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# MODELLING CO-CREATIVE ECOSYSTEM IN THE CONTEXT OF TECHNOLOGICAL DEVELOPMENT

SOCIAL SCIENCES,
MANAGEMENT (03 S)

VILNIUS, 2018

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# BENDRAKŪROS EKOSISTEMOS MODELIAVIMAS TECHNOLOGINĖS PAŽANGOS KONTEKSTE

Daktaro disertacija
Socialiniai mokslai, vadyba (03 S)

Vilnius, 2018

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# ABBREVIATIONS

API – Applications Programming Interface
B2B – Business to Business
B2C – Business to Consumer
CRM – Customer Relations Management
EC – European Commission
EU – European Union
HNA – Hyperlink Network Analysis
ICT – Information and Communication Technologies
NPG – New Public Governance
NPM – New Public Management
OGD – Open Government Data
SDL – Service Dominant Logic
UN – United Nations

# GLOSSARY OF TERMS

*Civic Technologies*. Platforms and applications enabling the citizens to connect and to collaborate with each other and with the government (Suri, 2013).

*Civil Society*. Aggregate of non-governmental organizations and institutions that manifest interests and will of citizens (Rugman, 2009).

*Co-Creation*. Management initiative or a form of economic strategy, that brings different actors together in order to jointly produce a mutually valued outcome (Prahalad & Ramaswamy, 2004a).

*Co-Creation in the Public Sector*. System driven by the goal of generating public value through the use of ICT and co-creation between public sector, private sector, and civil society.

*Conceptual Framework*. Network of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena. The concepts that constitute a conceptual framework support one another, articulate their respective phenomena, and establish a framework-specific philosophy (Jabareen, 2009).

*Ecosystem*. System where value emerges when a number of entities work collectively to create mutual benefits by granting access to one another's resources including people, technologies, organizations and information. In the context of this research project, service ecosystem refers to a system in which actors work together to achieve mutual benefit – public value.

*eGovernment*. The use of information and communication technologies to improve the activities of public sector organisations.

*Government 2.0*. The use of social technologies to increase participation, transparency, and inter-agency collaboration in the public sector (Ines Mergel, 2011).

*New Public Management*. Practices drawn from the private sector to the public sector.

*New Public Governance*. Governance characterized by the network perspective which takes into account the inputs by non-governmental organizations, private sector, educational organizations, international institutions in the processes of governance.

*Public Value*. The contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation.

*Service System*. Dynamic configuration of people, technologies and organizations and shared information that create and deliver value to customers, providers and other stakeholders (Uden, 2011).

# INTRODUCTION

**The relevance of the research**. Over the last decades, leading business and public management scholars and practitioners underlined the change towards interactive and networked nature of value creation both in private and public sectors. Innovative technological solutions and communication channels allow to include broader groups of society into collaborative activities. The notion of value co-creation becomes more relevant as organizational strategy, which tends to replace dominant value provision approach. In the private sector, this move has been conceptualized under Service Dominant Logic (SDL) approach where the focus of value creation is no longer perceived to reside within the enterprises' boundaries. The public sector research has developed several theoretical approaches underlining the importance of networked governance too e.g. New Public Governance, Government 2.0. The researchers suggest that the value no longer needs to be created by the governments alone, but could be generated in collaboration between the public organizations, the business entities, the civil society organizations or the citizens. The change has been echoed in communications of the European Commission as well. "The spread of digital technologies and concepts, such as open data and open government, seem to be driving an ongoing paradigm shift towards thinking of citizens and other non-state actors not only as contributors to public services initiated by the public sector, but as actors that can take the lead in providing services for the public good" (European Commission, 2013c, p. 6). The reality of public management practice is, however, different. It diverged towards the market-based principles of the performance measurement and competition, thereby reinforcing a framework which focuses on the customers who demand to be served rather than on the citizens working with their representatives to co-create public value (Dahl & Soss, 2014; Sandfort & Quick, 2015).

In European countries, the decay of confidence in traditional policy formation structures is apparent. For example, the trust of the European citizens in the EU institutions, their national parliaments, and governments measured by the quarterly Eurobarometer is low and slowly declining (Eurobarometer, 2016). Pew Research Centre survey on the EU favorability shows that people across Europe overwhelmingly think that the European Institutions do not hear their voice (Pew Research Centre, 2014). The Lithuanian democracy is facing the similar challenges. According to the Civic Empowerment Index of the Public Sector Representatives conducted in 2016 by Civic Society Institute, the Lithuanian citizens are interested in local problems but feel neglected by the local authorities when they make decisions on local issues (Civil Society Institute, 2016). Only 17% of the survey respondents indicated that the local authorities consider citizens` considerations when making decisions. The lack of citizen participation, political competence, and perceived influence implies that the Lithuanian model of democratic society and its instruments of direct democracy are not used to the fullest potential (Krupavičius, 2012). According to the Democracy Index 2016, the number of "full democracies" declined from 20 in 2015 to 19 in 2016 and the Eastern Europe experienced the most severe regression (Economist Intelligence Unit, 2016). In general, the old and new European countries are going through a crisis of representative democracy due to the growing notions of globalizations and in-

dividualism (Voorberg, Bekkers, & Tummers, 2014c). Hence, the re-creation of the links between government and society is critical.

The notion of co-creation emerges in the context of public value development as a key enabler for involving the diverse yet complementary set of stakeholders into decision-making. The co-creation profoundly differs from the traditional understanding of public participation. First, the co-creative initiatives can overcome the time and geography limitations and may allow "a significant leap in the scale and influence of public involvement" (Hom et al., 2014). Moreover, the co-creative perspective regards people as proactive citizens rather than as consumers of services. The co-creative methods help people and organizations to promote their own decisions, create new tools, develop capacities for self-government and open-ended civic processes, rather than to ask people to participate or contribute to existing initiatives or campaigns (Hom et al., 2014). Over the last two decades, a number of the EU policy strategic documents (e.g. Europe 2020 Strategy; EU Digital Agenda) have highlighted the access to information and decision-making processes for the public as a way to tackle the lack of democracy. The move to more open society allows to leverage the co-creation potential similarly to the ways it has been employed in the private sector (Ciasullo & Troisi, 2013; Gouillart, 2012; Leavy, 2014; Leavy & Moitra, 2006; Pinho, Beirão, Patrício, & Fisk, 2013; Thompke & von Hippel, 2002).

The national governments and the European Union invested considerably in the eGovernment and eDemocracy projects and expected the more active citizen participation. However, the majority of projects faced a number of problems. The research efforts on the public value creation by means of ICT has additional shortcomings in implementation. The locus of literature by academics and practitioners on the ICT-enabled governance has been within governments – they were regarded as the initiators, tools and information providers, who invite the citizens to join the processes. The modern governance theories place more focus on citizen-centricity but fail to include non-government initiated projects and initiatives. The concentration is on the processes in the governmental structures and managerial recommendations aimed at the creation of more open governance system and involvement of the citizens. However, the communities` movement is apparent, and the new self-government transparency and engagement platforms are created by the active members of society every day. The government cannot find the solutions to the established societal, economic and political problems alone (Bingham, Eisenhardt, & Furr, 2011; International Association for Public Participation, 2007; Lenihan, 2007). The European Commission has reported the change towards the collaborative nature of public services in the "A Vision for Public Services". The vision refers to the ICT-enabled collaborative services provided by the citizens, NGOs, private companies in collaboration or not with the government institutions (European Commission, 2013a). Around the world, civil society organisations, individual citizens, and even businesses are starting to experiment with ICT tools and available resources to collaborate with each other and with the government to project citizens` voice and to solve societal problems. The examples of such actions include the creation of e-democracy platforms (e.g. mySociety, Lietuva 2.0, manobals.lv), issue reporting platforms (e.g. FixMyStreet, Tvarkau Vilnių), transparency projects (e.g. PromiseTracker,

Poderpedia, skaidrumolinija.lt), online petitioning sites (e.g. Change.org, ControlShift, AskThem, WeThePeople, peticijos.com) or constituent-government communications tools (e.g. PopVox, Neighborland, parasykjiems.lt). Such intersection of the technologies and governance is coined as civic technologies in the scientific and practice based literature (Baack, 2015; Baeck & Bria, 2014; Ding et al., 2010; Knight Foundation, 2015; McNutt et al., 2016; Rumbul, 2015b). In such initiatives, the public (organizations and individuals alike) voluntarily lend their talent and resources to help the government to solve societal problems more efficiently. Although the public sector can generate the public value by itself and does not monopolize the processes, the capacity could be significantly extended by direct collaboration with other stakeholders and facilitation of initiatives outside governments control (Millard, 2013).

**The level of scientific problem exploration.** The discussion on co-creation frameworks, instruments and processes encompasses a growing amount of research efforts but the focus remains on the business and customer interactions (Hakanen & Jaakkola, 2012; Kohler, Fueller, & Matzler, 2011; Saarijärvi, 2012; Storbacka, Frow, Nenonen, & Payne, 2012; Tanev et al., 2011). Lithuanian research efforts into co-creation are limited and focus on the business settings (Bakanovė, 2013; Damkuvienė, 2009; Kazakevičiūtė, Bagdonienė, & Rai, 2012; Skaržauskaitė, 2013). International research on the application of co-creation in public sector offers several perspectives: improvement of governmental functions (Dörk & Monteyne, 2011; Lönn & Uppström, 2015; López-de-Ipiña, Emaldi, Aguilera, & Pérez-Velasco, 2016; Francesca Magno & Cassia, 2015; Mikušová Meričková & Meričková, 2014; Mulder, 2012; Torfing, Sørensen, & Røiseland, 2016; Voorberg, Bekkers, et al., 2014c), identifying barriers and enablers (Gillard, Simons, Turner, Lucock, & Edwards, 2012; Parrado, Van Ryzin, Bovaird, & Löffler, 2013; Vamstad, 2012), the roles of actors (Cobo, 2012; Francesca Magno & Cassia, 2015; Olphert & Damodaran, 2005), typologies of the methods (Carr, 2010; Ryan, 2012; Verschuere, Brandsen, & Pestoff, 2012). Research efforts on civic technologies include deliberations on individual user experience (Hivon & Titah, 2015; Peixoto, Fall, & Sjoberg, 2016; Rumbul, 2015a), institutional environment (OECD, 2001), readiness and support at the political level (Nambisan & Nambisan, 2013; OECD, 2001), the digital divide in the usage of ICT platforms (Ferro & Molinari, 2010; Lutz, 2015; A. Smith, Schlozman, & Verba, 2009), social behaviors online and offline (Boulianne, 2009; Gibson, Cantijoch, & Galandini, 2014) and demographic usage of such tools (Peixoto et al., 2016; Rumbul, 2015b). Lithuanian researchers did not analyze the civic technologies. However, the research body contains perspectives of eGovernment (Limba, 2004, 2007), eParticipation (Gatautis, 2010), eDemocracy (Domarkas & Lukoševičienė, 2006; Petrauskas, Malinauskienė, Paražinskaitė, & Vegytė, 2009; Raginytė & Paliulis, 2009; Žilionienė, 2004), smart governance (Gaulė, 2014; Stanislovaitienė, 2016; Šiupšinskas, 2014) and open data integration (Smalskys & Šilinskytė, 2016) of the ICT-enabled public value generation

**The problem of the research.** This research project intends to contribute theoretically and empirically to the research stream of co-creation by focusing on the ICT-enabled collective actions of citizens, communities, governmental organizations, business entities, NGOs and other stakeholders in the creation of public value. The investigative problem

of this study is expressed through the following question: *what are the processes of ICT-enabled co-creation and how do they contribute to the development of public value?*

**The object of the research.** Public value co-creation in Lithuanian and international civic technology platforms.

**The goal of the research.** To propose a ICT-Enabled Co-Creative Ecosystem framework aimed at development of public value. The goal will be achieved by completing the tasks of the research below.

1. Actualize the perception of ICT-enabled public value co-creation and to determine main preconditions, obstacles and risks by conducting analysis of related scientific research.
2. Construct the conceptual framework integrating activities and preconditions needed for ICT-enabled public value co-creation and to substantiate the methodology for research of the model.
3. Elaborate conceptual framework by determining the characteristics of ICT-enabled public value co-creation by means of expert interviews, content analysis of Lithuanian civic technology platforms and comparative analysis of international civic technology platforms.
4. Propose updated and empirically verified ICT-enabled Co-Creation Ecosystem model.
5. Prepare managerial and organizational recommendations for strengthening the collective efforts of citizens, platform initiators and developers, public and governmental institutions in creating public value.

**The methods of the research.** Theoretical aspects of ICT-enabled public value co-creation were examined using meta-analysis, comparative analysis and generalization methods of related scientific research. The empirical investigations were based on phenomenological research strategy and qualitative research triangulation approach. Three complementary empirical studies have been conducted – expert interviews, mapping and qualitative content analysis of Lithuanian civic technology platforms and comparative content analysis of international civic technology platforms. The applied approach emphasizes triangulation among multiple data sets and fosters iterative theory-building and testing.

**The limitations of the research.** The research project has several limitations which could be improved in the future research efforts. First, the empirical research methodology is based on the availability of data. Since ICT-enabled co-creation and civic technologies are evolving concepts, it was difficult to construct appropriate categories, define the measures and develop valid and reliable instrumentation. It complicated the analysis, although the iterative revision and testing of the selected measures was a useful way to clarify the concepts. Second, the interview method predetermines other types of limitations – ensuring research validity and reliability, stimulating participants' motivation, and decreasing subjectivity. Third, the secondary data gathered during the platform content analysis can have unknown errors and other issues. Also, research process was complex due to the heterogeneity of Internet data predetermined by the differences in content, user interfaces, semantics, structure, etc. The differences make it difficult for the

researchers collecting online data. Fourth limitation is the sample of Lithuanian platforms in the mapping activity. It has to be mentioned that the sample is not representative of the universe of civic technologies. Moreover, due to its limited size, it does not present statistical significance. However, as the first exercise in differentiating the building block of civic tech landscape, it can be considered as an effort of structuring the sample. Also, the research results were complemented by the study of the international platform content. The study was less in-depth but allowed to test some generalized findings of other two studies. The proposed model has several limitations too – definition of complex and emergent socio-technical systems, such as ICT-enabled co-creative ecosystems, is unavoidably partial, context-specific and temporary. Further research exploring civic technology platforms in greater depth and applying comparable methods in other countries, would be useful in the elaboration of the model.

**The practical implications of the research**. Research dealing with the nexus of ICT-enabled collective action confronts several challenges: complex conceptualization due to difficulties in finding common ground among new theories, focus on micro-issues (government-citizen relationship, citizen engagement, citizen roles, the applicability of tools in different contexts, etc.) and no studies on analyzing the field on the macro level. Such research could provide much-needed insights for civic leaders on how to create sustainable ICT-enabled projects and how to maintain them in the long-run. Also, the research can provide insights for governmental organizations on what civic leaders need from the governments, what encourages the creation of such initiatives and how to increase the much needed synergy between the citizens and the governments. The thesis contributes the co-creation research field in two ways. First, by expanding the knowledge on the mutual value generation in the empirical context of civic technologies. The second contribution relates to the identification of the roles society members enact during resource integration processes of public value co-creation. The contributions are expressed through the development of empirically tested co-creative ecosystem framework.

**The structure of the research** follows the logic illustrated in the Figure 1 below. The dissertation consists of the introduction, list of main definitions and abbreviations, three main chapters, eight sections dedicated to theoretical, methodological and empirical data analysis, discussion, conclusions and recommendations, literature list and annexes. The volume of the dissertation consists of 220 pages, 22 figures, 31 tables and 8 annexes. The literature list contains 438 sources.

**Figure 1:** *The structure of the research*



| INTRODUCTION |

**1. THEORETICAL INVESTIGATIONS**

**1.1.** *Theoretical Foundations to ICT-Enabled Co-Creation of Public Value*

Co-Creation Theory
ICT-Enabled Public Sector Theory
Governance Theory

**1.2.** *The Notion, Subject and Forms of Public Value Co-Creation*

Preconditions for Public Value Co-Creation
Types and Methods of ICT-Enabled Co-Creation
Limitations and Criticism

**2. MODELLING ICT-ENABLED CO-CREATIVE ECOSYSTEM**

Conceptual Framework of ICT-Enabled Co-Creative Ecosystem

Conceptualization and Elements of ICT-Enabled Co-Creation of Public Value

Research Questions, Design and Methodology

**3. EMPIRICAL INVESTIGATIONS: ELABORTION AND VALIDATION OF THE PROPOSED FRAMEWORK**

Study on Public Value Co-Creation through Civic Technologies (expert interviews)

Comparative Research of International Civic Tech Platforms

Civic Technologies Mapping in Lithuania

**ICT-ENABLED CO-CREATIVE ECOSYSTEM MODEL**

CONCLUSIONS AND RECOMMENDATIONS

**Source:** *developed by author (2018)*

# 1. THEORETICAL INVESTIGATIONS OF ICT-ENABLED CO-CREATION OF PUBLIC VALUE

## 1.1. The Theoretical Foundations of ICT-Enabled Public Value Co-Creation

Technological advancements, innovative managerial strategies, and new forms of interaction lead to the constantly changing roles of organizations and their customers. The concept of co-creation is seen as a new framework describing the shift from considering organizations as the definers of value to a more inclusive and collaborative process involving the end-users and other external actors. Several authors suggest that co-creative approaches could benefit the public sector (Bason, 2010; Magno & Cassia, 2015; Nambisan & Nambisan, 2013; Wise, Paton, & Gegenhuber, 2012). The contributions by the citizens, private and non-governmental sectors are increasingly considered as a useful tool for tackling multifaceted issues of contemporary society in terms of co-designing solutions to the problems together with the experts and public officials (Bason, 2010; Gouillart & Hallett, 2015). The theory of co-creation originated in the business management literature and practice. Hence, for the concept to be applied in the public sector, integration with established public sector administration and management theories is needed (See Figure 2 "The Theoretical Influences to Co-Creative of Public Value" below).

**Figure 2:** *The Theoretical Influences to Co-Creative of Public Value*
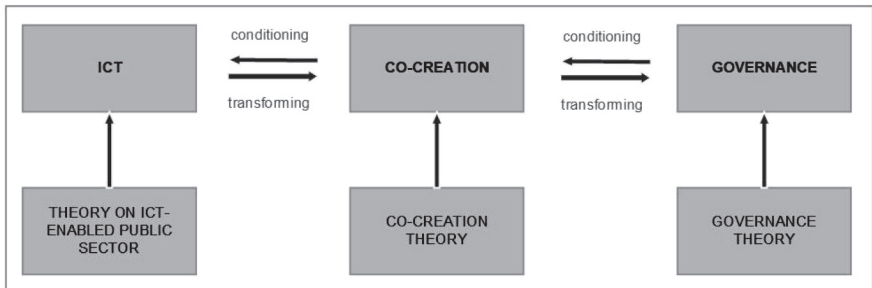


**Source:** *developed by author (2018)*

The purpose of this chapter is to provide a holistic view of the application of ICT-enabled Co-Creation processes in the generation of public value as represented in the current research. While the concept is complex and multilayered, the literature review will provide an in-depth discussion, enhance the understanding of various perspectives, research backgrounds and integrate the findings from diverse scientific fields of Governance, Co-Creation and ICT application in public sector. The three academic fields have a joint emphasis on ICT-enabled collaborative processes, but they differ in focus. Whereas governance theory focuses on governance processes, ICT-theory focuses on the digitization of services and co-creation theory focuses on the collective value creation processes by different groups of society.

### 1.1.1. The Aspects of Co-Creation Theoretical Approach

The idea of collaboration with customers is not new, but the Internet enables consumers to self-organize, collaborate and have socially-embedded consumption experiences on a larger scale (Loane, Webster, & D'Alessandro, 2014; Mathwick, Wiertz, & De Ruyter, 2008). The move from company-centric approach gives a new perspective of the established roles of organizations and consumers by enabling the value creation through interactions (Alexander, 2012; Lusch & Vargo, 2006; Prahalad & Ramaswamy, 2004a; Tanev, 2009; Vargo & Lusch, 2008; Wikström & Normann, 1994). The management literature has been converging the concept by scrutinizing and widely citing practical applications of co-creation in companies like Threadless, Nike, IDEO, or Starbucks. This lead to a variety of theoretical approaches for conceptualizing Co-Creation based largely on the seminal works in the field by C.K. Prahalad and V. Ramaswamy (Prahalad & Ramaswamy, 2000, 2004a, 2004b) and R.F. Lush and S.L Vargo (Vargo, 2011; Vargo & Lusch, 2008, 2016). Annex 1 provides an overview of the co-creation definitions. Saarijärvi and colleagues reviewed the prevailing research to identify established approaches and reduce the complexity of the field (Saarijärvi, Kannan, & Kuusela, 2013). The authors distinguished three main streams of co-creation research – Service Dominant Logic approach, Service Logic Approach, Service Science approach – and identified several other less prominent approaches, all of which will be elaborated by highlighting central elements, diverse features and relevant definitions below.

The research stream of lead-user innovation was initiated in the mid-eighties by Eric Von Hippel. Soon after in the nineties, first articles on co-creation appeared and gained momentum in the context of service delivery and product development (Ciccantelli & Magidson, 1993; Dolan & Matthews, 1993; Gilmore & Pine, 1997; Herstatt & von Hippel, 1992; Peppers & Rogers, 1993; Pine & Gilmore, 1999; Urban, Hauser, Qualls, Weinberg, & Al., 1997). Prahalad and Ramaswamy observed the changing roles of actors in the value creation processes and conceptualized the transformation of the customers from passive audience to active participants (Prahalad & Ramaswamy, 2000). Laterally, Lush and Vargo examined the way marketing has been studied and practiced during the 20th century and introduced the concepts of Service Dominant Logic (SDL) and customer-centricity (Vargo & Lusch, 2004). These concepts emphasize the development of customer-supplier relationship through interaction and dialogue. The first and central approach to co-creation – SDL, states that services rather than goods are the core units of exchange and the value is created through a collaborative process involving customers. Central to it is the notion that organizations, markets and society are fundamentally concerned with the exchange of services. SDL was initially based on eight and later extended to eleven foundational premises listed below (Vargo & Lusch, 2016).

FP1 Service is the fundamental basis of exchange.
FP2 Indirect exchange masks the fundamental basis of exchange.
FP3 Goods are a distribution mechanism for service provision.
FP4 Operant resources are the fundamental source of strategic benefit.
FP5 Value is co-created by multiple actors, always including the beneficiary.
FP6 All economies are service economies.

FP7 Actors cannot deliver value but can participate in the creation and offering of value propositions.

FP8 A service-centered view is inherently beneficiary oriented and relational.

FP9 All social and economic actors are resource integrators.

FP10 Value is always uniquely and phenomenologically determined by the beneficiary.

FP11 Value co-creation is coordinated through actor-generated institutions and institutional arrangements

These foundational premises center around four axioms: (1) "service is the fundamental basis of exchange", (2) "customer is always co-creator of value", (3) "all economic and social actors are resource integrators" and (4) "value is always uniquely and phenomenologically determined by the beneficiary" (Vargo & Lusch, 2016). The concept of SDL provides a basis for understanding the roots of co-creation and according to Saarijärvi et al. (2013) is discussed in most of the research papers on co-creation. Publications on SDL and co-creation put the organization in control of value co-creation, and the customer is invited to join this process as co-creator (Heskett, Sasser, & Schlesinger, 2002; Pongsakornrungsilp & Schroeder, 2011; Vargo & Lusch, 2004). SDL is criticized for the levels of abstraction it entails (Grönroos, 2008). However, the authors themselves (Vargo & Lusch, 2008) claim that it should be regarded as a pre-theory – a lens or mindset rather than a firmly grounded theoretical paradigm for further theoretical and conceptual investigations.

Second major approach incorporating the co-creation concept is *Service Logic*. Service Logic is considered to be a corner stone of current thinking of Nordic School of Marketing (Kowalkowski, 2015). Value co-creation happens only when an organization adopts provider service logic, establishes interactions with the customers, find innovative ways to be included in consumption processes and create interaction points through which customers could collaborate in developing and improving the products/services (Grönroos, 2008; Grönroos & Ravald, 2011). Such line of thought has similarities with the foundations of SDL. However, whereas SDL focuses more on conceptual advances (even beyond the field or marketing), Service Logic is more business oriented and focuses on managerial implications (Kowalkowski, 2015) thus is less applicable in the context of this research project.

Another important theoretical approach entailing co-creation – *Service Science* – is the most relevant in the framework of this research project due to its applicability in a wide spectrum of contexts. Meynhardt, Chandler and Strathoff (2016) suggest that most investigations on co-creation focus on micro and collective-macro levels. A systemic approach is often missing and isolated investigations lead to incomplete research outcomes. Researchers at IBM and University of Cambridge suggest Service Science as an alternative method and research direction to discover underlying components of complex systems and the way they can be combined (IfM and IBM, 2008). Number of theoretical frameworks attempt to conceptualize Service Systems and its dynamics e.g. Service-Dominant Logic (Akaka, Vargo, & Lusch, 2013; Robert F. Lusch & Vargo, 2006), Customer Contact model (Chase & Tansik, 1983; Soterioua & Chaseb, 1998), Unified Theory of Service (Scott E. Sampson, 2010), etc. This research projects focus on SDL approach to Service Sciences due to its close links with the concept of co-creation. SDL is concerned more with providing a new

perspective on the economic and social organization (Akaka & Vargo, 2014) and less with a theoretical reasoning and technical explanations. Hence, the Service System approach provides a much needed clarity and guidance for those wanting to apply principles of co-creation in managing organizations.

**Figure 3:** *The Core Components and Narrative of SDL and Service Science*
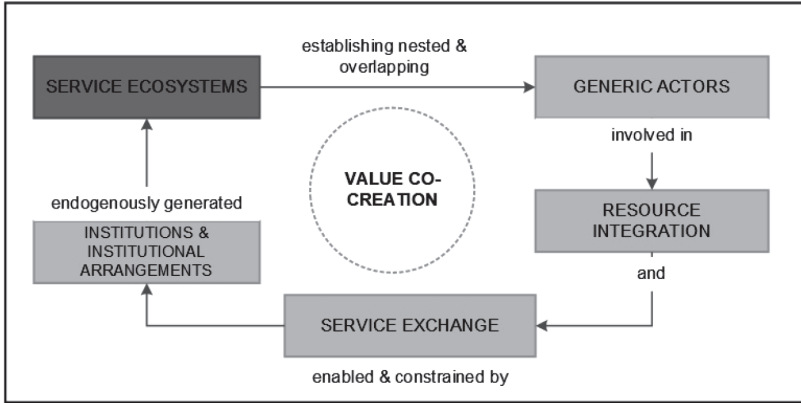


**Source:** *Fragidis & Tarabanis (2011)*

In basic sense, a service is defined as an interactive process of doing something for someone (Vargo & Lusch, 2004). The nature and definition of services, however, changed considerably in past decades. Traditionally, services involved concrete actions, performances (Berry & Parasuraman, 1993; Zeithaml, Bitner, & Gremler, 2006) and used to be provided on a face-to-face basis with the end-user (S. E. Sampson & Froehle, 2006). Technological advancements, however, weakened the contact and prompted an increased need for customer participation through the organizational value chains. Hence, the new perception of service is broader and can be defined as "the application of competencies (skills and knowledge) for the benefit of another party" (Vargo & Lusch, 2008, p. 5). In SDL perspective, the notion of service is focused on the process of serving rather than on a form of output (Lusch, Vargo, & Wessels, 2008). For instance, it could include the provision of resources that others will use, provision of actual labor. Also, services could be provided both directly and indirectly. Hence, in the Service Science understanding, services are open systems constructed of "complex series of, often iterative interactions, between the service user, the service organization and its managers and staff, the physical environment of the service, other organizations and staff supporting the service process, and the broader societal locus of the service" (Osborne, Radnor, Kinder, & Vidal, 2014, p. 406).

The central concept of the Service Science as represented by SDL perspective is *service ecosystem*. A service ecosystem consists of several or many service systems connected by a network and Service Science focuses on value co-creation amongst them. Service system can be defined as a dynamic configuration of people, technologies and organizations and their ecosystem can be defined as a self-adjusting system of resource-integrating contributors

connected by shared structures, social rules and mutual value creation (Akaka et al., 2013, p. 161). In Service Science perspective, the value is created through three interrelated and cyclical processes in service systems (Goda & Kijima, 2015, p. 85) listed below and illustrated in Figure 3 "The Core Components and Narrative of SDL and Service Science" above.

*Resource integration.* Operand and operant resources do not partake value per se but create value when resources are shared between the actors involved (Åkesson, 2011). According to Akaka & Vargo (2015, p.455), service systems leading to value co-creation and innovation should be regarded as "open systems that are capable of improving the state of another system through sharing or applying resources <...> and capable of improving its own state by acquiring external resources". Hence, the emphasis is shifted from the exchange of operand, tangible resources to exchange and application of dynamic operant resources such as knowledge or information.

*Networking.* The co-creation processes contain stakeholders operating in networks. The networks allows to integrate stakeholders' resources through interactions (Lusch, Vargo, & Tanniru, 2010; Macdonald, Wilson, Martinez, & Toossi, 2011) and innovative technologies enable to share information within and across the service systems. Co-creation in the networks can be actualized through co-production, customization, resource integration and other collaborative means (Fragidis & Tarabanis, 2011).

*Service exchange.* Service systems participating in the networks integrate various resources to create value and exchange this value through interactions. "The value is generated over and above what would have been possible in the absence of the relationship and interactions between the stakeholders involved in service ecosystem" (Madhok & Tallman, 1998).

The applicability of Service Science in public sector has been highlighted by several authors (Uppström, 2014; Virtanen, Stenvall, & Kinder, 2014). It is argued that public sector is undergoing a qualitative shift from product orientation to service orientation due to changing expectations of citizens and other government stakeholders, technological progress and strained economic circumstances (Hartley & Sklecher, 2008; Osborne, 2016; Stenvall, Laitinen, Ursin, Virtanen, & Kaivo-oja, 2014). Ng and Maull go even further and propose that all social processes and structures should be studied through the service perspective (Ng & Maull, 2011). Stenvall et al. suggest that the change to service-orientation "has created a new kind of operating environment for learning and intelligent public organizations. The question is no longer what the service users <…> can learn from the public sector, but also what public organisations can learn from them" (Stenvall et al., 2014, p. 26). Accordingly, Borras et al. claim that the service delivery should no longer be regarded as something done by governments to citizens, businesses and other organizations but rather as a co-creative process (Borras, Brown, & Parker, 2014). This new view of services could benefit the contemporary public management theories and practices (Virtanen et al., 2014).

Public Service-Dominant Logic (PSDL) is a theory-driven approach for analyzing and managing the public sector put forward by S.P. Osborne (Osborne, 2016; Osborne et al., 2014; Osborne, Radnor, & Nasi, 2012). Criticism of New Public Government model "which has dominated the reform and research agenda of the public sector for more than two decades" (Engen, Magnusson, Bergkvist, & Karlsson, 2016, p. 771) is a the core of the PSDL approach. Osborne and colleagues state that New Public Government approach is based on

research in the private sector on manufacturing and intra-organizational efficiency. Hence, it is "fundamentally flawed" and needs rethinking (Osborne et al., 2014). Public Service-Dominant logic suggests that the focus should be shifted to the services with the focus on interactions between public sector entities their users and other stakeholders. PSDL received criticism due to its harsh, axiomatic claims, with limited empirical evidence. According to Hughes, the division between goods and services "is not as stark as is made out; indeed, it becomes harder to make any claim that the distinction is real enough to require completely different management style" (Hughes, 2015, p. 12).

Other theoretical approaches also touch upon defining principles of co-creation but to a much lesser degree. Advocates of Many-to-Many Marketing (Edvardsson, Kristensson, Magnusson, & Sundström, 2012; Edvardsson, Ng, Min, Firth, & Yi, 2011; Gummesson, 2008a, 2008b) argue that more diverse spectrum of stakeholders should be considered in the process of value creation. Meaning that co-creation should involve not only the customers, but also network suppliers, intermediaries, employees, and society in general. Research stream of New Product and Service Development (Hoyer, Chandy, & Dorotic, 2010; Nambisan, 2008; Nambisan & Baron, 2009) focuses on consumer empowerment and their increasingly active role. Consumers are willing and able (due to the expansion of social technologies used by companies) to provide ideas for new products/services and suggest improvements for development of existing ones. According to Saarijärvi et al., active inclusion of customer resources has gained momentum in marketing research (Saarijärvi et al., 2013). Kohlbacher identified tacit knowledge residing mostly outside firm boundaries in customers, suppliers, partners and other stakeholders as a decisive factor in developing new products (Kohlbacher, 2008). Post-modern marketing literature also focuses on a more active role of customers and the need for organizations to open up their processes (Saarijärvi et al., 2013).

The variety of definitions in the scientific and practice-based literature of Co-Creation in the private sector is provided in Annex 1 of the thesis. According to Hom et al., definitions have following characteristics in common: systemic (i.e. extends across the entire value-chain); innovative and productive (i.e. intended to generate new products and models of service delivery); collaborative (i.e. pro-active role of users); diverse; hierarchy-flattening; shares power between organizations and stakeholders; bi- or multi-directional (i.e. information and ideas flow among stakeholders); mutually beneficial; trusted and transparent (Hom et al., 2014). Based on the literature review, different approaches and limitations of the concept discussed in this section co-creation is defined as a management initiative or a form of economic strategy which brings different actors together to jointly produce a mutually valued outcome (Prahalad & Ramaswamy, 2004a).

Approaches discussed in the chapter offer varied perspectives on the co-creation concept by emphasizing different characteristics, changing nature of relationships between organizations and network of their stakeholders. However, co-creation theory has several drawbacks which need to be mentioned. Firstly, co-creation theoretical frameworks and concepts are conflicted despite the massive usage rates in the research literature. Leroy et al. analyzed the selection of articles in special issues of marketing journals dedicated to co-creation and/or SDL, noticed that often what is presented as a conflict between schools of thought is more

often based on a difference of scale of observation (Leroy, Cova, & Salle, 2013). Various other aspects of co-creation have been explored, including the output of co-creation (Jaworski & Kohli, 2006), competing through service (Robert F. Lusch, Vargo, & O'Brien, 2007); management issues (Etgar, 2008) and the process of co-creation (Payne, Storbacka, & Frow, 2008).

## 1.1.2. The Aspects of Governance Theoretical Approach

Traditional public administration assumes citizen as a passive client. Contemporary public management theory is broadly encapsulated within the New Public Management (NPM) paradigm which refers to the practices drawn from the private sector to the public sector. The roots of NPM has been researched extensively (Dunleavy, Margetts, Bastow, & Tinkler, 2006; Hood, 1998; Thomas, 2012). According to Osborne et al. (2012), it has been influenced by three factors prevailing the traditional public management: politics-administration dichotomy, the view of civil servants as a self-serving elite, and inefficient allocation public resources. Downsizing, accountability, focus on performance and end-results, decentralization of responsibilities, separation from the political aspects of public administration and application of private sector practices are the main features of NPM (Batley & Larbi, 2004; Kettl, 2005). The application of innovative communication technologies is discussed broadly in this framework with the expectations to increase efficiency, policy effectiveness and democratic values (OECD, 2005).

Guogis and Urvikis (2011) suggest that in more advanced countries, the modernization of the public sector is based less and less on the principles of New Public Management and the school of New Public Management receives a growing amount of criticism. Even thought, NPM brought improvements to the public sector but the cost-efficiency and technical aspects were emphasized too much leaving other considerations out of scope (Kelly, Mulgan, & Muers, 2002). Hence, the focus shifted towards New Public Governance (NPG) theoretical approach. NPG is based on collaboration, multi-stakeholder governance and active role of third sector. Different countries apply the principles of NPM and NPG on varying levels. According to Guogis and Urvikis (2011), in Lithuania both of these approaches to public management are expressed in limited extent. The differences between the traditional approach to public administration, NPM and NPG are summarized in Table 1 "The Comparison of Competing Paradigms for Public Management" below.

**Table 1:** *The Comparison of Competing Paradigms for Public Management*

| Analyzed Dimensions | Traditional Governance | New Public Management | New Public Governance |
|---|---|---|---|
| *Context* | Stable | Competitive | Continuously changing |
| *Theoretical roots* | Political science and public policy | Economics and management studies | Organizational sociology and network theory |
| *Emphasis* | Policy implementation | Service inputs and outputs | Service processes and outcomes |
| *Strategy* | State and producer centered | Market and customer centered | Shaped by civil society |

| Analyzed Dimensions | Traditional Governance | New Public Management | New Public Governance |
|---|---|---|---|
| *Relationships to external partners* | Potential elements of policy system | Independent contractors in market place | Preferred suppliers and interdependent agents within ongoing relationships |
| *Governance through* | Hierarchies | Markets | Networks and partnerships |
| *Actors* | Public Servants | Purchasers and providers, clients and contractors | Civic leaders |
| *Focus* | Public goods | Public choice | Public value |

**Source:** *based on Osborne (2016)*

The concept of New Public Governance is characterized by the network perspective which takes into account the inputs by non-governmental organizations, the private sector, educational organizations, international institutions in the processes of governance. Such approach aims to create and maintain synergy between the competencies and knowledge of diverse actors in dealing with complex problems (Dedeurwaerdere, 2005). In NPG perspective, traditional hierarchies are replaced by new organizational forms and involve sharing infrastructures, processes, data, assets, knowledge, resources, content and tools (European Commission, 2013c). The notion of public value is of vital importance in deliberations on NPG. The concept was coined by Moore and refers to the actual social and economic improvements the services create for the public in addition to their quality or efficiency (Moore, 1995). Similar conclusions have been made by several other authors (Jorgensen & Bozeman, 2007; O'Flynn, 2007; Stoker, 2006) who also have stressed that public value covers more than governmental value. The research community (Cordella & Bonina, 2012; Huijboom et al., 2009; Lönn & Uppström, 2015; Meynhardt et al., 2016) suggest that engagement of citizens in collaboration with governments has a great potential in the creation of public value. Osimo (2010, p. 4) states that the "governments have to learn to promote innovation and create public value not through direct intervention, but by leveraging and enabling the best capacities of citizens to be deployed and fully realized". The public value can be created by improving the quality of public service (Kelly et al., 2002), operation of an efficient public organization (Moore, 1995) and other ways.

Based on the rationale put forward by Moore (1995), the value of public services is not limited to the efficiency and quality but also deals with the social and economic improvements they create for the society. Hence, the notion is used as a normative basis for evaluating the public services' performance (Kelly et al., 2002). However, Moore did not offer a systematic method for the analysis of public value, just asserted that efficiency, profit, productivity and other financial metrics does not provide comprehensive evaluation. Hence, there has been an increase in the research efforts aimed at defining more suitable public value metrics, especially in the context of eGovernment research (Golubeva, 2007; Kearns, 2004; Thanthri Waththage & Deng, 2011). Sterrenberg suggests that the applicability of public value in eGovernment research is preconditioned "due to the fact that it measures the outcomes of e-government services rather than the technology itself" (Sterrenberg, 2017, p. 2531). Public value focuses

on the collective and social interest served by the public institutions (Harrison et al. 2012). According to Meynhardt et al. public value represents "impacts on wider society including, but not limited to, economic results or financial gains. It redefines the entire idea of value creation by taking into account moral and political, as well as utilitarian and hedonistic, aspects of value creation. In other words, value is not just about money, it is about a change in peoples' perception of living in a community and society" (Meynhardt, Gomez, & Schweizer, 2014, p. 5).

The researchers suggest to understand the public value as the need for governments to increase collaborative efforts with the users and other stakeholders (Benington, 2009; O'Flynn, 2007). Hence, the public value could be viewed as a framework for thinking about the service delivery within the public sector but limiting it to governmental institutions only. According to Bryson et al., the perspective of public value in discussion of co-creation between different societal groups is crucial because it "underscores how entrepreneurial spirit, strategic action and leadership are key to promoting public value – again, in contrast to traditional theories of public administration, and in line with recent theories of management and leadership" (John Bryson, Sancino, Benington, & Sørensen, 2017, p. 643). Following this logic, public value is defined *as the contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation.*

The discussion on public value types is rather limited. Cook (2011a, 2011b) suggests two major kinds of public value: (1) value resulting from delivery of specific benefits directly to individuals or groups and (2) value resulting from the improvement of government as a public asset. Cook, in addition, provides a rather comprehensive framework and suggests seven types of public value available: economic, political, social, quality of life, strategic, ideological, stewardship (Cook, 2011a, 2011b). Cook also defined six pathways to achieving the public value through open government initiatives – efficiency (i.e. obtaining increased outputs with the same assets or obtaining the same outputs with lower resources), effectiveness (i.e. increasing quality of the outcome), intrinsic enhancements (i.e. changing the environment or circumstance of stakeholder in ways that are valued for their own sake), transparency (i.e. access to information), participation (i.e. direct involvement in decision-making), collaboration (i.e. activities in which set of actors share responsibility for decisions). The model by Cook is illustrated in Figure 4 "The Process of Delivering Public Value" below.

**Figure 4:** *The Process of Delivering Public Value*
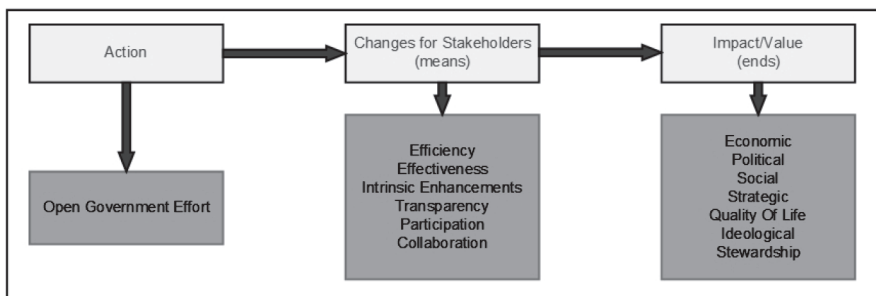
The notion of citizen engagement is relevant in the discussion of modern public governance theories. Philosophical roots for citizen engagement can be traced back to Athenian democrats. R. Putnam first popularized the term and its use spread not only in the scientific community but in the political and popular discourse. Discussion on the meaning of citizen engagement in modern governance starts with the theory of decision-making structures (Putnam, 1993). DeSario and Langton analyzed development, application, and regulation of technologies on decision-making structures and defined two approaches: technocracy and democracy (DeSario & Langton, 1984). Technocracy can be defined as a use of specialized knowledge, scientific approaches, expertise, and technical information when making decisions. Democracy refers to citizen participation in government planning by direct and indirect involvement measures. According to DeSario and Langton, only collaboration between experts and public and balanced technocratic and democratic contributions can bring progress to the society because both of the approaches on their own have their limitations: public is lacking objectivity and neutrality, experts and technologies may not always be aware of more abstract factors influencing society (DeSario & Langton, 1984).

The definition of the concept is complex, which has been referred and illustrated with different explanations throughout the literature. It depends on the perspective and interests of the definer. In general, public participation is widely viewed as a basic condition of decision-making at all levels of governance (EU level, national level, city level). Various definitions of citizen engagement have several building blocks in common: voluntary participation, citizen actions (e.g. volunteering, voting, donations) and it always refers to engagement in something. Thus, it is unreasonable to discuss citizen engagement outside specific context. According to Davies et al., there are "two contexts where citizen engagement is most frequently discussed: engagement of individuals in the various structures and institutions of democracy (often termed 'public participation'); and engagement in activities related to the community and other informal associations ('civil' or 'social' participation)" (Davies, Simon, Patrick, & Norman, 2012, p. 4). Citizen engagement in the contexts of political participation validates democratic institutions and ensures social cohesion. In the context of social participation, the focus is placed on the beneficial effects of citizen engagement on communities via increased social capital, shared networks and empowerment of individual citizens (Davies et al., 2012). Berger (2011) comes to similar conclusions in his analysis of conflicting civic engagement definitions. According to the author, traditional definitions may have outlived its usefulness and instead should be regarded as a combination political engagement and social/moral engagement approaches. When sociologists discuss civic engagement, they focus on "people's attention and energies invested in social groups and networks or focused on moral reasoning and follow-through" (Berger, 2011, p. 4). When political scientists debate civic engagement they refer to the inclusion of the public in the policy issues and interaction with entities at various levels of government (Berger, 2011).

According to Abelson et al. (2003, p. 239), the trend of citizen-centricity emerged because of the influence of neo-liberal consumerist, customer-centered public sector management philosophy and governance philosophy that encourages mutual citizen-government obligations and emphasizes the participation for collective rather than individual purposes. Dutton provides a useful taxonomy for analyzing maturity of collaboration in public sector

(see Figure 5 "The Matrix of Collaboration" below) including three ways organizations can utilize ICT (Dutton, 2008). Traditional models of governance allowed only the first two levels (sharing and contributing) of collaboration in civic society. New governance models (New Public Management, New Public Governance) provide the means for changing the power balance and enabling co-creation of public value.

**Figure 5:** *The Matrix of Collaboration*

| LEVELS OF COLLABORATION | Architecture | Openness | Control | Modularisation |
|---|---|---|---|---|
| **SHARING** The information can be shared, sold, or advertised (hypertextual) | Focus on open sharing of documents (one-to-many) | Enables access to information through deep searching (open) | The control of individual's participation is low or limited (low) | Contributors have limited level of intervention in content (low) |
| **CONTRIBUTING** Facilitates group communication, thereby reshaping who contributes information to the collective group (hypertextual-user generated) | Enables user-generated content (many-to-many) | Allows sharing insights, information and opinions (networked) | The platform's management is based on levels of participation (moderate, reputation) | Modularizations keeps the task at a manageable level (moderate, simple task) |
| **CO-CREATING** Allows attracting and sustaining relevant contributors and the co-creation of information products and service (hypertextual-user generated-cooperative work) | Allows collaborative production of information products (many-to-many) | Creates a hierarchy of rights and privileges (managed) | Hierarchical levels of control over who participates and how (high) | Keeping tasks modular, precise and easy to complete (high) |

**Source:** *Dutton (2008)*

The practice of public management which focuses on the market-based principles in measuring the performance (Moynihan, 2008; Pollitt & Bouckaert, 2004), fortifies a governing and public management structure where citizens are perceived as customers who demand to be served rather than partners working with their representatives working in pursuit of public policy co-creation (Dahl & Soss, 2014).

### 1.1.3. The Aspects of ICT-Enabled Public Sector Theoretical Approach

The last theoretical approach contributing to the conceptualization of ICT-enabled public value co-creation is the most complex in terms of available models, conflicting findings and availability of established theoretical models. European Union promotes the ICT tools in providing opportunities for citizen engagement and promoting discussions of public interest aimed at recreation of links between the governments and the citizens (Cobo, 2012). Europe 2020 Strategy is aimed at creating the preconditions for Europe's ongoing smart, sustainable and inclusive growth. Seven flagship initiatives are employed to achieve the goals of Europe 2020 Strategy; the first initiative (EU Digital Agenda, which seeks to aid businesses and society to achieve maximum value through development of technologies) and the second initiative (Innovation Union, which seeks encouraging a wider smart specialization in the fields of research and innovations and enhancing the efficiency of cooperation between public and private sectors) are most important for the development of civic society and sense of community.

Use of ICT in public sector is especially relevant in the framework of Europe 2020 and "refers to the use of ICT for the creation and implementation of new processes, products, services and methods of delivery which result in significant improvements in the efficiency, effectiveness and quality of public services as well as the wider operations of the public sector. It also refers to the ability of the public sector, as appropriate to its mandate and resources, to become more innovative in the way it operates and to itself support innovation in society" (European Commission, 2013b, p. 2). At the same time, Lithuania is also seeking answers to the global challenges faced by other European Union countries. The part of Lithuania 2030 Strategy that describes a civic society is aimed at creating a culture based on the sense of community and trust; it points to the need to re-consider national identity, to find the links that unify society and to enhance the power of citizens. It is clear that the re-creation of the relations between the government and society is a very important factor to Lithuania as well; however, it is not clear what means could be employed to re-establish the link most quickly and efficiently. Participatory politics and other technology-powered forms of engagement are still new and understudied, but there is a hope that they can help reverse the trends in civic involvement, especially for future generations. Henry Jenkins has argued that online communities might be the twenty-first-century bowling leagues, connecting youth and "creating a starting point for other civic activities" (Jenkins, 2009).

Web 2.0 technologies allow to share resources, data and knowledge in a participative and collaborative way. The growth of social technologies from blogs to wikis enabled the individuals to be more informed and connected on an unprecedented scale. These new communication and cooperation forms empowered both business and public organizations to share information, reach out to wider audiences and get fast feedback. Leading analysts at Forrester Research, McKinsey Global Institute, Knight Foundation, Pew Research Centre (Brown, Sikes, & Willmott, 2012; Chui et al., 2012; Knight Foundation, 2013) point to the growing popularity of ICT use for creation of public and social value. De Lange and De Waal (2013) conclude that the use of new media, technologies and collaborative methods promise several qualitative shifts in the way public is engaged and empowered: (1) collective issues can be defined and made visible more efficiently (e.g. use of big and open data); (2) engagement using collaborative technologies and social media allow citizens to feel as a part of something bigger; (3) media technologies empower self-organization when solving collective issues; and (4) media technologies allow individuals to act in new ways (e.g. design certain features of their cities or collectively govern urban issues).

The use of Information and Communications Technologies in civil issues and governance has been the object of a number research efforts. It can roughly be divided into two schools of thought the optimistic and pessimistic. The optimistic school refers to the digital participation as a way to further offline engagement by focusing on 2008 Obama presidential campaign and 2011 Arab Spring. The pessimistic stream of research, consider online forms of engagement as too easy and its effects uncertain and fuzzy (Galais & Anduiza, 2016). Accordingly, Leighninger suggests two strands of participation: thick and thin. Thick engagement happens in online and/or offline groups and features numerous forms of dialogue and deliberation (Leighninger, 2014, p. 9). Thin engagement occurs mainly online and features quick and easy actions requiring limited amount of time and commitment.

Adoption of Information Systems in government can be traced back to the 1950's but such applications were oriented to support batch processing of big data sets (Carter, Schaupp, & Moore, 2016). The search for new and improved modes of governance systems led to the concepts such as eGovernment, Government 2.0, Networked Governance. The first and comparatively largest research efforts on ICT application in public sector can be attributed to eGovernment research stream. eGovernment (alternative definitions in the literature - digital government, electronic government) can be seen as a shift from GDL to SDL in public sector (Åkesson, Edvardsson, & Tronvoll, 2014). Traditional, bureaucracy-centered governments worked in accordance with the GDL perspective by regarding citizens as targets of face-to-face interactions. eGovernment, contrary offers greater possibilities for joint value creation. The concept extends the access of public services by electronic channels and is focused on individual needs of citizens (Schellong, 2007). According to European Commission, effective eGovernment implicates reorganizations of processes and change of behavior (European Commission, 2013a). Hence, the modern eGovernment movement aims at the optimization of processes and management of the resources for the convenience of both the government officials and citizens by adding a technological layer to established operations. It mimics the existing government in electronic form and its functions cannot be provided by other (i.e. non-governmental sources). According to Shaw, eGovernment uses technology to improve the existing flow of government service execution but does not alter the traditional model of governance (Shaw, 2015). The boom of WWW technologies enabled brought dramatic changes in social and economic spheres like education, finance or leisure. However, the politics and civic participation stand as the fields least affected by the rise of the new tools.

The hype of ICT use expressed in the eGovernment movement has proved to be a failure. The European Union and national governments have invested considerable resources in the implementation of eGovernment services with limited citizen adoption success and satisfaction rates (Szkutaa, Pizzicannellab, & Osimoa, 2014). Such projects have failed to deliver real change in performance due to the lack of skills in governing the ICT investments, automation rather than innovation of processes and low levels of citizen-centricity (Ferro & Molinari, 2010). Sterrenberg argues that "that once implemented the use of the system does not always last, and so investments often prove ineffective" and backs up his arguments with the research showing "that approximately 70 to 80 per cent of eGovernment implementations have failed to deliver the intended outcome" (Sterrenberg, 2017, p. 2529). Despite the criticism, eGovernment is recognized as an important approach for the public sector to become more productive and increase the service quality (Lönn & Uppström, 2013).

Tapscott and Williams (2007) predicted Government 2.0 (alternative definitions Gov 2.0, Open Government, Networked Government) to be the next generation of eGovernment. Indeed, the focus of the public sector research has shifted from internal improvements towards openness (Jong & Rizvi, 2008). Government 2.0 is a novel way to define the use of Web 2.0 technologies in socializing government services, processes and data (O'Reilly, 2011). Goldsmith and Eggers in their book "Governing by Network: The New Shape of the Public Sector" first introduced the term (Goldsmith & Eggers, 2004) by focusing on the use of technology to increase participation and transparency. Later, Tim O'Reilly

extended the application of the term with the view of government as a platform where governmental entities provide data and support for civic initiatives (O'Reilly, 2011).

While the eGov initiatives focused on the internal and supply-driven technological changes, Government 2.0 re-shifted towards citizen-centric perspective (Chun, Shulman, Sandoval, & Hovy, 2010; Osimo, 2008). In this new paradigm, the governments transform their operations to reflect the changing societal needs by becoming collaborative spaces where interactions between public institutions, civic society and citizens happen. Some governments are already employing Gov 2.0 principles as a new source of policy advice, enabling policymakers to bring together opposite ideas that would not come from traditional sources (Lukensmeyer & Torres, 2008). Definitions of Government 2.0 refer heavily to collaborative relationships through contemporary technologies. However, the principle of transparency is key in ensuring such relationships and is an essential prerequisite for accountability between states and citizens (Rogers & Lindsey 2012). Transparency International defines transparency as a "characteristic of governments, companies, organisations and individuals of being open in the clear disclosure of information rules, plans, processes and actions" (Transparency International, 2009, p. 44). The spread of ICT use in public sector reduces the cost of information capture, management and enables easier sharing with non-governmental entities and individuals (Harrison, Pardo, & Cook, 2012). The same tools allow civic society to pressure governments to publish data and make public processes visible. The research shows, that lack of transparency in public sector has severe effects e.g. Corruption Perception Index 2016' showed that systematic corruption and social inequality reinforce each other and provide a ground for populist politicians (Transparency International, 2017). In addition, a large scale citizen survey conducted in 36 Chinese cities found a strong correlation between government transparency and citizen perceptions of public service equity (Wu, Ma, & Yu, 2017).

The new model of governance allows to manage new expectations of citizens (i.e. show capacity to solve complex policy issues, open up for public engagement). Open Government is considered to be a platform combining open services, public sector and third parties, open data which can be reused and combines, open decisions empowering users to participate in policy-making and open government as a platform. The European Union uses the notion of Open Government as a vision for public services. The report released in 2013 states there are "four main drivers of open government: citizen-driven issues, technology-driven issues, economic-cost driven issues, and public policy trends. All four of these drivers help to promote greater interaction between institutions, citizens, and public and private organizations" (European Commission, 2013a, p. 16). Capgemini and Sogeti (2011) suggest that governments in different countries perceive open government as a transformer of the public sector and relationships with the citizens and businesses. However, the regional and the local governments lag behind the national governments in launching and fulfilling open government initiatives, which poses the question of the efficacy of governance within and across administrative layers (Capgemini & Sogeti, 2011).

The new focus on openness in government seems to be valid in Lithuanian context too. In Lithuania the reach for Open Government is grounded in key strategic documents – Progress Strategy "Lithuania 2030", The National Progress Programme for Lithuania 2014-2020, Programme for the Improvement of Public Administration 2012-2020, National Re-

form Programme, 2014-2020 Digital Agenda for the Republic of Lithuania and National Anti-corruption Programme of the Republic of Lithuania for 2015-2025. Lithuanian Government is also starting Open Government Initiative with the goal to empower open government projects oriented towards citizen inclusion in public administration, increase of information on government activities and strengthen the competencies needed for opening up the government (Domeikienė, 2016). However, the study conducted by National Audit Office of Lithuania on the openness of public sector argues that despite the declarations on the necessity to be more open, the progress is limited and the intended results have not been reached (National Audit Office of Lithuania, 2016). The report listed a number of reasons why the progress has been limited such as inconsistent planning, no proper impact assessment indicators, insufficient regulation, inadequate management structure, etc.

### 1.1.4. Other Relevant Theoretical Approaches

Several different theoretical models outside the governance, ICT and Co-Creation fields underscore the importance of building co-creative capacity. Innovation Management research focuses on open and collaborative processes involving external stakeholders and provide a number of user-centric approaches to innovation design (Chesbrough, 2006; Eric von Hippel, 2005). The Social Capital theory focus on social ties enabling the actors in networks to share resources. Palinkas et al. (2011, p. 1) noted that the "successful implementation of evidence-based practices requires consideration and utilization of existing social networks of high-status systems leaders that often cut across service organizations and their geographic jurisdictions". The Cultural Exchange theory defines knowledge transaction among diverse groups and the Collective Intelligence theory offers a systemic view on the benefits of people working in groups to achieve set goals (Halpin, 2008; Malone, Laubacher, & Dellarocas, 2010; Skaržauskienė et al., 2015). Ecological Systems Theory emphasizes that collaborative efforts of stakeholders are influenced by macro system conditions such as leadership changes and socio-political processes (Metz, 2015). Information Systems research field is linked to co-creative approaches through studies on customer relationship management (Alavi, Ahuja, & Medury, 2012), open innovation platforms (Westergren, 2011) and technological platforms for customer engagement (Jonsson, Westergren, & Holmstrom, 2008).

### 1.2. The Notion, Subject and Forms of Public Value Co-Creation

Traditional views on public value creation focused on the public sector organizations as sole initiators of the value creation processes. Coleman suggests that the influence of broadcast media on 20th-century politics resulted in "a sense that democracy amounted to the public watching and listening to the political elite thinking aloud on its behalf" (Coleman, 2005, p. 205). The rise of interactive ICT tools, however, opens new opportunities for engagement of civic stakeholders. Section 1.1. reveals that the views of research community and practitioners in the field of governance are changing. More emphasis is put on the inclusive role of non-governmental actors in the creation of the public value. This progression is illustrated in the Figure 6 "The Processes of Public Value Creation" below.

**Figure 6:** *The Processes of Public Value Creation*



Figure with three panels:
- Panel 1: PUBLIC SECTOR → CIVIC SOCIETY — *Citizens as consumers*
- Panel 2: PUBLIC SECTOR ⇄ CIVIC SOCIETY — *Citizens as providers of insights / designers*
- Panel 3: PUBLIC SECTOR / OTHER STAKEHOLDERS / CIVIC SOCIETY — *Citizens as co-creators*
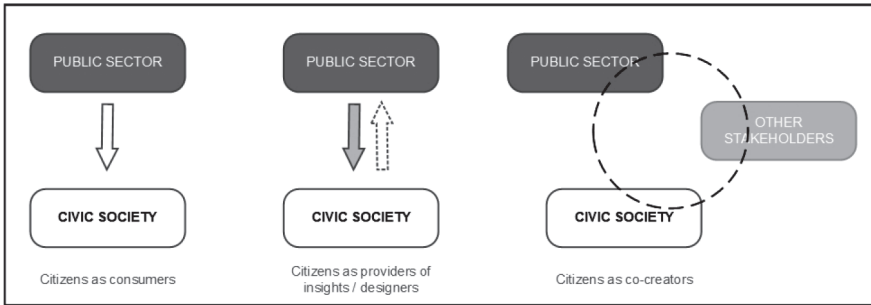
**Source:** *developed by author (2018)*

Taking into account the discussion on theoretical developments discussed in Section 1.1., co-creation of public value is *defined as a system driven by the goal of generating public value through the use of ICT and co-creation between the government sector, the private sector and the civil society*. Hom et al. (2014) suggest that co-creation fundamentally differs from the regular public participation forms. "Co-creation techniques possess the potential for overcoming the limitations of time and geography and may allow a significant leap in the scale and influence of public involvement <...> Additionally, co-creative techniques view people as proactive citizens, rather than as consumers of services, focused primarily on culture change, rather than on short-term outcomes, issues, or victories; and include a cross-section of entire communities, rather than parts of them" (Leading Cities, 2012, p. 4). (Gouillart and Hallett note that in co-creative initiatives, public entities open their value chain to their stakeholders by outsourcing some of the work in designing and delivering the services (Gouillart & Hallett, 2015). Thus, the stakeholders become active participants in the value chain (Moore & Benington, 2011). The following section will discuss the notion of co-creation in the context of public value creation by reviewing current research efforts of the academics and practitioners in the field.

### 1.2.1. The Preconditions for Co-Creation of Public Value

Co-creation of public services can lead to better allocation of resources (Cruickshank & Deakin, 2011), enhance effectiveness (Jan, Lu, & Chou, 2012), reduce the service quality gaps and planning mistakes (Linders, 2012) and higher transparency (Bradwell & Marr, 2008). Several authors (Cassia & Magno, 2009; Skidmore, Bound, & Lownsbrough, 2006) indicate that the co-creative approaches increase the trust of citizens in public organizations. EU eGovernment Action Plan 2016-2020 suggests similar outcomes of the co-creation by suggesting that involvement of citizens, businesses and other stakeholders in the design and delivery of public services foster the openness and transparency of public administration (European Commission, 2016). However, the literature suggests a number preconditions required for co-creation to have positive effects in creating public value.

Authors (Hou, 2016; Peixoto & Fox, 2016; Rumbul, 2016a) recognize the institutional support as a key driving force for co-creation in public sector and success of ICT-enabled platforms. The lack of institutional support is predetermined by several interconnected factors summarized by Kearns – strategic policy framework, insufficient effort to reward innovation efforts, lacking powers at the center of government and belied that the government should be the sole provider of public services (Kearns, 2004). Several other authors determined factors preventing co-creative processes. Voorberg et al. suggest that the public entities usually are large and complex which slows down any innovation and collaboration efforts (Voorberg, Bekkers, & Tummers, 2014b). Also, leaders of such bodies manage using top-down approach and opt-out of considering external insights (Magno & Cassia, 2015). Open attitude of public officials towards citizen inclusion is another precondition facilitating the co-creation in public sector (Cassia & Magno, 2011; Gebauer, Johnson, & Enquist, 2010). Ryan (2012) suggests that external entities should be considered as partners when opportunities to co-create occur. Another issue is the risk aversion of both citizens and public sector executives (Voorberg et al. 2014). Managers are usually not willing to risk by implementing new organizational model including co-creation elements (Magno & Cassia, 2015). Conservative administrative culture means that managers do not perceive citizens as possible collaborators (Maiello, Viegas, Frey, & Ribeiro, 2013). Patience required to see positive impact after changes in management techniques is also a factor hindering co-creation in public management. According to Gouillart & Hallett (2015, p.4) politicians "usually prefer to implement well-defined policies through standard administrative channels". The existence of clear incentives and justification for co-creation could foster the processes (Fuglsang, 2008) because public officials are often not informed about the benefits co-creative processes bring in governance and are reluctant to start collaborative initiatives.

ICT-enabled co-creation also relies on the openness of governments (Rumbul, 2016b). Such information is a valuable resource for platforms aiming at improving transparency of public sector. The importance of open government data has been highlighted by many authors researching Open Government Data initiatives around the world (Pollock, 2011; Reggi & Dawes, 2016; Shkabatur, 2013; Sieber & Johnson, 2015). Reggi and Dawes summarized these efforts and concluded that "the continuous release of easily accessible, machine-processable and possibly real-time government data can act "as a platform" for the creation of new applications and services" (Reggi & Dawes, 2016, p. 75). The Project on Government Oversight (POGO, 2013) focused on transparency and accountability practices in United States and concluded that infrastructure for openness ensuring scalability across agencies and intra-agency operations allow to release government data in an accurate, searchable, and user-friendly way. Capgemini & Sogeti (2011) in their research on digitization of European Public Services reach similar conclusions – collaborations and interoperability between governmental entities is a key success factor to achieve more consistent progress of digitization. The openness of governments is closely related to the concept of transparency and accountability as it was already discussed in Section 1.1.3. McGee et al. (2010), Janssen (2011) and Worthy (2010) studied the relationships between access to information and the ability of civic society to hold governments accountable and concluded that transparency is useless without due accountability measures. Rumbul summarized these research efforts and concluded that "ultimately, transparency is considered ineffective without due accountability measures, and accountability has been described as requiring both answer-

ability and enforcement to ensure its efficacy" (Rumbul, 2016a, p. 14). However, the initiatives for more openness in governance suffer from several challenges. Firstly, there is a lack of political motivation to publish relevant data (Barry & Bannister, 2014). When data are opened, such decisions often suffer from assumption availability of open data will instantly lead to the more open government (Reggi & Dawes, 2016). Janssen and Zuiderwijk suggest that the initiatives are designed for technical experts and specialists in the field which leaves less tech-savvy citizens out of scope and could prevent meaningful use of data (Janssen & Zuiderwijk, 2014). Ruijer et al. (2017) argue that open data initiatives use approaches that are too simplistic and do not consider the complexity of democratic processes i.e. diverging roles, purposes, rules and tools. Flawed laws and regulations hinder co-creation efforts by freezing the processes. Richardson (2012) concludes that higher state rates of corruption convictions were associated with significantly less citizen participation.

Several research studies (Brown & Osborne, 2012; Krimmer, Kalvet, Toots, & McBride, 2016; Torfing et al., 2016) propose that roles, perceptions and capacities of actors involved play a central role in co-creation. The authors suggest that three broad groups participate in public service co-creation i.e. public administration, citizens or citizen organizations and businesses consisting of various subgroups. These players can be both the drivers and barriers in the co-creative processes. However, the roles of the actors involved are not specified and research lacks systemized and empirically verified view on both the groups of actors involved and the roles they perceive. AVINA Foundation (2015, p.5) suggests that "when it comes to coordinating the different actors at play, promoting dialogue, and implementing joint projects, the success of government-public synergies is less than obvious, or evidence is still insufficient in this regard". Hardy et al. (2005, p.58) add that "although collaboration has the potential to produce powerful results, not all collaborations realize this potential. Many collaborations fail to produce innovative solutions or balance stakeholder concerns, and some even fail to generate any collective action whatsoever". Dalsgaard (2010) adds that increased involvement of external stakeholders in the public service delivery and policy making increases the complexity of the processes. Hence, the understanding of the actors involved in ICT-enabled co-creation and the roles they can perceive is crucial.

Some researchers looked at the roles of specific actor groups (e.g. intermediaries, citizens) in co-creative processes. The role of governments has been discussed mostly through the approach of context (i.e. what governmental, political factors enable co-creation) and are detailed at the beginning of the section. Dawes et al (2016) suggest two roles governments can perceive – be the source of data and stimulate co-creative ecosystems. However, more systematic approach is missing. The roles of citizens have been researched most extensively. Nambisan & Nambisan (2013) analyzed citizen roles in co-creation of public services and distinguished four types: (1) citizens as explorers (i.e. citizens can identify/discover and define emerging and existing problems); (2) citizens as ideators (i.e. citizens can conceptualize novel solutions to well-defined problems); (3) citizens as designers (i.e. citizens can design and/or develop implementable solutions to well-defined problems); and (4) citizens as diffusers (i.e. citizens can directly support or facilitate the adoption and diffusion of public service innovations and solutions among well-defined target populations). Voorberg, Bekkers, et al. (2014) conducted systematic review of academic literature on co-creation and co-production in public sector and distinguished three types of co-creation: (1) in which citizens act as initiator (co-initiate), (2) in which citizens are invited to co-design (co-design) and (3) in

which citizens are 'just' invited to implement public services (instead of public organizations) (co-implement). The results of the study reveal that in most cases the citizens are considered as co-implementers – the most passive type of co-creative activity. Åkesson (2011) suggests that citizens (defined as customers) can be active, devoted or passive in value creation. The citizen perceptions on collaborative creation of value and the use of ICT in governance processes has been analyzed extensively. Linders (2012) suggests that limited citizen participation is limited due to the time, expertise and effort they are asked to contribute and perception that their contributions will not lead to practical results. Schrock & Shaffer (2017) systemized the knowledge of the research field and concluded that the public is perceptive regarding such initiatives but have a vague understanding of how it affects them. Several misconceptions, such as perceived as lacking tangible benefits and costing a lot (Krimmer et al., 2016), could precondition that. In some cases, citizens also could be an impeding factor – they may resist to participate in co-creation initiatives due to possible contributions of their time, expertise and effort (Linders, 2012). Also, Parrado et al. (2013) suggest that citizens feel their efforts and contribution will not result in any positive changes in government.

The research literature emphasizes the role of intermediaries in ICT-enabled co-creation, especially initiatives requiring more technical knowledge. The intermediaries can be NGOs, media or individual citizens with expert knowledge. Van Schalkwyk (2014) suggests that such actors can increase utility of open government data and serve a democratizing function by translating it to the masses. Reggi and Daves (2016) add that intermediaries are vital when representing the citizens.

The process of public value co-creation has been analyzed based on the role of external actors. Krimmer et al. (2016) conducted extensive research on transformations the traditional public service production process to a lean and agile process of data-driven service co-creation. The authors designed framework detailing four stages: (1) co-initiation – where participants can contribute by identifying the problems and by generating ideas for problem-solving; (2) co-design – where participants can provide input into service design; (3) co-implementation – participants contribute by uploading data, suggesting changes to data sets and creating data for services; and (4) co-evaluation – participants can contribute by providing feedback and reporting data.

AVINA Foundation (2015) in their research on the use of civic technologies concluded that offline strategies are crucial for online platforms to catalyze the participation of external actors (especially citizens), influence the public policy and creation of public value regarding enhancing people's loving standards.

Network scholars suggest that embeddedness in the networks can provide additional insights on the performance of the organizations because of existing patterns both empower and constrain them (Bell & Zaheer, 2007). Online platforms rely on the effects of networks' power – the more actors they attract, the more valuable they become for those actors in terms of value creation (Bonchek & Choudary, 2013). The network perspective of ICT-enabled co-creation of public value is analyzed by Bria et al. (2015) in their research on digital social innovations in the European Union. The authors of the large-scale study suggest that online initiatives have not scaled in the society due to the long tail of smaller networks which are disconnected from larger organizations and hence cannot share the benefits of collaboration and learning from each other. Bria et al. (2015, p.9) reveal that "many of these organisations are also in countries without much support, such as those in

Eastern Europe". The authors mapped the degree of the organizations in their sample based on the number of connections they have with other nodes in the network and results show that only 26 per cent of organizations have a connection with other organizations and the average number of connections organizations in the sample have is three. Rashid (2015, p.41) adds that "even though networks are considered to be a major role of co-creation processes, current research provides a limited exploration of this subject."

The features of civic society such as values (Wise et al., 2012) and shared identity (Sekulova, 2016) have impacted the co-creative processes too. Several authors (Ansell & Gash 2008, Vangen & Huxham 2003a) argue that the facilitative leadership in citizen groups is essential for mobilizing and empowering stakeholders. Ostrom (1996) and Schafft & Brown (2000) regard social capital as an essential building block of collective actions. Bovaird et al. (2015) and Wise et al. (2012) argue that the citizens are more motivated to participate in the co-creative processes if they feel useful in solving the local issues and improving the government.

## 1.2.2. The Types and Methods of ICT-Enabled Co-Creation

There is a lack of clarity in the literature regarding the forms co-creation can take in the public sector and the research surrounding it. Even tough, the governments are becoming more user-centric and number of research studies focus on the servitization of the sector (Denhardt & Denhardt, 2015; Osborne et al., 2012), design thinking efforts (Allio, 2014; Brown & Wyatt, 2010; Leavy, 2012), ICT-enabled citizen engagement initiatives (Gatautis, 2010; Giest, Koene, Vallejos, Pitkänen, & Fosci, 2016; Peixoto et al., 2016), there has been an increase in the digital solutions oriented towards the creation of public value developed by entities outside the government such as civil society organizations, individual citizens and businesses. The methods of co-creation (from within government and by external stakeholders) are summarized in Table 2 "The Methods of ICT-enabled Co-Creation of Public Value" below. The methods presented in Table 2 demonstrates the variety available in practice but is not definite. Meaning that additional methods or blends of methods in co-creating the public value can be added to the list.

**Table 2:** *The Methods of ICT-enabled Co-Creation of Public Value*

| Type | Functions & Examples | Type | Functions & Examples |
|------|---------------------|------|---------------------|
| Benefit navigation tools | Assists individuals in identifying government or community provided benefits and services (Purple Binder, AuntBertha, UniteUS) | G2C communication tools | Broadcasts official communications and democratic processes (CouncilStat NYC, Nextdoor, EngagingPlans) |
| Campaign organizing tools | Facilitates political or community organizing (NationBuilder, ActionKit, Salsa) | Ideation platforms | Systems to elicit ideas and support (PlaceSpeak, Ideascale, Crowdicity, Open Ideo) |
| Check-in tools | Allows individuals and organizations can register their presence or status, often for the purposes of coordination in a crisis context (Facebook Safety Check, Google Person Finder) | Issue reporting platforms | Enable residents to notify their governments of items in need of attention, often municipal (SeeClickFix, FixMyStreet, Tvarkau Vilnių) |

| Type | Functions & Examples | Type | Functions & Examples |
|---|---|---|---|
| Citizen Relationship Management Systems | Technological strategy encompassing a strong focus on citizens by optimizations of relationships and maintenance of active participation (Accela, Citywide Performance Review) | Journalism action platforms | Connect readers of journalism to constructive action they can take based on the story (Positive News Network, Huffington Post Ways to Help feature, Huffington Post RYOT) |
| Civic engagement apps, mobile apps | Apps helping to create and maintain close connections between the citizens and public entities. Thus facilitating the engagement of public engagement in other phases of problem-solving (Pranešk STT, Pranešk VMI) | Legislation engagement | Systems that document, distribute, and otherwise make legible the legislative process (Capitol Bells, GovTrack, TheyWorkForYou) |
| Collaborative calendars | Keep people informed of interesting initiatives/events happening around them (demosphere.eu, Singapore Memory Project) | Mapping platforms | Technologies to collect, plot, and display geographic data (ESRI, Poplus Mapit, Mapbox, Million Dollar Blocks, Ushahidi, Google Crisis Map) |
| Community engagement platforms | Place for community members to engage with each other, elected leaders, responsible officials (Agora, Localocracy, Citizen beta, E-Democracy.org) | Neighborhood forums | Digital venues that promote conversation within geographically-defined communities (NextDoor, Local Circles, FrontPorchForum) |
| C2G communication platforms | Digital communication channels between constituents and representatives, trying to improve the feedback loop (PopVox, Neighborland, Contact Congress, Write to Them) | Participatory-based budgeting platforms | Enables the decision about how to use a portion of a community's budget to a citizen (Open Budgets Portal, ChangeTomorrow, OpenBudgets.eu) |
| Crowdsourced data collection | Allow a variety of people to contribute data to a common collection (LocalData, Ushahidi, Crowdmapping, Street Lives NYC, Zooniverse) | Open data publishing platforms | Web-based data access, publishing, and distribution platforms (Junar, Socrata. Civic Insight) |
| Crowdsourcing platforms | Platforms allowing collaborative generation of innovative ideas, solutions to predefined problems by employing the wisdom of crowds (Kickstarter, IndieGogo, GoFundMe, SpaceHive) | Opinion matching platforms | Connect people to other people or candidates based on their views (Brigade, Countable, iCitizen, Vote Compass, manobalsas.lt) |
| Data mashups | Allows to bring data sets together in a graphical representation in order for new insights and creative solutions to emerge (myFCC, DataMasher, National Obesity Comparison Tool) | Resource matching/sharing | Platforms that coordinate matching of needs and resources (Recovers.org, Favabank, Taproot Foundation, Catchafire, aukoklaika.lt) |

| Type | Functions & Examples | Type | Functions & Examples |
|---|---|---|---|
| Data schemas and standards | Formats designed to structure data, which then enables interoperability, analysis, and software development (Popolo, Open Connectivity Foundation, Open Civic Data Standard, Represent) | Service alerts | Governmental notifications pushed to residents, often municipal government notifying its residents about local service issues (Citygram, eCitizens.org, Where's my bus?, Mind My Business, Neighborhoods.NYC) |
| Data visualization tools | Allows to communicate important information more effectively than through statistics and numerical tables (City dashboards, Flow - Sidewalk Labs, Poplus SayIt, TransitScreen, Chicago Cityscape) | Transparency projects | Deek to provide greater visibility to the activities of governments, corporations, or individuals in power and allow others to monitor them (PromiseTracker, Poderpedia, MapLight, LittleSis, OpenSecrets.org, skaidrumolinija.lt) |
| E-petitions, online petitions | Allow citizens to request public policy changes, regulatory changes, or the need to address corruption, inefficiency, and other reform issues (Change, ControlShift, AskThem, WeThePeople) | Freedom of information tools | Tools that simplify the interface for filing freedom of information requests (MuckRock, JeVousSavoir.org, WhatDoTheyKnow) |
| Gamification, online games | Helps to run communications campaigns, engage citizens, train officials and even change behavior by creating environments where people compete to win prizes as part of a game, and through the process learn something new or behave in a desirable manner (Games for Change, Community Plan IT, Civic Seed, Emerging Citizens) | Voting and election information | Data and tools designed to help people vote by informing voters about registration requirements, ballot information, and election dates, locations, and procedures (TurboVote, Crowdpace, Voxe.org, rinkejopuslapis.lt) |
| Geographic Information Systems | Systems enabling to collect, store, analyze and share information about various areas on the globe (City of Portland used Google Maps to involve citizens in the planning of the local high capacity transit system) | Wiki technologies | Collaborative technologies, which can improve information creation and allow to share capacities across organizational boundaries and hierarchies Wikis are traditionally used as collaborative websites to create and edit other hyperlinked websites. |

**Source:** *developed by author based on Schellong (2007), Kamensky (2015), Ganapati, (2010), Chambers (2015), Baldwin-Philippi & Gordon (2013), Pratt (2012), Nambisan & Nambisan (2013), Gouillart & Hallett (2015), Nelimarkka et al. (2014), Davis, Meyer, Singh, Wrigh, & Paul (2013), Brabham (2013), Hoffman (2009).*

The research on such platforms and tools fostering co-creation is mostly bundled together with the research of eGovernment and digital engagement strategies. The distinction between top-down technologies created by institutions and those created outside government control, however, is vital because government-initiated participatory systems

"can be vulnerable to institutional biases and rationale, and the resulting tools may be built with inherent assumptions concerning the users' needs" (Rumbul, 2016a, p. 14). Hence, a more structured approach to ICT-enabled public value creation is needed in order to synthesize and generalize current research efforts. The review of the literature led to the definition of two perspectives for the analysis of co-creation of public value. The streams differ on the understanding of the roles of governmental entities in the processes. *Top-down co-creation approach* refers to the implementation, design, and evaluation of public services, participation in government-initiated platforms, data and content contribution, improvement of existing processes and services, user-centric approaches to service design (e.g. Design thinking, Service Co-Production). *Bottom-up co-creation approach* referring to the platforms emerging from outside the governmental sector. Such differentiation of research efforts allows to understand the co-creative use of ICT in the public sector better. Following sections will review two approaches by focusing on the actors involved in the processes, influencing factors and the outcomes of the processes. It allows to identify research gaps, elaborate understanding of the concept and formulate the roadmap for further empirical investigations.

*Government-led Co-Creation of Public Value*

Co-creation in the business environment refers to the active, collaborative relations between firms and their customers. In the same way, co-creation in the governmental and civic sectors moves the balance of power. Voorberg et al. (2014, p.4) note that "public sector has a specific history, starting in especially the 1980s, with involving citizens in policy making, policy implementation and service delivery processes". By applying the collaborative approaches to governance, new modes of engagement arrive and thus new strategies could be designed and implemented.

The field encompasses a variety of definitions by the practitioners and the academic community. Hence, a closer look at the variety of definitions referring to the co-creation of public value initiated and maintained by governmental entities is needed. The terms were identified during the literature review process by focusing on the research studies aimed at examining ICT-enabled public sector, collaboration and citizen role in delivering public value. The conceptual variants are closely related and the lines separating them are abstract due to the substantial confusion in a number of definitions describing similar processes. The popularity of terms within the research community has been evaluated by using Google Scholar database. The field work has been conducted in the 2nd quarter of 2017 by applying exact match strategy (e.g. "government technologies", "participatory governance"). To get the most current and relevant results, articles and other research items published after the year 2000 were included in the count. The results of the study are illustrated in Table 3 "The Conceptual Relatives of Government-Led Co-Creation" below.

**Table 3:** *The Conceptual Relatives of Government-Led Co-Creation*

| Concepts | Definitions | Google Scholar | Nominal works in the field |
|---|---|---|---|
| Participatory governance | The notion emphasizes democratic engagement using deliberative means and techniques. It seeks to deepen citizen inclusion in the processes of governance by transforming traditional means of participation. | 16,400 | Fischer (2010), Fung & Wright, (2001, 2003), Patsias, Latendresse, & Bherer (2013), van der Graaf & Veeckman (2014) |
| Collaborative governance | Governance model based on direct engagement of governmental entities with non-state actors in the collective decision-making. | 15,200 | Ansell & Gash, (2007), Emerson, Nabatchi, & Balogh (2011), Huxham (2000), Innes & Booher (2003) |
| Government technologies | GovTech is based on three premises: new and better wats to enable citizens to engage; new technologies and data; and involvement of entrepreneurs, innovators and small businesses. | 1,510 | Hallet & Jones (2016) |
| Digital government | The use of ICT in producing and delivering services inside governmental institutions and in interaction with the non-governmental entities. | 16,200 | Corydon, Ganesan, & Lundqvist, (2016), Elmagarmid & McIver (2001), Janowski (2015), Stephens (2004) |
| mGovernment | Governmental services based on the use of mobile devices and wireless internet. A subset of eGovernment. | 8,330 | Antovski & Gusev (2005), Kushchu & Kuscu (2004), Sandy & McMillan (2005), Sheng & Trimi (2008), Trimi & Sheng (2008) |
| Participatory based budgeting | Democratic processes based on collective decision-making of community on the public budget spendings. | 12,300 | Cabannes (2004), Kim (2008), Rose, Rios & Lippa (2010), Sintomer, Herzberg, Röcke & Allegretti (2012), Wampler (2000), Wampler & Hartz-karp (2012) |
| Smart governance | Smart city technologies provide a platform for new engagement mechanisms. These offer efficient and practical ways for local government to engage in citizen co-creation to identify problems and develop solutions (Sherriff, 2015) | 2,850 | Alawadhi & Scholl (2016), Chourabi et al., (2011), Coe, Paquet, & Roy (2001), Meijer & Bolivar (2015), Scholl & Scholl (2014) |
| Collaborative Public Management | Concept that describes the process of facilitating and operating in multi-organizational arrangements to solve problems that cannot be solved or easily solved by single organizations. | 3,350 | Cooper, Bryer, & Meek (2006), Kapucu, Yuldashev, & Bakiev (2009), McGuire (2006), O'Leary & Vij (2012) |
| Wiki government | Participatory government taking advantage of the expertise and know-how of people are not at the center of an institution, but who are at its edges. | 921 | (Ding et al., 2010; Nam, 2010; Noveck, 2009; Wagner, Cheung, Ip, & Bottcher, 2006) |
| Co-production with public sector clients | The concept of co-production has been mostly in used when defining such relationships in the scientific literature<br>New Public Governance is based on co-production, multi-stakeholder governance and third sector provision of welfare services. | 15,900 | Alford (2011), Brandsen & Pestoff (2006), McColl-Kennedy (2012), Pestoff, Brandsen, & Verschuere (2011), Pestoff, Osborne, & Brandsen (2006) |

| Concepts | Definitions | Google Scholar | Nominal works in the field |
|---|---|---|---|
| Citizen-sourcing | The act of taking a task that is traditionally performed by a designated public agent and outsourcing it to a large group of people via open call. | 379 | Bravo (2014), Hilgers & Ihl (2010), Loukis, Charalabidis, & Androutsopoulou (2015), Lukensmeyer & Torres (2008), Prest (2012), Seidel, Thapa, Plattfaut, & Niehaves (2013) |

**Source:** *developed by author, 2018*

The analysis of conceptual relatives (Table 3) and previous research efforts in defining the concept (Annex 2) has led to the identification of four core elements of the government-led public value co-creation: collaborative, hierarchy-flattening, facilitative and systemic. Collaborative refers to the transformation of citizens and other stakeholders from the passive onlookers to the active contributors. Hierarchy-flattening relates to the changed balance between the governments, citizens and other stakeholders. Facilitative refers to the pro-active role of governmental entities in the processes. Systemic refers to the extension of the co-creative approach through the value-chain. The notions discussed also place great emphasis on the role of ICT tools in enabling co-creative processes.

In general, co-creation in public sector concerns the development of new solutions with citizens, rather than for them. However, the ways of delivering public value differ. The literature provides a variety of taxonomies in understanding government-led co-creation. Magno & Cassia (2015) suggests government-led co-creation can happen through five activities: (1) customer's emotional engagement, (2) self-service (i.e., transfer of labor to the customers), (3) enhancement of the client experience, (4) problem-solving and (5) co-design of services. According to Sherriff (2015), co-creation happens through three dimensions: (1) horizontal movement – learning and working with parallel organizations, (2) vertical movement – working with stakeholders in the service delivery chain, and (3) intensity – fact-finding engagement through to shaping an outcome with citizens. Hilgers & Ihl (2010) suggests three dimensions of citizen engaged governance through citizensourcing: (1) citizen ideation and innovation i.e. general knowledge and creativity potential within citizenry through open innovation platforms, (2) collaborative administration i.e. integration of citizens for enhancing existing public administrative processes and (3) collaborative democracy i.e. new ways of collaboration to improve public participation in the policy process. Cabrera (2010) suggests three levels of citizen participation in perspective of public service co-production: (1) micro i.e. co-production at the site of service provision with direct citizen participation, (2) meso i.e. co-management of the local service provision by various service providers and (3) macro i.e. co-governance of service provision and joint determination of service policy. Kannan & Chang (2013) in their report on co-delivery of public services highlights three types of co-delivery initiatives: co-design (allows citizens to participate in the development of new service or policy), co-production (involves citizens in creating a service), and co-delivery (involved citizens in delivering the services).

Taxonomy by Kannan and Chang will be used for further explanations how the public value can be co-created. In co-design initiatives the governments allow citizens partici-

pate in the creation of public services by employing the methods of user-centric design, social-design, collaborative workshops, incorporation of citizen feedback from the usage of current services. Example of such collaboration is the efforts by the Canadian government to create "a single-point access online for its citizens to provide their input on any matter of government policy or actions contemplated by any government agency or department" (Kannan & Chang, 2013, p. 15). Another illustrative example is the social design experiment Vitamin Lab by Transparency International Lithuanian Chapter conducted in collaboration with Lazdynai Clinic. For two months, patients were able to evaluate the work of clinics' employees and quality of services in the Vitamin Lab, which was set in Lazdynai Clinic waiting-room (Transparency International, 2016). Kaunas City Municipality asked for the citizen input when placing the sculptures of famous personalities in the public spaces by conducting online surveys (e.g., vileisis.kaunas.lt). Co-production refers to the citizens being involved in the creation of services by providing active and long-term input. Examples of such initiatives are SeeClickFix in the UK enabling citizens to report non-emergency issues that they come across in their communities. Eggers & Salzetti (2013) suggest that under the co-production model the citizens can provide not only content to the platforms but also by contributing knowledge and physical resources and exemplifies New York City during Hurricane Sandy shut down when several car and ride sharing services waived their fees and commuters used social networks to collaborate in meeting the three-passenger minimum imposed on cars entering Manhattan after the storm. Lithuanian examples are high in number too: Vilnius city municipality has an issue reporting application, State Tax Inspectorate and Special Investigation Service have requests for citizens to report instances of bribery and illegal economic activities. And the last type, co-delivery, refers to the government-led based on the equality of participants in creating value. U.S. Centers for Disease Control and Prevention could be exemplified in their initiative to sponsor "Flu App Challenge" to solicit ICT platforms using publicly available influenza data (Eggers & Salzetti, 2013).

Despite the wide array of efforts in pursuing collaborative agendas, the public sector is lagging behind the adoption of co-creative initiatives (Nunes, Galvão, & Cunha, 2014). Some ICT-enabled initiatives of co-creation within the public services context have failed (Chadwick, 2011) or led to modest outcomes (Coleman & Kaposi, 2009; Peart & Ramos Díaz, 2007). Prieto-Martín et al. (2012, p.68), therefore, suggests that the ICT-enabled co-creation research "seems thus to be trapped in a kind of vicious cycle: since there are no truly functional eParticipation systems or experiences, it is very difficult to research empirically or to perform comparative analysis to test hypotheses; at the same time, the lack of clear concepts and theories means that experiences' and systems' designs are not adequate".

*Civic Technologies and Related Research: Bottom-Up Co-Creation of Public Value*

According to Badger (2012) and Suri (2013), the bottom-up technologies are not necessarily designed with the aim of being disruptive. However, they are created by and for average citizens using the available open data in innovative ways that can complement, overlay or frustrate the existing channels of information and communication previously controlled

by institutions alone. Based on Rumbul (2016a), it refers to the innovation outside the government control and may have a significant impact on the communications between civic society and governmental entities. The term civic technologies will be used to refer to the bottom-up approach to co-creation in the public sector. The definition is mostly employed by the practitioners' community (Rumbul 2016a) and the popularity of the term is growing in the academic circles. The notion is used as an umbrella term to define digital initiatives by civil society, private organizations and individual citizens aimed at public value creation and civic innovation. Hence, it is applicable in the discussion on various forms of ICT-enabled co-creation in the public sector. This section will provide in-depth analysis of the meaning of civic technologies, its relation to other conceptualizations of the collaborative public sector and civic innovation and define the notion.

Based on the reports of leading research and funding organizations (e.g. Knight Foundation, Omidyar Network) in the field of civic action the industry of civic technologies is growing. Between 2008 and 2012 the field grew annually by 23% (Knight Foundation, 2013) – more people are getting involved, more services are being offered, and more investments are being made. The civic tech movement was powered by the exponential growth of cities and President Obama 2009 directive to put the government data online. By January 2014, 43 U.S. cities had put their public data online in the hopes of spurring start-up entrepreneurs and connecting more effectively with their citizens (Microsoft Corporate Blogs, 2014). Rumbul (2015b) suggests that profound changes have been made by the individuals and loosely constituted groups with particular digital expertise who wanted to see faster changes in governance. Governments (mostly in the US) and large international NGOs (e.g., Code for America, Sunlight Foundation) recognized the value of the new form of engagement and started to fund and support emerging platforms.

However, the changes happen despite the support or resistance (in less democratically developed countries) of the governmental structures. Number of NGOs, active citizens and socially-minded businesses around the world develop digital tools to increase government transparency, efficiency and improve the lives of the communities they are involved in (Rumbul, 2015b). It is driven by the increased innovative use of ICTs such as social media or coding platforms and changed expectations of citizens towards the interactivity and the public services (Borras et al., 2014). The expectations are raised due to the digital offerings by the businesses – it is getting easier to do things online (e.g., shop online, communicate online, work online) every day and the citizen are expecting the same simplicity, comfort, and integration of the government and the services they provide too. States are struggling to match the pace of private sector in creating improved services and value propositions. Hence, a growing number of ICT-enabled platforms are found in between the technology and governance issues, in what defined as the civic technology sector.

The field, however, has not established on a canonical definition and there are substantial differences in the way the civic technologies are defined by the practitioners and the academic community. The section aims at identifying the common conceptual elements of civic technologies in the context of the co-creative public sector by reviewing the prevailing definitions and research in related fields. Firstly, a closer look to the conceptual cousins of ICT-enabled co-creation is taken. The terms of the investigation activity were identified

during the literature review process by focusing on the research studies analyzing civic action, social innovation and enabling digital tools. The conceptual variants are closely related, and the lines separating them are abstract due to the substantial confusion and number of definitions describing similar processes. Their popularity of the terms within research community has been evaluated by using Google Scholar database. The field work was conducted in the 3rd quarter of 2016 by applying exact match strategy (e.g. "civic media", "participatory innovations"). To get the most current and relevant results, articles and other research items published before 2000 were not included in the count.

**Table 4:** *The Conceptual Relatives of Civic Technologies*

| Concepts | | Google Scholar | Nominal works in the field |
|---|---|---|---|
| Social technologies | Technology | 23,000 | Alberghini, Cricelli, & Grimaldi (2010) |
| Online collaborative systems | Technology | 119 | Stavrakakis et al. (2015) |
| Civic media | Technology | 1,540 | MIT Center for Civic Media (2016) |
| Collective intelligence technologies | Technology | 775 | Malone et al. (2010) |
| Open societal innovations | Innovation | 28 | Lucke (2015) |
| Civic innovations | Innovation | 180 | Prieto-Martín et al., (2012) |
| Participatory innovations | Innovation | 401 | (Blair (2008), Geissel & Joas (2013), Osimo (2010) |
| Democratic innovations | Innovation | 2,590 | Smith (2009) |
| Collective Awareness Platforms for Sustainability and Social Innovation | Innovation | 191 | Stavrakakis et al. (2015) |
| Digital social innovation | Innovation | 163 | Anania & Passani (2014), Baeck & Bria, (2014), Bria et al. (2015), Millard & Carpenter (2014) |
| Citizen engagement platforms | Engagement | 28 | Stern (2015) |
| Digital citizen engagement | Engagement | 34 | Cobo (2012) |

**Source:** *developed by author (2018)*

The variety of the labels can be categorized in three dimensions – technology, innovation, engagement – based on their primary focus (see Table 4 "The Conceptual Relatives of Civic Technologies"). The classification does not imply that other dimensions are absent in the concepts discussed. The dimensions just identify the core object of the concepts presented. The results of Google Scholar review show that those concepts which take broader tools for achieving social goals into account are more popular but there is no dominating term across the disciplines.

The first dimension – technology – includes concepts referring to the use of social media, networks and tools but not necessarily seeking social change. Social technologies were the most popular term of those that were analysed (23,000 Google Scholar items) and refer to the technologies used for reaching any societal goals, including social hardware, social software and social media (Alberghini et al., 2010). Online collaborative systems

(119 Google Scholar items) which refer to geographically dispersed teams or individuals, which are action oriented, to work together (Stavrakakis et al., 2015). Collective intelligence technologies (775 Google Scholar items) enabling groups of individuals to do things that seem intelligent collectively (Malone et al., 2010). MIT offers the term of Civic Media (1540 Google Scholar hits) in defining the platforms enabling engagement of communities within and beyond the people, places, and problems of their community. The focus here lies in the use of ICT in facilitating collaborative outcomes in groups of individuals.

Next dimension, innovation, refers to the innovative use of ICT tools in solving societal problems. It involves both online and offline modes of engagement. Open societal innovation (28 Google Scholar items) referring to the application and utilization of open innovation approaches used in business by state and society (Lucke, 2015). Civic innovations (180 Google Scholar items) referring to new ideas, technologies or methodologies that challenge and improve existing civic processes and systems (Prieto-Martín et al. 2012). Participatory innovations (401 Google Scholar items) are regarded as supplements to representative democracy (Blair, 2008; Geissel & Joas, 2013; Osimo, 2010). Democratic innovations (2590 Google Scholar hits) redraw the traditional political division of labor within representative systems providing citizens with more influence in the political decision-making process (Smith 2009) and focus on the design institutions that increase and deepen citizen participation in the political decision-making process. Concepts focusing on innovation processes. Collective Awareness Platforms for Sustainability and Social Innovation (191 Google Scholar items) refer to online platforms creating awareness of sustainability problems and offering collaborative solutions based on networks (of people, of ideas, of sensors), enabling new forms of social innovation (Stavrakakis et al., 2015). The term is mostly used in defining EU funded projects, e.g., DS14EU, CAPTOR, Crowd4Roads (European Commission, 2017). Digital social innovation (163 Google Scholar items) refers to the innovative efforts by users, communities, and innovators working together in creating collaborative knowledge and solutions for societal problems by employing technological solutions (Anania & Passani, 2014; Baeck & Bria, 2014; Bria et al., 2015; Millard & Carpenter, 2014).

The last dimension is the least represented by the variety of concepts involved. Engagement dimension refers to the concepts focusing on citizens and communities but excluding other stakeholders in the society (i.e. NGO, business, public organizations). Citizen engagement platforms (28 Google Scholar items) offer a collaborative experience by facilitating online communities (Stern, 2015). Citizen engagement technologies are mentioned 53 in Google Scholar results. However, no definitions were found in scientific literature, just references to the concept. Digital citizen engagement (34 Google mentions) refers to the use of new media technologies in the creation and facilitation of civic, governmental and/or business interactions (Cobo, 2012).

The related research effort has been conducted by Wissenbach et al. (2016). Group of researchers employed a number of digital methods to analyze the prevalence of civic technology field. The research study aimed to understand in how civic tech as a new phenomenon is constructed beyond the technology and on a global scale by analyzing its relations as apparent on the web and social media. The authors generated Twitter hashtag network allowing to understand the relation of the concept to other field and evaluate the contem-

porary state of civic tech field. The capture of the tweets was conducted in the time frame from June 23, 2016, till July 05, 2016. Open data, open government, and gov tech form the biggest, thus most linked nodes in the network with the strongest affiliation to civic tech. This capture indicates the strong roots of the civic tech field in the already established areas of open government and data.

The second task in defining the common conceptual elements is the review of the current civic tech conceptualizations by the academics and practitioners. The broadest definition is offered by the analysts at the Microsoft Corporation. They refer to the civic technologies as "the use of technology for public good" (Stempeck, 2016, p. 3). According to the author, the definition is intentionally broad because it should be used as an umbrella term for all the instances where digital tools are leveraged to benefit the public. A similar approach towards defining civic technologies is employed by the Knight Foundation which conducted first of its kind civic tech landscape and investment analysis in 2015. Knight Foundation (2015) regard civic technologies too as a convergence of fields such as collaborative consumption, crowdfunding, government data, community organizing and social networks.

The focus of civic technology' definitions tends to differ based on the stakeholder group providing it (Shaw, 2016). Civic society groups and NGOs working in the field define the concept in terms of changing the power balance between the citizens and governments. Code for America suggests using technologies to empower citizens and improve government operations (Code for America, 2017). MySociety implies that ICTs allow the civic society to exert power over institutions and decision-makers (MySociety, 2017). The private sector, meanwhile, defines civic technologies through the perspective of the public sector services by claiming they can help governmental entities to engage with citizens and improve the services (Clarke, 2014). Shaw (2016, p.2) suggests that the range of definitions "reflect the fact that the sector mixes players with different structures and motivations." Formerly distinct fields under the civic tech paradigm can meet at the intersection of tech and lead to profound changes i.e. public sector (local governments & municipalities, national government entities, cross-national government organizations, EU governing structures, educational organizations, libraries, institutes), private sector (tech developers, media, private innovation funds, large corporations, SME's, start-up community), and civil society (NGOs, civic hackers, civic organizations, civic movements, communities, individuals).

Sifry (2014) offers seven attributes of civic technology for easier understanding of Civic Technologies, and the variety of processes and tools it encompasses: (1) involves citizens in the policy process, (2) involves citizens/beneficiaries in monitoring service delivery, (3) relies on structured information to inform decisions, (4) leverages technology, (5) makes previously hidden, inaccessible, or opaque information more public, (6) empowers citizens/beneficiaries to better hold service providers to account, and (7) democratizes previously elite processes. Civic tech platforms do not necessarily should include all mentioned attributed, but the combination of these provides ground for classification of this complex field. The variety of characteristics is necessary because civic tech differs by their user groups. Some tools appeal only to a niche group (community of neighbors, certain city district) while others aim to be fully transformative on a worldwide scale (e.g., MyVoice. co.uk with their continuous work and research on citizen engagement).

From the discussion of the conceptual relatives of civic technologies and the review of current definitions in the academic and practice-based literature, key conceptual components of the term were identified and clarified: (1) collaboration, (2) information, (3) technology, and (4) social change. Collaboration refers to various types of interactions between different groups in society, i.e., government, citizens, business, NGOs. Information relates to the collection, distribution, and analysis of data, i.e., open government data, crowdsourcing, collaborative mapping. Technology refers to the digital and interactive tools. Social change is linked to problems in the society which civic tech is addressing. Definition by Suri (2013) will be used for defining civic technologies in this thesis – *platforms, and applications that enable citizens to connect and collaborate with each other and with the government*. Civic Technologies imply that the governments cannot do everything themselves and the civic society fills in the gaps by co-creating the public value. On the other hand, such tools depend on the collaboration with the governments based on the principles of Government 2.0 and New Public Governance i.e. openness, transparency and participation.

Apart from the definition of the term, the classification of civic technologies is also needed to get deeper insights into the processes, actors, tools, and decisions involved. Stempeck (2016) suggests a spectrum based on the depth of technologies used with the civic goal: civic feature, civic product, and civic externalities. Civic feature refers to the insert of civic engagement perspective into mainstream Information and Communication Technologies (e.g., search engine informs the user about the election candidates). Civic externalities refer to the ICT designed with no or limited intent to affect civic life and governance but due to the broad reach and use in the society changed it (e.g., Twitter and Facebook allows broader inclusion, transparency, and conversations). Civic products are platforms specifically designed to achieve social change and are the focus of this research projects.

Another taxonomy was suggested by Knight Foundation (2013) who used two themes to distinguish a variety of civic tech tools available. The first theme – open government – indicates projects focused on transparency of public entities, accessibility of government data and civic involvement in democratic processes. Second, community action theme, indicates the projects utilizing peer-to-peer information sharing, civic crowdfunding and collaboration to report, identify, debate, and/or solve civic issues (Knight Foundation, 2013). Verhulst (2015) expands the classification and offers five overlapping component areas of civic technologies: (1) responsive & efficient city services, (2) open data portals & open government data, (3) engagement platforms for government entities, (4) community-focused organizing services, and (5) geo-based services & open mapping data. Dietrich (2015) categorize civic technologies into three main pillars: (1) transparency & accountability (i.e. hold governments to account, by making information and processes transparent), (2) citizen-government interaction (i.e. make citizens interaction with governments easier and more meaningful), and (3) digital tools for citizens' daily life (i.e. tools that make citizens everyday live easier). Sifry (2014) distinguished four segments of civic tech sector: (1) decision influencing organizations (change of influence particular decisions), (2) regime changing entities (replace decision-makers), (3) citizen empowering organizations (supply citizens with resources to exert power), and (4) digital government organizations (improve the ways governments acquire and use ICT). The classifications discussed allows

to understand the breadth of tools, applications, and platforms involved under the umbrella of civic tech and allow to further the discussion on its use in co-creative processes in public sector.

### 1.2.3. The Limitations of ICT-Enabled Public Value Co-Creation Practice and Research

The tools and platforms enabling co-creative processes bring a number of advantages to the communities, governments and other involved stakeholders. Nevertheless, ICT-enabled tools have several shortcomings which need to be discussed in more detail to get a more in-depth view of the concept. The first drawback is the lack of integration of such tools in daily lives of citizens. New technologies come along every day, but the metrics (i.e., a number of users, return visitors) show that most of them are not viable when compared to metrics of tools created for everyday use (e.g. taxi rides, shopping). The busy life is prevailing for today's citizens hence they usually opt out of using civic apps. Gibson et al. (2014, p. 3) suggest the platforms "could provide a more immediate and efficient way for users to connect their online activities with their offline communities." Integration of ICT tools into the daily life of citizens and consumer apps on a regular basis is critical as shown by the case study of traffic app Waze (acquired by Google recently). Waze implemented an option to report potholes in the streets and has received more pothole submissions than all the other 311 independent apps with the same goals combined (N. Stern, 2016). These tools are already installed on millions of devices worldwide, so it is easier for citizens to play a civic role. It implies that collaboration with business is essential for civic groups who want to reach a change in the society. Moreover, platform developers usually place too much emphasis on the tools. According to Shueh (2016), civic hackers should try to suggest help to established organizations and find community partners – if one wants to solve a problem, there is probably an organizations working with that issue.

Participatory technologies are developed with the goal to expand participation opportunities for all, but the way it is set up and designed may exacerbate political and social inequalities (Deursen, Dijk, & Helsper, 2014; Ferro & Molinari, 2010; Lutz, 2015). Many citizens and potential platform users have limited or no access to digital technologies or even the Internet, so the civic tools may increase the divide and further marginalize those already limited in exerting power. It also continues to focus on segments of society which is already high on privilege scale based on education, tech skills, social class and even race (Rumbul, 2015b) thus limiting the expected recreation of civic society. Smith et al. (2009, p. 12) point out that "rather than revolutionizing democratic politics, it would end up being more of the same and reinforcing established political patterns and familiar political elites." Civic technologies also involve risks related to information security, privacy and data protection. Some types of platforms gather personal information of citizens (e.g., location, activities, political opinion). If multiple data sets are combined, they might reveal sensitive information. Hence, careful screening and regulations are needed. Giest et al. (2016, p. 2) argues that "from the European data protection law's perspective, if a citizen can be identified, directly or indirectly, those data are personal data and even sensitive data, that are gov-

erned by the law, most significantly by the General Data Protection Regulation." Research study by Peixoto & Fox (2016) on impact of ICT-enabled citizen voice on government responsiveness concludes that such tools increase the capacity of governmental officials to respond but the influence on their willingness to respond is limited.

Since the year 2000, the EU has thus financed more than 70 projects in the field of ICT-enabled governance addressing the issue at local, national and EU levels according to Prieto-Martín et al. (2012). Maier & Reimer (2010) suggest that such projects and ICT-enabled platforms created as an outcome were predetermined by the requirements of governmental entities rather than those of civil society. Prieto-Martín et al. (2012, p.62) analyzed incentivization and implementation of eParticipation projects by European Union and identified three problem-fields: "(1) lack of a proper understanding and articulation with regard to the 'Participation' field; (2) eParticipation community's 'founding biases' around e-Government and academy; and (3) inadequacy of traditional Innovation Support Programmes to incentivize innovation in the eParticipation field". Bruns & Swift (2011) adds several inadequacies of the field. Firstly, the projects are often exceedingly focused on the quantity, e.g., numbers of citizens served, number of impacted legislation, with limited attention to the quality of the processes. Second, even though the projects promise more direct citizen engagement, in practice they often have limited impact on the policy-making processes (Bruns & Swift, 2011). The outcomes of these maladies are best summarized by Stephen Coleman, leading commentator on online democracy, in his speech on democracy in the age of the internet: "If you would have asked me ten years ago, I would have said very firmly: 'we need government to take the lead in this area'. I now don't think that anymore. Cause I've watched government trying to do it. I take the view that the best initiatives always come from citizens themselves. And the best two things governments can do are: one, get out of the way; and two, give them some money... In reverse order" (Stephen Coleman, 2006).

Conversely, ICT-enabled platforms initiated by entities outside governments encounter problems. According to Bruns & Swift (2011), such projects frequently lack measurable impact on policy processes and may generate endless debates with little outcome. Although there is broad agreement that ICT application in governance leads to benefits for society (AVINA Foundation, 2015; Baack, 2015; Knight Foundation, 2015; McNutt et al., 2016; Rumbul, 2015a), they should not be seen as an antidote to all problems. The technology is an enabler increasing the diffusion of information and acts as a fundamental dimension of social change (E. von Hippel, 2001; Weber, 2004). But technology alone is not capable of fueling the collaboration (Zappia, 2011). Kreijveld (2010, p.3) notes that "although technologies to improve insight and facilitate coordination are available, we still have to deal with social interactions that remain highly complex." The Internet is not magical, and citizens will not develop the interest in social issues just because the ICTs were invented.

## 1.3. The Conclusions of Chapter 1

ICT-enabled co-creation of public value entails some preconditions and challenges due to the diverse backgrounds of actors involved and variety of theoretical viewpoints analyz-

ing the processes. Based on the theoretical premises discussed in Section 1.1. and Section 1.2, co-creation of public value demands an extensive rethink of traditional disciplines from public sector management which often involves linear supply, service design, and decision-making models. Citizens, NGOs, and private sector cannot re-create the services offered by the governmental organizations due to a number of reasons – the resources, the scale or security issues. Only governmental organizations can create large-scale projects such as eHealth or eVoting. However, the civil society can contribute to creating (bottom-up approach) smaller tools increasing the transparency and accountability or building the communities.

The research on co-creation and application of ICT has mainly focused on the role of government, the tools they use and the procedures they apply. The locus of eGovernment, Government 2.0 and similar movements have been within governments – they were initiators, tool providers, information providers and citizens were invited to participate based on the government initiatives. Modern governance theories (New Public Management and New Public Governance) also focus on citizen-centricity but fail to include non-government initiated projects and initiatives. The interdisciplinary character of the field leads to fragmentation of the research efforts. The frameworks discussed in Chapter 1 have various shortcomings in adequately conceptualizing the ICT-enabled co-creation of public value. The research on co-creation initiated outside governmental entities is limited and remains at the initial phase. The field lacks generalization, established theoretical models and empirical evidence. While the literature within this stream provides multiple examples of civic society initiatives that have applied principles of co-creation, there exists a limited amount of studies regarding certain activities that should be undertaken to enable co-creative processes. The research focuses either on very specific components of co-creation of public value (e.g. the roles of citizens involved) or provides a general understanding of what the concept represents (the government should collaborate, involve, etc.) with no frameworks or empirical evidence to guide public officials.

Research on civic technologies lacks theoretical models and empirically based evidence which could demonstrate the necessity for such tools and allow initiators of projects to learn from each other. More effective approach is needed to boost collaboration efforts by redefining traditional roles of the actors included, e.g. politicians might have to assume the role of agenda setters, facilitators, and meta-governors of collaborative action, businesses and NGOs need to abandon their pursuit of creating value for their interests and citizens need to become co-creators instead of clients and end-users. It is a difficult task given the strong degree of technical, political and social implications.

## 2. MODELLING ICT-ENABLED CO-CREATIVE ECOSYSTEM: CONCEPTUAL FRAMEWORK AND RESEARCH DESIGN

### 2.1. Conceptualizing ICT-Enabled Co-Creation of Public Value

The section aims to design a framework conceptualizing ICT-enabled public value co-creation. Conceptual frameworks help to clarify what is known and unknown about the systems. They are critical in identifying variables, interpreting research results (Jabareen, 2009) and provide a strategy for examining the attributes of a concept (Walker & Avant, 1983). The conceptual framework is built based on the guidelines put forward by Jabareen (2009): (1) every concept has an irregular contour defined by its components; (2) every concept contains components originating from other concepts, (3) every concept is considered as the point of coincidence, condensation, or accumulation of its components, and (4) every concept must be understood relative to its own components, to other concepts and to the problem it is supposed to resolve. The conceptualization of ICT-enabled co-creation, therefore, is based on the combinations of theories discussed in Chapter 1 and is defined as a system driven by the goal of generating public value through the use of ICT and co-creation between the governmental sector, the private sector and civil society. New governance models (Section 1.1.2) explain the context and the need for changing the power balance and enabling collaborative practices in the creation of public value. ICT-enabled public sector theories (Section 1.1.3) provide a theoretical basis for understanding value propositions the governments can provide to the civic society in terms of open data and facilitation of transparency. Although the public sector can generate the public value on its own, its potential to do so is greatly enhanced by direct cooperation and facilitation of other stakeholders. Co-creation theories (Section 1.1.1) provide a new perspective on business management and administration field into the public services and offer a framework for describing complex relationships between public entities, private entities, and civil society.

The theory of Service Science provides a foundation for understanding the value co-creation processes. Vargo et al. (2008) define the service as the fundamental unit of exchange which is expressed through the application of competencies (such as knowledge and skills) by one party for the benefit of another. The Service Science suggests that value emerges when a number of entities work collectively to create mutual benefits by granting access to one another's resources including people, technologies, organizations and information. Interacting entities form service ecosystems consisting of several or many service systems connected by a network. The actors cannot create and deliver value alone; they can only propose value offerings to the other actors in the network and in this way co-create the value. Uppström (2014), Lönn & Uppström (2015), Sterrenberg (2017) and Alves (2013) suggest that Service Science theory is applicable when analyzing ICT-enabled services aimed at the creation of public value. McNutt et al. (2016) correspondingly add that the sustainability of such initiatives depends on the networked relationships between the business entities, NGOs and more informal groups of citizens. The motivation to create partnerships comes from the recognition that collaborating organizations can accomplish what each partner cannot accomplish alone by maximizing the influence, creating collective resources and removing duplication of the efforts.

In the context of this research project, service ecosystem refers to a system in which actors work together to achieve mutual benefit – public value. Based on the rational put forward by Moore (1995) the value of public services is not limited with the efficiency and quality but also deals with the social and economic improvements they create for the society. Hence, public value in the context of this framework means contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation. It is viewed not as a concrete outcome but as a lens for interpreting the change in the civic society. Following this argumentation and aspects of theoretical approaches discussed in Chapter 1, three foundational premises of the conceptual framework are proposed: *Premise 1. Public value is co-created by multiple actors in the ecosystem; Premise 2. Service is the basis of exchange; Premise 3. Actors cannot deliver the value alone but participate in the creation and offering of value propositions in the ecosystems.*

The object of analysis in this framework are the civic technology platforms which are considered to be public services provided by non-governmental entities. As discussed in Section 1.2, civic technologies accurately represent the ICT-enabled co-creation of public value because of the involvement of various groups of society, the employment of Web 2.0 tools and their social orientation. Due to their small scale, the components and networks of civic technologies are more evident and more open to analysis than the more complex national systems of ICT-enabled services. They are also proliferating in numbers globally and in Lithuania. The context of Lithuania is applicable for researching co-creation due to several interrelated reasons. The need for openness and collaboration in creating public value is grounded in the key strategic documents such as Lithuanian Progress Strategy 2030, National Reform Agenda, Digital Agenda of Lithuania and others. The government of Lithuania started Open Government Initiative in 2016 encouraging the creation of initiatives oriented towards citizen inclusion in public administration, increase of information on government activities and strengthen the competencies needed for opening up the government (Domeikienė, 2016). National Audit Office of Lithuania (2016) concluded that despite the declarations on the necessity to be more open, the progress is limited and the intended results have not been reached. Additionally, a quantitative research study conducted by Skaržauskienė et al. (2015) on the usage of online community platforms in Lithuania revealed that most of the Internet users in Lithuania do not use and, more importantly, do not know online platforms oriented towards social change. Hence, deliberations on how and why public value could be created through ICT-enabled means are especially relevant.

The conceptual framework is illustrated in Figure 7 "The Conceptual Co-Creative Ecosystem Framework" below and provides a holistic view into co-creation processes in creating public value. The proposed model has three dimensions – actors, content and processes distributed on three levels – micro, meso and macro. The service ecosystem approach moves the focus away from the exchange between two players to understanding that the value creation is grounded in the configurations between economic and social actors within networks (Vargo & Lusch, 2008). Hence, the services offered by civic technology platforms are only inputs in to public value creating activities in civic society. The actors in the ecosystem co-create value at three levels – micro level, meso level and macro level (Akaka

& Chandler, 2011; Frow & Payne, 2011). Micro level refers to the direct service-for-service exchange, i.e., end-users of platforms. Meso level refers to indirect service-for-service exchange with the external stakeholders i.e. partners or competitors. Macro level refers to the complex relationships between different systems with diverse interests co-creating public value. The exchanges between the actors in various levels of are needed because no one actor has all the resources needed to reach their goals (Frow & Payne, 2011). To understand how public value is created on micro, meso and macro levels, three dimensions – actors, content, processes – were developed allowing categorization of the entities involved and ways they co-create public value.

**Figure 7:** *The Conceptual Co-Creative Ecosystem Framework*
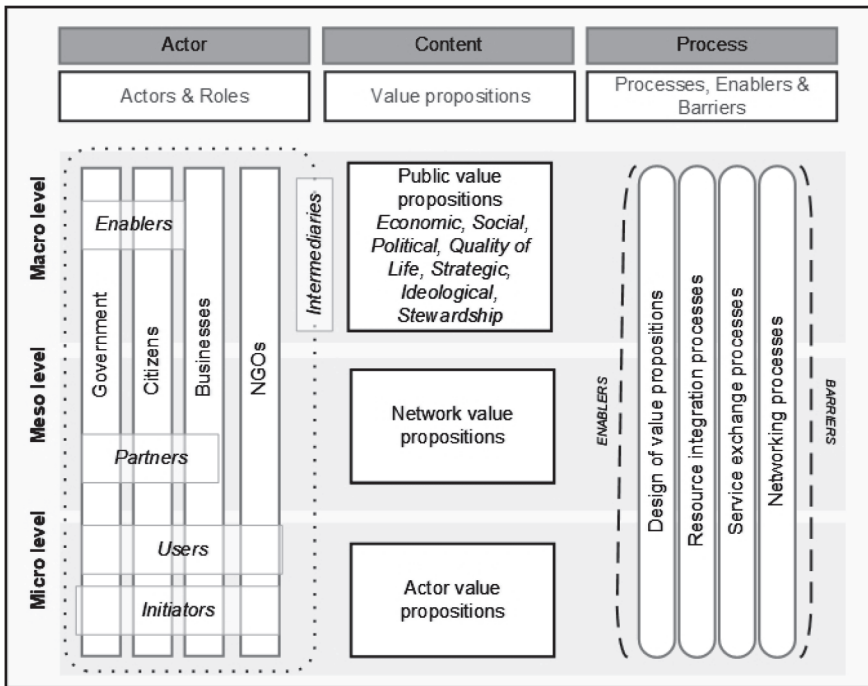


**Source:** *developed by author (2018)*

The actors' dimension refers to the individuals and organizations participating in the service ecosystem, their roles and resources. Hardy et al. (2005, p.58) suggest that "although collaboration has the potential to produce powerful results, not all collaborations realize this potential. Many collaborations fail to produce innovative solutions or balance stakeholder concerns, and some even fail to generate any collective action whatsoever". Hence, the understanding of the actors involved in ICT-enabled co-creation and the roles they can perceive is crucial. The stakeholders are defined as: Groups/individuals affected by management

decisions; Groups/individuals concerned about management decisions; Groups/individuals dependent on the resources to be managed; Groups/individuals with claims over the area or resources; Groups/individuals with activities that impact the area or resources. The concept of roles allows getting insights on the ways actors collaborate in service systems (Gronroos, 2011). Each actor is a potential source of resources for other actors within the ecosystem. Interactions happen through creation, sharing, obtainment, and integration of the resources. Certain social roles enable co-creation, but there are limited research on such roles and how they function together (Akaka & Chandler, 2011). Åkesson (2011) argues that heterogeneity of actors and resources involved in the ecosystems leads to productivity. Despite the diversity of actors involved in any ecosystem, it is possible to identify different types of actors, segment them and understand the nature of their relationships within a defined context. Figure 8 "Types of Actors and Roles in the Co-Creative Ecosystem" below shows the five types of actors identified in the research literature (see Section 1.2 for details) and types of roles they can perceive on different levels of the ecosystem. However, most of the research focuses on the co-creative public services initiated by governmental entities and more empirical evidence is needed to confirm and elaborate the identified roles.

**Figure 8:** *Types of Actors and Roles in the Co-Creative Ecosystem*
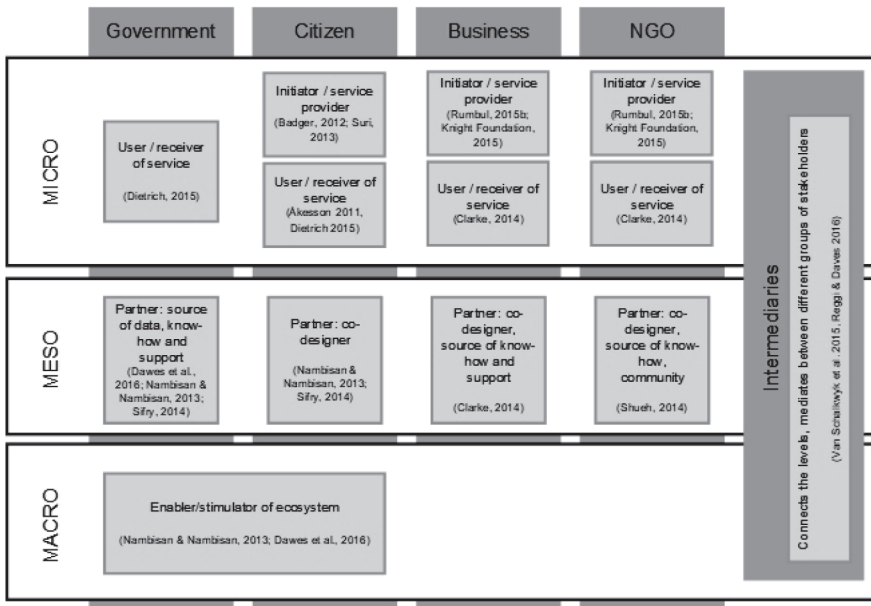


**Source:** *developed by author (2018)*

The processes' dimension includes deliberations on the patterns of design, management and collaboration in co-creating public value through civic technologies. Service Science provides a view where actors co-create value through resource integration and provision

of services in interlinked systems (Lusch & Vargo, 2011). Economic and social entities involved in the ecosystems have competencies expressed through the delivery of services, management of relationships with others and sharing of information. These attributes ensure the structural integrity of the ecosystem (Evans & Wurster, 2000; Lusch et al., 2007; Vargo & Lusch, 2004; Wikström & Normann, 1994). Value propositions are used in integrated systems to connect mutually interested actors. Following the logic of Service Science, the actors able to develop the most compelling value propositions will perform the best. Lusch & Webster (2011) stress the importance of constant revision of value propositions in response to changing needs of customers, suppliers and other stakeholders.

However, more clarity is needed on how to design compelling value propositions in the creation of public value and to maintain this advantage in the long-run. The co-creative processes are influenced by many preconditions on different levels of analysis summarized in Table 5 "The Barriers and Enablers for the Co-Creative Processes" below. What Table 5 shows is that most of the research is conducted on the macro level in discussing the contextual (i.e., legal, political, etc.) influence and more research is needed to understand the processes on meso and micro levels.

**Table 5:** *The Barriers and Enablers for the Co-Creative Processes*

| Macro level | |
|---|---|
| Strategic policy framework (Kearns, 2004); Infrastructure for openness (Dawes, Vidiasova, & Parkhimovich, 2016; Janssen & Zuiderwijk, 2014; Pollock, 2011; Shkabatur, 2013; Sieber & Johnson, 2015); View that the government should be the sole provider of public services (Kearns, 2004); Transparency and accountability (Janssen, 2011; McGee et al., 2010; Worthy, 2010); Features of civic society; Lacking powers of central government (Kearns, 2004); Institutional support (Hou, 2016; Peixoto & Fox, 2016; Rumbul, 2015a); Open attitude of public officials (Davis & Ruddle, 2012; Gebauer et al., 2010; Magno & Cassia, 2015); Roles of actors (Akaka & Chandler, 2011). | |
| Meso level | Micro level |
| Collaborations and interoperability between governmental entities (Capgemini & Sogeti, 2011); Heterogeneity actors involved (Åkesson, 2011); Embeddedness in networks (Bell & Zaheer, 2007; Bonchek & Choudary, 2013; Bria et al., 2015; Rashid, 2015); Offline engagement strategies (AVINA Foundation, 2015). | Integration of external input (F. Magno & Cassia, 2015); Risk aversion of actors (Voorberg et al. 2014, Magno & Cassia 2015); Clear incentives (Fuglsang, 2008; Voorberg, Tummers, et al., 2014) |

**Source:** *developed by author (2018)*

The content dimension includes deliberations on the goals and objectives of the actors involved. Knowing why individuals and organizations build platforms and why citizens participate in them, can guide the organizations and civic leaders in fostering ICT-enabled platforms. Collins in discussing the value created in private sector, states that the inputs here are mostly measured in the same units as the outputs, i.e., the money (Collins, 2011). In Collins' view, the value creation in public sector and third sector is very different – the inputs are the same, but the outputs are very different, e.g., social cohesion, increased social good, etc. The goals of organizations in the field, hence, should be related to the mission of the organization. The central concept of this dimension is the value proposition. Value proposition refers to a

promise of value to be delivered, communicated, and acknowledged. Value propositions indicate how the actors involved could co-create value by integrating ecosystems their resources because the actor cannot deliver the value, but only offer value propositions. To realize the value proposition, a firm must co-create value with other actors in the system by direct interactions (Grönroos & Voima, 2012; Vargo & Lusch, 2004, 2008) benefiting both sides.

The types of value proposition included in the model are based on the works of Public value theory (Moore, 1995) and elaborations of it by Cook (2011) and Ouden (2011). According to Moore (1995), a well-articulated value proposition can help streamline the organizational decision-making. Cook (2011) suggested seven types of public value: economic, social, political, quality of life, strategic, ideological and stewardship (see Section 1.1.2 for details) where first four types represent the practical interest of individuals and organizations in the ecosystem and the remaining types relating to societal and democratic outcomes. Ouden (2011) added deeper perspective to understanding public value creation in the ecosystems and suggested that the organizational strategy to public value involves several layers. The notion is made that public value is co-created on a macro level since it includes deliberations on the context and larger social constructs (government structures, civic society, etc.). Meso level provides insights on the stakeholder network benefits. When creating public value initiators of civic technologies have other goals too. It is especially true for Civic Technologies initiated by for-profit organizations. This notion coincides with the micro, meso and macro levels of analysis. However, there is limited evidence on the types of value propositions offered at the micro and meso levels. Hence, the micro level deals with value offerings for the individual actors. By distributing value propositions through three levels, the framework allows understanding the value of ICT-enabled co-creation for people, organizations and society.

Empirical investigations are needed to gain more insights on the interrelations between the elements and the validity of the proposed framework. For this purpose, four empirical research directions have been identified: (1) applicability of foundational premises to the analyzed context; (2) the processes in the ecosystem; (3) the actors in the ecosystem; and (4) the content of the public value co-creation. The dynamics of the identified research directions and empirical investigations conducted are discussed in the following section.

## 2.2. Research Design and Methodology

The conceptual framework presented in Section 2.1 is designed based on the theories and past investigation on the subject. Conceptual frameworks provide not a causal/analytical setting but, rather, an interpretative approach to social reality (Jabareen, 2009). Hence, the empirical investigations are aimed at testing its consistency with reality. The research design is based on phenomenological research strategy which with the help mixed method design approach allows answering identified research questions. Mixed methods approach is especially relevant in generating theories regarding social phenomena in domains without dominant theory (Creswell & Clark, 2011) such as co-creation of public value. The mixed approach emphasizes the triangulation among multiple data sets and fosters iterative theory-building and testing. Four empirical research directions were identified

in the previous sections. The relationships between the research directions, the empirical studies and the research questions they aim to answer are illustrated in Figure 9 "The Relations between the research directions and the empirical studies."

**Figure 9:** *The Relations between the research directions and the empirical studies*
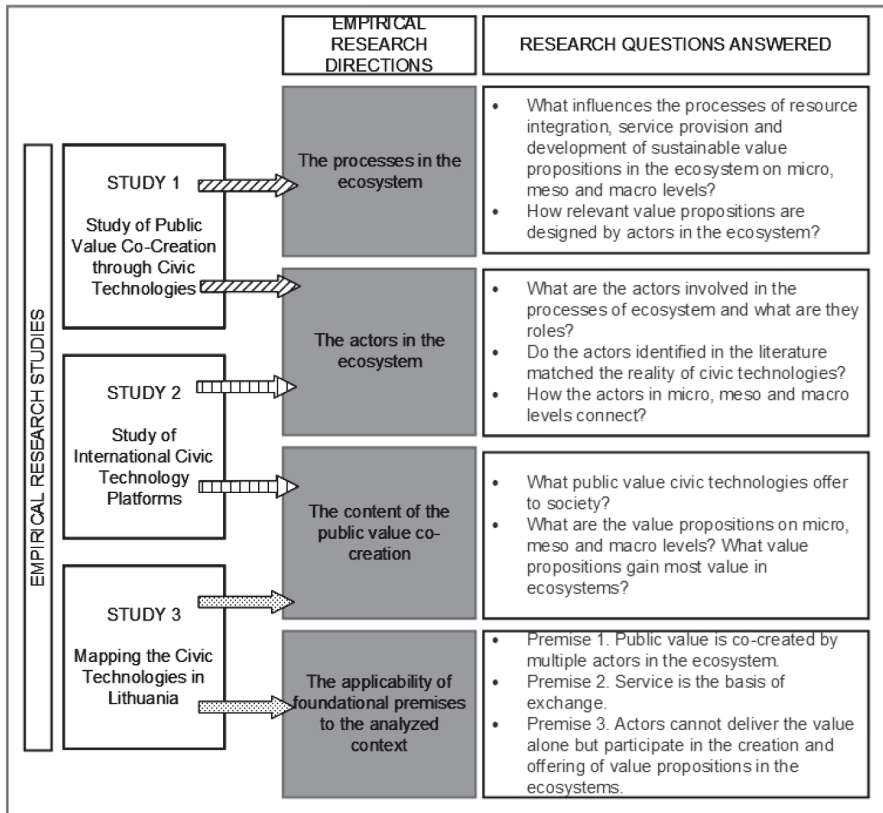
Figure 10 details the structure of the empirical research project, data collection methods, sample size and the data analysis methods used in the studies. Research begins by conducting expert interviews in the study of Public Value Co-Creation through civic technologies (Section 2.2.1). It is aimed at distinguishing the peculiarities of the actors and processes dimension of the framework. The findings of the qualitative study are complemented by the analysis of civic technology platforms on the international level (Section 2.2.2) providing a quantitative perspective of the actor and content dimensions. The last study combined qualitative and quantitative methods in confirming the applicability of the framework's foundational premises by Mapping of the Civic Technologies in Lithuania (Section 2.2.3).

| | Data collection methods | Sample size | Data analysis methods |
|---|---|---|---|
| Study of Public Value Co-Creation through Civic Technologies | Semi-structured expert interviews | 7 expert interviews | Content analysis. NVIVO software used for data analysis |
| Study of Co-Creative Ecosystem in EU | Online data collection (Scrapping) | 614 international civic tech platforms | Website content and factor analysis |
| Mapping the Civic Technologies in Lithuania | Online data collection IssueCrawler | 52 Lithuanian civic tech platforms | Content Analysis Hyperlink Network Analysis |

**Source:** *developed by author (2018)*

Results of the studies are used to elaborate and validate the elements of conceptual Co-Creative Ecosystem Framework presented in Section 2.3. The research strategy is more concerned with how the practices leading to public value work and not with the measurement of the outcomes. The term of Public Value is elusive and depends highly on the role of interpreter. The field is under-researched so first the main building blocks, and their connections need to be identified. Further research efforts could deepen the insights and provide recommendations on how to manage and improve the processes. Therefore, the focus of the study is not to offer prescriptive guidelines for the use of ICT in co-creating public value but rather allows to draw parallels and patterns. Ecosystem approach provokes "new thinking about the conditions and requirements necessary to actively cultivate development of an ecosystem to achieve a set of specific and desirable goals" (Harrison, Pardo, et al., 2012). Hence, the outcome of the empirical study is to offer a broader understanding of the phenomenon of non-government led public value co-creation. The analysis is undertaken directly by the actors in the ecosystem through interviews and by analyzing the content of the Civic Tech platforms. Following subsections detail the methodology – research sample, design, methods of data collection and analysis – of the studies. Chapter 3 details the results of the studies and discusses empirically validated elements of the framework and its implications.

## 2.2.1. Methodology for Study of Public Value Co-Creation through Civic Technologies

The qualitative research methods gain a growing importance in contemporary social sciences. Qualitative research process aims to obtain insights on processes and value individuals assign to social situations (Hesse-Biber & Leavy, 2006). In the context of this

research project, the qualitative research allows to collect and analyze empirical evidence from different stakeholders' perspectives. The primary research method used was a semi-structured face-to-face interview. According to Alvesson, the interviews are the core of the qualitative research and the method mostly used to gather insights on individuals, groups, and organizations (Alvesson, 2011). It allows understanding how people are creating and experiencing the meaning in their surroundings (Merriam, 2009).

Semi-structured interview permits the researcher to have a list of theme and questions to covered in the interview but it may have flexible and fluid structure depending on the flow of the conversation (Mason, 2002). The interview method enables evaluation of broader context and provides innovative and flexible ways to interpret the situation. Thus, resulting in the identification of the underlying relationships in the civic tech ecosystem. During the process of interviews, conditions were created for the participants to contribute freely to create new categories and meanings of the researched concepts. Open-ended questions allow receiving more in-depth and open answers based on personal experiences and perspectives. Reflective dialogues enhanced the quality and amount of data collected due to subjective interpretation of wider context not limited to particular questions. The instrument used in this study is a questionnaire based on the conceptual framework presented in Section 2.3. The questionnaire has four blocks illustrated in Table 6 "The Categories of the Research Instrument" below. The questionnaire used is provided in Annex 3.

**Table 6:** *The Categories of the Research Instrument*

| Processes | Content | Actors |
|---|---|---|
| How the platform was created? What kind of participants are involved in design of the platform? What initiator abilities are needed for sustainable platforms? How the platforms should be evaluated? How to receive feedback? How the target groups are selected? Is this needed? What determines selection of certain groups? Can civic tech platforms replace certain functions of government services? | What are the goals of civic tech platforms? Can such goals be achieved without the help of ICT? What value they are creating/offering for their end-users? Partners? Are the platforms and other ICT tools applicable in tackling various societal problems or in creating various public services? How individuals/organizations should select ICT tools when seeking to create projects creating public value? | What resources are needed in order to create platforms? What is the relation between civic tech platforms? What are the relations with NGOs? Do different entities collaborate? How? What is the role of political organizations and governments? What is the degree of collaboration, support? What is the role of business organizations in creating public value? |
| Context | What is the role of civic tech platforms in creating public value, more open society? What factors enable creation of civic tech platforms and involvement of various groups of society in creating public value? How open society, open data, changing perspectives of public services are changing the civic tech field? What are international examples of successful civic technologies? Why do you think they are successful and sustainable? What can be applied to your organizations and the context in which you are working? How Lithuanian civic platforms fit into the global context of civic tech movement? How civic tech platforms create value for the end-users, partners involved and society in general? | |

**Source:** *developed by author (2018)*

Considering that the probability (randomized) sampling is not suitable for qualitative research (Hennink, Hutter, & Bailey, 2011), the expert sampling was employed. In the context of this study, the validity and significance of the results are based more on to the richness of the data collected and the sample selected and the competencies of the researchers to analyze the data than on the size of the sample (Patton, 2002). The random sampling is proved to be ineffective in identifying and selecting the experts due to the inequal distribution of the experts in the population (Hennink et al., 2011). Thus, information rich cases and experts were selected (Patton, 2002). The experts can be defined as individuals with specific know-how and insights which they have due to their professional experience and position (Flick, 2014; Littig & Pöchhacker, 2014). According to Littig & Pöchhacker (2014), the experts contain not only specific professional or technical knowledge on organizational procedures, the field of activity. They also have a particular status in the organization or in the society which allows to represent the field or the organization. During the research, seven experts of Public Value creation through ICT enabled tools in Lithuania were interviewed. The selection has been made based on the professional experience, knowledge and the affiliation. A full list of interview participants, their affiliations and relations to the civic tech field is provided in Table 7 "The List of Experts for Qualitative Interviews" below. The fieldwork was implemented in the period from 30th of August, 2016 to 15th of November. The average length of the interview was 45 minutes; the conversations were recorded using digital voice recorders and transcribed. The interview participants participated in the research process voluntary and free of charge and confirmed that by signing consent forms (Appendix 4).

**Table 7:** *The List of Experts for Qualitative Interviews*

| Participant | Code | Affiliation |
|---|---|---|
| Edgaras Leichteris | R1 | Knowledge Economy Forum, Project leader |
| Rugilė Trumpytė | R2 | Transparency International Lithuanian Chapter, Project leader |
| Donatas Šimelis | R3 | Democracy project Lietuva 2.0, Initiator |
| Karolis Granickas | R4 | Open Data Institute, Project leader |
| Mykolas Lepeška | R5 | Global Lithuanian Leaders, Project leader |
| Aida Štelbienė | R6 | Archmap.lt, Project leader |
| Marija Šaraitė | R7 | Transparency project "Baltosios pirštinės", Project leader |

**Source:** *developed by author (2018)*

The limitations of interview method include difficulties in ensuring the research validity and reliability, stimulation of participants' motivation and subjectivity. The researcher used several precaution tools proposed by Flick (2007) to minimize the negative impact of the identified limitations: rigor and creativity, consistency and flexibility, transparency and feedback. A pilot interview (R1) was conducted to audit the how well the participants interpreted the terms and questions on the instrument. Furthermore, the researcher inquired two interview participants for feedback (i.e., confirm facts and circumstances mentioned) on data interpretation compliance. Majority of interpreted information complied with the participants' opinion. The description of research procedure, results and conclusions were

conducted with the goal to provide information in accessible and transparent manner. The complex structure of the research subject, the limited extent of empirically-based studies in the field conditioned and measures minimizing adverse impacts of the method chosen to determine interview as a proper method for achieving the research purpose.

Data analysis software Nvivo was used for data analysis and allowed to increase the level of accuracy, obtain more details and standardize the coding. Nvivo is designed for qualitative data processing and analysis in the social sciences and helps in the analysis of qualitative data in several respects. The application allows processing, organize and systemize the records. Computerized analysis enables researchers to employ systemized data by creating a searchable database, allowing a variety of visualization options and enabling correlations using models and matrixes (Morkevičius, Telešienė, & Žvaliauskas, 2008). Computerized qualitative content analysis software despite its broad applicability and benefits has several methodological limitations. The software is intended to facilitate the research but cannot independently analyze the data and provide conclusions. The software is especially useful when processing large quantities of evidence in early stages of the analysis process – identifying the themes, patterns. Later coding and analysis steps, however, are heavily influenced by the personal traits of the researcher. Hence, the research remains the primary instrument of the analysis.

The coding process is more complicated than just the marking of text to different categories. The creation of category tree were the text items are appointed to the main categories and categories is considered to be the basis of the analysis process. The categories crosscut the text under the study and become a tool for classification of semantic units (e.g. words, sentences). The process starts with interview reading and segment extraction. Each segment is coded with a word or short phrase indicating its relation to the research subject. After the completion of coding, the researcher prepares reports by summarizing the prevalence of codes in different segments, highlighting the differences between various codes and their groups, and comparing the relations between the codes, contexts, and sources. This way the analysis is converted to conceptualization and theorization. The coding enables an easier search for similarities, differences, models, and connections. Thus, it is an important part of the analytical process.

The analysis of content linked the insights of literature review with the outputs of empirical research (data, categories, context). The research analysis framework proposed by Creswell (2008) was applied in four steps: (1) idea generation and description; (2) preparation of data for analysis, creation of a system; (3) categorization and theme identification; (4) identification of links and relations between categories. While conducting qualitative analysis, interpretative analysis of content and its 'contextual' analysis, researchers used supplementing strategies, including abstraction, deduction, contextualization, and numbering. The similarities and differences between the discovered relations and variables highlighted while distinguishing extreme, non-typical cases and linking, integrating cases that are close in their content relation. In pursuing the iterative approach of the hermeneutic circle with inductive and deductive methods, the findings are evaluated against the literature and conceptual framework outlined in Chapter 2.1. Data were analysed in the context of participants' ideas, arguments and opinions in order to deepen the researchers'

understanding of the analysed issues. Qualitative research aimed at establishing similarities, differences and relations between the interview text segments.

## 2.2.2. Methodology for Study on International Civic Technology Platforms' Content

The goal of this research study is to evaluate the patterns of platform content in relation to the conceptual model presented in Section 2.1. The study has been conducted in three stages: (1) sample collection; (2) textual data scrapping; and (3) quantitative content analysis. The steps are described in detail further in this chapter. Purposive sample selection method has been used in selecting the civic tech platforms. Such non-probability sample is selected based on characteristics of a population and the objective of the study (Denscombe, 2007). The initial list of samples included 1702 organizations listed in the research outputs of leading research organizations in the field (GovTech100, Microsoft Civic graph, digitalsocial.eu, Nominet Trust, Knight Foundation Research). 614 civic tech platforms operating on a global scale were included in the sample (Appendix 8) based on the criteria detailed in Table 8 "The Research Sample Selection Criteria" below. A Larger sample of platforms allows adding quantitative dimensions to the research findings.

**Table 8:** *The Research Sample Selection Criteria*

| Criteria | Description |
|---|---|
| ICT-enabled | The platforms deploy and adapt Information and Communication Technologies. |
| Interactive | The platforms are open, inclusive and collaborative. |
| Profit orientation | The platforms may be for non-profit as well as for profit; but their overall objectives should serve the community. |
| Contributors | The platforms are capable of including large number of members. |
| Social orientation | Civic technologies with identified common social goal and use innovative collaboration technologies. |
| Duration | Projects with minimum 1 year of activity. |
| Data availability | Goals, metrics, initiators listed on the platform website. |
| Collaborators | Projects allows collaboration between citizens and/or business and/or NGO's and/or governments. |
| Language | All civic tech platforms reviewed had to present their activities in English. This facilitated the work of assessing the platforms and comprehending their use. |

**Source:** *developed by author (2018)*

The second step, included uses of automated text scrapping techniques and available tools. Text mining can be defined as the application of machine learning algorithms for semiautomatic or automatic text extraction of information from data stored in databases (Chakrabarti et al., 2009; Witten, Frank, & Hall, 2010). Techniques of text mining allow to identify and trace the patterns, trends, and models in unstructured textual data sets. Search engines provide an essential tool for data collection and information extraction. Publicly available information on platform goals, partners, user groups has been collected by using

data mining tools 80 legs and VOSON. For the third step, textual data analysis software Nvivo was used which allowed to increase the level of accuracy, obtain more details and standardize the coding. The benefits and shortcomings of computerized content analysis software have been discussed in Section 2.2.1 of the thesis. The software allowed to process large quantities of data and to identify themes and patterns. The coding allows preparing reports by summarizing the prevalence of codes in different segments, highlighting the differences between various codes and their groups, and comparing the relations between the codes, contexts, and sources. This way the analysis is converted to conceptualization and theorization.

The Chapter aims at application of empirically-derived quantitative data in the design of civic technologies classification regarding their involvement in value co-creation practices with their stakeholders. The websites of organizations have become an important mechanism for communication the economic and social goals, mobilizing stakeholder support and enhancing reputation. It is especially relevant in the ICT-enabled platforms which conduct their operations and communications with users through digital means. Combined with other data collection methods, content analysis of platform websites can help to understand the broader context of co-creation. Hicks et al. suggest that the firm's website is a valuable and easily accessible data source for the researchers (Hicks, Libaers, Porter, & Schoeneck, 2006).

### 2.2.3. Methodology for Mapping the Civic Technologies in Lithuania

The mapping activity seeks to collect information on the civic technology platforms in Lithuania to elaborate the ecosystem model. Hence, the goals of the research are twofold – to develop insights on involved actors, type of co-creative activities and objectives and to determine the linkages and synergy between actors involved. With so little existing research on the development of civic technologies, the study aimed to get insights on the landscape and note the patterns from which theories could be later generated. To achieve these objectives, several instruments have been employed: Content analysis and Hyperlink Network Analysis. Following sections will discuss the application of each instrument in detail.

The sample of the civic technology platforms was developed based on a set of criteria. The platforms were identified through the review of previous studies (Petronytė et al. 2015; Jakutytė 2012; Ramonaitė 2008; Visionary Analytics 2015a; Visionary Analytics 2015b) on citizen engagement, eGovernment, and social technologies by scanning scientific databases and other direct sources (European funding databases, municipal websites, popular blogs, etc.), searches for applications based on a list of major NGO's and original Google searches on array of civic engagement related terms. The definition of civic tech employed in the sampling is a platforms and applications that enable citizens to connect and collaborate with each other and with the government. The platforms were selected according to the selection criteria detailed in Table 9 "The Research Sample Selection Criteria" below. The sample includes 52 civic tech initiatives and is provided in Table 10 "The List of Platforms in the Sample" below.

**Table 9:** *The Research Sample Selection Criteria*

| Selection criteria | Description |
|---|---|
| ICT-enabled | The platforms deploy and adapt information and communication technologies. |
| Based in Lithuania | The platforms geographically originate in Lithuania. |
| Interactive | The platforms are open, inclusive and collaborative |
| Profit orientation | The platforms may be for non-profit as well as for profit; but their overall objectives should serve the community |
| Contributors | Selected platforms also have capabilities to involve a large number of members. |
| Social orientation | Platforms with identified common social goal and use innovative collaboration technologies. |
| Duration | Projects with minimum 1 year of activity |
| Data availability | Goals, metrics, initiators are listed on platform website |
| Collective action | Projects allows collaboration between citizens and/or business and/or NGO's and/or governments |

**Source:** *developed by author, 2017*

**Table 10:** *The List of Platforms in the Sample*

| Code | Name | Code | Name | Code | Name |
|---|---|---|---|---|---|
| P1 | archmap.lt | P19 | Kelionės kultūros keliais | P36 | pincetas.lt |
| P2 | aslietuvai.lt | P20 | Krašto Paveldo Gidas | P37 | Baltosios pirštinės |
| P3 | Aš už Lietuvą! | P21 | Kurgyvenu.lt | P38 | Pričiupk! |
| P4 | atvirasteismas.lt | P22 | Lietuva 2.0 | P39 | reitinguok.lt |
| P5 | aukok.lt | P23 | manokraujas.lt | P40 | renkumera.lt |
| P6 | aukokdaiktus.lt | P24 | manobalsas.lt | P41 | seime.lt |
| P7 | aukoklaika.lt | P25 | manodaktaras.lt | P42 | seimodarbai.lt |
| P8 | be-ribu.lt | P26 | manoseimas.lt | P43 | stirna.info |
| P9 | beseselio.lt | P27 | mesDarom.lt | P44 | sveikasvaikas.lt |
| P10 | buksavanoriu.lt | P28 | mokumokescius.lt | P45 | TechMap |
| P11 | code4vilnius | P29 | namubendrijos.lt | P46 | Telše programėlė |
| P12 | eile.lt | P30 | nemasinis.lt | P47 | trysmilijonai.lt |
| P13 | ekologija.lt | P31 | NVO paslaugų katalogas | P48 | Tvarkau Vilnių |
| P14 | freedata.lt | P32 | Oi, pranešiu! | P49 | zinaukarenku.lt |
| P15 | GIS mokykla | P33 | pamatykLietuvoje.lt | P50 | Žaliasis taškas |
| P16 | Global Lithuanian Leaders | P34 | parasykjiems.lt | P51 | peticija.com |
| P17 | Jurgio kepurė | P35 | peticija.lt | P52 | Skaidrumo Linija |
| P18 | kaveikiavaldzia.lt | | | | |

**Source:** *developed by author (2018)*

Content analysis of the civic platforms has been conducted in three stages. During the first stage, data collection template was designed based on the conceptual framework discussed in Section 2.1 and publicly available data on selected platforms. A template is a necessary tool to make data collection process uniform across platforms and to enable patterning. The tem-

plate can be divided into four sections based on the elements in the conceptual framework: content element, processes element, actors element and metrics of platform usage and uptake. Table 11 "The Template for Data Collection" below details categories and subcategories of the template). Some categories were pre-defined based on previous chapters to help data structuration and evaluation. Completed data collection template with data on 52 platforms is available in Appendix 5. The fieldwork was done during August-November, 2016.

The second stage of the mapping activity was data collection and included systemic coding of textual content and semantic themes found on the platforms by reviewing uploaded documents, outgoing links, social media accounts, user activity and media mentions. The last stage, involved evaluation and synthesis of results. Comparison of the research data across the cases led to the generation of the insights on the design and dynamics (e.g., key initiators, users, goals, tools) of civic tech platforms.

**Table 11:** *Template for Data Collection*

| Element | Category | Subcategories & descriptions |
|---|---|---|
| Content | Goals | The goals the platforms are trying to achieve. Official goals were added to the template and the subcategory was assigned by the coder. Subcategories: better government services, citizen engagement, community building, conscious consuming, solving social problems, stimulating economic exchange, transparency & accountability. |
| | Operation type | Type of operation the platform involves. Subcategories: data visualization platforms, gov. communication platforms, group decision-making platforms, issue reporting platform, mapping platforms, online learning platforms, opinion-matching platform, petitioning platforms, resource sharing/matching platforms |
| | Context | Context in which the platforms implement their activities expressed in the content of the platforms. |
| Actors and their roles | Users | Users the platforms are trying to reach. Subcategories of users: NGO's, governmental organizations, public organizations, international organizations, associations, business users, media, citizens. |
| | Initiators | Initiator type. Predefined subcategories: NGO's, business organizations, governmental organizations, public organizations, individuals |
| | Funding | Type and number of funding sources. Subcategories: business funding, government funding, EU + structural funds, international organization support, generates revenues itself, not specified. |
| | Partners | Number and type of partners the platforms have. Subcategories: NGO's, governmental organizations, public organizations, international organizations, associations, business users. |
| Resources | Developers | Developers of the platforms. Subcategories: business entities, organizations themselves, individuals, not specified. |
| | Tools | Tools used as a base of the platform. Types: website, mobile app, website + mobile app, network. |
| | Open data | Identifies if the platform is employing open data. |
| | Open source | Identifies if the platform shares its code by reviewing platform content and their activity on Github and open-source sharing services. Github search was conducted in August, 2016. |

| Element | Category | Subcategories & descriptions |
|---------|----------|------------------------------|
| Processes | Networks of collaboration | Links and types of relationships with to other actors in website content and strategic documents of the platforms. |
| Uptake metrics | Media mentions & comments | Mentions in the national media outlets online. The statistics were collected using Google News applet by using the name of the platform as a search keyword. Number of comments next to media mentions. Media searches were conducted in September, 2016. |
| | Google mentions | Number of Google results. The statistics were collected using Google Search by entering the name of the platform as a search keyword. Google searches were conducted in November, 2016. |
| | Duration | Start date of the project, end date of the project (if applies) and the duration of the project in years. Duration of the projects was evaluated in November, 2016 |
| | Public reports | Availability of public reports on the activity of the platform (financial statements, status reports, etc.) |
| | Facebook metrics | Likes on Facebook pages of the platforms. Facebook analysis was conducted in August, 2016. |

**Source:** *developed by author (2018)*

Described method has several limitations which need to be mentioned. The first limitation is the heterogeneity of Internet data which predetermined by the differences in content, user interfaces, semantics, structure, etc. The differences make it difficult for the researchers collecting online data (Bouchkhar, 2013). Another limitation is the sample of platforms. It has to be mentioned that the sample is not representative of the universe of civic technologies. Moreover, due to its limited size, it does not present statistical significance. However, as the first exercise in differentiating the building block of civic tech landscape, it can be considered as an effort of structuring the sample. Further research on larger sample of platforms in several countries could allow building a more representative sample.

The second method used in the study is Hyperlink network analysis (HNA). HNA suggests that social structures online can be analyzed based on the hyperlinks to the websites. This method has been applied in researching digital participation and deepening the insights on social technologies by a variety of researchers (e.g., Moe (2010) study of Norwegian Blogosphere, Nugroho (2009) proliferation study of civil society in Southeast Asia, Lang (2013) analysis of civil society and the public sphere). (Park, 2003, p. 53) suggests that "the Internet is a communication network made up of intertwined connections through which a number of messages travel. In this process, a website functions as a node that passes messages and determines their paths according to a selection of hyperlinks". Some researchers (e.g. Jackson, 1997; Richard Rogers, 2015) suggest that patterns of hyperlinks designed by individuals or organizations who own the websites reflect the communicative choices and agendas of the owners and thus can be used to examine the communication between actors. In the context of this study, HNA allows identifying patterns of the relationships between organizations online.

Data for the Hyperlink Network analysis can be collected both manually and using web-crawler systems. The second method is preferred due to lower costs of labor and lower probability of coding errors (Moe, 2010). HNA has been conducted using the IssueCrawler online software. It is an academic tool designed by sociologist Richard Rogers from the University of Amsterdam. IssueCrawler allows construction of URL networks "by identifying and documenting linkages from, to, and between different starting points" (Lang, 2013, p. 228). One distinct advantage of this method is its unobtrusiveness – the crawler A crawler uncritically and blindly scans the web without knowing the semantic aspects of the data collected (G. B. Bell, 2010). The process starts with compiling the list of network nodes (in this case URL addresses of the platforms in the sample, Table 9). The URL addresses are then used as seeds in IssueCrawler to identify the hyperlinks between the URL addresses. Three types of crawling activities are available using the software: co-link analysis, snowball analysis, and inter-actor analysis. The first two methods are used to identify significant websites in the network (R. Rogers, 2010). The co-link analysis was used due to its applicability for smaller network identification (the size of the network was predetermined due to the limited number of Lithuanian platforms).

## 2.3.  The Conclusions of Chapter 2

The intent of the Chapter has been to develop a theoretically-derived framework for conceptualizing ICT-enabled public value co-creation. To this end, the study has expanded on previous works on Civic Technologies, Government 2.0, New Public Governance and Public Value evaluation, value creation and efficient use, which have been assessed via service ecosystem perspective. The conceptual model of ICT-enabled public value co-creation proposed in the Chapter has three dimensions – actors, content, and processes. These dimensions are distributed through three levels – micro, meso, and macro. The framework and its elements allow to discuss the concept of ICT-enabled co-creative initiatives in-depth and enable the comparison between the cases. The framework provides a holistic view and helps to come to a more comprehensive assessment of what makes co-creation of public value sustainable in the long-run. The purpose of the empirical research project is to elaborate and validate Co-Creative Ecosystem Model. The methodology for three empirical studies has been outlined detailing the sample, methods, design, and limitations.

# 3. RESULTS OF THE EMPIRICAL INVESTIGATIONS AND THE MODEL OF CO-CREATIVE ECOSYSTEM

## 3.1. The Results of the Studies for Elaborating the Dimensions of Conceptual Framework

### 3.1.1. The Results of the Study on Public Value Co-Creation through Civic Technologies

*The Actors, Their Roles and Resources in the Ecosystem*

The actors identified during the interviews and their roles in Co-Creating Public Value through Civic Technologies will be discussed. The interview participants mostly focused on the roles enabling Co-Creation and identified seven groups of stakeholders (government, citizens, business, NGOs media and individual journalists, specialists).

The interview participants stressed the importance of *pro-active attitude of governmental entities* expressed through several roles which often are mixed and combined: partners, educators, and supporters. The first role the governmental entities can assume is one of partners. The experts stated the need of pro-active governmental officials which are ready to take responsibility and develop the project together (*R4: "The first thing needed in government and public administration is a person with enough knowledge, understanding and importance in order to push the project forward. It does not mean involvement of a president or a minister but refers to a charismatic person").* Such notion refers to the government as equal partner in creating public value. The governments can collaborate by contributing resources in form of data, information, know-how, etc. The experts noted that historically the initiators of ICT-enabled platforms and other types of civic initiatives needed only official support of the governmental institutions with no further interference within design and management process (*R4: "Looking from a historical perspective, the organizations required only passive role from governments. Empower and let it be <…> If there is a need for changes in legislative system, maybe more involvement was needed. The governments needed to be coordinators of the marketplace, allowing to operate and not to disturb"*). The relationships are changing however and initiators of the projects considered it necessary to include governmental entities and officials in designing civic technologies and offline initiatives (*R4: "The first thing we need to do as advocates of change is to speak with someone in government"*). In some cases, the activity of civic platforms would be invalid and void without the cooperation with governmental organizations and the resources they can offer (*R7: "If there would be no cooperation with the Police and Chief Electoral Committee we would not be able to carry on with our activities. If they would not perceive our information as a valid source, there would be no point in carrying on"*).

The experts agreed that the governmental entities often do not have the capacity and competent staff to employ the tools, open up the data and processes and be contributing actors. More often than not, the passive stance of governmental organizations is influenced by the prevailing opinion that no one is interested in the input (e.g. data, know-how) they can provide (*R4:*

*"Eternal discussion. The government is saying: come, ask and take. I don't think that Lithuanian government is ill-intentioned or close-minded. They just think that if someone needs something – they will come and ask. And the institution will provide the data and will participate"*). In this case, the experts suggest that governmental entities should be supportive and simply present in the discourse formulating the solutions to prevailing social challenges (*R1: "Governmental stakeholders by being present in the processes of citizens contributing their time, skills and thinking to tackle societal challenges are in a beneficial position to design and implement policies which meet the needs of the citizens that they serve"*). However, when developing the ICT-enabled tools and co-creative initiatives, the attitude of governmental entities varies (*R7: "It does depend on human factors. The candidates, officials, party members from different municipalities or political parties have different opinions towards organizations like ours"*) but tends to have positive outlook (*R2: "There are few of municipalities with limited interest. But not a majority"; R3: "The attitude is positive. This is declared officially by everyone. But the reality is nuanced"*).

The citizens in most cases need to be thought how to participate and what benefits active participation can bring. Hence, the local and national governments have to assume a role of educators in order to encourage citizens and other members of civil society to contribute (*R2: "The public sector and its institutions need to make efforts in order to show citizens that their voice is important, the opinions are valid and needed. Habit must be formed"*). By participating in partnerships with civic tech initiatives the governmental entities can use it as an opportunity to learn themselves too (*R2: "There were several municipalities that asked questions on how to improve their processes. They did not think of opening the processes themselves. And did not knew the significance of it"*). Therefore, the value can be co-created for all involved parties. The experts, however, report that governments are not keen to utilize the value offered by civil society organizations and online platforms (*R5: "Government institutions could use more of the outputs we are creating. But are usually reluctant due to prevailing opinion that they know better"*).

Discussion on the governmental entities and their role in enabling co-creation of public value, highlighted the lack of transparency, openness and engagement (*R6: "The leadership in private and public sectors contrast based on differing obligations. Public leaders should translate the ideas of transparency, accountability and engagement into technological design and project implementation"*). The need for openness was expressed through discussion on open governmental data. Interview participants pointed to the need for Lithuanian public sector to be more open (R7: "*We talk with the Central Election Committee, encourage them to publish the data, especially the data on the voter priorities. These data are great. You add certain mechanisms, algorithms and you can see everything. You can provide and explain the data to the citizens <…> this is one of the examples of us pushing the public sector to be more open*", R4: "*If we orient our discussion to Lithuania, it is crucial for the government to publish the data. This is a huge problem in Lithuania and needs to be solved right away*", R2: "*You cannot just take, scrape the data. You have to sign contracts allowing to collect the information. This is a problem of open data. In Lithuania the situation is especially sad*"). However, the political structures are mostly passive in opening the data and wait for the civil society to be more active (R4: "*Eternal discussion. The government is saying: we are not hiding anything – come and get it. And, actually, you can do that. The Lithuanian government officials are not closed-minded or bad-intentioned. But they think that if someone needs something, they will come and ask themselves*").

The governmental organizations are often in very vague positions where they do not know the demand-supply ration: do they have to encourage citizens and will the society use the tools and participate (R4: "*It is unclear who should take the first step. Does the government have to encourage everyone? Or the government only has to respond to the civic initiatives? Actually, the demand from civic society for government to act is minimal*"). The responsible officials in some cases do not know what the open data are (R2: "*Sometimes when you talk with public officials, they do not know what open data is*"). However, there are some exceptions – Vilnius City municipality is starting to be very open, again due to leadership of certain personalities (R2: "*Vilnius municipality has made an enormous progress in terms of openness. Povilas Poderskis made it happen <...> but this is a rare example. And only on the local level*"). With the provision of open data there is a greater chance in receiving innovative solutions for better government services, more active participation of society, etc. (R4: "*If the data would be open, then the potential for innovation to happen would be increased. There is a chance then, that one afternoon a group of active citizens will gather, look at the data, the issues, code a bit and will see an interesting solution, a tool*").

The experts provided some international examples where the pro-active actions of the governmental organizations proved to be very effective in fostering the civic society and engagement. Ukrainian example of opening the public procurement procedures was the most prominent example (R4: "*There exists an actual case in Ukraine <…> new system for public procurement, which made absolutely all data open. The government was pro-active after the revolution with the lead of Abramavičius as a minister. He started the reform. They started to invest heavily into non-governmental sector in the hopes they will help to monitor the procurement processes <…> now we can see that after two years of existence the programme allows to save roughly fourteen percent of the expenses. Which is a huge amount when you think about the size of the country*"). This case study again shows the importance of pro-active stance of government and the leader which can carry on the project and promote it (R4: "*With such changes like in Ukraine, when the government not only opens the data and waits for the civic society to react but actively create strategies for public involvement, platform creation, inclusion of non-governmental entities and public sector – the results are astonishing*").

As citizens are often at the heart of civic tech platforms and tools (with few exceptions of B2G, peer-to-peer platforms), the roles they have in the processes are discussed extensively. The interview participants mostly focused on citizens as *end-users* or *contributors* and not the *initiators* of the projects. When designing new ICT-enabled tools, the citizens should play a vital role by contributing their ideas and explaining what exactly is nor working and needs fixing (*R4: "You collect information from users and citizens and transform them into design solutions. If you start with the end-users than the questions of empowerment are non-existent"*). According to the experts, the initiators of the platforms call for pro-active role of citizens which can be expressed through decision-making and learning when using the established tools. The citizens need to be the owners of their environment and the issues it faces (*R2: "We want for the city habitants to be the owners of their city. Not the passive onlookers. But the active decision-makers*"). By the use of platforms, the citizens can come to easier decision-making and make informed choices about the important issues (*R4: "By creating our tool, we try to put this idea to the heads of people that one needs to think about*

*their options and consequences before voting").* The second important role which can be assumed by citizens by using the platforms is one of learner. The interview participants conclude that the society needs to learn how to be active and how to express their opinions (*R2: "It is easier said than done – to be active, good citizen. But people often do not know how the money is used, how the decisions in government are made. One needs to learn to be a citizen. It is not a natural capacity"; R7: "The citizens need to learn to identify corruption, be conscious, understand the importance and be involved").*

Interview participant pointed to the weak civil society in Lithuania and reasons underlying such situation. Firstly, the concept of digital divide was discussed. The interview participants suggest that ICT-enabled platforms are oriented towards youth with higher skills in computer literacy (*R2: "If you create IT tools, than your orientation is towards younger people"; R7: "Based on our experience, the majority of people using the platform are young people").* Such approach inequalities because the information and knowledge reaches only those who have access to online tools and know how to use them (*R4: "When you promote Internet and related tools, you, in essence, reach only those with the Internet connection"*). To communicate with other groups of society offline tools are often selected instead (*R4: "We work using methods allowing to disseminate information both to the elite of the society and other people"; R2: "If we want to reach other groups of people, non-Internet users, we drive to the municipalities, do consultations in the libraries, employ non-IT solutions and eye-to-eye contact").* The platforms will not and cannot replace live communication and engagement efforts (*R5: "In my understanding, virtual and digital technologies will never replace live communication. It is just a supplement. Additional opportunities"*). However, ICT enabled tools can be a great additional way to get the message through and provide information in new and exciting ways (*R2: "IT tools are wonderful in terms of containing and maintaining huge amounts of interactive information. You do not need to travel to get that information. It is accessible to everyone. I cannot imagine our organizational, platform activities without such tools").* Another interesting point is that the citizens often do not feel safe to report issues and engage in platform activities due to limited anonymity and whistle-blower protection in the country (*R2: "People are afraid, they do not report the issues due to limited anonymity and source protection. And the municipalities know and agree with such limitations"*). When discussing what could improve the civic participation, the interview participants highlighted the need for education of the society (*R2: "You need to learn to be active citizen. This is a learned skill. Not a natural social behavior"*, R7: "*Education and conscious society*").

The role of non-profit actors in the ecosystem was expressed through discussion on partnerships between NGO-initiated Civic Tech platforms. Interview participants expressed reservations regarding lack of collaboration between NGOs in different fields employing ICT tools (*R1: "Non-profits keep building their individual tools instead of engaging with their networks and similar initiatives in exploring ways to solve social problems"*).

The business organizations have a dual role based on the insights of the interview participants. Firstly, the businesses are expected to be the leaders and illustrations on how to utilize ICT tools and open data provided by governments, municipalities or other public institutions. The businesses are not expected to make society better without gain (*R4: "I am one hundred percent supporting the income-oriented stance of businesses. I do not think businesses should*

*work for free or on charitable-basis"*) but their pursuit of profit by utilizing civic tech tools can be a great example for non-governmental organizations and individuals on how such tools can be used and be useful (*R4: "The role of business is important because they can show how to utilize the data in pursuit of economic gain. Show that it could be a valuable resource. There are such examples in Lithuania like PlaceILive.com"*). Business entities operate based on different goals, hence developers of Civic Technologies have opportunities to learn how to leverage interactions for more than a single purpose. Business organizations, can also be supporters of such initiatives in reaching platform goals. They can provide financial (e.g. offer funding), human (e.g. pay their IT staff for coding the platforms) or other types of resources support can be expressed through financial. This can be considered as a form of corporate social responsibility (*R4: "They can do this in the framework of their corporate social responsibility framework. But the businesses should not be burdened with the responsibility to save the country"*).

Media and individual journalists were mentioned by several interviewed experts. The journalist and media organizations are considered to be partners of platforms and message-forwarders (*R5: "Media wants to collaborate and often ask for the contacts and content"*). However, limited reaction of media readers to the content on civic tech platforms leads to scarce reporting (*R7: "We have good relationships with the media. But when it comes to reporting the outcomes of our initiative the limited reaction and readership often limits the demand for information we can provide"*). The experts suggest it is due to the systemic flaws of media business based on clicks and preferences of the masses (*R4: "They have to earn for bread. Maybe if you are the best in the field you can report on transparency and your name will attract the mases. But if you are second best – then no one is interested. You have to spend a lot of time when analyzing, visualizing and preparing the data. So the media often resorts to more banal, easier content"*).

Other group of actors – specialists – were mentioned by the experts but their role was not discussed in-depth. The specialists group consists of bloggers (*R3: "I was expecting that the bloggers will help to promote the platform and push it forward to the masses. But a lot of problems occurred. I did not manage to persuade them"*) and programmers/hackers (*R7: "We do have several enthusiastic hackers who are observing the elections. They are online from 4 a.m. and observed the e-processes"*).

**Table 12:** *The Actors and their Roles Identified by Experts during Interviews*

| Public sector | Citizens | Private sector | NGOs | Media | Specialists |
|---|---|---|---|---|---|
| Partners | Users | Initiators (example setters) | Partners (shares insights) | Partners (forwards the message) | Partners (forwards the message) |
| Educators | Initiators | Supporters (Corporate social responsibility) | Initiators | | |
| Supporters | Partners (contributors) | | | | |
| Enablers | | | | | |

**Source:** *developed by author (2018)*

The results of the study on the actors and their roles are summarized in Table 12 "The Actors and their Roles Identified by Experts during Interviews" above. The list of the actors and their roles in enabling co-creative ecosystems is not exhaustive and additional elements will be added during further stages of the empirical investigations. However, certain patterns are apparent. Only citizens are identified as users of Civic Technologies excluding other stakeholder groups from exploiting the value propositions the platforms create. Variety of stakeholders is needed when aiming to co-create public value, hence the actors involved should be empowered to perceive more active roles.

*Content of ICT-Enabled Public Value Co-Creation*

This section will detail the results of qualitative study on the content of the Civic Technologies. Based on the conceptual analysis framework presented in Section 2.1, the importance of social aspects of technologies is discussed followed by the platform goals identified by the experts and deliberations of the functions of the content. Organizations and individuals aiming for social change are keen to create tools and platforms (R4: "*Everyone has such tools. They are exciting and fun. We create such tools too*"). However, not all of them succeed and reach the goals they planned (R5: "*We were expecting more action in the virtual platform, more communication, more bottom-up projects and solutions. We had such illusions but they failed"*). The platforms struggle with the low rates of community engagement (R5: "*we have a community, a lot of people. But we do not know how to engage with them. How to involve them into action*"). This could be explained by the lack of focus on the content and user needs when designing the initiatives e.g. "*We have such a fancy, sophisticated solution and are waiting for the demand in the society*" (R3). According to the expert interviews, civic tech movements and civic society organizations focus too much on the ICT side of co-creative processes (R4: "*The movement is lost in the creation of tools. Most of the platforms do not know how to engage the users. But if you understand the process correctly and start with the users, the problems are much less significant*"). This can be exemplified by the popularity of hackathons organized by municipalities in various countries and Lithuania too. Governments often overemphasize the role of hackathons and other temporary but very popular events encouraging citizens to create ICT tools for better governance (R4: "*This is a crucial mistake by governments and public institutions. Hackathons are the tools of education. It is not a way to create sustainable tools <…> in hackathon you invite people to experiment, to 'feel' the data and the institutional support. You kindle ideas in hackathons"*). Such events cannot bring more accountability and transparency to governmental organizations due to lack of resources and commitment of the participants (R4: "*Hackathons are positioned, advertised as a way to create tools that will bring more transparency and accountability. It is impossible in such short term"*).

Some platforms represented by experts failed (R5: "*We have tools programmed. But nothing is happening online, zero activity*") thus there are unified expert suggestions that the focus should shift away from technologies to more social perspective (R4: "*We are concentrating now on purifying ideas. The technology is no everything. It is not logical*"; R5: "*Content before technology. Before developing platform and systems, one needs to evaluate his knowledge on the processes he wants to improve. Can you explain a process in a simplified manner before you build*

*the system to contain the process?"*). When designing new platforms, the experts suggests not to start with the technologies (R4: "*There is no need to start a solution with the technologies. Everyone knows that, but it is really hard to implement*"). There are many other steps to take ahead such as assess the need, focus on your users and problems they experience, preferences they have and the context (R2: "*manoseimas.lt are trying to simplify and explain what is happening on a national level to a commoner, in a language he will understand <…> There is no need to create just an IT solution. You always have to think about the problem you are trying to solve*"; R1: "*There has to be a pain point, urgent need for a person to actually use the tool*"). During interview questions on the goals of the platforms, experts identified seven interrelated goals:

– Disseminate the information *(R2: "With manoseimas.lt we wanted to show what the elected officials were doing in the parliament, how they voted, etc.");*
– Facilitate the communication *(R2: "We are the intermediaries <…> with the help of IT solutions we try to bring nearer the decision-makers to the people and vice-versa in interactive way")*
– Empower the users *(R2: "We want to empower the habitants of Vilnius. To make them feel the owners of their city. From passive spectators to active decision-makers"; R1: "Platforms empower citizens to become civic actors themselves rather than to use them to persuade others to become active for them"; R7: "It enables citizens to make their voices heard, reveal injustice on a new scale and challenge their duty bearers"; R5: "A trend we've noticed in nonprofit civic tech is the rise in tools that lower the barrier to entry to become better informed and take action in politics, whether local or at the national level");*
– Collect the information *(R7: "During the election period we mediate between institutions and citizens, we collect the information via phone, Facebook or using our online platform. Most of the information comes via platform");*
– Simplify the processes *(R6: "It boils down complex, nuanced or difficult-to-understood process/dataset into a simplistic analysis for the citizens or other actors");*
– Educate the public *(R4: "When discussing citizenship and civic participation – education is of key importance. Even though your platform does not become a part of citizen's everyday life – you and ideas you spread become known to them, you start to exist in their universe");*
– Influence the governmental institutions *(R2: "When you discuss with them, they understand that the problem exists, that people are afraid to report issues. The municipalities are willing to change, to make it better. An opportunity for contact and collaboration occurs via tool you offer").*

Content of the platforms serves several functions: connects actors in collaborations and attracts the end-users. These two approaches to context will be discussed in more detail. Firstly, related goals of the Civic Tech platforms predetermine collaboration between organizations. For example, there is a cluster of Civic Tech platforms in Lithuania oriented towards elections (i.e. transparency, informed decision-making, communication with electives) which coordinates their actions and work together to achieve common goals *(R2: "We collaborate with other platforms, your organizations who also work with the elections and voting. There were meetings and debated on how to integrate the tools for citizens to see the fuller view and get more benefits", R7: "Everyone in this field – "Transparency International", "Žinau, ką renku", "Mano*

balsas", "Seimo darbai", "Man ne dzin" – are friends and partners"). This applies to international partnerships too (*R7: "We have international observers every election season and collaborate with the organizations working in the field like ESBO"; R7: "We initiated and planned to work with similar organizations internationally but did not receive the funding"*). Interview participants emphasize the importance of such collaboration and benefits it brings (*R2: "I think it makes the platform stronger. We are not separate islands and offer a spectrum of tools <…> it is cool that I can go to the and exchange the knowledge, experience"; R7: "It is beneficial for all of us"*). However, not all initiatives have to collaborate. It all depends on the content and the goals of the initiatives and initiators (*R2: "There is no need and purpose to collaborate on every single tool one creates. If the thematic content matches – then collaboration is needed"*).

The second approach, attraction of end-users via proper content focuses on the demand in the society. The experts suggest that the success of the tools depends mostly on the demand in the society. If there is no demand – it will be complicated to involve users and show why the tool is useful (*R4: "Firstly, one needs to think if a person has a need, desire to participate? If the need exists – then the tool is necessary. The tools themselves cannot make participation happen. In my opinion, only small percentage of people would use the tool just because it exists"*). The education and introduction of tools to wider audiences can lead to more interest in public issues (*R4: "That need combined with certain forms of education could be created and promoted. You could promote the usage by showing how it works"*). Meaning that the content of platforms exists mostly on its own and does not appear in media news or on users newsfeed in social network (*R4: "Another important aspect is contextualization. Often such initiatives operate in isolation from public matters. You read, watch the news and the tools are never mentioned"*).

*Processes in Co-Creating Public Value*

The interviews also allowed to broader the discussion on the features of ICT-enabled public value co-creation. Three interrelated groups of features were established – planning, implementation, and evaluation – during the content analysis process based on the phases of civic technology project cycle (See Table 13 "Reoccurring Discussion Themes on Features of Civic Technology Management Processes" below). Planning group included deliberations on user-centricity and targeting before designing tools for stakeholder engagement. Second group discusses the features of organizational and support systems needed when implementing sustainable civic technology platforms. The last group discusses how the outcomes of the platforms are evaluated and how platform initiators are receiving and integrating feedback from their users.

**Table 13:** *Reoccurring Discussion Themes on Features of Civic Technology Management Processes*

| Planning | Implementation | Evaluation |
|---|---|---|
| User-centricity<br>Collaboration with stakeholders<br>Targeting<br>Familiarize with existing norms and structure | Learning curve<br>Civic leaders<br>Support system<br>Formal commitment<br>Distribution of responsibilities<br>Competencies of initiators | Measuring results<br>Receiving feedback<br>Integrating feedback |

**Source:** *developed by author (2018)*

When planning to implement co-creative initiative enabled by ICT, the experts focused on involvement of various groups of actors in design of initiative i.e. governmental entities (*R7: "Government is not government. It is people. Under this logic, the first step for the advocates of change is to talk with someone from government"*). Collaboration with diverse actors allows to avoid biases and increase the quality of the platform (*R2: "When creating the tools, we meet with the economists, sociologists, specialists in culture, social politics <…> the process is not isolated to one person. Because then the tool would provide only his perspective. Those people advise you and allow you to avoid prejudice and preconceptions"*). The central role of end-users is key according to the interview participants (*R1: "Involvement of communities in implementation is crucial part of development of accessible technologies. One should not assume he knows what people need – otherwise, one risks to develop inefficient solutions"*). Platform initiators, however, instead on focusing on user needs and including them in design of the platform, pursue their own agenda and operate under assumptions about their users (*R1: "The initiators mostly focus on what they want platform users to do"*). Interview participants suggests that shift in mindset is needed for platform initiators in terms of stepping out of their contexts and presumptions about the citizens and other stakeholder groups (*R1: "We are not doing civic initiatives right, if we are not stepping out of contexts of our organizations and into the contexts of the communities and citizens"; R6: "Community-driven technologies are built to directly respond to the needs, ideas, and wants of those they're intended to benefit"*). Experts suggests to put less emphasis on the technological side and focus on user needs (*R4: "The tools should be created based on user needs <…> we meet with them, find out their demands. We search for monitoring indicators which could correspond to the needs of those people <…> Technology is the last step"*).

The user targeting was the next discussion point on the implementation features. The interview participants provided insights on how the platforms and their initiators are reaching out to their target groups. Several key ways can be listed: through friends (*R3: "During the initial phases we reached out through friends and acquaintances-to- acquaintances"*), through initiatives and projects (R3: "*Now we have a new method – through initiatives, where users invite others themselves to support, collect the signatures*"), through collaborative networks, youth organizations in smaller regions of the country (*R2: "We try to promote the initiative through networks, youth organizations based on similar goals and content"*), through social media networks (*R2: "We filter Facebook where to focus our attention and to get attention of people in other places"*). The need for targeting has been expressed through two very different perspectives. The first perspective, suggests that targeting is a way to pursue organizational goals with limited financial and organizational resources (*R1: "You always how you would achieve maximum result with the resources you have. We focus on the people under 40"*). Such approach has a downside –by excluding some users out of platforms scope, one might limit their accessibility to important information (R4: "*The questions is, if you are creating technologies for certain electorate – aren't you influencing the outcome of elections? Don't you create an advantage for the electorate of liberals or conservatives by providing the knowledge and information? How to create it in a way to reach electorate of the social democrats. They aren't bad; they are just the other side of the balance*"). This limitation leads to second approach to targeting – is the initiators start with the user-centricity the

need for inclusion and empowerment of masses or certain groups can be eliminated – *R4: "When you convert the information collected on the users and citizens into design solutions, then the problem of empowerment does not exist. Because you start with the users".* Either way, the experts have a unified opinion on the scale of initiatives, large-scale platforms are incredibly hard to design and implement which is exemplified by variety of failed participative innovations worldwide (*R6: "You should not imagine million users. No platform scales so fast. Try to create tool for one user with immediate benefits and work from there"*).

Also, the experts argued that platform initiators should recognize existing structures, systems and services in the public sector before pursuing their goals (*R1: "Firstly, we should familiarize with the existing laws, norms and infrastructures in the country <…> the balance between creation of new civic systems and existing structures will be the central challenge in leveraging ICT tools to achieve social goals"; "R5: Consideration for the regulatory frameworks as a basis for civic initiatives is essential"*). Civic technologies are implemented at the crossroad of changing structures and traditional norms, hence, the knowledge of traditional structures and ways of operation is vital (*R1: "Government has its own lingo, jargon and can be incredibly complex which can also make it an intimidating field. However, government has some extra layers of difficulty"*).

Reoccurring theme in the interviews was the importance of civic leaders and community coaches in driving the initiatives (*R5: "There is a need for community coacher. Someone has to be the first to show the way"*). The champions can come from various fields: governmental structures (*R4: "The first thing needed in government and public administration is a person with enough knowledge, understanding and importance in order to push the project forward. It does not mean involvement of a president or a minister but refers to a charismatic person"*) or media personalities *(R4: "A. Tapinas, Š.Černiauskas").* The number of such leaders does not have to be high but they have to carry the message to broader audiences (*R4: "Every country would be sufficient with a certain number of leaders, who work with open data. There is no need for thousands of young people to be involved in transparency projects <…> I think Lithuania would be sufficient with 10-15 professionals and public people who follow politics, public finances and translate the findings to the public"*). In such way, the opinion leaders connect the public to important issues (*R4: "There is no need to wait for an elderly lady from Šiauliai to come to your platform. She could get the same information from such leader in understandable format"*). Existence of a person who can lead the project can benefit both the platform and the champion (*R1: "Such person 'takes' a topic in the governmental affairs. He or she has understanding how to promote the idea and what he will 'win' in the end"*).

Another important feature in discussion on implementation of Civic Technologies is the learning curve. Several approaches to learning have been identified: international and local experience, interface testing and failed projects. The interview participants suggest to review local and national experience in the field when implementing the projects (*R1: "It is essential, to make sure you know what's already been done in the field. Where does your platform fit? Where value can be added? There are plenty of untapped opportunities"*). International platforms, active non-governmental organizations are a source of inspiration and know-how (R2: *"We look up international examples, look at the colleagues, other non-*

*governmental organizations. For example, the project „Parašyk jiems” was first developed in UK. We wanted to move good practice here*"). The tools do not have to be exactly the same, but some aspects are adaptable to the context civic platform is working in (R1: "*We always look at the tools created outside Lithuania. We do not necessary apply everything. But certainly use some elements. If you look only at your tool, then you will improve at much slower pace*"). The other approach to learning is expresses through interface design and testing in preparing and improving the tools (R2: "*You learn by creating the tools. By analyzing the usage statistics, the people visiting your platform. We now work with user design consultants advising us what could attract user attention online. They help us a lot with design, colors, simplifying the processes*"). The interview participants also pointed out the importance of failed projects in contributing to the learning curve of platform initiators (R2: "*We created variety of tools. Some were successful, others – not. You learn from failed projects, invest into successful ones, improve them*").

Several other features of co-creative processes were mentioned by interview participants but on limited extent: leadership (*R5: "Hierarchy is needed. It does not have to be complex. But at least two levels are needed – leader and others*"; R5: "*To attract a good person with experience in maintaining communities is one of the key issues. Not were to get the financial support*"); formal commitment (*R4: "If there is need for continuity, then formal commitment of actors is needed*"); support system (*R6: "Digital inclusion tools should have support systems, ecologies – institutions, informal groups sharing similar social normal and practices*"), competencies of initiators (*R5: "Technology is not a limiting factor <…> people and their skills, competencies are more important*, R7: "*Human, social factors are key in platform management*"), availability of volunteers (R5: "*We have a specific problem – the energy around this project is positive, but we cannot find good ways to attract volunteers, to make them stay long-term*") and distribution of responsibility within projects (R1: "*The platforms often end up abandoned with outdated content. Before starting a project, ask "Who's going to update it regularly?" and "Why will someone read it?*").

The participants pointed out that the public awareness of various platforms in Lithuania is very limited (R2: "*The tools are known only to 1-2% of population*", R7: "*We can see that 1-3% of population comes to our platform, get familiar with the message we spread*"). But the number of users is not always the best way to evaluate projects. Some of them only need to involve certain target groups to achieve their goals (R4: "*It is crucial to know and understand your target groups*"). For example, Stirna.info media transparency project targets journalists and journalism students which could forward the message further (R2: "*With stirna.info we collaborated with the Faculty of Communication and Institute of Journalisms because you always have to choose your target audiences. If the professor tells them about your platform and the information they can find, if it is included in the programme – students will remember it in their future careers <…> and this is our goal, for students to know. It would be nice for other to know the tool too, but you have to wisely distribute your resources*").

The expert opinions on measuring results of the platforms differ. Part of them highlighted the need and importance of tracking the outcomes (R2: "*We always evaluate and observe the traffic <…> if somedays the traffic is lower, we analyze the events that day, try to find the reasons why. If the traffic is higher than usual, we also try to find the underlying*

reasons – maybe some thought leader shared a link to our platform, etc."; R7: "*Of course we measure the outcomes. We publish the activity and financial reports publicly with conclusions and recommendations on the election process")*. Other experts were vague about the measurement of results and specified that is challenging to find indicators to calculate the social outcomes (R5: "*We have not tried to measure the result. It is hard to isolate the effect. We try to think about the indicators showing the outcomes of our projects – like size of diaspora, direct investments, return of talent and professionals to Lithuania;* R3: "*The measure of success in our case is ideas generated in our platform converted to legislation in parliament. At least few per year"*). The interviewed experts listed a number of ways how they receive and measure feedback on civic tech platforms, their usage and content. Two types of feedback can be identified in the context of co-creative initiatives: feedback provided to users and feedback received from users. The participants discussed the first type in more detail. The participants indicated that the feedback for users, especially citizens, is an important factor (R7: "*If that information reaches the law enforcement structures, then we give feedback to the person who reported the issue. If the information was less valuable – we still send generic thank you")* and can influence their recurrent usage of the platform (R2: "*parašykJiems.lt was less popular here than in other countries because when a citizen wrote to a public official – more often than not, he did not get the response or receives only partial information <…> it disappoints the person and he will not write again")*. But the interest in public reports on the outcomes of certain initiatives is mostly limited and the initiators orient their reports more to governmental institutions than citizens (R7: "*The feedback is not for the general society but for the governmental institutions. In 2015 we tried to distribute information on the elections for citizen, organized an event but the interest was very limited")*. Feedback from the users in online platforms is usually assessed by evaluating website statistics (e.g. data provided by Google analytics). This way the initiators evaluate how well the tools are designed and what changes need to be made (R2: "*We always look at the user traffic. If we have a test on the platform we observe if the test was completed <...> if we can see that most people leave after answering two questions, then we make the changes. We always look back and try to assess what is happening and why")*.

### 3.1.2. The Results of the Study on International Civic Technology Platforms' Content

The research study aimed at elaboration of content element discussed in conceptual framework. The content dimension includes deliberations on the goals and objectives of the actors involved. Knowing why individuals and organizations build platforms, and why citizens participate in them, can guide the organizations and civic leaders in fostering ICT-enabled platforms. During the quantitative content coding, three main content categories where established: the goals of the civic technology, the end-users (platform orientation) and the tools used to achieve the goal. The categories and subcategories identified are illustrated in Figure 11 "Content Analysis Coding Categories" below. Further in this section the categories will be reviewed in detail and analyzed in comparison of each other.

**Figure 11:** *The Content Analysis Coding Categories*
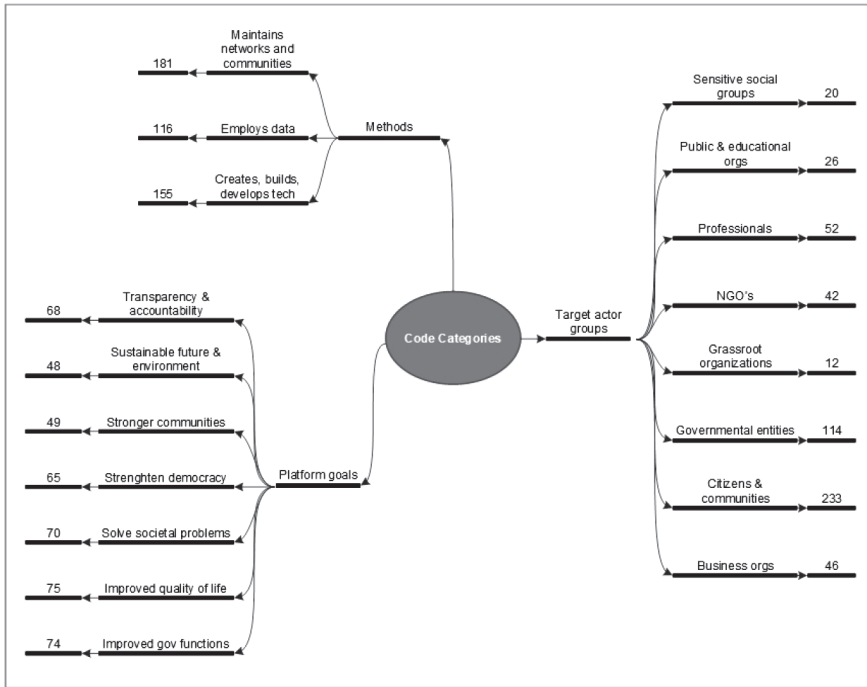
The analysis of platform goals allowed to deepen the insights on the goals the platforms are striving to achieve in the society. The first group – improved government functions – refers to digitalization of public services, improved organizational capabilities of public institutions and improved public decision-making processes. Second group – improved quality of life – refers to civic technologies aiming at improving day-to-day activities of citizens e.g. healthcare services, improve education, make accessibility a priority. The third group – solve societal problems – refers to platforms aiming at tackling complex challenges in societies (e.g., closing the gender gap, sexual harassment) and increasing awareness about such issues. Platforms oriented towards strengthening democracy provide tools to improve voting, civic engagement and freedom of expression in the societies. The platforms aiming at the creation of stronger communities provide means create networks, online communities and mobilize them. Sustainable future and environment platforms are oriented to protecting the environment by creating tools on sustainable transportation, conscious shopping or maximization of circularity of digital devices. The last group – transparency and accountability – refers to platforms making government data open, accessible and understandable to transform and improve governance. The distribution of platforms in the sample by goals is equal, with slightly lower numbers of platforms oriented towards stronger communities and sustainable future.

**Table 14:** *Structured Goals of International Civic Technology Platforms*

| Category | # | Illustrative quotes |
|---|---|---|
| Improved governmental functions | 74 platforms | *"<...> helps cities make sense of their data <...>" (Cityzenith)* <br> *"<...> fully integrated, Web-based platform for government affairs professionals who need to accurately identify congressional staff, monitor activity on Capitol Hill, and engage with members and staff <...>" (LegiStorm Pro)* <br> *"<...> offers the only complete true cloud solution that can meet all operations management needs for government <...>" (BasicGov)* |
| Improved quality of life | 75 platforms | *"<...> improves education for millions of students and educators through educational resources powered by cloud technology <...>" (Boundless)* <br> *"<...> makes life easier for people with a visual impairment by connecting them with sighted helpers through a smartphone app <...>" (Be My Eyes)* <br> *"<...> mission is to make cities better places to live <...>" (Metropia)* |
| Solve societal problems | 70 platforms | *"<...> designed to provide social organizations with the pro bono data science innovation team they need to tackle critical humanitarian issues in the fields of education, poverty, health, human rights, the environment and cities <...>" (Code for Australia)* <br> *"<...> enables society to collaborate and solve the most urgent challenges of our time <...>" (Babele)* <br> *"<...> believes in technology's huge potential to empower activists and humanitarians to create lasting and impactful social change <...>" (Hack4Impact)* |
| Strengthen democracy | 65 platforms | *"<...> aim at exploring new and exciting ways of enhancing population involvement in society, helping people changing their own tomorrow <...>" (Changetomorrow)* <br> *"<...> Our mission is to strengthen the democratic process by making it easier for people to get involved and implement solutions that improve their communities <...>" (Civicnomics)* <br> *"<...> location-based consultation platform that solves the problem of how to engage with people online within specific geographical boundaries <...>" (PlaceSpeak)* |
| Stronger communities | 49 platforms | *"<...> provide the means for communities to come together and drive positive change in their area <...>" (Civicrowd)* <br> *"<...> empowers communities in need by creating scalable technology solutions <...>" (Benetech)* |
| Sustainable future & environment | 48 platforms | *"<...> allows socially conscious users to scan bar codes as they prowl store aisles and determine whether a product's maker has any marks on its record they should consider when making a purchase <...>" (Buycott)* <br> *"<...> the only App for parking space sharing that features a physical wireless sensor providing its users reliable check-in/check-out control <...>" (PickParking)* <br> *"<...> technology-driven nonprofit with a mission to protect the environment by making more of it visible <...>" (SkyTruth)* |
| Transparency & accountability | 68 platforms | "<...> mission is to spur corporations to be transparent and responsive <...>" (WikiRate) <br> "<...> Upload, Visualize, Analyse public budget and spending data <...>" (OpenBudget.eu) <br> "<...> We bridge the digital divide between the public and government data, tapping the potential of open data to help you cope, communicate, collaborate, and grow <..>" (Vizalytics) |

**Source:** *developed by author (2017)*

Another analysis dimension, methods, allows evaluating the platforms based on the methods they are employing to reach their goals. Three groups of methods were established – development of technologies (155), employment of data (116) and maintenance of networks and communities (181). The first group refers to the development of software, mobile applications, and other technological solutions. The second group relates to employment of data by the collection of information, ideas, and content, data exploration, and management, the creation of databases and publishing of critical data in simplified formats for wider audiences. The last group refers to the maintenance of networks and communities through tools allowing to build alliances based on shared goals, communities of practice, the connection between different societal groups through digital means and networks aimed at advocacy and support.

The third dimension refers to the target groups identified during the content analysis of international civic technology platforms. The distribution of target groups in the sample is illustrated in Table 15 "Target Groups of International Civic Technology Platforms" below. What the table shows is that the platforms are mostly oriented towards citizens and governmental organizations and rarely include other relevant groups in the platform activities. The same distribution of target groups can be seen in the analysis of Lithuanian civic tech platforms.

**Table 15:** *The Target Groups of International Civic Technology Platforms*

| Target groups | # | Illustrative Quotes |
|---|---|---|
| Business organizations | 46 mentions | "enterprises", "private enterprises", "entrepreneurs", "funders", "property owners", "SME's" |
| Citizens & communities | 233 mentions | "civil society", "communities", "commuters", "consumers", "crowd", "households", "families", "good people", "individuals", "people", "real people", "residents", "the public", "voters", "anyone interested" |
| Governmental entities | 114 mentions | "cities", "municipalities", "local government institutions", "institutions", "parliament", "law enforcement institutions", "government" |
| Grassroot organizations | 12 mentions | "advocates", "local activists", "grassroot movements" |
| NGO's | 42 mentions | "advocacy organizations", "change makers", "civic organizations", "non-profit professionals", "social organizations", "social movements", "watchdogging organizations" |
| Professionals | 52 mentions | "artists", "layers", "tech talent", "experts", "creative practitioners", "programmers", "IT specialists", "technologists" |
| Public & educational organizations | 26 mentions | "colleges", "universities", "cultural institutions", "schools", "libraries" |
| Sensitive social groups | 20 mentions | "disabled", "people in need", "people with visual impairment", "wheelchair users, "older people" |

**Source:** *developed by author (2018)*

Analysis of the variety of target groups shows that the platforms rarely include more than one group of stakeholders in their activities. This is illustrated in Table 16 "Distribution of Target Groups in the Sample" below, which shows the appearance of the target groups in the platform content.

**Table 16:** *The Distribution of Target Groups in the Sample*

| | Business | Citizens | Gov | Grassroot | NGO's | Prof. | Public | Sensitive |
|---|---|---|---|---|---|---|---|---|
| Business orgs | - | 1 | 1 | 0 | 1 | 0 | 2 | 0 |
| Citizens & communities | 1 | - | 17 | 3 | 6 | 1 | 1 | 1 |
| Governmental entities | 1 | 17 | - | 0 | 1 | 2 | 2 | 1 |
| Grassroot organizations | 0 | 3 | 0 | - | 3 | 0 | 1 | 0 |
| NGO's | 1 | 6 | 1 | 3 | - | 0 | 1 | 1 |
| Professionals (individual) | 0 | 1 | 2 | 0 | 0 | - | 0 | 1 |
| Public & educational orgs | 2 | 1 | 2 | 1 | 1 | 0 | - | 0 |
| Sensitive social groups | 0 | 1 | 1 | 0 | 1 | 1 | 0 | - |

**Source:** *developed by author (2018)*

Comparative analysis of the identified dimensions in the sample is illustrated in Table 17, Table 18 and Table 19 below. The illustrations allow to understand the distribution of platforms in the sample.

**Table 17:** *The Distribution of Platforms in the Sample based on Target Group and Goals Dimensions*

| | Improved gov functions | Improved quality of life | Solve societal problems | Strenghten democracy | Stronger communities | Sustainable future & environment | Transparency & accountability |
|---|---|---|---|---|---|---|---|
| Business orgs | 0 | 0 | 2 | 0 | 2 | 3 | 3 |
| Citizens & communities | 17 | 11 | 12 | 19 | 20 | 9 | 12 |
| Governmental entities | 27 | 6 | 2 | 3 | 5 | 3 | 9 |
| Grassroot organizations | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| NGO's | 1 | 1 | 5 | 3 | 0 | 1 | 1 |
| Professionals (individual) | 0 | 2 | 3 | 1 | 4 | 2 | 1 |
| Public & educational orgs | 0 | 6 | 0 | 0 | 0 | 0 | 1 |
| Sensitive social groups | 0 | 3 | 3 | 0 | 0 | 0 | 0 |

**Source:** *developed by author (2018)*

Table 17 "Distribution of Platforms in the Sample based on Target Group and Goals Dimensions" shows that platforms oriented towards citizens and business organizations represent the widest spectrum of platform goals. International civic technologies geared towards the improvement of life quality and solving social problems include the broadest range of target groups in the content of their platforms.

**Table 18:** *The Distribution of Platforms in the Sample Based on Dimensions of Methods and Goals*

| | Creates tech solutions | Employs data | Maintains networks and communities |
|---|---|---|---|
| Improved gov functions | 11 | 8 | 13 |
| Improved quality of life | 3 | 7 | 14 |
| Solve societal problems | 9 | 2 | 10 |
| Strenghten democracy | 7 | 8 | 8 |
| Stronger communities | 6 | 5 | 9 |
| Sustainable future & environment | 7 | 7 | 2 |
| Transparency & accountability | 3 | 9 | 9 |

**Source:** *developed by author (2018)*

**Table 19:** *The Distribution of Platforms in the Sample Based on Methods and Target Groups Dimensions*

| | Creates tech solutions | Employs data | Maintains networks and communities |
|---|---|---|---|
| Business orgs | 7 | 6 | 4 |
| Citizens & communities | 37 | 22 | 44 |
| Governmental entities | 21 | 13 | 25 |
| Grassroot organizations | 1 | 0 | 1 |
| NGO's | 8 | 6 | 7 |
| Professionals (individual) | 4 | 2 | 16 |
| Public & educational orgs | 2 | 2 | 6 |
| Sensitive social groups | 0 | 2 | 3 |

**Source:** *developed by author (2018)*

Table 18 "Distribution of Platforms in the Sample Based on Dimensions of Methods and Goals" shows that platforms maintaining networks and communities represent the broadest variety of goals. Table 19 "Distribution of Platforms in the Sample Based on Dimensions of Methods and Target Groups" shows citizens are the most represented group in the sample through the perspective of methods applied, followed by governmental institutions.

### 3.1.3. The Results of the Civic Technologies Mapping in Lithuania

The intent of mapping exercise is not to generalize the population of Civic Technologies but to develop an in-depth exploration of the central phenomenon. The goal of most qualitative studies is to provide rich and contextualized understanding of the processes through intense study of particular cases. Following sections provide analysis of qualitative and quantitative data collected on platform activities and outline results on the actor, content and the processes.

*Measuring the Uptake of Civic Technologies*

The metrics collected on platform activity allow to evaluate the scale of the platforms online and the network effect they can achieve. Data were collected on four platform metrics:

media mentions, Google mentions, Facebook Pages likes and duration of the project. The variety of metrics available for measurement required a simplified way to understand the data. Hence, the data were used to compile uptake measurement tool. According to Hendler et al. (2016), the scale of the movement can be measured by observing mainstream media coverage and ongoing interest from the public at large. Mainstream media coverage was measured by media mentions. The interest of the public at large was indicated by noting the number of likes on Facebook and measuring the popularity of the platforms on Google Search.

*Media mentions (M).* Mainstream media coverage was measured by using Google News applet with the platform names as the search keywords (M1). In addition, the number of comments for each media mention was counted and noted (M2). Average of M1 and M2 was calculated as M indicator.

*Facebook page likes (F).* Social Networks like Facebook have a vast scope to engage citizens, primarily youth, in a two-way communication to discuss issues relevant to functioning of our democracy. By clicking 'like' users choose to show their affinity for an organization. Facebook page likes illustrate social endorsement and represents an affiliation with the organization (Bhattacharya, 2014; Vatrapu, 2017).

*Google search (G).* Google search engine was selected due to its wide application in society when searching for information. It provides a large set of results on any area of subject and allows to get universal measuring. To get information on hits the platform gets, the domain name of the platform was used as a search keyword.

*Duration (D).* Start date of the project, end date of the project (if applies) and the duration of the project in years. The duration was evaluated in Q4, 2016.

To calculate the index following procedure was applied: the values for indicators were noted in the data collection template. In the context of this research, the assumption has been made that all variables are of equal value thus the average of each category and assigned values were calculated based on this formula (F+G+M+D)/4 = uptake. Further research (e.g. expert evaluation of indicators) is needed to assign varying values to indicators. The need for proper evaluation procedure is determined by diverse indicators characterizing the analyzed area. Hence, every value of indicators was normalized to combine variables to unified index. This allows to compare the values between different indicators and to pursue complex research. Scientific research applies various normalizations methods based on their limitations and features. Empirical normalization method is applied in building this index. Based on this method the values of indicators will be distributed between 0 and 1 where 0 shows lowest value. However, this method does not allow to evaluate absolute values of indicators. Because of that it is problematic to evaluate if the values of analyzed indicator has climbed over set limits. The formula of normalization method used is provided below. $I_{nit}$ is normalized value of indicator and $I_{it}$ is the value of indicator. max($Ii$) and min($Ii$) reflects highest and lowest values of indicators.

$$I_{n\,it} = \frac{I_{it} - \min(I_i)}{\max(I_i) - \min(I_i)},$$

Summarized results of the uptake measurement are provided in Table 20 "Results of Uptake Index in Lithuanian Civic Tech Platforms" below. Detailed calculations of the uptake index are provided in Annex 6. The lowest amount of Facebook page likes observed

in the sample is 0 (this means that the organization is not present on Facebook) and can be attributed to 19 platforms. The highest amount of likes (21151) was observed in sveikas-vaikas.lt platform. Most searched platform was mesDarom.lt with 151 hits. Lowest count: seimodarbai.lt and TechMap.lt (both got 13 hits). The project with the longest duration is the health care website pincetas.lt. Global Lithuanian leaders have the highest number of media mentions (53) followed by mesDarom.lt (38).

**Table 20:** *The Results of Uptake Index in Lithuanian Civic Tech Platforms*

| Low | | | | | |
|---|---|---|---|---|---|
| Name | Code | Uptake | Name | Code | Uptake |
| RenkuMera.lt | P41 | 0,2 | asLietuvai.lt | P2 | 0,3 |
| AtvirasTeismas.lt | P4 | 0,1 | ZinauKaRenku.lt | P51 | 0,3 |
| Nemasinis.lt | P30 | 0,1 | NamuBendrijos.lt | P29 | 0,3 |
| Eile.lt | P12 | 0,1 | BukSavanoriu.lt | P10 | 0,3 |
| Online initiative „Krašto Pavel-do Gidas" | P20 | 0,1 | Ekologija.lt | P13 | 0,2 |
| JurgioKepure.lt | P17 | 0,1 | Seime.lt | P42 | 0,2 |
| Mobile app "Telše" | P48 | 0,1 | Reitinguok.lt | P40 | 0,2 |
| Code4Vilnius initiative | P11 | 0,1 | SkaidrumoLinija.lt | P44 | 0,2 |
| NVO paslaugų katalogas | P31 | 0,1 | ManoDaktaras.lt | P24 | 0,2 |
| Mobile app "Žaliasis taškas" | P52 | 0,1 | Stirna.info | P45 | 0,2 |
| GIS school initiative | P15 | 0,1 | AukokLaika.lt | P7 | 0,2 |
| ManoKraujas.lt | P25 | 0,1 | FreeData.lt | P14 | 0,2 |
| Be-Ribu.lt | P8 | 0,0 | Online initiative "Kelionės kultūros keliais" | P19 | 0,2 |
| SeimoDarbai.lt | P43 | 0,0 | Mobile app "Pričiupk!" | P39 | 0,2 |
| TechMap.lt | P47 | 0,0 | Mobile app "Tvarkau Vilnių" | P50 | 0,2 |
| Medium | | | High | | |
| Name | Code | Uptake | Name | Code | Uptake |
| KurGyvenu.lt | P21 | 0,4 | Global Lithuanian Leaders Initiative | P16 | 0,8 |
| Peticija.lt | P36 | 0,4 | MesDarom.lt | P27 | 0,8 |
| BeSeselio.lt | P9 | 0,4 | SveikasVaikas.lt | P46 | 0,8 |
| Peticija.com | P35 | 0,4 | ManoBalsas.lt | P23 | 0,7 |
| ManoSeimas.lt | P26 | 0,4 | Aukok.lt | P5 | 0,5 |
| MokuMokescius.lt | P28 | 0,3 | Pincetas.lt | P37 | 0,5 |
| Initiative "Aš už Lietuvą!" | P3 | 0,3 | PamatykLietuvoje.lt | P33 | 0,5 |
| Initiative "Baltosios pirštinės" | P38 | 0,3 | | | |
| KaVeikiaValdzia.lt | P18 | 0,3 | | | |
| Lietuva 2.0 | P22 | 0,3 | | | |
| AukokDaiktus.lt | P6 | 0,3 | | | |
| TrysMilijonai.lt | P49 | 0,3 | | | |
| ParasykJiems.lt | P34 | 0,3 | | | |
| Archmap.lt | P1 | 0,3 | | | |
| Mobile app "Oi, pranešiu!" | P32 | 0,3 | | | |

**Source:** *developed by author (2018)*

There are several limitations with the suggested method for platform uptake evaluation. First, there are no data on the actual page or app visitors available publicly. Availability of such data (especially information on return visitors) could provide a more realistic view of the platform status. Also, each variable has varying significance in calculating the uptake. However, for simplification reasons, it was assumed each variable was of equal value. And finally, the four variables included in calculations alone cannot represent the uptake in the society. Not the whole population uses tools included in calculations, and there are offline factors which could show the significance of the platforms. There are additional indicators that could be measured in further studies when evaluating the uptake of the platforms and initiatives behind them in the society and social media: petitions, digital letters to governmental institutions, Wikipedia analytics, photo sharing, tagging/hashtags analysis, app data analysis and sentiment analysis of the content. Despite these limitations, the uptake calculation method allows to evaluate the full range of platforms based on shared and publicly available indicators and adds a quantitative dimension to otherwise qualitative data.

## The Actors, Roles and ICT-Resources in Civic Technologies

This section provides an overview of data collected on the actors directly and directly involved in co-creating public value through civic technologies. The review begins with the review of the content of initiators regarding users and actors of their platforms followed by the analysis of the dynamics between the actors and roles they assume in platform activities is provided. It is important to note that the findings of this mapping activity are limited to the publicly available information on platform activities and collaborations. Hence, more groups of actors and roles could be identified by conducting interviews with the platform initiators, end-users and other stakeholders. The data collected on the end-user identified by the initiators are summarized in Table 21 "The Definitions of End-Users by Civic Tech Initiators" below.

**Table 21:** *The Definitions of End-Users by Civic Tech Initiators*

| # | Quote | # | Quote |
|---|---|---|---|
| P1 | "professional and amateurs, young and old, everyone" | P27 | "individuals, families, communities, businesses, governmental institutions, institutions and other movements" |
| P2 | "Lithuanians living and studying abroad" | P28 | "Lithuanian habitants" |
| P3 | "communities, municipalities, non-governmental organizations, businesses and pro-active people" | P29 | "Lithuanians" |
| P4 | "habitants of Lithuania" | P30 | "NGOs and employees of non-governmental organizations" |
| P5 | "donors, foreign donors, developers of social initiatives" | P31 | "observers of nature" |
| P6 | "non-governmental organizations and socially vulnerable people" | P32 | "local tourists" |
| P7 | "volunteers, receivers of aid" | P33 | "for citizens" |
| P8 | "public servants, law enforcement officers, lawyers, students" | P34 | "citizens of Pasvalys, Lithuania and foreigners" |

| # | Quote | # | Quote |
|---|---|---|---|
| P9 | "for conscious members of the society" | P35 | "for active citizens" |
| P10 | "volunteers and volunteering organizations" | P36 | "patients", "health care organizations and medical staff" |
| P11 | "programmers, analytics, designers, user experience and other specialists" | P37 | "to empower the society" |
| P12 | "visitors of public institutions" | P38 | "proactive citizens" |
| P13 | "to inform society", "dialogue between public, government and business" | P39 | "indifferent citizens and people with an opinion" |
| P14 | "for socially-beneficial initiatives" | P40 | "for the voters" |
| P15 | "for schools – teachers and pupils" | P41 | "for those interested in attendance of parliamentary committees" |
| P16 | "more than just Lithuanians, business persons, scientists, government officials, civil servants, scholars, sport professionals and artists" | P42 | n/a |
| P17 | "habitants" | P43 | "citizens" |
| P18 | "for citizens" | P44 | "Lithuanian citizens" |
| P19 | "online portal for you" | P45 | "movement of healthy-minded people" |
| P20 | "travelers, teachers, lecturer, tour guides and families" | P46 | "Space providers, government and municipality organisations, business organizations" |
| P21 | "owners, sellers, buyers, tenants, brokers, real estate developers" | P47 | "business organizations, citizens, governmental organizations" |
| P22 | "proactive citizens" | P48 | "Lithuanians of different generations and people interested in Lithuania" |
| P23 | "unpaid blood donors | P49 | "habitants of Vilnius city" |
| P24 | "voters", "a database for science" | P50 | "students in high-schools and higher education institutions" |
| P25 | "patients, medical staff" | P51 | "citizens" |
| P26 | "citizens" | P52 | "for the users of map" |

**Source:** *developed by author, 2017*

The content analysis of the user groups shows that, in most cases, initiators define the user groups employing very abstract terms. Also, the 'official' focus is on the citizens (expressed variously, e.g., voters, habitants, etc.). Non-citizen actor groups are left out of the definitions but may benefit from the value propositions put forward by the platforms (e.g. P13, P27). Hence, in-depth review of the platform content, the services they provide, funding sources and strategic documents was conducted and resulted in the identification of eight actor groups – citizens, governmental organizations, NGOs, business organizations, media organizations, public organizations, associations, international organizations – which participate in the ecosystem directly and indirectly. Also, five actor roles were defined during the analysis process – user, initiator, contributor, partner, and sponsor. The dynamics of the actors and the roles are summarized in Table 23 "Actor and Roles Dynamic in Civic Tech" below. The detailed distribution of actors and the roles in the sample platforms is provided in Annex 7.

**Table 22:** *The Roles of Actors in Civic Tech identified in Mapping Activity*

| | Initiator | User | Contributor | Partner | Sponsor |
|---|---|---|---|---|---|
| Description | Initiates projects, designs platforms and systems surrounding them | Receives information and service | Suggest ideas, vote, recommend, creates content, reports issues, communicates with other actors online, spreads ideas | Shares operant resources (e.g. knowledge, know-how, support). Mutually beneficial relationships. | Provides financial support for platform activities |

**Source:** *developed by author (2018)*

Analysis of the data collected on platform *initiators* shows that most the civic platforms in Lithuania are initiated by non-profit organizations. Such organizations were already established before extending their activities into digital ground (24 - VšĮ Geros valios projektai, Žmogaus teisių stebėjimo institutas, VšĮ Lietuva be šešėlio, VšĮ Actio Catholica Patria, VšĮ Global Lithuanian Leaders, VšĮ Paveldo projektai, VšĮ Mes Darom, Lietuvos laisvosios rinkos institutas, VšĮ Transparency International, VšĮ OSFL projektai, VšĮ Baltijos aplinkos forumas, VšĮ Baltosios pirštinės, VšĮ Europos namai, VšĮ Žaliasis taškas, VšĮ Namas Plius, VšĮ Sveiko vaiko institutas, VšĮ Nacionalinis Kraujo centras). Lithuanian chapter of Transparency international is the most active in creating civic tech platforms in Lithuania. In 16 platforms individual citizens or small groups were the initiators and perceived the active role of creating platform and inviting others to use the services. Business organizations (10 - UAB Inovacijos verslui, UAB H-nit Baltic, UAB CodeIN, UAB Mano daktaras, UAB OSM games, Agile & EuroSDR, MB Maži dideli, UAB INFOFACE, UAB GoFuture, UAB Tieto Lietuva) are the third largest group of civic tech platform initiators. Public organizations (2 - Klaipeda County Ieva Simonaityte Public Library, Vilnius University) are the least active in creating such initiatives.

**Table 23:** *The Actors and Roles Dynamics in Civic Tech*

| NGOs | | | | | GOVERNMENT ORGANIZATIONS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| user | initiator | contributor | partner | sponsor | user | initiator | contributor | partner | sponsor |
| 13 | 24 | 3 | 20 | 0 | 29 | 0 | 1 | 20 | 18 |
| 60 | | | | | 68 | | | | |

| ASSOCIOTIONS | | | | | BUSINESS ORGANIZATIONS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| user | initiator | contributor | partner | sponsor | user | initiator | contributor | partner | sponsor |
| 6 | 0 | 3 | 4 | 0 | 17 | 10 | 3 | 22 | 10 |
| 13 | | | | | 62 | | | | |

| MEDIA ORGANIZATIONS | | | | | CITIZEN | | | | |
|---|---|---|---|---|---|---|---|---|---|
| user | initiator | contributor | partner | sponsor | user | initiator | contributor | partner | sponsor |
| 14 | 0 | 0 | 5 | 0 | 52 | 16 | 25 | 0 | 7 |
| 19 | | | | | 100 | | | | |

| PUBLIC ORGANIZATIONS | | | | | INTERNATIONAL ORGANIZATIONS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| user | initiator | contributor | partner | sponsor | user | initiator | contributor | partner | sponsor |
| 29 | 3 | 3 | 10 | 0 | 5 | 0 | 0 | 6 | 7 |
| 45 | | | | | 18 | | | | |

**Source:** *developed by author (2018)*

Citizens are identified as users in all 52 platforms in the sample. Public (29) and governmental (29) organizations can be identified as user groups in larger half of the sample followed by business organizations (17) and NGOs (13). Media organizations play a major role in improving public awareness and disseminating the message of the social change the platforms try to achieve to broader audiences. Fourteen platforms provide services aimed at media organizations. Associations (6) and international organizations (5) are the least apparent user group. Distribution of user groups based on platform initiator type, context and goals of the platforms did not reveal any extraordinarily results – these factors did not influence the distribution of user groups.

The role of *contributor* in the context of civic technologies is especially important. Platform activities often depend on the active engagement by the end users in contributing the content in form of ideas, opinions, reactions and support. However, the prevalence of this role is limited in the sample platforms. In most cases (25) citizens are expected to contribute in co-creating public value through the platforms. Other types of actors are not invited to contribute content with the few exceptions (Lietuva 2.0, peticija.com, peticija.lt).

The *partner* analysis was conducted by analyzing the content of the platforms and public documents provided by the initiators. Partner analysis shows that platforms identify non-profit organizations and governmental entities as partners the most. Partner analysis based on the initiator type shows that platforms commenced by NGO's and business entities have the highest numbers of partners. In addition, business organizations are most commonly identified as partners in NGO projects. Projects initiated by public organizations and individuals are limited in terms of partners. Individually initiated platforms may lack structure for fundraising and finding partners. Public organizations often lack motivation to spread the news about their tools. Further analysis is needed in order to find underlying reasons. There is an apparent lack of government, public and associations partnerships among all groups of platforms with few exceptions on different parameters. This indicates a wall between public agencies and civic tech. Since government on national and local levels move towards more open governance they may gain the confidence to work with civic technologists in order to achieve their goals.

Another important role an actor can perceive when collaborating is the *sponsor*. Establishing collaborative partnerships often means a search for sustainable funding sources by demonstrating our values and accountability to external stakeholders. NGO's again have highest numbers of funding sources with EU and structural funds being most prominent. Business organizations in this sample are more likely to initiate platforms that can generate revenues themselves by means of membership fee, service fee, etc. Public organizations have lowest the numbers of funding sources and are mostly financed through governmental funds. Tech platforms initiated by individuals are least likely to reveal their funding sources and in most cases do not provide such information. This may be due to lack of structure in their organization for preparing reports and being accountable. In general, EU and structural funds are the most prominent funding sources in the Lithuanian civic tech field. This goes in line with official EU policies which encourage digital collaboration. However, the access to structural funds is restricted to organizations that have the resources and structure to prepare adequate funding applications. The analysis of funding sources implies that other external funding resources may be limited and not always easy to identify and access for civic tech platforms in Lithuania.

The case study of the Global Lithuanian Leaders platform relevant in discussion of the actors' dynamics. The platform represents widest spectrum of actors involved in processes of value creation. This non-profit platform connects international professional in building global opportunities for Lithuanian communities. Close collaborations with the citizens, media outlets and governmental organizations allow to create value propositions attractive for the actors involved in the platform e.g. young professional want to participate in platform activities because of career opportunities it creates and business organizations like Western Union feel confident to collaborate due to high-impact results they receive (illustrated by highest number of media mentions in the sample). Programs like GLL Business Advisors and LT Big Brother allow the actors in the service system perceive more active roles and contribute to the public value creation.

ICT is often considered the main enabler of innovative ways to co-create public value. The role of ICT in co-creative service ecosystems is explored through data collection and analysis on platform development, use of open data, use of open source coding and types of tools employed. Majority of the platforms use websites for reaching their goals. Apps are less likely option. Networks (group of people that communicate using online tools) have the lowest count amongst the sample organizations. Issue reporting platforms, government communication platforms and mapping platform are more likely to use their activities on mobile apps. Distribution amongst other variables is nonspecific. The collection of data on who developed the technological side of the platforms provided limited results. Half of the platforms (26) do not provide the information on who developed, programmed, created the platform. Those who provided the information used the services of business organizations (17), individual programmers' / data hackers' (5) or used internal organizational human resources (5).

Opening of government data has been named as one of the most important catalyzers of the civic tech movement in the literature (See Chapter 1) and qualitative study. Data was collected in order to find out the prominence of open data usage in Lithuanian civic tech field. Sixteen platforms out of fifty-five use open data to engage citizens, governments, business and other user groups and power insights to reach their goals. Data visualization platforms are the most prominent in using open data in their processes (10 organizations) followed by mapping platforms (4). Half of the platforms using open data are initiated by individuals. This implies that citizens are starting to take advantage of open data provided by national and local organizations. Platforms oriented towards transparency & accountability place most emphasis on open data by analyzing, structuring and visualizing data for their end-users.

By using open source code, the platforms can have more contributors and insights when designing tools suitable for their user groups. In addition, the initiators can use code created by other organizations and save valuable resources and time. In order to get information which platforms use open code in their activities we looked for platform activity on GitHub. GitHub is a web-based repository hosting service which offers distributed version control and source code management functionality. Thus it helps various organizations to create and share code. GitHub is most widely used tool of its kind. Six platforms in the sample use open source code. Four out of them are initiated by individuals. This again shows that individuals are more likely to experiment and make use of new technologies and tools.

Based on the conceptual analysis framework presented in Section 2.1, the content dimension includes deliberations on the goals and objectives of the actors involved. Knowing why individuals and organizations build platforms and why citizens participate in them, can guide the organizations and civic leaders in fostering ICT-enabled co-creation. In the perspective of Service Science, the value is co-created during interactions around value propositions and is determined by the customer in the context of using the service. The section aims to summarize the data collected during mapping activity on context, goals and means to achieve them (i.e. operation type) in order to define the value propositions and the services in the field of civic technologies.

Six contexts where the platforms operate were distinguished – economy, governance, social support, education & entertainment, environment, health & living (See Table 24 below). Platform analysis by the context revealed that most of the initiatives (24) focus on the governance issues such as tax collection awareness, use of open data for transparency, and preventing public sector corruption. Another prominent focus is on education & entertainment (9). The contexts of economy (5), environment (4), health & living (6) and social support (5) are distributed more or less evenly in the sample.

**Table 24:** *The Contexts and Sub-Contexts of Civic Technologies in the Sample*

| Context | Sub-Context | Context | Sub-Context |
|---|---|---|---|
| Economy | Contraband, smuggling reporting; Economic opportunities for emigrants; Economic opportunities in neighborhoods; NGO service outsourcing; Technology, startup development | Health & Living | Daily public service improvement; Health care reviews; Blood donations and awareness; Neighborhood forum; Healthy living |
| Education & entertainment | Education on architecture, heritage; Social inclusion through entertainment; Education on human rights; Education on tech, geography, Exploring the country; Exploring the heritage | Governance | Ideas for better future; Transparency in law system; Coding for city, volunteering; Open data for good; Local government transparency; Evaluating the Parliament; Fair elections; Informed elections and decision-making |
| Environment | Spread of green ideas; Caring for environment; Recycling awareness | Social support | Crowdfunding social projects; Peer-to-peer sharing for charity; Services for the social inclusion; Volunteering awareness |

**Source:** *developed by author, 2017*

Civic technologies in essence are public services provided by non-governmental entities. Hence, based on the rational put forward by Moore (1995) the value of such services is not limited with the efficiency and quality but also deals with the social and economic improvements they create for the society. Hence, another platform content perspective analyzed in the mapping activity – the goals of the platforms identified by the initiators.

The summarized results are provided in Table 25 "The Goals Identified by Civic Technology Platforms in the Sample" below.

**Table 25:** *The Goals Identified by Civic Technology Platforms in the Sample*

| Code | Type | Illustrative quotes |
|---|---|---|
| P1, P19, P20, P30, P33, P13, P46, P52 | Accessible information | "to spread and to popularize the digitalized heritage of memory institutions in Klaipėda region"; "knowledge of their existence extends the perception of the surrounding environment"; "in order to raise awareness and rational consumption"; "to ensure availability of safe and natural products in Lithuania"; "public education about waste sorting" |
| P3, P5, P6, P10, P15, P16, P49, P24 | Community building | "promote the spirit of community by helping the society to make conscious donation decisions and to offer new ways for organizations to fundraise"; "building a truly global network for Lithuania"; "connect the schools, students and teachers and people interested in GIS technologies"; "bring together the different generations of Lithuanians around the world"; "a place where the patients and doctors find each other" |
| P2, P8, P22, P25, P27, P32, P35, P36, P39, P40, P50 | Civic engagement | "strives to develop an open and democratic society by consolidating human rights and freedoms"; "promotes development of modern democratic processes in the cyber space"; "to provide proactive citizens with user-friendly environment for their civic initiatives"; "enable citizens to report environmental damage cases to responsible institutions"; "encourage citizens to be proactive and to report offences on the road"; "online citizenship project"; "to enable residents of Vilnius to inform the municipality about urban problems" |
| P7, P12, P29 | Improve services | "in search of effective solutions for social problems"; "finding solutions to improve queuing management systems"; "for more effective management and communities" |
| P37, P21, P23, P26, P41, P43, P51 | Informed decision-making | "to help the patients to choose the best qualified specialists and institutions"; "to help the owners, sellers, buyers, tenants, brokers, landlords and real estate developers make informed decisions about the real estate"; "encouraging the people to vote in responsible manner"; "encourages citizens to become more interested in the views of politicians and political party programmes"; "to increase the interest of citizens in the election processes"; "helping the voters to make informed decisions"; "seeking to ensure transparent policies and informed decisions of the voters" |
| P31, P47, P48 | Stimulating economic exchange | "to raise the competitiveness of NGOs in Lithuania by making them equivalent partners to for-profit organizations"; capture the tech ecosystem, measure status quo and growth, help startups to find the space, communities, funds and clients, help corporate technology centers find the talent, improve urban planning"; "a step closer to a smart city" |
| P4, P9, P11, P14, P17, P18, P28, P34, P38, P42, P44, P45 | Transparency | "we aim to increase transparency of the Lithuanian court system and to open it for the society"; "seeks to tackle the problem by developing initiatives promoting wider public participation in the fight against shadow market"; "to help solve the problems of Vilnius together, transparently and effectively"; "aim to inform the Lithuanian people on the quantity and variety of the taxes they are paying and to show how the collected funds are spent"; "to promote more open cooperation between the citizens and their representatives in the governmental institutions"; "to ensure transparent elections and intolerance for the corruption in the election process"; "allows to track the pulse of parliament work" |

**Source:** *developed by author (2018)*

The analysis of the goals identified by the initiators allowed to cluster the Civic Technologies based on the changes they are seeking in the society. Most common goals include: transparency and accountability (14), resolution of social problems (11) and encouragement of civic engagement (10). Other less prominent goals are stimulation of economic exchange (6), community building (7), better government services (4) and conscious consumption (3). The analysis of the platforms based on the context they are operating in and goals they are aiming to achieve allows to understand the types of public value they are aiming to create. The analysis show that the contexts identified relate closely to the types of public value put forward by the Center for Technology in Government – economic, political, social, strategic, quality of life, ideological and stewardship (Cresswell & Sayogo, 2012).

Platform analysis by their operation type show that nine types of platforms occur in Lithuanian Civic Tech landscape. The categories in the data collection template were based on the findings of literature review. Operation type was distinguished based on the main usability features identified by the initiators. It means that some platforms can be attributed to several groups of operation types e.g. mesDarom.lt platform enables users to report issues and plots the on interactive map. Summary of the types of platforms and the functions they have are explained in detail in Table 26 "Operation Types of Platforms in the Sample" below.

**Table 26:** *Operation Types of Platforms in the Sample*

| Operations type | Sample platforms | Features | Orientation |
|---|---|---|---|
| Data visualization platform | atvirasteismas.lt; mokumokescius.lt | Communicates big, complicated and raw data in explanatory manner. Allows to explore interactive data visualizations and narratives which leads to users feeling informed and engaged | Information |
| Gov communication platforms | eile.lt; parasykjiems.lt | Provide digital communication channels between citizens and governmental entities by improving user experience | Communication |
| Group decision-making platforms | Global Lithuanian Leaders; Lietuva 2.0 | Make it easier to interact and discuss online through deliberate design decisions. It provides structured online environments aimed for solving various problems | Communication |
| Issue reporting platforms | pincetas.lt; Baltosios pirštinės; beseselio.lt | Enabling users to notify institutions of items in need of attention | Communication |
| Mapping platform | archmap.lt; pamatykLietuvoje.lt; techmap.lt | Allows to collect, plot, and display geographic data. Maps are a way to visualize information in order to get through the message to the end users. | Information |
| Online learning platforms | be-ribu.lt, GIS mokykla | Virtual learning environment | Information |
| Opinion-matching platforms | manobalsas.lt; reitinguok.lt | Enables informed decision-making in civic processes based on individual believes. Simplifies information. | Information |
| Petitioning platforms | peticija.com; peticija.lt | Used to garner large-scale support on an issue | Collective action |
| Resource sharing/ matching platforms | aukoklaika.lt; NVO paslaugų katalogas | Allow initiators to coordinate matching of needs and resources (e.g. volunteers, peers, things) | Collective action |

**Source:** *developed by author (2018)*

Data visualization form the biggest cluster of platforms (14). Second biggest group issue reporting platforms (9) followed by mapping tools (7), resource sharing/matching platforms (7) and group decision-making tools (6). Other types of platforms are less represented in the sample – opinion-matching platforms (3), government communication platforms (2), online learning platforms (2) and online petitioning sites (2). Data visualization platforms represent largest group in the sample but are least diversified in terms of users.

<p align="center">*Processes in Civic Technologies*</p>

The processes in Lithuanian Civic Tech landscape are analyzed through the collaboration perspective. Collaboration refers to the existence of formal and/or informal relationships between the platform initiators and their external partners where there is some degree of coordination towards common goals. First, analysis of the connections between a number of platform partners, actors and the uptake in the society will be discussed. Then, the patterns of collaboration will be analyzed by employing results from the Hyperlink Network Analysis (HNA) and Stakeholder Mapping of Civic Technologies in Lithuania.

The analysis of connections between the number of partners, number of roles and the uptake of platforms in the society provides understanding about the dynamics of actors in the civic tech landscape. Figure 12 shows how the number of roles the platform assigns to various actors related to the uptake of platforms. Figure 13 illustrates relations between the number of partners (identified during the content analysis and strategic documents) the platform has and the uptake. Figure 14 demonstrates how the number of funding sources the platform has, relates to the uptake measurement. The figures correspond with the central ideas of Service Science which suggest that organizations no longer depend on internal capacities to satisfy external needs. Sustainable initiatives and organizations are required to maintain relationships with other actors in the ecosystem (e.g., partners, competitors, governments and end users). Further analysis and larger sample of platforms are needed to confirm these initial findings.

**Figure 12:** *The Relations between Partner Diversity Count and the Uptake of Platforms*
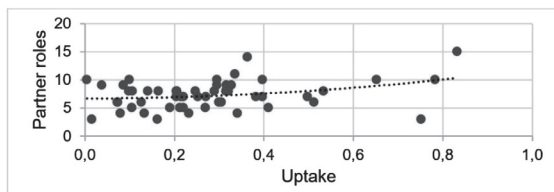


**Source:** *developed by author (2018)*

**Figure 13:** *The Relations between Number of Partners and the Uptake of Platforms*
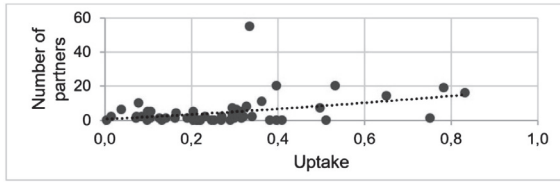


**Source:** *developed by author (2018)*

**Figure 14:** *The Relations between Number of Funding Sources and the Uptake*
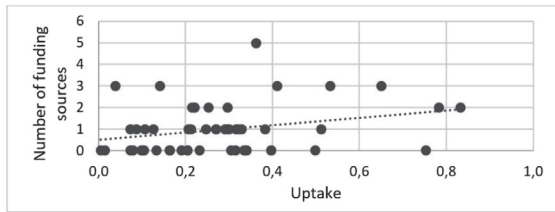


**Source:** *developed by author (2018)*

Another way to extract collaboration patterns in co-creating public value is through Hyperlink Network Analysis. In general, HNA allows analysis of the relationships between actors (i.e., people, organizations or websites) online. Researchers (Jackson, 1997; Richard Rogers, 2015) suggest that patterns of hyperlinks designed by individuals or organizations who own the websites reflect the communicative choices and agendas of the owners and thus can be used to examine the communication between actors. The assumption is made that "on aggregate, it is likely that users' browsing patterns are going to resemble the patterns of interlinkage between key sites" (Moe, 2010, p. 4). In the context of this study, HNA allows identifying patterns of the relationships between organizations online. The result of the co-link crawling activity is "a data set describing the network in terms of density, centralization, relation positioning of nodes, and their specific interconnections. Issue network crawl analyses can predict neither the actual use of the web nor the traffic generated by specific links" (Moe, 2010, p. 4). The assumption is made that "on aggregate, it is likely that users' browsing patterns are going to resemble the patterns of interlinkage between key sites" (Moe, 2010, p. 4). Similar algorithms are used by popular search engines to rank the websites in generating search results. Thus, "a central node in an issue network would thus presumably also be listed prominently in search results for that issue" (Moe, 2010, p. 4). The tool constructs networks of URLs based on the number of in- and out-links received by and sent to other in the network (Lang, 2013). The output network contains a list of actors associated with the initial list via a co-link analysis (i.e., websites linked by at least two actors will be included). The size of the nodes indicates player strength in the network.

The results of HNA are illustrated in Table 27 "Statistics of Lithuanian Civic Tech Hyperlink Network" and Figure 15 "Hyperlink Network Analysis of Lithuanian Civic Tech

Landscape" below. Table 27 details the key statistics of the hyperlink network to contextualize the network. The number of nodes included in the network is 2658 and 2736 edges connect the nodes. Figure 15 provides simplified visualization of the central nodes in the network, leaving the smaller, less central and less influential nodes out of scope. To evaluate the structure and dynamics of node network, two statistical measures will be used: degree centrality and betweenness centrality.

**Table 27:** *The Statistics of Lithuanian Civic Tech Hyperlink Network*

| Measure | Value | Measure | Value |
|---|---|---|---|
| # of Nodes | 2658 | Modularity | 0,808 |
| # of Edges | 3746 | # of Communities | 72 |
| Avg. Clustering Coefficient | 0,020 | Density | 0,001 |
| Avg. Path length | 2,476 | Avg. Weighted Degree | 1,409 |
| # of Weakly Connected Components | 63 | Avg. Degree | 2,819 |
| # of Strongly Connected Components | 2649 | Network Diameter | 6 |

**Source:** *developed by author (2018)*

**Figure 15:** *The Hyperlink Network Analysis of Lithuanian Civic Tech Landscape*



**Source:** *developed by author using IssueCrawler software, 2017*

Degree centrality (Freeman, 1977) is the most common measure to evaluate and interpret the node's network position. Network centralization refers to the inequality of individuals' connections (L´opez, 2015). Degree centrality shows how linked each node is to others by calculation direct connections between the nodes. A high degree centrality indicates that the node has a central position in the network among other nodes. Below the nodes with highest degree centrality measures are listed. The platforms have the central role in the network. However, the measurements also show the importance of governmental nodes (hyperlinks representing governmental organizations) which were not included in the seed list of URLs.

**Table 28:** *The Degree Centrality of the Nodes in the Network*

| Measure | Node | Type | Measure | Node | Type |
|---------|------|------|---------|------|------|
| 498,00 | linkedin.com | business | 25,00 | pagalbadarbais.lt | platform |
| 448,00 | delfi.lt | media | 13,00 | jurgiokepure.lt | platform |
| 362,00 | manoseimas.lt | platform | 13,00 | druka.lt | NGO |
| 317,00 | placeilive.com | business | 10,00 | kurgyvenu.lt | platform |
| 279,00 | zinaukarenku.lt | platform | 10,00 | vrk.lt | gov |
| 196,00 | atvirasteismas.lt | platform | 9,00 | stt.lt | gov |
| 194,00 | parasykjiems.lt | platform | 9,00 | skaidrumolinija.lt | platform |
| 176,00 | esparama.lt | gov | 8,00 | am.lt | gov |
| 164,00 | lrs.lt | gov | 8,00 | vdi.lt | gov |
| 163,00 | manobalsas.lt | platform | 7,00 | vmi.lt | gov |
| 145,00 | transparency.lt | NGO | 7,00 | sodra.lt | gov |
| 61,00 | twitter.com | business | 7,00 | lrkm.lt | gov |
| 59,00 | aukok.lt | platform | 7,00 | ivpk.lt | gov |
| 26,00 | pagalbadaiktais.lt | platform | 7,00 | jonvabaliai.lt | NGO |

**Source:** *developed by author (2018)*

Another measure allowing to evaluate the dynamics of the nodes is betweenness centrality. It is used for investigating the structural position of a particular node between clusters of nodes in a network (Freeman, 1977). Therefore, it can be interpreted as measuring the nodes based on their position and role as a gatekeeper between two or more independent components.

**Table 29:** *The Betweenness Centrality of the Nodes in the Network*

| Measure | Node | Type | Measure | Node | Type |
|---------|------|------|---------|------|------|
| 5805,00 | zinaukarenku.lt | platform | 70,00 | aukoklaika.lt | platform |
| 4540,00 | transparency.lt | NGO | 44,00 | pagalbadaiktais.lt | platform |
| 4074,00 | manoseimas.lt | platform | 39,00 | pagalbadarbais.lt | platform |
| 2956,00 | manobalsas.lt | platform | 9,00 | seime.lt | platform |
| 891,70 | jurgiokepure.lt | platform | 8,00 | civitas.lt | NGO |
| 846,00 | delfi.lt | media | 6,50 | skaidrumolinija.lt | platform |
| 336,00 | atvirasteismas.lt | platform | 6,00 | kurgyvenu.lt | platform |
| 320,00 | parasykjiems.lt | platform | 4,80 | skaidrumolinija.lt | platform |

**Source:** *developed by author (2018)*

Betweenness centrality measure revealed several patterns. First, the strong links between platforms and other actors in the network are based on the common issues and homogenous goals. Several important hubs can be established. The most prominent hub is the network of Transparency International Lithuanian Chapter. This hub is oriented towards increasing transparency in various fields of society. It is also closely linked with initiates oriented towards fair and informed elections (i.e. baltosiospirstines.lt (P51), zinaukarenku. lt (P51), manobalsas.lt (P23). Another prominent group is Aukok.lt network which is oriented towards crowdfunding in solving social issues. In addition, several governmental entities are apparent in the network. Since hyperlinks are messages of affiliations among the actors communicated to the publics such links are important in showing which governmental entities are more open to be included in ICT-enabled civic movements.

There are several limitations that need to be outlined regarding HNA and IssueCrawler use. Firstly, the HNA only documents the links between the websites and cannot detect other types of connections between the nodes i.e. organizations (common projects, volunteer networks, etc.). Also, the use of automated tool does not mean it is shielded from common methodological biases. The researcher provides starting points for the crawler and sets parameters typically restricting the speed, breadth, and depth of the data gathering. And lastly, the IssueCrawler can only capture a snapshot of recent links between the nodes. It does not take into account the 'deeper' and archived pages on the website.

**Figure 16:** *The Links of Actors in Lithuania Civic Tech Field*
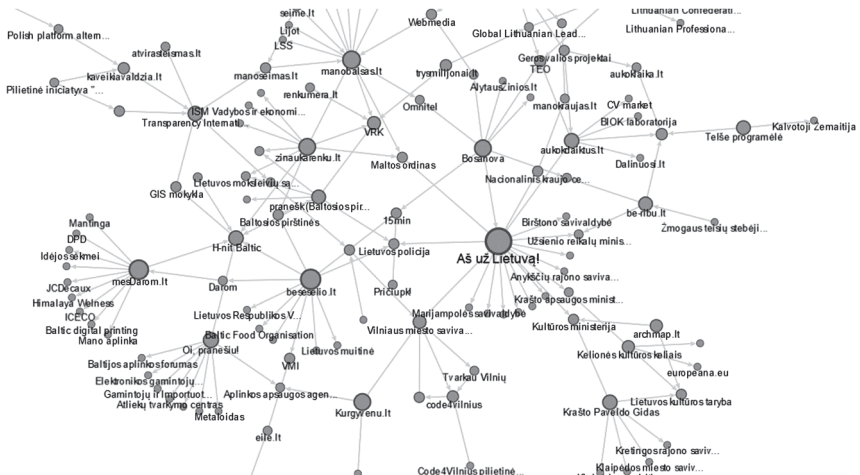


**Source:** *developed by author (2018)*

Hence, analysis of links between organizations identified in their platform content was conducted too. Results of the links study are illustrated in Figure 16 "The Links of Actors in Lithuania Civic Tech Field". Dynamic and more in-depth network illustration can be found here: 277 actors where identified and 299 connections. Based on the results of the mapping

activity, business organizations have been listed as partners the most (83 links). Followed by NGOs (61 links), government organizations (59 links), public organizations (22 links), international organizations (18 links) and associations (6 links).

**Table 30:** *Non-Platform Actor Links in the Partners Network*

| Name | Links | Name | Links |
|---|---|---|---|
| H-nit Baltic (business org.) | 8 | Omnitel (business org.) | 2 |
| Transparency International (NGO) | 8 | Krašto apsaugos ministerija (government org.) | 2 |
| Vilniaus miesto savivaldybė (government org.) | 6 | Aplinkos apsaugos agentūra (government org.) | 2 |
| VRK (government org.) | 6 | Žinių ekonomikos forumas (NGO) | 2 |
| TEO (business org.) | 4 | Global Lithuanian Leaders (NGO) | 2 |
| Socialinės apsaugos ir darbo ministerija (government org.) | 4 | Užsienio ministerija (government org.) | 2 |
| Lietuvos policija (government org.) | 3 | VDU (public org.) | 2 |
| 15min (business org.) | 3 | Delfi (business org.) | 2 |
| Kultūros ministerija (government org.) | 3 | ZIP FM (business org.) | 2 |
| Webmedia (business org.) | 3 | Vilnius university (public org.) | 2 |
| VMI (government org.) | 3 | DNB bank (business org.) | 2 |
| Nacionalinis kraujo centras (NGO) | 3 | Citizen initiative "Mano valstybė" (citizen org.) | 2 |
| Geros valios projektai (NGO) | 3 | Lietuvos moksleivių sąjunga (NGO) | 2 |
| Lietuvos kultūros taryba (government org.) | 3 | Pilietinės visuomenės institutas (NGO) | 2 |

**Source:** *developed by author (2018)*

To identify the partnering actors in the field the analysis of the non-platform actors having at least two links in the network has been conducted. The results partly coincide with the Hyperlink Network Analysis which also identified most of the organizations in the list as the members of the network. For example, the proactive stance of Vilnius Municipality has been identified in the interviews too.

## 3.2. The Discussion of the Empirical Studies' Results in the Context of Conceptual Framework

### 3.2.1. The Discussion on the Actors Dimension

During the expert interviews (Study 1) six groups of actors – governmental entities, citizens, private organizations, NGOs, media, specialists – were identified. The second study added three more generalized actor groups – associations, public organizations and international organizations. This enables to widen the conceptual model by adding five more groups to the framework. The content analysis of the user groups as defined by initiators (Study 2 and Study 3) shows that, in most cases, initiators define the user groups employing very abstract terms. Also, the 'official' focus is on the citizens (expressed variously e.g. voters, habitants, etc.). Non-citizen actor groups are mostly left out of the descriptions of the platform orientation. Based on the results the role of citizens is key – both the experts and the content of the platforms emphasize the citizens as the main actors in platform activities.

The role of governments was discussed the most during the interviews. The focus on governmental entities in the platform content has been significantly lower. The depth of discussion on government and citizen roles on the processes coincides with the findings of the literature i.e. the academics and practitioners in the field also analyze the topic profoundly. The studies allowed to add more roles too and provided more depth in understanding different roles the actors can perceive in ICT-enabled co-creation efforts.

Micro and meso levels refer to the relationships of the actor roles in the processes of developing and managing ICT-enabled platforms aimed at value co-creation. The five roles in these two levels will be discussed first. The Figure 17 "The Roles and Resources of Actors across Ecosystem Levels" shows the collaboration flows and details the resources each role contributes to the system. Initiators start the platforms by contributing their individual and organizational resources in terms of time, know-how, finances, etc. The role of a user refers to the actors using the platform and receiving ICT-enabled service. The role of the contributor is closely related to the role of the user. However, it is more interactive and refers to more interactive collaboration efforts by means of suggesting ideas, voting, reporting issues, communicating with other contributors and other ways of creating content beneficial for the active processes of the platform. The role of the partner is to share operant resources with platform initiators and managers. The role refers to mutually beneficial relationships which are developed without losing autonomy of individual actors. Sponsors provide financial resources for enabling platform activities. The sponsoring can happen in a number of ways through governmental, business funding or citizens backing up the platforms they find important. The roles identified here can be filled by any of the actor groups identified. Meaning that the businesses can be initiators, users, contributors, initiators, partners, and sponsors of the platforms. The same applies to the citizens and other actor groups.

**Figure 17:** *The Roles and Resources of Actors across Ecosystem Levels*
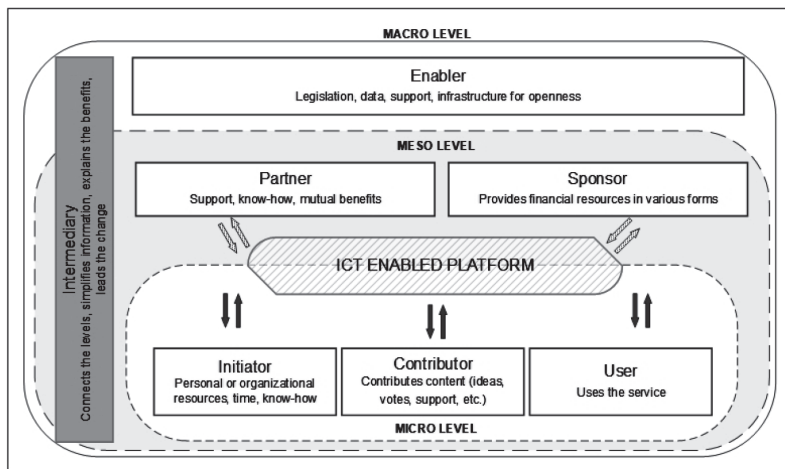
Other two roles – enablers and intermediaries – were identified during the expert interviews are not apparent in the day-to-day platform activities. These two roles are important in making the ecosystems work. The role of enabler refers to entities providing institutional environment enabling co-creation to happen. This role is usually occupied by governmental entities. Based on the expert interviews, the pro-active role of governments is crucial in enabling co-creation. The enabling can happen through several means. Firstly, the government is the source of the data. Hence, the choices the governments make about the availability, distribution, form, and communication of data have a strong effect on the ecosystem. Second, the legal system enables such ecosystems to exists without restraints. For example, in Latvia manobalsas.lv works effectively because the legal system allows for it to happen – to forward suggestions for legislation to the parliament, etc. Third, the pro-active stance of public officials and agencies encourage civic society to be more active in creating and supporting such tools. The role of intermediary refers to actors connecting different levels of the ecosystem. During the interviews it was established, that for society to evolve to being more open and engaged, not all citizens have to be active, not all organizations have to be active – but there is need for intermediaries, civic leaders, active citizens who could translate the importance of active citizenship, transparency, translate the data and make it easier for citizens and governments to cooperate. The role of intermediary mostly refers to the individual actors, mostly specialists with the skills and knowledge in the fields of IT, open data, and governmental processes. The role of the intermediary is especially relevant in the context of co-creating public value. Intermediaries translate the complex public sector information and processes to the other groups in the system and allow connections to happen easier. Intermediaries serve as the actor connecting the micro, meso and macro levels.

The interviews with the experts (Study 1) and the literature provided information on *idyllic* co-creation of public value i.e. the experts discussed the potential and desired roles of governments, citizens and other actors in the ecosystem. However, the analysis of the content of Lithuanian Civic Tech platforms (Study 3) provides a different view. Despite the declarations to include more individuals and organizations into co-creation, the reality is quite different. This can be illustrated by several empirical observations:

- Distribution of the actor roles in the sample. Although most platforms aim at increase of citizen engagement, the role of citizens is often limited to being users and contributors rather than partners (i.e. collaborators, experts contributing operant resources) in creation and management of ICT-enabled initiatives. In addition, the analysis of platform partnerships with external partners shows that majority of the projects have no (or does not declare the affiliations publicly) external partners. 277 actors were identified in the stakeholders' network with only 299 links connecting them.
- The limited inclusion of government. Pro-active government stance is needed but most of organizations are working without governments as active partners. But this passive role is not only determined by governmental attitudes. Sometime initiators of civic projects do not want the involvement too. Just "official" support. The governments can collaborate by contributing resources in form of data, information, know-how, etc. The experts noted that historically the initiators of ICT-enabled platforms and other types of civic initiatives needed only official support of the governmental institutions with no further interference within design and management process. The experts also agreed that the governmental entities often do not have the capacity and competent staff to employ the tools, open up the data and processes and be contributing actors.

– Contributors. The role of contributor in the context of civic technologies is especially important. Platform activities often depend on the active engagement by the end users in contributing the content in form of ideas, opinions, reactions and support. However, the prevalence of this role is limited in the sample platforms. In most cases citizens are expected to contribute in co-creating public value through the platforms. Other types of actors are not invited to contribute content with the few exceptions (Lietuva 2.0, peticija.com, peticija.lt).

### 3.2.2. The Discussion on the Content Dimension

The content dimension includes deliberations on the goals and objectives of the actors involved. Knowing why individuals and organizations build platforms, and why citizens participate in them, can guide the organizations and civic leaders in fostering ICT-enabled platforms. The goals and context of the platforms analyzed in the Mapping study (Study 3) provide insights on the public value the platforms aim to achieve. The analysis of the goals identified by the initiators allowed to cluster the Civic Technologies based on the changes they are seeking in the society. Most common goals include transparency and accountability, resolution of social problems and encouragement of civic engagement. Other less prominent goals are stimulation of economic exchange, community building, better government services and conscious consumption. The analysis of the platforms (both in Lithuanian and international samples) based on the context they are operating in and goals they are aiming to achieve allows understanding the types of public value they are aiming to create. The analysis shows that the contexts identified relate closely to the kinds of public value put forward in the conceptual framework.

**Figure 18:** *The Value Propositions in the Ecosystem*

**MESO LEVEL VALUE PROPOSITIONS**

| Closer partnerships, mutual benefits, increased impact | Partnership |
| Access to greater pool of partners and supporters | Network |
| More stable relationships in the ecosystem, more predictability | Stability |

| | Enabler | Partner | Sponsor | Intermediary | Initiator | Contributor | User | |
|---|---|---|---|---|---|---|---|---|
| | saves money | - | return of investments | - | profit | - | - | Economic |
| | - | contribute to society | - | contribute to society | contribute to society | can express his view on important issues | - | Self-expression |
| | - | - | - | - | - | receiver necessary information | - | Knowledge/information |
| | increased prestige, better image | be/feel more important | (corporate) social responsibility | be/feel more important | be/feel more important | be/feel more important | - | Status |
| | - | - | - | - | - | - | receive service | Functional |

**MICRO LEVEL VALUE PROPOSITIONS**

| Economic | Social | Political | Quality of Life | Strategic | Ideological | Stewardship |

**MACRO LEVEL VALUE PROPOSITIONS**

**Source:** *developed by author (2018)*

The analysis of the research outputs aimed at content dimension (the goals, operation type, contexts) of civic technologies in the results of Studies 2 & 3 allowed to elaborate the types of value propositions offered for the actors in the ecosystem (See Figure 18 "The Value Propositions in the Ecosystem" above). Macro level includes deliberations on the context and larger social constructs (government structures, civic society, etc.). Meso level provides insights on the stakeholder network benefits. Micro level deals with value offerings for the individual actors. By distributing value propositions though three levels, the framework allows to understand the value of ICT-enabled co-creation for people, organizations and society. Study 1, interviews, also provided insights on the content dimension. It was highlighted through two functions: it connects actors in collaborations and attracts the end-users.

### 3.2.3. The Discussion on the Process Dimension

The processes dimension includes deliberations on the patterns of design, management and collaboration in co-creating public value through civic technologies. The research studies aimed to answer the question – what influences the processes of resource integration and service provision in the ecosystem. The notion is made that value propositions connect actors within service ecosystem. Hence, the actors with abilities to develop the most compeling proposals will perform the best. This advantage is relative and brief i.e. the actors must learn to revice the propositions based on the chaning needs of the markets and stakeholders. This means that actors cannot create and deliver value alone; they can only propose value to other actors in the network and co-create the value. Hence the summarized results of studies, allow to analyze the processes of resource integration and service provision in two settings: design of value propositions/services (i.e. starting phase of projects) and management of value propositions/services (i.e. long-term management of established service, sustainability of the project). The expert interviews (Study 1) provided the most extensive information allowing to elaborate the details of these processes in co-creative ecosystems. However, Studies 2 & 3 provided more insights on the patterns of collaboration summarized in Table 31 "The Barriers and Enablers of Co-Creation through ICT" below.

The interviews confirmed the notion stressed in literature – collaboration with diverse actors allows to avoid biases and increase the quality of the platform. In designing compelling value propositions, platform initiators facilitate the involvement of various groups of actors and systemize the input into design solutions. Three factors influencing the process have been identified. Co-design (direct involvement of the users, partners and other stakeholders) in designing the value propositions. The notion of user-centricity is relevant here. The experts suggest to put less emphasis on the technological side and focus on user needs. Through intermediaries (civic leaders). During the interviews it was established, that for society to evolve to being more open and engaged, not all citizens have to be active, not all organizations have to be active – but there is need for intermediaries, civic leaders, active citizens who could translate the importance of active citizenship, transparency, translate the data and make it easier for citizens and governments to cooperate. Familiari-

zation with existing norms and structure. Experts argued that platform initiators should recognize existing structures, systems and services in the public sector before pursuing their goals.

The final design on the platforms and their operation type did not end in an extensive discussion of the experts. The mapping study identified nine types of platforms operating in Lithuanian civic tech landscape: data visualization platforms, government communication platforms, group decision-making platforms, issue reporting platforms, mapping platforms, online learning platforms, opinion-matching platforms, petitioning platforms and resource sharing/matching platforms.

The setting of managing value propositions is expressed through analysis of networking and collaboration patterns. The empirical evidence leads to several important factors influencing the management of the platforms: shared goals, targeting of important user groups, the learning curve of the initiators, need for a strong support system, the requirement of formal commitment from partners and competencies of the initiators. The importance of shared goals of the actors operating in the service system has been highlighted both by the expert interviews and the platform content analysis. Hyperlink Network Analysis also showed strong links between the platforms and other actors in the network based on homogeneous issues. The analysis of the patterns of collaboration showed correspondence with the main ideas of Service Science – the more partners, the more central the platforms are in the networks and the more popular in the society. The condensed results of a literature study and empirical investigations allow compiling a holistic view of the factors increasing the potential of the ICT-enabled co-creation and the barriers.

**Table 31:** *The Barriers and Enablers of Co-Creation through ICT*

| Barriers >> | Level | << Enablers |
|---|---|---|
| View that the government should be the sole provider of public services<br>Lack of skills and motivation in governmental agencies | Macro | Pro-active governmental entities<br>Infrastructure for openness, transparency and accountability, availability of open data<br>Institutional support |
| Limited partnerships with governmental entities<br>Lack of familiarization with existing norms and structures | Meso | Shared goals<br>Heterogeneity actors involved<br>Embeddedness in networks<br>Active role of intermediaries<br>Offline engagement strategies |
| Lack of clear incentives<br>Risk aversion of actors<br>Too much focus on technical side of projects | Micro | Integration of feedback and external input<br>User-centricity<br>Formal commitment of actors and clear distribution of responsibilities<br>Competencies of initiators |

**Source:** *developed by author, 2017*

However, the findings of the Study 2 suggest that the role of external stakeholders (i.e. partners, users, sponsors) is often limited to being users of information rath-

er than collaborators that help create value. This can be illustrated by several empirical observations:

– Platform initiators instead on focusing on user needs and including them in design of the platform, pursue their own agenda and operate under assumptions about their users. The initiators of civic technology projects often put too much emphasis on the creation of the tools. However, the field can grow and be sustainable if it includes the citizens, local communities, governmental employees, businesses and other stakeholders as equal partners. Partnerships should not be based on formal inclusion but by including the resources the actors have to offer in creation of public value.

– The platforms as actors provide only value propositions, however – mostly no one is interested as illustrated by the usage statistics of the platforms and low uptake in the society. The services and value propositions they offer are with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators without the regards as to what the target groups need. This can also be seen in analysis of the platform content on defining the target groups – it is limited to citizens only.

### 3.3. The ICT-Enabled Co-Creative Ecosystem Model

The model of ICT-Enabled Co-Creative Ecosystem is based on the conceptual framework (proposed in the Section 2.1) and empirical findings (presented and discussed in the Sections 3.1 and 3.2). The model suggests that the public value emerges when a number of entities work collectively to create mutual benefits (public value) by granting access to one another's resources including people, technologies, organizations and information. With the framework public value is defined as the contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation. The model is based on three foundational premises:

*Premise 1. Public value is co-created by multiple actors in the ecosystem.*

*Premise 2. Service is the basis of exchange.*

*Premise 3. Actors cannot deliver the value alone but participate in the creation and offering of value propositions in the ecosystems.*

The elements and the logic of the model are illustrated in Figure 19 "ICT-Enabled Co-Creative Ecosystem Model" below. The elements of the model are distributed through micro, meso and micro levels, which allows to take into account the interactions and interdependencies between all the elements of the ecosystem. The exchanges between the actors in different levels of are needed because no one actor has all the resources needed to reach their goals (Frow et al. 2014). In order to understand how public value is cre-

ated on micro, meso and macro levels, three dimensions – actors, content, processes – were developed allowing to categorization of the entities involved and ways they co-create public value.

The actors dimension constitutes of the individuals and organizations participating in the co-creative service ecosystem, their roles and resources. Each actor is a potential source of resources for other actors within the ecosystem. Interactions happen through creation, sharing, obtainment and integration of resources. The model presumes, that heterogeneity actors and resources involved leads to sustainability of the ecosystem. Research allowed to identify nine groups of actors involved in the co-creative ecosystem: *citizens, business organizations, non-governmental organizations, governmental organizations, specialists, associations, media organizations, public organizations* and *international organizations*. On the micro level, actor dimension reveals direct service-for-service exchange between the *initiators* (actors initiating ICT-enabled services), *users* (actors receiving ICT-enabled services) and *contributors* (actors contributing content to ICT-enabled services). Meso level refers to indirect service for service exchange with the *partners* (actors maintaining mutually beneficial relationships through sharing operant resources) and *sponsors* (actors providing financial resources for enabling platform activities). Macro level refers to the complex contextual role of *enabler* (actors capable of implementing systemic change enabling co-creation). *Intermediaries* (actors translating the complex information and processes to the other groups in the system and allowing easier connections) connect the three levels. The roles identified during the construction of the model can be filled by any of the actor groups with the exception of enabler role which is dedicated to governmental entities with the capacity to implement the systemic changes. The roles are described in more detail in Section 3.2.1.

The processes dimension refers to the patterns of design, management and collaboration in co-creating public value through civic technologies. A co-creative ecosystem has structural integrity because each involved actor has competencies, relationships and information that is shared. Two main processes in the ecosystem are *service provision* and *resource integration*. The empirical research allowed to identify the factors affect the sustainability of these processes on different ecosystem levels. At micro level the attention is paid to the design and maintenance of value propositions of individual actors by *Integration of feedback and external input, User-centricity, Formal commitment of actors and Competencies of initiators*. At meso level the processes between the actors are influenced by *Shared goals, Heterogeneity actors involved, Embeddedness in networks, Active role of intermediaries, Offline engagement strategies, Familiarization with existing norms and structures*. At macro level, the processes are influenced by the *Pro-active governmental entities, Infrastructure for openness, transparency and accountability, and Institutional support*. The factors affecting the processes are discussed in-depth in Section 3.2.3.

**Figure 19:** *ICT-Enabled Co-Creative Ecosystem Model*
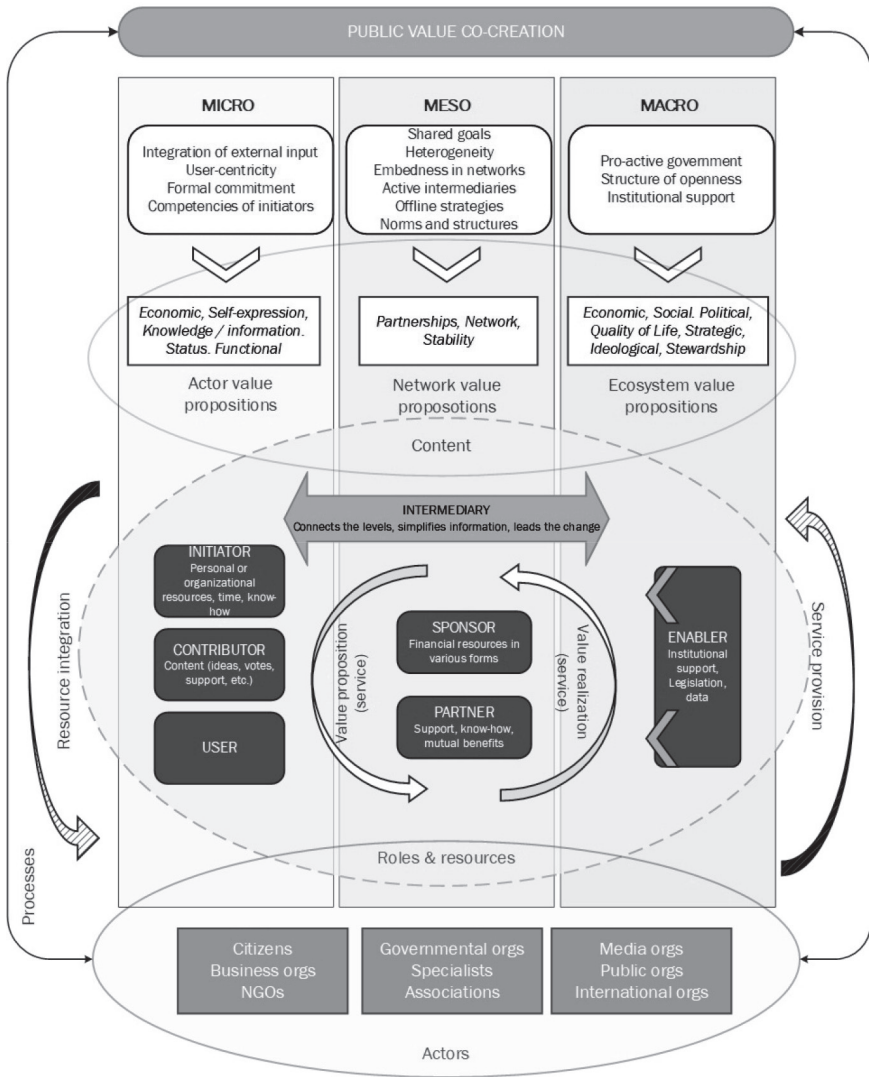


**Source:** *developed by author (2018)*

The content dimension includes deliberations on the goals and objectives of the actors involved and is expressed through the notion of *value propositions*. Value propositions are used to connect one actor with other interested actors within co-creative ecosystem. Value propositions indicate how the actors involved could co-create value by integrating ecosystems their resources because the actor cannot deliver the value, but only offer value

propositions. By distributing value propositions though three levels, the framework allows to understand the value of ICT-enabled co-creation for people, organizations and society. Three categories of value propositions were established. At micro level, value propositions are based on the benefits the ICT-enabled co-creative activity generates/might generate for individual actors: *Economic, Self-expression, Knowledge / information, Status, Functional*. At meso level, value propositions are based on the benefits the actors receive due to co-operation with other stakeholders: *Partnerships, Strong Network, Stability*. At macro level, where the public value resides expresses through *Economic, Social, Political, Quality of Life, Strategic, Ideological and Stewardship* value propositions. The meaning of value propositions on different levels of ecosystem are detailed in Section 3.2.2.

The proposed model contributes to the literature by offering a more overarching understanding and typology of cross-actor collaborations in co-creative ecosystems than found elsewhere in the literature. The resulting model provides a structure for further empirical investigations by incorporating current research efforts and empirical evidence. There is an urge to investigate the prevalence of the ICT-enabled public services provided by non-governmental organizations, hence, the model allows understanding of each of the components of the model and, to add holism, the relationship between them. The model is applicable in diverse settings. It integrates contextual factors as integral social and technical aspects of the ecosystem but is not dependant on the context. The practical implications of the ecosystem framework include the definition of participation architecture allowing to coordinate collaborative activities between the actors and promotion of a shared worldview between governmental entities, civic society and private sector. The model has several limitations – definition of complex and continuously emergent socio-technical systems, such as ICT-enabled co-creative ecosystems, is unavoidably partial, context-specific and temporary. Firstly, the model does not describe the causalities of the actions by different actors for the ecosystem. Further research exploring how the actors interact in creating ICT-enabled co-creative tools would be useful in elaboration of the actor dynamics represented in the models. Second, the changes in the ecosystems be influenced by external causalities, which are not foreseen and described by the model. Lastly, almost every study setting draws a simplified model of reality. This is the case for the proposed model as well. There might be additional variables than analyzed dimensions of co-creation. Further research could make efforts into this direction and focus on other individual difference variables.

## 3.4. The Conclusions of Chapter 3

The chapter brings forward the theoretical and empirical background of the modeling, the model itself and the limitations. *ICT-Enabled Co-Creative Ecosystem Model* is designed based on the integration of theoretical analysis and empirical studies results. The model is distributed through micro, meso, macro levels and concentrated on interactions between dimensions of actor, processes and content. *ICT-Enabled Co-Creative Ecosystem* is a dynamic network with mapped and interconnected resources and actors. By distributing value propositions though three levels, the framework allows to understand the value of ICT-enabled co-creation for people, organizations and society. The resulting model provides structure for further empirical investigations by incorporating current research efforts and empirical evidence.

# CONCLUSIONS AND RECOMMENDATIONS

**Task 1:** Actualize the perception of ICT-enabled public value co-creation and to determine main preconditions, obstacles and risks by conducting analysis of related scientific research.

1.  The theory of co-creation originated in the business management literature and practice. Hence, Section 1.1 provides the actualization of the co-creation concept in the generation of public value. The aspects of three theoretical fields – co-creation theory, governance theory, ICT-enabled public sector theory – have been integrated to provide *a holistic view of the application of ICT-enabled co-creation in the generation of public value*. A common feature of these approaches to the value creation is the shift towards broader perspective focusing on the collaboration of different actors in the network.

2.  The co-creation theoretical premise (Section 1.1.1) expressed through *Service Science theory* offers a systematic approach for understanding the complex value co-creating systems and logical structure of their dynamics. The governance theoretical approach (Section 1.1.2) expressed through *New Public Governance theory* allowed to actualize the definition of public value. In addition, it explained the context and the need for changing the power balance and enabling collaborative practices in the creation of public value. ICT-enabled public sector theories (Section 1.1.3) expressed through the notion of *Government 2.0* and *government-as-platform* provided a theoretical basis for understanding value propositions the governments can provide to the civic society in terms of open data and facilitation of transparency and openness. Taking into account the discussion on theoretical developments in the fields of Co-Creation, ICT and Governance, ICT-enabled co-creation of public value was defined as a system driven by the goal of generating public value through the use of ICT and co-creation between government sector, private sector and civil society.

3.  ICT-enabled co-creation encompass many different interpretations and views depending on the objectives, background, research disciplines and underlying theories. Section 1.2 aimed at reviewing current research efforts by the academics and practitioners in the field in order to identify. The review allowed to identify research gaps, elaborate understanding of the concept and formulate the roadmap for further empirical investigations.

4.  Section 1.2.1 determines the main *preconditions, obstacles and risks of public value co-creation* as identified in the literature. The research suggests that the success of co-creative initiatives in generation of public value depend on institutional support, open attitude of public officials, risk aversion of both citizens and public sector executives, infrastructure of openness, transparency and accountability, roles, perceptions and capacities of actors involved, role of intermediaries, offline strategies, embeddedness in networks, and the features of civic society.

5.  The review revealed the lack of clarity in the literature regarding the forms Co-Creation can take in the public sector and the research surrounding it. Section 1.2.2 provides a more structured approach by determining two approaches to ICT-enabled

co-creation of public value differing on the understanding of the roles of governmental entities. *Top-down co-creation approach* refers to the implementation, design, and evaluation of public services, participation in government-initiated platforms, data and content contribution, improvement of existing processes and services, user-centric approaches to service design. *Bottom-up co-creation approach* refers to the platforms emerging from outside the governmental sector. Such differentiation allowed to synthesize current research efforts and revealed the locus of research literature on the application of ICT in enabling collaborations for public value has been within governments. The research on co-creation initiated outside governmental entities is *limited and remains at the initial phase*. The research focuses either on very specific components of the processes or provide an abstract understanding of what the concept represents with no frameworks or empirical evidence to guide public officials.

**Task 2:** Construct the conceptual framework integrating activities and preconditions needed for ICT-enabled public value co-creation and to substantiate the methodology for research of the model.

6. Section 2.1 details the *logical disposition of the conceptual framework* and provides a theoretical justification of the building blocks. The framework has been expanded from the Service Science, Public Value, Government 2.0 theories and research related to them discussed in Chapter 1. The framework has three foundational premises and consists of three dimensions – actors, content and processes – distributed on micro, meso and macro levels.

7. The *foundational premises of the framework* originate from the Service Science theory and allows to describe complex relationships between public entities, private entities and civil society. Three foundational premises of the conceptual framework are: (1) public value is co-created by multiple actors in the ecosystem; (2) service is the basis of exchange; (3) Actors cannot deliver the value alone but participate in the creation and offering of value propositions in the ecosystems.

8. The *ecosystem approach* has been applied in designing the framework referring to a system in which actors work together to achieve mutual benefit – public value. Here public value means the contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation. It should be viewed not as a concrete outcome but as a lens for interpreting change in civic society. The service ecosystem approach moves the focus away from the exchange between two actors to understanding that the value creation is grounded in the configurations between economic and social actors within networks. The actors in the ecosystem co-create value at three levels – *micro, meso and macro*. Micro level refers to a direct service-for-service exchange between the actors. Meso level refers to an indirect exchange with the stakeholders in the system. Macro level refers to the complex relationships between different actors with diverse interests co-creating public value.

9. In order to understand how public value is created on micro, meso and macro levels, three dimensions – actors, content, processes – were developed allowing to categorize the entities involved and ways they co-create public value.

a) The *actor dimension* refers to the of individuals and organizations participating in the service ecosystem, their roles and resources. The review of the literature allowed to identify four types of actors (*government, citizen, business, NGO*) and five types of roles (*initiator, user, partner, enabler, intermediary*) they can assume in the co-creative ecosystem.

b) The *content dimension* includes deliberations on the goals and objectives of the actors involved. The central concept of this dimension is the value proposition indicating how the actors could co-create value by integrating their resources. The notion is made that the *public value is co-created on a macro level*. Micro level deals with value offerings and benefits for the *individual actors*. Meso level provides insights on the stakeholder *network benefits*. By distributing value propositions through three levels, the framework allows to understand the value of ICT-enabled co-creation for people, organizations and society.

c) The *processes dimension* includes deliberations on the patterns of design, management and collaboration in co-creating public value. Service Science provides a lens to view actors in a system of other actors co-creating value through resource integration and service provision. To this end, the actor that develops the most compelling and relevant to the context value proposition will perform the best. The co-creative processes and development of value propositions are influenced by a number of preconditions on micro *(integration of external input, risk aversion of actors, clear incentives)*, meso (*collaborations and interoperability between governmental entities, embeddedness in networks, offline engagement strategies*) and macro (*strategic policy framework, infrastructure for openness, view that the government should be the sole provider of public services, transparency and accountability, lacking powers of central government, institutional support, open attitude of public officials*) levels.

10. The conceptual Co-Creative Ecosystem Framework provides a holistic view and helps to come to a more comprehensive assessment of what makes ICT-enabled co-creation of public value sustainable in the long-run. The framework and its elements allow to discuss the concept of ICT-enabled Co-Creation initiatives in-depth and enables the comparison between the cases.

11. Section 2.2 details the methodology used to develop, verify and supplement the model with empirical findings consists of detailing the course of three empirical studies. Research begins by conducting expert interviews in the *Study of Public Value Co-Creation through Civic Technologies* (Section 2.2.1). It is aimed at distinguishing the peculiarities of the actors and processes dimension of the framework. The findings of the qualitative study are complemented by the *Study on International Civic Technology Platforms* (Section 2.2.2) providing a quantitative perspective of the actor and content dimensions. The last study combined qualitative and quantitative methods in confirming the applicability of the framework's foundational premises by *Mapping of the Civic Technologies in Lithuania* (Section 2.2.3). Results of the studies are used to elaborate and validate the elements of conceptual Co-Creative Ecosystem Framework.

**Task 3:** Elaborate conceptual framework by determining the characteristics of ICT-enabled public value co-creation by means of expert interviews, content analysis of Lithuanian civic technology platforms and comparative analysis of international civic technology platforms.

12. Section 3.1 provides summary of the results expert interviews, content analysis of international platforms and mapping of Lithuanian platforms. Section 3.2 details how the results elaborate the actors, content and process dimensions of the conceptual framework and confirm identified foundational premises.

13. Section 3.2.1 details how the actor dimension was elaborated by the empirical study results. During the expert interviews six groups of actors – *governmental entities, citizens, private organizations, NGOs, media, specialists* – were identified. The content analysis of Lithuanian and international civic technology platforms added three more actor groups – *associations, public organizations* and *international organizations*. The roles of citizens and governmental entities have been discussed in most detail as compared to the other actor groups. The platform content analysis allowed to get insights on the seven roles: actors can assume the roles of *initiator, user* and *contributor* on a micro level, the roles of *partners* and *sponsors* on a meso level, and the role of *enabler* on a macro level. The role of *intermediary* refers to actors connecting different levels of the ecosystem.

14. Section 3.2.2 details how the content dimension was elaborated by the empirical study results. During the interviews the importance of content was highlighted through two functions: it connects actors in collaborations and attracts the end-users. The analysis of the research outputs aimed at content dimension (the goals, operation type, contexts) of civic technologies in the content analysis of international platforms and mapping of Lithuanian platforms allowed to elaborate the types of value propositions on micro (*economic, self-expression, knowledge/information, status, functional*), meso (*partnerships, networks, stability*) and macro (*economic, social, political, quality of life, strategic, ideological, stewardship*). The platforms in the sample, mostly provide value propositions that only limited number of users are interested in. The platforms are created with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators. However, the user-centric approach is often missing.

15. Section 3.2.3 details how the process dimension was elaborated by the empirical study results. The *Study of Public Value Co-Creation through Civic Technologies* allowed to identify two settings of the resource integration and service provision processes: design of value propositions and management of services. The empirical findings suggest, that in *designing* compelling value propositions, platform initiators facilitate the involvement of various groups of actors and systemize the input into design solutions. Three factors influencing the process have been identified: *co-design, intermediaries* and *familiarization with existing norms and structures*. The setting of *managing* value propositions is influenced by the *shared goals, targeting of important user groups, the learning curve of the initiators, need for a strong support system, the requirement of formal commitment from partners and competencies of the initiators*. Results of the study confirmed that designing and managing a sustainable platform requires involvement

of diverse stakeholders in a collaborative participatory process. Platform initiators instead on focusing on user needs and including them in the design of the platform, pursue their own agenda and operate under assumptions about their users. The initiators of civic technology projects often put too much emphasis on the creation of the tools. However, the field can grow and be sustainable if it includes the citizens, local communities, governmental employees, businesses and other stakeholders as equal partners. Partnerships should not be based on formal inclusion but by including the resources the actors have to offer in the creation of public value.

16. Results of the *Mapping of the Civic Technologies in Lithuania* allowed to test the applicability of foundational premises in analyzed context. The analysis of connections between the number of partners, number of roles and the uptake of platforms in the society provides understanding about the dynamics of actors in the civic tech landscape. The results correspond with the central ideas of Service Science and the proposed foundational premises which suggests that organizations no longer depend on internal capacities to satisfy external needs. Sustainable initiatives and organizations are required to maintain relationships with other actors in the ecosystem (e.g. partners, competitors, governments and end users). Hyperlink Network Analysis also showed strong links between the platforms and other actors in the network based on homogeneous issues. The analysis of the patterns of collaboration showed correspondence with the main ideas of Service Science – the more partners, the more central the platforms are in the networks and the more popular in the society.

17. The interviews with the experts and the literature provided information on idyllic co-creation of public value i.e. the experts discussed the potential and desired roles of governments, citizens and other actors in the ecosystem. However, the analysis of the content of Lithuanian Civic Tech platforms provides a different view. Despite the declarations to include more individuals and organizations into co-creation, the reality is quite different: (1) the role of citizens is often limited to being users and contributors rather than partners in creation and management of ICT-enabled initiatives; (2) majority of the initiatives have no (or does not declare the affiliations publicly) external partners; (3) pro-active government stance is needed but most of the organizations are working without governments as active partners, and (4) prevalence of the contributor role and variety of actors assuming this role is limited.

18. The platforms as actors provide only value propositions, however – mostly no one is interested as illustrated by the usage statistics of the platforms and low uptake in the society. The services and value propositions they offer are with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators without the regards as to what the target groups need. This can also be seen in the analysis of the platform content on defining the target groups – it is limited to citizens only.

**Task 4:** Propose updated and empirically verified ICT-enabled Co-Creation Ecosystem Model.

19. The *ICT-enabled Co-Creative Ecosystem Model* design is based on the ecosystem approach which refers to a system where involved entities cannot create and deliver

value alone – they can only propose value offerings to the other actors in the network and in this way co-create the value. The ecosystem framework is a dynamic and inclusive network in which all resources, actors, and institutions are mapped and interconnected. The model was constructed based on the findings of previous research studies and empirically verified with three studies, which allowed to verify the model and update it to fit the social reality.

20. The ecosystem model presented in Section 3.3 is *distributed through the micro, meso, macro levels* which allows to understand the value of ICT-enabled co-creation for people, organizations and society. The model *incorporates three analysis dimensions* – actor, processes and content – which allow to compare cases of ICT-enabled public value.

    a) The micro level refers to the direct exchanges between the initiators, users and contributors. The meso level refers to indirect exchanges with the partners and sponsors. The macro level refers to the complex contextual role of enabler. Intermediaries connect the three levels. The roles identified during the empirical researches can be filled by any of the actor groups with the exception of enabler role which is dedicated to governmental entities who have the capacity to implement the systemic changes in the ecosystem.

    b) Value propositions are used to connect the actors in the ecosystem. Three categories of value propositions were established. At the micro level, value propositions are based on the benefits the ICT-enabled co-creative activity generates/ might generate for individual actors: Economic, Self-expression, Knowledge / information, Status, Functional. At the meso level, value propositions are based on the benefits the actors receive due to co-operation with other stakeholders: Partnerships, Strong Network, Stability. At the macro level, the public value is expressed through Economic, Social, Political, Quality of Life, Strategic, Ideological and Stewardship value propositions.

    c) The two main processes driving the co-creative ecosystems are the service provision and resource integration. However, at the three level identified different factors affect the sustainability of these processes. At the micro level the attention is paid to the design and maintenance of value propositions of individual actors by Integration of feedback and external input, User-centricity, Formal commitment of actors and Competencies of initiators. At the meso level the processes between the actors are influenced by Shared goals, Heterogeneity actors involved, Embeddedness in networks, Active role of intermediaries, Offline engagement strategies, Familiarization with existing norms and structures. At the macro level, the processes are influenced by the Pro-active governmental entities, Infrastructure for openness, transparency and accountability, and Institutional support.

21. The resulting model provides a structure for further empirical investigations. There is an urge to investigate the prevalence of the ICT-enabled public services provided by non-governmental organizations, hence, the model allows understanding of each of the components of the model and, to add holism to the relationship between them. The model is applicable in diverse settings and is not context-dependent. The

model integrates contextual factors such as climate for openness as integral social and technical aspects of the ecosystem.

22. The ecosystem model with its *emphasis on dynamics* can be useful for design and evaluation of ICT-enabled co-creative initiatives. For planners and designers, the model components allow to evaluate existing strengths and weaknesses in relation to changes and improvements needed to be made to achieve their specific goals. The model is also useful for public policy planners and officials of governmental institutions in terms of setting agenda for change and providing guidelines encouraging the engagement of civic society, businesses and other non-governmental entities. The proposed model builds a collective intention about the ways in which the ICT-enabled bottom-up initiatives co-create public value and in turn a stronger shared vision of future success for the sector as a whole.

**Task 5:** Prepare managerial and organizational recommendations for strengthening the collective efforts of citizens, platform initiators and developers, public and governmental institutions in creating public value.

23. The research activities performed to achieve previous tasks – literature review, conceptual model, empirical studies – allowed to *build an in-depth working knowledge of the public value co-creation domain* and its performance, outputs and impacts. In the light of the main observations that have emerged from the design of ICT-Enabled Co-Creative Ecosystem model, it has become possible to develop recommendations aimed at increasing the co-creative capacities of governmental, private and civic entities. The recommendations are based on the micro, meso and macro levels detailed in the framework and the factors affecting them identified during the empirical studies. The micro level and the meso level include managerial recommendations for the platform initiators, managers and civic leaders. The macro level recommendations are oriented towards guiding the governmental entities. Additionally, recommendations for further research on the topic are proposed.

24. *The micro level recommendations* based on the proposed model include integration of the feedback and external input, user-centricity, formal commitment of actors and improvement of initiator competencies. The empirical study showed that the platforms in the sample provide value propositions that only limited number of users are interested in. Hence, development of broader value propositions could yield positive results in terms of uptake in the society. This can be achieved, firstly, through *integration of feedback and external input*. Getting a clear picture of the platform performance helps to identify the weaknesses to be improved as well as strengths that can be leveraged. Secondly, *user-centric approach* is necessary in designing the platforms. In the user-centric process, user requirements are considered from the beginning and included into the whole service creation and management cycle. Often the platforms are created with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators. Hence, the shift of focus towards user needs enable initiators to create tools that will actually be used. Third, *formal commitment of the actors* and *initiator competencies* is needed to ensure continuity and placid implementation of co-creative processes.

25. *The meso level recommendations* include the promotion of shared goals, heterogeneity of actors, embeddedness in the networks and promotion of intermediaries. The focus of the initiators should shift from building technologies to creating ecosystems of collaboration and partnerships. The research revealed, the emphasis on tool development which often means the projects fail to include the citizens, local communities, governmental employees, businesses and other stakeholders as equal partners. To be more sustainable, initiatives are required to maintain the relationships with *heterogeneous actors* in the ecosystem based on the *shared goals*. Hence, *embeddedness in the networks* ensure the platforms capitalize on networks' power – the more actors they attract, the more valuable they become for those actors in terms of value creation. Lastly, for the society to evolve to being more open and engaged, not all citizens have to be active, not all organizations have to be active – but there is need for *intermediaries*, civic leaders, active citizens who could translate the importance of active citizenship, transparency, open data and make it easier for citizens and governments to cooperate. The platform initiators should ensure inclusion of intermediaries in platform activities in form of promotion, engagement and spread of the message.

26. *The macro level recommendations* are based on the proposed model include proactive government stance, structure of openness and institutional support. The *proactive government stance* should be acted through promotion strategies that create opportunities for engagement. Politicians have to assume the role of agenda setters, facilitators and meta-governors of collaborative action. In case of limited resources and knowledge the governmental entities should be supportive and simply present in the discourse formulating the solutions to prevailing social challenges by *providing institutional support*. The local and national governments have to assume a role of educators in order to encourage citizens and other members of civil society to contribute. By participating in partnerships with civic tech initiatives the governmental entities can use it as an opportunity to learn themselves. The *structure of openness* should be expressed through promotion of open data and transparency in providing public services. The governments can collaborate by contributing resources in form of data, information, know-how, etc. With the provision of open data there is a greater chance in receiving innovative solutions for better government services, more active participation of society, etc.

27. ICT-enabled co-creation of public value encompass many different interpretations subjected by researchers, users, science fields and disciplines. Various parties are likely to hold different views on the concept. Proposed model offers *dynamic ideas for future researches* to further identify, conceptualize and understand the underlying perspectives which strongly influence the previous, current, and future concept of co-creation. However, the proposed model needs to be tested in additional cases to further verify its validity and usefulness in diverse settings and its applicability in different countries. Maturity model of ecosystem could be designed in order to provide more detailed guidelines for the actor involved in how to achieve the value. Additional work is needed to formulate measures and indicators of successful initiatives.

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# ANNEXES

**Annex 1:** *Definitions of Co-Creation in the Business Management and Administration Literature*

| Author | Definition |
|---|---|
| Prahalad & Ramaswamy (2004a, p. 8) | The process during which consumers take an active role and co-create value together with the company |
| Kristensson, Matthing, & Johansson (2008, p. 475) | Collaboration with customers for the purposes of innovation |
| Ramaswamy (2009, p. 11) | The process by which products, services, and experiences are developed jointly by companies and their stakeholders, opening up a whole new world of value. |
| Ertimur & Venkatesh (2010, p. 258) | It implies that consumers become part of the collection of partners with whom the firm has to cooperate with in order to create value |
| Zwass (2010, p. 13) | The participation of consumers along with producers in the creation of value in the marketplace |
| Ostrom et al. (2010, p. 24) | Collaboration in the creation of value through shared inventiveness, design, and other discretionary behaviors |
| Ballantyne, Williams, & Aitken (2011, p. 180) | A form of experiential interaction, suggesting purposeful intent between suppliers and customers, actual or hoped for, likewise with all kinds of inter-institutional connections, as well as between individuals and groups of individuals |
| (Gronroos, 2011, p. 279) | A joint value creation process, which requires the simultaneous presence of both customer and supplier |
| McColl-Kennedy, Cheung, & Ferrier (2012, p. 370) | Benefit realized from integration of resources through activities and interactions with collaborators in the customer's service network |
| Chen, Marsden, & Zhang (2012, p. 4) | Joint activities by parties involved in dyadic direct interactions aimed at contributing to the value that emerges for one or both parties or all parties in a larger network |
| Grönroos (2012, p. 1523) | The joint collaborative activities by parties involved in direct interactions aiming to contribute to the value that emerges for one or both parties |
| Ind & Coates (2013, p. 87) | An active, creative, and social process based on collaboration between organizations and participants that generates benefits for all and creates value for stakeholders |
| Roser, DeFillippi, & Samson (2013, p. 23) | An interactive, creative and social process between stakeholders that is initiated by the firm at different stages of the value creation process |
| Galvagno & Dalli (2014, p. 644) | The joint, collaborative, concurrent, peer-like process of producing new value, both materially and symbolically |
| Stieler, Weismann, & Germelmann (2014, p. 72) | The process of collaborative value creation between different actors |
| Tai-Ning, Hsiao-Chen, Shou-Yen, & Chiao-Lun (2011, p. 47) | The meaningful and cooperative participation of customers during the process of service delivery |

**Annex 2:** *Definitions of Co-Creation in the Literature on Public Sector Management*

| Authors | Definition |
|---|---|
| Voorberg, Bekkers, & Tummers (2014, p. 14) | The involvement of citizens in the initiation and/or the design process of public services in order to (co)create beneficial outcomes. |
| Bason (2010b, p. 8) | Co-creation in the public sector realm has been conceived as "creating new solutions, with people, not for them". |
| Leading Cities (2012, p. 2) | The active flow of information and ideas among five sectors of society: government, academia, business, non-profits and citizens - the Quintiple Helix - which allows for participation, engagement and empowerment in developing policy, creating programs, improving services and tackling systemic change with each dimension of society represented from the beginning. |
| Gouillart & Hallet (2015, p. 1) | In a co-creation effort, multiple stakeholders come together to develop new practices that traditionally would have emerged only from a bureaucratic, top-down process (if, indeed, those practices would have emerged at all). |
| Kannan & Chang (2013, p. 11) | An active, creative, and social process, based on collaboration between governments and citizens and/or between citizens and citizens that is facilitated by the government to generate value for citizens through innovative services. |
| Marian & Monteyne (2011, p. 1) | The idea behind urban co-creation is to bridge the gap between professionals and laypeople and allow for intervention, participation, and engagement regardless of social or professional background of participants. The |
| Uppström (2014, p. 10) | A collaborative process, enabled by IT, where parties from public sector/citizens/private business participate in creating value for the involved stakeholders and for the public. |

**MRU**
MYKOLAS ROMERIS
UNIVERSITY

Interview questionnaire

**Researcher**: Monika Mačiulienė, Mykolas Romeris University (Faculty of Politics and Management)
**Goal**: The research aims to deepen understanding on the civic technology platforms and the ways they allow to co-create the public value.
**Main terms**:

Co-Creation. Management initiative or a form of economic strategy, that brings different actors together in order to jointly produce a mutually valued outcome (Prahalad & Ramaswamy, 2004).

Civic technologies. Platforms and applications enabling the citizens to connect and to collaborate with each other and with the government (Suri, 2013). Examples: open data visualization platforms, mapping platforms, apps allowing to notify the authorities about problems in the city.

| **Intro questions** |
|---|
| Please introduce yourself and organization (platform) you represent. |
| **Process dimension questions** |
| How the platform was created? |
| What kind of participants are involved in design of the platform? |
| What initiator abilities are needed for sustainable platforms? |
| How the platforms should be evaluated? How to receive feedback? |
| How the target groups are selected? Is this needed? What determines selection of certain groups? |
| Can civic tech platforms replace certain functions of government services? |
| **Content dimension questions** |
| What are the goals of civic tech platforms? Can such goals be achieved without the help of ICT? |
| What value they are creating/offering for their end-users? Partners? |
| Are the platforms and other ICT tools applicable in tackling various societal problems or in creating various public services? |
| How individuals/organizations should select ICT tools when seeking to create projects creating public value? |
| **Actors' dimension questions** |
| What resources are needed in order to create platforms? |
| What is the relation between civic tech platforms? |
| What are the relations with NGOs? Do different entities collaborate? How? |
| What is the role of political organizations and governments? What is the degree of collaboration, support? |
| What is the role of business organizations in creating public value? |
| **Context dimension questions** |
| What is the role of civic tech platforms in creating public value, more open society? |
| What factors enable creation of civic tech platforms and involvement of various groups of society in creating public value? |
| How open society, open data, changing perspectives of public services are changing the civic tech field? |
| What are international examples of successful civic technologies? Why do you think they are successful and sustainable? What can be applied to your organizations and the context in which you are working? |
| How Lithuanian civic platforms fit into the global context of civic tech movement? |
| How civic tech platforms create value for the end-users, partners involved and society in general? |
| Thank you for your time! |

### Consent form

I am informed that:
1. The research aims to deepen understanding on the civic technology platforms and the ways they allow to co-create the public value. To achieve this goal, the developers, initiators and experts of civic technologies are being interviewed.
2. The goal of the interview is to gain insights on the processes of civic technologies' development and management.
3. The participation in the interview is voluntary and unpaid.
4. The interview questionnaire consists of 4 groups of questions. The first group is related the processes in the civic technology platform, the second group raises questions on the content aspects of the platforms, third group analyzes the actors involved in creating and managing the technologies and the final group explores the context of platforms.
5. The estimated duration of the interview is 1 hour.
6. The results of the research will be published openly.

I am acquainted with the provided information. I understand that I can refuse to participate in the interview and research processes at any time without losses of fines. I have been offered a copy of this consent form.

_____          _____
The signature, name and surname                        Date


_____
E-mail address and phone number

**Annex 5:** *Data Collection Template and Collected Data*

| Name | Initiators | Context | Sub-Context | Goals | Type of platform |
|------|-----------|---------|-------------|-------|------------------|
| archmap.lt | NGO | Education & entertainment | Architecture, education | Community building | Mapping platform |
| aslietuvai.lt | Individual | Governance | Ideas for better future | Solving social problems | Group decision-making platforms |
| Aš už Lietuvą! | Business | Education & entertainment | Entertainment | Solving social problems | Resource sharing/ matching platforms |
| atvirasteismas.lt | NGO | Governance | Law system | Transparency & accountability | Data visualization platform |
| aukok.lt | NGO | Social support | Crowdfunding social projects | Solving social problems | Resource sharing/ matching platforms |
| aukokdaiktus.lt | NGO | Social support | Peer-to-peer sharing for charity | Solving social problems | Resource sharing/ matching platforms |
| aukoklaika.lt | NGO | Social support | Services for the social inclusion | Solving social problems | Resource sharing/ matching platforms |
| be-ribu.lt | NGO | Education & entertainment | Human rights, education | Solving social problems | Online learning platforms |
| beseselio.lt | NGO | Economy | Contraband, smuggling | Stimulating economic exchange | Issue reporting platforms |
| buksavanoriu.lt | NGO | Social support | Volunteering awareness | Solving social problems | Resource sharing/ matching platforms |
| code4vilnius | Individual | Governance | Coding for city, volunteering | Solving social problems | Data visualization platform |
| eile.lt | Business | Health & Living | Daily public service improvement | Better government services | Gov communication platforms |
| ekologija.lt | NGO | Environment | Spread of green ideas | Conscious consuming | Group decision-making platforms |
| freedata.lt | Individual | Governance | Open data for good | Solving social problems | Data visualization platform |
| GIS mokykla | Business | Education & entertainment | Education on tech | Transparency & accountability | Online learning platforms |
| Global Lithuanian Leaders | NGO | Economy | Emigrant inclusion | Stimulating economic exchange | Group decision-making platforms |
| jurgio kepurė | NGO | Governance | Local government transparency | Transparency & accountability | Data visualization platform |
| kaveikiavaldzia.lt | Individual | Governance | Evaluating the parliament | Transparency & accountability | Data visualization platform |
| Kelionės kultūros keliais | NGO | Education & entertainment | Exploring the country | Community building | Mapping platform |
| Krašto Paveldo Gidas | Public | Education & entertainment | Exploring the heritage | Community building | Mapping platform |
| Kurgyvenu.lt | Business | Economy | Exploring the neighborhood | Stimulating economic exchange | Data visualization platform |

| Name | Initiators | Context | Sub-Context | Goals | Type of platform |
|---|---|---|---|---|---|
| Lietuva 2.0 | Individual | Governance | Ideas for better future | Solving social problems | Group decision-making platforms |
| manobalsas.lt | Public | Governance | Informed decision-making | Solving social problems | Opinion-matching platforms |
| manodaktaras.lt | Business | Health & Living | Health care reviews | Better government services | Issue reporting platforms |
| manokraujas.lt | NGO | Health & Living | Blood donations and awareness | Citizen engagement | Resource sharing/matching platforms |
| manoseimas.lt | NGO | Governance | Informed decision-making | Citizen engagement | Opinion-matching platforms |
| mesDarom.lt | NGO | Environment | Caring for environment | Citizen engagement | Issue reporting platforms |
| moku-mokescius.lt | NGO | Governance | Taxes awareness | Transparency & accountability | Data visualization platform |
| namubendrijos.lt | Individual | Health & Living | Neighborhood forum | Community building | Group decision-making platforms |
| nemasinis.lt | Business | Education & entertainment | Exploring the country | Community building | Mapping platform |
| NVO paslaugų katalogas | NGO | Economy | NGO service outsourcing | Stimulating economic exchange | Resource sharing/matching platforms |
| Oi, pranešiu! | NGO | Environment | Caring for environment | Citizen engagement | Issue reporting platforms |
| pamatykLietuvoje.lt | Individual | Education & entertainment | Exploring the country | Community building | Mapping platform |
| parasykjiems.lt | Individual | Governance | Communication with gov officials | Transparency & accountability | Gov communication platforms |
| peticija.com | Individual | Governance | Petitions, community organization | Citizen engagement | Petitioning platforms |
| peticija.lt | Individual | Governance | Petitions, community organization | Citizen engagement | Petitioning platforms |
| pincetas.lt | Business | Health & Living | Health care reviews | Better government services | Issue reporting platforms |
| pranešk (Baltosios pirštinės) | NGO | Governance | Fair election | Transparency & accountability | Issue reporting platforms |
| Pričiupk! | Business | Governance | Safety in roads | Citizen engagement | Issue reporting platforms |
| reitinguok.lt | Business | Governance | Evaluating electoral candidates | Citizen engagement | Opinion-matching platforms |
| renkumera.lt | Business | Governance | Evaluating electoral candidates | Transparency & accountability | Data visualization platform |
| seime.lt | Individual | Governance | Evaluating the parliament | Transparency & accountability | Data visualization platform |
| seimodarbai.lt | Individual | Governance | Evaluating the parliament | Citizen engagement | Data visualization platform |

| Name | Initiators | Context | Sub-Context | Goals | Type of platform |
|---|---|---|---|---|---|
| skaidrumo linija | NGO | Governance | Bribery | Transparency & accountability | Issue reporting platforms |
| stirna.info | NGO | Governance | Media transparency | Transparency & accountability | Data visualization platform |
| sveikasvaikas.lt | Individual | Health & Livinig | Healthy living | Conscious consuming | Data visualization platform |
| TechMap | Individual | Economy | Technology, start-up development | Stimulating economic exchange | Mapping platform |
| Telše programėlė | Individual | Education & enterntainment | Exploring the country | Stimulating economic exchange | Mapping platform |
| trysmilijonai.lt | NGO | Governance | Diaspora networking | Community building | Group decision-making platforms |
| Tvarkau Vilnių | Individual | Governance | City management | Citizen engagement | Issue reporting platforms |
| zinaukarenku.lt | NGO | Governance | Informed elections | Transparency & accountability | Data visualization platform |
| Žaliasis taškas | NGO | Environment | Recycling awareness | Conscious consuming | Data visualization platform |

Platform data – Partners and Funding

| Name | Number of partners | NGO partners | Government partners | Public org partners | International orgs partners | Associations' partners | Business partners | Number of funding sources | Business funding | Government funding | EU + structural funds | Individual funding | International orgs funding | Generates revenues itself | Not specified - funding |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| archmap.lt | 7 | 1 | 2 | 0 | 0 | 1 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| aslietuvai.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Aš už Lietuvą! | 55 | 14 | 26 | 5 | 0 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| atvirasteismas.lt | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| aukok.lt | 20 | 0 | 0 | 0 | 0 | 0 | 20 | 3 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| aukokdaiktus.lt | 5 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| aukoklaika.lt | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| be-ribu.lt | 6 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| beseselio.lt | 20 | 7 | 6 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| buksavanoriu.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| code4vilnius | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| eile.lt | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| ekologija.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| freedata.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| GIS mokykla | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

| Name | Number of partners | NGO partners | Government partners | Public org partners | International orgs partners | Associations' partners | Business partners | Number of funding sources | Business funding | Government funding | EU + structural funds | Individual funding | International orgs funding | Generates revenues itself | Not specified - funding |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Lithuanian Leaders | 16 | 3 | 0 | 0 | 12 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| jurgio kepurė | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| kaveikiavaldzia.lt | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Kelionės kultūros keliais | 5 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Krašto Paveldo Gidas | 5 | 0 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Kurgyvenu.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| Lietuva 2.0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| manobalsas.lt | 14 | 9 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| manodaktaras.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| manokraujas.lt | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| manoseimas.lt | 11 | 1 | 1 | 2 | 1 | 0 | 6 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| mesDarom.lt | 19 | 0 | 0 | 2 | 1 | 0 | 16 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| mokumokescius.lt | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| namubendrijos.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| nemasinis.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NVO paslaugų katalogas | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Oi, pranešk! | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| pamatykLietuvoje.lt | 7 | 0 | 4 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| parasykjiems.lt | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| peticija.com | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| peticija.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| pincetas.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| pranešk (Baltosios pirštinės) | 8 | 4 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Pričiupk! | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| reitinguok.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| renkumera.lt | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| seime.lt | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| seimodarbai.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| skaidrumo linija | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| stirna.info | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| sveikasvaikas.lt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TechMap | 5 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Telše programėlė | 6 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| trysmilijonai.lt | 4 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Tvarkau Vilnių | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| zinaukarenku.lt | 10 | 4 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Žaliasis taškas | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Platform data (Tools)

| Name | Tools | Tools | Open data | Registration | Github/open source | Public reports |
|---|---|---|---|---|---|---|
| archmap.lt | website | 4 | 0 | 1 | 0 | 0 |
| aslietuvai.lt | website | 4 | 0 | 0 | 0 | 0 |
| Aš už Lietuvą! | website | 4 | 0 | 0 | 0 | 0 |
| atvirasteismas.lt | website | 4 | 1 | 0 | 0 | 0 |
| aukok.lt | website | 4 | 0 | 0 | 0 | 1 |
| aukokdaiktus.lt | website | 4 | 0 | 0 | 0 | 1 |
| aukoklaika.lt | website | 4 | 0 | 0 | 0 | 1 |
| be-ribu.lt | website | 4 | 0 | 1 | 0 | 1 |
| beseselio.lt | website | 4 | 0 | 1 | 0 | 0 |
| buksavanoriu.lt | website | 4 | 0 | 0 | 0 | 1 |
| code4vilnius | network | 3 | 1 | 0 | 1 | 0 |
| eile.lt | app | 1 | 0 | 1 | 0 | 0 |
| ekologija.lt | website | 4 | 0 | 0 | 0 | 0 |
| freedata.lt | network | 3 | 1 | 0 | 1 | 0 |
| GIS mokykla | website | 4 | 0 | 0 | 0 | 0 |
| Global Lithuanian Leaders | website | 4 | 0 | 1 | 0 | 0 |
| jurgio kepurė | website | 4 | 1 | 0 | 0 | 1 |
| kaveikiavaldzia.lt | website | 4 | 1 | 0 | 0 | 0 |
| Kelionės kultūros keliais | website | 4 | 0 | 0 | 0 | 0 |
| Krašto Paveldo Gidas | website | 4 | 1 | 0 | 0 | 0 |
| Kurgyvenu.lt | website | 4 | 1 | 0 | 0 | 0 |
| Lietuva 2.0 | website | 4 | 0 | 1 | 0 | 0 |
| manobalsas.lt | website | 4 | 0 | 0 | 0 | 0 |
| manodaktaras.lt | website | 4 | 0 | 1 | 0 | 0 |
| manokraujas.lt | app | 1 | 0 | 1 | 0 | 0 |
| manoseimas.lt | website | 4 | 0 | 0 | 1 | 0 |
| mesDarom.lt | website | 4 | 0 | 0 | 0 | 1 |
| mokumokescius.lt | website | 4 | 0 | 0 | 0 | 1 |
| namubendrijos.lt | website | 4 | 0 | 1 | 0 | 0 |
| nemasinis.lt | website | 4 | 0 | 0 | 0 | 0 |
| NVO paslaugų katalogas | website | 4 | 0 | 1 | 0 | 0 |
| Oi, pranešiu! | app + website | 2 | 0 | 1 | 0 | 0 |
| pamatykLietuvoje.lt | website | 4 | 1 | 0 | 0 | 0 |
| parasykjiems.lt | website | 4 | 1 | 0 | 0 | 0 |
| peticija.com | website | 4 | 0 | 0 | 0 | 0 |
| peticija.lt | website | 4 | 0 | 0 | 0 | 0 |
| pincetas.lt | website | 4 | 0 | 1 | 0 | 0 |
| pranešk (Baltosios pirštinės) | website | 4 | 0 | 0 | 0 | 1 |
| Pričiupk! | app | 1 | 0 | 1 | 0 | 0 |
| reitinguok.lt | website | 4 | 0 | 0 | 0 | 0 |

| Name | Tools | Tools | Open data | Registration | Github/open source | Public reports |
|------|-------|-------|-----------|--------------|--------------------|----------------|
| renkumera.lt | website | 4 | 1 | 0 | 0 | 0 |
| seime.lt | website | 4 | 1 | 0 | 1 | 0 |
| seimodarbai.lt | website | 4 | 0 | 0 | 0 | 0 |
| skaidrumo linija | website | 4 | 0 | 0 | 0 | 1 |
| stirna.info | website | 4 | 1 | 0 | 0 | 1 |
| sveikasvaikas.lt | app + website | 2 | 0 | 0 | 0 | 0 |
| TechMap | website | 4 | 1 | 0 | 1 | 0 |
| Telše programėlė | app | 1 | 1 | 1 | 0 | 0 |
| trysmilijonai.lt | website | 4 | 0 | 0 | 0 | 0 |
| Tvarkau Vilnių | app + website | 2 | 1 | 1 | 1 | 0 |
| zinaukarenku.lt | website | 4 | 1 | 0 | 0 | 0 |
| Žaliasis taškas | app | 1 | 0 | 1 | 0 | 1 |

**Annex 6:** *Uptake Calculation*

| CODE | PLATFORM | M indicator | | | | | G indicator | | D indicator | | | | F indicator | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of media mentions | Number of comments next to media mentions | Normalized M1 value | Normalized M2 value | M (normalized) | Google results | G (normalized) | Start date - end date | | Duration | D (normalized) | Facebook | F (normalized) | UPTAKE |
| P1 | archmap.lt | 3 | 0 | 0,057 | 0,000 | 0,057 | 75 | 0,392 | 2009 | now | 8 | 0,700 | 732 | 0,035 | 0,30 |
| P2 | aslietuvai.lt | 8 | 5 | 0,151 | 0,001 | 0,152 | 54 | 0,259 | 2009 | now | 8 | 0,700 | 1049 | 0,050 | 0,29 |
| P3 | Aš už Lietuvą! | 14 | 1729 | 0,264 | 0,388 | 0,652 | 100 | 0,551 | 2016 | now | 1 | 0,000 | 2948 | 0,139 | 0,34 |
| P4 | atvirasteismas.lt | 3 | 0 | 0,057 | 0,000 | 0,057 | 46 | 0,209 | 2013 | now | 4 | 0,300 | 0 | 0,000 | 0,14 |
| P5 | aukok.lt | 27 | 167 | 0,509 | 0,037 | 0,547 | 142 | 0,816 | 2009 | now | 8 | 0,700 | 1496 | 0,071 | 0,53 |
| P6 | aukokdaiktus.lt | 0 | 0 | 0,000 | 0,000 | 0,000 | 37 | 0,152 | 2010 | now | 7 | 0,600 | 10804 | 0,511 | 0,32 |
| P7 | aukoklaika.lt | 0 | 0 | 0,000 | 0,000 | 0,000 | 31 | 0,114 | 2014 | now | 3 | 0,200 | 10804 | 0,511 | 0,21 |
| P8 | be-ribu.lt | 0 | 0 | 0,000 | 0,000 | 0,000 | 20 | 0,044 | 2015 | now | 2 | 0,100 | 195 | 0,009 | 0,04 |
| P9 | beseselio.lt | 23 | 1443 | 0,434 | 0,324 | 0,758 | 83 | 0,443 | 2013 | now | 4 | 0,300 | 1826 | 0,086 | 0,40 |
| P10 | buksavanoriu.lt | 3 | 1 | 0,057 | 0,000 | 0,057 | 101 | 0,557 | 2012 | now | 5 | 0,400 | 0 | 0,000 | 0,25 |
| P11 | code4vilnius | 2 | 19 | 0,038 | 0,004 | 0,042 | 53 | 0,253 | 2015 | now | 2 | 0,100 | 0 | 0,000 | 0,10 |
| P12 | eile.lt | 2 | 0 | 0,038 | 0,000 | 0,038 | 86 | 0,462 | 2016 | now | 1 | 0,000 | 112 | 0,005 | 0,13 |
| P13 | ekologija.lt | 1 | 3 | 0,019 | 0,001 | 0,020 | 103 | 0,570 | 2012 | 2015 | 5 | 0,400 | 0 | 0,000 | 0,25 |
| P14 | freedata.lt | 1 | 9 | 0,019 | 0,002 | 0,021 | 81 | 0,430 | 2013 | now | 4 | 0,300 | 1458 | 0,069 | 0,21 |
| P15 | GIS mokykla | 0 | 0 | 0,000 | 0,000 | 0,000 | 40 | 0,171 | 2015 | now | 2 | 0,100 | 500 | 0,024 | 0,07 |
| P16 | Global Lithuanian Leaders | 53 | 4187 | 1,000 | 0,940 | 1,940 | 86 | 0,462 | 2009 | now | 8 | 0,700 | 4832 | 0,228 | 0,83 |
| P17 | jurgio kepurė | 2 | 0 | 0,038 | 0,000 | 0,038 | 52 | 0,247 | 2015 | now | 2 | 0,100 | 767 | 0,036 | 0,11 |
| P18 | kaveikiavaldzia.lt | 2 | 12 | 0,038 | 0,003 | 0,040 | 101 | 0,557 | 2010 | 2012 | 7 | 0,600 | 1824 | 0,086 | 0,32 |
| P19 | Kelionės kultūros keliais | 4 | 0 | 0,075 | 0,000 | 0,075 | 21 | 0,051 | 2015 | now | 2 | 0,100 | 12557 | 0,594 | 0,20 |
| P20 | Krašto Paveldo Gidas | 6 | 234 | 0,113 | 0,053 | 0,166 | 54 | 0,259 | 2016 | now | 1 | 0,000 | 0 | 0,000 | 0,11 |
| P21 | Kurgyvenu.lt | 18 | 590 | 0,340 | 0,132 | 0,472 | 129 | 0,734 | 2014 | now | 3 | 0,200 | 4989 | 0,236 | 0,41 |
| P22 | Lietuva 2.0 | 10 | 97 | 0,189 | 0,022 | 0,210 | 93 | 0,506 | 2012 | now | 5 | 0,400 | 3172 | 0,150 | 0,32 |
| P23 | manobalsas.lt | 16 | 2813 | 0,302 | 0,631 | 0,933 | 129 | 0,734 | 2007 | now | 10 | 0,900 | 851 | 0,040 | 0,65 |
| P24 | manodaktaras.lt | 4 | 49 | 0,075 | 0,011 | 0,086 | 43 | 0,190 | 2013 | now | 4 | 0,300 | 5983 | 0,283 | 0,21 |
| P25 | manokraujas.lt | 12 | 85 | 0,226 | 0,019 | 0,245 | 20 | 0,044 | 2016 | now | 1 | 0,000 | 0 | 0,000 | 0,07 |
| P26 | manoseimas.lt | 16 | 257 | 0,302 | 0,058 | 0,360 | 121 | 0,684 | 2012 | now | 5 | 0,400 | 213 | 0,010 | 0,36 |
| P27 | mesDarom.lt | 38 | 1187 | 0,717 | 0,266 | 0,983 | 171 | 1,000 | 2008 | now | 9 | 0,800 | 7438 | 0,352 | 0,78 |
| P28 | mokumokescius.lt | 12 | 987 | 0,226 | 0,221 | 0,448 | 83 | 0,443 | 2014 | now | 3 | 0,200 | 5820 | 0,275 | 0,34 |
| P29 | namubendrijos.lt | 0 | 0 | 0,000 | 0,000 | 0,000 | 73 | 0,380 | 2009 | now | 8 | 0,700 | 0 | 0,000 | 0,27 |
| P30 | nemasinis.lt | 0 | 0 | 0,000 | 0,000 | 0,000 | 18 | 0,032 | 2012 | now | 6 | 0,500 | 0 | 0,000 | 0,13 |
| P31 | NVO paslaugų katalogas | 1 | 0 | 0,019 | 0,000 | 0,019 | 17 | 0,025 | 2013 | now | 4 | 0,300 | 0 | 0,000 | 0,09 |
| P32 | Oi, pranešiu! | 4 | 9 | 0,075 | 0,002 | 0,077 | 61 | 0,304 | 2008 | now | 9 | 0,800 | 0 | 0,000 | 0,30 |

| CODE | PLATFORM | M indicator | | | | | G indicator | | D indicator | | | | F indicator | | UPTAKE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number of media mentions | Number of comments next to media mentions | Normalized M1 value | Normalized M2 value | M (normalized) | Google results | G (normalized) | Start date - end date | | Duration | D (normalized) | Facebook | F (normalized) | |
| P33 | pamatykLietu-voje.lt | 7 | 4456 | 0,132 | 1,000 | 1,132 | 59 | 0,291 | 2016 | now | 1 | 0,000 | 12037 | 0,569 | 0,50 |
| P34 | parasykjiems.lt | 3 | 28 | 0,057 | 0,006 | 0,063 | 96 | 0,525 | 2010 | now | 7 | 0,600 | 277 | 0,013 | 0,30 |
| P35 | peticija.com | 5 | 839 | 0,094 | 0,188 | 0,283 | 97 | 0,532 | 2010 | now | 7 | 0,600 | 2433 | 0,115 | 0,38 |
| P36 | peticija.lt | 11 | 381 | 0,208 | 0,086 | 0,293 | 75 | 0,392 | 2007 | now | 10 | 0,900 | 68 | 0,003 | 0,40 |
| P37 | pincetas.lt | 11 | 636 | 0,208 | 0,143 | 0,350 | 112 | 0,627 | 2006 | now | 11 | 1,000 | 1521 | 0,072 | 0,51 |
| P38 | Baltosios pirštinės | 7 | 191 | 0,132 | 0,043 | 0,175 | 106 | 0,589 | 2014 | now | 3 | 0,200 | 7397 | 0,350 | 0,33 |
| P39 | Pričiupk! | 3 | 237 | 0,057 | 0,053 | 0,110 | 53 | 0,253 | 2012 | now | 5 | 0,400 | 0 | 0,000 | 0,19 |
| P40 | reitinguok.lt | 3 | 1 | 0,057 | 0,000 | 0,057 | 80 | 0,424 | 2012 | 2016 | 5 | 0,400 | 71 | 0,003 | 0,22 |
| P41 | renkumera.lt | 3 | 3 | 0,057 | 0,001 | 0,057 | 70 | 0,361 | 2014 | not ac-tive | 3 | 0,200 | 709 | 0,034 | 0,16 |
| P42 | seime.lt | 2 | 9 | 0,038 | 0,002 | 0,040 | 74 | 0,386 | 2011 | now | 6 | 0,500 | 81 | 0,004 | 0,23 |
| P43 | seimodarbai.lt | 3 | 22 | 0,057 | 0,005 | 0,062 | 13 | 0,000 | 2016 | now | 1 | 0,000 | 4 | 0,000 | 0,02 |
| P44 | skaidrumo linija | 1 | 0 | 0,019 | 0,000 | 0,019 | 86 | 0,462 | 2012 | now | 5 | 0,400 | 0 | 0,000 | 0,22 |
| P45 | stirna.info | 9 | 29 | 0,170 | 0,007 | 0,176 | 72 | 0,373 | 2013 | now | 4 | 0,300 | 0 | 0,000 | 0,21 |
| P46 | sveikasvaikas.lt | 15 | 1605 | 0,283 | 0,360 | 0,643 | 134 | 0,766 | 2009 | now | 7 | 0,600 | 21151 | 1,000 | 0,75 |
| P47 | TechMap | 1 | 0 | 0,019 | 0,000 | 0,019 | 13 | 0,000 | 2016 | now | 1 | 0,000 | 0 | 0,000 | 0,00 |
| P48 | Telše programėlė | 2 | 0 | 0,038 | 0,000 | 0,038 | 45 | 0,203 | 2015 | now | 2 | 0,100 | 1247 | 0,059 | 0,10 |
| P49 | trysmilijonai.lt | 2 | 1 | 0,038 | 0,000 | 0,038 | 105 | 0,582 | 2009 | 2013 | 7 | 0,600 | 0 | 0,000 | 0,31 |
| P50 | Tvarkau Vilnių | 0 | 0 | 0,000 | 0,000 | 0,000 | 52 | 0,247 | 2012 | now | 5 | 0,400 | 282 | 0,013 | 0,17 |
| P51 | zinaukarenku.lt | 6 | 16 | 0,113 | 0,004 | 0,117 | 90 | 0,487 | 2014 | now | 3 | 0,200 | 5886 | 0,278 | 0,27 |
| P52 | Žaliasis taškas | 3 | 2 | 0,057 | 0,000 | 0,057 | 54 | 0,259 | 2016 | now | 1 | 0,000 | 0 | 0,000 | 0,08 |

**Annex 7:** *Platform Content Analysis (Actors and Roles)*

| Platform code and name | Non-governmental organizations | | Governmental organizations | | Public organizations | | International organizations | | Associations | | Business organizations | | Media organizations | | Citizens and citizen groups | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1 archmap.lt | 2 | initiator, partner | 2 | partner, sponsor | 1 | user | 0 | n/a | 1 | partner | 2 | partner, sponsor | 0 | n/a | 2 | user, contributor | **10** |
| P2 aslietuvai.lt | 0 | n/a | 2 | user, sponsor | 1 | user | 0 | n/a | 0 | n/a | 1 | user | 1 | user | 3 | user, initiator, contributor | **8** |
| P3 Aš už Lietuvą! | 2 | user, partner | 2 | user, partner | 2 | user, partner | 0 | n/a | 1 | partner | 3 | user, initiator, partner | 1 | partner | 1 | user | **12** |
| P4 atvirasteismas.lt | 1 | initiator, partner | 3 | user, partner, sponsor | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 1 | user | 2 | user, sponsor | **8** |
| P5 aukok.lt | 2 | user, initiator | 1 | sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 3 | user, partner, sponsor | 0 | n/a | 2 | user, sponsor | **8** |
| P6 aukokdaiktus.lt | 3 | user, initiator, partner | 1 | user | 1 | user | 0 | n/a | 0 | n/a | 2 | user, partner | 0 | n/a | 1 | user | **8** |
| P7 aukoklaika.lt | 2 | user, initiator | 3 | user, partner, sponsor | 1 | user | 0 | n/a | 1 | user | 1 | user | 0 | n/a | 1 | user | **8** |
| P8 be-ribu.lt | 2 | user, initiator | 3 | user, partner, sponsor | 2 | user, partner | 1 | sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | **9** |
| P9 beseselio.lt | 2 | initiator, partner | 2 | user, partner | 2 | user, partner | 0 | n/a | 0 | n/a | 1 | partner, sponsor | 2 | user, partner | 2 | user, contributor | **11** |
| P10 buksavanoriu.lt | 2 | user, initiator | 2 | user, sponsor | 1 | user | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | **7** |
| P11 code4vilnius | 1 | user | 2 | user, partner | 1 | user | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 3 | user, initiator, contributor | **8** |
| P12 eile.lt | 0 | | 2 | user, partner | 1 | user | 0 | n/a | 0 | n/a | 2 | user, initiator | 0 | n/a | 1 | user | **6** |
| P13 ekologija.lt | 1 | initiator | 2 | user, sponsor | 1 | user | 0 | n/a | 1 | user | 1 | user | 0 | n/a | 2 | user, contributor | **8** |
| P14 freedata.lt | 2 | user, partner | 1 | user | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | 2 | user, initiator | **7** |
| P15 GIS mokykla | 1 | partner | 0 | n/a | 1 | user | 0 | n/a | 1 | user | 2 | initiator, partner | 0 | n/a | 1 | user | **6** |
| P16 Global Lithuanian Leaders | 3 | n/a | 2 | user, sponsor | 1 | user | 2 | user, partner | 2 | user, partner | 1 | user | 1 | user | 3 | user, contributor, founder | **15** |
| P17 jurgio kepurė | 2 | initiator, partner | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | 1 | user | **5** |
| P18 kaveikiavaldzia.lt | 1 | partner | 1 | user | 0 | n/a | 2 | partner, sponsor | 0 | n/a | 0 | n/a | 1 | user | 3 | user, initiator, contributor | **8** |

| Platform code and name | Non-governmental organizations | | Governmental organizations | | Public organizations | | International organizations | | Associations | | Business organizations | | Media organizations | | Citizens and citizen groups | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P19 Kelionės kultūros keliais | 2 | initiator, partner | 1 | partner | 2 | user, partner | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | 2 | user, contributor | 8 |
| P20 Krašto Paveldo Gidas | 0 | n/a | 2 | partner, sponsor | 3 | user, initiator, partner | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | 2 | user, contributor | 8 |
| P21 Kurgyvenu.lt | 0 | n/a | 1 | sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 3 | user, initiator, sponsor | 0 | n/a | 1 | user | 5 |
| P22 Lietuva 2.0 | 1 | contributor | 1 | contributor | 1 | contributor | 0 | n/a | 1 | contributor | 2 | contributor, partner | 0 | n/a | 3 | user, initiator, contributor | 9 |
| P23 manobalsas.lt | 1 | partner | 2 | partner, sponsor | 2 | user, initiator | 1 | sponsor | 0 | n/a | 1 | partner | 2 | user, partner | 2 | user, sponsor | 11 |
| P24 manodaktaras.lt | 0 | n/a | 1 | sponsor | 1 | user | 0 | n/a | 0 | n/a | 3 | user, initiator, sponsor | 0 | n/a | 2 | user, contributor | 7 |
| P25 manokraujas.lt | 1 | initiator | 0 | n/a | 2 | user, initiator | 0 | n/a | 0 | n/a | 2 | partner, sponsor | 0 | n/a | 1 | user | 6 |
| P26 manoseimas.lt | 2 | initiator, partner | 2 | partner, sponsor | 2 | user, partner | 2 | partner, sponsor | 0 | n/a | 2 | partner, sponsor | 1 | user | 3 | user, contributor, founder | 14 |
| P27 mesDarom.lt | 1 | initiator | 1 | user | 2 | user, partner | 1 | partner | 0 | n/a | 3 | user, partner, sponsor | 0 | n/a | 2 | user, sponsor | 10 |
| P28 mokumokescius.lt | 1 | initiator | 0 | n/a | 0 | n/a | 1 | partner | 0 | n/a | 0 | n/a | 1 | user | 1 | user | 4 |
| P29 namubendrijos.lt | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 1 | sponsor | 0 | n/a | 3 | user, initiator, contributor | 5 |
| P30 nemasinis.lt | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 1 | initiator | 0 | n/a | 2 | user, contributor | 4 |
| P31 NVO paslaugų katalogas | 2 | user, initiator | 2 | user, sponsor | 1 | user | 0 | n/a | 1 | user | 2 | user, partner | 1 | partner | 1 | user | 10 |
| P32 Oi, pranešiu! | 2 | initiator, partner | 2 | user, partner | 0 | n/a | 0 | n/a | 1 | user | 1 | partner | 0 | n/a | 3 | user, contributor, founder | 9 |
| P33 pamatykLietuvoje.lt | 0 | | 1 | partner | 2 | user, partner | 1 | partner | 0 | n/a | 1 | partner | 0 | n/a | 2 | user, initiator | 7 |
| P34 parasykjiems.lt | 1 | partner | 1 | user | 0 | n/a | 1 | sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 3 | user, initiator, contributor | 6 |

| Platform code and name | Non-governmental organizations | | Governmental organizations | | Public organizations | | International organizations | | Associations | | Business organizations | | Media organizations | | Citizens and citizen groups | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P35 peticija.com | 1 | contributor | 0 | n/a | 1 | contributor | 0 | n/a | 1 | contributor | 1 | contributor | 0 | n/a | 3 | user, initiator, contributor | 7 |
| P36 peticija.lt | 1 | contributor | 0 | n/a | 1 | contributor | 0 | n/a | 1 | contributor | 1 | contributor | 0 | n/a | 3 | user, initiator, contributor | 7 |
| P37 pincetas.lt | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 3 | user, initiator, sponsor | 0 | n/a | 2 | user, contributor | 6 |
| P38 pranešk (Baltosios pirštinės) | 2 | initiator, partner | 3 | user, partner, sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 1 | partner | 1 | user | 2 | user, contributor | 9 |
| P39 Pričiupk! | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 2 | initiator, partner | 1 | partner | 2 | user, contributor | 6 |
| P40 reitinguok.lt | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 2 | initiator, sponsor | 0 | n/a | 2 | user, contributor | 5 |
| P41 renkumera.lt | 0 | n/a | 1 | partner | 0 | n/a | 0 | n/a | 0 | n/a | 1 | initiator | 0 | n/a | 1 | user | 3 |
| P42 seime.lt | 1 | partner | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 2 | user, initiator | 4 |
| P43 seimodarbai.lt | 0 | n/a | 1 | user | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 2 | user, initiator | 3 |
| P44 skaidrumo linija | 1 | initiator | 2 | user, sponsor | 1 | user | 1 | sponsor | 0 | n/a | 0 | n/a | 0 | n/a | 2 | user, contributor | 7 |
| P45 stirna.info | 2 | initiator, partner | 0 | n/a | 0 | n/a | 1 | sponsor | 0 | n/a | 0 | n/a | 1 | user | 1 | user | 5 |
| P46 sveikasvaikas.lt | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 1 | user | 0 | n/a | 2 | user, initiator | 3 |
| P47 TechMap | 2 | user, partner | 2 | user, partner | 0 | n/a | 1 | user | 1 | partner | 2 | user, partner | 0 | n/a | 2 | user, initiator | 10 |
| P48 Telšė programėlė | 1 | user | 2 | user, partner | 2 | user, partner | 0 | n/a | 0 | n/a | 2 | user, partner | 0 | n/a | 3 | user, initiator, contributor | 10 |
| P49 trysmilijonai.lt | 2 | initiator, partner | 1 | user | 0 | n/a | 1 | user | 0 | n/a | 1 | partner | 0 | n/a | 1 | user | 6 |
| P50 Tvarkau Vilnių | 0 | n/a | 2 | user, partner | 1 | user | 0 | n/a | 0 | n/a | 1 | partner | 0 | n/a | 3 | user, initiator, contributor | 7 |
| P51 zinaukarenku.lt | 2 | initiator, partner | 2 | partner, sponsor | 1 | partner | 0 | n/a | 0 | n/a | 1 | partner | 0 | n/a | 1 | user | 7 |
| P52 Žaliasis taškas | 2 | user, initiator | 0 | n/a | 0 | n/a | 0 | n/a | 0 | n/a | 1 | partner | 0 | n/a | 1 | user | 4 |
| Total | 60 | | 68 | | 45 | | 17 | | 13 | | 62 | | 19 | | 100 | | |

**Annex 8:** *Sample for Comparative Content Analysis (International Civic Technology Platforms)*

| Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink |
|---|---|---|---|---|---|
| #CTZNWELL | http://www.ctznwell.org | Boundless | https://www.boundless.com | Datanest.sk | datanest.sk/ |
| #endfgm | www.endfgm.eu/ | Brightidea, Inc. | http://www.bright-idea.com | D-CENT | dcentproject.eu/ |
| #innovateAFRICA | https://innovateafrica.fund/ | BS&A Software | www.bsasoftware.com/ | DECARBONET | https://www.decar-bonet.eu/ |
| 18F | https://18f.gsa.gov/ | BudgIT | yourbudgit.com | Deebase | deeba.se/ |
| 3dna Corp. (Nation-Builder) | http://nationbuilder.com/ | Buycott Inc. | http://www.buycott.com/ | Degooglize Internet | https://degooglisons-internet.org/liste/ |
| 596 Acres | http://596acres.org/ | Buildingeye | https://www.buildingeye.com/ | Delib Limited, Co. (DialogueApp) | http://www.delib.net |
| 7 cups of tea | http://www.7cups.com/ | BuitenBeter | http://www.buitenbeter.nl/ | Democracy Works, Inc. (TurboVote) | https://turbovote.org |
| AALIANCE2 | www.aaliance2.eu/ | Buntwani | www.buntwani.org/ | Democracy.com | www.democracy.com/ |
| Accela, Inc. | http://www.accela.com | busuu | https://www.busuu.com/ | DemocracyLab | www.democracylab.org/ |
| AccessArt Distance Learning and Online Tutorial | www.accessart.org.uk/distance-learning-courses/ | California Common Sense (GoLocal) | http://www.cacs.org | DemocracyMap | http://www.democracymap.org |
| Acts of Sharing, Inc. | http://actsofsharing.com/ | CAP4ACCESS | www.cap4access.eu/ | Department of Better Technology, LLC | http://www.dobt.co |
| Ad Hoc Team | https://adhocteam.us/ | Capsella | http://www.capsella.eu/ | Detroit SOUP | http://detroitsoup.com/ |
| Aecosoft | http://epermithub.com/ | Captricity | https://captricity.com/ | AIRESIS | https://www.airesis.eu/ |

| Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink |
|---|---|---|---|---|---|---|---|
| African Network of Centres for Investigative Reporting | https://investigative-centers.org/ | CartoDB | https://carto.com/ | Code for Princeton | codeforprinceton.org/ | Development Seed, Inc. (OpenStreetMap) | http://development-seed.org |
| aid maps | https://www.directrelief.org/maps/ | CASI | www.casi2020.eu/ | Code for Seattle | openseattle.org/ | Digital Democracy USA, Inc. | http://digital-democracy.org |
| air quality egg | airqualityegg.com/ | Casserole Club | https://www.casseroleclub.com/ | Code for South Africa | code4sa.org/ | Digital Enlightenment Forum (DEF) | https://digitalenlightenment.org/ |
| akirachix | akirachix.com/ | CATALYST | catalyst-fp7.eu/ | Code Week Cz | codeweek.cz/ | digital green | https://www.digital-green.org/ |
| Alla Giornata | allagiornata.org/ | Causes | https://www.causes.com/ | Code.org | https://code.org/ | DISENO SOCIAL (Social Design) | disenosocial.org/ |
| Americans Elect Corp. | http://www.americanselect.org/ | Center for Investigative Reporting, Inc. (FOIA Machine) | http://cironline.org | Codecademy | https://www.codecademy.com/ | DoSomething | https://www.dosomething.org/ |
| Amicus | https://amicushq.com/ | Centralab | centralivinglab.eu/ | CodeNewbie | www.codenewbie.org/ | DotGov, Inc. (You Town) | http://youtown.com/ |
| AmigoCloud | https://www.amigocloud.com/ | Centrum Cyfrowe Projekt | http://en.centrumcyfrowe.pl | CoderDojo | https://coderdojo.com/ | DropCountr | https://dropcountr.com/ |
| Amplify Labs (LocalData) | http://localdata.com | CEOs For Cities (Change by Us) | http://www.ceosforcities.org | comap | www.comap.com/ | DSI4EU | https://digitalsocial.eu/ |
| Andela | https://andela.com/ | ChainReact | www.chreact.eu/ | Commons4EU | commonsforeurope.net/ | Dudley Street Neighborhood Initiative | www.dsni.org/ |
| Appallicious | appallicious.com/ | Change by US | newyork.thecityatlas.org/change/ | Communia Assosiation | www.communia-association.org/ | E-Democracy | www.e-democracy.org/ |
| AppCityLife | www.appcitylife.com/ | Change.org Inc. | http://www.change.org | Community boost_r | communityboostr.org/ | Edinburgh Living Lab | edinburghlivinglab.org/ |
| Appfrica International (Abayima) | http://appfrica.com | Changers CO2 fit App | https://www.changers.com/en/ | Community Currencies in Action | www.ccia.eu | EdinburghApps | edinburghapps.net/ |

| Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink | Civic Tech Platform | Hyperlink |
|---|---|---|---|---|---|---|---|
| Apps4Warsaw | http://www.apps4warsaw.org/ | ChangeTomorrow | www.changetomorrow.io/ | Compiler LA | compiler.la/ | eGov Strategies | www.egovstrategies.com/ |
| AsktheEU.org | https://www.asktheeu.org/ | CHEST | www.chest-project.eu/ | Comrades | www.comrades-project.eu/ | Election Debate Visualisation (EDV) | edv-project.net/ |
| AskThem.io | http://www.askthem.io | Chrinon Ltd. (OpenCorporates) | http://opencorporates.com | CONCORDnet | https://www.concord-europe.net/ | Empatia | https://empatia-project.eu/ |
| Aspiration Tech | https://aspirationtech.org/ | City Digital | www.citydigital.org/ | Connect neighbors and local organizations | http://www.wijkconnect.com | engage.re | http://engage.re/ |
| AthenaPlus | www.athenaplus.eu/ | CITYREGIONS | cityregions.org/ | Councilmatic | https://www.councilmatic.org/ | EngagePoint | engagepoint.com/ |
| Aunt Bertha | https://www.auntbertha.com | CitySDK | https://uscensusbureau.github.io/citysdk/ | Councilpedia | www.councilpedia.org/ | Enigma | http://enigma.io/ |
| Avaaz Foundation | http://www.avaaz.org/en | CITI-SENS | www.citi-sense.eu/ | coUrbanize | www.courbanize.com/ | Epsi Platform | https://epsi.genscape.com/ |
| Azavea, Inc. | http://www.azavea.com | CitySourced | http://www.citysourced.com | Court Innovations | https://www.courtinnovations.com/ | eReuse | https://www.ereuse.org/en/ |
| Babele - create together | https://babele.co/ | Cityzenith | www.cityzenith.com/ | Crime Reports | https://www.crimereports.com/ | Esri | www.esri.com/ |
| Bang the Table Pty Ltd | http://bangthetable.com | Citizens Pact | https://citizenspact.eu/ | CrimeStar | www.crimestar.com/ | EuansGuide.com | https://www.euansguide.com/ |
| BasicGov | www.basicgov.com/ | Citizens Union Foundation Inc. of the City of New York (Councilpedia) | http://www.citizensunion.org | CrisisNet | CrisisNet | EVERYAWARE | www.everyaware.eu/ |
| be my eyes | www.bemyeyes.org/ | Civic Crowd | www.theciviccrowd.org/ | CROSS project | www.crossproject.eu/en/ | Evidence Hub | ci.olnet.org/ |
| SocialCoding4Good | http://www.benetech.org | Civic Data | www.civicdata.com/ | Crowd4Roads | www.c4rs.eu/ | Exversion | https://exversion.com/ |

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| BenefitKitchen | benefitkitchen.com/ | Civic Decisions | www.civicdecisions.com/ | Goteo | http://en.goteo.org/ | Favabank Ltd | http://www.favabank.co.uk/ |
| BetaNYC | https://beta.nyc/ | Civic Exchange | www.civic-exchange.org/ | crowdvoice.org | http://crowdvoice.org/ | FiscalNote | https://www.fiscalnote.com/ |
| Better Lesson | https://betterlesson.com/ | Civic Impulse, LLC | http://www.civicimpulse.com/ | CultureCrowd | http://www.culturecrowd.co.uk/ | Fixers | www.fixers.org.uk/ |
| bettervest | https://www.bettervest.com/ | Civic Industries | civicinsight.com/ | Dallant Networks, LLC | http://dallant.net | FOIA Machine | https://www.foiamachine.org/ |
| Bidgely | https://www.bidgely.com/ | Civic Tech Toronto | civictech.ca/ | DNAdigest | dnadigest.org/ | Forum InnovAfrica | innovafrica.org/ |
| Bio FabLab | https://www.fablabs.io/biofab | CivicArchive | civicarchive.com/ | Data Transparency | www.datatransparencylab.org/ | FriendsWithThings | http://friendswiththings.com.au/ |
| bioserenity | www.bioserenity.com/ | CivicFlow | www.civicflow.com/ | Datademo | datademo.fi/ | Front Porch Forum, Inc. | http://frontporchforum.com |
| BLIP Clinic | www.blipclinic.org/ | CivicMakers | civicmakers.com/ | DataGM | www.datagm.org.uk/ | Fundacion Ciudadana Civio | www.civio.es/en/ |
| Blue 1647 | www.blue1647.com/ | CivicPlus | https://www.civicplus.com/ | DataKind | www.datakind.org/ | Fundacion Ciudadano Inteligente | http://www.ciudadanointeligente.org |
| BlueLine Grid | https://www.bluelinegrid.com/ | CivicTechTO | civictech.ca/ | DataLook | datalook.io/ | Fundacion Poderomedia (Poderopedia) | http://www.poderopedia.org |
| Fundacja ePanstwo | http://epf.org.pl | civicwise | https://civicwise.org/ | DataMade | https://datamade.us/ | Fundacja ePanstwo | http://epf.org.pl |
| Future Fabulators | fo.am/future-fabulators/ | I Change My City | http://www.janaagraha.org | MuniRent | https://www.munirent.co/ | OurCommonPlace | www.ourcommonplace.org/ |
| FutureEverything Festival | futureeverything.org/ | Judicata | https://www.judicata.com/ | Museomix community | community.museomix.org/ | OurSay Pty Ltd | http://oursay.org |
| FuturICT | futurict.inn.ac/ | Junar, Inc. | http://www.junar.com | Nappi Naapuri - Nifty Neighbour | https://nappinaapuri.fi/ | Palantir | https://www.palantir.com/ |
| FWD.us | http://www.fwd.us/ | JustFix.nyc | www.justfix.nyc/ | NationBuilder | nationbuilder.com/ | ParkatmyHouse Ltd. | http://wwwparkatmyhouse.com |

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| GeoSmartCity | www.geosmartcity.eu/ | KC Digital Drive | www.kcdigitaldrive.org/ | ncdlinks | www.ncdlinks.org/ | Parlement et Citoyens | https://www.parlement-et-citoyens.fr/ |
| giftedmom | www.giftedmom.org/ | Knight Fdn | www.knightfoundation.org/ | Neighbor.ly, Inc. | http://neighbor.ly | Patient Opinion Limited | https://www.patientopinion.org.uk |
| Girling Kelly Design Group, LLC (Civic IQ) | http://www.artefactgroup.com | La Paillasse Network | lapaillasse.org/ | Neighborland, Inc. | https://neighborland.com | PatientsLikeMe | https://www.patientslikeme.com/ |
| Girls Who Code | https://girlswhocode.com/ | Landshare | www.landshare.org/ | neighbortree.com | http://www.neighbortree.com | Peak Democracy | http://www.peakdemocracy.com/ |
| global forest watch | www.globalforestwatch.org/ | LeedsDataMill | https://datamillnorth.org/ | Neighbourhood Planner | neighbourhoodplanner.org.uk/ | Peerby BV | http://www.peerby.nl |
| Globalbility | en.globalbility.org/postcard | LegiNation Inc. (Bill Track 50) | http://www.billtrack50.com/ | netCommons | netcommons.eu/ | Petities.nl | https://petities.nl/ |
| GNUnion | https://gnunion.wordpress.com/ | Legistorm LLC | http://www.legistorm.com/ | netivist | https://netivist.org/ | philanthropyu | philanthropyu.org/ |
| GOOD Worldwide, LLC | http://www.good.is | LikeMinded, Inc. | http://likeminded.org | New America | https://www.newamerica.org/ | Philotic, Inc. (Causes) | http://causes.com |
| GoodGuide, Inc. | http://goodguide.com | LinkedAge | www.linkedage.com/ | New Urban Mechanics | newurbanmechanics.org/ | Phone2Action, Inc. | http://phone2action.com/ |
| GovDelivery | https://www.govdelivery.com/ | LiquidFeedback | http://liquidfeedback.org/ | Nextdoor.com, Inc. | https://nextdoor.com/ | PickParking | www.pickparking.com/ |
| GovFaces Platform | www.govfaces.com/ | Little Sis | littlesis.org/ | NoiseTube | http://noisetube.net | PilotCity | pilotcity.com/ |
| GovLab | www.thegovlab.org/ | Living Cities, Inc. | http://www.livingcities.org | Nouvelle Fabrique | www.nouvellefabrique.fr/ | Place Speak, Inc. | https://www.placespeak.com/ |
| GovQA | govqa.com/ | LocalCircles India Private Limited | https://www.localcircles.com | Open Cleveland | www.opencleveland.org/ | Placemeter | https://www.placemeter.com/ |
| GovSense | govsense.com | LocalData | localdata.com/ | Open Counter Enterprises | https://opencounter.com/ | Placr Ltd. | http://placr.co.uk |

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| Granicus, Inc. | http://www.granicus.com | Localisto | www.localisto.org/ | Open Cultuur Data | www.opencultuur-data.nl/ | Planet Lab | https://www.planet-lab.org/ |
| Green Streets Initiative | gogreenstreets.org/ | Loveland | https://makeloveland.com/ | Open Data Cities S.L. | http://reparaciudad.com | Poietic Generator | poietic-generator.net/ |
| GreenInfo Network (Park Info) | http://www.green-info.org | Made Open | https://www.madeopen.co.uk/ | Open Democracy | https://www.opendemocracy.net/ | Popvox, Inc. | http://www.popvox.com |
| Hack for LA | www.hackforla.org/ | Mahallae | mahallae.org/ | Open Droplet | opendroplet.org/ | PPL Crowdfunding Portugal | ppl.com.pt/en |
| Hack Oregon | www.hackoregon.org/ | Make Things Do Stuff | www.makethings-dostuff.co.uk/ | Open Food Network UK | https://openfoodnetwork.org.uk/ | PredPol | www.predpol.com/ |
| HackaImpact | hack4impact.org/ | Makers Guild | makersguildfc.com/ | Open Garden | www.opengarden.com/ | Project Vote Smart | http://votesmart.org/ |
| Hackable City | thehackablecity.nl/ | Mapbox | https://www.mapbox.com/ | Open Integrity Index | https://openintegrity.org/ | Public Allies | www.publicallies.org/ |
| HackAIR | www.hackair.eu/ | MappiNa Alternative Map of Cities | www.social-life.co/blog/post/Mappina_maps_alternative/ | Open Knowledge Foundation (CKAN) | http:/okfn.org | Public Engines, Inc. | http://crimereports.com |
| Hackity App | https://www.hackityapp.com/en | Mark43 | https://www.mark43.com/ | Open NEO | https://openneo.org/ | PublicStuff, Inc. | http://www.publicstuff.com |
| Hacks/Hackers Africa | hackshackers.com/ | Mashauri | www.mashauri.com/ | Open North (Citizen Budget) | http://www.open-north.ca | Purpose Global, LLC (Crowdring) | http://www.purpose.com |
| HaSadna | www.hasadna.org.il/en/ | Matinale Digitale | www.matinaledigitale.com/ | Open Onderwijs Data | www.openonderwijs-data.nl/ | QuienManda.es | www.quienmanda.es/ |
| Heat Seek | heatseek.org/ | Maximus | www.maximus.com/ | Open Shed Pty Ltd | http://www.openshed.com.au | Qwanz, LLC | http://qwanz.com |
| Hollaback, Inc. | http://www.ihollaback.org | Meet the Neighbors | http://www.meettheneighbors.org/ | Open Society Fdns | https://www.opensocietyfoundations.org/ | Rallyt, Inc. | http://www.rallyware.com/ |
| HullCoin | www.hull-coin.org/ | Meetup Inc. | http://meetup.com | Open Source Beehives | opensourcebeehives.net/ | Razoo | https://www.razoo.com/ |

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| I Wheel Share | www.iwheelshare.com/ | meSch | mesch-project.eu/ | Open Tech Strategies | https://opentechstrategies.com/ | Remix The Commons | www.remixthecommons.org/en/ |
| IA4SI | ia4si.eu/ | MesInfos | mesinfos.fing.org/ | Open4Citizens | open4citizens.eu/ | Responsible ICT | www.r-ict.eu/ |
| IB5k | ib5k.com/ | Metro4All | metro4all.org/ | OpenAlps | www.open-alps.eu/ | RICHES | www.riches-project.eu/ |
| icount4eu | icount4eu.eu/ | Metropia | www.metropia.com/ | Opencare | https://www.opencare.com/ | Rise STL | www.risestl.org/ |
| Idealist | www.idealist.org/ | MeWe | https://mewe.com/ | Opendata Trentino | dati.trentino.it/ | RisorgiMenti.Lab | risorgimentilab.it/ |
| IdeaScale LLC | http://ideascale.com/ | Michael Culture | www.michael-culture.eu/ | OpenDataCommunities | opendatacommunities.org/ | Rock the Vote | https://www.rockthevote.com/ |
| Impact Hub | kingscross.impacthub.net/ | micomappers (qcri) | micromappers.org/ | OpenGov | opengov.com/ | RomaniaPozitiva.ro | www.romaniapozitiva.ro/ |
| In Our Backyards, Inc. | http://ioby.org | Mideast Youth | http://www.mideastyouth.com/ | OpenLocal | www.openlocal.org.au/ | Root Cause | www.rootcause.org/ |
| InfoNET Kenya (Hudama) | http://infonet.or.ke | MIES - Social Innovation and Entrepreneurship Map | www.mies.pt/index.php/en/ | openpetition.de | openpetition.de | Rotterdam Open Data | rotterdamopendata.nl/ |
| InfoTrafford | www.infotrafford.org.uk/ | Mighty Software, Inc. | https://www.mightybell.com | OpenSaltLake | https://opensaltlake.org/ | Ruckus, Inc. | http://www.ruck.us |
| Innovate Your State | www.innovateyourstate.org/ | Minnesota E-Democracy | http://www.e-democracy.org | Openspending.nl | http://openspending.nl/ | safecity | https://safecity.in/ |
| Innovationskraftwerk | https://www.innovationskraftwerk.de/ | MySidewalk | app.mysidewalk.com/ | OpenStreetMap | https://www.openstreetmap.org/ | safetipin | www.safetipin.com/ |
| International Center for Journalists | www.icfj.org/ | mySociety Limited | http://www.mysociety.org | OpenTransportNet | opentransportnet.eu/ | Saving Food 2.0 | savingfood.eu/ |
| YouAid+ | youaidplus.org/ | MoveOn.org | front.moveon.org/ | OpenWest Systems Inc. (Recollect) | http://openwe.st/ | Science Club for Girls | www.scienceclubforgirls.org/ |
| Isla Urbana | islaurbana.org/ | Munetrix | https://www.munetrix.com/ | Opower | https://opower.com/ | ScraperWiki Ltd | https://scraperwiki.com |

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| ISOC-NY | isoc-ny.org/ | Municibid | https://municibid.com/ | OpportunitySpace | https://www.opportunityspace.org/ | SDI4Apps | sdi4apps.eu/ |
| iWGC Limited | https://www.iwantgreatcare.org | Municode | https://www.municode.com/ | optiGov | http://comingsoon.optigov.com | Seamless Cities App Camp | www.seamlesscities.app-camp.eu/ |
| iWorQ | www.iworq.com/ | MuniLogic | www.munilogic.com/ | Otvorenezmluvy.sk | otvorenezmluvy.sk/ | SeeClickFix, Inc. | http://seeclickfix.com |
| SEN2SOC | smartsantander.eu/index.php/sen2soc | Stichting Govcom.org | http://www.govcom.org | Unlimited Cities DIY | www.unli-diy.org/ | OurSpace | https://www.joinourspace.eu/ |
| SF Brigade | codeforsanfrancisco.org/ | StreetLend | http://www.streetlend.com/ | UP Campus | up-campus.org/ | Puzzled by Policy | http://www.puzzled-bypolicy.eu/ |
| SFCITI | https://sfciti.org/ | NeighborGoods | http://neighborgoods.net | Urban Institute | www.urban.org/ | Openbudgets.eu | http://openbudgets.eu/ |
| Sharevoisins | https://sharevoisins.fr/ | Sum of Us | sumofus.org/ | u-report | https://ureport.in/ | Poplus | poplus.org |
| Shop My Town | www.shopmytown.com.au/ | talklife | talklife.com.au/ | Ushahidi, Inc. | http://ushahidi.com | AskTheEU | https://www.asktheeu.org/ |
| Sidewalk Labs | https://www.sidewalklabs.com/ | Teachers21 | www.teachers21.org/ | Village Defense | www.villagedefense.com/ | Digiwhist | http://digiwhist.eu/ |
| Simpolfy | https://simpolfy.com/ | Tech Goes Home | wwwtechgoeshome.org/ | Vizalytics | www.vizalytics.com/ | EuroPAM | http://europam.eu/ |
| Sirocco Corp. | https://recovers.org | techfugees | https://techfugees.com/ | Voting Information Project | https://votinginfoproject.org/ | Debating Europe | http://www.debatingeurope.eu/ |
| Skytruth, Inc. | http://www.skytruth.org | The Asset | www.asset-scienceinsociety.eu/ | Votizen, Incorporated[2] | http://www.votizen.com | mepvote.eu | http://mepvote.eu/ |
| Smart Chicago Collaborative | www.smartchicagocollaborative.org/ | The Capital Network | www.thecapitalnetwork.org/ | Voto Latino | votolatino.org/ | consiliumvote.eu | http://consiliumvote.eu/ |
| Smart Citizen Kit | https://smartcitizen.me/ | CommonPlace Initiative, Inc. | http://www.ourcommonplace.com | Vox Metropolis, Inc. | https://www.textizen.com | SnapSense | www.snapsense.co/ |
| Smart Cville | smartcville.com/ | Freecycle Network | http://www.freecycle.org/ | voXup | https://www.voxup.co.uk/ | Social Cities | socialcities.org/ |

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| SmartOpenData | www.smartopendata.eu/ | Young People's Project | www.typp.org/ | wayfindr | https://www.wayfindr.net/ | Socientize | www.socientize.eu/?q=eu |
| SmartProcure | https://smartprocure.us/ | TrustTheVote | http://www.osdv.org | WaterSmart Software | www.watersmart.com/ | SONETOR | www.sonetor-project.eu/ |
| Think Commons | thinkcommons.org/ | Weathermob Inc. | http://weathermob.me | Tumml | www.tumml.org/ | Sourcemap, Inc. | http://sourcemap.com |
| tomnod | https://wwwtomnod.com/ | WEB-COSI | www.webcosi.eu/ | TurboVote | https://www.turbovote.org/ | Space Town Hall | www.spacetownhall.com/ |
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| Transformify | https://www.transformify.org/ | Wheelmap.org | https://wheelmap.org/ | Uniiverse Collaborative Lifestyle Inc. | https://www.uniiverse.com | Spare to Share, LLC | https://www.aspare-toshare.com/ |
| Transit Future | transitfuture.org/ | whenvi.com | https://www.whenvi.com/ | WIKIRATE | wikirate.org/ | SPECIFI | www.specifi.eu/ |
| TransitCenter | transitcenter.org/ | Wiki Spot | http://wikispot.org | WiredBlue | wiredblue.co/ | Sponge Media Lab | thesponge.eu/ |
| TrustTheVote | https://trustthevote.org/ | WikiEducation | https://wikiedu.org/ | Women Shift Digital | www.womenshiftdigital.com/ | SpotCrime | https://www.spot-crime.com/ |
| Zooniverse | https://www.zo-oniverse.org/ | | | | | | |

MYKOLAS ROMERIS UNIVERSITY

**Monika Mačiulienė**

# MODELLING CO-CREATIVE ECOSYSTEM IN THE CONTEXT OF TECHNOLOGICAL DEVELOPMENT

Summary of Doctoral Dissertation
Social Sciences, Management (03 S)

Vilnius, 2018

This doctoral dissertation was prepared at Mykolas Romeris University during 2013-2017 under the right to organize doctoral studies granted to Vytautas Magnus University together with Klaipėda University, Aleksandras Stulginskis University, Mykolas Romeris University and Šiauliai University by the order of the Minister of Education and Science of the Republic of Lithuania No. V-1019 dated on June 8, 2011.

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Scientific consultant: Assoc. Prof. Dr. Dap Hartmann (Delft University of Technology, Kingdom of the Netherlands, Social Sciences, Management, 03 S)

The doctoral dissertation will be defended at the Scientific Council of Vytautas Magnus University, Klaipėda University, Aleksandras Stulginskis University, Mykolas Romeris University and Šiauliai University in the field of Management:

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The doctoral dissertation will be defended at the open meeting of the Scientific Council in the field of Management on 9 February, 2018 at 13:00 at Mykolas Romeris University, Room I-414.

Address: Ateities str. 20, LT-08303 Vilnius, Lithuania.

The summary of the doctoral dissertation was sent on 9 January, 2018

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# INTRODUCTION

**The relevance of the research**. Over the last decades, leading business and public management scholars and practitioners underlined the change towards interactive and networked nature of value creation both in private and public sectors. Innovative technological solutions and communication channels allow to include broader groups of society into collaborative activities. The notion of value co-creation becomes more relevant as organizational strategy, which tends to replace dominant value provision approach. In the private sector, this move has been conceptualized under Service Dominant Logic (SDL) approach where the focus of value creation is no longer perceived to reside within the enterprises' boundaries. The public sector research has developed several theoretical approaches underlining the importance of networked governance too e.g. New Public Governance, Government 2.0. The researchers suggest that the value no longer needs to be created by the governments alone, but could be generated in collaboration between the public organizations, the business entities, the civil society organizations or the citizens. The change has been echoed in communications of the European Commission as well. "The spread of digital technologies and concepts, such as open data and open government, seem to be driving an ongoing paradigm shift towards thinking of citizens and other non-state actors not only as contributors to public services initiated by the public sector, but as actors that can take the lead in providing services for the public good" (European Commission, 2013c, p. 6). The reality of public management practice is, however, different. It diverged towards the market-based principles of the performance measurement and competition, thereby reinforcing a framework which focuses on the customers who demand to be served rather than on the citizens working with their representatives to co-create public value (Dahl & Soss, 2014; Sandfort & Quick, 2015).

In European countries, the decay of confidence in traditional policy formation structures is apparent. For example, the trust of the European citizens in the EU institutions, their national parliaments, and governments measured by the quarterly Eurobarometer is low and slowly declining (Eurobarometer, 2016). Pew Research Centre survey on the EU favorability shows that people across Europe overwhelmingly think that the European Institutions do not hear their voice (Pew Research Centre, 2014). The Lithuanian democracy is facing the similar challenges. According to the Civic Empowerment Index of the Public Sector Representatives conducted in 2016 by Civic Society Institute, the Lithuanian citizens are interested in local problems but feel neglected by the local authorities when they make decisions on local issues (Civil Society Institute, 2016). Only 17% of the survey respondents indicated that the local authorities consider citizens` considerations when making decisions. The lack of citizen participation, political competence, and perceived influence implies that the Lithuanian model of democratic society and its instruments of direct democracy are not used to the fullest potential (Krupavičius, 2012). According to the Democracy Index 2016, the number of "full democracies" declined from 20 in 2015 to 19 in 2016 and the Eastern Europe experienced the most severe regression (Economist Intelligence Unit, 2016). In general, the old and new European countries are going through a crisis of representative democracy due to the growing notions of globalizations and individualism (Voorberg, Bekkers, & Tummers, 2014c). Hence, the re-creation of the links between government and society is critical.

The notion of co-creation emerges in the context of public value development as a key enabler for involving the diverse yet complementary set of stakeholders into decision-making. The

co-creation profoundly differs from the traditional understanding of public participation. First, the co-creative initiatives can overcome the time and geography limitations and may allow "a significant leap in the scale and influence of public involvement" (Hom et al., 2014). Moreover, the co-creative perspective regards people as proactive citizens rather than as consumers of services. The co-creative methods help people and organizations to promote their own decisions, create new tools, develop capacities for self-government and open-ended civic processes, rather than to ask people to participate or contribute to existing initiatives or campaigns (Hom et al., 2014). Over the last two decades, a number of the EU policy strategic documents (e.g. Europe 2020 Strategy; EU Digital Agenda) have highlighted the access to information and decision-making processes for the public as a way to tackle the lack of democracy. The move to more open society allows to leverage the co-creation potential similarly to the ways it has been employed in the private sector (Ciasullo & Troisi, 2013; Gouillart, 2012; Leavy, 2014; Leavy & Moitra, 2006; Pinho, Beirão, Patrício, & Fisk, 2013; Thompke & von Hippel, 2002).

The national governments and the European Union invested considerably in the eGovernment and eDemocracy projects and expected the more active citizen participation. However, the majority of projects faced a number of problems. The research efforts on the public value creation by means of ICT has additional shortcomings in implementation. The locus of literature by academics and practitioners on the ICT-enabled governance has been within governments – they were regarded as the initiators, tools and information providers, who invite the citizens to join the processes. The modern governance theories place more focus on citizen-centricity but fail to include non-government initiated projects and initiatives. The concentration is on the processes in the governmental structures and managerial recommendations aimed at the creation of more open governance system and involvement of the citizens. However, the communities` movement is apparent, and the new self-government transparency and engagement platforms are created by the active members of society every day. The government cannot find the solutions to the established societal, economic and political problems alone (Bingham, Eisenhardt, & Furr, 2011; International Association for Public Participation, 2007; Lenihan, 2007). The European Commission has reported the change towards the collaborative nature of public services in the "A Vision for Public Services". The vision refers to the ICT-enabled collaborative services provided by the citizens, NGOs, private companies in collaboration or not with the government institutions (European Commission, 2013a). Around the world, civil society organisations, individual citizens, and even businesses are starting to experiment with ICT tools and available resources to collaborate with each other and with the government to project citizens` voice and to solve societal problems. The examples of such actions include the creation of e-democracy platforms (e.g. mySociety, Lietuva 2.0, manobals.lv), issue reporting platforms (e.g. FixMyStreet, Tvarkau Vilnių), transparency projects (e.g. PromiseTracker, Poderpedia, skaidrumolinija.lt), online petitioning sites (e.g. Change.org, ControlShift, AskThem, WeThePeople, peticijos.com) or constituent-government communications tools (e.g. PopVox, Neighborland, parasykjiems.lt). Such intersection of the technologies and governance is coined as civic technologies in the scientific and practice based literature (Baack, 2015; Baeck & Bria, 2014; Ding et al., 2010; Knight Foundation, 2015; McNutt et al., 2016; Rumbul, 2015b). In such initiatives, the public (organizations and individuals alike) voluntarily lend their talent and resources to help the government to solve societal problems more efficiently. Although the public sector can generate the public value by itself and does not monopolize the processes, the capacity

could be significantly extended by direct collaboration with other stakeholders and facilitation of initiatives outside governments control (Millard, 2013).

**The level of scientific problem exploration.** The discussion on co-creation frameworks, instruments and processes encompasses a growing amount of research efforts but the focus remains on the business and customer interactions (Hakanen & Jaakkola, 2012; Kohler, Fueller, & Matzler, 2011; Saarijärvi, 2012; Storbacka, Frow, Nenonen, & Payne, 2012; Tanev et al., 2011). Lithuanian research efforts into co-creation are limited and focus on the business settings (Bakanovė, 2013; Damkuvienė, 2009; Kazakevičiūtė, Bagdonienė, & Rai, 2012; Skaržauskaitė, 2013). International research on the application of co-creation in public sector offers several perspectives: improvement of governmental functions (Dörk & Monteyne, 2011; Lönn & Uppström, 2015; López-de-Ipiña, Emaldi, Aguilera, & Pérez-Velasco, 2016; Francesca Magno & Cassia, 2015; Mikušová Meričková & Meričková, 2014; Mulder, 2012; Torfing, Sørensen, & Røiseland, 2016; Voorberg, Bekkers, et al., 2014c), identifying barriers and enablers (Gillard, Simons, Turner, Lucock, & Edwards, 2012; Parrado, Van Ryzin, Bovaird, & Löffler, 2013; Vamstad, 2012), the roles of actors (Cobo, 2012; Magno & Cassia, 2015; Olphert & Damodaran, 2005), typologies of the methods (Carr, 2010; Ryan, 2012; Verschuere, Brandsen, & Pestoff, 2012). Research efforts on civic technologies include deliberations on individual user experience (Hivon & Titah, 2015; Peixoto, Fall, & Sjoberg, 2016; Rumbul, 2015a), institutional environment (OECD, 2001), readiness and support at the political level (Nambisan & Nambisan, 2013; OECD, 2001), the digital divide in the usage of ICT platforms (Ferro & Molinari, 2010; Lutz, 2015; A. Smith, Schlozman, & Verba, 2009), social behaviors online and offline (Boulianne, 2009; Gibson, Cantijoch, & Galandini, 2014) and demographic usage of such tools (Peixoto et al., 2016; Rumbul, 2015b). Lithuanian researchers did not analyze the civic technologies. However, the research body contains perspectives of eGovernment (Limba, 2004, 2007), eParticipation (Gatautis, 2010), eDemocracy (Domarkas & Lukoševičienė, 2006; Petrauskas, Malinauskienė, Paražinskaitė, & Vegytė, 2009; Raginytė & Paliulis, 2009; Žilionienė, 2004), smart governance (Gaulė, 2014; Stanislovaitienė, 2016; Šiupšinskas, 2014) and open data integration (Smalskys & Šilinskytė, 2016) of the ICT-enabled public value generation

**The problem of the research.** This research project intends to contribute theoretically and empirically to the research stream of co-creation by focusing on the ICT-enabled collective actions of citizens, communities, governmental organizations, business entities, NGOs and other stakeholders in the creation of public value. The investigative problem of this study is expressed through the following question: *what are the processes of ICT-enabled co-creation and how do they contribute to the development of public value?*

**The object of the research.** Public value co-creation in Lithuanian and international civic technology platforms.

**The goal of the research.** To propose a ICT-enabled co-creation ecosystem framework aimed at development of public value. The goal will be achieved by completing the tasks of the research below.

1. Actualize the perception of ICT-enabled public value co-creation and to determine main preconditions, obstacles and risks by conducting analysis of related scientific research.
2. Construct the conceptual framework integrating activities and preconditions needed for ICT-enabled public value co-creation and to substantiate the methodology for research of the model.

3. Elaborate conceptual framework by determining the characteristics of ICT-enabled public value co-creation by means of expert interviews, content analysis of Lithuanian civic technology platforms and comparative analysis of international civic technology platforms.

4. Propose updated and empirically verified ICT-enabled Co-Creation Ecosystem Model.

5. Prepare managerial and organizational recommendations for strengthening the collective efforts of citizens, platform initiators and developers, public and governmental institutions in creating public value.

**The methods of the research.** Theoretical aspects of ICT-enabled public value co-creation were examined using meta-analysis, comparative analysis and generalization methods of related scientific research. The empirical investigations were based on phenomenological research strategy and qualitative research triangulation approach. Three complementary empirical studies have been conducted – expert interviews, mapping and qualitative content analysis of Lithuanian civic technology platforms and comparative content analysis of international civic technology platforms. The applied approach emphasizes triangulation among multiple data sets and fosters iterative theory-building and testing.

**The limitations of the research**. The research project has several limitations which could be improved in the future research efforts. First, the empirical research methodology is based on the availability of data. Since ICT-enabled co-creation and civic technologies are evolving concepts, it was difficult to construct appropriate categories, define the measures and develop valid and reliable instrumentation. It complicated the analysis, although the iterative revision and testing of the selected measures was a useful way to clarify the concepts. Second, the interview method predetermines other types of limitations – ensuring research validity and reliability, stimulating participants' motivation, and decreasing subjectivity. Third, the secondary data gathered during the platform content analysis can have unknown errors and other issues. Also, research process was complex due to the heterogeneity of Internet data predetermined by the differences in content, user interfaces, semantics, structure, etc. The differences make it difficult for the researchers collecting online data. Fourth limitation is the sample of Lithuanian platforms in the mapping activity. It has to be mentioned that the sample is not representative of the universe of civic technologies. Moreover, due to its limited size, it does not present statistical significance. However, as the first exercise in differentiating the building block of civic tech landscape, it can be considered as an effort of structuring the sample. Also, the research results were complemented by the study of the international platform content. The study was less in-depth but allowed to test some generalized findings of other two studies. The proposed model has several limitations too – definition of complex and emergent socio-technical systems, such as ICT-enabled co-creative ecosystems, is unavoidably partial, context-specific and temporary. Further research exploring civic technology platforms in greater depth and applying comparable methods in other countries, would be useful in the elaboration of the model.

**The practical implications of the research**. Research dealing with the nexus of ICT-enabled collective action confronts several challenges: complex conceptualization due to difficulties in finding common ground among new theories, focus on micro-issues (government-citizen relationship, citizen engagement, citizen roles, the applicability of tools in different contexts, etc.) and no studies on analyzing the field on the macro level. Such

research could provide much-needed insights for civic leaders on how to create sustainable ICT-enabled projects and how to maintain them in the long-run. Also, the research can provide insights for governmental organizations on what civic leaders need from the governments, what encourages the creation of such initiatives and how to increase the much needed synergy between the citizens and the governments. The thesis contributes the co-creation research field in two ways. First, by expanding the knowledge on the mutual value generation in the empirical context of civic technologies. The second contribution relates to the identification of the roles society members enact during resource integration processes of public value co-creation. The contributions are expressed through the development of empirically tested co-creative ecosystem framework.

**The structure of the research** follows the logic illustrated in the Figure 1 below. The dissertation consists of the introduction, list of main definitions and abbreviations, three main chapters, eight sections dedicated to theoretical, methodological and empirical data analysis, discussion, conclusions and recommendations, literature list and annexes. The volume of the dissertation consists of 220 pages, 22 figures, 31 tables and 8 annexes. The literature list contains 438 sources.

**Figure 1:** *The structure of the research*



**Source:** *developed by author (2018)*

# SYNTHESIS OF RESEARCH FINDINGS AND CONCLUSIONS

**Task 1:** Actualize the perception of ICT-enabled public value co-creation and to determine main preconditions, obstacles and risks by conducting analysis of related scientific research.

1.  The theory of co-creation originated in the business management literature and practice. Hence, Section 1.1 provides the actualization of the co-creation concept in the generation of public value. The aspects of three theoretical fields – co-creation theory, governance theory, ICT-enabled public sector theory – have been integrated to provide *a holistic view of the application of ICT-enabled co-creation in the generation of public value*. A common feature of these approaches to the value creation is the shift towards broader perspective focusing on the collaboration of different actors in the network.

**Figure 2:** *The Theoretical Influences to Co-Creative of Public Value*
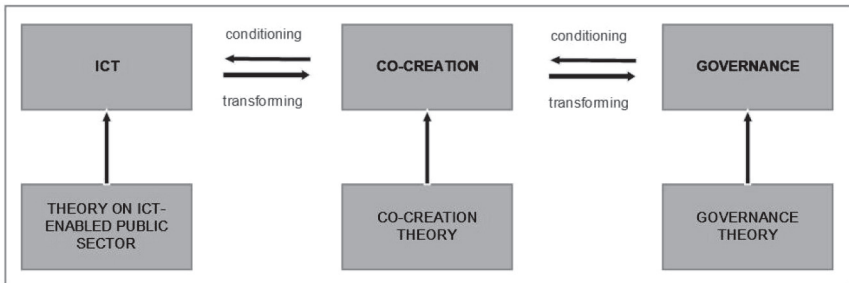


**Source:** *developed by author (2018)*

2.  The co-creation theoretical premise (Section 1.1.1) expressed through *Service Science theory* offers a systematic approach for understanding the complex value co-creating systems and logical structure of their dynamics. The governance theoretical approach (Section 1.1.2) expressed through *New Public Governance theory* allowed to actualize the definition of public value. In addition, it explained the context and the need for changing the power balance and enabling collaborative practices in the creation of public value. ICT-enabled public sector theories (Section 1.1.3) expressed through the notion of *Government 2.0* and *government-as-platform* provided a theoretical basis for understanding value propositions the governments can provide to the civic society in terms of open data and facilitation of transparency and openness. Taking into account the discussion on theoretical developments in the fields of Co-Creation, ICT and Governance, ICT-enabled co-creation of public value was defined as a system driven by the goal of generating public value through the use of ICT and co-creation between government sector, private sector and civil society.

3. ICT-enabled co-creation encompass many different interpretations and views depending on the objectives, background, research disciplines and underlying theories. Section 1.2 aimed at reviewing current research efforts by the academics and practitioners in the field in order to identify. The review allowed to identify research gaps, elaborate understanding of the concept and formulate the roadmap for further empirical investigations.

4. Section 1.2.1 determines the main *preconditions, obstacles and risks of public value co-creation* as identified in the literature. The research suggests that the success of co-creative initiatives in generation of public value depend on institutional support, open attitude of public officials, risk aversion of both citizens and public sector executives, infrastructure of openness, transparency and accountability, roles, perceptions and capacities of actors involved, role of intermediaries, offline strategies, embeddedness in networks, and the features of civic society.

5. The review revealed the lack of clarity in the literature regarding the forms Co-Creation can take in the public sector and the research surrounding it. Section 1.2.2 provides a more structured approach by determining two approaches to ICT-enabled co-creation of public value differing on the understanding of the roles of governmental entities. *Top-down co-creation approach* refers to the implementation, design, and evaluation of public services, participation in government-initiated platforms, data and content contribution, improvement of existing processes and services, user-centric approaches to service design. *Bottom-up co-creation approach* refers to the platforms emerging from outside the governmental sector. Such differentiation allowed to synthesize current research efforts and revealed the locus of research literature on the application of ICT in enabling collaborations for public value has been within governments. The research on co-creation initiated outside governmental entities is *limited and remains at the initial phase*. The research focuses either on very specific components of the processes or provide an abstract understanding of what the concept represents with no frameworks or empirical evidence to guide public officials.

**Task 2:** Construct the conceptual framework integrating activities and preconditions needed for ICT-enabled public value co-creation and to substantiate the methodology for research of the model

6. Section 2.1 details the *logical disposition of the conceptual framework* and provides a theoretical justification of the building blocks. The framework has been expanded from the Service Science, Public Value, Government 2.0 theories and research related to them discussed in Chapter 1. The framework has three foundational premises and consists of three dimensions – actors, content and processes – distributed on micro, meso and macro levels.

7. The *foundational premises of the framework* originate from the Service Science theory and allows to describe complex relationships between public entities, private entities and civil society. Three foundational premises of the conceptual framework are: (1) public value is co-created by multiple actors in the ecosystem; (2) service is

the basis of exchange; (3) Actors cannot deliver the value alone but participate in the creation and offering of value propositions in the ecosystems.

8. The *ecosystem approach* has been applied in designing the framework referring to a system in which actors work together to achieve mutual benefit – public value. Here public value means the contributions by the individuals and organizations to the society and its functioning by means of economic, moral, political, utilitarian and hedonistic aspects of value creation. It should be viewed not as a concrete outcome but as a lens for interpreting change in civic society. The service ecosystem approach moves the focus away from the exchange between two actors to understanding that the value creation is grounded in the configurations between economic and social actors within networks. The actors in the ecosystem co-create value at three levels – *micro, meso and macro*. Micro level refers to a direct service-for-service exchange between the actors. Meso level refers to an indirect exchange with the stakeholders in the system. Macro level refers to the complex relationships between different actors with diverse interests co-creating public value.

9. In order to understand how public value is created on micro, meso and macro levels, three dimensions – actors, content, processes – were developed allowing to categorize the entities involved and ways they co-create public value.

   a) The *actor dimension* refers to the of individuals and organizations participating in the service ecosystem, their roles and resources. The review of the literature allowed to identify four types of actors (*government, citizen, business, NGO*) and five types of roles (*initiator, user, partner, enabler, intermediary*) they can assume in the co-creative ecosystem.

   b) The *content dimension* includes deliberations on the goals and objectives of the actors involved. The central concept of this dimension is the value proposition indicating how the actors could co-create value by integrating their resources. The notion is made that the *public value is co-created on a macro level*. Micro level deals with value offerings and benefits for the *individual actors*. Meso level provides insights on the stakeholder *network benefits*. By distributing value propositions through three levels, the framework allows to understand the value of ICT-enabled co-creation for people, organizations and society.

   c) The *processes dimension* includes deliberations on the patterns of design, management and collaboration in co-creating public value. Service Science provides a lens to view actors in a system of other actors co-creating value through resource integration and service provision. To this end, the actor that develops the most compelling and relevant to the context value proposition will perform the best. The co-creative processes and development of value propositions are influenced by a number of preconditions on micro (*integration of external input, risk aversion of actors, clear incentives*), meso (*collaborations and interoperability between governmental entities, embeddedness in networks, offline engagement strategies*) and macro (*strategic policy framework, infrastructure for openness, view that the government should be the sole provider of public services,*

transparency and accountability, lacking powers of central government, institutional support, open attitude of public officials) levels.

10. The conceptual Co-Creative Ecosystem Framework provides a holistic view and helps to come to a more comprehensive assessment of what makes ICT-enabled co-creation of public value sustainable in the long-run. The framework and its elements allow to discuss the concept of ICT-enabled Co-Creation initiatives in-depth and enables the comparison between the cases.

11. Section 2.2 details the methodology used to develop, verify and supplement the model with empirical findings consists of detailing the course of three empirical studies.

**Figure 3:** *The Structure of the Empirical Research Project*

| | Data collection methods | Sample size | Data analysis methods |
|---|---|---|---|
| Study of Public Value Co-Creation through Civic Technologies | Semi-structured expert interviews | 7 expert interviews | Content analysis. NVIVO software used for data analysis |
| Study of Co-Creative Ecosystem in EU | Online data collection (Scrapping) | 614 international civic tech platforms | Website content and factor analysis |
| Mapping the Civic Technologies in Lithuania | Online data collection IssueCrawler | 52 Lithuanian civic tech platforms | Content Analysis Hyperlink Network Analysis |

**Source:** *developed by author (2018)*

12. Research begins by conducting expert interviews in the *Study of Public Value Co-Creation through Civic Technologies* (Section 2.2.1). It is aimed at distinguishing the peculiarities of the actors and processes dimension of the framework. The findings of the qualitative study are complemented by the *Study on International Civic Technology Platforms* (Section 2.2.2) providing a quantitative perspective of the actor and content dimensions. The last study combined qualitative and quantitative methods in confirming the applicability of the framework's foundational premises by *Mapping of the Civic Technologies in Lithuania* (Section 2.2.3). Results of the studies are used to elaborate and validate the elements of conceptual Co-Creative Ecosystem Framework.

**Figure 4:** *The Relations between the research directions and the empirical studies*

**Task 3:** Elaborate conceptual framework by determining the characteristics of ICT-enabled public value co-creation by means of expert interviews, content analysis of Lithuanian civic technology platforms and comparative analysis of international civic technology platforms.

13. Section 3.1 provides summary of the results expert interviews, content analysis of international platforms and mapping of Lithuanian platforms. Section 3.2 details how the results elaborate the actors, content and process dimensions of the conceptual framework and confirm identified foundational premises.

14. Section 3.2.1 details how the actor dimension was elaborated by the empirical study results. During the expert interviews six groups of actors – *governmental entities, citizens, private organizations, NGOs, media, specialists* – were identified. The content analysis of Lithuanian and international civic technology platforms added three more actor groups – *associations, public organizations* and *international organizations*. The roles of citizens and governmental entities have been discussed in

most detail as compared to the other actor groups. The platform content analysis allowed to get insights on the seven roles: actors can assume the roles of *initiator, user* and *contributor* on a micro level, the roles of *partners* and *sponsors* on a meso level, and the role of *enabler* on a macro level. The role of *intermediary* refers to actors connecting different levels of the ecosystem.

15. Section 3.2.2 details how the content dimension was elaborated by the empirical study results. During the interviews the importance of content was highlighted through two functions: it connects actors in collaborations and attracts the end-users. The analysis of the research outputs aimed at content dimension (the goals, operation type, contexts) of civic technologies in the content analysis of international platforms and mapping of Lithuanian platforms allowed to elaborate the types of value propositions on micro (*economic, self-expression, knowledge/information, status, functional*), meso (*partnerships, networks, stability*) and macro (*economic, social, political, quality of life, strategic, ideological, stewardship*). The platforms in the sample, mostly provide value propositions that only limited number of users are interested in. The platforms are created with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators. However, the user-centric approach is often missing.

16. Section 3.2.3 details how the process dimension was elaborated by the empirical study results. The *Study of Public Value Co-Creation through Civic Technologies* allowed to identify two settings of the resource integration and service provision processes: design of value propositions and management of services. The empirical findings suggest, that in *designing* compelling value propositions, platform initiators facilitate the involvement of various groups of actors and systemize the input into design solutions. Three factors influencing the process have been identified: *co-design*, *intermediaries* and *familiarization with existing norms and structures*. The setting of *managing* value propositions is influenced by the *shared goals, targeting of important user groups, the learning curve of the initiators, need for a strong support system, the requirement of formal commitment from partners and competencies of the initiators*. Results of the study confirmed that designing and managing a sustainable platform requires involvement of diverse stakeholders in a collaborative participatory process. Platform initiators instead on focusing on user needs and including them in the design of the platform, pursue their own agenda and operate under assumptions about their users. The initiators of civic technology projects often put too much emphasis on the creation of the tools. However, the field can grow and be sustainable if it includes the citizens, local communities, governmental employees, businesses and other stakeholders as equal partners. Partnerships should not be based on formal inclusion but by including the resources the actors have to offer in the creation of public value.

17. Results of the *Mapping of the Civic Technologies in Lithuania* allowed to test the applicability of foundational premises in analyzed context. The analysis of connections between the number of partners, number of roles and the uptake of platforms

in the society provides understanding about the dynamics of actors in the civic tech landscape. The results correspond with the central ideas of Service Science and the proposed foundational premises which suggests that organizations no longer depend on internal capacities to satisfy external needs. Sustainable initiatives and organizations are required to maintain relationships with other actors in the ecosystem (e.g. partners, competitors, governments and end users). Hyperlink Network Analysis also showed strong links between the platforms and other actors in the network based on homogeneous issues. The analysis of the patterns of collaboration showed correspondence with the main ideas of Service Science – the more partners, the more central the platforms are in the networks and the more popular in the society.

18. The interviews with the experts and the literature provided information on idyllic co-creation of public value i.e. the experts discussed the potential and desired roles of governments, citizens and other actors in the ecosystem. However, the analysis of the content of Lithuanian Civic Tech platforms provides a different view. Despite the declarations to include more individuals and organizations into co-creation, the reality is quite different: (1) the role of citizens is often limited to being users and contributors rather than partners in creation and management of ICT-enabled initiatives; (2) majority of the initiatives have no (or does not declare the affiliations publicly) external partners; (3) pro-active government stance is needed but most of the organizations are working without governments as active partners, and (4) prevalence of the contributor role and variety of actors assuming this role is limited.

19. The platforms as actors provide only value propositions, however – mostly no one is interested as illustrated by the usage statistics of the platforms and low uptake in the society. The services and value propositions they offer are with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators without the regards as to what the target groups need. This can also be seen in the analysis of the platform content on defining the target groups – it is limited to citizens only.

**Task 4:** Propose updated and empirically verified ICT-enabled Co-Creation Ecosystem Model

20. The *ICT-enabled Co-Creative Ecosystem Model* design is based on the ecosystem approach which refers to a system where involved entities cannot create and deliver value alone – they can only propose value offerings to the other actors in the network and in this way co-create the value. The ecosystem framework is a dynamic and inclusive network in which all resources, actors, and institutions are mapped and interconnected. The model was constructed based on the findings of previous research studies and empirically enhanced with three studies, which allowed to verify the model and update it to fit the social reality.

**Figure 5:** *ICT-Enabled Co-Creative Ecosystem Model*
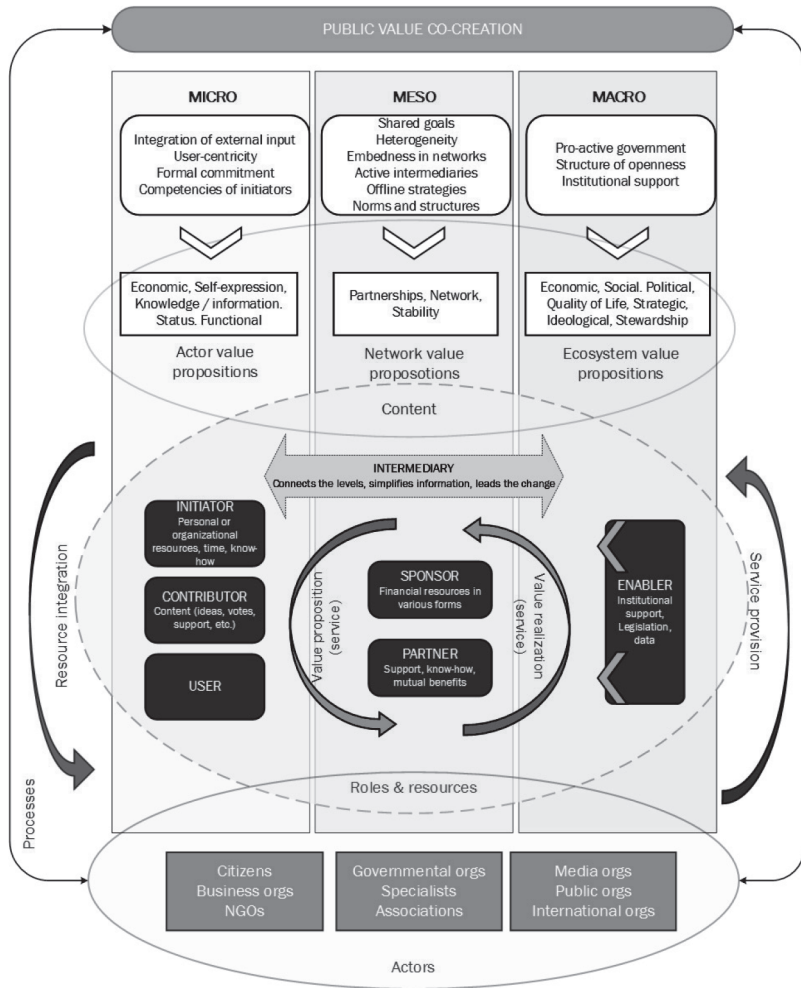


**Source:** *developed by author (2018)*

21. The ecosystem model presented in Section 3.3 is *distributed through the micro, meso, macro levels* which allows to understand the value of ICT-enabled co-creation for people, organizations and society. The model *incorporates three analysis dimensions* – actor, processes and content – which allow to compare cases of ICT-enabled public value.

   a) The micro level refers to the direct exchanges between the initiators, users and contributors. The meso level refers to indirect exchanges with the partners and

sponsors. The macro level refers to the complex contextual role of enabler. Intermediaries connect the three levels. The roles identified during the empirical researches can be filled by any of the actor groups with the exception of enabler role which is dedicated to governmental entities who have the capacity to implement the systemic changes in the ecosystem.

b) Value propositions are used to connect the actors in the ecosystem. Three categories of value propositions were established. At the micro level, value propositions are based on the benefits the ICT-enabled co-creative activity generates/ might generate for individual actors: Economic, Self-expression, Knowledge / information, Status, Functional. At the meso level, value propositions are based on the benefits the actors receive due to co-operation with other stakeholders: Partnerships, Strong Network, Stability. At the macro level, the public value is expressed through Economic, Social, Political, Quality of Life, Strategic, Ideological and Stewardship value propositions.

c) The two main processes driving the co-creative ecosystems are the service provision and resource integration. However, at the three level identified different factors affect the sustainability of these processes. At the micro level the attention is paid to the design and maintenance of value propositions of individual actors by Integration of feedback and external input, User-centricity, Formal commitment of actors and Competencies of initiators. At the meso level the processes between the actors are influenced by Shared goals, Heterogeneity actors involved, Embeddedness in networks, Active role of intermediaries, Offline engagement strategies, Familiarization with existing norms and structures. At the macro level, the processes are influenced by the Pro-active governmental entities, Infrastructure for openness, transparency and accountability, and Institutional support.

22. The resulting model provides a structure for further empirical investigations. There is an urge to investigate the prevalence of the ICT-enabled public services provided by non-governmental organizations, hence, the model allows understanding of each of the components of the model and, to add holism to the relationship between them. The model is applicable in diverse settings. It is not context-dependent but rather it integrates contextual factors as integral social and technical aspects of the ecosystem.

23. The ecosystem model with its *emphasis on dynamics* can be useful for both design and evaluation of bottom-up ICT-enabled co-creative initiatives. For planners and designers, an assessment of the existing strengths and weaknesses in relation to the model components can suggest where the changes and improvements are most needed in capabilities or connections to achieve their specific goals. The model is also useful for public policy planners and officials of governmental institutions in terms of setting agenda for change and providing guidelines encouraging the engagement of civic society, businesses and other non-governmental entities. The proposed model builds a collective intention about the ways in which the ICT-enabled bottom-up initiatives co-create public value and in turn a stronger shared vision of future success for the sector as a whole.

**Task 5:** Prepare managerial and organizational recommendations for strengthening the collective efforts of citizens, platform initiators and developers, public and governmental institutions in creating public value

24. The research activities performed to achieve previous tasks – literature review, conceptual model, empirical studies – allowed to *build an in-depth working knowledge of the public value co-creation domain* and its performance, outputs and impacts. In the light of the main observations that have emerged from the design of ICT-Enabled Co-Creative Ecosystem model, it has become possible to develop recommendations aimed at increasing the co-creative capacities of governmental, private and civic entities. The recommendations are based on the micro, meso and macro levels detailed in the framework and the factors affecting them identified during the empirical studies. The micro level and the meso level include managerial recommendations for the platform initiators, managers and civic leaders. The macro level recommendations are oriented towards guiding the governmental entities. Additionally, recommendations for further research on the topic are proposed.

25. *The micro level recommendations* based on the proposed model include integration of the feedback and external input, user-centricity, formal commitment of actors and improvement of initiator competencies. The empirical study showed that the platforms in the sample provide value propositions that only limited number of users are interested in. Hence, development of broader value propositions could yield positive results in terms of uptake in the society. This can be achieved, firstly, through *integration of feedback and external input*. Getting a clear picture of the platform performance helps to identify the weaknesses to be improved as well as strengths that can be leveraged. Secondly, *user-centric approach* is necessary in designing the platforms. In the user-centric process, user requirements are considered from the beginning and included into the whole service creation and management cycle. Often the platforms are created with the purpose to achieve organizational goals or pursue personal interest/satisfaction/self-development of initiators. Hence, the shift of focus towards user needs enable initiators to create tools that will actually be used. Third, *formal commitment of the actors* and *initiator competencies* is needed to ensure continuity and placid implementation of co-creative processes.

26. *The meso level recommendations* include the promotion of shared goals, heterogeneity of actors, embeddedness in the networks and promotion of intermediaries. The focus of the initiators should shift from building technologies to creating ecosystems of collaboration and partnerships. The research revealed, the emphasis on tool development which often means the projects fail to include the citizens, local communities, governmental employees, businesses and other stakeholders as equal partners. To be more sustainable, initiatives are required to maintain the relationships with *heterogeneous actors* in the ecosystem based on the *shared goals*. Hence, *embeddedness in the networks* ensure the platforms capitalize on networks' power – the more actors they attract, the more valuable they become for those actors in terms of value creation. Lastly, for the society to evolve to being more open and engaged, not all citizens have to be active, not all organizations have to be active – but there is need

for *intermediaries*, civic leaders, active citizens who could translate the importance of active citizenship, transparency, open data and make it easier for citizens and governments to cooperate. The platform initiators should ensure inclusion of intermediaries in platform activities in form of promotion, engagement and spread of the message.

27. *The macro level recommendations* are based on the proposed model include proactive government stance, structure of openness and institutional support. The *proactive government stance* should be acted through promotion strategies that create opportunities for engagement. Politicians have to assume the role of agenda setters, facilitators and meta-governors of collaborative action. In case of limited resources and knowledge the governmental entities should be supportive and simply present in the discourse formulating the solutions to prevailing social challenges by *providing institutional support*. The local and national governments have to assume a role of educators in order to encourage citizens and other members of civil society to contribute. By participating in partnerships with civic tech initiatives the governmental entities can use it as an opportunity to learn themselves. The *structure of openness* should be expressed through promotion of open data and transparency in providing public services. The governments can collaborate by contributing resources in form of data, information, know-how, etc. With the provision of open data there is a greater chance in receiving innovative solutions for better government services, more active participation of society, etc.

28. ICT-enabled co-creation of public value encompass many different interpretations subjected by researchers, users, science fields and disciplines. Various parties are likely to hold different views on the concept. Proposed model offers *dynamic ideas for future researches* to further identify, conceptualize and understand the underlying perspectives which strongly influence the previous, current, and future concept of co-creation. However, the proposed model needs to be tested in additional cases to further verify its validity and usefulness in diverse settings and its applicability in different countries. Maturity model of ecosystem could be designed in order to provide more detailed guidelines for the actor involved in how to achieve the value. Additional work is needed to formulate measures and indicators of successful initiatives.

29. Further reserach could elaborate on the applicability of the framework in diverse setting – different countries. Maturity model of ecosystem could be designed in order to provide more detailed guidelines for the actor involved in how to achieve the value. Additional work is needed to formulate measures and indicators of successful initiatives.

# CURRICULUM VITAE

**Personal information**

| | |
|---|---|
| Name, Surname | Monika Mačiulienė (Skaržauskaitė) |
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**Work experience**

| | |
|---|---|
| 2012 - now | Mykolas Romeris university, lecturer at Communication Institute, junior researcher. |
| 2010-2012 | Western Union Processing Lithuania, senior coordinator. |
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| from 2013 | Doctoral student at Mykolas Romeris university |
| 2011-2013 | Master's degree in Business Management and Administration, Mykolas Romeris university |
| 2009-2011 | Master's degree in Political Science, Vilnius University |
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**Peer-reviewed scientific publications**
1. Mačiulienė M., Skaržauskienė A. (2016) Emergence of collective intelligence in online communities, *Journal of business research*, 69(12), p. 1718-1724.
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5. Skaržauskaitė M. (2013) Measuring and managing value co-creation process: overview of existing theoretical models, *Social technologies*, 3(1), p. 115-129.

**Presentations in scientific conferences:**
1. Mačiulienė M., Mikulskienė B. (2017) Towards sustainable civic technologies: case study of Lithuania. *21st annual IRSPM conference: 19-21 April 2017, Budapest. Budapest: International Research Society for Public Management.* Corvinus University of Budapest, 2017. p. 1.
2. Mačiulienė M., Mačiulis A. (2017) Public spaces as evolving frameworks: applying principles of co-creation in urban planning. *Enhancing places through technology: proceedings from the iCiTy conference, Valletta, Malta - 18-19 April, 2016*, p. 257-266.
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7.  Skaržauskaitė M., Leichteris E., Mačiulis A. (2013) Development perspective of virtual community projects in Lithuania. *Proceedings of Social Technologies conference.* Vilnius: Mykolas Romeris University, p. 123-136.

**Monographies and scientific studies:**
1.  Skaržauskienė A., Žemaitaitienė G., Tvaronavičienė A., Mačiulienė M. (2017) Online community projects in Lithuania: cyber security perspective. *The analytics process. Strategic and tactical steps.* Edited by E. Rodriguez. Boca Raton: CRC Press Taylor & Francis Group, 2017. p. 155-167.
2.  Jankauskienė, D. et al. (2015) *Integrated transformations of e-health: perspectives of stakeholders*. Vilnius: Mykolas Romeris university, 526 p.
3.  Skaržauskienė, A. et al. (2015) *Social technologies and collective intelligence.* Vilnius: Mykolas Romeris university, 520 p.

**Scientific practical and project activities:**
1.  Scientific project "C³PLACES - using ICT for Co-Creation of inclusive public Places. ERA-NET Cofund Smart Urban Futures" (2017-2020), junior researcher.
2.  Scientific project "Integrated Transformations of eHealth Development: The Perspective of Stakeholder Networks" (2012-2015), junior researcher.
3.  Study project "Preparation and Implementation of Joint Master's Degree Programme Social Technologies" (2012-2015), lecturer.
4.  Doctoral seminar "From Input to Output: Designing, Implementing and Disseminating Research" at Mykolas Romeris university (October, 2016).
5.  Doctoral school "Nida doctoral school 2016 CO-ACTION" organized by Lithuanian Art Academy and Aalto university (August, 2016).
6.  Doctoral internship funded by Lithuanian Research Council to the Global Innovation and Knowledge Academy Conference 2016, Valencia, Spain (April, 2016).
7.  Doctoral internship funded by Lithuanian Research Council to the 14th Academic Conference by International Institute of Social and Economic Sciences, Valletta, Malta (October, 2014).
8.  Erasmus staff exchange to Middlesex university, London (April, 2014).

**Monika Mačiulienė**

# BENDRAKŪROS EKOSISTEMOS MODELIAVIMAS TECHNOLOGINĖS PAŽANGOS KONTEKSTE

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Daktaro disertacija ginama viešame Vadybos krypties gynimo taryboje 2018 m. vasario 9 d. 13 val. I-414 aud. (Ateities g. 20, LT-08303 Vilnius).

Daktaro disertacijos santrauka išsiųsta 2018 m. sausio 9 d.

Daktaro disertaciją galima peržiūrėti Lietuvos nacionalinėje Martyno Mažvydo bibliotekoje (Gedimino pr. 51, Vilnius) ir Aleksandro Stulginskio universiteto (Studentų g. 11, Akademija, Kauno raj.), Klaipėdos universiteto (K. Donelaičio a. 3, Klaipėda), Mykolo Romerio universiteto (Ateities g. 20, Vilnius), Šiaulių universiteto (Vytauto g. 84, Šiauliai), Vytauto Dižiojo universiteto (K.Donelaičio g. 52, Kaunas) bibliotekose.

# ĮVADAS

Temos aktualumas. Per pastaruosius dešimtmečius pažangiausi verslo vadybos ir viešojo valdymo mokslininkai bei praktikai išryškino interaktyvų ir įtinklintą vertės kūrimo pobūdį. Nauji komunikacijos kanalai ir didėjantys informacijos srautai įgalino platesnį skirtingų visuomenės grupių dalyvavimą bendradarbiavimo veiklose. Bendrakūros (angl. *co-creation*) sąvoką keičia tradicinius vertės kūrimo metodus ir tampa aktuali, kaip organizacinė strategija. Verslo sektoriuje šis pokytis konceptualizuotas per *į paslaugas orientuotą logiką* (angl. *Service Dominant Logic*), kur vertės kūrimas nebėra suvokiamas, kaip uždaras organizacinis procesas. Viešajame sektoriuje tokia transformacija išreikšta per Naujojo viešojo valdymo, Įtinklinto valdymo bei Atvirosios valdžios teorinius požiūrius, pabrėžiančius, kad viešoji vertė kuriama ne vien valdžios pastangomis, o bendradarbiaujant viešiesiems subjektams, privačiam sektoriui, visuomeninėms organizacijoms bei piliečiams. Tai patvirtina ir Europos Komisijos komunikacija – „skaitmeninių technologijų ir koncepcijų, tokių kaip atviri duomenys bei atvira valdžia, sklaida skatina nuolatinius paradigminius pokyčius link supratimo, kad piliečiai ir kiti su valdymo sistemomis nesusiję suinteresuotieji yra ne tik viešųjų paslaugų naudotojai, bet ir patys gali imtis iniciatyvos teikti paslaugas visuomenės labui" (EB 2016, p.6). Moksliniai tyrimai rodo, kad realybėje viešojo sektoriaus valdymo praktika krypsta link rinkos principais veikiančių veiklos vertinimo bei konkurencijos metodų, kurie sustiprina požiūrį į piliečius, kaip klientus, kurių poreikius reikia patenkinti, o ne partnerius, su kuriais vertė yra kuriama per bendradarbiavimą (Dahl & Soss 2014; Sandfort & Quick 2015).

ES šalyse pasitikėjimas tradicinėmis politikos formavimo struktūromis akivaizdžiai mažėja. Pavyzdžiui, pagal kasketvirtinio Eurobarometro (2016) duomenis, Europos piliečių pasitikėjimas ES institucijomis, nacionaliniais parlamentais bei vyriausybėmis yra mažas ir lėtai mažėjantis. Pagal Pew tyrimų centro apklausą, dauguma žmonių visoje Europoje mano, kad jų balsas nėra girdimas ES institucijose (Pew Research Centre 2014). Lietuvos demokratija susiduria su panašiomis problemomis. 2016 metų Pilietinės galios indekso duomenimis, Lietuvos piliečiai domisi vietinėmis problemomis, tačiau jaučiasi vietos valdžios institucijų ignoruojami priimant sprendimus vietos klausimais. Tik 17% apklaustųjų nurodė, kad vietos valdžios institucijos įtraukia piliečius į sprendimų priėmimą. Piliečių dalyvavimo trūkumas ir politinės kompetencijos stoka leidžia daryti prielaidą, kad Lietuvos demokratinės visuomenės modelis ir tiesioginės demokratijos instrumentai nėra pilnai išnaudojami (Krupavičius 2012). Pagal tarptautinį 2016m. Demokratijos indeksą, „pilnateisių demokratijų" skaičius pasaulyje sumažėjo nuo dvidešimties 2015 metais iki devyniolikos 2016 metais, o Rytų Europos šalyse matoma didžiausia regresija. Apibendrinus galima teigti, kad senosios bei naujosios Europos sąjungos narės išgyvena atstovaujamosios demokratijos krizę dėl stiprėjančių globalizacijos ir individualizmo apraiškų (Bekkers et al. 2011). Taigi, ryšių atkūrimas tarp valdžios ir visuomenės yra ypač aktualus.

Atviro valdymo ir atvirųjų duomenų kontekste bendrakūra gali būti traktuojama kaip pagrindinis įrankis, užtikrinantis skirtingų bei vienas kitą papildančių suinteresuotųjų grupių įtraukimą į viešosios vertės kūrimą. Bendrakūros terminas iš esmės skiriasi nuo tradicinio supratimo apie visuomenės dalyvavimą. Pirmiausia, technologijomis paremtos

bendrakūros iniciatyvos įveikia laiko ir geografijos apribojimus ir gali paskatinti platų visuomenės dalyvavimo mastą ir rezultatus (Hom et al. 2014). Siekiantt bendrakūros efekto, piliečiai veikia ne tik kaip paslaugų naudotojai, bet yra aktyvūs kūrimo proceso dalyviai. Užuot prašant piliečių įsitraukti į jau egzistuojančių iniciatyvas, bendrakūros metodai padeda žmonėms ir organizacijoms iškelti savo sprendimus, kurti naujus įrankius ir taip vystyti atvirus pilietinius procesus (Hom et al. 2014). Per pastaruosius du dešimtmečius, ES politikos strateginiai dokumentai, tokie kaip Europos 2020 Strategija, ES Skaitmeninė Darbotvarkė, pabrėžė viešosios informacijos atvėrimo ir sprendimų priėmimo įgalinto informacinių ir komunikacijos technologijų (IKT) svarbą sprendžiant demokratijos problemas. Perėjimas prie atviresnės ir labiau įtraukios visuomenės leidžia išnaudoti bendrakūros potencialą atliepiant jos metodų panaudojimą privačiame sektoriuje (Gouillart 2012; Ciasullo & Troisi 2013; Pinho et al. 2013; Leavy & Moitra 2006; Thompke & Hippel 2002; Leavy 2014).

Europos Sąjunga bei valstybės nacionaliniu lygmeniu investavo žymias sumas į e.valdžios ir e.demokratijos projektus tikintis aktyvesnio piliečių dalyvavimo, tačiau priemonių įgyvendinimas nesukūrė piliečių dalyvavimo proveržio (Prieto-Martín et al. 2012). Moksliniai Naujojo viešojo valdymo tyrimai taip pat pasižymi tam tikrais ribotumais. Akademinė bei praktinė literatūra nagrinėjanti IKT įgalintą atvirąjį valdymą daugiausiai koncentruojasi į valdžios, kaip pagrindinio iniciatoriaus, įrankių kūrėjo bei informacijos tiekėjo, vaidmenį. Nors šiuolaikinės valdymo teorijos akcentuoja piliečių vaidmenį, į tyrimų lauką bei egzistuojančius teorinius modelius dažniausiai patenka valstybės institucijų, o ne piliečių inicijuoti projektai. Dėl šios priežasties tyrimai koncentruojasi į procesus, vykstančius valstybinio valdymo struktūrose bei rekomendacijų pateikimu viešajam sektoriui, kaip kurti atviresnę ir išmanesnę valdymo sistemą įtraukiančią piliečius. Nors viešasis sektorius, iš esmės, gali kurti viešąją vertę be papildomos pagalbos, dėl tiesioginio bendradarbiavimo su išorės veikėjais kuriamos vertės potencialas reikšmingai išauga. Viešasis sektorius negali monopolizuoti viešosios vertės kūrimo procesų, tačiau atlieka svarbų vaidmenį užtikrinant, kad vertė būtų sukurta. Akivaizdu, kad valstybinės struktūros negali vienos rasti sprendimų sudėtingoms socialinėms, ekonominėms bei politinėms problemoms spręsti (Bingham et al. 2005; IAP2, 2007; Lenihan 2007). Modernios pilietinės visuomenės organizacijos, piliečiai ir verslas nuolat eksperimentuoja su IKT įrankiais bei prieinamais informacijos ištekliais siekdami bendradarbiauti tarpusavyje bei su valdžios institucijomis sprendžiant aktualias visuomenines problemas. Bendradarbiavimo pavyzdžiais galima laikyti e.demokratijos platformas (pvz. mySociety, Lietuva 2.0, manobals.lv), miesto problemų pranešimo platformas (pvz. FixMyStreet, Tvarkau Vilnių), skaidrumo projektus (pvz. PromiseTracker, Poderpedia, skaidrumolinija.lt), internetinių peticijų svetaines (e.g. Change.org, ControlShift, AskThem, WeThePeople, peticijos.com) ar komunikacijos su valdžios atstovais platformas (pvz. PopVox, Neighborland, parasykjiems.lt). Minėtose iniciatyvose, visuomenė (individai ir organizacijos) savanoriškai naudoja savo intelektinius ir materialinius išteklius padėdamos valstybinėms institucijoms spręsti socialines problemas greičiau ir efektyviau. Mokslinėje bei praktikų literatūroje tokios technologijas ir valdymą apjungiančios iniciatyvos apibrėžiamos pilietinių technologijų terminu (angl. *civic tech-*

*nologies*) (Knight Foundation 2015; Baeck & Bria 2014; Hendler et al. 2016; Baack 2015; McNutt et al. 2016; Rumbul 2015a).

Pilietinių platformų (PP) vystymąsi lėmė inovacijos 3 sferose: IKT, atvirųjų duomenų judėjime ir skaitmeninio bendradarbiavimo formose. Didelio vartotojų skaičiau įtraukimas į virtualias veiklas sukūrė prielaidas didesniam kolektyvinio intelekto potencialui, greitesniam visuomenės problemų identifikavimui, o nauji žinių ir informacijos valdymo metodai sudarė galimybes saviorganizacijai. Deja, entuziasmas dėl PP veiklų efektyvumo ir įtakos visuomenės gerovei paremtas tik fragmentiniais, į valstybinio sektoriaus procesus orientuotais tyrimais e-dalyvavimo, e-demokratijos ar atvirųjų duomenų integravimo srityse.

Mokslinė problema ir jos ištyrimo lygis. Mokslinių tyrimų skirtų bendrakūros procesų bei metodų modeliavimui daugėja, tačiau daugiausiai dėmesio yra skiriama verslo objektų bei klientų sąveikos analizei (Allen, Bailetti, & Tanev, 2009; Devasirvatham, 2012; Frow & Payne, 2012; Hakanen & Jaakkola, 2007; Kohler, Fueller, Matzler, & Stieger, 2011; Saarijärvi, Kannan, & Kuusela, 2013). Lietuvoje bendrakūros tyrimų atlikta nedaug, daugiausia fokusuojantis į verslo aplinką (Bakanovė 2013; Skaržauskaitė 2012; Kazakevičiūtė et al. 2012; Mačiulienė 2014, Damkuvienė et al. 2012, Jokubauskienė 2014, Piligrimienė 2015). Tarptautiniai tyrimai nagrinėjantys bendrakūros taikymą kuriant viešąją vertę nagrinėja keletą perspektyvų: valstybinių funkcijų gerinimo (Mikušová & Mária 2010; W. Voorberg, Bekkers, et al. 2014; Marian & Monteyne 2011; W. Voorberg, Tummers, et al. 2014a; Magno & Cassia 2015; Mulder 2012; Lönn & Uppström 2015; López-de-Ipiña et al. 2016; Torfing et al. 2016), ribojančių bei skatinančių faktorių analizės (Gillard et al. 2012, Parrado et al. 2013, Vamstad, 2012), suinteresuotųjų vaidmenų (Magno & Cassia 2015; Olphert Damodaran, L., 2005; Cobo 2012) ir metodų tipologijos (Carr, 2012; Pestoff, 2012; Ryan, 2012). Pilietinių technologijų taikymo tyrimai apima diskusijas apie individualių vartotojų patirtis naudojantis platformomis (Rumbul 2015b; Hivon & Titah 2015; Peixoto et al. 2016), institucinę aplinką (OECD 2001), pasirengimą ir paramą dalyvaujant politiniame lygmenyje (OECD 2001), skaitmeninę atskirtį (Lutz 2015; Smith et al. 2009; Ferro & Molinari 2010), socialinį elgesį internetinėje erdvėje (Boulianne, 2009; Gibson and Cantijoch, 2011) ir demografinį įrankių panaudojimą (Rumbul, 2015; Sjoberg et al, 2015). Lietuvos mokslininkai pilietinių technologijų tematika tyrinėjo kolektyvinio intelekto atsiradimo aspektu (Skaržauskiene, et al, 2015). IKT panaudojimas viešosios vertės kūrime nagrinėtas per e.valdžios (Limba 2004, 2007), e.dalyvavimo (Gatautis 2010), e.demokratijos (Žilionienė 2004, Ginevičius et. al 2006, Domarkas & Lukoševičienė 2006, Petrauskas & Malinauskienė 2007, Paliulis & Jurkėnaitė 2007), išmaniojo valdymo (Šiupšinskas 2014; Gaulė 2014; Stanislovaitienė 2016) bei atvirų duomenų integravimo (Smalskys & Šilinskytė 2016) perspektyvas.

Dėl fenomeno sudėtingumo ir tyrimų fragmentiškumo nėra nusistovėjusios IKT įgalintos viešosios vertės bendrakūros sampratos, integruojančios nevyriausybinių organizacijų bei piliečių iniciatyvas. Galima teigti, kad IKT paremtos bendrakūros procesų modelio sudarymas ir aprobavimas yra aktuali mokslinė problema. Šis disertacinis tyrimas siekia teoriškai bei empiriškai prisidėti prie bendrakūros mokslinių tyrimų srauto akcentuojant IKT įgalintų kolektyvinių piliečių, bendruomenių, nevyriausybinių organizacijų, verslo su-

bjektų ir kitų suinteresuotųjų šalių veiksmų svarbą kuriant viešąją vertę. Mokslinė problema šiame tyrime išreiškiama per klausimą: *kokie yra IKT įgalintos bendrakūros procesai ir kaip jie skatina viešosios vertės kūrimą?*
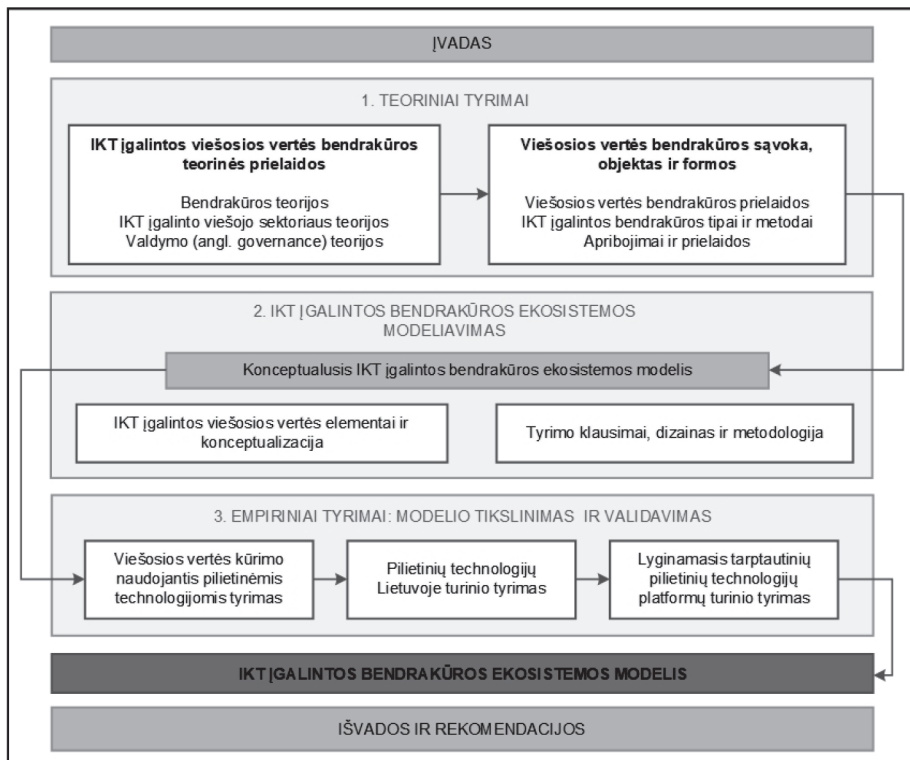
Disertacinio darbo objektas. Viešosios vertės bendrakūros procesai pilietinio dalyvavimo platformose Lietuvoje ir užsienyje.

Disertacinio darbo tikslas. Pasiūlyti patikrintą IKT Įgalintos Bendrakūros Ekosistemos modelį. Tikslo siekiama atliekant tarpusavyje susijusias bei vienas kitą papildančias disertacinio darbo užduotis:

1. Atliekant mokslinių šaltinių analizę aktualizuoti IKT įgalintos viešosios vertės bendrakūros supratimą, objektą ir formas bei apibrėžti pagrindines bendrakūros procesų prielaidas, kliūtis bei rizikas.

2. Parengti konceptualųjį modelį, integruojantį IKT įgalintos pilietinės visuomenės, valstybės bei kitų suinteresuotųjų vaidmenį bendrai kuriant viešąją vertę bei pagrįsti modelio validavimo metodologiją.

3. Validuoti konceptualųjį modelį atskleidžiant viešosios vertės bendrakūros procesų veiklas, ypatumus ir turinį, atliekant ekspertinę apklausą, kokybinį pilietinio dalyvavimo platformų Lietuvoje tyrimą ir lyginamąjį tarptautinių pilietinio dalyvavimo platformų tyrimą.

4. Pasiūlyti patikslintą ir empiriškai patikrintą IKT Įgalintos Bendrakūros Ekosistemos modelį.

5. Paruošti vadybines ir organizacines rekomendacijas, kurios sustiprintų kolektyvinius piliečių, pilietinio dalyvavimo iniciatorių, pilietinių platformų vystytojų bei viešojo valdymo institucijų veiksmus bendrai kuriant viešąją vertę.

Disertacinio tyrimo metodai. Siekiant išskirti patikrintą IKT Įgalintos Bendrakūros Ekosistemos modelio elementus, teoriniam tyrimui buvo naudojami mokslinės literatūros analizės, sisteminimo, apibendrinimo bei lyginimo metodai, daugiausia dėmesio skiriant užsienio autorių publikuotiems moksliniams darbams. Teoriniam modeliui sudaryti taikytas konceptualiojo modeliavimo metodas. Empiriniai tyrimai buvo grindžiami fenomenologinio tyrimo strategija bei taikomas tyrimų trianguliacijos principas. Siekiant gilesnio tiriamo fenomeno supratimo buvo derinami trys vienas kitą papildantys kokybiniai empiriniai tyrimai: ekspertinio interviu metodas, kokybinės turinio analizės bei lyginamosios turinio analizės metodai. Empirinių tyrimų rezultatams apibendrinti ir išvadoms suformuoti buvo naudojami loginės analizės bei duomenų vizualizacijos metodai.

Disertacinio darbo struktūra pavaizduota paveiksle 1 žemiau. Disertaciją sudaro įvadas, darbe naudojamų sąvokų ir trumpinių sąvadas, 3 pagrindiniai skyriai, 8 poskyriai, skirti teorinei, metodologinei ir empirinei duomenų analizei ir diskusijai, taip pat išvados ir rekomendacijos, naudotų literatūros šaltinių sąrašas ir priedai. Darbo apimtis yra 220 puslapiai, pateikti 22 paveikslai, 31 lentelė, 8 priedai. Literatūros sąrašą sudaro 438 šaltiniai. Toliau šioje santraukoje pateikiamos kiekvienos disertacinio darbo dalių svarbiausių įžvalgų bei rezultatų apibendrinimas.

**Pav. 1:** *Disertacinio darbo struktūra*
**Šaltinis***: sudaryta autorės (2018)*

# PAGRINDINIAI DARBO REZULTATAI IR IŠVADOS

**1 užduotis.** Atliekant mokslinių šaltinių analizę aktualizuoti IKT įgalintos viešosios vertės bendrakūros supratimą bei apibrėžti pagrindines procesų prielaidas, kliūtis bei rizikas.

1. Bendrakūros teorija kilusi iš verslo vadybos literatūros ir praktikos, todėl Poskyryje 1.1 aktualizuojamas bendrakūros metodų panaudojimas kuriant viešąją vertę. Trijų mokslinių sričių – bendrakūros, viešojo valdymo ir IKT įgalinto viešojo sektoriaus – teoriniai aspektai integruojami siekiant pateikti holistinį IKT įgalintos viešosios vertės bendrakūros apibrėžimą. Nors šių tyrimo laukų analizės objektai skiriasi, juos vienija naujas požiūris į vertės kūrimą išreikštas per įtinklinto suinteresuotųjų bendradarbiavimo svarbą.
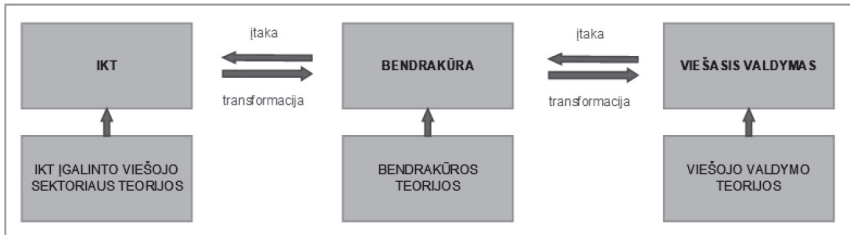


**Pav. 2:** *IKT įgalintos viešosios vertės kūrimo teorinės prielaidos*
**Šaltinis:** *sudaryta autorės (2018)*

2. Bendrakūros teoriniai aspektai (Poskyris 1.1.1) analizuoti per *Paslaugų mokslo* nuostatus suteikė teorinį pagrindą sudėtingų, daugiasluoksnių ir vertę bendrai kuriančių sistemų dinamikos, struktūros bei logikos suvokimui. Viešojo valdymo teorinis požiūris (Poskyris 1.1.2) išreikštas per *Naujojo viešojo valdymo* teoriją leido aktualizuoti viešosios vertės sampratą. Šis požiūris padėjo paaiškinti pokyčių poreikį visuomenės valdymo struktūrose ir kintančių jėgų balanso visuomenėje kontekstą. IKT įgalinto viešojo sektoriaus teorijos (Poskyris 1.1.3) nagrinėtos per *Atvirosios valdžios* idėjas suteikė teorinį pagrindą valdžios institucijų vertės pasiūlymų sampratai t.y. leido suprasti ką valdžia gali pasiūlyti pilietinei visuomenei (e.g. atvirus duomenis, skaidrumo skatinimą). Remiantis skyriuje nagrinėtomis teorinėmis nuostatomis, *IKT įgalinta viešosios vertės bendrakūra yra apibrėžiama kaip sistema veikianti su tikslu kurti viešąją vertę per IKT panaudojimą ir bendrakūrą tarp viešojo sektoriaus, privataus sektoriaus ir pilietinės visuomenės.*

3. IKT įgalintos bendrakūros tyrimų laukas apima didelę interpretacijų ir požiūrių įvairovę nulemtą skirtingų mokslinių tyrimų tikslų, prielaidų ir disciplinų. Poskyris 1.2 nukreiptas į šių mokslinių ir praktinių tyrimų apžvalgą siekiant identifikuoti atliktų tyrimų spragas, išplėsti koncepcijos suvokimą ir parengti tolesnių empirinių tyrimų planą.

4. Poskyryje 1.2.1 nustatomos pagrindinės viešosios vertės bendrakūros prielaidos, kliūtys ir rizikos identifikuotos literatūroje. Tyrimų analizė atskleidė, kad bendrakūros iniciatyvų sėkmė priklauso nuo *institucinės paramos, atviro valstybės pareigū-*

nų požiūrio, piliečių ir viešojo sektoriaus darbuotojų baimės rizikuoti, atvirumo infrastruktūros, tarpininkų vaidmens, dalyvių vaidmenų, suvokimo ir gebėjimų, offline strategijų, įsitvirtinimo tinkluose bei *pilietinės visuomenės bruožų*.

5. Apžvelgiant IKT įgalintos bendrakūros metodų taikymo kuriant viešąją vertę literatūrą nustatyta, kad tyrimų laukui trūksta aiškumo. Dėl šios priežasties poskyryje 1.2.2 pateikiamas naujas, struktūrinis požiūris į viešosios vertės bendrakūrą, kuris išreiškiamas per du bendrakūros metodų tipus: *iš viršaus į apačią* bei iš *apačios į viršų*. Pirmasis metodų tipas apima valstybinių institucijų inicijuotus projektus bei veiklas, kuriomis siekiama įtraukti pilietį ir kitus suinteresuotuosius į viešųjų paslaugų kūrimą, tobulinimą bei teikimą. Antrasis tipas nurodo IKT įgalintus projektus bei veiklas, kylančias iš valstybinių valdymo struktūrų išorės t.y. pilietines platformas. Toks struktūrinis požiūris į bendrakūrą leido susisteminti atliktus tyrimus ir parodė, kad IKT įgalintos bendrakūros *tyrimai daugiausiai orientuojasi į viešojo valdymo struktūras*. Tyrimai nagrinėjantys bendrakūros inicijuotos ne valstybinių struktūrų metodus yra riboti bei išlieka pradiniuose etapuose. Įvykdyti moksliniai tyrimai dėmesį telkia arba į labai specifinius procesų komponentus, arba pateikia abstrakčią bendrakūros sampratą be ją aiškinančių modelių ar empirinių įrodymų.

**2 užduotis.** Parengti konceptualųjį modelį integruojantį IKT įgalintos viešosios vertės bendrakūros prielaidas ir veiklas bei pagrįsti modelio tyrimo metodologiją.

6. Poskyryje 2.1 išsamiai paaiškinama *loginė konceptualiojo modelio struktūra* ir pateikiamas teorinis modelio elementų pagrindimas. Koncepcinis modelis sukurtas remiantis Paslaugų mokslo, Viešosios vertės, Atvirosios valdžios teorinėmis prielaidomis bei pirmajame skyriuje apžvelgtais moksliniais tyrimais. Koncepcinis modelis paremtas trimis kertinėmis prielaidomis, jį sudaro trys analizės kryptys (dalyviai, turinys, procesas) pasiskirsčiusios per mikro, mezo ir makro lygmenis.

7. Esminės modelio prielaidos, kilusios iš paslaugų mokslo teorijos, leidžia apibrėžti sudėtingus santykius tarp viešojo sektoriaus, privačių ir pilietinės visuomenės subjektų. Prielaidos išreiškiamos per šiuos teiginius: 1. Viešoji vertė yra bendrakūros tarp skirtingų ekosistemos dalyvių rezultatas; 2. Paslaugos yra mainų pagrindas; 3. Dalyviai ekosistemose negali vieni kurti vertės, tačiau gali kurti ir teikti vertės pasiūlymus vienas kitam.

8. Kuriant modelį taikyta „ekosistemos" metafora, kuri suvokiama, kaip sistema apimanti dalyvius dirbančius drauge siekiant abipusės naudos – viešosios vertės. Šiame kontekste viešoji vertė reiškia individų ir organizacijų indėlį į visuomenę bei jos veikimą ekonominiais, moraliniais, politiniais, utilitarizmo ir hedonistinės vertės kūrimo aspektais. Viešoji vertė suvokiama ne kaip konkretus viešųjų paslaugų teikimo bei naudojimo rezultatas, bet, kaip koncepcija, leidžianti interpretuoti pokyčius pilietinėje visuomenėje. Paslaugų ekosistemos požiūris akcentuoja vertės kūrimą per įtinklintą socialinių ir ekonominių aktorių bendradarbiavimą. Dalyviai ekosistemoje vertę kuria trijuose lygmenyse. *Mikro lygmenyje* nagrinėjami tiesioginiai paslaugų mainai su platformų vartotojais. *Meso lygmenyje* nagrinėjamos netiesioginės interakcijos su suinteresuotosiomis grupėmis. *Makro lygmuo* įtraukia kompleksinius santykius tarp skirtingų ekosistemos dalyvių kuriant viešąją vertę.

9. Siekiant suprasti kaip vertė yra kuriama mikro, meso ir makro lygmenyse išskiriamos trys dimensijos – dalyviai, turinys, procesas – leidžiančios lyginti į ekosistemas įtrauktus subjektus ir vertės kūrimo būdus tarpusavyje.

   a) *Dalyvių dimensija* nagrinėja individus ir organizacijas, dalyvaujančias paslaugų ekosistemoje, jų vaidmenis bei išteklius. Literatūros apžvalga leido identifikuoti keturias dalyvių grupes (valstybinės institucijos, piliečiai, verslo organizacijos ir nevyriausybinės organizacijos) ir penkis vaidmenų tipus (iniciatorius, vartotojas, partneris, įgalintojas, tarpininkas).

   b) *Turinio dimensija* nagrinėja dalyvių tikslus ir siekius. Pagrindinis šioje dimensijoje analizuojamas konceptas yra vertės pasiūlymas nurodantis, kaip dalyviai galėtų bendrai kurti vertę integruodami savo resursus. Daroma prielaida, kad viešoji vertė yra kuriama makro lygmenyje. Mikro lygmenyje nagrinėjami vertė pasiūlymai ir nauda individualiems dalyviams. Mezo lygmenyje nagrinėjama tinklo naudos perspektyva. Vertės pasiūlymų paskirstymas per tris lygmenis leidžia suprasti IKT įgalintos bendrakūros naudą žmonėms, organizacijos ir visuomenei.

   c) *Proceso dimensija* nagrinėja bendrakūros platformų kūrimo, valdymo ir bendradarbiavo modelius. Literatūros analizė atskleidė, kad bendrakūros procesai yra veikiami daugybės prielaidų mikro (grįžtamasis ryšys, rizikos baimė, aiškūs paskatinimai), mezo (bendradarbiavimas su valdžios institucijomis, įsitraukimas į tinklus, offline strategijos) ir makro (atvirumo infrastruktūra, požiūris, kad valdžios institucijos yra vieninteliai viešųjų paslaugų tiekėjai, centrinės valdžios galios trūkumas, institucinė parama, atvirtas viešojo sektoriaus darbuotojų požiūris) lygmenyse.

10. Konceptualusis modelis pateikia holistinį požiūrį ir formuoja pagrindą aiškesniam bendrakūros procesų vertinimui ilgalaikėje perspektyvoje. Modelis ir jo elementai leidžia analizuoti IKT įgalintas bendrakūros iniciatyvas ir lyginti atvejus tarpusavyje, tačiau trūksta empirinių duomenų leidžiančių vertinti modelio pritaikomumą praktikoje.

11. Poskyris 2.2. detalizuoja metodologiją skirtą modelio vystymui, papildymui ir patvirtinimui bei nurodo trijų empirinių studijų eigą.

| | Duomenų rinkimo metodai | Imties dydis | Duomenų analizės metodai |
|---|---|---|---|
| Viešosios vertės kūrimo naudojantis pilietinės technologijomis tyrimas | Pusiau struktūrizuotas ekspertinis interviu | 7 ekspertai | Turinio analizė su NVIVO |
| Lyginimasis tarptautinių pilietinių technologijų turinio tyrimas | Automatizuotas internetinių duomenų rinkimas (Scrapping) | 614 Tarptautinių pilietinių technologijų platformos | Kokybinė ir lyginamoji turinio analizė su NVIVO ir SPSS |
| Pilietinių technologijų turinio Lietuvoje tyrimas | Internetinių duomenų rinkimas IssueCrawler metodas | 52 pilietinių technologijų platformos Lietuvoje | Turinio analizė Hipersaitų tinklo analizė |

**Pav. 3:** *Empirinių tyrimų metodologija*
**Šaltinis:** *sudaryta autorės (2018)*

12. Empirinis tyrimas pradedamas ekspertiniu *Viešosios vertės kūrimo naudojantis pilietinėmis technologijomis tyrimu* (Poskyris 2.2.1), orientuotu į aktorių ir procesų dimensijos ypatumų analizę. Kokybinio tyrimo rezultatai papildomi *Lyginamuoju tarptautinių pilietinių platformų turinio tyrimu* (Poskyris 2.2.2), kuris suteikia kiekybinę dalyvių ir turinio dimensijų perspektyvą dėl didelės tyrimo imties. Trečiasis, *Pilietinių technologijų turinio Lietuvoje tyrimas* – apima kokybinius ir kiekybinius metodus siekiant patvirtinti modelio prielaidas (Poskyris 2.2.3).
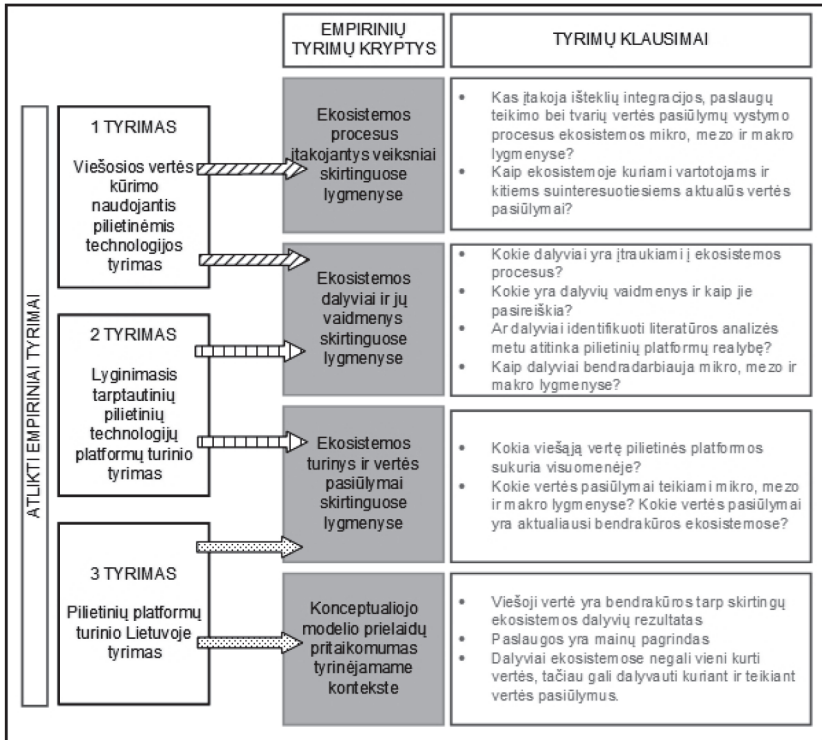


**Pav. 4:** *Empirinių tyrimų sąsajos su identifikuotomis tyrimo kryptimis*
**Šaltinis:** *sudaryta autorės (2018)*

**3 užduotis.** Validuoti konceptualųjį modelį atskleidžiant viešosios vertės bendrakūros procesų ypatumus, turinį ir suinteresuotuosius atliekant ekspertinę apklausą, kokybinį pilietinio dalyvavimo platformų Lietuvoje tyrimą ir lyginamąjį tarptautinių pilietinio dalyvavimo platformų tyrimą.

13. Poskyryje 3.1 pateikiama trijų empirinių tyrimų *rezultatų santrauka*. Poskyryje 3.2 detalizuojama, kaip rezultatai išplečia konceptualiajame modelyje įvardintas dalyvių, turinio ir proceso dimensijas bei patvirtina esmines s modelio prielaidas.

14. Poskyryje 3.2.1 išsamiai paaiškinama kaip dalyvių dimensija yra papildoma atliktų empirinių tyrimų. Ekspertinių interviu metu identifikuotos šešios dalyvių grupės – *valdžios subjektai*, *piliečiai*, *verslo organizacijos*, *NVO*, *žiniasklaida* ir *specialistai*. Lietuvos ir tarptautinių pilietinių platformų analizė papildė tipologiją trejomis aktorių grupėmis – *asociacijos*, *viešosios organizacijos* bei *tarptautinės organizacijos*. Piliečių ir valstybinių subjektų vaidmuo palyginus su kitomis dalyvių grupėmis buvo diskutuotas plačiausias. Platformų turinio analizė papildė supratimą apie dalyvių vaidmenis: dalyviai mikro lygmenyje gali tapti *iniciatoriais*, *vartotojais* ir *kontributoriais (turinio kūrėjais)*, mezo lygmenyje - *partneriais* ir *rėmėjais*, o makro lygmenyje – *pokyčių įgalintojais*. Tarpininko vaidmuo nurodo dalyvius, jungiančius skirtingus ekosistemos lygius.

15. Poskyryje 3.2.2 detalizuojama, kaip turinio dimensija buvo papildyta empirinių tyrimų rezultatų. Interviu metu turinio svarba pabrėžtas per dvi funkcijas – turinys jungia dalyvius bendradarbiavimui ir pritraukia galutinius vartotojus. Tyrimų rezultatų, orientuotų į turinio dimensiją (tikslų, veiklos tipo, veiklos konteksto), analizė leido išplėsti vertės pasiūlymų sampratą mikro (*ekonominiai, saviraiškos, žinių/ informacijos, statuso, funkciniai*), mezo (*partnerystės, tinklų, stabilumo*) ir makro (*ekonominiai, socialiniai, politiniai, gyvenimo kokybės, strateginiai, ideologiniai, valdymo*) lygmenyse. Platformos nagrinėtos trečiojo tyrimo imtyje dažniausiai teikia vertės pasiūlymus, kurie domina labai ribotą skaičių vartotojų. Taip pat, tyrimas atskleidė, kad IKT įgalinti įrankiai dažniau yra kuriami siekiant organizacinių tikslų ar asmeninių iniciatorių interesų (savirealizacija, pasitenkinimas, saviugda), tačiau pasigendama į vartotojus ir jų poreikius orientuoto požiūrio.

16. Poskyryje 3.2.3 išsamiai paaiškinama, kaip empiriniai tyrimai papildė proceso dimensiją. Viešosios vertės kūrimo naudojantis pilietinėmis technologijomis tyrimas leido identifikuoti dvi išteklių integracijos ir paslaugų teikimo aplinkas: *vertės pasiūlymo kūrimas* ir *paslaugos valdymas*. Kuriant dalyvių poreikius atitinkančius vertės pasiūlymus, platformų iniciatoriai kuruoja įvairių suinteresuotųjų įsitraukimą ir susistemina jų teikiamą informaciją. Tyrimų metu identifikuoti trys šiuos procesus veikiantys faktoriai: *bendras dizaino kūrimas* (angl. *co-design*), *tarpininkai* ir *egzistuojančių normų bei struktūrų išmanymas*. Paslaugų valdymo perspektyva, remiantis empirinių tyrimų rezultatais, yra įtakojama *bendrų dalyvių tikslų*, *tikslinių vartotojų grupių nustatymo*, *iniciatorių gebėjimo mokytis*, *stiprios paramos struktūros*, *formalių dalyvių įsipareigojimų* bei *iniciatorių kompetencijų*. Tyrimų rezultatai patvirtino, kad tvarių platformų kūrimas bei valdymas reikalauja įvairių suinteresuotųjų įtraukimo į bendradarbiavimo procesus. Nepaisant to, platformų iniciatoriai dėmesį telkia ne į vartotojų ir suinteresuotųjų poreikius, bet siekia įgyvendinti savo planus remdamiesi neaptikrintomis prielaidomis apie savo paslaugų poreikį. Taip pat, pilietinių platformų iniciatoriai daug dėmesio skiria techniniam įrankių kūrimo aspektui, mažiau dėmesio skirdami socialiniams elementams – pilietinių technologijų sritis gali augti ir būti tvari tik įtraukiant piliečius, vietos bendruomenes, verslo įmones ir kitus suinteresuotuosius, kaip lygiaverčius partnerius.

17. Pilietinių technologijų turinio Lietuvoje tyrimo rezultatai leido patikrinti konceptualiojo modelio esminių prielaidų pritaikomumą analizuojamame kontekste. Ryšių tarp partnerių skaičiaus, vaidmenų skaičiaus ir platformų populiarumo visuomenėje analizė leido aiškiau suvokti dalyvių dinamiką pilietinių technologijų kontekste. *Tyrimo rezultatai sutampa su pagrindinėmis paslaugų mokslo idėjomis bei pasiūlytomis kertinėmis prielaidomis aiškinančiomis, kad organizacijos nebepriklauso vien tik nuo vidinių pajėgumų siekdamos patenkinti išorinius vartotojų poreikius.* Tvarios bendrakūros iniciatyvos turi palaikyti ryšius su kitais ekosistemų dalyviais (partneriais, konkurentais, valstybinėmis organizacijomis, galutiniais vartotojais). Hipersaitų tinklo analizė taip pat atskleidė sutampančiais strateginiais tikslais paremtus ryšius tarp platformų ir kitų dalyvių tinkluose. Bendradarbiavimo modelių analizė atskleidė tendencingas sąsajas su paslaugų mokslo idėjomis – kuo daugiau partnerių platforma turi, tuo labiau centrinį vaidmenį įgauna tinkluose ir tuo labiau yra populiarios visuomenėje.

18. Ekspertiniai interviu ir literatūros analizė leido suvokti *idilišką viešosios vertės bendrakūros vaizdą* t.y. ekspertai aptarė galimas ir potencialias valdžios institucijų, piliečių ir kitų dalyvių funkcijas ekosistemoje. Tačiau Lietuvos ir tarptautinių politinių platformų turinio analizė pateikia kitokį vaizdą – nepaisant viešų deklaracijų apie įvairių dalyvių įtraukimą, realybė yra visai kitokia. Pirma, *piliečiai dažniausiai suteikiami vartotojų ir kontributorių (turinio kūrėjų) vaidmenys, tačiau jie nėra įtraukiami į partnerystes kuriant ir valdant IKT įgalintas bendrakūros iniciatyvas.* Antra, *dauguma iniciatyvų neturi (arba viešai nedeklaruoja) išorinių partnerių.* Trečia, *pro-aktyvus valstybinių institucijų vaidmuo yra reikalingas ir pabrėžiamas, tačiau dauguma organizacijų dirba be valstybinių institucijų kaip aktyvių partnerių.* Galiausiai, *kontributorių (turinio kūrėjų) vaidmuo platformose pasitaiko itin retai, o skirtingų dalyvių grupių įsitraukimas į šį vaidmenį yra ribotas.* Platformos, kaip ekosistemos dalyviai, teikia vertės pasiūlymus, kuriais dažniausiai niekas nesidomi. Tai iliustruoja platformų naudojimosi statistika ir menkas paplitimas visuomenėje bei viešojoje erdvėje. Per platformas teikiamos paslaugos ir vertės pasiūlymai dažniausiai susiję su organizaciniais tikslais ir siekia patenkinti asmeninius iniciatorių interesus neatsižvelgiant į galutinių vartotojų poreikius. Tai atsispindi ir platformų turinio analizėje per tikslinių platformų vartotojų apibrėžimus – dauguma platformų apsiriboja nurodydami tik piliečius kaip potencialius platformų vartotojus.

**4 užduotis.** Pasiūlyti patikslintą ir empiriškai patikrintą IKT Įgalintos Bendrakūros Ekosistemos modelį.

19. IKT Įgalintos Bendrakūros modelis yra paremtas teorinės analizės bei empirinių tyrimų rezultatų integracija. Modelį sudaro trys dimensijos – dalyvių, turinio, procesų – pasiskirsčiusios per mikro, mezo ir makro lygmenis. Ekosistemos modelis yra dinamiškas ir integralus tinklas, kuriama ištekliais, dalyviai ir institucijos yra susietos tarpusavyje.
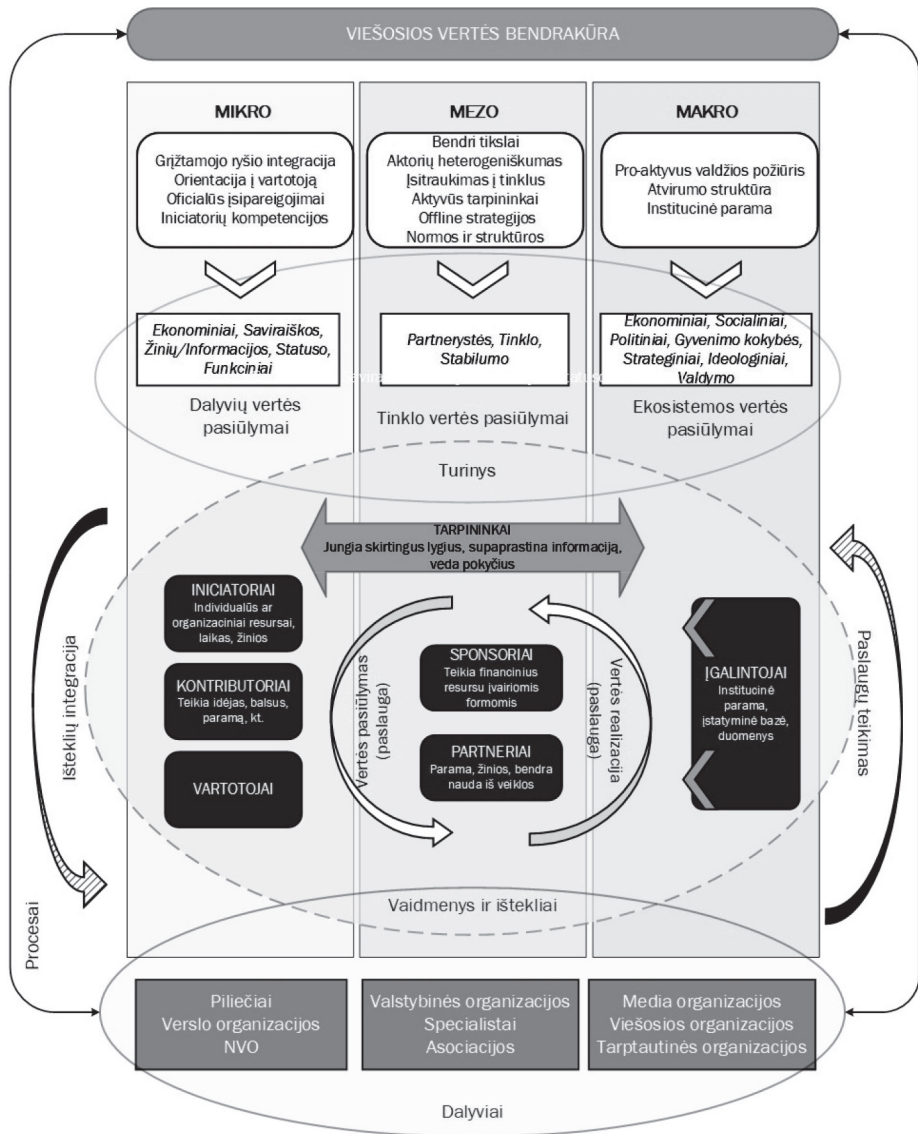
**Pav. 5:** *IKT Įgalintos Bendrakūros Ekosistemos modelis*
**Šaltinis:** *sudaryta autorės (2018)*

20. Modelis suteikia struktūrą tolimesniems empiriniams tyrimams orientuotiems į ne valstybinių institucijų viešųjų paslaugų kūrimą. Disertaciniame darbe pasiūlytas modelis leidžia suprasti individualios modelio elementus, jų sąsajas bei sukuria

prielaidas sisteminiam bendrakūros suvokimui. Modelis nėra priklausomas nuo konteksto, tačiau integruoja konteksto veiksnius tokius, kaip valstybinių organizacijų gebėjimai, inovacijų klimatas ar pilietinės visuomenės bruožai.

**5 užduotis.** Paruošti vadybines ir organizacines rekomendacijas, kurios sustiprintų kolektyvinius piliečių, pilietinio dalyvavimo iniciatorių, pilietinių platformų vystytojų bei viešojo valdymo institucijų veiksmus kuriant viešąją vertę.

21. Mokslinių tyrimų veiklos – literatūros analizė, konceptualiojo modelio kūrimas, empiriniai tyrimai – atliktos siekiant įvykdyti ankstesnius disertacinio darbo uždavinius leido įgyti išsamias žinias apie viešosios vertės bendrakūros tyrimų lauką. patikrintą IKT Įgalintos Bendrakūros Ekosistemos modelis įgalino parengti rekomendacijas, kuriomis siekiama padidinti kolektyvinio veiksmo rezultatus valstybiniuose subjektuose, privačios organizacijose bei pilietinėje visuomenėje. Rekomendacijos pateikiamos per įtinklinto bendradarbiavimo mikro, meso ir makro lygmenyje akcentavimą. *Mikro ir meso lygmenys orientuoti į valdymo rekomendacijos platformų iniciatoriams, valdytojams ir pilietiniams lyderiams. Makro lygio rekomendacijos skirtos valstybinių institucijų veiklos tobulinimui.* Papildomai pateikiamos rekomendacijos tolimesniems moksliniams tyrimams disertacinio darbo tematika.

22. Rekomendacijos mikro lygmenyje apima grįžtamojo ryšio integraciją, orientaciją į galutinį vartotoją, formalų dalyvių įsipareigojimą ir iniciatorių kompetencijų tobulinimą. Empiriniai tyrimai parodė, kad platformos teikia vertės pasiūlymus dominančius ribotą skaičių vartotojų. Įtraukių vertės pasiūlymų kūrimas leistų pasiekti tvaresnių rezultatų ilgalaikėje perspektyvoje. Visų pirma, tai įmanoma pasiekti per *atgalinio vartotojų ryšio integraciją* į platformos tobulinimo veiklas. Aiškus supratimas apie platformos veiklą iš vartotojų perspektyvos leidžia identifikuoti silpnąsias vietas, kurias verta tobulinti, bei rasti stipriąsias platformos savybes, kurias reikia išnaudoti plačiau. Antra, *į galutinius vartotojus orientuotas požiūris* yra būtinas kuriant platformas. Į galutinį vartotoją orientuotame procese, į vartotojų poreikius atsižvelgiama nuo pirmųjų platformos kūrimo žingsnių įtraukiant juos į visą paslaugų kūrimo ir valdymo ciklą. Tyrimai parodė, kad platformos dažnai kuriamos su tikslu patenkinti iniciatorių tikslus, todėl į vartotojus orientuotas požiūris leistų sukurti įrankius, kurie iš tikrųjų bus naudojami. Trečia, *formalūs dalyvių įsipareigojimai vykdant veiklas* bei *tinkamos iniciatorių kompetencijos* reikalingos siekiant užtikrinti platformų tęstinumą bei sklandų bendrakūros procesų įgyvendinimą.

23. Mezo lygmens rekomendacijos apima bendrų tikslų iškėlimo svarbą, dalyvių/partnerių heterogeniškumą, įsitvirtinimą tinkluose bei tarpininkų skatinimą. Platformų iniciatorių dėmesys turėtų pereiti *nuo technologinių įrankių kūrimo prie bendradarbiavimo ir partnerystes ekosistemų kūrimo.* Tyrimai atskleidė, kad koncentruodamiesi į įrankių kūrimą, iniciatoriai dažnai nesugeba įtraukti piliečių, vietos bendruomenių, valdžios institucijų atstovų, verslo organizacijų kaip lygiaverčių partnerių. Siedamos būti tvariomis, bendrakūros iniciatyvos turi palaikyti ryšius su skirtingais ekosistemos dalyviais *remiantis bendrais tikslais. Įsitvirtinimas tinkluose* leidžia platformoms pasinaudoti tinklų suteikiama galia - kuo daugiau dalyvių yra

pritraukiama, tuo vertingesniais jie tampa įtrauktiems dalyviams. Galiausiai, didėjant visuomenės atvirumui ir įtraukumui, svarbu suvokti ekosistemos ribotumus: ne visi piliečiai ir ne visos organizacijos turi būti aktyvūs, tačiau ypatingai reikalingi *tarpininkai* galintys supaprastintai perteikti informaciją ir suformuluoti pilietinių technologijų poreikį.

24. Makro lygmenyje rekomendacijos yra orientuotos į pro-aktyvų vyriausybinių institucijų vaidmenį, atvirumo struktūros kūrimą bei palaikymą ir institucinę paramą pilietinėms bendrakūros iniciatyvoms. *Pro-aktyvi valstybinių institucijų pozicija* turėtų būti išreiškiama per skatinimo strategijas įgalinančias piliečius, privatų sektorių bei nevyriausybines organizacijas aktyviai kurti bendrakūros įrankius. Politikai bei valstybinių institucijų darbuotojai turi tapti ne tik strategijų rengėjais, bet ir imtis aktyvių įgalinimo, bendradarbiavimo bei tarpininkavimo veiklų. Ne visos valstybinės institucijos turi išteklius (žmogiškuosius, žinių, finansinius ar kt.), kad galėtų aktyviai remti pilietines platformas bei jų kūrimą, tačiau rekomenduojama *iniciatyvas palaikyti bent jau formaliai, suteikiant institucinę paramą bei netrukdant jų įgyvendinimo.* Taip pat, vietos ir nacionalinės valdžios institucijos turėtų prisiimti visuomenės švietėjų vaidmenį skatindami piliečius veikti bei paaiškinti jų veiksmų naudą. Dalyvaudamos bendrakūros procesuose, valdžios institucijos taip pat turėtų galimybę mokytis pačios – pasisemti naujų idėjų, įgauti žinių apie piliečių poreikius ar susipažinti su viešajame sektoriuje netaikomais metodais. *Atvirumo struktūra* turėtų būti išreikšta per duomenų atvėrimo bei skaidrumo skatinimo viešajame sektoriuje iniciatyvas. Nepaisant deklaratyvių teiginių strateginiuose dokumentuose, Lietuvos viešasis sektorius ribotai išnaudoja atvirų duomenų potencialą. *Viešojo sektoriaus organizacijos bendrakūros veiklose gali dalyvauti suteikdamos duomenis, žinias ir informaciją t.y. atverdamos duomenis institucijos turi galimybę prisidėti prie iniciatyvų skatinimo minimaliomis pastangomis bei ištekliais.* Duomenų atvėrimas įgalina visuomenę kurti inovatyvius sprendimus tobulinančius ar pakeičiančias viešąsias paslaugas bei įtraukiančias socialumą į sprendimų priėmimą.

25. IKT įgalinta viešosios vertės bendrakūra apima daug skirtingų interpretacijų, priklausančių nuo tyrėjų požiūrio bei konceptą nagrinėjančių tyrimų teorinių disciplinų, kurios lemia skirtingus požiūrius bei suvokimą. Disertaciniame darbe siūlomas modelis apibendrina iki šiol atliktus tyrimus viešosios vertės bendrakūros tyrimų lauke bei suteikia dinamišką naujais moksliniais tyrimais pagrįstą pagrindą tolimesniems tyrimams atlikti. Siūlomas modelis galėtų būti *išbandomas skirtingose šalyse bei regionuose siekiant patikrinti jo pagrįstumą ir pritaikomumą įvairiuose kontekstuose.* Ekosistemos *brandos modelis leistų lyginti pilietines platformas skirtinguose kontekstuose tarpusavyje bei įgalintų teikti išsamesnes veiklos gaires platformų iniciatoriams, potencialiems partneriams bei valstybinėms institucijoms.* Papildomi tyrimai reikalingi siekiant išskirti *IKT įgalintos bendrakūros sėkmės bei pritaikomumo visuomenėje rodiklius bei tinkamas priemones leidžiančias šiuos rodiklius pasiekti.*

# GYVENIMO APRAŠYMAS

**Asmeninė informacija**

| | |
|---|---|
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**Darbo patirtis**

| | |
|---|---|
| 2012 - dabar | Mykolo Romerio universitetas, Komunikacijos instituto lektorė, jaunesnioji mokslo darbuotoja |
| 2010-2012 | Western Union Processing Lithuania, vyriausioji koordinatorė |
| 2008-2010 | MCB Finance, apskaitos skyriaus vadybininkė |

**Išsilavinimas**

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|---|---|
| Nuo 2013 | Vadybos mokslo krypties Mykolo Romerio universiteto doktorantas |
| 2011-2013 | Vadybos ir verslo administravimo magistro kvalifikacinis laipsnis, Mykolo Romerio universitetas |
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| **Užsienio kalbos** | Anglų, vokiečių |

**Publikacijos recenzuojamuose leidiniuose**:
1. Mačiulienė M., Skaržauskienė A. (2016) Emergence of collective intelligence in online communities, *Journal of business research*, 69(12), p. 1718-1724.
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5. Skaržauskaitė M. (2013) Measuring and managing value co-creation process: overview of existing theoretical models, *Social technologies*, 3(1), p. 115-129.

**Pranešimai mokslinėse konferencijose:**
1. Mačiulienė M., Mikulskienė B. (2017) Towards sustainable civic technologies: case study of Lithuania. *21st annual IRSPM conference: 19-21 April 2017, Budapest. Budapest: International Research Society for Public Management*. Corvinus University of Budapest, 2017. p. 1.
2. Mačiulienė M., Mačiulis A. (2017) Public spaces as evolving frameworks: applying principles of co-creation in urban planning. *Enhancing places through technology: proceedings from the iCiTy conference, Valletta, Malta - 18-19 April, 2016*, p. 257-266.
3. Mikulskienė B., Mačiulienė M. (2016) Harnessing collective knowledge in development of absorptive capacity. *Governing business systems. Theories and challenges for systems thinking*

*in practice: 4th Business Systems Laboratory International Symposium*, Mykolas Romeris University, Vilnius - August 24-26, 2016. Editor: Francesco Caputo. Avellino: Business Systems Laboratory, p. 197-199.

4. Skaržauskienė A., Hartmann D., Mikulskienė B., Mačiulienė M. (2015) Collective intelligence monitoring technique. *Collective Intelligence 2015: proceedings*, May 31- June 2, 2015, *Santa Clara*. Center for the Study of University of Michigan, p. 1-4.

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6. Skaržauskienė A., Pitrėnaitė B., Leichteris E., Paunksnienė Ž., Mačiulienė M. (2014) Social technologies for developing collective intelligence in networked society, *Collective Intelligence 2014 proceedings: June 10-12. Massachusetts Institute of Technology*, p. 1-4.

7. Skaržauskaitė M., Leichteris E., Mačiulis A. (2013) Development perspective of virtual community projects in Lithuania. *Proceedings of Social Technologies conference.* Vilnius: Mykolas Romeris University, p. 123-136.

**Monografijos ir mokslo studijos:**

1. Skaržauskienė A., Žemaitaitienė G., Tvaronavičienė A., Mačiulienė M. (2017) Online community projects in Lithuania: cyber security perspective. *The analytics process. Strategic and tactical steps.* Edited by E. Rodriguez. Boca Raton: CRC Press Taylor & Francis Group, 2017. p. 155-167.

2. Jankauskienė, D. et al. (2015) *Integrated transformations of e-health: perspectives of stakeholders*. Vilnius: Mykolas Romeris university, 526 p.

3. Skaržauskienė, A. et al. (2015) *Social technologies and collective intelligence.* Vilnius: Mykolas Romeris university, 520 p.

**Mokslinė praktinė, projektinė veikla:**

1. Mokslo projektas „C3 eRDVĖS – IKT panaudojimas kuriant įtraukias viešas erdves" ERA-NET Cofund Smart Urban Futures (2017-2020), jaunesnioji mokslo darbuotoja.

2. Mokslo projektas „E-sveikatos plėtros integruotos transformacijos: suinteresuotųjų pusių tinklo perspektyva" (2012-2015), jaunesnioji mokslo darbuotoja.

3. Studijų projektas „Jungtinės magistrantūros studijų programos „Socialinės technologijos" parengimas ir įgyvendinimas" (2012-2015), lektorė.

4. Doktorantų mokymai „From Input to Output: Designing, Implementing and Disseminating Research", Mykolo Romerio universitetas, Vilnius (2016m. spalis).

5. Nidos doktorantų mokykla 2016 CO-ACTION, organizatoriai - Lietuvos dailes akademija ir Aalto universitetas (2016m. rugpjūtis).

6. Lietuvos mokslo tarybos finansuota doktoranto išvyka į Global Innovation and Knowledge Academy konferencij, Valencija, Ispanija (2016m. kovas).

7. Lietuvos mokslo tarybos finansuota doktoranto išvyka į 14-ąją akademinę konferenciją organizuojamą International Institute of Social and Economic Sciences, Valeta, Malta (2014m. spalis).

8. Erasmus akademinio personalo mainai į Middlesex universitetą, Londonas, Didžioji Karalystė (2014m. balandis).

*Disertacinis darbas teoriškai bei empiriškai prisideda prie bendrakūros mokslinių tyrimų srauto nagrindėdamas IKT įgalintų kolektyvinių piliečių, bendruomenių, nevyriausybinių organizacijų, verslo subjektų ir kitų suinteresuotųjų šalių veiksmų svarbą kuriant viešąją vertę. Disertacinio darbo objektas yra viešosios vertės bendrakūros procesai pilietinio dalyvavimo platformose Lietuvoje ir užsienyje. Disertacinio darbo tikslas yra pasiūlyti IKT Įgalintos Bendrakūros Modelį. Siekiant išskirti modelio elementus, teoriniam tyrimui buvo naudojami mokslinės literatūros analizės, sisteminimo, apibendrinimo bei lyginimo metodai, daugiausia dėmesio skiriant užsienio autorių publikuotiems moksliniams darbams. Teoriniam modeliui sudaryti taikytas konceptualiojo modeliavimo metodas. Empiriniai tyrimai buvo grindžiami fenomenologinio tyrimo strategija bei taikomas tyrimų trianguliacijos principas. Siekiant gilesnio tiriamo fenomeno supratimo buvo derinami trys vienas kitą papildantys kokybiniai empiriniai tyrimai: ekspertinio interviu metodas, kokybinės turinio analizės bei lyginamosios turinio analizės metodai. Įgyvendintos mokslinių tyrimų veiklos leido apibendrinti žinias viešosios vertės bendrakūros tyrimų lauke. Pasiūlytas IKT Įgalintos Bendrakūros Modelis įgalino parengti rekomendacijas, kuriomis siekiama padidinti kolektyvinio veiksmo rezultatus valstybiniuose subjektuose, privačios organizacijose bei pilietinėje visuomenėje.*

*Doctoral dissertation contributes theoretically and empirically to the research stream of co-creation by focusing on the ICT-enabled collective actions of citizens, communities, governmental organizations, business entities, NGOs and other stakeholders in the creation of public value. The object of the research is the public value co-creation in Lithuanian and international civic technology platforms. The goal of the research was to propose a ICT-Enabled Co-Creative Ecosystem model aimed at development of public value. Theoretical aspects of ICT-enabled public value co-creation were examined using meta-analysis, comparative analysis and generalization methods of related scientific research. The empirical investigations were based on phenomenological research strategy and qualitative research triangulation approach. Three complementary empirical studies have been conducted – expert interviews, mapping and qualitative content analysis of Lithuanian civic technology platforms and comparative content analysis of international civic technology platforms. The completed research activities allowed to build an in-depth working knowledge of the public value co-creation domain and its performance, outputs and impacts. In the light of the main observations that have emerged from the design of ICT-Enabled Co-Creative Ecosystem Model, it has become possible to develop recommendations aimed at increasing the co-creative capacities of governmental, private and civic entities.*