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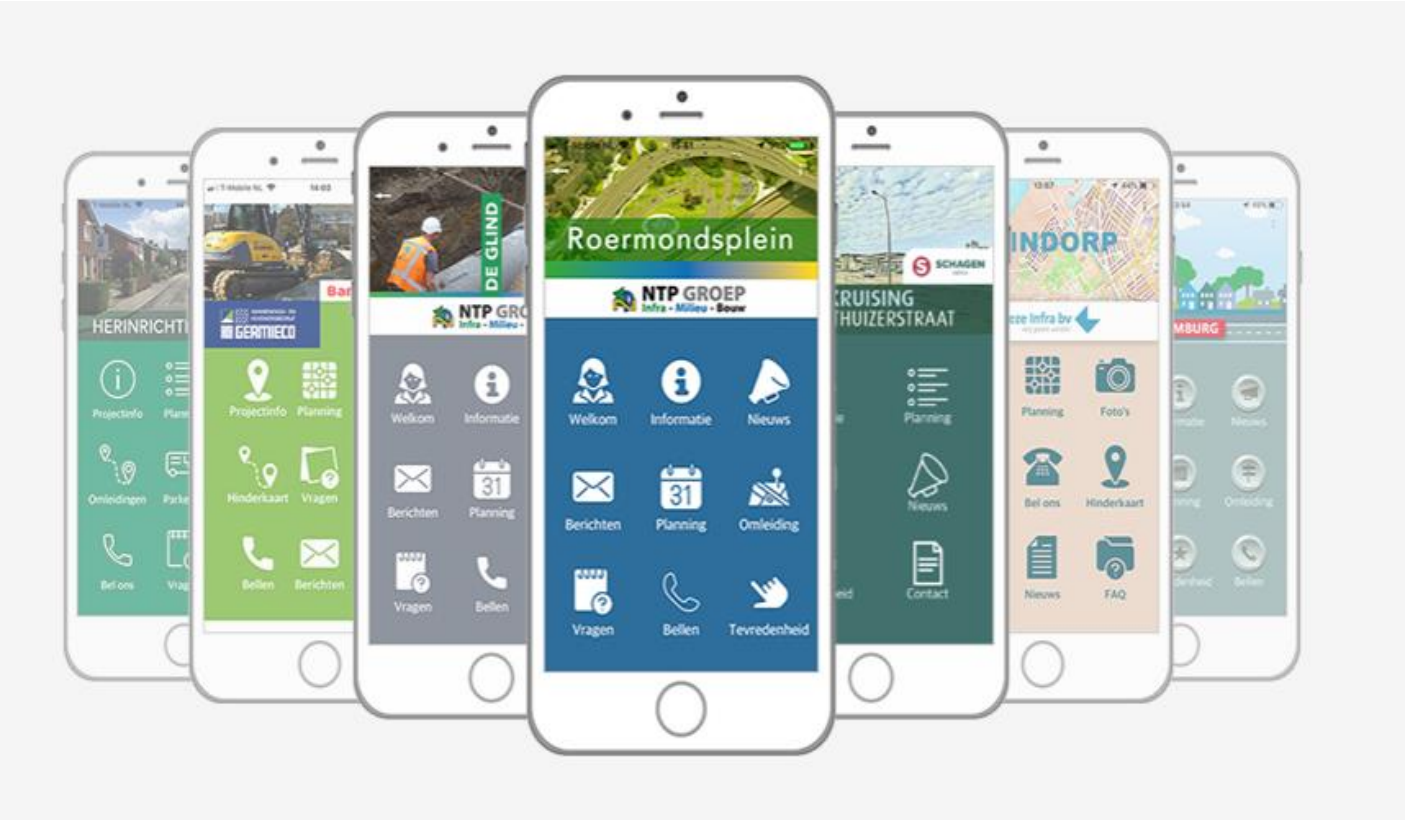

One app connects all

PLANNING SUPPORT APPS FOR STAKEHOLDER COMMUNICATION IN COLLABORATIVE PLANNING PROCESSES

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Summary

Planning Support Systems (PSS) are generally seen as high-potential systems that can aid planners in planning processes. They can visualise large amounts of data and engage different stakeholders in planning processes. However, more forms of PSS have recently emerged to support urban planning. In particularly, they have the potential to contribute stakeholder communication in collaborative planning, which was argued to be the new paradigm of urban planning. How to support the communication and interaction between government, the private sector, citizens and other actors in collaborative planning processes is a big challenge. PSS could potentially fulfil this role, or at least aid in the communication process. The overall aim of this research is to evaluate different phases of collaborative planning and the added value of communicative PSS in stakeholder communication and management. It investigates five case studies of planning practices in the Netherlands. These cases were all reconstruction projects, which appointed a stakeholder manager that was specifically responsible for the communication with stakeholders. All case studies used a variant of the Omgevingsapp, a communicative planning support system with the goal to facilitate the communication between planners, constructor, citizens and other stakeholders. The research shows a possible way for planners to evaluate collaborative planning processes, by dividing the process in two different stages. Evaluating collaborative planning will become more and more important in the Dutch context after the Omgevingswet is introduced. The research also shows high promise for communicative PSS. They have a large reach, can be used to provide extra information, are interactive and have a high responsiveness. However, the performance of communicative PSS is highly dependent on the user-friendliness (the ease with which app users can use the app) of the system. This shows that there is room for communicative PSS in the future, but the systems must be further developed to reach the full potential.

Keywords: Collaborative planning, Planning Support Systems, Stakeholder Communication, Stakeholder Management

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Chapter 1: Introduction and problem definition

The Dutch spatial planning system is about to undergo significant changes as a new national law is currently in development. The new law is called the Omgevingswet, which roughly translates to the Surroundings Law, and will be formally go into effect in 2021. In the current Dutch system, there are 26 different laws that all tackle specific topics (such as space, living, infrastructure and nature). The Omgevingswet connects all these spatial planning laws into one central new law (Ministerie van Infrastructuur en Milieu, 2017). It comes as no surprise that one of the main incentives behind the Omgevingswet is the current complexity for citizens and other involved stakeholders. The Omgevingswet simplifies participation processes for stakeholders and involved governmental organizations. The topic participation is one of the core values of the Omgevingswet. Due to the growing complexity of society and the diversity of public interest, the Omgevingswet states that involvement and participation of society is essential when making new plans and policy (Ministerie van Infrastructuur en Milieu, 2017). In the Netherlands, this is the first time that participation and collaboration in planning processes are established in a national law, showing how important collaboration is deemed by policymakers. The focus on participation and stakeholders, fits well with the idea of the communicative turn in planning as described by Healey (1992). She claims that in contemporary planning, communication and citizen involvement have become more and more important throughout the years. This form of planning with a focus on participation is also known as collaborative planning. Proper communication between different stakeholders is essential for a 'good' collaborative planning process.

Not only the Dutch law is changing, societal changes are happening as well. In 2012, the amount of people with mobile phones with internet access was 56.5%. In 2018, this number had increased to 90.3%. This is an increase of 33,8% in a relatively short period of six years (Centraal Bureau voor Statistiek [CBS], 2018). This increase of digital accessibility has changed the ways in which communication takes place within planning. Stakeholders can find information much easier and communication lines are shorter due to digital communication (such as mobile phones, email, apps and social media). Therefore, the amount of participation that takes place has increased in the last few years (Ertiö, 2013). Simultaneously, more and more digital means are being developed to aid planners in their field of work. Generally, the internal quality of these digital systems is also higher than before, due to technological improvements in the systems themselves. In scientific literature, these systems are called Planning support systems (PSS). A very broad definition of PSS would be that they are "*any kind of infrastructure which systematically introduces relevant information to a specific process of related planning actions"* (Te Brömmelstoet, 2013, p.299). In short, PSS are digital systems that support planners in their actions. A sub-component of PSS are communicative PSS, which focus more on designing and improving communication with stakeholders, rather than analytic forecasting (Klosterman & Pettit, 2005). This research will specifically focus on communicative PSS.

As mentioned above, both the Dutch law and society are changing. The role of participation in the Dutch planning system has increased over the last few decades, resulting in participation being mentioned in the national law for the first time. At the same time, digitalisation is causing an increase in involved stakeholders as they can gain access to more information and the communication lines are shorter than before the age of mobile phones. Planners are trying to keep up with the digital changes by creating more (and more advanced) PSS. As the amount of participation and digitalisation is increasing (and likely to continue that trend in the coming years), one would expect that PSS would be

widely used by now by all sorts of planners. However, there seems to be a gap between the development and the actual implementation of PSS (Te Brömmelstoet, 2013). As numerous authors find, PSS are seen by their potential users as inadequate, too generic or too complex (Te Brömmelstoet, 2013; Goodspeed, 2016; Silva, Bertolini, te Brömmelstoet, Milakis & Papa, 2016). This results in PSS currently being underrepresented in planning (Pelzer, Geertman & van der Heijden, 2015). This seems odd, as there is a clear potential of social media, online platforms and mobile technologies for particular forms of citizen engagement (Kleinhans, van Ham & Evans-Crowley, 2015). The role of technology is likely to increase in the future and planners will need to adapt with the changing society and law. According to Te Brömmelstoet (2013), more practical research should be done on existing PSS, rather than just theorizing what potential features PSS should have.

This research will look at collaborative planning processes in the Dutch planning system and combine these insights with a specific communicative PSS, the Omgevingsapp. This is done by looking at six different reconstruction projects that all used the Omgevingsapp. A customary method in smaller Dutch reconstruction projects is to appoint a stakeholder manager, who is responsible for communication with stakeholders during reconstruction projects. These can either be employed by the government or the constructer (in which case they will also work closely with the governmental organisation). The Omgevingsapp is a tool that stakeholder managers can use to make communication with different stakeholders easier. Anyone with a smartphone can download the app for free. The main goal of the Omgevingsapp is to have a low threshold communication method between municipality and stakeholders. As the developer of the Omgevingsapp states, the Omgevingsapp "*offers the possibility for low-threshold communication with stakeholders in an attractive and interactive way*" (ITC Groep, 2019). The stakeholder manager can post weekly updates, urgent news messages and the planning and in what way the planning alters. Stakeholders themselves can use the Omgevingsapp to dial the stakeholder manager, ask questions and post complaints with photos (ITC Groep, 2019). Each case used an app.

In this research, the collaborative planning processes have been divided into the planning phase and the execution phase. The planning phase is the phase which eventually leads to the definitive design. In this phase, face to face communication in the form of citizen evenings are the most used method. In the second phase, the execution phase, the actual construction takes place. This is where the Omgevingsapp was firstly introduced.

1.1 Research Questions

The following question is central in this research:

How can planners evaluate different phases of collaborative planning and what is the added value of communicative PSS?

The main question will be answered by answering the following sub questions:

- How can we evaluate stakeholder communication in the planning and execution phases of collaborative planning?
- What are the relations between the two phases of collaborative planning?
- To which extent can communicative PSS aid with the execution phase?

1.2 Relevance

As mentioned, the current paradigm in planning seems to focus on communication and participation, based on the ideas of collaborative planning. According to Pelzer et al. (2015), more empirical research is required to determine in what way PSS can be useful in a planning process. This research can add to the scientific discussion on the usefulness of PSS in collaborative planning. At the same time, the role of communication in planning has not yet been clarified thoroughly enough. As Innes & Booher (2015, p.2017) state: "*to bridge the multiple perspectives planning theorists should focus more research on the role of communication in planning and incorporate into their thinking work already published that can shed light on how communication has power*." This research will combine the collaborative planning approach with communicative PSS and can provide new insights on the role of technology in planning. Another important aspect of this research is the practical approach. Rather than looking at what the perfect PSS might potentially look like, this research looks at PSS that are already being use in practice. As Te Brömmelstoet (2013) mentions, more practical research is necessary to find solutions for the implementation gap that currently exists. Pelzer et al. (2015) agree with this, as they state that more empirical case studies should be undertaken to better understand and develop new PSS.

Not just the scientific community is interested in PSS and collaborative planning. The Dutch government is focusing more and more on participation in their new *Omgevingswet.* This implies participation at all scale levels, not just national policies. There is an increased need for local planning initiatives to communicate properly. In the 21st century, the advancement of technology in daily life has continued to grow (Ministerie van Infrastructuur en Milieu, 2017). Despite these technological advancements, the number of planning institutions that actually use PSS in their regular working processes is still limited. Moreover, most organizations lack both knowledge of how to apply PSS and experience of doing so (Vonk, Geertman & Schot, 2005). This research can help determine the values of communicative PSS and see in what way it can contribute to a planning process. Proper communication between government and stakeholders is mutually beneficial. On top of that, this research will delve deeply into specific cases while looking at communication in the planning processes. The conclusions from these cases can be extended to other cases, leading to better communication between different stakeholders. The conclusions and recommendations from this research will be shared with the developer of the Omgevingsapp and the involved municipalities. They can use this research as a basis from which the functioning Omgevingsapp can be improved. The developer will know which points to develop, the municipality will know how to use the Omgevingsapp in a better way and the stakeholders will profit since they receive a better product.

Chapter 2: Literature Review

2.1 Collaborative Planning

2.1.1. The communicative turn

The concept of planning has changed greatly in the last few decades. Before the 1980s, urban planning was expert focused with little attention to communication and participation. Planning was a rational top-down process which used logic and focused on measurable objectives that could be verified. A planning process would start by setting goals and generating different solutions to the problem at hand. The public was a mere advisor on some final preferences. The underlying idea behind this way of thinking, was that planners were in fact neutral analysts that could determine the best strategy (Innes & Booher, 2015).

The general approach to planning led to critique on the "traditional" planning methods. More and more planners found that the real world could not be calculated in an objective manner. The problems that planners were facing were becoming too complex and wicked (Hartmann & Geertman, 2016, Rittel & Webber, 1973). The wickedness of the problems demanded a different approach as they could not be tackled by an expert from the drawing table. Social processes were increasingly being seen as important (Watson, 2016) This led to a shift in the 1980s, the focus of planning became process-oriented, rather than object-oriented. In urban planning, this resulted in the communicative turn, a focus shift from government to governance. Perhaps the best-known communicative planning form is collaborative planning as formed by Healey (1997).

There is not one work that defines what collaborative planning is (Goodspeed, 2016b). Collaborative planning looks at planning problems and states that all planning activity involves interactive relation and a governance process (Healey, 2003). Contrary to what some believe, collaborative planning does not just look at participation. Healey (1997, p.12) states that: *"Collaborative planning is about why urban regions are important to social, economic and environmental policy and how political communities may organise to improve the quality of their places."* Not just participation but also political elements and community engagement are included. In collaborative planning, planners are not the central power in processes, but only one actor in a highly complex decision-making structure (Hartmann & Geertman, 2016). Collaborative planning has gained increased attention in planning theory and practice and is even named by some as the current planning paradigm (Yiftachel & Huxley, 2000). Based on the ideas of Habermas, collaborative planning tries to find consensus between different stakeholders by bringing them together to discuss their views (Innes, 2004).

The influence of the communicative turn can still be found in most contemporary Western planning systems (Innes & Booher, 2015). The complexity of planning is ever increasing as the world becomes more densely populated and urbanised (Métral, Falquet & Vonlanthen, 2007). According to Emerson, Nabatchi & Balogh (2012), the communicative turn led to a society in which collaborative governance takes place. Collaborative governance is in this context defined as "*the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished (p.2).*" This definition goes beyond the original idea of Healey (1997), since the necessity of governance is introduced. Still, the focus is still heavily on process-oriented planning methods. The usage of the word engagement in

this definition is interesting as this term implies that collaboration involves more than just informing the public.

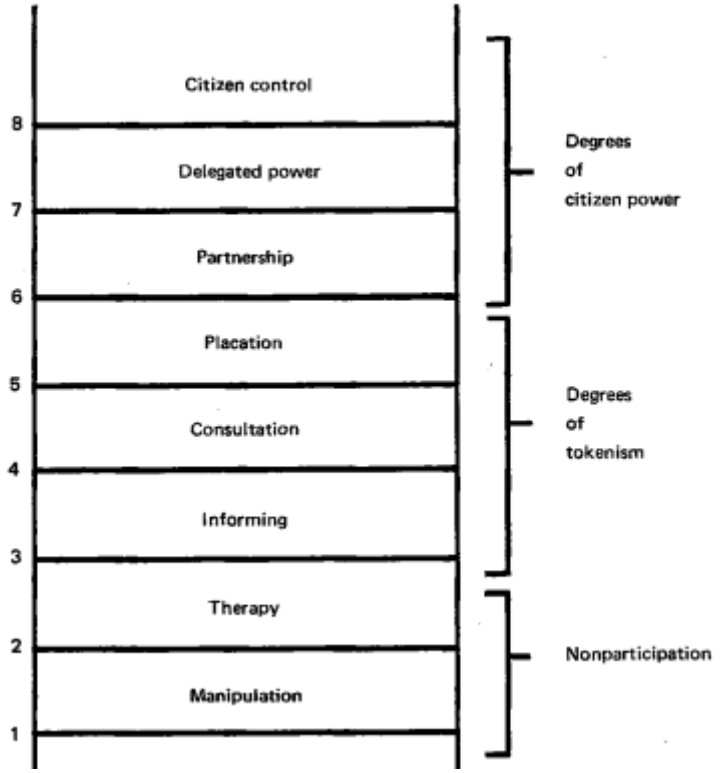


Figure 1: A Ladder of Citizen Participation (Arnstein, 1969)

The idea of citizen engagement being more than just informing the public is perhaps best exemplified by Arnstein (1969). She wrote an often-cited article on citizen participation, dividing the amount of participation into different steps of a ladder. Figure 1 shows the different steps of the ladder of citizen participation. The higher a form of participation is on the ladder, the higher the amount of participation is. Manipulation has the least amount of participation and citizen control the highest. The bottom two steps are seen as non-participation, the real objective of the government is not to enable people to participate but to educate the participants (Arnstein, 1969). In steps three, four and five, the amount of participation increases so that the public hears and is heard. Their views are not headed by the powerful though, the decision making is not done by the public. The top three steps have active citizen power and decision making by the public. (Arnstein, 1969). This ladder is of course a simplification as there are much more forms of public involvement. However, Arnsteins core message seems valid as there are gradations in public participation. *"There is a difference between going through the empty ritual of participation and having the real power needed to affect the outcomes of the process"* (Arnstein, 1969, p.216). According to Arnstein, the higher a planning process is on the ladder, the higher the democratic legitimatisation of the planning process and therefore the outcome.

2.1.2 Knowledge

Friedmann (1987), defines planning as the translation of knowledge into action. During the rational planning period, knowledge was seen as an objective concept that could be used by an expert to create high-quality plans (Rydin, 2007). However, as Healey (2008) states, knowledge is not a universal concept in a collaborative world. Planners may have 'hard scientific' knowledge, while local citizens may know practicalities which cannot be measured. The concept of knowledge forms can perhaps be best explained with an example:

Imagine a crossing in which two roads meet in an intersection with hardly any overview and no traffic lights. Even though the intersection is chaotic, no actual accidents have occurred. The local community (that uses the intersection) complain to the municipality about the dangerous intersection. A rational-comprehensive planner would respond by looking at the data and conclude that there have not been any accidents. Therefore, the intersection must be safe, and no expensive intervention is required. This example shows a clash of knowledge forms, in this case local experience versus rational statistics.

According to Healey (2008), it is important that the different knowledge forms meet and together look for a solution. Different people have different kinds of knowledge. In urban planning, the chances of these different knowledge forms intermingling are high (Rydin, 2007). In the practical engagement of collaborative planning, different groups debate and discuss with each other to determine the best possible outcome. Crucial in this process is the mix between the different knowledge forms, localised knowledge should be included in the planning process as well (Healey, 2008). Campbell (2012), agrees with the idea of different forms of knowledge and states the importance of implicit knowledge. Implicit knowledge in this case refers to knowledge that is hard to write down or quantify (Reber, 1989). Determining in what ways these different knowledge forms should communicate with each other is no easy task. Rydin (2007, p.55), explains this: *"Handling multiple knowledges involves more than just bringing the different actors together to articulate those knowledges in a context oriented towards mutual understanding. Just as with other heterogeneous voices, the engagement between multiple knowledges involves translation."* Planners must find a way to combine the different knowledge forms together while they must at the same time ensure that the process is interactive. Only then can the different groups truly interact. Rydin (2007), continues by saying that combining different knowledge forms is not as easy as creating a lingua franca, the actors' knowledge is rooted in different experiences. Innes (2004), also mentions the complexity of bringing different groups together. Consensus-building does not happen through arguments alone but also through storytelling. Planners should use tools and methods that combine the different knowledge forms, with attention to interaction between the different groups.

2.1.3 Critique on Collaborative Planning

The idea of a communicative turn in planning has not been accepted by everyone. Some researchers even say that the new focus on process-oriented planning has led to a crisis in collaborative planning (Monno & Khakee, 2012.) The ladder of citizen participation suggests that more independent citizen participation leads to a better planning process. Some researchers claim that in practice however, almost all forms of participation are government-led (Monno & Khakee, 2012). Governments use participation to their own end, not to give citizens actual power (Purcell, 2009). Rather than achieving citizen power, most planning processes end up at most in the middle of the ladder. Planning mostly happens in formal settings in which the government has control of who participates and in what way the participation takes place (Legacy, 2017). This is what some see as the crux of the crisis in collaborative planning: how can planning be process-oriented if all processes are determined by the government? Monno & Khakee (2012), even state that collaborative planning has lost its transformative potential. The suggested crisis in collaborative planning is backed by some more fundamental critiques on collaborative planning. Boonstra and Boelens (2011) made a literature overview on collaborative planning throughout the years. They concluded that there are some fundamental flaws in collaborative planning that undermine the potential of collaborative planning processes. They do conclude that the fundamental problems do not make collaborative planning unworkable. The problems need to be addressed in order to improve collaborative planning processes.

The first problem that Boonstra & Boelens (2011) mention, is the long duration of collaborative planning. Inviting all involved stakeholders and getting them to the table is a lengthy and costly process. As a stakeholder, coming to the table also takes time which not everyone has. This results in a legitimacy problem: collaborative planning vouches to include all stakeholders, but those that do not have the time are not included. Rather than improving all relations, planning processes only include a government, public servants and “professional citizens” that are familiar with government procedures (Boonstra & Boelens, 2011). This raises the question whether collaborative planning processes are legitimate democratic processes. In the future, planners need to find a way to include even the stakeholders with little time in every step of the process.

Another often mentioned criticism are power relations between different stakeholders and how collaborative planning deals with these power differences. Collaborative planning is based on the ideas of Habermas: a discussion between parties with opposing views will lead to some sort of agreement in the end (McCarthy, 1978). Critical researchers question whether this idea really works in practice, or whether it is just an idealistic theory (Watson, 2016). There are always power differences in a real scenario. Imagine, a Shell representative meets with a poor Nigerian farmer to discuss the drilling of oil in his land. The Shell spokesman represents one of the world’s largest companies with thousands of employees, the farmer one has three sons that work for him and some crops. How could this discussion ever be held in a way that is in both party’s interest? Shell has much more influence, means and power than a single farmer. The result will very likely favour the larger company, which can be seen as unfair.

This critique links well with the critique of Tewdwr-Jones and Allmendinger (1998), who say that the underlying idea of the communicative turn is wrong. The basic assumption of Habermas is that consensus can in fact be reached through rational argumentation. In the real world however, consensus between different parties cannot always be achieved. If a company wants to demolish a forest to build a hotel, and another organisation wants to safe that forest, their interests are entirely

perpendicular. According to Habermas, the parties can discuss and, in the end, only a part of the forest is demolished to make room for the hotel and both parties are happy. This outcome would likely not satisfy any of the involved parties. Critics of collaborative planning question whether consensus should be the end goal of a planning process (Tewdwr-Jones & Allemendinger, 1998, Allemendinger & Tewdwr-Jones, 2002, Brand & Gaffikin, 2007).

A final often mentioned critique is the collision of interests (Goodspeed, 2016b). Planning initiatives will probably use local stakeholders in a collaborative planning process. The initiative could be beneficial on a larger scale while being damaging at the local scale. An example would be windmills that generate energy, but also cause horizon pollution. The involved stakeholders, which are almost always locals, will likely be against the building of windmills, despite the larger-scale advantages. Within collaborative planning, these locally undesirable developments with beneficial effects on a large scale will be very hard to implement (Goodspeed, 2016b).

In short, collaborative planning has led to a wide array of critiques. These flow from the idea that the government is always the leading actor, even in a collaborative planning process. This leads to the government determining who is involved in the process, power balances being ignored, a delay in the construction of locally undesirable developments and the fundamental question whether consensus should be the goal of a planning process.

2.1.4 Response to critique

Supporters of collaborative planning do not agree with the critiques on collaborative planning and still support the ideas of collaborative planning. Innes and Booher (2016) reverse the critique that collaborative planning is time consuming, by stating that a decision does not need to be taken as fast as possible. Particularly wicked problems do not have an obvious best decision. It might take longer to have a collaborative process, but the outcome is likely much better than in a scenario in which a rapid decision is taken that in hindsight has a lot of shortcomings. The wickedness of contemporary planning problems justifies a somewhat longer thorough collaborative planning process.

Supporters of collaborative planning also dismiss the idea of a planning crisis (Legacy, 2017). Some form of government is always required in planning to avoid a tragedy of the common's scenario. A tragedy of the common's scenario refers to a situation in which certain goods (such as land) are publicly accessible. Legacy (2017) also makes mention of the reciprocal relation between government and the public. Governments may determine which members of society are involved in planning, but the entire society votes for the next government. This makes planning a political act in which governments really must listen to the people or they will lose their power. Legacy (2017), therefore concludes that there is no crisis in collaborative planning. The truth probably lies somewhere in the middle, but the fact stands that collaborative planning has not been without critique throughout the years.

Healey (2003) also responded to the critique on collaborative planning. She states that the treatment of power differences is a strength of collaborative planning rather than a weakness. She says that power relations are not a 'thing', but rather a concept integrated in social relations. The power differences change throughout a planning process. By bringing different stakeholders together, the different power relations are brought together, and the interaction leads to a better outcome. Innes & Booher (2015) respond to the idea that two opposing sides cannot collaborate as there are conflicting interests. They state (p.203) that: "C*ollaboration is about conflict. If players did not have differences, they would not need to collaborate, but could march forward on their own."* As long as

different stakeholders have different ideas on a certain topic, there will be conflict. The collaboration between conflicting parties can lead to new outcomes that could otherwise never have been foreseen. Healey (2003) believes that collaborative planning is the only way in which a complex social world can be approached flexibly. One of the major advantages of a collaborative planning approach is that it has the potential to combine different knowledge forms.

Summarizing the literature overview, the focus in planning has shifted from rational-comprehensive to more collaborative processes. Collaborative planning allows for more participation and even interaction and engagement. It also has the potential to combine different knowledge forms to find the best solution for a problem. Some planners have had critique on collaborative planning, as they claim that some planning processes are still government-led. However, traditional methods for participation in planning have been lacking in truly integrating the public in the planning process. Collaborative planners have responded to the criticism by stating that a collaborative approach is the only way to address the wicked problems that we face in a contemporary complex society. Despite the critiques, collaborative planning has become an effective mean to solve complex planning problems.

2.2 Planning Support Systems

2.2.1 Overview of PSS

Traditional planning methods are not sufficient in truly involving all different stakeholders in planning processes. Especially combining different knowledge forms can be tricky without an interactive system. Technology can be helpful in connecting the different knowledge forms. This section describes the usage of PSS in planning and how the systems have developed throughout the years. As mentioned in the introduction of this research, the used definition of PSS is the following: "(PSS) can be defined as geo-information technology-based instruments that are dedicated to supporting those involved in planning in the performance of their specific planning tasks" (Geertman et al., 2015). The definitions for PSS are widely spread however, as they incorporates a wide variety of systems. Pelzer et al. (2015, p.2), state that: "*PSS usually consist of a combination of planning-related theory, data, information, knowledge, methods, and instruments that take the form of an integrated framework with a shared interface.*" The term PSS is rather vague, as PSS are not one system but rather a combination of different systems that can be used in different situations and with different functions. There does seem to be a general consensus as to what the strengths of PSS are. According to Vonk, Geertman and Schot (2007), PSS have potential to improve the output of planning processes, as long as they are implemented in the right way. In their research, Vonk et al. (2007), name three general strengths that PSS have.

1. PSS have a high to store and retrieve information, as well as visualise that information.
2. PSS can be used to transform raw data into maps that combine different statistics. This leads to a first form of analysis.
3. There is a strong disseminative quality that the results of PSS have. Generally, all results from the analysis can be viewed by everyone at home.

These are not the only the only advantages of using PSS. They can also be used to keep people interested in the planning process. It allows for interactive and fun ways that can engage a broader audience and PSS can provide opportunities for empowerment through technology (Foth et al., 2009). On top of that, PSS can stimulate creativity in a planning process. Especially the visualization of data can for be used to facilitate creative solutions for detected problems. The more interactive a PSS is used, the more creativity it sparks (Geertman, 2002). Finally, if more people are engaged in a creative process that has high-quality information, there is likely to be a more thorough discussion. Interactivity plays a key role in the effectiveness of PSS. However, stakeholders need to feel like they are controlling the PSS, rather than the PSS controlling them (Geertman, 2002). These advantages may give the impression that PSS are impeccable systems that only aid planning processes. The history of PSS shows that the general view on PSS was not always positive. To further clarify the development of PSS, a short overview of the usage and types of PSS throughout the years will now be given.

PSS have not been around for all that long, as they only emerged as "*geo-technical instruments fully dedicated to support and improve the performance of those involved in undertaking specific planning tasks*" in the 1990s (Geertman & Stillwell, 2009, p.2). The history of using systems in urban planning dates further back. With technology developing rapidly in the latter half of the 20th century, the earliest forms of PSS can be traced back as far as the 60s and 70s (Geertman, 2006). The first models fitted within the planning paradigm that was dominant in that time-period: large-scale rational models obsessed with large amounts of data (Hartmann & Geertman, 2016). The large-scale nature of the systems resulted in what Lee (1973) called fundamental flaws (as illustrated in image 1). The most

apparent flaw of these systems was the transparency, only the expert using the model truly understood what was happening. Non-experts simply had to believe that the output of the system was legit, without truly understanding the system's process. These flaws resulted in a shift of the usage to easier understandable PSS in the 80s, leading to the 'true birth' of PSS in the 90s (Geertman, 2006). This shift happened simultaneously with the acceleration of technological developments, making systems cheaper to develop.

Image 1: The fundamental flaws of the classic PSS, the systems used large amounts of data and no one really understood the process. (Goodspeed, 2016a)

With technology developing, the typology of PSS developed as well. PSS were no longer just large clumsy systems but began to diversify for different planning tasks. In an overview of PSS in 2005, Klosterman and Pettit said that PSS had evolved into two different types of systems (pp.477-478): "One focuses on planners' analytic, forecasting, or design tasks. The other type "are designed to improve communication and/or presentation." This research focuses on the Omgevingsapp, which aims to improve the communication between stakeholders. The Omgevingsapp can therefore be classified as the second type of PSS: communicative PSS. The first development of communicative PSS occurred at the same time as the planning paradigm was changing. Planners found that PSS could be used to aid in the communication process of collaborative planning (Goodspeed, 2016a).

2.2.2 Communicative PSS

Communicative PSS were not perfect from the start, as the systems had some problems with truly integrating the involved stakeholders. The first communicative PSS were developed during 90s, at the same time as Healey's (1992) communicative turn took place. During the first years of the 2000s, the focus of communicative PSS was too one-sided on providing information. Rather than allowing users to give their own input, the systems were used to expand the provision of information (Needham, 2004). This raises the question whether these supporting systems are not just part of the 'traditional planning methods' as described by Kleinhans et al. (2015). Goodspeed (2008) had the same conclusion, by 2008, most planning institutions had only posted information on a website as an easier way of providing the public with information, nothing more. Planners saw these shortcomings of these "PSS" and decided to focus on building more interactive systems, aided by the technological development of internet possibilities and access (Reddick, 2010). Reddick concludes his book chapter by saying that *"For future e-planning systems to be effective as enablers, the deliberative features of existing software*

will have to move beyond mere documented feedback, exploit the spatiality of the participatory environment, and allow more real-time dynamic consultation" (Reddick, 2010, p.143). Interactivity was seen as more and more important for PSS to work properly. The newer PSS (in the second half of the 2000s) were much more accessible and interactive than the first generation of communicative PSS (Foth, Bajracharya, Brown & Hearn, 2009).

The last decade has not only seen an increase of internet accessibility, but also an increase in smartphones and social media. These have changed the way in which communicative PSS work. Due to the growing importance of smartphones, the disseminative quality of PSS has increased. Almost everyone has a smartphone and can use it to download apps. The usage of apps in communicative planning is known by some as m-participation, which is defined as "t*he use of mobile devices to broaden the participation of citizens and other stakeholders by enabling them to connect with each other, generate and share information, comment and vote*." (Ertiö, 2015, p. 304-305). A major advantage that is often linked with the use of apps is the concept of 'situated engagement' (Gonçalves et al., 2014). People always have their phones with them, meaning they can use the apps to give feedback 'on the spot'. This is seen by some as beneficial over having people store the information in their brain and presenting it to a planner later when some feelings or details may be forgotten. This allows for a more thorough communication process between the app-user and the municipality.

Aside from the situated engagement, the type of participation is also different from traditional methods: "*Mobile participation expands the concept of what it means to participate, as it allows new forms of engagement to take place."* (Lybeck, 2018). People can participate more actively in the planning process. Not only the type of interaction is influenced by the usage of communicative PSS, they can also reach a wider array of people easily. With so many people owning smartphones, the amount of people that can be reached is relatively high (Höffken & Streich, 2013). Within citizen participation, the necessity to be physically present is a barrier for some people to get involved in the planning process (Kleinhans et al., 2015). Online participation can work as a low threshold participation method as it takes little time to open an app from home (Höffken & Streich, 2013). As a result, more people can be directly involved in a planning process. This is advantageous, as the involvement of more residents and other stakeholders can strengthen the amount of representation from the neighbourhood (Agger & Löfgren, 2008).

It is important to realise that the usage of communicative PSS also brings new challenges. One of the biggest challenges is that using mobile apps can exclude a certain population group from the planning process. In practice, these are mostly seniors that have difficulty with their smartphone (or no smartphone at all). The level of skills between different groups of people is large, which is what planners should take into account when designing apps (Korsgaard, Thiel, Thomas & Ertiö, 2018). This is why Höffken and Streich (2013), conclude that a multi-channel strategy is required. A multi-channel strategy is a combination of different methods, both traditional and electronic. This combination ensures that both the technological impaired group and the group that has little time are included in the planning process. (Kleinhans et al., 2015) also agree on this, they also mention that virtual connections should also lead to real space interactions. This increases the amount of engagement that citizens have.

2.2.3 Bottlenecks of PSS

Considering all these advantages of PSS and mobile apps, it might seem odd that they are currently so underrepresented in planning. Numerous researches have been done on why PSS are not used frequently in planning. One of the main causes for the lack of PSS in planning are the system's bottlenecks (Vonk et al., 2005). The main bottlenecks of PSS are not actually the systems themselves, but rather the link between systems and user. Geertman and van der Heijden (2015) state that a part of the problem lies in the attention to the technological side of PSS rather than usage and planning context. Vonk et al. (2005) explain, PSS's bottlenecks can be divided into three categories, *little awareness, lack of experience and low intention*.

- Little awareness: Planners are simply not aware of any potential systems that can be used in their specific situation. They are also generally not aware what the advantages of some systems can be.
- Lack of experience: Potential users are unaware of the benefits of PSS as they have not used them before and are therefore reluctant to implement PSS.
- Low intention: Planners know about PSS but do not want to use them, they see them as black boxes where the throughput leads to output that is incomprehensible.

These bottlenecks all rise to the surface at the planner's side of PSS. On the developer's side there are also some problems, that stem from different expectations of planners and developers. There seems to be a mismatch between demand and supply (Silva et al., 2016). Involved stakeholders want systems that are *user-friendly,* whereas app developers want systems that are *useful.* In this context, user-friendliness refers to the ease with which the PSS can be used. The systems should be understandable and easily usable, regardless of the outcome. Usefulness has to do with the question whether the used PSS can be used to achieve the required goals (Silva et al., 2016). As of today, most municipalities are struggling with finding the right balance between user-friendliness and usefulness (Schröder, 2014). Linked with the dilemma of usefulness versus user-friendliness is another often mentioned drawback of apps in communicative planning is the idea that it might create new technical barriers that exclude certain groups from participating (Ertiö, 2015). Especially older people might struggle with the use of apps in practice which is why user-friendliness is of utmost importance. The technical barriers might also increase the costs for municipalities, as better designed and user-friendly systems take time and money to develop.

Summarizing the literature overview, planning has shifted from a more top-down rational approach to a more process-oriented approach. Simultaneously, most collaborative processes are government-led, raising the question whether collaborative planning is currently in crisis and some even claim that collaborative planning is a utopian idea. However, some form of government is always required to steer a process and avoid a tragedy of the common's scenario. It is up to planners to try and create collaborative processes which focuses on achieving the best outcome while functioning on behalf of both government and society. Proper communication is key in this process. However, communication can prove to be tricky as different actors have different kind of knowledge forms. For planning processes to work, different knowledge forms need to come together in a way in which interaction is encouraged and different knowledge forms come together. Non-linear planning methods could be the key to connecting the different knowledge forms, as just conversing does not bring the different knowledge forms together. M-participation, as a small part of the wider spectrum of communicative PSS, could be used to aid planners in the communication with stakeholders. The usage of the apps can increase the amount of direct involvement as it does not require people to by physically present. At

the same time, planners should be aware that by using apps, they can potentially exclude certain groups from the planning process. M-participation should not be used instead of “normal” participation but rather as a supportive tool alongside the traditional methods.

2.3 Conceptual Framework

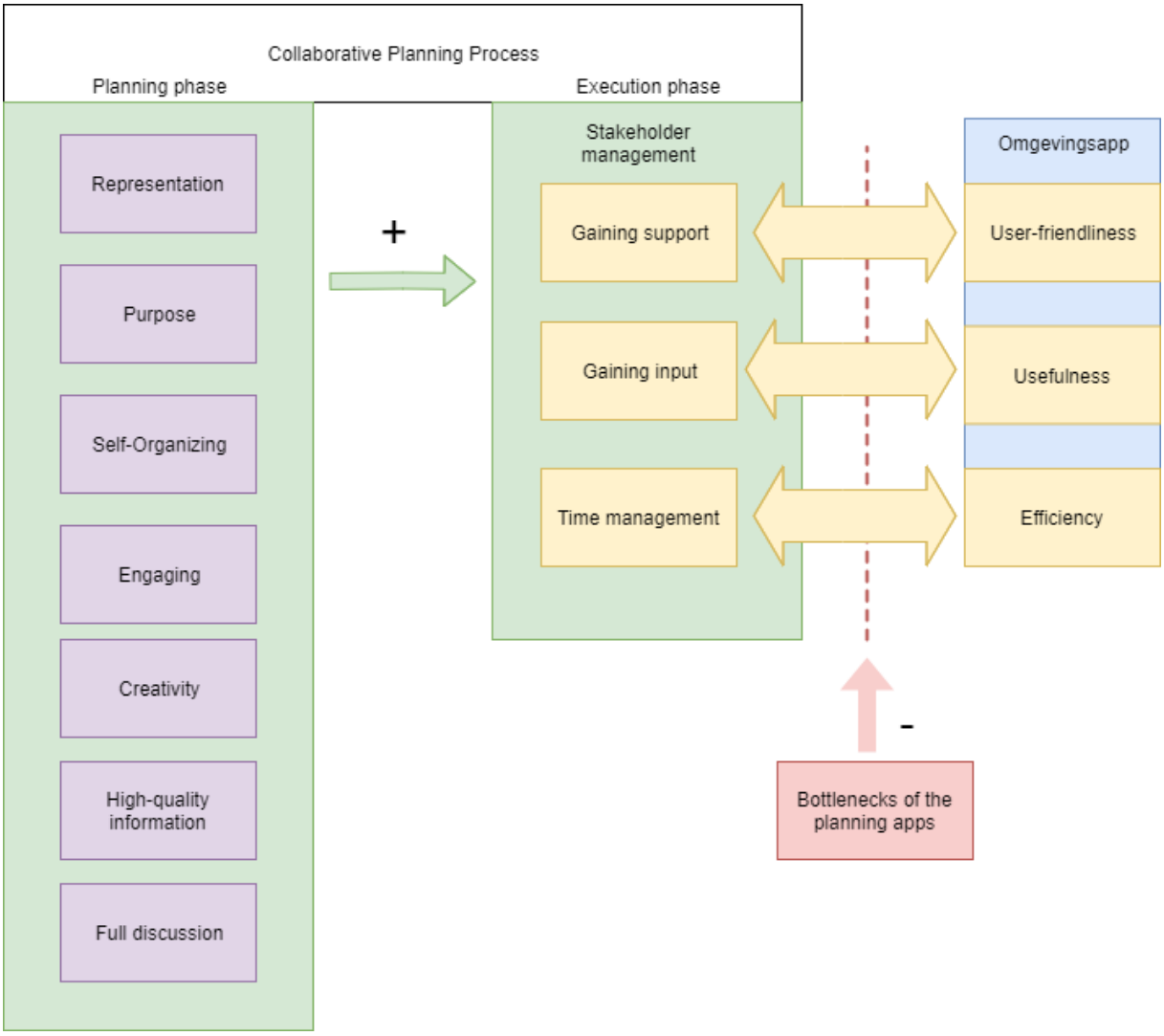


Figure 2: The conceptual model that will be used in this research. Source: Author

Figure 2 shows the conceptual framework that will be used in this research. The model combines the framework of Innes and Booher (1999) and adds the Dutch practice on evaluating stakeholder management in practice. The framework also looks at the role of the Omgevingsapp in collaborative planning processes and potential bottlenecks of the app. A detailed description of all theoretical concepts can be found in paragraph 2.3.2 and 2.3.3. This model was made to operationalize the literature review. Concepts like collaborative planning and PSS are rather vague for an interviewee that does not know the theoretical background. Therefore, operationalisation is required to make the concepts graspable (Boeije, 't Hart & Hox, 2009).

2.3.1 Two Phases in planning

Before the conceptual model can be explained in further detail, a clear distinction should be made between two phases in a collaborative planning process. The figure divides the **collaborative planning process** into two phases, **the planning phase and the execution phase.** The planning phase is followed by the execution phase, which is still part of the collaborative process. These phases specifically exist in the Dutch planning context. In the Netherlands, planning processes know two types of designs, preliminary design (voorlopig ontwerp) and the definitive design (definitief ontwerp). The first plan that is constructed in the planning phase is only a preliminary design (or prototype plan). The extent to which this design was made with public participation differs per municipality and per case. In practice, the first few preliminary designs are open to public debate, stakeholders can discuss the content of the plan and try to make changes. At the end of the first phase (the planning phase), a "definitive design" is presented. This design is made legal after it is accepted by the municipal council. Before the design is accepted however, any legal complaints from stakeholders must be dealt with. Stakeholders can go through legal processes if the plan conflicts with existing laws (known as bestemmingsplannen).

The planning phase ends when the definitive design is accepted. In the planning phase, the different knowledge forms are brought together. As explained in the literature review, traditional top-down planning methods are not suitable to combine the different knowledge forms in an interactive way (Kleinhans et al., 2015). Therefore, non-linear interactive methods are required to combine the different knowledge forms. In practice, these consist of stakeholder walk-in evenings, usually called information evenings, even though these evenings do much more than just informing residents. The preliminary designs are discussed during the information evenings. How these evenings are organized depends on what the municipality wants. Some municipalities go for more interactive methods, as they believe higher the amount of true collaboration can lead to better planning processes. Some municipalities prefer to keep these sessions mostly informing to save money.

After the first phase ends, the second phase begins (the execution phase). The execution phase starts directly after the municipal council accepts the definitive design and makes it legally binding. After that, the municipality (or other form of planning power) picks a construction team (contractor) and the preparation for the actual construction work starts. In this phase, the design is already determined, but the communication and participation do not stop. Despite the fact that the design is definitive, the route to reach that design is relativity open. Construction teams can determine for themselves how they tackle the communication and discussion with the surrounding stakeholders. This is where stakeholder managers are appointed and where the Omgevingsapp is firstly introduced. The app is used to inform people and is an interactive way for stakeholders to communicate with the municipality and the construction team (which is represented by a stakeholder manager). The planning phase has a positive connection with the execution phase. If the planning phase is done well, the execution phase is likely to fare better. This is shown by **the green arrow** between the two phases.

2.3.2 Criteria for assessing collaborative planning processes

In this research, the two collaborative planning phases will be assessed using the framework of Innes and Booher (1999). They constructed the commonly used framework to test the communication process and consensus building in collaborative planning processes. According to this framework, a good communication process will lead to consensus and therefore a higher quality outcome. The criteria that will be used in this research can be found in table 1.

Criteria	Explanation, the planning process:
1. Representation	Makes sure all relevant actors and interests are included in the planning process.
2. Purpose	Is driven by a realistic purpose shared by the involved actors.
3. Self-organization	Is self-organizing, participants can decide ground rules, objective tasks and discussion topics.
4. Engaging	Engages participants and keeps them interested in the process and promotes informal interaction.
5. Creativity	Encourages challenges to the status quo and promotes 'outside the box' ideas.
6. High-quality information	Incorporates high-quality information of many different types and makes sure every actor understands what the information means.
7. Full discussion	Seeks consensus only after the issues and interests are clear and differences have been responded to.

Table 1: Process criteria for collaborative planning processes. In the left column different criteria are listed. In the right column, these criteria are elaborated into further detail (Innes & Booher, 1999, p.419).

An important side note is that these criteria can only be used to test the planning process, not the actual outcome. If one of these seven criteria is lacking, that hinders the effectiveness of the communication and the quality of the planning process (Innes & Booher, 1999). This means that a process in which several of the criteria are missing, PSS will not be a panacea that fixes that process (Geertman, 2017). The more a planning phase has these seven criteria, the higher the chance that the retrospective feeling on the planning process is better. By examining cases, using these seven criteria, existing collaborative processes can eventually help with evaluating collaborative planning outcomes (Innes & Booher, 1999).

In the execution phase, the content of the planning process changes as the design is made definitive. However, the communication with external stakeholders is still relevant. External stakeholders are stakeholders that "can affect and are effected by" a project but are not internally involved in the construction organisation or municipality (Freeman, 1984). According to Rijkswaterstaat (2009) (the Dutch national planning government), stakeholder management during the execution phase of

construction work has three basic roles when it comes to dealing with external stakeholders. Meijers (2009), linked the Dutch stakeholder manager roles with planning literature. Combining these sources, creates three conditions for better stakeholder management performance in the execution phase of projects:

- The first condition is informing all involved stakeholders in a timely manner to gain support for the project (Meijers, 2009). Keeping an overview is of utmost importance in this regard. Stakeholders want to keep up to date with what is happening, this requires a tight schedule from the stakeholder manager. The information must be understandable as well, preferably presented in a visually appeasing form (Rijkswaterstaat, 2009). On top of that, the stakeholder should look for solutions and respond to questions whenever possible. This condition can be summarized as **gaining support.**
- The second condition is that the government actively listens to stakeholders when they ask for something. This does not necessarily mean that the demand of the resident must be met, but the government should listen and respond to what is being said. Argumentation is important in this regard, people want to know the reasoning behind the answer. If at all possible, the local input should be included in the project (Rijkswaterstaat, 2009, p.44). This is known in literature as **gaining input,** as increasing the amount of local knowledge from involved stakeholders can lead to better decision making by planners and stakeholder managers (Meijer, 2009, p.13).
- The third condition has to do with time management. As Meijers (2009) mentions, the stakeholder manager is also responsible for the working schedule of the project. Dealing with stakeholders takes time, and the stakeholder manager should deal with input as quickly as possible. This smoothens the process of the project and decreases the time spent debating between construction team and stakeholder. This condition is operationalized as **managing time.**

Together, these three conditions for stakeholder management can be summarized as **gaining support, gaining input and managing time.** These conditions determine the performance of stakeholder management in the execution phase. Since the stakeholder manager in charge of the communication, these conditions can also be used to test the communication in the execution phase. A small note that should be added is that the three conditions of stakeholder manager communication are not influencing the actual construction. This framework says nothing on the quality of the construction, merely the communication between the stakeholder manager and the stakeholders. Finally, the performance of the stakeholder management is also dependent on the usage of the Omgevingsapp.

2.3.3 Communicative Planning Support App

The **Omgevingsapp** is used in the execution phase to enable easier and more interactive communication between different groups. As is mentioned in the description of the Omgevingsapp, it is a tool that is used to "*offers the possibility for low-threshold communication with stakeholders in an attractive and interactive way"* (ITC Groep, 2019). The Omgevingsapp is used to smoothen the communication between stakeholder and the construction team and make it more efficient. In order to test the performance of the Omgevingsapp, the three conditions for good stakeholder management have been linked with criteria for a good functioning communicative PSS, by combining a part framework of Zhang, Geertman, Hooimeijer & Lin (2019) and the concepts over usefulness and user-friendliness of Silva et al. (2016).

The first condition of good stakeholder management, gaining support for the project, can be linked with the **user**-**friendliness** of the Omgevingsapp. This term refers to the amount of ease with which the PSS users can use the app and how easy it is to control for the municipality that is running the app (Silva et al., 2016). The user-friendliness is dependent upon the connectivity and the ease of use of the PSS (Zhang et al., 2019). The connectivity refers to extent to which the app is easily accessible to the public. Ease of use refers to whether the system is easily usable for a diverse range of technological literacy levels (Zhang et al., 2019). If more people are involved in the project and are downloading the app, the chances of gaining support for the project are also higher.

The second condition of good stakeholder management, gaining input, can be linked with the **usefulness** of the Omgevingsapp. The term refers describes the extent to which the used PSS reaches the goal it is meant to reach. The goal of the Omgevingsapp is that it "*offers the possibility for low-threshold communication with stakeholders in an attractive and interactive way*" (ITC Groep, 2019). The usefulness is dependent upon the interactivity and the effectiveness of the PSS. The interactivity refers to the whether the system is interactive, rather than just a form of providing information. App users should be able to give input themselves. The effectiveness refers to the whether the app can accurately and completely achieve its purpose (Zhang et al., 2019). The usefulness determines whether the app can actually increase the amount of input that stakeholders have in the execution phase of a project.

The third condition of good stakeholder management, managing time, can be linked with the **efficiency** of the Omgevingsapp. Efficiency refers to the time and effort that is used by both app users and the stakeholder manager (Zhang et al., 2019). An app should have added value compared to face-to-face communication. It should save time a create a higher level of productive communication between stakeholders and stakeholder managers.

Together, these three concepts determine the performance of the PSS. Summarizing, the performance will be measured by looking at the user-friendliness (the stakeholders), the usefulness (from a developer's perspective) and the efficiency gain (from a municipal planner's perspective).

The performance is not only dependent on the features of the Omgevingsapp, but also of the potential shortcomings. These shortcomings are represented in the **bottlenecks of the PSS.** They have a negative impact on the performance of the Omgevingsapp as PSS on the execution phase. The more bottlenecks a system has, the less effective the PSS is on the communication in the execution phase.

Chapter 3: Methodology

3.1 General Research Strategy

The next chapter describes how the literature review and the conceptual model from chapter 2 were translated into the analysis at the end of this. In order to collect the data, qualitative methods were selected. Qualitative research methods link well with the typology of the research questions. The research questions are explanatory, rather than descriptive. To answer these questions, it is important to have a thorough analysis and reach to the core of the cases. Qualitative research allows for researchers to delve deeply into the research material and answer why questions rather than the what questions (Baxter & Jack, 2008). Qualitative research is also very suitable when researching complex social structures, which links well with the wickedness of collaborative planning processes (Rittel & Webber, 1973, Boeije et al., 2009). In order to answer the research questions, a comparative case study was carried out using four different cases. These cases will be described separately in chapter four. The data collection methods that were used are a combination of policy documents analyses, semi-structured interviews with policymakers, stakeholder managers and involved stakeholders.

3.2 Case Study Research

3.2.1 Case study as a research method

This research consists of four different cases that were researched to answer the main questions of this research. The nature of case study research is that it is concerned with the "complexity and particular nature of the case(s) in question" (Bryman, 2016). By looking at different cases and interviewing multiple people per case, it is possible to give a complete image of the complex planning processes that took place. The main advantage of the case study research is that it can look directly at phenomena as they unfold in practice (Flyvbjerg, 2006). In this research, the seven criteria of collaborative planning the performance of the Omgevingsapp in support to the stakeholder manager will be analysed by looking at four different cases. The cases will be compared to each other, making this a comparative case study research. Using multiple cases gives the results of this research more robustness and makes the results more generalizable (Flyvberg, 2006). Using multiple cases also gives the researcher a wider array of documentary information that can be used to answer a why-question (Yin, 2009). As Sartori (1991) mentions, by comparing case studies can researchers control the results. This increases the external validity of this research.

Some researchers are not too fond of using case studies as a research method, as the limited amount of data and the high amount of details would make it impossible to generalise case studies (Flyvberg, 2006). Bryman (2016) also mentions this flaw, namely when looking at the external validity. How can a few cases on a planning support systems be representative for all planning support systems? Some researchers therefore believe that generalization of theory based on case study research is not possible. However, Flyvberg (2006) states that case studies are especially useful in generating theory when looking at complex social processes. Ideally, scientific experiments would be conducted that could be performed in total isolation of any external factors. Within social sciences, the possibility for this type of research is limited, as external factors cannot be removed from the reality. Because of this, cases are the best way to look at practical elements from a scientific viewpoint (Yin, 2009). As explained above, the inclusion of multiple cases increases the amount of robustness and increases the external validity. In this research, the cases are specifically selected by looking at certain criteria. Since the results of the cases are likely to differ, the researcher will need to find a reason to explain these

differences. Yin (2009, p.10) summarizes this: "*case studies, like experiments, are generalizable to theoretical propositions and not to populations or universe."* Therefore, a multiple-case study research is well suited for this research topic.

3.2.2 Case selection criteria

As mentioned in paragraph 3.2.1, this research used four different cases that were all deliberately chosen. Within multiple case study research, the goal is to replicate and explore differences between different cases. This comparison requires a thorough case selection (Baxter & Jack, 2008). Yin (2009) states that cases should be chosen using replication, rather than sampling logic. Sampling within case study research does not work, as you would need an unrealistic amount of cases and variables in order to entirely describe and analyse a certain concept (Yin, 2009). The goal of this research was to compare and analyse the different cases by looking at the seven criteria of collaborative processes and the functioning of the planning apps. As Yin (2009) explains, this is possible if the cases are chosen using the same criteria. Following from the conceptual model and the research questions, the four cases were selected based on the following criteria:

- First, all selected case studies are ongoing collaborative planning practices. As stated in the municipal law of the Netherlands, citizens should always be able to object formally to a plan (Wettenbank Overheid, 2019). All processes also had "interactive information evenings", in which citizens could discuss with the municipality and experts on the plans. Therefore, all cases can be seen as part of the collaborative planning process, as they focus on discussion between stakeholders (Innes, 2004). The cases all need to be still ongoing, as respondents tend to forget things that happened in the past, especially details (Boeije et al., 2009). By researching cases that are still ongoing, respondents are more likely to remember their feelings during the different phases. By choosing cases that are still ongoing, the chance that respondents will not remember what the process was like, leading to unreliable interviews, is decreased.
- All cases use a planning app in the execution phase. At the start of each execution phase, all cases used an app with which they could communicate with the different stakeholders. These apps are a small part of the wide spectre of communicative planning support systems, as they were all designed to improve the communication and presentation between stakeholders and the municipality (Klosterman & Pettit, 2005).
- All cases were accessible. Through ITC Groep, which were involved in all the cases, the researcher had access to documents that are not publicly accessible. These documents were included in the analysis and allowed for a more through preparation for the interviews. The accessibility of respondents for the interviews is also increased (more on this in paragraph 3.3).
- All cases are located in a different municipal region, reflecting the influence of different local contexts. Municipalities all follow the same basic process when it comes to reconstruction work (namely the two phases). The specific details with which the processes are shaped are however different per municipality. As Eisenhardt (1989) explained, especially the contradictory data creates new perceptions. Therefore, the cases followed the same planning trajectory, with variations in the details. Only the municipality of Woerden occurs twice. Even though both cases within Woerden had the same problem (subsidence of the soil), the chosen solutions were different. On top of that, the apps that were used in both cases were also very different. Therefore, as an exception, the municipality of Woerden is the governmental party in two cases.

The amount of cases was limited at six. Five cases increases the amount of comparison that can be made between cases, leading to a higher validity (Sartori, 1991). At the same time is the amount of data that comes from six different cases not so much that it would be incomprehensible, and that the researcher would be lost in the details (Flyvberg, 2006). As a result of these case selection criteria, the following four cases that were selected can be found in table 2.

Case	**Governmental responsible party**
Reconstruction Assumburg	Muncipality of Dordrecht
Reconstruction de Kanis	Municipality of Woerden
Reconstruction Hoa Phase 2	Muncipality of Zwijndrecht
Reconstruction Zegveld	Municipality of Woerden

Table 2: The cases that were selected for this research and the municipality in which these cases took place.

In the first version of this research, two more cases were selected, Duindorp and the Nieuwe Driemanspolder. However, these two cases were in the end removed due to different reasons. Duindorp was removed as the municipal experts that were responsible for the planning process switched jobs and were unavailable. The Nieuwe Driemanspolder was removed because the app that was used in that project was taken offline and no longer available.

3.3 Research Methods

This next section describes the different methods that were used in this research. By using different methods, known in literature as triangulation, researchers can see different viewpoints and produce results with greater accuracy when compared to using just one method (Jick, 1979). The main advantage of triangulation is that the diversity of methods can create different types of results that can then be compared to each other (Boeije et al., 2009). The "uncertainty of interpretation" is reduced by using multiple methods (Bryman, 2004). In this research, two different methods were used, policy document analysis and semi-structured interviews. The next section describes the used methods and their advantages and shortcomings.

3.3.1 Policy document analysis

The purpose of a policy document analysis is that a researcher can look at texts and images without external intervention, leading to unbiased outcomes. Since policy documents are not directly influenced by the researcher, they are less likely to have a researcher's bias (Bowen, 2009). Not everyone agrees on the idea that policy documents are unbiased, as the researcher that is analysing the documents can himself still potentially be biased (Karppinen & Moe, 2012). Bowen (2009), also mentions some shortcomings of policy analysis. Even though a policy analysis is a cheap and relatively unbiased, it should not be used as a stand-in for other kinds of methods that could potentially work better. However, the goal of the policy analysis in this research is not to use them for generalisation. Rather, they are used as background information into preparing the researcher for higher quality interviews, which is the other used method. As Karppinen and Moe (2012, pp .14-15) mention: *"Although analyses of documents may give only limited information on the intentions and motives of political actors, they can often help us understand the process of creating political definitions and meanings and thus clarify the policy process."* So, the policy document analysis is used to prepare the

researcher for the interviews, as it can help with understanding the ideas behind the planning process. The extra information allows for better follow-up questions during the interviews. Bowen (2009, p.38), agrees with the idea that policy documents can perform well together with other forms of data: *"documentary evidence is combined with data from interviews and observation to minimize bias and establish credibility."* Therefore, the policy document analysis is used as a supportive form of data in this research.

For each case, two sets of policy documents were looked at. Firstly, the communication strategy document, describing the communication of the construction team in the execution phase. These documents are not publicly accessible and confidential. Therefore, they are not included in this research as a primary source. However, they were used to give the researcher a better understanding of the way in which the communication with stakeholders is organised. The other documents that were used are publicly accessible. These documents are constructed by the responsible governmental party. These documents were all given to the involved stakeholders. In the documents, the reason for the project is explained, along with any potential nuisance. The documents that were analysed can be seen in table 3.

Case studies	Policy Documents
Reconstruction Assumburg	Assumburg en omgeving. Collection of multiple information flyers. Made by the municipality.
Reconstruction de Kanis	Reconstructie de Kanis. Information booklet. Made by the municipality.
Reconstruction Hoa Phase 2	Hoa Fase 2. Information folders. Made by the municipality.
Reconstruction Zegveld	Reconstructie van de Slotenbuurt. Collection of multiple information flyers. Made by the municipality.

Table 3: The different policy documents that were analysed in this research. The list shows the name of the document, the type of document and which government made the document.

3.3.2 Semi-Structured interviews

Semi-structured interviews are conducted in order to delve deeper into the cases in a flexible way, as the interviewer has the potential to deviate from the standard question/topic list by asking follow-up questions if a certain answer is interesting (Boeije et al., 2009). This type of interview is well suited for inductive research. It allows for researchers to keep an open mind about the interviewee's answers, so that concepts can emerge from the data (Bryman, 2016). By interviewing involved experts and stakeholders, the views and opinions of the participants can be discovered (Cresswell, 2009). In this research this is especially valuable, as the communication process happens outside the policy documents. In order to evaluate a collaborative planning process, the views of the involved participants must be taken into consideration, making interviews an important extension of the policy document analysis. As mentioned above, the policy documents were used to prepare for the interviews. On top of that, the researcher was given a tour of the construction site by an employee of

the construction team or the stakeholder manager. This gave the researcher extra information and added to the understanding of each case. By seeing the construction work in real life, the scale and scope of the construction became more graspable. On top of that, the tour added to the detailed knowledge of the researcher. If an interviewee mentioned a specific part of the construction, the researcher would be more informed of where that specific part is and what is happening, since he had already seen it before. Therefore, the extra context added to the quality of the interviews as more context allows for better follow-up questions.

A total of 24 interviews were held (approximately 4 per case) with experts from the municipality, experts from the developer of the app and involved stakeholders. Since a few case were removed from the research, 16 interviews were used for the analysis. The aim of each interview was to last approximately 30 minutes, giving the respondent space to elaborate more if they wanted to. The content of the interviews were the planning processes of the different cases. For each type of interview, respondent experts and stakeholders, a different topic list was constructed. The topic list was used by the interviewer to keep the structure in the interview and make sure that every topic is treated. Because the interviews were semi-structured, the order of the topic list differed per interview. The topics of the topic list all correspond with the concepts in the conceptual framework. The interviews with experts from the municipality, focused on policy, decision-making and communication processes in the planning phase. The expert-interviews with stakeholder managers focused on the communication in the execution phase and the functioning of the app. The interviews with involved stakeholders were more focused on their feelings and how they experienced the planning phase, execution phase and the functioning of the Omgevingsapp. The full topic lists can be found in the appendix of this research.

The questions that were asked, were all asked as open as possible. This reduces the amount of steering by the interviewer. All interviews were recorded with permission by the interviewee and transcribed afterwards. By recording the interviews, the interviewer can focus more on the actual conversation, rather than having to write and listen at the same time. The transcripts were also coded afterwards, creating structure in the large amount of transcript data (Boeije et al., 2009). At the end of each interview, the respondent was asked if he/she had any last remarks or certain topics to add. This open question at the end of the interview decreases the chance that an important subject is not included in the interview and it can even open an entirely new area of information (Opdendakker, 2006).

The section above mentions a few exceptions concerning the interviews. For a few other citizen interviews, due to time constraints, the topic lists were sent by email. This is the case for the interviews with stakeholders in Assumburg and Hoa Phase 2. A disadvantage of this method is that the potential for follow-up questions is limited. To counter the limitation of not getting to ask follow-up questions, the researcher increased the number of interviews per email for each case. Assumburg had three interviews. The residents of Hoa Phase 2 received the questionnaire online via the app and Google Forms, since no one wanted to meet for a full interview. The topic list was filled in by 17 residents. Luckily, the planning phase was organized by the same company that was responsible for the planning phase in Assumburg and the app that was used is the same as the one used in Assumburg. Since the results of this case were really similar to the results of Assumburg, the description of this case will be summarized.

3.3.3 Respondents

This research has three different types of respondents, experts from the municipality, experts of the app developer and participants of the planning process. In order to analyse communication within collaborative planning process, both policymakers, app administrators and involved stakeholders need to be included in the research. Showing all sides of the process is beneficial, as it gives a more complete image of what happened during the process.

The first group is the group of policymakers and stakeholder-managers (which control the app). The policymakers were involved in the planning phase and were present during the information evenings. The stakeholder-managers are responsible for the communication with the surroundings during the execution phase. These types of interviews can be classified as expert-interviews. The interviewees were an expert as they were either responsible for the development of a strategy or had access to information about the decision processes. Gläser & Laudel (2009, p.117) describe this as *"people who have an expert role in the investigated social setting."* Expert interviews are a separate form of interviewing with its own advantages and disadvantages. Firstly, it is a good and sound way to generate a large amount of inside knowledge of a process (Bogner, Littig & Menz, 2009). Secondly, the expert allows the researcher easier access to the organisational structures behind the expert, which can help as a new point of entry into the research (Bogner et al., 2009). Also, when the researcher has the same scientific background and interests as the interviewee (in this case urban planning), the interviewee is more likely to reveal information that he/she would otherwise not reveal (Bogner & Menz 2009, p.59). A downside to the interviewing of experts, is that the expert might not be too critical of his/her own work, leading to bland outcomes (Bogner & Menz, 2009, p.68). On top of that, the quality of experts differs, one expert might know a lot about a specific project, just not in the way that is useful to the researcher (Gläser & Laudel, 2009). To counter this, this research uses at least two experts per case.

Below, a list of the interviewed people can be found. All respondents were deliberately approached and chosen because they were experts for their corresponding case. In the right column, it is argued why that interviewee is an expert, using the definition of Gläser and Laudel (2009).

Case	Role	Date of interview	Why an expert?
Reconstruction Assumburg	Stakeholder manager for the municipality	26-4-2019	A stakeholder manager, is responsible for the communication with all involved stakeholders in the execution phase
Reconstruction Assumburg	Project Director Engineer service Drechtsteden	09-5-2019	A Project Director Engineer service Drechtsteden was responsible for the design and presenting that design in the planning phase.
Reconstruction de Kanis	Stakeholder manager for the contractor	26-4-2019	A stakeholder manager is responsible for the communication with all involved stakeholders in the execution phase
Reconstruction de Kanis	Communication adivisor for the municipality	15-05-2019	A communication advisor is responsible for the communication with all involved stakeholders in the execution phase. She was also involved in the planning phase as communication manager.
Hoa Phase 2 (Zwijndrecht)	Stakeholder manager for the municipality	25-4-2019	A stakeholder manager is responsible for the communication with all involved stakeholders in the execution phase.
Hoa Phase 2 (Zwijndrecht)	Project Manager, municipality of Zwijndrecht	09-5-2019	A project manager, was involved in the planning phase in the communication with the stakeholders.
Reconstruction Zegveld	Stakeholder manager for the contractor	25-4-2019	A stakeholder manager, is responsible for the communication with all involved stakeholders in the execution phase.
Reconstruction Zegveld	Project Manager, municipality of Woerden	21-5-2019	A project manager, was involved in the planning phase in the communication with the stakeholders.

Table 4: A of interviewed experts by case. The right row shows in what way the experts were involved the planning process.

The other interviewed group were residents/stakeholders that were involved in the planning process. These residents were approached two forms of sampling, convenience sampling and snowball sampling. Convenience sampling simply means that the respondents are accessible to the researcher (Bryman, 2016, p.201). This method is often used in social research. The other method, snowball sampling, was done because the experts had access to the involved stakeholders. Snowball sampling refers to the idea that a researcher first contacts a small group of people (in this case the stakeholder managers), which then introduce them to other stakeholders, who in their turn know new potential respondents (Bryman, 2016). A critique on both these forms of sampling is that it is not random, and therefore not generalisable. However, as Bryman (2016, p.203) explains, these methods of sampling are well suited for qualitative research, where altering theory is the goal, rather than testing hypotheses. The table below shows all the different stakeholders that were interviewed per case, in what way they were involved is shown in the right column.

Case	Date of interview	Different planning phases involved	Anonymised name for results chapter
Reconstruction Assumburg	20-6-2019	Resident of a street in which the construction takes place. (done per email)	Resident D
Reconstruction Assumburg	20-6-2019	Resident of a street in which the construction takes place. (done per email)	Resident E
Reconstruction Assumburg	20-6-2019	Resident of a street in which the construction takes place. (done per email)	Resident F
Reconstruction de Kanis	26-4-2019	Resident of a street in which the construction takes place. Member of the citizen group that was involved in the decision-making design panels with the municipality in the planning phase. Has downloaded the app and still follow the construction closely. Is also a member of the neighbourhood committee	Resident J
Reconstruction de Kanis	26-4-2019	Same as above.	Resident K
Hoa Phase 2 (Zwijndrecht) (5 people)	29-6-2019	Residents that live adjacent to the construction. All have the app downloaded and came to the information sessions in the preparation phase. Still discuss with the stakeholder manager.	Resident H
Reconstruction Zegveld	11-7-2019	Resident of a street in which the construction takes place and member of the village platform. The village platform represents the citizens of Zegveld in a panel and regularly meets with the municipality.	Resident B
Reconstruction Zegveld	11-7-2019	(same as above)	Resident C

Table 5: List of interviewed stakeholders by case. The order of the case studies was changed, therefore the residents are not ordered alphabetically.

3.4 Research Quality

The last section tried to fully describe the methods that were used in this research. This research is a qualitative multiple-case study research as that suits well with the typology of the research questions. Within scientific research, the validly, reliability and suitability of the chosen methods is crucial for the research quality. This section will briefly summarise the research quality of this research.

Reliability

Research reliability refers to the idea that the methods are optimised for the type of research that is conducted, the internal analytical methods must be consistent (Noble & Smith, 2015, p.34). To achieve this, the interviews were all done with the same topic list for each case. Within these topic list, the theoretical concepts were operationalised in a conceptual model, making the questions understandable to all interviewees. All interviews that were recorded were also transcribed, giving transparency to the analysis of the researcher, which was done by coding. All the policy documents that were publicly accessible are also included in the methods chapter. In order to protect privacy, the names of the interviewees are not mentioned. However, the role of the interviewee and how they were involved in the case are included. This helps with placing the answers that respondents give in perspective.

Validity

Research validity refers to the "*integrity and application of the methods undertaken and the precision in which the findings accurately reflect the data*." (Noble & Smith, 2015, p.34). By using triangulation of different methods, policy document analysis and interview, the validity is increased. Interviewing both experts and "normal" stakeholders also increases the validity of this research, as it shows different views of the planning process.

External generalization

Perhaps the main critique on case study research is that the results are not generalizable. However, as the section above explains, case studies can be used for theory building (Yin, 2009). By using multiple cases and comparing these cases to each other, concepts that occur in multiple cases are likely to occur in other similar cases. This does not mean that this research can lead to defining new theory, further research is required to test these concepts further.

Chapter 4: Results from Cases:

4.1 Reconstruction Assumburg

4.1.1 Case description

Assumburg is a neighbourhood in the city of Dordrecht. The sewerage was outdated and needed to be replaced. On top of the outdated sewerage, the roads in the neighbourhood were in poor condition as well. The municipality recognized these problems and decided to tackle them all together. While the municipality replaces the sewers, the public space will receive an upgrade as well. In practice this translates to new forms of green on the street, better parking spots and new materials for roads and sidewalks. Finally, in the new situation, the roads will be less suitable for drivers to drive fast as it was one of the main concerns of locals. (Gemeente Dordrecht, 2018). This project is rather tricky, due to the layout of the main road that goes through the neighbourhood (see image 2).

Image 2: The area in Assumburg that is being reconstructed. The road in the middle is the vein in and out of the neighbourhood, making it tricky to keep all areas accessible at all times. (Gemeente Dordrecht, 2018).

The image shows the area that is being reconstructed. The Assumburg (also the name of the main road) is the main access point for people to get in and out of the area. If the Assumburg would be closed, there would be only one other way out of the area. On top of that, there are dead end streets on both sides of the Assumburg. The dead ends also mean that there is an increased pressure on the Assumburg to remain accessible. All these factors together make this a tricky project, the impact of the construction is severe while the demand from the public for an accessible area is high. The construction started on the 14th of January 2019 and is expected to finish in May 2020.

4.1.2 Stakeholder communication in planning phase

As mentioned above, the difficulty of this plan was keeping all roads accessible while the construction was taking place. In order to do this, the planning had to be specific and accurate, a job in which a small mistake is easily made. In order to keep local stakeholders involved, the municipality organized two information evenings in which the plans would be presented. At these evenings, there was the opportunity to ask questions, post complaints and discuss with the municipality. However, before the information evenings were planned, the municipality was already determining the ground rules of the project design. The first forms of communication consisted of internal background research by the municipality. In this internal research, bigger stakeholders like the public transport company, the fire brigade and the green management department were already included, the public was not involved until later on (interview with the Project Director Engineer, May 2019). At the same time, there was a lot of back and forth going on internally, as the project director engineer stated, *"A lot was going on, and the municipality had trouble finding a good way to tackle the problems. The municipality took a long time determining what the new design (of the public space) would be like. They spent 1.5 years discussing that new design."* The preparation process before any citizen involvement took place was long and no citizens were involved in this stage. According to the project director engineer, this was not a good way to start the initial phase, "*I think that a lot of people have had fear and uncertainty, since the plans were already announced in 2016*." However, the interviewed residents do not really seem to share this fear as they were unaware of the communication that was happening behind the scenes.

When eventually, a preliminary design was ready to be presented, the invitations for the first information evening were sent. Every citizen in the Assumburg was supposed to be invited for the evenings, as it would increase the amount of citizen input. However, not all residents received the invitation that the municipality send (interview with resident D, June 2019). The problem that seems to have occurred is that the letters either did not reach everyone or were lost somewhere. If people do not receive an active invitation, the chances of them showing up to the evening are slim. The residents that did not receive the letter would have needed to check the municipal website themselves and randomly see the announcement or hear it from a neighbour. This would not be a huge problem if it was just one house, but multiple people seem to have encountered this problem. Because of this, the first information evening is likely to have missed some stakeholders that would have liked to have been involved. This hinders the amount of citizen representation, as some relevant stakeholders that would have liked to have been involved, were not (interview with the Project Director Engineer, May 2019). Those that did receive the invitation were satisfied, claiming that the municipality did its best to inform citizens well in advance (interview with resident F, June 2019). In the end, the project director was satisfied with the amount of people that showed up to the information evenings as "the evenings were really well attended*"* (interview with the Project Director Engineer, May 2019).

The information evenings were set up in the following way: the municipality had set out different discussion tables at which discussions about specific aspects of the preliminary designs were held. At these tables, stakeholders could communicate directly with the municipality and each other. Each table had different experts of the engineering office and municipal workers that were knowledgeable on the topic that was discussed at that table. Examples of the topics are green space, parking space and environmental issues (interview with the Project Director Engineer, May 2019). There was no general presentation about the design by the municipality, which is criticised by the project director engineer. He states that the information evenings were not creative enough and rather conservative.

The municipality should look to the future more and less at the existing situation (interview with the Project Director Engineer, May 2019). Oddly enough, the residents disagree with the project director engineer as they liked the informality of the information evenings. Since there was no general presentation, only discussion tables, the stakeholders could ask questions that were specific for their situation. As resident E states. *"The information evening was well organised. There were sufficient experts to explain what is going to happen."* This shows that the residents quite liked the setup of the information evenings, even though the project director engineer was not completely satisfied himself. Another positive aspect of the information evening, according to residents, is that the municipality really listened to the suggestions. For example, a resident saw that in the first design his own parking spot (in front of his house) was unavailable After he told this to the municipality, it was changed in the final design (interview with resident E, June 2019). This shows that generally, the residents were quite happy with the setup of the information evenings, the municipality listened well to their questions and there was sufficient room for citizen input.

All questions and remarks that were made during the sessions were written down and published online with a response next to it. The idea was that every comment would be included in this list and answered in that list, so that any follow-up questions could be asked in the next session. This idea was well liked, but in reality, led to two problems. The first problem being that people that missed the first session did not know where to find this list and therefore could not prepare themselves for the second information evening. As resident E said, "*I was not made aware of the ideas that were brought forward in the first information evening."* The second problem was that some ideas that residents' suggestions were not included in the list as happened with resident D: *"my input was nowhere to be found in the records."* This led to irritation as some people felt that their input was not included in the definitive design, or that questions were being avoided by the municipality (interview with resident D, June 2019). This problem solved itself, as there was a second information evening which had the same setup as the first one. During this evening, any last remarks or questions from residents were taken in and (possibly) included in the decision-making.

After the second information evening, the definitive design was published and open to formal complaints. In the end, the definitive design that was formed was quite well liked by the different involved parties, as exemplified by resident F, *"I truly think that the municipality did its best with the information and communication."* Also, the residents felt that most of their input was included and that specific changes were made to the design. For example, resident E noted that their specific parking spot was not accessible at all in the first design, in the end, this was changed so that the parking spot was accessible (interview with resident E, June 2019). These small changes to the design were really well liked by the community of the Assumburg. This is also seen in the amount of formal complaints on the final design, only ten formal complaints. This might seem like much, but it is quite low considering the scale of the project. On top of that, most of the problems were small details that could easily be solved by altering the design lightly (interview with the Project Director Engineer, May 2019).

In short, the planning phase proceeded relatively smoothly. The neighbourhood was closely involved, shown by the high attendance of the information evenings. The involved stakeholders understood the relevance of the reconstruction and were engaged in the process. There were some problems with people not being invited to the first information evening, therefore missing some information, but in general the quality of information was well received by the stakeholders. This all led to a definitive design that was accepted by the municipal council without too many complaints.

4.1.3 Stakeholder communication in the execution phase and Omgevingsapp

After the definitive design was accepted by the council, the construction work was eventually given to contractor Kuipers Infra. However, a long time passed between acceptance of the definitive design and the appointment of the contractor. In this "in-between" phase, there is hardly any communication. Both resident E and F feel like there should have been more attention to this phase from the municipal side, as they felt like they were kept in the dark. The problem with this phase is that there is not yet a contractor that can communicate with stakeholders, while the municipality is focusing al its attention to selecting the proper contractor for this reconstruction.

When eventually the contractor was appointed, the first step that the contractor took, was to organize their own citizen information evening. During this evening, the construction work was explained in detail and specific small-scale practicalities were discussed. This was well liked by the residents, as it allowed for personal communication about very specific problems. After this evening, the communication was taken over by the stakeholder manager and the "standard communication methods" were implemented. These methods consist of monthly general letters for the entire neighbourhood, specific letters per street, a walk-in hour with the stakeholder manager and what is posted on the app (interview with the Stakeholder Manager, April 2019). As was evident in the interviews, the residents are generally happy when it comes to the "standard communication methods". The constant flow of updates to keep residents informed is well liked. The different ways to contact the stakeholder manager were also appreciated (interview with resident E, June 2019).). When it comes to communicating, the stakeholder manager has one aspect she would like to improve, the communication that happens without her knowledge: *"I do not have a good view on the communication on the construction site when I am not around. Some residents go to the contractor themselves with questions, I would like more insight in that matter."* The problem with this is that the contractor's primary task is not the communication but the construction itself, leading to unanswered questions. This can lead to some confusion, as the stakeholder manager is then unaware of some problems that the community did report, leading to some irritations (interview with the Stakeholder Manager, April 2019). But in short, both residents and the stakeholder manager are contempt with the way the communications is currently going.

The Omgevingsapp

The app for Assumburg is called reconstruction Assumburg. Image 3 shows the home screen of the app. This screen as multiple options to click on. A short summary of the features:

- **Welkom** (welcome): Opens a short article on the construction work. The article contains a link to the municipal website, on which summaries of the information evenings in the planning phase are found.
- **Informatie** (information): Opens a tab with general information and a summary of what the construction work entails. Here are also important affairs treated, such as where not to drop garbage, where not to park and what new green will be planted.
- **Nieuws** (news): Opens the news menu where the weekly updates are posted. The updates have photos to show what exactly has been done on what location (see image 5). When a news update is place, the people who have downloaded the app will receive a push notification.
- **Berichten** (messages): Shows the answer to questions that multiple people had. For instance, multiple residents had questions concerning the narrowing of the road in the

new situation. Rather than answering everyone personally, the answer to the question is posted in this tab. When a message is posted, the people who have downloaded the app will receive a push notification.

- **Planning**: This tab shows the planning as it was made in January, phase by phase as it was decided upon in the definitive design.
- **Omleiding** (alternative route): This tab is updated every week. It shows where any roads are closed off and what the alternative routes are. This is done in the form of a map of the neighbourhood with different routes being shown.
- **Vragen** (questions): Within this tab, app users can ask questions that are read by the stakeholder manager. They have to fill in their name and email address (see image 4). After the stakeholder manager reads the question, she delivers it to the person who has answer to that specific question. The stakeholder manager can then respond to the question per email or by a phone call.
- **Tevredenheid** (satisfaction): People can rate the app whenever they want. They can rate the app from 1 to 5 stars on the topics of service, information quality and the general satisfaction rate with the construction. This tab also has an open box for any points of improvement.
- **Bellen** (call): When someone presses this tab, they directly call the stakeholder manager on her mobile phone.

Image 3: The home screen of the Omgevingsapp reconstruction Assumburg

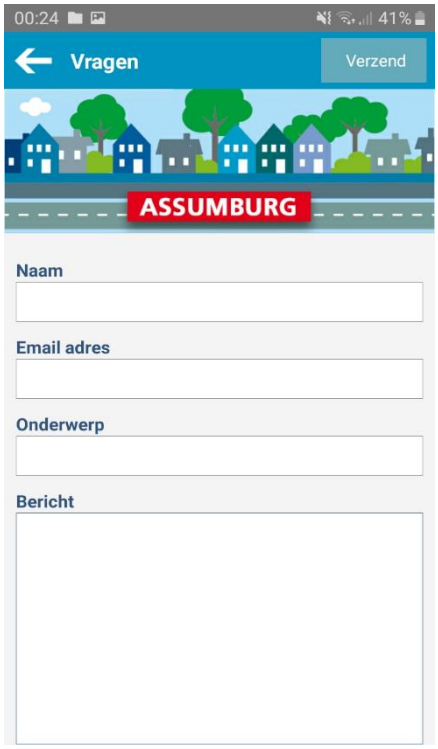


Image 4: The question tab of the Omgevingsapp reconstruction Assumburg

Image 5: The Update screen of the Omgevingsapp reconstruction Assumburg. The weekly updates contain pictures that show what the contractor has been doing for the last week.

The app of the Assumburg was developed by the company that the stakeholder manager works for. This becomes apparent in the enthusiasm she has when it comes to the app, as she was able to determine what features the app would have herself. According to the stakeholder manager, the main advantage of the app is its responsiveness in combination with its ability to reach a large audience. The responsiveness is especially apparent when stakeholders use the message function and the stakeholder manager can respond straight away. As she explained, one specific week the construction was progressing slowly, and the planning had to be altered. This raised questions in the community, as people were worried what this meant for the accessibility of their houses. All the questions that were asked in the app could be quickly answered by the stakeholder manager, taking away the worries of stakeholders (interview with the Stakeholder Manager, April 2019). If there was no app, stakeholders would have to call the municipality when they see something wrong on the street. This would mean that the questions would be left unanswered until the municipality reaches the contractor. This extra step could take hours/days, leading to irritated stakeholders who have to wait for any form of communication from the stakeholder manager.

The potential of the app to reach a large audience is also one of the main advantages of the app. By using push notifications, the weekly updates are received by over 200 people (interview with the

Stakeholder Manager, April 2019). This is a much more efficient way of delivering information to a large group than having to go to each house to deliver letters individually. The push notification is an important function, as it reminds people automatically that a new update is posted. Whenever something goes wrong (like a power outage), the stakeholder manager can communicate this using a push notification, ensuring that stakeholders actually receive the update. Not just the reach of the information in the app is larger, the type of information you can send is also different (interview with the Stakeholder Manager, April 2019). In newsletters on paper, a contractor can only focus on the most important matters are the space is limited. In the weekly updates, contractors can explain the reconstruction in a more informal matter and with more attention to details. The possibility to add pictures and maps to the weekly updates is also appreciated, as it makes the information clearer and more understandable (interview with the Stakeholder Manager, April 2019). In short, the stakeholder manager is entirely happy with the way the app functions and would not change anything.

The residents of the Assumburg are predominantly enthusiastic about the app as well. Specifically, the interactivity and the possibility to send messages are highly appreciated. As resident D mentions, the app is *"one of the advantages that contemporary technology brings with it*." Resident E agrees with him, saying that every time he asked a question, the response was swift. Resident F also mentions the swiftness of the response of the stakeholder manager but also the swiftness of the contractor to also do what was agreed upon by the stakeholder manager (interview with resident F, June 2019). Another liked aspect of the app are the weekly updates with pictures. The residents like that there are weekly updates and the pictures add to the understanding that residents have of the reconstruction. This was also mentioned by the stakeholder manager: "*once I did not post the weekly update in time. When this happened, I received a lot of worried comments and phone calls asking where the weekly update was*. *This really shows that people like the updates*." This is also mentioned by resident D, who stated that the functioning of the app is inherently linked to the input of the person maintaining the app, in this case a very good stakeholder manager (interview with resident D, June 2019).

4.1.4 Discussion

Summarizing it can be said that both the planning phase and execution phase were being seen as well planned, communicated and executed by involved stakeholders. When looking at the seven criteria of Innes and Booher (1999), the reconstruction of the Assumburg scores quite well. The criteria **purpose, self-organizing, engaging, high-quality information and full discussion** were all met. These criteria are met due to the citizen information evenings having plenty of freedom for discussion and interaction. The personal approach made it so that stakeholders could ask specific questions about their own chosen topics. After the first information evening, there was enough time to think about the design and prepare any comments or questions for the second information evening.

When it comes to **representation**, there is room for improvement as there was a group of residents accidently left out in the first information evening due to a mistake with the invitations. This means that not all relevant actors and interest were included in the first stage (Innes and Booher, 1999). The **creative** aspect was also lacking. As the project director engineer stated, that the process was heavily guided with little room for citizen input for actual creative solutions.

When looking at the execution phase, the three conditions for stakeholder management also score rather well (Meijer, 2009). The plan has a lot of support, already shown by the few formal complaints on the plan in the planning phase. This **support** can be seen by the number of stakeholders that feel like the contractor is doing its best in the communication. This is enhanced by the app, as more people can be reached and kept up to date with the information. The ease of the app and the fact that nobody

mentioned any technological problems, shows that the app is **user-friendly** (Zhang et al., 2019). **Gaining input** is also something that is positively felt by both the stakeholder manager and the stakeholders. The app can be used on the spot to ask questions to the stakeholder manager, this encourages people to actually post questions instead of ignoring any problems. This links well with the concept of situated engagement, people can ask questions at any time (Gonçalves et al., 2014). This interactivity is well liked by both residents and the contractor, as it greatly increases the amount of input and local knowledge (Healey, 2008). The responsiveness of the stakeholder manager is also seen as a positive aspect of the stakeholder communication. Input is only useful when listened and responded to, which is what the stakeholder manager did in this case (Rijkswaterstaat, 2009). The app was implemented to make communication between stakeholders and the stakeholder manager easier, a task that it does well. This means that this app is also **useful**, as the app achieves the goal it was implemented for (Silva et al., 2016).

Finally, the stakeholder manager should **manage the time** of the construction team, also a criterium that was met in the Assumburg. As the stakeholder manager is the sole point of contact for the stakeholders, the number of useless messages and phone calls to the wrong people (that would eventually end up by the stakeholder manager anyway) are reduced. The success of this criterium is greatly aided by the app as the amount of people an app can reach is far more than the traditional door to door approach. The app truly has added value, which is increased due to push notifications that even further increase the amount of people that receive messages and updates. Therefore, the app of the Assumburg is **efficient** as it reduces the amount of time and effort that app users and app maintainers need to invest (Zhang et al., 2019).

4.2 Reconstruction de Kanis

4.2.1 Case description

The Kanis is a small village which is part of the municipality of Woerden and has around 400 inhabitants. The village lies in the middle of a polder, making the ground sink rapidly. The sinking of the ground is causing damages to roads, houses and sewerage systems as can be seen in image 6. In order to tackle this problem, the municipality decided to undermine the entire village infrastructure with a concrete construction. This construction would make it so that the village could not sink for 100 years (Bunnik Groep, 2018). This type of reconstruction is intense and demands a lot from people living in de Kanis. The expected run time of the reconstruction was three years. The main challenge with this project for the municipality was the duration and scope of the project (as can be seen in image 7), as well as convincing every stakeholder that the concrete structure was the best option (even though it was more expensive than using foam).

Image 6: The unsolid ground under de Kanis is causing visible damages to the infrastructure and foundation of the village. Source: Stakeholder Manager

Image 7: The scope and length of the construction makes this a tricky project. Source: Author

4.2.2 Stakeholder Communication Planning Phase

The first step that the municipality took in the planning phase was to form a design panel that determines the first preliminary design. This panel consisted of external experts hired by the municipality and a few local citizens that volunteered (Interview with the Communication Advisor, May 2019). The experts were landscape architects, soil experts and municipal workers. The local volunteers was a small selection of members of the neighbourhood committee, representing the entire community of de Kanis. Together with the local volunteers, the expert group focused on determining what the best solution for the sinking problem would be. The experts brought in their specific knowledge and after each meeting, the local volunteers needed to gauge the feelings of the inhabitants (interview with resident J, June 2019). The inhabitants of the Kanis liked the idea of the panel, as the municipality tried to truly include the views of the locals in the decision making (interview with the Communication Advisor, May 2019). The combination of locals with experts was well liked (interview with resident K, June 2019).

"I have no technological knowledge, so I mostly took that part for granted. (…) But I do know for instance which part of the village needed the most attention. I was able to convince the municipality that an extra temporary solution for that specific part was necessary."

This example shows that, even though the technical aspects were still mostly determined by experts, the locals could influence the planning designs from the very beginning. Resident J was mostly happy with this approach but does mention one aspect that did not sit well with him. He had the idea that the municipality sometimes already made up their mind about what solution they wanted before even speaking to the locals. One-way traffic was an example of this: "*They asked us about one-way traffic and some positives but also a lot of negative aspects were mentioned. Then in the next stage (citizen information evenings), the one-way traffic was presented as an amazing idea."* This shows that, even though the volunteers were mostly happy with the functioning of the expert group, there is room for improvement. More transparency about these decisions would make the residents feel like they have more choice (interview with resident J, June 2019). In the end, the local volunteers and the expert group came up with a preliminary design that would be presented to the entirety of de Kanis at a citizen information evening.

The information evening was well organised and well attended. The invitations were for the information evening were sent by email. On top of the, the neighbourhood committee of de Kanis was asked to spread the word. In the end, this resulted in two information evenings that were well attended (Interview with the Communication Advisor, May 2019). In the invitation it was also said that some important decisions for the design were going to be taken at the information evenings, which pushed a lot of residents to attend (Interview with resident J, June 2019). The information evenings themselves were set up in an interactive way. Firstly, the preliminary design was presented and after that, questions could be asked. The presentation of the design was given by the chairman of the design panel and the presentation was made using the input of the volunteers. The main advantage of first presenting the design with a slide show is that it gives the audience a better perspective on the impact of the reconstruction (interview with resident J, June 2019). Following the presentation, some decisions about details were chosen in "the most democratic way" (interview with resident K, June 2019). The process consisted of three variations of the design being presented with advantages and disadvantages. After that, those present could vote for the version of the design that they liked best and in the end the version with a park was chosen (interview with resident K, June 2019).

The main discussion on the design was focused on whether to go for the concrete construction (that is more expensive, experimental but could potentially last 100 years), or for a more traditional solution using foam (that would last at most 20 years) (interview with the Communication Advisor, May 2019). The problem was that some residents of de Kanis did not want to feel like they were being used to experiment on with some revolutionary new method. As the communication advisor stated, *"these discussions could be fierce."* However, the municipality in the end decided that the experimental method would be used. They did so by explaining to each resident that, even though the method was costlier, the results would be better compared to the other method. In the end, the decision to go for the experimental option did not lead to any true resistance on the design. Resident K thinks that this was because "*the municipality was transparent in their argumentation and showed that they used our local input"*

At the end of the information evenings, there was room for a freer form of discussion. Stands were put up with different experts and topics (such as water, green and parking). At these stands, notes could be made that could change the design. A summary of the entire evening and some notes were published in the form of a small comic that every inhabitant of de Kanis received (interview with resident K, June 2019). However, as resident J states, there was no way to confirm whether your comment was actually implemented in the plan. Also, the opportunity to present truly new ideas was rather limited (interview with resident J, June 2019). The communication advisor mentions this as well and says that this was a deliberate approach the municipality took:

"Only the stakeholders have input on what they can actually change. "It is better to be honest as a municipality. Let people actively decide on 20% of your plan that is actually changeable. Do not say (as a municipality): "bring us all your ideas" and then ignore 80% of those ideas. It is better to let stakeholders know beforehand that only 20% of the design is open to input."

This statement might explain the feelings of resident J that some parts of the design were determined beforehand. However, in the end, a definitive design was published that had little to no formal complaints (interview with the Communication Advisor, May 2019). There was one court case that took a year but that was about a very specific matter that could not have been solved any other way due to perpendicular standpoints. In short, the communication process made use of local inhabitants in the design panel, combining locals with experts. There was plenty of room for questions and discussion and even though there was little room for own initiatives, the end result was a plan that was hardly objected to.

4.2.3 Stakeholder communication in the execution phase and Omgevingsapp

When eventually the definitive design was accepted, the municipality searched for a contractor, leaving a potentially rather large gap in the information flow in the in-between phase. This contractor that was selected in the end was Bunnik Groep. However, as mentioned above, there was a large court case going on between a specific landowner and the municipality. During this court case, there was no possibility for Bunnik Groep to start any preparations as there was no way to tell what the outcome of the court case was going to be. As a result, the amount of information the residents received during this court case was rather limited. The municipality was busy with the court case and the contractor could not provide any final information yet (interview with the Communication Advisor, May 2019). However, the neighbourhood committee was given some information about the proceedings of the court case, and they provided the rest of the community with the information (interview with resident K, June 2019). So, in the end, there was no true gap of communication.

The communication in the execution phase is well thought out and the contractor truly does its best to communicate properly (interview with resident J, June 2019). The first step that the contractor took

was to organize an information evening in which the impact of the reconstruction was explained. For this specific reconstruction, the content of the gardens of every inhabitant had to be removed. In the first information evening, the contractor addressed how this would be tackled, what part residents had to do themselves and which part the contractor could help with (interview with the Stakeholder Manager, April 2019). This was a welcome addition for the residents, as the clear communication helped to avoid worries that people might have (interview with resident J, June 2019). After this information evening, the stakeholder manager went by every house of de Kanis individually to talk about the gardens. As there were different options on what to do with the garden and the impact is severe, the individual approach was necessary (interview with the stakeholder manager, April 2019). After the preparation for the gardens was done, the stakeholder manager started the "standard communication methods" (interview with the stakeholder manager, April 2019). These methods consist of general monthly letters, specific letters per street, a weekly walk-in hour for questions and what is posted on the app.

The stakeholder manager, the communication advisor and the residents are all pleased with the communication in the execution phase. The biggest strengths are the customer friendly approach of the contractor, the willingness to listen of the contractor and the responsiveness of the stakeholder manager (interview with the Communication Advisor, May 2019). The customer friendly approach of the contractor is a deliberate approach that the contractor took. As the impact of the reconstruction is large, keeping the community of de Kanis happy was an important task given to the contractor (interview with the stakeholder manager, April 2019). This is something that Bunnik Groep is doing well according to resident K. For instance, he noticed that there were not enough walking boards in front of his house (which are used to walk on when the road is removed for construction). When he asked one of the construction workers, the response was swift and extra boards were added on the same day. *"This shows that they really do their best for the locals"* (interview with resident K, June 2019). At the same time this also shows that the input that stakeholders give is listened to by the contractor. The responsiveness of the stakeholder manager herself is also seen as a strong point by the residents. Resident J states that: "*the stakeholder manager always answers his calls and then acts quickly whenever possible".* In short, the general communication is going well, the residents are content, and the stakeholder manager responds quickly to the messages she receives. The supporting app is also often mentioned when it comes to the strong point of the communication.

The Omgevingsapp

The app for de Kanis is called reconstruction de Kanis. Image 8 shows all features of the app. This screen as multiple options to click on. A short summary of the features is given below:

- **Nieuws** (news): Opens the news menu where the weekly updates are posted. The updates have photos to show what exactly has been done on what location. When a news update is place, the people who have downloaded the app will receive a push notification.
- **Tuinen** (Gardens): This tab opens the gardening section with more information about what people have to remove from the gardens themselves and what part the contractor can help with.
- **Planning**: This tab shows the planning as it was made in January, phase by phase as it was decided upon in the definitive design.
- **Vragen** (questions): Within this tab, app users can ask questions that are read by the stakeholder manager. They have to fill in their name and email address (see image 7). After the stakeholder manager reads the question, she delivers it to the person who has answer

to that specific question. The stakeholder manager can then respond to the question per email or by a phone call.

- **Bellen** (call): When someone presses this tab, they directly call the stakeholder manager on her mobile phone.
- **Tevreden** (satisfaction): People can rate the app whenever they want. They can rate the app from 1 to 5 stars on the topics of service, information quality and the general satisfaction rate with the construction. This tab also has an open box for any points of improvement.

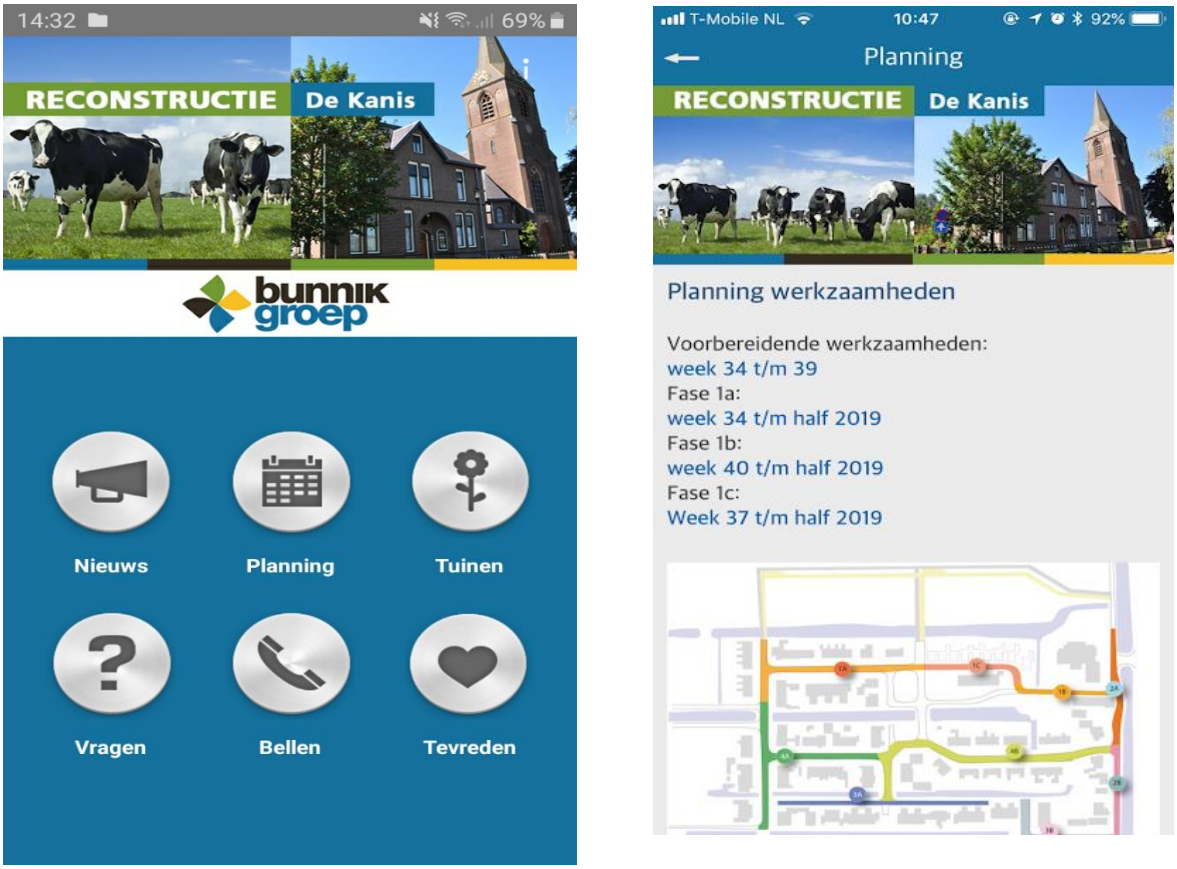
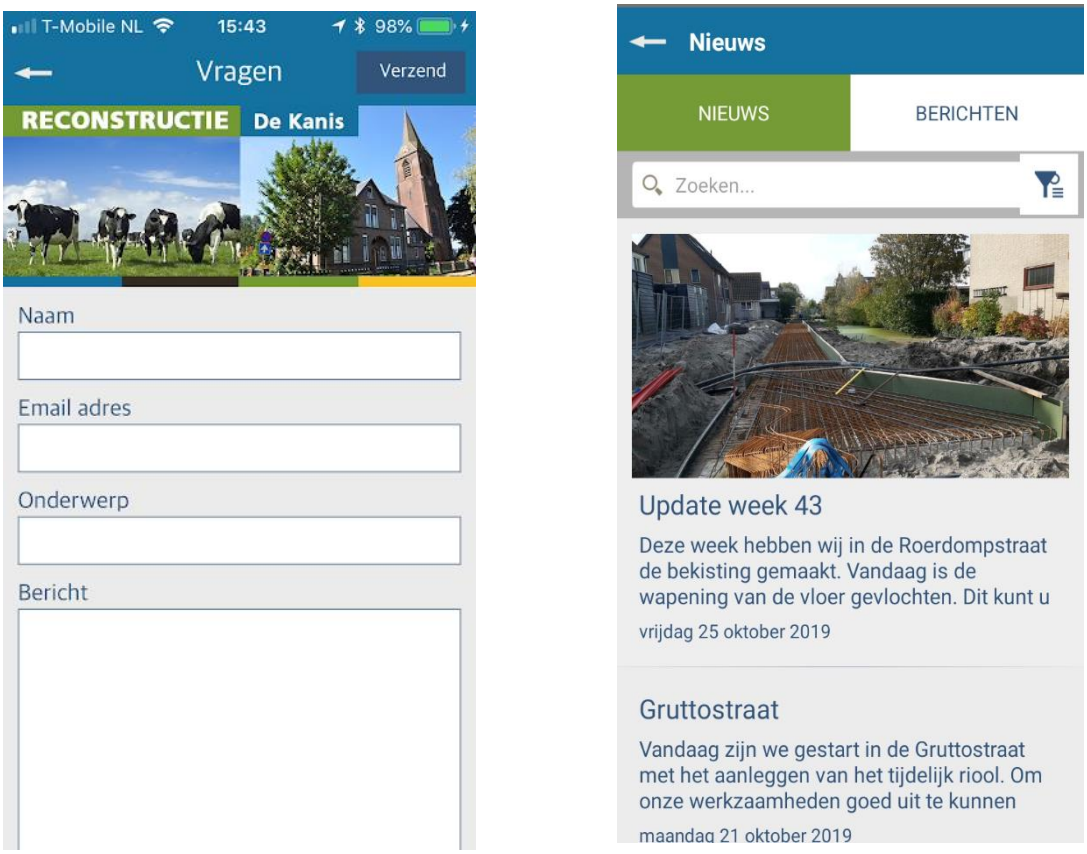


Image 8: The home screen of the Omgevingsapp de Kanis (top left). The tab showing the planning (top right). The tab showing the questions tab (bottom left) and the weekly update (bottom right). Source: Author



The app for de Kanis was developed by the company that the stakeholder manager works for. As she said, this gave her the possibility to influence what components the app would contain, and which components would be left out. The main advantages of the app are its reach, interactivity and responsiveness (interview with Stakeholder manager, April 2019). The reach of the app is great as it allows for the stakeholder manager to reach a large group of people with the same message. For instance, *"a power cable was cut during the construction work, the app was then used to notify the community to avoid irritations"* (interview with Stakeholder manager, April 2019). This is an example of both the reach and the responsiveness of the app that work well. When something goes wrong during the construction, the stakeholder manager can respond immediately and at the same time reach a large group of people. This is also what resident K found, as he mentions that the *"app works really well for short and quick communication (…) everyone around me is also satisfied with the way the app functions."* This shows that the app is well liked by the community of de Kanis. A final important aspect that should not be underestimated is the usage of push-notifications (interview with resident J, June 2019). Rather than having to open the app manually and see if there is an update, the residents receive a notification that an update has been placed. This eases the use of the app and keeps the stakeholders more involved.

Not just the reach, but also the interactivity of the app is well-liked. The app has features that allow the users to not just receive information, but also send messages themselves. According to resident J this is a big benefit to the app: *"you have a direct communication line with the contractor, which is nice."* The feature on the app allows for more input from the community and allows stakeholders to ask questions. As stakeholder manager puts it: *"The residents that ask questions get a response, if you do not ask the questions that you have, you will never find the answer. It is a trade-off."* This shows that the contractor actively encourages stakeholders to give input and ask questions. By asking questions, the stakeholders can show the stakeholder manager what any possible hot topics in the neighborhood are. At the same time, resident K mentions an important necessity of the Omgevingsapp, *"it only works when it is kept up to date."* This links with the third advantage of the app, the responsiveness. If stakeholders send messages using the app, there has to be a response. This is something that the stakeholder manager does well, but sometimes there could be a bit more proactiveness from the contractor (interview with resident J, June 2019). As an example, he mentions the same example of the power cable being cut that the stakeholder manager mentioned: *"I rung the stakeholder manager and asked her to put the information on the app that the power was out. (…) Sometimes I think that the response from the contractor could be swifter."* However, resident J is generally really contempt with the way the app functions (interview with resident J, June 2019).

In short, the app functions really well in de Kanis. The main advantages are the reach, interactivity and responsiveness of the app. The app allows for the stakeholder manager to reach a large portion of the stakeholders with the push of a button, enhanced by the usage of push notifications. The interactivity is well liked as it allows stakeholders to give their own input, rather than just receiving information. Interaction only works when the response is also given quickly. Apart from the contractor sometimes posting urgent messages not swift enough, the responsiveness of the stakeholder manager is also seen as a good feature.

4.2.4 Discussion

Summarizing, it can be said that both the planning phase and execution phase were well organized by both the municipality and the contractor. When looking at the seven criteria of Innes and Booher (1999), the reconstruction of de Kanis scores really well. The criteria **representation, purpose, self-organizing, engaging, high-quality information and full discussion** were all met. Before the larger information evenings were organised, a small design panel was formed that consisted of both experts and locals. This shows a good combination of local knowledge and expert knowledge, which is important in collaborative planning processes (Rydin, 2007). Eventually, the entire village was invited to collaborate on the preliminary and eventually the definitive design on citizen information evenings. The evenings were set-up in a way that allowed a free discussion between stakeholders and the municipality. The information evenings were summarised in the form of a comic that showed which decisions were taken and why these were taken. In the end, a design was presented that had the support of almost the entire community, with the amount of formal complaints being rather low. The only criterium one could argue was lacking was the **creative** aspect. As was mentioned by the resident J, the municipality had some ideas that were pushed into the plan, with somewhat limited options for own creative ideas.

The execution phase also scores really well. There is widespread **support** amongst the citizens of de Kanis that both the contractor and the stakeholder manager are doing their utmost to communicate with stakeholders. The support is increased by the usage of the app, as it informs a large number of stakeholders and allows stakeholders to ask questions. The has push notifications, meaning that residents can see important updates with the click of a button, showing that the app is **user-friendly** (Zhang et al., 2019). The ability to ask questions allows for the stakeholder manager to **gain input** from the community. This allows for interaction between contractor and stakeholders, which is well liked by both sides. The stakeholder manager can find out what the hot topics are in the village and the stakeholders can easily get answers to questions they have. Just as with the app in Assumburg, the app was implemented to make communication between stakeholders and the stakeholder manager easier. This is a task that it does well. This means that this app is also **useful**, as the app achieves the goal it was implemented for (Silva et al., 2016). Finally, the stakeholder manager should **manage the time** of the construction team. Since stakeholders can ring the stakeholder manager, send messages via the app and come to the walk-in hour with the stakeholder manager, the amount of questions being asked to the wrong person are reduced. This means the time managing criterium is also met. The app supports the stakeholder manager greatly in this task. Rather than having to answer each question personally, the stakeholder manager can use the app to answer to questions. Therefore, the app of the Assumburg is **efficient** as it reduces the amount of time and effort that app users and app maintainers need to invest (Zhang et al., 2019).

4.3 HOA Phase 2

As mentioned in the methods chapter, the description of this case will be shorter than the other cases. Since no resident was interviewed in depth, the topic list was sent via the app. It was filled in by 17 residents. The planning phase was however organized in the same way that the Assumburg process was organized. The app that was used also has the same features as the app in Assumburg. Therefore the following case description will be summarizing the processes.

4.3.1 Case description

HOA Phase 2 is a project that is located in the town of Zwijndrecht. Just like in de Kanis, the foundation of the roads and gardens is not strong enough to keep the road from sinking. This causes a difference in height between the houses and the surrounding gardens (see image 9). In Zwijndrecht, this is happening in an entire neighbourhood named Heer Oudelands Ambacht (HOA). The neighbourhood is too large to raise in one go. Therefore, HOA was divided into eight different phases, the project is currently in phase 2 (which is the only sub-phase that is included in this research). Due to the scale of the project, the time the construction will take 10 years in total, 1.5 years per phase on average (Gemeente Zwijndrecht, 2019).

Image 9: The height difference between a reinforced house and a sidewalk. Due to this difference, the sewerage is damaged severely if no action is taken. (Gemeente Zwijndrecht, 2019).

4.3.2 Stakeholder communication in planning phase

The planning phase started with citizen information evenings that were organised by the municipality. Before these evenings started, the municipality already had decided upon an internal design that would be the basis for the information evening. This was deliberately done to keep the discussion from getting too broad, making sure that the discussion kept progressing forwards (interview with the Project Manager, May 2019). By keeping the discussion focused on the main topics, the process proceeded smoothly, and the costs were low. However, some residents felt like the municipality had already determined the design entirely beforehand and did not listen to the input from residents (interview with Residents, June 2019). However, most residents were satisfied with the setup of the information evenings, as there was plenty of room for discussion and questions. The transparency of the municipality during the information evenings were also seen as a positive aspect. Questions were answered in a clear manner, even if the answer to the questions was no (interview with Residents, June 2019). This can be explained by the following statement of the project manager: *"you have to manage citizen's expectations. This is a reconstruction, in reality the number of things you can chance is limited, you do not create extra space."* So, when ideas were suggested by residents that were impossible, the answer the municipality gave was a clear no. By doing this, the process might feel like it is being controlled entirely by the municipality, but in the end in simply means that stakeholders can only discuss the areas of the design that actually can change. In HOA Phase 1 (which proceeded phase 2), the discussion was held in a too free manner, leading to unrest as people felt like the municipality did not listen to them (interview with the Project Manager, May 2019).

A point of improvement that the residents mentioned concerning this strategy was the lack of transparency after the information evening. There was no way to see in what way our comments were included in the next version of the design (interview with Residents, June 2019). However, the design that was accepted by the municipal council in the end was satisfactory for most residents. This can be seen in the amount of formal complaints on the final design. The second preliminary design had 250 comments, whereas the amount of formal complaint on the final design was reduced to 25. Half of these complaints were honoured as they pointed out small mistakes in the details of the design (interview with the Project Manager, May 2019). In short, the planning phase proceeded smoothly, partly due to the tight control that the municipality had on the discussion.

4.3.3 Stakeholder communication in the execution phase and Omgevingsapp

After the definitive design was accepted, the municipality turned its attention to finding a suitable contractor. In the end, the contractor that was chosen was De Groot & Schagen Bv. Rather than using a personal approach, the contractor started the construction with general letters and an information evening. During this evening, the contractor explained the planning of the reconstruction. This extra start-up information was liked by the residents as it showed them in detail what the reconstruction would really look like (interview with Residents, June 2019). After the planning was presented to the residents, the 'normal' communication methods started. These consist of monthly letters, walk-in hours with the stakeholder manager, being able to call the stakeholder manager and the Omgevingsapp (interview with the Stakeholder Manager, April 2019). The stakeholders are really pleased with the way the communication is currently going. What is especially well-liked is the stakeholder as a point of contact and the quick responses that stakeholders receive when they ask questions or post complaints (interview with Residents, June 2019). The quickness of response is also something that the stakeholder manager likes, as she has the freedom to do the communication herself (interview with the Stakeholder Manager, April 2019).

The Omgevingsapp

As mentioned, this app uses the same features as the app for Assumburg. It was developed by the company the stakeholder manager works for. This gave her the ability to determine what features the app should have (interview with the Stakeholder Manager, April 2019). The main advantages of the app are its reach, responsiveness and the possibility for interaction. The reach of the app is reinforced by the push notifications that the app has. Rather than having to come to the contractor for questions, people receive a lot of extra information wherever they are (interview with the Stakeholder Manager, April 2019). The residents like the extra information they receive on the app, mainly the updates, reminders and information about sudden changes in the planning (interview with Residents, June 2019). The responsiveness is also seen as a positive point, which is linked to the ability to ask questions. As the stakeholder manager states, *"the app is a way to quickly send messages to the me. I then act to see how we can handle that question in a good way."* The swiftness of these responses and the personal approach as a response to the questions are also seen as a positive aspect of the stakeholder communication. As a resident states, *"the contractor listens well to our questions and when possible, solves the problem. When it is not possible, they also tell us why they cannot change it."* The app enforces the swiftness, as residents can quickly send a message, rather than having to find a construction worker and asking him/her the question.

In short, the execution phase is proceeding smoothly and involved stakeholders are really happy with the way the communication is organized. The stakeholder manager and the project manager agree with this. The amount of complaints is far lower than in Hoa phase 1 and the municipality is thinking about rehiring the same contractor and stakeholder manager for the next phase (phase 3). The app is also functioning properly, both the stakeholder manager and the residents like using it.

4.4.3 Discussion

Summarizing, one can conclude that both the planning phase and execution phase were well organized and communicated with stakeholders. When looking at the seven criteria of Innes and Booher (1999), the reconstruction of Hoa phase 2 scores well. The criteria **representation, purpose, engaging, high-quality information and full discussion** were all met. The residents were all informed on time that there would be information evenings in which the preliminary designs would be discussed. During the information evenings, the necessity of the reconstruction was explained and people could ask any questions they had. By allowing the stakeholders to discuss with the municipality about details of the design, albeit only the details that were discussable, stakeholders were engaged with the planning process. The information that people received during the information evenings was transparent and the final design only had a small amount of formal complaints.

The criteria **self-organizing** was partially met. Since the municipality had a tight control over what topics were discussable, the space for residents to come with own ideas was limited. However, the municipality did explain why certain ideas were shut down. So, even though people could come with own ideas that the municipality responded to, the amount of ideas that were actually included in the final design was limited. Therefore, the self-organizing aspect was only partially met. Since the sessions were highly controlled and the focus was only on small details, the **creative** criterion was not met.

In the execution phase, the three conditions for good stakeholder management score well. The **support** for the plan is high, as shown by the number of residents that like the way the contractor is communicating. This is aided by the well-functioning app. The reach of the app helps keeping residents

informed about the current situation of the reconstruction. On top of that, the app is easy to use and has push notifications to keep app users informed actively. Therefore, the app is **user-friendly.** The stakeholder manager also **gains input** from the community, aided by the app. As both the stakeholder manager and the residents state, the ability to ask questions to one point of contact is well liked. The easiness of use that the app has, encourages people to actually ask questions as they can do it from anywhere. As was the case with Assumburg, the app was implemented to make communication between stakeholders and the stakeholder manager easier. This task is done well by the app. This means that this app is also **useful**, as it achieves the goal it was implemented for (Silva et al., 2016). Finally, the stakeholder manager **manages the time** of the construction team. Since she is the point of contact for the neighbourhood, she relieves the pressure on construction workers. She communicates with stakeholder, reducing the amount of questions and complaints that the working crew receives. This allows the construction team to work more efficiently. Again, the app helps in this regard. Rather than having to go by every house individually, the stakeholder manager can use the app to reach (almost) the entire community. At the same time, stakeholders do not have to go outside or walk to a construction worker with questions, they can use the app to quickly send messages. The stakeholder manager then reads at the message and finds the best way to respond (either by mail, phone call or a personal approach). Therefore, the app of Hoa phase 2 is **efficient** as it reduces the amount of time and effort that app users and app maintainers need to invest (Zhang et al., 2019).

4.4 Reconstruction Zegveld

4.4.1 Case description

Zegveld is a small village near Woerden with some 2400 inhabitants. The village was built on peat, typical soil for polders in the Netherlands. The problem with peat is that it is not strong and solid enough to carry the burden of heavy infrastructure. As a result, the ground is sagging further and further towards the groundwater level. (Gemeente Woerden, 2017). To counter this, the houses and other buildings in the village are reinforced by poles in the ground. The roads and gardens are however not reinforced. This leads to a situation in which the ground of the road is sacking while the houses remain at the same level (see image 10). This is in itself not a problem, but the height difference damages both the roads and the sewers.

Image 10: The gardens are sagging while the houses remain at the same level. Source: Jos Scholman, 2019

To oppose the sacking, the municipality decided to tackle the problem. The ground level of the streets and gardens will be raised to match with the level of the houses (Gemeente Woerden, 2017). The new roads will be padded with a form of Styrofoam that is light but strong. This new material will decrease the sinking of the road significantly, keeping it at the same level as the houses. However, these constructions have a big impact on the public space. In order to raise the roads and gardens, the entire road must be removed. While the road is open, the accessibility of the housing area is reduced, the amount of parking space is reduced and there is a lot of sand flying through the neighbourhood. At the same time, people must remove every type of vegetation from their gardens to make space for the renovations. The construction is therefore not just inconvenient, but also demands active participation from the residents (Gemeente Woerden, 2017).

4.4.2 Stakeholder communication in planning phase

When the reconstruction of Zegveld was first announced, the residents were pleased that the problems in their village would finally be tackled. Multiple citizen information evenings were organised so that the community could influence the shape of the definitive design. Letters were sent to the entire neighbourhood in Zegveld that would be undertaken. However, a small part of the residents did not receive the first letter (interview with Resident C, July 2019). Because this group missed the first letter, a part of them did not attend the first information evening, resulting in a lower attendance. Apart from this small group missing, the information evening was well attended. 85 People showed up from 125 addresses, a really high percentage (interview with the Project Manager, May 2019).

The information evenings started with a presentation from the municipality about their first design, in which three options were possible. A green option, a grey option (with parking) and a combination. Both the project manager and resident B felt that this process was tightly controlled by the municipality. As resident B states: "*We chose (almost) unanimously for the grey option, as it was the only realistic option."* This shows that, even though there was a citizen information evening, the process was controlled by the municipality. After the presentation, there was the room to discuss with the municipality about the different forms and how these forms would work out. The residents liked this option, as the municipality had an open mind and responded to questions (interview with Resident B, July 2019). At the same time, the project manager was not too keen on this discussion room as she states: w*e (the municipality) had the attitude of 'yes unless'. Way too open towards the residents. That creates a lot of disappointment, as the room to change the plan was limited."* This led to the discussion being too open, and topics being discussed that were irrelevant to the plan. Resident C also felt this, as she said: *"there are some residents that want to squeeze every last drop out of the municipality and keep complaining."* In the end however, after a long discussion, the grey design was chosen by means of voting. Even though the process was rather steering, the community felt that their worries were heard, and taken into account by the municipality, and that there was enough room for discussion and questions (interview with Resident B, July 2019).

After the first information evening was finished, a small group of residents from a specific street sought out the old project manager of the municipality. They argued that their specific street should remain green while the rest of the neighbourhood would become grey, as was voted for. The project manager agreed with the citizens. In the next version of the design, the entire neighbourhood was grey except for that specific street (interview with Resident C, July 2019). When eventually this news leaked, the community was outraged as mentioned by resident B: "*we agreed to go for the grey design, if you change the design you should do the entire planning process again. If you deviate from the plan, you need to explain that decision. (…) It was a mistake form the municipality."* The project manager agrees with this, stating that the old project manager made a mistake: "*when you looked at the design you thought, this is weird. You changed an essential part of the design without communicating it to the entire community. You even presented a definitive design before that."* After this change in the design leaked, the atmosphere in the neighbourhood changed, whereas it had been positive until that point (interview with Resident B, July 2019). As a result of the change in the design, other stakeholders also wanted to change their specific street in the design. The municipality however realised that this would lead to an entire green plan that was impossible in practice. Therefore, it was decided that the plan would not be further altered (interview with the Project Manager, May 2019). This decision led to even more outrage amongst the community, as resident B states: *after that (the change in the design), the municipality feared that the situation would escalate. (…) There were consultations to see what was*

possible in the new situation and all of a sudden the municipality was very clear: nothing would change whatsoever." Resident C experienced the same problem: *"I had the feeling that the municipality had an open attitude towards our suggestions, then all of a sudden every idea was shut down."* These quotes show that, even though the municipality started out with an open process with room for citizen involvement, the planning process ended with a lot of questions, frustrations and uncertainties amongst stakeholders. Eventually, the definitive design that was accepted was completely grey, apart from the one street that is mentioned above. Due to the fact that the '*bestemmingsplan'* (a legally binding Dutch document that determines what function a space has) was already altered, the green space could not be changed anymore. Not even formal complaints could change the design.

In short, the planning process started out with plenty of room for discussion and citizen involvement. Even though some people did not receive the invitation for the first information evening, they were well attended. The municipality sometimes had a too open attitude where there was too much room for own ideas that could never work in practice, leading to some irrelevant discussions. However, up until this point, the community was pleased with the organisation of the process and the room for own ideas. The process took a turn for the worst when the entire community voted for a grey design, but a small group of people managed to change their own street to green. This all happened without the rest of the community knowing about it. This resulted in a divide in the community, but the design could not be altered as it had already been legally changed. After this was decided, there were no more opportunities for stakeholders to come up with their own ideas as the municipality wanted to avoid a possible escalation of the situation. In the end, this resulted in the stakeholders having a sour taste about the entire process, as most people did not at all agree with the end result.

4.4.3 Stakeholder communication in the execution phase and Omgevingsapp

Even though the community did not appreciate the design that was accepted, a contractor was sought to work on this design. Eventually, Jos Scholman was appointed as the contractor for this reconstruction. Before the construction work started, the contractor together with the stakeholder manager presented the planning. After that session, the stakeholder manager held talks with each address. This gave people the ability to ask questions and discuss with the stakeholder manager how and when the emptying of the garden could take place (interview with Stakeholder Manager, April 2019). This individual approach was well liked, as it gave the residents the opportunity to ask specific questions in detail with the stakeholder manager (interview with the Project Manager, July 2019). In the end, the final planning of the reconstruction was published. This planning showed in what order the streets would undergo the reconstruction and when residents needed to clear their garden. The residents liked the clarity of this approach, as stated by resident C: *"the planning was presented to us in a clear fashion, that was nice."* So, in theory, the start of the reconstruction should have gone smoothly. The residents knew what was expected of them and the contractor clearly communicated about the finer details due to the personal approach. After the preparation was done, the "normal" communication measures started. These consist of weekly updates on the app, monthly newsletters per address and a walk-in hour with the stakeholder manager (interview with Stakeholder Manager, April 2019).

Unfortunately, the start of the reconstruction did not proceed smoothly. The reason for this was a clash between Jos Scholman and a subcontractor, who had trouble cooperating with one another. This led to delays in the planning and extra costs for the municipality (interview with Stakeholder Manager, April 2019). This delay in the construction had huge effects, as the planning was quickly tossed aside.

However, the residents did not receive a proper update on their planning, as mentioned by resident C: *"At some point, the contractor started to lag behind the planning. We as residents felt that they were making a mash of the reconstruction. We followed the planning with our gardens using the information that we had gotten. (…) However, we never heard that the planning changed."* This led to irritations amongst some involved stakeholders, as the contractor failed to deliver on the promises they had made during the individual talks. A possible explanation for the lack of communication might be the lack of flexibility that the stakeholder manager has in her communication. She states that: *"All official forms of communication need to pass the municipality first. (…) This makes it hard to communicate in a quick and flexible way with stakeholders."* In the end however, the grim ambiance that was present during the planning phase, was reawakened in the execution phase. Resident B even claims that the *"trust of the community in the contractor is gone."* Whether this is true for the entire community is difficult to say. There are still plenty of people who are satisfied with the information they receive and who like to come by for questions (interview with Stakeholder Manager, April 2019). The monthly newsletter is also much appreciated by stakeholders (interview with the Project Manager, July 2019).

Apart from the planning being altered, some residents are also unhappy with the contractor's responsiveness to questions. This can partly be explained by the negative atmosphere that surrounds the reconstruction. As resident C states: *"residents feel like they are sometimes not taken seriously (by the contractor). You are seen as a 'typical angry citizen', even though your questions stem from genuine concern."* It is understandable that the construction workers on the street can be fed up with the negative attitude that the citizens have towards them. The construction workers cannot help it that the planning was altered and that the planning phase did not proceed smoothly. They do however have to deal with the consequences, which can be frustrating for both sides involved. Resident B also mentions this: "*I do not think that the contractor realized what the mood of the residents was when the construction started."* Because of these unfriendly relations between contractor and stakeholders, the communication is not proceeding in productive way.

In short, the communication and the reconstruction are not proceeding smoothly, as explained in the paragraphs above. Because of this, the municipality has decided to control the communication more tightly after complaints from residents (interview with the Project Manager, July 2019). The village platform will from now on meet with the contractor and the municipality every two weeks to discuss the progress and the communication. At the same time, on the contractor's side, the implemented app was evaluated. In the end, it was decided that the old app (the Jos Scholman app) would be replaced with a project specific app, developed by the stakeholder manager. The section below will describe the functioning of the old app, as the new app was not yet accessible during the time of this research.

The Omgevingsapp (Jos Scholman app)

The app for Zegveld was, unlike the other cases in this research, developed by the contractor. This means that Jos Scholman uses this app for all the work they do in the entirety of the Netherlands. Image 11 and 12 show the different features that the app has.

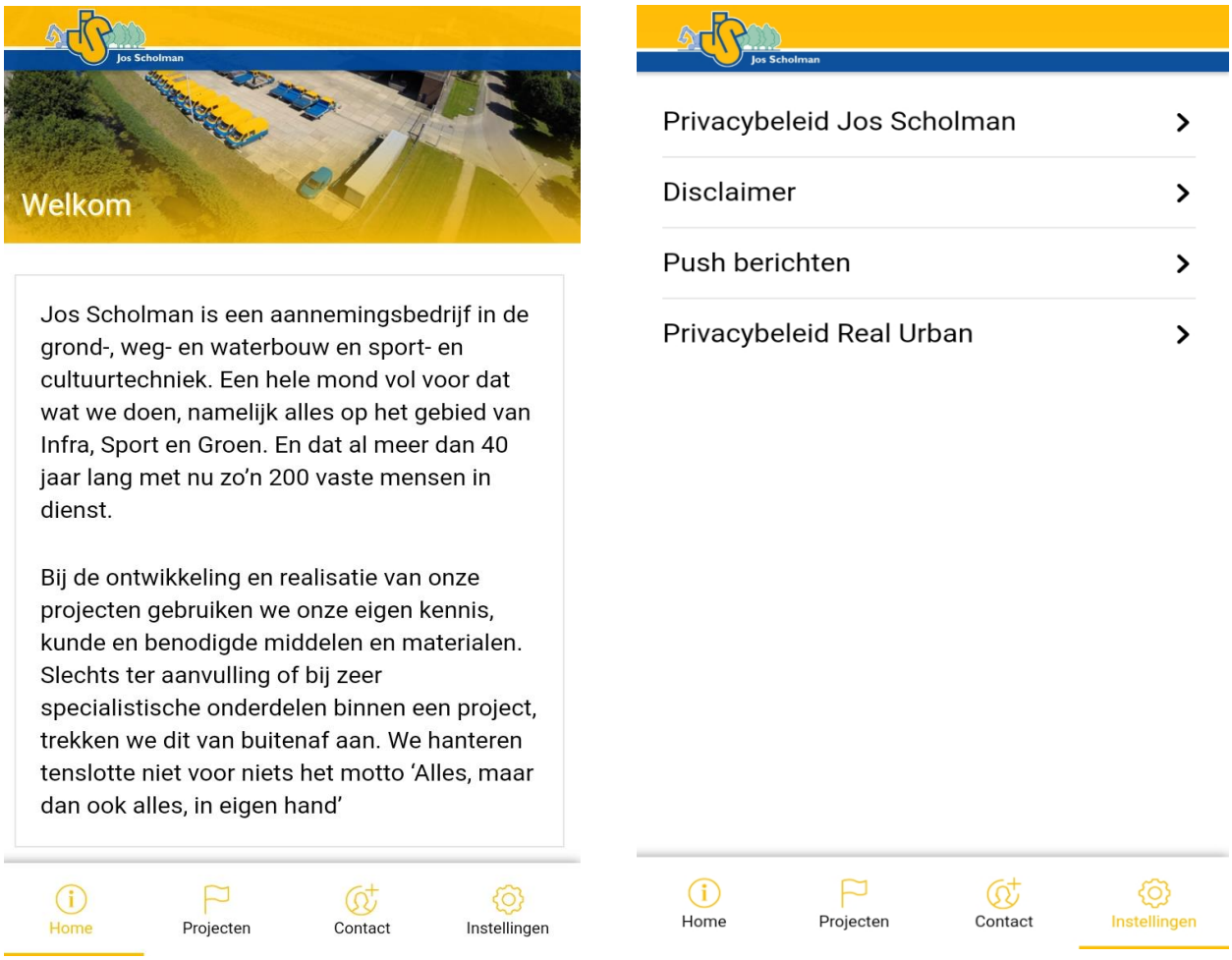
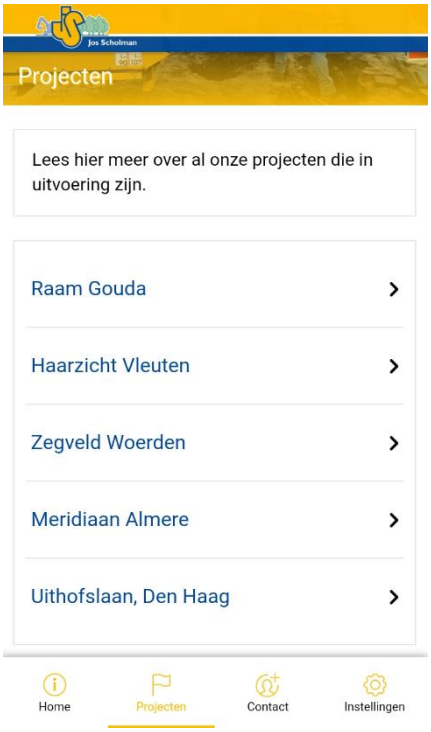


Image 11: The home screen of the Jos Scholman app (left side above). The settings section of the app (top right) and the projects tap (bottom left). Source: Author



- **Home screen:** The home screen of the app is the first screen that everyone sees when they open the app. It shows general information about the contractor.
- **Instellingen (Settings):** When people want to enable push notifications for their specific project, they have to enable these from the settings section. This section is found on the home screen, not in the section of the specific project. The rest of this tab can be used to read privacy policies.
- **Projecten** (Projects): This tab shows the different projects that the contractor is currently working on. Users need to select their own project from the list of different projects.

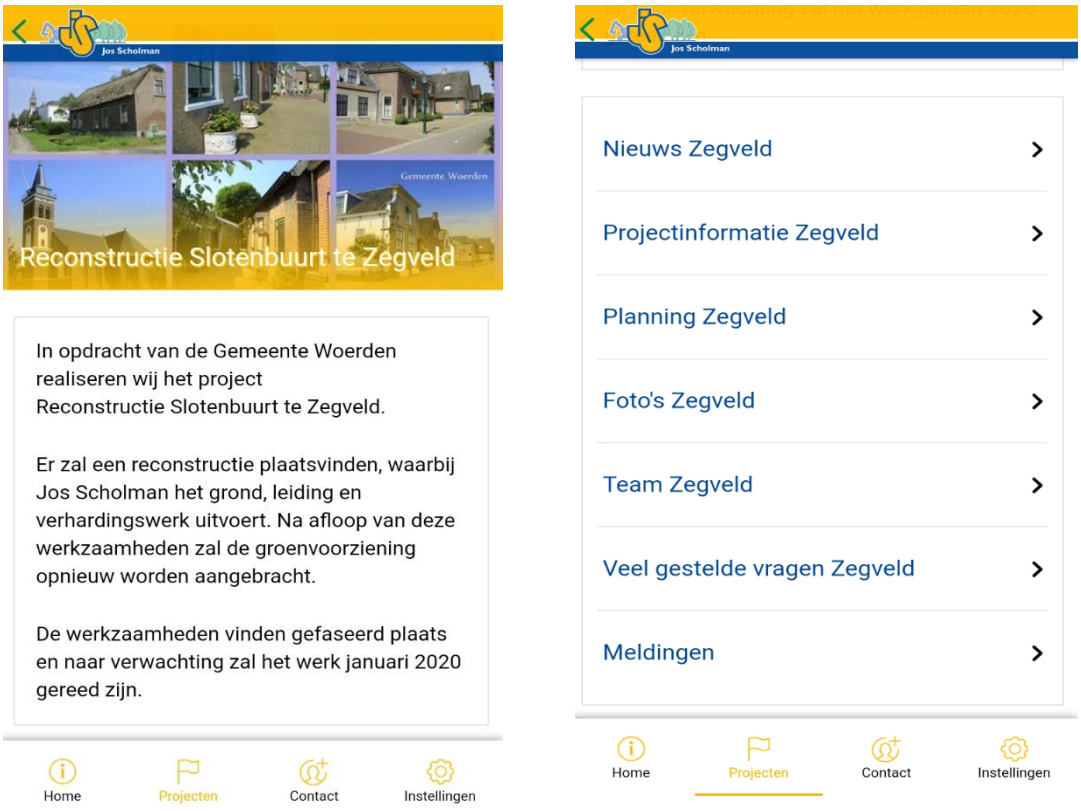


Image 12: The home screen of the project specific tab (left) and the different features of the app (right. Source: Author

- **Nieuws** (News): This tab shows the weekly updates that have been posted by the stakeholder manager. People that have turned on push notifications will receive a notification when an update is posted.
- **Projectinformatie** (Project information): This tab works as an archive for important letters that were sent to the residents. These letters are stored in this tab and can be reread.
- **Planning**: This tab shows the planning of the app. The planning consists of different phases which have been linked to dates.
- **Foto's** (photos): Photos are posted in this tab by the stakeholder manager. These photos range from pictures of the celebratory start of the reconstruction to pictures of the reconstruction itself.
- **Team**: This tab contains the personal information of the stakeholder manager. Through this tab, the stakeholder manager can be rung and mailed.
- **Veel gestelde vragen** (frequently asked questions): In this tab, frequently asked questions by stakeholder are posted with the response from the stakeholder manager.
- **Meldingen** (notifications): By using this tab, app users can post a complaint, ask a question or just send a message to the stakeholder manager.

The app for this project was not designed by the stakeholder manager herself but is a general app that was made by the contractor. This limited the ability for the stakeholder manager to determine what features the app would have. As she stated, the app is not functioning as well as it could: *"this app is not functioning properly. The process of going to this specific reconstruction in the app is too cumbersome. You have to open the app yourself and select the right options to find the project."* This shows the biggest problem that this app has (and why it was eventually replaced). In theory, the app has a large reach and can quickly send out messages. In practice however, app users manually have to enable push notifications, in a place that is not too logical (in the general settings tab in the app. The implication of this is that the information that the stakeholder manager puts on the app is not read by a large amount of people. This was also said by resident B: "*there are a lot of old people that are not good with technology in this neighbourhood. (…) Every time you open the app you have to select your own project. The initiative really lies with you to undertake action."* This shows the main problem that the app has. Rather than alerting people with a notification, the app users need to undertake action themselves first, undermining the reach of the news updates. This is unfortunate, as the residents that do read the updates, seem to like the extra information they receive. As resident C (who has enabled push notifications) states: *"I always like reading the weekly updates."* So, the potential for the app seems to be there, but the technology is not working to its fullest potential as the reach of the app is rather limited.

The app can also be used to ask questions to stakeholder manager. This is a feature that is relatively underused, as people in this neighbourhood prefer mailing and ringing. Some people do however like using the app to ask questions (interview with the Project Manager, July 2019). However, because the municipality is strongly involved in the communication that the stakeholder manager can send to the residents, the messages can sometimes be left unanswered for a long time. This can lead to irritations amongst the app users, as they have no idea that their questions is currently being processed (interview with Resident B, July 2019). Another problem that might have occurred is that app users used the contact tab, that can be found on the home screen of the app. This contact tab leads to a phone number and email address of the general office of the contractor. Emails that were send to this address will have been answered much more slowly than emails that were send to the stakeholder manager. Some people even stopped using the app and started going to the construction workers directly (interview with Resident C, July 2019). The intent for the stakeholder manager is to be the point of contact for stakeholders. However due to limited use of the app, she is not used enough. That is why the decision was taken to use a new app (interview with the Project Manager, July 2019).

When asked about the new app, the stakeholder manager mentioned a few features that she would like to add: *"I would like to add push notifications, these encourage the usage of the app. I would also like to see the app be more user-friendly, a nicer interface with more attention to design. Also, a specific app just for this reconstruction and not a general app from the contractor."* The new app that was developed was a similar Omgevingsapp to the ones that were used in the other cases.

Summarizing, the execution phase in Zegveld is proceeding in a chaotic way. The planning that was presented and discussed to stakeholders was abandoned due to a clash between contractor and subcontractor. The negative feelings of stakeholders that were left over from the planning phase resurfaced and the execution phase also started having a grim ambiance. Because of this ambiance, the communication is not proceeding in a mutually beneficial way. All this is not helped by the malfunctioning of the app, which in theory has a very high potential. Fortunately, these problems are

addressed and recognized by both the municipality and the contractor. To tackle the problems, the municipality, contractor and village platform will meet every couple of weeks to discuss the process, planning and reflect on the communication. A new app is being released to replace the old one. The new app was made by the stakeholder manager and tries to eliminate any flaws that the old app had.

4.4.4 Discussion

Summarizing, it can be said that both the planning phase and execution phase were well organized by both the municipality and the contractor. However, one decision to change the design in the planning phase led to outrage amongst involved stakeholders. When looking at the seven criteria of Innes and Booher (1999), the reconstruction of Zegveld scores rather low. The criteria **purpose, self-organizing, engaging and creative** were all met. The stakeholders were all glad to come to the information evening to fix the sinking of their neighbourhood. The necessity of the reconstruction was clear, also shown by the high attendance of the information evenings. These evenings started out in with a presentation, after which the residents could discuss freely with the municipality. By allowing the attended people to vote democratically on the design of their favour, the municipality made sure that stakeholders kept engaged with the planning process.

The criteria **representation and creativity** were partly met. Because some residents did not receive the invitation to the first information evening, they could not actively participate in the planning process. However, since the information evenings were well attended, chances are that these residents were told about the information evening by other people. The creative aspect of the planning phase can be found in the freedom that the residents had in the discussion. In hindsight, this might have been too much freedom according to the municipality. However, the municipality still controlled the process tightly. Of the three designs that were presented, only one was truly reasonable. Therefore, the creative aspect was there, but not in a good and complete way.

The criteria **high-quality information and full discussion** were not met. After the democratic voting was complete, a grey design was chosen. After this vote, the design was secretly altered, without the community's permission. When they eventually found out about this change, they wanted to discuss this. However, the municipality would not discuss the design any further, in order to avoid an escalation in the community. Because of this, a design was legally accepted by the municipal council that was not accepted by the entire community. Therefore, the planning process lacked high-quality information and the discussion was not yet complete.

The execution phase also scores rather poorly. This can partly be explained by the low score of the planning phase. Since the municipality failed to meet certain criteria, the quality of the planning process and communication are also lacking (Innes & Booher, 1999). The negative atmosphere of the planning phase resurfaced in the execution phase. After the contractor used a well-liked individual approach to discuss the planning with stakeholder, the planning was quickly abandoned due to an internal clash between contractor and subcontractor. For some residents, all the negative feelings of the planning phase combined with a newfound negative attitude towards the contractor. Therefore, the public **support** amongst stakeholders is not widespread. In theory, the app could reinforce the public support by informing citizens, the possibility to ask questions and the quick responsiveness. However, the interface of the old app is too complicated. Rather than using push notifications to inform citizens about urgent news, the initiative has to come from the app user. Especially for older people, this can be quite challenging. Therefore, the app is not **user-friendly,** as it is not easy to use

(Zhang et al., 2019). The stakeholder manager is always available to answer any questions that stakeholders have. At the same time, people also go to the construction workers directly to ask questions or note something. Due to an agreement between the municipality and the stakeholder manager, the stakeholder manager has to show all her communications forms to the municipality first. Therefore, some questions can be left unanswered for a longer period. Therefore, the ability to **give input** is partially there, but there is room for improvement. Again, the app could support both the stakeholder manager and the residents by functioning as an easy tool to ask questions and read updates. However, the app is relatively underused and not performing as it should be. The main reason for this is the app not being user-friendly enough. The intent of the app was to make communication between stakeholders and the stakeholder manager easier. Some residents like this and still use the app. However, the app is **not useful enough**, as the app fails to achieve the goal it was implemented for (Silva et al., 2016). Finally, the stakeholder manager should **manage the time** of the construction team. This condition is also partially successful. Since the stakeholder manager is the point of contact for the neighbourhood, residents mainly go to her for questions. This relieves the pressure of the construction team. However, since the stakeholder manager has to check her answers to questions with the municipality, some residents prefer going to the construction team directly. Therefore, the time managing aspect is only partially successful. The app should support the stakeholder manager in this aspect. However, the app is underused by residents. Therefore, the Jos Scholman app is **inefficient** as it fails to reduce the amount of time and effort that app users and app maintainers need to invest (Zhang et al., 2019).

Chapter 5: Analysis and Discussion

The next chapter will compare the different cases. Before the comparison, a small summary of each case is given.

The reconstruction of Assumburg was needed due to the sewerage being outdated. The planning phase proceeded smoothly, the only problems being that some invitations did not reach their destination and a lack of creativity. The execution phase is going well and both residents and stakeholders are happy with the communication, aided by a well-functioning app.

The reconstruction of de Kanis was needed due to the entire village sinking rapidly due to a bad foundation. The information evenings in the planning phase were preceded by a design group that combined expert knowledge and local knowledge. The information evenings were well liked, and the definitive design received hardly any criticism. The execution phase is also proceeding smoothly. Just as with Assumburg, both residents and stakeholder manager are satisfied with the way the communication is handled. The app plays a major role in this success.

The reconstruction of Hoa phase 2 was necessary due to the sinking of the roads and gardens, damaging the cable infrastructure in the ground. The planning phase was tightly controlled by the municipality, as they controlled the discussion topics. However, they did explain why other ideas (outside these discussion topics) were not going to be added to the design. The definitive plan was relatively well-liked, even though the creativity was lacking. The execution phase is proceeding well, as both the stakeholder manager and citizens are content with the communication process. Once again, the app plays a role in the positive experience.

The reconstruction of Zegveld was started due to sinking of the entire village into the peat. During the planning phase, the municipality changed the design after it was democratically chosen, without notifying the stakeholders. This led to outrage as the residents felt like they were cheated out of the design they chose. This negative atmosphere was reawakened in the execution phase when the contractor changed the planning it had discussed with residents individually. The app in Zegveld is not user-friendly enough and is therefore not functioning properly. All these problems together led to the municipality, stakeholder manager and village platform to discuss extra meetings about the process of the construction work and the communication. On top of that, the old app was replaced with a new one. (which was unfortunately not included in this research as the app was not yet available during the interviews).

Comparing the four case studies by looking at the conceptual framework gives the following results that can be seen in tables 6 and 7 below. In the tables, the green square shows that the criterium was sufficiently present in the collaborative planning process. A yellow square represents a criterium that was not entirely performed well and has room for improvement, but is not completely missing. A red square stands for a criterium that was not met and was therefore a hinderance to the planning process (Innes & Booher, 1999).

Case (below) criterium planning phase(right)	Representation	Purpose	Self-organising	Engaging	Creativity	High-quality information	Full discussion
Assumburg (ITC app)							
De Kanis (ITC app)							
Zegveld (Contractor app)							
Hoa Phase 2 (ITC app)							

Table 6: The evaluation of the planning phase of the different cases using the seven criteria for collaborative planning. A green tile means that the criterion was met, a yellow tile that it was partially met and a red tile that is was not met. Source: Author.

Case (below) criterium execution phase (right)	Gaining support	Gaining input	Time management	User-friendliness	Usefulness	Efficiency
Assumburg (ITC app)						
De Kanis (ITC app)						
Zegveld (Contractor app)						
Hoa Phase 2 (ITC app)						

Table 7: The evauuation of the execution phase using the three conditions for good stakeholder management and showing the app-performance. A green tile means that the criterion was met, a yellow tile that it was partially met and a red tile that is was not met. Source: Author.

After analysing the four different cases and looking at the planning processes in both the planning and executing phase, certain topics appear when comparing the different cases. These topics will be discussed, using the results of the cases and linking these to the current discussion in planning theory.

5.1 Planning phase:

Municipalities are still the leading actor in collaborative planning: Even though all cases were collaborative planning processes, they were all still government led. The government determined what the starting positions of the preliminary designs should be, organized the information evenings, decided which part of the stakeholder input would be included in the design and determined the definitive design. It might therefore seem that the critique on collaborative planning being government led and therefore not having transformative potential is correct (Purcell, 2009, Boonstra & Boolens, 2011, Monno & Khakee, 2012). However, even though the planning processes were strongly guided by

the government, they were still heavily influenced by other stakeholders. This is especially apparent in the finer details of each design. Even small changes, like a parking spot being added to a design as was the case in Assumburg, show that citizens have the power to change designs. De Kanis even used locals to gauge what was currently being discussed in the community of the village to add these topics in their preliminary design. The idea made by Healey (2003), that bringing power relations together leads to interaction and therefore a better outcome, seems to be true for these cases. Even though they were strongly government led, the cases still score really well when looking at the criteria of Innes and Booher (1999). So, the idea that planning process being government led is problematic, is not visible in this research.

The amount of people that show up for information evenings is important: In two of the four cases, the invitations did not receive all potential stakeholders. This leads to a problem in the representation of all stakeholders, which is necessary for an effective planning process according to Innes and Booher (1999). Besides de Kanis, where the municipality used to village platform to spread the message that an information evening would be held, all cases just sent letters with invitations to all addresses. The problem is that letters can easily get lost in the mail or not be delivered. It might seem that having a few less people during the first information evening is not problematic. However, the information evenings are the only place during which stakeholders can let their concern be publicly heard. If a stakeholder misses the first information evening, they can possibly have missed 50% of the entire process. This can potentially have negative consequences for the outcome of the planning process as a definitive design can be accepted that does not have the full support of the people. On top of that, all cases used little technology in the planning phase (with the exception of Assumburg posting comments online and answering them). This means that the need to be physically present, that is troublesome for some stakeholders, is still there.

So, planners need to find alternative ways to invite stakeholders to participate. Simply sending out invitations through post is not enough. Alternative ways such as using a neighbourhood committee or hanging posters in the local supermarket should be considered to ensure that the representation of stakeholders is as high as possible. Technology in the planning phase could also potentially be beneficial. In the case of Zegveld, the municipality is already thinking about using technology in the future, that can be used at home to vote on different designs. This new method links well with the idea of Kleinhans et al. (2015), that technology can break the barrier of being physically present that some residents. However, there is much room for improvement in this regard.

Municipalities need to use local knowledge in an interactive way: The idea that planning consists of different types of knowledge that each have their own value was very apparent in the cases. By combining local knowledge with expert knowledge, the planning outcome is likely to be better (Rydin, 2007, Healey, 2008). Locals know their neighbourhood better than the municipality ever will. Just letting them respond is not enough, interaction aids the planning process. This is why the criteria of purpose, self-organizing and engaging by Innes and Booher (1999) are important. Just presenting the design and letting people respond is not a good way to include people. The set-up that de Kanis had was perhaps the best example of using local knowledge in a good way. Locals worked together with experts in a design panel that determined what the first form of the design would look like. The technical side of the design was determined by experts, while the locals helped with details and determining topics to discuss during the general information evenings with the entire community. It comes as no surprise that, when looking at the seven criteria, de Kanis scores the best. The method of

using a design panel is more expensive than doing everything yourself as a municipality, an often-cited critique on collaborative planning (Boonstra & Boelens, 2011). However, the planning phase of de Kanis shows that it leads to a better process (Innes & Booher, 1999).

Managing expectations is important: In all cases, it was apparent that the municipality wanted to keep the control at least somewhat in their own hand. Outside the box thinking was not stimulated, as can be seen in the fact that all four cases were lacking in the creative criterion by Innes and Booher (1999). This approach contradicts the ideas of Arnstein (1969), that more citizen participation always leads to a better outcome and links to the ideas of a crisis in collaborative planning as mentioned by Monno and Khakee, (2012). However, it is better to give citizens less freedom but let them be important in a small portion of the plan, than to give them the freedom and then disappoint them, as mentioned in the section above. Stakeholders may come with large creative ideas that in their views are amazing, but in reality, are impossible to carry out due to a limited budget and time constraints. Shooting down ideas can lead to irritation and stakeholders will ask themselves: why bother showing up if the municipality does not listen to us. Because of this, the municipalities did give stakeholders the ability to choose their own discussion topics, but were limited in the promotion of outside the box ideas. It can perhaps best be summarized by two quotes from the project manager of Hoa phase 2 and the communication advisor from de Kanis.

"This is a reconstruction, in reality the number of things you can chance is limited, you do not create extra space." (interview with the Project Manager of Zegveld, May 2019).

"Only the stakeholders have input on what they can actually change. "It is better to be honest as a municipality. Let people actively decide on 20% of your plan that is actually changeable. Do not say (as a municipality): "bring us all your ideas" and then ignore 80% of those ideas. It is better to let stakeholders know beforehand that only 20% of the design is open to input." (Interview with the communication advisor of de Kanis, May 2019).

Summarizing, it can be said that lack of the creative criterion was not problematic, as long as residents can give their input and let their voice be heard. The lack of creativity might even be seen as a positive aspect, as the processes are more focused on the details that (according to the municipality) are changeable. This prevents the possibility of the process taking too long, a critique that is often given on collaborative planning (Boonstra & Boelens, 2011). Even though the setup of the information evenings was not creative, by combining storytelling (in three of the four cases a presentation was given) and allowing free discussion per topic, the municipality still brought different groups together to reach consensus (Innes, 2004). However, it is important for planners to manage peoples' expectations and let them know beforehand which areas of the design are open for debate.

Transparency and a full discussion is a necessity: This links with the idea of managing expectations and giving stakeholders the ability to influence the planning outcome. The last two criteria of Innes and Booher (1999), high quality information and having a full discussion are a necessity for the performance of the planning process. If a planner does not communicate what is done with the stakeholders' input, the effectiveness of a collaborative planning process is greatly reduced. If you present a design, then discuss with people about that design, only to not include any of their points in your final design, you are not truly collaborating with people. This is what Arnstein (1969) refers to as an empty ritual of participation. In Zegveld, this was the case. Even though both information evenings were organized in a decent manner with attention to stakeholder input, the outcome was undone by

the municipalitys' change of the stakeholders' voting. The stakeholders voted democratically for a grey design for the entire neighbourhood and the municipality decided to change a small part of the design without explaining this to all stakeholders. This decision fundamentally undermined the entire planning process, as the outcome was not at all agreed upon. Therefore, transparency about how the input of stakeholders is used is important.

The case that is the most transparent is the reconstruction of Assumburg. All questions that were asked during the first information evening were published online and answered. This could even be seen as a first step to incorporating PSS in the planning phase of reconstruction work, even though it is only a website. By posting the questions online and answering them, even people that did not attend the information evening have the opportunity to read what was discussed during the session. Using a website in such a way to present information is what Needham (2004) calls 'just an expansion of information'. However, using a website in such a way allows planners to reach a broader audience and empowers the group that missed the first evening to better prepare for a potential follow-up evening Foth et al., 2009). Therefore, this simple website shows that communicative PSS have potential to function in the planning phase of collaborative planning processes.

Ending the planning phase with the discussion being finished is also of utmost importance. After the preliminary design is changed to a definitive design, there is room for formal complaints. These formal complaints are much harder to deal with for municipalities than dealing with them in the planning phase. It is therefore a necessity to only seek consensus (by finalizing your design) after all issues and interest are clear and responded to (Innes & Booher, 1999). The more the discussion is held in the planning phase, the fewer formal complaints a plan will receive, as stakeholder already had the opportunity to let their concern be heard. Only when two stakeholders' views are completely perpendicular, will there be a formal complaint that can eventually go to court, as happened in de Kanis. This process is long, costly and should therefore be avoided at all costs, by making sure that the discussion is finished when a planning process is finished.

There is a long gap between the planning phase and the execution phase: After the definitive design is accepted, the municipality spends all their time selecting the best contractor. In the meantime however, the residents have no idea on what is going on as there is hardly any communication. This in-between phase can sometimes last years. It is recommended for the municipality to keep informing the public in this phase by sending out letters, as the execution phase technically starts when the definitive design is accepted. This means that gaining support for the reconstruction, which is part of good stakeholder management according to Meijers (2009), already starts before a stakeholder manager is actually appointed.

5.2 Execution phase

The atmosphere of the planning phase oozes out into the execution phase: The amount to which the planning phase fails to deliver on the criteria of Innes & Booher (2009), will determine the retrospective feeling that stakeholders have when looking back at the planning phase. Even though contractors had nothing to do with the planning phase, they still have to deal with the consequences. For de Kanis, Assumburg and Hoa phase 2 this was no problem as these planning phases scored relatively high on the seven criteria. In these cases, the resident's willingness to cooperate was high as they were pleased with the process of the planning phase. The willingness to cooperate is important for the second and third condition for good stakeholder management, gaining support and managing time (Meijer, 2009).

If stakeholders do not cooperate with the stakeholder manager or use the app, these conditions are nearly impossible to meet. This is illustrated in the case of Zegveld. The planning phase of the reconstruction of Zegveld did not score well and consequently, the atmosphere was grim. Because of this, the contractor had much less space to make mistakes in both the construction itself and the communication, as the attitude of stakeholders is far less supportive than it could be. Gaining support in such a situation can prove to be difficult. In order to gain support, both the contractor and the stakeholder manager need to realise the situation that they are in and be extra cautious with their promises.

Stakeholder managers as a point of contact can help with good stakeholder management: The three conditions of good stakeholder management in the execution phase are to gain support, gain input and manage the time of the construction team (Rijkswaterstaat, 2009, Meijer, 2009). The stakeholder manager works as a single point of contact that stakeholders can contact for information. All three conditions for good stakeholder management can be strengthened by using a stakeholder manager. Gaining support is strongly interwoven with the quality of the information that stakeholders receive and determines the atmosphere that surrounds a reconstruction. In Hoa phase 2 for instance, the residents feel like the stakeholder manager is there for them as she responds quickly to questions and informs people on time. The support for a plan affect the entire reconstruction. If there is support for a plan, residents are more willing to cooperate. This has in turn a positive influence on the work speed, as the contractor receives less complaints. The stakeholder manager should make sure that the support for the reconstruction is there. This can be done by informing stakeholders properly and proactively, responding to questions from stakeholders and look for possible solutions (Meijer, 2009).

This links with the second condition for good stakeholder management gaining input. Stakeholders that have questions or make comments, want to be heard. As Rijkswaterstaat (2009) stated, this does not mean that these demands should also be met. However, gaining input by local stakeholders can improve the quality of the execution process. Even such a simple thing as repairing fences that fall over or adding extra walking board (as happened in de Kanis) can be seen as local input. Stakeholder input can help with correcting small mistakes that occur during the reconstruction. A stakeholder manager can help in this regard, as they can function as a single point of contact. With a stakeholder manager, it is easier for stakeholders to give their input and are more inclined to do so, as they know who they have to contact. The stakeholder manager should focus on collecting the input of stakeholders, bringing them to the right person, and explain to stakeholders why the input will be incorporated into the reconstruction or not.

The final condition for good stakeholder management, managing time, can also positively be affected by a stakeholder manager. The time management aspect is important, as the time that is spent inefficiently creates extra costs for the municipality. It is therefore important for a contractor to spend its time as efficiently as possible (Meijer, 2009). Having one stakeholder manager can help in this regard. Since stakeholders know who they have to contact, the time spend looking for the right person to answer the question is reduced. This is beneficial for both the contractor and stakeholders. Contractors do not need to worry about an abundance of questions (as they are directed at the stakeholder manager) and stakeholders know who they have to contact. For the time managing aspect, it is important that the stakeholder manager works efficiently. A supporting app can be of great help to the stakeholder manager.

The Omgevingsapp functions well as a communicative PSS: When looking at the three conditions of good stakeholder management, the apps can provide support in reaching these conditions. The main advantages of using an Omgevingsapp are its reach, the ability to give more information, interactivity and responsiveness.

The first way in which the Omgevingsapp can support the stakeholder manager is by providing a large reach amongst involved stakeholders. All stakeholder managers felt like the app allowed them to reach a large portion of the community, simply by posting a message. This links well with the ideas of Höffken and Streich (2013), who stated that the high number of smartphones in a modern society could increase a planners' reach by using apps. Ertiö (2015) stated that mobile apps can broaden participation. The Omgevingsapp also functions well for this. This can be linked to the second advantage, the ability to give more information. Rather than sending out letters every week (which is a time-consuming process and in practice unlikely to happen), weekly updates can easily be send via the app. Both stakeholder managers and residents liked this extra information, as it adds to the understanding of the reconstruction. The reach is also dependent on the amount of app users. The Omgevingsapp is free for all stakeholders to download, which increases the amount of app users, and therefore the apps' reach.

The third advantage of the Omgevingsapp is the interactivity that it has. This was seen by some planners as a fundamental flaw in the first generation of communicative planning. These earlier systems were simply used as an extension for the municipality to give some more information, rather than actually encouraging participation (Needham, 2004, Goodspeed, 2008 Reddick, 2010). The Omgevingsapp does not have this fundamental flaw, as there are plenty of ways in which stakeholders can use it to participate. All apps have a message function, the ability to send photos and the option to call the stakeholder manager from the app. The apps also have functions that are just relevant for that specific project. The app for Assumburg has a map function that shows which parts of the roads are currently closed and the app for de Kanis has an extra option to arrange the emptying of the gardens with the contractor. This all shows that these apps are much more than an extension of the information. By allowing this interaction to take place, the amount of local input is increased, which is important in collaborative planning (Rydin, 2007, Healey, 2008). On top of that, the interactivity of the Omgevingsapp allows for more participation and new forms of engagement (Lybeck, 2018). Stakeholders that would normally not participate in the execution phase (as they have to work during the day) can use the app to engage with the contractor. This extends the group of involved stakeholders (Agger & Löfgren, 2008).

The final strength of the Omgevingsapp can be found in the responsiveness of the system. This links with the concept of situated engagement that Gonçalves et al., (2014) mention. Both app users and the stakeholder manager carry around the app as they walk around the reconstruction. When something is wrong, stakeholders can easily send a quick message to the stakeholder manager, rather than having to go the contractor or write an email. The benefit of this is that the amount of input that a stakeholder manager receives is higher, as stakeholders are more inclined to send quick messages on the spot. On the stakeholder managers' side, the situated engagement is also beneficial. When a construction error occurs (such as a cable being cut), the stakeholder manager can immediately post a message on the app. This shortens the length of the communication lines, as mentioned by Ertiö (2013). In short, the apps have a high potential to function well. They can potentially have a large reach,

give more information, are interactive and have a quick response time. There is however a very important aspect that the Omgevingsapp should have to function properly.

User-friendliness is essential for a communicative PSS to be useful and efficient: If a communicative PSS is not user-friendly, it is practically impossible to be useful and efficient. As lies in the nature of communicative PSS, they are dependent on both the app user and the person maintaining the app. An app is user-friendly when it is easy to use (Silva et al., 2016). If an app is not user-friendly, hardly anyone will use it as using the app is not faster than sending an email for instance. The app of Zegveld was not user-friendly, it was too general and important features like push notifications were hidden away in an illogical place. The entire goal of the app is that it should: "*offers the possibility for low-threshold communication with stakeholders in an attractive and interactive way*" (ITC Groep, 2019). Therefore, an app is useful when this goal is met (Silva et al., 2016). The time and effort should be reduced for both stakeholder manager and stakeholders (Zhang et al., 2019). If an app is not user-friendly, it will be underused. The main strengths of the Omgevingsapp will all be taken away if the app is underused. The reach is lower, as there are fewer app users. The amount of information that stakeholder managers can send through the app is limited, as there are only a few app users. On top of that, the responsiveness is lower, as stakeholders are unlikely to use the app when they encounter problems, since the app is not faster than other forms of communication. Finally, the interactivity of the app also decreases as fewer people will use it, leading to less involvement and local participation. All this shows that if a communicative PSS is not user-friendly, it cannot reach the goal it was implemented for (namely communication which requires two sides to work). An app not being user-friendly also leads to the app being inefficient, as it does not reduce the time and effort of both the app user and stakeholder manager. So, user-friendliness is a necessary condition when it comes to creating a successful Omgevingsapp. The following aspects all contribute to the user-friendliness of the Omgevingsapp.

Push notifications are important for the reach and responsiveness of the app: The low-threshold aspect of the app depends on where the initiative lies. If an app has no push-notifications, the initiative lies with the stakeholders. They have to open the app themselves to check for any possible updates. The case of Zegveld showed that this does not work properly, as the app ends up being underused. The initiative should lie with the stakeholder manager who should send messages that have a push notification on the app users' phone. When people get a push notification every week, they are more likely to stay involved as all the info is just one click away. If people need to open a general app, then search their specific project, they are less inclined to do so. By using push-notifications, the initiative lies with the stakeholder manager.

Apps need input and output: It might seem logical, but for apps to work, the flow of information must be constant. The stakeholder manager should always keep the app up to date. If one day a road is closed off and the app is not up to date so people get lost, why should people even bother to use the app? If app users send a message through the app, the stakeholder manager should respond as quickly as possible. Even if the solution to the question takes weeks, it is important to get a response that people are working on it. The responsiveness and interactivity on the app are not just dependent on the input from app users, but also on the output by the app maintainer.

Keep the app simple and visually appealing: A large part of the success of the Omgevingsapps in the cases of Assumburg, de Kanis and Hoa phase 2 were that they were simple. One app for the specific

project, no extra menus with settings but the recommended setting already installed. The case of Zegveld did not have a project specific app but used an app that the contractor developed. This app was confusing for some app users as they had to select their own project every time they opened the app. These extra steps only make the app less user-friendly. It is important to realize that the technological levels of the app users differs greatly. This needs to be taken into account when designing apps, by keeping them as simple as possible (Korsgaard et al., 2018). Another important aspect that helps with keeping apps simple is the language used in the apps. Reconstruction work can be complex, but stakeholders do want to be informed on the process. By using photos of the construction site, the app adds to the insight that stakeholders have on the reconstruction. All this contributes to the user-friendliness of the app.

Apps do not replace real non-digital contact: A final important note that needs to be made when looking at the performance of the Omgevingsapp is the fact that the app should not replace other forms of communication. The app can be used to communicate, but personal contact should not be omitted and replaced by the app. The app should be used to lead to real-space interactions (Kleinhans et al, 2015). The multi-channel strategy that Höffken and Streich (2013) mention, seems to be the right way to implement communicative PSS. Apps should be used be used as a support tool and an extension of the stakeholder manager. Even though the number of smartphones has increased over the last decade, there are still some people that do not have a smartphone. These people can miss some vital information due to not having the app installed. These people can go to the stakeholder manager themselves to ask for alternative ways to reach this information. However, this leads to the same problem as not having push notifications, as the initiative lies with the stakeholder rather than the stakeholder manager. For all the benefits of the Omgevingsapp seems to exclude a small number of people from participating fully in the process, which is undesirable (Korsgaard et al, 2018).

Chapter 6: Conclusion and Discussion

This research set out to explore the concepts of collaborative planning and communicative planning supports systems in the Dutch planning context. The Dutch planning context is changing rapidly, the national is being changed to the Omgevingswet, a law that encourages planners to participate with stakeholders. This shift in the Dutch context links well with the shift that planning has undergone in the last few decades. Planning used to be rational comprehensive, with the focus on data and neutral analysis (Innes & Booher, 2015). During the 90s, planners started to realize that the problems they were dealing with were too complex to handle in a neutral statistic way (Hartmann & Geertman, 2016). Therefore, planning shifted from a rational comprehensive practice to a more collaborative practice (Healey, 1997). Collaborative planning focuses on interaction between stakeholder and is even named by some planners as the new planning paradigm (Yiftachel & Huxley, 2000). The Omgevinswet shows that collaborative approaches might very well be the new paradigm, as collaboration is for the first time in Dutch history included in a national law. Therefore, this research sought a way to evaluate collaborative planning process, in order improve planning processes in the future, by looking at four case with collaborative planning.

During this communicative turn in planning, the Dutch society is changing was changing as well. Digitalisation of communication forms has been increasing rapidly, with the arrival of internet, smartphones and other forms of digital communication (Ërtio, 2013). This digitalisation also reached the domain of planning as new planning support systems started to arise. These PSS show high potential and can be used to aid planners in their planning tasks (Geertman et al., 2015). This even led to a sub-component of PSS, communicative PSS. The goal of these communicative PSS is to improve the communication with stakeholders (Klosterman & Pettit, 2005). Even though PSS have a high potential, there seems to be an implementation gap between the development and the usage of PSS (Te Brömmelstoet, 2013). Therefore, PSS are currently underrepresented in planning (Pelzer et al, 2015). Rather than theorizing what potential communicative PSS should have, this research looks at existing PSS, which is what numerous authors think is necessary for the further development of PSS (Te Brömmelstoet, 2013, Pelzer et al, 2015). Therefore, this research looked at evaluating the performance of stakeholder management in the execution phase by looking at four different cases that all used an Omgevingsapp.

The main question that this research sought to answer was the following: **How can planners evaluate different phases of collaborative planning and what is the added value of communicative PSS?**

The planning phase of collaborative planning can be looked at through the seven criteria that Innes and Booher (1999) used in their framework. These criteria look at the representation, purpose, self-organisation, engagement, creativity, high-quality information and the full discussion in collaborative planning. The more of these criteria are present, the better the planning process performs. Following this research, there are certain aspects that planners need to take into account while they are in a collaborative planning process.

Even though municipalities are still the leading actor, they should still listen to stakeholders. Bringing different groups together and letting them interact leads to a better planning outcome (Healey 2003). Even if stakeholders can only change details of the design, that will lead to a better final product. This is due to local stakeholders having a different type of knowledge when compared to the municipal experts (Rydin, 2007, Healey, 2008). This is why the criteria of purpose, self-organizing and engaging

by Innes and Booher (1999) are important. By letting local stakeholders interact with each other and the community, the amount of representation in the final design is increased. It is therefore important that the spaces in which the interaction between different knowledge forms, the information evenings, are well attended. There is a high potential for technology to play a part in the amount of representation, as it could take away the barrier of needing to be physically present (Kleinhans et al., 2015). However, as was stated by Te Brömmelstoet (2013), there is still a long way to go in this regard.

During the information evenings, the managing of expectations is important, as it reduces the amount of frustration that stakeholders have. Creative ideas being constantly shut down due to budgetary reasons can often lead to irritations amongst stakeholders that want to participate. By managing the expectations, and clearly communicating what aspects of the design are subject to change, planners can decrease the amount of frustration. This result implies that the use of the creative aspect of Innes and Booher's (1999) criteria should be considered. Planners should not blindly encourage outside the box ideas if the budget does not allow it, as it will not contribute to the planning outcome but only lead to irritations during the planning process.

Collaborative planning should be both transparent and seek to end only after the discussion is complete. If an entire planning process is complete, and the municipality decides to ignore the community and the matters that were agreed (or voted) upon, that process is just an empty ritual of participation (Arnstein, 1969). The process should be transparent, and no decision should be taken secretly. The benefit of this is that the more discussion there is in the planning phase, the less formal complaints will be submitted after the definitive design.

The performance execution phase of planning can be evaluated by looking at the three conditions for good stakeholder management, as constructed by Rijkswaterstaat 2009 and Meijers (2009). These conditions are gaining support, gaining input and managing time. Having stakeholder manager can help reaching these three conditions. The stakeholder manager can inform the stakeholders about the proceedings of the reconstruction and answer their questions quickly. This leads to more support. Stakeholders are also more inclined to communicate with the contractor via the stakeholder manager, as it is simpler, leading to more input. Since the A stakeholder manager is the single point of contact for involved stakeholders, the amount of questions that are asked to the wrong person are low, allowing construction workers to focus on the construction, leading to a better time management.

The Omgevingsapp that were researched showed a high potential for the future, when implemented in the right way. The apps increase the reach, amount of information, interactivity and responsiveness that takes place between the stakeholder manager and stakeholders. These advantages help with the performance of the stakeholder management. The reach of the app increases the support and broadens the participation and the format allows for more information to be send to stakeholders (Höffken & Streich, 2013, Ertiö, 2015). The interactivity of the app encourages participation, creates new forms of engagement and extends the group of involved stakeholders (Agger & Löfgren, 2008, Lybeck, 2018). The responsiveness of the app can be linked to the concept of situated engagement by Gonçalves et al., (2014). The app is always online and can always be used anytime to post a comment or send a message. This shortens the communication lines between stakeholders and the stakeholder manager. However, in order reach their full potential, the apps should be implemented in the correct way. User-friendliness is the key to a successful communicative PSS (Silva et al., 2016). If an app is not user-friendly, the number of stakeholders using the app will be greatly reduced. If the number of app

users is limited, the app cannot achieve the goal it was introduced for in the first place. The goal of the app is that it should: "*offers the possibility for low-threshold communication with stakeholders in an attractive and interactive way*" (ITC Groep, 2019). The fewer stakeholders that use the app, the less useful and efficient that app is (Silva et al., 2016, Zhang et al, 2019). Therefore, user-friendliness is the key to a well-functioning communicative PSS. To improve the user-friendliness, app developers need to add push notifications to increase the reach of the app, keep the app as simple as possible and visually appealing. App maintainers need to make sure that the app is kept up to date and that both the stakeholder input and the stakeholder managers' output of the app are important. One final note is that it is important to realize that communicative PSS are *support* systems that ease communication between different people. Apps are not a replacement of all the other forms of communication, merely a tool to improve communication. Face-to-face contact is still important, as there is still a group that does not have access to the app.

So, when looking at the changing theoretical and planning context, this research showed that there are good ways to evaluate collaborative planning processes by dividing the process into a planning phase and an execution phase. Since the Dutch law is focusing more and more on participation, evaluating collaborative processes becomes more and more important, since the amount of collaboration is only likely to increase in the future. Communicative PSS can play an important role and show high potentials within the current digitalisation of society. When implemented in the right way, communicative PSS can aid in achieving good stakeholder management. But the apps should be implemented in the right way. Looking at the user-friendliness is key to the correct implementation of communicative PSS. It is also important that the second S in PSS is honoured, as planning support systems should focus on support, nothing more. More research is required to further explore the concepts of communicative PSS in a collaborative context.

Future research recommendations

When looking at future research, the first area I would recommend is the creative aspect in the criteria list of Innes & Booher (1999). According to this research, creativity would have a negative influence on a collaborative planning process. Creative ideas generally tend to cost more as they require a change to the status quo (Innes & Booher, 1999). Therefore, municipalities like to keep planning processes more tightly controlled, stating that creative 'outside the box' idea would be shut down anyway due to budgetary reasons. To avoid irritations amongst stakeholders, who feel like their ideas are being shut down, municipalities like keep discussions uncreative. However, creativity encompasses is far more than just expensive outside the box ideas. Creative sessions might lead to better outcomes. A change to the status quo could even lead to cheaper solutions in the end. Therefore, municipalities should explore the creative possibilities that are available (for instance through PSS or some sort of game) to find whether more creativity could further aid collaborative planning processes. More empirical research could help determine the value (and negative aspects) of a creative planning process.

More research is also required on the functioning of communicative PSS. This research looked at four different cases that used a comparable app, but these are not the only communicative PSS that are available. These cases were also set in the Dutch planning context, which generally is quite collaborative. PSS might work very differently in a Chinese context for instance where the government has a stronger position of power. The Chinese internet is also more tightly controlled than the Dutch internet. In order to further determine how communicative PSS can aid collaborative planning, more

empirical research into communicative PSS is necessary. Another aspect that needs more research is the user-friendliness of communicative PSS. User-friendliness is the key to a well-functioning communicative PSS, as a app that fails to be user-friendly is not workable. This research already sets a foundation for criteria that determine the user-friendliness of a communicative PSS. However, more quantitative data could be used to systematically determine what features define a user-friendly PSS.

A final direction for further research would be the group that is being excluded from participating due not having a smartphone and the group that does not want to download an app. This research focused on the performance of the app, so the group of non-app users was note researched. In the future, planners need to focus on finding a way to ensure that as many stakeholders as possible download the app. Alternatives should also be considered for the group that cannot download the app even if they wanted to. In order to explore this problem of exclusion, there needs to be more research on communicative PSS and the excluded group.

Chapter 7: Reflection

There are a few things that I would have done differently if I could do my research all over again. The first aspect is the amount of cases that I initially was given. Six cases was, in the timespan of my research, a bit too much to handle given the scope of the theoretical framework. This explains why two cases were eventually removed from the analysis. Interviews and transcripts were however already made for these cases, so they might have influenced the researchers perception.

Another aspect is the language. The research took place in a Dutch planning context where there is a very specific professional slang. Words like bestemmingsplanwijziging, voorlopig en definitief ontwerp, klinkers (bepaald type stoeptegels) and even the word omgevingsmanager are rather hard to translate. Since the interviews were done in Dutch and the analysis was done in English, some nuances might be missing in the quotes. The researcher that held the interviews and did the translation is fluent in both Dutch and English, which minimalizes the chances of mishaps in the translation occurring. However. it must still be taken into account when looking at the quotes.

A final aspect that would give this research a stronger basis would be more quantitative data on the app. There are a lot of interesting variables that could help with the validation of the analysis. These include the amount of times an app is downloaded, the number of messages that the stakeholder manager receives and a survey amongst all app users about the functioning of the app and the stakeholder manager. However, the scope of this research was already quite large with initially six cases and both the planning and execution phase. Therefore, it was decided to focus on qualitative research. As is mentioned in the recommendations for further research, more quantitative data could add to the understanding of the performance of communicative PSS.

Chapter 8: Literature List

Agger, A., & Löfgren, K. (2008). Democratic assessment of collaborative planning processes. *Planning Theory*, *7*(2), 145-164.

Allmendinger, P., & Tewdwr-Jones, M. (2002). The communicative turn in urban planning: Unravelling paradigmatic, imperialistic and moralistic dimensions. *Space and polity*, *6*(1), 5-24.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, *13*(4), 544-559.

Boeije, H. 't Hart, H., & Hox, J. (2009). *Onderzoeksmethoden. Den Haag: Boom Lemma Uitgevers*.

Bogner, A., & Menz, W. (2009). The theory-generating expert interview: epistemological interest, forms of knowledge, interaction. In *Interviewing experts* (pp. 43-80). Palgrave Macmillan UK.

Bogner, A., Littig, B., & Menz, W. (2009). Introduction: Expert interviews—An introduction to a new methodological debate. In *Interviewing experts* (pp. 1-13). Palgrave Macmillan, London.

Boonstra, B., & Boelens, L. (2011). Self-organization in urban development: towards a new perspective on spatial planning. *Urban Research & Practice*, *4*(2), 99-122.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal*, *9* (2), 27-40.

Brand, R., & Gaffikin, F. (2007). Collaborative planning in an uncollaborative world. *Planning Theory*, *6*(3), 282-313.

Bryman, A. (2004). Triangulation and measurement. *Retrieved from Department of Social Sciences, Loughborough University, Loughborough, Leicestershire: www. referenceworld. com/sage/socialscience/triangulation. pdf*.

Bryman, A. (2016). *Social research methods*. Oxford university press.

Bunnik Groep (2018). Reconstructie De Kanis. Obtained from: https://bunnikgroep.nl/projecten/reconstructie-de-kanis/

Castells, M. (2013). *Communication power*. OUP Oxford.

Centraal Bureau voor Statistiek (2018). Internet; toegang, gebruik en faciliteiten. Obtained from: https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83429NED/table?ts=1568643798030

Creswell, J.W., (2016). *Research Design.: Qualitative, Quantitative, Mixed Methods Approaches*. University of Nebraska-Lincoln: SAGE Publications.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, *14*(4), 532-550.

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of public administration research and theory*, *22*(1), 1-29.

Ertiö, T. (2013). M-participation: the emergence of participatory planning applications. *Turku Urban Research Programme's Research Briefings*, *6*.

Ertiö, T. P. (2015). Participatory apps for urban planning—space for improvement. *Planning Practice & Research*, *30*(3), 303-321.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, *12*(2), 219-245.

Foth, M., Bajracharya, B., Brown, R., & Hearn, G. (2009). The Second Life of urban planning? Using NeoGeography tools for community engagement. *Journal of Location Based Services*, *3*(2), 97-117.

Freeman, R. E. (1984). Strategic management: A stakeholder theory. *Journal of Management Studies*, *39*(1), 1-21.

Friedmann, J. (1987). *Planning in the public domain: From knowledge to action*. Princeton University Press.

Geertman, S. (2002). Participatory planning and GIS: a PSS to bridge the gap. *Environment and Planning B: Planning and Design*, *29*(1), 21-35.

Geertman, S. (2006). Potentials for planning support: a planning-conceptual approach. *Environment and planning B: Planning and Design*, *33*(6), 863-880.

Geertman, S. (2017). PSS: Beyond the implementation gap. *Transportation Research Part A: Policy and Practice*, *104*, 70-76.

Geertman, S., Ferreira, J., Goodspeed, R., & Stillwell, J. (2015). Introduction to 'planning support systems and smart cities'. In *Planning support systems and smart cities* (pp. 1-17). Springer, Cham.

Geertman, S., & Stillwell, J. (Eds.). (2009). *Planning support systems best practice and new methods* (Vol. 95). Springer Science & Business Media.

Gemeente Dordrecht (2018). Assumburg en omgeving. Obtained from: https://cms.dordrecht.nl/Inwoners/Overzicht_Inwoners/Projecten/Onderhoud_en_herinrichting/Assumburg_en_omgeving

Gemeente Woerden (2017). Reconstructie van de Slotenbuurt. Obtained from: https://www.woerden.nl/sites/default/files/p.17%20%20keuze%20funderingsconstructie%20openbare%20ruimte%20slotenbuurt%20zegveld.pdf

Gemeente Zwijndrecht (2019). Hoa fase 2. Obtained from: https://www.zwijndrecht.nl/Inwoners/Parkeren_verkeer_en_vervoer/Goed_op_weg/Heer_Oudelands_Ambacht_grote_aanpak_openbare_ruimte/HOA_fase_2

Gläser, J., & Laudel, G. (2009). On interviewing "good" and "bad" experts. In *Interviewing experts* (pp. 117-137). Palgrave Macmillan, London.

Goncalves, J., Kostakos, V., Karapanos, E., Barreto, M., Camacho, T., Tomasic, A., & Zimmerman, J. (2014). Citizen motivation on the go: the role of psychological empowerment. *Interacting with Computers*, *26*(3), 196-207.

Goodspeed, R. (2008). Citizen participation and the Internet in urban planning. *Final Paper for the Degree of Master of Community*.

Goodspeed, R. (2016a). Digital knowledge technologies in planning practice: from black boxes to media for collaborative inquiry. *Planning Theory & Practice*, *17*(4), 577-600.

Goodspeed, R. (2016b). The death and life of collaborative planning theory. *Urban Planning*, *1*(4), 1-5.

Hardin, G. (1968). The tragedy of the commons. *science*, *162*(3859), 1243-1248.

Harrell, M. C., & Bradley, M. A. (2009). *Data collection methods. Semi-structured interviews and focus groups*. Rand National Defense Research Inst santa monica ca.

Hartmann, T., & Geertman, S. (2016). Planning theory. *Handbook on Theories of Governance*, 61-70.

Healey, P. (1992). Planning through debate: the communicative turn in planning theory. *Town planning review*, *63*(2), 143.

Healey, P. (1997). *Collaborative planning: Shaping places in fragmented societies*. UBc Press.

Healey, P. (2003). Collaborative planning in perspective. *Planning theory*, *2*(2), 101-123.

Healey, P. (2008). Knowledge flows, spatial strategy making, and the roles of academics. *Environment and Planning C: Government and Policy*, *26*(5), 861-881.

Höffken, S., & Streich, B. (2013). Mobile participation: Citizen engagement in urban planning via smartphones. In *Citizen E-Participation in urban governance: Crowdsourcing and collaborative creativity* (pp. 199-225). IGI Global.

Hoogheemraadschap van Rijnland (2016). Piekberging Nieuwe Driemanspolder: Projectplan. Obtained from: https://www.n3mp.nl/wp-content/uploads/2016/09/Projectplan-N3MP-29-01-2016.pdf

Innes, J. E. (2004). Consensus building: Clarifications for the critics. *Planning theory*, *3*(1), 5-20.

Innes, J. E., & Booher, D. E. (1999). Consensus building and complex adaptive systems: A framework for evaluating collaborative planning. *Journal of the American planning association*, *65*(4), 412-423.

Innes, J. E., & Booher, D. E. (2015). A turning point for planning theory? Overcoming dividing discourses. *Planning Theory*, *14*(2), 195-213.

Innes, J. E., & Booher, D. E. (2016). Collaborative rationality as a strategy for working with wicked problems. *Landscape and urban planning*, *154*, 8-10.

ITC Groep (2019.) The Omgevingsapp. Obtained from: https://omgevingsapp.com/

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*, *24*(4), 602-611.

Johansson, R. (2007). On case study methodology. *Open house international*, *32*(3), 48.

Karppinen, K., & Moe, H. (2012). What we talk about when we talk about document analysis. *Trends in Communication Policy Research: New Theories, Methods and Subjects. Bristol: Intellect*, 177-193.

Kleinhans, R., Van Ham, M., & Evans-Cowley, J. (2015). Using social media and mobile technologies to foster engagement and self-organization in participatory urban planning and neighbourhood governance.

Klosterman, R. E., & Pettit, C. J. (2005). An update on planning support systems.

Korsgaard, H., Thiel, S. K., Thomas, V., & Ertiö, T. (2018, May). Working across boundaries in smart city research. In *Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age* (p. 39). ACM.

Lee Jr, D. B. (1973). Requiem for large-scale models. *Journal of the American Institute of Planners*, *39*(3), 163-178.

Legacy, C. (2017). Is there a crisis of participatory planning? *Planning Theory*, *16*(4), 425-442.

Lybeck, R. (2018). Mobile Participation in Urban Planning; Exploring a Typology of Engagement. *Planning Practice & Research*, *33*(5), 523-539.

McCarthy, T. (1978). The critical theory of Jurgen Habermas.

Meijers, J. (2009). Handreiking omgevingsmanagement: Op weg naar een gestructureerde manier van werken voor omgevingsmanagers via de Tien Treden en ondersteunende tools. University of Twente: Enschede.

Métral, C., Falquet, G., & Vonlanthen, M. (2007). An ontology-based model for urban planning communication. In *Ontologies for urban development* (pp. 61-72). Springer, Berlin, Heidelberg.

Ministerie van Infrastructuur en Milieu. (2017). De opgaven voor de Nationale Omgevingsvisie. Den Haag.

Monno, V., & Khakee, A. (2012). Tokenism or political activism? Some reflections on participatory planning. *International Planning Studies*, *17*(1), 85-101.

Needham, C. (2004). The citizen as consumer: e-government in the United Kingdom and the United States. *Routledge ECPR Studies in European Political Science*, *33*, 43-69.

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-based nursing*, *18*(2), 34-35.

Nuojua, J., Juustila, A., Räisänen, T., Kuutti, K., & Soudunsaari, L. (2008, October). Exploring web-based participation methods for urban planning. In *Proceedings of the Tenth Anniversary Conference on Participatory Design 2008* (pp. 274-277). Indiana University.

N3MP. (2019). Nieuwe Driemanspolder. Obtained from: https://www.n3mp.nl/

Opdenakker, R. (2006, September). Advantages and disadvantages of four interview techniques in qualitative research. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 7, No. 4).

Pelzer, P., Geertman, S., & van der Heijden, R. (2015). Knowledge in communicative planning practice: a different perspective for planning support systems. *Environment and Planning B: Planning and Design*, *42*(4), 638-651.

Piotrowski, S. J., & Van Ryzin, G. G. (2007). Citizen attitudes toward transparency in local government. *The American Review of Public Administration*, *37*(3), 306-323.

Purcell, M. (2009). Resisting neoliberalization: communicative planning or counter-hegemonic movements? *Planning theory*, *8*(2), 140-165.

Reber, A. S. (1989). Implicit learning and tacit knowledge. *Journal of experimental psychology: General*, *118*(3), 219.

Reddick, C. G. (Ed.). (2010). *Politics, Democracy and E-Government: Participation and Service Delivery: Participation and Service Delivery*. IGI Global.

Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy sciences*, *4*(2), 155-169.

Rijkswaterstaat (2009). Omgevingsmanager: de onmisbare schakel tussen buiten en binnen. Obtained from: https://www.publicspaceinfo.nl/media/uploads/files/RIJKSWATER_2009_0002.pdf

Rydin, Y. (2007). Re-examining the role of knowledge within planning theory. *Planning theory*, *6*(1), 52-68.

Schröder, C. (2014, November). A mobile app for citizen participation. In *Proceedings of the 2014 Conference on Electronic Governance and Open Society: Challenges in Eurasia.* (pp. 75-78). ACM.

Silva, C., Bertolini, L., te Brömmelstroet, M., Milakis, D., & Papa, E. (2017). Accessibility instruments in planning practice: Bridging the implementation gap. *Transport Policy*, *53*, 135-145.

Silver, H., Scott, A., & Kazepov, Y. (2010). Participation in urban contention and deliberation. *International Journal of Urban and Regional Research*, *34*(3), 453-477.

Swain, C., & Tait, M. (2007). The crisis of trust and planning. *Planning Theory & Practice*, *8*(2), 229-247.

Te Brömmelstroet, M. (2013). Performance of planning support systems: what is it, and how do we report on it?. *Computers, Environment and Urban Systems*, *41*, 299-308.

Tewdwr-Jones, M., & Allmendinger, P. (1998). Deconstructing communicative rationality: a critique of Habermasian collaborative planning. *Environment and planning A*, *30*(11), 1975-1989.

Van Audenhove, L. (2007). Expert interviews and interview techniques for policy analysis. *Vrije University, Brussel Retrieved May*, *5*, 2009.

Verhoeven, F., (2017). Communicatieplan Nieuwe Driemanspolder.

Vonk, G., Geertman, S., & Schot, P. (2005). Bottlenecks blocking widespread usage of planning support systems. *Environment and planning A*, *37*(5), 909-924.

Vonk, G., Geertman, S., & Schot, P. (2007). A SWOT analysis of planning support systems. *Environment and Planning A*, *39*(7), 1699-1714.

Watson, V. (2016). Shifting approaches to planning theory: global north and south. *Urban Planning*, *1*(4), 32-41.

Wegener, M. (2012). Government or governance? The challenge of planning for sustainability in the Ruhr. *Planning by law and property rights reconsidered*, 157-168.

Wettenbank Overheid. (2019). Wet ruimtelijke ordening. Obtained from: https://wetten.overheid.nl/BWBR0020449/2018-07-01#Hoofdstuk8

Yiftachel, O., & Huxley, M. (2000). Debating dominance and relevance: notes on the 'communicative turn' in planning theory. International Journal of Urban and Regional Research, 24(4), 907-913.

Yin, R. (2009). Case Study Research. Thousand Oaks: SAGE.

Chapter 9: Appendix

Appendix 1: Topic list expert planning phase

Topic list expert planning phase. (follow-up questions can be asked anywhere)
Asking permission for name + recordings **General introduction into the case and my thesis** Do you think that the construction is going well? (what are points of improvement?) What is your general communication strategy? (What tools and means are used?) How is the communication going so far?
Representation - Which stakeholders were involved? (what stakeholders have not been included and to what extent are all local stakeholders included?) - Were all stakeholders able to ask questions and deliver input? (in what ways?) - Could a digital tool (such as the app) be useful in the planning phase?
Purpose - During the planning phase, were people aware of the necessity of the construction? (What was the influence of your used-tools on this?)
Self-organizing - To what extent was the governmental party the leading stakeholder? (Did they really listen to other stakeholders in the planning phase?) - To what extent is the governmental party still involved in the communication in the execution phase? (do they determine what is written in the Omgevingsapp?) - Did other stakeholders (non-governmental) have an active say in the decision-making?
Engaging - How did you draw the attention of stakeholders in the planning phase? (what effect did your tools have?
Creativity - To what extent did you stimulate creative ideas? - Where non-governmental stakeholders also encouraged to be creative? (could an app improve the creativity?)
High-quality information - Were all stakeholders given the same amount of information? (Were there many complaints?) - In what way did you try to keep the information simple and understandable for the other stakeholders?
Full discussion - Were all stakeholders truly heard in the planning phase? (were there many complaints?) - Do you think that the Omgevingsapp could be used to generate more discussion in the planning phase? (and therefore decrease complaints?)
General questions - What would you liked to have done differently in the planning phase? - How would you have liked to integrate more stakeholders? - What features would you like to add to the Omgevingsapp? - Do you have anything to add?

Appendix 2: Topic list expert execution phase

This topic list was constructed using the old conceptual model Therefore, the questions that were asked focused more on comparing the two phases. The content of the interviews was luckily usable for the analysis using the final conceptual model.

Topic list involved stakeholder (follow-up questions can be asked anywhere)
Asking permission for name + recordings **General introduction into the case and my thesis** Do you think that the construction is going well? (what are points of improvement?) How is the communication going so far?
Representation - Which stakeholders are involved? (what stakeholders have not been included and to what extent are all local stakeholders included?) - Were all stakeholders able to ask questions and deliver input? (in what ways?) - Are more people involved in the process due to the Omgevingsapp? (in what way are they involved?)
Purpose - Do people see the necessity of the construction? - Did the app have a positive influence on the understanding of stakeholders of the construction?
Self-organizing - To what extent is the governmental party the leading stakeholder? (Do they really listen to other stakeholders?) - To what extent is the governmental party still involved in the communication in the execution phase? (do they determine what is written in the Omgevingsapp?) - Did other stakeholders (non-governmental) have an active say in the decision-making in the planning phase? - Did the app encourage own initiatives of stakeholders?
Engaging - How did you draw the attention of stakeholders and keep that attention? (what effect did your tools have? - Does the Omgevingsapp have a positive effect on the active participation of stakeholders?
Creativity - Are there some things that were not net decided upon in the planning phase and can these be creatively solved in the execution phase? - Where non-governmental stakeholders also encouraged to be creative? (could an app improve the creativity?)
High-quality information - Are all stakeholders given the same amount of information? (Are there many complaints?) - In what way are you trying to keep the information simple and understandable for the other stakeholders? - Does the app have a positive effect on the information provision?
Full discussion - Were all stakeholders truly heard in the planning phase? (were there many complaints?) - Do you think that the Omgevingsapp could be used to generate more discussion in the execution phase? (and therefore decrease complaints?)
General questions - How do you deal with stakeholders that have no smartphone? - What features would you like to add to the Omgevingsapp?

- Do you have anything to add?

Appendix 3: Topic list involved stakeholder

Topic list expert execution phase (follow-up questions can be asked anywhere)
Asking permission for name + recordings **General introduction into the case and my thesis** Do you think that the construction is going well? (what are points of improvement?) What do you think of the general communication strategy? (What tools and means are used?) How is the communication going so far?
Representation - Which stakeholders are involved? (what stakeholders have not been included and to what extent are all local stakeholders included?) - Were all stakeholders able to ask questions and deliver input? (in what ways?) - Are more people involved in the process due to the Omgevingsapp? (in what way are they involved?)
Purpose - Do people see the necessity of the construction? - Did the app have a positive influence on the understanding of stakeholders of the construction?
Self-organizing - To what extent is the governmental party the leading stakeholder? (Do they really listen to other stakeholders?) - Did other stakeholders (non-governmental) have an active say in the decision-making in the planning phase? - Did the app encourage own initiatives of stakeholders?
Engaging - Is your attention being kept by the stakeholder manager? (what effect did the app have? - Does the Omgevingsapp have a positive effect on the active participation of stakeholders?
Creativity - Are there some things that were not net decided upon in the planning phase and can these be creatively solved in the execution phase? - Where non-governmental stakeholders also encouraged to be creative? (could an app improve the creativity?)
High-quality information - Do you feel like all stakeholders given the same amount of information? (Are there many complaints?) - Do you understand the information that is posted in the app? - Does the app have a positive effect on the information provision?
Full discussion - Were all stakeholders truly heard in the planning phase? (were there many complaints?) - Do you think that the Omgevingsapp could be used to generate more discussion in the execution phase? (and therefore decrease complaints?)
General questions - How do you feel about with stakeholders that have no smartphone? - What features would you like to add to the Omgevingsapp? - Do you have anything to add?