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Slutrapport projektgenomförande - DAKA advisory AB

Projektet är genomfört inom ramen för Post- och telestyrelsens (PTS) innovationstävling Innovation för alla.

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1 Projektsammanfattning

Organisation/företag: Diane Alarcon Kim Andreasson advisory AB (DAKA)
Projekttitel: Webbtillgänglighetskollen (WTK): WTKollen.se
Projektets start- och slutdatum: 15 februari 2017 – 31 oktober 2018
Kort beskrivning av projektet och dess syfte (max 200 tecken): Projektet utvecklade en produkt för PTS webbriktlinjer för att testa webbsidor, webbplatser och PDF-dokument genom automatiserade och manuella tester i utvecklingen mot mer tillgängliga webbplatser. Projektet fokuserade på fyra områden: <ol style="list-style-type: none">1. Skapa nya tester enligt PTS webbriktlinjer.2. Översätta nuvarande användardialog till svenska.3. Sammanställa resultat från automatiserade och manuella tester.4. Etablera en affärsmodell för fortlevnad.
Kort beskrivning av projektets målgrupp och deras behov (max 200 tecken): I Sverige, precis som i andra länder, finns en stor andel människor med nedsatt funktionsförmåga. Enligt Arbetsförmedlingens statistik från 2013 rör det sig om nästan en miljon svenskar mellan 16 och 64 år. Detta kan hindra dem från att använda webbtjänster om de inte är korrekt utformade. Vi känner starkt för att förbättra denna situation. Resultaten från projektet kan ge en bild av utvecklingen för webbtillgänglighet och kan användas till att korrigera barriärer för människor med funktionshinder.

2 Målgrupp och behov

The European Web Accessibility Directive (WAD) of 2016 formalized accessibility requirements for online services from public entities. WTKollen.se targets the stakeholders of public websites and aims to facilitate compliance with the WAD and web accessibility in general. Specifically, the project identified nine types of users, their needs, and how the project aims to serve them. More details can be found in Bilaga 1.

Målgrupp	Behov	Effektmål
Website suppliers	The EU directive on available public websites and apps, was decided 2016-10-26. * This makes accessibility requirements clearer. Suppliers will need interactive testing tools in development. They also need a test report as part of the final delivery.** For more information, see: https://ec.europa.eu/digital-single-market/en/web-accessibility	More efficient development process with integrated web accessibility testing. This can be confirmed by WTKollen tests.
Buyers	Website buyers can ensure that the product is of a certain standard.	Easier tests that meet requirements in the EU directive. This can be confirmed by WTKollen tests.
Owners	Need a way to keep track of the status and trends of the site. Need a way to easily produce bug reports to improve accessibility.	Better website experience as well as improved accessibility, especially for people with disabilities. Easier test that the site meets the requirements of the Directive. Reduce transaction costs by moving them from phone / visit to the Internet.

Målgrupp	Behov	Effektmål
Users	<p>The primary need is more accessible content on the web for people with disabilities.</p> <p>All users will be able to help through manual validation. Disabled users can produce reports that make it easier to pinpoint problems.</p>	<p>More sites with better accessibility. This can be confirmed by WTKollen tests.</p> <p>Better access to more targeted testing tools to improve accessibility by displaying shortcomings.</p>
Test experts	<p>Test experts can integrate reports from the tools in their analysis of web pages.</p>	<p>Simplified test activities.</p>
Researchers	<p>Researchers have access to data that can be used for analysis and research.</p>	<p>Easier access to larger amounts of data for analysis and research.</p>
Authorities (accessibility)	<p>Decision makers can get a quick idea of the quality of different websites through clear results and benchmarking lists.</p> <p>Authorities can analyze trends over time through simple performance lists.</p>	<p>More targeted web accessibility policies and evidence of shortcomings and improvements over time.</p>
Media	<p>Media can make their own web pages more accessible and they can use performance lists to report results to users.</p>	<p>More information about web accessibility.</p> <p>Simple results and lists for potential articles.</p>
Associations for people with disabilities	<p>Need a way to easily produce reports to create awareness and to point out problems in a way that makes it easier to fix them.</p> <p>Associations and members can use the results to influence the need for better accessibility.</p>	<p>More sites with better accessibility.</p> <p>Proof of deficiencies and improvements over time.</p>

3 Redogörelse av projektresultatet

The project focused on four main objectives:

1. To develop new tests according to PTS web guidelines.
2. To translate the current user interface to Swedish.
3. To integrate results from automated and manual testing.
4. To establish a sustainable business model for the future.

The WTKollen checker tool is based on an earlier version that was developed for the project “European Internet Inclusion Initiative (EIII),” which took place between 2013 to 2015 under the European Union Seventh Framework Programme (grant no. 609667). A major innovation under the WTKollen project is the integration of data from automated and user testing tools (ATT and UTT) in order to get an overall evaluation of a website, instead of running two separate tests. Also, the automatic tests were updated to reflect revised standards and the automatization of certain tests that were previously done manually. The checker is available at: <http://checkers.wtkollen.se/en/pagecheck/>

The WTKollen project conducted benchmarking tests on municipalities in Sweden, government websites and universities. The results of the benchmarking results are available here: <http://checkers.wtkollen.se/en/benchmarking/previous/>

Results were presented and discussed in several relevant events, including Offentliga Rummet on 1 June 2017; the MITT network meeting in Stockholm on 20 October 2017; WAI ACT, and WAD meetings on 29 November 2017 in Brussels. To pursue the exchange with the WAD development we have also met with key stakeholders at the Zero conference on 21 February 2018 in Vienna, and in Luxembourg at the EC premises on 14 March 2018. Meetings for exploitation have been organized in connection to the ICCHP conference 12 July 2018, and most recently in Stockholm 18 October 2018. We have also been invited to present results from the project at the Accessible Europe: ICT for ALL in Vienna on 12 December 2018.

Blog posts were published on the WTKollen website and publicized through Facebook. The most popular post was about benchmarking accessibility of Swedish university websites and reached more than 1300 people, according to Facebook.

3.1 Beskriv kortfattat projektets mål och leveranser

The result of this project is the WTKollen checker, an open source tool in Swedish that is free and available to all. The service is the first in the marketplace to integrate automated and manual testing and to quantify the combined results into an accessibility score, which is automatically

assigned and ranges from 1 to 100 (100 = best). The tests are transparent and designed for web accessibility evaluation and monitoring according to the EU Web Accessibility Directive. Users can go online (<http://checkers.wtkollen.se/en/pagecheck/>) and enter the address of a website that they want to check. The tool runs the automated tests and reports them along with the results of manual testing, if any.

WTKollen has the capacity to run 44 automated tests that correspond to WCAG 2.0 and aim to be in line with European Standards. The checker provides a detailed list of the tests that are available and instructions for how to repair common problems. This information is available here: <http://checkers.eiii.eu/en/tests/>

In course of the project we have added and extended a new open source test engine based on aXe core, in collaboration with Deque Systems. The new test engine has 72 tests and is written in Javascript. This migration can contribute to consolidation of open source tests.

The WTKollen User Testing Tool (UTT) is a bookmarklet designed for web accessibility evaluation and is available here (<https://www.accessiblecheck.com/>). With this tool, a user can evaluate some of the accessibility barriers that cannot be measured automatically. The tests are designed to evaluate images, page titles and the headings structure of a web page. The UTT can run 14 tests, which are described here: <http://checkers.wtkollen.se/en/manualtests/>

The usage of the WTKollen tools has been monitored on a regular basis. Statistics have been gathered and analyzed. In 2018, the WTKollen checker has been used 20 000 times through 1 November 2018. Detailed information by month is available below:

Month	2017 usage	2018 usage
January		2041
February		1448
March		3080
April		1450
May	71	1859
June	890	1580
July	1069	843
August	1552	2611
September	1196	3816
October	3978	2100
November	2907	

December	2817	
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Source: WTKollen

Also, the usage of the UTT bookmarklet tool has been registered. 129 manual tests have been performed with use of the UTT bookmarklet tool from its deployment date of January 2018. The integration UI is available since October 2018. The usefulness of this tool has since then increased substantially.

In total, the bookmarklet tool has been downloaded 1077 times and 1962 web pages have been checked (source: <https://accessiblecheck.com/>)

3.2 Viktiga insikter

The work on the WTKollen web accessibility tool has yielded many insights into market needs, awareness and how to develop sustainable business models. Below we summarize some of the insights:

Our initial score presentation caused some confusion. We received feedback from some users that the website score was close to 100% and yet problems were encountered. Based on this input we have moved the disclaimer and changed the wording so that it should be clearer that automated testing cannot detect all possible accessibility problems.

Awareness for web accessibility remains low outside of communities that are focused on this. The WAD has introduced web accessibility requirements for public sector websites in Europe, but the awareness of these standards is nascent. The timing of the introduction of web accessibility standards coincided to some extent with the timing of new data privacy regulations (GDPR). While the GDPR received a lot of press attention, the WAD guidelines did not. To raise awareness of the issues in Sweden, the WTKollen project developed a blog and Facebook page. We ran tests on the websites of Swedish political parties, universities, and newspapers, among others. The most popular blog post to date was on universities and reached 1,324 people (source: Facebook).

The accessibility of public body websites varies both across countries in Europe and within regions in a country. As part of the European Internet Inclusion Initiative (the project that developed the initial version of WTKollen), the project team ran the accessibility checker on websites in 32 EU+ countries. Country scores ranged from 72 to 91 with Cyprus receiving the lowest score and Netherlands receiving the highest score. As part of the WTKollen project, we ran the

tool on 279 municipality websites in Sweden. The highest score was 100 for more than 30 municipalities, and the lowest score was 72 for Gagnefs kommun.

Users desire a one-stop-shop tool for web accessibility. During the course of the project, the team focused on the development of new tests and the integration of results from automated and user testing. As we presented the tool to more people in one-on-one meetings, it became clear that users—particularly government authorities and website owners—are interested in a tool that integrates the ATT, UTT and user feedback mechanism that are required as parts of the WAD. A result of our discussions with potential users is that they would like a service that allows anyone to report accessibility barriers directly to website owners.

The most compelling user case scenarios for the WTKollen testing tools are self-assessment and benchmarking. The accessibility score is a simple way to quantify and compare web accessibility against other websites and over time. It allows the individual user to see how their website performs against WAD guidelines. A website owner can find and fix barriers, then re-test the site to see improvement. The score also allows monitoring bodies, such as government and representative organizations, to identify sites that exemplify best practices and those that require more work to increase internet inclusion. We also note that the benchmarking lists trigger competition. In particular, some of the universities and airlines whose websites we tested commented on this.

From a long-term impact, we note that the average score for a selection of about 100 websites in Qatar has increased from 69 to 87 in five years. We have been told this is much due to the element of competition driven by the monthly benchmarking list we have been providing.

Deployment of the manual testing tool will require more awareness raising amongst users of websites. The user testing tool will become a better measure of accessibility as more people download the tool and use it. The tool was deployed in January 2018, has been downloaded 1077 times and used to test nearly 2000 web pages. The integration with the automated testing was completed in October 2018.

A sustainable business model is likely to depend on the network effects of many users and revenues for value-added services from some users. The WAD has introduced the requirement that new public body websites in the EU must comply with web accessibility standards by 23 September 2019 and existing websites must comply by 2020.

Although there are several tools to test web accessibility, we have not found any capable of testing lists of websites that is open source and free. We have developed a simple tool that gives real-time feedback and assigns a score that can be benchmarked against similar websites in a sector or region. We will have to develop and market services that add value such as: subscriptions to test many sites, consulting, one-off assignments, and connecting service providers to evaluation reports.

We can also develop certification services and analysis of trends and best practices. After the project ended, we have obtained a small but strategically interesting assignment from NDA, the Non-discrimination Agency in Ireland, to test 8 sites for bus services. We think this European contract can pave way for more opportunities.

4 Redogörelse av projektets genomförande

The implementation of the project followed the plan that was set at the beginning. The timeline was extended in 2018 to allow more time for exploitation and to refine tests according to Web Content Accessibility Guidelines (WCAG2.1), which was published in June 2018 (<https://www.w3.org/2018/06/pressrelease-wcag21.html.en>).

The open project approach where we have shared documents and met on a regular (approximately bi-weekly) basis has been useful for sharing ideas and keeping track of progress.

4.1 Genomförandeplan/tidplan

WTKollen was developed to build upon work that began in 2013 and to design web accessibility tools for Swedish websites. The initial plan was segmented into four stages (etapper) that began in February 2017.

Phase I ran from February 2017 through June 2017. The main objectives of the first stage of the project were to kick-off the project, develop concepts, compare accessibility standards within Europe and begin discussions around creating a sustainable business model. The actions in this stage included the kick-off meeting, analysis of WCAG and PTS accessibility guidelines, translation of WTKollen interface from English into Swedish and initial work on a sustainable business model. These objectives were met during the time period.

Phase II ran from June 2017 to October 2017. The main objective this second stage was to define and develop appropriate tests according to guidelines from WCAG, the WAD and PTS. The actions in this stage included developing and documenting ATT and UTT, testing the

Swedish language user interface, iterative testing, integrating the ATT and UTT and initiating dialogue with potential users to receive insights and feedback into the tool. The project encountered some obstacles in developing the integration between the ATT and the UTT. The development and integration continued into Phase III. The other objectives were met during the time period.

Phase III ran from October 2017 to February 2018. The main objectives of this third stage were to continue work from Phase II, to refine and implement the user testing tool and to update the GUI based on user comments. The integration and documentation of the user testing tool encountered some delays due to a longer learning curve than planned and due to some sick leave. The project team also requested an extension of the project timeline because more refinement of web accessibility guidelines were released in 2018. The other objectives were met during the time period.

Phase IV ran from February 2018 to October 2018. The main objectives of this fourth stage were to test the functionality of the WTKollen tool, to update tests based on the WCAG 2.1 release and user comments, to continue discussion with potential users, to develop sustainable business models and to write a white paper summarizing the work and outcomes of the project. During this stage, the project team began to test more websites, including universities, airlines, and political parties. Results of the tests were published in blogposts on both the WTKollen website and on Facebook. The objectives were met during this period.

4.2 Projektets budget

Totala kostnader.

Poster	Budget		Utfall		Andel av totala kostnader (%)
	PTS finansiering	Egenfinansiering	PTS finansiering	Egenfinansiering	
<i>Utveckling</i>	<i>614,904</i>	<i>153,726</i>	<i>704,147</i>	<i>210,355</i>	<i>42%</i>
<i>Test</i>	<i>458,208</i>	<i>114,552</i>	<i>411,396</i>	<i>102,849</i>	<i>24%</i>
<i>Projektledning</i>	<i>261,664</i>	<i>65,416</i>	<i>272,647</i>	<i>68,162</i>	<i>16%</i>
<i>Marknadsföring</i>	<i>251,456</i>	<i>62,864</i>	<i>198,042</i>	<i>49,511</i>	<i>11.5%</i>
<i>Inköp</i>	<i>111,000</i>	<i>27,750</i>	<i>111,000</i>	<i>29,182</i>	<i>6.5%</i>
<i>...</i>					
Summa	1,697,232	424,308	1,697,232	460,058	

Kostnader för underleverantörer.

Underleverantör ACC		
Poster	Budget	Utfall
<i>Utveckling</i>	<i>176,750</i>	<i>176,750</i>
<i>Test</i>	<i>0</i>	
<i>Projektleddning</i>	<i>0</i>	
<i>Marknadsföring</i>	<i>0</i>	
<i>Inköp</i>	<i>0</i>	
<i>...</i>		
Summa	176,750	176,750

Underleverantör Tingtun		
Poster	Budget	Utfall
<i>Utveckling</i>	<i>591,880</i>	<i>737,751</i>
<i>Test</i>	<i>536,160</i>	<i>473,155</i>
<i>Projektleddning</i>	<i>174,580</i>	<i>178,170</i>
<i>Marknadsföring</i>	<i>216,720</i>	<i>164,581</i>
<i>Inköp</i>	<i>138,750</i>	<i>125,836</i>
<i>...</i>		
Summa	1,658,090	1,679,494

Note: In the Agile process that Tingtun applied, they combined testing and development and therefore the amount recorded for development includes some of testing work. Prospective clients in government told us that they are very busy with implementing the WAD into national legislation until the end of the year and will focus on procurement in the beginning of 2019. Therefore, WTKollen spent less on exploitation than initially planned.

4.3 Projektets arbetssätt

The project was organized as planned with DAKA responsible for the project management in collaboration with Tingtun and the Accessibility Foundation, the latter two organizations who provided technical development.

Synergies was organized through collaboration with the Public Barrier Tracker project (PBT) under separate funding from PTS.

5 Vad händer nu?

WTKollen is the first open-source, online web accessibility checker that integrates automated and user testing. We are not aware of any other open source tools able to produce benchmarking lists for the accessibility of websites. In addition to this, the team has developed a prototype for the user feedback mechanism that is part of the WAD. We have presented this solution to stakeholders in the Netherlands, Ireland and Poland who have expressed interest in an integrated solution to WAD compliance. Overall, the feedback has been positive and we expect that demand for monitoring web accessibility will grow as the deadlines approach for compliance with WAD. For example, after the project ended, we obtained a small but strategically interesting assignment from NDA, the Non-discrimination Agency in Ireland, to test 8 sites for bus services.

With the aim to improve marketability and branding, we have also reserved a new domain name to feature all of our service in a single portal where we plan to integrate and further develop the ATT, UTT and feedback mechanism under this brand.

We do expect that the group of stakeholders that would be willing to pay for a service is limited. The main reason for this are that the WAD is only to be applied for the public sector, and because the use of “free” services is widely adopted, also in the public sector. We would not entirely exclude the use of advertisements to generate some revenue from the service. However, advertisements associated with evaluation services could compromise the credibility of the service and efficient advertisements needs access to personal profiles. Therefore, we propose to explore sustainability models without advertisements at this stage.

Feedback from some public sector bodies indicate that they are currently focusing on getting the legal basis in place, and will look at implementation in terms of services and tools next year.

Bilaga 1. Målgruppens behov och hinder

Målgrupp	Identifierat behov	Identifierat hinder	Identifierad åtgärd	Status
Website suppliers	<p>The EU directive on available public websites and apps, was decided 2016-10-26. * This introduces clearer accessibility requirements. Suppliers will need interactive testing tools in development. They also need a test report as part of the final delivery.</p> <p>* https://ec.europa.eu/digital-single-market/en/web-accessibility</p>	<p>Low levels of awareness and willingness to invest resources into understanding and implementing accessibility guidelines</p> <p>Many guidelines from WC3, the EU and PTS that needed to be analyzed and translated into tests</p>	<p>WTKollen analyzed accessibility recommendations and developed automated and manual (user) tests (ATT and UTT)</p> <p>Integrated ATT and UTT</p> <p>WTKollen documents the tests and provides fixes for them</p>	Complete
Buyers	<p>Website buyers can ensure that the product is of a certain standard.</p>	<p>Lack of resources to dedicate specifically web accessibility</p> <p>Available products do not allow real time testing</p>	<p>Online WTKollen checker tool allows users to test websites and receive detailed feedback</p>	Complete

Owners	Need a way to keep track of the status and trends of the site. Need a way to easily produce bug reports to improve accessibility.	Lack of resources to dedicate specifically web accessibility Available products do not allow real time testing	Online WTKollen checker tool allows users to test websites and receive detailed feedback	Complete
Users	The primary need is more accessible content on the web for people with disabilities. All users will be able to help through manual validation. Disabled users can produce reports that make it easier to pinpoint problems.	Most websites do not have a way for users to report barriers or ask for accessible content	As part of a different project, the WTKollen team conducted a feasibility study for a public barrier tracker, and integrated WTKollen test results into the PBT report.	Complete for the project. Still more work to do for more accessible websites.
Test experts	Test experts can integrate reports from the tools in their analysis of web pages.	APIs does not exist.	APIs have been prepared	Complete
Researchers	Researchers have access to data that can be used for analysis and research.	APIs does not exist.	APIs have been prepared	Complete
Authorities	Decision makers can get a quick idea of the quality of different websites through clear results lists. Authorities can analyze trends	Not aware of accessibility score	Awareness increased	Done, but can be further improved.

	over time through simple performance lists.			
Media	Media can make their own web pages more accessible and they can use performance lists to report the best sites and effects for users.	Not aware of available tool	Awareness increased with Newspaper benchmarking list	Done, but can be further improved.
Associations for people with disabilities	Need a way to easily produce bug reports to create awareness and to point out problems in a way that makes it easier to fix them. Associations and members can use the results to influence better accessibility.	Not aware of available tool	Awareness increased and first PBT integration done.	Done, but can be further improved.