Directive on Web Accessibility Paikkatietohakemisto

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1. Summary

The conclusion is that the accessibility of Paikkatietohakemisto is in very bad level.

In the testing there was found 7 critical, 19 remarkable and 7 other problems and 5 other remarks. Most the findings were found in metadata editing page.

The most critical findings concern using keyboard to navigate and using screen reader.

Most of the remarkable findings were about focus, the labelling of elements and too small contrast between elements. Most of the findings concern a single page and not the whole application which makes the usability more difficult.

The other problems slow the usage of the application when using aided technologies. The most concerning thing is that the data is lost in metadata editing when you need to re-login after timeout.

Other observations include for example the not-translated headers and the not wholly visible texts in field.

Admin pages were not tested.

It is recommended to fix minimum all the critical and remarkable problems. Then the service can be considered to meet the requirements of the law of digital service accessibility. The fixing of the other findings should be considered.



2. General about the review

This document covers the findings in testing Paikkatietohakemisto against the accessibility law. The findings and possible corrections are listed in this document.

Evaluation of the service is made against the current law (Laki digitaalisten palvelujen tarjoamisesta (306/2019)) and its accessibility requirements (based on WCAG 2.1 levels A and AA). The findings are grouped in three categories: critical, remarkable, other.

The target of the evaluation of the service accessibility was to find out the current status of the service and made a base for the plan to fix the service so it will fulfill the requirements of the law. The evaluation was made in the project SAAVU/su.

3. Tested target

Tested target: http://www.paikkatietohakemisto.fi/

All the cases were not be able to test in the production environment so there were testing in the demo environment instead http://demo.paikkatietohakemisto.fi/geonet-work/srv/fin/catalog.search#/home. The demo environment is identical to the production environment.

Testing date: 23.8.2019 - 27.09.2019

- Paikkatietohakemisto is a national metadata service guidelined by the Inspire directive.
- National Land Survey of Finland is providing for the users a platform for their metadata. The data is produced by the users.
- The users of the service are mainly covernment users. But anyone has the right to get a user credentials to the service.
- It is possible to search for metadata through the service, but the main task is not to be used as a search service. In PTA there is a more sofisticated search service that gets the data from Paikkatietohakemisto.
- The service is build using the open source Geonetwork application. The National Land Survey of Finland has made some customisation on top of the basic service.
- The last major update for the service was 2016.



• The service is a public so it should fulfill the requirements of the accessibility law starting September 23 2020.

The following use cases where tested:

Käyttötapauksen nimi	URL
Editing metadata	for example http://demo.paikkatietohakemisto.fi/geonet- work/srv/fin/catalog.edit#/metadata/22464698?justcreated&redirec- tUrl=catalog.edit
Searching meta-	http://demo.paikkatietohakemisto.fi/geonetwork/srv/fin/cata-
data	log.search#/home
Displaying meta- data	for example http://demo.paikkatietohakemisto.fi/geonet- work/srv/fin/catalog.search#/metadata/34155a94-b58b-4ad0-87e6- f96d2db0f3ba
MML Admin usage?	

4. Findings

4.1. General about the findings

The findings are categorized: critical problems, remarkable problems, other problems and other findings.

Critical problem

Accessibility problem that prevents or has other critical affect on the usage of the service. For example the main usage is not possible with using keyboard or screen reader.

Remarkable problem

• Less impact that the critical ones. Has major effect on the usage of the service. For example opening a new page without any information in the link.

Other problem



• In this category the problems are not so serious or ambiguous accessibility problems. For example the incoherence on the structure or the outlook of the service.

Other findings

All other findings are listed here.

The level (A, AA vai AAA) and the wideness of the finding has effect on the seriousness.

4.2. Critical problems

4.2.1. The information about the timeout for the session is stuck in a loop when using screen reader

The information about the ending of the session comes, disappears after couple of seconds and then appears again. The screen reader never managed to finish the reading and then starts again.

WCAG 2.2.1 Timing Adjustable (level A): If there is a timing in the page or in the application the user should have the opportunity to disable the time limit, adjust the time limit or lengthen the time limit.

To fix: Add a close button for the time limit information box and remove the automatic exit in the information box. Or add a possibility to adjust the time limits.

4.2.2. Logging out not working with keyboard

You can not log out using the keyboard. Even the additional navigation served by NVDA does not find the logging out functionality. There was problems also in the page of metadata search page navigation buttons when using the keyboard.

WCAG 2.1.1 Keyboard (Level A): All the functionality should be usable also with keyboard (All the links, buttons and form elements can be used with keyboard.)

To fix: Fix the keyboard focus on elements so they are reachable with keyboard.

4.2.3. All the submenu choices cannot be used with keyboard

When looking the metadata for example 'Remove' button can not be reached with keyboard.

In Load menu only the choices PDF and XML get focused when using keyboard. Also in 'Modify..The view' and 'Take part' choices are not reachable with keyboard.



WCAG 2.1.1 Keyboard (Level A): All the functionality should be usable also with keyboard (All the links, buttons and form elements can be used with keyboard.)

To fix: Add tablindex to the buttons, so they are reachable with keyboard.

4.2.4. Theme removal does not work with keyboard

When editing the metadata for example to remove a theme does not work with keyboard. The added themes do not get the focus, so it is impossible to remove them using the keyboard. The remove marked as 'X' after the theme is not clean with the screen reader.

WCAG 2.1.1 Keyboard (Level A): All the functionality should be usable also with keyboard (All the links, buttons and form elements can be used with keyboard.)

To fix: Add focus possibility to themes so you can choose and remove them. Fix the alt-texts of the buttons.

4.2.5. Keyboard shortcuts are not mentioned and you can not off the shortcuts

There are keyboard shortcuts in web pages that affect the usage of the assisting technologies. It is not mentioned in the page that the guide can be found using '?' character.

WCAG 2.1.4 Character Key Shortcuts (Level A): Turn off: There is a mechanism which can be used to turn of the shortcuts.

To fix: Add the possibility to turn of the shortcut mechanism OR add a possibility to reprogram the keys OR the shortcut is active only when the element has focus.

4.2.6. Remove button not recognised properly with NVDA

When looking metadata the 'Remove' button is not read with NVDA after the modify was cancelled and the metadata was shown again in screen. NVDA does not recognise the 'Permanent link' button.

WCAG 2.1.1 Keyboard (Level A): All the functionality should be usable also with keyboard (All the links, buttons and form elements can be used with keyboard.)

To fix: Check and fix the attributes of the buttons so that the screen reader recognise them properly.

4.3. Remarkable problems

4.3.1. The fields of the form missing names

When editing the metadata some field are missing names. For example there is some button without name in front of 'Other keywords' field. There is also four labels that are missing the input field. In the search of metadata the check boxes for choosing the topics are missing name/description.



1.3.1 Info and Relationships: Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text. (Level A). If standard HTML has no proper means of labels and information you can use ARIA.

To fix: Add the name or the label of the part to the fields in form and remove the extra label elements.

4.3.2. The choices for input field are in the next element

When editing metadata the choices for the fields can be found in the next field with a button.

WCAG 1.3.5: Identify Input Purpose (Taso AA): Input fields have autocomplete action.

To fix: Join the fields together with labels or add the possible values to input field.

4.3.3. The focus of the fields are shown only with minor color change

When editing metadata for example focus of the 'Use scrollbar' button is shown only with minor color change (contrast 1.2:1 it should be minimum 3:1). And in the metadata search the focus of the search criteria button (X) is shown only with minor color change. In the metadata information display the 'Information about the resource' magnifying glass icons are small and when activated with keyboard the tooltip is not visible, only minor color change.

WCAG 1.4.1 Use of Color: Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. (Level A)

To fix: Better contrast when focus on element. Can also use a frame to show the focus.

4.3.4. Contrast on buttons is not adequate.

When editing the metadata the contrast in green 'Save metadata' button is not enough (background #449d44, text #fff => 3.41)

In the orange color 'Draw the coverage' button the contrast is not enough (background #ec971f, text #fff => 2.33)

WCAG 1.4.3: Contrast (Minimum) (Level AA): The visual presentation of text and images of text has a contrast ratio of at least 4.5:1.

To fix: Add the contrast of the buttons.

4.3.5. In narrow screen the navigation part does not fix on screen

Editing metadata does not fit the screen totally when using for example mobile phone. The upper navigation part does not adjust and causes the need to scroll sideways.



WCAG 1.4.10 Reflow (Level AA): Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for

- Vertical scrolling content at a width equivalent to 320 <u>CSS pixels</u>;
- Horizontal scrolling content at a height equivalent to 256 CSS pixels.

To fix: Make the application more responsive.

4.3.6. Form fields contrast too small compared to the background

When editing the metadata the contrast between the edge of the form fields and background is only 1.6:1.

WCAG 1.4.11 Non-text Contrast (Level AA): The visual presentation of the following have a contrast ratio of at least 3:1 against adjacent color(s): user interface components, graphical objects.

To fix: Add the contrast of the form field borders.

4.3.7. Edit button disappears from screen

If the user same time changes the text spacing and enlarges it with 200% the 'Edit' button disappears from metadata page.

WCAG <u>1.4.12 Text Spacing</u> (Level AA): In content implemented using markup languages that support the following text style properties, no loss of content or functionality occurs by setting all of the following and by changing no other style property:

- Line height (line spacing) to at least 1.5 times the font size;
- Spacing following paragraphs to at least 2 times the font size;
- Letter spacing (tracking) to at least 0.12 times the font size;
- Word spacing to at least 0.16 times the font size.

To fix: Change the menu buttons to relocate when the space is too narrow.

4.3.8. Text not totally visible if you enlarge the spacing of characters, words and lines

When searching the metadata if the result have a two-row-title it is covered partly by picture and for example Y shows like V.

WCAG <u>1.4.12 Text Spacing</u> (Level AA): In content implemented using markup languages that support the following text style properties, no loss of content or functionality occurs by setting all of the following and by changing no other style property:

- Line height (line spacing) to at least 1.5 times the font size;
- Spacing following paragraphs to at least 2 times the font size;
- Letter spacing (tracking) to at least 0.12 times the font size;
- Word spacing to at least 0.16 times the font size.



To fix: Enhance the text field size compared to the font size so that the text is always totally visible.

4.3.9. The content changing without notice

When editing the metadata for example values are opened for the field Namespace when the field gets the keyboard focus. When moving with the tabulator to the next field a value is chosen before the focus goes to the next field. The logging fields in metadata search react only with cursor and/or focus. When showing the metadata 'Take part' button and 'User' opens a choice list that you can not reach with moving the cursor or focus.

WCAG <u>1.4.13 Content on Hover or Focus</u> (Level AA): Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true:

Dismissible

A <u>mechanism</u> is available to dismiss the additional content without moving pointer hover or keyboard focus, unless the additional content communicates an <u>input error</u> or does not obscure or replace other content;

Hoverable

If pointer hover can trigger the additional content, then the pointer can be moved over the additional content without the additional content disappearing;

Persistent

The additional content remains visible until the hover or focus trigger is removed, the user dismisses it, or its information is no longer valid.

To fix: Change the navigation with keyboard so that no values are chosen when moving from element to another.

4.3.10. No possible to lengthen the timeout value

When editing the metadata there seems to be no possibility to lengthen or totally remove the timeout value. You will loose the made changes when relogging after timeout.

WCAG <u>2.2.1</u> **Timing Adjustable:** For each time limit that is set by the content, at least one of the following is true: (Level A)

- Turn off: The user is allowed to turn off the time limit before encountering it; or
- Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or
- Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or
- **Real-time Exception:** The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or



- Essential Exception: The time limit is <u>essential</u> and extending it would invalidate the activity; or
- 20 Hour Exception: The time limit is longer than 20 hours.

To fix: Add a possibility to the user to lengthen the timelimit.

4.3.11. No proper options to bypass the content

There seem to be no landmarks or headings working with screen reader when editing metadata. So the moving is slow. In metadata search there are no landmarks and headings are missing levels h1 and h2 (at least NVDA does not detect them). When displaying the metadata there is no landmarks but the headings are correct.

WCAG **2.4.1 Bypass Blocks:** A <u>mechanism</u> is available to bypass blocks of content that are repeated on multiple <u>Web pages</u>. (Level A).

To fix: Correct the headings in the pages so that the moving is more fluent.

4.3.12. The order of the focus is not logical

The order of focus varies in different pages. For example in metadata editing the navigation changes from right to left in 'Scroll to the top' and 'Use scrollbar' buttons. Sometimes the focus totally disappears.

When searching the metadata the logging fields are coming after language choice in focus order even the logging field is before language choice. Otherwise the order is correct.

When looking the metadata the focus in the navigation is not in order.

WCAG <u>2.4.3</u> Focus Order: If a <u>Web page</u> can be <u>navigated sequentially</u> and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability. (Level A)

To fix: Check the navigation and fix the taborder to be in logical order. Remove the tabindex from invisible elements so the focus not disappearing when moving from element to the next..

4.3.13. The meaning of links is not understandable in link texts

When editing metadata for example 'remove this field' link does not point to the removable field. Also in 'connecting resources' part the links 'modify' and 'remove' miss the explanation what is the target.

In the metadata search for example the query results 'Relations' button links are not always linked to the search target.

When looking the metadata for example there is more than one "...more.." links without any connection to the content. This makes is difficult to navigate just using links.



WCAG <u>2.4.4</u> Link Purpose (In Context): The <u>purpose of each link</u> can be determined from the link text alone or from the link text together with its <u>programmatically determined link context</u>, except where the purpose of the link would be <u>ambiguous to users in general</u>. (Level A)

To fix: Add to the alternate text of the link for example the name of header or the field where it refers to.

4.3.14. Fields and menus without labels

There are missing links between the header and the field for example 'Namespace' header is not read when moving with tabulator. INSPIRE(eye) button is also missing the name. Also the show/hide parts button does not have a name. Also the service type field miss the name.

In the search of the metadata for example the checkbox for topic is loosen topics and with same name for the screen reader if you for example move X-key using NVDA.

When looking a metadata for example the 'Open link' and 'Connecting service' button labels do not tell to which link or service they are connected to (NVDA).

WCAG **2.4.6 Headings and Labels:** Headings and <u>labels</u> describe topic or purpose. (Level AA)

WCAG <u>3.3.2</u> Labels or Instructions: <u>Labels</u> or instructions are provided when content requires user input. (Level A)

To fix: Add labels for fields and menus.

4.3.15. Focus not visible enough

When editing the metadata the focus of the links 'remove group' and 'add keyword' is not visible enough.

In searching metadata page the focus of search button, empty the search field and in results back to beginning and preceding results focus is not clear.

In the header and footer of metadata display the focus is not visible at all and in 'Information about the resource' part the topic classes link focus is almost not visible.

WCAG <u>2.4.7</u> Focus Visible: Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. (Level AA)

To fix: Add frames or underlines to elements to show the focus OR change the colors to enhance the contrast.

4.3.16. Content with different language is missing the lang-attribute

When editing the metadata some of the headers and content are in English even Finnish is chosen.



The results in metadata search are in Finnish without lang-attribute even if the language chosen is English or Swedish. If there is a translation for the text both languages are visible in the text with language tag in the front for example '[EN]'.

When looking the metadata the content in different language does not have lang-attribute.

WCAG <u>3.1.2</u> Language of Parts: The <u>human language</u> of each passage or phrase in the content can be <u>programmatically determined</u> except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text. (Level AA)

To fix: Add the lang-attribute to the elements content.

4.3.17. Error messages are not so informative

In editing the metadata for example if you leave the 'Name' mandatory field empty and press 'Save and close' button there is no message about the missing name and the metadata is saved without name. Error messages in validation are in English and quite cryptic to understand for example 'Required Elements: Data Identification Citation Title is a required element'

In the metadata search the screen reader is not reading the logging error message, the logging fields are just emptied and the username field is read as a wrong one.

WCAG <u>3.3.1</u> Error Identification: If an <u>input error</u> is automatically detected, the item that is in error is identified and the error is described to the user in text. (Level A)

To fix: More clear error messages that tell the location and type of error.

4.3.18. Messages of the wrong values in fields are not precise

In metadata editing you will not be informed about wrong data without separate validation. There are data available for some fields but for example Service type values comes from a separate button. Even data are suggested to some fields you can still give a wrong data without any warning.

WCAG <u>3.3.3</u> Error Suggestion: If an <u>input error</u> is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content. (Level AA)

To fix: Validate the data user is giving and give a proper message about that for example when you move to the next field.

4.3.19. The alt texts of pictures and picture links are not informative

The alt text of the logo is not informative and does not inform that it is a link. The 'eye' icon in INSPIRE button in metadata editing is missing the description and the info button for the map is just 'i' and for example the button 'Responsible organisations (t)' add field is missing the



description. When looking the metadata the graphics are just described with name that is not describing the content of the picture. In header part there is 2 link leading to the front page hidden.

WCAG <u>1.1.1 Non-text Content</u> (Level A): All <u>non-text content</u> that is presented to the user has a <u>text</u> <u>alternative</u> that serves the equivalent purpose

To fix: Add missing and replace non informative alt texts. Remove unnecessary link elements.

4.4. Other problems

4.4.1. Lack of information in complex pictures

In metadata editing the geographical coverage is missing information about the context and text describing the map. In metadata view the geographical coverage does not have a proper description and the thumbnail pictures miss the description.

WCAG <u>1.1.1 Non-text Content</u> (Level A): All <u>non-text content</u> that is presented to the user has a <u>text</u> <u>alternative</u> that serves the equivalent purpose.

To fix: Add a mandatory field with the loaded picture.

4.4.2. Esitystavassa välittyvä informaatio ilman tyylejä

In metadata editing page there are textboxes with styles for example <textarea id="_X1_gmdCOLON-referenceSystemInfoaddCrs3067-value" style> == \$0. To search metadata page is without styles but in logical order but missing headers h1 and h2. To look the metadata without styles shows extra information not connected to the metadata itself.

WCAG <u>1.3.1 Info and Relationships</u> (Level A): Information, <u>structure</u>, and <u>relationships</u> conveyed through presentation can be programmatically determined or are available in text.

To fix: Fix the headers to be logical.

4.4.3. The search result header is read twice

The serach results of metadata is read twice (elements <a> and <i> texts) in screen reader.

WCAG <u>1.1.1 Non-text Content</u> (Level A): All <u>non-text content</u> that is presented to the user has a <u>text</u> <u>alternative</u> that serves the equivalent purpose.

To fix: Remove the extra name or add an empty alt attribute to the other element so it is not read with screen reader.



4.4.4. The edited metadata information disappears when re-authenticating to the system

The edited information are not kept when timeout happens and are lost after re-authenticating to the system.

WCAG <u>2.2.5</u> **Re-authenticating:** When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating. (Level AAA)

To fix:

- https://www.w3.org/WAI/WCAG21/Techniques/general/G105
- https://www.w3.org/WAI/WCAG21/Techniques/general/G181.html

4.4.5. Invisible buttons with focus

When editing metadata there is buttons that have no name for example after field Keywords → Inspire Service there is some button.

WCAG <u>2.5.3 Label in Name</u> (Level A): For <u>user interface components</u> with <u>labels</u> that include <u>text</u> or <u>images of text</u>, the <u>name</u> contains the text that is presented visually.

To fix: remove the focus possibility from the extra buttons

4.4.6. Too small clickable links

When editing the metadata there is in 'Connecting resources' part icons that are small (less that 20 x 20 pixels) and also link picture near '+Add' button.

When searching the metadata for example the topics checkboxes are too small and also the picture links in the footer.

In viewing the metadata for example in the filtered links magnifying class icons are just 13 x 16 pixels.

WCAG <u>2.5.5 Target Size</u> (Level AAA): The size of the <u>target</u> for <u>pointer inputs</u> is at least 44 by 44 <u>CSS</u> pixels

To fix: Expand the clickable links/buttons so they are at least 44 x 44 pixels or give a possibility to expand the links/buttons.

4.4.7. Focus shifts when you change the language

The focus jumps to the beginning of the page when you change the language from the language choice list.



WCAG <u>3.2.2</u> On Input: Changing the setting of any <u>user interface component</u> does not automatically cause a <u>change of context</u> unless the user has been advised of the behavior before using the component. (Level A)

To fix: Keep the focus on language choice after the reload of the page.

4.5. Other remarks

4.5.1. The length of the lines is over 80 characters and both sides aligned

The length of the lines is over 80 character which affect the screen reader. In metadata search the result text are both left and right aligned which causes long gaps between the words.

WCAG <u>1.4.8</u> Visual Presentation: For the visual presentation of <u>blocks of text</u>, a <u>mechanism</u> is available to achieve the following: (Level AAA)

- 1. Foreground and background colors can be selected by the user.
- 2. Width is no more than 80 characters or glyphs (40 if CJK).
- 3. Text is not justified (aligned to both the left and the right margins).
- 4. Line spacing (leading) is at least space-and-a-half within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing.
- 5. Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text on a full-screen window.

To fix: It is good at least mention to the user about the line width limit so he/she can adjust the reading to be more flexible and smooth. The aligning should be only other side (for example left aligned).

4.5.2. There are no explanations for difficult words and abbreviations

The abbreviations used in the search results are not explained in the text or in the metadata page. There was not found a link to the abbreviations or <abbreviation was not found.

WCAG 3.1.3 – 3.1.6 (Taso AAA)

To fix: Proper instructions to the producer of metadata so that the result is more reachable.

4.5.3. There is a header that is not translated

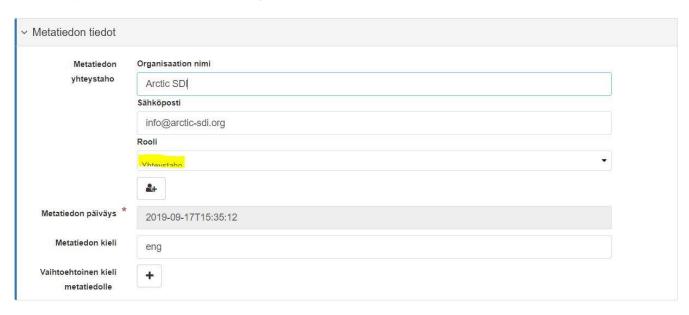
In the metadata information there is a header 'Technical information' even if the chosen language is Finnish.

To fix: Translate the header to Finnish and Swedish



4.5.4. Some of field texts are not totally visible

For example the field Role is not totally visible.



To fix: Adjust the field properties so that the text is totally visible.

4.5.5. The search field using categories by default

The search field works default with categories which might confuse the user. The metadata searched was not necessary found with its name but searching with proper category it was found. It might have affected to the testing that part of the testmaterial metadata was missing its name (name field was saved with empty name).

5. Recommended fixes

It is recommended that at least all critical and remarkable problems should be fixed so that the service will fulfil the requirements of the accessibility law.

Also other problems might be included in the requirements of the law. These problems should be checked against the usage of the service if they affect the users with special needs. Generally the fixing of other problems and findings will affect the accessibility and usage of the service



6. Further information about the testing

The accessibility testing covers all the most important tasks of the service.

WCAG 2.1 A and AA levels were used to check the service and screen reader and other accessibility tools were used to check the service.

7. Software and equipment used in testing

7.1. Browsers

Google Chrome Chrome, Android

7.2. Tools

SiteImprove Accessibility Checker -addon

7.3. Screen reader

NVDA (Windows)

7.4. Other tools

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