

# How newly emerging collaborative spaces are changing the role of the citizen within smart cities



(fig.1.1)

By Derek Alford

# How newly emerging collaborative spaces are changing the role of the citizen within smart cities: A case study of three major European cities

## Master Thesis

Environmental and Infrastructure Planning Master's – Rijksuniversiteit Groningen, faculty of spatial sciences

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## Abstract

Confronted with complex issues such as energy usage, waste management, and mobility, cities are constantly forced to find newer ways to address challenges such as these through more innovative governance systems. The emergence of smart networks has helped to transition cities towards a platform of innovation, efficiency, and information sharing. However, the question remains about the role of the citizen within such a governance system, and how they come to define those social and political spaces. By involving citizens within smart governance, we must not only define what smart governance is, but also how the everyday citizen is placed within such a space. When placing the citizen within governance, we then begin to see movements supporting or championing collaboration. In doing so, contextual factors and questions must be raised about the citizens influence and responsibilities within such a system. A movement towards collaborative governance can be seen and identified within various global urban centers, and to understand this movement further within smart cities, this paper considers three cities, Amsterdam, Barcelona, and Helsinki, to analyze three distinct platforms and various projects within each platform that are aimed at encouraging and fostering public participation and co-creation within a smart city dynamic. It is through this research that analysis and thought will be given towards what role citizens have within collaboration, furthermore, what contextual factors may influence citizens to participate within collaborative spaces. However, to do this, you must first identify and define what a smart city is, following with what collaboration is, and what collaborative spaces may look like. Through this, you can then begin to understand the role citizens play within collaborative practices, and the potential they have in solving various socio-political problems for cities.

## 1.1 Thesis Outline

This thesis is methodically divided into 11 chapters which all contribute to the overarching analysis in their own distinct way.

Keywords: Smart City, Collaboration, Citizens, Platforms

**Chapter 1** discusses the background, including the academic and societal relevance, as well as addressing the research questions, and outline of the paper.

**Chapters 2 - 5** include the theory, which is divided into 4 sections (Defining smart cities, Collaborative governance, The changing role of citizens, Contextual factors).

**Chapter 6** includes the conceptual framework.

**Chapter 7** discusses the methodology, outlining the case study, research design, unit of analysis, research design, data collection, and data analysis.

**Chapter 8** discusses the case studies of Amsterdam Smart City, Barcelona's Decidim, and Helsinki's Agile Piloting Lab; aided by projects from each individual platform which further showcase collaborative efforts of each city.

**Chapter 9** discusses the findings from the subsequent cases studies.

**Chapter 10** discusses the lessons learned from the case studies in relation to the research questions and earlier theoretical framework.

**Chapter 11** contains the conclusion, summing up the thesis and providing closing statements.

# Introduction

## 1.2 Research Background

The widespread socio-political challenges within the 21<sup>st</sup> century have given rise to a form of governance known as the smart city. Operating on a global scale, this form of governance provides a foundation which builds upon data-driven forms of authority focused on efficiency, with an emphasis on smart infrastructures and technological networks (Pereira et.al, 2018). Smart governance provides both systems and its citizens with a means to address current and future problems through data sharing and smart technologies, which are then introduced as a means for solving some of the most pressing socio-political problems such as service efficiency, electric grids, and noise pollution. With the increasing urbanization of cities, as well as the constant global population growth, we will continue to look for new ways to become more sustainable through our urban practices (Joshi et.al, 2016). Through data and information technology, smarter cities look to use technology to improve efficiency within city services. Smart cities become spaces where system improvements through technology can facilitate the coordination of disjointed urban systems such as energy and water (Glasmeyer & Christopherson, 2015). While this remains a starting point for debate within academia, the question must remain of how citizens are involved within these smart city networks, and what is their role (Berntzen & Johannessen, 2016). Attempting to address the changing roles of everyday citizens remains essential in identifying the various contextual factors and challenges towards creation, as well as improvement of citizen engagement within smart cities. It then must be defined as to what is meant by traditionally smart practices, which may lead to a shift within localized systems towards those collaborative forms of engagement.

Collaborative governance positions the citizen as an additional actor in solving complex situations which cannot entirely be solved only through data-based infrastructures. The most important aspect and underlying influence regarding collaborative systems thus remains its involvement from citizens. Therefore, a participatory system positions citizens as co-creators of community-based smart networks. Collaborative forums introduced within smart governance can provide structure where citizens collaborate with an organization in designing and bringing to life its interests and values. Through dialogue and social cohesion, citizens within a collaborative system typically gain a deeper understanding of what collaborative governance can be.

Co-creative decision making that exists within emerging collaborative governance systems provides both local governments and their citizens with the resources to create spaces together that guide the transition towards collaborative governance. This is not possible without a system where both hold each other accountable (Lee & Ospina, 2022). Regarding collaboration, on a local scale, such a focus needs to consider contextual factors and values that

influence citizens' willingness and abilities to participate (Yigzaw, 2020). Collaborative governance is then positioned as a step towards co-creative decision making and design. As the research will show, cities like Amsterdam, Barcelona, and Helsinki, which will be presented further as case studies, aim to provide sustainability through efficiency in connecting and igniting co-creation and development through a collaborative network of stakeholders (Lee & Ospina, 2022).

Of particular interest towards furthering the research and analyses regarding collaborative governance, three major European cities that lead the way on collaborative-based systems is of focus throughout. Amsterdam's Smart City platform, Barcelona's Decidim platform, and Helsinki's Agile Piloting programs have each created modern solutions that highlight the importance of citizens within smart governance systems. Each program and platform remain unique to its localized contexts but provides valuable lessons throughout. These cities present different ways of achieving collaborative governance and place the citizen as a key participant and co-creator. While there is not one "right way" to achieve such governance, the emphasis on reaching beyond service efficiency and technological development remains an important aspect of each selected framework.

### 1.3 Academic and societal relevance

The tension between data-based service systems within cities presents challenges for recurrent improvement and design of city services. Thus, collaboration presents a solution to alleviate smart cities of their problems through innovative practices. While cities may collaborate through shared data and information, further collaboration through smart platforms and initiatives may present a better lens to incorporate the citizen as a co-creator within such a system. However, collaboration remains difficult when addressing it in relation to smart cities, and it must be understood that challenges and contextual factors remain prevalent (Sims, 2021). Learning from past failures also remains a key step in overcoming and avoiding the pitfalls of former smart systems (Sims, 2021).

When addressing the socio-political challenges to be faced by cities in the coming decades, we often think of issues such as climate change, energy use, and technological development. Understanding the relevance for the use of smart cities in solving or addressing these issues remains essential to the aim of the overall research and following theoretical framework. Yet, while smart cities can present spaces of enhanced service delivery and resource use to address these issues, the 'smart city' ideal has been critiqued for favoring technological solutions and business interests over social inclusion and urban innovation (Paskaleva et.al, 2017). It is through this lens that it must be addressed how urban collaboration within smart cities can transition this ideal towards improvements within social cohesion and collaboration. To understand why social empowerment and cohesion represent a renewed



focus on the citizen as a key contributor of socio-political change remains imperative in further understanding the dynamics of collaboration within a smart city.

Understanding the renewed role of the citizen within a smart city may help us recognize how to better collaborate over governance decisions. However, discussion regarding this dynamic often places the citizen within a political landscape where they aim to influence decision making, often ignoring the non-political aspects of collaboration, such as their actual participation in solving urban issues (Berntzen & Johannessen, 2016). Through theoretical analysis, questioning the emerging role of the citizen within collaborative spaces is necessary to understand the factors that may allow them to collaborate, and within which spaces this collaboration may function best. The discussed platforms represent three distinct styles of collaboration which engage the citizen and fundamentally change its role within the overarching urban system of that city. Through an understanding that the citizen represents a proactive movement towards democracy, it can be understood that collaboration presents a platform for improved social dynamics within a smart city. However, to understand this, we must engage with the current literature and debate on how citizens are and can be involved, as well as the contextual factors that may inhibit their ability and willingness to collaborate (Sweeting et.al, 2022).

#### 1.4 Research questions

The major research questions that must be addressed throughout relate to the definitions of both smart cities and collaborative governance systems. In analyzing these systems, it is important to understand what is meant when the term smart city is used. In defining that term, collaborative governance can then be understood further as a newly emerging practice within smart city dynamics. Reflecting upon the citizens changing roles remains essential for the overarching research in connecting the theoretical analysis with the role of each individual platform discussed later. Lastly, understanding the various contextual factors that either allow for, or can challenge collaboration is important for addressing how it can happen, and how certain complexities can be overcome. Thus, the research questions are presented below:

1. How do we define smart cities?
2. How do we define collaboration within smart cities?
3. How can collaborative spaces change the citizen's role?
4. What contextual factors may influence the citizens ability or willingness to participate or inhibit them to do so?

## 2.0 Theory A: Defining Smart cities

### 2.1 What is a smart city

Traditional smart city infrastructure is positioned within an innovative technological grid of sensors and networks which aim to make information and knowledge more accessible (Cassandras, 2016). Smart cities aim to promote operational efficiency in providing a higher quality, and more effective role for public services (Shea & Burns, 2020). Because smart cities exist as cybernetic and physical networks that generate services within an urban environment, they aim to balance data collection and sharing with physical infrastructure (Cassandras, 2016). For example, aspects such as safety, waste management, and energy use may all become part of the mutual shared space between the city and its residents. The smart city, however, is often viewed from above, meaning that smart cities only become seen through an infrastructural and urban lens (Fernandez, 2013). Smart cities viewed this way often prevent the inclusion of social and political interaction which reduces the smart city to a concrete jungle. What transitions cities towards a focus on social interaction, then also incorporates the influence its citizens can have within decision making processes, and how governance structures provide ways to support those complex socio-political movements (Bianchi et.al, 2021). As cities continue to undergo vast social, political, and environmental changes, questions will need to be asked and addressed regarding the role of co-creation within smart spaces, and how that can be achieved. It is in this view to look within smart infrastructures and place an increased focus on scale when exploring cities from a collaborative perspective (Fernandez, 2013). Through newer, collaborative uses of technology and co-creation, a city's residents may hold the keys to a linked space that examines social networks in addition to infrastructural ones.

### 2.2 The importance of information

For smart cities, information functions through various forms of technological, or data-based infrastructure networks, typically through dialogue, or on a legal basis (Forester, 1989). Understanding how it becomes connected through smart city processes presents a base for further discussion. Information through either formal or informal dialogue and action therefore presents a challenge for smart cities, and how specific terms or processes are defined depending on their contextual factors (Musiolik et.al, 2012).

Providing information to citizens through shared knowledge and governance processes allows them to actively influence their living spaces and create a structure which promotes interaction (Savolainen, 2017). This converted interest of citizens involvement within governance processes, as opposed to passive recipients of socio-political action, enables citizens to have a proactive role within governance (Lefebvre, 1996). For these newly developed

processes, the function of information and data sharing within a collaborative framework becomes vital as it provides opportunities to engage citizens with government. Planners and governance systems ensure that those who do not have access to digital forms of information are still able to receive and use them within collaborative platforms. Community forums and advertisements then become a way to engage citizens who are unable to participate digitally. Understanding how governance structures work contextually helps us to define and interpret specific types of information regarding smart city processes, no matter what policy domain they exist within (Van Assche, 2014). Sharing information within interactive spaces empowers citizens to become more involved in governance processes and in doing so, both citizens and city officials work together to create a society that respects and promotes various kinds of information.

### 2.3 Avoiding misinformation

Misinformation within smart governance can often place a constraint on socio-political action (Forester, 1989). Therefore, planners within smart spaces must present their initiatives, projects, and legal procedures in a way that acknowledges citizens goals and provides clarity for socio-political discussion. Within collaborative, social networks, information and knowledge sharing become essential for the success of shared goals and visions. Authoritative figures within these spaces include respected community leaders who ensure that those participating are equipped with access to, as well as understanding of, all forms of legal and political process within the city. Collaborative planning, therefore, strives to anticipate and counteract misinformation as it obstructs accessible and credible forms of the participatory process (Forester, 1989). Recognizing various forms of smart city information and data, how it may become misinformed, as well as how to deal with such misinformation, remains a step towards collaborative governance. Moving within data-driven infrastructures inherent in smart cities requires a checks and balances approach towards planning and citizen involvement that positions the citizens as users of data, as well as editors and knowledge bearers of that data (Sørensen, 2021). That cannot be utilized properly unless anticipatory and interactive knowledge spaces exist that seek to democratize current sources of information (Maffei & Leoni, 2020).

## 3.0 Theory B: Collaborative governance

### 3.1 Shifting towards collaborative governance

Collaborative governance is defined as a mode of policy and service delivery that shifts away from central government, or market centric settings towards more public and private actor involvement within policymaking (Voets et.al, 2021). When designing these collaborative, anticipatory, and more inclusive spaces, it is important to focus on the challenges smart infrastructures may produce to better understand the services that can be provided within a more collaborative system. Smart city design may often run into budgetary risks, as well as failures to attract new residents or capital (Angelidou, 2014). Also of concern is an overreliance on efficiency through technological innovation in lieu of a focus on social and economic equity (Angelidou, 2014). Smart cities may attempt to promote innovative practices through an efficiency lens within various public services and sectors, but in doing so, lose focus on more important societal values, while avoiding the wicked nature or exact cause of the problem (Voets et.al, 2021). Collaborative strategies thus consider the public values individuals hold to engage public and private groups and disciplines within the norm of governance.

Collaborative spaces are defined as working in line with residents and local groups to address the misunderstanding regarding governance policies, systems, and regulations. Allowing citizens to shape and redefine smart governance processes takes center stage through spaces of co-creation. Thus, building strategies that provide a means for transformation towards collaboration are developed with an understanding that there will be individuals who still see smart innovation as being shaped purely by efficiency and data (Hemment & Townsend, 2013). Working through and identifying disadvantages within a localized context allows for both citizens and city managers to learn and grow with the city and its innovations towards a collaborative view.

### 3.2 Who is responsible for data sharing?

Deployment of collaborative practices towards smart technologies has the potential to bridge sectoral levels together to promote a shared communal vision. Governments in this view become responsible for sharing information amongst sectoral levels, while citizens become responsible in distributing knowledge amongst themselves and within their organizational structures (Jayasena et.al, 2019). Smart cities have often involved citizens through tokenistic processes where they become engaged with data, but not fully considered as co-creators and developers of newer forms of data (LeClercq & Rijshouwer, 2022). This process has constrained citizens' attempts to reach their full participatory potential. Through collaboration, technologies

and infrastructures within smart governance make way for a system where the citizen has the right to co-create and influence in an interactive way.

As cities look to cope with future environmental, social, and political problems, information and data sharing represent core elements of the renewed collaborative discourse. But sharing and data efficiency may not function properly if it is not used within spaces which involve stakeholders from all societal divisions and backgrounds (Jayasena et.al, 2019). This shift of power within smart governance occurs through a collaborative lens, but it is critical that management roles are defined within co-creative spaces to help ensure successful and equitable collaboration and sharing.

### 3.2 Empowerment and moving beyond ICT

Smart cities place information communication technology (ICT) as one of its main pillars. Basic aspects of ICT function include digital uses of technology such as cell phones, computers, and tablets to share and create accessible, efficient data across sectors (Oliviera et.al, 2020). While ICT remains an important aspect within smart cities, collaborative spaces look to innovate and find newer ways for more interactive and participatory growth within ICT management (Oliviera et.al, 2020). Engagement through information and knowledge sharing prompts a values-based movement towards digital decision-making processes. Collaboration may help to mold citizen empowerment in dealing with global and local challenges such as resource use and climate change. When the citizen sees that governance systems are willing to share information regarding rules, regulations, and governance processes, it helps the citizen to be placed at the forefront of democratic processes of co-creation. (Baack, 2015) then emphasizes the importance for intermediaries, or people that exist as teachers of information within newly democratic or collaborative spaces. Intermediaries can help to recognize that shared data and knowledge may not be understood or accessible to everybody, thus, a focus remains on empowering citizens to be able to sufficiently respond to future problems (Baack, 2015). In the cases of Amsterdam, Barcelona, and Helsinki, citizen empowerment created through digital as well as co-creative spaces sees those cities' residents as equal and in line with authority figures' goals. Because citizens will come to understand that they will not only be listened to but encouraged to participate, it thus creates a social space that further considers goals, thoughts, and values in an equitable way to give the citizen the belief that they are part of a mutual space (Dupuy & Defacqz, 2021).

### 3.3 Technology as a participatory tool

The conservative nature of smart governance often presents few opportunities for exploration of any inclusive forms of technologies and data (Aranda & Vezzoni, 2021). As

information technology and data sharing make up the basics of smart city infrastructural networks, collaborative programs, and websites provide its residents with ample ways to engage, discuss, and share within their social and political networks where they live. Using technology as a means for smart city dialogue aimed at sharing enhanced and more informed data can allow for exploration, co-creation, and development (Berntzen & Johannessen, 2016).

Newly modernized forms of public and private, cross boundary technological data and information sharing within collaborative governance has allowed for complete re-developing of smart systems (Pardo et.al, 2010). Digital technologies and emerging information networks within collaborative cities provide residents and officials with processes in which they co-manage and discuss important socio-political conflicts or interests (Aranda & Vezzoni, 2021). GIS, participatory budgeting, shared data, and information technology have helped to spearhead a technological movement away from traditional forms of smart city management. Technological advancements have provided governments and citizens alike with new forms of sharing and access. These democratic led processes taking place globally have seen a shift towards a more collaborative decision making and co-creative process of cities and planners working together (Aranda & Vezzoni, 2021). Understanding that society shapes technology, as well as technology being shaped by society, remains a key focus for further collaborative examination (Roberts, 2017).

Capital, resources, infrastructure, and social values often place immense strains on a community or city's ability to not only absorb new technologies, but to re-develop and re-design them to fit the needs of that community (Law & Lynch, 2019). Unintended consequences such as cybersecurity hacks and weak technologies present further challenges for functioning smart cities, which must be asked about how to best mitigate such consequences (Law & Lynch, 2019). Further technological development can present essential opportunities for institutional transformation but will require and nurture this sense of freedom within its development (Sen, 1999). This freedom exists by removal of unfreedoms, or societal ills that negatively influence socio-political processes, or hinder freedom towards development (Sen, 1999). Collaborative development and exploration must continue to focus on freedom, but also equity within its technological developments. As collaborative platforms continue to prepare for the future, they must do so with the citizen in mind, while also allowing them to alter any previously implemented smart technologies. Enabling a democracy through technology presents meaningful opportunities that may help extend beyond traditional approaches, through communication, to reach a larger audience. Therefore, consideration for individuals who may not be able to contribute through technological platforms due to societal factors, is necessary in creating more equitable governance spaces to address the digital divide (Cohen, 2022). The successful functioning of a government or city relies on its ability to acknowledge, consider, respond, and redevelop its ongoing processes or hinderances in a resilient way. In doing so, technology along with other collaborative initiatives can be placed front and center within

participatory discussions. This places government and the citizen as one, which values co-creation and exploration of technological advancements as the future of smart institutions.

## 4.0 Theory C: The changing role of citizens

### 4.1 Smarter citizens in smart cities

Creation and implementation of a vast network of smart infrastructures requires people who know how to use them. Introducing technologies amongst physical infrastructure networks with the aim of promoting more efficient regulatory or network-based practices means little if those who use the network are ill informed on how to operate within such spaces. The smart city allows actors to position themselves amongst “an ensemble of notions, ideas, and concepts, but does so in a restrictive way” (De Waal, 2017). While users of such an ensemble may operate within these spaces, they often do not come to define or change them, that much is typically still achieved through governance led processes (De Waal, 2017). Inclusion of a wide range of actors within such a system has the potential for changes regarding the citizens role in governance processes. Further inclusion of citizens can enable and allow socio-political structures to obtain second opinions or outside knowledge from those groups. Of course, the downside to this point remains that citizens will not have a full grasp of governance practices which have made up those spaces over time. Thus, the-changing role of the citizen within collaborative governance allows for discussion of political practices to ensure that citizens are equipped with the proper knowledge to achieve shared goals.

The emerging debates surrounding smart cities often place heavy emphasis on smart technologies, and the role that data efficiency provides for governance structures. However, positioning the citizen as both a maker and shaper of urban environments becomes a key focus for empowering the collaborative structure, as well as understanding the citizens role within it (Hemment & Townsend, 2013). Citizens help to re-create and contribute towards collaborative spaces which have the potential to transform various smart urban centers through innovate practices. This could be achieved through online platforms, laboratory spaces, as well as shared community forums. However, we must ask further questions about what the characteristics of a smart city are, and what the changing role of the citizen becomes when creating collaborative systems (Hemment & Townsend, 2013). Including citizens within governance processes enhances their role as decision makers, instead of data users inherent in a smart city view (Calzada, 2018). Thus, to define what a city’s collaborative governance structure is means to understand that the city realizes its residents as mutually inclusive change makers. Amsterdam, Barcelona, and Helsinki present compelling cases for citizen-led movements which display not

only the power that citizens can hold, but also the effectiveness of shared governance within smart city methods.

#### 4.2 Involving citizens in an equitable way

A collaborative system allows its citizens to capitalize on the resources and data that become available to them. As such, structures can also provide aid through dialogue and resource availability. The complexities surrounding metropolitan city centers such as Amsterdam, Barcelona, and Helsinki may present a myriad of solutions for how to not only involve citizens within smart governance, but to do so in a way that ensures a fair and safe process for all involved. Participation may have the potential to achieve varied outcomes within smart governance systems such as more efficient budget allocation, delivery of community services, and management of common property resources (Osmani, 2007). While data and information are shared within smart governance, ensuring that specific resources are disbursed in a way that is not only easily accessible but also fits the needs of individual groups or citizens is a component in moving towards more collaborative modes of governance. Efficiency often becomes a tradeoff for equity during smart decision-making processes, and governments may often place an emphasis on one or the other to ease challenges during a project or policy implementation within smart governance (Osmani, 2007). Strategies aimed at catering to both equity and efficiency, to work through these challenges within co-creative or laboratory-like spaces, often dominate collaboration. In designing more resilient and innovative spaces, citizens and governance structures can work to imagine futures together but must focus on creating more meaningful participation within smart cities (Reuter, 2020). Governments, knowledge organizations, and non-governmental organizations may take the lead in steering unbiased contribution through allocation and sharing of resources and knowledge to provide a renewed socio-political role for its residents (Brdulak & Brdulak, 2017). Obtaining the knowledge and resources to engage and interact with projects such as participatory budgeting may allow for different viewpoints to be heard during governance processes. Done in such a way where citizens have a fair say in spending and resource allocation, resources and funds typically used through a smart city lens may see a change in newly formed patterns of cooperation and dispersal regarding city services.

As information and data provide a breeding ground for innovation within collaborative governance, societal-driven projects such as laboratory spaces, and technology infrastructures can provide citizens with ample tools and resources to redefine their role and voice within society. As it is understood that within collaborative spaces such as Barcelona, smart city data and information become woven into the power and value given to citizens, it is also understood how such networks can transform into truly collaborative spaces (Andrews, 2018). These spaces provide the basis for shared visions, goals or plans to be developed and changed over time with



the citizen in mind. Fostering proactive environments thus means providing all sectoral levels with a space to collaborate, as well as the adequate resources and knowledge to achieve safe and successful discussion and partnership. To move towards this goal, working together within collaborative platforms to develop and gauge which resources are needed, and developing a distinct plan and outline for establishment of each citizen's role within this process, is necessary to ensure everyone trusts each other and remains on the same page (Kumagai & Iorio, 2022).

Collaborative structures can provide a co-creative space for citizens to voice their opinions on policies and projects within their current living spaces. Assessing early on which skills and knowledge individuals hold, what incentives they have to participate, and the empowerment they have in relation to their social network, are key in defining collaborative processes (Osmani, 2007). There are different ways to achieve successful collaborative governance, as cities vary by socio-economic structure and hold diverse values and interpretations surrounding aspects of governance strategies. What remains for this form of governance is for processes of collaboration to start early in the practice of analyzing, reviewing, and applying necessary measures to ensure that all citizens have a voice, and that their voices and role regarding their contributions are accurately heard and implemented within socio-political processes.

## 5.0 Theory D: Contextual factors

### 5.1 Why are people choosing to participate?

Conditions that influence collaborative strategies remain contextual to each individual citizen, as well as city structure, as both differ in composition and collective thought. Collaborative structures consist of elements regarding the social and intellectual capital which connects its citizens and forms relationships throughout socio-political spaces (Myeong et al., 2018). The influencing of collaborative action sees a few main drivers that may lead to the growth of more networked strategies connecting technology, people, institutions, and other knowledge-based organizations (Yigitcanlar, 2018). Asking what factors constitute and create successful collaborative spaces remains urgent in defining the role of citizens within such networks. However, it is necessary to understand that contextual factors may determine that a particular strategy in one city may or may not work in another. Factors such as the degree of centralization or state involvement within a smart system, available technologies, and citizens, as well as organizations' trust and maturity within the governance processes, play a key role in defining successful collaboration (Simonofski, 2019). Citizens' choices to participate within programs such as shared budgeting, community forums or workshops ultimately remains an individual decision. It is important to note that while this may be the case, analyzing such

contextual factors helps to present compelling arguments for further understanding of why an individual or knowledge institution may choose to enter the realm of collaborative governance. Processes which place the citizen within co-creative decision making between institutional agents and public actors can allow for this shift from passive towards collaborative governance (Guenduez et al., 2020).

As noted previously, a variety of contextual factors such as citizens' trust towards governance and understanding of technology may influence involvement within collaborative processes. Further contextual factors may range from individual attitudes, perceived knowledge, prior experience, and social factors relating to belonging or reputation within their community (Kusumastuti et al., 2022). Furthermore, the attitude of the constituent towards the proposed or implemented technologies and infrastructures is reflected in how they perceive the smart city to solve its problems. Kusumastuti defines this perceived knowledge or belief as that which may relate to citizens' abilities towards understanding the governance system within which they live and contribute. Perceived knowledge may encourage citizens to engage within a collaborative system because they feel that their understanding of the overarching system is adequate in providing necessary structure and input (Kusumastuti et al., 2022). Social may also relate to the sense of community, that people feel the need to contribute to if similar interests are shared amongst community members. Furthermore, they may feel that their reputation is boosted by sharing information or acting as a leading figure within online platforms or within socio-political organizations (Kusumastuti et al., 2022). Finally, a prior experience in sharing and obtaining knowledge related to smart governance, technologies, and data-driven infrastructures may push the citizen to feel more comfortable in using a particular platform or smart technology as they feel equipped to do so. This intention may also influence the future sharing and learning behaviors for the users of such platforms. Ultimately, these factors can influence citizens to become direct democratic participants within a collaborative city concept (Irvin & Stansbury, 2004). When contextual factors align to influence their participation within governance circles, citizens learn about difficult procedural problems and become involved within matters of public relevancy (Simonofski et al., 2019).

## 5.2 Potential challenges of collaboration

As actors look to give agency within a collaborative structure, there will likely be disagreements within any social or political processes as actors within a governance structure, particularly a larger city, are all likely to express singular and unique interests that exist within their personalized beliefs (Emerson et.al, 2011). As those actors move about within the organization or structure, their beliefs and values may rub off on another group or individual, which may then create further dissent. Nurturing collaborative environments helps to create trust-based knowledge sharing, joint exploration of problems, and responsive discussions of

problems with every citizen involved, ensuring that affected actors can scrutinize results (Sørensen, 2021). This is particularly hard to do, and will often require certain sacrifices to be made, as not everyone is heard or listened to within a large-scale structure or organization. Technology platforms within collaborative structures may not always be accessible or easy to use for every individual, thus consideration of alternative platforms for collaboration must be analyzed to ensure equitable access for all. Furthermore, collaborative governance remains costly and time sensitive as meeting spaces and key resources are needed to develop proper discourse amongst practitioners (Peng, 2020). Time remains a key aspect within this domain not just on a political level regarding the timing of policies or projects, but also on a personal level regarding the amount of time people want to commit towards discussion and meetings (Peng, 2020). Language barriers, or lack of expertise amongst both participants and authoritative figures and organizations, also place immense stress upon aspirations to create adequate and innovative discussion spaces (Peng, 2020).

Various factors constrain a collaborative structure's ability to engage and connect with its citizens. Time, money, differing morals, language, and knowledge present key challenges towards efficient collaboration. Within collaboration, a shared understanding of goals, values, and ideologies is to be respected amongst all parties if this is to be achieved. Answering the challenges that collaborative governance may face means asking the question of, does collaborative governance only affect those who participate (Rizzo, 2021)? Looking at forms of data and information-driven governance within shared processes of knowledge, co-creation, and collaboration is necessary. Fostering well-organized membership amongst all societal levels means acknowledging the challenges inherent in methods of both smart and collaborative governance, while trying not to completely remove them but to learn from them instead.

### 5.3 Inspiring the next generation of governance

Empowering those who are inclined to contribute means providing them with sufficient information, resources, and comprehension to achieve those collective goals. What remains a further talking point within governance involves empowerment of not just the citizens and leaders, but specifically the youth (Zeb, 2008). As collaborative smart cities continue to shape and reinvent the changing landscapes globally, youth can become a focus of analysis for the futures of smart cities.

Assessing young people's capacity to participate remains a challenge for smart city data in showing the potential for what a smart city can become. Understanding youth's role within current society, as well as their knowledge and opinions on pressing socio-political issues, should be at the heart of participatory discourse (Hennig, 2014). Youth can bring about issues relating to their age group that may not be thought of during adult-led focus groups or meetings. However, it is imperative to not only determine what they already know, but

furthermore what their capacity is to learn and absorb new technology and dialogue (Hennig, 2014). Creating collaborative environments means considering all societal groups and sublevels to give them a voice and renewed role within governance processes. Accepting the social dynamics and power imbalances amongst younger populations will present a challenge for all cities, but must be considered (Zeb, 2008). Classifying youth within societal levels amongst smart city discourse can allow us to define their roles within such a complex process.

Investment in academic programs, organizations, training groups and accessible technology may present measures for implementing youth within collaborative governance. Adults can guide youth within complex structures to not only provide agency for them but also to help them realize their own potentials and in doing so, set a policy direction for governance organizations and structures (Zeb, 2008). Ensuring fair democracy and equity within these processes, however, may remain a challenge within the contextual arena of policy making and implementation. Ongoing discussion and safe spaces for inclusion of youth or student members should play a part in achievement of adequate co-creation and participation. It is then that youth contribution is seen as extending past a tokenistic perspective, further emphasizing a deeper understanding and respect shown for youth engagement (Zeb, 2008). Involving youth, not because it may be tokenistic to do so, but for actual consideration within a city's networked plans, allows for greater assessment and understanding of a community's structure and what the overall capacity consists of. Youth have the agency and potential to help smart cities re-create ideal, resilient, and inclusive collaborative landscapes of the future, especially due to them being seen as "digital natives," or those very familiar with technology (Hennig, 2014). It then remains that they are guided on how to achieve that agency and provided with the capacity and resources to do so.

## 6.0 Conceptual framework

Smart governance has arisen as a modern strategy for solving the complex social, political, and environmental problems common within the 21<sup>st</sup> century. Done through efficient and data-driven initiatives, smart infrastructures create a dense network of technology and data sharing, but questions must be asked about how citizens fit into this system, furthermore, what is their role? Collaborative governance then turns data and technological strategies dominant within smart governance on its head to combine with newer participatory and co-creative forms of management. This research theorizes the smart approach and uses three examples of how collaborative governance can be effectively achieved, and both how and why citizens participate in it. This research adds to an already growing library of smart city research but hopes to shine an important light of three unique and impactful cities who are re-writing the boundaries for how collaborative systems can be established within smart domains.

The framework below combines important elements from the literature and theory into a conceptualized context. The outline helps to add to the theory by contributing to the question of what the citizens role is? As well as what contextual factors and challenges influence citizens? Research surrounding collaboration requires a continued deep dive into the theoretical challenges of such a topic and requires the discussion to go beyond simple implementation of participation strategies. Capturing the true nature of what collaborative governance is, who it affects, and how people become absorbed within it requires a conceptual model for matured understanding. The questions below, as considered in the framework, follow the proposed research questions in addressing the nature of both smart and collaborative systems, as well as the citizens changing role within them, followed by theoretical analysis of the challenges and contextual factors faced.

How do we define smart cities?

Introduction to provide background

How do we define collaboration

Second most important factor

How is the citizens role changed and affected within a collaborative system?

Most important factor

What are the contextual factors and challenges that influence citizens and collaborative spaces?

Fourth most important

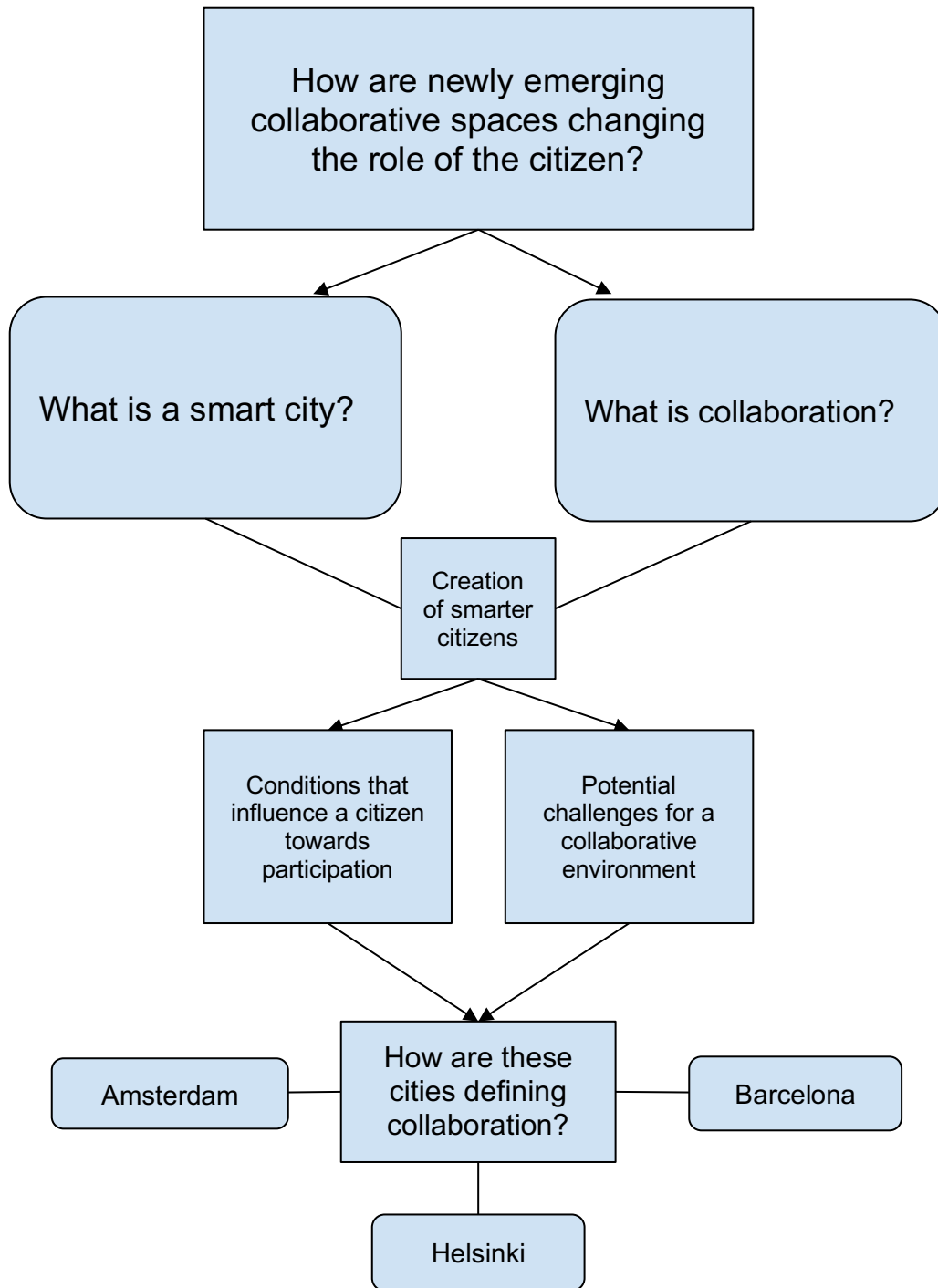


Fig.1.2

## 7.0 Methodology – a case study of three major European cities

This thesis uses case study research to analyze and compare the complexities surrounding smart city design towards promotion of a new collaborative system. The focus remains in understanding how citizens come to participate within these spaces, and why they remain as the focal point for collaborative governance transformations. The goal is to be able to provide readers with an enriched knowledge on the emerging role of the citizen through collaboration, and how solving complex social and political problems can be enhanced through these localized forms of participatory governance.

Research done consisted of extensive analysis and exploration of case studies and successful collaborative projects within Amsterdam's smart city online platform and Barcelona's online Decidim platform. Helsinki was researched by means of government documents and case studies regarding its Agile Piloting Labs. Furthermore, survey data completed by a member of Forum Virium Helsinki, provided important input on questions regarding the Agile Piloting Labs. A comparative analysis between the three selected platforms was used as a means for analysis in contributing to the proposed research questions and theory.

### 7.1 Case study as a research methodology

In an analysis of case studies, the goal becomes to not only analyze the case, but to understand why those cases are important, and how they provide answers towards the research questions and theory. Because smart cities represent such a complex socio-political topic, case study research within the example of a specified smart city and its collaborative systems provide essential opportunities for learning and answering of the research questions. In using the case study as a form of research methodology, you are positioning yourself in full understanding of that context in hopes of gaining a better understanding of why collaborative systems exist.

In the case of my specific research and theoretical implementations, I felt that the use of case studies proved to be most valuable. My focus on the platforms Amsterdam Smart City, Barcelona's Decidim, and Helsinki's Agile Piloting Labs represented ample opportunities for me to explore and analyze specific instances of citizen-led collaborative governance and its potential effectiveness. I understood that simply exploring the platform and commenting on its makeup and influence would not be enough, I had to delve deeper into a theoretical base regarding the citizens role and importance within these online or piloting laboratory spaces. Exploring specific case studies within all three cities and their corresponding platforms gave me further insight into the specifics of each platform, and how there may be context and value-dependent scenarios that influence its overall structure and contributions towards governance in that city. Case studies may also allow for interpretation of the results or findings of a

particular case within another context through a type of policy translation, but it must be assumed that not all platforms are applicable or transferable for every smart city.

In choosing a descriptive and exploratory style of research and analysis, I allowed for the specific contexts of Amsterdam, Barcelona, and Helsinki to be brought to the forefront of already existing smart city literature. It is my hope throughout this paper that I will have contributed to already existing research, while also enriching it with further, more context-based knowledge of unique platforms and collaborative spaces within Europe.

## 7.2 Research design

The design of the specified research focuses on a descriptive analysis and study of the cases presented. The purpose of the study remains to answer the question regarding not only what role citizens have within collaborative governance, but also to determine what smart cities and collaboration are as to initially base my research within an academic standing. Furthermore, asking how collaborative spaces can be created with a smart city framework, as well as what challenges they may have, is essential in discussing the future of potential collaborative systems. The theoretical analysis and discussion of the research questions, along with the proposed cases and subsequent findings from them, and the survey of Helsinki's piloting labs, present the underlying framework for answering the research questions provided.

The comparative aspect of the cases presented helps to connect the overarching theoretical framework of the thesis together with the case selections. In comparing each case and bridging the theory within the specified case studies and subsequent findings section and lessons learned, a proper analysis of the initial research question(s) can be done to determine the uniqueness of each platform. In contributing to the research design, a comparative analysis helps to determine successful examples for collaborative governance that also touch upon the potential challenges of defining and creating such a system. I would have liked to complete more surveys and interviews regarding this thesis, but several contacts failed to respond. Even without those responses, I feel that the research and analysis of the selected cases presents a compelling example towards the analysis and understanding of collaborative structures within a smart city model.

## 7.3 Unit of analysis

The boundary and scope of this research consists of an exploration and analysis of three major European cities (Amsterdam, Barcelona, Helsinki) that have each implemented their own collaborative platforms within their individual smart city frameworks. All three platforms exist as major innovators and contributors towards collaborative smart city innovation and literature within the last decade. As such, all three case studies represent successful and relevant



examples for the continued theoretical questioning and analyzation of smart city design. The choice for focusing on these three specific cities stems from the belief that they represent three of the best options within smart city discourse in answering the proposed research questions, while also remaining sufficient examples for the future of participatory governance. However, it is noted that further analysis and theory is needed regarding collaborative governance to extend beyond these cases in incorporating smart cities within other geographical areas and socio-political backgrounds.

The theoretical scope within this thesis is defined based on existing literature on smart cities, with a hope for further questioning and implementation of a collaborative lens regarding citizens. As cities continue to expand and develop in lieu of global complexities, theoretical analysis of smart governance systems will continue to become more embedded within such contexts. As such, this analysis aims to add onto existing literature while considering and providing fresh alternatives and case studies of which to examine for future use.

#### 7.4 Data collection framework

This research used a case study analysis to extract research from the existing platforms of the three cities mentioned. In extracting this research, a heavy focus was placed on *how* and *why*. Specifically, in choosing cases, how are they involved, and why are they involved or why did they want to become involved.

In focusing in on these aspects, I was able to align literature and theoretical interpretations into a unified research framework. Extensive analysis and time spent researching and navigating Barcelona's Decidim and Amsterdam's Smart City website platforms was used to gauge participatory levels and answer the research-related questions. For Helsinki, similar action was taken in that specific case studies within Agile Piloting Labs were studied to provide a foundation for analysis into that topic. Helsinki data was also reached and provided by means of a survey and email documentation conducted with members of Forum Virium Helsinki (survey results can be found in section 8.2, page 45).

#### 7.5 Data analyses and interpretation

Analyzing data regarding the cases of Barcelona, Amsterdam, and Helsinki exist on two levels. While the individual platforms of Amsterdam's Smart City, Barcelona's Decidim, and Helsinki's Agile Piloting Labs were studied, specific cases within the platforms were also used in the thesis to provide further input and context to the overarching research questions and theoretical background. Data interpretation is done through a descriptive process and involves studying actors' feedback, commentary and input regarding a specific project or case study. Data analysis, as well as digital conversation with members from forum Virium Helsinki, further

contributed to the analysis and interpretation of data beyond an online level. This analysis allowed me to tie the cases and subsequent research into the theoretical aspect of the thesis, to lend significant thought and insight into addressing my research questions and topic.

## 8.0 Case studies

The following cases studies present the cities of Amsterdam, Barcelona, and Helsinki to highlight three distinct smart city platforms which incorporate collaborative governance within its social and political spaces. Each remain unique in their output and context yet share similar goals regarding citizen participation and influence. Each platform contributes to and helps answer the research questions and theoretical output that remain present throughout the thesis. The individual case studies used within each platform present further analysis and examples of successful collaborative projects regarding the different strategies that can be achieved. Further, successful projects implemented and achieved within each city and platform are showcased for each system to highlight the success of some collaborative projects within each city.

### 8.1 Amsterdam Smart City

Amsterdam's Smart City platform connects citizens with institutions and organizations working towards co-creative strategies being developed within Amsterdam's existing smart infrastructures. To ensure a sustainable and innovative metropolitan future, Amsterdam's platform and website for smart city collaboration presents a base for research, proposals, workshopping, and co-creation. The myriad of information being pushed through the platform daily helps users and city officials capitalize on all the available technologies and startups within the Amsterdam metropolitan region. The city made the initial decision to transform Amsterdam into a smart city with the use of ICT's in helping to solve its environmental problems by building a sustainable urban environment (Mora & Bolici, 2017). Becoming one of the early leaders in Europe for its smart city efforts, Amsterdam's platform launched in 2009 and has since blossomed into one of the largest and most innovative smart networks in the world. The platform started by way of public-private innovation aimed at solving Amsterdam's energy grid systems and further expanded towards a larger network of collaborative projects and plans. The platform focuses on the future living spaces and uses of the Amsterdam metropolitan area but does so through inclusion of values, public-private partnerships, and open innovative spaces for strengthening community bonds and trust amongst all sectors. Information within Amsterdam is used and shared within the website through a variety of topics with the goal to ease access and accessibility for those wishing to participate within collaborative spaces. The

city’s vision remains to involve citizens within a system which embraces an inclusion of topics, values, and beliefs regarding smart cities. With an emphasis on collaboration and information sharing between startup companies and citizens, responsibility is taken on by both parties to promote collaboration and mutual learning.

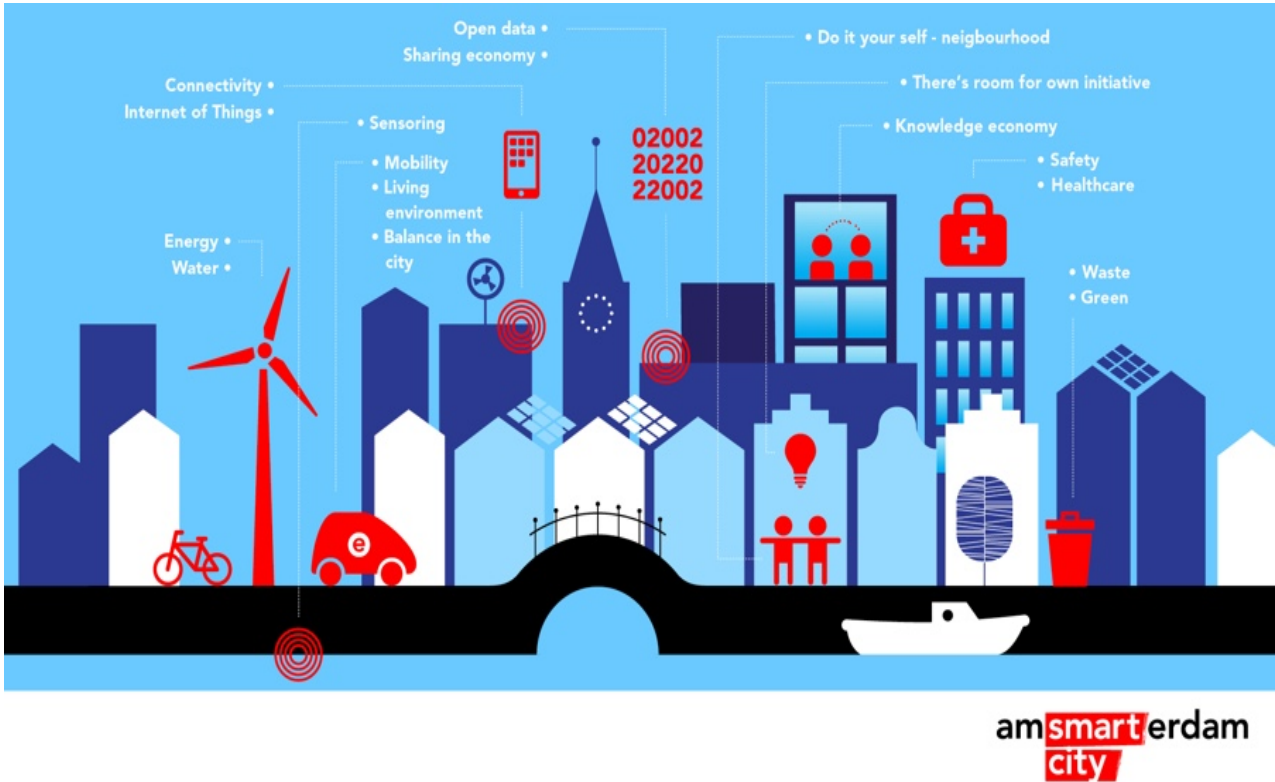


Fig.1.3 (Source: smartercommunities.media, 2017)

8.2 Collaboration within Amsterdam

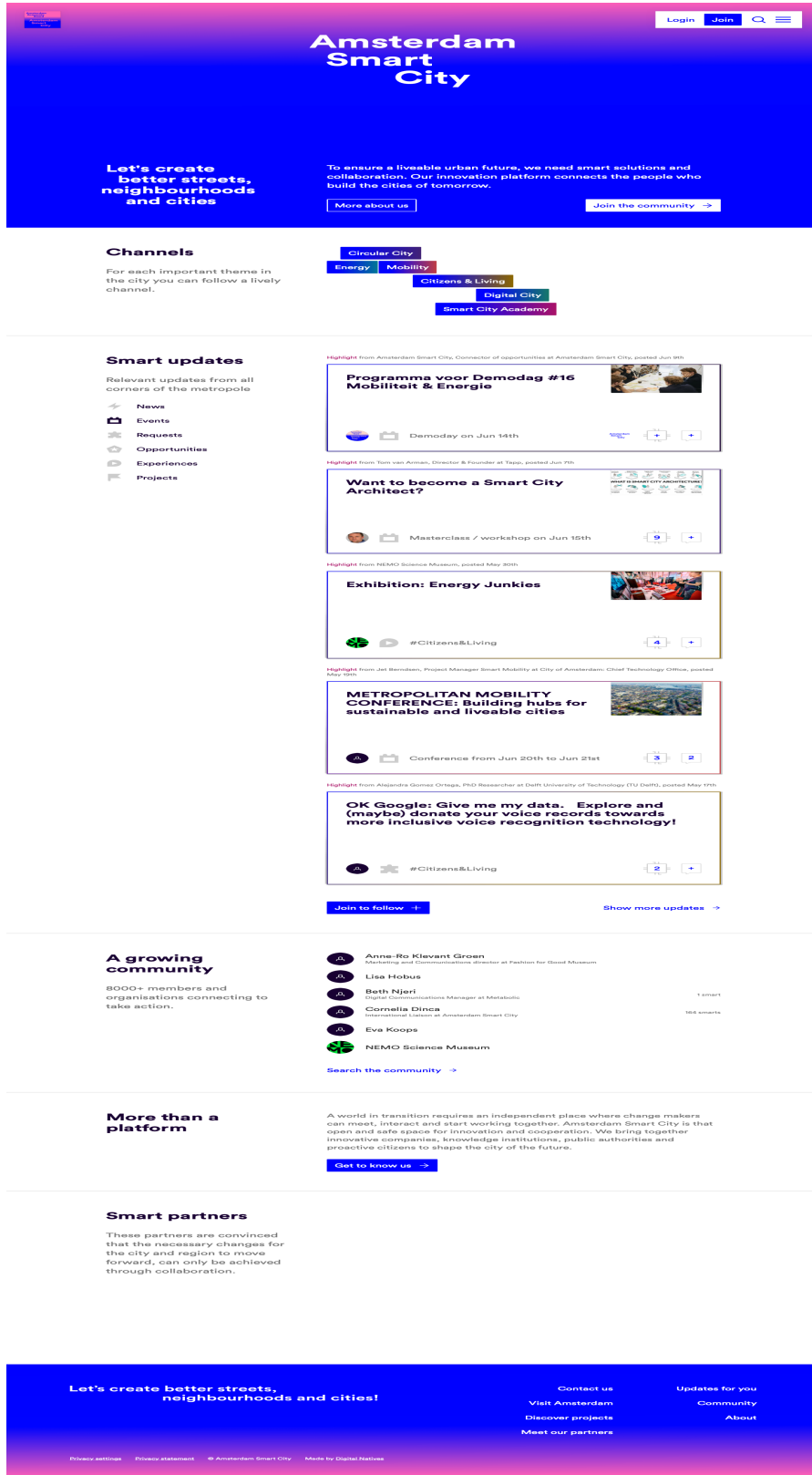
The key stakeholders within the Amsterdam Smart City project consist of various private and public organizations, governance sectors, citizens and local officials or experts. Tackling a wide variety of topics such as energy, mobility, digitization, and economics, Amsterdam’s smart city platform uses an interdisciplinary perspective to connect the city and its residents with an abundance of opportunities for learning, discussion, and project management with public or private organizations. The goal is to create a communal space where residents feel comfortable in sharing their proposals, ideas, and recommendations for the future of Amsterdam’s urban space. Partners from various public and private organizations around the Netherlands exist as liaisons for solving the complex problems that require collaborative solutions. Universities, social groups, and governmental bodies exist within Amsterdam’s Smart City spaces as carriers

of social collaboration between residents and higher organizations. Through workshops, networking opportunities and open meetings, sharing of goals and visions for the future of Amsterdam take center stage. This collaboration between stakeholder's bridges technology and information as a tool for the empowerment of residents. Amsterdam Smart City exists as a vast network of thousands of residents, organizations and users from all backgrounds who share a common goal for improvement of Amsterdam's social and political spaces. The platform operates as an open share space where residents submit requests, learn about local projects, read news, share updates, interact with others, and learn of opportunities for participation in community events, meetings, or workshops. Joining the community gives the user access to an abundance of choices within the platform, and provides a plethora of information, access and learning for the user to experience.

As Amsterdam has continued to create a platform for innovation and creativity, its users are further allowed to tailor their feed towards specific interests and projects they may be interested in, further connecting the user with local projects and events. Intersecting interests of all stakeholders involved helps to create this base of knowledge and information that exists within Amsterdam. As such, contextual values of all users and contributors can be considered in a way that places the user first. Stakeholders' voices and interests can be placed front and center, and in the case of Amsterdam, they are given priority in discussion and creation of smart policies and social projects.

### 8.3 Case study: Responsible sensing lab

The lab exists in a similar vein to that of Helsinki's agile labs in that it aims to conduct rigorous and extensive research on how smart technologies employed in Amsterdam can be improved or made more responsible. In January 2021, the sensing lab was launched and immediately worked towards solving questions regarding integration of values-based public sensing systems. A collaboration between the city of Amsterdam and the AMS Institute, the lab remains a space where an integration of stakeholders from all disciplines come together to test, experiment, and learn. Experts from the Technische Universiteit Delft industrial design faculty were also included throughout the process. In connecting a wide range of stakeholders, this project joins Amsterdam's already thriving and innovative smart services with public ethics and best interests. This project has shown the importance for collaboration in allowing citizens to become smarter through learning, as well in addressing challenges related to the future of smart infrastructures.



(Source: Amsterdamsmartcity.com)

Fig.1.4

## 8.4 The changing role of citizens within Amsterdam

Amsterdam's Smart City platform involves citizens in a myriad of ways through various forms of democratic participation which helps to transition the city towards a collaborative structure. Meetings, conferences, workshops, and co-creative labs form the basis of Amsterdam's fight to not only include citizens in all aspects of governance, but to form equitable spaces for them to learn with each other. Throughout the space, website, books, documentaries, conferences, and important meetings highlight projects and topics that are shared amongst community members. Residents and users of the platform receive open access to all forms of news, experiences, projects, and events within and around Amsterdam as well as the entire Netherlands.

While Amsterdam, Barcelona, and Helsinki share similar standards for their platforms, Amsterdam's Smart City exists by means of economic innovation more so than technological participation. Amsterdam Smart City focuses on collaboration with organizations to provide solutions for problems they cannot solve on their own through public participation. Barcelona's Decidim exists in a similar vein but caters more towards citizen-led governance, and places overall power in the hands of citizens as fewer organizations are involved (Noori et al., 2020). This approach has helped to implement new policies and plans within Amsterdam through an equitable decision-making process that actively recruits and uses citizens within a smart city system, actively changing their role within governance. Amsterdam's focus therefore is centered around smart innovation done with collaboration between public-private partnerships. At its core, Amsterdam Smart City remains an open innovation platform that is also values based, where beliefs held by both citizens and organizations are considered and crafted in a collaborative way. Citizens are involved within Amsterdam and seen as collaborators within public-private partnerships, upholding and creating sustainable futures for Amsterdam's residents. As Amsterdam continues to grow and face larger environmental as well as socio-political challenges, residents and public-private organizations will remain key contributors towards solving them.

With a focus on the future of Amsterdam, the smart city platform ensures collaboration and innovation in the present while also working towards the changing future needs of the city. Realizing that collaboration can be beneficial for smart governance, Amsterdam places the citizen or user amongst public and private organizations that have the resources to aid in sustainable or green projects. This approach, while less democratic and more economic or organization based, still shows a high level of transformation within Amsterdam's socio-political spaces which helps solve the challenges surrounding collaborative governance. As time, money, personal beliefs, and available resources may influence and place a strain on a structure's

ability to create collaboration, Amsterdam's role in further defining what their citizens' input can be remains a central aspect of the platform's message.

### 8.5 Case study: LEGO model

Projects such as the LEGO model involve citizens and present a call to action for imagining the future of Amsterdam. Shared on the platform in October 2021, this project connected residents with various financial, educational, and technological partners to develop a LEGO model for what they envisioned the future of Amsterdam to be. In turn, residents and partners were able to learn how to take an integrated approach into imagining the future of Amsterdam. Residents or users of the platform were allowed to share models and stories of what they thought would be beneficial for the project. Projects such as these present a fun way for the platform to connect residents socially, while also focusing on building and developing shared visions for the future of Amsterdam's smart services.

### 8.6 The future of Amsterdam smart city

Amsterdam Smart City has placed its ambitions in the hands of both residents and public or private organizations aiming to solve various social, economic, and environmental issues. Amsterdam applies an immense focus on innovation, conversation, workshopping and learning amongst all parties. Differing in approach from the other selected cities, Amsterdam's focus shifts towards solving those issues in collaboration with the many partners and organizations, along with its residents of all ages. This of course presents a similar outcome, but a different focus for the future of Amsterdam. Because of this focus on organizations and public-private partnerships, Amsterdam exists on what is defined as an innocratic development path, focused more on innovation and competition (Noori et al., 2020). This development path means more co-creative labs and workshopping opportunities for Amsterdam's residents that move beyond traditional smart technologies towards a collaborative process. Recognizing that citizens provide the backbone of policy formulation and implementation, but do not necessarily have all the required resources to achieve certain outcomes, remains part of Amsterdam's organizational strategy. This does not look to take away from the more inclusive, or participation-driven smart spaces like Barcelona, but simply does so within a different approach.

Creating a network of willing and enthusiastic actors remains an integral part of Amsterdam's Smart City approach and since its inception, has continued to expand both within and outside of the Netherlands. This networked approach pushes innovation and collaboration within Amsterdam and has created one of the leading smart city platforms in the entire world. Existing as a major cultural and political hub for startup organizations, Amsterdam connects such businesses with larger organizations and knowledge institutions that cover each other's

weaknesses. Amsterdam's open source and open platform of innovation and data sharing between its residents and other involved parties creates ample opportunities for a startup or local organization to obtain resources and support. The future of Amsterdam's Smart City platform presents an open canvas for further revolution, creation and learning amongst all residents, organizations and municipalities involved. Amsterdam's smart strategy shows that there are ways to engage and involve citizens within such a data-driven focus if inclusion and consideration of values remains at the heart of the process. Innovative spaces for co-creation that are available to users allow those who want to learn and contribute to do so, without forcing anyone to participate. Part of fostering collaborative environments considers that, while many individuals have the knowledge and time, many also do not have the resources or capital to fully realize those goals. Amsterdam places the smart city targets within a future-oriented action plan that considers innovation and value as a key task for developers and citizens to solve together. In doing so, Amsterdam promotes sustainable and economically safe options for solving the future problems that its residents face.

## 8.7 Barcelona: Decidim

Barcelona's status as one of Europe's largest cultural and economic hubs presents vast challenges for its residents. Urban issues affecting the city and its residents have prompted Barcelona's government to adopt a collaborative approach, now known as Decidim. Launched in early 2016, Decidim came to exist as an approach in participatory governance surrounding Barcelona's municipal action plan but upon implementation, found further success. This eventually led city officials to reconsider Decidim's platform and approach going forward, to ensure further democratic success. It now exists as a public commons infrastructure in which residents provide input, share ideas, contribute within co-creative spaces, and meet to deliberate over socio-political concerns and policies. Decidim exists within Barcelona's growing smart network regarding information sharing and technological innovation. Shared throughout the platform, the ease of access for its users and residents provides a system of true collaboration where citizens have an important role in suggesting, implementing, and working on proposed developments, both social and economic related. This in turn helps to transition Barcelona's strategy towards an inclusive shift, which creates smarter citizens within an already growing collaborative environment.

## 8.8 Decidim: The citizens role within

Since its implementation, Decidim has existed within Barcelona as a major participatory tool for citizens and government to co-exist. Exploring the website presents a firsthand account of how citizens can discuss, share, and present plans for both macro and micro level changes



within and around Barcelona. Not only has Decidim allowed citizens to contribute to governance projects and policies, but it has also created a vast network of information for citizens to share amongst each other. Decidim provides adequate documents and scheduled activities for citizens to participate and voice their opinions, thus giving spaces for smarter and more equitable participation. Barcelona's residents have been called upon to engage within participatory budgeting spaces and review policy plans, an extension beyond the platform's initial use. Taking influence from Decide Madrid, Barcelona transformed its platform over the years to provide citizens with the ability to explore their interests, join groups or activities and voice their opinions. Plans within Decidim also exist among all sectors and topics including women's rights, urban planning, environment, technology and more.

The most popular methods within Decidim exist through its processes in which citizens voice their opinions or respond to proposals from other residents or organizations. Citizens throughout the platform organize meetings, respond to comments, and propose their own solutions to various types of plans. These communities within Decidim can present the individual with a renewed role or function within many different governance processes. Projects such as the Zona de Bajas Emisiones or the Presupuestos Participativos de Barcelona plan, allow residents to work on a firsthand basis with activities of participatory budgeting and emissions zoning, while providing their residential voice to the matter.

Barcelona's emphasis in placing its citizens at the forefront of political processes not only invites the citizen to feel safe in contributing their voice, but also creates spaces of learning and co-creativity. Allowing citizens to contribute their knowledge to a project, while still maintaining authoritative management from a partnering organization, allows for mutual learning and reflexive participation. This revolution that has taken place within Barcelona allows both residents and planners to define social and political spaces together, while also providing spaces for resilient growth and learning amongst all sectors. Decidim furthers its reach towards deeply integrated values-based approaches of its citizens' abilities and beliefs within a larger collaborative system. Decidim exists within a co-creative and design-led space where residents operate within a workspace to build up, fix and/or scrap ideas. Futuristic spaces of urban planning that involve a city's residents within budgeting processes have also allowed Barcelona's residents to have a clear impact on governance processes. Decidim subsists as a vast socio-political collaborative space that actively promotes empowerment of its residents towards further creativity, learning and discussion of policy plans that aid present development, but also looks to create more resilient and sustainable futures for its citizens.

### 8.9 Case study: Zona de Bajas Emisiones Plan

Barcelona's Zona de Baja Emisiones Plan, centered around information regarding low emission and pollution zones, garnered over 200 participants and 183 answers within Decidim. Separate sessions discussing different zoning policies were shared along with documents detailing what was discussed within the meetings. Participants passionately added to the discussion regarding banning of certain vehicles and sharing ideas such as rethinking what should be banned and modification of older vehicles. With this specific policy you see residents' passion for proposals from a democratic level and as a result, consideration of their voices from the various debate sessions were factored into the results. This case, like many within Decidim, showcases the voice that citizens have when they don't agree with a specific set of proposed policies. Citizens within Decidim realize that they can change and influence anything they feel encroaches on their rights and livelihood, and companies or governments within Decidim respect that, as citizens exist as the main driver of the platform.

### 8.10 Case study: Presupuestos Participativos

This proposal exists as a participatory budgeting project within Decidim, with each person allowed to submit a maximum of three investment projects. Budget proposals went through a range of steps to ensure unbiased and just implementation. Then, after review, citizens were granted permission to vote on at least two proposals that they agreed with. Participants were involved in all aspects beginning with the initial phase, voting, selection, implementation, further voting, and results. More than 70 projects were designed and shared amongst residents across different districts. In creating a platform for participatory budgeting such as Decidim has, Barcelona not only involves its citizens within governance processes but does so in a way that gives a voice to everybody and allows them to vote for what they feel is the best option. Since its implementation, over 70 proposals have officially become implemented, and nearly 30 million Euros will be used throughout the projects. This project has remained one of Decidim's most popular achievements with nearly 65,000 participating.



Fig.1.5 (Source: Barcelona.cat, 2020)

### 8.11 Barcelona’s collaborative governance

Decidim provides a voice for Barcelona’s residents to not only empower and educate each other, but to do so with the municipality as well. This shared or mutual empowerment creates a network of learning and decision making that is less centralized and top-down than traditional governance. Thus, Barcelona remains persistent in creating spaces for its residents to engage, share and comment on important city-wide initiatives and policies that affect them. Decidim exists through a malleable website where information can be changed and added, so that ideas and proposals come to fruition in places where they would otherwise not be able to. Decidim therefore creates this blank canvas space, where citizens and community organizers work together to achieve shared goals. Decidim’s technological aspect allows for a wider array of options regarding democratic decision making and newer forms of idealized governance. Decidim and the Ajuntament, or town hall of Barcelona, provide citizens with a fair way to participate within citizen-led governance and in doing so, create a safer, friendlier, and more shared community space of support. The city understands that citizens remain at the center of smart city design, research, and implementation, and realizes this through continued expansion and revising of Decidim’s role in that. Allowing for such a focus on interdisciplinary research and proposals allows the citizen to not only gain knowledge within their known domains, but also within other subjects which they may know less about. This process creates the all-knowing

citizen which can now respond to a variety of problems regarding political matters. Decidim, and the city of Barcelona, therefore, show the importance of information and forms of technology within more dynamic spaces of co-creation and learning.

Decidim provides its users with guides and templates for learning participatory regulations and rules and gives the citizen capacity to enact upon them. These guides also present the functions and importance for every governance body and sector within policy processes, so that the user is informed of their role beforehand. Organizations also operate within Decidim as liaisons between the citizen and higher-level governance structures in providing or creating these spaces for dialogue and meetings. Through this citizen-led governance, Decidim presents its users with multiple options for participation through in-person or online meetings, and spaces where anyone can feel comfortable in sharing their ideas. This moves away from governance processes where a citizen may feel less adequately informed, but also not listened to or heard respectfully. Decidim presents its users with various forms of participatory methods and ways to engage within projects and does not force the user to adhere to one specific agenda or way of doing.

Barcelona is therefore empowering its citizens by allowing them to have this open book of knowledge, creativity, learning, voting and communication, known as Decidim. Because the platform exists as an open book where citizens create, use, and share their thoughts as well as decide what factors remain present within governance, it then becomes the role of the citizen or user who becomes impacted the most. Ajuntament Barcelona and Decidim present compelling ways to use technology as a participatory tool and show the future of what citizen-based governance looks like. The city of Barcelona does an adequate job in empowering its residents with information that encourages them to participate and share amongst each other. In doing so, participants have realized that their goals, wants, and needs become realized and respected amongst other socio-political spaces. This method remains key for the future of governance spaces in moving forward with ever-changing landscapes and increasingly complex socio-political challenges. This improvement and change of governance towards more citizen-led democratic initiatives has further modernized and legitimized governance processes within Barcelona.

Monumental shifts in knowledge, information sharing, and citizen empowerment are likely to come with their own set of challenges and pushbacks. Decidim presents a compelling case of incremental and co-creative spaces where citizens take center stage in proper democratic processes. Setting up these participatory space's aids in a transformative style of governance which has long-term effects on citizens, planners, politicians, and governance organizations. Through a wide array of plans, proposals and discussions using an interdisciplinary governance approach, Decidim provides its users with the necessary tools and resources for fostering their own empowerment which is then shared among fellow users and neighbors.

### 8.12 Case study: Pla D'Accio

Another such project, the Pla D'accio similarly presents this multi-phased approach to city planning. A plan to revitalize a particular neighborhood within Barcelona was met with various proposals and input from residents who were then informed of the plan, and through various information and face-to-face meetings, validated and informed of their role within it. Further processes of return (return in Catalan) shows the participant which proposals have been accepted, and a further seguiment, or follow up meetings, show which plans and participatory actions have been implemented and developed through several follow up gatherings which allow those involved to further question and ensure that their proposals and voices have been implemented and respected.

### 8.13 Case study: Nuevo Plan Para la Justicia de Género

A plan titled Nuevo Plan Para la Justicia de Género looked to implement a feminist perspective within planning. The plan, which exists between 2021 and 2025, hopes to eliminate gender inequalities within the city. Proposals from residents such as greater access to public toilets and working with male students to ensure different educational perspectives for the youth were considered and shared with the organization undertaking the project. Directly responding to residents, the organization provided adequate responses and strong considerations for any proposals and advice for further tailoring of the initial plan. This plan shows how Decidim positions its residents and organizations together with a shared goal, ultimately giving residents a thorough voice in all social and political processes.

### 8.14 The future of Decidim

Decidim currently exists as a pro-democratic tool for citizen participation and action within Barcelona, which has had a tremendous effect on local policies and projects. Various plans proposed, agreed upon and implemented within Barcelona have made their way through Decidim's boundaries in a newly formed socio-political process centered around the citizen's contributions. Plans such as the Clavegueram, and the Pla d'accio del pou de la figuera, show Barcelona's willingness as a city and region to involve all individuals and forms of participatory process. For example, the Clavegueram, which existed as a sanitation-led plan for teaching residents about the challenges facing Barcelona, as well as how to better use specific services, was implemented in June of 2021. Citizens provided input on what they would have liked to see within the project and were also able to learn more of the city's sanitation programs. Through processes such as these, Decidim shows a clear outline of phases, objectives, resources, and spaces for discussion that allow supporters or critics of the plan a fair say. This sort of plan,

through public assistance, is just one example of how Decidim presents fair and openly democratic spaces that allow all to not only have a say, but to learn and grow with the city.

Decidim exists as a vast network of individuals, agencies, and organizations from all backgrounds of life and therefore disagreements will be had, but through nearly all proposals and action plans, a way for governance to become more equitable for all involved is realized. As an online system such as Decidim continues to grow and expand, newer participatory approaches and ways of interactive governance are created through such a platform. Decidim's existence as an open space platform for co-creative or workshop-based participation presents a plethora of options for the future of governance within Barcelona, and abroad. Decidim functions through a more transparent lens on how to not only involve citizens within governance, but also how to provide them with networking connections and resources to better understand how the city and its services function. This positions the resident and user of Decidim within a smart framework and provides them with the necessary tools to influence smart governance. Decidim allows citizens the right to decide Barcelona's future and shifts away from governance where politicians solely take the lead. It is through these ideals and channels that citizens become smarter and learn not only how governance processes work, but also how much empowerment and influence they have.

### 8.15 Helsinki: Agile Piloting co-creative labs

Helsinki's Agile Piloting Labs present vast opportunities for co-creative and innovative spaces amongst its residents. One of Helsinki's main Agile Piloting programs exists within its smart Kalasatama district, to promote learning and creativity amongst all stakeholder groups. Agile Piloting consists of short, early term projects aimed at experimentation and creation of technologies and uses for specific services. Helsinki has run more than 50 Agile Piloting Labs focusing on solutions from a wide range of topics such as climate, education, and mobility. Agile Piloting follows in the footsteps of Amsterdam and Barcelona as spaces for participation and engagement but does so in a more co-creative way. These spaces allow for smart city services to be transformed on a collaborative basis which places responsibility on both the citizens and the governance structure. Helsinki's governance structure allows for traditional smart city technologies and ideals to transform into a collaborative, co-creation network which pushes the boundaries regarding data and information sharing within the overarching system.



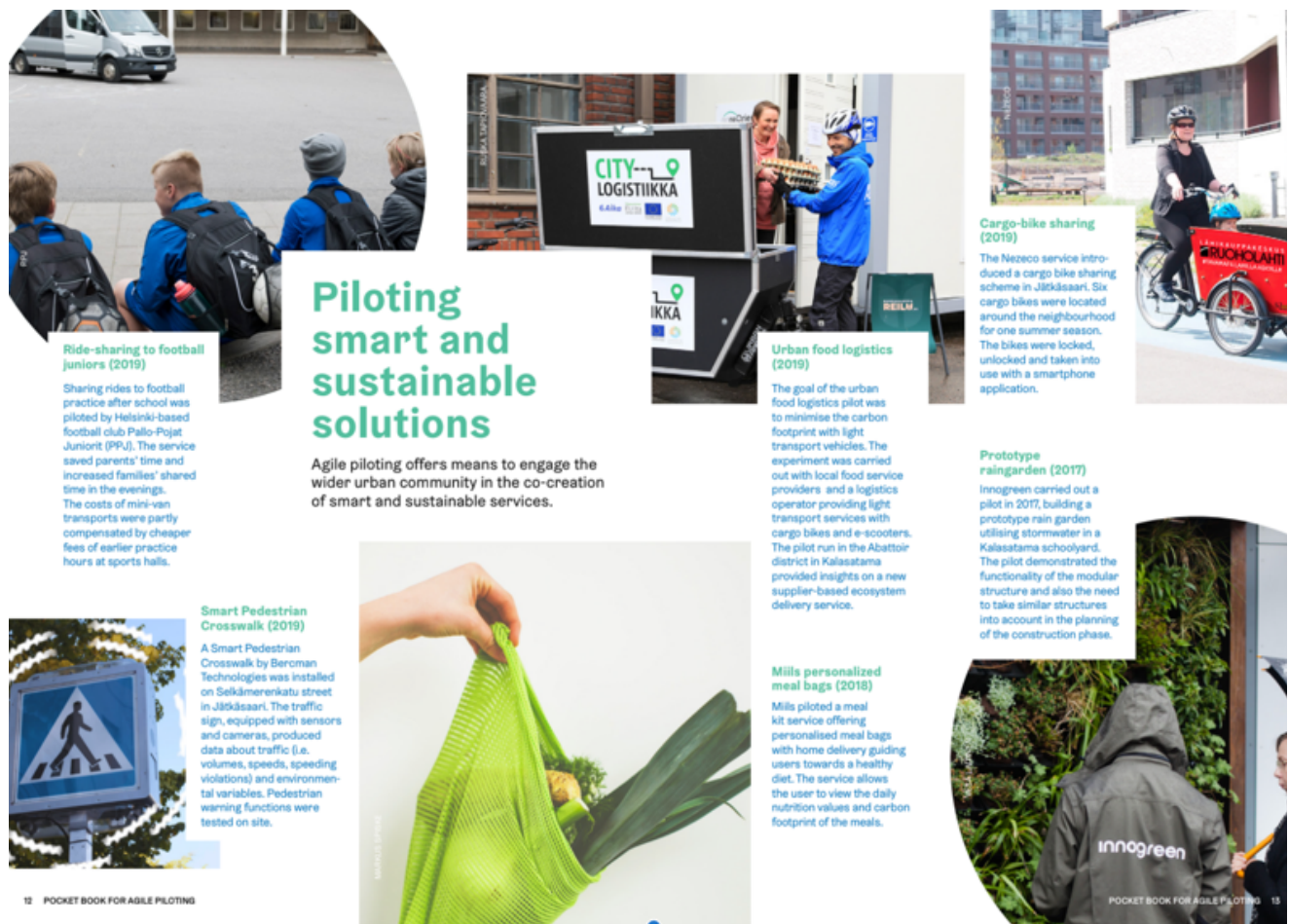


Fig.1.6

(Source: fiksukalasatama.fi)

## 8.16 Helsinki: The citizens role

Forum Virium Helsinki, the institute that operates these agile programs within Helsinki, stresses agility by experimentation. Thus, experimentation and trial by error remain at the heart of Helsinki's participatory processes aimed at promoting and creating smarter citizens. Testing and trying new ideas centered around technological improvement or development of specific processes for solving local or regional issues requires residents and organizations to have a safe space for experimentation. It is through these beliefs that Helsinki operates its Agile Piloting Labs. The stakeholders involved within these projects consist of residents, Helsinki's government, corporate partners, local startups, and other public-private organizations. These stakeholders remain essential towards Helsinki's strategies to not only foster participation and learning but to also ensure that the Agile Piloting Labs run as smoothly as possible. Stakeholders become engaged early in the process to ensure adequate team building and knowledge of the selected outcome or goal. Like Amsterdam's strategy, larger stakeholders

within these labs exist as providers of knowledge and resources or capital towards residents or smaller startup companies. They exist to allow for co-creation between themselves and residents but do so in a way that still places the citizen first. The stakeholder's role within this project exists as a means for creating an innovative canvas where ideas are produced, shared, and brought to life. Therefore, participation and respectful communication remain key amongst all levels. Agile Piloting programs link stakeholders and network individuals together in a way that ensures future technologies and projects within Helsinki are now realized and enacted upon. Agile Piloting promotes this scaling up of potential challenges and experimentation amongst its stakeholders, which creates visibility regarding the ways to collaborate and innovate better in the future. These agile programs not only foster co-creative and collaborative environments but do so while also focusing on equity and the individual growth of both citizens and companies involved. The citizens ability to participate within these spaces is a necessary element for the future of collaborative social and political spaces, and all stakeholders involved play a key role in accepting their influence in the matter.

#### 8.17 Collaborative governance through agile piloting

Citizens are involved in Helsinki's Agile Piloting Labs typically through a variety of steps outlined by Forum Virium Helsinki. Both the citizens and participating organizations start with mapping and envisioning ideas, goals or beliefs centering the projects. Following this process, stakeholders hold open meetings or spaces for a myriad of ideas to be heard and discussed, after which a choice is then selected. Finally, the implementation, experimentation and learning aspects of Agile Piloting come into play. Stages of Agile Piloting last months or even years depending on the scale of the project and the involved stakeholders. Throughout all these processes, citizens play a role in the realization of a project, guiding it towards the end goal. These processes position the citizen as a co-creator within agile spaces or labs and allow for questions to be asked and answered as well as ideas to be formed or changed throughout. These spaces position the resident or citizen as a user within this co-creative urban laboratory of constant change and imagination, looking towards smaller creations aimed at solving localized problems. Throughout this experimentation phase, the citizen learns not only how to deliberately choose best practices, but also to engage and make decisions in a theoretical way, questioning and considering multiple perspectives.

Co-creating value remains a vital aspect of Helsinki's agile strategies, extending public-private relations and discourse beyond simply just engaging, but furthermore emphasizing value within such projects. The values of all involved parties within Helsinki's co-creative processes remain an integral element towards successful engagement and participation. This aspect of going past the norm and extending thought towards individual beliefs and goals provides the basis for this form of participatory work. It is one thing to engage stakeholders



from the neighborhoods, municipalities, public and private organizations, but if a shared vision is not realized together, then the translation is lost somewhere within the project process. Agile Piloting accentuates engagement of stakeholders early in the process and looks to involve its citizens to build those needed and lasting relationships that remain fundamental for successful projects or policies.

Citizen involvement within Helsinki’s piloting labs provides value towards a particular project. More specifically, citizens exist as co-creators for newer forms of technology or processes that may require further guidance and engagement from other disciplines. As communication remains key for success of these labs, the citizen is positioned as both one that gives and receives feedback towards a project they become involved in. This places them in a unique perspective where they are both learning and conducting or teaching at the same time. Thus, evaluation and learning of projects and policies workshopped within one of these labs allows the citizen to gain enhanced knowledge regarding their own creation, or another they may be interested in. Citizens become involved and part of innovation districts such as the Smart Kalasatama and contribute to this network of thought, values, and co-creation. Involving citizens within these Agile Piloting spaces contributes to a new normal of co-creative, open experimentation processes that place the citizen as an architect of smart democracy. Gathering their insights, beliefs and values remains crucial to Helsinki’s strategy and allows for newer forms of social, political, and infrastructural growth.



Fig.1.7 (Source: fiksu.kalasatama.fi)

## 8.18 The future of Helsinki

Participation from residents proves necessary in fostering democratic decision making and helping to realize the socio-political transformations within Helsinki. Residents have a tremendous impact as co-creators within these agile labs, learning from and sharing knowledge with other stakeholders involved. Helsinki's residents have contributed to several successfully implemented and piloted projects that have positively impacted the city's residents through a variety of service categories.

Within these piloting labs, which have become situated not just in Helsinki but throughout Finland, piloted services serve as a means for testing before implementation, which therefore gives the citizen the first use. Agile Piloting not only has the power to facilitate better decision making and services amongst Helsinki's residents, but it also creates a smart space where citizens learn and grow along the way. Through open forums, residents contribute what they know through discussion or hands on work, but also sit back and learn if necessary. This open-minded strategy set in stone throughout all Agile Piloting Labs showcases the flexibility of such a project. It encourages and promotes all social groups and ages to participate and share ideas amongst each other and with other involved organizations. Startups, corporations, and citizens working together present the crux for the future of participation, decision making and service sharing.

Inclusion of residents helps to speed up development and freshen up the decision-making processes. Often, as Helsinki's residents see local issues with a different lens as compared to a corporation or government, involving them within open workshop spaces becomes incredibly beneficial for extracting value from a particular project, or injecting a project with more value. Residents exist and impact these projects through participation, learning and a unique perspective which cannot be understood by other stakeholders. Enhancing social cohesion remains a key step in helping to create smarter services within smart cities, and Helsinki's Agile Piloting Labs present a compelling case towards the future. Citizens become willing to participate within Agile Piloting Labs because they know that not only does it affect them, but that their voices and ideas will be heard and used properly. While Barcelona and Amsterdam present digitalized ways of fostering a participatory democracy and creating spaces for provision of social capital, Helsinki focuses on a more physical and innovative lab space. In doing so, residents act more so as planners and co-creators of decisions, before they are implemented within society, which promotes and builds upon a learning environment where all involved benefit.

## 8.19 Case Study: Last Mile Project

The Agile Piloting projects known as the Last Mile project, within the Jätkäsaari neighborhood of Helsinki showcases this well. Eight separate agile labs, in collaboration with

various stakeholders aimed to find collaborative mobility solutions for Helsinki's residents as well as tourists. After data collection, open workshops were held which resulted in collaboration upon different topics such as smart mobility, shared vehicles, and traffic safety. Residents were not only encouraged to participate throughout the process but were motivated to do so. Results from the projects of programs such as ride sharing for youth football players, and establishment of smart pedestrian crosswalks in the Jätkäsaari neighborhood, showcase the principles of co-creation.

#### 8.20 Case study: Kalasatama Innovators Club

Smart Kalasatama is one of Helsinki's smart district developments which consists of spaces and labs for innovation and creation. The two main innovation districts within Helsinki, Kalasatama and Jätkäsaari, provide both housing opportunities and jobs for residents looking to live within that innovation space. Smart Kalasatama remains a major part of Helsinki's path towards smart city development, and fashions itself as a kind of living lab. Therefore, the Agile Piloting program was created within this space to further smart city research and design. The innovators club remains as a model for co-operation and development within the Kalasatama neighborhood of Helsinki. Meeting a handful of times every year, information sharing about current projects and policies as well as future projects and policies helps actors to learn and grow within this network. Providing this urban lab for testing of social or environmental services allows residents to live and work within a hotbed of innovation and creativity daily. Living within this district has created a close-knit community through carpooling, shared parking, and use of smart technologies in which residents continually are creating and developing. This environment fosters not just participatory governance, but also makes the resident feel comfortable and at ease to contribute.

#### 8.21 Survey: Forum Virium Helsinki

In a survey sent to and completed by a member of Forum Virium Helsinki regarding their understanding of Helsinki's Agile Piloting Labs, they were able to answer some questions I had regarding the overall project. The responder mentioned a wide variety of projects that she had worked on such as a focus on circular economies, green urban developments, and sustainable living. Further mentioning that the pilots have engaged the citizens or residents at a more practical level to test the piloted solutions, ultimately focusing on gathering feedback from residents. The respondent mentioned that time commitments often remain the biggest challenge in creating the possibility to influence, therefore finding active residents who have free time becomes a challenge for a particular project. Communication and purpose remain at the heart of any piloted project to give a clear connection to any resident willing to participate.

They mention that residents from all backgrounds and skill levels are welcome and encouraged to participate within projects, and the institute (Forum Virium) does a good job in ensuring accessible facilities and technologies are available. In a question regarding the future of Helsinki's vision, the respondent sees Helsinki as being the most functional smart city in the world, with Forum Virium's visions to add to that mission through the multitude of piloted projects. Finally, the respondent noted the importance and impact of the ability to test new technologies and services in a real life setting with residents and companies. This has engaged multiple stakeholders and allowed for testing and instant feedback, which has been valuable for both companies and city departments or sectoral levels. All of this has engaged citizens within Helsinki in a way that pushes towards Helsinki's future visions of becoming the most functional smart city in the world.

I would like to sincerely thank my respondent and other members from Forum Virium Helsinki for emailing with me, sending important documents regarding the Agile Piloting Labs, and taking time out of their day to complete my survey. I respect their wish to remain anonymous.

## 9.0 Findings

### 9.1 Overview: Amsterdam

Amsterdam Smart City exists as an umbrella organization under the economic board of the city and continues to work together with various businesses and startups in promoting and re-building the vast networks encompassing the city. Unlike Barcelona's inclusive, social driven strategy, Amsterdam places more of an emphasis on innovation and business-driven tactics to solve Amsterdam's most pressing issues. This approach can lead to knowledge-driven forms of friendly competition which places startups and local organizations with higher level municipalities, organizations, or universities throughout the Netherlands.

### 9.2 Amsterdam smart city

Amsterdam Smart City exists as an open innovation platform where users are allowed to share ideas and collaborate with various organizations and knowledge institutions about different topics. The platform focuses on six main topics for users to engage in, those are the circular city, energy, mobility, citizens and living, digital city and the smart city academy. Events, opportunities, and projects are shared throughout the platform and users are also allowed to comment or support any of their interests. Projects such as the LEGO model involve citizens and present a call to action for imagining the future of Amsterdam. Another such project, the

responsible sensing lab, provided users with the opportunities to engage in smart city research and understand how Amsterdam's technologies work. Amsterdam's efforts to place the citizen in direct contact with other organizations shows heavily throughout the platform. Furthermore, the ability and effort placed in connecting social values with developed smart services continues to push forward the boundaries of the city's smart technology and infrastructure. Amongst the six topic channels, knowledge institutions, municipalities, and public or private organizations share what projects they are working on or looking to work on, adding to the

In this sense, Amsterdam Smart City is a platform where economic innovation and a focus on startups becomes a focal point for fostering innovation and collaboration amongst involved stakeholders. Amsterdam's website/platform is less immense and complex in comparison to Barcelona's Decidim but exists as a connector for citizens to unite ideas and challenges within and around Amsterdam, with the help of other organizations. The dense network of information sharing within Amsterdam presents residents with an abundance of opportunities to work with organizations and knowledge institutions to lend their ideas, but also learn of other proposals. Through Amsterdam's smart city platform, data networks such as ([data.amsterdam.nl](http://data.amsterdam.nl)) provide residents with access to a wide array of services to be seen through a map of the city. Within this, residents can access and examine the locations of trash bins, soil quality, cultural sites, parking zones and more. Separate from the mentioned cases, additional projects such as the installation of a smart grid in Amsterdam's Nieuw West district showcase the platforms potential in providing environmentally friendly solutions within a smart and collaborative data-based system which champions learning by doing, networking and workshops. Thus, Amsterdam does an excellent job in balancing residents' abilities and individual goals with that of the collaborating organizations, information networks and knowledge centers in and around the city.

### 9.3 The citizens' role within Amsterdam

Amsterdam's smart city platform works with the city's smart technologies, and its residents to further place an emphasis on public private collaboration regarding development of social and infrastructural networks. Amsterdam's Smart City website stresses the importance of diversity and sharing of ideas, goals, and community-led visions that can be achieved together between multiple levels. The shared responsibility to envision a better Amsterdam allows citizens to step into decision-making processes and actively work to avoid and manage city data and information with the help of startups, and both private and public companies.

Amsterdam's collaborative structure shifts towards an economic based, startup focus for participation which allows local companies to work with residents and solve ideas together. This helps involve citizens equitably by allowing them a say in various types of projects within Amsterdam. The city's work with public and private companies sees funding come from

different sources to be able to provide options for achievement of participatory goals. In doing so, as Amsterdam's focus regarding collaborative governance differs slightly to that of Barcelona and Helsinki, the focus remains on ultimate participation and collaboration between the city, citizens and involved organizations to promote development.

The smart city platform allows and helps citizens to re-define their roles by providing them with an abundance of events, resources, and networking opportunities to become involved within the city's smart programs that cover a wide range of topics. In shaping a role for every citizen, the platform does well to provide and consider all the beliefs and values residents may hold, as well as contextual factors that may influence their abilities to participate.

#### 9.4 Conclusions

The future of Amsterdam sees the smart city platform as a driver for innovation, collaboration and sharing of ideas. Like the LEGO model workshop, residents share values and empower each other through collaborative spaces. Inspiring the next generation through projects such as the smart kids' lab, Amsterdam's collaborative strategies promote economic innovation, along with technology as a collaborative tool for creation and innovation, which can be used by any individuals who remain interested. In turn, this fundamental placement of the citizen within the Amsterdam smart city network sees them as key contributors within this social-economic driven smart development. In connecting residents and startup organizations with higher education and other national organizations, the city of Amsterdam creates a competitive, economically driven, and collaborative space which engages and uses the citizens knowledge and passion to fill in the gaps needed to solve the city's most pressing social, political, and environmental problems.

#### 9.5 Overview: Barcelona

Barcelona strictly focuses on social value as a number one priority for community efforts aimed at future growth of the existing smart city infrastructures. Decidim presents a case of taking smart technology but going beyond that to further include the social aspects of what can make collaborative governance successful. Decidim's progress since its inception has transformed it as well as the city of Barcelona into one of the leading global smart city networks, with a further focus on social inclusion and open participatory spaces which emphasize the citizen as a key creator.

## 9.6 Decidim

Barcelona's Decidim is a digital participatory platform in which residents share ideas, propose projects, and respond to each other's proposals. In doing so, Decidim's focus is centered around social cohesion and sharing, which differs slightly in approach to Amsterdam and Helsinki. Within Barcelona, citizens are seen as makers and shapers of infrastructural projects or policies, and they all have an equal right to do so. Projects such as the Nuevo Plan Para la Justicia de Género and the Zona de Bajas Emisiones Plan showcase a citizen-led participatory governance which places the citizen directly within the planning process. Barcelona's Nuevo Plan and Zona de Emisiones represent two separate plans where the citizens exist as co-creators within a wider governance strategy. While the Nuevo plan focused on gender equality through implementation of equitable services within the city, the Zona de emisiones plan focused on dissemination of information regarding emissions zoning within the city. Both cases represented active citizen participation throughout, with the citizen placed as a key actor to help guide the process towards project and policy delivery. Throughout Decidim's citizen-led initiatives and cases studied, users of Decidim are therefore allowed to provide valuable input and direction for the proposed projects or city policies. Another such case, the Presupuestos Participativos, a participatory budgeting project, showcases Barcelona's ambitious efforts to allow the citizens to become an integral part of city planning. All cases represent Barcelona's freedom and willingness granted towards its citizens' thoughts and ideas, and Decidim exists as a platform which allows creativity and social inclusion of all groups and citizen-led organizations.

Decidim places information at the heart of its platform and throughout all the cases, citizens were able to learn, share and develop their own plans throughout. Resources for users of Decidim exist everywhere throughout the website and help the user to learn about a particular plan, organization, or meeting regarding topics they are interested in. This creates empowerment and guidance for the user but does so in a way that still allows them to lead. Decidim fosters a wonderfully diverse network of users interested in a variety of topics and plans for improvement of Barcelona's neighborhoods and governance structures. The open structure of the platform and how each case or proposed plan develops, shows how invested Barcelona is in creating an inclusive socio-political network.

## 9.7 The citizen's role within Decidim and the city of Barcelona

Decidim's inclusion of Barcelona's growing smart city network presents vast opportunities for transformation of the city's governance strategies. A collaborative platform has seen Barcelona convert into a structure which uses government information and data networks for the benefit of creating social cohesion. Responsibilities are placed directly in the



hands of citizens, as they work with companies and organizations to propose and develop their own projects through meetings and workshops.

Citizens are utilized because of Decidim's platform, which fosters a community of decision making deeper than other smart cities. Barcelona's residents, collaborating within projects such as the participatory budgeting, have flocked to contribute within Decidim's plans as they see and understand that their voices are being recruited and listened to by the platform. By placing the citizen as a key contributor towards social cohesion, ideas can be shared across the platform to improve and lend a hand towards proposed issues that affect Barcelona's everyday resident.

## 9.8 Conclusions

The open and free nature of Decidim's platform allows for any idea or proposal to be critiqued. This creates both a sense of accountability, but also a system where people are not scared to speak up if they do not approve of something. Decidim helps to involve its citizens within proactive democratic efforts that encase them within the fabric of Barcelona's wider smart city social and political networks. The social nature of Barcelona and Decidim's strategy allows for complete innovation in governance movements, such as the city's efforts to create a collaborative budgeting system where citizens are engaged by politicians and bureaucrats to reinvigorate the traditionally mundane and technical city processes. Decidim offsets the challenges of collaboration by providing the resources for those who may not be technologically savvy and allows for anybody to participate within meetings and workshops regardless of their involvement within the platform.

## 9.9 Overview: Helsinki

Helsinki's involvement of its citizens within these Agile Piloting Labs allows for open-minded partnership, while also improving and strengthening community relationships. Creating smart governance does not always have to follow the trend of online platforms such as Amsterdam and Barcelona, and Helsinki showcases a viable example of that through its co-creative labs. Helsinki's work shows how creative and citizen-led democratic processes can have drastic effects on a city, and thus foster communities of value and progress.

## 9.10 Helsinki's Agile Piloting Labs

Helsinki's Agile Piloting Labs foster co-creative innovation and social learning within Helsinki's various neighborhoods. The smart Kalasatama district within the city represents a community of like-minded innovators who share a common goal and desire for innovation, co-



creation and sharing of newly designed tools and services. The district hosts a myriad of agile labs and different programs where residents either co-create or simply sit in on workshops that they are interested in. Helsinki's innovation labs exist within more co-creative spaces in comparison to Amsterdam and Barcelona and see the citizen as more of a builder of services and projects which can be workshopped throughout Helsinki's neighborhoods and innovation districts. Within the Kalasatama district in particular, residents propose, create, and share their ideas with each other, with the area existing as a testbed for those designs. Ride sharing for youth through the Last Mile Project remains just one small aspect of Agile Piloting's success within Helsinki.

Agile labs within Helsinki see the citizen or participant as providing important value and voice towards piloted projects. In this lens, the participant is not only gaining valuable knowledge but is also having priority regarding decision making surrounding newly implemented projects or policies. Innovation districts within Helsinki create this vast workshop of residents, companies and local citizen groups that brainstorm, share, and create their idealized visions for what they want the city to look like in the present and the future. Agile labs place the citizen as valid and listened to co-creators within a smart governance context, directly asking for their input and voice within tested and piloted projects. Testing the projects or services also allows for ensured perfection or compatibility before implementation. Helsinki's smart actions allow for citizens to become smart through services that allow them to work hands-on with other like-minded citizens, and with organizations and corporations who share similar interests and values.

Furthermore, survey responses as conducted by a member of Forum Virium Helsinki helped me obtain more insight into the nature and process of Helsinki's piloting labs. Responses stressed the importance of collaboration and testing between citizens and corporations, which in turn creates feedback that is essential in developing new technologies and products. Findings from the survey also stressed the challenge of collaboration regarding scheduling and time commitments during project phases amongst participants.

#### 9.11 The citizen's role within Helsinki: Citizen based workshops

Helsinki places creativity in the hands of its citizens through their innovative laboratory spaces and districts. Doing so allows information regarding Helsinki's strategies to be co-created and imagined together, with residents working together to develop new projects and policies to be tested. This shared responsibility sees a platform that fosters co-management of smart city ideals and works within the cities overarching strategies to create massive innovation districts within Helsinki's neighborhoods where people can live, learn, and grow together with their infrastructure and services.

These actions taken help to create smarter residents and services, as they are allowed and encouraged to be tested before implementation. Involving a wide range of service types surrounding the environment, economy, data and social services, there are a myriad of projects for discussion within the agile labs. Helsinki's residents are encouraged to participate through these labs as a firsthand tester of a designed product and are given free range to contribute within such processes. The agile piloting process helps to make smarter citizens by connecting stakeholders from different backgrounds and bridging various contextual factors together to create an appealing place for creation and testing of smart services.

Helsinki's collaborative strategies promote a shared space where residents, companies and the city come together to create and develop smart services. Participatory environments were created by involving the resident early in the process, as well as providing them with all resources needed to succeed in learning and understanding of the agile laboratory spaces. Challenges within the process, as confirmed by the survey, mentioned Helsinki's struggle for time with involving certain residents in the process. However, the agile labs presented a strategy for Helsinki to propose, create, test, and implement many efficient and smart solutions that positively impacted the residents.

## 9.12 Conclusions

Agile piloting Labs aim to move beyond ICT and empower the citizens to participate within workshops which promote learning and allow citizens to actively work on and build product designs. As the agile labs cover a variety of topics, learning and hands on experience remain at the heart of the initiative, thus creating authentic experiences for Helsinki's residents who choose to participate. The structure of the platform allows for a focus on early involvement and development of products and strategies within Helsinki to perfect the solution before it is fully released to the public. While Helsinki's approach differs slightly in comparison to Amsterdam and Barcelona regarding technology, it takes a much more hands-on approach which promotes and considers the values of its citizens and how they may be able to learn from proactively participating in workshops and agile communities

## 9.13 Final discussion of findings

Discoveries from the case studies and platforms indicate how the structure of open innovation collaborative platforms can fundamentally change the role and importance of the citizen within smart governance. While contextual factors remain a key influence throughout, the cases showed the potential of collaborative governance and how it can be achieved with the citizen in mind as a key creator and contributor. The research questions, methodology and selection of case studies contributed to the overall findings of the proposed research and helped to strengthen the theoretical arguments in connection with the platforms chosen.

Amsterdam Smart City, Barcelona's Decidim, and Helsinki's Agile Piloting Labs represent three different examples of collaborative governance, all of which have helped foster a citizen-led governance style within their respective smart city initiatives. In shifting towards collaborative governance modes, the cases remain loyal to a smart city model as outlined but continue to push for inclusion of citizens within various projects that allow them to share their knowledge and co-create within innovative policies and projects. In solving global complexities such as climate change, energy system fragmentation and mobility concerns, participatory governance may provide a means for reaching preferred, networked goals while also giving the choices to extend beyond traditional smart city approaches. However, we must be cognizant of the challenges that can occur when undertaking such a vast systemic and societal change. While it is not advocated for collaborative governance to become the way forward for any and every city or governance system, the platforms and connected theory present good practice examples for further research and understanding of successful collaborative systems.

## 10.0 Lessons learned

### 10.1 Amsterdam Smart City

Amsterdam continues to connect residents with local, regional, and country-wide organizations to develop services and programs that help solve social, political, and environmental problems together. This collaborative structure provides a vast networking opportunity for residents, while giving the organizations a helping hand in pushing forward their products. Amsterdam's business-driven tactics differ slightly in comparison to Barcelona's social and Helsinki's laboratory spaces but share a common lesson regarding the renewed role of the citizen within collaborative governance spaces. By including residents within smart city spaces, you create trust and respect amongst interested parties, and engage a wide range of participants within governance systems.

### 10.2 Barcelona's Decidim

Decidim presents lessons through social cohesion regarding smart city collaboration and its inclusion of citizens. In taking a more social approach in comparison to Helsinki, for example, Barcelona's focus remains on applying an open and innovative structure to traditionally top-down projects such as city budgeting. Allowing for residents to be at the heart of Barcelona's strategies not only informs them, but also empowers them and gives them confidence and trust in city government. Decidim's platform represents a style of collaborative governance which

places the citizen first, but still guides them through the process and allows them access to the necessary tools needed for them to succeed.

### 10.3 Helsinki agile piloting

Lessons learned from Helsinki's piloting labs showcase a smart city vision that emphasizes hands-on learning. Where most smart cities attempt to influence governance and social infrastructures through data and information networks, Helsinki actively works to provide a laboratory space for creation and testing of physical services. In doing so, Helsinki has allowed companies, citizens, and the local government to work together in finding tailor-made solutions that benefit the city. Creation of innovation districts provides a smart city lesson that showcases the benefits of collaborative districts and social networks within a city.

## 11.0 Conclusion

Collaborative governance presents opportunities to move towards citizen-led, co-governing initiatives. In this sense, the citizen is empowered to learn, hold, and share values and ideas within their community, and thus re-invigorate the role they have in solving local problems through collaboration. In dealing with complexities surrounding everyday city life such as noise, energy consumption, waste, water usage and transportation, the citizen within collaborative spaces exists as a creator and critic of existing smart services. Collaborative governance positions the citizen as an active player who has the capacity to influence social and political thought and policy. But the question of how a citizen or group of citizens' roles and influence within governance fundamentally change remains essential in understanding how collaborative systems operate. Also key to this topic is asking what factors may influence involvement within programs such as Decidim or an Agile Piloting lab. Understanding how citizens influence governance when involved in such processes presents key questions and challenges for the future of smart cities. Bridging the gap in defining smart cities, as well as what collaboration means will allow for further understanding of how newly emerging collaborative spaces fundamentally change the citizens role within governance, which may enable a move towards more integrative and sustainable solutions.

Moving forward, it is critical to look towards citizen participation as a means for developing modern technologies, policies, and social systems where all users benefit and interact in a way that fosters creativity and growth. In studying such cases where cities exhibit these qualities, it is necessary to examine the structural and theoretical challenges regarding how a particular organization or municipality implements residents within their existing vision.

The case studies of Amsterdam, Barcelona, and Helsinki represent examples of cities that have taken this premise to be a main driver for institutional transformation within its boundaries. In doing so, each city has helped to solve problems regarding energy usage, social equality, political knowledge, budgeting and more. Each city presents the citizen as a key creator and developer of change within the transformative boundaries of the proposed existing smart policies and projects. In allowing the citizen to have access to all available information and resources necessary for project and policy development or growth, the citizen is therefore positioned along with policymakers and planners. The platforms of Amsterdam Smart City, Barcelona's Decidim, and Helsinki's Agile Piloting Labs place the citizen as a key contributor to project and policy development in a way that stimulates innovative practices for the future, while also focusing on achieving present objectives. Each city, through its platforms, provides and fosters a community of learning, growth and co-creation that allows the citizen to propose their ideas and share their views on proposals. These spaces support the city's efforts towards sustainable co-governance which builds a community of trust and respect amongst all sectoral levels and age groups. In addressing the future of urban governance, it is important to discuss what socio-political spaces can look like when confronted with social, political, and environmental challenges. Each city that has been studied and used as an example within this thesis presents a compelling case for governance shifts towards citizen led co-creative processes. In doing so, addressing, and researching from a values-based perspective considers a multitude of interests surrounding involved stakeholders (Flyvbjerg, 2006 pg. 375). While each case study used and evaluated within this paper will not be relevant or applicable within a cross-policy lens for every city, lessons can be drawn which involve the importance of understanding how citizens' responsibilities shift under a collaborative lens, but furthermore, how collaborative is defined in the context of smart governance.

Collaborative cities can present spaces where ideas and shared visions are realized within a participatory context. In solving global complexities, the collaborative governance transition for major European cities like Amsterdam, Barcelona, and Helsinki can allow for all sectoral levels to respond to challenges in an inclusive way. Smart city design and implementation is realized through information, technological and data developments, but it must also look towards more theoretical and participatory-based thinking. Specifically, in engaging within smarter design, seeing the average citizen as an actor that can contribute towards structural change may remain key in solving local challenges beyond simply a data and information-based level. The studied cases regarding Amsterdam, Barcelona, and Helsinki showcase the citizen as a leader within this collaborative governance framework. With the city providing necessary assistance and resources, the citizen can take the lead in co-creating spaces of governance that foster immense growth, learning and development in and around the respective cities. In continuing to imagine and redesign governance landscapes to solve current problems, these cities become examples for not only involving citizens within co-governance,

but also understanding why defining such governance is important and what comes from enabling such processes. It is my hope that I have contributed to the growing research and theoretical development on collaborative governance and have also helped to shed light on projects within three European cities that are leading the way towards a participatory revolution.

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