Citizens in the digital metropolis: Towards a *meaningful* stance of Smart Citizenship?!

The interpretation of meanings of citizenship in Dutch smart cities

Author: Starke, R. (Robert)
Student number: S0197563

UNIVERSITEIT TWENTE.

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By Robert Starke

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Supervisors University of Twente:

Dr. M.R.R. (Ringo) Ossewaarde
Dr. M.M. (Minna) van Gerven-Haanpää

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University of Twente, the Netherlands

The image on the cover of this thesis is a modern interpretation of the movie 'Metropolis' (1927). The movie shows a future city in which the society is split in two: the working class is separated from the city planners.

Abstract

With this thesis, meanings given to citizenship in Dutch smart cities by stakeholders involved in policies on citizenship of Dutch local governments are studied. An interpretive case study is used to study the *meaning* of citizenship. Citizenship in this case is studied as a social constructions. Although interpretive qualitative research is inductive in its nature, this interpretive case study is a hybrid of inductive and deductive elements. The deductive element of this case study exists out of the three ideal types of citizenship in the smart city that are derived from current dominant conceptions of citizenship. The ideal types are big society citizenship, urban citizenship and smart citizenship. These ideal types are compared to the empirical part of the study. For the empirical part of the study, eleven conducted interviews and twenty policy documents were analysed. As an inductive result of the empirical part of the study, three meanings given to citizenship in Dutch smart cities are interpreted. The first meaning that is interpreted is citizenship *as (co-)producers*. The key value of this meaning of citizenship is empowerment. Within this meaning of citizenship, platforms empower citizens in order to be of societal value. In terms of boundary conditions, stakeholders attach value to transparency and accessibility of these platforms are of importance. In the second meaning of citizenship as *end usership*, the key value is behavioural change. Other value that characterize this meaning of citizenship are applications and digital infrastructure, through which citizens are approached as individuals. The third meaning interpreted in this study is citizenship as *being object of registration*. The two values interpreted in this form of citizenship are the creation of public acceptance and the gathering of data without noticing citizens. The ideal types are a sociological meter to study subject-related motives and patterns of meaning. In this case, the ideal types are compared to the three meanings of citizenship. The ideal type of big society citizenship has most in common with the meaning of citizenship as (co-)producers. The ideal type of urban citizenship has most in common with the meaning of citizenship as end usership. The ideal type of smart citizenship has to little extend similarities with the meaning of citizenship as end usership and the meaning of citizenship as (co-)producers. Governments and businesses give meaning to citizenship as end usership. For citizenship as (co-)producers counts that the governmental stakeholders and the ´civil society organizations and knowledge institutions´ give meaning to this form of citizenship. Finally, only the local government gives meaning to citizenship as being object of registration. Thus, smart cities integrate several perspectives on citizenship, with different key values in different operating practices. Above, when discussing citizenship in smart cities, it is of importance to understand that the different stakeholders have different views on citizenship and depending on the operating practice of smart cities specific perspectives on citizenship exist.

Keywords: smart city, citizenship, Dutch policy, smart citizenship, meanings, interpretive case study

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This report is conducted in the context of my internship and work at the ministry of the Interior and Kingdom Relations. Conducting this study was interesting, since it is at the cross of three interests of me; citizenship, digitalization and the public space. Not only have I learned a lot on the topic of citizenship in smart cities, I also have met a dozen interesting professionals and gain many new insights outside the scope of this study. I am content with the result and this study marks the end of my study period of the master Public Administration at the University of Twente.

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1. Introduction

1.1 Prelude

On the cover of this thesis about citizenship in Dutch smart cities, the film poster of the 1927 German science fiction film *Metropolis* is placed. *Metropolis* was one of the biggest productions of it time. The film is playing in a futuristic utopian city, with high buildings, floating metros and orderly streets. The choice for this cover lies not within the storyline of the movie, which reminds of a modern interpretation of the Romeo and Juliet love story. The relation between *Metropolis* and this thesis is the setting in which the movie takes places. Back in 1927, the thought of a manufactural society was undeniable present. An ordered society, where under the influence of technology, citizenship defines a strict separation of the working class and an upper class (IMDB, n.d.). In comparison with present-day smart phones, the predictive value of the film turned out to be high in aspects as the *picture phones*. Within this study, the influence of the increasing amount of technology in the public space (better known as *smart cities*) on citizenship is studied. Whereas the utopian city of *Metropolis* in 1927 was miles away, the emergence of *smart cities* in the Netherlands in 2017 could be the second predictive value of *Metropolis* which comes true in a way. As the title of this thesis suggests, '*Citizens in the digital metropolis: Towards a meaningful stance of Smart Citizenship*?!' this thesis studies meanings given to citizenship in these currently emerging Dutch smart cities.

Under the ´catch-all´ label of *smart cities*, all over the world, governments place a wide variety of information and communication technologies (ICT) in public spaces (Zoonen, 2016). The promises of smart cities are endless: cities should be able to solve old and new problems, and improve the quality (of life) in the city. Numerous *smart city* practices, projects, and technologies are being set in motion, relating to a wide range of services and systems, from electricity grids to public transport and traffic management. Among scholars, the way ICT in smart cities intervene in the governing of our daily life is a lasting question (Klauser, Paasche & Söderstrom, 2014). The scientific discourse on smart cities states that the *smart city* makes *smart citizens*, and thus affects the relation between citizens and the government. However, to which extend this happens is unclear. Above, there are different readings on smart cities "*in terms of normative stance and assumed benefits"* (Klauser, et al., 2014). All in all, the way smart cities affect the relation between citizens and the government and what normative stances are that intervene in the governing of our daily life are is, is the prelude of this study.

1.2 Policy context of Dutch smart cities

As elsewhere in Europe, a variety of Dutch governmental organizations are involved in smart cities. Naturally, there are Dutch local governmental organizations who make policies to develop their city into a smart city. The city of Amsterdam is among the first Dutch cities who developed such policies, which started in 2010 and initially focused on sustainable economic growth. Meanwhile, the focus has broadened to six different areas varying from ´Citizens & Living' to 'Mobility'. In the development of policies and practices, the city cooperates with partners via a platform called '*Amsterdam Smart City'* in which governmental institutions, civil society organizations, research institutions and businesses are involved to ensure e.g. citizens interests (Amsterdam Smart City, n.d.). Among the other local governments who develop policies on smart cities are Utrecht, Eindhoven, Groningen, Rotterdam, Den Haag, Zwolle, Nijmegen and Enschede. The Dutch national government is involved via the Smart City strategy NL, which is a common investment agenda for smart cities of the national government, local governments, companies and knowledge institutions (RVO, 2017). Among the involved national governmental institutions are the ministry of the Economic Affairs and the ministry of Infrastructure and the Environment.

The development of smart cities by local governments is not a development in itself. Dutch smart cities operate in a governmental context that is subject of change; increasingly policy is decentralized from the central government to local governments. This development relates to the debate on the position of city in policies in the Western world. Scholars give two contrasting perspectives for the meaning of modern cities in the 21st century. On the one hand, modern cities are seen as weak places suffering from an accumulation of problems such as pollution, poverty and instability – sometimes even defined as a 'wicked problem' (Sennett, 2006, Jorna, 2015). On the other hand, cities are considered as places that catalyse innovation, ideas and creativity to solve the accumulation of problems they suffer from (Castree, Rogers & Kitchin, 2013; Saunders, 2010). All in all, worldwide, policy makers see cities as a place with potential. Apart from this similarities, Dutch cities differ from other mega-cities in their structure. The Netherlands are known for its *polycentric network* of relatively small cities. This polycentric structure gives Dutch cities the advantage of the 'borrowed size', the proximity of cities gives the opportunity to borrow functions of other cities (Van Oort et al., 2015). By the opportunity of the borrowed size, urban regions should profit from other urban regions' strength to compensate their own weaknesses (Raad voor de Leefomgeving en Infrastructuur, 2014). Thus, the development of Dutch smart cities has to be seen in light of a worldwide trend in which (the network of) Dutch local governments are of increasing importance in policies.

Together with the increasing importance of Dutch local governments in policies has come a change in the relationship between citizens and the Dutch government. The current dominant conception on citizenship in the Netherlands is active citizenship, in which citizens are expected to be actively involved in policies, so-called active citizenship (Verhoeven & Tonkens, 2012). Already is studied that in at least one case Dutch smart cities relate directly to active citizenship (Raad voor de Leefomgeving en Infrastructuur, 2014). Via the use of smart city technologies, a Dutch local government makes room for societal initiative in which citizens have more responsibility and possibilities to influence their environment. Nevertheless, an in depth and broad study on the meaning of citizenship in smart cities has not been executed.

The section above describes the relevance of smart cities in the Dutch policy context. It discusses that Dutch smart cities can be seen in a context of increased importance of local governmental policies. Above, it described that policy on smart cities and smart city applications holds relation to the current dominant conception on citizenship, active citizenship. However, an in depth study on the meaning given to citizenship in Dutch smart cities is missing. Therefore, it is important to study the meanings given to citizenship in Dutch smart cities. This study will do so. The goal of this study is to study Dutch smart cities and citizenship in a more holistic perspective, by understanding the meanings given to citizenship in Dutch smart city by involved policy makers. With this study, it is expected that new insights are gained on the meanings given to citizenship in Dutch smart cities. These insights are expected to be a set of practices and cultures that structure citizenship in the smart city, a mechanism that leads to inclusion or exclusion of citizens. As will turn out, the research design of this study is an interpretive case study combining deductive and inductive elements. Out of the theoretical framework, three ideal types of citizenship in the smart city are deducted, based upon current applicable conceptions of citizenship. The ideal type that is developed for this specific study is named ‘smart citizenship’, since current dominant conceptions of citizenship are an inadequate measure to study citizenship in the smart city, due to their inability to incorporate the effects of digitalization in citizenship completely these. The inductive approach exists out of the analysis of to interpret these meanings.

1.3 Reading guide

In chapter two, the **conceptual framework** and the **research questions** are presented. The conceptual framework discusses the concept *smart city* in relation to *citizenship,* and sociological concepts of citizenships in a smart city. Upon this conceptual framework, the second chapter finishes with the problem statement and research questions for this study. In chapter three, the **methodology** for of this study is described. As will turn out, the methodological approach in this specific study is an interpretive case study with inductive and deductive elements. The main goal of

this thesis is to interpret the meanings given to smart cities. To study meanings, the interpretive method suits best. In chapter four, the **results** of the analysed interviews and policy documents are presented. For this study, eleven interviews with involved stakeholders in the development of Dutch smart cities and twenty policy documents are analysed. In chapter five, the **conclusions** of this study are presented. Above, in chapter five the **discussion**, **limitations** of this study and some **suggestions for further research** are discussed.

2. Conceptual framework and research questions

In this chapter, both the conceptual framework and the research questions for this study are discussed. These two aspects are combined due to the characteristic of the two central concepts in this study; *smart city* and *citizenship*. As will turn out, both concepts are part of the main research question and both concepts are considered to be 'catch-all' terms. In order to come to an understanding of the specific aspects of these concepts and how these concepts relate to each other, these two concepts are discussed into depth. Afterwards, the research agenda is presented.

Section 2.1 discusses the concept of smart city in relation to citizenship. Section 2.2 and 2.3 discuss the tradition of the concept of citizenship and the current dominant conception of citizenship in the Netherlands, active citizenship. Section 2.4 discusses two sociological concepts of citizenship related to smart cities. In section 2.5 three ideal types of the citizenship concept in a smart city are constructed, which are the basis for the empirical fieldwork. Finally, in section 2.6 the problem statement and the research questions of this study are presented.

2.1 Smart cities as part of modern cities

Digitalization, in which *smart cities* finds its origin, is inseparable with the development of current modern cities; it influences the *meaning*, form and function of cities. One of the promising developments for modern cities related to digitalization is the *smart city*. The promise of the smart city is that it can help cities and citizens to make better use of their resources. Depending on the city's needs and habits, ICT should be complementary to the human and organizational capital in a city. Smart cities focus on improving the urban living practices and conditions and have something to do with "*digitally mediated sensing practices".* However, technology in itself is not ´smart´. A smart city can only function 'smart' when business, the local administration, visitors and citizens use these applications and technology in ´smart´ ways (Berntzen & Johannessen, 2016). Smart cities emerge both in specific and broad applications (Townsend, 2013). A widely supported definition for smart cities does not exist, nor is there a univocal label for smart cities (Hollands, 2008; Neirotti, De Marco, Cagliano, Mangano & Scorrano, 2014). However, six characteristics can be distinguished which define European smart city policies, in which all characteristic have different approaches and goals (Giffinger, Fertner, Kramar & Kalasek, 2007; Caragliu, Del Bo & Nijkamp, 2011; Vanolo, 2014):

1. Smart economy: a characteristic that relates to innovation, entrepreneurialism, and international trade.
2. Smart mobility: a characteristic that relates to the accessibility of cities and regions, the availability of digital infrastructure and the sustainable aspect of public and private transport.

3. Smart governance: a characteristic which has to do with public participation in decision making, openness of government, and the accessibility of public information and services.
4. Smart environment: a characteristic that has to do with the reduction of pollution and the management of resources.
5. Smart living: a characteristic referring to projects the improvement of quality of life, such as housing, social cohesion, and health.
6. Smart people: a characteristic that has to do with the citizens and their qualification of human and social capital.

Smart cities are a global trend (Gabrys, 2003; 2007; 2014; Hollands, 2008). Initiatives labelled as smart cities first popped up in Asia. Early publications describe the emergence of a smart city dating back to the late '90 (Mahizhnan, 1999). Even in Nigeria plans emerge to transform a part of the capital into a smart city (Ola-David & Oyelaran-Oyeyinka, 2014). A variety of organizations are involved in developing smart cities. Out of the academic world, the development of smart cities has special attention considering the amount of publications over the last years. Among many others, the six characteristics of citizenship are a result of these academic publications. Businesses are also involved in the development of smart cities. Technology firms like IBM, Cisco and Huawei have multiple roles; not only do they provide ICT, they also provide position papers and narratives that go into the opportunities of smart cities (IBM, 2009). Commonly used frameworks for cooperation in innovation and policy development of the smart cities are the triple helix model and the quadruple helix model. Depending on the model, the main stakeholders in the framework are government, knowledge institutions, business, and civil society organizations (Leyesdorff & Deakin, 2011; Lombardi, Giordano, Farouh & Yousef, 2012). Although within these models the importance of civic involvement in the governance of the city is endorsed, the models do not make clear how the involvement of citizens in policies for smart city should be shaped.

2.1.1 The neglected role of citizenship in studies on smart cities

In the paragraph above, six characteristics of smart cities are described. The description of each of these characteristics suggests that smart cities affect more or less citizenship, in the sense that it is a socio-legal relation between citizens and governments. For example when it comes to *smart governance*, it describes that smart cities affect public decision making, which directly relate to the democratic citizenship of citizens. However, within the current literature on smart cities, citizenship does not seem to be a central element. The need of studying citizenship in light of smart cities is, among others, described by prof. dr. Valerie Frissen (2015)[1]. She states in a column that, up till now,

[1] Prof. Valerie Frissen holds the chair of professor ICT & Social Change at the Erasmus University in Rotterdam and publishes irregular columns in the Dutch newspaper 'Financieel Dagblad'.

the citizen in the smart city is not a player of *meaning* in the promising story of the smart city. Earlier, Gary Graham (2014) published a column on smart cities in which he put up the need to "s*tart working with everyday citizens to find the right questions – and then work with them towards developing solutions to the problems they raise".*[2] Also among scholars, the lack of meaning to citizenship in smart cities is brought to light. For example, Gabrys (2014) suggests that *"yet the intersection of smart and sustainable urbanisms is an area of study that has yet to be examined in detail, particularly in relation to what modalities of urban environmental citizenship are emphasized or even eliminated in the smart city".* In a recent study on Dutch smart cities among Dutch governments, Nijman (2014) concludes that 'including people' is one of the main goals given to Dutch smart cities. Nevertheless, for Nijman it was unclear what the role of 'the people' is as an actor in the perspective of government has been.

Out of the above, it is clear that scholars and policy makers see relevance for citizenship in smart city, and implicit argue that citizenship is affected by smart cities. Within all characteristics of smart cities, citizenship is more or less affect by smart city technologies or applications. Above, citizens are generally named as a player whom should be included or be active in the development of smart cities, but it is unclear how this is in the current Dutch smart cities. Above, in light of the upcoming smart cities in the Netherlands, the meaning that is given to citizenship in smart cities is insufficiently studied. Therefore, our first step is to reconsider reflections on the concept of citizenship.

2.2 Citizenship

Conceptions on citizenship have a tradition throughout history, dating back to the Athenian times of which the *Metropolis* was the mother state. Throughout the decennia's, the conceptual understanding of citizenship has broadened. However, conceptions on citizenship are fluid and in motion which makes it difficult to define a modern concept of citizenship. Formerly accepted definitions are currently being discussed and rethought (Van Houdt and Schinkel, 2009; Stevenson, 2005; Purcell, 2003). Thus, citizenship can best be seen as a developing institution (Leydet, 2003; Marshall & Bottomore, 1992). Citizenship became a topic of interest among policymakers in the early 1990s in the Netherlands and in other Western societies (WRR, 1992). Out of the early conceptions still stands that citizenship is a socio-legal status, citizens are members of a community who enjoy rights and assumes duties. Above these rights and duties, modern conceptions of citizenship are *"concerned with a diverse set of practices and cultures that structure complex patterns of inclusion and exclusion*" (Stevenson, 2005). Scholars divide modern conceptions of citizenship in three elements, namely a civil, social and political element (Marshall & Bottomore, 1992). Modern

[2] Column is published in The Guardian.

paradigms of citizenship are based on the assumption that these components would neatly map onto one another. For example, Dutch citizens enjoy civil rights such as freedom of speech, social rights such as the right and political rights such as the right to vote.

Among the developments which influence conceptions of citizenship, three developments are of importance for this study to highlight. The first development is the increasing focus on the moral side of citizenship within social policy (Gunsteren, 2009; Houdt & Schinkel, 2009). For example, Dutch citizens are morally expected to be involved in decision making processes. This aspect will be discussed into depth in the next section (section 2.3). Secondly, the strengthening of 'national citizenship' is upcoming in all kinds of Dutch policies. An example is the 'Participatieverklaring voor nieuwkomers', in which migrants are asked to endorse the Dutch key values (Rijksoverheid, 2017). A third development for this study is the impact of technological change upon citizenship (Stevenson, 1999). As Dutch citizens live and grow up in a culture of technology, the role and impact of science and technology on our daily life is wide (Van Est, 2016; Bijker, 2001). Of course, technology is openly linked to societal challenges and aspects like mobility and communications. But above, technology impacts the debate on ethical dilemmas and the way individual identities are formed. For example, the debate on live and death is heavenly influenced by technological inventions.

The section above discusses the broadening of the concept of citizenship since the Athenian times. Above, it describes three developments which influence conceptions of citizenship. However, this thesis is about the meaning given to citizenship in Dutch smart cities, which is a contemporary phenomenon. Thus, in the next section, the current dominant conception of citizenship in the Netherland will be discussed.

2.3 Active citizenship in the Netherlands

The leading modern conception of citizenship in the Netherlands is *active citizenship*. As explained by Ossewaarde (2007), both the attitude of the government and the attitude of citizens is subject of change within public policy. Scholars have widely observed that western countries made a shift from *simple* industrial society to the cross-national phenomenon defined as *complex society* and 'late modern' (Van Gerven & Ossewaarde, 2011). Alongside this change, also governments made a shift to a governance approach, especially within welfare arrangements. This change led to a new social contract: in public policy, people are expected to be *active citizens*. Thus, being citizen does no longer refer to a passive social citizenship or a legal status, but in case of realization of policy it refers to an active cooperation with citizens. The Dutch change is of particular interest of Ossewaarde (2007); social citizenship has an essential role in the Dutch identity. The Dutch identity is affected by the shift of the government attitude which leads to a disillusioned public. Ossewaarde (2007) states that the

changes in the political consciousness were inevitable within this open, post-industrial society. Modernization and a *complex society* are in a broader sociological context described by Ossewaarde (2006). Within the view of modern post-industrialization, growth of the welfare state is the consequence of technological innovation and division of labour. The functionality of the welfare state is undermined by the post-industrial society. The post-material awareness is a characteristic of the post-industrial society. Post-materialism is phrased by concepts as corporate social responsibility, in which contradictory parties work together. In the same line of argumentation, the complex society has a link with globalization and de-bureaucratization.

In general, active citizenship is characterized by a set of expectation: citizens should actively work for their own welfare, for social coherence, safety and for the liveability of the community. This type of citizenship is characterized by national culture like norms and values. These active citizens are separated from the bad, inactive-, not-integrated- or 'risk'-citizens. Recently the Dutch government added some additional expectations to the set of general expectations. The Dutch government introduced terms like '*participatiesamenleving*', in which they expect from citizens to take over tasks that used to be delegated to the government. An example of these tasks are some basic care tasks (Rijksoverheid, 2013). In line with the report of the WRR, the Dutch governments promotes actively citizenship (Verhoeven & Tonkens, 2012). With this interpretation of citizenship, a shift is made from a passive interpretation (characterized by a focus on rights) to a focusing upon 'active citizenship' (characterized by a focus on commitments) (Van Houdt & Schinkel, 2009).

The section above describes the current dominant conception of citizenship in the Netherlands, active citizenship. Within the western world, various modern conceptions of citizenship exist. Therefore, the next section will discuss two sociological concepts of citizenship that are relevant in light of smart cities.

2.4 Citizenship concepts

The two sociological concept for citizenship that are relevant for this study are *big society citizenship* and *urban citizenship.* In section A, the concept of *big society* is discussed. In section B, *urban citizenship* is discussed.

A. Big Society citizenship

Among other leading modern conceptions on citizenship, citizenship as a *big society* is a relevant concept in relation to smart cities. Under the supervision of former Prime Minister David Cameron in Great Britain, a policy program called *big society* was introduced in 2010. One of the founding fathers of this eponymous concept is Phillip Blond (2009), who argues that Britain needs a radical social reform. The British society was strongly condemned for its dysfunctional bureaucracy, and for its bi-

polar, disempowered and isolated citizenry (Blond, 2009). Amidst a severe financial crisis, the British society suffers from both an unrestrained market as well as the unlimited state. Blond places these issues in a historical perspective in which the British society struggles with ongoing class struggles, lack of liberal consensus and struggles with "*the triumph of monopoly and speculation in the name of free trade and modernisation"*. The implicit message of the *big society* is that "*the state is bad and almost anything else – the free market, charities, volunteers – is better*" (Scott, 2011; Kisby, 2010). Verhoeven (2012) argues that the *big society* is part of a decentralised bottom-up focus, instead of a classic centralistic top down focus. Thus, the introduction of the 'Big Society' seems quite logic in the British (liberal-individualist) tradition.

Big society citizenship combines aspect of the participatory society perspective and the communitarian perspective on citizenship. Whereas participatory citizenship promotes participation in civil society and the community, the communitarian perspective argues that the role of the state is to protect the collective values and rights of communities, and that citizenship is about an identity (Messelink, 2014). Above, the view on citizenship of *big society* holds a relation to neo-liberal market driven thinking, in which societies are influenced by technologically and globalisation (Stevenson, 2005). The goal of the *big society* is to give community groups and citizens more control over initiatives and local institutions (Alcock, 2010). The society as a whole and social ties within societies are therefor of great importance for the *big society*. Through ties, citizens are linked to the society, their country and citizens feel publicly affected. With a *big society* and strong ties, the poorest citizen of the society should recapitalize (Kisby, 2010). The importance of the society is expressed in the three core values of the *big society*; 1) *empowering of communities*, 2) *promoting voluntary work* and 3) *redistributing of power to citizens* (Kisby, 2010). These values make that citizens, civil society, third sector[3] and social enterprises have a closer commitment to policy engagements and succeed in it where the state has arguably failed (Alcock, 2010; Scott, 2011). Through *big society* policies, all these parties will have more decision-making power on local level, and public services are open to social entrepreneurs, cooperation's and local companies (Verhoeven & Tonkens, 2012). Meanwhile, the government will support voluntary work and community action.

The relevance for the big society policy in relation to the study of citizenship in Dutch smart cities is best argued by Verhoeven (2012). Aspects of the *big society* are already present in current Dutch policy. Verhoeven (2012) sees parallels between the Dutch Social Support Act[4] and the *big society*. At first, the Act is commonly framed as the 'participation act'. This has probably to do with the goal of

[3] The third sector refers to voluntary work
[4] Known in the Netherlands as the *Wet Maatschappelijke Ondersteuning.*

the law; the Act makes that citizens are responsible to take care for the (informal) care. Only if someone is not able to solve problems within his own network, it is possible to appeal for professional help. Nevertheless, Verhoeven (2012) states that in general the frame of the British B*ig society* differs from the Dutch frame. In Britain, citizens are encouraged to empower themselves, whereas the accent in the Dutch policy is focused on the own responsibility of citizens.

B. Urban Citizenship

The second relevant conception of citizenship in relation to the smart city is *urban citizenship*. Urban citizenship has a relation with the concept of citizenship, that does not limits citizenship as members of a nation state, but considers all residents present in the 'small scale' city as cityzens (Vrasti & Dayal, 2016)**.** Urban citizenship derives its relevance for this study by the increased interest of city in the concept and the urban character of smart cities. Ideal types of urban citizenship return occasionally since the 1960's, for example by Dutch cities in the mid-zeroes (Amin & Graham, 1997; Van Der Wouden, 1999; Bochove, Rusinovic, & Engbersen, 2009). Modern conceptions of urban citizenship appeal stronger to the ancient Greece notion of citizenship than active citizenship and big society citizenship, by combining a political dimension of citizenship with the spatial dimension of citizenship (Kalk, n.d.); citizens more often claim their rights, duties and responsibilities in the urban context and urban space than they do on the national level (Tuula, 2007; Sassen, 2000). A crucial aspect for urban citizenship is the presence of public spaces (Tuula, 2007). Therefore rights, duties, and responsibilities related to citizenship are negotiated in cities (Tuula, 2007). Urban citizenship can therefore be seen as an alternative to national citizenship (Giband & Siino, 2013). Thus, it is interesting to explore the context of urban citizenship in light of citizenship in the smart city.

Urban citizenship focuses upon a moral side of citizenship and is defined by a set of skills focused on living together peacefully (Van Der Wouden, 1999; Van den Brink, 2006). Urban citizenship relates to everyone that lives within a city or visits a city and expects citizens to be active in urban regions and that citizens they transcend their borders, just like cityzenship does (Schinkel, Dekker & Van Houdt, 2010; Van den Brink, 2006). Borders in urban citizenship relate to both self-interest of citizens as well as the borders of their own ethnical, religious or political group. Urban citizenship is the result of the cosmopolitan and local character of cities (Zijderveld, 1998). Urban citizenship has a cosmopolitan character due to the international character of cities; cities are the centre of international trade and the culture of cities is a blend of all kind of cultures. The local character of urban citizenship is influenced by the notion that cities have a unique spatial character, which makes it a breeding ground for trade, science, culture and governance. Giband & Siino (2013) conclude that urban citizenship contributes to both the symbolic and the material development of cities. Nevertheless, material conditions for urban citizenship are barely present (Van Der Wouden, 1999).

Urban citizenship has three dimensions: (1) political dimension (2) social-cultural dimension and (3) identification (Bochove, Rusinovic & Engbersen, 2009). All these dimensions are crosslinked, of which the political and social dimension have most in common. The link between the (1) political and (2) social-cultural dimension can best be explained via the citizenship metaphors of Walzer (1983). On the one hand, citizenship can be explained as a membership of a *club.* On the other hand, citizenship can be explained as part of a *neighbourhood*. Nation states function as a *club,* via the political dimension of national citizenship is decided who is member of the country and who is allowed into the country. Urban citizenship can be seen as a *neighbourhood*. Inhabitants of cities cannot derive membership from their *neighbourhood* since everybody is free to enter the city (the *neighbourhood*) and cannot be excluded from it. Thus, the neighbourhood – and the political dimension in urban citizenship - is an open political community who can be entered by all outsiders (Van Der Wouden, 1999). In the same way, the social and cultural dimension of urban citizenship is shaped. Cultural communities of urban citizenship are best seen as a set of *subcultures.* A city exists out of a set of subcultures, in which citizens relatively easy can integrate. Through the process of individualization, citizens have freedom of choice to become member of a subculture, and sub cultures are open for both citizens of the city and outsiders. Subcultures exist alongside different lines, for example ethnic lines, religion, language or via activities (Van Der Wouden, 1999). The paradox of the open political community and the open social-cultural communities is that under influence of the moral side of urban citizenship, citizens are expected to be actively involved in these community. For example, citizens should be political active and are expected to do voluntary work as moral obligation to their social and cultural community. With regard to (3) identification, the possibility for citizens to identify themselves with the city is of great importance for urban citizenship. Identification relates to the sense of belonging in a city; not the loyalty that citizens have to city, but the ability of citizens to make them feel at ease within a city is of importance (Van den Brink, 2006).

In sections above, the sociological concept of big society and urban citizenship are discussed. However, concepts are not a suitable method for this thesis since it studies meanings given to citizenship in Dutch smart cities. Therefore, the following section discusses ideal types of citizenship in a smart city. As will turn out later, ideal types are a suitable method of studying meanings given to citizenship in the smart city.

2.5 Ideal types of the citizenship concepts in a smart city

To study meanings given to citizenship in Dutch smart cities, three ideal types of citizenship in a smart city are described. These ideal types are an alternative to the conceptualization of the different types of citizenship. The ideal type is a feature commonly used within the Verstehende Soziologie,

the interpretive sociological tradition (Ossewaarde, 2006). The research method used in this thesis is an interpretive method. Within the methodology chapter of this thesis, chapter 3, the details of this approach are discussed. For now, the ideal type as conceptual instrument is discussed.

An ideal type is a sociological meter which allows the researcher to study subject-related motives and patterns of meaning (Ossewaarde, 2006). Three sorts of ideal types can be distinguished, among the ideal type as social phenomenon is one. Max Weber is one of the leading sociologist who uses this sort of ideal types in his work, and defined his ideal type as "*a from historic reality abstracted model*" (Becker, 2007; Ossewaarde, 2006). An ideal type is not focusing upon the *´truth´*, but it describes the essential characteristics of a concept which makes that the core of the described object becomes visible. This makes it possible to order and classify (in this case) citizenship in a smart city. Ideal types are not described as normative stances, but only as analytical stances (Becker, 2007). As described by Elchardus (2007), within an ideal type, one can find a set of characteristics deducted from theory. If these characteristics approach a real world situation, an ideal type has become reality. However, usually the ideal type is approached only to some extent.

Inspired by the modern ideal types of citizenship by Wijdeven, De Graaf & Hendriks (2013), the three 'stories' under *A, B,* and *C,* describe ideal types of citizenship in a smart city. The ideal type 'big society citizenship in the smart city' is discussed in section A. The ideal type of 'urban citizenship in the smart city' is discussed in section B. Both ideal types are deducted from the similar sociological concept of citizenship as is previously discussed in section 2.4. The third ideal type of citizenship is smart citizenship is discussed in section C. A concept of smart citizenship is not discussed as such. As will turn out, the ideal types of big society citizenship and urban citizenship alone are an inadequate measure to study citizenship in the smart city. Thus, the ideal type of smart citizenship is constructed.

A. Ideal type of big society citizenship in the smart city

The ideal type of big society citizenship in the smart city focuses upon the enabling of local communities, networks and neighbourhoods by getting control over those things that improve the quality of life (Nicholson, 2011; Runswick-Cole & Goodley, 2011). Local governments take their "*hands off*" of certain services because the government assumes that citizens have the competences and capabilities to take over those things. Technology in the ideal type of citizenship in the smart city is a mean to improve the quality of life. This ideal type is best explained alongside the three key values of the Big Society citizenship model; 1) *empowering of communities*, 2) *redistributing of power to citizens* and 3) *promoting voluntary work* (Kisby, 2010).

Technology is an enabler for 1) *the empowering of communities* in the big society in the smart city. In the ideal typical view of big society, decision making is "*a bottom up process. Governing authorities should derogates from the local council to areas, towns or even streets*" (Blond, 2010). Under certain conditions, communities are able to govern the commons of shared ownership. Technology helps communities to govern, it lowers barrier for participation, it is a cost-efficient way to set up participation and therefore technology is a value in itself for improving everyday life. In order to be able to empower communities, big society in the smart city 2) *redistributes power to citizens*. The focus of big society citizenship in the smart city is upon organized individual citizens, who should not rely on the state but take care of themselves. Big society citizenship in the smart city intends to tackle inequality in the city (Lister & Bennett, 2010). Through big society citizenship in the smart city, the dependency on the welfare state is declined, which helps to lower the taxes and improve the social cohesion.

The role of the government is 3) *to promote voluntary work*. Under the denominator of ´voluntary´, the government promotes all kind of forms of organizations such as social enterprises, co-operative organizations, and charities. All these organizations are can participate against the background of the idea that "*the state is bad and almost anything else – the free market, charities, volunteers – is better*". If necessary, the local government provides organizations with limited support. Support is organized in two ways. On the one hand, the government promotes volunteering work and involvement in social action via a platforms. On the other hand, the government provides a framework for learning to be involved in social action. Therefore, the government comes with a social service obligation, in which youngsters are given a chance "*to develop the skills needed to be active and responsible citizens, mix with people from different backgrounds, and start getting involved in their communities*" (Conservative Party, 2008).

Summary: the ideal type of big society citizenship in the smart city

- Active, self-reliant communities
- Big civil society, independent from government policy
- Further enabled and empowered by technology

B. Ideal type of urban citizenship in the smart city

The ideal type of urban citizenship in the smart city is focused upon the application of technology to ease the citizenry in living peacefully together. Smart city technology is available for both inhabitants of a city as well as to visitors of a city; the rules for using these technologies apply to everyone within

the borders of the city (Jorna, 2015). With smart city technology, citizens are better able to transcend their borders related to their own self-interest, to ethical, religious, cultural and political. The urban citizen is increasingly subject of good governance based local policies which have an orientation on technology, sharing of power, participation and the protection of rights (Sledzinska & Jorna, 2014). The urban citizen has a better connection with his local government and has more trust in the local political institution than in the national institutions. Free elections, transparency and honesty of the local government are the most important democratic values for urban citizenship (Meer, T. van der & Kolk, H. van der, 2016). Upon stimulating the use of technology, urban citizenship strongly supports on the moral side of this citizenship; governments expect citizens to actively use the possibilities of smart city technology within the capabilities of citizens. Elaborating on the conceptions of urban citizenship as explained in paragraph 2.4, urban citizenship in the smart city has three dimensions; the political, the social-cultural and the identification dimension. As urban citizenship is defined by a set of skills focused on living together peacefully, within these three dimensions, citizens require multiple skills. For skills (local) governments hold the responsibility to provide a framework for citizens to learn these skills.

Under the influence of increasing use of technology in cities, the political dimension of the ideal type urban citizenship in the smart city is a techno-culture in which the urban citizen is a local voter who gives legitimacy and political support to the local authorities (Hendriks & Tops, 2000). The dominant procedure direct democracy is the ´voting democracy´ (Hendriks, 2016). A voting democracy exist out of governmental organized e-referenda and publicly organized e-petitions and internet polls, so called quasi referenda's in which all citizens and visitors are expected to participate. Above, in terms of participatory democracy, the actively involvement of citizens is also shaped via a techno-cultural variant of deliberative minipublic, based on the ideas of Fishkin (1991) for a deliberative minipublic. In techno-cultural deliberative minipublics, a smaller sample of a bigger public is designated to advice on problems via digital platforms. Various variants of this process exist, although the most known variant exist of two rounds of discussion with a process of learning in between. In terms of a set of skills, the political dimension of urban citizenship in the smart city requires all citizens to take the interests of other outside their 'borders' into their considerations. Further, all citizens should conform to the outcome of majority decision, whereas the governmental holds responsibility for the procedural justice of democratic processes.

In the social-cultural dimension of urban citizenship in the smart city, smart city technology especially influences sub cultures. In general, sub cultures are better able to move through the city – the potential of sub cultures is larger. For individual citizens, sub cultures are better accessible and the freedom of choice between different sub cultures increases via smart city technologies. This

freedom affects participation in sub cultures, which is subject of fluctuation and in continuous competition with other sub cultures and changing life style behaviours. Thus, sub cultures are more volatile (Van Der Wouden, 1999). For the identification dimension, citizens have multiple social-spatial and social-digital bonds in the city with which they identify. These multiple identifications make that urban citizenship can best be interpreted as a collection of layered citizenship; sovereignty is managed in the different social-spatial and social-digital bond. With that, urban citizenship is not only restricted to those who life in the city, but also accessible for those who have an institutional bond with the city.

Summary: the ideal type of urban citizenship in the smart city

- Peaceful co-existence without necessary engagement
- Large role for political institutions in governing interaction
- Powered by individualism, further strengthened by technology

Need for an ideal type of smart citizenship

The ideal types of big society citizenship and urban citizenship are an inadequate measure to study citizenship in the smart city, due to their inability to incorporate the effects of digitalization in citizenship completely. This is especially caused by their impossibility to profit entirely from the functions of smart city technology, or cope with the new challenges the smart city brings with it. For example, whereas big society citizenship in the smart city focuses strong upon the social involvement of the public which is above effective and cost-efficient, this ideal type of citizenship lacks full appliance of the digital democratic involvement of citizenship in the smart city. In case of urban citizenship in the smart city the focus on technology in political participation is well anchored, but this ideal type leaves aside the possibilities that technology bring for ownership of public goods and services. To come to a meaningful study on citizenship in Dutch smart cities, a new ideal type of citizenship is developed. This ideal type is named *smart citizenship,* which will be discussed in the next section.

C. A third ideal type: smart citizenship

Smart citizenship is a socio-legal status that let citizens profit from rights and duties that the smart city provides, and emancipate citizens to protect themselves from the risks that smart cities create (Stevenson, 2003; Van Est, 2016). The melting of smart city technology and society leads to a situation in which technology wise citizens have a say on how technology affects their wellbeing; smart citizenship is about socio-technical interaction (Nijman, 2016). In terms of a normative stance,

good smart citizenship allows citizens to determine the risks of technology, have control over their privacy, are able to make a safety calculation and ensuring the individuality of themselves (Frankenfeld, 1992; Van Est, 2016). These risks both includes short-term risks such as privacy and data protection, but also long-term effects such as "*what kind of people we would like to be"* (Frankenfeld, 1992).

Smart citizenship is about co-creation and participation to solve societal issues in an innovative way (Nijman, 2016). The division between the public and the private has disappeared (Boogaard, Dijkman, Munnik & Smits, 2016). Citizens and entrepreneurs are equipped with skills and resources to evolve valuable activities in safe areas suitable for experimenting, for example in city labs or via platforms. These cooperative owned multi stakeholder platforms and city labs are open for citizens, government, civil society organizations, knowledge institutions and companies (Veenstra, 2016). The needs of citizens are the central issue in these city labs and platforms (Jorna, 2015). To make optimal use of the socio-technical interaction, citizens search also for public spaces to meet. Therefore, platforms and city labs can be both virtual and physical.

Democracy and politics are of great importance for smart citizenship. Smart citizenship is a form of active citizenship in a twofold in which citizens both can choose and respond via technology (Barber, 1998). Citizens are equal to experts, citizens are emancipated via an equal information position to experts. All citizens have the moral obligation and responsibility to inform themselves and take part in the decision making process. An adjustment of the political institution is necessary to provide smart citizenship, since citizens "*can subvert political hierarchy and nurture an unmediated civic communication*" (Barber, 1998). A broad group of citizens should be able to take part in the decision making process; participating is not limited to the inhabitants or the citizens, but is also accessible for visitors. Depending on the size of the problem at hand, decision making processes are not fixed to the borders of the city but can also be organized on neighbourhood level. The suitable method in the smart city are governance arrangements which provide compliance of fundamental rights in the smart city.

To establish smart citizenship, the focus is upon the fundamental rights of smart citizenship, which are transparency, open communication, well informed citizens and access to internet (Barber, 1998). Transparency helps to establish a free society and empower people, since it stimulates the degree of informed citizen, and that communication among them is open and informed. Above, transparency is a key value for participating in smart citizenship (Jorna, 2015; Williamson, 2015). Access to internet is a right for citizens; it helps to establish a level playing field between all players in

the smart city, and makes the smart city accessible for citizens. Governments play a key role in protecting the fundamental rights of citizens when they make policy for the smart city.

The danger of smart city technology is that smart citizenship is insufficient in protecting fundamental rights, insufficient in adopting new technologies to the needs of the public or the improper deployment of technology (Barber, 1998). If these aspects are in danger, two problems can appear. The first danger of the smart city lies in the soft despotism of dataism (Ballon, 2016). The soft despotism of dataism means that through data analyses, citizens are incorrectly judged causing inequality within the city. The second danger is that the smart city turns into the ultimate panopticon. The smart city in this sense is a dystopia, the complete opposite of an utopia. Building upon the idea of Foucault (1989), the set of cameras and sensors makes that the smart city has disciplinary power over its inhabitants. The smart city affects its citizens through the 'invisible hand' – a mechanism that is well known in the social psychology as 'nudging'. Smart systems eventually could lead to less responsible behaviour instead of citizens who take more responsibility for their city (Ballon, 2016). The smart city as a panopticon is a paradox: the key element of smart citizenship such as transparency are unitable within the smart city as panopticon. In this case, Foucault argues that utopia architectures are in essence dystopian totalitarian control systems.

Summary: the ideal type of smart citizenship

- Powered by critical thinking emancipated citizens
- Moral obligation to participate in e-democracy
- Contradiction: socio-technological enabling results in improvement of human rights or despotism of data

2.6 Towards a research agenda on citizenship in smart cities

Up till now, the first two chapters discuss the upcoming of smart cities and the context in which policy for Dutch smart cities is developed by Dutch policy makers. The recent development of smart city policies by Dutch local governments can been seen in light of the worldwide trend in which cities are of increasing importance in governmental policy. Within all characteristics of smart cities, citizenship is more or less affect by smart city technologies or applications, although policy makers do make clear what the meaning of citizenship in smart cities is. Thereafter, the conceptual framework discusses the concept of smart cities. Smart cities focus upon the improvement of the urban living practices and conditions with help of ICT. Based on the six characteristics, smart cities aim on a variety of changes in domains as mobility and governance, all with different approaches and goals.

Up till now citizenship is neglected in studies on smart cities. Scholars argue the need for a study on the meaning given to citizenship in smart cities, for example since ´including the people´ is an aim in Dutch smart city policies.

In the second part of the conceptual framework, various aspects of citizenship are discussed. Definitions of citizenship describe the concept as a social-legal status between citizens and governments, and conceptions of citizenship are a developing institution. The current dominant conception in the Netherlands is active citizenship, in which the government expects citizens to be actively in taking over tasks that used to be delegated by the government. Also, the sociological concept of big society citizenship and urban citizenship are discussed as a prelude on these two concepts as ideal types of citizenship in the smart city. Above, a third ideal type named smart citizenship is developed for this study. The ideal type of big society citizenship in the smart city is characterized by active, self-reliant communities in which a big civil society operates independent from government policy. The role of technology is to further enabled and empower citizens. The main character of the ideal type of urban citizenship in the smart city is that citizens have a peaceful co-existence without the necessity of their engagement. Urban citizenship in the smart city is powered by individualism, of which technology helps to further strengthen this. Political institutions have a key role in the governing of interactions with citizens. The ideal type of smart citizenship is powered by critical thinking individualism. The distinction between the public, the private and the civil disappears by the interweaving of these elements. Technology is a central aspect as socio-technical enabler in all elements of smart citizenship.

Now the context of Dutch smart cities, the concept *smart city* and three ideal types of citizenship in the smart city are discussed, there is a need for a research agenda. Therefore, the next section will discuss the research questions for a study on meanings given to citizenship in Dutch smart cities.

2.7 Problem statement and research questions

As with many policies, policies on Dutch smart cities hold a relation with citizenship. The current conception of citizenship in the Netherlands, *active citizenship,* affects policies in local governments and thus smart city policy. Earlier studies point out the appearance of ´citizens´ as an actor and the relation with citizenship in policy documents on Dutch Smart cities, but not have made an in depth study on the meaning of citizenship in Dutch smart cities (Nijman, 2016; Raad voor de Leefomgeving en Infrastructuur, 2014). Also, it is known that technology in general has an impact on citizens; smart city technology only function when they are used in a smart way by citizens. Above, as one of the functions of smart city is participation, it is possible for citizens to participate in (governmental) projects (Stevenson, 2005; Berntzen & Johannessen, 2016). Thus, it is supposed that smart cities

influence citizenship. Both the policy documents as well as the scientific literature in the field of smart cities do not provide a sufficient answer on the meaning that is given to citizenship in smart cities; there are no standards for the way these citizenship in smart city is shaped, nor is known what the meaning of these citizens in smart city projects is. Thus, it is unclear what meaning policymakers give to citizenship in Dutch smart cities. To understand what citizenship in Dutch smart city means, a study is necessary to explore how meanings of citizenship in Dutch smart cities by stakeholders can be interpreted. To come to such a study, the following main research question is formulated:

How can meanings of citizenship within Dutch smart cities, given by different stakeholders, be interpreted and to what extent do these meanings differ?

With the research question, the *meanings* given to citizenship in smart cities is studied. Referring to the various conceptions on citizenship (resulting in the three ideal types of citizenship in the smart city), it is expected that multiple meanings to citizenship in Dutch smart cities can be interpreted. Studying meanings is a frequently used method for studies within the interpretive sociology. Meaning are used to study social order. This order is the result of the meaning that actors give to their own behaviour (Ossewaarde, 2007). The method of studying will be further discussed in the methodology chapter, chapter 3. As will turn out, a consequence of this method is that the researcher interpreted meanings, which explains the presence of both the meaning and the interpreted part in the main research question. The object of this study is formulated as 'stakeholders'. Within this study, it concerns stakeholders actively involved in the development of policy in Dutch smart cities. For example, through the '*quadruple helix model*' of the city of Eindhoven, stakeholders such as knowledge institutions and civil society organizations are involved in the development of practices and policies for smart cities (Eindhoven, 2016). Above, the national government is involved in the field of policies on smart cities via Smart City strategy NL (RVO, 2017). Therefore, the research question focus of the study on meanings is broadened to 'stakeholders' instead of a focus on local governments alone. The main question is supported by three sub questions. Per sub question, some notions are made with regard to the expected insights.

1. ***Which meanings are given to citizenship in Dutch smart cities by stakeholders?***

The first sub question is an important aspect of this study, since it provides the necessary empirical data for the answering of the main question. Earlier studies have not made an in depth study on the meaning of citizenship in Dutch smart cities (Nijman, 2016; Raad voor de Leefomgeving en Infrastructuur, 2014). Klauser et al. (2014) have critical contributions on the smart city discourses in

terms of engineerist approaches to urban governance in a discourse-analytical. However, these scholars used a discourse analysis to study a broad set of normative stances and assumed benefits of smart cities, of which the role of citizens is a very small portion. This study studies meanings – simply because a written discourse is missing. An analysis of policy documents alone does not provide data on the meaning that is given to citizenship in smart cities. Thus, in this study different sources of data are triangulated. Therefore, stakeholders in policy of smart cities are studied to come to an interpretation of the meanings given by smart cities. It is expected that with this research question the interpretive part of the main research question is answered.

2. What similarities and differences can be found between the meanings given by different stakeholders to citizenship in Dutch smart cities?

The second sub question elaborates on the first question, and takes a closer look in the collected data to study potential differences and similarities between the meanings given by stakeholders in policies on Dutch smart cities. As is argued earlier, Dutch local government work together in the development of smart city policies. Within the current discourse, none of these stakeholders are explicit in the meaning they assign to citizenship in Dutch smart cities. It is expected that the different stakeholders hold different interests in the smart cities, and that these different interest hold relation to the meaning they give to citizenship in smart cities. Thus, a study on similarities and difference is important to come to an understanding of the meanings given to citizenship in smart cities. With this second sub question, a contribution is made to the second part of the main research question.

3. How do the meanings, similarities and differences relate to ideal type(s) of citizenship in smart cities?

Earlier in this chapter, in section 2.5, the three ideal types of citizenship concepts in the smart cities are described. These ideal types are a sociological meter which allows the researcher to study subject-related motives and patterns of meaning (Ossewaarde, 2006). Within the third sub question, the essential characteristics of the three ideal types of citizenship in the smart city are compared to the meanings given by the stakeholders, in order to make the core of the meanings given to citizenship in smart cities visible. By answering the third sub question, it is possible to order and classify the meaning given to citizenships in a smart city. Thus, the third sub question makes it possible to interpret the meanings given by stakeholders in smart cities, which helps to answer the main question.

3. Methodology

In order to perform the analysis, in this chapter the research paradigm, the methodological approach and the strategy of collecting data and the strategy of analysing data is presented. The methodology for this study is chosen in line with the main and sub research question. As explained in the second chapter, the main research question for this study is how meanings of citizenship within Dutch smart cities, given by different stakeholders, can be interpreted and to what extent these meanings differ. The underlying assumptions of the research questions makes that this study is performed in a constructivist-interpretive research paradigm. To get an understanding of this research paradigm, section 3.1 discusses the constructivist-interpretive research paradigm. In section 3.2, the research design is described. The method of collection is described in section 3.3. Finally, the method of data analysis, and how the research questions are answered is outlined in section 3.3. The coding scheme that is used for the analysis is part of this last section.

3.1 Research paradigm

The goal of this study is to interpreted meanings given to citizenship in Dutch smart cities. In line with this goal, the study is performed in the tradition of a constructivist-interpretive research paradigm. The constructivist-interpretive research paradigm differs from other research paradigms in social science, of which the positivistic-realist research paradigm is best known. For this study, it is sufficient to make a short comparison of these two paradigms to understand why the constructivist-interpretive paradigm is chosen. Paradigms differ in many ways, for example in the way they view the position of knowledge and define 'reality´. Whereas the positivist-realist paradigm is associated with objectivity, the existence of reality and the development of hypotheses, the basic belief of the constructivist paradigm is the existence of multiple local and specific constructed realities (Guba and Lincoln, 1994). These constructions have to be discovered by visiting the ´natural world´ of the subject and studying it through social constructions. To understand social constructions, the researcher studies the *meaning* that participants give to the study object, which in this study is the meaning given to citizenship in smart cities (Denzin & Lincoln, 1994; Walsham, 1993). Interpretive research do not work with positivist standards as 'reliability, validity, objectivity, replicability and falsifiability'. As an alternative to these standards, interpretive research studies take 'trustworthiness' 'systematicity', 'reflexivity, 'transparency' and 'engagement with positionality and 'contamination' as standards (Schwarz & Yanow, 2012). Above, interpretive research does not work with predefined dependent and independent variables; it focuses on the complexity of human sense-making (Kaplan and Maxwell, 1994). Theories have a substantive and formal character; scientific built conceptual frameworks are not tested in the field on accuracy. The goal of the paradigm is to understand how concepts are used in the field (Schwarz & Yanow, 2012).

3.2 Research design

To come to a research design within the constructivist-interpretive research paradigm, roughly two research designs are suitable in relation to the formulated research questions; the ethnographic fiction and interpretive case study. Ethnographic methods are used for longitudinal studies in the search for the extraction of cultural knowledge, using of instruments in everyday events or in the identification of actions and require detailed observational data. The interpretive case study distinguishes itself from the ethnographic methods in the required time and the method of collecting data; to come to interpretations, the researcher can use observations of secondary sources or via online interviews (Schwartzmann, 1993; Yin, 2002). Therefore, the interpretive case studies can best be defined as "*exploring a single phenomenon (the case) in a natural setting using a variety of methods to obtain in-depth knowledge*" (Collis & Hussey, 2012). The available amount of time and resources for this study are insufficient for the ethnographic method, which makes the interpretive case study the suitable option for this study. The interpretive case study is a qualitative method. The qualitative aspect of this study exists out of two types of qualitative data, which will be further discussed in the method of qualitative data collection and the method of qualitative analysis (paragraph 3.2 and paragraph 3.3).

Interpretive qualitative research is inductive in nature. With an interpretive case, the main interest is the case itself, formulating a theory is not a goal in itself. However, interpretive qualitative case study can to some extend have a link to theory. In this thesis, the theory is the basis upon which the ideal types are deducted. Thus, depending on the role of theory, this interpretive case studies could be a hybrid of inductive and deductive elements. In this case, the role of ideal types (resulting from a deductive process) is to demonstrate the empirical relevance and thus to study subject-related motives and patterns of meaning. This makes it possible to order the meanings given to citizenships in a smart city. The results are thus mainly based upon the inductive process of studying smart cities, in which the deductive derived elements of ideal types function as supportive to study citizenship in smart cities. As argued by Ruzzene (2014) and Eckstein (2000 [1975]), the research design of this study can best be described as an illustrative interpretive case study, which is formulated as "*the aim is to give the reader a "feel" for a theoretical argument by providing a concrete example of its application, or to demonstrate the empirical relevance of a theoretical proposition by identifying at least one relevant case*". The added value of these sort of interpretive approaches are that they are more nuanced in their interpretation; Eckstein (2000 [1975] formulates that as "*the interpretation is successful if it is logically compelled by the theory: one should be able to demonstrate that, given the regularity and the characteristics of the case."*

As explained by Schwartz-Shea & Yanow (2012) the process to answer a main question starts with formulating and adapting the main and sub research questions. Throughout the study and under the influence of new knowledge and insights, the main question evolves from learning in the field. Thus, answering the main question is a process of going back and forth between the main question and the insights out of the study. In this study, eventually one main question focusing upon the interpreting of meaning in the smart city is formulated, which is supported by three sub research questions.

3.3 Method of collection

The interpretive case study requires specific methods and techniques to collect data. Thus, this chapter describes the method of collecting data for the conceptual framework and the empirical part of this study.

3.3.1 Data sources

To answer the main research question, empirical data is gathered. Existing governmental documents do not provide enough information to answer the main and sub research questions. Therefore, the interviews with stakeholders involved in the development of smart city policies are the primary source of data. The process of selecting cases, doing the interviews and making an analysis of all the data gathered is open to different interpretations – the so-called 'researcher bias'. To reduce this problem as much as possible, this study works with the triangulation of data by combining the interview transcripts with policy documents. The primary data source are the eleven interviewed participants and their interview transcripts, the secondary data source are twenty policy documents.

Interviews and participants

In light of the research questions and the research design chosen, the method to derive empirical data are interviews. In the interpretive paradigm, interviews are seen as information that derives from transactions between the researcher and the subject of study as the only source of data (Guba & Lincoln, 1994). As stated in the main research question, the meaning given by stakeholders to citizenship in smart cities is studied. Earlier, it is defined that stakeholders are involved in policies on smart cities. Thus, these '*transactions'* have to come from interviews held with persons influencing the policy of smart cities in Dutch governments, or have specific knowledge of smart cities in light of citizenship. During the interviews, the researcher and the objects of study are assumed to be 'interactively linked'. For this study, this means that during the interview the meaning given to citizenship in Dutch smart cities is created by the conversation between the researcher and the respondent. Meanings are not only a transaction of spoken word, but can also be given `between the

lines´. The task of the researcher is to read this information by analysing how the interviewees react emotionally on several issues (Schwartz-Shea & Yanow, 2012).

In the search for meaning given to citizenship, the position of the researcher towards respondents is of importance (Schwartz-Shea & Yanow, 2012). This includes the prior knowledge of the researcher. In this case, developing the research question is made possible with the knowledge developed in my work at the Ministry of the Interior and Kingdom Relations. This prior knowledge on smart cities is also the basis for the development of questions for a semi-structured interview scheme. Above, in preparation on the interviews, policy documents on smart cities of the specific organization are taken into consideration.

Document study

All studied documents in the documents study are governmental documents, which reflect policies and governmental knowledge on smart cities. Documents vary from reports to program plans, and from alderman's answers on questions from city councils to informative documents of the national and transnational government.

3.3.2 Sampling and setting

Sample of respondents

Respondents play a key role in answering the main research question by providing data on the meanings given to citizenship. Due to the limited amount of time for this study, the sample of respondents contains eleven persons. Two criteria are formulated to come to a sample.

1) Organizations of respondents and respondents should have experience with policy on smart cities.
2) In line with the research questions, the sample should include respondents of various governmental and non-governmental organizations.

A combination of purposive sampling and snowball sampling is a suitable method to come to a sample meeting the criteria above. Both forms of sampling are non-probability sampling, a form of sampling in which respondents do not have an equal chance to participate in a study (Schwartz-Shea & Yanow, 2012). The first four respondents are sampled via purposive sampling; these persons are selected intentional since I expected that they could give a major contribution to this study. Via my network at the ministry of the Interior, I know that these persons are in the lead of smart city development in the Netherlands. During the process of interviewing, the sample is completed via snowball sampling. Via snowball sampling, a method in which respondents are asked whom else should be included in a study, respondents working for a knowledge institution and a civil society

organization are added to the sample. All respondents are interviewed in their work setting. Except for two persons, respondents provided a small conference room for the interviews. In the other two cases, the interviews are conducted in open meeting rooms. Most interviews are held face-to-face, except for two interviews. At the request of these respondents, interviews are conducted via videoconference. The table below gives an overview of the sample of respondents:

Respondent number	***Function***	***Organization***	***Documents included in analysis***
1	Head of knowledge	Civil society organization	*No*
2	Strategic advisor	Local government	*Yes*
3	Strategic advisor	Local government	*Yes*
4	Lector	Knowledge institution	*Yes*
5	Senior policy advisor	National government	*No*
6	Advisor digital government	Provincial government	*No*
7	Senior policy advisor	National government	*Yes*
8	Senior policy advisor *Former director of knowledge institution on digitalization in cities.*	Governmental network organization	*No*
9	Senior policy advisor	National government	*Yes*
10	Director	Local government	*Yes*
11	Policy advisor	Local government	*Yes*

Table 3.1: Overview of the sample of respondents for this study.

Sample of documents

The sample of documents is based upon purposive sampling. For this study, governmental policy documents on smart cities suit best for studying meanings given to citizenship. Due to a limited amount of time for this study, the sample includes twenty policy documents. The sample of documents is created after the completion of all interviews. With that, knowledge out of the interviews is used in the creation of the sample of documents. In the strategy to come to a sample of twenty documents, four criteria are formulated:

1) In line with the research questions, the sample should include a variety of governmental organizations (local, national, transnational) if available.
2) The sample should include documents of organizations involved in the study through interviews, if available and up to four documents per organization.
3) The sample should be supplemented with documents of cases that regularly returned in the interviews.
4) If respondents hand over documents during the interviews, the sample may include these documents for the analysis. And if these documents are not publicly available documents, these documents may only be included with permission of the respondent.

The documents are searched via various local, national and European governmental information systems, such as a "Raadsinformatiesystemen" of cities or the "Officiële bekendmakingen" of the national government. Documents of Dutch knowledge institutions are not included in the document analysis. As far as documents of Dutch knowledge institutions are relevant for this study, these are already included in the conceptual framework. Eventually, fourteen of the selected documents are set up by Dutch local governments, three documents are set up by the Dutch national government and three documents are published by the European Union. One document of the analysis is a not-public available document and is retrieved via a respondent. Table 2 gives an overview of the sample of documents:

Document number	***Document name***	***Organization***	***Type of document***
1	Case Study Report Living Labs	Gemeente Eindhoven	Report/ evaluation
2	Uitvoeringsprogramma Smart Society	Gemeente Eindhoven	Program plan
3	Smart City Rotterdam	Gemeente Rotterdam	Report
4	Schriftelijke vragen over de studie Smart City Rotterdam	Gemeente Rotterdam	Answers on questions from the city council
5	Actieprogramma Smart Mobility	Gemeente Amsterdam	Program plan
6	Besluit actieprogramma smart mobility	Gemeente Amsterdam	Letter from the alderman
7	Programma Smart City Den Haag	Gemeente Den Haag	Program plan
8	Voortgangsrapportage Programma Smart City Den Haag	Gemeente Den Haag	Letter from the alderman
9	Technische vragen Programma Smart City Den Haag	Gemeente Den Haag	Answers on questions from the city council
10	Intentieovereenkomst Smart City Den Haag	Gemeente Den Haag	Agreement of cooperation
11	Essay Smart mobility in de Stad	Gemeente Utrecht	Essay
12	Campus Party, Building Blocks en Raid	Gemeente Utrecht	Program plan
13	Raadsvoorstel Smart City	Gemeente Enschede	Program Plan
14	Raadsbesluit Smart City	Gemeente Enschede	Discussion in the city council
15	Smart City krant	Rijksoverheid	Informative
16	Kamerbrief over voortgang Agenda Stad	Rijksoverheid	Letter form the ministry
17	Motie Veldhoven over smart cities	Rijksoverheid	Resolution from the Second Chamber
18	Strategic Implementation Plan	European Commission	Implementation plan
19	Operational Implementation Plan	European Commission	Implementation plan
20	Smart Cities and Communities	European Commission	Informative

Table 3.2: Overview of the sample of documents used for this study

3.3.3 Instruments

As this study is a quantitative interpretive research design, an interview schedule is used in all semi structured interviews. The interview schedule existed out of 9 topics. The interview schedule is used iterative; depending on the way conversations progressed, the order in which questions are asked is shuffled, some aspects are deepened out more extensive than others and other deepening questions are added to the interview. The semi structured interview questions are added in Annex 1.

3.3.4 Procedure

All eleven interviews are conducted in Dutch. The interviews lasted 55 minutes on average. The interviews are recorded digitally and transcribed afterwards. During the interviews, respondents are asked whether they would like to check the transcribed documents. If so, the transcribed documents are send to the interviewees for a final check on the content of the interview. Afterwards, the transcribed documents are considered to be official. With regard to the privacy of participating respondents, the transcribed interviews are not added in the openly available version of this thesis. The interview transcripts are available at request via the researcher. An impression of the interview transcripts is found in Annex 2, which display a word frequency of the words most often used in the interview transcripts.

3.4 Method of analysis

3.4.1 The interpretive paradigm

Coding is an iterative process (Weber, 1990). In case of the method of analysis of the interview, it is about the constructs brought forward by the respondents. In both cases, the meanings are of the interest for this study. This means that the researcher has an “interpretive relation” with the transcript (Smith & Osborne, 1997).

3.4.2 Method of dealing with qualitative data

The method of dealing with qualitative data in this study is *coding*. Since all analysed data is (transformed into) written text, the collected documents can be analysed with help from Atlas.TI 8.0 – a software program that assists to analysis qualitative data. The goal of coding is to come to conclusions via a method of linking, analysing, categorizing and identification of concepts. The coding is done through a procedure of cycles. The procedures followed for analysing qualitative data in this study is derived from the publication of Saldana (2009).

Coding is an interpretive act and goes in several cycles. This process is iterative. The first step of analysing is to code the transcribed interviews and documents. The codes are translated to the ideal types build in the second chapter. The first notes for the coding phase are made during the transcribing of the interviews. These notes gave an idea of how the final coding scheme would look

like. Based upon the idea of Saldana (2009), the following questions are kept in mind within the coding process:

- What are my respondents try to achieve or to accomplish?
- How do my respondents try to accomplish this;
- What specific means do my respondents give to their 'smart city' labelled project?
- How do the respondents talk about their project; how do they characterize it?
- Do the respondents understand what is going on in the field of smart cities?
- What are the preliminary assumptions of the respondents?
- As for me, the researcher, do the respondents not respond to certain question – ergo, are certain questions avoided?

3.4.3 Analysis of coded concepts

Analysing the data is an iterative process of code weaving, which is a strategy to look for patterns in the data. The interviews transcript form the primary source of analysis; the document analysis are the secondary source of analysis. Most of the data sources are in Dutch, thus, the coding scheme is also in Dutch. The coded concepts are analysed for categorizing of coded concepts. Through categorizing, the applied codes are linked to each other. The first cycle of categorizing is in this case followed by a second cycle of categorizing. Since this study only consisted out of 31 documents, categorizing is relatively easy. The first step used to categorize is a word frequency, which is displayed in Annex 2. Out of this word frequency, the first and second cycle of categorizing, groups of stakeholders and boundary conditions are distracted from the data. The third step of analysing is the identifying of themes and concept. This is described as "*an outcome of a coding, categorizing, and analytical reflection, not something that is, in itself, coded. And when the major categories are compared with each other and consolidated in various ways, you begin to transcend the "reality" of your data and progress towards thematic, conceptual and theoretical"* (Saldana, 2009). As identifying is an interpretive act, I interpreted throughout the documents three key themes that reflect the cohesion between the group of stakeholders, the boundary conditions they define and the meanings they give to citizenship in the smart city. Finally, I checked this outcome in the process of analysing data is being searched for comparable repetitive patterns and consistencies in in the data (Saldana, 2009).

For answering the main and sub research questions, in the process of coding three things are of special importance. In the first place, is taken into consideration that "*citizenship is concerned with a diverse set op practices and cultures that structure complex patterns of inclusion and exclusion within modern society*" (Stevenson, 2005). Alongside this notion, in the process of coding is searched for practices and cultures that are characteristics of meanings of citizenship. With this notion, the first sub question of this study can be analysed. In the second place, in the process of coding is coded

which organization the interviewee works for. Thus, via this way of coding it is possible to analyse the second sub question of this study. Thirdly, the process of coding is seen in light of the three ideal types as constructed in section 2.5. The ideal types are not directly suitable for studying the data; a 'translation' between these ideal types and real world situations is made. Therefore, in the table below a coding scheme is positioned.

	Big Society	**Urban Citizenship**	**Smart Citizenship**
Focus of citizenship	Buurten, gemeenschappen, vrijwilligersorganisaties, maatschappelijke organisaties, netwerken.	Bewoners, gasten, bezoekers	Individuen
Role of citizens	Actief participeren	Norm gebaseerd, semi gedwongen deelname	Autonome burgers die vrijwillig co-creëren en participeren.
Role of local government	Terugtrekkende overheid. Empowerment van burgers	Samen leven bevorderen. Vergroten van de gemeenschap	Creëren van een gelijk speelveld. Beschermen van fundamentele vrijheden
Role of national government	Decentraliseren van beleid	n.a.	
Role of civil society organizations	Vrijwilligerswerk aanmoedigen, betrokkenheid in platformen actief promoten.	Vrijwilligersorganisaties als middel om het samen leven te bevorderen	Onderscheid tussen privaat en publiek is verdwenen
Role of business	Ontwikkelaars voor applicaties	n.a.	Onderscheid tussen privaat en publiek is verdwenen
Technology	Platformen in de zin verbeteren van het leven van iedereen. Platformen voor het delen van open data	Applicaties in de zin van het bevorderen van het samen leven	Toegang tot een open internet. Coöperatief
Presence	Burgerschap als fysiek eigenaarschap van publieke goederen	Nadruk op fysiek (buurten en gemeenschappen), ondersteund door digitaal.	Virtueel en fysiek; living labs.
Size	Beperkte omvang van gemeenschappen	Woorden gerelateerd aan sub groepen	No limitations
Political citizenship	Macht naar de burger. Politiek in de zin van stimuleren van burgerinitiatieven van bottom up	Focus op de lokale politiek.	Politiek is een voortdurende interactie. Niveau van politieke gemeenschap wisselt per onderwerp (met eventueel buurt/bezoeker)
Rights and freedom	Actieve burgers, die uiteindelijk kan terug vallen op de overheid	Burger moreel verplicht	Burger beschikt over
Boundary conditions	Both legal participation as well as political participation	Gelijke deelname aan participatie	Transparantie, open communicatie, goed geïnformeerde burgers. Toegang tot internet

Table 3.3 Coding scheme

3.5 Concluding methodological remarks

Within this chapter, the methodology of this study is described. As discussed, the research design of this study is an illustrative interpretive case study. The case study is interpretive since it explores a single phenomenon, in this case citizenship in the smart city, and is conducted in the natural setting, by conducting interviews to explore meanings given to citizenship. The case study is illustrative because it combines inductive and deductive elements. Inductive elements contain the method of gathering and analyzing the empirical data, the deductive element is in the way the ideal types of citizenship is established and used to order meanings given to citizenships in a smart city. The empirical data exists out of eleven interview transcripts and twenty policy documents. The sample of respondents is established via snowball sampling and purposive sampling, and the interviews are conducted with an interview schedule. The empirical data is analysed via an iterative process of code weaving in which is looked for patterns in the data.

With the disquisition of the methodology, this study is one step further in answering the main and sub research question. Before that is possible, four steps have to be taken. Firstly, the observed elements of meanings given to citizenship in Dutch smart cities have to be interpreted and structured. As will turn out, three elements can be observed. Thus, step two, three and four exist out of interpreting each of these elements into deep. All four steps together form the analysis of this study, which is described in the next chapter.

4. Results

In the fourth chapter, the results of the analysed data is presented. With this chapter the main and sub research question are answered. The first paragraph introduces the three observed elements of citizenship. In paragraph 4.2 till 4.4, each of these three elements is discussed, representing three meanings of citizenship within Dutch smart cities. In line with the first and second sub question, these paragraphs start with an analysis and comparison on the meanings of citizenship by and between stakeholders. In line with the third sub question framework, each of these paragraphs ends with a comparison of the interpreted meanings with the ideal types as formulated in the conceptual framework. The results of the interpreted meanings given to smart citizenship in Dutch smart cities are based on the observations made in the interview transcripts and the documents analysis.[5]

4.1 Three elements of citizenship in Dutch smart cities

As there are multiple conceptions on the concept of citizenship (Marshall, 1992), multiple meanings to citizenship in smart cities are observed within this study. One challenging aspect for researchers is to present observations in a structured way. Scholars on citizenship use different approaches to structure observations in studies on conceptions of citizenship. Commonly, conceptions of citizenship are composed out of three main elements (Cohen, 1999; Marshall, 1992). Above, modern technological conceptions of citizenship are often described by a broader set of aspects such as the construction of popular imaginations and patterns of public participation. As explained by Stevenson, in these cases, "*citizenship is concerned with a diverse set of practices and cultures that structure complex patterns of inclusion and exclusion within modern society*" (Stevenson, 2005). Thus, in line with the tradition of scholars on citizenship, results are composed and structured in three elements and to be discussed in the next paragraph. Within these elements, the main focus is on practices and cultures which create patterns of inclusion and exclusion of citizenship within the smart city. Consequently, the three paragraphs 4.2 till 4.4 answer the first sub-question of which *meanings are given to citizenship in Dutch smart cities by stakeholders.*

[5] As discussed in the methodological chapter, the analysis is a combination of interview transcripts and a document analysis. References and quotes out of the interview transcripts are displayed with an R (respondent) and followed with the number of the respondent. The same counts for references to document, although these are displayed with a D followed by the number of the document.

By means of a cite out of a document of the city of Rotterdam, the three elements of citizenship can be explained further:

> "*Marco puts on his smart vest and cycles through the twilight to the forest. By putting on the light of his bicycle, he automatically activated a sensor measuring the air quality. His smart watch shows the results of the air quality. The sensor is provided free of charge by the local government. (…) When he comes home sweating, he reads out the data of his smart vest and sends it to the medical file. (…) He experiences difficulties parking, however, since there are parking sensors built in the post lamps (…) he knows where he can park. (…) Just before he goes to bed, Marco logs to the neighbourhood portal. He reads that the nice seventy years neighbour needs help to go to the hospital over two days. He sees that he has time and sends her a message* " (Fragment out of the introductory chapter of Document 3, *Smart City Rotterdam*, called "A day in the life of…")

The cite above is an ideal typical fragment illustrating the various aspects of a smart city. The cite is found in a study published by the city of Rotterdam. To come to a selection of elements on meanings given to citizenship for this study, *D3* document is useful. The authors distinguish three elements, or 'perspectives' as they name it, on the role of citizens in the smart city. The first element is the role of the **citizen as (co-)producer**. With regard to cite above, one could argue that by providing Marco with a sensor free of charge, the local government makes him a co-producer in measuring the air quality. Within this study, the scope of this role is widened to both citizenship as producers and co-producers. The second element distinguished in *D3* are **citizens as end user.** With regard to the aforementioned cite, Marco is an end user and data supplier for his medical file. The third element distinguished in *D3* is the **citizen as object of registration**. Both in the example of the measuring of parking places and the sensor for air quality, Marco is also an object of registration for the government. With the data from the sensor for air quality, the government can make policy or address a problem.

As will turn out, observed meanings given to citizenship can be assigned under these three elements. Therefore, these three elements are used to structure the meanings given to citizenship in Dutch smart cities. To emphasize the character of citizenship, which is earlier defined as a socio-legal status, two changes are made to the elements described above. Instead of citizens as end users, this study presents *citizenship as end usership* which emphasizes the status of citizens as end users. Besides, instead of citizens as object of registration, this study presents *citizenship as being object of registration*. Referring to the social-legal aspect of citizenship, this form of citizenship is about the being of an object pf registration. Thus, the three observed meanings of citizenship in Dutch smart cities are:

Section 4.2: **Citizenship as (co-)producers**

Section 4.3: **Citizenship as end usership**

Section 4.4: **Citizenship as being object of registration**

Consequently, the three paragraphs are the structure which answers the first sub-question of which *meanings are given to citizenship in Dutch smart cities by stakeholders.*

Before going to the results, some notions have to be made with regard to the aforementioned 'set of aspects' which are common among modern technological conceptions of citizenship. In this study, two ´sets of aspects´ can be observed within all the three elements of citizenship, and thus will return in the analysis of the three elements in citizenship in Dutch smart cities. The first aspect are (**boundary) conditions**. Through the creation of (boundary) conditions, governments seek to control the developments of smart city initiatives and cooperate with stakeholders in the development of smart cities. Thus by observing conditions, mostly (policy) instruments such as boundary conditions and preconditions, meanings given to citizenship in Dutch smart cities can be interpreted. What the dominant (boundary) conditions are differs from element to element, and will be discussed into detail within the other paragraphs. The second aspect that is observable in the development of all smart cities are the involvement of multiple **stakeholders**; meanings to citizenship in the smart city are not only assigned by governments. Smart cities, and thus citizenship in smart cities, are a result of an interplay between stakeholders in the policy development process. A variety of stakeholders can be observed within the interview transcripts and documents of this study. For sake of the analysis, these stakeholders are sorted in three groups: 1) (the multiple levels of) governments, 2) civil society organizations and knowledge institutions and 3) businesses.

The interplay of stakeholders needs some additional explanation. Of all the stakeholders, the government can be observed as the dominant stakeholder. As dominant stakeholder, governments jointly take the lead in the process of developing smart cities, which eventually leads to giving meaning to citizenship in smart cities. Governments seek to 'create a level playing field' as a mechanism of organizing cooperation with other stakeholders (R 3, 4, 7, 8, 9, 10). Under the heading of providing a 'tafel´ ('table'), governmental respondents see a role for governments to provide a fair and equal level playing field that takes care for a fair share of all interests, both on national and on local governmental level. Around these tables governments invite other stakeholders such as civil society organizations, knowledge institutions and businesses (R 1, 3, 4, 7, 8, 9, and 10). Some local governmental organizations developed a conceptual framework for this level playing field and the structuring of stakeholders in it. Under the flag of a 'triple helix', 'multiple helix' or 'quadruple helix' model, cooperation is shaped with an equal level playing field as a starting point (D1, 2, 3, 10). Within

the analysis, special notice will be given to those aspects were stakeholders hold different views on citizenship. Consequently, the three paragraphs answer the second sub-question of *similarities and differences that are observed between the meanings given by different stakeholders to citizenship in Dutch smart cities.*

Especially two civil society organizations are named by governmental organizations. These organizations type themselves as a 'broker' or a 'middle ground organization' (R1). With regard to knowledge institutions, local governments cooperate mostly with local universities of applied sciences. Further, respondent distinguish two types of companies. On the one hand, there are the large technology companies such as IBM, Huawei and Cisco who are responsible for a ´technology push´, meaning that they are a supplier of technological devices and technological infrastructure. They serve governments with their global expertise on the development in the smart city sector mainly as a contractor. On the other hand, business could refer to start-ups or small IT-business who develop applications.

With regard to the analysis of three groups of stakeholders, one could wonder why citizens are not taken into consideration as a stakeholder. First of all, the amount of observed cases in which 'citizens' are considered to be a stakeholder in the development of smart cities is limited. Secondly, in most cases it is unclear what respondent define as citizen's participation. At least to some extend citizen participation proceeds via existing institutional structures such as neighbourhoods councils (thus, civil society organizations; R10). Finally, the respondent actively discuss the typology of the role 'citizen', and come with alternatives such as inhabitants, consumer, customers, 'the people', visitors or tourist. These typologies do (to some extend) relate to citizenship, and thus, citizens cannot be studied as a stakeholder who gives meaning to citizenship.

The final step of the results in this chapter is the comparison of each of the three elements of citizenship with the three ideal types of citizenship as formulated in chapter 2. These comparisons are placed in separate sub paragraphs. The comparison is specially focused upon the ideal type(s) which have the most in common with the findings, as well as possible aspects that have not been taken into account in the ideal types. Consequently, the three sub paragraphs answer the third sub question of *how meanings, similarities and differences relate to ideal type(s) of citizenship in smart cities.* Enumerating, all of the aforementioned is plotted in the table to give a structure overview of the analysis.

		Stakeholders		
		Local and national government	**Civil society organizations and knowledge institutions**	**Business**
Meanings (three elements)	**Citizenship as (co-) producer** Paragraph 4.2 and 4.2.1	*4.2 Analysing a set of aspects; boundary conditions* *4.2.1 Comparison to the ideal type of big society citizenship, urban citizenship in the smart city and smart citizenship*		
	Citizenship as end usership Paragraph 4.3 and 4.3.1	*4.3 Analysing a set of aspects; boundary conditions* *4.3.1 Comparison to the ideal type of big society citizenship, urban citizenship in the smart city and smart citizenship*		
	Citizenship as being object of registration Paragraph 4.4 and 4.4.1	*4.4 Analysing a set of aspects; boundary conditions* *4.4.1 Comparison to the ideal type of big society citizenship, urban citizenship in the smart city and smart citizenship*		

Table 4.1 Structure of analysis of the results

4.2 Meaning 1: Citizenship as (co-)producers

The first meaning of citizenship in the smart city observed in this study, is the meaning of citizenship as citizens who are (co-)producers. The observed practices in Dutch cities upon which this meaning of citizenship in the smart city are related to policy suitable for public participation, as will turn out, is driven to solve societal issues. With this paragraph is argued that this meaning of citizenship is about empowering citizens. Above, the paragraph develop new insight in a set of values that support the empowering of citizens. Further, it gives insight in the different stakeholders that give meaning to this form of citizenship. Not all stakeholders within the scope of this study give notice of this meaning of citizenship by sharing ideas or practices in which citizens are (co-)producer. The main stakeholders are local and national governments, civil society organizations and knowledge institutions. Thus, businesses are not observed as a stakeholder in this perspective. Respondents working for civil society organizations and knowledge institutions have also experience with smart city project in which citizens are (co-)producers, which is to some extend shows similarities with the meaning given by governmental actors. All observations are turned into an analysis of the meaning of citizenship as citizens who are (co-)producers.

Analyzing meanings of citizenship as (co-)producers, the first eye-catching cite found is in the initial document in which the designation of citizens as co-producers is described. The document shortly points out what the meaning of citizens as co-producers could be:

> *"Citizens can be seen as co-producer who provide input for policy in various ways and in various degrees. The ways in which citizens produce varies from a relative approachable method as data sharing, a more time intensive version of participating in living labs up to active participation or initiating for the creation of new technological applications for the city.*" Document 3, local government

This short cite gives a first direction on the meaning of citizenship as (co-)producers. In the view of this local government, citizens in a smart city as co-producers proceeds via policy. The role of citizen is to be co-producers of governmental policy. The intensity of the co-production and the way citizens participate can vary. To come to a meaningful interpretation of citizenship as co-producers in this study, the scope of the meaning of citizenship as (co-)producers is broadened to both co-producing and producing citizens. In case of producing citizens, a hypothetical example brought up during the interviews is a situation in which a group of citizens wants to produce their own energy and approach the government with a request for help to achieve their goal (R10). The mechanism of citizenship as producers is in general the same as with citizenship as co-producers. And at the intersection of producing and co-producing citizens are smart city initiatives started by civil society organizations or knowledge institutions. These stakeholders mobilize citizens to produce, and afterwards come together with their group of citizens to the government to ask for help.

In the paragraph above the field of policy in which citizenship as (co-)producers operate is little specific. Among the respondents, this topic is further clarified. Especially when the meaning to citizenship is citizens as (co-)producers, smart city initiatives focus on 'societal question', 'societal challenges' or 'societal value' (R 3, 5, 6, 7, 8, 9, 10). The wording all these respondent choose appears to be a variation on the same social aspect. Three respondents elaborate on the meaning they give to the social aspect and smart cities, which in short can be interpreted as a 'pragmatic' aspect on societal challenges (R 3, 5, 8). This can best be illustrated by the following two cites:

> *"For me it is about societal value. One can look at that differently. If smart city is the theme people run after, so we can use that."* Respondent 8, local government/civil society
>
> *"It [defining the social question as government] is not something new, but is for me one of the most important challenges where the government stands for when governments start to work with technology."* Respondent 5, national government

What these respondents have in common is the central place social aspects have in the development of smart city initiatives. This notion is contrary to the words chosen in the analysed policy documents. Within the huge jumble of word choice of the policy documents, the first thing that is noticeable is the variety of alternative wording such as 'societal challenges', 'societal benefits' and 'societal added value' can be found among most of the policy documents among all layers of government (D 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16). Contradictory to the interviewees, these policy documents use words that combine a societal aspect with an economical aspect. Observing the meaning that governments give in these policy documents, there seems to be a surprisingly but inexplicable difference in the interpretation of the respondents on what the societal aspect of smart cities is and the way it is approached by the policy documents. Above, cities claim that civil society organizations in general are better able to formulate a social problem. Civil society organizations are better able to organize the public, and have the advantage that they are better organized than individual citizens. The extent to which this aspect can lead to an experience of friction is out of the scope of this study, but certainly is an aspect which should be kept in mind in developing smart cities.

The first analysed cite gives three examples of interaction between citizens and the governments, namely 1) data sharing, 2) participating in a living lab and 3) active participation. In comparison to this cite the shared practices of respondents have a broader scope and all relate to platforms. In general, platforms are used to engage citizens to smart city project. The goal of platforms is to engage and empower citizens to a project and governments give meaning to citizenship as (co-)producer through these platforms. Among the seven respondent that discussed platforms, different functions and forms of platforms can be distinguished (R 1, 3, 4, 7, 8, 9 & 10). To illustrate this distinction, two examples are helpful. The first example is a platform functioning as an

agent to match individual citizens in request for small help, for example matching neighbours to do groceries for each other (D3). In this case the task of the government is to organize a platform and stimulate citizens to use this platform. The second example is a platform run by a civil society organization and a knowledge institution (R4). This platform gives insight in all kind of sensors active in the city, among which the data of governmental sensors is the basis. Above, a knowledge institution stimulates citizens and companies to register their sensors to enlarge the amount of available private collected data which eventually should lead to the development of new smart city applications. This initiative distinguishes itself from the previous example in the goal of the platform, to stimulate re-use of open data of the city. The role of the government in this platform is more versatile. Not only should the government organize the platform (in this case is done by consulting a group of 'partners'). To stimulate the re-use of data the platform attractiveness is of continuing emphasis. In this specific case, the developers of the platform made therefor a tool to visualize data. The role of partners, businesses or developers, will be discussed later.

Especially governments and civil society organizations see a role for themselves in the development of platforms, for example when it comes to set up boundary conditions for platforms. Among the respondents, boundary conditions relating to transparency are brought up most often, with words such as '*open source, open systeem, openheid, transparantie, open infrastructuur, open data'*. Earlier scholars have distinguished a large variety of meanings given to the word transparency in the Dutch governmental context, of which openness is one of them (Scholten, 2012). To illustrate the differences in the meaning given to words related to openness, the following two cite are interesting:

> *"What is called a platform by them [a company], is if you look closely to it not a platform. The next step is 1) to make it a platform and 2) to make it open and distributed so that it is from and for the inhabitants."* Respondent 10, local government
>
> *"Our goals is to democratize technology. […] We do that under the heading of* ***open,*** *fair and inclusive."* Respondent 1, civil society organization

Three different meanings can be interpreted among words that have to do with transparency. The most often, both governmental and civil society respondents came up with transparency as 'open' in that sense that platforms should be *open for everyone* (R 1, 4, 6, 7, 10). This relates to another aspect brought up in the first cite, in which a link is made between 'open', ownership and an equal information position. The second meaning of transparency brought up in the interview transcripts has to do with internal quality processes of the governmental data; via open platforms with open governmental data the internal quality control on open governmental datasets improves (R6). The third meaning of open relates to second cite above and is only argued by the respondent of the civil

society organization; openness as boundary condition to come to ´democratic´ technology. It is ambiguous to what extend governmental organization support this goal. Overall, the different meanings assigned to the word 'open' could lead to friction when governmental organizations and civil society cooperate with each other.

As platforms aim at collective action, government need users for these platforms. Thus, accessibility of platforms and selection of users are two other important boundary condition for platforms. For citizenship it is important to understand who are part of the smart city community, who are involved in platforms and how governments keep platforms accessible. Out of the gathered data, it is difficult to interpret meanings on these aspects. Although respondents attach importance to building a broad community and accessible platforms, it seems respondents have difficulty assigning meaning to these boundary conditions (R 1, 2, 4 & 10). This can best be illustrated by a cite:

> *" [someone asked] Is there a community building aspect in it? I said, I do think so. I have all kinds of conversations with people who work for the districts. The district manager, the neighbourhood manager. Those are the existing structures within neighbourhoods. The question is, how can we involve our citizens?"* Respondent 10, local government

To cope with the difficult aspect of community building, the organization in this case choose a strategy to engage citizen in a smart city community via existing governmental structures. A buzz-word that governments use in relation to engage (co-) producing citizens is *living lab* or an *urban living lab* (R 2, 4, 7, 9 & 10; D 1, 2, 3, 5, 7, 8 & 9). There is not a definition for a *living lab*, but it has something to do with an open and accessible setting where citizens, companies and civil society organization are grouped to develop innovative projects or practices. Not in the interview transcripts, nor in the policy documents is argued how governments get there citizens involved in these *labs*. Elaborating on that, there are multiple indications that respondents let the community building aspect to civil society organizations and knowledge institutions (R1, 4 and 10). As discussed in the previous paragraph, the function civil society organization assign to platform *slightly* differs from governments. Especially if governments choose to delegate the community building aspect to civil society organizations, a friction in policy could develop between the function of the platform and the way the community and the civil society organization want the platform to function.

Discussing the perspective of citizens as (co-)producers in a smart city brought some of the interviewees to bring a critical note forward. This aspect is also being addressed by another respondent, who brings forwards that consultation of citizens seems to be a paper reality:

"Ideally, you have the conversations with the city, but in nine out of ten times, we have these conversations with large firms." Respondent 3, local government.

"I have not seen [consultation of citizens in smart cities] yet. In one of the last committee meetings of the city councils, last year, some councilors specifically asked the alderman: think especially of the citizen. […] Perhaps a smart city is not a city who says it is a smart city, but it just does? I mean, that it does not so much pays attention to it, but that is does address some wise issues. […] There is a double threshold. It was difficult [to consult citizens] in the past. Then I had to consult [with citizens in] neighborhoods, districts and squares. It was in the normal world already difficult to consult a broader public […], those [citizens who are] professionally and notorious interested. It was difficult to reach people outside this inner circle. When you put the aspect technology in this frame, it is a double burden. […] the inhabitant of the smart city has bad luck. It should learn to handle with technology and learn how one as inhabitant can let your voice

The main problem that was brought forward is the government's inability to approach citizens. Three different views are brought up why governments struggle with the approach of citizen. A first argument that is brought up, is that in the haste to do the job citizens are *´forgotten'*. Letting citizens participate is a costly and time intensive affair, and citizens are often not interested (R 3).

4.2.1 Comparison to ideal types

Interpreting the various aspects of citizenship has (co-)producers, the key value of this meaning of this form of citizenship is empowerment of citizens. Examples of empowerment in the smart city is data sharing, participating in living labs or creating new technological applications for the city (Rotterdam, 2016). Empowerment of citizens is in this study a derivative of words like 'co-creation', 'participation' or 'initiative'. For instance, cities could participate in 'local energy supply'. The role of the government is particular focused on the right set of preconditions aimed at strengthening empowerment. Out of the key value empowerment, a value systemic can be interpreted. Through these values, formulated by the respondents as boundary conditions or pre conditions, governments seek to create a level playing field for all actors. In comparison with the ideal types, citizenship as (co-)producers has most similarities with the ideal type of big society citizenship in the smart city and with smart citizenship. Especially when it comes to citizenship as producers, the similarities with the ideal type of big society citizenship is recognizable. As is described in the ideal type, this meaning of citizenship is indeed focused upon the empowering of communities and the redistributing of power to citizens. Indeed, technology helps communities to govern their own goods and therefore technology is a value in itself for improving everyday life in the meaning of citizenship as (co-)producers. Out of the ideal type of big society citizenship, it is unexpected that governments give no meaning to the promotion of voluntary work in the meaning of citizenship as (co-)producers. Inclusion of participating citizens is mainly done via the lowering of boundaries for participating. The

comparison with the ideal type of smart citizenship lies in the meaning that is given on co-creation and participation, and the central role of solving societal issues in an innovative way. Above, reasoning out of the ideal type, the disappearance of the distinction between the public and the private is comparable to the way meaning is given to citizenship as (co-)producers.

In sum, the analysis of citizenship as (co-)producers brought up a set of operating practice of smart cities focusing on empowering citizens in producing. In comparison with the ideal type, it has most similarities with the ideal type of big society citizenship. All in all, the key values of citizenship as (co-)producers and the comparison to the ideal types big society citizenship and smart citizenship are structured in the following table:

	Key values compared to ideal types				
Citizenship as (co-)producers	**Empowerment**	**(co-) production for a societal reason**	**Platforms**	**Transparency and accessibility**	**Community**
Ideal type of big society citizenship	Comparable	Slightly comparable: (co-) production motivated as instrument to empower	Slightly comparable: platforms as instrument to empower	Not comparable; ideal type focuses on promotion of voluntary work	Comparable
Ideal type of smart citizenship	-	Comparable	-	-	Slightly comparable; disappearance between private and public

Table 2 Key values of citizenship as (co-)producers in comparison with the ideal types of big society citizenship and smart citizenship

4.3 Meaning 2: Citizenship as end usership

The second meaning of citizenship in the smart city analysed in this study, is the meaning of citizenship as end usership. The observed practices in Dutch cities upon which this meaning of citizenship in the smart city are related to applications and, as will turn out, is driven by participation in use. With this paragraph is argued that this meaning of citizenship is about behavioural change. Above, the paragraph develop new insight in a set of values that support the behavioural change of citizens. Also, it gives insight in the different stakeholders that give meaning to this form of citizenship. Not all stakeholders within the scope of this study give notice of this meaning of citizenship by sharing ideas or practices in which citizens are end users. The most present stakeholders are the local and national government. Also, business is present within this perspective. Civil society organizations and knowledge institutions are not observed. The observed practices in Dutch cities upon which this meaning of citizenship in the smart city are related to public services. All observations are turned into an analysis of the meaning of citizenship as (co-)producers.

To come to a meaning of citizenship as end usership, first a reverence is made to the initial document in which the designation of citizens as end users is found. The document shortly points out what the meaning of citizenship as end usership could be in their point of view:

> "*Citizens as end user is about an individual experience of smart city technology. For example, citizens use applications to help with energy efficiency, a quick route or for their personal health. The role for the government is to focus on the success of the use of an app, which depends on the appreciation by the citizen*." Document 3, local government

In the view of the authors of D3, citizenship as end usership is about individual experiences of an overarching set of smart city technologies. The local government ascribe themselves a role in making successful applications. The governments leaves aside a role in the development of applications. Out of the cite is extracted that citizens as end users use applications in the domains of energy, mobility and personal health. The relation between citizens and governments is based on the appreciation of applications and participation by using these applications. The cite above is the most explicit description observed in the data. In the following paragraphs, the aspects extracted out of this cite will be analysed into detail within the interview transcripts and the analysed documents.

But first, in of the cite of D3 an important boundary condition for the success of applications remain unexposed; a digital infrastructure. Especially in relation to citizenship as end usership, the development of a digital infrastructure is a practice that is brought up recurrently (All documents except for 1, 10, 13, R6). A digital infrastructure is necessary to make applications function and thus relates to the (for the government as important) appreciation of citizens and participation by citizens. Among respondents, a digital infrastructure reflects on varies technologies such as glass fibre

internet network, LoRa/IoT access points[6] and Wi-Fi access points (R 3, 7, 10) or on a standard to share and store data called FiWare (R3). Within the development of digital infrastructure, governments see a role for business, although there is a difference in the approach and practice business advocate:

> *"If we [the government] do nothing, there will start an investment firm […] to roll out a city-wide infrastructure who is owned by a private company. Which is very difficult in this city, [continues sarcastic] we have an opinion on that point."* Respondent 10, local government.

R10 argues that government has a role in ´restraining´ business. This might have to do with the contradictory approach of large technology firms. Large technology firms such as IBM are not so much explicit in the *type* of infrastructure that should be build, they frame the discussion in light of *timing* by opting for a 'technology push' (R1, 3). Against the background of their global expertise, business advice Dutch cities to invest upfront in their technological devices and technological infrastructure in order to make the smart city a success, business state that the government should invest upfront in deploying technology within the city – which could lead to a mechanism known in the technological sector as 'vendor lock-in'.[7] Business and government diametrically oppose each other on the point of ownership of technology, although an example of a shared or cooperative digital infrastructure is an opportunity worth further examination to overcome this aspect (R3).

Especially when it comes to citizenship as end usership, a recurring practice are the development of applications upon a digital infrastructure. *Applications*, or often abbreviated to *apps*, differ to some extend from platforms as discussed in section 4.2, although there is a relation between these two practices especially in relation to the meaning they give to citizenship. The relation between platforms and applications can best be illustrated by the next cite:

> *"I belief I wrote a weblog two weeks ago, in which I argued that I don´t belief in smart city platforms. The European Commission speaks of ICT/urban integrated platforms. I believe that the appearance of platforms will be: this is helpful for me, this is an information service that is useful. Thus, apps. Although apps are built upon a common basis, [an individual] doesn't see that. One takes part, because it is helpful for him. So my strategy is to start and end with the citizens, [start with] the value they derive from the app, and to add this value in all these specific projects."* Respondent 10, local government

[6] LoRa stands for Long Range-, Low Power network is a relatively cheap network for the data transmission of IoT (*Internet of Things*) applications. IoT is a development where everyday services and devices (*things*) connect to the internet which brings new opportunities for these services and devices.

[7] As defined by the Linux Information Project (2006), "*Vendor lock-in, or just lock-in, is the situation in which customers are dependent on a single manufacturer or supplier for some product (i.e., a good or service), or products, and cannot move to another vendor without substantial costs and/or inconvenience. This dependency is typically a result of standards that are controlled by the vendor (i.e., manufacturer or supplier). It can grant the vendor some extent of monopoly power and can thus be much more profitable than would be the absence of such dependency*."

At first sight, it seems that the respondent use the word platforms and applications interchangeable. That makes the study on the meaning given to applications more complicated. In several aspects, applications differ from platforms. Applications are tailored at personal preferences of users which makes them helpful for the individual. Therefore, applications appear as information services. This appearance affects the way applications should be developed, in which the value citizens can derive from an application is the starting point of developing an application. Nevertheless, citizens are not actively involved in the development of applications.

The role of government is not to develop applications; among all respondents and documents that role is left to business. Governments can be supportive in the development of applications, for example through funding instruments such as risk sharing financial facility and steering on the substance of applications (D20). Thus, the role for the advocacy of citizens should be taken by developers/business. Developing applications seems thus more complicated than developing platforms.

> *"You need programmers to make information services. It is not a job of the local government to develop information services. It is, however, a job to there is a data scientist community."* Respondent 10, local government

The unexpected issue of developing applications lies in apparent contradictory approaches of end users by different stakeholders. To illustrate this issue, the approaches of the stakeholders 'government' and 'business' will be highlighted. On the one hand, governments choose an approach which contributes to an application that is being appreciated and used by citizens. The underlying assignment to come to an appreciated application can best be illustrated by the following cite:

> *"You need all the stakeholders in a neighbourhood to create support. We can think something up for a neighbourhood, but those living in a neighbourhood should work with it. It is not that you put a layer on it, and the people just work with it. Those people are also increasingly critical […]That is an intensive process."* Respondent 2, local government

The cite above describes why support of citizens is an important aspect for governments who develop an application for citizens as end users. The cite refers to a campaign focused on recruiting end users for an applications to energy reduction of houses by giving insight in energy usage which eventually should lead to changing of energy supply behaviour. With that, an application contributes to a higher policy goal. To get citizens as users for this application, the government went from house to house to ask the resident to participate. Thus, an approach to come to appreciation and used applications by citizens is a time intensive process in which governments convince individual citizens to participate and contribute to the policy goal. A means thereby is the development of application

for the individual gain of citizens. On the other hand, business a different approach in organizing end users:

> *"They [business] say, we are good in organizing users. Take a look at [a commercial television station], we can do that. Our mass is in the bundling of individual preferences in the interface."* Respondent 10, local government

The cite above describes the view of a governmental actor on the practice of business in organizing end users. Other than governments, business focus on a mass, and choose an approach to bundle individual preferences to come to a mass. Potentially, these individual preferences on which business focus are incompatible with the higher policy goal governments focus on. The existence of these different approaches could lead to a certain friction in jointly developing application of governments and business.

Data and the smart city applications are two irrefutable aspects and is a sensitive topic among respondents. Smart cities depend on ICT-driven applications, and these ICT-technologies produce a flow of data and information (D19). Data is thus produced with or by application of individual citizens. The potential of the data in improving applications or in other services makes that all stakeholders are interested in data. The difficulty with data is the privacy aspect of individual users, an interest which that should be defended by the government. It moves governments in a difficult position in which contradictory interests have to be managed. Respondents agree that privacy is an important aspect, but also argue that the topic 'kills' the discussion of the possibilities of data (R1, 2, 4, 5, 6, 7, 8, 9, 10, 11). Aspects that could be discussed in that light, is the risk of collecting data and illegitimate use or abuse of data (R5). As soon as data is published, geographical boundaries are irrelevant for published data, which makes national laws and regulations for data collection an inadequate policy instrument. Within the formulated solution direction two things are noticeable. Among the 4 respondents which whom this topic was discussed, there was no consensus on the direction of solution. However, the respondents were unanimous in the fact that the solution does not lie in laws and regulations alone. Contradictory, especially the European Commission argues that laws and regulations should be the solution, both at national and European level.

In the cite of the city of Rotterdam, *citizenship as end usership* relates to an individual approach. Individuality is thereby an aspect that distinguishes the perspective of citizenship as end usership from the other perspectives observed. Individuality and role definition of citizens is a topic that comes back in the data more often. This can best be illustrated by the following cite:

> *"We should do it together with the city. […] I avoid the word citizen. When I call them citizen, I push someone in a role."* Respondent 3, local government

In the view of this respondent, it is important to choose a role in which people are approached by the government in the smart city. Especially when it comes to citizens as end user, respondents avoid the word citizen. Instead, two other types of role definition can be observed. On the one hand there are role definition that relate to an individual-economic approach marked by words as *customers* or *consumers*. Noticeable is that in these cases governments define their own role in an equal way, by expressing the success of smart city projects in terms of commercial success. In other examples, roles relate to a geographic-individual approach marked by words as *inhabitants*, *participants* (R3) or as *smart citizen* (R1). In these cases, governments choose an approach in which 'wijkcoordinatoren' or 'buurtregisseurs' [8] play a role.

Whether it is about citizens, individuals, customers or inhabitants, especially when it comes to citizenship as end usership, respondents endorse the importance of critical thinking citizens. (R1, 2, 4, 9 and 10). Critical thinking refers to the ability of citizens to make an estimation of the effects of use of technology or an application. Under the surface of the like-mindedness endorsement unfolded a discussion with respondents on aspects as the existence of a critical thinking mass in the Netherlands, what critical thinking citizens are and the extend in which the government has a role in promoting of a critical thinking mass. The two divergent argument in this context are interesting two highlight.

> *"I think that in the ideal world there is a role for the government. That citizens not only have the ability to use technology, but much more understand what the underlying mechanisms [of technology] are.* Respondent 3, local government.

Within this first argument, the respondent argues that critical thinking citizens understand the underlying mechanisms of technology. The respondent argues that the role for the government should be to influence the public opinion in such a way that citizens stand critical to certain technological developments. Divergent to this opinion is the notion of a respondent working for the national government:

> *I think we have a large critical mass in the Netherlands. For example, [reference to civil society organization X], is a party within [city Y] and the Netherlands who is most alert on these kind of thinks, as far as I overlook."* Respondent 9, national government.

The respondent positions the argument in a wider context of the international reputation of the Netherlands, in which the Netherland is seen as a testing ground for smart city applications. When smart city applications succeed here, the probability of success of this application is higher. The respondents argues that reputation of the large critical mass in the Netherlands is an element which

[8] Civil servants working for the local government who coordinate governmental work in a neighborhood.

makes this country attractive as a testing ground. In that context, the respondent refers to a *civil society organization X*, an organization that is represented in this study via an interview with *R1*. The activities of this organization focus on developing of alternative applications, the education of citizens in technology and lobbying among governments for the ´democratization of technology. It is the largest organization in the Netherlands in the field of critical thinking of technology. However, as pointed out by *R1* the capacity of this civil society organization is limited. The organization is locate in only one city in the Netherlands which makes that citizens in other cities can only profit marginal from the educational aspect. This civil society organizations points out that governments themselves also have a role in being critical on the applications of technology whether, both on local, national and European level (R1). Enumerating; when it comes to critical thinking citizens, different respondents from different organizations hold different views. This seems to coincide with the impression that the meaning of critical thinking citizens in the smart city is not well thought, especially not by governmental actors.

4.3.1 Comparison to ideal types

In citizenship as end usership, the key value in this meaning of citizenship is behavioural change. This change is stimulated via custom-made and individual advice to the citizen. Behavioural change of citizens within the city is related to broader governmental policy goals of the city, in areas such as energy and mobility. Values that derive from the key-value behavioural change are applications and a digital infrastructure, through which citizens are approached as individuals. Involving a sub group of citizens in applications is one of the main targets, as well as to get citizens who are able to critically think of technology. In comparison with the ideal types, citizenship as end usership has most similarities with the ideal type of urban citizenship in the smart city, and to some extend with the ideal type of smart citizenship. As argued, government give meaning to citizenship as end usership through their focus on behavioural change. This relates to the ideal type of urban citizenship, as it is a moral obligation to use the practices provided by the government. The meaning of application in this form of citizenship relate in twofold to the ideal type of urban citizenship. On the one hand, government seek actively to get their citizens involved in these new digital sub-cultures of applications. Above, when citizens are involved in these applications the citizens are powered by their individuality through the approach of applications. Due to the similarities with the ideal type of urban citizenship and the meaning of citizenship as end usership, it is unexpected that governments do not give meaning to the political dimension in citizenship as end usership. Perhaps this is related to the outsourcing of the development of applications, which makes the political dimension undiscovered territory. The meaning of citizenship as end usership also shares two aspects with the ideal type of smart citizenship; the focus upon critical thinking citizens and the meaning that is given

to a digital infrastructure to ensure the accessibility of the city. Especially the aspect of critical thinking citizens is unexpected and paradoxical in a way; citizens are morally expected to be both an end user of closed applications but moreover should be critical towards technology and the risks it brings with it.

In other words, the analysis of citizenship as end usership brought up an operating practice of smart cities in which participation in use to come to behavioural change are the key values. This perspective is best comparable with the ideal type of urban citizenship. The key values of citizenship as end usership and the comparison to the ideal types of urban citizenship and smart citizenship are structured in the table below:

	Key values compared to ideal types			
Citizenship as end usership	**Behavioural change**	**Participation in use; appreciation of applications**	**Digital infrastructure, safe data collection**	**Critical thinking citizens (*existence discussed*)**
Ideal type of urban citizenship	Comparable; form of moral obligation	Slightly comparable; applications as digital sub-cultures	Not comparable to ideal type	Not comparable to the ideal type
Ideal type of smart citizenship	Not comparable	Not comparable	Slightly comparable, as aspects of the fundamental rights in smart citizenship	Comparable as key value of the ideal type

Table 4.3 Key value of citizenship as end usership in comparison with the ideal type of urban citizenship and smart citizenship

4.4 Meaning 3: Citizenship as being object of registration

The final meaning of citizenship in the smart city observed in this study, is the meaning citizenship as being object of registration. The observed practices in Dutch cities upon which this meaning of citizenship in the smart city are related to sensoring and is driven by public support. With this paragraph is argued that this meaning is the stranger in our midst. Within the boundaries of this study, this paragraph will argue that citizenship in this form is by-product which is not extensively being rethought. Above, it gives insight in the different stakeholders that give meaning to this form of citizenship. In comparison to meaning 1 and meaning 2, only respondents working for governments give notice of this meaning of citizenship by sharing ideas or practices in which citizens are an object of registration (R 3, 9 & 10). But even among governmental respondents, it seems that smart city projects in which citizens are an object of registration is uncharted territory or a territory too sensitive to share their ideas. Above, the observed practices in Dutch cities upon which this meaning of citizenship in the smart city is based are very different, namely on a project focused on mobility (D16) and on a project for public safety (D19). Respondents working for civil society organizations and knowledge institutions have no experience with smart city project in which citizens are an object of registration and find it hard to give meaning to this mode of citizenship. The small amount of observations are turned into a relatively brief analysis of citizenship as being object of registration. Due to the deviation of the meaning of citizenship as being object of registration compared to meaning 1 and 2 of citizenship in the smart city, a relevant insight is analysed and presented in this paragraph.

Analyzing meanings of citizenship as being object of registration, the first eye-catching cite found is in the initial document in which the designation of citizens as object of registration is described (D3). The document shortly points out what the meaning of citizens as object of registration is the point of view the authors:

> *In the role of citizens as an object of registration, without immediate notice all kinds of data of individual citizens are being collected. Aspects like privacy and safety are important values to create public support.* Document 3, local government

This short cite gives five practices and cultures in which the meaning of citizenship as being object of registration distinguishes itself from the other two observed meanings. The overarching value distracted from this cite is to come to a culture of public support. To come to public support, the role of the government is to ensure the boundary conditions *privacy* and *safety*. The operating practice of this meaning is the collection of data of individual citizens. The data is collected without immediate notice, which says something about the way the data is collected but could also be an indication for the use of the data. Later on in the document is speculated on custom services (‘maatwerk’)

delivered by the government and has better insight in the problems that occur among the citizens. Although this situation is still purely speculative, the report has already a (marketing) term for this situation: city intelligence – for better policy and services (D3). On the basis of the indicators above, the remainder of this paragraph will analyse these aspects into detail.

Considering that the meaning of citizenship as being object of registration is based upon two cases, these two cases deserve a short introduced. In the first case, the goal of smart city technology is to increase the public safety in a night life area. Therefore all sorts of data is gathered, such as the noise level on the street, messages on social media and the amount of occupied parking. To get public support and guarantee the privacy, the data is gathered on the level of the street as a whole (R2, D1, 2, 15). With this data, the local government has real time insight in the area which can help to enforce the situation in the area. Contrary to the other meanings, the relation between citizens and government is not so much determined by the presence of an individual citizens in the area, but of the larger group of ´visitors´ (R2). Thus, citizenship in this case is determined by the presence at a certain physical location. Above, it is not about the individual but on the collective who are all object of smart city technology without immediate notice and should support this. As a result, the involvement of citizens is that of an object of registration, a supplier of data and via support.

The second case observed has to do with mobility and the various modalities of transport, such as train, bus, car, metro and bike. The formulation of the goal of this project is on a meta-level, namely to get insight in the city using data and information (D16). The governmental organization sees especially assumed benefits for itself, although 'the people itself' and companies are also named. Throughout the plan, behaviour of citizens is described in a way that reminds of the *homo economicus;* within the policy document the assumption is that mobility within the city is mainly a problem of coordination and that public behaviour should be influenced to solve this problem. That both observed cases are to some extend 'exceptional', can best be illustrated by the following cite (referring to the public safety case):

> *We look at [this case] as a place where everything is possible – where we have the room to experiment. The other living labs are of a different type, with different conditions. We don't want to transfer all [the conditions] from [this case] to the other living labs. We would like to point out that there are different forms. Some cases are more conditioned, the other is more cowboy country'.* Respondent 2, local government

Especially in cases where citizens become object of registration, the operating practice of governments is to govern and sensor the city by collecting all sorts of data without immediate notice. This practice can be divided into two aspects. The first aspect is the role of data. Smart city initiatives depend on ICT-driven technologies, and these ICT-technologies produce a flow of data and

information (D19). This point of view is especially adopted by the European Commission, who states that data-ownership is an important precondition for the success of development of smart cities. To support this statement, the European Union is the key governmental leader in developing platforms for collecting data and developing standards for data collecting and sharing (R4, D2, 3 & 8). The second aspect of the operating practice is the collection of data ´without citizens' immediate notice´. Within the two cases observed, governments communicate relatively little to none of their operating practice. For example, to come to the description of the operating practice in the entertainment area all three policy documents and the interview transcript are used, and all of these sources contained little information. Elaborating on this aspect, another interviewee stated the following about the closeness of governments on their operating practice:

> *"Continuation of the pilot projects that we have done the past two years, of what we call data-driven management. To see how it works and what our roles [as a local government] should be. We do this process especially inside [the organization] because it is so exciting and no one knows. […] We should not bother the citizen with it."* Respondent 10, local government

The operating practice of this specific organization is still in development. During this process of two years, the organization is both searching for an operating practice and the corresponding role definition of the government. Remarkable is that the organization in that process does not work on public support. The lack of public support as an overarching value for citizenship as being object of registration does not apply only to this organization, within the scope of this study is not found that governments give meaning to public support as a value that comes with citizenship as being object of registration.

4.4.1 Comparison to ideal types

Interpreting the aspects above, the meaning of citizenship as being object of registration is to gather data without noticing citizens. The only stakeholder involved in this study who give meaning to this form of citizenship is the local government. This is contrary to the expectation that followed out of the document analysis on forehand, in which the phrase is expressed as 'without *immediate* notice'. Instead of immediate noticing the public, government give meaning through their search of 'public support´. Comparing this meaning of citizenship with the ideal types of citizenship in the smart city is relatively difficult, due to the limited amount of available data. Nevertheless, in comparison with the ideal types, citizenship as being object of registration has most similarities with the ideal type of smart citizenship. The meaning these cases give to being object of registration is a form of social-technical interaction, which above are implemented to improve the wellbeing of citizens. As earlier described, the contradiction of smart citizenship is that the socio-technological aspect could result in the improvement of human rights, or leads to a situation in which the governing via data leads to a

form of despotism. Out of the studied cases, the meaning given to citizenship as being object of registration misses crucial aspects of the ideal type of smart citizenship to ensure that this form of citizenship leads to an improvement of human rights. No efforts are taken to emancipate citizens to think critical of technology, the citizens do not have a say in the projects that are developed, nor do the cases studied do not hold a relation to forms of e-democracy. Thus, the meaning of citizenship as being object of registration has most similarities with the negative connotation of the ideal type of smart citizenship threatens the fundamental rights of individuals.

In sum, citizenship as being object of registration is the stranger in our midst. Smart city project have an operating practice focused upon public support and the collection of data without immediate notice. This meaning of citizenship is only to some extend comparable to an ideal type, which is the ideal type of smart citizenship. The key values of citizenship as being object of registration and the comparison to the ideal type of smart citizenship is structured in the table below:

	Key values compared to ideal type				
Citizenship as being object of registration	**Public support**	**Being object of registration**	**Collection of data without (immediate) notice**	**Privacy, safety**	**Govern and sensor the city**
Ideal type of smart citizenship	Not comparable, to ideal type in which citizens think critical	Slightly comparable, minimum form of social-technical interaction	Not comparable to ideal type in which citizens have a say in the development of technology	Slightly comparable; aspects of the fundamental rights of smart citizenship	Comparable to the smart despotism citizenship

Table 4.4 Key values of citizenship as being object of registration in comparison with the ideal type of smart citizenship

4.5 Analysis of results

In this chapter, three meanings on citizenship in Dutch smart cities are distinguished; citizenship as (co-)producers, citizenship as end usership and citizenship as being object of registration. Within meaning 1) citizenship as (co-)producers, the interpreted key value is empowerment. Platforms empower communities in which citizens have a role as (co-)producer for a societal reason. In terms of boundary conditions, stakeholders attach value to transparency and accessibility of platforms. Stakeholders put down a critical note in terms of the government's inability to empower citizens for platforms. In meaning 2) citizenship as end usership, the key value is behavioural change. The operating practice of this form of citizenship are applications. Values that derive from this key value are digital infrastructure and the safe data collections, through which citizens are approached as individuals. Individuals can take their role via the participation in, and the appreciation of applications. Finally, in meaning 3) citizenship as being object of registration, the key value is public support. Without (immediate) notice, all sorts of data are collected to govern and sensor the city. The come to public support, the privacy and safety are important boundary conditions. The role of citizens is passive; they are only object of registration. The table below gives an overview of these three forms of citizenship in the smart city.

	Key value	**Role of citizens**	**Operating practice**	**Boundary conditions**	**Approach**
Citizenship as (co-)producers	Empowerment	Participation in the design via(co-) production	Platforms	Transparency and accessibility	Community
Citizenship as end usership	Behavioural change	Participation in use; appreciation of applications	Applications	Digital infrastructure, safe data collection	Individual
Citizenship as being object of registration	Public support	Being object of registration	Collection of data without (immediate) notice	Privacy, safety	Govern and sensor the city

5. Conclusion and discussion

The final chapter of this study contains two sections. The first section of this chapter discusses the conclusion of this study, the main and sub research questions. The second chapter of this study discusses the results and methodology of this study and some suggestions for further research.

5.1 Conclusion

The first section works towards the conclusion of this study. Therefore, this chapter starts with a summary of the results, a short review of the existing studies in which this study is performed and the added value of this thesis. With that in mind, paragraph 5.1.3 answers the three sub research questions. In paragraph 5.1.4. the main research question is answered.

5.1.1 Summary of results

The overall purpose of this study is to interpreted meanings of citizenship in Dutch smart cities by stakeholders involved in policies in Dutch smart cities. As a result of the theoretical framework, three ideal types of citizenship in the smart city are formulated. The first ideal type describes *big society citizenship* in the smart city. This is characterized by active, self-reliant communities in which a big civil society operates independent from government policy. The role of technology is to further enabled and empower citizens. The second ideal type describes *urban citizenship* in the smart city, which is powered by individualism. Technology in this case helps to further strengthen individualism. Political institutions have a key role in governing interactions between citizens. The third ideal type describes *smart citizenship*, which is powered by critical thinking individualism. The distinction between the public, private and civil domain disappears in the interweaving of these elements. Technology is a socio-technical enabler in all elements of smart citizenship. The analysed empirical data existed out of twelve interview transcripts and twenty policy documents. In an arbitrary order, this study interpreted three meanings, namely 1) the meaning of citizenship as (co-)producers, 2) the meaning of citizenship as end usership and 3) the meaning of citizenship as being object of registration. For all of these meanings of citizenship, a key value and a "*set of practices and cultures that structure complex patterns of inclusion and exclusion"* are described (Stevenson, 2005).

5.1.2 What we already knew

To understand the context of the conclusions of this study, this paragraph discusses what earlier publications in this field of research have found. In general, it is known that cities are of increasing importance in governmental policy. Also, scholars describe that smart cities relate to citizenship, and that citizenship is part of policies of Dutch Smart cities (Nijman, 2016; Raad voor de Leefomgeving en Infrastructuur, 2014). However, relatively few publications study smart cities in the perspective of citizens; the academic debate of smart cities mostly focuses on the way smart city information and

communication technology and infrastructure should look like (Zanella, Bui, Castellani, Vangelista & Zorzi, 2014). Only a small set of publications study the emerging technology in cities which discuss various perspectives on the way smart cities effect citizens lives, and the way citizens have a place in the smart city. Two of these are conducted in the Dutch context. The first study shows that the boundaries of engaged citizens towards non-governmental developers of smart city applications are blurred, which results in uncertainty on citizens role in smart cities (Nijman, 2014). However, this study leaves out the perspective of the government as an actor. Another study by De Waal (2012) uses a philosophical approach to describe how emerging digital and mobile media technologies could influence the public space of Dutch cities in the possible future. It describes that most applications are ´affordances´ in the perspective of citizens, and that applications can roughly be divided in application that make the city as a parochial place, or help to improve the public domain of the city.

In the perspective of citizenship, conceptions still stands that citizenship a social-legal status is, describing the relation between citizens and governments. It is known that the improving technology influences conceptions of citizenship (Van Est, 2016). Scholars describe the current dominant conception of citizenship in the Netherlands as active citizenship, in which the government expects citizens to be actively in taking over tasks that used to be delegated by the government. For this study, the two sociological concepts of big society citizenship and urban citizenship are of special interest. Big society citizenship holds a relation with active citizenship, and focuses upon empowering communities (Alcock, 2010). Urban citizenship is described by scholars as a morally loaded form of citizenship, defined by a set of skills focused on living together peacefully (Van der Wouden, 1999; Van den Brink, 2006).

5.1.3 What this thesis adds

In the previous section is described that in the context of this study, both the concept of smart cities and conceptions on citizenship have been studied extensively and that smart cities and citizenship relate to each other. This thesis builds upon these aspects. Up till now, scholars studied functions of smart cities for citizens without studying the government as an actor. Where it comes to studying smart cities, this thesis adds a holistic and nuanced view to that topic. Whereas other scholars left out the government as their core object of study in relation to smart city and citizens, this study includes this important perspective. Scholars argue the need for a study on the meaning given to citizenship in smart cities, for example since ´including the people´ is an aim in Dutch smart city policies. This study is of relevance, since a discourse on citizenship in Dutch smart cities within policy documents was missing. Above, this perspective is more nuanced. In general, the promises of the smart city seems endless. Many publications embroider on that frame. Specific, whereas De Waal chooses to make his ideal typical description the centre of his study (as what he describes

'philosophical provocations'), this study combines a deductive approach (the three ideal types) and inductive approach (the study on interview transcripts and document) to understand these meanings out of the perspective of policy makers, which makes it more nuanced.

5.1.4 Conclusion; answers to the sub research questions

To come to a substantiated answer on the main research question, first the three sub research questions are answered. The first sub research questions of this study is formulated as:

1. ***Which meanings are given to citizenship in Dutch smart cities by stakeholders?***

In the analysis of the meanings given to citizenship in Dutch smart cities, three meanings are interpreted; 1) citizenship as (co-)producers, 2) citizenship as end-usership and 3) citizenship as being object of registration. Within meaning 1) *citizenship as (co-)producers*, the interpreted key value is empowerment. Platforms empower communities in which citizens have a role as (co-)producer for a societal reason. In terms of boundary conditions, stakeholders attach value to transparency and accessibility of platforms. Stakeholders put down a critical note in terms of the government's inability to empower citizens for platforms. In meaning 2) *citizenship as end usership*, the key value is behavioural change. The operating practice of this form of citizenship are applications. Values that derive from this key value are digital infrastructure and the safe data collections, through which citizens are approached as individuals. Individuals can take their role via the appreciation of applications and the participation in using applications. Finally, in meaning 3) *citizenship as being object of registration*, the key value is public support. Without (immediate) notice, all sorts of data are collected to govern and sensor the city. The come to public support, the privacy and safety are important boundary conditions. The role of citizens is passive; they are only object of registration.

	Citizenship as (co-)producer	***Citizenship as end-usership***	***Citizen as being object of registration***
Key value	Empowerment	Behavioural change	Public support
Role of citizens	Participation in the design via(co-) production	Participation in use; appreciation of application	Being object of registration
Operating practice	Platforms	Applications	Collecting data without (immediate) notice
Boundary conditions	Transparency and accessibility	Digital infrastructure, safe data collection	Privacy, safety
Approach	Community	Individual	Govern and sensor the city
Critical note	Governments in able to empowering citizen via platforms with an eye for societal aspects.	Do we have critical thinking citizens who think of the technology they use?	*Not observed in the data*

Table 5.1 Three meanings given to citizenship in Dutch smart city by stakeholders

The second sub question to be answered is formulated as follow:

2. What similarities and differences can be found between the meanings given by different stakeholders to citizenship in Dutch smart cities?

Within the second sub question is interpreted the meanings given by three groups of stakeholders to citizenship in Dutch smart cities. Above, this sub question studies whether the meanings assigned by these stakeholders are similar or differ. Out of the analysis, four general conclusions can be made: 1) None of the meanings to citizenship is supported by all stakeholders. 2) The group of stakeholders 'government' and business give meaning to citizenship as end usership. 3) The groups of stakeholders ´governments´ and ´civil society organizations and knowledge institutions´ give meaning to citizenship as (co-)producing. 4) Only the local government gives meaning to citizenship as of being object of registration. Some further interpretations are made for each of the meanings of citizenship:

Within citizenship as (co-)producing, governmental stakeholders are observed to give mostly meaning to citizenship as co-producing. Within this meaning governments see citizens as co-producer of governmental policy. On the other hand, civil society organizations and knowledge institutions are observed with a different focus; their meaning has mostly to do with citizenship as producing. Within this meaning of citizenship, the role of the government is to join societal initiative of citizens who produce their 'own' data and solve their 'own' societal issues. In this meaning of citizenship, both the role of government and the role of citizens differs from the meaning of citizenship as co-producing. Within citizenship as end usership, governments and business are observed as stakeholders who give meaning to this form of citizenship. Within this meaning of citizenship, one major difference can be observed between these two stakeholders. When it comes to their own role, it is observed that business think of themselves as the developers and owners of applications, since business think of themselves to be better able to bundle individual preferences. Although governments let business develop these applications, they invest in applications to achieve a higher policy goal. It is possible that the focus on bundling individual preferences by business are incompatible with the focus on higher policy goals by governments focus on. The existence of these different approaches could lead to a certain friction in jointly developing application of governments and business. Finally, only the local government give meaning to citizenship as being object of registration. Although this study could not analyze local and national government as separate stakeholders, it is observable that the national government does not give meaning to citizenship as being object of registration. However, within the amount of data of this study, it is not possible to analyze why the meaning of the national government is absent in this meaning of citizenship.

The table below gives an overview of the meanings given by the stakeholders:

	Governments	*Civil society and knowledge institutions*	*Business*
Meanings of citizenship	Citizenship as co-producing	Producing	-
	Citizenship as end usership	-	End usership
	Citizenship as being object of registration *Only by local government*	-	-

Table 5.5 Differences and similarities in the meanings given to citizenship by different stakeholders

The third sub question to be answered is formulated as follow:

3. How do the meanings, similarities and differences relate to ideal type(s) of citizenship in smart cities?

Based on the three ideal types of citizenship concepts in the smart cities, these ideal types are compared to the meanings given to citizenship in Dutch smart cities by the stakeholders. Citizenship as (co-)producers is mostly comparable with the ideal type of big society citizenship in the smart city. Similar to the ideal type, the key value of citizenship as (co-)producers is to empower communities. Nevertheless, the ideal type of big society citizenship and the meaning of citizenship as (co-)producers are not comparable for their key values. Whereas in the meaning, the key values transparency and accessibility are of importance, the ideal type focuses upon redistributing power to citizens and the promotion of voluntary work. Further, the meaning of citizenship as (co-)producers has some comparison with the ideal type of smart citizenship in that sense that both forms of citizenship put the societal question central.

Citizenship as end usership is most comparable with urban citizenship; especially the focus of the meaning of citizenship on behavioural change can be interpreted as a form of moral obligation, as formulated by the ideal type. Above, the form and function of applications in the meaning of citizenship as end usership are comparable with the function of digital sub cultures in the ideal type of urban citizenship which could lead to a peaceful co-existence without necessary engagement. The meaning of citizenship as end usership misses similarities with the ideal type on the importance of digital infrastructure and the importance of individuality and critical thinking citizens. Citizenship as being object of registration is to some extend comparable with the ideal type of smart citizenship. Two aspects are of importance to highlight; the boundary conditions of the meaning of citizenship could be considered as the fundamental rights of the ideal type of smart citizenship. Further, the approach of this meaning of citizenship – governing the city by sensoring – is comparable with the despotic side of smart citizenship.

The table below gives an overview of the meanings given by the stakeholders:

	Citizenship as (co-)producers	***Citizenship as end usership***	***Citizenship as being object of registrations***
Ideal type of big society citizenship	**Most comparison with the ideal type big society citizenship in the smart city.**	No comparisons with this ideal type.	No comparisons with this ideal type.
Ideal type of urban citizenship	No comparisons with this ideal type.	**Most comparison with the ideal type of urban citizenship in the smart city**	No comparisons with this ideal type.
Ideal type of smart citizenship	**Little comparison with this ideal type.**	**Little comparison with this ideal type**	**Some comparison with the ideal type of smart citizenship**

Table 5.7 Meanings to citizenship compared to the ideal type of citizenship in the smart city.

5.1.5 Conclusion; answer to main research question

In the previous paragraph, the sub research questions of this study are answered. With that in mind, the main research question of this study can be answered. The main research question for this study is:

How can meanings of citizenship within Dutch smart cities, given by different stakeholders, be interpreted and to what extent do these meanings differ?

Three different meanings of citizenship in the smart city can be interpreted within Dutch smart cities. The first meaning interpreted is citizenship as (co-)producers. The key value of this meaning of citizenship is empowerment. Within this meaning of citizenship, platforms empower citizens in order to be of societal value. In terms of boundary conditions, stakeholders attach importance to transparency and accessibility of these platforms. In the meaning of citizenship as end usership, the key value is behavioural change. Values that derive from this key value are applications and digital infrastructure, through which citizens are approached as individuals. The relation between citizens and the governments is shaped via the use of and appreciation by citizens for the applications. The third meaning interpreted in this study is citizenship as being object of registration. The two values interpreted in this form of citizenship are the creation of public support and the gathering of data without noticing citizens.

The three meanings of citizenship can be interpreted in light of the three ideal types of citizenship in the smart city; 1) the ideal type of big society citizenship, 2) the ideal type of urban citizenship and 3) the ideal type of smart citizenship. The ideal type of big society citizenship in the smart city is characterized by active, self-reliant communities in which a big civil society operates independent from government policy. This ideal type is to some extend comparable to the meaning of citizenship as (co-)producers, especially where they focus on the empowerment of communities. The second ideal type is urban citizenship in the smart city, which is powered by individualism, of which technology helps to further strengthen this. The ideal type of urban citizenship has to some extend similarities with the meaning of citizenship as end usership, namely in their focus on behavioural change as a moral obligation. Above, the form and function of applications in the meaning of citizenship as end usership is comparable with the function of digital sub cultures in the ideal type of urban citizenship. The third ideal type in this study is smart citizenship, in which critical thinking individualism is the key value. Further, technology is seen as a central aspect as socio-technical enabler in all elements of the ideal type of smart citizenship. The ideal type of smart citizenship has to little extend similarities with the meaning of citizenship as end usership and the meaning of citizenship as (co-)producers, and to some extend comparison with the meaning of citizenship as being object of registration; whereas the ideal type of smart citizenship focuses on the fundamental rights of citizens, the meaning of citizenship as being object of registration gives meaning to privacy and carefully gathering of data – two aspects that are in line with each other. Further, the approach of this meaning of citizenship – governing the city by sensoring – is comparable with the despotic side of smart citizenship.

For all meanings of citizenship counts that none of the meanings of citizenship are ascribed by all stakeholders. The governmental stakeholders and businesses give meaning to citizenship as end usership. When it comes to their own role, it is observed that business are assigned as the developers and owners of applications, since business is thought to be better able to bundle individual preferences. Although governments let business develop these applications, they invest in applications to achieve a higher policy goal. It is possible that the focus on bundling individual preferences by business are incompatible with the focus on higher policy goals by governments focus on. For citizenship as (co-)producers counts that the governmental stakeholders and the ´civil society organizations and knowledge institutions´ give meaning to this form of citizenship. However, for this meaning of citizenship, governmental stakeholder give mainly meaning to citizenship as co-producers whereas the civil society organizations and knowledge institutions give mainly meaning to citizenship as producers. Finally, only the local government gives meaning to citizenship as being object of registration.

The conclusion of this thesis relates to the two aspects of the academic debate on citizenship. In the first place, the outcomes of this thesis hold relation to the communitarian perspective and participatory society perspective on citizenship. The communitarian perspective argues that the role of the state is to protect the collective values and rights of communities, and that citizenship is about an identity. The participatory society perspective promotes participation in civil society and the community. The meanings of citizenship as (co-)producers have patterns that hold relation to both these views. Out of perspective of the communitarian citizenship, it is positive that governments promote (co-)production which help to emancipate communities, which contributes to the collective values of communities. For the participatory society perspective on citizenship, participation in itself is of value. And with this argument, the meaning of citizenship as end usership holds also relation to the active citizenship perspective, although the role of citizens shift from participation in production to participant in use. More noticeable is that the meaning of citizenship as being object of registration does not hold relation to both these perspectives of citizenship; the operating practice of this meaning of citizenship in the smart city undermines both perspectives on citizenship because it takes away the responsibility and involvement of citizens. Thus, smart cities integrate several perspectives on citizenship, depending on the operating practice. Above, when discussing citizenship in smart cities, it is of importance to understand that the different stakeholders have different views on citizenship and depending on the operating practice of smart cities specific perspectives on citizenship exist.

5.2 Discussion

The second section of this chapter discusses the strengths & limitations of this study. Further, it discusses some suggestions for further research.

5.2.1 Strengths and limitations

Strengths

With this study meanings given to citizenship in the Dutch smart cities are studied. To come to conclusions which are in line with this aim, the research design has three strengths to come with conclusions. The design incorporates inductive and deductive elements, which makes this thesis better able to interpret nuanced findings and see to what extend these findings are unexpected. The deductive element is the extensive theoretical framework, and more specific, the three ideal types of citizenship in the smart city. When it comes to the empirical part of the study – the inductive element - the sampling method makes that stakeholders who influence policy on smart cities in the Netherlands are included in the scope of this study. Further, by combining the interview transcripts with policy document of various layers of government in the analysis, the chances on a bias are reduced. Finally, the method chosen is a strong method to study the meanings of a social construct.

Thus, the interpretive case study is a suitable to come with conclusions on the meanings given to citizenship in smart cities.

Limitations

This study is limited by three things. The disadvantage of the illustrative interpretive case study in combination with the method and size of sampling the respondents. The sample does not include respondents working for relatively small local government with smart city policies, neither are their respondents working for the European Union or for businesses. Therefore, based on the trustworthiness of the sample, it is impossible for a researcher to make conclusions on the level of the population of stakeholders involved in Dutch smart cities. Within the analysis, the amount of data is limited to study all the groups of stakeholders separately for the meaning they give. Thus, in favour of the analysis is chosen to combine 'national and local government' and 'civil society organizations and knowledge institutions'. Organizations are grouped in such a way that the meaning they give to citizenship is best reviewed. Lastly, this study is limited through its supposed bias. Within the sample, the weight of the respondents lies on stakeholders of local governments. That makes the perspective of the local government possibly overly biased within the overall perspective. Above, possible are all respondents positively on the feasibility of the smart city. These come forward in the answers on the extend of critical thinking citizens and the extend of citizens that are willing to participate in digital platforms are possible positively biased. Lastly, in line with the constructivist-interpretive research paradigm, knowledge is considered to be a social construct. The key element of the construction of knowledge for this study are the interviews. Due to the influence the researcher has during the interviews – as the person who makes the consideration of questioning into depth or even in the formulation of the questions – the researcher is a limitation in itself.

5.2.2 Suggestions for further research

Based upon the conclusion of the main research question and the limitations of this study, four suggestions for further research are formulated. The first suggestion for further research has to do with the lack of citizens as stakeholders. It would be great to organize panel discussions with citizens who live in a smart city to discuss what meaning they give to their role in the smart city, what their responsibility should be, and what they expect from the government. Especially when it comes to values as public support. The second suggestion for further research is to broaden this study to an European wide scope. Earlier, Giffinger et al. (2007) studied and ranked smart cities of European countries, in which they distinguished six characteristics of European smart cities. Based upon their study, it would be interesting to broaden the scope of the meanings given to citizenship in Dutch smart cities. With the result of such a study, it would be better possible to share best practices between European local governments, or cities would be better able to include European citizens in

their smart city applications or platforms. The third suggestion for further research is one that lies on the cross-edge of the meaning of citizenship as being object of registration and the ideal type of smart citizenship in Dutch smart cities. As is analysed in chapter four, the matter of detail of this meaning of citizenship is relative low. To understand this form of citizenship better, and thus to prevent that citizenship as being object of registration leads into an dystopian variant of the smart city, more study is needed. The fourth suggestion for further research is based upon the conceptual framework of this study. Discussing citizenship with respondents was from time to time difficult, especially when it came to citizenship as being object of registration. Debating the form of citizenship in smart cities and smart city applications could be improved by designing ideal types that suit with images and the practice of policy makers. The ideal types used in this study could be the basis for such a study. It is of importance to start such a study, because a coherent and thoughtful designed form of citizenship in smart city applications could lead to an improvement of the position of citizens in smart city and prevent friction between developing stakeholders.

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Annexes

Annex I: Semi structured interview questions

Introduction of the interviewer; background as an student researcher of Public Administrations at the University of Twente, but also working as an intern at the Ministry of the Interior and Kingdom Relations, working for a direction where ICT and citizenship come together. Bringing forward that it is an explanatory research with a semi structured interview, an translating the main research question in 'normal' Dutch – thus that the researcher is studying meanings given to citizenship in smart cities. Bringing forward that the technology push is not so interesting for this study, but the relation between technology and citizens and communities is.

1. Can you tell me something about your work and function?
2. Can you tell me something about smart cities in your work? How did it come up, and what progress do you make in it.
    a. Ask on certain projects whether they came up bottom up, top down or a combination of it.
    b. What is the size of these projects, are the physique or virtual? Are there specific projects or general projects?
3. Topic of the smart city and citizenship.
    a. For whom is the smart city. For the citizen? And whom else?
    b. What do you do with citizens that do not participate? What is the meaning of participation? Is it direct or indirect? Is it compulsory?
    c. What is the role of citizens that do participate? Should they have skills, time, should they change their behaviour?
    d. Is the smart city something of mutually citizens? What is the role of government in the smart city?
    e. Classic approaches of citizenship focus on inclusion and exclusion of citizen. Can you relate this aspect to citizenship in your smart city?
4. Optional: special focus on publications by the interviewee or the organizations the respondent is working for (in case of respondent 1, 3, 4 & 10).
5. Whom are the winners and losers of the smart city.
6. How do you approach citizens in your projects? How do you make it attractive to approach

    a. Optional: How do you enlarge citizens movements? Can you institutionalize these movements?
    b. How do people get the notion of their responsibility? Can you enlarge their basic knowledge
7. Platforms. For whom are they? For makers, solvers or?
8. Are there cases within your smart city where citizens become sensing nodes, only suppliers of data? This is a way of understanding 'citizen sensing' not as a practice synonymous with 'citizen science' but as a modality of citizenship that emerges through interaction with computational sensing technologies used for environmental monitoring and feedback.
9. With whom else should I talk?

Annex II: Word count of interview transcripts

The word count is filtered for verbs, adverbs and prepositions. Singular and plural form are combined.

	Word	Count
1	Smart	195
2	Data	171
3	Mensen (‘People’) Stad/steden (‘city/cities’)	170
5	Burger(s) (‘Citizens’)	161
6	Overheid (‘Government’)	151
7	City/cities	148
8	Open	84
9	Gemeente(n) (‘Municipality or local government’)	82
10	Vraag (‘Question’)	79
11	Rol (‘Role’)	75
12	Technologie(y)	74
13	Partijen (‘Parties’)	71
14	Burgerschap (‘Citizenship’)	69
15	Bedrijf/bedrijven (‘Companies or businesses’)	68

Table 6: Word and frequency count of the eleven interview transcripts.