UNIT4

Unit4 Accessibility

Accessibility in the development process

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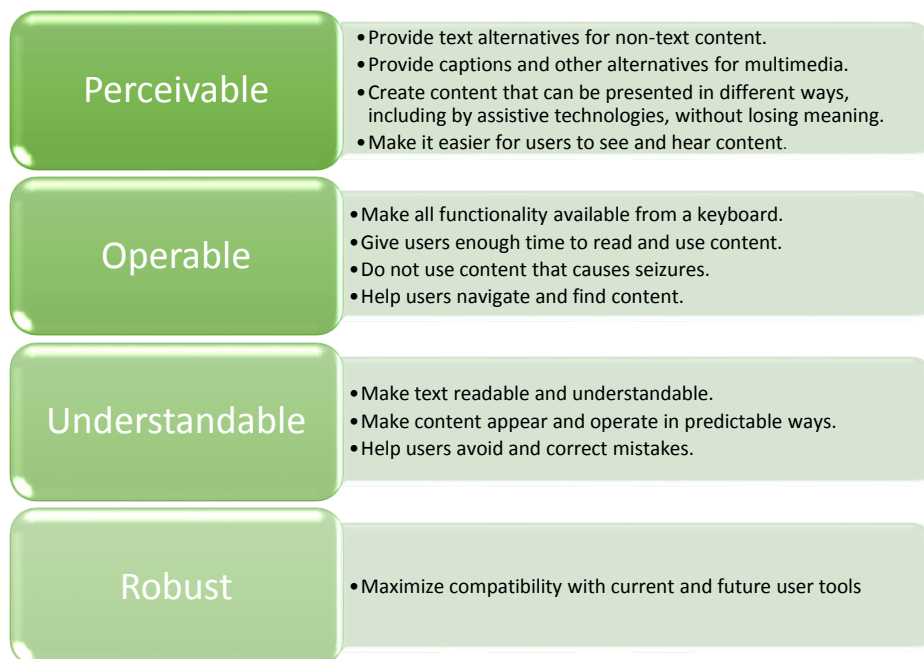January 2017

UNIT4 R&D

Unit4 Accessibility

Introduction

Web accessibility means that people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web. The Web is an increasingly important resource in many aspects of life: education, employment, government, commerce, health care, recreation, and more. It is essential that the Web is accessible in order to provide equal access and equal opportunity to people with disabilities. Following accessibility guidelines will improve the product quality for all users focusing on keyboard navigation, clearly visible text and more obvious indications. In this way the software can be used by more employees in companies. This document aims to explain how accessibility is an integral part of the development of Unit4 Business World web clients.

Over the last years the R&D department has invested much time in making the Unit4 Business World Web application comply with the WCAG 2.0 Guidelines. The Norwegian Association of the Blind and Partially Sighted, an existing customer of Unit4 is and has been a valuable partner while working on accessibility issues. Our development process contains selected best practices among other industry standards including Web Accessibility. We have dedicated RD staff working on incorporating accessibility into our product as part of our development processes.

WCAG Support

Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible. It has 12 guidelines that are organized under 4 principles: perceivable, operable, understandable, and robust.

Perceivable
- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

Operable
- Make all functionality available from a keyboard.
- Give users enough time to read and use content.
- Do not use content that causes seizures.
- Help users navigate and find content.

Understandable
- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust
- Maximize compatibility with current and future user tools

Several customers require a certain degree of accessibility and the common requirement is WCAG 2.0 AA. For each guideline, there are testable success criteria, which are at three levels: A, AA, and AAA.

| Level A	Level AA	Level AAA
• For Level A conformance (the minimum level of conformance), the Web page satisfies all the Level A Success Criteria, or a conforming alternate version is provided.	• For Level AA conformance, the Web page satisfies all the Level A and Level AA Success Criteria, or a Level AA conforming alternate version is provided.	• For Level AAA conformance, the Web page satisfies all the Level A, Level AA and Level AAA Success Criteria, or a Level AAA conforming alternate version is provided.

Accessibility support

All the TopGen screens that appear in the web client are generated by a central system that creates all interactive parts of the screen, including tabs, sections, and input fields and so on. The main advantage of this system is that the HTML code for the UI is generated one place only, and as long as this system produces an interface that meets the WCAG 2.0 AA requirements, a huge part of the system becomes accessible. Hence, any new screen using this system will also become accessible.

Other UI elements, such as menus and toolbars, are also generated by the system and are quality assured to be accessible. This means that screen designers only need to focus on a small subset of the accessibility guidelines, such as logical sequence and wording, and in some rare cases colours and contrast.

All new screens that take advantage of the HTML5 technology stack and new UI framework allows the development teams to have much more flexibility to enhance the user experience by using colours and external elements. Since these screens are designed manually, the designers and engineers have an increased focus on accessibility and also a larger responsibility to ensure that the developed functionality adheres to the accessibility guidelines. The components used to build the screens will be accessible and the components are verified to be accessible by the team responsible, but any new screens may contain non-system controls and other interactive elements.

In order to ensure focus on non-functional requirements like Accessibility and to support it in our development processes we have incorporated support of quality characteristics throughout the project. In the Elaboration phase we have support in Team Foundation Server (TFS) to create Accessibility needs that will be taken into account throughout the development sprints.
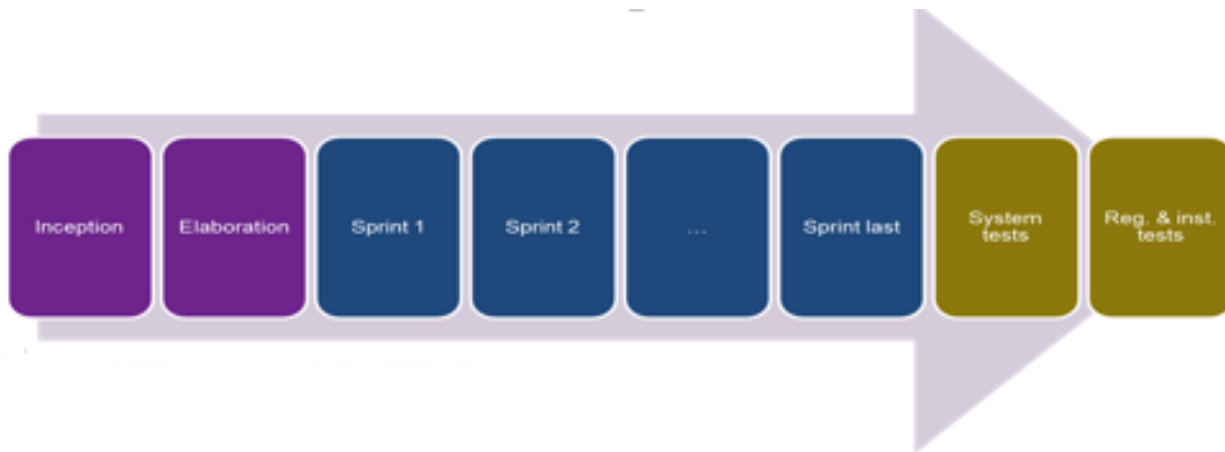
The teams are working with the requirements in the form of user stories during sprints with the duration of 3 weeks. To ensure the right qualities for the functionality to be released from a sprint into potential shippable software or complete in any other way the deliverables will need to adhere to Definition of Done. Accessibility testing is part of Definition of Done.

UX center

This multidisciplinary team take care of interaction, interface and visual design. Accessibility has to be mainly taken into account when developing the visual design which goal is to communicate information effectively and appropriately, in an aesthetically pleasing way. For doing that, the team provide a set of style guides, icons and fonts that should be used by developers to give homogeneity to the tool. The given designs will ensure readability and color contrast so accessibility is taken care from the early phases of development.

Guidelines and training

All members of the development teams need to be aware of the accessibility guidelines. We provide an e-learning for all R&D staff to give initial insights of accessibility.

WAI – ARIA

Web Accessibility Initiative - Accessible Rich Internet Applications are various techniques for making web pages and RIAs accessible to everyone. WAI-ARIA makes it possible to:

- Describe control types (menu, button, tree)
- Describing the structure of the page (header, regions, tables)
- Describing the state of an element (checked, has popups)
- Define areas that can be updated dynamically
- Define areas that are used for drag-and-drop

WAI-ARIA supports engineers ensuring that assistive technologies can use this information to better inform the user about the screen content and how it works.

Quality assurance of Accessibility

The members of the development teams will ensure that all focusable screen elements should be reachable in a logical sequence by using the keyboard. In practice this means that the use of mouse should never be required.

The text must be understandable for the intended persona and the contrast of text elements are checked with colour contrast analysers with the exception of locked elements and graphics. All input fields should have an associated label, unless it is otherwise obvious what the purpose of the field is. The teams are also verifying that colour is never the only indicator of a state or condition.

Accessibility Tools

The tools listed under are supporting and are easing the quality assurance of Accessibility.

JAWS (Job Access With Speech) is a computer screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech output or by a Refreshable Braille display.

Color contrast analyser (CCA) allows the development teams to evaluate the color visibility and contrast of foreground/ background color combinations. It provides an initial pass/fail assessment against WCAG 2.0 color contrast success criteria.

Overview of our compliance towards WCAG 2.0

Below is a detailed overview of each principle and guideline according to WCAG 2.0 and at what level our application meets the requirements.

Guideline	Level	Pass/Fail	Comment
Principle 1: Perceivable			
1.1 Text Alternative			
1.1.1 Non-text Content	A	Pass	Most images in Unit4 Business World On! are icons that supplement the text, e.g. icons on buttons and links. There are a few instances where buttons do not contain text (value lookup, zoom), but tooltips are provided in such cases. No text alternatives are provided for images that are used for cosmetic purposes as these do not serve any functional purpose in the screen.
1.2 Time-based Media			
1.2.1 Audio-only and Video-only (Prerecorded)	A	N/A	There are no video or audio elements in Unit4 Business World On!

1.2.2 Captions (Prerecorded)	A	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.3 Audio Description or Media Alternative (Prerecorded)	A	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.4 Captions (Live)	AA	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.5 Audio Description (Prerecorded)	AA	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.6 Sign Language (Prerecorded)	AAA	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.7 Extended Audio Description (Prerecorded)	AAA	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.8 Media Alternative (Prerecorded)	AAA	N/A	There are no video or audio elements in Unit4 Business World On!
1.2.9 Audio-only (Live)	AAA	N/A	There are no video or audio elements in Unit4 Business World On!
1.3 Adaptable			
1.3.1 Info and Relationships	A	Pass	Header elements (<H1>, <H2>, etc.) are used in the HTML code to specify the hierarchy of the screen. This makes it possible for users of assistive technologies to navigate quickly between the main sections of the screen.
1.3.2 Meaningful Sequence	A	Pass	The header elements (see above) give a good indication of the hierarchy of the screen (menu, tool bar, data sections etc.), and this structure can be interpreted by screen readers such as JAWS and Window-Eyes. Sections of the screen are also designed to appear in logical order.
1.3.3 Sensory Characteristics	A	Pass	Tooltips are provided for graphical elements such as the mandatory asterisk (*) and buttons with no text content. Such tooltips can be picked up by assistive technologies.
1.4 Distinguishable			
1.4.1 Use of Color	A	Pass	Color is never used as the only visual indicator in any of the controls used in the Unit4 Business World On! A grid row may sometimes be colored (row error, warning, etc.), but there is an option to add a visual indicator in front of it.

1.4.2 Audio Control	A	N/A	There are no audio elements in Unit4 Business World On!
1.4.3 Contrast (Minimum)	AA	Pass	Unit4 Business World On! passes this requirement for both text labels and editable controls, i.e. the most important controls in the screen. Other elements also pass the requirement. The Color Contrast Analyzer application by The Paciello Group (as recommended by the WCAG 2.0 document) was used to measure the contrast of all the Unit4 Business World On! screen components.
1.4.4 Resize text	AA	Pass	Zooming is fully supported by all popular web browsers (Internet Explorer, Firefox, Opera, Safari, and Chrome), and the Unit4 Business World On! application can be run in all of these.
1.4.5 Images of Text	AA	N/A	There are no images of text (except for the logo) in Unit4 Business World On!
1.4.6 Contrast (Enhanced)	AAA	Fail	Very few elements have a lower contrast ratio than 7:1.
1.4.7 Low or No Background Audio	AAA	N/A	There are no audio elements in Unit4 Business World On!
1.4.8 Visual Presentation	AAA	N/A	There are no visual presentations in Unit4 Business World On!
1.4.9 Images of Text (No Exception)	AAA	N/A	There are no images of text (except for the logo) in Unit4 Business World On!
Principle 2: Operable			
2.1 Keyboard Accessible			
2.1.1 Keyboard	A	Pass	Almost all the functionality of Unit4 Business World On! is operable by keyboard.
2.1.2 No Keyboard Trap	A	Pass	There are no keyboard traps in Unit4 Business World On!
2.1.3 Keyboard (No Exception)	AAA	Fail	Almost all the functionality of Unit4 Business World On! is operable by keyboard.
2.2 Enough Time			
2.2.1 Timing Adjustable	A	Pass	The only time limit that exists in the application is the ASP.NET session timeout. This is an essential part of the application (and indeed an essential part of the ASP.NET technology platform), and therefore does not fail this success criterion. (None of the techniques suggested by W3C would work in the Unit4 Business World On! scenario.) Note also that the timeout limit can be adjusted or disabled in the management console.
2.2.2 Pause, Stop, Hide	A	Pass	There are no moving, blinking, scrolling, or auto-updating parts in Unit4 Business World On!

2.2.3 No Timing	AAA	Pass	No part of Unit4 Business World On! uses timing as part of the interaction process. As for session timeout, see 2.2.1.
2.2.4 Interruptions	AAA	Pass	No interruptions occur in Unit4 Business World On! screens.
2.2.5 Re-authenticating	AAA	Pass	If the session expires, unsaved data will be lost. Note however that session expiry can be disabled in the management console.
2.3 Seizures			
2.3.1 Three Flashes or Below Threshold	A	Pass	There are no flashing elements in Unit4 Business World On!
2.3.2 Three Flashes	AAA	Pass	There are no flashing elements in Unit4 Business World On!
2.4 Navigable			
2.4.1 Bypass Blocks	A	Pass	There are keyboard shortcuts that enable the user to move between the major elements of the screen, and for moving to the first and last element of the screen. Assistive technologies can also be used to jump between major sections of the screen.
2.4.2 Page Titled	A	Pass	Unit4 Business World On! page titles include the name of the application as well as the title of the screen (i.e. the same name that appears in the menu system).
2.4.3 Focus Order	A	Pass	It is possible to navigate through all interactive elements of a Unit4 Business World On! data entry screen and menu pane by using the Tab key or the arrow keys. The focus marker traverses the screen in a logical fashion; it moves through all the interactive elements in a section, then proceeds to the next section.
2.4.4 Link Purpose (In Context)	A	Pass	Links are always presented in context, so they will have a label informing the user (and assistive technologies) about the purpose of the link. If a link has no label attached to it, the tooltip of the link will contain the relevant information. When located in a grid, the link will have a tooltip containing the name of the column.
2.4.5 Multiple Ways	AA	Pass	Unit4 Business World On! provide two ways of reaching a data entry screen; by navigating through the menu (quite similar to a site map), and by using a flexible search mechanism.
2.4.6 Headings and Labels	AA	Pass	There are descriptive section, tab, and screen headers in the data entry screens (these use the HTML header tags to support assistive technologies).
2.4.7 Focus Visible	AA	Pass	Input fields and buttons are highlighted when they receive focus, while other elements are marked by a solid border or a background color change.
2.4.8 Location	AAA	Pass	The currently selected module and folder path is indicated in the menu pane.
2.4.9 Link Purpose (Link Only)	AAA	Fail	The purpose of a link is sometimes, but not always, clear without its context.

2.4.10 Section Headings	AAA	N/A	This criterion covers section within written text, not user interface components. Unit4 Business World On! contain no such sections.
Principle 3: Understandable			
3.1 Readable			
3.1.1 Language of Page	A	Pass	The standard HTML way of specifying language is used according to WCAG 2.0 recommendation.
3.1.2 Language of Parts	A	N/A	The same language is used throughout the application.
3.1.3 Unusual Words	AAA	Fail	No mechanism exists for explaining unusual words.
3.1.4 Abbreviations	AAA	Fail	No mechanism exists for explaining abbreviations.
3.1.5 Reading Level	AAA	Fail	Most screens in Unit4 Business World On! requires some knowledge of the system and/or business area.
3.1.6 Pronunciation	AAA	N/A	The pronunciation of certain words is not a critical factor when reading text in the application screens.
3.2 Predictable			
3.2.1 On Focus	A	Pass	In Unit4 Business World On! screens context is only changed when the user actively clicks a link or button.
3.2.2 On Input	A	Pass	In Unit4 Business World On! screens context is only changed when the user actively clicks a link or button.
3.2.3 Consistent Navigation	AA	Pass	The menu is always rendered the same way in all Unit4 Business World On! screens. The toolbar is always rendered at the bottom of the screen.
3.2.4 Consistent Identification	AA	Pass	The fact that the structure of almost all pages in Unit4 Business World On! are generated by a renderer ensures a high level of consistency. A titles database is also used by the application to make sure that the same terms are used in different screens.
3.2.5 Change on Request	AAA	Pass	In Unit4 Business World On! screens context is only changed when the user actively clicks a link or button.
3.3 Input Assistance			
3.3.1 Error Identification	A	Pass	Errors are reported in detail in a dedicated section. The error report contains the name of the input field in error, as well as the full error message. The input field itself is rendered in a red color hue (which does not fail criterion 1.4.1 because it is a supplementary indication to the text in the error section.)
3.3.2 Labels or Instructions	A	Pass	All Unit4 Business World On! input elements have an associated label. The label can be turned off by the designer, but this does only happen when it is very clear to the user what the purpose of the input field is (i.e. from its context).

3.3.3 Error Suggestion	AA	Pass	When an input field fails validation, an error message is always presented to the user. Unit4 Business World On! uses variations of the techniques G83, G85, and SCR18 as suggested in the Suggested Techniques for 3.3.3 in the WCAG 2.0 document.
3.3.4 Error Prevention (Legal, Financial, Data)	AA	Pass	The option "2. Checked" is always true for the Unit4 Business World On! application. Options "1. Reversible" and "3. Confirmed" are sometimes true.
3.3.5 Help	AAA	Pass	The user can get help with understanding the current screen by using the built-in help system, and help with choosing the correct values in input fields are provided by dropdown lists, typeahead lists, or a value lookup button.
3.3.6 Error Prevention (All)	AAA	Pass	See 3.3.4.
Principle 4: Robust			
4.1 Compatible			
4.1.1 Parsing	A	Pass	The HTML markup code used in Unit4 Business World On! is produced according to the W3C HTML 4.01 specification. Some elements are generated by ASP.NET, while others are produced by UNIT4 Platform code. The code has been tested using external validators.
4.1.2 Name, Role, Value	A	Pass	Standard HTML controls are used throughout the application, which should meet this success criterion. A few exceptions exist, but in those cases ARIA-attributes are used to communicate the intended control type to assistive technologies.

About Unit4

Unit4 is a leading provider of enterprise applications empowering people in service organizations. With annual revenue north of 500M Euro and more than 4000 employees world-wide, Unit4 delivers ERP, industry-focused and best-in-class applications. Thousands of organizations from sectors including professional services, education, public services, not-for-profit, real estate, wholesale, and financial services benefit from Unit4 solutions. Unit4 is in business for people.

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