

Empathy-Centric Design of a System to Evaluate and Repair Accessibility Barriers

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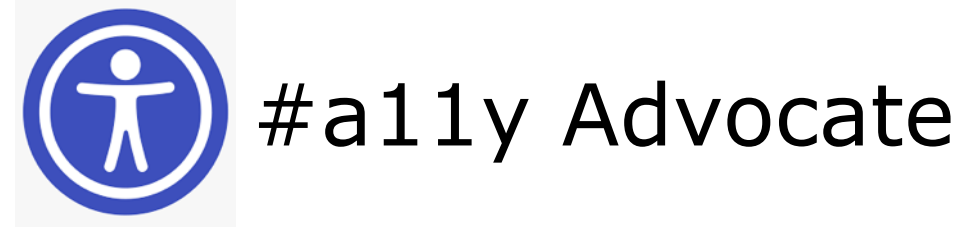
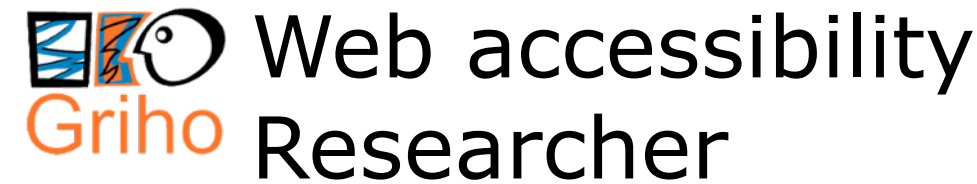
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Presentation

Afra Pascual Almenara



Afra-Pascual-Almenara



Outline

1. Introduction
2. Previous research
3. EmpathicEditor4Accessibility
4. Evaluation of EmpathicEditor4Accessibility
5. Conclusions

INTRODUCTION

Introduction

About 15-20% of the global population has some type of disability



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There are laws of web accessibility



Introduction

About 15-20% of the global population has some type of disability



There are laws of web accessibility



BUT.... less than 10% of web sites are accessible



European
Commission

WebAIM
web accessibility in mind



Introduction

What is the problem?



Introduction

Prosumers



Introduction

Prosumers

Prosumers
don't know about
web accessibility



The CMS do
not provide support
for developing
accessible websites



Introduction











To solve the problem

EmpathicEditor4Accessibility


Accesibilidad empática para editores de contenido en editores web

EE4A Publicar contenido ✕ Corregir

Si publicas el contenido ahora, César Cerezo, Blas Blanco y Óscar Coliba se van a encontrar con barreras de acceso.

 Visual	 Baja visión	 Motriz	 Auditiva	 Intelectual
 César Cerezo 4 barreras	 Blas Blanco 2 barreras	 Miguel Mota Sin barreras	 Aurora Ausín Sin barreras	 Óscar Coliba 3 barreras
corregir	corregir			corregir

Contenido evaluado



PREVIOUS RESEARCH

Previous research

User tests

I feel bored when I can't see an image without alternative text

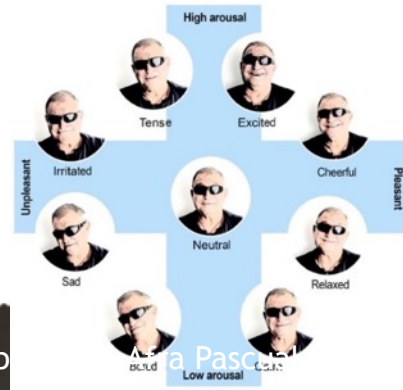


Tested 40 users with disabilities



We registered comments, experiences, expressions and moods of users

Moods were classified with emoticons



All data were stored on a database

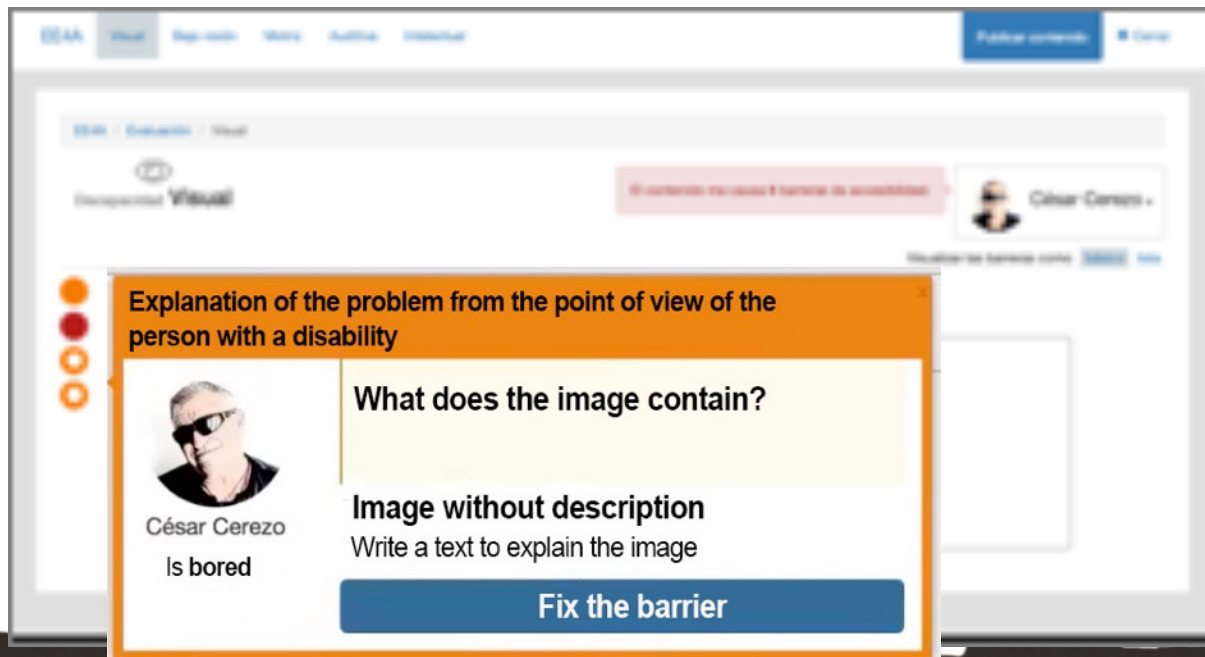
Previous research

- Pascual, A., Ribera, M., Granollers, T. (2013). **Grado de afectación de las barreras de accesibilidad web en usuarios con discapacidad intelectual.** Interacción 2013.
- Pascual, A., Ribera, M., Granollers, T., Coiduras, J. (2014). **Impact of accessibility barriers on the mood of blind, low-vision and sighted users.** Procedia Computer Science, 27, 431-440.
<https://doi.org/10.1016/j.procs.2014.02.047>.
- Pascual, A., Ribera, M., Granollers, T., (2014). **Impact of web accessibility barriers on users with hearing impairment.** Interacción'14: XV International Conference on Human Computer Interaction, 1-2,
<https://doi.org/10.1145/2662253.2662261>.
- Pascual, A., Ribera, M., Granollers, T., (2015). **Impact of accessibility barriers on the mood of users with motor and dexterity impairments.** Journal of accessibility and design for all, 5(1), 1-26,
<https://doi.org/10.17411/jacces.v5i1.93>.

EMPATHIC EDITOR 4 ACCESSIBILITY

Main goals

1) **Communicate accessibility barriers in a more empathic way**, offering a personal perspective of accessibility barriers built upon real people's perception.



Main goals


2) Offer automatic repairs and specific suggestions to improve the accessibility of the content, just before the publication of a content on a CMS

⚠ Image without description

Write a text explaining the image. [More information about the barrier](#)

1/1 Element **Form to repair the barrier**

Código HTML:



Type of image

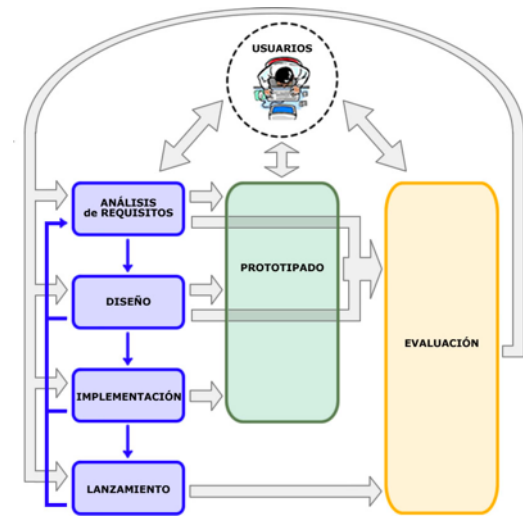
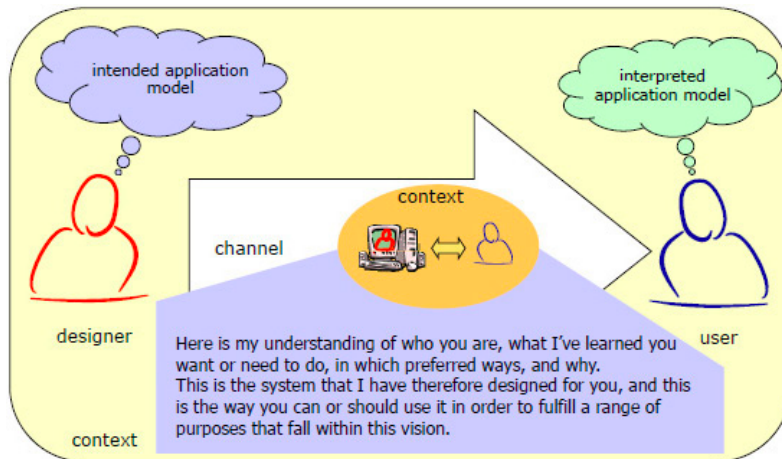
- It is an image containing text
- Is an image relevant to the content (graphic, etc...)
- It is a decorative image, which does not provide information.

Write a description for the image

Save

EmpathicEditor4Accessibility Development

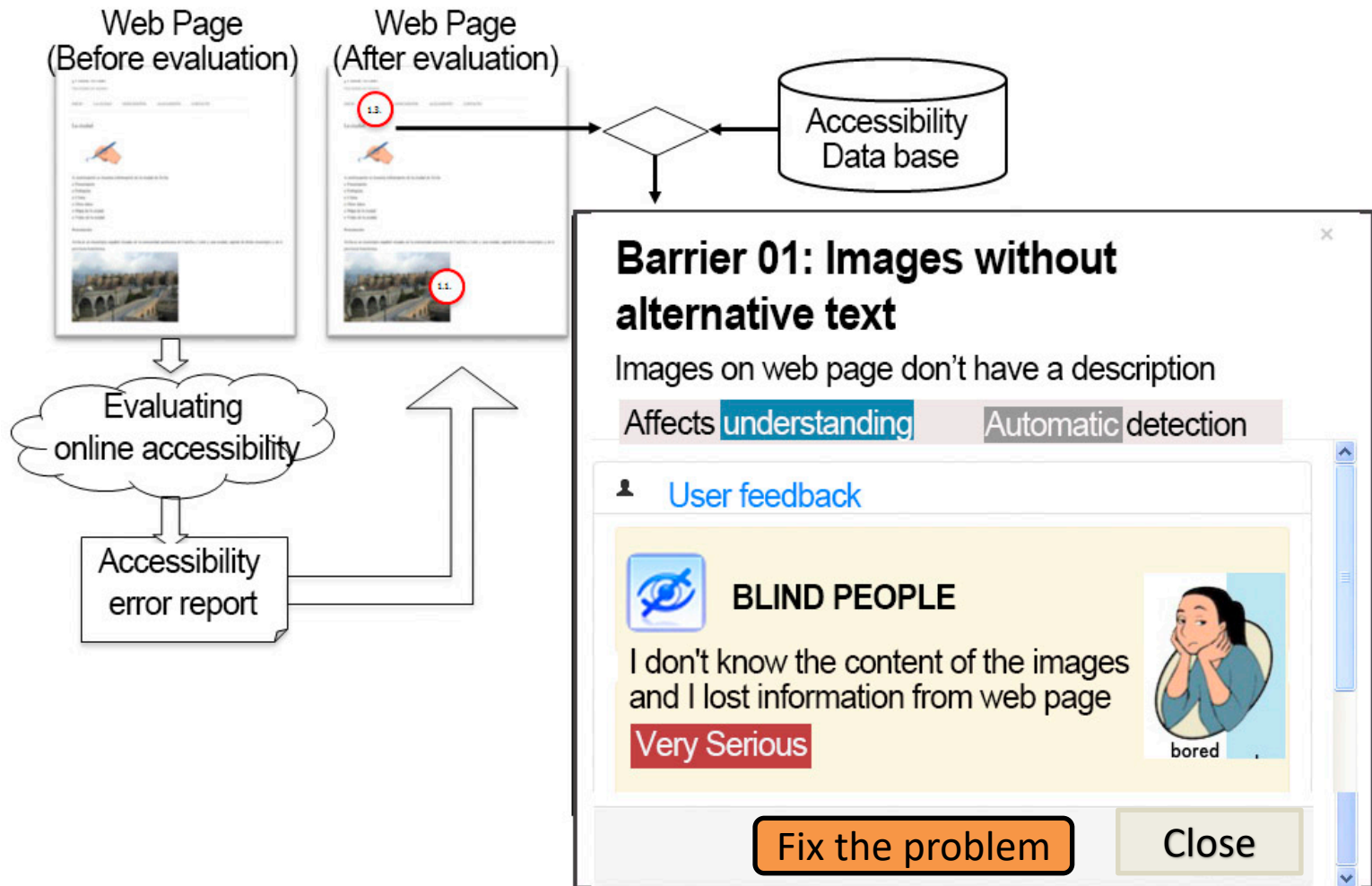
- The tool was developed upon the **Semiotic Engineering** principles and following a **User Centered Design methodology**



<https://mpiua.invid.udl.cat/>

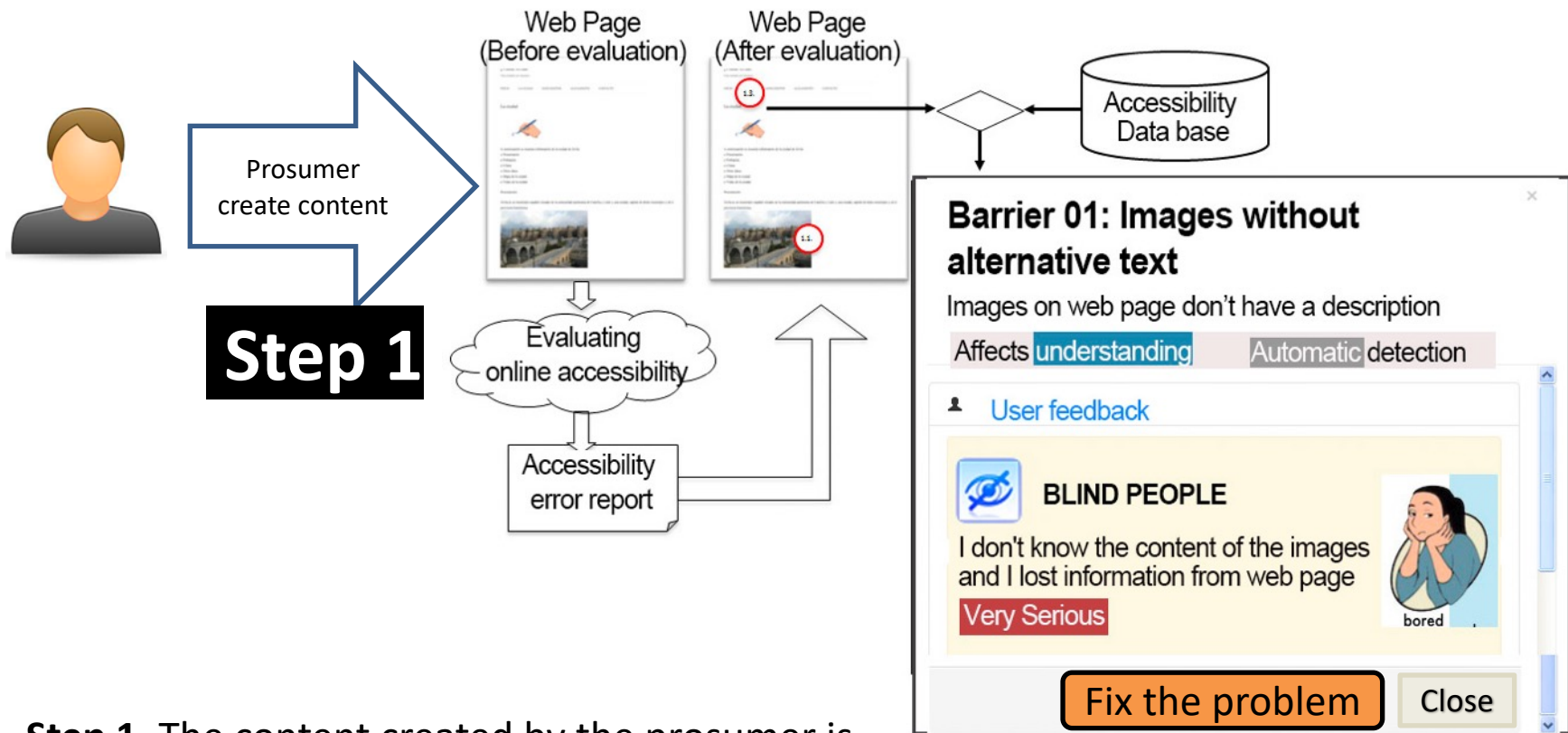
EmpathicEditor4Accessibility

System preview diagram



EmpathicEditor4Accessibility

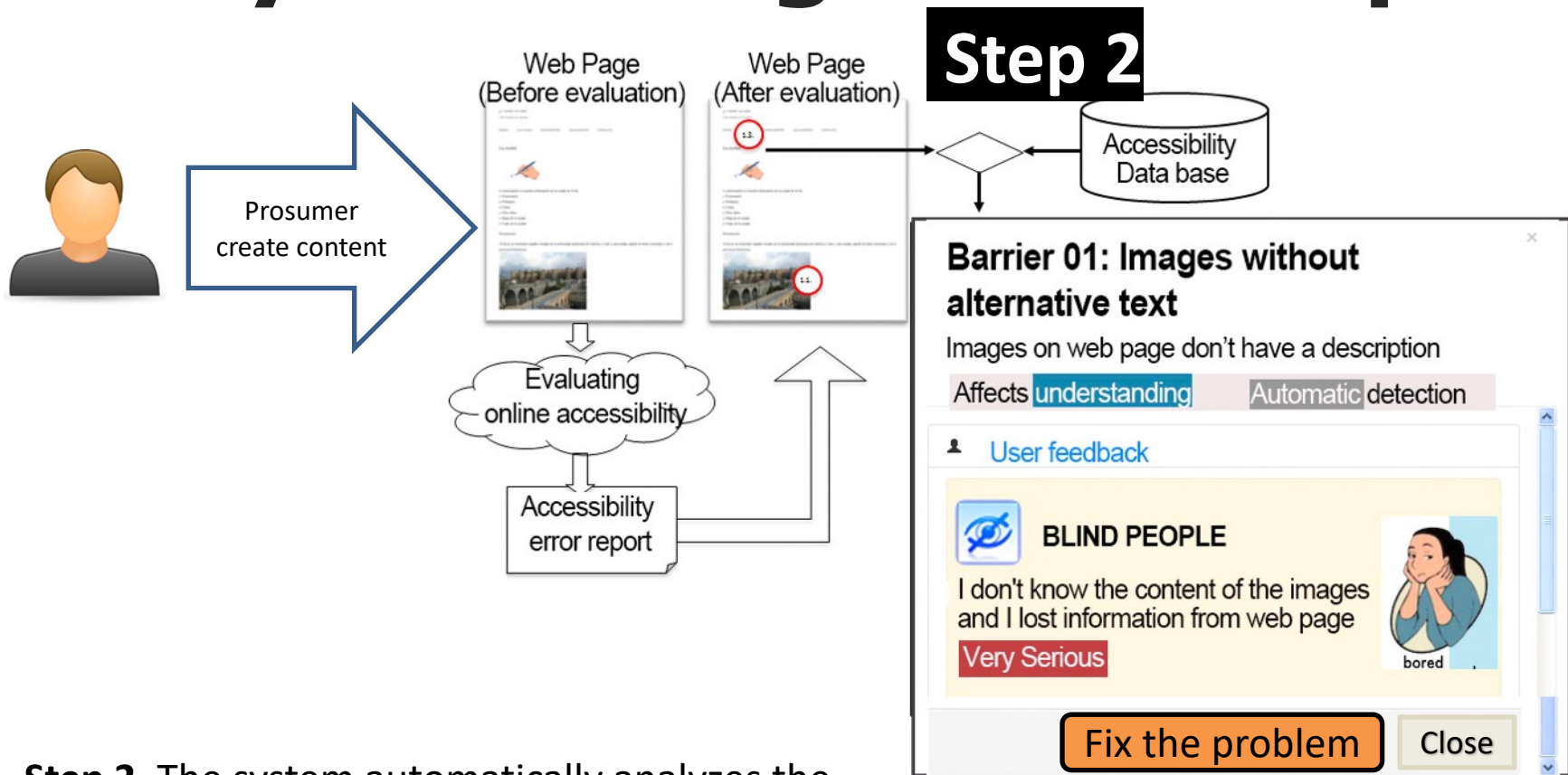
System diagram – Step 1



Step 1. The content created by the prosumer is evaluated by an automatic evaluation tool (we used IDI Web Accessibility Checker API)

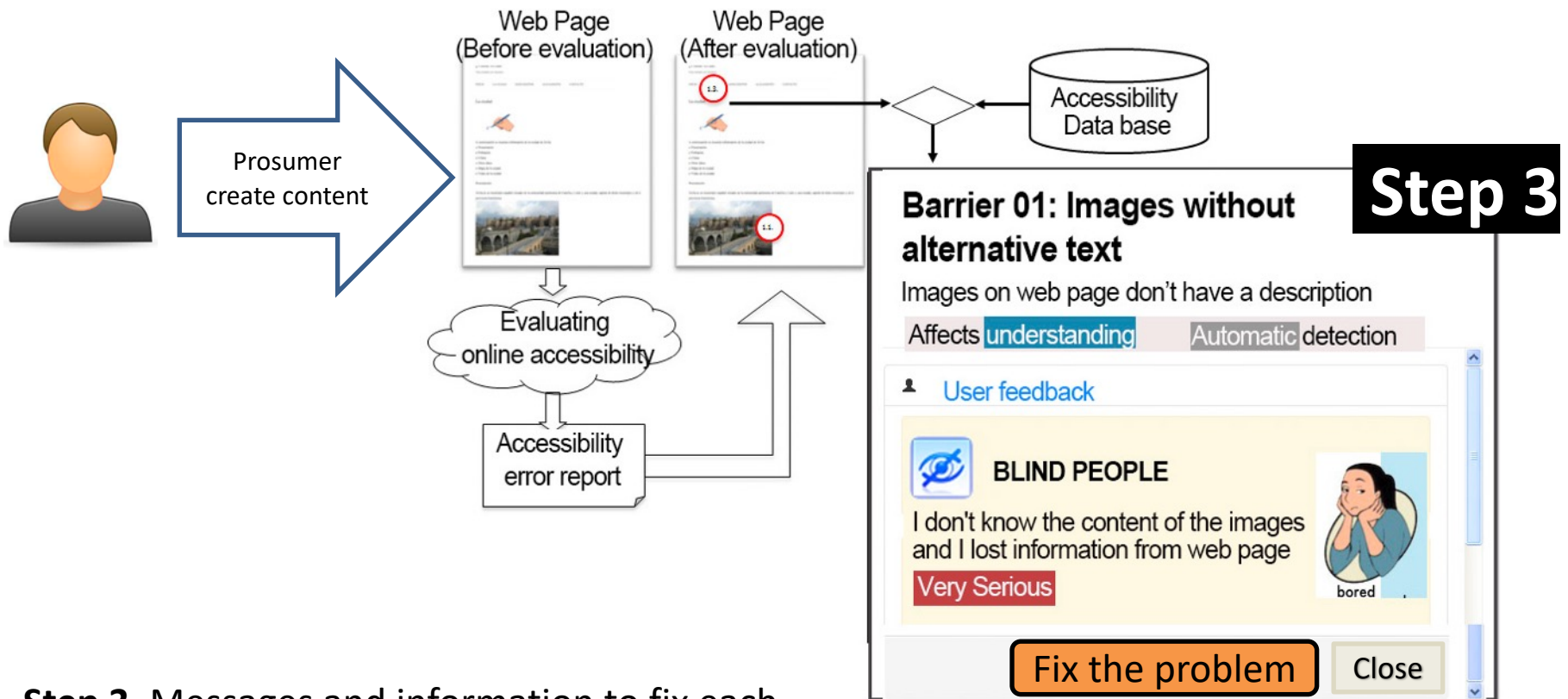
EmpathicEditor4Accessibility

System diagram – Step 2



Step 2. The system automatically analyzes the errors from the WCAG guidelines and groups them by barriers

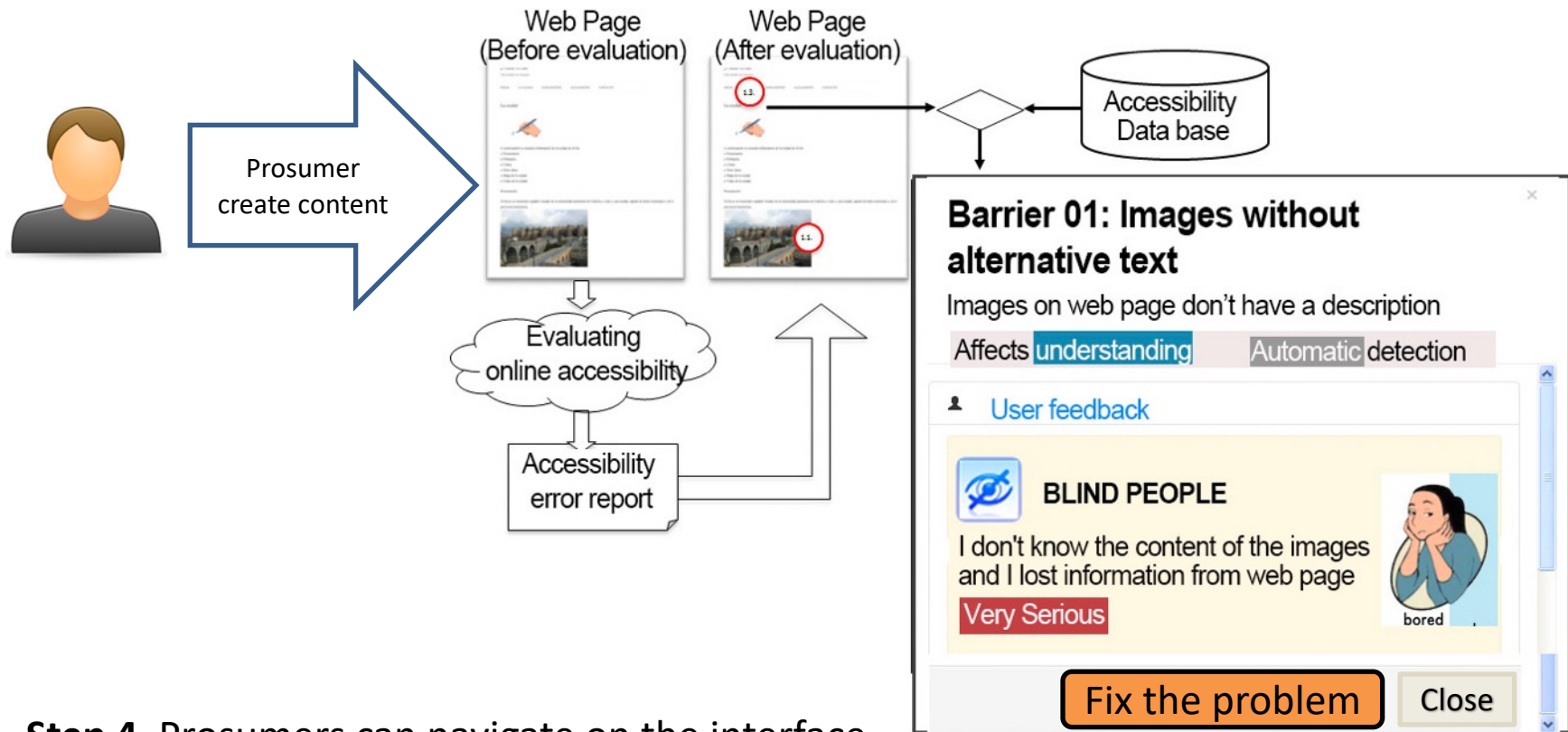
EmpathicEditor4Accessibility System diagram – Step 3



Step 3. Messages and information to fix each content barrier are organized and displayed on the interface. All information come from the database system within *EmpathicEditor4Accessibility*

EmpathicEditor4Accessibility

System diagram – Step 4

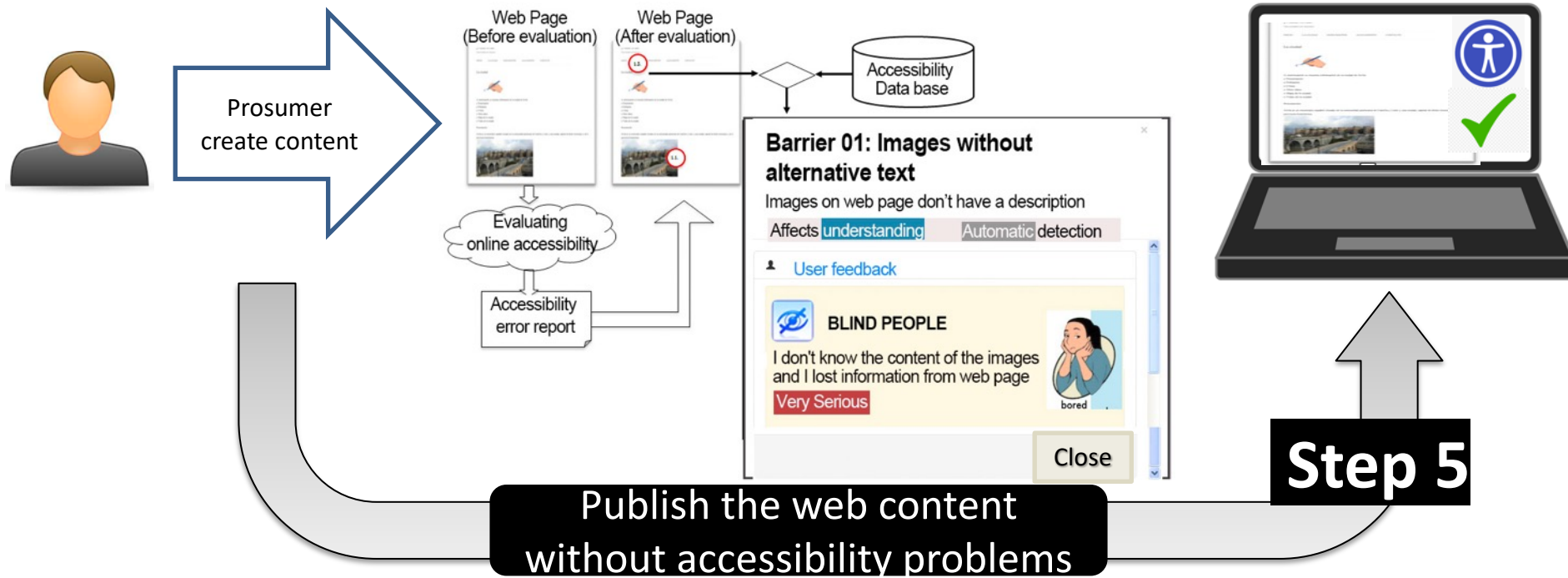


Step 4. Prosumers can navigate on the interface in order to know each barrier of accessibility and fix them.

Step 4

EmpathicEditor4Accessibility

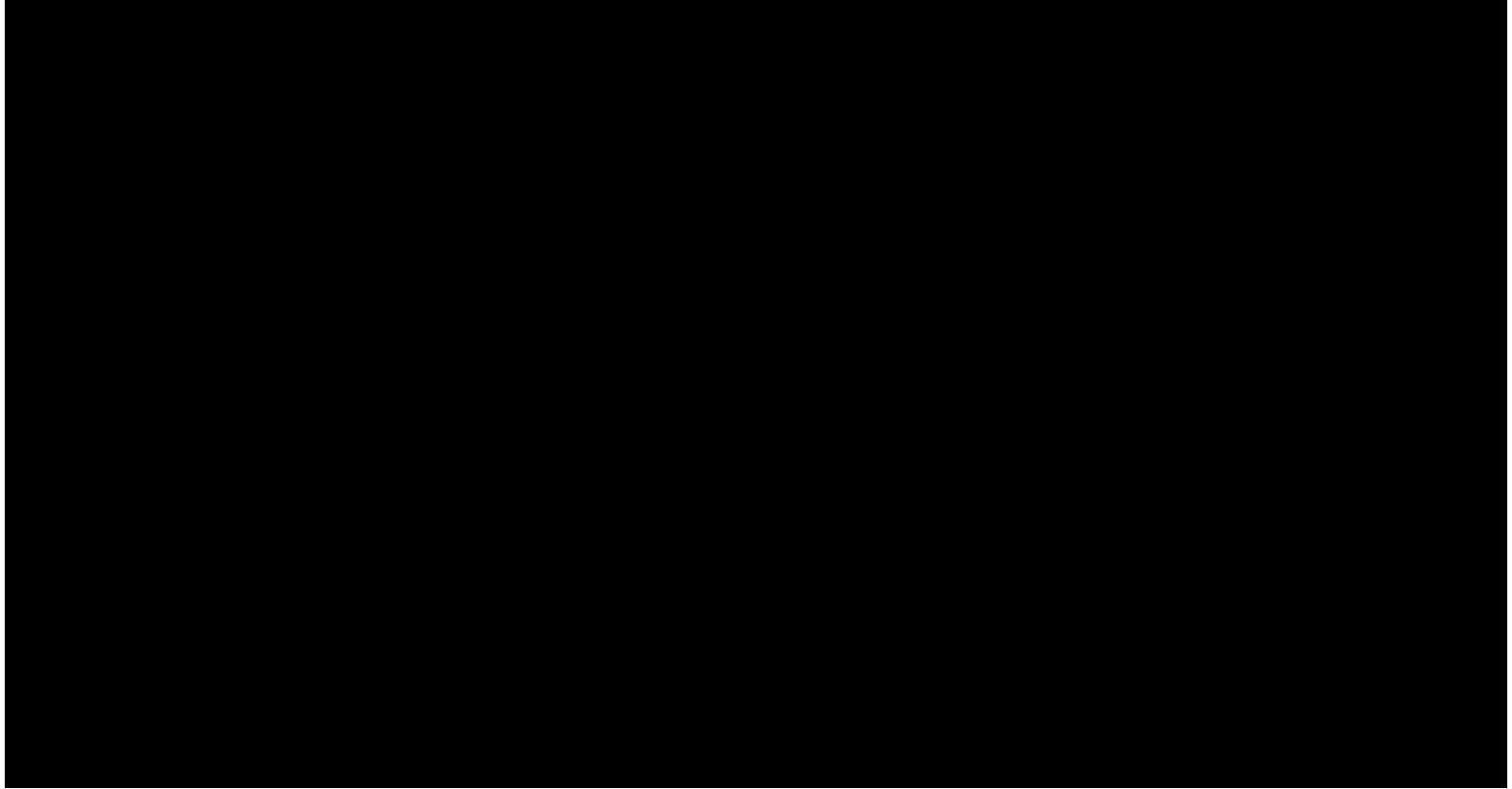
System diagram – Step 5



Step 5. When the prosumer has solved all the accessibility barriers, he can publish the content without accessibility problems

EmpathicEditor4Accessibility

A demo about how it works



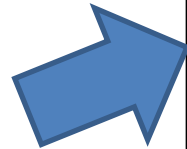
- <https://youtu.be/1FBIw6I4wo8>

EVALUATING THE SYSTEM EMPATHIC EDITOR 4 ACCESSIBILITY

Empathic communication of accessibility barriers in web 2.0 editing



Tested 8
prosumers

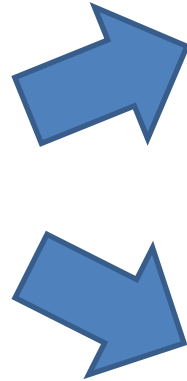


Pascual, A., Ribera, M., Granollers, T. (2015). Empathic communication of accessibility barriers in web 2.0 editing. W4A '15

Empathic communication of accessibility barriers in web 2.0 editing



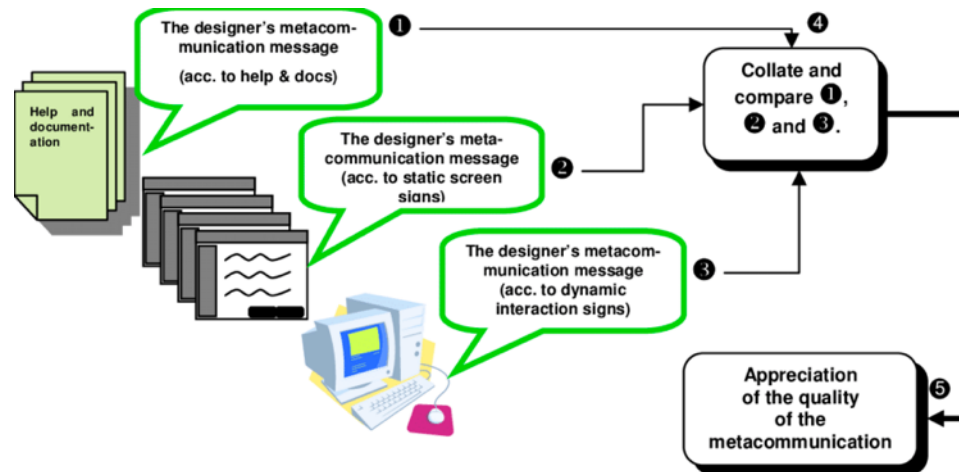
Tested 8
prosumers



Pascual, A., Ribera, M., Granollers, T. (2015). Empathic communication of accessibility barriers in web 2.0 editing. W4A '15

Communicability of two web 2.0 accessibility evaluation tools

- Semiotic Inspection Method (SIM)



10th
Computing
Colombian
Conference
(10CCC),






Pascual, A., Ribera, M., Granollers, T. (2015) **Communicability of two web 2.0 accessibility evaluation tools**. 10th Computing Colombian Conference (10CCC), 2015, pp. 269-272, doi: 10.1109/ColumbianCC.2015.7333425

Communicability of two web 2.0 accessibility evaluation tools



EmpathicEditor4Accessibility **Prosumers**



TAW CMS System **Technical users**

10th
Computing
Colombian
Conference
(10CCC),



Pascual, A., Ribera, M., Granollers, T. (2015) **Communicability of two web 2.0 accessibility evaluation tools**. 10th Computing Colombian Conference (10CCC), 2015, pp. 269-272, doi: 10.1109/ColumbianCC.2015.7333425

CONCLUSIONS

Conclusions

- The *EmpathicEditor4Accessibility* system
 - **facilitates empathy with accessibility problems**
 - The **communication design** and the **empathy** built into the system **makes the tool suitable for non-technical** audiences with no previous knowledge on web development
 - Following **User Centered Methodology** in the development of the system and considering **Semiotic Engineering** to create the informative messages **has provided a more empathic tool for communicating issues related to the WCAG guidelines**

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