Ambient Assisted Living Joint Programme
Call 2

D 2.1: Usability and Ergonomics Report

Proposal full title:
VIRTUAL NETWORK TO EMPOWER THE INTEGRATION OF SENIORS INTO AN ACTIVE COMMUNITY IN THE POST RETIREMENT YEARS

Proposal acronym:

SENIORENGAGE

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Scope of the document

In order to assure that the SeniorEngage platform will be usable and accessible for our target groups we need to have corresponding guidelines in mind. Additionally it is important to develop the user interface in an iterative way to assure that it matches the requirements of the users. This means that already very early in the development phase design concepts will be assessed with representatives of the end users and the feedback flows back as input to the user interface designers. So the scope of this document is two-parted: first it is about reviewing literature for relevant usability and accessibility guidelines and heuristics focused on seniors (part A) and second it is a report about the evaluation of the SeniorEngage user interface development (part B).

This is the final version of the Deliverable 2.1. The first version provided heuristics and guidelines for web design for older people out of a literature review. The results supported the work of the user interface designers and developers of WP3 and WP5. In order to control and improve the user interface design phase we conducted various test cycles with end-users to evaluate our achievements in view of usability and accessibility. Based on the results reported in this document the prototype development will be finalised before the final field trials of WP6 will be carried out.

PART A

Heuristics and Guidelines

1. Introduction to the Literature Analysis

Older people have special needs and some have limitations due to age-related impairments that can affect how they use the Web. Hence when designing a web portal like SeniorEngage for older people, critical restrictions and particular requirements need to be considered. Those restrictions derive from declining [8]:

- **vision -** including reduced contrast sensitivity, color perception and near-focus, making it difficult to read web pages;
- **physical ability -** including reduced dexterity and fine motor control, making it difficult to use a mouse and click small targets;
- **hearing -** including difficulty in hearing higher-pitched sounds and separating sounds, making it more difficult to voice chat, especially when there is background music;
- **cognitive ability -** including reduced short-term memory, difficulty in concentrating and being easily distracted, making it difficult to follow navigation and complete online tasks.

These age-related impairments become barriers to web use for seniors when the designers of websites don't take them into account. Although many researchers have published guidelines and heuristics to make websites more accessible and usable for older people, just a fractional amount of websites really stick to them. The majority of website owners doesn't regard seniors as a target group or are not aware of the accessibility problems.

To avoid creating another inaccessible and unusable website, the consortium of SeniorEngage will take the published guidelines into account. In the section 2 we present general usability heuristics that also apply for older people, followed by web content accessibility guidelines in section 3, before we present additional guidelines especially evolved for older people in section 4. To finalize the introduction we summarize the main barriers to web use for senior in the following paragraph 1.1, we leave some words about the second target group in paragraph 1.2 and explain the importance of user involvement for web design in paragraph 1.3.

1.1 Barriers to web use for seniors

The demographic forecasts and the age-related impairment statistics show an increasingly older population. Many of these older people are confronted with barriers when using the web and thus cannot take full advantage of current web services and applications. Some of those barriers are physical, which means that web designers need to take older people's needs into account. For example, 21% of people over 50 have severe hearing, vision or dexterity problems, making it difficult or impossible to use standard ICT equipment. In addition, too much information is a big problem for seniors e.g. 39% of Germans aged 65 years often had a feeling of information overload. However, the web usage of seniors in all Europe is increasingly growing, and rapidly. Although the amount varies between studies, it has doubled during the last five years

up to around 20% of European citizens over 65 (see D1.1 of SeniorEngage for more details).

Ageing is often not considered when designing mainstream websites and there can be a distinct lack of industry awareness about older users' capabilities. Even when assistive technologies for seniors with age-related impairments are developed and offered, a lack of interoperability can hinder their usage. However, web accessibility is an imperative in our information society and overcoming these barriers will ensure equal access for all citizens [10].

In summary, it can be stated that older people are experiencing web accessibility barriers due to [10]:

- Poor design and poor coding of websites, including information and applications on the Web
- Complex software, including browsers, media players, and assistive technologies, as well as authoring tools (these are editors, content management systems, blogs, wikis, and the like)
- Little or no prior experience with computers

1.2 Accessibility for young professionals

Up to now we have only discussed accessibility problems of older people. However, SeniorEngage will be used by young professionals as well. Although there are no age restrictions for SeniorEngage, the majority of these younger users will be between 20 and 35 years old. Concerning accessibility aspects, it has been stated that web sites being accessible for older people are also accessible for younger web users [9].

In terms of usability it is important to offer quick access and short cuts to the various contents. They will mainly be used by more experienced users thus especially the young professionals.

1.3 User Involvement for Web Design

The process of service and user interface development of the SeniorEngage platform is characterised by the involvement of its target groups. Involving end users in projects helps to understand real-world accessibility and usability issues, such as how older people use the web and how they apply assistive technologies. Besides early user involvement helps to implement more effective accessibility solutions and can open new perspectives of thinking about the website [11]. Thus it could finally work better for more people in more situations than originally intended.

To stick to a user-centred-design process like mentioned before we took the following actions. As one of the first actions in WP1, we created surveys, one for the retired and one for the young professionals, in order to get on overview of living circumstances

and first ideas on SeniorEngage of the target groups. Subsequently, we gathered more concrete service needs and wishes by conducting workshops in Austria and Finland with test persons of the target groups. In these workshops we also evaluated the elaborated service scenarios of the consortium (see SeniorEngage D1.1 for more details). Concerning the design of the SeniorEngage platform we not only adhere to the guidelines presented in part A of this document but we also created the platform design in an iterative manner. This means various elementary user interface concepts have been elaborated and the resulting mock-ups were presented to test users in form of usability tests in order to ascertain which ideas will be preferred. The feedback of the test users flew directly into the next iteration step where the concepts were refined to click-dummies. Afterwards these prototypes have been evaluated together with users again with the focus on the assessment of the interaction flow. The results of these tests will be presented in part B of this Deliverable.

2. Universally valid Usability Heuristics

In this section we present usability heuristics that are not explicitly created for older web users but apply for them as well. The consortium is aware that there are some general guidelines being not eligible for older persons as they require too much previous knowledge or contradict to the implications of age-related limitations.

2.1 Nielsen's Heuristics

Source: [1]

2.1.1 Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2.1.2 Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

2.1.3 User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

2.1.4 Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

2.1.5 Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

2.1.6 Recognition rather than recall

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

2.1.7 Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

2.1.8 Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

2.1.9 Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

2.1.10 Help and documentation

Even though it is better if a system can be used without documentation, help should be necessary to provided. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

2.2 GUI Element Heuristics

2.2.1 Icons often work well with text labels

If possible there should be graphical representations for labels in the form of icons.
Source: [5]

2.2.2 Horizontal and vertical grid alignment of all used elements

Use grids to align all user interface elements.
Source: [6]

2.3 Interaction Heuristics

2.3.1 Clear confirmation of target capture

There should be a clear confirmation of target capture, which should be visible to older adults who should not be expected to detect small changes.
Source: [5]

2.3.2 Adjustable Interface Elements

Ensure the user can easily make interface elements larger. This ameliorates the effects of vision impairment and also, by allowing the user to enlarge user interface elements as much as they please, they can reduce the need for fine motor co-ordination
Source: [4]

2.3.3 Language should be simple and clear

Avoid long and complex sentences.
Source: [5]

2.3.4 Use clear wording (e.g. emergency call instead of SOS)

Avoid abbreviations and unspecific buzz words.
Source: [6]

2.3.5 Minimalist dialogues: All dialogues contain no irrelevant information

Focus on the relevant information for a dialogue and leave out any clutter.
Source: [2]

2.3.6 Highlight input position or focus on the screen

The user should be aware at which interaction element the focus is at every time.
Source: [5]

2.3.7 Use redundant user guidance by colour-coding and blinking boxes

Additional guidance helps users to orientate themselves at the screen.
Source: [6]

2.3.8 Simplicity: Minimise the number of interface elements.

Source: [4]

2.3.9 Consistency: Strive for predictability by maximising consistency.

Source: [4]

2.3.10 Use new objects with new appearances for new interface behaviours

This avoids clashes with the user's existing knowledge.
Source: [4]

2.3.11 Support user in reducing clutter

This is especially important if many user interface elements need to be large.
Source: [4]

2.3.12 Reduce distraction from the current focus

Source: [4]

2.3.13 Avoid using computer terms which may not be understood

e.g. 'files', 'directories', 'server', 'spooling' etc.
Source: [5]

2.3.14 Keep input as simple as possible

Only one input at a time: Sequence of inputs/prompts rather than form-filling style of input.
Source: [5]

2.3.15 Avoid requiring long textual inputs to the system

Source: [5]

2.3.16 Avoid audio feedback for longer inputs

Source: [5]

2.3.17 Use slow blinking rate

Source: [6]

2.4 Text Heuristics

2.4.1 Avoid fancy font types: Use san serif type font.

Source: [5]

2.4.2 Font size

Size should be large (up to 48pt). Adjustable font sizes are to be used.
Source: [6]

2.4.3 System text and inputted text should be distinguishable

Inputted characters should be clearly distinguished from the system prompt by colour, font, case, or inverse video.
Source: [5]

2.5 Navigation Heuristics

2.5.1 Headlines displayed on the top of each screen as the major information

Source: [6]

2.5.2 Use basic controls for navigating through the system

Start, Finish, Restart, Go back, Next page, Previous page, Enter/OK, Cancel/Exit
Source: [5]

2.5.3 Clearly marked exit/back button to leave unwanted screens

Source: [2]

2.6 Colour Heuristics

2.6.1 Avoid using red and green colour

Problems in discriminating red/green are common by over 6% of the male population.
Source: [5]

2.6.2 Avoid large adjacent areas of red and blue colour

Users have difficulty focusing on these colours at the same time, causing visual fatigue.
Source: [5]

2.6.3 Use colours to structure the display:

To group categories of information and to help identify labels, entry fields or prompts.
Source: [5]

2.6.4 Coloured text

Only for short or temporary elements (such as menu choices or messages). Not for permanent elements such as long lines of text.
Source: [5]

3. Web Content Accessibility Guidelines

The W3C (World Wide Web Consortium) has published some principles and guidelines making web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including sight impairment and decreased vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these [9]. If all these guidelines are applied websites are not only accessible for seniors but also to young professionals suffering from disabilities. This section presents those guidelines that are relevant for SeniorEngage.

3.1 Perceivable

Information and user interface components must be presentable to users in ways they can perceive (Source: [9]):

3.1.1 Text Alternatives

- Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language

3.1.2 Time-based Media

- Provide alternatives for time-based media

3.1.3 Adaptable

- Create content that can be presented in different ways (for example simpler layout) without losing information or structure

3.1.4 Distinguishable

- Make it easier for users to see and hear content including separating foreground from background
- Use of Colour: Colour is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element
- Audio Control: If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level
- Contrast: The visual presentation of text and images of text has a contrast ratio of at least 4.5:1 (Minimum) respectively 7:1 (Enhanced), except for the following: Large Text (3:1 respectively 4.5:1), Incidental and Logotypes
- Resize text: Except for captions and images of text, text can be resized without assistive technology up to 200% without loss of content or functionality

3.2 Operable

User interface components and navigation must be operable (Source: [9]):

3.2.1 Keyboard Accessible

- Make all functionality available from a keyboard

3.2.2 Enough Time

- Provide users enough time to read and use content

3.2.3 Navigable

- Provide ways to help users navigate, find content, and determine where they are
- Bypass Blocks: A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.
- Page Titled: Web pages have titles that describe topic or purpose
- Focus Order: If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability
- Link Purpose (In Context): The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general.
- Link Purpose (Link Only): A mechanism is available to allow the purpose of each link to be identified from link text alone, except where the purpose of the link would be ambiguous to users in general
- Multiple Ways: More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in a process
- Headings and Labels: Headings and labels describe topic or purpose
- Section Headings: Section headings are used to organize the content
- Focus Visible: Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible.
- Location: Information about the user's location within a set of Web pages is available.

3.3 Understandable

Information and the operation of user interface must be understandable (Source: [9]):

3.3.1 Readable

- Make text content readable and understandable

3.3.2 Predictable

- Make Web pages appear and operate in predictable ways

3.3.3 Input Assistance

- Help users avoid and correct mistakes

3.4 Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies (Source: [9]):

3.4.1 Compatible

- Maximize compatibility with current and future user agents, including assistive technologies
- Parsing: In content implemented using mark-up languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.
- Name, Role, Value: For all user interface components the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies

4. Heuristics and Guidelines specifically for older users

As previously described, older users have special needs for web design and may suffer from age-related impairments. For this reason research has been done on the implications of these limitations. Results of those investigations have been published in the form of web design guidelines for elderly. In this section we present relevant guidelines for SeniorEngage summarised out of various sources.

4.1 Web Design Guidelines for Elderly

Source: [3]

4.1.1 Target Design

- Provide larger targets
- There should be clear confirmation of target capture, which should be visible to older adults who should not be expected to detect small changes
- Older adult should not be expected to double click

4.1.2 Graphics

- Graphics should be relevant and not for decoration. No animation should be present
- Images should have alt tags
- Icons should be simple and meaningful

4.1.3 Navigation

- Extra and bolder navigation cues should be provided
- Clear navigation should be provided
- Provide location of the current page
- Avoid pull down menus
- Do not use a deep hierarchy and group information into meaningful categories

4.1.4 Browser Window Features

- Avoid scroll bars
- Provide only one open window e.g., pop-up/animated advertisements or multiple overlapping windows should be avoided

4.1.5 Content Layout Design

- Language should be simple and clear
- Avoid irrelevant information on the screen
- Important information should be highlighted
- Information should be concentrated mainly in the centre
- Screen layout, navigation and terminology used should be simple, clear and consistent

4.1.6 Links

- There should be differentiation between visited and unvisited links

- Links should be clearly named and no link with the same name should go to a different page
- Links should be in a bulleted list and not tightly clustered

4.1.7 User Cognitive Design

- Provide ample time to read information
- Reduce the demand on working memory by supporting recognition rather than recall and provide fewer choices to the user

4.1.8 Use of Colour and Background

- Colours should be used conservatively
- Blue and green tones should be avoided
- Background screens should not be pure white or change rapidly in brightness between screens. Also, a high contrast between the foreground and background should exist, for example, coloured text on coloured backgrounds should be avoided.
- Content should not all be in colour alone (colour here is denoted by all colours other than black and white)

4.1.9 Text Design

- Avoid moving text
- Text should be left justified and text lines should be short in length
- There should be spacing between the lines
- Main body of the text should be in sentence case and not all capital letters
- Text should have clear large headings
- Use san serif type font i.e., Helvetica, Arial of 12-14 point size. Avoid other fancy font types.

4.1.10 Search Engine

- Search engines should cater for spelling errors

4.1.11 User Feedback & Support

- Provide a site map
- An online help tutorial should be provided
- Support user control and freedom
- Error messages should be simple and easy to follow

4.2 Heuristics for Older Adults as Web Users

Source: [7]

4.2.1 Use conventional interaction elements.

- Does the site use standard treatments for links?
- Is link treatment the same from section to section within the site?

4.2.2 Make obvious what is clickable and what is not.

- In lists of bulleted links, are the bullets clickable?
- Are command and action items presented as buttons?
- Do buttons and links show that they have been clicked?
- Are buttons clearly labelled?
- If there is an image on a button or icon, is it task-relevant?
- Do graphic buttons avoid symbols that will be unfamiliar to older adults who have low computer and Web expertise?
- Is there a visible change (other than the cursor changing) when the user "points" to something clickable with his or her mouse?

4.2.3 Make clickable items easy to target and hit.

- Are buttons large enough to easily see the image or text on them—at least 180 22 pixels?
- Is the area around buttons clickable?
- Is there enough space between targets to prevent hitting multiple or incorrect targets?
- Do buttons and links enlarge when the rest of the text size is increased?

4.2.4 Minimize vertical scrolling; eliminate horizontal scrolling.

- Does the site work at the resolution at which the user would typically view the site without horizontal scrolling?
- Do pop-ups and secondary windows open wide and long enough to contain the content without the need for scrolling?
- For scrolling lists, for example, a list of all the states:
    - Are checkboxes used rather than drop-down (a menu that drops down when requested and stays open without further action until the user closes it or chooses a menu item) or pull-down menus (a menu that is pulled down and that stays available as long as the user holds it open)?
    - If not, are drop-down menus used rather than pull-down menus?

4.2.5 Ensure that the Back button behaves predictably.

- Does the Back button appear on the browser toolbar on every page?
- Does clicking the Back button always go back to the page that the user came from?

4.2.6 Let the user stay in control.

- Is there no rolling text that goes by automatically?
- Does the site use static menus (a click leads to another page) rather than "walking menus" (exposing a sub-menu on hovering the mouse over the label)?
- If there are walking menus, do they expand on a click (rather than a hover)?
- Are the sub-menus timed to stay open for at least 5 seconds or until they're clicked?

4.2.7 Provide clear feedback on actions.

- Are error pages descriptive, and did they provide a solution to the user?

- Are confirmation pages clear?

4.2.8 Provide feedback in other modes in addition to visual.

- Are captioning and/or meaningful alternative text provided for images, video, and animation?
- Does the site support haptic pointing devices (such as the Logitech iFeel mouse that vibrates when the cursor goes over user interface elements such as links)?

4.2.9 Make the structure of the Web site as visible as possible.

- Does the site use a directory list format (a list of links) for listing topics (such as Yahoo!, http://www.hhs.gov, or http://www.firstgov.gov do)?
- Does the site use cross-references to related topics and redundant links?
- Is the site hierarchy as broad and shallow as possible?

4.2.10 Clearly label content categories; assist recognition and retrieval rather than recall.

- Are labels descriptive enough to make it easy to accurately predict what the content will be under each topic category?
- Do labels and links start with different, distinct, and relevant key words?
- Are labels useful and understandable each on their own?
- Do labels reflect language that older adults are familiar with?

4.2.11 Implement the shallowest possible information hierarchy.

- Are important, frequently needed topics and tasks closer to the surface of the Web site?
- Are related topics and links grouped and labelled?
- Do labels and category names correspond to users' tasks and goals?
- Do paths through the information architecture support user's tasks and goals?
- Is the path for any given task a reasonable length (2–5 clicks)?
- Is the path clear of distractors and other obstacles to reaching task goals?
- Are there a few, helpful cross-referenced links that are related to the current task goal?
- Do redundant links have the same labels?

4.2.12 Include a site map and link to it from every page.

- Is there a site map?
- Is the site map linked from every page?
- Does the site map provide a quick overview of the whole site (rather than descriptions of the top level choices, a rehash of the main navigation or a list of every single topic on the site)?

4.2.13 Make pages easy to skim or scan.

- Are pages clean looking and well organized (versus cluttered or busy)?

- Is there a clear visual “starting point” to the page?
- If pages are dense with content, is content grouped or otherwise clustered to show what is related?
- Is it easy to tell what is content and what is advertising?
- Do task-supporting keywords stand out?
- Are images relevant to, and supportive of, the text content?
- If there are videos or animated sequences, do they support specific goals or tasks?

4.2.14 Make elements on the page easy to read.

- Is the default type size 12-point or larger?
    - If not, is there an obvious way on the page to increase the type size?
    - If not, does changing the type size in the browser enlarge all of the text?
- Is the type size on pull-downs and drop-down menus the same size as the text content? Does it change when the user increases the type size?
- Are headings noticeably larger than body content (18- or 24-point)?
- Is sans serif type used for body content?
- Are headings set in a typeface that is easy to read?
- Are there visual cues to direct users’ attention to important items that are in the left and right columns?

4.2.15 Visually group related topics.

- Is the amount of information—sparse, dense, or in between—appropriate for the audience and type of site?
- Are the most important and frequently used topics, features, and functions, close to the centre of the page rather than in the far left or right margins?
- Are task-related topics grouped together?
- Are frequently used topics, actions, and links “above the fold”?

4.2.16 Make sure text and background colours contrast.

- Are text and interaction elements a different colour from the background (not just a different hue)?
- Do the colours that are used together make information easy to see and find?
- Are clickable items highlighted differently from other non-clickable highlighted items?
- Are multiple types of highlighting minimized on each page?

4.2.17 Use adequate white space.

- Are there visual cues in the layout of the page that help users know there is more content “below the fold”?
- Is there at least 2 pixels of line space between clickable items?
- Is body text broken up with appropriate and obvious headings?

4.2.18 Make it easy to find things on the page quickly.

- Is the amount of text minimized; is only necessary information present?

- If there are introduction paragraphs, are they necessary?
- Are instructions and messages easy to recognize?
- Is there liberal use of headings, bulleted lists, and links to assist skimming?
- Do bulleted lists have the main points and important keywords at the beginning of each item?
- Do links have meaningful labels?
- Are buttons labelled clearly and unambiguously?
- Do button and link labels start with action words?

4.2.19 Focus the writing on audience and purpose.

- Is the content written in active voice, directed to “you”?
- Are sentences short, simple, and straightforward?
- Are paragraphs short?
- If humour is used, is it appropriate?
- Are headings, labels, and captions descriptive of associated content?
- Are conclusions and implications at the top of a body of text, with supporting content after? (inverted pyramid)

4.2.20 Use the users’ language; minimize jargon and technical terms.

- Does the site use words that older adults know?
- If there are technical words or jargon, are they appropriate for the level of domain expertise that the audience has?
- If there are new or technical terms, does the site help users learn what the terms mean?
- Are concepts and technical information (such as safety and effectiveness information about a prescription drugs) written in plain language?
- Are instructions written in plain language?
- Is the reading level appropriate for the capabilities of the audience and their literacy in the topic area? Is it easy to draw inferences and to understand the implications of text?

4.3 Emotional Heuristics

Source: [2]

4.3.1 Avoid calling the system "computer"

It might frighten elderly people. Call it by some familiar name (in this example it was a "new form of questionnaire").

PART B

Usability Tests and Ergonomics

5. Introduction for User Testing

In the following, we present the procedure, the sampling, and the results of the usability tests that CURE and JAMK have conducted in WP2. User-tests have been carried out in collaboration with potential end-users to identify shortcomings of the SeniorEngage platform.

In general, usability testing "involves users attempting representative tasks in representative environments, on early prototypes of computer interfaces" [1].
Usability tests are either expert based, automated by a software program or user based. We applied one expert based and two user based usability tests:

- a heuristic evaluation by usability experts (see section 6),
- a discussion session and an assessment by email presenting mock-ups of the platform to users (see section 7),
- final usability tests with young and already retired professionals presenting the functional prototype of the platform with the integrated graphical design to the participants (see section 8).

Conclusions about aspects or components that were confusing, misleading, or generally sub-optimal and therefore cause problems were gathered in this report to adapt the user interface to the target group of older adults.

6. Heuristic Evaluation

In general a heuristic evaluation is conducted by usability experts as a systematic inspection of a user interface design (UID) for usability. The goal is to find the usability problems in the design so that they can be attended to as part of an iterative design process. Heuristic evaluations involve having a small set of evaluators examining the interface and judge its compliance with recognized usability principles (i.e. the "heuristics").

The most commonly used heuristics are by Jacob Nielsen [1], details on the heuristics can be found in part A of this Deliverable. Concerning the “average user”, it represents more the figurehead of younger users than of older users [15].
In the case of the SeniorEngage project it is one of the main aims to design an interface that is accessible not only for young but also for elderly people. Therefore, special guidelines (i.e. heuristics) have been researched (see section 4).
For this first stage analysis of the mock-ups of the platform the evaluation was conducted by two project-independent usability experts from CURE. They checked every page of the SeniorEngage platform if they apply the heuristics.
In addition a cognitive walkthrough was conducted by a third person who was familiar with the project. In a cognitive walkthrough, an expert simulates users by accomplishing a series of task “through the eyes of a user” [14].
The vagueness, problems and barriers identified with these two methods have been recorded. The educed recommendations were incorporated into final mock-ups before they were sent to the developer partner CRIC.

7. First Usability Testing

The goal of the first usability testing was to get early feedback of potential end users on the structure and the general layout of the SeniorEngage platform. The testing was conducted by the JAMK University of Applied Sciences between the 8th of November and the 2nd of December 2011.

7.1 Method

The usability testing consisted of two parts:

- a discussion session and
- an assessment by email.

In the discussion session seven teachers participated (> 55 years old; 6 female, 1 male). In the assessment by email a woman from CAJYR, a male teacher and a woman from the JAMK University participated.

A brief introduction to SeniorEngage was presented and three mock-ups were analyzed: a profile page, a topic page and a discussion page.

Regarding the profile page (see Figure 1), questions about the amount of information and possible badges or rewards were asked. When presenting the topics page (see Figure 2) the idea of clustering interests in topics was presented. The discussion page mock-up (see Figure 3) was used to gather ideas how the user would interact and participate in this discussion.

7.2 Results

In the following, the results of the discussion session and the assessment by email are summarized.

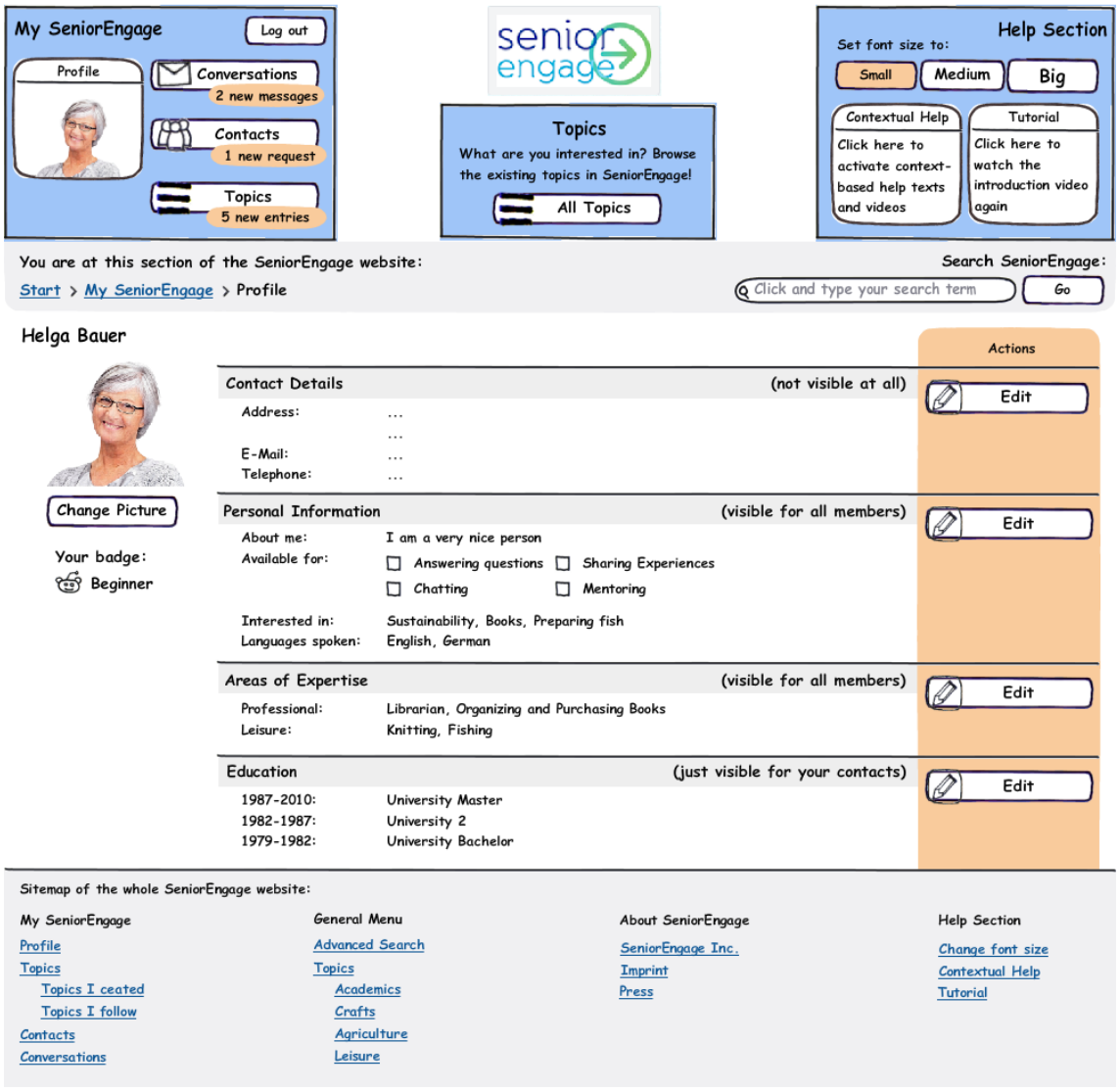


Figure 1: Mock up of the profile page.

Comments by the participants on the profile page mock-up (see Figure 1):

- *The page is clear and understandable, there is not too much information.*
- *I do not want to have rewards*
- *I was not able to find the place for "Age", is it necessary?*
- *Is the year important on the education section?*
- *The rewarding system is strange; there may be a danger that if you are using the platform infrequently you will not dare to use it all, if other persons are able to see your low activity levels.*
- *Can we classify the user according to frequency and name them e.g. frequent user, infrequent user?*
- *I do not want this classification being visible to all users, I want to define its visibility myself.*

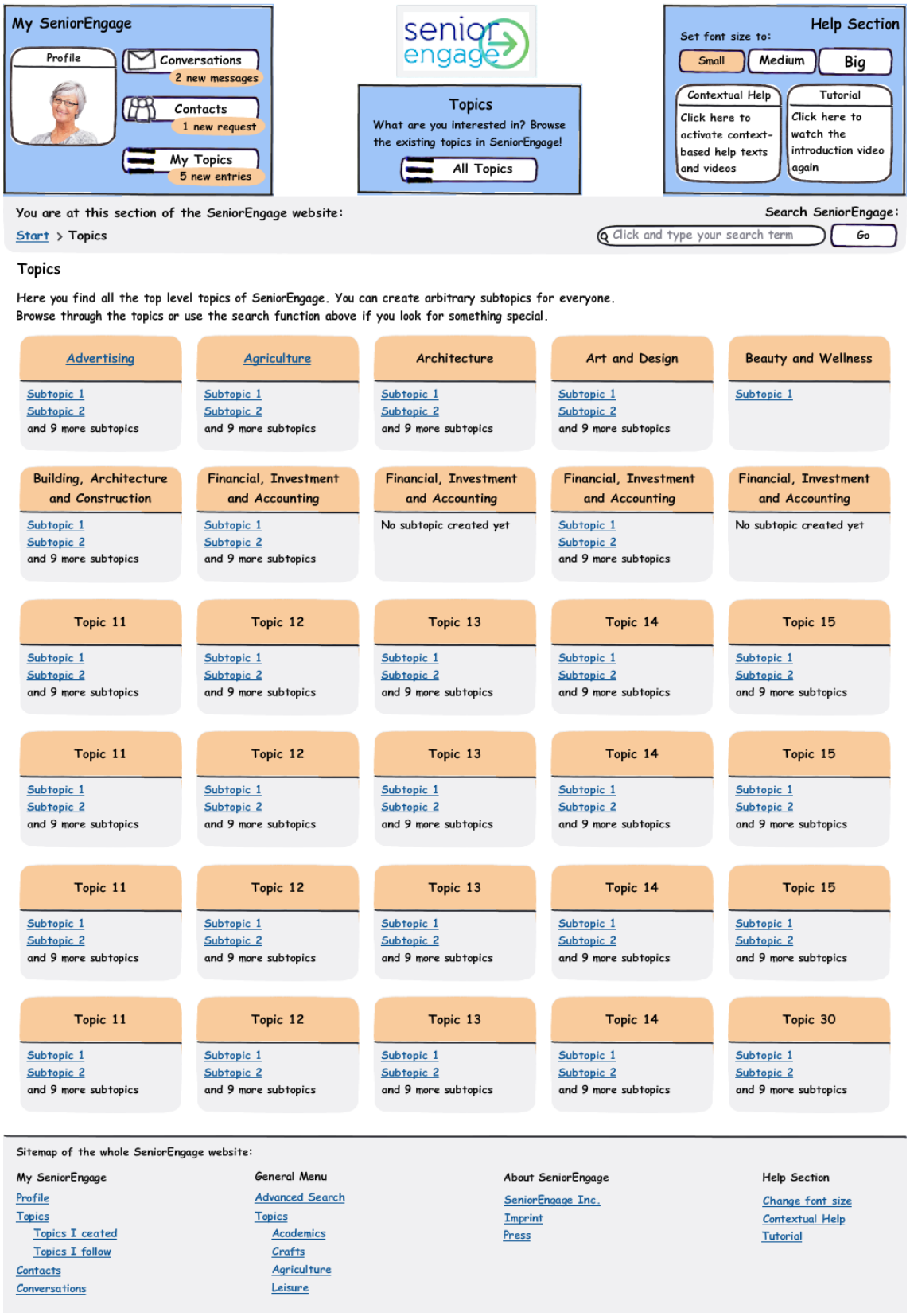


Figure 2: Mock-up of the topics page.

Comments by the participants on the topics page mock-up (see Figure 2):

- *Quite many boxes, it is dull to open many windows*
- *I will be interested in habits, politics, history, education etc.*
- *What about the classification systems like in libraries (UDK)?*
- *There are so many things on the page, the font is too small and you will need a very big screen!*
- *This is quite tangled*
- *The voluntary work is missing*
- *Massive, heavy*
- *Maybe it has to be like this, because the users may have a variety of interests*
- *Put icons/pictures on buttons*

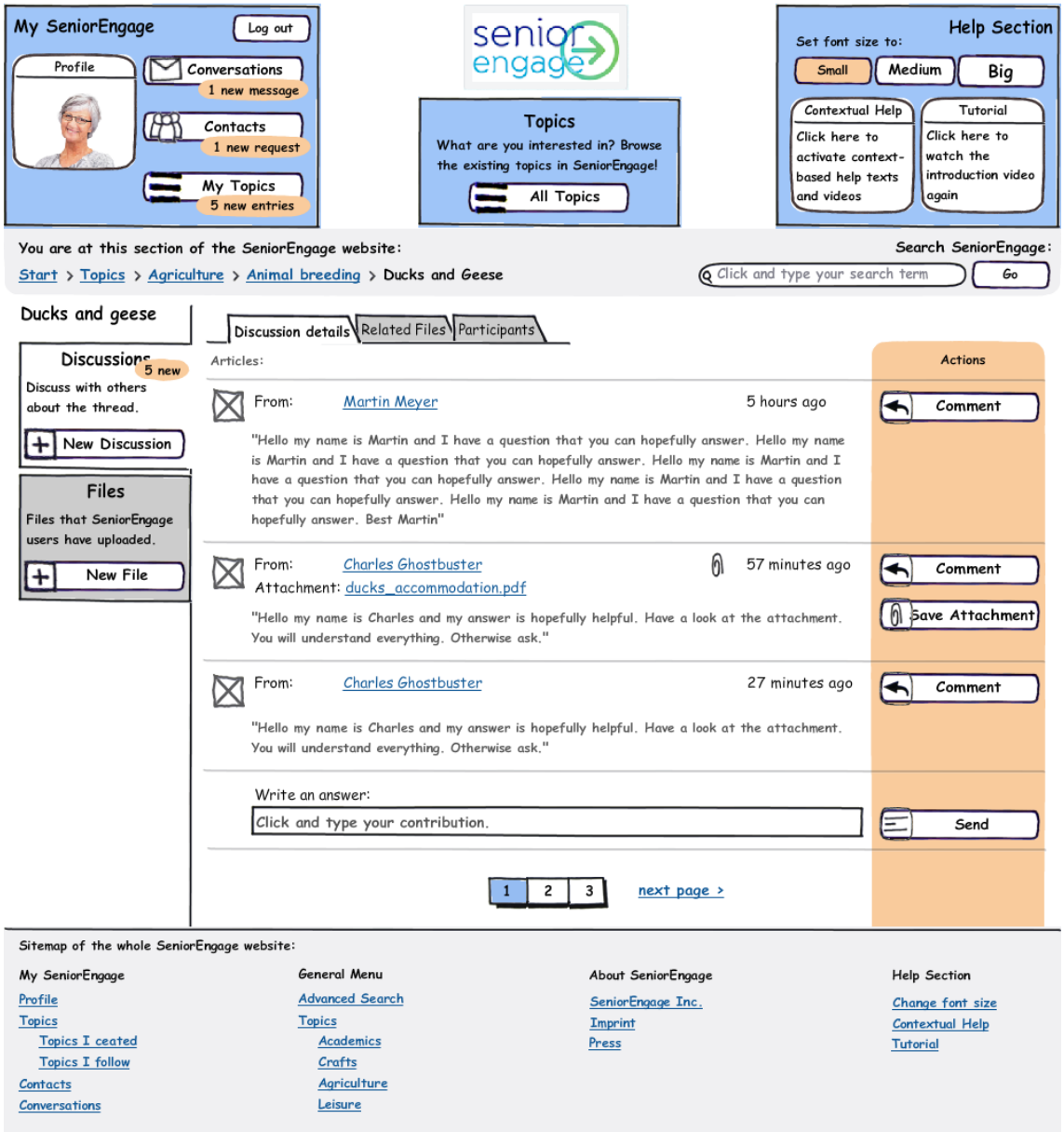


Figure 3: Mock-up of the discussion page.

Comments by the participants on discussion page mock-ups (see Figure 3):

- *If I write the text in the box "Write an answer" maybe it will send my answer to the original question, on the other hand there seems to be the "Comment" button also?*
- *I am not able to comment*
- *What are the "Files" on the left column or the "Related files" on the interleafs*
- *Discussion details, the title "articles" is it correct?*
- *Too many things on the page*

8. Final Usability Testing

Taking the results of the first usability tests into account the graphical user interface for SeniorEngage has been created and added to the functional prototype of the platform. In the final usability testing this prototype has been evaluated with the help of potential end users. The goal of this study was to investigate how retired professionals on the one hand and young professionals on the other hand could cope with the SeniorEngage platform in terms of usability and accessibility.

8.1 Method

We invited 48 persons to take part in the final usability testing (8 retired professionals and 40 young professionals). Every participant evaluated the prototype individually instructed by a supervisor.
The graphical prototype has been provided via a standard desktop PC and the Mozilla Firefox[1] Browser.
Before the actual testing of the SeniorEngage platform, we asked the participants about their experiences with the internet in general and social network sites in particular. Apart from basic data like age and hobbies, profession was an interesting aspect to know in the context of SeniorEngage. This pre-interview was finished with a question about expectations for a social network site with the goal of exchanging working experiences.
For the usability testing we presented a fictive person to every participant with name, profession and a short story about interests. The profile of this fictive person has already been registered to the platform and the participants were asked to log in with the accordant credentials. According to age and sex of the participants we used four different fictive persons.
Before the first login, the participants were asked to evaluate layout and structure of the start page. After login, they had to evaluate the home page and to conduct various tasks. These tasks were clustered to the four central functionalities of SeniorEngage:

Homepage and Contacts

1. Explore the homepage
2. Find and edit your profile (of the fictive person)
3. Access and inform yourself about your contacts

Topics and Subtopics

4. Search a given subtopic and have a look at the accordant discussions
5. Create a new subtopic
6. Write a short entry to a discussion of a given subtopic

Conversations

7. Send a message to a given contact of yours
8. Start a text-chat with a given contact of yours
9. Start a video-chat with a given contact of yours

[1] http://www.mozilla.org/en-US/firefox/features/

Sitemap

10. Explain the purpose of the sitemap

The participants were asked to speak out their thoughts loud so that we can understand easier the positive and negative aspects of the current prototype.
After each task the participants had to rate how good they were supported by the system. After every cluster, we asked about general impression, visual design and layout, expectations and ideas for improvement.

At the end of the study, the participants were asked in a post-interview how they liked the idea and the current realisation of the platform. Besides, we asked again about general impression, visual design and layout, expectations and ideas for improvement for their overall experience. A crucial question we asked was about how to draw their attention on SeniorEngage so that they would at least try it out and what name would be more suitable for such a platform.
To conclude the study, the participants filled out the standardized UTAUT questionnaire [12] in order that we comprehend potential behavioural intentions better.

8.2 Results

While the overall structure and layout was perceived quite positive the usability testing also unfolded many small bugs and also some usability problems. For a better oranganisation of the problems we assigned those problems to at least one of the four categories: (i) Language, (ii) Graphic, (iii) Structure, (iv) Bug and (v) Content. Also the pre- and post-interviews delivered some interesting insights about attitudes and expectations towards a social network site for exchanging experience between young and retired professionals.

8.2.1 Participants of the usability testing

8 retired and 40 young users from a broad range of professions participated in the usability tests. The retired professionals were all over 60 years old, the young professionals were not older than 40.

8.2.2 Insights from pre-interviews

All participants use the internet on regular basis for a broad variety of things. The retired professionals all use the computer and the internet on regular basis and six out of eight have experiences with social networking websites. In the younger user group, all participants regularly use the internet and 36 out of 40 participants are members of social networking websites.

8.2.3 Internal prototype problems

In this section we describe problems and errors within the current structure of the prototype. At first we describe some overall inconsistencies before we name detected

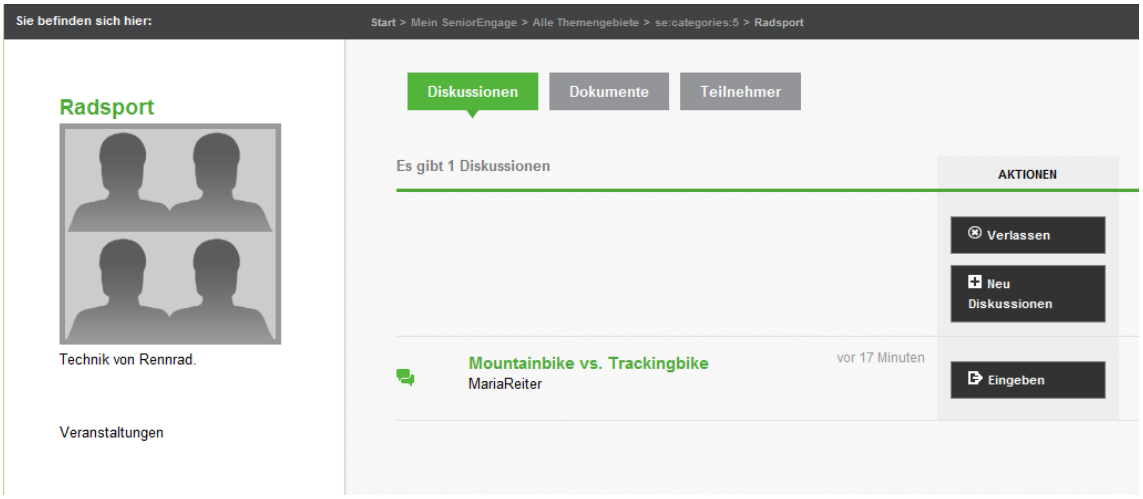
usability problems in detail for every page. We prioritized those usability problems by the help of three colors:

- Red (highest priority = needs to be fixed as soon as possible),
- Orange (medium priority = needs to be fixed for the field trials),
- Green (lowest priority = rather a recommendation).

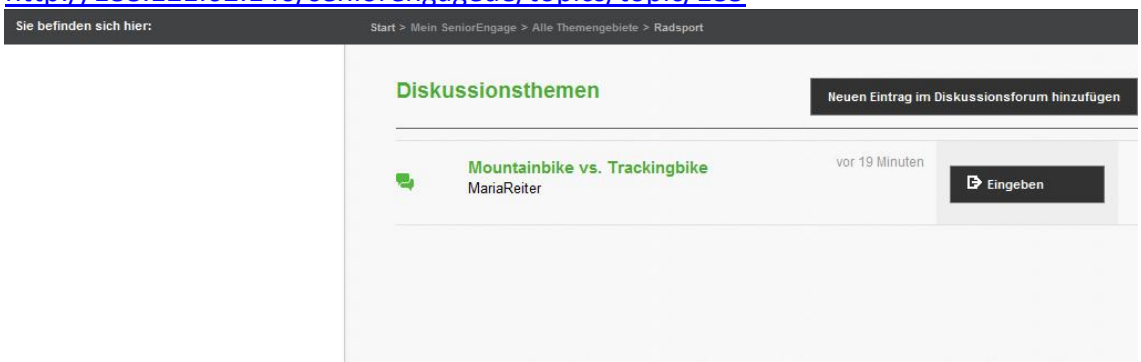
Topics = Groups

In general, topics and groups are supposed to be the same. This is very important otherwise the whole website cannot work in a correct way. When a user clicks at 'Meine Themen' (My topics) in the header there should be this page: http://188.121.62.146/seniorengagede/topics/member but with this content: http://188.121.62.146/seniorengagede/groups/member/MariaReiter. Currently, at the latter page all topics are shown.

Another internal error is inconsistency between various pages e.g. when clicking on a subtopic there are two pages:



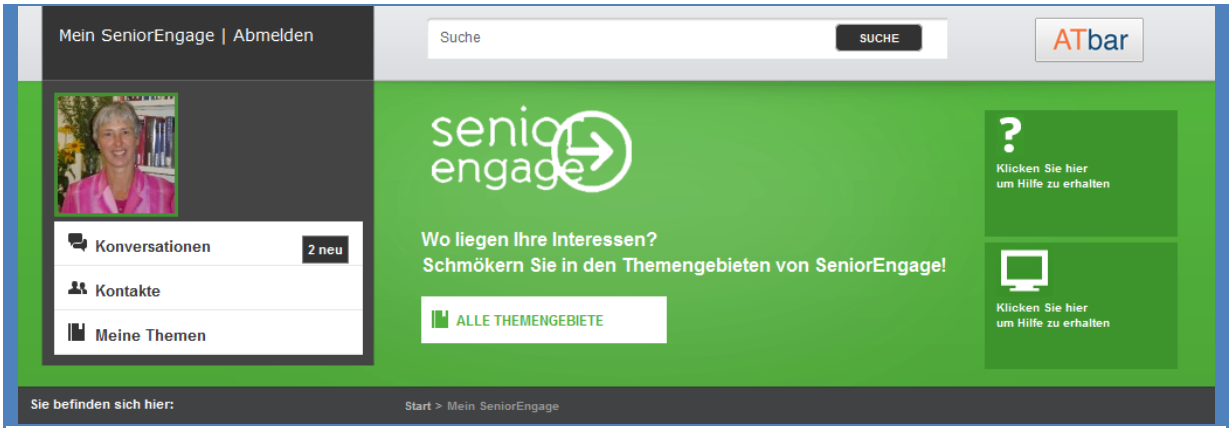
http://188.121.62.146/seniorengagede/topics/topic/185



http://188.121.62.146/seniorengagede/discussion/owner/185

When looking at the breadcrumb the error can be seen. In the first picture there is an additional cryptically term: "se:categories:5". These two versions are supposed to be the same.

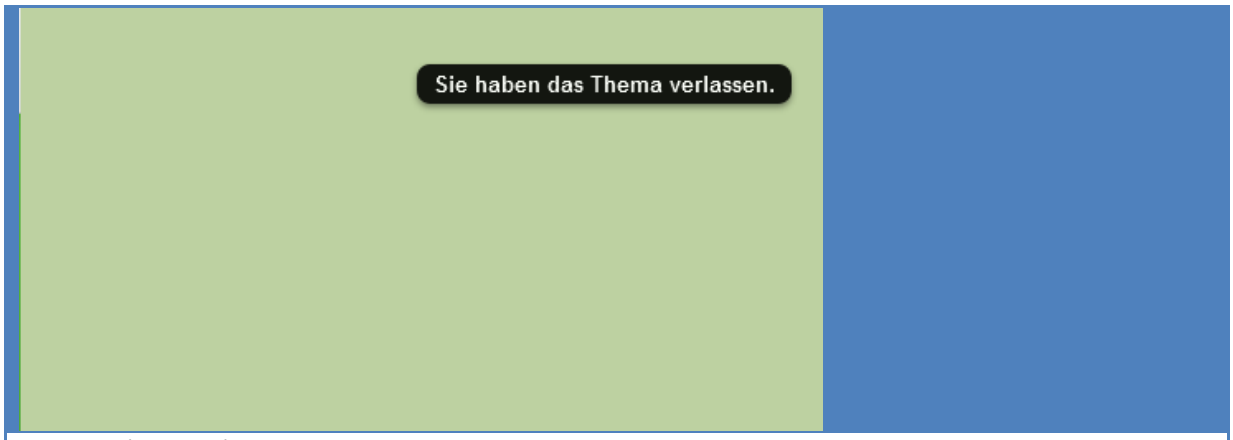
In general the contrast between white and green (text and background) as well as the font size was considered too low by retired professionals. The ATBar was hardly recognized and not considered as support to readability issues. It was suggested that, the language should be chosen before logging in. It was also mentioned that tooltips are missing (except for ATbar). An older adult mentioned that it was confusing to her to have "conversations" and "contacts". She rather would merge these.



Header (general)

#	Usability Issue	Solution	Category
1	The word "Erinnerung" does not describe the meaning of the feature.	Replace with "Passwort speichern".	Language
2	It is not visible that users have to click on the image to reach their profile.	Add text label "Mein Profil".	Graphic
3	The breadcrumb cannot be seen as it is too small.	Make the font size bigger and rearrange it to the left. Make it more prominent.	Graphic
4	Search does not find parts of words e.g. the search term "bank" does not find results of "banking"	Adapt the search algorithm accordingly. Furthermore, auto-completion would help a lot.	Bug
5	The term "Konversation" is confusing.	Replace with "Kommunikation"	Language
6	The difference between the two help possibilities is not clear.	Make the two possibilities discernible and understandable at the first sight.	Graphic/ Language
7	The profile picture is on a black background.	Provide a lighter background (e.g. light green)	Graphic

Comments by the participants:
I like the central position of "Alle Themengebiete".
The area for help is important and it is easy-to-find.
The Search bar is very important for me.
Why are there two help-buttons?
I always look at the help first.
I like the help functionalities, but it is difficult for me to differentiate between the two help functionalities.



Pop-ups (general)

#	Usability Issue	Solution	Category
1	The popups cannot be seen by older adults.	Use the modal window (with greyed out background) and place it in the center like provided by the graphic designer and place it.	Graphic
2	Popups should be dismissed by the user and not automatically.	Use the modal window (with greyed out background) and place it in the center like provided by the graphic designer and place it.	Graphic/Bug

Comments by the participants:
I like the central position of "Alle Themengebiete".
The area for help is important and it is easy-to-find.

8.2.4 Detailed feedback for the pages

In this section we describe for every page the detailed feedback of the participants in terms of usability issues and solutions as well as Comments. If problems occur at various pages they are just mentioned at first occurrence.

Start Page

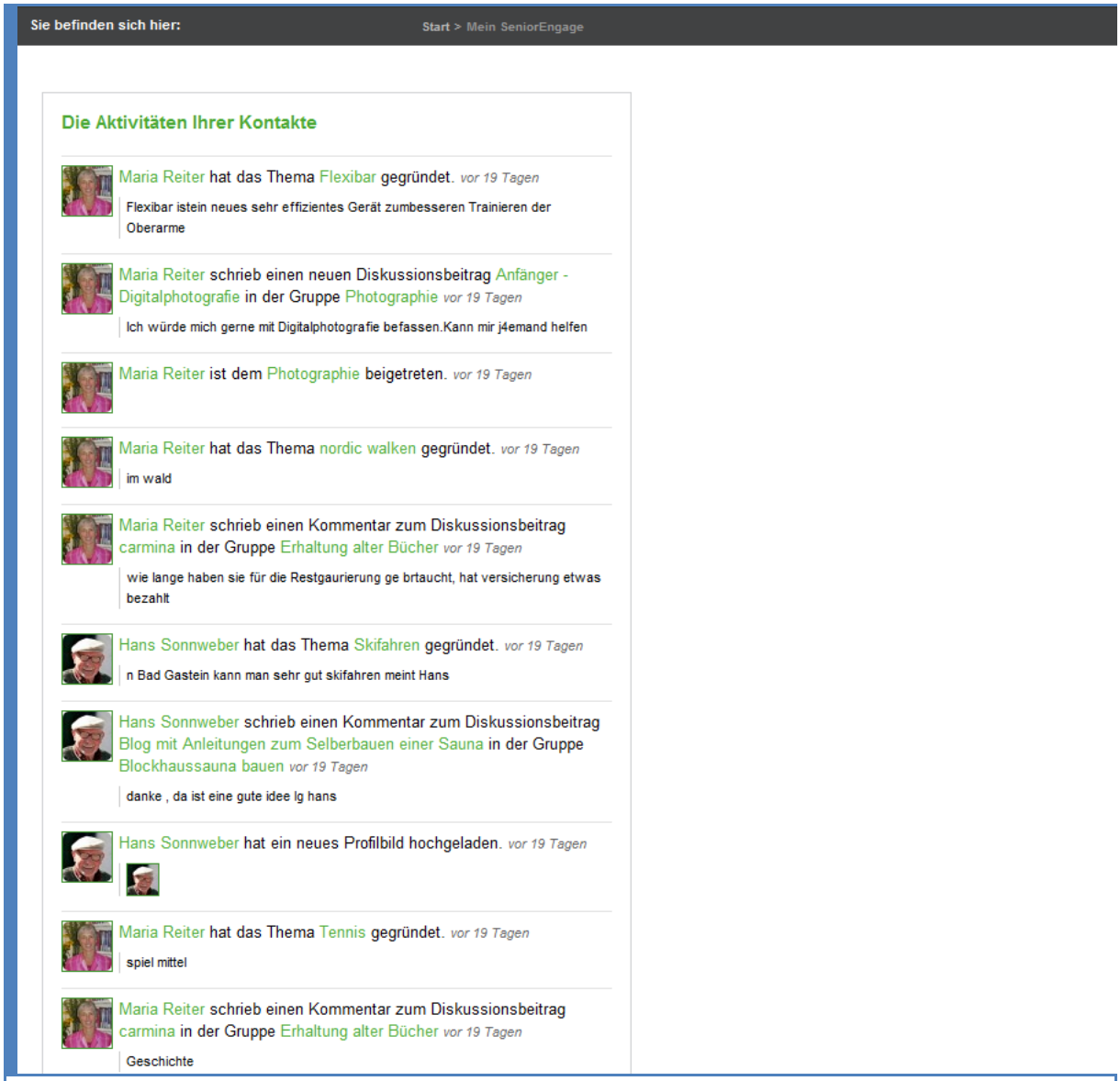
Start page - http://188.121.62.146/seniorengagede/

#	Usability Issue	Solution	Category
1	The word “Erinnerung” does not describe the meaning of the feature	Replace with “Angemeldet bleiben”	Language
2	The contrast of a white font before a green background is too low	Update Graphic design with higher contrast	Graphic
3	The label “Einloggen” for the input field is not appropriate.	Replace with “Benutzername”	Language
4	The font size should be bigger but the participants don’t know ATBar	Add more visible options to adapt font sizes	Graphic
5	On the left side (registering) the words “Gratis anmelden” are not appropriate	Replace “Gratis anmelden” with “Gratis registieren”.	Language

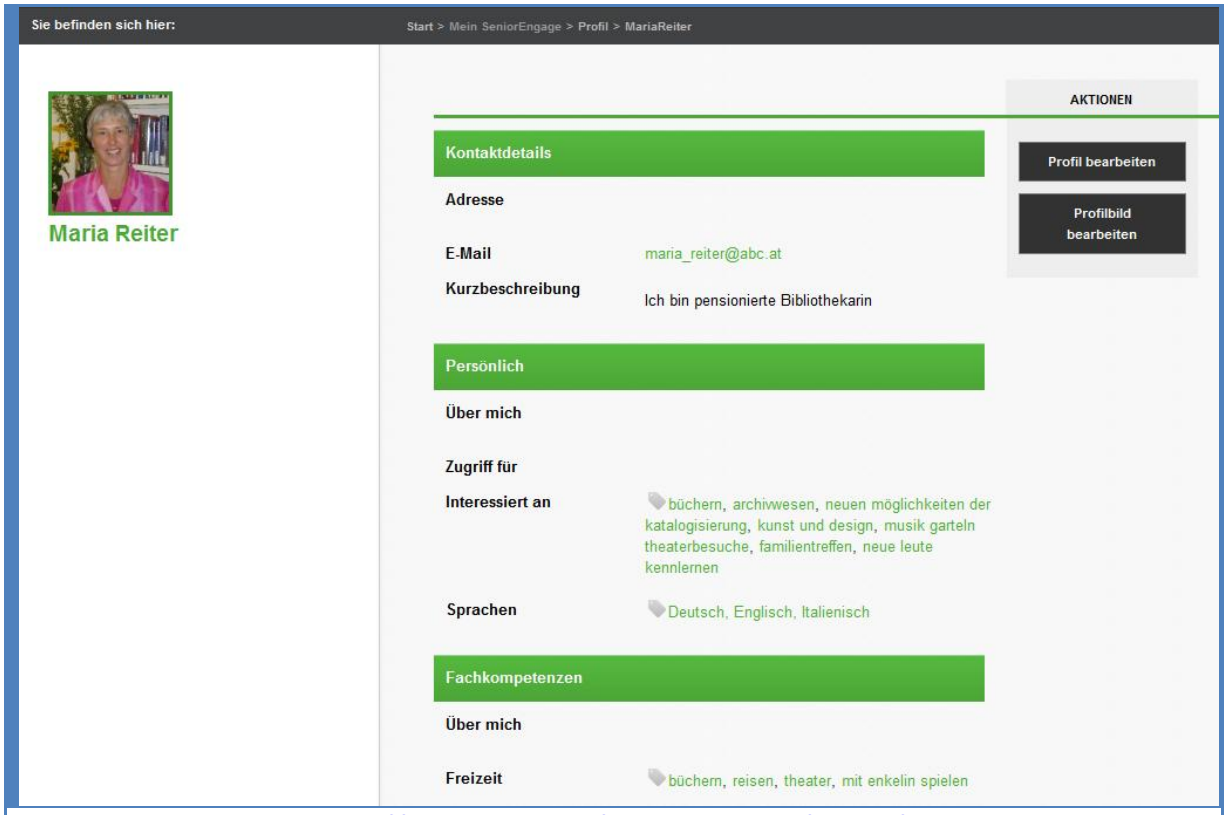
Comments by the participants:
It is a beautiful and clearly-arranged page.

I like the dominant green very much.

My SeniorEngage

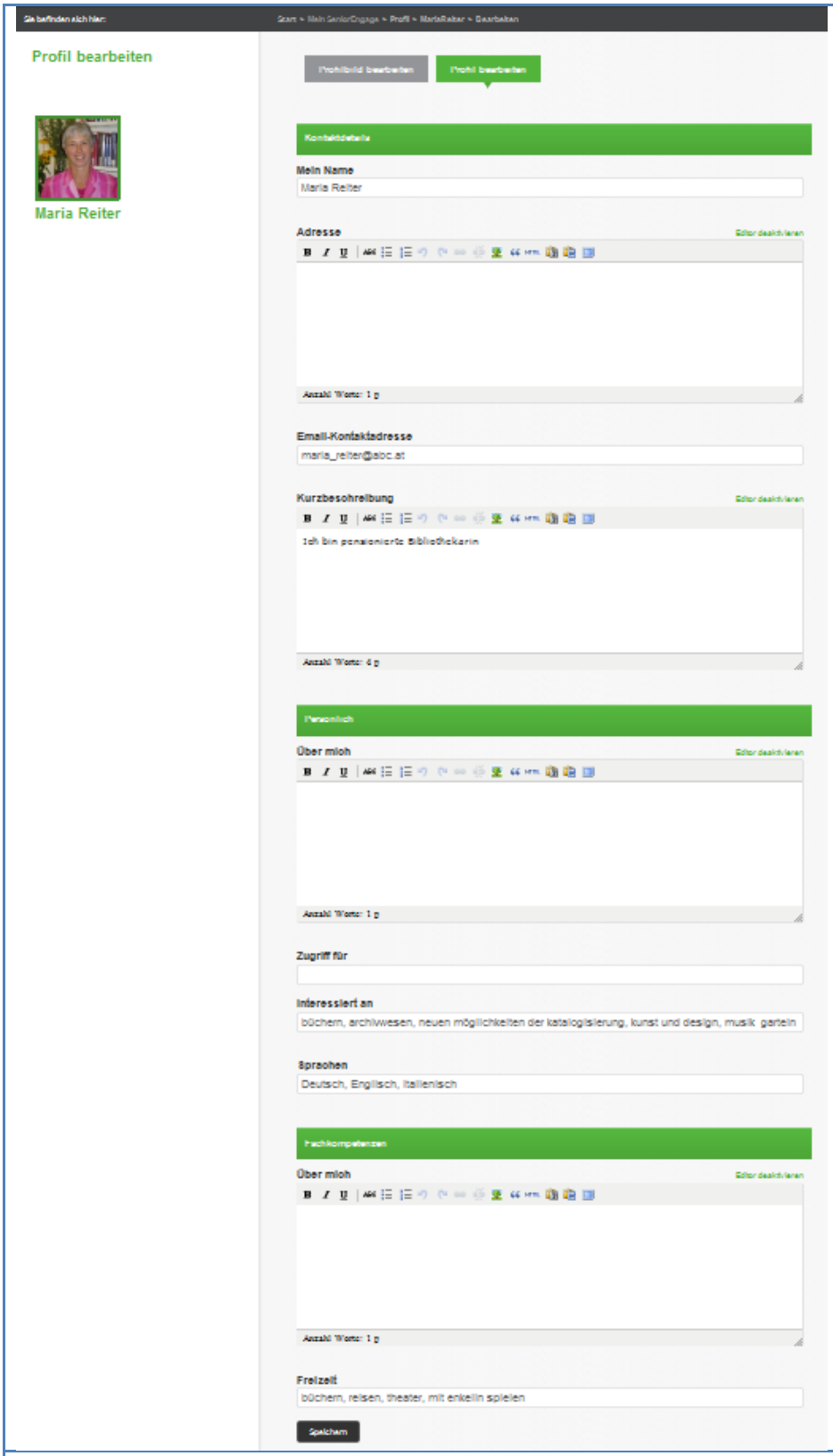


Home page - http://188.121.62.146/seniorengagede/			
#	**Usability Issue**	**Solution**	**Category**
1	The place on the right is wasted.	Adapt structure of the page	Graphic/ Structure
2	The contrast of a green font before a white background is too low.	Update Graphic design with higher contrast	Graphic



My Profile - http://188.121.62.146/seniorengagede/profile/MariaReiter

#	Usability Issue	Solution	Category
1	It is not clear that the delimiter for listings of attributes is comma.	Add help text: “Bitte trennen Sie Ihre Eingaben per Komma.”	Graphic/ Language
2	The delimiter for “Sprachen” is not working. It is indicated as one clickable link.	Separate tags by the delimiter	Bug
3	The highlighting in the header of the button “Kontakte” is wrong.	Highlight “Mein Profil” instead.	Bug
4	There are too many “Über mich” sections. It is not clear what to use them for.	It should be clearly separated between professional knowledge and spare time interests. Remove “Kurzbeschreibung” and rearrange the rest!	Graphic/Bug
5	It is not clear what “Zugriff für” stands for.	Better might be “Ansprechperson für”	Language/ Bug
6	It is not considered appropriate to give access to e-mail address and home address to everyone.	Settings should allow to give (not) access to certain information. However the base settings should hide this information.	Content
7	Additional information on age, professional career, education, a CV in general would be nice	Include a short CV	Content
8	The term “tag” is not clear to everyone.	Include the meaning of the word in the tutorial	Content

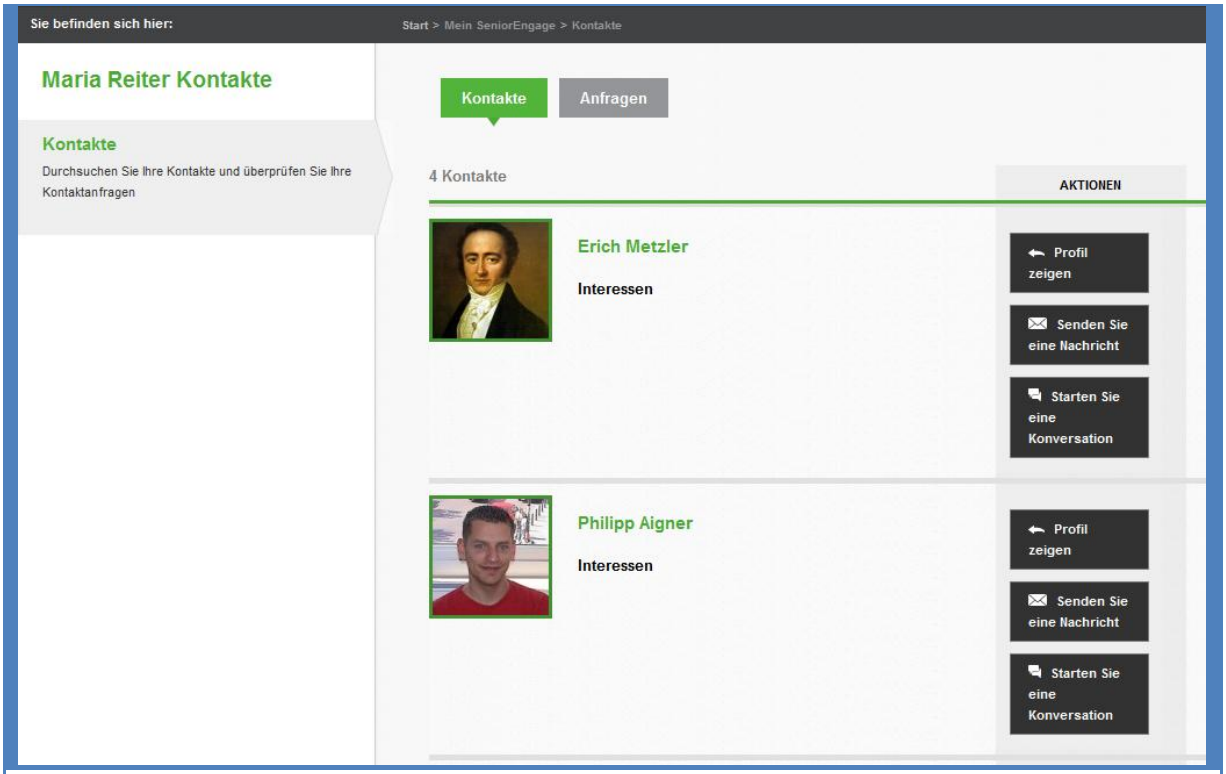


My Profile Edit - http://188.121.62.146/seniorengagede/profile/MariaReiter

#	Usability Issue	Solution	Category
1	The button “Speichern” at the bottom is not found. Especially older adults	Use consequently the “Actions” area on the right for those	Graphic

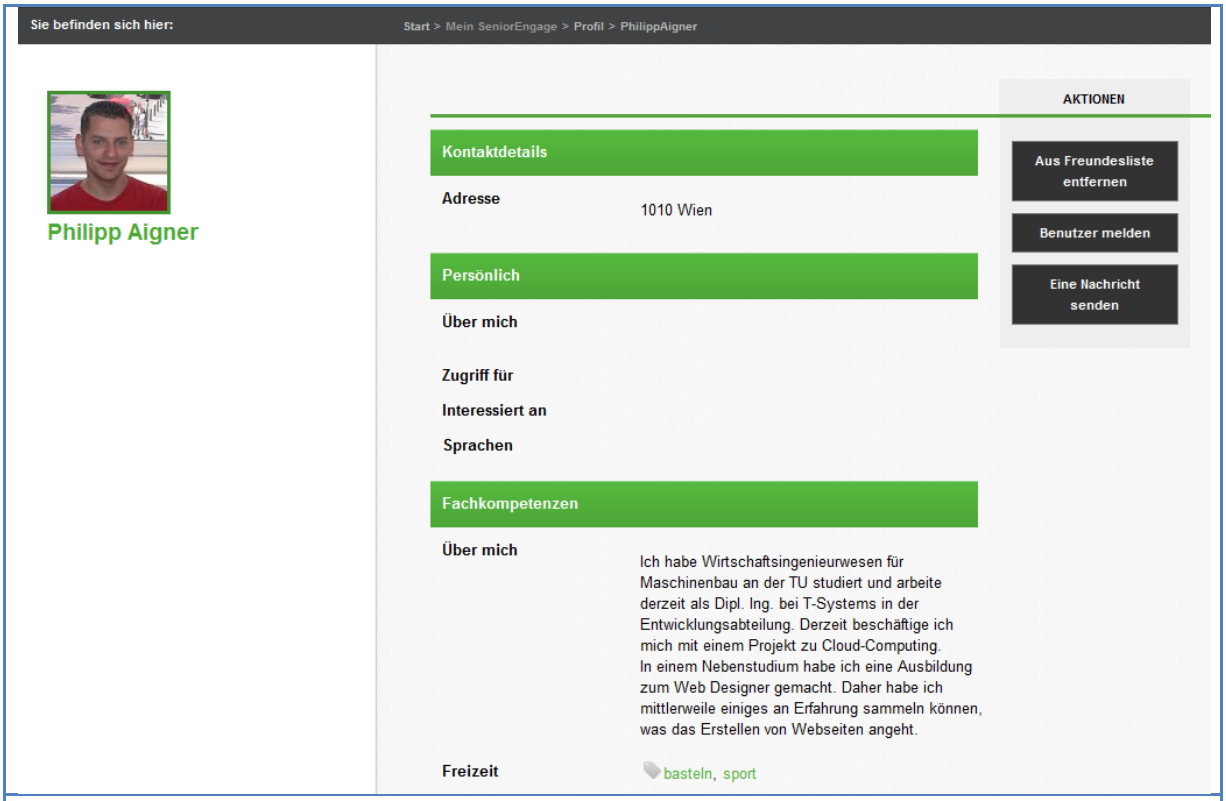
	don't scroll here.	buttons. It should be duplicated for every area ("Kontaktdetails", "Persönlich", "Fachkompetenzen").	
2	The input fields are too long.	The size should grow dynamically depending on the amount of text.	Bug

Contacts



My Contacts - http://188.121.62.146/seniorengagede/contacts/MariaReiter

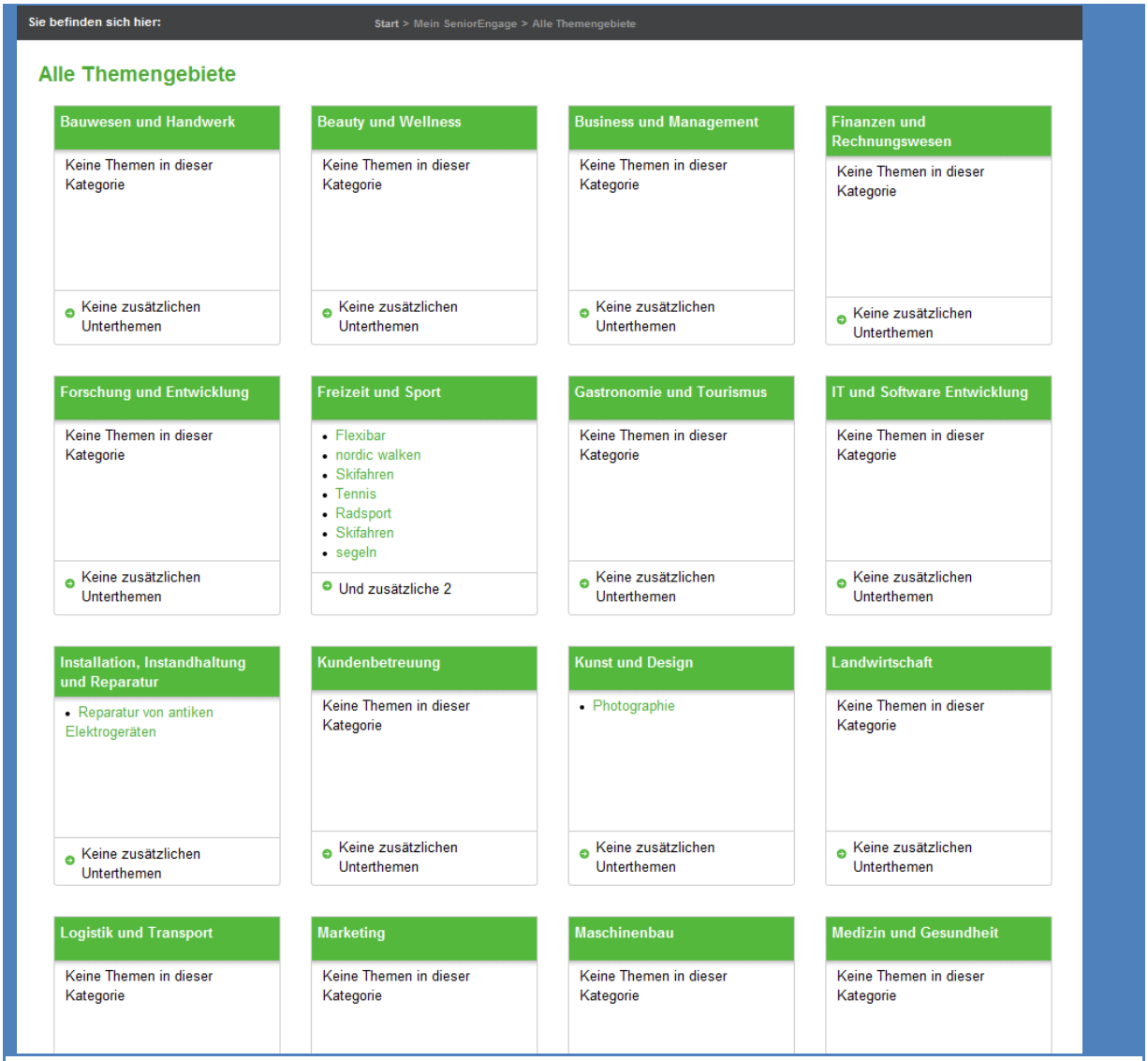
#	Usability Issue	Solution	Category
1	The black buttons are not in the middle of the actions bar.	Center the buttons and make them broader.	Graphic/Bug
2	In the German version the texts are too long.	Replace e.g. "Senden Sie eine Nachricht" with "Nachricht senden" and „Chat starten"	Language
3	The term "Anfrage" is hardly interpreted as contact request.	Replace "Anfrage" with "Kontaktanfragen"	Language
4	The order of the list is arbitrary	Put it in alphabetical order	Bug
5	There are no quick access options if there are many contacts	Allow quick access by click-able alphabetic characters	Graphic
6	It is not clear if a contact is online or offline.	There should be clear sign for both states	Graphic



My Contacts Details - **http://188.121.62.146/seniorengagede/profile/PhilippAigner**

#	Usability Issue	Solution	Category
1	In business context it is not appropriate to use “Freundesliste” for contacts.	Replace with “Kontaktliste”.	Language
2	What does “Benutzer melden” mean? Wherefore is this button?	Better remove this button.	Graphic

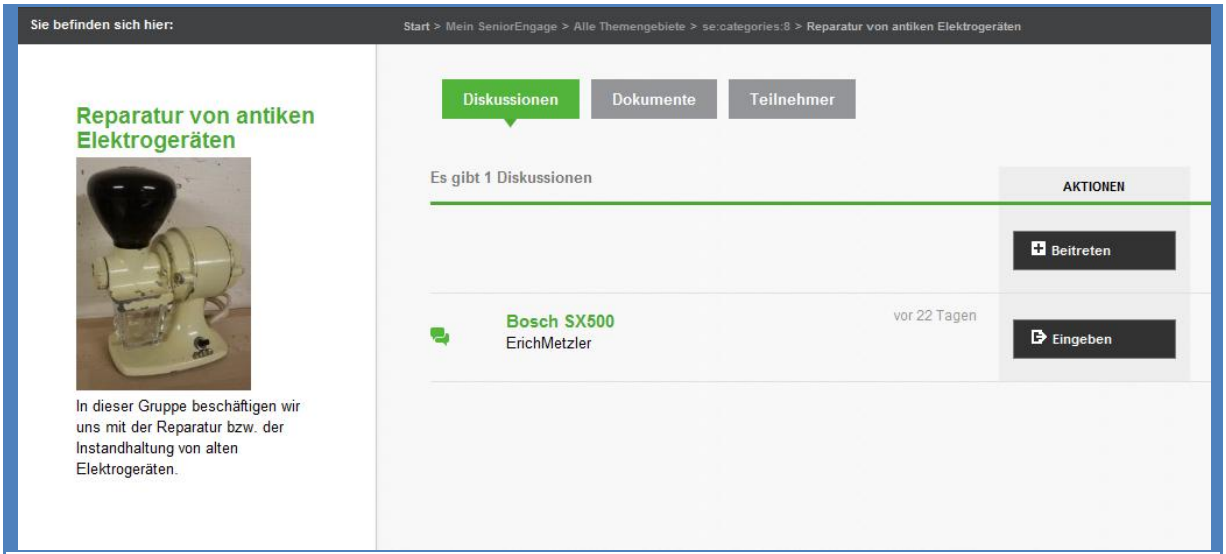
Topics



Topics Overview - http://188.121.62.146/seniorengagede/topics/all

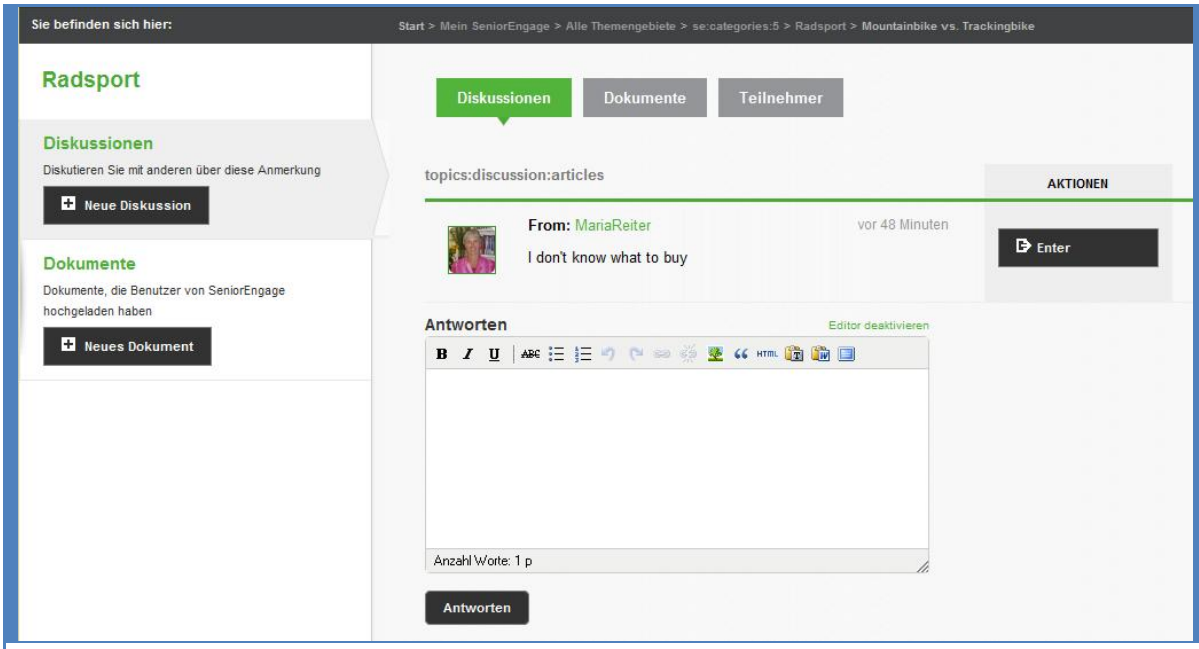
#	Usability Issue	Solution	Category
1	The term “keine zusätzlichen Unterthemen” should not be visible.	Delete	Graphic
2	Restricted subtopics should not be visible in the overview when not associated to the current user.	Remove these subtopics	Bug
3	The clustering of the topics is not optimal. Some users don’t find “Wellness” as it belongs to “Beauty”.	A more detailed catalogue might be better.	Language
4	The highlighting in the header of the button “Meine Themen” is wrong.	Highlight “Alle Themengebiete” instead.	Bug
5	Discerning the Topics would be easier if there were pictures highlighting them	Insert characteristic pictures for topics	Graphic

6	It is confusing that the picture-placeholder for a topic consists of 4 smaller picture-placeholders.	Make the picture-placeholder for a topic more explicit.	Graphic



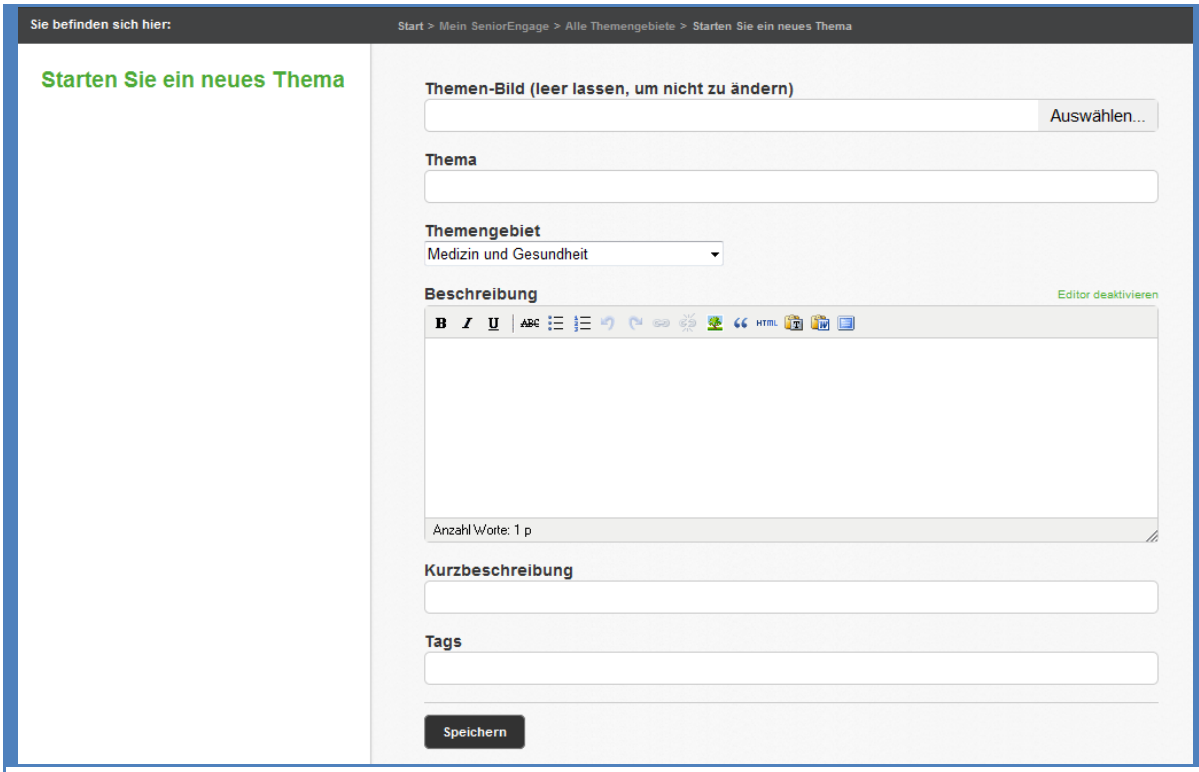
Subtopic Details - **http://188.121.62.146/seniorengagede/topics/topic/120**

#	Usability Issue	Solution	Category
1	It is not clear what “beitreten” means.	Replace with “Thema abonieren”. In general it should not be necessary to affirm the abo of a topic.	Language/ Bug
2	It is not clear what “eingeben” means.	Replace with “Beitrag anschauen”.	Language
3	The bread crumb shows a cryptic entry: “se:categories:8”.	This is supposed to be the topic where the current subtopic is included.	Bug
4	The term “Thema verlassen” might be interpreted as “go back to the page before”.	Replace with “aus Thema austreten”	Language



Discussion Entry - http://188.121.62.146/seniorengagede/topics/thread/218

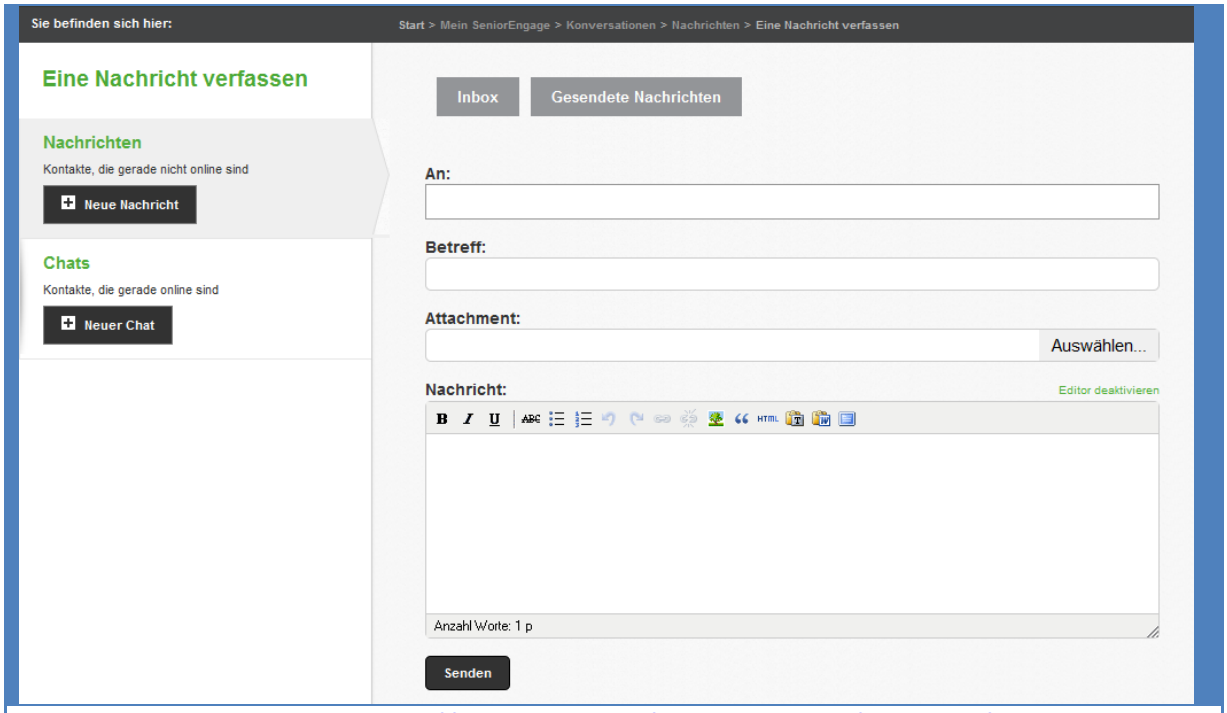
#	Usability Issue	Solution	Category
1	The header is the cryptic term “topics:discussions:articles”	Replace with actual header (like in the breadcrumb)	Bug
2	The button “Antworten” cannot be seen.	Use consequently the “Actions” area on the right for those buttons.	Graphic/Bug
3	The meaning of “Antworten” is not appropriate in this context.	Replace with “Beitrag veröffentlichen”	Language
4	The button “Enter” on the right is not translated.	Use the translation “Kommentar schreiben”. Actually it is not needed at all if the input field at bottom is shown always.	Language/ Bug
5	It is not clear what the tab “Dokumente” (documents/attachments) could mean	Rather write “Anlagen” (attachments)	Language



New Subtopic - http://188.121.62.146/seniorengagede//topics/add?category=15

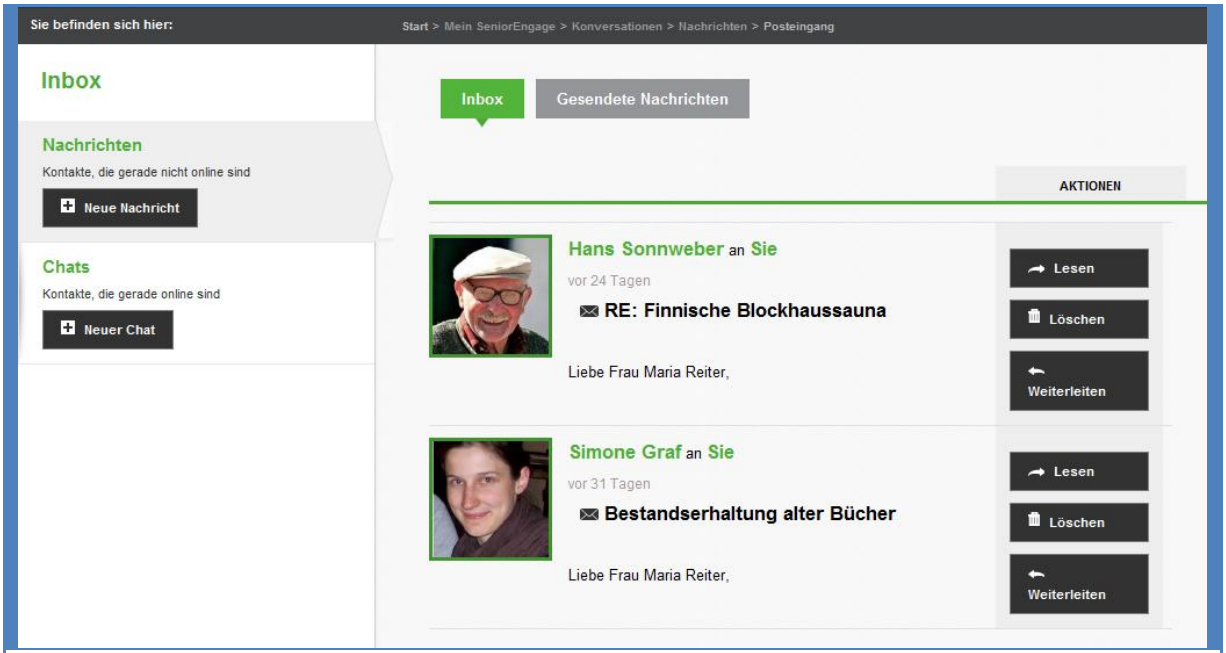
#	Usability Issue	Solution	Category
1	For older adults it is not clear what “tags” means.	Replace with “Beschreibende Stichwörter”.	Language
2	It is not clear why there is a long and a short description of the new subtopic?	Remove the input field for short description “Kurzbeschreibzung”	Graphic/Bug
3	The button “Speichern” cannot be seen.	Use consequently the “Actions” area on the right for those buttons.	Graphic/Bug

Conversations



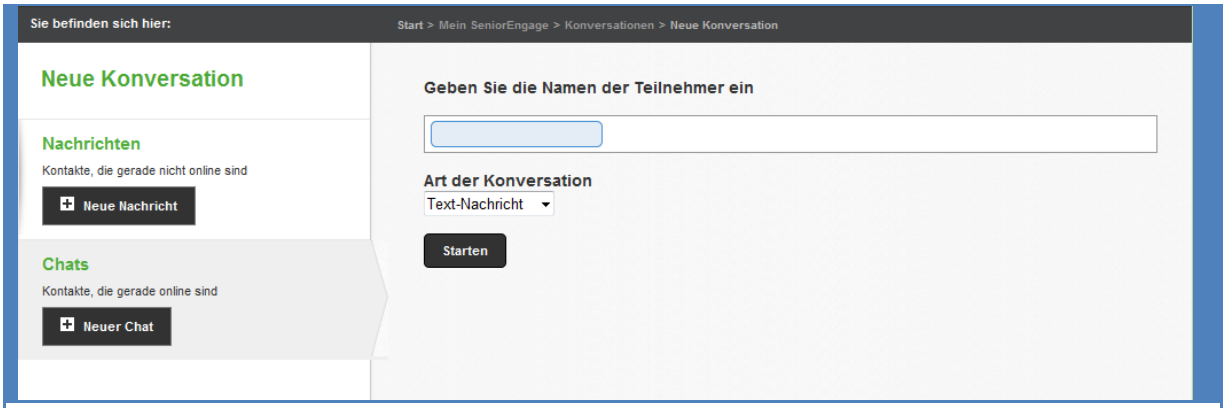
New Text Message - http://188.121.62.146/seniorengagede/messages/compose

#	Usability Issue	Solution	Category
1	The word “attachment” should be translated as well.	Replace with “Anlage”.	Language/ Bug
2	Concerning the input field “To”: The users often don’t remember the correct spelling of names.	It should be possible to access the contact list.	Graphic/Bug
3	Concerning the input field “To”: It is required to start with the first name. If typing the name the contact is not found	Auto-Completion should work with name and first name	Bug
4	The placement of the button “Senden” does not fit in the interaction concept	Use consequently the “Actions” area on the right for those buttons.	Graphic/Bug
5	The word “Inbox” should be translated as well.	Replace with “Posteingang”.	Language/ Bug



Messages Overview- http://188.121.62.146/seniorengagede/messages/inbox/MariaReiter

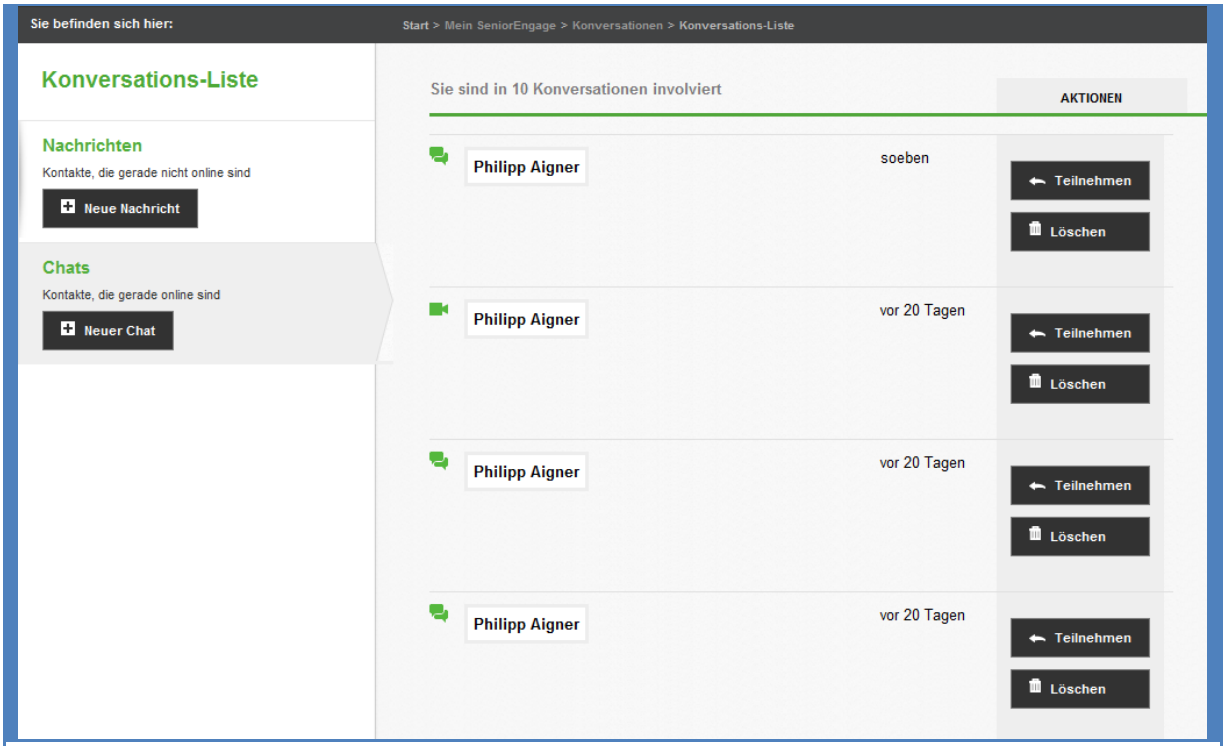
#	Usability Issue	Solution	Category
1	The actions bar on the right is smaller than its header.	It should be as broad as the header. Also the buttons become some pixels broader then	Graphic/Bug
2	When a user clicks in the header on “Conversations” this message list (see figure above) is shown. However, ”Conversations” includes messages and chats.	In this case there should be a list of chats and messages.	Structure
3	The word “Inbox” should be translated as well.	Replace with “Posteingang”.	Language/ Bug



New Text Chat - http://188.121.62.146/seniorengagede/conversations/create

#	Usability Issue	Solution	Category
1	Concerning the input field “To”: The users often don’t remember the correct spelling of names.	It should be possible to access the contact list.	Graphic/Bug
2	Concerning the input field “To”: It is	Auto-Completion should work	Bug

	required to start with the first name. If typing the name the contact is not found	with name and first name	
3	"Art der Konversation": the two types are named "Nachrichten" instead of "Chat"	Let the participants choose between "Text-Chat" and "Video-Chat"	Language
4	The placement of the button "Starten" does not fit in the interaction concept	Use consequently the "Actions" area on the right for those buttons.	Graphic/Bug
5	It is very confusing to see the chat overview list after clicking on "Starten".	After starting a new chat it should be opened immediately.	Bug

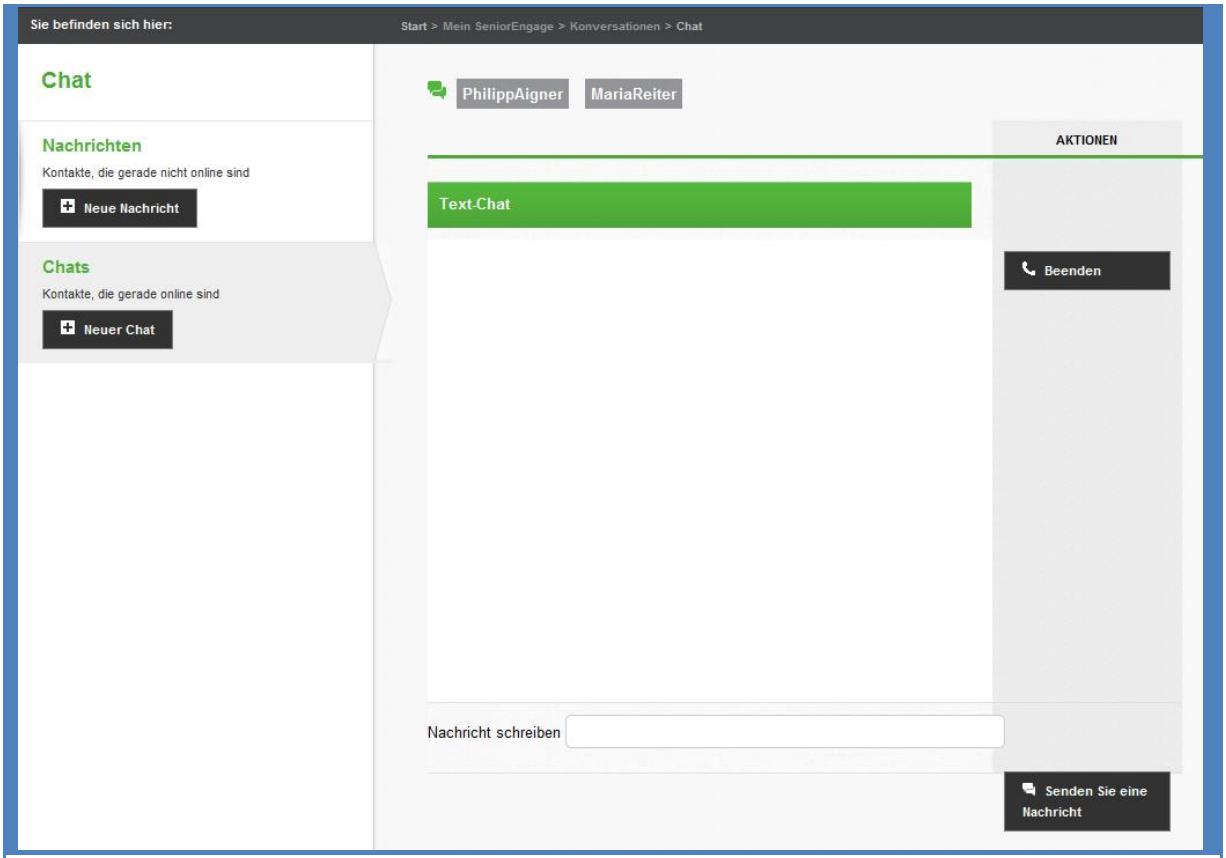


Chat Overview List - http://188.121.62.146/seniorengagede/conversations/list

#	Usability Issue	Solution	Category
1	The count of the conversations in the header is not working properly.	Display the right amount of entries.	Bug
2	It is very uncommon to create a new entry to the list if a chat with the same person is created.	Continue the existing chat when talking to the same contact again (like in Skype)	Bug
3	There is a lot of space not used in the list.	Display the latest chat message of text chats in this overview list. This is also a clear indicator between text and video chat.	Graphic
4	It is not clear if a contact is online or offline.	There should be clear sign for both states	Graphic
5	Text-Chat and Video-Chat signs are	Make Text-Chat and Video-Chat	Graphic

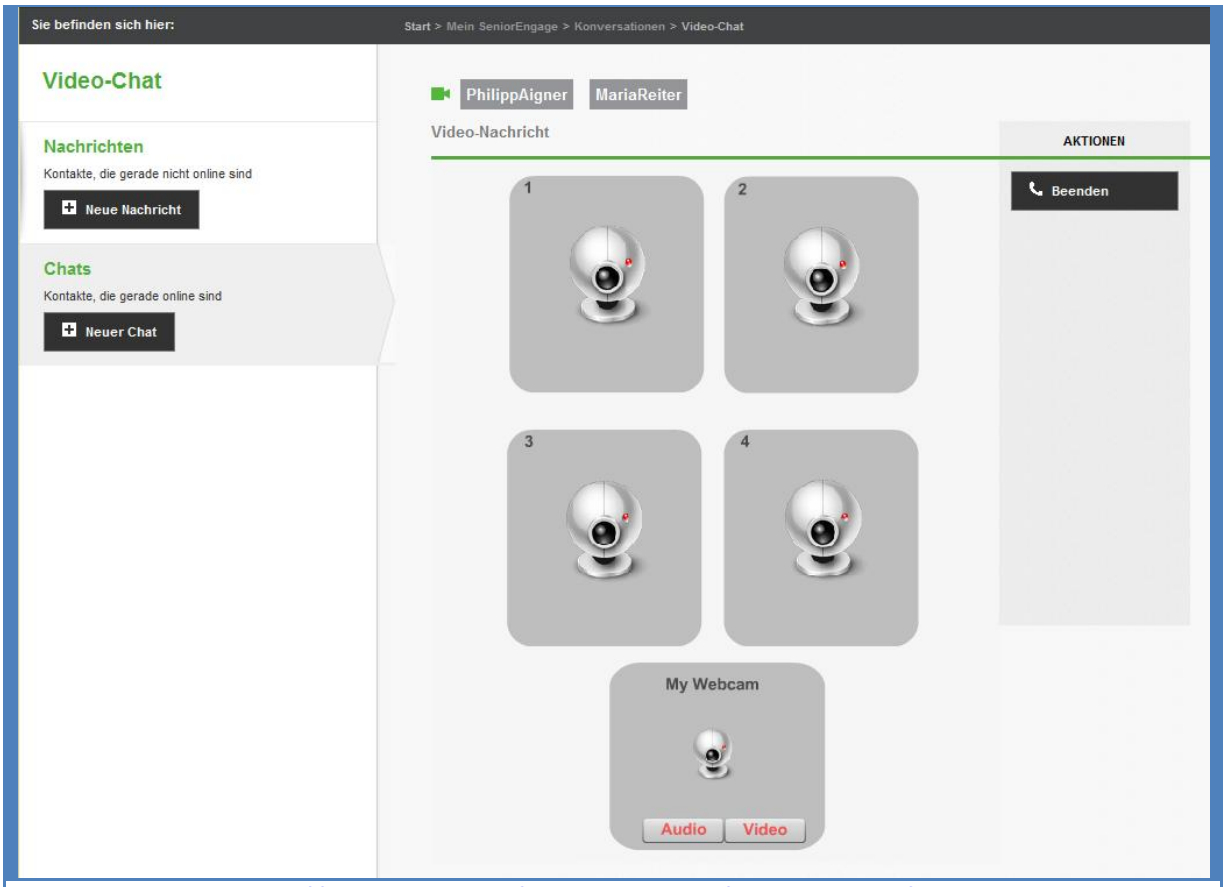
	too small.	signs bigger.	
6	"Teilnehmen" does only work when the contact is offline.	In case the contact is offline write "Ansehen".	Language
7	It is not clear to the participants, why they have to additionally click "participate" ("Teilnehmen"), after they sent an invitation for a chat.	To make the procedure less complex leave that "step" out.	Graphic/Structure

Comments by the participants:
The differentiation between text and video chat is clear to me, only the symbols should be bigger.



Text Chat - http://188.121.62.146/seniorengagede/conversations/conversation

#	Usability Issue	Solution	Category
1	On most screens the text input field lies outside the visible screen	Adapt the position of the input field according to the screen solution and make the text-entry window variable.	Bug
2	The older chat messages with the same contact are not visible	Continue the existing chat when talking to the same contact again (like in Skype)	Bug
3	The input field and the button to send a message are bumped out of the graphical layout	Arrange them appropriately	Bug

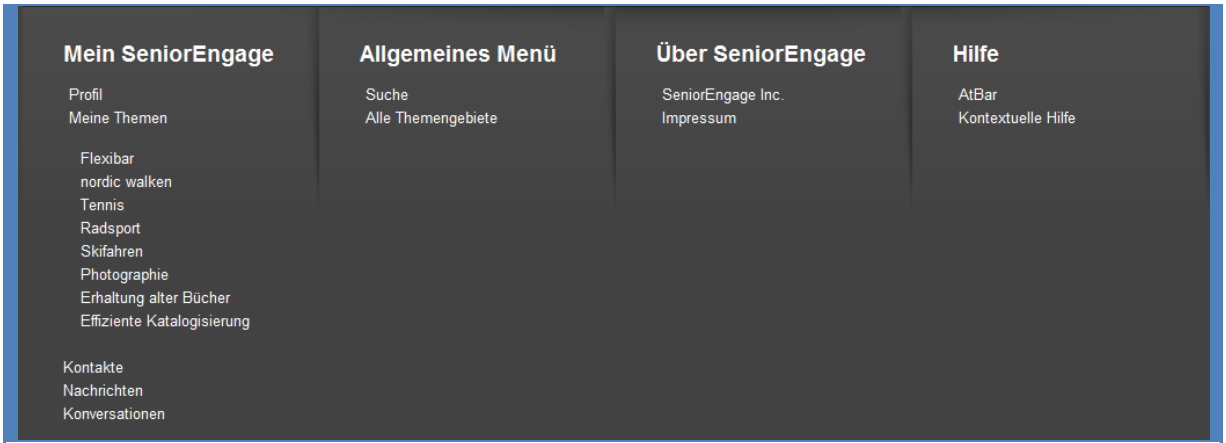


Video Chat - http://188.121.62.146/seniorengagede/conversations/videoconversation

#	Usability Issue	Solution	Category
1	There are always five placeholders for videos.	It would be better to arrange them dynamically depending on the amount of participants (like in Skype)	Graphic
2	The actions bar on the right is shorter than the other content	Stretch the bar according to the length of the content	Bug
3	A lot of space is wasted when all 4 possible video-chat partners remain displayed.	Implement a possibility to enlarge a window.	Graphic

Comments by the participants:
The video chat is great.

Sitemap



Sitemap - http://188.121.62.146/seniorengagede/

#	Usability Issue	Solution	Category
1	The left column is much longer than the other ones.	A restructuring would be helpful.	Graphic
2	Putting “Meine Themen” (My Topics) on the sitemap might leads to a very long section which does not provide an appropriate overview.	Provide only topics and make them open for subtopics.	Graphic
3	Not all items in the sitemap are clickable.	All items need to be linked to their page (e.g. Allgemeines Menü”)	Graphics

Comments by the participants:
I don’t need a sitemap.
A sitemap is very useful. It is great to have a permanent overview!

8.2.5 Insights of final interview and questionnaire

Comments by the participants:
You only need about 10 minutes to setup your profile and to understand how the website works.
I don't like the logo. I do not like the circle with an error in it. I do not see the meaning.
The website is very sophisticated but is still in its infancy.

Name suggestions for SeniorEngage:
A list of the suggestions for alternative names of SeniorEngage can be found in Table 1. Most suggestions came from the young professionals.

potential names	utterance by young or retired professional
Young Seniors	young
Generation-Conversation	young
something like: SeniorSupport	young
something with: mentor	young
Young-Meets-Old	young
Senior-Meets-Junior	young
Business-Sparetime-Information-Plattform	young
Seniorentipp	young
Seniorenforum	young
SeniorCommunity	young
InterGenerational	young
something: senior, junior	young
Young-Asks-Old	young
Young-meets-Old	young
AgeOfWisdom	young
ExchangingExperience	young
HelpTogether	young
SeniorExperience4All	young
SharedKnowledge	young
ExpertConsult	young
SeniorsShare	young
SeniorsCouldHelp	young
SeniorJuniorExchange	senior

Table 1: Suggested alternatives name for the SeniorEngage platform.

How will I find SeniorEngage:
On Google?
Word of mouth recommendation
Rather not about a senior-organisations
Through newspapers, websites, TV, Newsletters

9. Summary

The results of the usability tests show the potential of the SeniorEngage platform. Nevertheless, shortcomings were identified. In particular attitudes toward the rewarding system, evaluations about the amount of information presented to the users, the arrangement of information, misunderstandings regarding wording as well as general attitudes toward the graphical user interface were collected.

During the first usability testing in Finland users stated that they do not want rewards. A participant mentioned that the rewarding system may cause that members who use the platform infrequently do not use it at all, because they do not want anyone to see their low activity level. Therefore, no rewarding system was implemented in the first prototype. Nevertheless, some other participants of the focus groups were asking for a mild rewarding systems to motivate the users and to provide an idea about who is actually present on the platform. Therefore badges (e.g. a badge for setting up the profile or for sending a message to another user) have been implemented for the final version.

The resonance to the amount of information on the profile page was positive, although users suggested modifications regarding privacy. They wanted to define by themselves which information is visible to whom. The topics page was criticized because of the amount of information presented to the users but participants also mentioned the positive aspect of a broad variety of topics. A suggestion for modification was to only present non-restricted subtopics and a more detailed clustering of the topics to facilitate finding certain topics. Nevertheless, the senior participants were very keen on using the search functionality. Therefore, it will be extremely important to provide a proper working search.

Several misunderstandings regarding wording could be collected, e.g. the term “tag” was not clear to many users as well as the differences between the categories “conversation”, “chat”, and “mail”. Also for the German version of the platform all English terms should be replaced with common German terms. Additionally, e-learning and tutorial material should be provided on terms like “tag”.

Regarding the graphical interface, participants mentioned that the contrast of white letters on a green background is a bit too low and the font size should be bigger. Also ‘Save’ buttons should be located closer to the text-input. The usability tests showed that especially the senior participants often do not scroll down.

The results and the implications will be incorporated in the development of the SeniorEngage platform to enhance usability and user experience.