Teaching Accessibility with Personas

Claudia Loitsch, Gerhard Weber, Jens Voegler

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DRESDEN
concept
Exzellenz aus
Wissenschaft
und Kultur

01 Personas

- **Personas are fictional characters describing a particular customer segment** [1]

- Personas help designers, developers and customers to create empathy with the end user and put themselves in a user's way of thinking.

- A persona has a name, a picture.

- Describes characteristic, background, desire or a typical day.

- Describe perceptual and motor capabilities, interaction strategies with information technologies, barriers, or include design considerations.

[1] Cooper, A.: The Inmates Are Running the Asylum. Macmillan Publishing Co., Inc., Indianapolis, IN, USA (1999)

Alexander – colour vision deficiency

Meet Alexander

- Name: Alexander Schmidt
- Age: 36
- Location: Dresden
- Marital status: Single
- Education: Master in Business Administration
- Visual impairment: colour vision deficiency

Alexander lives in Dresden, the capital of Saxony, in Germany. Most of his relatives live near the city and he sees them often. His younger brother has left Dresden and is now working in the Frankfurt area. His fiancée is from the Stuttgart area but feels quite at home since the Saxon mountains are not far from the city. Alex graduated from university with an MBA; he focused on math and macroeconomics. He quickly got a job at the Deutsche Bank in Dresden. Alex has minor vision problems; he cannot distinguish red and green colours, like 10% of the male population. Some people confuse this condition with achromatopsia (full colour blindness), which is actually very rare.

A day in the life of Alexander

At university, Alexander had problems with some of the lecture materials, mostly when they contained graphs with colour-coded legends. Classes on statistics often used line charts and Alexander was often unable to figure out the difference between lines describing the evolution of the net profit of several companies. The same problem also occurred with bar charts where the bars could only be distinguished by colour and not by different textures.

Alexander now works as a loan manager and is very successful. Whereas as a student he was dependent on trains and had trouble reading coloured metro network maps, he now drives his own expensive car. He no longer needs to ask for help with reading network maps when trains are late and he needs to figure out an alternative route. And traffic lights pose no problems as long as there isn't too much sunshine. Alexander bought a car with a navigation system that can be controlled through speech recognition.

01 Personas
Some examples

WAI [2]

- Stories how people with disabilities use the web

- Type of disability as well as accessibility principles are given.

Mr. Lee, Online shopper with color blindness

Mr. Lee wants to buy some new clothes, appliances, and music. As he frequently does, he is spending an evening shopping online. He has one of the most common visual disabilities for men: color blindness, which in his case means an inability to distinguish between green and red.

⊞ **More about Mr. Lee**

⊟ **Sections related to Mr. Lee**

Diversity of web users:
- Color blindness (Visual disabilities)

Diversity in web use:
- Customized fonts and colors (Distinguishing and understanding)

Accessibility principles:
- Content can be presented in different ways (Perceivable)
- Content is easier to see and hear (Perceivable)
- Content is compatible with current and future user tools (Robust)

[2] Abou-Zahra, S.: How People with Disabilities Use the Web. Draft Updated 1 August 22012., http://www.w3c.org/WAI/intro/people-use-web/Overview

01 Personas
Some examples

Pilgrim [3]

- Educational concept to impart tips how to make a web site accessible in 30 days.

- Day 1 to 5, personas are introduced.

- Personas describe combinations of physical and mental disabilities.

- Day 6 to 30, practical accessibility tips and for which personas these tips are helpful.

Dive Into Accessibility
30 days to a more accessible web site

Day 11: Skipping over navigation links

If you didn't manage to hack your templates to present your main content first, here's a compromise: provide an link to skip over your navigation links. It's not a perfect solution (presenting your main content first is better), but it's an accepted compromise that many sites use.

This "skip link" is just a regular `<a>` tag, like any other link, but we'll use CSS to hide it from visual browsers like Internet Explorer and Netscape. It won't affect your page layout at all; it will be completely invisible.

Who benefits?

1. Marcus benefits. When he visits your page, Lynx will display the link and allow him to skip over your navigation bar and go straight to your main content. See Day 10: Presenting your main content first for an example of why this is so important.
2. Jackie benefits. When she visits your page, JAWS will read the skip link and allow her to skip over your navigation bar and go straight to your main content.

How to do it

First, use Lynx Viewer on your own home page to determine whether your navigation bar is presented before your main content. If your main content comes first, this tip does not apply to you; enjoy your day off.

Now define a CSS rule for the skip links, to make them invisible to visual browsers. If you have an external stylesheet, put this rule at the end of it. (If you have multiple external stylesheets, put this rule in the Netscape 4-friendly one.) If you just have a `<style>` section at the top of your template, add this rule immediately after the `<style>` tag.

```
.skiplink {display:none}
```

[3] Pilgrim, M.: Dive Into Accessibility.30 days to a more accessible web site (2002), https://github.com/nfreear/diveintoaccessibility

01 Personas
Some examples

AEGIS Personas [4]

- Derive accessible interaction models.

- Automatic assessment tool.

- Enable developers to perform an accessibility assessment that focuses on the specific Persona.

[4] Oikonomou, T., et. al., An accessibility assessment framework for improving designers experience in web applications. 2011
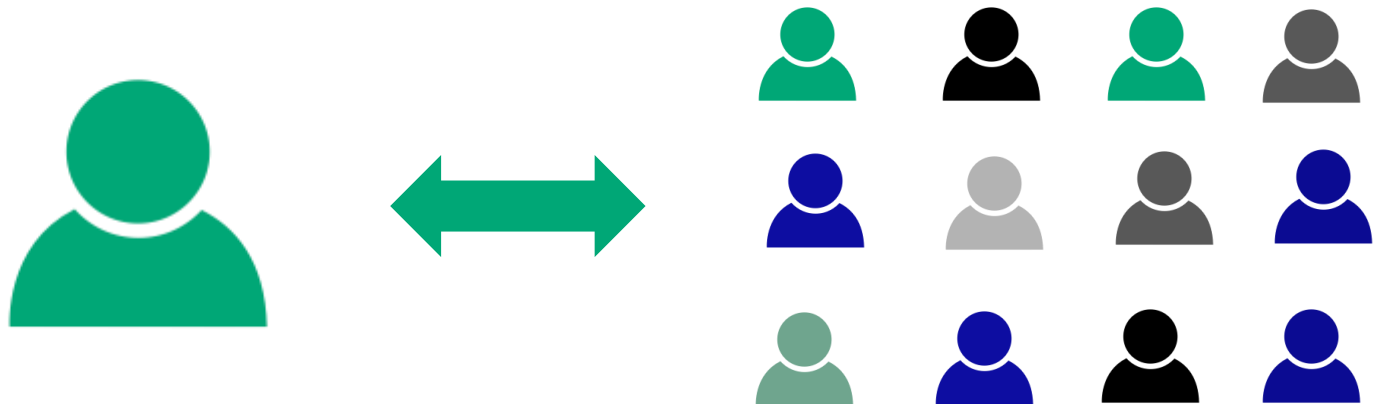
01 Personas

General consensus

- Personas are useful to impart accessibility knowledge, increase awareness of technological barriers and allow to talk about the target user in a personal and illustrative way.

Dichotomy

- Learning a user requirement from a persona versus understanding how barriers affect a large variety of different users.

02 Background

MOOCAP

- *MOOC's for Accessibility Partnership* (MOOCAP) is a European project on educating accessible design in ICT.
- Massive Open Online Courses (MOOC) are being developed and materials are published as Open Educational Resources (OERs).
- First course is on Digital Accessibility (DA)
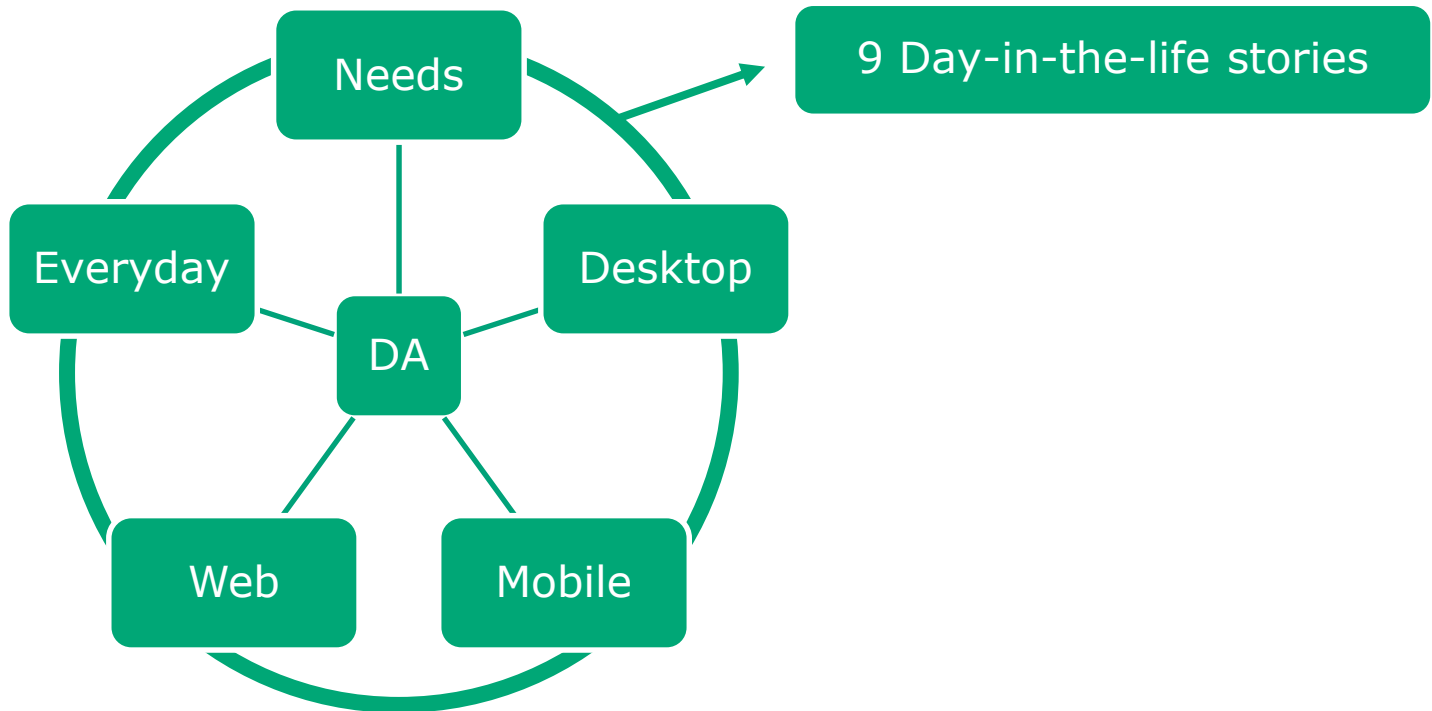
02 Background

MOOCAP day-in-the-life stories

- Carole – blind
- Maria – partially sighted
- Alexander – colour vision deficiency
- Lars – deaf
- Susan – hard of hearing
- Mary – mobility and dexterity problems
- Tom – speech impairment
- Anna – dyslexia
- Monika – elderly

Creation

- Extensive experience with these types of people.
- Not obtained from field research.
- Introduced in the first week and are used repetitively during all course weeks.

Tom – speech impairment

Meet Tom

Tom has just left college and is looking for work. He uses a wheelchair and an Augmentative and Alternative Communication (AAC) aid with a portable system which has a wide selection of symbols with speech output. However, there are times when he needs to use gestures, eye contact and text to get his message across. Tom has cerebral palsy and has an assistant who works with him to achieve a degree of independence wherever possible.

A day in the life of Tom

Tom is a volunteer for a local charity lobbying for greater support for many other AAC users, their families and carers. On the day in question he has a busy schedule and has help to dress and have breakfast, but once in his wheelchair with his communication device (which is now an adapted tablet), Tom reminds his assistant that they need to go to the centre, as he will be working on the helpline and has a meeting before lunch.

This part of the conversation has largely been pre-programmed into Tom's device and the symbols with speech output appear with relative rapidity, but still the 27 words needed to communicate this timetable takes well over a minute compared to 12 seconds of spoken speech. Tom has access to many environmental aids around the house as well as his communication aid, so he can call his assistant and control his television, video player, the lights and blinds. Using other cooking aids and being independent in the kitchen is still a dream, but at least he can now shop online.

Choosing symbols that allude to a past happening and recounting a story can be a real issue, but Tom not only has good literacy skills, he is also able to control an on-screen keyboard. His communication aid allows him to flip between symbols and text depending on the situation. Symbols for instant questioning and interruptions can be quick, but a new thought takes time to communicate. Tom is also able to send an SMS to the taxi company and soon he and his assistant are at the centre.

03 In this Paper

Course material

- Selected material of the course week Mobile Accessibility are presented.

Educational concept

- A educational concept that uses personas repeatedly to built foundations of knowledge on accessibility.
- Focus on adoption of imparted knowledge and barriers to other user groups.

Evaluation of the course material and use of personas

04 Course Material and Educational Concept

General

- Short learning units (no longer than 6 min)
- Around 20 leaning units per week
- Media: article, video, quiz, discussion
- Creative tasks: create user stories

Example – the first 3 learning units:

1. **Article:** potential barriers on mobile phones. Carol, who is blind, uses the touch-screen of her new smart phone.
2. **Video:** a blind person and a physically impaired person explain their usage of a smart phone in a video.
3. **Discussion:** learners are asked to report on their own experiences, problems they know, and suggestions (by referring a MOOCAP day-in-the-life story or creating a new ad hoc persona).

Potential barriers on mobile devices
(Version 1)

As with the introduction of almost any new computer technology the mobile phone introduced barriers to people with a disability in the beginning. Nowadays these devices can be very useful to them. In this step we introduce you to a few examples.

Information often is needed while being not at home nor in an office. Smartphones allow many activities, such as searching the web, orienting in unknown surroundings and last but not least to call someone if help is needed. Accessible mobile phones have changed the level of independence people with a disability can achieve. Examples:

Carole (*http://gpii.eu/moocap/?page_id=33*) is blind and when working on a desktop computer she uses a regular keyboard, a headset and a braille display. Okay, laptops are portable and come with a keyboard, but placing phone calls and sending SMS through Skype is not very convenient when on the move. Many smartphones
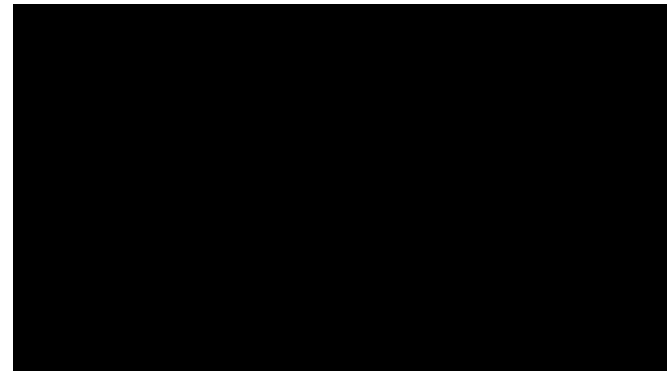
Overview

Research Questions

Quality of the course material
- understanding, scope, presentation

Use of personas
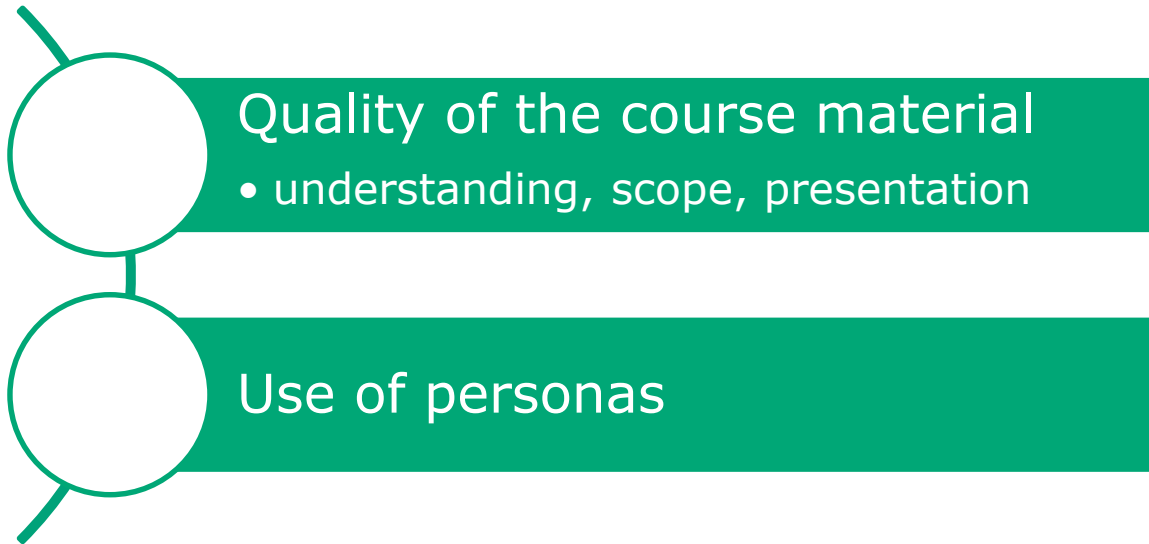
05 Evaluation

Overview

Method

- Evaluation during seminar of the lecture series Accessible Documents.
- 50 students registered, 20-30 students usually complete seminar.
- Complete online course as one of the practical seminar tasks.
- 2 weeks to do the online course.
- Questionnaire after the completion of the online course
  - 4 questions to assess whether the aim to impart requirements of people with disabilities was achieved as well as the representation and the scope of course material
  - 3 questions concerning the use of personas
  - Likert scale (strongly agree, agree, neither agree nor disagree (neutral), disagree, strongly disagree)
  - Additional remarks for each question.

05 Evaluation

Overview

Material

- Course contents and MOOCAP day-in-the-life stories were uploaded to Moodle.
- Seminar was conducted online; No face-to-face classroom activities
- **Learning units:**
  1. Read the *MOOCAP day-in-the-life stories*.
  2. Read the article *Potential barriers on mobile devices*
  3. Watch the video *What are you using a smartphone for*
  4. Create a user story (as forum article) and report on accessibility issues.
  5. Watch the first video in the series *Everyday activities of people with disabilities*
  6. Watch the second video in the series *Everyday activities of people with disabilities*
  7. Read the article *Multimedia on mobile devices*
  8. Create a user story (as forum article) and report on what might help to engage developers in accessibility.

05 Evaluation
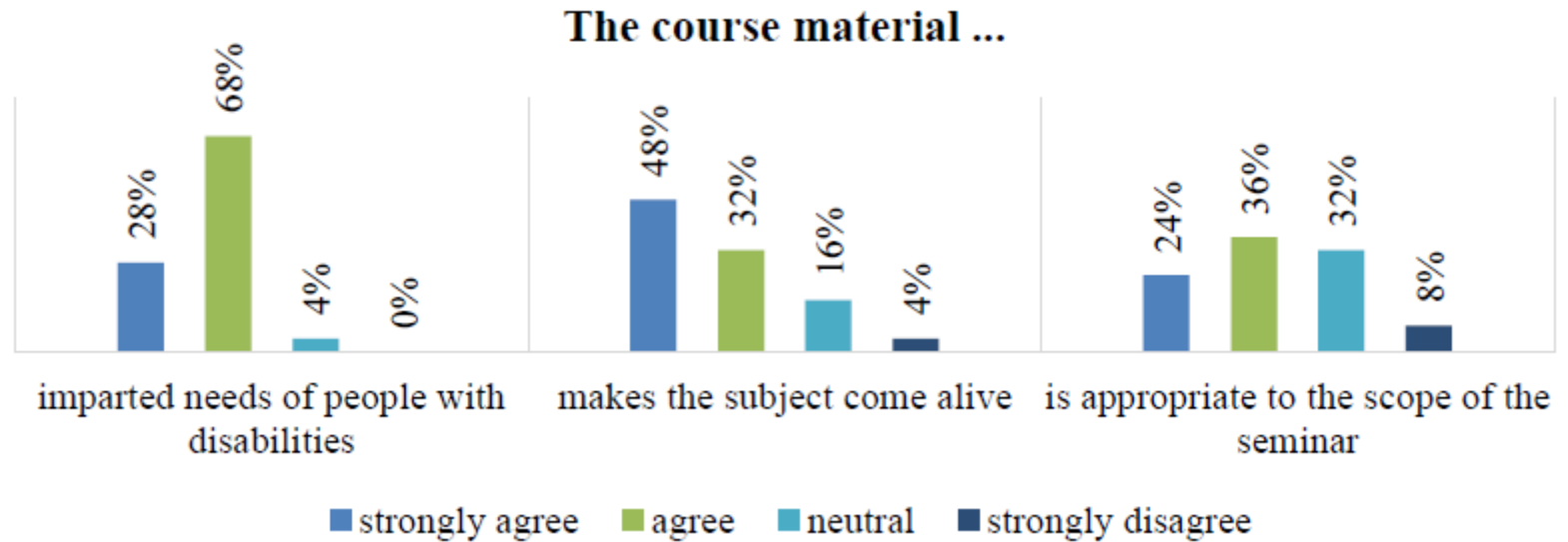## Overview

Participants

- 25 participants completed the course.

- All participants were students in computer science.

- Aged between 21 and 31 Years.

05 Evaluation
Summary of Results

Course Content
- overall positive feedback

The course material ...

	strongly agree	agree	neutral	strongly disagree
imparted needs of people with disabilities	28%	68%	4%	0%
makes the subject come alive	48%	32%	16%	4%
is appropriate to the scope of the seminar	24%	36%	32%	8%

Summary of Results
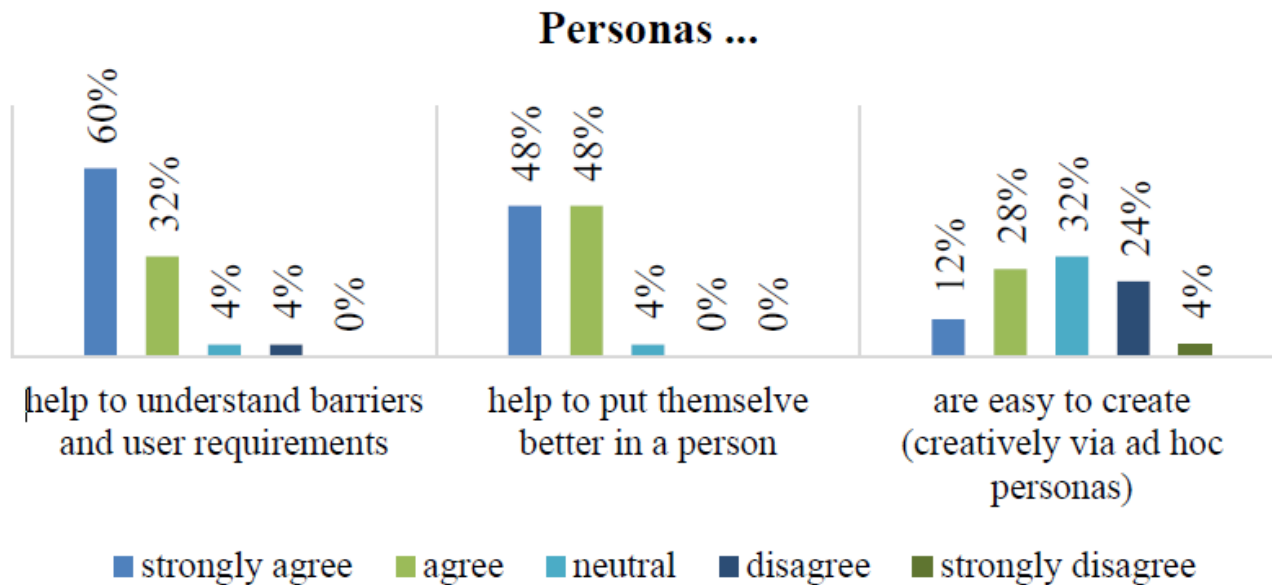
Course Content

- Videos used in conjunction with personas were especially helpful.

- Many comments such as:

    - *"Videos were motivated the topic very much."*

    - *"Instead of textual description of a persona, I would have preferred also videos of the persona itself, not only about application scenarios."*

    - *"As we are talking about real people I prefer to have videos instead of written descriptions of Personas."*

Summary of Results

Use of Personas

- Overall positive feedback.
- Creativity task to create ad hoc personas was more challenging (60% of the participants find the creation of ad hoc personas not easy).

Personas ...

help to understand barriers and user requirements — 60%, 32%, 4%, 4%, 0%

help to put themselve better in a person — 48%, 48%, 4%, 0%, 0%

are easy to create (creatively via ad hoc personas) — 12%, 28%, 32%, 24%, 4%

■ strongly agree ■ agree ■ neutral ■ disagree ■ strongly disagree

Summary of Results

Creativity Task - create user stories

- 51 user stories created during the course

- 27 user stories describe accessibility issues of people with disabilities

- 24 user stories describe developer perspectives

- 8 of the 51 created user stories refer to impairments that were not introduced during the course, e.g.:

  - Anna - multiple sclerosis
  - Lisa – motor neurone disease (or Amyotrophic lateral sclerosis)
  - Karl - one-armed

Example of an user stories:

Lisa is 40 and lives with her husband and children in Leipzig. One year ago she got the diagnosis motor neuron disease. [...] She can still articulate well but she has difficulties to coordinate her arms and legs for which reasons she need a wheelchair.

A day in the life of Lisa

Thanks to her husband, Lisa can start a day without the need of a professional carer. After having breakfast together, she takes the public transport to go to work. She uses an app on her smartphone to get updated about latest connections or delay. She needs to hold the smartphone steady with one hand. With the other hand she can type. For large texts, searching information on the web as well as reading she either needs a storage place to put the smartphone or speech input. Zoom or wiping gestured are also difficult as her fingers are slow-moving.

Due to the disease, she had to give up her job in a big logistic company. Today she works in a call centre. She can operate the computer and the telephone service with a mouse and uses a headset. The service application is simple to use and Lisa has no problems in using it.

[…]

06 Conclusion

- Use more personas to teach requirements of user needs.

- Incorporate videos (e.g. video personas or people talking about their experiences) as they are more vivid than textual representations.

- Creativity tasks such as creating ad hoc personas help students to start discussing barriers and particular needs of people with disabilities.

Thank you for your attention

- All course material is available as OER:

  ## https://drive.google.com/drive/folders/0B1xSmiMx9252Ny1uakMzdHFmM28

»Wissen schafft Brücken.«