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The **adoption and implementation** of accessibility guidelines within Dutch municipalities

Master thesis:

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Abstract

Dutch municipalities often seem not to be able or motivated to comply with accessibility guidelines, while the law prescribes them to comply. This research investigated what ensures that municipalities will or will not comply with the guidelines. Key stakeholders within six municipalities were interviewed to test the influence of dimensions gathered by literature and expert interviews. Results show that most dimensions are connected with the factor perceived importance. The proposed adoption model is built around this factor and explains how factors in several categories contribute to the final implementation. The research concludes with recommendations for both key stakeholders within municipalities and advisory governmental organizations. This study placed existing adoption models in a new context and proposed a new adoption model that contributes to explaining adoption processes within e-government systems and organizations.

Executive summary

Background and theoretical framework

13% of the Dutch population copes with some kind of disability, which can make it more difficult to browse and use websites. The accessibility guidelines are developed to guarantee this website accessibility. Despite the large number of people with disabilities, Dutch municipalities seem not to be able or motivated to comply with accessibility guidelines, while the law prescribes them to comply. This research investigated what ensures that municipalities will or will not comply with the guidelines. The adoption and implementation of the accessibility guidelines was compared with existing adoption models and their factors. Besides the adoption process, other dimensions that were likely to influence the successful implementation of guidelines were distinguished and categorized into the website design process, organizational factors, personal factors and external factors. This led to a set of dimensions that were added to the research model and subsequently tested.

Method

The research model was extended with the results of interviews with experts in the field of (organizational) accessibility. The final research model was tested by performing interviews with key stakeholders within the municipal website design process. These stakeholders were involved with the management/strategy, content development or website development, and consisted of both internal and external stakeholders. The interviews were performed at six municipalities, of which three complied with the guidelines and three did not comply. Interviews were transcribed and episodes of texts were assigned to codes after which the codes were analysed and evaluated.

Results

The existing adoption models did not explain as much influence on the implementation of the guidelines as expected. Factors did not come forward as important influencers or did not influence the adoption as described in their definition. The factors compatibility, (perceived) complexity, sponsorship and technical possibilities did influence the process and were thus added to the final adoption model. For the other categories, the majority of the factors did have an influence on the adoption process and these factors were thus added to the new adoption model that is shown below.

Conclusion & discussion

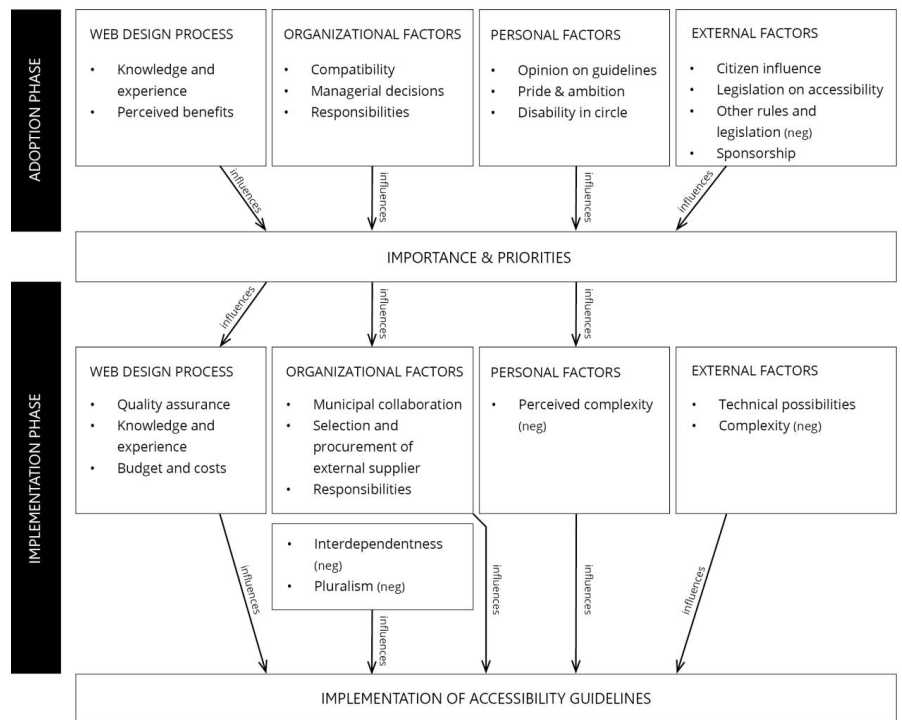
The main stakeholders were counsilors, management, web employees, communication employees and external developers. Most of them directly influence the website design process, except for the counsilor. The counsilor can influence the process by stating the importance of accessibility for the municipality. In the cases of non-complying municipalities, stakeholders often did not check up on suppliers, other wishes and requirements were often placed higher on the priorities list and the guidelines were not marked as a precondition. Stakeholders within non-

complying municipalities lacked perceived importance of the guidelines and this also explained why they also failed on the other factors.

The analysis of the results for each category and the results on the factor perceived importance led to the proposal of a new adoption model that is especially relevant for the adoption of open standards within governmental organizations. The model on the right shows all factors that scored high on their influence on the implementation of the guidelines.

Recommendations are given to support stakeholders within municipalities or external organizations whose task it is to support the implementation

of guidelines at municipalities. This study had contributed to the use of adoption models by proposing a new model that is relevant for open standards and application in governmental environments. Future research could focus on the further development and testing of this model.



Factors explaining the adoption and implementation of accessibility guidelines at Dutch municipalities

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Preface

With this thesis I will finish my master new media and communication at the University of Twente. In the past years, my interest in user experience design has grown. After following a master course on user centered design I knew I wanted to delve deeper into the subject of accessible design. The Accessibility Foundation gave me the opportunity to look into accessibility guidelines and their implementation process at municipalities. I was surprised to learn about the doubtful attitude of municipalities towards the web accessibility guidelines and was excited to take a closer look at this process. With this thesis, I finish a valuable, but also challenging, period.

I would like to thank my supervisors Thea and Lidwien for their guidance and for providing me with useful feedback, which helped me to improve the research and this report. Secondly, I would like to thank the Accessibility Foundation and its employees for giving me the opportunity to study the implementation process and for introducing me into the world of accessibility. In particular I want to thank Eric Velleman for the useful meetings and the important critical look. Furthermore I want to thank the members of my graduation group for helping me succeed this graduation period and all my friends and family for their positive energy and for motivating me to achieve this result.

Inge Nahuis

Introduction

Problem description

In an ideal world the government and municipalities provide citizens with information and services as well as possible and for every single citizen. Unfortunately, municipalities have a lot of tasks, cope with complex organizational systems and have to cut down on budget. With that they sometimes might lose sight of what is in the best interests of their citizens and especially minorities will suffer for it.

More than 13% of the Dutch population has a disability (CBS, 2010). This includes disabilities like visual impairments, color blindness, hearing impairments, physical disabilities, mental disabilities, dyslexia and low literacy. All people in this group might experience struggles while using the web as a source of information and a way to communicate. When visiting inaccessible websites they can have problems reading texts because of low contrasts, problems navigating through pages because of poor menu structures, or difficulties understanding texts because of long and inconsistent sentences. As such, there are many more similar problems people with disabilities can encounter.

In the last decade, more people became concerned with accessibility of the web for everyone, regardless of your physical or mental capabilities. This has led to guidelines and objectives. The World Wide Web Consortium (W3C) developed a set of guidelines that became the standard for assessing web accessibility. Following these guidelines, the Dutch Ministry of Internal Affairs developed the 'Webrichtlijnen', which should apply to all governmental organizations. These 'webrichtlijnen' contain guidelines that should make a website more observable, operable, understandable and robust for everyone. The guidelines state that, for example, a website should be able to be controlled by keyboard, have color combinations that can be distinguished by colorblind people, have the right navigation and chapter structure so screen readers will read aloud in the right order, will comply with the B1 reading level, and so on.

Perhaps the most striking right that is violated with poor accessibility is the right to equal treatment on grounds of disability or chronic illness. This right treats equal treatment in the fields of labor, education, living, public transportation and legal protection (Overheid.nl, 2013). This law is not yet applicable to public services or the internet, but in combination with article 1 from the constitution it should be clear that having inaccessible websites can be regarded as discrimination. This fundamental right states that everyone living in the Netherlands should be treated equally and that discrimination, on any ground, is not allowed (Nederlandse Grondwet, 2013).

The reason for the ministry of internal affairs to develop the guidelines was to create a different government that should be more accessible to everyone. Despite the existence of the guidelines and deadlines for implementation, the vast majority of web site owners and even municipalities

seem not to be able or motivated to ensure website accessibility. Of all Dutch municipalities, only 8% complies with the guidelines on a minimal level (Accessibility.nl, 2011). A very striking result, especially since municipalities offer services that should address all citizens. By having inaccessible websites, municipalities indirectly exclude parts of the population from information provision and services. It is therefore important that web accessibility guidelines are implemented on municipal websites within a short amount of time.

Unfortunately, the accessibility guidelines are not the only guidelines or policies that seem to be very socially relevant, but nonetheless get ignored. We can think of dozens of municipal policies that would have a very positive impact on citizens or the society, but that have troubles with implementation. For example, connection to a general prefix phone number (the Dutch 14+ net number), energy-saving policies, safe and efficient information exchange, and data and privacy security policies. Many societal or municipal problems keep existent due to the failing of following policies. Research into the implementation accessibility guidelines can therefore be very useful to get to know more about the general handling of policies and guidelines by municipalities.

Context of the study

This study will focus on the adoption and implementation process of accessibility guidelines within municipalities, and especially on the process between the decision to create a new municipal website and the completion of that website. Earlier research (Wilmink, 2006) showed that municipalities are willing to work on accessibility of their websites. However, in practice, they do not carry out this intention. This makes one wonder what happens between this beautiful intention and the reality in which the vast majority of the municipalities seem not to put effort into the implementation of the guidelines.

This study will identify key factors of the adoption and implementation process that advance or restrain the implementation of web accessibility guidelines. During this study, the key stakeholders, their involvement and their influence will be determined. This report will start by creating a theoretical framework based on literature that treats dimensions that influence the adoption of open standards and more specific, the accessibility guidelines.

Background

The arrival of the internet and governmental websites generally improved participation and opportunities for citizens to communicate with the government and arrange their municipal affairs online. Many of the Dutch municipal websites do not comply with national and international guidelines on accessibility (Accessibility.nl, 2011), which makes those websites difficult to use for people with disabilities.

Use of governmental websites

Despite the poor accessibility, governmental websites have high visitor numbers and it keeps becoming more popular to arrange municipal affairs online. In 2010, 86% of the Dutch population visited a governmental website (Wijngaert et al, 2010), a large increase compared to 2006. Governmental websites are a popular way to look up information or to communicate with the government. Wijngaert et al (2010) found that e-mail is the most popular way to communicate with the government online. The second and third most popular online municipal affairs are applying for a passport and reporting problems or other issues. Most of these services happen through municipal websites.

Development of accessibility guidelines

The accessibility guidelines of the W3C are developed by the Web Accessibility Initiative (WAI). Before a new standard is initiated, it passes several steps (W3C, 2013). First, the W3C provides a working draft that can be provided with reviews and input. After several working drafts a last call working draft is published when the working group believes it has addressed all reviews and comments. Third, a candidate recommendation is proposed to ensure the report can be implemented. This candidate recommendation is followed by a proposed recommendation. In this stage is each feature of the technical report implemented and is the report submitted to the W3C membership. Finally, the report becomes an official W3C recommendation and thus a web standard.

As described above, the development of new guidelines is done very carefully and during the process various experts are involved and asked for contributions or reviews. Despite this diligence, a document can become obsolete. In that case, a new generation of guidelines is needed. For this reason, the W3C started working on new accessibility guidelines, WCAG 2.0, which were released in 2008. Compared to WCAG 1.0, WCAG 2.0 applies better to new web techniques and technologies and contains more specific success criteria. (W3C, 2008).

The guidelines led to national, international and European agreements and conventions. One of the most important agreements is the UN Convention on the Rights of Persons with Disabilities. The purpose of the convention is to 'promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity' (UN, 2006). The convention promotes to have accessible (governmental) organizations, including accessibility of information and communication systems. Since 2007, the convention has been signed by 155 countries and is ratified by 129 countries (UN, 2013). As one of the few European countries, The Netherlands haven't ratified the convention yet.

Compliance of municipalities with accessibility guidelines

Compliance of Dutch municipal websites

In 2006, the Dutch government decided that all government websites should comply with the Dutch 'webrichtlijnen' by 2010. This regulation was established in the Dutch implementation agenda for e-government services (NUP). In response to this objective, the Accessibility Foundation was instructed to test the extent to which the objectives were achieved. The annual monitor that followed proved that the vast majority of the governmental websites didn't meet the requirements. In 2011, more than 98% of municipal websites did not comply with the guidelines on excellent level, 92% of the websites did not even comply with the minimal level of accessibility (Accessibilitymonitor.nl, 2011).

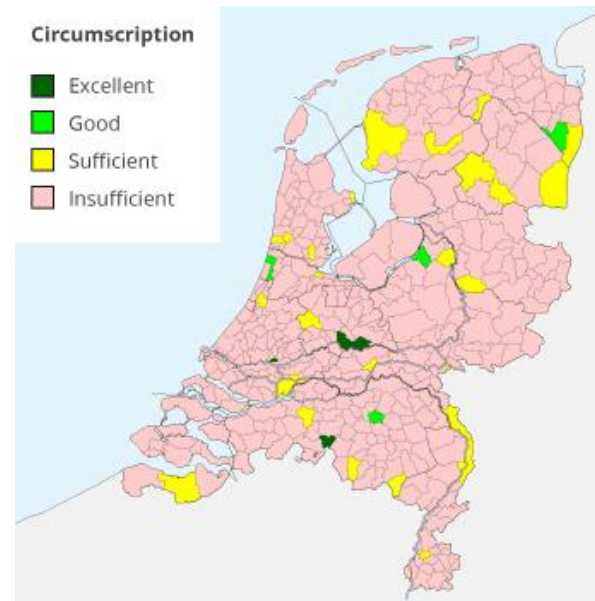


Figure 1. Overview of Dutch municipalities' compliance with the guidelines (Accessibilitymonitor.nl, 2011)

Compliance of European municipal websites

Several papers examined the status of accessibility of governmental websites in Europe (Pribeanu et al, 2012; Kuzma, 2010; Abdelgawad et al, 2010). Not all studies measured accessibility on the basis of the guidelines. Nevertheless, most studies give similar conclusions. Slight progress has been made for several years, but still the vast majority of the municipal websites is not accessible. Other research showed that governmental websites of countries that have stricter disability laws scored higher on accessibility compliance (Kuzma, Dorothy and Oestreicher, 2009). Stronger laws and rules on accessibility contributed to more accessible websites, but did not guarantee accessibility.

1. Literature study

The goal of this literature study is to gather knowledge on the implementation of accessibility guidelines and to develop a research model that allows us to determine factors that influence the successful implementation of accessibility guidelines. In order to create this research model, several subjects concerning either implementation or accessibility processes will be studied. Therefore, we distinguish the following subjects and categories: Adoption models, the design process of accessible websites, organizational structure and external influences.

1.1. Adoption models in the context of accessibility guidelines

1.1.1. Introduction to adoption

The launch of a new product or technology almost always involves the acceptance and the use of the product by its intended users. Rogers (1983), was one of the first researchers that looked into the adoption process of innovations. He created the model 'diffusion of innovations', which has become very popular among scholars. The model describes several stages of adoption and factors that influence the process. Later on, researchers (Cozijnsen & Vrakking, 1986; Bouwman et al., 2005; Andriessen, 1994; Hovav et al, 2004) picked up his model and applied it specifically to ICT. Most of the adoption theories are aimed at new ICT systems, instead of guidelines.

Adoption is a famous term in the field of innovation processes, yet not so familiar in the field of the implementation of standards and guidelines. Nevertheless, these processes of implementing innovations and implementing guidelines could be quite familiar. In the next section several adoption theories will be discussed and we will discuss how the adoption process can be adapted towards the process of implementing web accessibility guidelines.

1.1.2. Overview of adoption theories

To create a framework that represents the adoption of usability guidelines within the government, first an overview of available theories is needed. Table 1 shows available research on the adoption process and its stages of innovation and factors.

Author	Environment	Stages of innovation	Factors / characteristics
Rogers (1983)	Innovations in organizations	Knowledge, persuasion, decision, implementation, confirmation	Relative advantage, compatibility, complexity/simplicity, trialability, observability
Cozijnsen & Vrakking (1986)	Development and introduction of	Research, development, diffusion, adoption,	-

	new media	introduction, incorporation	
Andriessen (1994)	Telematic innovations	R&D, diffusion, adoption, implementation, incorporation	Incremental functionality, expected costs, visibility, radicalness, experimentability, transferability, standardization and compatibility
Bouwman, van den Hooff, Wijngaert, van Dijk (2005)	ICT in organizations	Adoption, implementation, use, effects	Organizational, technological, economic & user perspective
Hovav et al. (2004), Hovav et al. (2011)	Internet standards	-	Environmental conduciveness (network externalities, related technologies, installed base/drag, communication channels, sponsorship, resaources) and usefulness of the features (Relative advantage, compatibility, complexity, observable benefits)

Table 1. Research on phases of adoption of innovations

1.1.3. Phases of adoption of accessibility guidelines

This study deals with the adoption process of accessibility guidelines within an organization. Table 1 shows that researchers disagree on the start and ending of adoption processes. Some authors include the research phase, while others start the process at the point where the decision to adopt is already taken. It depends on the case what phases are most relevant. In general, the different phases of researchers are derived from each other and are similar to each other. However, some interesting insights are given by Hovav et al. (2004), who proposes a model for the adoption of the Ipv6 open standard.

Despite the differences between the models, most steps in these studies correspond to the steps that need to be taken in the adoption process of accessibility guidelines. On the basis of previous research, relevant steps for the adoption of accessibility guidelines were selected:

1. Research

Research and development of the WCAG guidelines and the development of national and international legislation.

2. Adoption

In the adoption phase the decision to adopt the guidelines is made. Bouwman, van den Hooff, Wijngaert and van Dijk (2005: 11) describe this phase as 'the phase of investigation, research, consideration and decision making in order to introduce a new innovation in the organization'. In the case of the accessibility guidelines this new innovation will be the guidelines.

3. Design/implementation

Bouwman, van den Hooff, Wijngaert and van Dijk (2005) describe the implementation phase as 'activities aimed at establishing the actual use of the application in the organization'. In the case of accessibility of municipality websites, the definition would be slightly different. We will particularly focus on the creation of the strategy of the website by the communication department and the design and realization of the actual website by a design team. In most cases, the communication department within the municipality will handle the global strategy and the approach of a design team. The design and realization is mostly outsourced towards an external supplier.

4. Use

Use of the website by citizens of the municipality (including users with disabilities).

This study will focus on the second and third phase, because these phases are relevant for the adoption of guidelines within municipalities. The research and use phase do not involve processes within the municipality, so they will not influence adoption process within municipalities. Municipal stakeholders thus only have an influence on the implementation of the guidelines during the phases adoption and design/implementation.

1.1.4. Factors influencing adoption of guidelines

Table 1 shows factors influencing the adoption process. In this section we will shortly elaborate on relevant factors for the adoption of ICT.

Units of adoption by Rogers (1983)

Rogers (1983) gives an interesting division between 'units of adoption', namely the organization and the individual. In the case of adoption of accessibility guidelines, the organization is the municipality that makes the decision to implement the guidelines. Individuals are stakeholders within the municipality that are involved with the implementation. Rogers (1983) created a model that shows how innovations are adopted by organizations. The factors described by Rogers (1983) are already well-known in the context of innovations. The factors relative advantage, compatibility, complexity/simplicity, trialability and observability seem to be also very suitable for the adoption of guidelines. The table beneath shows how these factors are relevant for the adoption of accessibility guidelines.

Dimension	Description in the context of accessibility guidelines
Relative advantage	How the implementation of a standard can improve the website or organization compared to not implementing the standard.
Compatibility	The degree to which the standard can be implemented easily within the existing infrastructure of the municipality or the current website.
Complexity or simplicity	If the standard is perceived easy or difficult to understand and implement.
Trialability	Possibilities to experiment and test with the standard before

adopting the standard.

Observability

The extent to which the standard is visible to others. For example by the Drempelvrij label, or by a visibly easier and more accessible website.

Environmental conduciveness

Hovav et al. (2004, 2011) created a model to describe the adoption of IPv6 by organizations in South Korea in which he described factors that influenced the adoption of IPv6. It was well known that availability of IPv4 addresses was rapidly decreasing and adoption of IPv6 was important. Nevertheless, researchers noticed problems with the adoption of this new internet standard (Hovav et al, 2004; Leavitt, 2011). In the case of the new internet protocol, the government strategy that created user demand and pressured companies to adopt was the most influential and sponsorships and financial factors seemed to have no influence. Hovav et al. (2004) mentioned environmental conduciveness and usefulness of the features as most important factors to influence the mode of adoption. Usefulness of the features contains the same characteristics as Rogers' (1983) factors. Environmental conduciveness includes factors that are of specific interest for the adoption of guidelines. Therefore we will explain the factors covered by environmental conduciveness below. During this research, we will take a closer look into these factors and to what extent they played a role in the adoption process of guidelines at municipalities.

Dimension	Description in the context of accessibility guidelines
Network externalities	This factor describes that organizations are more eager to adopt a standard when other (similar) organizations already adopted the standard.
Current infrastructure and sunk costs of already existing infrastructure	When adopting accessibility guidelines it is difficult to adapt existing websites and it often requires building a new website. When municipalities already spent much money on their current website, reluctance towards throwing that website away may occur. Besides, municipalities are often working with an existing content management system that is difficult or expensive to adjust.
Communication channels and information	This factor treats the availability of information that is needed to adopt a new standard. Municipalities and their external contractors need information on how to implement guidelines into website design.
Sponsorship	When external agents with a degree of power are involved, it is easier to adopt internet standards. In this case is the adoption of accessibility guidelines sponsored by organizations like the W3C and the accessibility foundation and are guidelines mandated by several European or governmental organizations by obligations and deadlines.
Resources	Resources on accessibility are widely available at websites of

accessibility related organizations. The W3C gives clear lists of guidelines and elements that need to be fulfilled to comply (W3C, 2008).

1.2. Design process of accessible websites

Accessibility guidelines treat how websites should be designed and developed. They contain guidelines on the design, content and technique of the website. This makes it interesting to take a closer look into the design process of websites and therewith dimensions that influence the eventual implementation of accessibility guidelines.

1.2.1. Accessible design process

Zimmermann & Vanderheiden (2007) argue that accessible design should be incorporated within all phases of the development of the website and propose a design methodology including use cases and scenarios. Despite their statement on including accessibility throughout the whole design cycle, their proposed model mainly focuses on the implementation.

Abdelgawad, Snaprud & Krogstie (2010) propose a causal loop diagram that is applicable to the design of accessible websites (figure 2). The diagram includes many factors that influence web accessibility integrated within the design process. The diagram is not empirically validated and mainly based on assumption of the authors. Nevertheless, it is one of the few sources available that try to give a more elaborated view on the accessibility design cycle. Also, it gives an interesting view on how accessibility can be integrated throughout the whole design process.

This diagram shows us a different view on the design process and new factors influencing the accessibility. Some of the factors are interesting to measure within our study and will thus be taken to the research design. This study can therefore contribute to a more scientific approach of the accessibility design cycle. The authors indicated workforce training, workforce experience, quality assurance and budget devoted to accessibility as important factors influencing the successful implementation of accessibility guidelines. Therefore, these factors will be studied further in the next part.

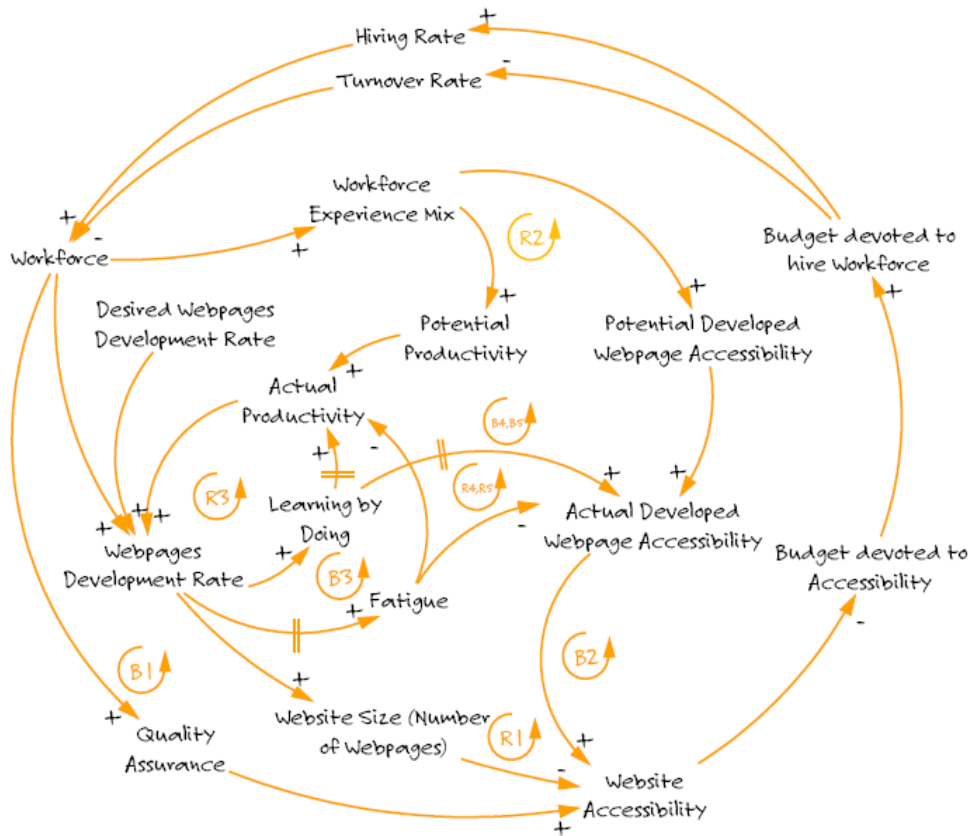


Figure 2: Accessible design process (Abdelgawad, Snarud & Krogstie, 2010)

1.2.3. Quality assurance

Abdelgawad, Snarud and Krogstie (2010) suggest quality assurance directly influences website accessibility and they recommend spending more development time on quality assurance. They speak of quality assurance as an internal quality check and re-editing accessible pages. In his book, Kline (2011) also presses the importance of validating, throughout the whole process. He describes testing should happen thoroughly, early and often for all developed applications, documents and information (Kline, 2011, p. 152). Zimmermann and Vanderheiden (2007) describe testing as an important part of an accessible website design process. They distinguish internal testing on accessibility checkpoints, user testing and expert reviews. Thus, quality assurance can be performed by employees, but also from the outside, for example by an independent inspection body. We can therefore distinguish two types of quality assurance; internal and external quality assurance that will be added to the research model.

Dimension	Description in the context of accessibility guidelines
Quality assurance intern	Checking of the degree and success of implementation of the accessibility guidelines by someone working in the organization.
Quality assurance extern	Checking of the degree and success of implementation of the accessibility guidelines by an external inspection body.

1.2.4. Knowledge barriers

Nambisan and Wang (2000) studied some factors influencing the adoption time and focused especially on knowledge barriers. The authors distinguished three types of knowledge barriers: technology related, project management related and application related barriers. Factors that could also be applied to accessibility guidelines:

- Technology-related knowledge barriers
Lack of knowledge on how to create an accessible website and to apply the guidelines in practice. Web designers at an agency, for example, may not have enough experience to implement the guidelines on a website.
- Project-related knowledge barriers
Problems related to knowledge regarding the (human) resources, website development process, duration, project leadership, and so on. This barrier lies largely with the management.
- Application-related knowledge barriers
This barrier concerns the knowledge about business objectives related to the web-application or, in this case, guidelines. For example, the advantages of implementing the guidelines, assumptions required to implement the guidelines, the possibilities of implementing it within the existing digital infrastructure or the consequences of implementation on the organizational structure and systems.

The study found a significant contribution of knowledge barriers to the adoption time of new technologies. This study mainly focused on the adoption of web technology, including establishing a corporate website and intranet. When this study was conducted, these were still very new technologies. By now, for many organizations it is obvious to have a corporate website and an online communication tool. Still, the adoption of accessibility guidelines passes a similar process and knowledge barriers seem to be an important factor, especially during the implementation of guidelines by web designers and developers. In addition, also other authors mention the importance of knowledge of employees within the context of accessible webdesign (Abdelgawad, Snarud and Krogstie, 2010; Kline, 2011; Katsanos et al, 2012).

Because of the seemingly important influence of knowledge of employees, this subject will be added to the research design. The three mentioned knowledge barriers cover all stages of the adoption process and thus we will ask all respondents for this study about their knowledge and experience regarding accessibility guidelines.

Dimension	Description in the context of accessibility guidelines
Knowledge	The familiarity of a stakeholder within the governmental website design process with the content of the guidelines.

1.2.5. Budget, costs and benefits

Another important factor that was mentioned by Abdelgawad, Snarud and Krogstie (2010) is budget. Before determining the budget of a website or a web accessibility project, it organizations will first determine the costs of these projects. Some researchers argue that costs of conforming a website to accessibility guidelines are much higher when adjusting a website afterwards, compared to when it's built accessible from the beginning (Souza, 2001; Velleman and van der Geest, 2011). Souza (2001) even argues that costs of implementing accessibility afterwards are ten times higher than implementing it from the beginning of the website design process. This study will thus take into account if the web accessibility goal was assigned before creating a new website, or when there was already a website.

Velleman and van der Geest (2011) studied the costs and benefits of the implementation of web accessibility guidelines within organizations. They appoint important advantages of applying the guidelines, such as reaching more people, improved findability by search engines, better performance in all browsers, operating systems and devices, a faster website, a pleasant user experience for your users and making contributions to corporate social responsibility. Still, it is hard to give exact numbers on the exact costs and benefits for organizations. Velleman and van der Geest (2011) argue that one of the main reasons for this is that companies often do not gather data from their website. Besides, it is often difficult to measure what the exact income from a website is.

In the above sections several topics concerning the website design process were described. The following dimensions came forward as possible important factors for the successful implementation of accessibility guidelines.

Dimension	Description in the context of accessibility guidelines
Internal benefits	Advantages for the organization that the implementation of the accessibility guidelines offers above not implementing them.
External benefits	Advantages for the citizen or the society that the implementation of the accessibility guidelines offers above not implementing them.
Budget and costs	The amount of money that the municipality devotes to spend on the website and accessibility of the website and the actual costs associated with achieving an accessible website.

1.3. Organizational structure and accessibility

Several authors (Zimmermann & Vanderheiden, 2007; Kline, 2011) agree Accessibility is an issue that should be applied throughout the organization. Before doing so, more information is needed on organizational aspects that influence the implementation of the accessibility guidelines. Therefore, this section will treat several organizational dimensions that, according to

literature, seem to influence the successful adoption and implementation of accessibility guidelines.

1.3.1. Interoperability of open standards

What is interoperability?

Gasser and Palfrey (2007, p. 4) describe interoperability as “the ability to transfer and render useful data and other information across systems (which may include organizations), applications, or components.” With this definition, the guidelines can be seen as the useful data or information and the adoption process as the way this data transfers and renders across the organization. Research into the interoperability of open standards is in line with what other researchers conclude on the adoption of accessibility guidelines. Thaens (2009, p. 5), for example, designates five critical success factors, including the following: “Stakeholders have to see the standards particularly as part of the infrastructure of the e-government with a clear strategic value”. This is in line with the introduction of this chapter in which accessibility is described as an organizational issue.

What are open standards?

The ‘webrichtlijnen versie 2’ is an open standard that is used by the national government and it provides guidelines for the development of accessible websites. The guidelines consist of a document with 5 principles, each principle contains 1 to 14 guidelines. Therefore, the definition of open standards as a normative document can be used to define open standards such as the accessibility guidelines: “een document opgesteld met consensus en goedgekeurd door een erkende normalisatie-instelling, dat voor gemeenschappelijk en herhaald gebruik voorziet in regels, richtlijnen of kenmerken voor activiteiten of de resultaten daarvan, met het doel een optimale mate van orde te bereiken in een bepaalde context” (Paapst, 2012, p. 14).

In Denmark, a list of seven working areas in which open standards are applied is used (Minneché & Korsten):

1. Standards for data-exchange between organizations
2. Standards for editing and managing electronic files and documents
3. Standards for e-procurement
4. Standards for digital signatures
5. Standards for governmental websites and accessibility
6. Standards for IT security
7. Standards for exchange of documents

The accessibility guidelines are covered by area 5 which describes standards for governmental websites and accessibility. This list of standards is chosen based on the standards’ relevancy for Danish government; therefore it is hard to say they will be the same for the Dutch government. However, the context is similar and the list makes a clear distinction between types of standards. This list also makes one assume that research into the adoption of accessibility guidelines may be useful also for other areas of open standards.

Interoperability of open standards

Punter et al. (2010) describe an organizational view on the adoption of open standards in general. They do not focus on the collection of open standards an organization has to deal with. Their study proposes a 'plan, do, check, act' strategy for the implementation of open standards. The report tries to give organizations starting points on how to deal with open standards and concludes with four advices, of which three seem very relevant to the adoption for accessibility guidelines:

- Assign responsibilities for the implementation of open standards on each organizational level
- Check the progress of the adoption of open standards and adjust steps on this evaluation
- Use successes to implement the standards in other parts of the organization and in other projects and processes

Also Gasser and Palfrey (2007) describe a general approach of implementing open standards, but they also state there is no 'one size fits all' way to achieve interoperability and that a 'blended' approach may give the best results. However, they do think interoperability should be a key point to focus on. There are a range of strategies to establish and sustain interoperability, which makes it hard to distinct dimensions directly from these approaches. This chapter will therefore look further into organizational aspects that may influence interoperability and possibly also the adoption and implementation of accessibility guidelines. This section already collected the dimensions responsibilities and quality assurance, which could influence the adoption and implementation of the guidelines.

Dimension	Description in the context of accessibility guidelines
Responsibilities	Assignment of responsibilities to involved stakeholders.
Quality assurance	(already assigned to the web design process in section 1.2.3.)

Cross-organizational collaboration

Interoperability is described as the transferring of data across systems. In this chapter, this transference is mainly treated as an inter-organizational flow. Yet, interoperability can also take place cross-organizational. Pardo, Nam and Burke (2012) mention this cross organizational collaboration as an aid to achieve information sharing and interoperability. Bonacin et al. (2010, p27.) indicate that promoting interaction and interoperability between organizations can help the development of accessible services for citizens. The assumptions of these authors suggest that collaboration between municipalities can advance the adoption and implementation of accessibility guidelines and thus this dimension will be added to the research model.

Dimension	Description in the context of accessibility guidelines
Municipal collaboration	Interactions between municipalities that positively influence the adoption and implementation of accessibility guidelines.

1.3.2. Accessibility within organizations

Kline (2011) proposes a strategic framework for enabling an organization to become IT accessible. The work plan includes the goals, key tasks, priorities, statuses, owners and teams. A plan like this makes it possible to divide tasks over several stakeholders and makes people or groups responsible for certain tasks. Vlerken-Thonen (2012) studied the assessment model of the web accessibility guidelines. This report treated the current assessment model and its constraints. An interesting view is placed on the implementation and evaluation of the guidelines. Vlerken-Thonen proposes to change the assessment model of website accessibility into a model where (governmental) organizations are allowed to explain the situation when they fail to meet one or more requirements. Also, she recommends further development of a managing and development model for open standards that advises organizations on how to implement guidelines throughout the process. A good example of a model like this in which a more process oriented way of implementing guidelines is incorporated is the British Standards.

The case of the British Standards

The British standards 8878:2010 guidelines provide a framework on implementing WCAG guidelines within organization (HassellInclusion, 2013). While other guidelines mainly focus on checklists and compliance, do the British Standards also focus on the implementation of guidelines within organizations and through different job positions. The standards include the whole organization within the design process and recommend embedding accessibility throughout the organization. This implies documenting accessibility by having an organizational web accessibility policy that includes all roles and responsibilities concerning accessibility of persons within an organization. The standards describe information that is important for specific groups of stakeholders, including senior managers, procurement managers, quality assurance managers and people involved or responsible for web development, web content and web training.

The British standards give a detailed plan on how to embed web accessibility within an organization. One of the aspects is a detailed, step-by-step plan to implement accessibility. The steps include, for example, the defining of a purpose, target audience, needs, goals and tasks and strategies. The standards also give an overview of roles within the development process and describe how to embed motivation, responsibility, strategic policies and standard processes within the development of the website and within the team.

1.3.3. Organizations as networks

In the decision making process of both commercial and governmental organizations, many people are involved in the decision-making process. In governmental organizations this process is often even more complex, because of the many bodies involved that all try to realize their own interests. Heuvelhoff and de Bruijn (2007) give a well-described overview of the complexity of this process.

Hierarchies VS networks

The authors of the book make a distinction between hierarchic and network organizations. The difference in characteristics that can be traced from this distinction is one of the main factors for slow decision making and problems with implementing interventions within network organizations. Municipalities can clearly be distinguished as a network, because of their social interests and many departments and different interests. Besides the municipality itself, also other organizations are involved with the implementation of guidelines. For example, policy makers, politicians and design agencies. This makes the adoption of guidelines a complicated process that intertwines a broad network of organizations, persons and various interests.

Structure of networks; risks and chances for interventions

Because of the structure of municipality networks, many possible problems exist when making decisions. De Bruijn and Heuvelhoff (2007) describe several possible barriers in the decision-making process. These problems are possibly relevant to the adoption process of guidelines, because they delay the implementation of guidelines by the multiple stakeholders. Below we describe the problems that relate towards the implementation of guidelines.

- Irregular and no clear sequence of activities
Problems in networks are often treated by multiple stakeholders and often don't lead to a solution.
- Stakeholders get in and out of the process
In every decision-making round other stakeholders can participate. Stakeholders get in and out of the process, which can make the decision-making process chaotic and unpredictable.
- Dynamic content of the problem
The content of a problem can shift. During the implementation of the guidelines problems can be encountered that can lead to an adjustment of the previously taken decision.
- Panning and unpredictability
In networks, outcomes are often unpredictable, because the process always happens in a different way and is very dependent of details or stakeholders.

These problems with making decisions lead to several risks and chances. Especially the risks could explain why governments have problems implementing the accessibility guidelines. De Bruijn and Heuvelhoff (2007) describe three risks of networks on interventions that are well applicable to the implementation of accessibility guidelines.

Firstly, networks are pluralistic, which means they contain several actors that all have their own characteristics and own interests, which makes it difficult to adjust interventions to everyone's knowledge and preferences. Implementing guidelines means that agreements can be conceived different by several stakeholders and therefore confusion about the common purpose can exist. The second risk of networks is their closedness. The authors of the book argue that in networks, (groups of) stakeholders are often closed and not open for interventions from the outside. In the

case of the guidelines, this may cause that the advice on implementing guidelines is not perceived or will be ignored when stakeholders do not see them as important or of interest. Finally, networks are interdependent. Stakeholders in a network are dependant of each other, which can lead to a slower and more complex decision-making. Within the accessibility guidelines implementation, interdependence can lead to a slower decision-making process and actors being dependent on other actors for, for example, providing documents and approvals.

These three risks of networks all seem to have their accordance with the adoption and implementation of accessibility guidelines at municipalities. Therefore, they will be added to the research model and tested in practice:

Dimension	Description in the context of accessibility guidelines
Pluralism	Difference in interests between several stakeholders within the website design process.
Closedness	Being closed for external organizations or interventions, such as the national government or inspection authorities.
Interdependentness	Being dependent on other stakeholders for, for example, delivery of content, making decisions or getting information.

1.3.4. Procurement of website

Procurment towards external supplier

Prior to development of the website, municipalities have to acquire other companies to develop the website. Kline (2011, p.133) indicates that choosing an external party to develop a website can have significant impact on the IT accessibility and that accessibility should be implemented within the procurement process. Kline mentions steps to be performed during this process, including: accessibility guidelines need to be integrated into the procurement, supplier need to be tested on accessibility experience before contracting them, perform accessibility tests throughout the process.

The person within the municipality that is responsible for procurement cannot always ensure if an external agent is acting in their best interests. The problem persists that the agent knows more about the subject than the person that asks for advice. This is also called the 'principal-agent relationship'. Jensen (2003, p. 86) describes the principal-agent theory as "a contract under which one or more persons – the principal(s) – engage another person – the agent – to perform some service on their behalf that involves delegating some decision-making authority to the agent. If both parties to the relationship are utility maximizers, there is a good reason to believe that the agent will not always act in the best interests of the principal." This problem could be very relevant for the acquisition of external agencies. Agencies could convince the management of their skills on accessibility, just to bring in the order. The client (in this case the municipality) does not always have the knowledge to assess if suppliers indeed are able to develop websites

that comply with all accessibility guidelines and to check if the developed website meets the guidelines.

Because of these important risks in the procurement phase, related factors will be added to the research model:

Dimension	Description in the context of accessibility guidelines
Quality of procurement	The extent to which accessibility guidelines are mentioned as an obligation in the procurement towards the supplier.
Checking skills of outsourced party	Testing the actual skills and expertise on online accessibility of the supplier(s) before contracting them.

1.3.5. E-government stakeholders

Categorizations of stakeholders

During the adoption of guidelines within municipalities various persons and organizations are involved and will influence the process. Therefore, these stakeholders will contribute or affect the degree to which the guidelines are implemented. In general, stakeholders are seen as ‘any group or individual who can affect or is affected by the achievement of the organization’s objective’ (Freeman, 2010). In this case, the organization’s objective is to create an accessible website. This means that all persons that are involved in at least one of the phases of adoption can be seen as a stakeholder.

Rowley (2011) describes several groups and categorizations of stakeholders that are concerned with the design of a new governmental website or IT system. He studied several categorizations of e-government stakeholders that were mentioned in literature. From the stakeholder analysis of Rowley (2011) we derived our own group of stakeholders concerned with the realization of a new municipality website during the process of the first decision-making to the final use of the website. We categorized the stakeholders on the basis of the categorizations of Yildiz (2007) by dividing on the categories Government-to-Government, Government-to-Business, Government-to-Business and the extra category Government-to-Employees. This last category is added because we expect that during the process of the adoption, many employees of the municipality are involved.

CATEGORIZATIONS E-GOVERNMENT (Yildiz, 2007)	CHARACTERISTICS (Yildiz, 2007)	STAKEHOLDERS (Rowley, 2011; Yildiz, 2007,)
Government-to-Government	Communication, coordination, standardization, of information and services	<ul style="list-style-type: none"> • National and international policy makers • Politicians • Researchers • Municipal council

Government-to-Employees	Communication, coordination, standardization, of information and services	<ul style="list-style-type: none"> • Administration • E-government project managers • Finance employees • (online) Strategy and marketing employees • Testers • Writers
Government-to-Business	Communication, collaboration, commerce	<ul style="list-style-type: none"> • Account managers • Designers • Developers • Suppliers and partners
Government-to-Citizen	Communication, transparency, accountability, effectiveness, efficiency, standardization of information and services, productivity	<ul style="list-style-type: none"> • Citizens of the municipality

Table 2. E-government stakeholders

Rowley (2011) studied several studies on stakeholder categorizations and several factors on which they are differentiated. Previous researchers differentiated stakeholders on the basis of, for example, salience, tasks, internal/external or management level. We would like to analyze following stakeholder characteristics concerning the accessibility guidelines adoption and implementation:

- Involvement
- Influence
- Communication with other stakeholders

Most of studies on e-government stakeholders are studied in a specific context or concern only governments of specific countries. Before the key stakeholders within the website design process of municipalities will be determined, we will include expert opinions in the final decision.

Political decision-making

Miller, Hickson and Wilson (2008) investigated involvement and influence from stakeholders in top-level decisions and implementation of those decisions. Some of the factors they investigated include involvement in strategic decisions, degree and continuity of involvement during the implementation and influence. From their research the Political Decision Making model originated. The model shows how roles of stakeholders change when proceeding to a new stage in the adoption and distinguishes heavy weights (very influential) and light weights (less influential). The CEO, Marketing and purchasing departments in organizations have a big influence during the decision-making as well as the implementation, while the influence of finance and suppliers drops after the decision-making phase.

This model tells us that different stakeholders are involved in different phases of adoption and that the degree of their influence also differs over the stages. With focus on our research, we suspect that during the adoption of guidelines the degree of influence and involvement of

specific stakeholders differs per stage and that this could influence the success of the implementation. Therefore, this study will investigate the degree of involvement of stakeholders and the influence on the adoption of guidelines.

Dimension	Description in the context of accessibility guidelines
Stakeholder influence and involvement	The commitment a stakeholder has with the project and the degree to which a stakeholder feels he or she has an influence on the final implementation of the guidelines.
Stakeholder responsibilities	The assignment of duties within the organization concerning (steps in) the implementation of accessibility guidelines.
Managerial commitment	Persistence or willingness of the management to implement the guidelines and to take steps to achieve an accessible website.

1.4. External influences

Rules and legislation

Since 1999 there have been directives and legislations regarding web accessibility. Despite this, the vast majority of websites does not meet (the basic level of) the accessibility guidelines. Table 3 describes the actual legislation on web accessibility on several levels of governance. Because of the focus of this study, only laws and regulations that apply to the Netherlands are treated.

LEGISLATION	APPLYING TO	DEADLINE	DESCRIPTION
i-NUP	Dutch municipalities	2012	This document from the Dutch government states that all municipality websites should comply to the minimal requirements on web accessibility
New European law	Public websites within Europe	App. 2020	This new law should require all EU states to comply with their national accessibility guidelines and the UN convention by 2020
UN convention on the rights of persons with disabilities	155 countries that signed the convention	Ratified in 2010 by EU	This convention tries to protect the rights of persons with disabilities. One of that rights is the right to information, also in the online environment.

Table 3. Legislation and regulation on web accessibility applicable to Dutch municipality websites

The existence of these regulations seem not to influence the accessibility of governmental websites to a great extent. Many countries have difficulties complying with the guidelines. Problems with the compliance and evaluation of these laws could be one of the explanations. At this moment there is no penalty on failing to meet the accessibility guidelines. At this moment, the EU is working on a new law concerning accessibility of websites from the public sector. This law should support member states to achieve national commitments on web accessibility as well

as their commitment to the United Nation Convention on the Rights of persons with Disabilities regarding websites of public sector bodies (European Commission, 2012).

Despite the questionable influence of the existing rules and legislation, they exist for a reason and therewith it stays an interesting dimension for the implementation of the guidelines. Therefore, the following dimension will be tested in the final research model:

Dimension	Description in the context of accessibility guidelines
Rules and legislation	Available rules and legislation on national, European or international level which oblige to comply with the accessibility guidelines.

2. Research questions

2.1. Main question

The literature review studied the adoption of ICT and internet standards, the web design process, organizational factors and external factor influencing the adoption and implementation of accessibility guidelines. When taken together, there are still some gaps to fill. The retrieved factors may not be complete and not all dimensions are studied in the context of the adoption and implementation of accessibility guidelines. Municipalities in both national and internationally fail to meet the accessibility guidelines. In previous research (Wilmink, 2006) has shown that municipalities seem to have the intention to comply with guidelines. However, they still fail to meet the guidelines. Subsequent to previous research we therefore like to answer the following question:

Which factors influence the adoption and implementation of the web accessibility guidelines on Dutch municipal websites?

2.2. Sub questions

To investigate the main question, this question was divided in several sub questions. These questions are based on the main categorizations and relevant literature.

Adoption process

The literature review mentioned factors that could influence the adoption of ICT and guidelines. Especially the studies of Rogers (1985) and Hovav et al. (2004) gave an interesting view on factors that are of specific importance to the adoption of guidelines in comparison with the adoption of innovations in general. This study will investigate whether these factors are applicable in practice and in the specific context of web accessibility guidelines. This leads to the following research questions:

Which are the main factors of existing adoption models influencing the adoption and implementation of accessibility guidelines?

Web design process

The study of Abdelgawad, Snaprud & Krogstie (2010) served as starting point for a further investigation into the accessible website design process. The authors proposed a causal loop diagram of steps in the web design process and their influence on the successful implementation of accessibility guidelines. Despite the fact that this model was not scientifically founded, it did give us dimensions that are interesting for further analysis. The most important factors were

already supported by several other studies and therefore they will be added to the research model. Therefore, we can state the following sub question:

Which are the main factors of the web design process influencing the adoption and implementation of accessibility guidelines?

Organizational dimensions

Interoperability is a term that is often mentioned together with the implementation of open standards. It describes how data or guidelines get transferred through organizations, and in our case, municipalities. A further study into interoperability and into related factors and processes led to a set of dimensions that were interesting for the adoption of accessibility guidelines, and possibly also for the adoption of open standards in general. This makes this subject interesting to examine with a sub question:

Which are the main organizational aspects that influence the adoption and implementation of accessibility guidelines?

External influences

During the literature study a few categorizations were investigated and described. Besides these categories, there are also dimensions from outside the organization or process that may influence the adoption process, which certainly can not be ignored. We will therefore also investigate the following sub question:

Which are the main external factors influencing the adoption and implementation of accessibility guidelines?

3. Interviews with experts

3.1. Design

Before starting the main study, a number of interviews with experts were conducted. The goal of the expert interviews was to get to know more about the website design process within municipalities and to identify the dimensions that are most likely to influence the implementation process. The expert interviews were designed to complement the literature and to guarantee the completeness of the dimensions to be examined in the research design. These interviews prevent that gaps in the literature remain present by asking several experts with different expertises and backgrounds to their view on accessible website design and factors that they expect to be important.

After conducting the literature review a set of interview questions was composed. The interview questions emerged from the gaps in literature, supplemented with other subjects that could lead to more insight into factors determining successful adoption. Appendix A shows the final interview questions for experts in Dutch and English. Chapter 3.4 shows which dimensions were retrieved from the expert interviews and subsequently added to the research model in chapter 4.

3.2. Respondents and demographics

This exploratory research included three experts, who were all (accessibility) guidelines experts, with different backgrounds and working in different situations. They have all been involved deeply in various implementation processes of guidelines in organizations. The respondents were contacted by telephone or e-mail and were interviewed on location or by e-mail (when living abroad). In total, three respondents were questioned on the implementation of accessibility guidelines. Table 4 shows an overview of respondents.

#	FUNCTION	RELATION WITH WEB ACCESSIBILITY
1	Technical director Accessibility Foundation	Project management at the Accessibility Foundation, concerned with several (national and international) accessibility projects
2	Accessibility and compliance expert at Logius	Accessibility advisor for governmental websites. Investigating comply or explain principle
3	Organizational accessibility expert	Advises companies on implementing accessibility, writer of the book 'Strategic IT accessibility' (Kline, 2011)

Table 4: Respondents on the expert interviews

3.3. Results

Motivations for organizations to implement accessibility guidelines

Participants mentioned that reasons for organizations to create an accessible website were mainly external and driven by fear for the risk to get a penalty or punishment (#1, 2 3). However, sometimes organizations might comply because they believe it is 'the good thing to do' or because they have someone in their circle of relatives or friends that has a disability.

"Municipalities should provide information and services to citizens. Unfortunately, in many organizations practical considerations dominate."

Respondent #2

Respondent #2 mentioned that in the past, many people only thought about blind people when hearing from accessibility. Slowly, people started to believe that accessibility has more advantages. Participant #2 mentions, for example, an increase in frequency in which organizations pop up in search results when having an accessible website. Also, organizations start to realize accessibility is not only for blind people, but for all people who have some kind of disability and also for those who don't have a disability at all.

Therefore, motivations for organizations to comply with the guidelines can be wide and there could be a lot of benefits for organizations. However, at this moment, when organizations comply it's mainly because of extrinsic motivations. Participant #1 also mentioned the presence of people with a disability as an important influencer of the motivation to comply with the guidelines.

Stakeholders within municipalities

To get more insight into the regular processes within municipalities, all experts were asked about the main stakeholders within the website design process. Participant #3 tells many different areas are involved with the development and deployment. He mentions the communication team, department content providers, management at various levels, test teams, infrastructure and development teams. When the website is contract you also have to deal with procurement and external teams. Also other participants mentioned the wide variety of persons and specialisms to be engaged within the process. Participant #1 indicated that most of the time it is not clear who is responsible for the accessibility. All in all, there are a lot of stakeholders, which means the final research should approach stakeholders on different levels of the organizations. Also the factor 'responsibilities' seems to come forward as an important factor and will thus be used in the final research model.

Organizational structure

One recurring factor from participants was the designation of responsibilities within the website design process. The lack or unclear designation of responsibilities seems to result in problems with the implementation of accessibility guidelines at all levels. Besides, often it is not clear who is the main responsible for the final website. In many cases this function is reserved to a councillor, although he is often not aware of this responsibility.

Participant #3 mentioned that municipalities should be organized in a way it is easy to implement accessibility and that they should focus on accessibility during all of the phases. At this moment accessibility seems to be only discussed during the procurement phase and at the evaluation. According to several participants accessibility should return and be monitored in every phase and with all stakeholders.

Procurement

All of the participants mentioned the procurement of a website as an important phase that could influence the successful implementation of accessibility guidelines. Sometimes the municipality does not clearly add accessibility to the requirements, or the outsourced party claims to be very experienced with web accessibility while in reality they are not.

“Unfortunately, many web development vendors used by government agencies claim they understand web accessibility, they seldom do to the level needed.”

Respondent #3

According to #2, it often occurs that people are asked as advisor (internal or external) by the municipality, while they do not have the right capacities to give the best advice. They would always advice to do the things that they are good and experienced at. If they are not experienced with accessibility they would never advice to invest in accessibility. Therefore, the training of employees is an important factor contributing to the successful implantation, which is in line with the theoretical framework.

Therefore, the execution of a clear and structured procurement seems to be a key factor in the adoption process. Respondents mentioned the specifying of the guidelines in the requirements, the choice of a competent supplier and the checking up on suppliers as important subfactors.

Rules and legislation

Several participants (#1, 3) agreed laws are a powerful way to force organizations to comply with guidelines. Especially expert #3 found laws to be the a very powerful way of forcing organizations to comply to accessibility guidelines.

“If properly written and enforced, laws should be highly instrumental in increasing accessibility on the web in both sectors”

Respondent #3

Not all of the experts believed laws are the solution for the problem. Thereby, the accessibility and compliance expert within the national government (#2) believed it wouldn't be possible to impose fines on organizations that wouldn't comply to the guidelines. The same participant mentioned that several countries have laws on online accessibility, nevertheless still many of the (governmental) websites do not comply to the guidelines. It is unclear if laws are actually checked and enforced.

These views are thus a little contradictory, which makes this factor interesting to investigate further in the main research. For now, laws seem to push organizations to implement the guidelines, but do not seem to be decisive.

Quality assurance and monitoring

Quality assurance and inspections were mentioned several times as important factors contributing to the success of the implementation of the guidelines. Especially the technical manager of the Aecessibility Foundation (#1) and the accessibility compliance expert (#2) insisted on the monitoring of accessibility.

“When building a website it is important to look under the hood of the car to see if it indeed can run 100.000 kilometers or if you have to expect problems.”

Respondent #1

Respondent #2 is a great supporter of the ‘comply or explain’ principle. This principle still demands all municipalities to comply to the accessibility guidelines, but in the case they fail to comply in once they get the chance to explain why they were not able to. This explanation cannot be a simple ‘I’m sorry, we could not make it’, but should be very specific and measurable. The explanation should contain why they didn’t comply, what is the cause, how that cause can be solved and when the cause will be solved. Throughout this process municipalities and other organizations should keep monitoring. In his view the monitoring does not necessarily has to be done by official inspection organizations, but can also be done by an in-house employee that followed accessibility trainings.

The respondents made a distinction between internal and external quality assurance and believed they can both help to reach the goal of implementing accessibility guidelines. According to respondent #2, internal quality assurance would be even better, because the knowledge would be within the organization. Therefore, both internal and external quality assurance seem to positively influence the implementation of accessibility guidelines.

3.4. Conclusions

Mentioned factors

During the interviews the participants named many factors that could be of importance when analysing the implantation of accessibility guidelines. Many factors were already included in literature, but the interviews gave new insights as well. Below we name the new factors that were mentioned by the interviewed experts and that thus will be included in our final research design. Some of the mentioned dimensions were not directly classifiable under one of the categories that were established in the literature section. These dimensions all were about personal experiences or opinions. We therefore added a new category to the research model, named ‘personal factors’. All of the newly mentioned dimensions were added to one of the five categories. Table 5 shows the factors that were mentioned and the corresponding categories.

Dimension	Description	Mentioned by experts	Mentioned in literature section	Suggestion of category
Stakeholder responsibilities	Clear definition and allocation of responsibilities and tasks	1, 2	Miller, Hickson & Wilson (2008)	Personal factors
Quality of procurement	Quality of the contract with the external supplier and mentioning of the accessibility guidelines as requirement	1, 2, 3		Website design process
* Disability in circle	Having or knowing someone with a disability in your inner circle	1		Personal factors
Managerial commitment	Effort and willingness of the management to implement the guidelines on the website	2, 3	Miller, Hickson & Wilson (2008), Wilmink (2006)	Organizational structure
Development of tools	Resources available for development and testing of accessibility	3	Hovav et al. (2004)	Website design process
Accessibility as an organizational issue	Involvement of accessibility throughout the whole process and even throughout the organization	3	Kline (2011)	Organizational structure
Rules and legislation	Having rules on the implementation of accessibility guidelines	1, 3	Kuzma, Dorothy & Oestreicher (2009)	External influences
Quality assurance	Monitoring accessibility by an external inspection authority or by an internal accessibility expert	1, 2	Abdelgawad, Snaprud & Krogstie (2010)	Website design process
Knowledge	Stakeholders' knowledge on accessibility guidelines	1, 3	Nambisan & Wang (2000), Abdelgawad, Snaprud & Krogstie (2010)	Website design process
* Wanting to do the right thing	Complying with guidelines because of intrinsic motivations	3		Personal factors
Budget & costs	Influence of costs on the adoption of accessibility	2	Abdelgawad, Snaprud & Krogstie (2010)	Website design process

* = Dimensions that were not yet mentioned in literature

Table 5. Factors influencing the adoption of accessibility guidelines, mentioned by experts

Additions to the research design

This exploratory research was used to adapt and confirm the research model. After analyzing the results a final research design was composed, which is explained in the next chapter. Table 5 shows the factors that were mentioned by experts. The expert opinions were consistent with the results from the literature section. The main part of the factors that were mentioned by experts also occurred in the literature section. Nevertheless, the experts mentioned a few new factors that may be interesting for the research. The factors *wanting to do the right thing, disability in circle and quality of procurement* will therefore also be added to the research model and subsequently tested in practice.

These new factors were added to the initial coding scheme, of which the final version can be found in appendix C. There was no reason to doubt certain literature findings on the basis of the expert interviews. Therefore, all literature findings will also be used in the research model.

4. Research design

4.1. Design

Case studies on the adoption and implementation of accessibility guidelines

This study focuses on the phases adoption and design/implementation of the adoption process, because of their crucial roles in explaining why the implementation of web accessibility guidelines within municipalities is failing so often. Therefore, key stakeholders within several municipalities that were involved during these phases will be interviewed.

This study will take place as a comparative multiple case study. Yin (2003, p. 13) describes the case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. This study deals with the website design process within municipalities and investigates how the accessibility guidelines occur in this process. However, it is not exactly clear in what stage of the process and what factors decide whether the guidelines get implemented successfully. Because of this unclear context and the many real-life cases, a case study is very suitable as research method. The cases will be linked to theories that were found in literature. This will be accomplished by creating a set of codes (based on the theoretical framework and expert interviews) that will be linked to the case interviews.

Research model

The literature study and the expert interviews led to insight into the implementation of accessibility guidelines and generated a set of dimensions that will be investigated in this study. The table below shows the factors that were retrieved from literature and the expert interviews. These dimensions will be investigated by performing case studies. For each dimension will be determined in what way they influence the adoption and implementation process of accessibility guidelines.

Adoption factors	Web design process	Organizational structure	Personal factors	External influences
<ul style="list-style-type: none">• Relative advantage• Compatibility• Complexity or simplicity• Trialability• Observability• Network externalities• Current	<ul style="list-style-type: none">• Quality assurance intern• Quality assurance extern• Knowledge• Internal benefits• External	<ul style="list-style-type: none">• Pleuralism• Closedness• Interdependentness• Quality of procurement• Checking skills of outsourced party• Accessibility as	<ul style="list-style-type: none">• Stakeholder influence• Stakeholder responsibilities• Stakeholder involvement• Disability in circle• Wanting to do the right thing	<ul style="list-style-type: none">• Rules and legislation

<ul style="list-style-type: none"> • Communication channels • Sponsorship • Resources 	<ul style="list-style-type: none"> • Budget and costs 	<ul style="list-style-type: none"> • Managerial commitment • Municipal collaboration
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Table 6. Dimensions of the research model

Development of interview questions

Constructs derived from literature and expert interviews (table 6) were incorporated within the interview questions to make sure each of these subjects would be investigated in this study. The final interview questions can be found in appendix B. Appendix B also shows which questions were asked to which stakeholder, so only questions relevant to stakeholders' functions were asked. It also shows the dimensions interview question were derived from. All questions were linked to relevant dimensions, to make sure all subjects are covered by the questions.

4.2. Respondents and demographics

The interviews were conducted in the period from half of May to half of October in 2013. In these months the important stakeholders were identified and then called or e-mailed.

4.2.1. Case selection

Six municipalities were included in the set of cases to be examined. These municipalities were chosen on the basis of size and the level of compliance with accessibility guidelines. Dahl and Hansen (2006) already showed that size of municipalities can be of significant importance towards the implementation of standards. Besides, large municipalities have a more complex organizational structure which can also affect the adoption of the guidelines. Both municipalities that comply and municipalities that do not comply with the guidelines were added to the selection, to be able to make a comparison between these municipalities. The table below shows the details on the selected cases.

Municipality	A	B	C	D	E	F
Size (citizens)	150.000 – 200.000	> 500.000	10.000 – 20.000	30.000 – 40.000	20.000 – 30.000	30.000 – 40.000
Website launch	March 2012	October 2009	February 2011	May 2013	February 2010	April 2010
Accessibility level	-	***	***	-	**	-

Table 7. Overview of participating municipalities

Municipal websites

Of the six municipalities' websites that were examined, three of them did not comply with the accessibility guidelines. Two of the websites that did comply with the guidelines, achieved a three star level, the other website complied on a two star level. In the cases in which accessibility fails, problems occur in several areas, thus both in the area of content, design and technique.

4.2.2. Respondents approach

The goal of the approach was to interview an internal decision-maker, a web editor and a web developer for each municipality. While contacting and interviewing stakeholders it became clear that, especially for small municipalities, the tasks were not always assigned in that manner.

A total of 18 respondents were recruited. For each municipality at least one respondent working for the municipality as well as one respondent working for an external developer was recruited. For smaller municipalities it was more difficult to get in touch with the right persons. In the case of [E] and [F] the researcher did not succeed in reaching the external developers. The suppliers were called an e-mailed several times, but it did not lead to an interview or answer on the questions.

Case	ID	Internal	ID	External
A	A1	Webmaster	A3	Supplier: Developer
	A2	Communication strategist		
B	B1	Project leader accessibility	B6	Supplier: Accessibility expert
	B2	Webmaster	B7	Supplier: Project leader
	B3	Chief editor		
	B4	Photo editor		
	B5	Domain coordinator		
C	C1	Webmaster	C2	Supplier: Project leader
D	D1	Webmaster	D3	Supplier: Developer
	D2	Communication employee		
E	E1	Webmaster / editor		
	E2	Project manager online services		
F	F1	Webmaster		

Table 8. Overview of respondents for each case and their functions

4.3. Coding process

The dimensions retrieved from literature and from expert interviews were combined to a set of codes that serve as the basis of the coding of interviews in appendix C. Every interview with respondents was recorded and transcribed into a document. The transcribed texts were split up in episodes. Every episode had one main subject, so it facilitated the process of coding the

interviews. The splitting of the interview texts was necessary to make it possible to validate the coding process with a second and third coder.

A second and third coder were recruited to test and improve the coding scheme. The author and the two coders coded all episodes of data with the adjusted coding scheme. The second and third coders were both university students close to achieving their masters' degree. The coders were allowed to assign either none, one or multiple codes to the text episodes. Because of the number of codes and the absence of a guessing chance it was not necessary to calculate a Cohen's Kappa, and thus the agreement in assigned codes was calculated.

After each coding round some codes were assigned to new categories and some definitions of codes were changed slightly. The first round led to a 45% agreement of the assigned, the second round led to a 41% agreement. While evaluating the round with the coders it appeared that the score of the second round was drastically lowered because of the complex content of one of the interviews; the coding scheme therefore seemed somewhat improved. Yet, both of the coding rounds did not give undoubtable results. Thus to ensure successful coding for the remaining interviews, the researcher and one of the coders defined coding rules to improve coding results:

- Codes in the category 'network structure' should only be applied to situations within the municipality.
- When the supplier is mentioned, the code 'procurement and communication with supplier' should always be assigned.
- The code 'knowledge' should only be assigned when knowledge about online accessibility is mentioned.
- The code 'complexity' should only be assigned to episodes covering the complexity of the accessibility guidelines, and thus not the complexity of other standards or systems.
- When document, rules and legislations that do not relate to the accessibility guidelines are mentioned, only the code 'other rules and demands' should be assigned.

With the final coding scheme (appendix C) and the coding rules the researcher was able to code the rest of the interview transcriptions.

5. Results

This section will describe the results gathered with the interviews that were conducted with stakeholders within municipalities. The coding scheme (appendix D) will function as the global structure of the results section. Thus, the categories adoption factors, web design process, organizational structure, personal factors and external factors will be treated in this order with their corresponding dimensions.

5.1. Adoption factors

The literature section studied several adoption models and tried to explain them in the context of adopting accessibility guidelines. Rogers (1985) and Hovav et al. (2004), described factors influencing the adoption process, respectively in the context of innovations and in the context of the adoption of the standard Ipv6. This chapter will first discuss these adoption factors in the context of the implementation of accessibility guidelines. Thereafter, the relevance of the used models will be evaluated.

5.1.1. Perceived complexity

Perceived complexity describes how the accessibility guidelines are experienced by stakeholders. In general, the accessibility guidelines, or specific guidelines, were perceived as complex. From the 38 quotations on complexity, 6 were about the amount of work it takes to implement the guidelines and 10 were about the complexity of the guidelines on the use of videos on the website. There were also a few quotations on other guidelines, like the guidelines on the use of interactive maps and guidelines on texts and images. At least three of six municipalities perceive the requirements on the use of videos as complex or too strict.

There is a difference between the perceived complexities of the several levels of accessibility determined by the 'drempelvrij' certification. Some of the municipalities indicated that the one and two star level is manageable, but that the third star is impossible to achieve. According to the project manager accessibility within municipality [B], the prevailing thought before reaching the third level was that this level was impossible to reach. Nevertheless he decided to try to achieve that level and it turned out easier than expected.

It is interesting to see that the perceived complexity of the guidelines varies by municipality or per person. In general, the municipalities that meet the requirements of the accessibility guidelines seem to perceive the guidelines as less complex than municipalities that do not meet the requirements. Especially municipality [A] perceives the guidelines as difficult and too demanding. The persons within municipalities complying with the guidelines seem to be more positive about the guidelines and the obligations from the government than persons within a municipality that does not comply. These differences in perceived complexity could be influenced by the more extensive experience with and knowledge of the guidelines at complying municipalities.

Generally, it appears that the complying municipalities perceive the guidelines as less complex. It is unclear whether a high perceived complexity is the result of thoroughly examining the guidelines or just from prejudice and common opinions. A lower perceived complexity can make it easier to decide to implement the guidelines or to place the higher on the priorities list. Therefore, perceived complexity is an interesting factor that influenced a successful implementation of the guidelines.

5.1.2. Compatibility

Compatibility is the degree to which the guidelines can be implemented easily within the existing infrastructure of the municipality or the current website. In several cases the compatibility influenced the choice to develop a new website and/or the implementation of accessibility guidelines.

In the case of [C] there was a program to improve municipal services, of which the website was also part. When developing the website the municipality decided to reach at least the one star certification, to show citizens their willingness to improve their services. The implementation of the accessibility guidelines was thus compatible with the view at that time on online service provision.

Municipality [E] had a similar program. The employees of the municipality moved to a new building. With that, all of the municipal services and hardware moved along. This move led to the decision to develop a new IT infrastructure, including a new website. Key to the new service provision was that it should be easier for citizens to use municipal services. The accessibility guidelines became one of the means to achieve that goal.

Municipality [B] established a set of rules after achieving the highest certificate on online accessibility. These rules apply on all new websites and applications for the municipality. Thus, whenever a new application is launched it should comply with the accessibility guidelines. In this case the new websites should be compatible with prevailing rules within the municipality.

Striking is that, only in municipalities that comply with the guidelines the compatibility is mentioned. Changes in the vision of municipalities towards a more service oriented municipality seem to increase the perceived importance of accessibility guidelines and make it possible for the guidelines to get implemented.

5.1.3. Sponsorship

Sponsorships describes the influence of external organizations, programs or persons on the internal adoption process. Five out of the six interviewed municipalities named the interference of such organizations or programs that contributed to the accessibility of the website. 'Stichting Accessibility' and 'Quality House' were named as inspection authorities and KING and iNUP were named as programs managed by the national government.

Municipalities [A], [F], and [E] mentioned the existence of the NUP (national implementation program), which states that all municipalities' websites should comply with the accessibility

guidelines on level AA by 01-01-2015. The existence of the NUP increased the importance of the guidelines in these municipalities. However, an editor of [A] mentions that the program does not impose fines when they would not comply by that date.

The legislation on online accessibility for municipalities (within the NUP) is the main 'sponsor' of implementing the guidelines. With the NUP, KING existed to help municipalities to comply with the guidelines. Although everyone seems to know about the legislation, is it not obvious to implement the guidelines. The part 'legislation on accessibility' in paragraph 5.4.1 will discuss this subject more extensive.

Summarizing, governmental organizations could have some influence on the adoption process, but the effect is minimal when stakeholders do not see the importance of the guidelines. A sponsorship strategy based on increasing the perceived importance would be interesting and could lead to a more successful adoption and implementation process at municipalities.

5.1.4. Resources

The factor resources describes available information or means that can facilitate the adoption and implementation of accessibility guidelines. Some of the respondents mentioned that their knowledge was mainly gathered by websites that explain the accessibility guidelines.

Another kind of resources was provided by the developers of systems. In some of the cases the content management system (CMS) provided features which stimulated to create accessible websites. An example is the CMS of municipality [B]. This system had a built-in function that checks pages on accessibility before publication. For example, when images did not contain an alt label, the system would give a warning. Several editors within municipalities [A, B, C, D, F] named the CMS as a factor influencing the accessibility of the website. However, a CMS with strict rules and checking of accessibility is no guarantee for an accessible output. For example, the editor of municipality [D] mentioned the functionality of the system that checks whether tables have headers. Despite this functionality the website still contains inaccessible pages with errors that could have been prevented by the system. The system of municipality [A] has some features that creates the right html code, but it does not guarantee accessible output. Both the editors and the supplier indicate that the problem is not with them. The supplier indicates that the municipality never asked them to build in special features that would make it easier to apply some specific guidelines.

All in all, the right resources make it easier to comply with the accessibility guidelines, but the availability does not guarantee accessible websites. In general, it looks like stakeholders first need to see the importance and their responsibility, before they will look for the right resources.

5.1.5. Other adoption factors

The factors communication channels, current infrastructure, network externalities, observable benefits and related technologies were not mentioned by the respondents, or just once. This is a very interesting finding, because on the basis of literature, one could expect that the adoption

factors would have a great influence on the implementation of accessibility guidelines. At the end of the result section we will therefore elaborate on the adoption models and their relevance for the subject of this study.

Most of the adoption factors that were gathered by literature did not have the great influence on the adoption process of accessibility guidelines as expected, except for compatibility. Compatibility of the guidelines with the municipal policy influenced the successful implementation of the guidelines positively. Also sponsorship and resources had a positive influence on the adoption. Chapter 5.5 will take a closer look at these interesting findings on the adoption models and will integrate the adoption models from the literature with the results of this study.

5.1.6. Phases of adoption

The literature section of this report described four phases of adoption. Beneath, these phases will be described for the adoption of accessibility guidelines.

Phase 1: Research & development

This phase concerns the development of the guidelines themselves. The WCAG guidelines were initially developed by the W3C with the help of specialists and experts. The Dutch 'webrichtlijnen' which are the standard for Dutch municipalities are derived from the WCAG guidelines. The implementation of these guidelines within municipalities has little to do with the research phase, so this subject is not treated further.

Phase 2: Adoption

The adoption phase describes the decision-making process in order to introduce the accessibility guidelines within an organization. This process is the same for most of the municipalities. It is the management that takes the decision to develop a new website, often based on advice from the web or communication employees. In all of the cases the management knew about the existence of the guidelines and in the procurement towards the external developer the accessibility guidelines are always mentioned. From the results it becomes clear that the management knows about the guidelines and also takes some kind of decision to adopt the guidelines. However, this decision often only encompasses the stating of the guidelines in the procurement or program of requirements. The results showed that this did not always lead to the actual implementation of the guidelines (A, D, F).

Therefore, it looks like the guidelines are almost always adopted in one way or another, but not always with great importance or high priority.

Phase 3: Implementation

The implementation phase includes the steps that are taken after the decision to create a new website that complies with the guidelines or to implement the guidelines on the current website is made. As mentioned in paragraph 5.2.2.3, after the decision-making the municipality composes a program of requirements and selects a supplier. In most of the cases, after the choice for the

supplier was made, the municipalities did not continue to check the requirements and if promises were kept. Only in the case of [B], the project leader consistently kept checking if external suppliers kept their promises and made new appointments if needed. This was one of the causes of a successful implementation of the accessibility guidelines. For municipalities that did not manage to comply with the guidelines, the guidelines got a lower priority during this phase. The webmaster of [A] indicated that other things concerning the website got higher priorities which reduced the importance of the accessibility guidelines.

These results make the implementation phase a crucial phase for the successful adoption of the guidelines. Many stakeholders do not seem to see the importance of the guidelines and assume too easily that the supplier will deliver an accessible website. How stakeholders deal with and see the guidelines during this phase determines whether they will be successfully implemented.

Phase 4: Use

The use phase concerns the use of the standard or website by the end users. Since this study treats the implementation of the guidelines by municipalities, this phase is not treated further.

5.1.7. Evaluation of the adoption models

In the literature section, a few adoption models were mentioned and explained. The two most relevant models of that section were the models by Rogers (1985) and Hovav et al. (2004) and were therefore added to the coding scheme. There are a few reasons to doubt the relevance of the adoption models regarding the adoption of accessibility guidelines within municipalities:

- Difference in opinion between first, second and third coder often concerned the codes which fell under the adoption models
- Other factors outside of the adoption models seemed to explain the adoption better

These results give cause to rethink the importance of the two adoption models. The models certainly explain part of the adoption and implementation of the accessibility guidelines, but not all factors are relevant and the models will not explain the complete process. Therefore, the results give good reason to develop a new adoption model. Table 9 shows a few suggestions on new or adjusted constructs from the two adoption models. Because of the amount of codes the codes will be divided over the categories that were used in the coding scheme: organizational factors, personal factors and external factors. The new and adjusted adoption model is shown in figure 5.

Original construct	Relevance/explanation	Suggestion of new construct	Suggestion of category
Relative advantage	Relative advantage coincides with the codes 'internal benefits' and 'external benefits'. For a clear adoption scheme it is thus better to take these codes together.	Perceived benefits	Organizational structure
Compatibility	Compatibility came forward as an interesting factor that seemed to have a high, positive	Compatibility	Organizational structure

	influence on the adoption. Therefore this factor will be held as explaining factor.		
Complexity	Complexity was often named by the participants as an factor that influenced their implementation process and can thus be held as an adoption factor.	Complexity / perceived complexity	External factors / Personal factors
Observable benefits	None of the respondents mentioned anything on benefits that they saw on forehand. Therefore this factor will be left out of the model.	-	-
Network externalities	From the results, this factor did not emerge as an important factor and it seems to have too little influence, therefore this factor will be left out of the model.	-	-
Related technologies	The results did not give reason to hold on to this factor, it seemed to have too little influence.	-	-
Current infrastructure	The results did not give reason to hold on to this factor, it seemed to have too little influence.	-	-
Communication channels	The results did not give reason to hold on to this factor, it seemed to have too little influence.	-	-
Sponsorship	Sponsorship was mentioned several times and seemed to have at least some influence	Sponsorship	External factors
Resources	Resources came back as a factor that has some influence, especially on the field of technical possibilities of the content management system. Therefore it will be converted to 'technical possibilities'	Technical possibilities	External factors

Table 9. Redefining the factors from the adoption models

5.2. Design process of accessible websites

Abdelgawad, Snaprud & Krogstie (2010) proposed a causal loop diagram that explains the website design process of accessible websites. Important factors from this model, together with other website design dimensions were added to the research model. This section will therefore treat the dimensions knowledge, external benefits, internal benefits and quality assurance.

5.2.1. Knowledge

Knowledge is the familiarity of a stakeholder within the governmental website design process with the content of the guidelines. During the coding process, the code 'knowledge' came up as the code with the highest number of quotations (79), which makes knowledge an interesting factor. Many of the respondents mentioned they have followed courses on accessibility; this is especially true for the web editors. Of the 9 editors that were interviewed, 6 of them followed courses on accessibility or courses in which accessibility was treated. One would expect that the persons that did not follow the courses would work for municipalities that do not comply with the guidelines. Surprisingly, two of them belong to municipality [B], which is the biggest

municipality from the sample and complies with the guidelines. These editors indicated that they learned the guidelines by self study; They studied the guidelines from websites such as webrichtlijnen.nl and by talking about the guidelines with colleagues and peers.

The interviewed managers clearly had less substantive knowledge on the guidelines. This did not necessarily lead to less or more problems on the implementation of guidelines. In the case of [B], the project leader had no knowledge on the guidelines before starting the accessibility project. He solved this by hiring accessibility experts and by keeping employees and responsible for the accessibility of their discipline. For example, he pointed the external web developers at the contract, which stated the website should be delivered completely accessible. When the developers asked which of the guidelines were not met yet, he would indicate it is their responsibility to know.

The knowledge of developers differed for each case. All suppliers of cases with complying websites (B, C, E) had experience with accessibility and built other websites that comply with the guidelines. This suggests they have in-house knowledge on accessibility. The suppliers of [B] and [C] both have accessibility specialists among their employees. The external developers of [A] and [D] do have some knowledge on accessibility, but do not have accessibility specialists among their employees and did not have other accessible websites in their portfolio.

From the analysis of the dimension knowledge we can conclude that knowledge does not necessarily needs to be gained by following courses. Some of the editors managed to successfully apply the guidelines by self-studies or by conversations with peers. Employees of municipalities that do not comply with the guidelines seem to have less knowledge on the guidelines, which makes one believe that knowledge is a factor that could influence the implementation of the guidelines. Knowledge can help to create more accessible code, create more accessible pages and to perform internal quality assurances.

5.2.2. External benefits

External benefits are results of the guidelines or the implementation of guidelines that benefit the citizens of the municipality, other organizations or the society. The external benefits that were mentioned by the respondents can be divided in benefits for citizens of the municipality and benefits on societal level.

The following benefits for citizens were mentioned:

- Citizens can find information easier
- It becomes easier to do transactions with the municipality
- Citizens know they can trust the municipality when seeing the Drempeelvrij mark
- Citizens with disabilities are able to use the website

Besides these benefits, some of the stakeholders mentioned that accessibility for everyone is important, because everyone deserves to have access to governmental information. Most of the respondents mentioned the same kind of benefits. Everyone understands that a website that

complies with the guidelines is better to use by people with disabilities. However, not everyone finds this as important. Especially in municipalities that do not comply with the guidelines yet, the importance of the guidelines is sometimes disputed. For example, the webmaster of [D] indicates that people that are deaf can also be assisted at the service desk.

"If it's not on the website, it does not mean it is not available for a deaf person. If he would notify us, he would be helped and we would explain it. The fact that the information is not available on the website does not mean it is not public. We also have other channels; you can also call or come over to the municipality."

Webmaster of municipality [D] on the accessibility guidelines

5.2.3. Internal benefits

Perceived internal benefits are results of the guidelines or the implementation of guidelines that benefit the organization itself. The following kind of internal benefits were perceived and mentioned by the respondents:

- Showing the municipality has its affairs in order
- The website will also be accessible for mobile devices and this can increase the number of visitors
- If more people are able to use the website, it will cut costs on helping citizens at the desk or by phone
- Citizens that are more satisfied with the municipality
- The guidelines can be used as a weapon to convince other departments or convince the management to develop a new website
- The management of the website gets less expensive when the code is of good quality
- Having a faster website
- Having a better ranking in Google

It was interesting that several stakeholders mentioned the guidelines as an instrument to convince the management of their ideas (B, D). For example in [D], the guidelines were used as a way to convince the management a new website was needed. Striking is that, the priority was adjusted downwards when the development of the website started and thus, this did not result in an accessible website.

We had to use the accessibility guidelines as a way to push to convince them we needed a new website for this.

Webmaster of [D] on the use of accessibility guidelines as a weapon to convince the management

Therefore, internal benefits are present and recognized, but do not necessarily lead to an

accessible website. Nonetheless, they can influence the perceived importance of the guidelines which in turn leads to a higher chance of successfully implementing the guidelines.

5.2.4. Quality assurance

Checking is the monitoring of the degree and success of implementation of the accessibility guidelines and can be carried out both internally as externally. Quality assurance helped to improve the implementation of accessibility guidelines in the following ways:

- Achieving the Drenpelvrij mark awakened some feelings of pride or ambition in persons within the municipality [C, E]
- The reports of websites that were not fully complying with the guidelines yet were used as a to-do list for the team [E, B]
- Internal quality assurance helped to check if suppliers kept their promises and delivered an accessible website [B]

Some of the municipalities performed internal checks on accessibility. Some of the editors checked on accessibility, but they do not always have enough knowledge to check the technical guidelines as well. If employees perform an internal quality assurance it could mean that they have enough knowledge on online accessibility and see it as important enough to do so. Internal quality assurance can cut costs on assessments by official inspecting authorities and it can also help to check if suppliers kept their promises. Especially municipality [B] put a lot of effort in internal quality assurance by hiring an accessibility expert. They used the internal and external accessibility reports as a way to push suppliers to keep their promises and deliver accessible websites.

Within municipalities complying with the accessibility guidelines (B, C, E) some stakeholders perceived differences in the way of inspecting among the different inspection authorities or even among different inspectors within the same authority. These differences led to some discussion with the authorities, but eventually these problems did not stand in the way of reaching a higher accessibility level. The differences between the inspectors are mainly present because the guidelines are sensitive to interpretation, which could also be a reason of the perceived complexity of the guidelines. Because the guidelines are defined on an international level it will be hard to overcome this problem.

As with many other factors, quality assurance can help to improve the implementation of accessibility guidelines. Internal quality assurance can help to push suppliers to keep their promises and to cut costs on inspections by authorities. External quality assurance can help to get the website in order and to increase knowledge of employees.

5.2.5. Budget and costs

Budget and costs describe the amount of money the municipality devotes on (accessibility of) their website and the actual costs associated with achieving an accessible website. Of the

complying cases, municipality [C] and [E] launched their website accessible. Municipality [B] implemented the guidelines on their website after the website was already developed and launched. The project leader indicated that it took a lot of effort and money to achieve this result afterwards. Because of a special accessibility project the municipality it was possible to hire a project manager and to free budget for accessibility. The project leader indicated that many suppliers asked for money (up to 50% of the original website costs) to implement the guidelines afterwards, while they were already in the contract they signed. In municipality [C] and [E] there was a special budget available on forehand for improving online services, of which accessibility was a part. Employees also got more hours to spend on accessibility.

Municipality [A] indicated that budget was an important reason to lower accessibility on the priorities list. At the end of the project, the project ran out of money and choices had to be made. Other wishes were prioritized higher than the guidelines and thus the guidelines were removed from the to-do list. Municipality [F] had a minimum budget to spend on the website, which limited their choice in website wishes and requirements.

These results indicate that a higher available budget can contribute to the implementation of accessibility guidelines. Stakeholders in non-complying cases indicated they lowered the priority of the guidelines due to available budget and one of the complying cases was able to achieve compliance because of a special project and related budget. Yet, perceived importance of the guidelines by the management is a precondition; when the management does not perceive the guidelines as important, they will not free budget.

5.2.6. Evaluation of the accessible design process

The investigated factors all had an influence on the implementation of the accessibility guidelines within the six cases. For web editors it is essential to have some knowledge on online accessibility, because the content must meet accessibility requirements. In the complying cases, employees gathered knowledge in several manners, so it is not necessarily required to follow courses. It can also be sufficient to gather knowledge on the internet or by colleagues. For the external web developers it is even more essential to have knowledge. Municipalities with non complying websites all had web developers that did not deliver a website complying with the technical guidelines. All stakeholders could name some internal and external benefits, but it did not necessarily lead to an accessible website. However, the benefits can be used to convince other stakeholders of the importance of the guidelines or as a reason to develop a new website. If the benefits are used in that manner, it is important to keep an eye on the guidelines during the whole process. Both internal and external quality assurance can positively influence the implementation of the guidelines. Internal quality assurance can help to set up points for improvement, it can cut costs on inspections by authorities, it can increase knowledge of employees and it can help to push suppliers to keep their promises. The factor budget and costs itself was mentioned regularly, both as a reason and an excuse not to comply with the guidelines. In the conclusion section all factors will thus be integrated within a new adoption model.

5.3. Organizational structure

Literature review and expert opinions led to a set of organizational dimensions that can be influenced by the organization itself to achieve an accessible website. The dimensions include management and decisions, municipal collaboration, procurement and communication with supplier, responsibilities, interdependentness and closedness.

5.2.1. Management and decisions

This factor describes the persistence or willingness of the management to implement the guidelines and to take steps to achieve an accessible website. In all of the six municipalities the management had an influence on the implementation of the accessibility guidelines. The management was mentioned by stakeholders within all disciplines. In general, the webmaster or communication department comes up with the idea to develop a new website. Subsequently, the management is approached to approve the idea and to release a budget for the project. In this step the priority of several website components, including the website accessibility, gets determined.

The priorities are strongly influenced by advice of the website editors or webmasters. In [C], the management decided to spend extra hours on accessibility after advice from the webmasters and in [E] the project manager was advised by the web editors too. According to webmasters from [D], which does not comply with the guidelines, the management had little to do with the guidelines. Nevertheless, the guidelines were still used as a reason to develop a new website.

Especially the respondents from municipality [B] mentioned the management as a great influence. The person responsible for the accessibility in [B] mentioned contact with a councilman in which the accessibility guidelines were discussed. After the councilman indicated the importance of the implementation it was easier for the employee to stress the importance among other employees working on the website. This became also evident when talking to the editors of this municipality. They indicated that they spent the effort on the accessibility guidelines 'because the councilman finds the accessibility guidelines so important'.

"All employees have the task to comply with what is promised by the councilor. If you tell them 'the councilor finds it very important', then some kind of pressure arises. Not only a time pressure arises, but also a responsibility pressure in order to ensure that it will be arranged."

Project manager of [B] on the influence of the councilor

Summarizing, municipalities in which management is involved with the website and online services, seem to have fewer problems with the implementation of accessibility guidelines. Management often determines the priority of the implementation of accessibility guidelines, based on advice from web or communication employees.

5.2.2. Municipal collaboration

This factor describes interactions between municipalities that positively influence the adoption and implementation of accessibility guidelines. Especially stakeholders within small municipalities talked a lot about collaborations with other municipalities. The website of [E] was developed by an organization that started a partnership between dozens of Dutch municipalities. Stakeholders within that municipality indicated that they valued the partnership highly and explained the collaboration as a factor that determined the successful implementation of the accessibility guidelines. The partnership implied that not only their website, but their whole back-end and intranet was developed for all the participating municipalities. Because many municipalities joined the collaboration it was easier to implement the accessibility guidelines. Costs of implementing the guidelines were shared and therefore not as high as with developing a single website.

Municipality [F] joined a collaboration of municipalities working with the same open source content management system. Part of the technique and modules are shared with each other, which makes it cheaper to implement new website functionalities. According to the webmaster of the municipality they also implemented some functions to improve the accessibility. However, the website does not comply with the guidelines yet.

Municipal collaboration can thus help to reduce costs of implementing accessibility guidelines and herewith make it more appealing to make the decision to implement them. Especially when several municipalities use the same website template (as is the case at [E]) it can be more important to have a decent back-end with accessible code. As with other factors, also this factor influences the implementation process positively, but municipal collaboration is far from a guarantee of a successful implementation of accessibility guidelines.

5.2.3. Procurement and communication with supplier

Before external suppliers get started with developing the website they have conversations with the municipality and have to sign a contract. The factor 'procurement and communication with supplier' describes this process. In general, the procurement went through the following steps:

1. Advice to develop new website

In most of the cases, someone within a municipality comes up with the idea to develop a new website. In the small municipalities (less than 50.000 citizens), someone within the IT or communication department came up with the idea and advised the management. In municipality [A] it was the communication manager who advised to develop a new website and in municipality [B], a councilman wanted a more international oriented website and thus started the process of developing a new website.

2. Decision-making

The management makes the decision to develop a new website, often influenced by advise from the IT or communication department.

3. Program of requirements

After making the decision to develop a new website, a set of requirements is composed by stakeholders within the municipality. In all of the cases the accessibility guidelines were mentioned in either the contract or the program of requirements towards the suppliers.

4. Pitch

For the pitch, several suppliers are invited to do a proposal for a new website. Subsequently, a team of stakeholders within the municipality decides which supplier is most suited to develop the website according to their requirements and budget.

5. Selection of supplier

After the pitch the municipality chooses the supplier that matches their requirements and budget the most. The accessibility guidelines do not always get the highest priority when choosing a supplier.

One of the most interesting phases of this process is the program of requirements. All of the stakeholders indicated the accessibility guidelines were mentioned in the program of requirements or in the contract. Therefore it is very remarkable that, except for [C] and [E], all of the websites did not comply to the guidelines when they were delivered. This assumes that mentioning the accessibility guidelines in the procurement does not have a decisive role in the implementation of the guidelines.

This could partly be explained by the fact that suppliers are not chosen on their ability to create accessible websites, even though the guidelines are mentioned in the program of requirements. During pitches, almost all of the suppliers claimed to be very able to create accessible websites, while this was not always true. Employees within the municipalities thereafter did not always check assumptions that were made by suppliers or just believed them.

Many of the employees within municipalities were convinced the technical part of the website complied with the guidelines, while this was not the case. Also before choosing a supplier employees believe suppliers know about the guidelines and trust them in their claims on creating accessible web sites. Suppliers often make these claims to get the assignments, but later on they do not live up to these claims. The municipality does not always put a lot of effort in checking these claims and in pushing suppliers to keep their promises.

When suppliers delivered a website that did not comply with the guidelines, the employees within the municipalities did not check if the website indeed met the requirements that were set before. Therefore, they did not really know if the website complied with the guidelines, and could not address this to the supplier. Only in municipality [B], a newly employed project leader checked if suppliers kept their promises. When they did not implemented the guidelines in the way they have said they would, the project leader addressed this to the suppliers and demanded them work on the guidelines as yet.

5.2.4. Responsibilities

This dimension investigated the assignment of responsibilities to stakeholders that are involved with the development of the municipal website. It was remarkable to see that several stakeholders blame stakeholders in other areas on not complying with the guidelines, while there are also accessibility problems within their disciplines. In all of the cases one or more persons are responsible for the website and/or the accessibility guidelines. In some of the cases persons are only partly responsible (A, E) for implementing the guidelines or they are just responsible for the website in general (D, E). Besides, these stakeholders often do not have to report their progress towards the management.

Municipality [B] assigned an external project leader to the accessibility project. He got the assignment to reach at least the two star level for the municipal website. The only way he could achieve the project was by checking and contacting suppliers until they created accessible websites. He was assessed on the success he booked on this project and thus became succeeding in implementing the guidelines very important to him.

Stakeholders often referred to other persons within or from outside the municipality for specific accessibility issues. For example, in the case of [A], the CMS has some built-in functions to make it easier to comply with the accessibility guidelines. Yet, not all of the guidelines can easily be achieved with those functions. The supplier of [A] indicated that the question to expand those functions was never asked by the municipality.

“For some specific guidelines we don’t have support yet. For example, the question to build in the use of language codes was never asked.”

The developer of the website of municipality [A] on accessibility features within the CMS

Also in other municipalities it was often not clear who was responsible for accessibility. Even though the communication department is responsible for the website, for the accessibility guidelines they can refer to another department.

“The people that know more about the technique are seated in the information management department. They also deal with the accessibility. Personally, I don’t know so much about that.”

The communication manager of [A] about the accessibility on technical level

This lack of knowledge could explain the failing to implement the accessibility guidelines. However, employees do not necessarily have to know a lot about programming to know what the current state of affairs is in this project, or to instruct others to make it happen. Altogether, when there is not someone within the municipality that is responsible to create a fully complying website; it is hard to achieve a fully accessible website.

5.2.5. Interdependentness and pluralism

Interdependentness describes the dependence of several stakeholders within an organization of each other. Pluralism describes the different interests among stakeholders within an organization. In the results these concepts returned and seemed to play a role in the adoption process. Employees within municipalities [A, B, and F] mentioned dependence of other stakeholders within the municipality. This included having to wait on text documents, texts (not complying with the guidelines) that were written by other departments and having to convince other departments of the importance of guidelines.

Instances of pluralism were mentioned by municipalities [A, B, D and E]. This included departments that wanted to put too much (according to the respondents) information about their department on the website, struggles between departments on the amount of information that needs to be placed on the website, submitted information that does not comply with the recommended reading level, differences in priorities between departments and tension between departments about tasks and restrictions. Pluralism gives some problems on the implementation of guidelines because all departments have their own opinions on the website and information on it. Especially with a decentralized website information management, it is difficult to publish only easy to read and accessible information on the website.

Thus, both pluralism and interdependentness seem to be factors that can negatively influence the accessibility of the website. They can be limited by, for example, having a centralized web editing staff and giving responsibilities and permissions to the right persons.

5.2.6. Evaluation of organizational structure

All of the organizational factors that were gathered from literature and expert interviews were treated in the results section. Most of the factors seem to have a relatively high influence on the adoption process, which means most of the factors can be used in a new adoption model. The factors importance & priorities, managerial decisions, municipal collaboration, selection and procurement of external supplier, responsibilities, pluralism and interdependentness all had an evident influence on the adoption process. Only the influence of closedness was questionable, because the results did not showed a clear influence. Therefore all dimensions, except closedness, will be included within the adoption model.

5.4. Personal factors

Personal factors are factors that are of relevance for individual stakeholders. These factors were all found either by literature or by the expert interviews and include influence and involvement, disability in circle, knowledge, pride/ambition and opinion on guidelines.

5.4.1. Influence and involvement

This describes the commitment a stakeholder has with the project and the degree to which a stakeholder feels he or she has an influence on the final implementation of the guidelines. Almost all of the stakeholders perceived their influence on the accessibility level of their website as high. In general, the respondents were talking about the influence on their discipline. They all do have some kind of influence on the policy and on the decision to give the guidelines a higher priority. For example, web masters often advise the management on decisions regarding the website. Nevertheless, when being asked about the reason not complying with the guidelines, none of the respondents of non complying municipalities (A, D, F) indicated it was their fault or it was in their line of influence.

Summarizing, stakeholders do believe they have an influence on the successful implementation of the guidelines, but this does not always lead to more accessible websites. When asked more thoroughly, stakeholders indicate the problem lies with other disciplines.

5.4.2. Disability in circle

Only one of the respondents (municipality [B]) mentioned the presence of someone with a disability in their inner circle. He indicated that this helped him see the importance of accessibility guidelines. And that he would find it not correct if he had to tell her to go to the service desk because she just not belongs to the majority of the people. Furthermore, there were other respondents (from [A,C] that have seen how people with specific disabilities use websites. These respondents indicated that it made them understand the importance of accessibility guidelines. Therefore, it can help to let people see how people with a disability use websites. For the stakeholders where this was the case, knowing someone with a disability increased the understanding and importance of the accessibility guidelines.

5.4.3. Pride / ambition

An interesting difference between the complying municipalities compared to the municipalities that do not comply is that first ones seem to have a lot more ambition and pride than municipalities that do not comply. All of the complying municipalities indicated to be very proud of the Drempeelvrij mark. Municipality [B] even mentioned that achieving the mark was a cause of celebration, and a 'tompouce' moment. On the contrary, municipalities that do not comply with the guidelines seem to perceive the guidelines as less important and they indicated to find the obligation from the government sometimes a little too 'strict' or 'overdone'.

"The Drempeelvrij mark simply looks nice on the website. We are very proud about that, because it really was an enormous task"

Editor of municipality [C] on achieving the three star mark

5.4.4. Opinion on guidelines

The opinion on the guidelines and the obligation to comply with them varies greatly by municipality and by person. In general all stakeholders indicated that the existence of the guidelines is a good thing, but not all of them were positive about the way they have to comply with the guidelines. Beneath, the mentioned opinions, both positive and negative, are described.

- The guidelines, or some of them, are too strict (A, B, C, D, F)
- The guidelines do not always tell something about the quality of the website (E)
- The guidelines are very free to interpret (C)
- Some of the guidelines are easy and improve the usability of the website (D)
- The guidelines can make a website too rigid or boring (D)
- The guidelines are expected to be implemented too broadly. The primary website should comply with the guidelines, but it is too demanding to ask that for all of the subsites and applications (B)

Non complying municipalities perceived the guidelines as more strict and thought of them as more overdone. As mentioned in part 5.2.1.1 about complexity, many of the stakeholders perceive the guidelines as complex. Particularly the guidelines on video are perceived as difficult and overdone. Some municipalities indicated that it is very expensive to let the videos comply with the guidelines by giving those subtitles or alternatives. Therefore, some of the municipalities decided to remove the videos from their website (A) or link to external websites like Youtube instead (B).

Summarizing, most of the stakeholders think the guidelines are a good thing, but they can be perceived as too difficult. Also, the municipalities that do not comply with the guidelines do not always favor the obligation to comply with the guidelines. More about these obligations follows in the next part about rules and legislation.

5.4.5. Evaluation of personal factors

The personal factors described in this chapter all seem to have an influence on the adoption of accessibility guidelines. Most of the personal factors have an influence on stakeholders' perceived importance of guidelines. For example, having someone with a disability in your inner circle can help to empathize with the guidelines and having a positive opinion on the guidelines will make it more logical to prioritize the guidelines highly. The majority of the stakeholders were convinced they had an influence on the implementation, but blame other stakeholders or departments for not complying. Having someone in his inner circle with a disability increased the perceived importance of the guidelines for at least one of the stakeholders, but the influence on the implementation is not indisputable. Pride on complying with the guidelines was a striking result for complying municipalities and stakeholders within municipalities that complied with the guidelines also perceived the guidelines as more positive and less complex. All factors mentioned above will be added to the final adoption model.

5.5. External factors

External factors are factors that cannot be influenced by stakeholders or by municipalities themselves. External factors are influencing the process from the outside, for example by other organizations or by legislation. The external factors that were found by literature and experts are rules and legislation on accessibility, other rules and legislation and citizen influence.

5.5.1. Rules and legislation on accessibility

In the Netherlands there are some rules and legislation on online accessibility. According to the 'Nationaal Uitvoeringsprogramma e-Overheid' (i-NUP), Dutch municipalities should comply with the accessibility guidelines on AA level by the first of January in 2015 (Kinggemeenten.nl, 2013). Three out of the six cases comply with the guidelines on this level, the other ones do not comply on any level. All of the stakeholders knew about the guidelines and the rules concerning the guidelines. Not all of the stakeholders knew the exact date on which they should comply. For example, some thought they should comply on the first of January in 2014 (E), or they should comply by 2017 (C).

An important result is the difference in the opinion on legislation. Stakeholders within municipalities that comply with the guidelines were remarkably more positive about the legislation than municipalities that do not comply. It is unclear whether stakeholders are negative about legislation because it is indeed too excessive or complicated or because legislation it is to their disadvantage since they do not meet the guidelines, A stakeholder from municipality [A] mentioned the absence of a sanction for not complying with the guidelines. Some stakeholders within [B] indicated it would make their job easier if there was a fine on not complying because it would make it easier to push people to supply accessible content and applications.

Especially in municipality [B], the legislation was seen as an important factor for implementing the accessibility guidelines. The legislation was even mentioned as a weapon to convince colleagues of the importance.

The obligation is one of the weapons, or munition, that we have to enroll it throughout the organization. We can indeed use them as a weapon, because I cannot come up with the stories about my blind sister in law. People are just like small children asking "Why? Why?". Now you can say "Because it is mandatory".

Content editor of [B] on the importance of legislation on accessibility

Therefore, the influence of rules and legislation can not be established based on this study, but it seems like rules and legislation do influence part of the municipalities and it even helps employees to implement the guidelines by convincing other stakeholders.

5.5.2. Other rules and legislation

While interviewing the respondents, some of the respondents of small municipalities [C, E, F] mentioned other rules and legislation. Sometimes they confused the accessibility guidelines with other rules they should comply to and sometimes respondents indicated that it is very hard to comply with all of the rules that are demanded by the government. The presence of other rules and legislation, such as DigID regulations, standards for news letters, online security and other standards on digitalization, seem to make it hard for small municipalities to meet all of the demands. The presence of these other regulations can result in lowering the priority and importance of implementing the accessibility guidelines.

5.5.3. Citizen influence

This code describes the influence that citizens have on the implementation of the guidelines. Citizens can complain about the guidelines or come to the service desk when they find the website not usable enough. Two of the municipalities (A, F) indicated they made changes on the website after having remarks or complaints from citizens of the municipalities. On the other hand, when citizens do not complain, municipalities may wrongly believe their website is accessible while it is not. A webmaster of [D] indicated that they haven't had complaints yet, which made the guidelines less important to them.

I have to say, I am not in favor of the obligation to comply. There is this principle of comply or explain, I think that is a good principle. On the other hand, I have never heard a remark along the lines of 'the contrast on your website is not right.'

Webmaster of [D] on the importance of complying with the guidelines

Thus, citizens seem to have an influence on the implementation. The results indicate that if citizens would complain more, it would have a positive effect on the implementation of accessibility guidelines.

5.5.4. Evaluation of external factors

This chapter described the influence of the external factors citizen influence, legislation on accessibility and other rules and legislation on the adoption and implementation of accessibility guidelines. All of the described factors had a notable influence on the adoption process. Especially rules and legislation have potential to play an important role in the adoption process. Legislation can increase the perceived importance of the guidelines and therewith give them a higher priority. However, it must be taken into account that non-complying municipalities may perceive legislation and the guidelines as complex and unnecessary. The influence of other rules and legislation can lower the priority of accessibility guidelines and has thus a negative influence on the adoption process. Because of their influence on the adoption and implementation, the factors rules and legislation, other rules and legislation and citizen influence will be added to the final adoption model.

6. Conclusions and recommendations

6.1. Sub questions

In chapter 2.2. we stated four sub questions to be examined. Below we will answer these questions.

Which are the main factors of existing adoption models influencing the adoption and implementation of accessibility guidelines?

In the results section the adoption models and factors were evaluated. The adoption models did not explain the adoption of accessibility guidelines as much as expected. Nevertheless, some of the factors had a clear influence on the adoption of accessibility guidelines. The factors perceived benefits, compatibility, complexity, perceived complexity, sponsorship and technical possibilities were evaluated as strongly influencing the adoption and implementation and can thus be seen as the main factors of existing adoption models. Because the adoption models were not as relevant as expected, these factors were added to the other categories.

The other sub questions can be treated, together, because they .

- **Which are the main factors of the web design process influencing the adoption and implementation of accessibility guidelines?**
- **Which are the main organizational aspects that influence the adoption and implementation of accessibility guidelines?**
- **Which are the main personal factors that influence the adoption and implementation of accessibility guidelines?**
- **Which are the main external factors influencing the adoption and implementation of accessibility guidelines?**

This study led to an overview of all factors that were mentioned by literature and experts. Each factor was treated on its relevance towards the adoption of accessibility guidelines, which led to a set of factors that influenced the adoption of the guidelines. Some of the factors did not come forward as influencing factors, including observable benefits, network externalities, related technologies, current infrastructure, communication channels and closedness.

The table below shows all factors and the amount of influence they have on the implementation of accessibility guidelines. The row 'high influence' shows the main factors for the adoption, design & implementation of accessibility guidelines. The high influence factors were mentioned by multiple stakeholders and indicated as factors that had an influence on the final result. Medium influence factors were mentioned at least once, but seem to have a lower influence. All of these factors were also described separately in the results section.

	Web design process	Organizational factors	Personal factors	External factors
High influence	<ul style="list-style-type: none"> • Quality assurance • Perceived benefits • Knowledge and experience • Budget and costs 	<ul style="list-style-type: none"> • Importance & priorities • Compatibility • Managerial decisions • Municipal collaboration • Selection and procurement of external supplier • Responsibilities • Pluralism • Interdependentness 	<ul style="list-style-type: none"> • Opinion on guidelines • Pride and ambition • Influence and involvement 	<ul style="list-style-type: none"> • Citizen influence • Legislation on accessibility • Other rules and legislation
Medium influence			<ul style="list-style-type: none"> • Disability in circle 	<ul style="list-style-type: none"> • Sponsorship • Resources
No or doubtful influence		<ul style="list-style-type: none"> • Observable benefits • Network externalities • Current infrastructure • Closedness 		<ul style="list-style-type: none"> • Related technologies • Communication channels

Table 10. Factors and their influence on the adoption and implementation of accessibility guidelines

6.2. Complying municipalities VS non-complying municipalities

The research investigated six cases of municipalities' websites, of which 3 complying with the accessibility guidelines and 3 not complying. The sample is not large enough to generalize, but it does give some good starting points on the successful implementation of the guidelines. One of the most convincing differences was the perceived importance of the guidelines. Stakeholders within municipalities that did not comply perceived the guidelines as less important. This clearly had an impact on other factors and the process as well. In all of the cases it was clear from the beginning of the website development process that the website should comply with the accessibility guidelines. All municipalities included the guidelines in either the program of requirements and/or the contract with the supplier. However, later on in the process the importance of the guidelines seemed to decrease, which led to a decrease of the guidelines on the priorities list. This was reflected in the following consequences at municipalities that did not manage to comply with the guidelines:

- Suppliers were not checked on the degree to which they met the program of requirements.
- Other wishes and requirements were placed higher on the priorities list at the expense of the accessibility guidelines.
- The guidelines did not get a high priority that could block the website launch if not compliant.

These consequences made it harder to successfully implement the guidelines. If the stakeholders would have seen the importance, there would be a higher chance that they would put effort into

the implementation. Also these municipalities did not put effort into the increasing of the perceived importance. In the complying municipalities it was often just one or few of the stakeholders that emphasized the guidelines within the organization, leading to an increase of the perceived importance within other stakeholders. However, when external organizations emphasize on this importance, it seems to be less effective. Concluding, the internal perceived importance was a striking difference between complying and non complying municipalities and contributed greatly to the successful implementation.

6.3. Key stakeholders

The respondents that were interviewed for this research included webmasters, web editors, developers, management and marketing staff. All of the respondents indicated that they felt involved with the website development project. Figure 4 shows the communication lines between relevant stakeholders. Most of the stakeholders communicate with other stakeholders and are involved during the whole process. Only the intensity of the involvement differs. In all of the cases the guidelines were an important factor during the assembly of the program of requirements and all stakeholders agree on adding the guidelines as an important requirement. Unfortunately, further on in the process the guidelines often lose their priority. Other requirements get to be seen as more important and the guidelines are lowered in priority.

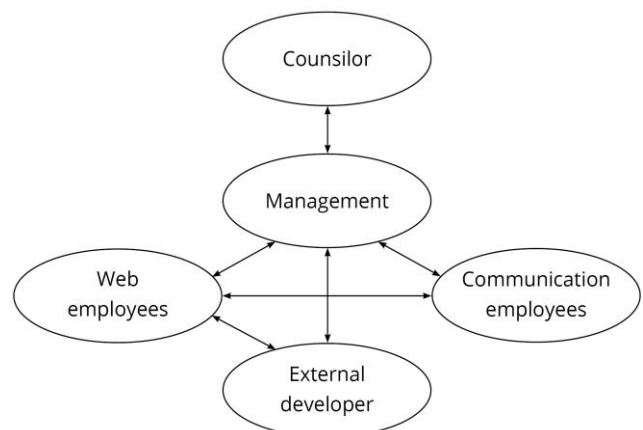


Figure 4. Stakeholder communication

All of the stakeholders had possibilities to influence the implementation process. Therefore all of the stakeholders and their abilities to influence the website development project will be described.

- Counsilman
The counsilman has the most influence on the project, when he indicates to find online accessibility important; other municipal employees often start to find it important as well. Despite this capability, counsilmen have many other problems to worry about, and accessibility does not always has their highest priority. In the case of municipality [B], the counsilman stressed the importance of the online services and accessibility in particular. This led to an increased importance within the organization, to appointing specialists and to freeing up budget and working hours. Therefore, the counsilman can mean a lot to accessibility, but unfortunately involving counsilmen is not always an option.
- Management
As expected, the management has the most chances to influence the web development process. On the one hand, this is because their responsibilities to make decisions and to

lead the project, on the other hand it is because of their lines of communication (as figure 4 shows). Management can align the website with the municipal task to serve citizens as well as possible by pushing on complying with the guidelines. They can determine the priorities and make sure the website complies before launching the website. Also, management practically always has contact with all relevant stakeholders concerning the guidelines, which gives them the possibility to make accessibility an organizational issue.

- Web employees

Web employees manage the website and are therefore well able to advise management on the website and its functionalities. In some of the cases, web employees pushed on developing a new website. The webmasters of [D] used the guidelines even as a reason to develop a new website. However, this is not enough to lead to a successful implementation of the guidelines. Web employees should keep checking up on the guidelines and make it a high priority. Web employees also have the possibility to check up on the external developers and if necessary, ask them to keep their promises.

- Communication employees

Communication employees include all employees that work on the communication department. In the case of the guidelines this study aimed at employees that create content for the website, for example content editors. These employees are often responsible for writing accessible content. In general, these employees know how to write accessible content, but they are dependent of other municipal employees that can also deliver content. Communication employees do not always have the working hours or budget to check all the content on the guidelines. If these employees find the guidelines important they will try to implement them as good as possible, but still they are dependent on the budget the management frees on accessibility.

- External developers

All of the municipalities that were selected for this research hired external developers to develop the website. These developers were chosen on a set of requirements. All developers signed a contract that stated they should comply with the requirements, which included the accessibility guidelines. However, developers do not always deliver the website complying with the guidelines and thus have a great influence on the degree to which websites comply with the guidelines. When they do not deliver the website in an accessible manner, it becomes very difficult for stakeholders within the municipality to create an accessible website. The management or web employees do have the power to point to the contract and oblige the developers to deliver a website of which the technical part in whole complies with the guidelines. Thus, whenever a developer delivers an inaccessible website, stakeholders within municipalities should point them to the contract or to the guidelines.

6.4. Main question

In chapter 2, the following research question was stated:

Which factors influence the adoption and implementation of the web accessibility guidelines on Dutch municipal websites?

After evaluating all of the retrieved dimensions, it was possible to develop a model to explain the adoption and implementation process of the web accessibility guidelines in municipalities. Table 10 already showed the factors and the degree of influence they have on the implementation process. These factors were subsequently added to the model in either the adoption or implementation phase. Figure 5 shows the proposed adoption model of accessibility guidelines in municipalities, which explains what factors are relevant for making Dutch municipalities successfully implement the guidelines.

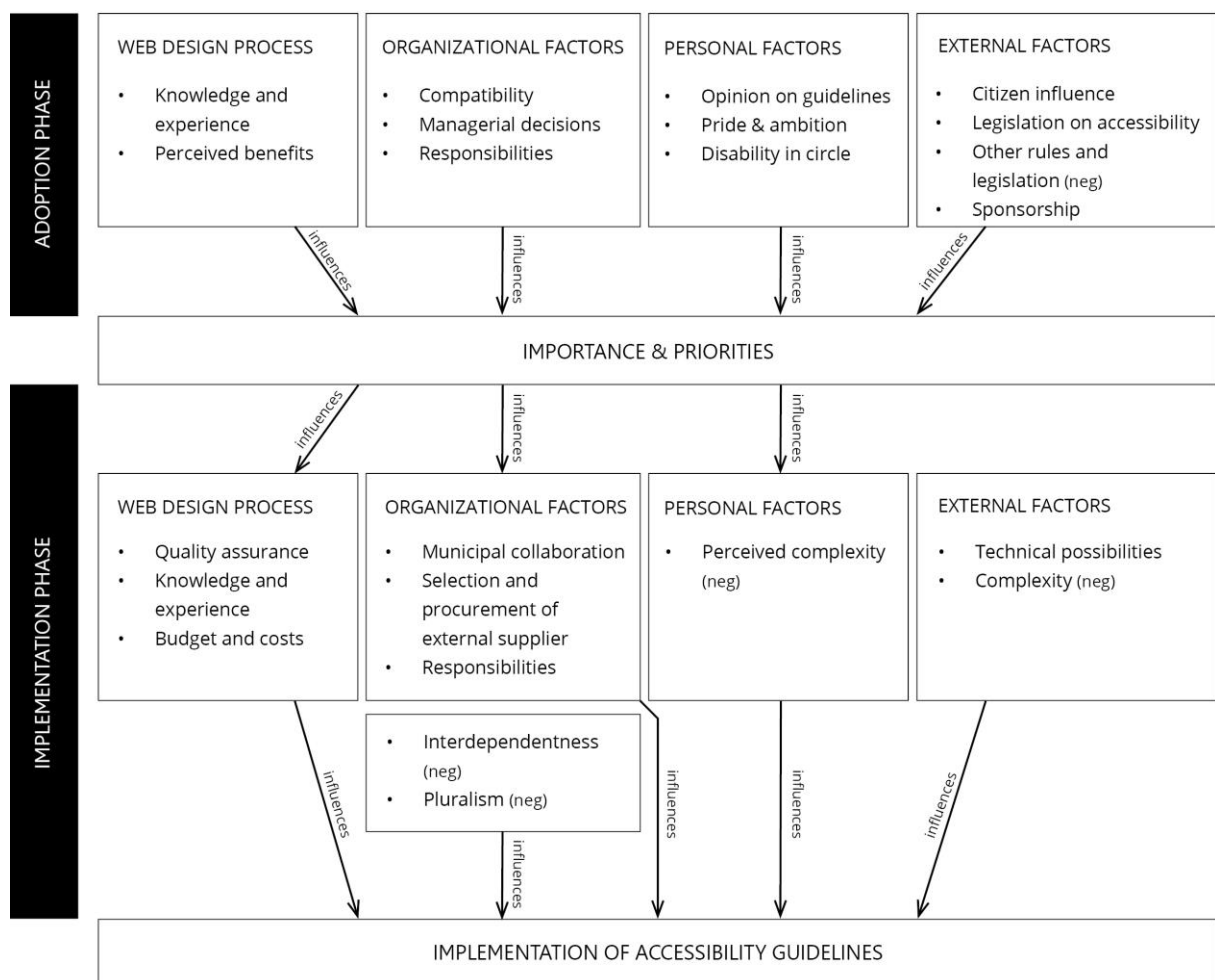


Figure 5. Factors explaining the implementation of accessibility guidelines

The model depicts two steps in the adoption process and shows importance & priorities as the central factor in this process. While investigating the results, the code 'importance & priorities' increasingly emerged as a key factor explaining the adoption and implementation of accessibility

guidelines. After investigating all the factors that appeared in the coding scheme it became clear that the factor 'importance and priorities' played a role in almost all of the other factors. Besides, the code 'importance & priorities' had the highest co-occurrence with other codes during the coding process, it co-occurred 98 times with other codes.

The total set of factors can be divided into organizational, website design, personal and external factors that are either important in the adoption phase or in the implementation phase. Factors that are placed in the adoption phase have an influence on the adoption process and factors depicted in the implementation phase have an influence on the implementation phase. For example, when stakeholders find the guidelines important they can choose to initiate a cooperation with other municipalities. Subsequently, the municipal collaboration makes it easier to comply with the guidelines and thus to successfully implement the guidelines.

The model is based on literature, expert opinions and the results of this study. Despite this solid base, it is a proposed model that needs further research and fine-tuning. Therefore the further use of this model will be described in the discussion section.

6.5. Recommendations

This study investigated factors that influence the adoption and implementation of accessibility guidelines. By working on or influencing these factors, the guidelines have a higher chance of being implemented successfully. Below, these factors and their influence will be used in advices towards organizations that have to deal with guidelines, such as municipalities themselves, governmental organizations like KING or inspection bodies like the Accessibility Foundation.

6.5.1. Create a service and accessibility oriented organizational environment

Compatibility of the requirements with the organizational policy and culture can be a very good cause of increasing perceived importance of the guidelines. Dutch municipalities are offering many services for citizens, which are more and more offered by their website. It would therefore be a logical step to deploy a citizen-oriented policy. Accessibility would be a suitable part of this policy, because accessibility is beneficial for all citizens. As can be seen in figure 5, this would lead to an increased compatibility of the guidelines and therewith an increase in the perceived importance of the guidelines and a higher probability of successful implementation. An increasing number of municipalities seem to already deploy a service-oriented policy. Web or communication employees can use this service-oriented policy as a reason for raising accessibility on the priorities list and to broaden the policy to all levels of the organization.

6.5.2. Assign responsibilities

Management should assign responsibilities concerning accessibility. Depending on the size of the municipality, these responsibilities should be assigned on several levels. This will make it possible to judge employees on the successful implementation and will automatically increase the perceived importance among employees. With assigning responsibilities it is important to be very concrete and determine the following properties: The name of the responsible person, a concrete goal (e.g. achieve the two star accessibility level), a range (e.g. on the main website), a time (e.g. by the first of may, this year), a budget, and how it is tested (e.g. by an expert or by performing an external quality assurance). Only then it is possible to achieve goals and test if the goals are met. It is advisable to have a project leader who is primarily responsible. This project leader can be both from within the organization or from the outside, as long as this person is able to set aside time to spend on implementing or improving accessibility guidelines.

6.5.3. Include the guidelines in the procurement and communication with suppliers

In all of the non-complying cases, the websites were not delivered fully accessible, meaning something went wrong in the procurement or in the work of the developer. The first problem existed when choosing suppliers. Suppliers were often chosen by their presentations and stories, but barely on their real skills and expertise. The results indicated the guidelines were always mentioned in the procurement and discussed with the supplier. Suppliers were thus informed, but were not able to fully implement the guidelines. Municipalities can tackle this problem by taking the following measures:

1. Ask suppliers to show other websites complying with the guidelines
2. Discuss accessibility guidelines during the procurement phase
3. Add a three star level of accessibility to the requirements
4. Perform quality assurances throughout the development process
5. Check up on suppliers and let them keep their promises

Especially performing quality assurances and checking up on the suppliers seemed to be very important. In the non-complying cases, the guidelines were discussed and mentioned in the procurement, but it went wrong at these last steps. Quality assurance is an inevitable requirement for checking up, because stakeholders need to know the state of the accessibility before it can be linked back to the suppliers. When the guidelines are mentioned in the procurement, which is almost always the case, suppliers can be held to their promises. At the moment, checking up on suppliers hardly happens. Municipal employees should thus be reminded of their rights and on the fact that suppliers do not always keep their promises. Municipalities should get what they pay for and if not, go after it. They should only pay if the delivered website meets the program of requirements and therewith comply with accessibility guidelines. Organizations such as inspection bodies or governmental advisors like KING can press municipalities on these rights and facts.

6.5.4. Enforce rules and legislation

During the study, respondents were asked about their opinion on rules and legislation. The opinions differed, but a substantial part of the respondents would be influenced by rules and legislation, especially when there would be sanctions on it. Rules and legislation are mainly relevant for the national government, because they are able to adjust it. They can be dealt with in two ways that are likely to positively influence the implementation of accessibility guidelines within municipalities.

- **Allocate sanctions**
Many countries set penalties on not complying with the guidelines. However scientific articles do not yet evidently guarantee the positive influence on the successful implementation of the guidelines, some experts and stakeholder within municipalities believe they will push municipalities to implement the guidelines because they may want to prevent getting a fine, or they do not want to be known as 'the municipality that does not care about disabled citizens'.
- **Lower the barrier by applying the 'comply or explain' principle**
Many of the stakeholders within municipalities that did not comply with the guidelines perceived the guidelines as very complex and impossible to achieve. These perceptions were often based on a few specific guidelines or on stories of colleagues and may very well not be based on own experiences with the guidelines. Therefore, a more soft strategy may help to introduce municipalities with the guidelines. One of the most interesting ideas to do so is to lower the barriers by applying a comply-or-explain principle in which municipalities have the chance to comply stepwise. The 'comply-or-explain' principle is becoming more accepted. It implies that municipalities are pressed to comply with the guidelines, but if they do not manage to comply they have the possibility to explain why they did not comply. This explanation is not without obligation. When choosing to explain municipalities should specify exactly which guidelines were not met, how they will make sure they will comply the next time and when they will comply with them.

Both of the options are suggestions and do not guarantee municipalities to implement the guidelines. However, based on the results, these options are believed to have a positive influence and will at least push municipalities to discuss the guidelines and take action.

6.5.5. Adapting strategy towards the size of municipalities

The size of municipalities has a great influence on the way accessibility guidelines are implemented; it is thus wise to adapt the above mentioned recommendations towards the size of the municipality. While investigating the results of the interviews the following observations with regard to the size of municipalities were detected:

	Small municipalities < 50.000 citizens	Large municipalities > 100.000 citizens
Budget available for websites	Small	Large
Number of websites/applications	< 5	> 10
Possibility to release a special budget for accessibility	Hardly	Yes
Amount of pages	Small (<10.000)	Large (>15.000)
People directly involved with the website	< 10	> 20
Organizational structure	More or less the same policy in different departments, most of the employees know each other.	Different rules and management for each department. Employees mainly know people within their own departments

Table 11. Observed differences between small and large municipalities

The table above shows some big differences between small and big municipalities. Although these findings are based on just six cases, the differences seem to be very distinct. Because of the differences it seems that small municipalities need a different strategy on implementing accessibility guidelines than large municipalities. When implementing accessibility guidelines within municipalities it is therefore wise to adjust the strategy on the size of the municipality. There can be thought of the following adjustments in strategy:

- Changes in budget: Large municipalities often have a much more extensive website (especially the amount of pages differs greatly) and also have more websites and applications than just their main municipal website. These differences ask for a larger budget which mainly needs to be spent on staff hours.
- Hiring of employees: Large municipalities will need employees with other skills and expertise than small municipalities. For large municipalities it can be interesting to hire own web developers or accessibility specialists, they will be too expensive for small municipalities. Small municipalities will not always have the resources to hire extra personnel, training and courses for personnel would be a good alternative. A project leader with commercial experiences can be interesting for all of the municipalities, as he can negotiate about the contracts with external suppliers.
- Project organization: The number of meetings and their topics should be adjusted to the size of municipalities. It is important that the perceived importance of the guidelines is organization-wide. This can be facilitated by having regular and structured meetings. Small municipalities can have meetings with key stakeholders of each department. Large municipalities should have both meetings with employees within the department as with the management of all relevant departments.

The points above are mainly considerations. For a specific strategy, the plan needs to be adjusted to the concerning municipality and its organizational structure.

7. Discussion and future directions

7.1. Discussion

The accessibility guidelines are slowly becoming a more accepted standard, while websites are getting more service and user oriented. Still, many of the Dutch municipalities have troubles with implementing the accessibility guidelines and thus, are not complying with them. This study proposed a new adoption model for the adoption of guidelines within local governments, based on a thorough research based on interviews. The model shows specific and practically applicable factors on how to implement the guidelines successfully.

Previous studies on accessibility mainly researched the content of the guidelines or the amount of complying (governmental) organizations. This research looked into the adoption and implementation process of the guidelines and combined the well known adoption model of Rogers (1985) and the less familiar model of Hovav et al. (2004) with literature on accessibility and views of accessibility experts. Therefore, the value of this research is the establishment of a new adoption model that combines both results from literature, experts and research and is adapted for the implementation of accessibility guidelines. Despite the limited research scope, the model can potentially be applied broader than just for accessibility guidelines. It may be useful for, for example, the adoption of digital security standards, nationally imposed online service policies or even for the adoption of offline standards, such as payment or system standards.

This study focused on Dutch municipalities and used a limited amount of cases and is therefore difficult to generalize. Cases were chosen on practical or interesting characteristics, such as the size of municipalities or the degree of compliance. The amount of cases (6) and number of respondents (18) were limited. Therefore, this is not a representative sample and thus is the national or global appliance is not sure yet. Nevertheless, a well-founded adoption model is proposed and is ready for further research. Because of the exploratory nature of the research the limited sample can not be avoided and contributes to the composition of a new model. Further research can assess this model and establish a more scientifically tested model.

This research was partly built upon existing adoption models of Rogers (1985) and Hovav et al. (2004). The choice to extend these models, and especially Rogers's model, towards the adoption of internet standards was made based on the similarity of the guidelines with digital innovations. The results indicated that the existing adoption models were just partly relevant towards the adoption of accessibility guidelines. However, the use of these models was not in vain. The models gave a good starting point and still had a great influence in the development of a new model that was still partly based on the existing models.

7.2. Future research

The proposed adoption model is based on results from the study, literature research and expert opinions and therefore has a proper foundation. Nonetheless, the model is newly developed and emerged from exploratory research. Future research can test the model and improve or extend the model. The verification of the model could be done by gathering quantitative data, for example in the form of questionnaires.

Although the model focuses on the adoption of accessibility guidelines within Dutch municipalities, it would be interesting to see if the model has a wider application. This can either be wider in the sense of the kind of open standards, or in the sense of the type of organizations. For example, future research could test the model for other internet standards or test the model for other governmental organizations or even commercial organizations.

The adoption models of Rogers (1985) and Hovav et al. (2004) did not turned out as major predictors of the implementation of accessibility guidelines. One of the explanations for this result might be the too big difference with other innovations. Another explanation might be the change in time and situations, which could lead to changes in the adoption of innovations and standards. In either case, the original adoption models remain interesting for further research into their relevancy towards the present time and different places.

Another interesting approach can be found in the growing popularity of tablets, smartphones and other devices. Because research on online accessibility and the guidelines is limited, there is also little known on accessibility of mobile devices. At the moment, guidelines for mobile devices are covered in WCAG 2.0, but these guidelines still mainly focus on websites and not on applications. Besides, little is known about compliance of mobile websites and applications with the guidelines.

References

- Abdelgawad, A. A., Snaprud, M. H., & Krogstie, J. (2010). Accessibility of Norwegian Municipalities Websites: A Qualitative System Dynamics Approach
- Accessibility.nl (2011). *Accessibility Monitor 2011 van Gemeenten*. Retrieved February 4, 2013, from <http://www.accessibilitymonitor.nl/downloads>
- Andriessen, J. (1994). *Telematics and work*. Psychology Press.
- Bouwman, H., den Hooff, V., & van de Wijngaert, L. (2005). *Information and Communication Technology in Organizations: Adoption, Implementation, Use and Effects*. SAGE Publications.
- CBS (2012). *Gezondheid aandoeningen beperkingen; Persoonskenmerken*. Retrieved February 19, 2013, from <http://statline.cbs.nl/StatWeb/publication/default.aspx?DM=SLNL&PA=81173NED&D1=0,27-30,41,48,50,53,60,66,77&D2=0-13,32-37&D3=0&D4=0&HDR=T&STB=G1,G2,G3&VW=T>
- Dahl, P. S., & Hansen, K. M. (2006). Diffusion of standards: the importance of size, region and external pressures in diffusion processes. *Public Administration*, 84(2), 441-459.
- European Commission (2012). *Directive of the European Parliament and of the council on the accessibility of public sector bodies' websites*. Retrieved March 13, 2013, from <http://ec.europa.eu/digital-agenda/en/news/proposal-directive-european-parliament-and-council-accessibility-public-sector-bodies-websites>
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press.
- Gasser, U., & Palfrey, J. (2007). When and How ICT Interoperability Drives Innovation. *Berkman Publication Series*.
- HassellInclusion (2013). *BS 8878 web accessibility standards (supersedes PAS78) – All you need to know*. Retrieved on 6 March, 2013, from <http://www.hassellinclusion.com/bs8878/v>
- Heuvelhof, ten, E.F. & Bruijn, de, H. (2007). *Management in netwerken*. Den Haag: Boom Lemma Uitgevers
- Hovav, A., Patnayakuni, R., & Schuff, D. (2004). A model of Internet standards adoption: the case of IPv6. *Information Systems Journal*, 14 (3), 265-294. doi: 10.1111/j.1365-2575.2004.00170.x
- Hovav, A., Hemmert, M., & Kim, Y. J. (2011). Determinants of Internet standards adoption: The case of South Korea. *Res Policy*, 40(2), 10-10. doi: 10.1016/j.respol.2010.09.016
- Jensen, M. C. (2003). *A theory of the firm: governance, residual claims, and organizational forms*. Harvard University Press.

- Katsanos, C., Tselios, N., Tsakoumis, A., & Avouris, N. (2012). Learning about web accessibility: A project based tool-mediated approach. *Education and Information Technologies*, 17(1), 79-94. doi: 10.1007/s10639-010-9145-5
- Kinggemeenten.nl (2013). *Bouwsteen Webrichtlijnen*. Retrieved December 3, 2013, from <http://new.kinggemeenten.nl/operatie-nup/bouwstenen/webrichtlijnen>
- Kline, J. (2011). *Strategic IT Accessibility: Enabling the Organization*. Austin: Live Oak Book Company
- Kuzma, J., Yen, D., & Oestreicher, K. (2009). Global e-government Web accessibility: An empirical examination of EU, Asian and African Sites.
- Kuzma, J. M. (2010). Accessibility design issues with UK e-government sites. *Government Information Quarterly*, 27(2), 141-146. doi: <http://dx.doi.org/10.1016/j.giq.2009.10.004>
- Leavitt, N. (2011). IPv6: Any Closer to Adoption? [Editorial Material]. *Computer*, 44(9), 14-16. doi: 10.1109/mc.2011.284
- Miller, S., Hickson, D., & Wilson, D. (2008). From strategy to action: involvement and influence in top level decisions. *Long Range Planning*, 41(6), 606-628.
- Minnecré, P.H., & Korsten, L. (2008). *Een korte lijst voor het beproeven van het 'comply-or-explain and commit' principe*. Retrieved March 15, 2013 from http://www.wikixl.nl/wiki/ictu/index.php/Open_standaarden_-_Een_korte_lijst_voor_het_beproeven_van_het_'comply-or-explain_and_commit'_principe
- Nambisan, S., & Wang, Y.-M. (2000). Web technology adoption and knowledge barriers. *Journal of Organizational Computing and Electronic Commerce*, 10(2), 129-147.
- Nederlandse Grondwet (2013). *Artikel 1: Gelijkebehandeling en discriminatieverbod*. Retrieved March 18, 2013 from <http://www.denederlandsegrondwet.nl/9353000/1/j9vviHlf299q0sr/vgrnb2er8avw>
- Overheid.nl (2013). *Wet gelijke behandeling op grond van handicap of chronische ziekte*. Retrieved March 18, 2013, from http://wetten.overheid.nl/BWBR0014915/geldigheidsdatum_18-02-2013
- Pardo, T. A., Nam, T., & Burke, G. B. (2012). E-Government Interoperability: Interaction of Policy, Management, and Technology Dimensions. *Social Science Computer Review*, 30(1), 7-23. doi: 10.1177/0894439310392184
- Pribeanu, C., Marinescu, R.D., Fogarassy-Neszly, P., & Gheorghe-Moisii, M. (2012). Web Accessibility in Romania: The Conformance of Municipal Web Sites to Web Content Accessibility Guidelines. *Informatica Economica*, 16(1), 28-36.
- Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York: Free Press.

- Rowley, J. (2011). e-Government stakeholders—Who are they and what do they want? *International Journal of Information Management*, 31(1), 53-62.
doi:<http://dx.doi.org/10.1016/j.ijinfomgt.2010.05.005>
- Thaens, M. (2009). *'Fatsoenlijk besturen' ten aanzien van de elektronische overheid. Een verkenning van de 'governance van interoperabiliteit'*. Den Haag: Bureau Forum Standaardisatie.
- UN (2006). *Convention on the Rights of Persons with Disabilities*. Retrieved March 2, 2013, from <http://www.un.org/disabilities/convention/conventionfull.shtml>
- UN (2013). *Newsletter*. Retrieved on March 2, 2013, from <http://www.un.org/disabilities/documents/newsletter/february2013.doc>
- Velleman & Van der Geest (2011). *Business Case study costs and benefits of implementation of Dutch Webrichtlijnen*. Retrieved Februari 7, 2013, from <http://www.accessibility.nl/projecten-en-publicaties/onderzoek-naar-toegankelijkheid/return-on-investment-of-webrichtlijnen>
- Vlerken-Thomas (2012). *Van Controle naar In Control*. Retrieved March 20, 2013 from <http://versie2.webrichtlijnen.nl/rapporten/2012-van-controle-naar-in-control/>
- W3C (2008). *Web content accessibility guidelines (WCAG) 2.0*. Retrieved February 28, 2013, from <http://www.w3.org/TR/WCAG/>
- W3C (2013). *How WAI Develops Accessibility Guidelines through the W3C process: Milestones and Opportunities to Contribute*. Retrieved March 4, 2013, from <http://www.w3.org/WAI/intro/w3c-process>
- Wijngaert, v. D., ten Tije. (2012). *De e-overheid vanuit gebruikersperspectief*. Retrieved March 7, 2013 from http://www.utwente.nl/ctit/cfes/docs/rapporten/2011_07_gebruikersonderzoek.pdf
- Wilmink, M. (2006). *Invloedrijke factoren bij de realisatie van een toegankelijke overheidswebsite* (Unpublished master's thesis). University of Twente, Netherlands.
- Yin, R.K. (2003). *Case study research: Design and methods*. California: Sage Publications, Inc.
- Zimmermann, G., & Vanderheiden, G. (2008). Accessible design and testing in the application development process: considerations for an integrated approach. *Universal Access in the Information Society*, 7(1), 117-128.

Appendix A: Expert interview questions

Interview questions in English

- 1) How would you describe your involvement and experience with online accessibility?
- 2) How do you think about the WCAG 2.0 guidelines as an adequate measurement of online accessibility of organizations?
- 3) In your experience, what are the main reasons for companies or governmental organizations to implement accessibility guidelines on their websites?
- 4) How are laws and regulations influencing the implementation of accessibility guidelines?
- 5) How would you expect national and international laws and regulations concerning online accessibility to develop in the next 10 years?
- 6) What phases are usually passed during a website design process at municipalities?
- 7) Which persons or groups are usually involved during the website development process at municipalities?
- 8) To what extent are persons involved with the development of a municipality website aware of the implementation of accessibility guidelines and the content of the guidelines?
- 9) How would you describe the perfect process of implementing accessibility guidelines starting from when a municipality decides to create a new website, until the moment the website goes live.
- 10) (when involved within the adoption of guidelines) What ensured that guidelines were introduced successfully in the organization you were involved with?
- 11) What do you believe to be the five main factors that determine the success or failing of the implementation of accessibility guidelines within municipalities?

Interview questions in Dutch

- 1) Hoe zou u uw betrokkenheid en ervaring met online toegankelijkheid omschrijven?
- 2) Wat vindt u van de WCAG 2.0 richtlijnen als toereikende maat voor het meten van de online toegankelijkheid van organisaties?
- 3) Wat zijn, in uw ervaring, de belangrijkste redenen voor bedrijven of gemeenten om accessibility richtlijnen te implementeren op websites?
- 4) Hoe beïnvloeden wetten en regelgeving de implementatie van accessibility richtlijnen?
- 5) Hoe verwacht u dat nationale en internationale wetten en regelgeving op het gebied van online toegankelijkheid zich in de komende 10 jaar zullen ontwikkelen?
- 6) Welke fasen worden gewoonlijk doorlopen tijdens het webdesign proces bij gemeenten?
- 7) Welke personen of groepen zijn normaal gesproken betrokken bij de ontwikkeling van een website bij gemeenten?
- 8) In welke mate zijn personen die betrokken zijn bij de ontwikkeling van een gemeentewebsite op de hoogte van de invoering van accessibility richtlijnen en de inhoud van de richtlijnen?
- 9) Hoe zou u een perfect proces van de implementatie van accessibility richtlijnen beschrijven? Vanaf het punt wanneer een gemeente besluit een nieuwe website te ontwikkelen tot het punt dat die website live gaat.
- 10) (indien betrokken bij de implementatie van richtlijnen) Wat heeft ervoor gezorgd dat accessibility richtlijnen succesvol geïmplementeerd werden bij de organisatie waarbij u betrokken was?
- 11) Wat zijn volgens u de belangrijkste factoren die het succes of falen van de implementatie van accessibilityrichtlijnen binnen gemeenten bepalen?

Appendix B: Interview questions

The table below shows the interview questions that were generated from the subjects and factors that were treated in literature. Each question has an ID and will be linked to several subjects that were treated in the previous table. All questions will only be posed to respondents for whom the question is relevant. Some questions, for example, will thus only be asked to persons that were involved in the implementation process, but not in the decision-making process.

ID	QUESTIONS	MANAGEMENT	STRATEGY/ MARKETING	DESIGN & DEVELOPM.	EDITING / CONTENT	RELEVANT DIMENSIONS
Q1	Wat is uw functie? Op welke manier bent u betrokken bij de website van de gemeente? <i>What is your position? How were you involved with the website of the municipality?</i>	x	x	x	x	Influence and involvement
Q2	Wanneer werd de huidige website gelanceerd? Was het een revisie van de vorige website of is er een nieuwe website ontwikkeld? Was u betrokken sinds het begin van het ontwikkelproces? <i>When was the current website launched? Was it a revision of the previous website or was a new website developed? Were you involved since the beginning of this development process?</i>	x				Influence and involvement, responsibilities, compatibility, current infrastructure
Q3	Hoe toegankelijk is de website van uw gemeente? Hoe weet u dit? <i>To what extent is the website of your municipality accessible? How do you know this?</i>	x	x		x	Knowledge, influence and involvement
Q4	Hoe zou u uw betrokkenheid bij de ontwikkeling van de website omschrijven? Hoe lang en gedurende welke fasen was u betrokken? <i>How would you describe your involvement with the development of the website? How long and during which phases were you involved?</i>	x	x	x	x	Influence and involvement, responsibilities
Q5	Wie waren uw belangrijkste contactpersonen en medewerkers tijdens het ontwikkelproces van de website en hoe ging u met ze om? Wie was er verantwoordelijk voor de toegankelijkheid van de website tijdens het project? <i>Who were your key contacts and employees during the development process of</i>	x	x	x	x	Responsibilities, internal collaboration and structure, communication channels

the website and how did you interact with them? Who was responsible for the accessibility of the website during the project?

Q6	Hoe zou u uw vermogen om de uiteindelijke invoering van de webrichtlijnen te beïnvloeden omschrijven? <i>How would you describe your ability to influence the eventual implementation of the accessibility guidelines?</i>	x	x	x	x	Influence and involvement, responsibilities, interdependentness
Q7	Welke bijeenkomsten om de website en haar vooruitgang te bespreken woonde u bij? <i>What meetings to discuss the website and its progress did you attend?</i>	x	x	x	x	Influence and involvement, interdependentness, Communication channels, internal collaboration and structure
Q8	Wat werd er besproken tijdens de bijeenkomsten en wie waren erbij betrokken? Werden de webrichtlijnen ook besproken tijdens bijeenkomsten over de website? <i>What was discussed during the meetings and who were involved with the meetings? Were the accessibility guidelines also discussed during meetings about the website?</i>	x	x	x	x	Interdependentness, pluralism , closedness
Q9	In welke mate waren mensen die betrokken waren bij de website ervan op de hoogte dat de website moest voldoen aan de webrichtlijnen? <i>To what extent were people involved with the website aware of the obligation to comply with the accessibility guidelines?</i>	x	x		x	Knowledge, influence and involvement, internal collaboration and structure, observable benefits
Q10	Is er een extern bureau ingehuurd om de website te ontwikkelen? Welke factoren en overwegingen bepaalden jullie keus voor een extern bureau dat de website kon ontwikkelen? Heeft het bureau of hun website systeem jullie beperkt in jullie wensen en eisen? <i>Was an external agency hired to develop the website? What factors and considerations determined your choice for an external agency to develop the website? Did the agency or their website system limit you in your wishes and requirements?</i>				x	Procurement, Resources
Q11	Waren de webrichtlijnen vermeld in de aanbesteding naar het externe bureau? Hoe werd toegankelijkheid in de aanbesteding vermeld? Werden de	x			x	Procurement

richtlijnen vermeld als een verplichting?

Were the accessibility guidelines mentioned in the procurement towards the external agency? How was accessibility mentioned in the procurement? Were the guidelines mentioned as an obligation?

Q12	Werd de website door iemand, intern of extern, gecontroleerd op het voldoen aan de webrichtlijnen? Als dit het geval is, door wie en hoe vaak werd er gecontroleerd op toegankelijkheid? <i>Was the website checked by someone, intern or extern, on complying with the accessibility guidelines? If so, by whom and how often was the website tested on accessibility?</i>	x	x	x	x	Quality assurance intern, quality assurance extern
Q13	Welke richtlijnen zijn volgens u doorgevoerd en welke niet, en waarom? Had het keurmerk drempelvrij een invloed? <i>What guidelines are, according to you, implemented, which not and why so? Did the quality mark 'drempelvrij' have an influence on this?</i>	x	x	x	x	Knowledge, complexity
Q14	Op welke manier heeft het beschikbare budget de ontwikkeling van een toegankelijke website beïnvloed? <i>In what way did the available budget influence the development of an accessible website?</i>	x				Budget and costs, managerial commitment
Q15	Wat zijn volgens u de voordelen van een website die voldoet aan de toegankelijkheidsrichtlijnen? <i>What do you think are the benefits of a website that complies with the accessibility guidelines?</i>	x	x	x	x	Internal benefits, external benefits, relative advantage, observable benefits
Q16	Wat vindt u van de verplichting vanuit de overheid om de webrichtlijnen te implementeren op gemeentewebsites? Kent u iemand met een beperking? Heeft dat invloed? <i>What do you think of the obligation from the government to implement the accessibility guidelines on municipal websites? Do you know someone with a disability? Does this have an influence on how you see the guidelines?</i>	x	x	x	x	Rules and legislation, Disabilities in inner circle, sponsorship, other rules and legislation
Q17	Wat weet u over wet- en regelgeving over online toegankelijkheid? <i>What do you know about rules and legislation concerning online accessibility?</i>	x	x			Rules and legislation, knowledge, sponsorship
Q18	Kunt u uw ervaringsniveau en kennis over toegankelijkheid beschrijven? Heeft trainingen of cursussen gevolgd om dat niveau te bereiken? <i>Can you describe your experience level and knowledge about accessibility? Did</i>	x	x	x	x	Knowledge

you follow training or courses to achieve that level?

Q19	Op welke manier worden de webrichtlijnen meegenomen wanneer er nieuwe inhoud op de website wordt geplaatst of wanneer er updates van de website plaatsvinden? Staat toegankelijkheid nog steeds op de agenda en op welke manier? <i>In what way are the accessibility guidelines taken into account when adding new content on the website or when updates of the website occur? Is accessibility still an agenda item and how is it treated?</i>	x	x	x	x	Compatibility, internal collaboration and structure, importance and priorities
Q20	Leeftijd, functie, opleiding, geslacht <i>Age, position, education, gender</i>	x	x	x	x	

Appendix C: Final coding scheme

Table 12. Interview coding scheme based on theoretical framework, expert interview questions and the results of the interviews.

Category	Supercode	Code	Name	Description
Demographics	Municipality		Municipality name	Name of the municipality the respondent is working for
	Function	1	Management	Functie van de respondent
		2	Webmaster	
		3	Content editor	
		4	Supplier	
	Accessibility level	5	Insufficient	Voldoet de website aan het minimum niveau van toegankelijkheid en welk drempelvrij level is er behaald?
		6	* label	
		7	** label	
8		*** label		
Adoption of open standards	Usefulness	9	Relative advantage	Noemt het voordeel dat het toepassen van de webrichtlijnen heeft boven het niet toepassen ervan, of voordelen die de betreffende gemeente heeft boven andere gemeenten. Bijv. 'beter gevonden worden door Google'
		10	Compatibility	Verwijst naar hoe goed de webrichtlijnen aansluiten binnen de gemeente. Bijv: 'We waren al bezig met het verbeteren van de dienstverlening, dus de webrichtlijnen sloten daar goed bij aan'
		11	Complexity	Verwijst naar de moei lijkheidsgraad van het toepassen van de webrichtlijnen. Bijv: 'Het ontwikkelen van toegankelijke video's is bijna niet te doen'
		12	Observable benefits	Noemt de mogelijkheid om de voordelen van de webrichtlijnen te beoordelen, te ervaren of te zien voordat ze geïmplementeerd worden op eigen website.
	Environmental	13	Network externalities	Noemt voordelen van het implementeren van de richtlijnen die zichtbaar zijn

	conduciveness			bij andere gemeenten die de webrichtlijnen al hebben doorgevoerd.
		14	Related technologies	Verwijst naar andere technologieën of open standaarden die ervoor zorgen dat het makkelijker wordt de webrichtlijnen door te voeren.
		15	Current infrastructure	Noemt het moeite hebben met het aanpassen of wegdoen van websites en systemen, omdat daar al zoveel geld in is gaan zitten. Bijv: 'Onze website was pas een jaar oud, dus het was lastig om het management te overtuigen om een nieuwe website te ontwikkelen'
		16	Communication channels	Noemt beschikbaarheid van informatie over en voordelen en beperkingen van de webrichtlijnen.
		17	Sponsorship	Externe personen of organisaties die bevorderen dat de richtlijnen worden geïmplementeerd (bijvoorbeeld Stichting Accessibility of programma's als iNUP en KING). Dit kan ook door de overheid die de verplichting oplegt.
		18	Resources	Beschikbaarheid van relevante middelen om de invoering van webrichtlijnen mogelijk te maken. Bijvoorbeeld het noemen van het content management systeem of kwalificaties van personeel.
Organizational factors	Procurement & Quality	19	Budget and costs	Vertelt over budget dat wel/niet beschikbaar is voor toegankelijkheid of over kosten die gepaard gaan met de invoering van de webrichtlijnen
		20	Procurement and communication with supplier	Zegt iets over het contract en de aanbesteding naar de leverancier (de bouwer van de website) toe, het contact met de leverancier en/of controle van de vaardigheden van de leverancier.
		21	Quality assurance intern	Heeft het over het controleren van de mate van invoering van de webrichtlijnen door iemand binnen de gemeente zelf of hoe hij/zij die controle heeft ervaren
		22	Quality assurance extern	Heeft het over het controleren van de mate van invoering van de webrichtlijnen door iemand extern of hoe hij/zij die controle heeft ervaren Bijv: 'De eerste controleur was veel strenger dan de tweede'
	Network structure	23	Closedness	Noemt het gesloten zijn voor interventies van buitenaf, door bijvoorbeeld overheidsorganisaties, KING of keuringsinstellingen.
		24	Interdependentness	Noemt het afhankelijk zijn van andere stakeholders binnen de gemeente. Bijv:

		25	Pluralism		‘We moesten steeds wachten op afdeling C voor het aanleveren van teksten’ Noemt het verschil in belangen tussen stakeholders. Bijv: ‘Afdeling belastingen wilde vooral zo veel mogelijk informatie op de website hebben, omdat zij dat belangrijk vinden’
	Organizational structure	26	Management decisions	and	Noemt beslissingen die zijn genomen vanuit decision-makers of volhardendheid vanuit het management. Bijv: ‘Op een gegeven moment zijn we naar de wethouder gestapt en zij maakte er vervolgens een agendapunt van’
		27	Importance and priorities		Noemt het belang of de prioriteit van het doorvoeren van de webrichtlijnen. Bijv: ‘Er zijn niet zoveel blinden in onze gemeente, dus we vonden het niet zo belangrijk’ of ‘Het was belangrijker dat de website snel live ging’
		28	Responsibilities		Noemt verantwoordelijkheden met betrekking tot de invoering van de webrichtlijnen binnen het website ontwikkeltraject. Kan hierbij ook verwijzen naar anderen. Bijv: ‘Het technische gedeelte lag bij de leverancier, dus daar hadden wij geen invloed op’
		29	Internal collaboration and structure		Noemen van samenwerking(en) met andere personen of afdelingen binnen dezelfde gemeente, of noemt de samenstelling van de organisatiestructuur
	Benefits	30	Municipal collaboration		Noemen van samenwerking(en) met andere gemeenten
		31	Internal benefits		Noemt voordelen voor de gemeente of personen binnen de gemeente die de invoering van de webrichtlijnen teweeg brengen.
		32	External benefits		Noemt voordelen voor burgers van de gemeente of voor de maatschappij die de invoering van de webrichtlijnen teweeg brengen. Bijv: ‘Iedereen heeft het recht op toegankelijke informatie’
Personal factors	Involvement	33	Influence and involvement		Noemt eigen invloed over of betrokkenheid met het website ontwikkeltraject en/of de invoering van de webrichtlijnen
		34	Disability in circle		Kent iemand die een beperking heeft, bijvoorbeeld in de familie of vriendenkring. Of heeft het van dichtbij meegemaakt. Bijv: ‘Ik zag hoe en blinde een website gebruikte, dat liet mij het belang van de webrichtlijnen zien’
		35	Knowledge		Noemt kennis, cursussen of trainingen over online toegankelijkheid of

				opgedane er varing met online toegankelijkheid. Hieronder valt ook het gebrek aan kennis of ervaring. Kan over eigen kennis, maar ook over die van anderen gaan, zoals kennis van leveranciers.
		36	Pride / ambition	Laat merken trots te zijn op het voldoen aan de webrichtlijnen, of heel ambitieus te zijn. Kan ook worden toegewezen als juist het ontbreken van trots of ambitie duidelijk blijkt.
		37	Opinion on guidelines	Laat een positief of negatief oordeel merken over de webrichtlijnen. Bijv: 'De webrichtlijnen zeggen niet altijd iets over de kwaliteit van een website'
External factors	Governmental interference	38	Legislation on accessibility	Noemt wet- en regelgeving over online toegankelijkheid
		39	Other rules and demands	Noemt andere regels en vragen vanuit de overheid waar de gemeente ook mee bezig is. Bijv: 'Wekelijks komen er nieuwe eisen vanuit de overheid, we kunnen niet in alles meegaan'
	Citizen influence	40	Citizen influence	Noemt invloed die de burger heeft of het website ontwikkelproces. Bijv: 'We kregen steeds vaker klachten van burgers, dus gingen we er meer aandacht aan besteden'.

