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Rodriguez Vazquez, Silvia

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# Unlocking the Potential of Web Localizers as Contributors to Image Accessibility: What Do Evaluation Tools Have to Offer?

Silvia Rodríguez Vázquez

Cod.eX Research Group, TIM

Faculty of Translation and Interpreting, University of Geneva

40, Bd. du Pont d'Arve - CH-1211 Geneva 4 - Switzerland

Silvia.Rodriguez@unige.ch

## ABSTRACT

Creating appropriate text alternatives to render images accessible in the web is a shared responsibility among all actors involved in the web development cycle, including web localization professionals. However, they often lack the knowledge needed to correctly transfer image accessibility across different website language versions. In this paper, we provide insight into translators' performance as regards their accessibility achievements during text alternatives adaptation from English into French. While our work does not yet return conclusive results, preliminary findings suggest that the combination of both specialized and general web accessibility evaluation tools can help web localizers bridge the knowledge gap and potentially produce text alternatives of higher quality.

## Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: User Interfaces – *Evaluation/Methodology*. I.7.1 [Document and Text Processing]: Document and Text Editing – *Languages, Version control*. K.4.2 [Computers and Society]: Social Issues – *Handicapped persons/special needs*. K.7.4 [The Computing profession]: Occupations.

## General Terms

Experimentation, Human Factors, Languages, Verification.

## Keywords

Web localization, image accessibility, text alternatives, accessibility evaluation tools, quality assurance (QA).

## 1. INTRODUCTION AND BACKGROUND

In a Web increasingly populated with visual content, assuring the existence of textual alternatives is crucial for visually disabled users to successfully participate in the information society. In the particular case of images, while adding an `alt` attribute to an `img` element appears to be a simple task, creating an informative text equivalent might not be as straight-forward. The value of the `alt` attribute should communicate the purpose of an image or explain

its meaning, that is, a text alternative should serve as a replacement for the image, and not as a mere description of its content.<sup>1</sup> Although scholars, standards organizations and the web international community [10,12] have devoted considerable efforts to define best practices on how to write appropriate text alternatives, recent work still reports low conformance rates concerning image accessibility [1,2]. We argue that this might be derived from three main reasons.

First, and as a result of all the above, elaborating an appropriate text alternative requires not only analytical and language skills, but also a significant time investment. Relevant guidance usually comes in the form of long and hard-to-understand official documents by which web professionals, with a more technical-oriented profile, might feel overwhelmed.

The second aspect often discussed in the literature is the lack of tool support [5]. Current web accessibility evaluation tools do detect the presence or not of an `alt` attribute, but warnings related to image accessibility commonly remain too vague and tend to be considered unhelpful (*ibid*).<sup>2</sup>

Third, there is uncertainty as to who should be held responsible for providing appropriate text alternatives. Actors involved in the web life cycle range from web commissioners and developers to graphic designers and content authors, including web localizers<sup>3</sup> in the case of multilingual websites. Images might be added, modified or deleted at different web development stages, thus making it difficult to guarantee an acceptable homogeneity as regards the text alternatives' quality level.

In this paper, we report the preliminary findings of a large experimental study carried out with a view to (i) understand the extent to which professional translators take into account web accessibility considerations during the web localization process, particularly focusing on image accessibility, and to (ii) assess the

<sup>1</sup> We are aware that the HTML5 `figure` and `figcaption` elements can now be used to associate a longer text alternative with an image, leaving the `alt` attribute just to label it. Nonetheless, these HTML elements are not yet accessibility supported by the majority of browsers [12].

<sup>2</sup> A more detailed literature review on existing guidelines for image description and studies on automated checking of image text equivalents can be found in our previously published research work [7].

<sup>3</sup> For the purposes of this paper, we will use translators, web localizers and web localization professionals indistinctively. However, it should be noted that the localization task goes further than pure translation, as it also implies dealing with other semiotic and non-textual web elements (e.g., colors, images, date formats, size of menus, page structure, etc.).

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impact of using evaluation tools to improve the appropriateness of image text alternatives in the localized website. Since the evaluation of the latter is still work-in-progress, the present work will cover some of the key issues related to the former.

## 2. RESEARCH MOTIVATION

When a website is localized, its content is linguistically and culturally adapted for a new target audience. During this information transfer, web localization professionals are expected to assure that accessibility achievements are maintained across the different website language versions they are working on [6]. This includes, among other tasks, the translation of text alternatives and the creation of new ones, should images be replaced or inserted in the target language website. Although accessibility and web localization shared interests have been already brought to the forefront [3,4], awareness on image accessibility and other accessibility-related issues is believed to be low among the web localization community (*ibid*). While observational data gathered from a series of seminars on web accessibility taught for localization students showed that this trend is promisingly changing [8], we argue that more experimental work is needed to complement the theoretical insights described in the literature.

When specialized training on web accessibility is not an option, one would expect automated evaluation solutions to bridge the translators' knowledge gap. Nevertheless, the reports they generate often present the testing results for users with at least some basic knowledge on web accessibility, pointing out to specific Web Content Accessibility Guidelines (WCAG), success criteria and recommended techniques provided by the W3C. We believe it would be desirable for web localizers to have complementary information about the reasoning behind the problems flagged throughout the automatic checking process. Interestingly, this appears to be as well one of the current tools' shortcomings web professionals claim [5]. Additionally, employing tools alone, without a final human judgment, has proved to lead to incorrect results regarding the accessibility level achieved [11]. Combining different tools, though, has been pointed out as a possible solution to improve the testing outcome in terms of coverage, completeness and correctness (*ibid*).

Taking into consideration all the aforementioned arguments, our main hypothesis is that web localization professionals play an important role in the achievement of image accessibility. More specifically, in the next sections, we will address the following questions:

Q1: How often are image text alternatives considered as translatable elements by translators without web accessibility knowledge?

Q2: Does the use of evaluation tools contribute to identify text alternatives as translatable content during the web localization process?

## 3. METHOD

In this section, we describe the empirical study design, the participants' profile, the experiment working environment, the tools and the materials used, as well as the procedure followed.

### 3.1 Design

The main goal of the study was to assess the potential of web localizers as contributors to image accessibility. We manipulated two independent variables: the participants' web accessibility knowledge and the use of accessibility evaluation tools. Given the

nature of the experiment, we decided to employ a factorial design, where the first independent variable was investigated through a between-group approach –the control group (CG) had no web accessibility knowledge and the treatment group (TG) received a one-hour training on the subject–, and the second independent variable was investigated through a within-group approach. The total number of conditions was therefore four. In this paper, we present relevant data gathered from the administration of the following test conditions to our control group: (i) web localization without the use of evaluation tools, and (ii) web localization with the use of evaluation tools.

### 3.2 Participants

A 'snowball' sampling method was used to recruit translation professionals with web localization experience or at least basic HTML knowledge, English into French. The call for participation, launched 27<sup>th</sup> October 2014, was distributed through the authors' research group website, relevant mailing list servers, as well as via Twitter and LinkedIn. Targeted participants had four weeks to sign up for the study via Doodle, after which they received an online screening questionnaire. From the 53 people who initially showed their willingness to participate, 45 replied to the questionnaire. Three people were rejected because they did not match the required profile, so we divided the remaining candidates in two groups of 21 translators. Those who reported to have web accessibility knowledge, were automatically assigned to the treatment group. As shown in Table 1, a second round of recruitment was needed to balance the final number of participants between the two groups. As stated in the previous subsection, we will focus on the control group (CG).

**Table 1. Participants' recruitment and distribution in groups.**

Group	TG	CG
Initial distribution after questionnaire	+21	+21
Retired before the experiment	-8	-5
Retired during the experiment	-3	-1
Unusable data after experiment	0	-1
Second round of recruitment	+4	0
<b>Total</b>	<b>+14</b>	<b>+14</b>

All the participants from the control group were French native speakers ( $N=14$ , aged between 24 and 57,  $\bar{x} = 32$ ,  $sd = 2.5$ ; 4 male, 10 female), with an average of 5 years of experience in the translation domain ( $sd = 1.7$ ) and no background knowledge in web accessibility. Three participants had not previously work in the web localization field, but self-reported to have dealt with HTML files during their professional career.

### 3.3 Tasks and Tools

Participants were requested to (i) translate a website comprising three HTML files from English into French; and to (ii) check the image accessibility level achieved in the resulting target language website using two different accessibility evaluation tools: Acrolinx and aDesigner.

**Acrolinx:** Acrolinx is a state-of-the-art controlled-language checker for which we have developed an accessibility-oriented 40-rule set for French, specifically designed to help content authors automatically verify the appropriateness of text alternatives for images [7]. After each check, users are presented

with a comprehensive report that includes (i) all the errors found; (ii) an explanation of the rules that have been contravened; (iii) relevant examples of each rule, according to the type of information conveyed through the image (descriptive, functional, decorative); and (iv) useful links to W3C resources [9].

**aDesigner**<sup>4</sup>: Eclipse ACTF aDesigner is a freeware visual impairment simulator which, at the same time, serves the user as a web accessibility evaluation tool to check websites against different sets of guidelines, including WCAG 2.0. We chose this tool because not only is its interface and testing results reporting format similar to Acrolinx's, but it also goes further than other tools as regards image accessibility verification: it detects the presence or absence of the `alt` attribute and, in some cases, gives hints about why a certain `alt` value might not be appropriate.

### 3.4 Experiment Material Acquisition

Since we wanted to use the data collected from the study to assess, in future work, the impact of applying our Acrolinx style rules on the appropriateness of text alternatives for images, we created a test website which contained 130 images. The material selection procedure was as follows: we first applied our 40-rule style set on a web corpus with similar characteristics to the one that served as training data for the rule development [7]. A total of 44 French websites from Belgium and Canada were retrieved for that purpose. We then chose the 10 rules that showed the highest precision level in terms of false and true positives flagged by Acrolinx. In order to select 10 inappropriate text alternatives examples per rule, we manually coded the non-empty `alt` values of an English web corpus (44 websites from Ireland and South Africa) according to the style rules violated. Finally, we randomly chose 100 images (10 per rule), plus: (i) 10 images with no `alt` content, (ii) 10 images with an empty `alt` attribute, and (iii) 10 images with an appropriate `alt`. Table 2 summarizes the content of the two corpora built for the experiment material acquisition.

**Table 2. Total number of pages and images per web corpus.**

Selected material	Total Pages	Total <img>	No alt	Empty alt	Non-empty alt
Rules	4,125	15,008	1,654	3,464	9,890
alt text	5,377	22,071	2,411	5,643	14,017

### 3.5 Procedure

The whole experiment was conducted remotely, so that users could complete the tasks in their usual working environment. In order to assure the study's validity, we asked them to record all the sessions with BBFlashBack Express 5, a free screen recording software. The study took place over a month period, from 8<sup>th</sup> December 2014 to 9<sup>th</sup> January 2015. Participants received a monetary compensation of CHF 50 and a free webinar on web accessibility best practices for web localizers.

The study was divided into two 90-minute sessions, which corresponded to each one of the tasks requested. For the first task, they could use any tool of their choice. For the second one, participants had to access a remote desktop, where Acrolinx and aDesigner were installed, with the help of TeamViewer 10. Since they had to use two different tools to check the same content, the order of the instructions was counterbalanced in order to reduce bias due to random or confounding variables. After each session,

participants were asked to complete a post-task questionnaire. Translators did not know that they were participating in an image accessibility-related experiment until the beginning of the second session.

## 4. PRELIMINARY FINDINGS

The subsections below give an overview of (i) the overall performance of participants across both sessions as regards text alternatives translation and quality improvement; and (ii) web localizers' perception on the general usefulness of the tools used.

### 4.1 Text Alternatives Editing

Upon completion of the experiment, participants submitted three different translations: version *T1*, which was not validated through any accessibility evaluation tool; version *T2*, which included changes made, if any, after having used the first assigned tool; and version *T3*, which was the definitive localized website, based on *T2* and covering modifications done, if any, according to the second tool's testing results.

Six out of 14 (43%) participants did not identify text alternatives as translatable content at first sight (see *T1* columns, Table 3). Screen recordings indicate that those who did it ( $N=8$ ) were either (i) presented with the text to translate by the computer-assisted translation tools they were using to complete the task, or (ii) spontaneously spotted `alt` texts in the source HTML file and translated them without necessarily knowing their context of use or purpose. We also observed that the text alternatives identified within this second scenario were mostly well-constructed full sentences, which are presumably easier to recognize by translators, rather than isolated nouns or verbs, which might have gone unnoticed among the surrounding HTML code.

Data analyzed up to present already shed some light on tools' performance. Regardless of the checking order specified in the task instructions –aDesigner was used before Acrolinx in Model A, while in Model B, participants were asked to use the tools in reverse order–, Acrolinx proved to trigger more text edits (70%,  $N=811$  text alternatives out of 1,152). This led not only to a higher translation rate –even among participants who had not found any image text equivalent in *T1*–, but also to an apparent quality improvement of the text alternatives which were modified (see Table 3). The latter is inferred from the hypothesis that a translated `alt` text, regardless of the level of appropriateness achieved, will render an image more accessible than an untranslated text alternative, but further research is needed to validate this statement.

**Table 3. Alt texts edited per translation version and participant.**

	Model A				Model B		
	<i>T1</i>	<i>T2</i>	<i>T3</i>		<i>T1</i>	<i>T2</i>	<i>T3</i>
P1	85	0	0	P8	111	51	25
P2	6	15	28	P9	70	92	25
P3	87	0	67	P10	0	40	20
P4	0	74	49	P11	88	102	56
P5	0	36	25	P12	0	109	6
P6	42	59	91	P13	0	119	11
P7	31	9	38	P14	0	0	5
Total	248	193	298	Total	269	513	148

<sup>4</sup> <http://www.eclipse.org/actf/downloads/tools/aDesigner/>

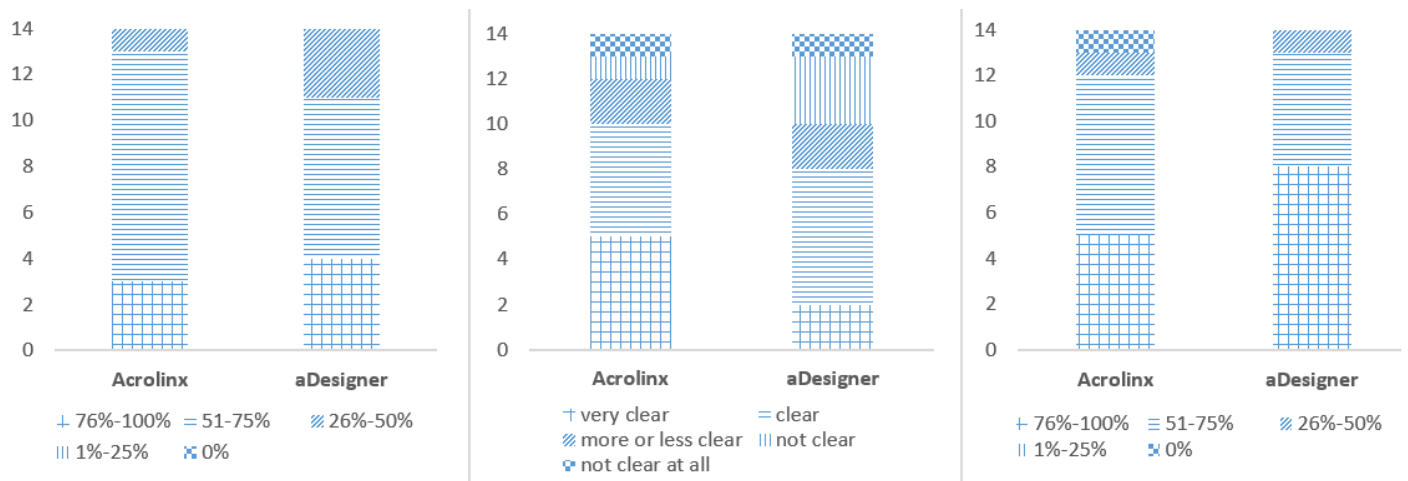


Figure 1. [From left to right] Participants' opinion about tools' correctness, documentation clarity and tools' specificity regarding the automatic verification of image accessibility.

## 4.2 Tools Subjective Assessment

Interestingly, and despite the above, participants did not show a clear preference for Acrolinx in the post-task questionnaire. When asked about the tools' correctness, Acrolinx received a considerable higher appreciation, while aDesigner seemed to be the preferred choice in terms of specificity (see Figure 1). Web localizers mentioned in the open-ended questions that Acrolinx reports and rule documentation were clear and easily understandable. Improvement suggestions and examples given to illustrate the problems flagged were also pointed out as some of the tool's advantages. aDesigner's main highlight was the possibility of checking the errors in context, as well as the detection of `img` elements with no `alt` attribute.

## 5. CONCLUSIONS AND FUTURE WORK

In this paper, we have provided insight on the need of a further involvement of web localization professionals in the achievement of image accessibility. The translation of text alternatives is often left out during web localization assignments, thus reducing the web accessibility level of new website language versions. The use of quality assurance tools that incorporate specific features to assess the appropriateness of text alternatives for images, such as Acrolinx, increases the visibility of these translatable elements and, at the same time, could potentially boost their quality level. If combined with other general web accessibility evaluation tools like aDesigner, results can considerably improve. Similarly, the need of well documented reports including relevant examples and suggestions, already highlighted by other web professionals, has been echoed by the participants taking part in the study, who found that Acrolinx adequately satisfied that requirement. While preliminary findings suggest that our main research hypothesis might be supported, a more in-depth analysis of all the data collected throughout the experiment is still needed to confirm this statement. The next stage planned is to carry out a human comparative assessment of the appropriateness of text equivalents for images that will be performed by an external panel of judges.

## 6. REFERENCES

- [1] Access for all. 2011. Étude 2011 sur l'accessibilité des sites Web suisses. <http://bit.ly/15q817w>.
- [2] Hanson, V.L. and Richards, J.T. 2013. Progress on Website Accessibility? In *ACM Transactions on the Web*, 7(1), 2:1-2:30.
- [3] Gutiérrez, E. and Martínez, L. 2010. Localisation and Web Accessibility. In *Tradumática*, 8(1), 383-388.
- [4] O'Broin, U. 2004. Accessibility is just another language: The common concerns of localization and accessibility. In *Multilingual Computing and technology*, 15(3), 17-20.
- [5] Petrie, H., Power, C., Swallow, D., Velasco, C.A., Gallagher, B., Magennis, M., Murphy, E., Collin, S. and Down, K. 2011. The value chain for web accessibility: challenges and opportunities. In *Proceedings of ADDW 2011*, Sun SITE Central Europe.
- [6] Rodríguez Vázquez, S. and Bolfig, A. 2013. Multilingual Website Assessment for Accessibility: a Survey on Current Practices. In *Proceedings of ASSETS 2013*, Bellevue, WA, USA, October 2013.
- [7] Rodríguez Vázquez, S., Bolfig, A. and Bouillon, P. 2014. Applying Accessibility-Oriented Controlled Language (CL) Rules to Improve Appropriateness of Text Alternatives for Images: an Exploratory Study. In *Proceedings of LREC 2014*, Reykjavik, Iceland, May 2014.
- [8] Rodríguez Vázquez, S. 2014. Introducing Web Accessibility to Localization Students: Implications for a Universal Web. In *Proceedings of ASSETS 2014*, Rochester, NY, USA, October 2014.
- [9] Rodríguez Vázquez, S. and Lehmann, S. 2015. Acrolinx: a Controlled-Language Checker Turned into an Accessibility Evaluation Tool for Image Text Alternatives. In *Proceedings of W4A 2015*, Florence, Italy, May 2015.
- [10] Tang, L. 2012. Producing informative text alternatives for images. Doctoral Thesis. University of Saskatchewan, Saskatoon.
- [11] Vigo, M., Brown, J., Conway, V. 2013. Benchmarking Web Accessibility Evaluation Tools: Measuring the Harm of Sole Reliance on Automated Test. In *Proceedings of W4A 2013*, Rio de Janeiro, Brazil, May 2013.
- [12] World Wide Web Consortium, W3C. 2014. HTML 5: Techniques for providing useful text alternatives. <http://www.w3.org/TR/html-alt-techniques/>.