Business Case Study
Costs and Benefits of Implementation of Dutch Webrichtlijnen

Center for e-Government Studies – Universiteit Twente
Business Case Study Costs and Benefits of Implementation of Dutch Webrichtlijnen

Datum 16 november 2011
Versie

Uitgever Universiteit Twente
Center for e-Government Studies
http://www.cfes.nl

Met subsidie van ECP-EPN, Platform voor de Informatiesamenleving

Publicatie titel Business Case Study Costs and Benefits of Implementation of Dutch Webrichtlijnen
Publicatiejaar 2011
Publicatietype Onderzoeksrapport

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Project Rendement van Webrichtlijnen

Achtergrond
In 2004 publiceerde de Nederlandse overheid de Webrichtlijnen, een uitgebreide set richtlijnen voor de ontwikkeling van kwalitatief hoogstaande websites die makkelijk te gebruiken en te onderhouden zijn. In 2011 is de herziene versie van de Webrichtlijnen, waaronder de Web Content Accessibility Guidelines versie 2.0 vallen, onderdeel geworden van de ‘Pas toe of leg uit’-lijst van Open Stan- daarden van de Nederlandse overheid.

In opdracht van ECP-EPN, Platform voor de InformatieSamenleving, heeft de Universiteit Twente een onderzoek uitgevoerd naar mogelijke kosten en baten van de invoering van de Webrichtlijnen door niet-overheidsorganisaties, zoals bedrijven, ondernemingen, non-profit en charitatieve organisaties en andere private partijen.

Onderzoeksvraag
De onderzoeksvraag in dit project was: Wat is het rendement van (de invoering van) Webrichtlijnen? Om het rendement vast te stellen van de investeringen die organisaties doen bij invoering van de Webrichtlijnen, moeten we een beeld hebben van kosten en baten. Enerzijds moeten we weten hoeveel menskracht, financiële en andere middelen (de ‘kostenkant’) er geïnvesteerd is in het ontwerpen, onderhouden en aanpassen van die delen van de organisatiewebsite waarop de Webrichtlijnen betrekking hebben. Anderzijds moeten we weten wat de opbrengsten zijn van de website (de ‘batenkant’) om het rendement van de investeringen vast te kunnen stellen. Opbrengsten kunnen gemeten worden aan de hand van financieel-economische indicatoren (bijvoorbeeld een besparing op ontwikkelkosten of een groei in verkochte producten), maar ook met andere soorten indicatoren (bijvoorbeeld positieve publiciteit, minder klachten, of een verschuiving van klantcontacten van het telefoonkanaal naar het minder dure web-kanaal). Naast financiële indicatoren van rendement, hebben we ook sociale, technische en juridische indicatoren in het onderzoek meegenomen.

Onderzoeksopzet
Om de vraag naar kosten en baten van de invoering van de Webrichtlijnen te beantwoorden, is er een onderzoek in twee delen uitgevoerd.

Voor het eerste deel van het onderzoek hebben we een aantal business cases geselecteerd. Vier zeer verschillende organisaties werden nauwlettend gevolgd bij het opzetten of veranderen van sites die (beter) aan de Webrichtlijnen moesten (gaan) voldoen. Het betrof de software multinational Microsoft (met twee sites), de Hogeschool Arnhem-Nijmegen, KWF Kankerbestrijding en de webwinkel Man and Shaving, in samenwerking met diens webshop-ontwikkelaar Directshop. Op vier tijdstippen in 2009-2011 werden de sites van de vier organisaties geanalyseerd en beoordeeld op het correct toepassen van de Webrichtlijnen (bij de start, twee keer tijdens het ontwerp/aanpassingsproces, na afloop). Bovendien ontvingen de business case-organisaties ondersteuning van twee externe teams van deskundigen, speciaal gericht op de invoeringsvragen en –problemen die ze ondervonden. Be-
trokkenen van de vier organisaties werden geregeld geïnterviewd over de kosten, baten en onder-
vonden problemen bij de invoering van de Webrichtlijnen.

Het eerste deel van het onderzoek is gerapporteerd in: Business case study Costs and benefits of implemen-
tation of Webrichtlijnen, E. Velleman and Th. van der Geest (2011).

Aan het tweede deel van het onderzoek namen twee groepen referentieorganisaties deel. Eén refer-
entiegroep van 30 organisaties was zich bewust van mogelijke toegankelijkheidsproblemen, zoals
bleek uit hun contacten met de Stichting Accessibility. Zij werden aan het begin van het project gein-
terviewd over hun opvattingen over de Webrichtlijnen en de daarmee gepaard gaande kosten en
baten. Hun sites werden op twee momenten gecontroleerd op het voldoen aan de Webrichtlijnen,
en daarnaast nog op een aantal andere punten zoals toegankelijkheidsniveau, laadsnelheid van pagi-
na’s en geschiktheid voor gebruik per mobiele telefoon. Na 6 maanden en na één jaar werden de 30
organisaties nogmaals geïnterviewd over hun inzicht in en overtuigingen over kosten en baten.

Een tweede referentiegroep bestond uit 50 willekeurige organisatie die aan het begin van het onder-
zoeksproject een vragenlijst hebben ingevuld, waarin zij hun opvattingen meldden over de Webrich-
tlijnen en de daarmee gepaard gaande kosten en baten.

Het tweede deel van het onderzoek is gerapporteerd in: Cost-benefit analysis of implementing web standards
in private organizations, Th. van der Geest, E. Velleman and M. Houtepen (2011).

Resultaten

Bewijzen en geloven

Een kosten-baten analyse kan alleen uitgevoerd worden als organisaties zich bewust zijn van de feite-
lijke indicatoren, zoals de financiële investeringen in en de besparingen en opbrengsten van het werk
dat zij in hun websites stoppen. Het bleek om twee redenen een probleem te zijn om data te verza-
melen over investeringen en opbrengsten. Een belangrijke reden is dat investeringen in websites
vooral bestaan uit personeelskosten. De meeste organisaties kunnen wel bepalen wat de perso-
neelskosten zijn van het bouwen en ontwikkelen van een websites, zeker als zij het werk hebben uit-
bested. Maar de personeelskosten van het produceren van content en van content management
zijn gewoonlijk verdeeld over veel verschillende afdelingen en mensen. De Webrichtlijnen gaan over
zowel bouw/ontwikkeling als contentproductie/management. Dat maakt het in het algemeen moei-
lijk voor organisaties om de kosten van hun website in harde cijfers uit te drukken, in het bijzonder
de kosten die met de Webrichtlijnen te maken hebben. Grotere organisaties hebben een beter over-
zicht van de kosten dan kleinere organisaties.

Een tweede belangrijke reden is dat veel organisaties wel een beeld hebben van wat zij met hun site
willen bereiken, maar geen data verzamelen waarmee ze aannemelijk kunnen maken of kunnen be-
wijzen dat zij daadwerkelijk de beoogde opbrengsten realiseren. Als de website vooral bedoeld is om
informatie over te dragen, is de ‘opbrengst’ sowieso moeilijk aan te tonen. Grotere organisaties en
webwinkels verzamelen, vaker dan andere organisaties, informatie waarmee ze kunnen vaststellen
of hun websites de beoogde doelen of opbrengsten realiseren. De andere organisaties verzamelen in
de praktijk op zijn best data over bezoekersaantallen en zoekmachine-effectiviteit. Slechts een enke-
le onderzochte organisatie verzamelde data die specifiek gaan over de mate waarin ze voldoen aan de
Webrichtlijnen, of aan gangbare criteria van gebruiksgemak en toegankelijkheid. Dat maakt het moeilijk om te bewijzen dat positieve resultaten, zoals toenemende bezoekersaantallen, specifiek veroorzaakt worden door toepassing van de Webrichtlijnen.

Het is opmerkelijk te noemen dat de onderzochte organisaties zo weinig harde informatie verzamelen en gebruiken over de opbrengsten en effecten van hun websites die gekoppeld kan worden aan het ontwerp en de inhoud van hun website. Elk van de business case-organisaties heeft de indruk dat de kosten van hun website omlaag zijn gegaan door de (verdere) invoering van de Webrichtlijnen. Het is makkelijker geworden om content en andere web-elementen te veranderen of toe te voegen. De perceptie van (werken aan) de invoering van Webrichtlijnen is dus positief. Die organisaties die de Webrichtlijnen invoeren hebben het idee dat het hun website makkelijker te gebruiken maakt, beter toegankelijk en beter in het algemeen. Bij gebrek aan harde data over de opbrengsten en effectiviteit van hun website kunnen ze deze claim echter niet bewijzen. Het gebrek aan data over gerealiseerde voordelen maakt het moeilijk om organisaties op basis van financiële en economische argumenten te overtuigen van het belang van invoering van de Webrichtlijnen.

Hoewel in het algemeen in de markt de indruk bestaat dat het toepassen van de Webrichtlijnen een positief effect heeft op verschillende kosten-baten indicatoren, stellen we vast dat het op het ogenblik niet mogelijk is conclusies te trekken over financiële of economische voordelen, bij gebrek aan hard bewijs voor de effecten van de toepassing van de richtlijnen.

Een bredere acceptatie en een verdergaande invoering van de Webrichtlijnen kan alleen gerealiseerd worden als er veel aandacht wordt besteed aan informatie en voorlichting.

Overtuigende argumentatie

Ons onderzoek bracht een aantal onderwerpen en thema’s aan het licht die gebruikt kunnen worden om organisaties ervan te overtuigen dat zij de Webrichtlijnen moeten gaan toepassen.

Zowel in de business cases als in de referentiegroepen bestond veel belangstelling voor het effect van de toepassing van Webrichtlijnen op de vindbaarheid van de site en zoekmachineoptimalisatie (SEO). De business case-organisaties gebruiken het argument van SEO intern om steun te krijgen voor de toepassing van de Webrichtlijnen. Hard bewijs voor het effect van de Webrichtlijnen op SEO zou andere organisaties over de streep kunnen trekken.

Het snel toenemend gebruik van mobiel internet kan ook dienen als argument voor het implementeren van Webrichtlijnen. Sites die voldoen aan de richtlijnen presteren beter op de verschillende platforms, waaronder ook mobiele platforms. Organisaties kunnen overtuigd worden van de waarde van het toepassen van Webrichtlijnen als ze zien dat het hun sites meer toekomstbestendig maakt. Ons onderzoek levert hiervoor het bewijsmateriaal.

In twee business cases werd er gewerkt aan het toepassen van de Webrichtlijnen vanuit het perspectief van ‘good governance’, maatschappelijk verantwoord ondernemen. Het management van één van de business cases, Microsoft, heeft toegankelijkheid in de bedrijfssmissie opgenomen. Voor een andere business case, de Hogeschool Arnhem-Nijmegen, is toegankelijkheid een wettelijk verplichte en dus noodzakelijke voorwaarde in het kader van de onderwijscertificatie. Het argument van maat-
schappelijke verantwoordelijkheid kan gebruikt worden als een overtuigend argument voor vele andere organisaties.

De Webrichtlijnen kunnen ook een bruikbaar instrument worden in aanbestedingsprocedures. Organisaties kunnen simpelweg eisen dat een nieuwe site aan de Webrichtlijnen voldoet. Deze eis kan gecheckt worden door externe organisaties, waardoor de marktpartijen geprezen wordt om goed werk te leveren, zelfs als de nodige expertise voor kwaliteitsbeoordeling niet binnen de organisatie voorhanden is.

De business case-organisaties zijn zich ervan bewust dat het duurder is om bestaande sites achteraf toegankelijker te maken (retro-fitting) dan om van het begin af aan te bouwen volgens de Webrichtlijnen. Pogingen om andere organisaties en bedrijven te overtuigen de Webrichtlijnen te implementeren zouden dus in de eerste plaats gericht moeten worden op de volgende release van een website of op nieuwe websites.

De inspanningen zouden zich ook kunnen richten op leveranciers van systemen voor content management. Zij zouden ervan overtuigd moeten worden dat de implementatie van Webrichtlijnen een verkoopargument kan zijn en producten op de markt moeten brengen die het heel makkelijk maken voor hun afnemers om websites te maken en onderhouden die voldoen aan de Webrichtlijnen.

**Bewustzijn en deskundigheid**

In de meeste organisaties is men zich er niet of nauwelijks van bewust wat de Webrichtlijnen inhouden en wat het effect van toepassing is. Dit onderzoek heeft een lijst van indicatoren opgeleverd waarmee organisaties zich beter bewust kunnen worden van de kosten en baten van het voldoen aan de Webrichtlijnen.

Zelfs die organisaties die zich bewust zijn van het belang van Webrichtlijnen of toegankelijkheidsrichtlijnen geven aan dat ze niet beschikken over veel deskundigheid op dit gebied. Zij delegeren de kwestie aan hun externe webbouwers, maar hebben geen middelen of expertise om te controleren of de externe bouwers websites opleveren die voldoen aan de richtlijnen. Het is belangrijk dat de huidige en toekomstige webbouwers en – redacteuren meer en beter opgeleid en getraind worden, zodat zij hun expertise in de organisaties kunnen verspreiden.

De vier organisaties in ons business case-onderzoek geloven dat zij baat hebben bij het toepassen van de Webrichtlijnen. Slechts een paar organisaties verzamelen data die bewijzen dat implementatie van de Webrichtlijnen resulteert in betere sites, sneller ladende pagina’s, betere vindbaarheid, betere prestaties op mobiele telefoons, meer bezoekers en een betere reputatie. Deze organisaties kunnen een rol spelen als ‘ambassadeur’ voor de Webrichtlijnen in contacten met andere organisaties.

**Tot slot**

Onze business case-organisaties zijn er over het algemeen van overtuigd dat toepassing van de Webrichtlijnen een positief effect heeft op verschillende indicatoren van kosten en baten. We stellen echter vast dat het op het moment niet mogelijk is onomstotelijk bewijs te leveren voor de kostenvoor-
In de discussie over rendement en over kosten en baten wordt veel belang gehecht aan financiële argumenten, maar er zijn ook andere soorten baten denkbaar. In dit project is in overleg met belanghebbende organisaties een lijst met verschillende soorten indicatoren van kosten en baten opgesteld, die gebruikt kan worden voor verdere beleidsontwikkeling en onderzoek op het gebied van de invoering en toepassing van Webrichtlijnen.
Management summary

Project Rendement van Webrichtlijnen
(Return on Investment of Webrichtlijnen)

Background

In 2004, the Dutch government published the Webrichtlijnen, an extensive set of guidelines for the development of high quality, maintainable and usable websites. In 2011, the updated version of the Webrichtlijnen, which includes the 2.0 version of the Web Content Accessibility Guidelines, became part of the ‘comply or explain’ list of Open Standards of the Dutch government.

In commission of ECP-EPN, Platform for the Information Society, the University of Twente conducted a study on the potential costs and benefits of implementation of the Webrichtlijnen for non-governmental organizations, like businesses, corporations, not-for-profit and charity organizations, and other private parties.

Research question

The research question in this project was: What is the return on investment of (the implementation of) the Webrichtlijnen. To assess the return of the investments (ROI) what organizations do for the implementation of the Webrichtlijnen, we must have a view of costs and benefits. At one hand, we need to know how much human, financial and other resources (the ‘costs’ side) have been invested in creating, maintaining and adapting those parts of the organizational sites that are affected by the Webrichtlijnen implementation. At the other hand, we need to determine the yield or returns of the website (the ‘benefits’ side) to assess the ROI. Returns can be measured in economic/financial indicators (e.g. reduced development costs or increased number of purchases), but also in other types of indicators (e.g. positive publicity, reduced number of complaints, switch of customers from telephone to the less expensive web channel). In addition to the financial indicators, we also studied social, technical and legal indicators.

Research design

To address the question of costs and benefits of implementing the Webrichtlijnen, a study with two parallel parts was conducted.

For the first part of the study, we selected a set of business cases. Four very different organizations were followed in detail in the process of creating or adapting sites to (better) meet the Webrichtlijnen standards. It concerned the software corporation Microsoft (with two sites), the Arnhem-Nijmegen University of Applied Sciences, the KWF Cancer Society and the web store Man and Shaving, in cooperation with its web shop developer Directshop. Their sites were analyzed and reviewed at four moments for correct implementation of the Webrichtlijnen (before, 2x during, after redesign). In addition, the organizations received support from two external teams of experts, tailored
to the special implementation issues or questions they were confronted with. Representatives of the four organizations were interviewed at regular intervals about costs, benefits and experienced problems with the implementation of the Webrichtlijnen.

The first part of the study is reported in: Business case study Costs and benefits of implementation of Webrichtlijnen, E. Velleman and Th. van der Geest (2011).

In the second part of the study, two groups of reference organizations participated. One reference group of 30 organizations was aware of possible accessibility problems, as appeared from their contacts with the Accessibility Foundation. They were interviewed at the start of the project about their views of the Webrichtlijnen and the associated costs and benefits. Their sites were checked for implementation of the Webrichtlijnen at two moments, including additional measures like level of accessibility, page loading speed, and mobile device suitability. Additional interviews were conducted after six months and one year to explore their insight and perceptions of costs and benefits.

A second reference group, consisting of 50 random organizations, filled out the questionnaire at the start of the project, reporting their views of the Webrichtlijnen and the associated costs and benefits.

The second part of the study is reported in: Cost-benefit analysis of implementing web standards in private organizations, Th. van der Geest, E. Velleman and M. Houtepen (2011).

The results

Evidence and beliefs

One can only perform a cost-benefits analysis when organizations are aware of the actual indicators like financial investments, savings and returns that they gain from the efforts for their websites. It proved to be problematic to collect data about investments and returns, for two reasons. One important reason is that investments in the website are mostly personnel costs. The personnel costs of building and developing a website can be determined by most organizations, especially if they have used subcontractors for this work. But the personnel costs of content creation and content management is usually divided over many different departments and people. The Webrichtlijnen are about both building/development and content creation/management. That makes it hard for many organizations to quantify their website costs in general, and the Webrichtlijnen-related costs specifically. Larger organizations have a better overview of costs than smaller organizations.

A second important reason is that many organizations have a view on what they want to accomplish with their site, but do not collect the data that could demonstrate or prove that they indeed reap the intended benefits. If the goal of the website is primarily informational, it is hard to demonstrate a ‘return’ anyway. Larger organizations and web stores collect, more often than other organizations, information that helps them to assess whether their websites achieves the intended goals and benefits. In practice, the data that the other organizations collect are at best about visitor numbers and search engine effectiveness. Only a few participating organizations collect data specifically related to adherence to Webrichtlijnen, or to viable criteria for usability or accessibility. That makes it difficult to prove that benefits, like increasing visitor numbers, are specifically caused by the implementation of the Webrichtlijnen.
It is surprising that the participating organizations collect or use so little solid information about their website’s returns and effectiveness that can be related to the actual design and content of their website. Each of the business case organizations has the impression that the costs of their website are reduced thanks to the (further) implementation of the Webrichtlijnen. It has become easier to change or add content and other components to the website. So the perception of (working on) implementation of the Webrichtlijnen is positive. Those organizations that are implementing Webrichtlijnen feel that it makes their website better usable, more accessible, and better in general. However due to the lack of solid data about website effectiveness and returns, they cannot support this claim. The lack of data about realized benefits makes it very hard to convince organizations of the relevance of Webrichtlijnen compliance on the basis of financial and economic arguments.

**Convincing arguments**

Our study revealed a number of topics and themes that can be used to convince organizations that they should start applying the Webrichtlijnen.

Both in the business cases and in the reference groups, there was a strong interest in the effect of applying Webrichtlijnen on search engine findability and optimization (SEO). The business case organizations use the SEO argument internally to get support for the implementation of the Webrichtlijnen. Solid evidence about the effect of Webrichtlijnen on SEO would draw other organizations over the line.

The rapid increase of mobile internet access also can be used as an argument for implementing the Webrichtlijnen. Sites that follow the guidelines perform better on various platforms, including mobile platforms. Organizations can be convinced of the value of applying the Webrichtlijnen when they see that it makes their sites more future-proof. Our study provides this evidence.

Two business cases were working on implementing the Webrichtlijnen from the perspective of ‘good governance’. The management of one business case, Microsoft, has included accessibility in its mission. For another business case, the HAN University of Applied Sciences, accessibility has become a legally required certification criterion in their educational assessment. The argument of social responsibility could be used as a convincing argument for many other organizations.

The Webrichtlijnen could also become a useful instrument in tender procedures. Organizations can simply demand that a new site is meeting the Webrichtlijnen. This requirement can be checked by external organizations, thus forcing the market to deliver work of high quality, even when organizations do not have the required expertise internally for checking the quality of results.

The business case organizations realize that it is more expensive to make accessibility improvements to existing websites (retrofitting) than to take the Webrichtlijnen into account from the start. Attempts to convince other organizations and businesses to implement Webrichtlijnen should hence be directed primarily at the next release or at new websites.

Efforts could also be directed at content management system (CMS) vendors. They should be convinced to make Webrichtlijnen implementation one of their selling points and to bring products to
the market that make it very easy for their clients to create and maintain Webrichtlijnen-proof websites.

**Awareness and expertise**

Awareness of what the Webrichtlijnen encompass and what the effect of applying them could be is low in most organizations. This study resulted in a list of indicators that can help to raise the awareness of costs and benefits of compliance to Webrichtlijnen.

Even organizations that are aware of the importance of Webrichtlijnen or accessibility guidelines indicate that they do not have much expertise in this field. They delegate the issue to their external web builders, but have no means or expertise to check whether the external vendors have built sites according to the guidelines. It is important that current and future web builders and editors receive more and better training and education, so they can share their expertise in the organizations.

The four organizations in our business case study believe that they benefit of applying the Webrichtlijnen. Just a few organizations collect data that proves that implementation of the Webrichtlijnen results in better sites, webpages loading faster, better findability, better performance on mobile phones, more visitors and a more positive public reputation. These organizations could play a role as an ‘ambassador’ for the Webrichtlijnen in contacts with other organizations.

**To conclude**

Our business case organizations in general have the perception that applying the Webrichtlijnen has a positive effect on different cost and benefit indicators. However, we conclude that at the moment it is not possible to come up with solid evidence for cost benefits of applying the Webrichtlijnen to a website, due to the lack of data about the effects of implementation of the standards. Efforts need to be focused on creating awareness, distributing information and building expertise of costs and benefits of websites, and of the effects of implementing the Webrichtlijnen on costs and benefits.

In the discussion about return on investment and the costs and benefits a strong emphasis is placed on financial arguments, but there are more types of benefits conceivable. In this project a list of different types of cost-benefit indicators was created together with stakeholders, which can be used for further policy development and research on the implementation of Webrichtlijnen.
1. Introduction

In 2004, the Dutch government published an extensive set of guidelines for the development of high quality, maintainable and usable websites. In 2011, the updated version including WCAG2.0 became part of the ‘comply or explain’ list of Dutch Standards. Both versions fully include the accessibility criteria that W3C (the organization governing the Web) has published for accessible web content.

In commission of ECP-EPN, Platform for the Information Society, the University of Twente is conducting a study on the potential costs and benefits of implementation of the national Dutch Webrichtlijnen. The focus of the study is on non-governmental organizations, like businesses, corporations, not-for-profit, charity organizations and other private parties. What is the cost-benefit of (starting to) comply with the Webrichtlijnen (internationally known as W3C WCAG with some added guidelines) and what is the yield of the implementation of this national, governmental standard?

To address this question, we have selected a set of business cases and two groups of reference organizations. One reference group of 30 who are interviewed and reviewed and who fill out the questionnaire and another (larger) group of organizations that we asked to fill out the questionnaire.

The business cases are extensively analyzed before the start of the study. They are analyzed again at different moments during the implementation process. They underwent three reviews by the Accessibility foundation. After the first report, two teams of experts have supported them. The team focus was to support the business case organizations with implementation of the guidelines as much as possible.

After the support phase, the cases are analyzed a second time and a third time near the end of the study. Besides the review and the help we used interviews and questionnaires to find more precise data to support and quantify the cost benefit indicators. We researched the following groups of indicators: financial, social, technical and legal.

1.1 The business cases

We started the business cases analysis with 4 organizations and 5 websites. Unexpectedly after phase 1, one of the websites was replaced and no longer available for the project:

- Microsoft Nederland: MSN.nl and Het Nieuwe Werken
- Hogeschool Arnhem-Nijmegen (HAN)
- Man & Shaving Webshop
- Koningin Wilhelmina Fonds (KWF).

The business cases received special support, tailored to their needs, to help them reach a higher implementation level with the Webrichtlijnen by external advisors (WIEP and GRIP). More information on the choice and method can be found in section 4.

2. Literature on cost-benefit studies

There is no specific cost-benefit literature about implementing the Webrichtlijnen. Cost-benefit of applying the Webrichtlijnen is subject of a long-standing discussion that mainly takes place on the
web. The Web Accessibility Initiative (WAI) states in its business case about implementation of the Web Accessibility Guidelines (WCAG) that, ‘in the long run, cost savings will occur, but the initial investments in acquiring knowledge, establishing processes, and increased development and testing time have to be taken into account when incorporating accessibility. However, when accessibility is considered from the start of the design and development process, this may take a small percentage of the overall web site development costs’ (W3C, 2009a). These assumptions are repeated many times in literature and on the web, mostly without real supporting data or research. The assumptions need support in order to make a convincing case to organizations for applying the Accessibility guidelines, or a wider set of guidelines such as the national Webrichtlijnen in the Netherlands. Many authors cite the evidence presented by Legal and General at a conference1:

- 30% increase in natural search-engine traffic
- Significant improvement in Google rankings for target keywords
- 75% reduction of time for pages to load
- Elimination of browser-compatibility complaints
- Accessible to mobile devices
- Reduced time to manage content (ten-fold)
- Savings of £200,000 annually on site maintenance
- 95% increase in visitors getting a life insurance quote
- 90% increase in insurance sales online
- 100% return on investment in less than 12 months

2.1 Business benefits of the Web Content Accessibility Guidelines

The international standard for Web Accessibility is constituted by the W3C Web Content Accessibility Guidelines. W3C has been developing a suite of technical standards for accessibility of web content, but also for authoring tools, browsers and media players2.

W3C has published a business case on the benefits of applying the WCAG standard for web accessibility3. The business case is not backed up by any actual business data or clear indicators, but it offers the view of many international experts working in the field. We use part of this business case in section 15.1 to provide a preliminary focus example. The business case describes the benefits divided over four factors4:

- Financial Factors. Implementing the guidelines leads to direct and indirect cost savings and a higher score in search engines (SEO) (FCB02, FCB20, FCB28).
- Social Factors. You reach a larger target audience including people with (temporary) disabilities and non-disabled (FCB11). Also people with low bandwidth connections to the Internet (FCB21, FCB22), people using older technologies, and new and infrequent web users get better access (FCB14, FCB15, FCB16, FCB17, FCB18).

1 http://www.accessibility.nl/toetsing/casestudy/Legalandgeneral (Dutch)
2 Including W3C/WAI Web Content Accessibility Guidelines (WCAG), the Authoring Tool Accessibility Guidelines (ATAG), User Agent Accessibility Guidelines (UAAG) and Accessible Rich Internet Applications (WAI-ARIA)
3 http://www.w3.org/WAI/bcase/
4 Website of W3C: http://www.w3.org/WAI/presentations/WCAG20_benefits/Overview.php Consulted on May 5th 2011, 14:53 CET
• Technical Factors. Increased interoperability and quality. A reduction in time and money for site development and maintenance (FCB01, FCB03, FCB04). Reduction of server load and an increase in efficiency of the website (FCB22, FCB23, FCB24, FCB25).
• Legal and Policy Factors. This covers meeting the legal requirements for Web accessibility from governments and other organizations in the form of laws, policies, regulations, standards, guidelines, directives, communications, orders, or other types of documents (FCB07, FCB27).

The numbers (FCBxx) refer to the benefits that can be found also in the list of cost benefit indicators in section 3. In the table they are marked as W3 cost-benefit indicators.

2.2 Benefits of the Dutch National Webrichtlijnen

At the beginning of March 2010, the Ministry of the Interior and Kingdom Relations in the Netherlands, together with the Quality mark drempelvrij.nl Foundation, officially commissioned the revision of the Dutch national Webrichtlijnen to be fully conformant with the Web Content Accessibility Guidelines 2.0 (WCAG2.0) as produced by the World Wide Web Consortium (W3C). The Dutch guidelines include the full WCAG2.0 guidelines and add a number of extra requirements for quality and presentation of web content that are judged important for recognizing, finding and using the websites of the national and local government. In 2011, the updated version including WCAG2.0 became part of the ‘pas toe of leg uit’ ('comply or explain’) list of Dutch Standards. The new version is also the basis of the Quality Mark Drempelvrij.nl. On the website of the Webrichtlijnen, there are references to potential business opportunities and benefits. The Webrichtlijnen website states that the benefits of applying the guidelines are:

• Reaching more people (FCB11)
• Improved findability in search engines (FCB20)
• A website that performs well in all browsers, on all devices and in all operating systems (FCB21, FCB24, FCB26)
• Making clear agreements on web development quality (FCB27, FCB28)
• A faster website at lower costs (FCB01, FCB02, FCB03, FCB04, FCB22, FCB25)
• A sustainable and flexible website that is future-ready (FCB07b)
• A pleasant user experience for your visitors (FCB17, FCB18)

The numbers (FCBxx) refer to the benefits that can be found also in the list of cost benefit indicators in section 3. In the table they are marked as WR cost benefit indicators. At the time of this study, part of the Webrichtlijnen version 2 (tests for the ‘universal’ part) was still in development.

2.3 Examples of measuring benefits in literature

2.3.1 Visitor statistics and search engine indexing

Leitner, Hartjes and Strauss (Leitner et al., 2009a) set up a framework for efficiency measurement of accessible web sites. Hartjes applied this framework to a website in a case study. First he analyzed the inaccessible website, then the site was transferred to an accessible website and re-analyzed (Hartjes, 2009). Hartjes observed an improvement in the statistics specifically the number of visits, keywords, time on site, the bounce rate and the number of returning visits. Leitner (2009b) uses the results to conclude that accessible web sites cause an improvement of visitor behavior and an increase in web site traffic that can be measured by evaluating the visitor statistics (e.g., bounce rate,

5 www.webrichtlijnen.nl. Consulted on August 19th, 16.30 CET
conversion rate, and time on site). Visitor statistics are incorporated into the indicators used in this study. In our view, it is however difficult to relate these data to the actual implementation of Web Accessibility Guidelines as there are many (external) factors that can influence visitor statistics. This includes advertisement, campaigns, time of the year, new products or information.

Hartjes also concludes that ‘accessible web sites enable better search engine indexing of web sites which leads to an improved visitor behavior and web site traffic’. Our interviews with the business cases lead to the conclusion that this is not as obvious as indicated by Hartjes. The search engine indexing is easy to monitor, but the relationship with the improved visitor behavior and web site traffic is dependent on many factors that are not measured in the visitor statistics and that can be external to the project (for example a different company doing an advertisement campaign for a related or same sort of product).

Dutch webbuilder qforma reports on the perceived advantages of implementing Webrichtlijnen version 1.0 priority 2 to the website of Worldwide Vision. Qforma built a new webshop for them. In the webshop Worldwide Vision sells assistive products to people with a visual impairment (Telephones, reading tools, walking canes etc.). Before the change of the webshop, most orders where by phone, since the completion of the new webshop the organization receives more online orders and notices a reduction in the amount of phone calls.

Qforma reports an increase in the number of visitors and relates this to the better quality of the website thanks to implementing the Webrichtlijnen. They report however that at the same time they have also increased the number of activities related to SEO including Google Adwords campaigns. Also in the communication there is more focus on the website than was previously the case. The results are therefore important as they reflect the perception of the impact of the Webrichtlijnen by the direct involved but the data cannot be proven to be directly related to the Webrichtlijnen as they state.

### 2.3.2 More customers

Heerdt and Strauss (Heerdt and Strauss, 2004) provide a cost-benefit analysis where the total accessibility costs depend on two factors. The size of the company and the complexity of the website as opposed to the increase of the number of visitors. Based on that equation, they estimate the reduction of cost for accessible websites between 12 and 35 percent.

Cullen and Kubitschke (Cullen, Kubitschke, Blanck e.a., 2008) use calculations based on an increase of visitors successfully completing tasks on your website. They state that ‘if the average on-line sales per customer are 20% greater on-line than using other mediums, with an average annual spend of €767 for every 1% increase in the use of on-line shopping by consumers with disabilities, retailers would per annum generate additional sales of more than €128 million. If 40% of the target group

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6 http://www.qforma.nl/referenties/139/worldwide-vision.html
made use of these accessible services this would generate additional sales of €5.15 billion every year. The figures are over all of the EU-27. The EU population with disabilities is estimated between 50 and 65 million (10% of the EU total population), with a correlation between disability and ageing (63% of people with disabilities are older than 45). Nearly 30% of people in the age group 55-64 report a disability and the incidence of disability will increase, as the EU population gets older.

The UK government estimates that the combined spending power of impaired and elderly people is over 297 billion Euros (Leitner, 2009b). Leitner quotes the RNIB data and says that this figure represents about 14% of disabled people in the UK with a combined spending power of about 60 billion Euros, and 33% of people over the age of 50 with a combined spending power of about 240 billion Euros. The figures are impressive, but like in the previously discussed studies, the results cannot be directly related to implementation of Webrichtlijnen. The figures however indicate the potential market if websites are accessible to all, including people with disabilities.

2.3.3 Decreasing multichannel cost

The Danish local government interest group published a study (Devoteam, 2011) that shows the cost of citizens contacting the municipality through different channels. They argue that a better and more efficient website could decrease the multi-channel cost. The study estimates the cost of a (fully automated back office) self-service at 20 Dkr per contact. Self-service (manually back office) is estimated at 40 Dkr., telephone at 40 Dkr., email at 55 Dkr. and snail mail at 60 Dkr. Face to face contact is estimated at 75 Dkr. The research indicates that shifting part of the face to face appearance to self-service can save the Danish government large amounts of money. A European survey (Ramboll, 2004) has found that ‘the average time saving for citizens using eGovernment services as opposed to more traditional modes of government or public service interaction was 69 minutes for each online-contact’.

During our study, Dutch SNSbank indicated that a call-center cost them an average of 7,50 to 12,50 Euro per call. They declare that by conforming with the Webrichtlijnen (priority 1 and 2) they have reduced the number of calls with 15 to 30 percent. As they received around 20,000 calls per week before, the reduction in cost is estimated at more than € 1.755.000 per year. This covers the cost they make for the implementation of the Webrichtlijnen. They attribute that completely to the improvement of the website by following the Webrichtlijnen. Reduction of multi-channel cost has been added as an indicator in our study.

2.3.4 Reducing bandwidth cost

During a meeting in Brussels, Jutta Treviranus pointed to the example of Fairfax in Australia. In an email they write (Nevile & Treviranus, 2011) "Fairfax in Australia, has offered a striking economic reason for being concerned about accessibility. In 2003, they redeveloped their Web site with accessibility in mind and the result is a saving of an estimated $1,000,000 per year in transmission costs. In a 2004 presentation for the Web Standards Group [WSG], Brett Jackson, Creative Director of Fairfax Digital, reported that Fairfax credits this achievement to its decision to follow accessibility guidelines by its move to the XHTML/CSS platform. Jackson represented Fairfax Digital "with 40 sites, 5 or 6 key destinations, ... SMH/AGE alone has 135 million [pageviews]'s per month, 6 mill [unique visitors]'s. [These] represent the leading News sites in Australia." Fairfax "moved our biggest sites across in a 6 month timeframe' with "the smoothest rollout we have ever experienced" and "will save a million $ in bandwidth a year." (Jackson, 2004)".
2.3.5 Business Case Tool (BCT)

The Business Case Tool is developed in a EU project on cost-benefit of implementing accessibility standards by a Consortium lead by the Spanish company Technosite in collaboration with The Blanck Group. They worked on the “Study on economic assessment for improving eAccessibility Services and Products”. The tool is intended to give a general estimation of the extra cost of applying the Accessibility Guidelines. It does not provide indicators or calculations for the benefits. The study adds that more detailed evaluation by a web accessibility consultant will be necessary for a good overview of the extra cost. The tool is built up in a way that makes the use fairly easy. After answering a limited number of questions about the country, the objectives, possible training, techniques used on the website and daily rates for the own and external organizations, the tool calculates the extra cost. The calculation takes into account if websites have many templates and if they use specific technologies or techniques (forum, pdf documents, transactional processes, multimedia etc.).

The tool makes it difficult to single out particular costs that are made for accessibility implementation. It does not calculate what happens if CMS systems are used. Also its focus is on retrofitting existing websites. This way it always seems to calculate extra cost although companies in our study indicate that making a website accessible from the start was not more or even less expensive if clearly described in the requirements.

The assumption in BCT is that organizations are at least to some extent aware of the specific costs and of the size of their website. The organizations we spoke seem to have only a very general view of the costs (if they have any): they know at best how much they paid to the vendor or how much they spent on their ICT or web team.

2.3.6 Using different versions of the guidelines

The EU study “Monitoring eAccessibility in Europe 2009-2011” (MEAC2) and the study “Economic Assessment for improving e-Accessibility Services and Products”, both by the Spanish Technosite give an indication of the extra cost of developing an accessible website. As requested by the European Commission, Technosite wrote an additional report (Technosite, 2011) describing the differences in cost between applying the different accessibility guidelines versions like:

- WCAG 2.0,
- WCAG 1.0 (+ 5,56 percent cost compared to implementing WCAG2.0 AA) or the
- Spanish National Law (UNE) (+ 6,04 percent cost compared to implementing WCAG2.0 AA).

Their study shows that conforming to WCAG2.0 AA is on average easier and lower cost than with WCAG1.0 or UNE. They make the calculation based on what they call educated guesses. Using the same ‘educated guess’ we would presume that the Spanish situation could apply also in the Netherlands. This would mean that the average price per average website (calculated for cluster 3.200 pages, 10 templates with transactional functionalities and some multimedia content is:

- 41.431,12 euros + cost of non quantifiable categories if compliant with WCAG 2.0 AA
- 43.732,85 euros + cost of non quantifiable categories if compliant with WCAG 1.0 AA
- 43.932,18 euros + cost of non quantifiable categories if compliant with National Law

We would expect that conforming to National law in the Netherlands would be more complicated (and thus higher cost than in Spain) because of the number of extra requirements in the Dutch Webrichtlijnen. With these data it is possible to calculate the market value. This shows the possible benefits when implementing one or the other of the guidelines. It is an important factor to consider before starting or commissioning a website. The version of the guidelines and the level is added to the cost benefit indicators as a sub under the development cost.
2.3.7 Legal requirements and harmonization

With an educated guess Technosite (Technosite, 2011) estimates that the extra cost for a company doing business in all European Union Member States through their website is at least one working day per country to adapt it to each national law (27 countries * 1 working day at 400 Euros = 10.800 Euros per company). As it is difficult to find a Web Accessibility consultancy that knows how to apply the 27 regulations at this respect, clients tend to hire a local Web accessibility consultancy per local website. Using the Web Content Accessibility Guidelines as a harmonized standard means that this extra cost is not required. This is a clear cost benefit.

In the same study, Technosite did a quick calculation using fines as they are linked to non-compliance with the Accessibility Guidelines in some European countries. In Spain, companies that do not comply with the national web accessibility requirements face fines that range between 30.000 and 90.000 Euros. This issue is especially relevant for multinational companies.

3. Core Accessibility Guidelines implementation cost-benefit indicators

In this study we made a list of indicators for cost-benefit of applying the Webrichtlijnen. To create a validated list, we undertook a number of activities (van der Geest, 2010):

- First we looked into the literature of Return on Investment (ROI) for the application of quality guidelines to websites. We focused specifically on literature about applying accessibility and/or usability guidelines. This resulted in a detailed compilation of possible cost-benefit indicators (Section 13).
- We organized two meetings with stakeholders (25 and 26 March 2010) representing 18 private organizations and companies interested in applying the Webrichtlijnen. We invited a wide variety of stakeholders. We welcomed representatives from international companies with many international websites, but also specialized shops run by just one person.
- During the meetings, the stakeholders did not only share their vision on the application of the Webrichtlijnen, but they also discussed the research instruments.

Based on the literature and the discussion with the stakeholders in the two meetings, we made a choice of the cost-benefit indicators for applying Web Accessibility Guidelines (specifically the Dutch National Webrichtlijnen):

<table>
<thead>
<tr>
<th>Code</th>
<th>Core indicators</th>
<th>Impact</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCB01</td>
<td>Reduction of development cost</td>
<td>Reduced costs for development</td>
<td>WR,W3</td>
</tr>
<tr>
<td>FCB02</td>
<td>Reduction of development time</td>
<td>Reduced hours for development</td>
<td>WR,W3</td>
</tr>
<tr>
<td>FCB03</td>
<td>Reduction of maintenance/support cost</td>
<td>Reduced costs spend on maintenance and support</td>
<td>WR,W3</td>
</tr>
<tr>
<td>FCB04</td>
<td>Reduction of maintenance/support time</td>
<td>Reduced hours spend on maintenance and support</td>
<td>WR,W3</td>
</tr>
<tr>
<td>FCB05</td>
<td>Reduction of multichannel cost</td>
<td>Decreased costs of other (additional) channels</td>
<td></td>
</tr>
<tr>
<td>FCB06</td>
<td>Reduction of (cust.) support cost</td>
<td>(sub) Decreased support costs</td>
<td></td>
</tr>
<tr>
<td>FCB07</td>
<td>Reduction of additional cost risk</td>
<td>(sub) Financial sanctions for not conforming with the guidelines</td>
<td>WR,W3</td>
</tr>
<tr>
<td>FCB08</td>
<td>Reduction of training cost</td>
<td>(sub) Reduction of training-time</td>
<td></td>
</tr>
<tr>
<td>FCB09</td>
<td>Reduction of documentation cost</td>
<td>(sub) Reduction of documentation costs</td>
<td></td>
</tr>
<tr>
<td>Indicator Code</td>
<td>Description</td>
<td>Match</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>FCB10</td>
<td>Increase of transactions/purchases</td>
<td>Increased transactions/purchases</td>
<td></td>
</tr>
<tr>
<td>FCB11</td>
<td>Increase of number of visitors</td>
<td>Increased number of visitors</td>
<td></td>
</tr>
<tr>
<td>FCB12</td>
<td>Increase of return visit ratio</td>
<td>Increased number of return visits</td>
<td></td>
</tr>
<tr>
<td>FCB13</td>
<td>Reduction of drop-off frequency</td>
<td>Reduced drop-off rates</td>
<td></td>
</tr>
<tr>
<td>FCB14</td>
<td>Increase of completion rate</td>
<td>Increased success rate / completion rate</td>
<td></td>
</tr>
<tr>
<td>FCB15</td>
<td>Increase of completion rate time</td>
<td>Increase of success rate / completion rate in less time for visitors</td>
<td></td>
</tr>
<tr>
<td>FCB16</td>
<td>Reduction of user error</td>
<td>Reduced user error/decreased failed searches</td>
<td></td>
</tr>
<tr>
<td>FCB17</td>
<td>Increase of user satisfaction</td>
<td>Increased user satisfaction</td>
<td></td>
</tr>
<tr>
<td>FCB18</td>
<td>Increase of success perception</td>
<td>Users’ perception of their success (or failure)</td>
<td></td>
</tr>
<tr>
<td>FCB19</td>
<td>Increase of perception of value of company by stakeholders</td>
<td>Improved perception of company value</td>
<td></td>
</tr>
<tr>
<td>FCB20</td>
<td>Increase in search engine ranking</td>
<td>Increased findability of the website in search engine</td>
<td></td>
</tr>
<tr>
<td>FCB21</td>
<td>Increase in multi platform support</td>
<td>Offers same or better experience and services on mobile devices</td>
<td></td>
</tr>
<tr>
<td>FCB22</td>
<td>Increase in technical performance</td>
<td>Increase of upload speed on standard PC</td>
<td></td>
</tr>
<tr>
<td>FCB23</td>
<td>Reduction of bandwidth</td>
<td>Reduction of bandwidth</td>
<td></td>
</tr>
<tr>
<td>FCB24</td>
<td>Increase of cross-platform perfor- mance</td>
<td>Increase of cross-platform performance (IE, Firefox, etc)</td>
<td></td>
</tr>
<tr>
<td>FCB25</td>
<td>Increased natural support for peeks</td>
<td>Better support for peek activities without additional server space</td>
<td></td>
</tr>
<tr>
<td>FCB26</td>
<td>Increase in interoperability</td>
<td>Increased interoperability with systems, websites or other parts of the organization</td>
<td></td>
</tr>
<tr>
<td>FCB27</td>
<td>Increase of legal conformance</td>
<td>Increased conformance with procurement/accreditation rules</td>
<td></td>
</tr>
<tr>
<td>FCB28</td>
<td>Increase of support for project leaders</td>
<td>Increased efficiency and support for project leader of website owner</td>
<td></td>
</tr>
<tr>
<td>FCB29</td>
<td>Increase in perception of CSR</td>
<td>Increased perception of Corporate Social Responsibility</td>
<td></td>
</tr>
<tr>
<td>FCB30</td>
<td>Increase in job satisfaction</td>
<td>(sub) Increased job satisfaction of employees related to CSR</td>
<td></td>
</tr>
</tbody>
</table>

In the column ‘match’, WR means that these indicators are also named by the Webrichtlijnen website as benefits for implementation of the Dutch National Webrichtlijnen. W3 means that these indicators are named by W3C/WAI in their business case suite for WCAG.

### 4. Research questions

It is claimed that web accessibility implementation, or adherence to the Webrichtlijnen in general, may lead to business benefits for organizations. Currently, few non-governmental and governmental organizations have implemented WR-compliant web sites. That implies that little information is available concerning their experiences with implementation procedures, their incentives, or the direct benefits they obtained from an implementation of Webrichtlijnen. Webrichtlijnen or accessibility guidelines implementation projects have been initiated in organizations but may have failed or been dropped due to various reasons. In this case, information about the reasons for project failure, for
hesitation of web standards implementation, or required incentives can be useful. On the basis of these considerations, the research questions for this business case study can be formulated as follows:

1. Before and during the support
   - To what extent, on which point does the site of [name of organization] comply with the Webrichtlijnen? (Webrichtlijnen test, both with the WR-Tool and manually)
   - How is (getting to) implementation of the Webrichtlijnen embedded in the organization? (Policy, expertise, management, budgets, etc.)
   - How does the organization assess Costs & benefits/Return-on-investment (C&B/ROI) of the websites? How about specific C&B for implementation of Webrichtlijnen?

2. Directly after support
   - What are the most costly implementation issues and support questions
   - What is the status of the website directly after support: Webrichtlijnen repeated, 2nd Webrichtlijnen test, Cost-benefit questions for organizations and interviews with a focus on the indicators.

3. Six months after support and end of project
   - What are the support questions, issues at this point in time?
   - What is the status of the website 6 months after support: repeated, 3rd Webrichtlijnen test, Webrichtlijnen Cost-benefit questions for organizations and interview including discussing the indicator list.
   - Do the Indicators generate cost benefit data for applying the Webrichtlijnen

The web site evaluation that is conducted in an early stage of the analysis represents the largest quantitative data input into the case study. It is carried out in order to screen the five websites for the level of Webrichtlijnen implementation of their web sites. It is done by the Accessibility Foundation, an inspection organization in the Netherlands working under accreditation (ISO/IEC 17020) and specialized in Web Evaluation.

4.1 Automated Tests:

Accessibility Foundation used a number of automated tests to do a preliminary quickscan of the websites. For this quickscan they used:

   - The Firefox developer toolbar.
   - The W3C validator: validator.w3.org.
   - The mobile ok validator on the W3C website.
   - The W3C link checker.
   - The AIS toolbar.
   - The leesniveau toetstool and
   - Google for search engine results

The results were used in the reports that we discussed during the Stakeholder meetings in Utrecht at the start of the project. For the main testing, the inspection organization only used the developer toolbar to search in the code of the sampled webpages.

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http://www.accessibility.nl
4.2 Manual Tests:

The manual tests were used for the official inspection of the websites. First the scope of the website was determined. Then based on that scope, a number of pages where sampled using the UWEM1.2 methodology that is also used for the Quality Mark drempelvrij.nl.

The sampled pages have then been used to test manually with the help of graphical and specialized browsers and code programs.

The reviewers used the Web Developer Plug-In on Firefox: disabling images, alt-text check, turning off sound, font sizes, resolutions, color display, navigation without the mouse etc. All found errors were also checked manually in the code.

At the time of this study, the Webrichtlijnen version 2 was still in development. The Universal guidelines had not been finished in a testable form. The evaluators tried to include all the guidelines, but limited the reports to level A and AA.

4.3 Semi structured interviews

Semi-structured interviews have been conducted in this study. This type of interview allows open questions and conversational style and therefore enables new viewpoints to emerge freely. The interviewee guides the conversation, whereas the interviewer listens actively and intervenes in case of breaks in the conversation or in case of major deviations of the interviewee in order to minimize the interview-induced bias (Thompson et al. 2006). We used the set of indicators, derived from the focus groups and the questions that were also asked in the online survey as interview guidelines. These guidelines cover the main topics identified in the conceptual framework and ensure comparability across interviews. The interview guidelines start with a predetermined set of questions (personal background, description of work, description of organization). Commonly, additional questions emerged out of the conversation.

Once the organizations were in the process of implementing the Webrichtlijnen, we called them about once every 3 months, to hear about their experiences and to determine what the most relevant and pressing problems were. There was no fixed set of questions for these follow-up calls: we wanted the organizations to report on whatever was of interest for them. Part of this follow up was done by Wiep and GRIP during their support.

5. Case selection

The literature on case study research does not stipulate a certain number of cases to be selected but suggests a number of four to ten cases for sound research results (Eisenhardt 1989). We tried to find cases that offer the widest variety of input to the study. Together with the project group the following business cases have been selected:

- Microsoft Nederland: MSN.nl and Het Nieuwe Werken
- Hogeschool Arnhem-Nijmegen (HAN)
- Man & Shaving Webshop
- Koningin Wilhelmina Fonds (KWF).
Unexpectedly after phase 1, the website of MSN.nl was replaced externally and no longer available for the project. Below is an overview of the organizations from the interviews. We added questions from the BCT. Part of the data was collected at the first interview. Other data were collected using the BCT (Technosite, 2011) in the summer of 2011. The cases are described in more detail in the following sections.

6. Business case: Microsoft Het Nieuwe Werken website

Microsoft almost immediately indicated their interest in applying the Webrichtlijnen and trying this on a number of their websites. They were particularly interested in the subject of accessibility and the relation to quality and cost-benefit. We stress that in this business case, it was the accessibility part of the Webrichtlijnen that was in the focus of interest of the organization. Accessibility is one of the pillars of Microsoft and stimulated by Bill Gates. Microsoft Netherlands was interested in applying more accessibility to their Dutch websites and using the experience to outreach to the companies they know in their network and daily relations. The business case focuses on the website for Het Nieuwe Werken. Known in the US as the New World of Work: http://www.microsoft.com/netherlands/het_nieuwe_werken/

In view of the cost benefit study it is interesting to also look at the accessibility website recently built by Microsoft. The Microsoft website on accessibility (www.microsoft.com/netherlands/toegankelijk/) is built in part by TamTam, an experienced accessible web building company. The site is fully conformant with the Webrichtlijnen and Accessibility guidelines version 2. This website is the first non-government website in the Netherlands that complies with the complete set of Webrichtlijnen (125 in total, including all the Web Content Accessibility Guidelines for priority 1 and 2). It was built after the initial Webrichtlijnen test of the website Het Nieuwe Werken and the input from the test was used to its full extent in building this website.

6.1 Introduction to the website Het Nieuwe Werken
Figure 1: Screenshot of the Microsoft website Het Nieuwe Werken

The website “Het nieuwe werken” is a modern website that explains the New World Of Work as proposed by Microsoft. The website describes a dynamic way of working and cooperating with colleagues and customers, supported by the latest technology. This includes an increase in the flexibility of working hours and a different view of the working environment. People feel better and the organization increases its productivity. Microsoft is a forerunner when it comes to the New World Of Work and wants to help companies to solutions and more information through this website. The website attracts more than 10.000 unique visitors per month.

The website includes links to companies who can help you implement the New World Of Work. Also it offers testimonial videos and different help and support possibilities for companies wanting to implement this especially if they are using Microsoft products. Main focus of the website is to come into contact with people who are interested in a guided tour.

6.1.1 Microsoft website about accessibility

It is interesting to point to the accessibility website made by Microsoft to create awareness of the subject: www.microsoft.com/netherlands/toegankelijk/

This website attracted about 2.200 unique visitors per month at the end of 2010. This figure is growing since Microsoft is creating more awareness of the website. From the analytics, it is visible that visitors mostly look at the pages about “why” (why has Microsoft made this website) and that search engines bring many people to the website. This search engine result is in the eyes of Microsoft a result of the Search Engine Optimization advantages of the Webrichtlijnen. This is an interesting observation for the goal of this cost-benefit study.

6.2 Results of the first Webrichtlijnen inspection

The website was first inspected in August 2010. The scope includes the website as it can be found on the base URL and the contact form (forms.microsoft.nl/hetnieuwewerken/). The total number of pages checked in the sample was 36. The pages where selected using the method described in UWEM1.2 for manual evaluation. In the 50 page report, the inspectors describe the errors that were found on the website in such a way that they can be used by the two companies doing the support and training to help repair or prioritize reparation of the website to be more conformant with the Webrichtlijnen. After the help phase where the companies received comments and help, there was a second evaluation. The general overview of the scores can be seen below. They are compared to the results of the second and third measurement:

- X = Fail continued
- X+ = Fail but improved
- XV = Pass, was fail
- VX = Fail, was pass
- V = Pass continued

<table>
<thead>
<tr>
<th>Principles, Guidelines and Success criteria</th>
<th>level</th>
<th>Nieuwe werken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1 Non-text Content</td>
<td>A</td>
<td>X</td>
</tr>
</tbody>
</table>

Center for e-Government Studies
<table>
<thead>
<tr>
<th>Requirement</th>
<th>A</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1 Audio-only and Video-only (Pre-recorded)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.2 Captions (Prerecorded)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.2.3 Audio Description or Media Alternative (Prerecorded)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.2.4 Captions (Live)</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>1.2.5 Audio Description (Prerecorded)</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.3.1 Info and Relationships</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.3.2 Meaningful Sequence</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.3.3 Sensory Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4.1 Use of Color</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.4.2 Audio Control</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>1.4.3 Contrast (Minimum)</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.4.4 Resize text</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>1.4.5 Images of Text</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>2.1.1 Keyboard</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.1.2 No Keyboard Trap</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.2.1 Timing Adjustable</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.2.2 Pause, Stop, Hide</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.3.1 Three Flashes or Below Threshold</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.4.1 Bypass Blocks</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.4.2 Page Titled</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.3 Focus Order</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.4 Link Purpose (In Context)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.5 Multiple Ways</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>2.4.6 Headings and Labels</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>2.4.7 Focus Visible</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.1.1 Language of Page</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.1.2 Language of Parts</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.2.1 On Focus</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.2.2 On Input</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.2.3 Consistent Navigation</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.2.4 Consistent Identification</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.3.1 Error Identification</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>3.3.2 Labels or Instructions</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>3.3.3 Error Suggestion</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.3.4 Error Prevention (Legal, Financial, Data)</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>4.1.1 Parsing</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>4.1.2 Name, Role, Value</td>
<td>A</td>
<td>X</td>
</tr>
</tbody>
</table>

Some of the errors found during the test have a potential low impact. Examples are images that miss a clear text description and some of the pages that do not validate correctly. This indicates that the code used for showing the content in the browser has minor mistakes. Also on some pages, the target of the hyperlinks was not clear. These issues are easy to repair.

The guidelines related to video have more impact. There are missing captions and in some cases missing audio description. The best solution for these problems is demonstrated by Microsoft on the
accessibility website that was developed later. The video on that website was made in such a way that captions and audio descriptions are not necessary. On that site, MS also offers a possibility to view or download the videos if Silverlight is not supported. This was done mainly because Silverlight does not work on the Apple IPad. By implementing the Webrichtlijnen, this issue of platform and browser compatibility is covered from the start.

The errors found were described in the test report that was handed over to the two supporting agencies, GRIP and Wiep. GRIP used the reports to discuss possible solutions and prioritize the approach together with the owner and the maker of the website. In this business case, a web builder that has extensive experience with applying the Webrichtlijnen, is already assisting Microsoft, so technical support in applying the test results was minimal.

6.3 Cost & benefit of applying Webrichtlijnen to Het Nieuwe Werken

Microsoft wants to focus on Design for all, including people with disabilities. They want to show that accessibility is possible and they want to be an example of excellence for their suppliers, resellers and partners.

Most important cost-benefit indicators for using the Webrichtlijnen after the first round of support are:

- Corporate Social Responsibility (CSR)
- Quality of the code and therefor easier and cheaper maintenance and management of a website
- SEO. Websites function better in search engines
- Improved support for other platforms and devices like mobile phones and general improved working of the website
- Reach a larger audience

For the website Het Nieuwe Werken, the most important and specifically measurable cost-benefit indicator is people calling for an appointment. This is directly measurable in numbers of people calling the telephone number, filling out the contact form or sending an email. Microsoft indicates that they perceive that the Webrichtlijnen help them to better achieve this goal.

For the website Het Nieuwe Werken, Microsoft collects the following information:

- Personnel costs and other costs related to the design and development of the website (as project cost). This means that the costs are mostly defined (project budgets are mostly defined). Most websites at Microsoft have a lifespan of about one year and are extremely dynamic when it comes to content and functionality. They see many changes during their sometimes very short lifetime.
- Personnel costs and other costs related to maintenance and management are also measured during the lifespan of the website. This includes costs for content management and external costs for content delivery.
- Visitors numbers. MS knows the number of return visitors. Microsoft is primarily interested in the conversion rate. This is the number of people that call the call center or use other channels to ask for a guided tour. They know how many people ask for a guided tour and in that way measure conversion.
- Click rate of banners and adverts are known and actively used to upgrade the number of visitors to the website who make a call.
- They do not measure the Drop-off rate.
- Use of different channels is measured because the main target is people calling the Call center, filling out a contact form or sending an email. The primary conversion is through the phone channel. So instead of less phone calls, this website aims to increase the number of calls.
- Feedback from customers is directly input for the website. Goals is higher conversion rates.
- Click paths and time on the website are actively used to see what people are looking for and how successful the site is in conversion.
- Findability by search engines. This is considered very important. Microsoft experiences strong SEO advantages when using the Webrichtlijnen. They primarily focus on implementing level AA accessibility guidelines.
- They do not measure if the site works on mobile phones. It works, but needs a lot of scrolling. Microsoft believes the Webrichtlijnen help here because they make websites more mobile-ready.
- Accessibility. This is considered important, specifically for people with disabilities, at the moment less for low-literacy users. At the moment the website is being repaired to be more conformant with the Webrichtlijnen. The target is to reach level AA with all Microsoft websites.
- Customer satisfaction. This is measured over the whole Microsoft NL websites. Many people jump from site to site for information. This is not measured separately in the case of Het Nieuwe Werken.
- Usability. This is measured with a special focus group of people with and without disabilities. The guidelines provide Microsoft with a clear list that they can point to. They will use this in their relations with suppliers. They plan to organize meetings and outreach to make their own organization and their suppliers more aware also because from 2011 onwards level AA is part of corporate strategy.

### 6.4 Webrichtlijnen in the organization: Expertise in Microsoft Nieuwe Werken site development team

Bill Gates talked about creative capitalism in Davos and addressed this subject for Microsoft: "We need to develop a new system with a twin mission of making profits and also improving lives of those who don't fully benefit from today's market forces ... for sustainability we need to use profit incentives in the form of recognition. Recognition enhances an company's reputation, appeal to customers and above all attracts good people to an organization". This speech led to a special Microsoft team on accessibility in the Netherlands that focuses on delivering level AA to all the websites of the organization.

The website of “Het Nieuwe Werken” was an existing website that is of importance to Microsoft Netherlands and reaches a large audience. Because the site can be edited from the Netherlands and because of the importance of the subject, they proposed this website to the business case.

The people working on the website are knowledgeable and enthusiastic and have hired a web builder with sufficient expertise to make the relevant changes. They are directly supported by the management and work in accordance with the speech by Bill Gates. The team consists of experts inside and outside of Microsoft Netherlands. The main focus of their work is accessibility, with the target of making all Microsoft websites conformant with level AA. They also try to influence the international websites. The team is supported by people with disabilities. Together with web technicians they visit large companies to show them how it can be done.
Starting in the new bookyear 2011/2012, the guidelines will be the basis for all new websites used in the Netherlands. Microsoft sees clear benefits in the application of the Webrichtlijnen and accessibility guidelines from a creative capitalism view but also from a SEO and cost perspective (saving cost for maintenance and management). The importance is underlined by the fact that they have organized training sessions for their suppliers.

### 6.5 Support questions and issues

Microsoft wants all their suppliers to deliver Level AA conformant web applications and websites. This will be part of corporate strategy starting in 2011.

To make a good start, Microsoft hired a knowledgeable web builder, TamTam, just after the start of our project. Input from GRIP on a technical level was not necessary. They did however provide information about adding information layers if technologies like Silverlight are not supported (like on the iPad). Microsoft uses SharePoint and Silverlight, technologies that currently require a layered approach. The Microsoft team is working on this. They provide different templates and tools to support accessibility within these technologies. Support company GRIP looked into issues like how to keep a website accessible in the long run when the building process ends and new content and functionality is added to the website. For this, they used the Process described on the Webrichtlijnen website and in the Procurement Toolkit. The other support agency, Wiep, who worked with the content providers and web editors, also provided valuable input on this subject.

Microsoft Netherlands also wants to start a checking tool for developers and policy makers. They hope the Dutch government will support this effort and help develop this support tool.

Many existing Microsoft websites have a short lifecycle (sometimes less than one year). This makes it difficult and sometimes expensive to make them level AA conformant. For new websites however, Microsoft estimates that making an accessible site might cost 5 to 10 percent extra on the total budget, depending on the technologies used. Video accessibility can obviously be more work than adding a text description to an image.

### 6.6 Status directly after support

We talked to Microsoft just after they received input and support by GRIP and Wiep. They were enthusiastic about the Webrichtlijnen and had presented their new website on accessibility on many occasions including the ECP-EPN Member day in Scheveningen in 2010. They also plan to contact their suppliers and point them to the Webrichtlijnen. This is done by a special support team consisting of technical people and people with disabilities. They see the guidelines as in important quality instrument in the process of delivering and keeping up an accessible website. The primary focus is on accessibility. Both Wiep and Grip focused in their training on the same thing: How to include implementation of a set of standards in all levels of the organization and how to layer information for all browsers, platforms and devices.

In line with the remarks of GRIP on the necessary higher-level support and attention for the subject, Microsoft has indicated that they want to ask Wiep for further help outside the framework of this Cost-benefit analysis project. In new web projects in the Netherlands, Microsoft now takes a more strategic approach to accessibility. They use the Webrichtlijnen (focus is on the accessibility guide-
lines) as a clear set of requirements for a new website and have implemented a clear control strategy involving experts.

Microsoft intends to build a toolkit for their suppliers and resellers and make them more aware of the subject. They are focusing on the accessibility part of the Webrichtlijnen but after talks with GRIP they include some of the SEO advantages they see in the Universal part of the Webrichtlijnen.

6.7 What can we learn from this case

Microsoft has taken up the Webrichtlijnen much faster than other organizations, including many central governmental organizations that should conform to the Webrichtlijnen by law. They see a clear advantage in the SEO part of the guidelines, the accessibility, the clear guidelines for suppliers, etc. They even prove that the findability is better in beating other sites in the search results. They indicate that the maintenance and management costs are lower once the site is working. Their current conclusions are:

- The extra cost is worth the effort. The extra cost is 5 to 10 percent of the total budget for a new website, also depending on the technologies used.
- It is clear to suppliers what the requirements are. Microsoft will use WCAG2.0 in the new bookyear. This is part of the Webrichtlijnen.
- The SEO advantages are clearly measurable by Microsoft in search results after adapting their website for the level AA Webrichtlijnen and some Universal Webrichtlijnen.
- It clearly shows Corporate Social Responsibility (CSR) to the public without additional actual costs.
- The quality of the code is much better and therefore the websites are easier and cheaper in maintenance and management. This however is depending on the technologies used.
- Microsoft assesses a distinguishable improved support for other platforms and devices like mobile phones and general improved working of the website.
- The website reaches a larger audience and makes people clearer what should be done if they make mistakes (like more logical search engine results etc.)

Microsoft is so enthusiastic that they do outreach to all their suppliers and even opened a Dutch LinkedIn group on accessibility. They produced the website “Kleed je site uit” to help suppliers look at websites: www.microsoft.com/netherlands/toegankelijk/kleedjesiteuit/.

The website of Het Nieuwe Werken seemed less easy to change because it was built on an external system and it was an existing website. The conclusion is that it is easier to build accessible and Webrichtlijnen compliant sites from the start. In the meantime, they have realized a completely new website about accessibility that fully conforms with the complete set of Webrichtlijnen when tested in March 2011. This shows that when accessibility is a strategic part of the complete process to build a new website, and the process is well guarded by people who have proven to know the Webrichtlijnen, that it is not more expensive of difficult to make a fully conformant website.

Part of the costs for accessibility consists of the external checks and re-checks for the Quality mark Drempelvrij.nl. The cost of testing is depending on the number of components of a website. Standard text is not a problem, but video, Twitter feeds, animation etc. easily lead to specific adjustments for accessibility and might demand additional layers. Such website elements increase the work of implementation of the Webrichtlijnen and hence produce extra costs that should be balanced by the benefits.
7. Business case: Microsoft MSN.NL website

7.1 Change of website

The Microsoft MSN.nl website was planned to be the large website in the test with more than 1 million visitor per month. However, the central organization Microsoft in Redmond, USA, suddenly directed that the MSN.nl site had to be replaced by a complete new website created in the United States. The American site meets the ADA Section 508 standards, which are slightly different from the W3C accessibility standards. It does not meet the other parts of the Webrichtlijnen set. The directive from the corporate management made it almost impossible to make changes to (parts of) the new MSN.nl website. The test report has been discussed with Microsoft, but the new website did not fall under their editing capabilities and we concluded that further work on that site was not feasible. We searched for a replacement website, but did not find a good alternative.

7.2 Status of the Webrichtlijnen and MSN.nl at the start

The Windows Live website was checked in August/September 2010 using the latest draft version of the Webrichtlijnen 2.0 and following the UWEM1.2 methodology for sampling of websites. A sample of 28 pages was reviewed. The 51 pages test report gives a detailed description of the Webrichtlijnen and how the site scores.

Scope of the review: www.microsoft.com/netherlands/windowslive/

The general conclusion was that the website had a good start position to work on the Webrichtlijnen. The review found many good examples of elements that were conformant with the Webrichtlijnen and it is clear that accessibility guidelines have been used when building the foundation of the website. This could be explained by the fact that section 508 is an important factor in the United States. After the help phase where the companies received comments and help, there was not a second and third evaluation because the website was replaced externally. The errors found were both simple and complicated. Some are incidental, some are structural.

Below are the results of the evaluation:

<table>
<thead>
<tr>
<th></th>
<th>1st test</th>
<th>2nd test</th>
<th>3rd test</th>
<th>1st test</th>
<th>2nd test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceivable</td>
<td>5/9</td>
<td></td>
<td></td>
<td>1/5</td>
<td></td>
</tr>
<tr>
<td>Operable</td>
<td>7/9</td>
<td></td>
<td></td>
<td>1/3</td>
<td></td>
</tr>
<tr>
<td>Understandable</td>
<td>4/5</td>
<td></td>
<td></td>
<td>5/5</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>0/2</td>
<td></td>
<td></td>
<td>0/0</td>
<td></td>
</tr>
<tr>
<td>WCAG 2.0 total</td>
<td>16/25</td>
<td></td>
<td></td>
<td>7/13</td>
<td></td>
</tr>
<tr>
<td>Universal</td>
<td>-/11</td>
<td></td>
<td></td>
<td>-/2</td>
<td></td>
</tr>
</tbody>
</table>
Overview of the Webrichtlijnen 2.0 score for MSN.nl

The pages were missing a few text alternatives for images like arrows, a number of banners; in one case the menu was not readable for assistive technologies. Some videos were missing captions or audio descriptions.

Not all the dynamic parts were keyboard accessible. In some cases this was caused by the placement of information. There is some text on the pages with low contrast, mostly bannerlike advertisements. One example was the banner asking you to download the latest version of Explorer. The text was difficult to read.

The pages were missing the language indication. This would be easy to repair. The language indication makes it possible for screen readers to read the text to blind people in the proper language and with the proper pronunciation.

Keyboard focus was difficult to see on the pages. In most cases this is fairly easy to repair.

The test indicated a number of techniques that did not fully pass the inspection. Most errors found seem structural errors that could be repaired through a change to the templates in the CMS system. The pages did not separate content and style everywhere. This facilitates smaller files and for large amounts of visitors like in the case of the MSN.nl website could reduce the server load. Some errors found needed a more structural approach to create a long lasting solution.

7.3 What can we learn from this case?

Due to the replacement of the website by a new complete system it is not feasible to adapt the new website to the Webrichtlijnen. Microsoft plans to use the lessons learnt to create more awareness in the Netherlands, but also with Microsoft colleagues in other countries. This change of websites was slightly frustrating for the researchers and the people at Microsoft Netherlands, because it took away an opportunity to gather important data in a website that is visited by an extreme high number of visitors.

Microsoft indicated that they were interested in the calculation made for the networksite Hyves. That calculation said that the pages could be limited in size (by half), just by applying the Webrichtlijnen. That would generate an enormous reduction in the pageload and in this case, because of the large numbers, save significantly in server load and thus in the number of servers for this widely used website.

There is another interesting lesson to draw from this case. We worked with a local subsidiary of a multinational company. We (and the Microsoft people) assumed that we had covered all aspects of working on the MSN.nl site to make it more compliant with Dutch regulations and guidelines. The Dutch Microsoft management was overruled by its international corporate management. This teaches us that it is very complicated for multinational organization to adhere to a particular, national set of standards. The accessibility standards within the Webrichtlijnen have international status, since they are a direct copy of the W3C Accessibility Content Guidelines (WCAG). But all other Webrichtlijnen than the accessibility ones, had no ‘corporate’ status.
8. Business case: HAN International Website

8.1 Introduction to HAN website

HAN (Hogeschool Arnhem Nijmegen) University of Applied Sciences strives to be one of the top universities of applied sciences in the Netherlands. With campuses in both Arnhem and Nijmegen, in the east of the Netherlands, HAN has over 29,000 students. The organization has a strong focus on internationalization and attracts many international students. HAN offers courses in the domains of education, social studies, commerce, communication, business administration, law, economics, engineering, built environment, applied sciences, IT and communication, health, nursing, and sport and exercise. Students can choose from more than 60 Bachelors courses and exchange programs and from 21 Masters courses. HAN employs more than 3000 people.

The website inspected first was the corporate website of HAN, Hogeschool Arnhem Nijmegen. During the project, the renewal of the corporate website was slightly delayed and HAN shifted the effort of conforming with the Webrichtlijnen to a smaller subsite that would be produced earlier and could be considered a good trial to watch how much work it would be for the corporate website. Also the more limited scope of the approach would provide a good insight into the process of conforming a website to the guidelines. The results of the first Webrichtlijnen test were therefore implemented into the new subsite “HAN International”. A new inspection was done on the old international website that was temporarily kept online longer so it could be tested first. This enabled us to compare the baseline site with the revised site in the second and third test and show advancement in implementation. GRIP helped with input for the new website based on the earlier inspection by Accessibility Foundation. They also talked about the Universal Webrichtlijnen that were not part of the initial inspection (that part of the Webrichtlijnen document was not stable enough at the time).

The scope of the first inspection was: www.han.nl
The International site (new website): www.han.nl/international/english/sitemap/
Being a public, but not a governmental organization, HAN is not (yet) obliged to conform to the Webrichtlijnen. For the Educational Review and Accreditation however, accessibility implementation of WCAG guidelines is an issue that is considered by the accreditation organization NVAO. It is expected that the HAN website will have to be conformant in the coming years. Although there is a clear wish to be accessible, there is also an internal discussion about the cost-benefit of such implementation. This project should provide the HAN with input for that discussion. HAN would also like to be a forerunner when it comes to accessibility and applying the (full) Webrichtlijnen in higher education.

8.2 Results of the Webrichtlijnen inspection

The first inspection was of the corporate website of HAN. After this inspection the focus was changed to the HAN international website. This new sub-site was made using the report of the inspection and with help from GRIP. We did a new test of the old site before it was taken offline so we can show the difference with the new website. Below are the results of the reviews. Because the old International website was built on the same technology base as the corporate website, there are no real differences in the results of the corporate and the international website. The layout and components are the same. The International website does not have all the complicated technologies that can be found on the rest of the website, so it was easier to review. After the help phase where the companies received comments and help, there was a second evaluation and a third at the end of the project. The results can be seen below:

X = Fail continued  
X+ = Fail but improved  
XV = Pass, was fail  
VX = Fail, was pass  
V = Pass continued

<table>
<thead>
<tr>
<th>Principles, Guidelines and Success criteria</th>
<th>level</th>
<th>HAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1 Non-text Content</td>
<td>A</td>
<td>X+</td>
</tr>
<tr>
<td>1.2.1 Audio-only and Video-only (Pre-recorded)</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>1.2.2 Captions (Prerecorded)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.2.3 Audio Description or Media Alternative (Prerecorded)</td>
<td>A</td>
<td>X+</td>
</tr>
<tr>
<td>1.2.4 Captions (Live)</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>1.2.5 Audio Description (Prerecorded)</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.3.1 Info and Relationships</td>
<td>A</td>
<td>X+</td>
</tr>
<tr>
<td>1.3.2 Meaningful Sequence</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.3.3 Sensory Characteristics</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>1.4.1 Use of Color</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.4.2 Audio Control</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>1.4.3 Contrast (Minimum)</td>
<td>AA</td>
<td>X+</td>
</tr>
<tr>
<td>1.4.4 Resize text</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>1.4.5 Images of Text</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>2.1.1 Keyboard</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.1.2 No Keyboard Trap</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.2.1 Timing Adjustable</td>
<td>A</td>
<td>V</td>
</tr>
</tbody>
</table>
In general the problems found are not difficult to repair. The plan is however to implement any changes in the new website on the new platform, primarily because on that platform it is easier to do this. This is specifically true for the problems found regarding Flash, the document structure and the use of new technologies. The experience from this will be used as input for eventual changes to the platform that will later also form the basis for the other websites.

One example of the errors on the website is missing alternative text for images. Some of the icons and images on the homepage and other pages do not have a text description for people who are blind. This is also the case for videos on the website. At the time of the inspection, they did not have captions or audio description.

Some images with text had a low contrast on the old site. The menu at the top of the pages and the items at the bottom of the page had a low contrast. The contrast values fall under the minimum requirements stated by W3C in their Web Content Accessibility Guidelines (WCAG2.0).

The website has forms for input of information. These forms do not always have a label. In some cases it is difficult to see which part of the form has the focus, an important help in staying oriented for people with visual disabilities.

Some pages are missing language attributes when the language is other than Dutch. Also language changes on pages are not indicated in all cases.

<table>
<thead>
<tr>
<th>Section</th>
<th>A</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.2 Pause, Stop, Hide</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.3.1 Three Flashes or Below Threshold</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.4.1 Bypass Blocks</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.2 Page Titled</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.3 Focus Order</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>2.4.4 Link Purpose (In Context)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.5 Multiple Ways</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>2.4.6 Headings and Labels</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>2.4.7 Focus Visible</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.1.1 Language of Page</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.1.2 Language of Parts</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.2.1 On Focus</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>3.2.2 On Input</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.2.3 Consistent Navigation</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.2.4 Consistent Identification</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.3.1 Error Identification</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>3.3.2 Labels or Instructions</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.3.3 Error Suggestion</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.3.4 Error Prevention (Legal, Financial, Data)</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>4.1.1 Parsing</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>4.1.2 Name, Role, Value</td>
<td>A</td>
<td>X+</td>
</tr>
</tbody>
</table>
8.3 How does HAN define Cost Benefit for this site?

Maybe contrary to expectations, HAN has clear business and commercial goals with the website. A large part of the students of HAN is international. The website is the main instrument used to attract these students. HAN makes extensive use of analytics to follow clickpaths and other relevant user behavior. Most relevant indicator is the number of new students that apply to the university. This is largely generated through the website and local organizations in different countries.

Main Cost-Benefit indicators are:

- SEO. Optimizing Search Engine results is important for conversion
- Legal. WCAG implementation is a requirement for accreditation by NVAO
- Quality of the website for other devices including mobile use
- Website usability, increase usability and perception
- Technical reasons like bandwidth, cross-platform performance, interoperability and robustness.

Corporate Social Responsibility is only indirectly indicated as an indicator for using the Webrichtlijnen. At the same time it is seen as an important quality and ambiance aspect of HAN that should be represented in the Website.

For the website HAN measures:

- Personnel costs and other costs related to the design and development of websites (as project costs). The cost of the separate websites is not measured and the rate personnel – website is not measured. There are budgets for new websites, but after development and launch all websites fall under the general budget. The International website is part of the corporate website engine. The content is delivered by a team of editors that also do the content of other websites. Content is also provided by many other people in the organization.
- Personnel costs and other costs related to maintenance and management are measured but not for the separate subsites like International.
- Visitor numbers. The HAN keeps extensive analytics of their website. They know not just the number of visitors, but also the clickpaths of their visitors within the complete website, including separate numbers on the International website. This is however limited, that is one of the reasons for an update of the website. HAN is primarily interested in the conversion rate, but does not link this directly to the number of new students. They also log return visits.
- Search terms. This is a primary focus for assessment and improvement. There are search terms that need to be top scorers in search engines to attract students. This is one of the expected effects of implementation of the Webrichtlijnen.
- They measure exactly where visitors enter and leave the website. The conversion is important. Students should go to the form to ask for more information or apply as student. A phone number is available. The goal of HAN is to get as many people applying for a program and enquiring about the programs as possible.
- Clickrate of banners and adverts are known and actively used to lead visitors through the website.
- Drop-off rate is measured.
- Effects on use of different channels, e.g. telephone call center, are not measured.
- Clickpaths and time on the website are actively used to see whether people find the correct information.
- Webrichtlijnen.
- They measure if the site works on mobile phones, but also on very slow computers and connections. Usability is measured when new sections or components of websites are launched. The guidelines also provide HAN with a clear list of directions that they can point to for their technical and content people.

### 8.4 Expertise in HAN site development team and accreditation

HAN has a small but expert development team on campus with experienced people who have worked on accessibility for the drempelvrij guidelines (part of the Webrichtlijnen). For a short time, one of their team members was also working part-time with the Accessibility Foundation and was experienced in accessibility testing. The team includes some content editors who also know about the guidelines. Most content editors, however, work in different parts of the organization, and can input content through the CMS.

The Webrichtlijnen (accessibility part) have been included into the general plans for the websites of HAN and more recently into the policy plans of HAN. HAN has followed training sessions and have discussed the Webrichtlijnen many times during meetings at SURF and Handicap + Studie. They are active and want to be the first to have a Drempelvrij logo on their website. The new portal software brings that objective closer to realization.

#### 8.4.1 Accreditation law

In 2010 the Commission published a report about accessibility of higher education for students with disabilities. The commission advised the Minister about reasonable minimum requirements for higher education institutions. The commission proposed that the website, digital learning environment and other student information systems should be conformant with the W3C Web Content Accessibility Guidelines (WCAG) and that this should be checked by a certified party.

The law came into force on the 22nd of June 2010. For higher education this means that digital accessibility is now part of the accreditation parameters, checked by the Nederlands-Vlaamse Accreditatie Organisatie (NVAO).

HAN wants to conform with the guidelines for reasons of accreditation, but also they want to be the first higher educational institute to have a completely compliant website in the Netherlands.

### 8.5 Support questions and issues

The team of content editors sometimes experiences the Webrichtlijnen as ‘bad news’. This is caused by the fact that the Hogeschool has a very large group of content editors, spread out over the campus and the different locations. They are difficult to control from the perspective of the web team. In the old CMS all content providers have the possibility to do almost whatever they like. This makes quality control over the content very difficult. If any quality or accessibility problems would occur during the test or during future accreditation, the web team tends to feel as if they get all the blame. This makes the subject of Webrichtlijnen not always a popular discussion item.
Also it took some time to generate enthusiasm with the web development team. This was partly caused by the phrasing of the test reports. The developers felt that their hard work did not get any support or appreciation and that the test only focused on things that went wrong. This was brought to the attention of the testers at the Accessibility Foundation. The work on the new portal and the support by GRIP renewed enthusiasm about the possibilities of i.e. HTML5 and related technologies.

Now the team is working hard on making the new portal conformant with the Webrichtlijnen. GRIP helped in this process. The new portal is built primarily in HTML5. The International website is the first website to be based on the new portal. The rest of the corporate websites will make the shift later. The change of portal technology is also the reason that HAN chose not to make changes to the existing websites on the older portal software but to focus on the new situation.

HAN works with a small internal team. There are only a few technical implementers (at the time of the test, there were two). Together with GRIP and Wiep they looked at ways to include the Webrichtlijnen in the process and in their daily work. The new portal CMS makes it more difficult to provide non-conformant content.

8.6 Status directly after support

The next tests indicate that the implementation of the Webrichtlijnen has significantly improved. Many fails from the first review have been repaired. This will be used in the next CMS. They want to conform to Accessibility Level A and will try to reach level AA at a later time. HAN perceives cost-benefit advantages in using the Webrichtlijnen.

HAN wants to measure more information and indicators in the near future and compare the results with those of the old situation. Currently these data are not available.

8.7 What can we learn from this case

Even with a motivated and knowledgeable team and support from WIEP and Grip, it was difficult for HAN to achieve level A for the new version of the website. That is why Level A accessibility implementation has been decided as the aim for the new website, instead of higher (AA). The difficulties of reaching that level of implementation could be caused by the wide dispersion of the content editors, the small development team and the use of external software components with an unclear status in terms of Webrichtlijnen implementation. It could be that making the Webrichtlijnen leading in the development process will make the level AA achievable in the near future. Lessons that we can draw from this business case are:

- In large organizations with large numbers of content editors, it is extremely difficult to guarantee a specified level of accessibility and WR implementation. It is also difficult to motivate the content providers, if the only thing they hear from time to time is that they should not forget to add alt-text or should make audio descriptions for videos. It is important to have control over the input of content and to train, motivate or prompt content editors to use the guidelines.
- A small team of developers is a potential risk in stable and long term implementation of the Webrichtlijnen. The developers became more motivated after what looked like an initial setback. They now search for more solutions inside the CMS than they did in the start of the process. It is important to organize continuity.
9. Business Case Study Costs and Benefits of Implementation of Dutch Webrichtlijnen

9.1 Introduction to ManandShaving

ManandShaving is a small webshop that sells (as the name says) shaving products for men. The owner is also the person working in this shop. The shop itself uses an external system called Directshop. This CMS shop-system caters to more webshops like: Steps, Didi, Superstar, Kender Thijssen, Talk & Vision (KPN), flexlease and more. This makes the participation of ManandShaving in combination with Directshop valuable. The changes made are changes in the CMS of Directshop and directly in the website of Man and Shaving.

Website of ManandShaving: www.manandshaving.nl
Website of Directshop: www.directshop.nl

The Directshop team helped in the project to find solutions within certain parameters of time and effort. At the start of the project they were not really convinced of the advantages of the Webrichtlijnen but this changed in a positive way during the project. Directshop has made changes that are positive for SEO and also implemented some other changes in their system that were perceived as valuable and easy to implement. In some cases these changes coincide with accessibility guidelines inside the Webrichtlijnen.

Figure 3. Screenshot of the website of ManandShaving.nl
ManandShaving is enthusiastic about the Webrichtlijnen. They have invested extra money in additional changes to the site and together with Directshop made important changes to the main page. They have also added a simple text version of the General Conditions to make that part more understandable for everyone.

9.2 Introduce CMS and role of CMS vendor (web store CMS)

The basis of the website is an external CMS by a company named Directshop. The CMS is used by more than 20 webshops. This means that changes to the CMS will in the long run affect more websites than just ManandShaving. But it is also an existing CMS that will make it more difficult to conform to the guidelines. The people at Directshop were willing to participate in the project and make changes to the CMS but within clear boundaries and without a pre-defined budget allocation. This means that other supplemental changes are charged to ManandShaving. This makes prioritization also budget wise important.

9.3 Results of the Webrichtlijnen inspection

The website of ManandShaving was one of the best scoring websites in the preliminary test for the stakeholder meetings in 2010. This is reflected in the level A results of the review for the Webrichtlijnen 2.0. The site has a few issues that need to be addressed to be fully conformant with the level A guidelines. The necessary actions do not seem technically difficult. After the help phase where the companies received comments and help, there was a second evaluation and a third at the end of the project. The results can be seen below:

X = Fail continued
X+ = Fail but improved
XV = Pass, was fail
VX = Fail, was pass
V = Pass continued

<table>
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<td>V</td>
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<td>V</td>
</tr>
<tr>
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<td>A</td>
<td>V</td>
</tr>
<tr>
<td>1.2.4 Captions (Live)</td>
<td>AA</td>
<td>V</td>
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<tr>
<td>1.3.1 Info and Relationships</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.3.2 Meaningful Sequence</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>1.3.3 Sensory Characteristics</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>1.4.1 Use of Color</td>
<td>A</td>
<td>XV³</td>
</tr>
</tbody>
</table>

³ Viel in de vorige toetsing binnen de marge incidenteel. Nu is het helemaal verbeterd.
A sample of 30 pages was reviewed. The review report describes the main action points that were found within the scope of the website:

- Some images do not have textual descriptions for people who are blind (search engines also look at these so called alt-attributes). The images range from arrows in the product carousel to product images.
- Keyboard accessibility is reasonable on the website, but not in all parts. Changing this must be done in the CMS and is extra work for the CMS vendor (and thus extra cost for the webshop owner). In the next version of the CMS the vendor wants to take that part out. This would partly solve the problem. This problem occurs on the ordering page and could be a serious problem there.
- Keyboard focus is not clear on the pages.
- There are missing labels in the forms. This makes the forms more difficult to operate, also for non-disabled people.
- Structure of the code is fuzzy. The headers are not well structured on the pages and tables are not made up the right way. Also tables are in some instances used for layout. This would be wrong for the Webrichtlijnen full implementation, but is acceptable for level A.
Language could be considered as jargon. However for visitors of the website this seems ok. The owner of the website does however have a positive approach to the General Conditions page. There is a simple language version of that page.

- The site does not have videofiles, but this might be a point of concern in the future.
- The code used to generate the website is not valid. This could be a minor fix if it can be implemented into the CMS.
- The site has some color contrast issues.

During the review, GRIP, ManandShaving and Directshop worked together to make a prioritization of the problems found based on the perceived cost-benefit for the webshop and within the restrictions of time and budget.

9.4 How does ManandShaving define Cost Benefit for this website?

The owner of the shop indicates that the main reason for taking part in the project is the possible gain in the number of customers. He hopes the project will help his website to rank higher in search engines. The main Cost-Benefit indicator for this webshop is:

- SEO. Optimizing Search Engine results is important to attract more customers
- Usability of the website
- Contribute to the image and reputation of the organization

CSR is named once as important, but the real goal is more customers buying products.

ManandShaving measures the following information related to their website:

- Personnel costs and other cost related to the design, development, maintenance and management of the website. As this is a one-person organization, this is not complicated.
- Visitor numbers. They use simple analytics with pageviews and unique visitors.
- Search terms. This is a primary focus to score on. They work hard on optimizing the search score. This is one of the expectations of the Webrichtlijnen. Also they track the search terms used in the website itself. When the reviewer input a strange term, he was called..
- They can see where visitors enter and leave the website.
- Click rate of banners and adverts are not separately used.
- Drop-off rate is measured.
- Use of different channels is not relevant for this website. If people call, that is no problem. There are limited numbers of customers who call. Most customers are more or less returning visitors.
- Click paths and time on the website are not available except as a page level analytics option.
- Findability by search engines is one of the most important things for this website. SEO is probably the most important reason why the parties want to apply the Webrichtlijnen.
- They have not really looked if the website works on mobile phone or ipad.
- Image, Reputation of the organization. ManandShaving sees this as a primary reason for wanting to place the Drempelvrij logo on the website.
- Accessibility. This is considered interesting but does not have the highest priority.
- Customer satisfaction. This is measured as the number of returning buyers.
9.5 How does the CMS vendor define Cost benefit for the CMS?

Directshop was particularly interested in the SEO and usability advantages of the Webrichtlijnen. They were also interested in the general optimization of the quality of the website code and structure. Directshop started off skeptical about the benefits and started with a strong focus on the cost. They did a good effort in making relevant changes to the homepage of ManandShaving to fit as many guidelines as possible. GRIP helped them prioritize. Later in the project Directshop also helped out on more success criteria. This can be seen in the results.

9.6 Webrichtlijnen in the organizations

There was no knowledge about the Webrichtlijnen in the organization. ManandShaving was interested because they expected possible publicity, use of a logo and increase in SEO would bring more customers to the website. Directshop was contacted by the owner of the webshop and expressed limited interest at first. They had not really heard of the Webrichtlijnen before but were interested in improving quality and SEO of their CMS. However, the basics of the CMS do not support the Webrichtlijnen (specifically the accessibility guidelines) in an optimal way. Many changes are considered too difficult and expensive to implement and have therefore been scheduled for a next release of the CMS.

9.7 Support questions and issues

As the focus was primarily on SEO, communication and image of the website (“a logo could create trust”), this is also were the support questions were about. In an early stage they concluded that Wiep is more on the content side of the information: writing for a specific audience etc.. For the webshop, this is less important because they offer short descriptions of products only. The SEO questions for this website (as far as they could be related to the Webrichtlijnen) were more detailed.

The team was limited in their activities because the Directshop system is already an existing system. Some necessary changes to achieve level A would involve restructuring of the CMS. Directshop indicated that this would cost more time.

GRIP helped Directshop in the translation of the Webrichtlijnen to practical solutions for their CMS. Also ManandShaving found that the review report was extremely technical and it was unclear what they had to do and why. Also they did not know if solutions were easy of difficult. GRIP had to translate the rather technical guidelines to both parties.

The relationship between Directshop, ManandShaving and GRIP was good. Many changes were made. Specific focus was on the homepage because it would better clarify the SEO case.

The team focused on pushing through to level A. Clear prioritization helped achieve this. The site is still not level A, but many significant changes have been made to optimize the website for the Webrichtlijnen. We added a selection of scenarios that can be found in the section 15 (appendix selection of scenarios).
Status directly after support

A number of changes have been made to the CMS and the website. Many changes have been made to the homepage. Alt-text has been added to many images, arrows and other icons. Part of those changes could also positively affect the CMS for the other customers of Directshop. Also changes have been made to keyboard accessibility on the homepage and visibility of the focus.

Webrichtlijnen indicate that text should be short and clear. The use of bullets is good for overview. This is already the case in the webshop. In some cases, the text has been upgraded.

To reach more level A and AA Webrichtlijnen, Directshop indicates that another 6 to 7 hours of programming would be necessary. This would include the correct use of headers, tables and smaller changes to the system. The investment would be around 665 Euros. The changes would include:

- Adding Alt-text to product photos
- Adding Alt-text to arrow, photos inside the carousel and “onlangs bekeken”
- Adding Labels to the login form.
- Repairing header use of titles, product titles and headers in tables (th for td)
- Keyboard accessibility for the complete website
- Repairing the focus and order of the focus of the contact page
- Middle menu: take page numbers away.

Most of the above activities are not a priority for the shop owner but indicate the low cost of implementation of Webrichtlijnen.

What can we learn from this case

In the interview with ManandShaving and GRIP it is clear that using an existing and external system does not facilitate easy uptake of the Webrichtlijnen. Also webshops like ManandShaving are in general not knowledgeable of the Webrichtlijnen and their advantages. ManandShaving indicates that there is an important business case when it comes to SEO and quality of the code and content: “it makes life easier and saves extra costs on search engine optimization”.

Changing an existing system is difficult. Improving the system does not always generate effective advances. The technology used is mostly limiting structural change possibilities. Also making considerable changes a risk to the system in general because it was not built like that. The best option is to improve as much as possible and focus on the next release or better the complete rebuild of a (new) system.

Problem is also that many web builders and their suppliers have never heard of the Webrichtlijnen. And because their customers do not ask for it, there is no real incentive to use them to make changes to existing or even newly built systems.

Also shop owners who want a new shop mostly just go shopping for a cheap and effective system. Most of them have never heard of the Webrichtlijnen and focus all their investments on what is absolutely necessary to get their shop up and running. Because Webrichtlijnen are not implemented in shops, this would involve extra cost that most shop owners are not willing to pay. At least not at the start of the process.

It is interesting to see that ManandShaving is willing to pay for the Webrichtlijnen. Even though they focus on small things, they seem to see the advantages of using the guidelines. They perceive better
search engine results, better usability and using a logo they expect that this will enhance their reputation and thus generate more customers. The logo is not related to the Webrichtlijnen, but could be an important stimulator of organizations to work on the Webrichtlijnen.

Even after all the extra work, it is still difficult to conform fully to the level A guidelines. This is also due to the existing system that needs some adapting to incorporate the guidelines.

Starting web shop owners should try to find the shop system that is most conformant with the Webrichtlijnen. Directshop is close to this solution. It would be interesting to make a list of them and place them on an external website. Also it would be good to generate more awareness about Webrichtlijnen via the Dutch Kamer van Koophandel and similar channels.

10. Business case 5: KWF

10.1 Introduction

The Dutch Cancer Society was founded in 1949 by Queen Wilhelmina. The organization helps in the battle against cancer. Each year more than 120,000 collectors call at 6 million homes to collect money for research and awareness. The mission of the Dutch Cancer Society is to reduce the incidence of cancer, to improve the chances of curing the disease and to create a better quality of life for cancer patients and their loved ones.

Figure 4. Screenshot of the website of KWF

URL of the website: www.kwfkankerbestrijding.nl

The Dutch Cancer Society is the only charity in the Netherlands to address every type and aspect of this disease. They fund cancer research, provide education and training, disseminate information, help cancer patients themselves and support patients’ associations. The majority of the income is spent on scientific research.

During the project the website will be completely renewed. This offers the opportunity to make the website conformant with the Webrichtlijnen from the start. Accessibility (Webrichtlijnen level A) is part of corporate strategy since 2010. Untill now it did not have real focus but now that the backof-
office is ready, KWF will start working on the new website-front.

10.2 Results of Webrichtlijnen inspection

The review of the website discusses a total of about 50 sampled pages. All the pages within the scope of kwfkankerbestrijding.nl were reviewed by using the sampled pages. After the help phase when the companies received comments and help, there was a second evaluation and a third at the end of the project. The results can be seen below:

X = Fail continued
X+ = Fail but improved
XV = Pass, was fail
VX = Fail, was pass
V = Pass continued

<table>
<thead>
<tr>
<th>Principles, Guidelines and Success criteria</th>
<th>level</th>
<th>KWF</th>
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</thead>
<tbody>
<tr>
<td>1.1.1 Non-text Content</td>
<td>A</td>
<td>X+</td>
</tr>
<tr>
<td>1.2.1 Audio-only and Video-only (Pre-recorded)</td>
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<td>V</td>
</tr>
<tr>
<td>1.2.2 Captions (Prerecorded)</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>1.2.3 Audio Description or Media Alternative (Prerecorded)</td>
<td>A</td>
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</tr>
<tr>
<td>1.2.4 Captions (Live)</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>1.2.5 Audio Description (Prerecorded)</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.3.1 Info and Relationships</td>
<td>A</td>
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<td>1.3.2 Meaningful Sequence</td>
<td>A</td>
<td>X</td>
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<tr>
<td>1.3.3 Sensory Characteristics</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>1.4.1 Use of Color</td>
<td>A</td>
<td>V</td>
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<tr>
<td>1.4.2 Audio Control</td>
<td>A</td>
<td>V</td>
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<tr>
<td>1.4.3 Contrast (Minimum)</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.4.4 Resize text</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>1.4.5 Images of Text</td>
<td>AA</td>
<td>XV</td>
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<tr>
<td>2.1.1 Keyboard</td>
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<td>X+</td>
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<tr>
<td>2.1.2 No Keyboard Trap</td>
<td>A</td>
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<td>2.2.1 Timing Adjustable</td>
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<td>2.3.1 Three Flashes or Below Threshold</td>
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<td>V</td>
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<td>2.4.1 Bypass Blocks</td>
<td>A</td>
<td>V</td>
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<tr>
<td>2.4.2 Page Titled</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>2.4.3 Focus Order</td>
<td>A</td>
<td>V</td>
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<tr>
<td>2.4.4 Link Purpose (In Context)</td>
<td>A</td>
<td>V</td>
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<tr>
<td>2.4.5 Multiple Ways</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>2.4.6 Headings and Labels</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>2.4.7 Focus Visible</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.1.1 Language of Page</td>
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<td>X+</td>
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<tr>
<td>3.1.2 Language of Parts</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.2.1 On Focus</td>
<td>A</td>
<td>V</td>
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<tr>
<td>3.2.2 On Input</td>
<td>A</td>
<td>XV</td>
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<tr>
<td>3.2.3 Consistent Navigation</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.2.4 Consistent Identification</td>
<td>AA</td>
<td>V</td>
</tr>
<tr>
<td>3.3.1 Error Identification</td>
<td>A</td>
<td>V</td>
</tr>
<tr>
<td>3.3.2 Labels or Instructions</td>
<td>A</td>
<td>X</td>
</tr>
<tr>
<td>3.3.3 Error Suggestion</td>
<td>AA</td>
<td>X</td>
</tr>
<tr>
<td>3.3.4 Error Prevention (Legal, Financial, Data)</td>
<td>AA</td>
<td>XV</td>
</tr>
<tr>
<td>4.1.1 Parsing</td>
<td>A</td>
<td>X+</td>
</tr>
<tr>
<td>4.1.2 Name, Role, Value</td>
<td>A</td>
<td>X</td>
</tr>
</tbody>
</table>

Issues that were found on the website include:

- Missing text descriptions for images, logos and icons. This includes images like the central logo and also a ‘donate’ text. Without images, these messages and texts are not available.
- Use of Flash buttons without an alternative. Without Flash, there is no alternative for these buttons. On an ipad or iphone these buttons would not work.
- Videos do not have captions or audio description (if necessary). Also there is no alternative to watch the videos if the player is not supported in the browser or by a device.
- On some pages the headers are not marked up as a header. Also in some places header markup is used to achieve formatting. Use header markup for headers (only). On some pages, headers are images without a text description.
- Also in other places, markup is used for other purposes than what it is intended for. For instance, markup is used to simulate a table. This separation of presentation and content is a main issue in the Webrichtlijnen.
- Forms are not correctly associated with the labels. Forms in general cause many errors in the review. The labels are not correctly associated. The search engine form does not have a label associated.
- There is text with low contrast on the website.
- Keyboard accessibility. Not all components are reachable with the keyboard. This includes the images at the top of the page to change the fontsize on the page.
- Pausing content. The homepage has a scrolling information section that cannot be paused.
- Link text. Some pages have more than one link saying ‘read more’.
- Language changes: Some pages are in a different language than indicated in the page source. Also there are language changes for languages that do not exist.
- Some links open popup windows without warning the visitor of the page.
- When making errors in a form to donate, the website does not provide an overview of the fields that need (other or new) input.
- The markup is not valid and in many instances wrong syntax is used.
- Frames are used. These frames do not have a title.

Most of the problems found should be easy to repair. As KWF built a new website (front), this has been done from the start. Many of the errors found have a direct influence on the user experience of the website. If you fill out a form for donation and make an error and it is not clear where this happened, some potential donators might abort the donation process. Also by not correctly associating fields and labels it is can be more difficult to fill out forms. The fact that at the time of testing it was difficult to donate using an iphone or ipad could influence the number of donations. Most found issues have been repaired.
10.3 How does KWF define Cost benefit of the website

The main targets for the website(s) are:

- The number of donations
- Number of times that the infoservices are used (infoservices include ordering a brochure, calling by phone, searching information about funding etc.)

They also wanted to focus more on online information for researchers, i.e. funding and research papers online. The income through the webchannel is growing exponentially as compared to the old channels (door-to-door and telephone). Donations have their own action codes. They can be linked to the online form and all go through a ‘centrale kassa’ system. This is well structured. Not all the possible analytics where actually used in the processes, but measuring became to be considered a more important mindset during the research time.

KWF added complex analytics to their pages three years ago. They have now used this for more than 18 websites and campaigns. They are able to see if people jump from one site to the other. They are now starting to ascertain key performance indicators (kpi’s). They have a strategic partner helping them with analytics. Still there are relations that are not measured like with other businesscases.

KWF measures the following information related to their website:

- Personnel costs and other cost related to the design, development, maintenance and management of the website. There is not a calculation back to the web department.
- Visitor numbers. They use complex analytics and have a third party helping them optimize. They do not yet measure return visits but are trying now to do this on a campaigsite. They call this reactivation of incoming traffic.
- They look at the effects of social media actions in terms of increase of donations.
- Search terms. They are starting to feedback search words to the content editors.
- They can see where visitors enter and leave the website.
- Clickrate of banners and adverts are used as far as they are external. They have a sponsorship contract with Google for banners. This is well documented and has clear analytics. They do not measure the success of the banners on the own website. They do feedback the donation results and the use of the services.
- Drop-off rate is measured.
- Use of different channels is good. They like it when people call. These contacts are important. However there is not much overview of the different channels and how they relate to each other.
- Click paths are in standard analytics but not really used. The do a funnel analysis: follow people through scenarios.
- Findability by search engines.
- They test the website with stakeholder groups (panels).
- They are working on the mobile version of the website. iPhone/mobiles are sent to a special mobile template, but the page is not yet ready. For the target audience, the mobile platform is not yet really a factor.
- Image, Reputation of the organization. They thing doing something with Webrichtlijnen is important with regards to the mission and purpose of KWF.
- Accessibility. This is considered interesting but does not have the highest priority. It is now part of corporate strategy, but does not have a core focus.
- Customer satisfaction. Not now, but a trafficlight approach is coming up. Also they plan to do customer surveys with an overlay popup...
The problems found in the earlier version of the website seemed possible to repair in the new website. GRIP has made a roadmap that helped KWF to plan that and also choose extra guidelines from level AA that could be easily implemented now or later in 2012.

10.4 Webrichtlijnen in the organization

Accessibility of the website(s) is in the corporate internet strategy since 2009. It is not yet part of the Corporate Social Responsibility but does receive more positive focus. KWF sees the Webrichtlijnen primarily from the standpoint of SEO and quality. This includes accessibility as stated in the guidelines themselves. As the old website used a Sharepoint version that did not really support accessibility, they plan to incorporate the guidelines into the new website. In the choice for the new system, accessibility was named but it seems that it was not a clear and primary demand.

KWF wanted to realize level A before the end of 2011. The team working on the Website is relatively small and consists mostly of project managers. The knowledge of the Webrichtlijnen is low and also the sense of urgency to include the guidelines into the new website for reasons of accessibility seems low. In the interview they indicate that they will soon start with implementing the Webrichtlijnen. The current new website is in fact a rebuild of the old website. They plan to upgrade to a new website later this year.

Their new backoffice system Sharepoint 2010 delivers better support for the Webrichtlijnen. A meeting was arranged with Microsoft for more input.

Their website builder, Conclusion, has looked at the guidelines and the report and discussed it with GRIP. They asked for a more readable version where the guidelines are translated to more specific examples. It is not very hopeful for the implementation of the guidelines if the builder wants an easy version of the review report but nevertheless they succeeded well in optimizing the results of the new website. The standard review report has links to all the technical documents and provides links to real examples found on the KWF website.

Their builder would like to participate in implementation of the guidelines, but they are reluctant to invest in this as they state that the market for Webrichtlijnen websites is small. KWF is looking to start-up a partnership with these organizations to get closer to the Webrichtlijnen target.

10.5 Support questions and issues

The project support for the web team of KWF started later than expected. After they received the first practical help, they became really enthusiastic. The website is built on Sharepoint 2010. This is much better for the Webrichtlijnen than the previous version. They have talked to Microsoft (also one of the business cases) to optimize the conformity.

Sharepoint 2010 seems to render a lot of waste code. That code is problematic for the Webrichtlijnen. Taking that waste code out is best done at the start when making the templates. It is not clear if KWF will succeed to do this at a later stage when they change the current website.

The website is new, but not conformant from the start. It has the same look and feel as the old website but built on a new platform. Although web accessibility is a corporate goal, the current version of the new site does not fully conform with level A. The web team asked GRIP for a specific report on
level A. They also asked for more explanation to make it more ‘readable’ for the developers. GRIP delivered this.

There was also a need expressed by KWF for a roadmap to implement level A in 2011. GRIP plans to deliver that later.

### 10.6 Status directly after support

The website is not yet conformant with Webrichtlijnen level A. KWF will try to implement all level A Webrichtlijnen in 2011 while continuing to build the new website. They have asked GRIP to provide a roadmap proposal for that.

From the work done until now, KWF has the impression that the cost of making a website conformant with the Webrichtlijnen is not higher. They indicate that security is also an issue that renders additional cost, as are changes to the basic functionality of the website and upgrades for SEO and user satisfaction.

KWF wants to focus more on user satisfaction and accessibility but seems to have some difficulty choosing for the Webrichtlijnen for this reason.

### 10.7 What can we learn from this case

There does not seem to be a direct relation between the choice to implement accessibility as part of the corporate internet strategy and actually implementing the Webrichtlijnen in a new website.

The work on the Webrichtlijnen is clearly linked to the possibilities of the back office software. There seems to be agreement that if that software does not support accessibility or other Webrichtlijnen they should focus on other guidelines that are possible to implement.

KWF plans to further increase the accessibility user satisfaction as in the Webrichtlijnen, starting with a primary focus on search results and optimizing the website with data from the analytics. After that they want to work further on the specific accessibility guidelines. Webrichtlijnen offer all that as a possibility.

They have had problems when it comes to the process of incorporating the Webrichtlijnen into the daily work of content editors, but also of the internet team itself. There is a clear need for more awareness of the Webrichtlijnen and of the process document. Also there is a need for arguments to use the Webrichtlijnen inside the organization.

Also web builders need active support to know what is possible and what is not. They easily say that Webrichtlijnen are no problem for their system, but then when they have to implement them, they charge extra work.

### 11. Conclusions

The websites of the business cases have been evaluated three times. After the initial and detailed first evaluation in October 2009, they received help from GRIP and Wiep. In December 2010/January 2011 there was a second round of evaluations. Then in July-August 2011 there was a third round of
evaluations that where limited to the level A guidelines because of the limited results from the first two rounds.

It was expected that after the first review and the help by Wiep and GRIP, the websites of the organizations would have significantly improved their score. This is not always true. In personal interviews, the researchers walked through a questionnaire, the guidelines with problems and the indicators.

There was a possibility for the business cases to call the Webrichtlijnen helpline if they have additional questions during the last period after the second evaluation. Some of them had a final meeting with GRIP in that period which could additionally improve the results.

11.1 Overview of results business cases

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<tr>
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<th>1st test</th>
<th>2nd test</th>
<th>3rd test</th>
<th>1st test</th>
<th>2nd test</th>
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<tr>
<td>Level A</td>
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<tr>
<td>MSN.nl</td>
<td>16/25</td>
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<td></td>
<td>7/13</td>
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<tr>
<td>Nieuwe werken</td>
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<td>8/25</td>
<td>8/25</td>
<td>7/13</td>
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<tr>
<td>ManandShaving</td>
<td>14/25</td>
<td>15/25</td>
<td>16/25</td>
<td>7/13</td>
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</tbody>
</table>

It is important to note that the inspection instrument (accredited manual evaluations by experts) shows only the end result of an evaluation and not if the site has become larger or if the problems found earlier occur in a lower percentage. If problems fall within a certain maximum threshold (a fixed percentage), they are marked as fail even though it is possible that there have been significant improvements made to the website.

A more detailed overview of the results can be found in section 13. This overview also shows the actual improvements to the websites even if they do not reach the threshold for the ‘accredited check’.

11.2 Cost Benefit and Webrichtlijnen Conclusions

Most available research papers claiming to have measured proof of the cost-benefit of applying the Webrichtlijnen or the WCAG guidelines cannot provide sufficient scientific proof for their conclusions. Most papers disregard other influences like i.e. general growth of the number of people buying online and using the internet, the growing availability of devices and the web, influence of related advertisement, newsletters etc. etc.

The web as a digital channel is ideal for measuring customer behavior and linking that directly to the cost and benefit of the companies’ customer relation ecosystem. To our amazement, most of the website owners we interviewed and who took part in our questionnaire do not effectively use the analytics of their website for this purpose. Some do not measure the cost-benefit of their website besides pointing to the number of unique visitors. And if they do gather data, mostly the data are not
used to improve the cost-benefit or are not related to other channels used to contact their potential customers.

The focus of most business cases starting with the Webrichtlijnen is on SEO. The business cases indicate that they perceive a clear advantage but do not have data to support that. Even if the data are available, there are still many factors influencing these data. An increase in the number of search engine visitors can be a clear indication, but at the same time this can be caused by other (external) factors. SEO is however an important driver for the Webrichtlijnen for organizations. They use this internally to get support for the implementation.

The cost of implementing the Webrichtlijnen is not high and not low as indicated by the business cases, if done from the start. The business cases indicate that there is an initial investment necessary into educating the colleagues (training, skills development), establishing Webrichtlijnen in their processes and some increased development time. Because of the learning curve implementing and maintaining the Webrichtlijnen takes more time at the start of the process. This is conformant with the experiences described by companies in the online business case on the W3C website.

Business cases indicate that the cost of implementing the Webrichtlijnen lie between 0 and 10 percent. Mostly these are initial cost only. The extra cost at a later stage are caused by specific technologies and the possibility to include the Webrichtlijnen from the start. An example is online video. Sometimes the complete accessibility can be included from the start (like the example of Microsoft shows), but with user-generated content this is less easy. Webrichtlijnen should try to find a common solution for that.

Cost Considerations seem to be the main focus in the interviews. During the help by GRIP and Accessibility, business cases searched and asked for sub-lists of guidelines and success criteria to prioritize their implementation. They indicate that the other level A or AA guidelines are also important, but in practice they quickly put them aside when time is running out in the web development process. They then plan to come back to the rest of level A later. This could explain why web owners who state that they want to implement level A finally end up with a better website, but not conformant with level A. More awareness should be raised to help organizations to choose for level AA from the start and not focus on parts. Focusing on parts could lead up to a website that does not conform to any of the standards levels not even the basic accessibility.

Web developers and website owners are not always very knowledgeable on the subject. One web developer asked for simple versions of the guidelines even after they had indicated to the customer that they can build Webrichtlijnen conformant websites. It would be good to hire expertise like Microsoft has done. Their website was made level AAA (WCAG) from the start.

It is always more expensive to make improvements to existing websites. Partly because it involves external cost like in the case of ManandShaving and Directshop and partly because there is an existing system that is not built to optimally support the Webrichtlijnen (Directshop, Sharepoint 2007, HAN). In that case the best achievable result is probably to implement as many as possible success criteria and focus on the next release or new website.

There are also ongoing cost like for additional development and training on accessibility (Webrichtlijnen) for new technologies. Content editors will have to generate Open Standard documents in an accessible form, supported by assistive technology. This requires constant updating of knowledge in the team of hiring experts like Microsoft did. To keep a website conformant is mostly a minor cost issue. This is also indicated by the business cases. There are extra cost however for video and audio and for user-generated content.
Also there are extra costs for evaluation of the website. W3C states in their business case that organizations committed to providing usable, accessible sites will likely increase testing time. We have heard that from the business cases during the interviews. This included template and design testing of prototypes with disabled users and with assistive technology. But also quality assurance during the lifecycle of the website and content.

The business cases indicate that they perceive a stable or lowering of cost for their website thanks to the Webrichtlijnen because it is now easier to change or add content and components to the website. Also it is easier to point suppliers to the Webrichtlijnen document. However without (external) testing there is a large chance that you will not get what you asked for. Implementing Webrichtlijnen from the start is easier and less costly than changing an existing website.
12. References

Cullen, K., Kubitschke, L., Blanck, P. e.a. (2008) *Accessibility of ICT products and services to Disabled and Older People. Evidence-based analysis for a possible co-ordinated European approach to web accessibility*. Bonn Work Research Centre Ltd, Dublin


13. **Appendix List of Success criteria scores**

This document contains a short and a longer version of the checklist for WCAG2.0

- **X** = Fail continued
- **X+** = Fail but improved
- **XV** = Pass, was fail
- **VX** = Fail, was pass
- **V** = Pass continued

<table>
<thead>
<tr>
<th>Principles, Guidelines and Success criteria</th>
<th>Nieuwe werken</th>
<th>HAN</th>
<th>Man and shaving</th>
<th>KWF</th>
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<tr>
<td>Principle 1: Perceivable</td>
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<tr>
<td>Guideline 1.1 Text Alternatives</td>
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<tr>
<td><strong>1.1.1 Non-text Content</strong></td>
<td>A</td>
<td>X</td>
<td>X+</td>
<td>X+</td>
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<tr>
<td>Guideline 1.2 Time-based Media: Provide alternatives for time-based media.</td>
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<tr>
<td><strong>1.2.1 Audio-only and Video-only (Pre-recorded)</strong></td>
<td>A</td>
<td>V</td>
<td>V</td>
<td>V</td>
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<tr>
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<td>X</td>
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<tr>
<td><strong>1.2.4 Captions (Live)</strong></td>
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<td><strong>1.2.5 Audio Description (Prerecorded)</strong></td>
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<td><strong>1.2.9 Audio-only (Live)</strong></td>
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<tr>
<td>Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.</td>
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<tr>
<td><strong>1.3.1 Info and Relationships</strong></td>
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<td><strong>1.3.3 Sensory Characteristics</strong></td>
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</tr>
<tr>
<td>Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1.4.1 Use of Color</strong></td>
<td>A</td>
<td>X</td>
<td>X</td>
<td>XV</td>
</tr>
<tr>
<td><strong>1.4.2 Audio Control</strong></td>
<td>A</td>
<td>V</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td><strong>1.4.3 Contrast (Minimum)</strong></td>
<td>AA</td>
<td>X</td>
<td>X+</td>
<td>X</td>
</tr>
<tr>
<td><strong>1.4.4 Resize text</strong></td>
<td>AA</td>
<td>V</td>
<td>V</td>
<td>X</td>
</tr>
</tbody>
</table>

*Viel in de vorige toetsing binnen de marge incidenteel. Nu is het helemaal verbeterd.*
### Principle 2: Operable

<table>
<thead>
<tr>
<th>Guideline 2.1 Keyboard Accessible</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1 Keyboard</td>
</tr>
<tr>
<td>2.1.2 No Keyboard Trap</td>
</tr>
</tbody>
</table>
| 2.1.3 Keyboard (No Exception)   | AAA  

Guideline 2.2 Enough Time: Provide users enough time to read and use content.

| 2.2.1 Timing Adjustable         | A X V V V  |
| 2.2.2 Pause, Stop, Hide         | A X X V X  |
| 2.2.3 No Timing                 | AAA  

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

| 2.4.1 Bypass Blocks             | A V V X V  |
| 2.4.2 Page Titled              | A X X V  |
| 2.4.3 Focus Order              | A X V X+ V  |
| 2.4.4 Link Purpose (In Context)| A X X X++ V |
| 2.4.5 Multiple Ways            | AA X V V V |
| 2.4.6 Headings and Labels      | AA V X X X |
| 2.4.7 Focus Visible            | AA X X X V |

Guideline 2.5 Re-authenticating

| 2.5.1 Re-authenticating        | AAA  

Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.

| 2.3.1 Three Flashes or Below Threshold | A V V V V |

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

| 2.4.1 Bypass Blocks             | A V V X V  |
| 2.4.2 Page Titled              | A X X V  |
| 2.4.3 Focus Order              | A X V X+ V  |
| 2.4.4 Link Purpose (In Context)| A X X X++ V |
| 2.4.5 Multiple Ways            | AA X V V V |
| 2.4.6 Headings and Labels      | AA V X X X |
| 2.4.7 Focus Visible            | AA X X X V |

Guideline 2.8 Location

| 2.8.1 Location                  | AAA  

Guideline 2.9 Link Purpose (Link Only)

| 2.9.1 Link Purpose (Link Only)  | AAA  

Guideline 2.10 Section Headings

| 2.10.1 Section Headings        | AAA  

### Principle 3: Understandable

<table>
<thead>
<tr>
<th>Guideline 3.1 Readable: Make text content readable and understandable</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1 Language of Page</td>
</tr>
<tr>
<td>3.1.2 Language of Parts</td>
</tr>
</tbody>
</table>
| 3.1.3 Unusual Words                                           | AAA  

Guideline 3.4 Abbreviations

| 3.4.1 Abbreviations                                           | AAA  

Guideline 3.5 Reading Level

| 3.5.1 Reading Level                                           | AAA  

Guideline 3.6 Pronunciation

| 3.6.1 Pronunciation                                           | AAA  

Guideline 3.2 Predictable: Make Web pages appear and operate in predictable ways.
### 3.2.1 On Focus
| | A | X | V | V | V |

### 3.2.2 On Input
| | A | X | X | X | XV |

### 3.2.3 Consistent Navigation
| | AA | V | V | V | V |

### 3.2.4 Consistent Identification
| | AA | V | V | V | V |

### 3.2.5 Change on Request
| | AAA |

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.

### 3.3.1 Error Identification
| | A | V | V | XV | V |

### 3.3.2 Labels or Instructions
| | A | V | X | X+ | X |

### 3.3.3 Error Suggestion
| | AA | V | V | X+ | V |

### 3.3.4 Error Prevention (Legal, Financial, Data)
| | AA | V | V | V | XV |

### 3.3.5 Help
| | AAA |

### 3.3.6 Error Prevention (All)
| | AAA |

Principle 4: Robust

Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

### 4.1.1 Parsing
| | A | X | X | X+ | X+ |

### 4.1.2 Name, Role, Value
| | A | X | X+ | X | X |
### Appendix Core cost benefit indicators detailed list

<table>
<thead>
<tr>
<th>Core indicators</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCB01 Reduction of development cost</td>
<td>Reduced costs for development</td>
</tr>
<tr>
<td>(sub) Less overrunning of cost estimates</td>
<td></td>
</tr>
<tr>
<td>(sub) Version of guidelines used and level</td>
<td></td>
</tr>
<tr>
<td>FCB02 Reduction of development time</td>
<td>Reduced hours for development</td>
</tr>
<tr>
<td>(sub) Less overrunning of time estimates</td>
<td></td>
</tr>
<tr>
<td>FCB03 Reduction of maintenance/support cost</td>
<td>Reduced costs spent on maintenance and support</td>
</tr>
<tr>
<td>FCB04 Reduction of maintenance/support time</td>
<td>Reduced hours spent on maintenance and support</td>
</tr>
<tr>
<td>FCB05 Reduction of multichannel cost</td>
<td>Decreased costs of other (additional) channels</td>
</tr>
<tr>
<td>Remark: How much are the cost of the channels per client</td>
<td></td>
</tr>
<tr>
<td>(sub) Decreased costs of traditional customer service channel</td>
<td></td>
</tr>
<tr>
<td>FCB06 Reduction of (cust.) support cost</td>
<td>(sub) Decreased support costs</td>
</tr>
<tr>
<td>(sub) Less (labor-intensive) support e-mails</td>
<td></td>
</tr>
<tr>
<td>(sub) Less (and/or shorter) support calls</td>
<td></td>
</tr>
<tr>
<td>(sub) Decreased use of &quot;Call Back&quot; button</td>
<td></td>
</tr>
<tr>
<td>FCB07 Reduction of additional cost risk</td>
<td>(sub) Financial sanctions for not conforming with the guidelines</td>
</tr>
<tr>
<td>(sub) Extra cost to include the guidelines later (retrofitting)</td>
<td></td>
</tr>
<tr>
<td>FCB08 Reduction of training cost</td>
<td>(sub) Reduction of training-time</td>
</tr>
<tr>
<td>FCB09 Reduction of documentation cost</td>
<td>(sub) Reduction of documentation costs</td>
</tr>
<tr>
<td>FCB10 Increase of transactions/purchases</td>
<td>Increased transactions/purchases</td>
</tr>
<tr>
<td>FCB11 Increase of number of visitors</td>
<td>Increased number of visitors</td>
</tr>
<tr>
<td>(sub) Increased number of visitors through search engines</td>
<td></td>
</tr>
<tr>
<td>(sub) Increased sales leads</td>
<td></td>
</tr>
<tr>
<td>Remark: If 1.6M disabled people would buy like others, how much is that?</td>
<td></td>
</tr>
<tr>
<td>FCB12 Increase of return visit ratio</td>
<td>Increased number of return visits</td>
</tr>
<tr>
<td>(sub) Increased return visits to website</td>
<td></td>
</tr>
<tr>
<td>(sub) Increased frequent visitors</td>
<td></td>
</tr>
<tr>
<td>(sub) Increased number of visits/traffic</td>
<td></td>
</tr>
<tr>
<td>FCB13 Reduction of drop-off frequency</td>
<td>Reduced drop-off rates</td>
</tr>
<tr>
<td>FCB14 Increase of completion rate</td>
<td>Increased success rate / completion rate</td>
</tr>
<tr>
<td>(sub) Increased sign-up by visitors/users</td>
<td></td>
</tr>
<tr>
<td>(sub) Decrease of visitors that are put off by forced registration</td>
<td></td>
</tr>
<tr>
<td>FCB15</td>
<td>Increase of completion rate time</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td>(sub) Increased ability to recover from errors</td>
</tr>
<tr>
<td>FCB16</td>
<td>Reduction of user error</td>
</tr>
<tr>
<td></td>
<td>(sub) Number of errors made during initial use</td>
</tr>
<tr>
<td></td>
<td>(sub) Increased ease of remembering</td>
</tr>
<tr>
<td>FCB17</td>
<td>Increase of user satisfaction</td>
</tr>
<tr>
<td>FCB18</td>
<td>Increase of success perception</td>
</tr>
<tr>
<td></td>
<td>(sub) Increased ease of use rate (by customer)</td>
</tr>
<tr>
<td></td>
<td>(sub) Decreased failed searches</td>
</tr>
<tr>
<td>FCB19</td>
<td>Increase of perception of value of company by stakeholders</td>
</tr>
<tr>
<td></td>
<td>(sub) Improved perception of company value</td>
</tr>
<tr>
<td>FCB20</td>
<td>Increase in search engine ranking</td>
</tr>
<tr>
<td>FCB21</td>
<td>Increase in multi platform support</td>
</tr>
<tr>
<td>FCB22</td>
<td>Increase in technical performance</td>
</tr>
<tr>
<td>FCB23</td>
<td>Reduction of bandwidth</td>
</tr>
<tr>
<td>FCB24</td>
<td>Increase of cross-platform performance</td>
</tr>
<tr>
<td>FCB25</td>
<td>Increased natural support for peeks</td>
</tr>
<tr>
<td>FCB26</td>
<td>Increase in interoperability</td>
</tr>
<tr>
<td>FCB27</td>
<td>Increase of legal conformance</td>
</tr>
<tr>
<td>FCB28</td>
<td>Increase of support for project leaders</td>
</tr>
<tr>
<td>FCB29</td>
<td>Increase in perception of CSR</td>
</tr>
<tr>
<td></td>
<td>(sub) Improved satisfaction ratings related to CSR</td>
</tr>
<tr>
<td>FCB30</td>
<td>Increase in job satisfaction</td>
</tr>
</tbody>
</table>
15. Appendix Selection of Scenarios

All the business cases indicate that they recognize SEO, accessibility and quality criteria in the guidelines. At the start they primarily focus on the SEO advantages but soon they choose to go for level A. The possibility of conforming with different levels of complexity seems to be attractive. As some of the SEO criteria are outside of level A, most sites implement a mix of guidelines from different levels including accessibility guidelines.

Two of the website builders involved in the implementation of the businesscases indicate that they think the Webrichtlijnen are complicated. They asked for a simplified version of the text in the review with more practical examples inside their own website. Most of the business cases asked for a prioritization. Their prime interest was then SEO and after that level A and accessibility.

All business cases expressed an interest in selecting from the Webrichtlijnen based on the cost-benefit indicators during the interviews. Two indicated that this would also facilitate prioritization of the guidelines. The researchers have the impression that if this information would be provided, it would have a significant positive influence on the choice of the guidelines for implementation. But at the same time it would be a potential risk to the increase of the accessibility of the websites. They might skip important basic guidelines and only focus on the financially beneficial guidelines.

W3C already provides an overview of the WCAG guidelines linked to different kinds of cost benefit in their online business case suite\(^\text{10}\). We used them below to show how such a ‘focus list’ could look like.

15.1 Focus scenarios

Focus scenarios provide a specific list of Webrichtlijnen and success criteria for an indicator group. Below are a few examples of possible focus scenarios that should be studied further. They are based on the W3C business case description and they are not completely covering the cost-benefit indicator list. More study is needed to do that. We based these examples also on the experience and talks with the business cases.

Naturally the basic level A and AA should be the start goal of every organization. The EU and many Member States are therefore requiring level AA. It would be useful to add success criteria from the highest level AAA if possible.

As we described earlier, offering sub-lists could be a risk to better implementation and also make the guidelines and levels of conformance less clear.

\(^{10}\) http://www.w3.org/WAI/bcase/Overview.html visited 5th May 2011
15.1.1 Success criteria related to Search engine optimization (SEO) and low bandwidth

The Webrichtlijnen can help to optimize webpages to rank higher in search engines like Google. All business cases except Microsoft requested an overview of SEO related Webrichtlijnen and success criteria. Webrichtlijnen that are specifically interesting in view of SEO are:

- Provide clear URI’s so they are available in search engines. (relevant success criteria: U.10.1, U.10.2 and U.10.3)
- Provide text alternatives for images, icons and multimedia. (relevant success criteria: 1.1.1, 1.2.1, 1.2.2 and 1.2.8)
- Use text instead of images with text on your pages. (relevant success criteria: 1.4.5, 1.4.9)
- Use correct markup. (relevant success criteria: U.1.1, U.1.2, 3.1, 4.1.1, 4.1.2)
- Use heading markup for headings. (relevant success criteria: U.1.3, 1.3.1, 2.4.6, 2.4.10)
- Provide alternatives to scripts, program files and plugins. (relevant success criteria: U.3.1, 2.1.1, 2.1.2, 2.1.3, 4.1.2)
- Use clear links to other language versions. (relevant success criteria: U.6.1)

Low bandwidth and server load

HAN indicates that low bandwidth is important because many of their students come from areas where there is only limited internet possibilities due to low bandwidth. It may also be interesting for people who pay per extra Mb (like sometimes on mobile phones). At the same time, limiting the pageload, can also lower the server load, requiring less servers.

- Provide information to people who do not see the images, icons etc. (relevant success criteria: 1.1.1 and 1.2.8)
- Higher contrast for people working outside or with a lot of sunlight or save battery status making it difficult to read the screen. (relevant success criteria: 1.4.1, 1.4.3 and 1.4.6)
- Use text instead of images with text on your pages. (relevant success criteria: 1.4.5 and 1.4.9)
- Separate content from presentation to reduce size of pages. (relevant success criteria: U.2.1, U.2.1 and 1.3.1)
- Work on older technology. (relevant success criteria: 4.1.1)

15.1.2 Success criteria related to general usability

There are many articles on the web concerning usability. Many provide usability guidelines but there is much discussion on them. W3C provides a list of success criteria that are part of the WCAG version 2.0 and that could be related to usability. Some important Webrichtlijnen formulated additionally in the Netherlands have been incorporated. Some Webrichtlijnen that can be relevant to usability are then:
- Help visitors if they are on your site and could encounter errors.  
  (relevant success criteria: U.4.1 and U.5.1)
- Clear and consistent design, navigation, and links  
  (relevant success criteria: U.10.1, 2.4.2, 2.4.4, 2.4.5, 2.4.6, 2.4.9, 3.2.3, 3.2.4, 3.3.1 – 3.3.6)
- Provide scalable text.  
  (relevant success criteria: U.1.1, U.2.1, 1.4.4, 1.4.8)
- Group information blocks.  
  (relevant success criteria: 1.3.1, 1.3.2 and 2.4.10)
- Use clear and simple language.  
  (relevant success criteria: 3.1.1 - 3.1.6 and U.4.1, U.5.1)
- Provide sufficient color contrast.  
  (relevant success criteria: 3.1.5, 3.1.3)
- Warn visitors for pop-up screens.  
  (relevant success criteria: 3.2.1, 3.2.2, 3.2.5)
- Avoid blink and other formatting changes while looking at information.  
  (relevant success criteria: U.1.2, 2.2.2)
- Give users time or the possibility to pause  
  (relevant success criteria: 2.2.1 and 2.2.2)
- Provide support for keyboard use and device independence.  
  (relevant success criteria: 2.1.1, 2.1.2, 2.1.3, 2.4.7)

There are also Webrichtlijnen that discuss faster loading of pages or low bandwidth circumstances that could be relevant in this section.