

Design and Implementation of a Mobile Application for the Collaborative Structuring of Knowledge-Intensive Processes

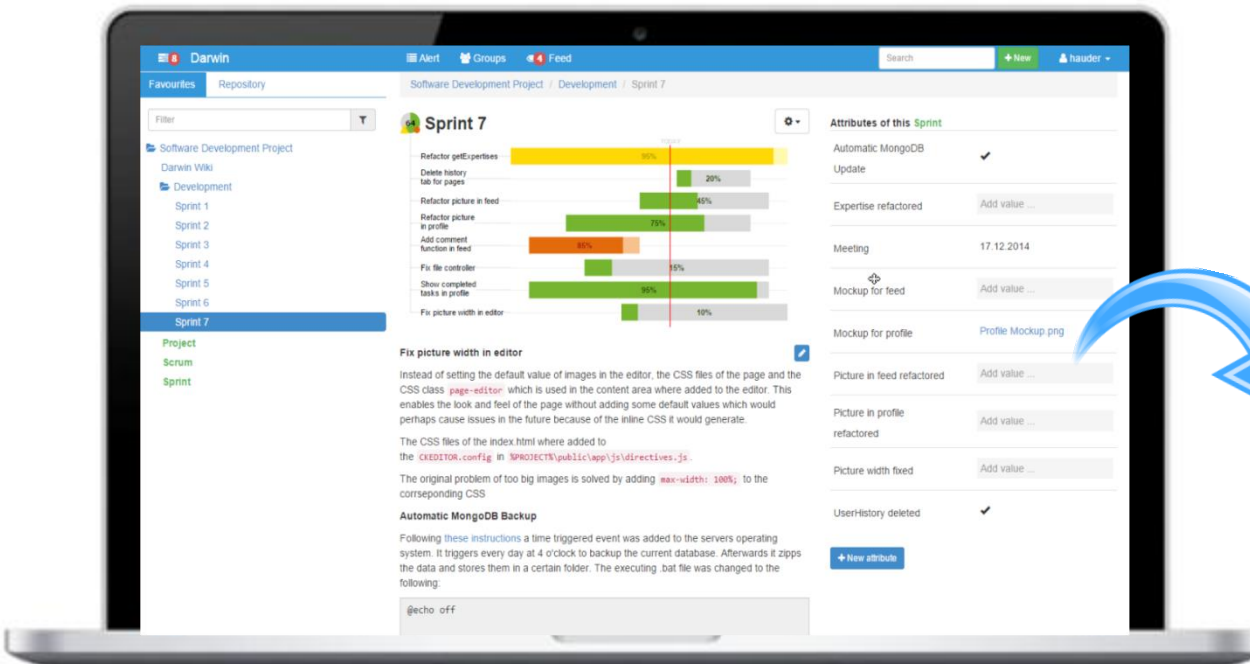
Natascha Abrek

05.10.1015

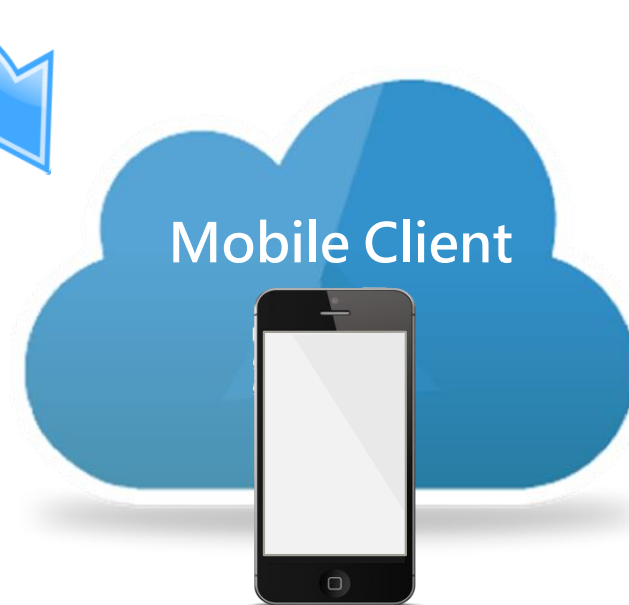
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www.matthes.in.tum.de

- 1. Motivation**
- 2. Review of Existing Applications**
- 3. Implementation**
- 4. Live Demo**
- 5. User Evaluation**



Darwin
Empowering Users to
Collaboratively Structure KIPS



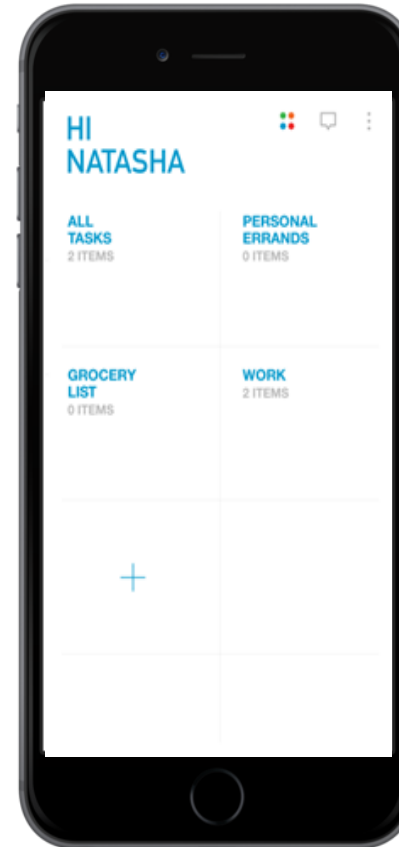
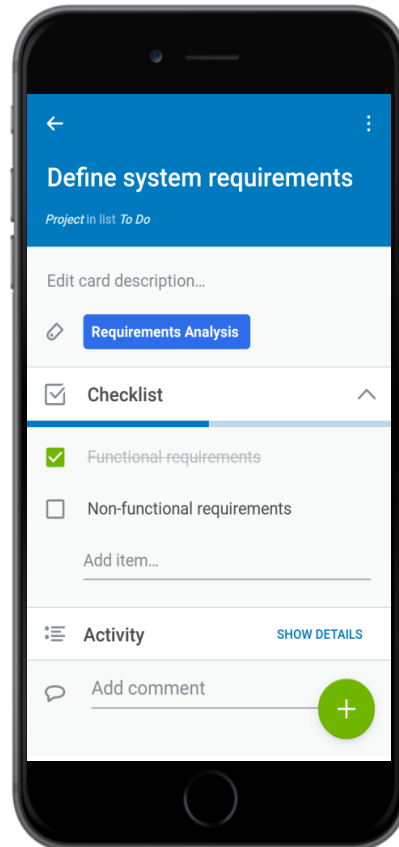
- Wiki pages as work plans with timeline
- Creation and generalization into work templates
- Simple structuring concepts as metaphors

✓ Pros

- Intuitive UI
- Calendar feature
- Easy Creation of boards and cards for projects
- Collaboration within a team

✗ Cons

- No charts for project progress and tracking
- No wikis for boards, only simple descriptions



✓ Pros

- Simple
- Intuitive UI
- „Any.do Moment“

✗ Cons

- No sorting of tasks by dates
- No web app, only chrome extension
- No wiki, only notes for tasks

Task-Centered Mobile Applications II



Pros

Simple and easy to use

Add notes via email
and Google Now

Collaboration with
comments



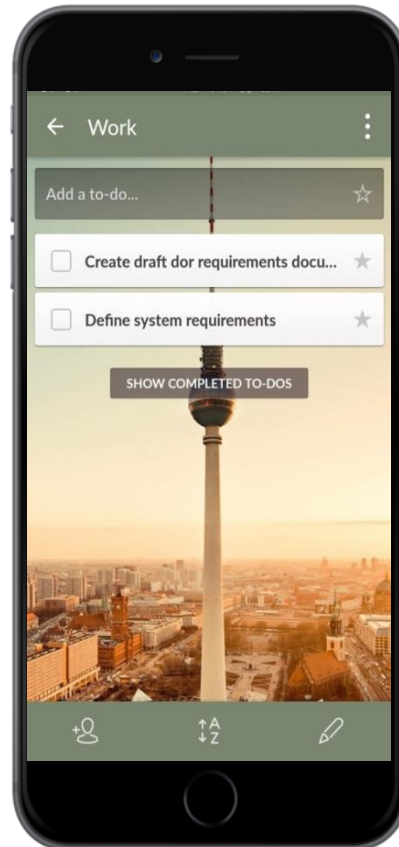
Cons

Subtasks hidden within
task window

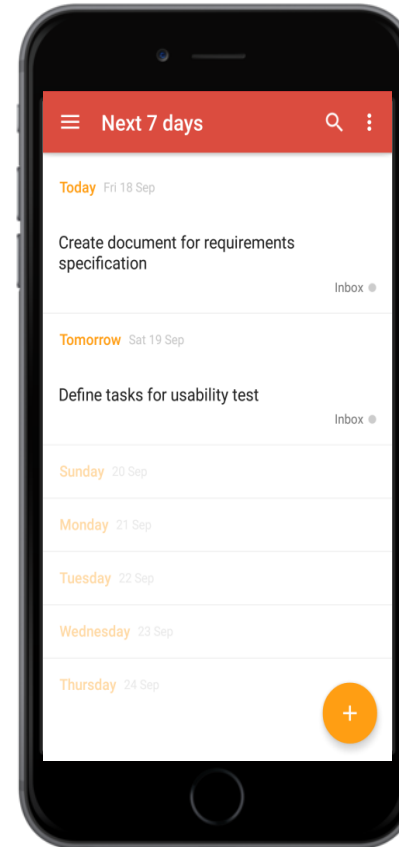
Limited customization
and organization options



Wunderlist



todoist



Pros

Minimalistic UI

Extended search and
filtering functionality

Multiple ways to
organize tasks in
projects

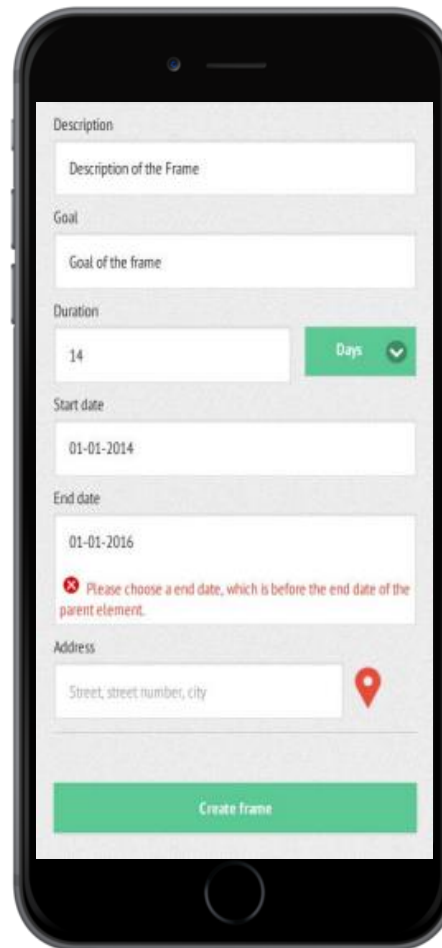
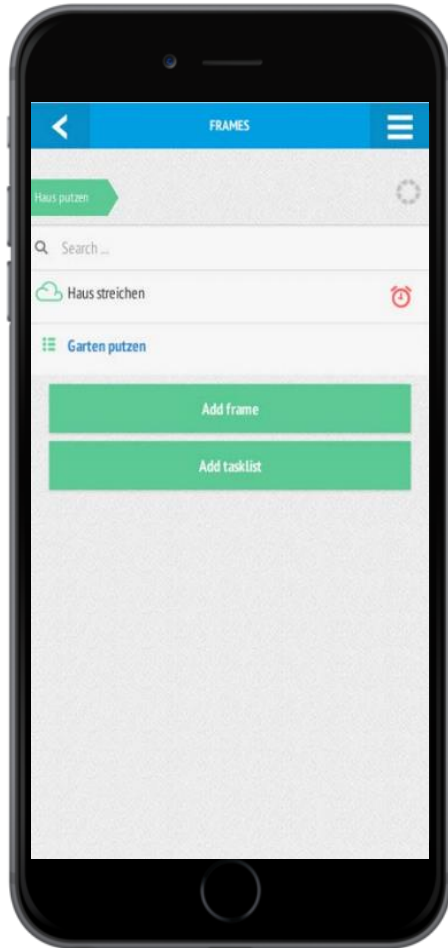


Cons

Free version very
limited (no labels,
reminders)

Assigning of tasks
cumbersome

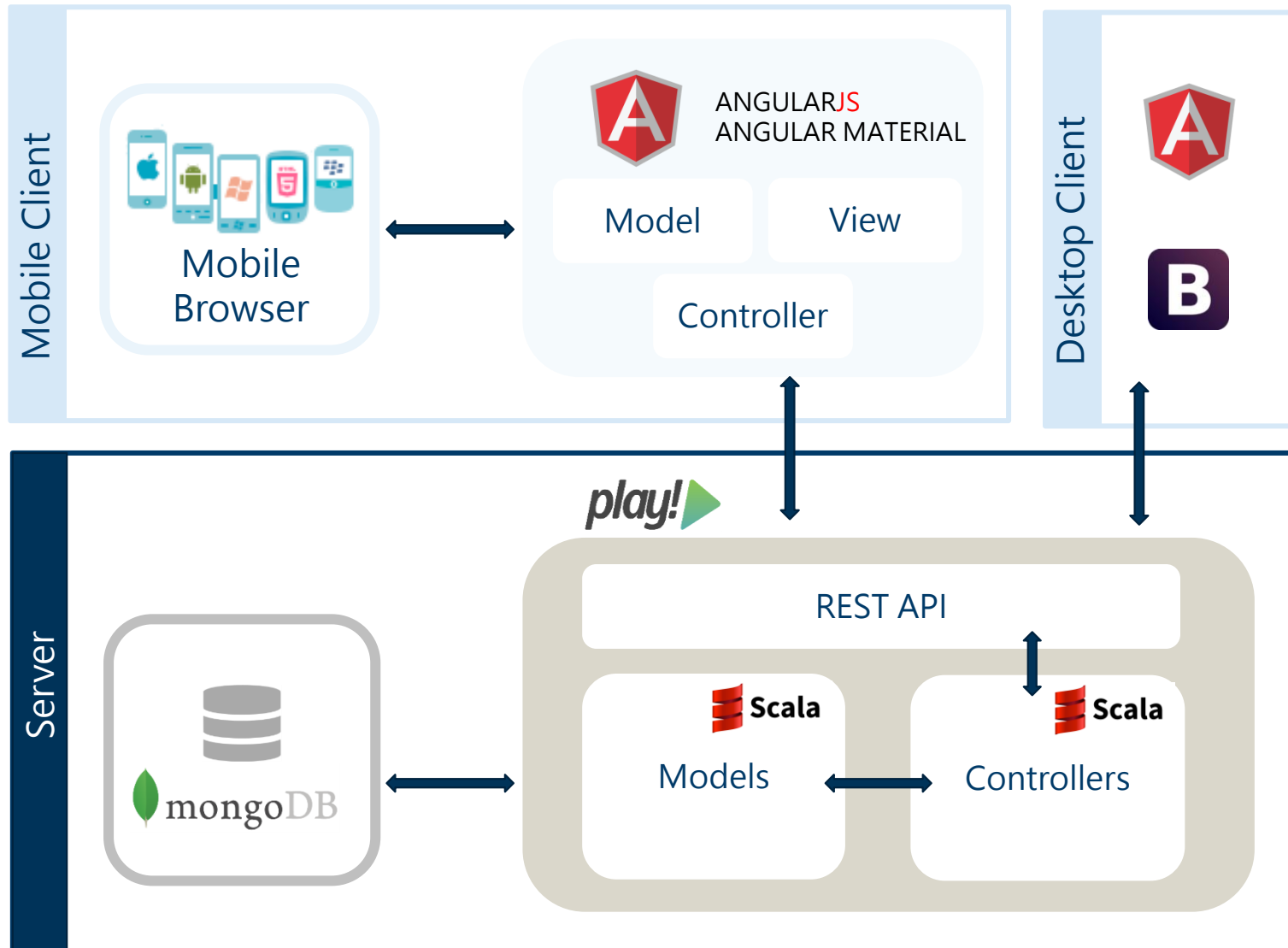
Process-Aware Task Management for KIPs with Checklists

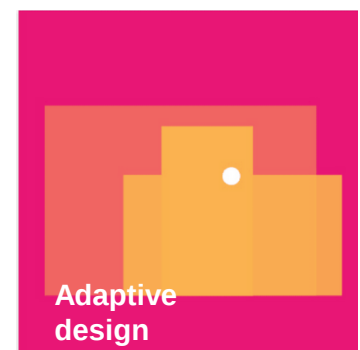
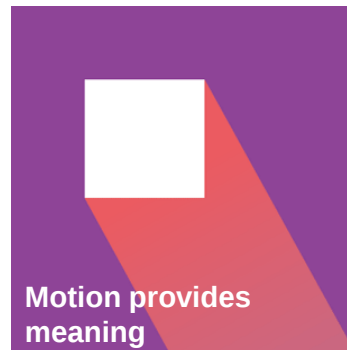
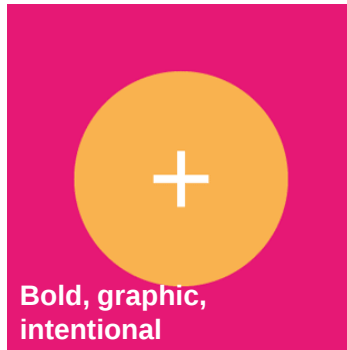
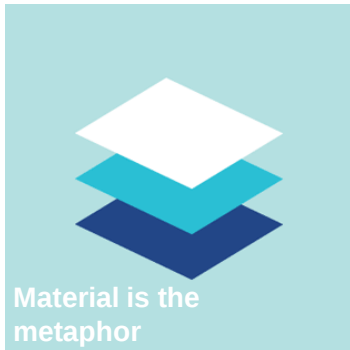


proCollab

- Research project of the university of Ulm
- Process-aware task management support for KIPs
- Checklists for active, organizational and dynamic coordination of tasks

Seperation of Concerns with a Client-Server Architecture





- Set of design guidelines introduced by Google
- Provide intuitive and natural interfaces by transferring attributes of the real work to the virtual world
- Comprehensive design language unified experience across platforms and device sizes



Colors

Primary - Light Blue

500	#3498DB
200	#81D4FA
500	#3498DB
800	#0277BD

Accent - Cyan

500	#00BCD4
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Warn - Pink

A400	#F50057
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Typography

REGULAR

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Quantum Mechanics

6.626069×10^{-34}

One hundred percent cotton bond

Quasiparticles

It became the non-relativistic limit of quantum field theory

PAPERCRAFT

Probabilistic wave - particle wavefunction orbital path

ENTANGLED

Cardstock 80lb ultra-bright orange

STATIONERY

POSITION, MOMENTUM & SPIN

REGULAR

THIN

BOLD ITALIC

BOLD

CONDENSED

LIGHT ITALIC

MEDIUM ITALIC

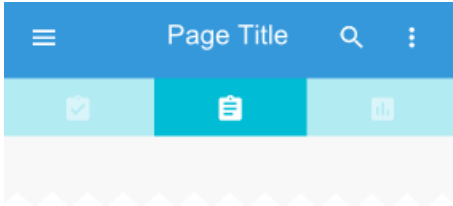
BLACK

MEDIUM

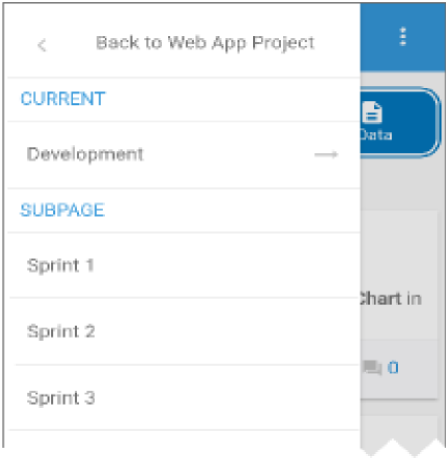
THIN

CONDENSED LIGHT

Components



Toolbar & Tabs



Navigation Drawer

Live Demo

Empirical User Evaluation to Determine the Usability of the Developed Website

Participants

- 69 students of the Seba Master SS 2015 course
- Used desktop Darwin to hand in deliverables

Time & Place

- Conducted over two days
- Students distributed to slots, each about 20 minutes

Procedure

- Participants were asked to perform five tasks
- Think-Aloud Protocol and observation of user behavior
- Following a SUS questionnaire with

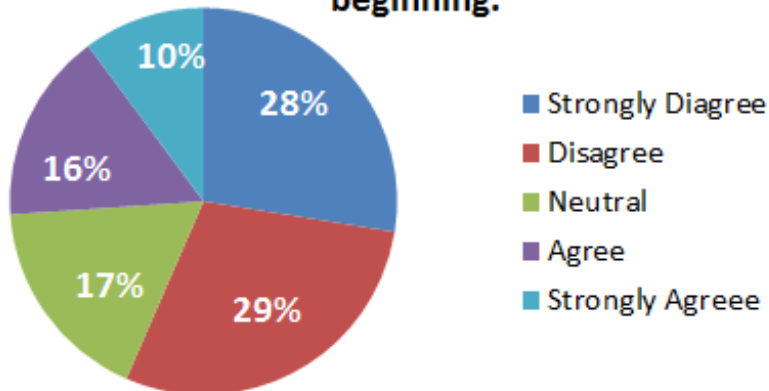


Tasks

1. Commenting on feed entry
2. Navigating to a wiki page
3. Creating a new task
4. Navigating to the task overview
5. Finishing a task

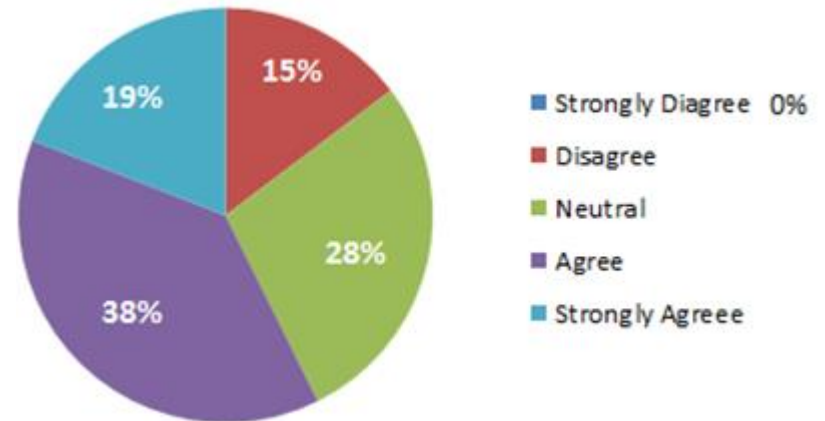
Frequency of use

I think that I would have used the mobile www.sebamastr.de frequently, e.g. additionally to the desktop version if it would have been available from the beginning.

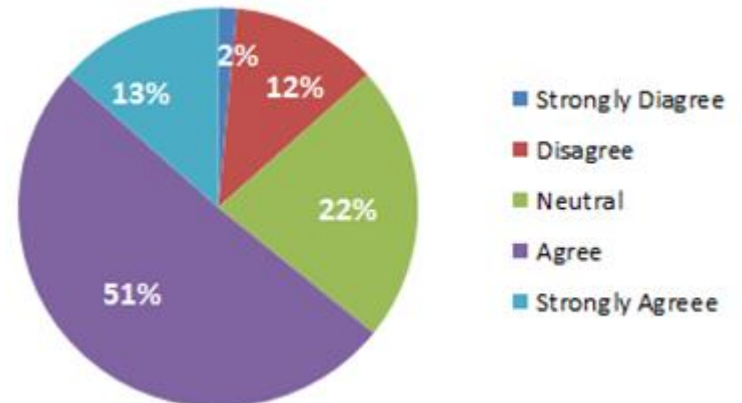


Ease of use

I felt very confident using the system.

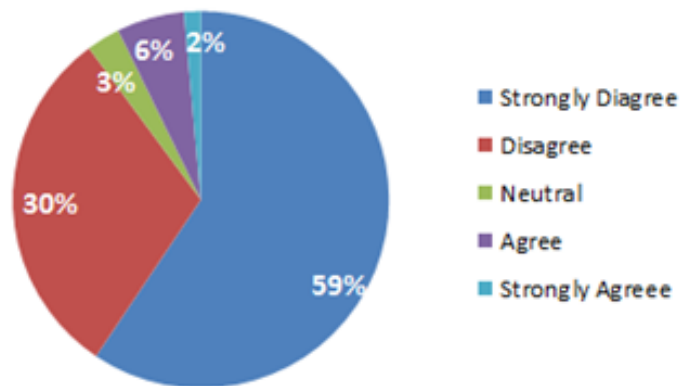


I thought the system was easy to use, e.g. regarding the creation and the editing of tasks.

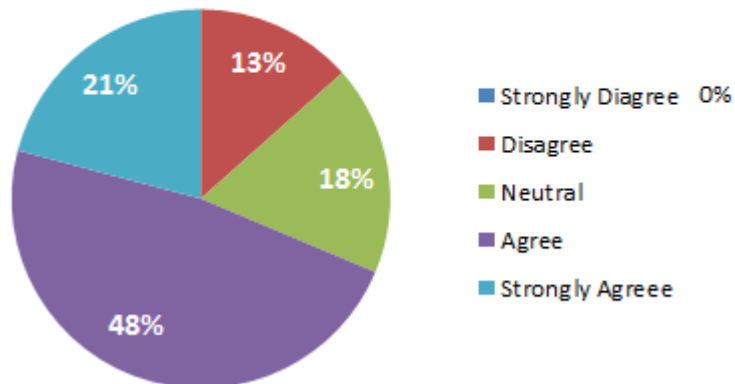


Learnability

I think that I would need the support of a technical person to be able to use this system.

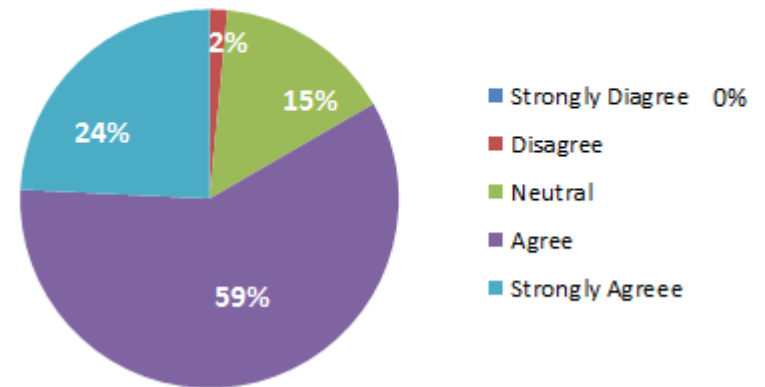


I would image that most people would learn to use the system quickly.

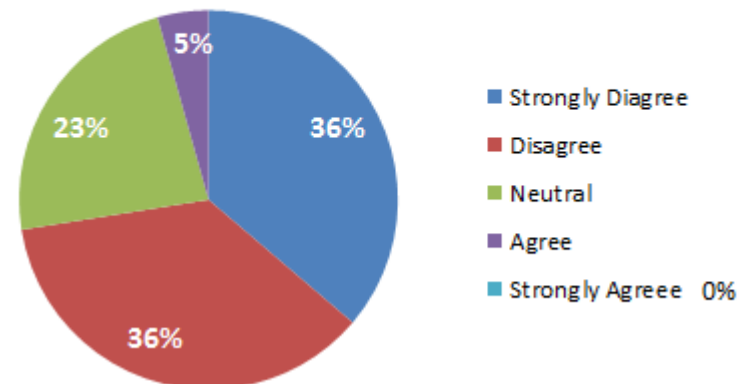


Consistency

I found the various functions of www.seba-master.de were well integrated into the mobile version, e.g. the feed, pages and tasks



I thought there was too much inconsistency in this system, e.g. the colors in the feed.



The System Usability Score

- System Usability Score (SUS) gives indications about a product's usability
- It is calculated with the responds of the 10 item questionnaire
- Score ranges from 0 to 100
- Different interpretations of SUS score in terms of product usability

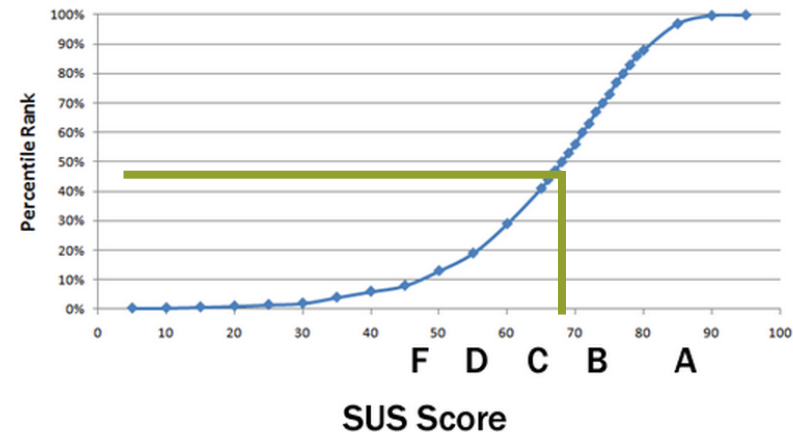
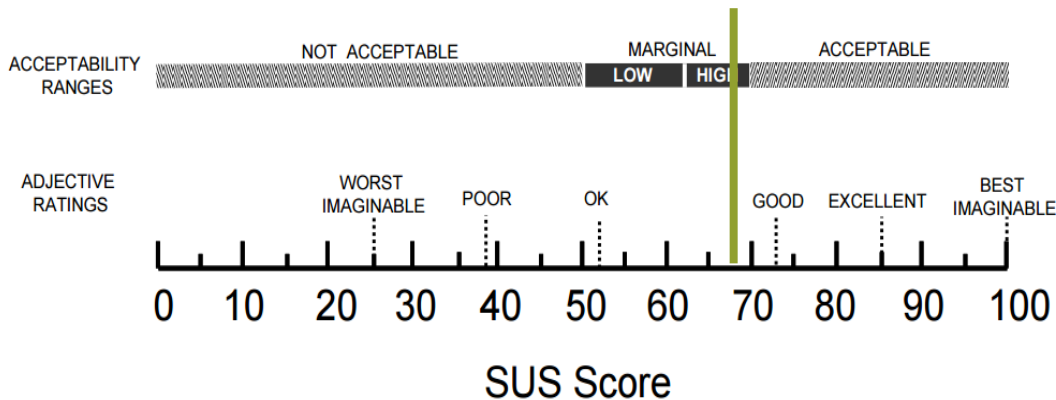
Calculated SUS Score

67.57

Counts as highly marginal

Equivalent letter grade C

Average system wide SUS score*
68

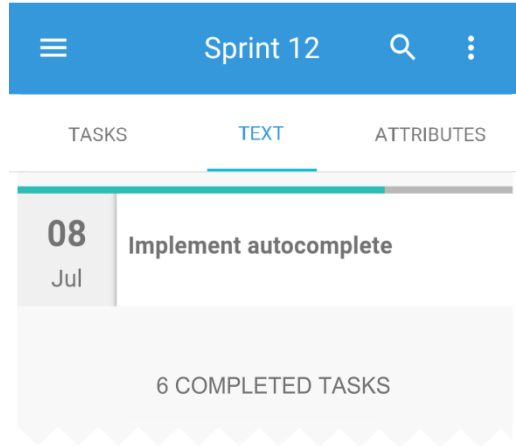


Aaron Bangor, Philip Kortum, and James Miller. Determining what individual sus scores mean: Adding an adjective rating scale, 2009

*Jeff Sauro. Measuring usability with the system usability scale (sus). 2011

Adaptions to the UI according to participants' responses

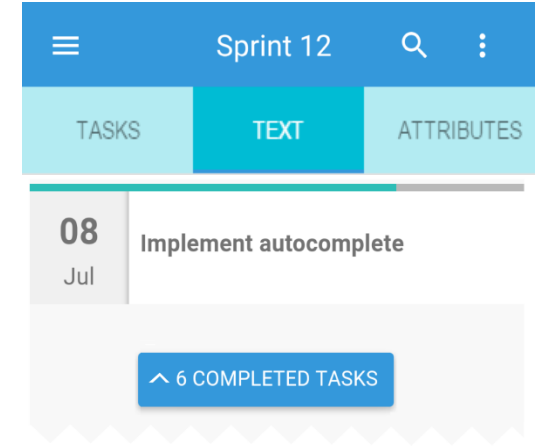
before



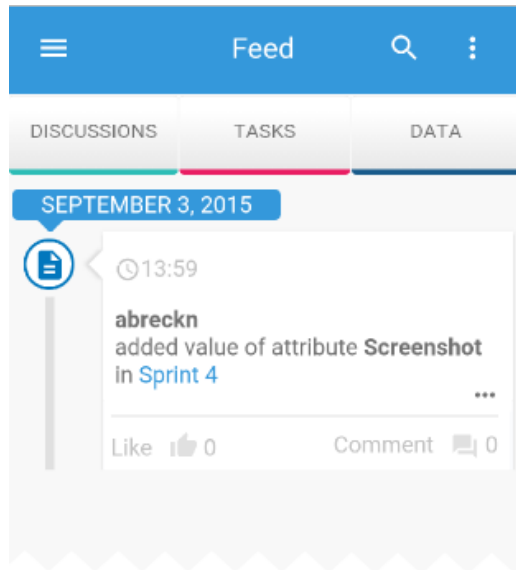
1. Improve visibility by highlighting tabs with colors



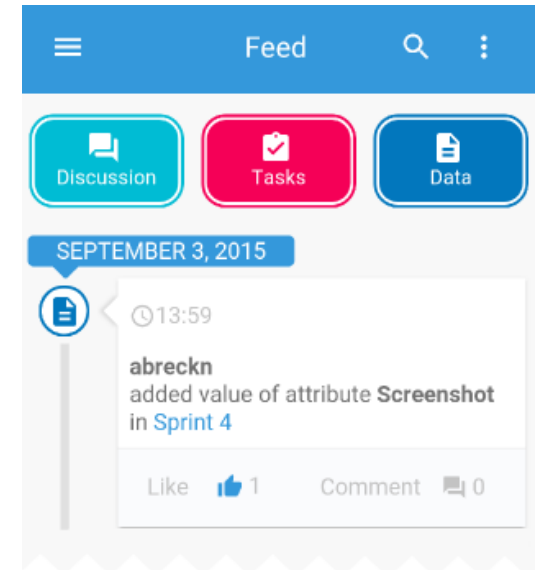
after



2. Apply „typical“ button design



3. Make use of familiar designs



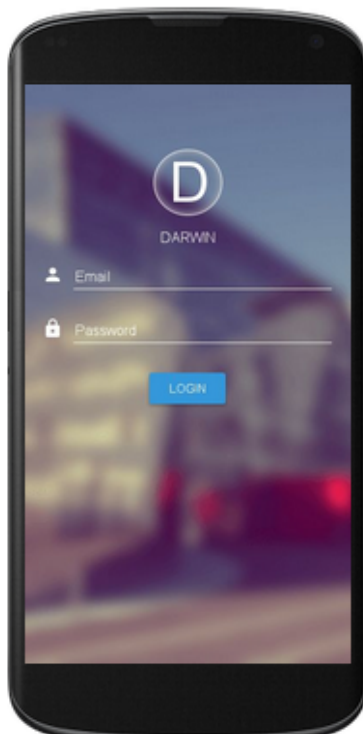
4. Provide available actions at first glance



Mobile-Friendly Test [ANALYZE](#)

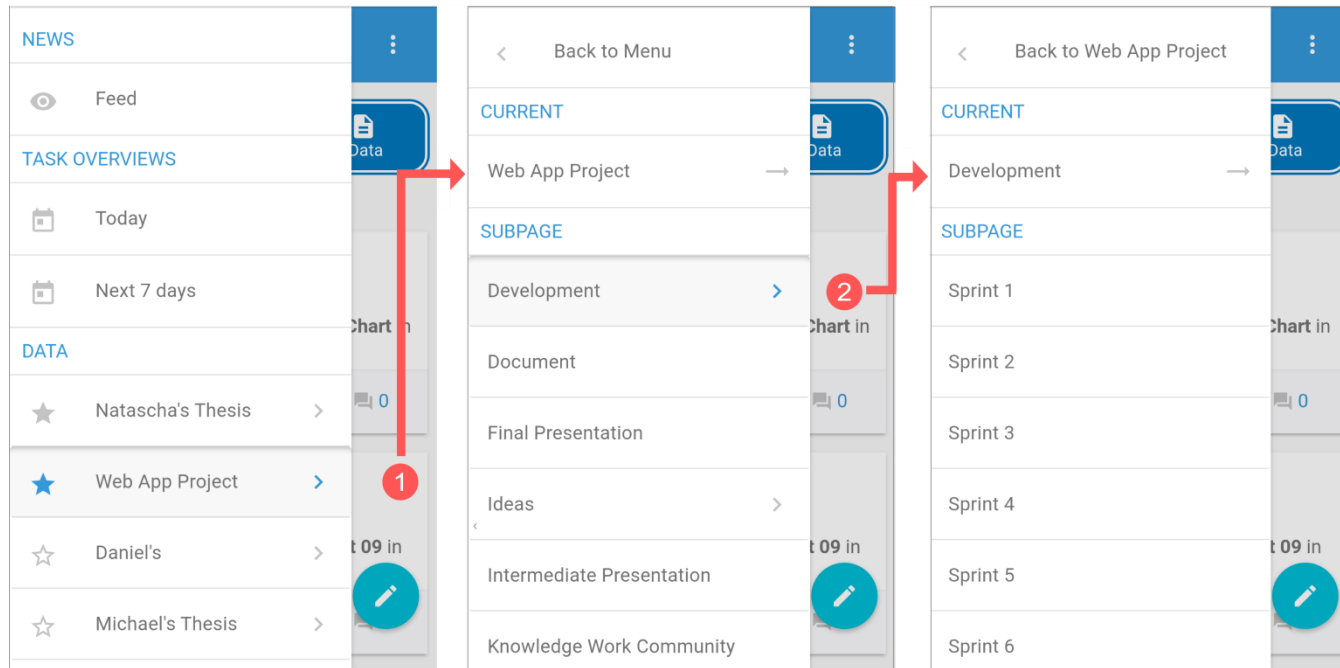
Awesome! This page is mobile-friendly.

How Googlebot sees this page

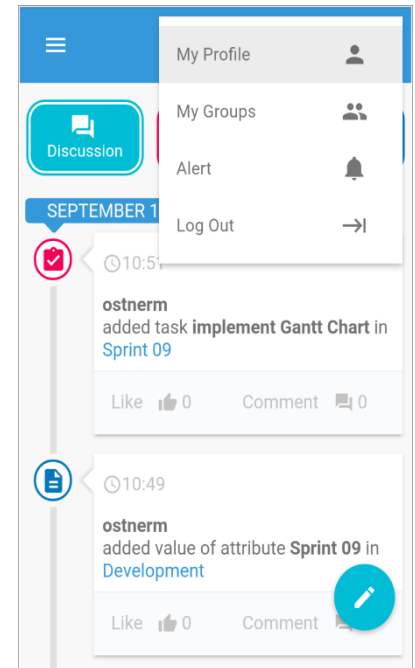


Any questions?

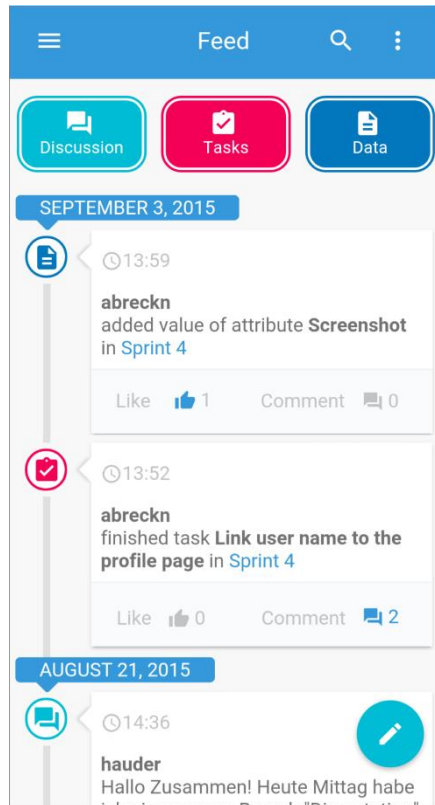
Side Drawer Navigation



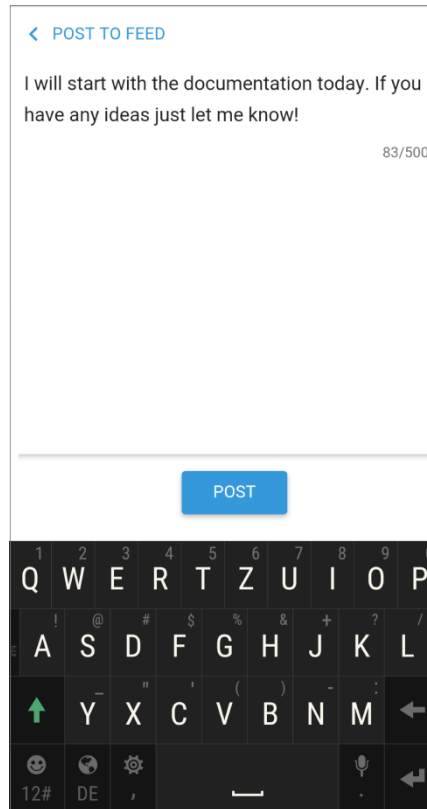
Drop Down Menu



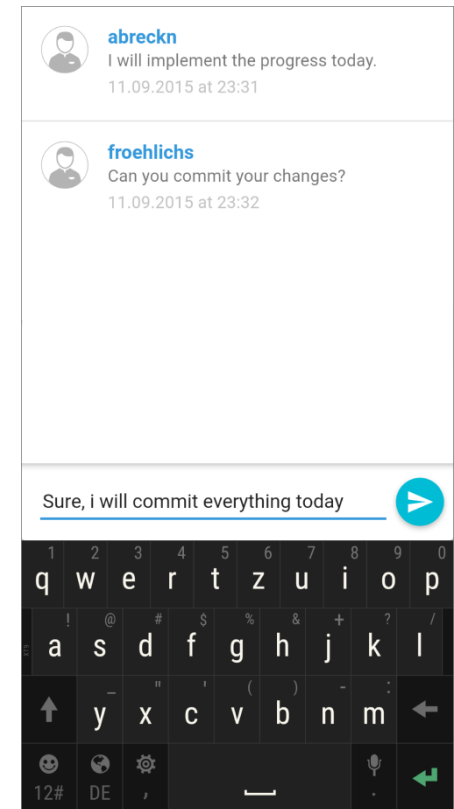
Feed



New Discussion Post



New Comment



Task Overview

≡

Sprint 12

🔍

⋮

TASKS

TEXT

ATTRIBUTES

08 Jul

Implement autocomplete

06 Aug

Write requirements analysis

6 COMPLETED TASKS

✓

Implement alert feature similar to the profile

✓

Limit the number of expertises in the pie to ten

✓

Replace ranking with percent

+

Wiki Text

≡

Sprint 11

🔍

⋮

TASKS

TEXT

ATTRIBUTES

Visualization for the profile page

I prefer the following solution for the expertise visualization. The ranking still needs some improvements.

Task progress

Turns out that both the task progress and the chart for the expertises had the same scope name in the controller. So i just renamed one of them.

Example Wiki

I created a new wiki in the init folder called 'Training Wiki'. In order to create it, the initialize() function needs to be run later on for every user.

✎

Attribute Overview

≡

Sprint 4

🔍

⋮

TASKS

TEXT

ATTRIBUTES

Attributes of this Sprint

Color scheme

📎 color_scheme.png

Instal plugin

✓

Link to presentation

Final Presentation

Project Manager

abreckn

Screenshot

📎 sidenav_v31514.png

Date

20.04.2015

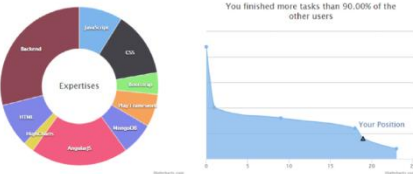
+

Edit Text

× Edit Text SAVE

Visualization for the profile page

I prefer the following solution for the expertise visualization. The ranking still needs some improvements.



Task progress

Turns out that both the task progress and the chart for the expertises had the same scope name in the controller. So i just renamed one of them.

Example Wiki

I created a new wiki in the init folder called 'Training Wiki'. In order to create it, the initialize() function needs to be run. Later on, for every new user a new page with predefined attributes and tasks will be created.

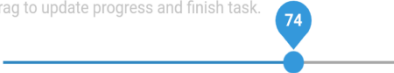
Create Task

× New Task SAVE

Name
Implement autocomplete

Start date End date
 July 1, 2015  July 8, 2015

Task Progress in %
Drag to update progress and finish task.



Expertises

Javascript × **AngularJS** ×

Enter a new expertise

Delegate to:

abreckn × Search for a user or group

Create Attribute

× New Attribute SAVE

Attribute name

Type
Select type

 Editor

everybody ×

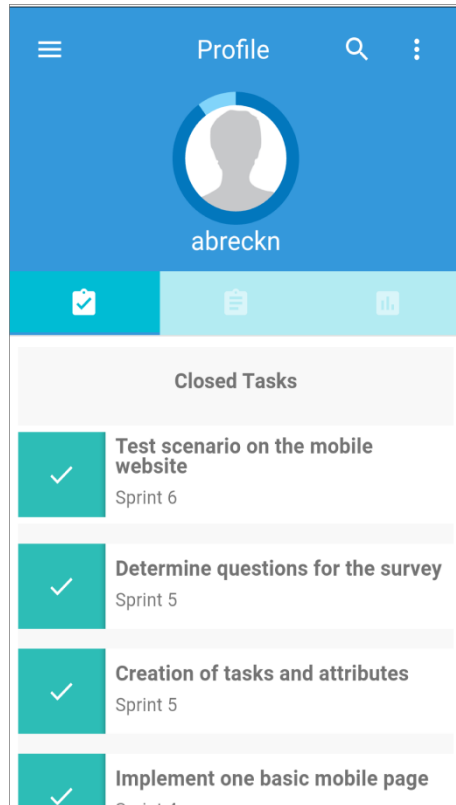
Search for a user or group

 Reader

everybody ×

Search for a user or group

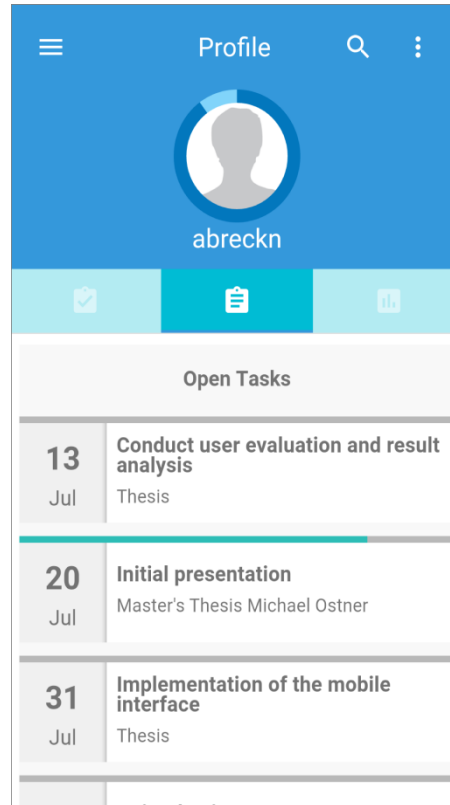
Closed Tasks



The screenshot shows a mobile app interface for a user named 'abreckn'. The top bar is blue with a menu icon, the word 'Profile', a search icon, and a three-dot menu icon. Below the bar is a circular profile picture placeholder with the name 'abreckn' underneath. A bottom navigation bar has three icons: a checkmark, a clipboard, and a bar chart. The main content area is titled 'Closed Tasks' and lists four completed tasks, each with a green checkmark icon in a teal box.

Closed Tasks	
✓	Test scenario on the mobile website Sprint 6
✓	Determine questions for the survey Sprint 5
✓	Creation of tasks and attributes Sprint 5
✓	Implement one basic mobile page Sprint 4

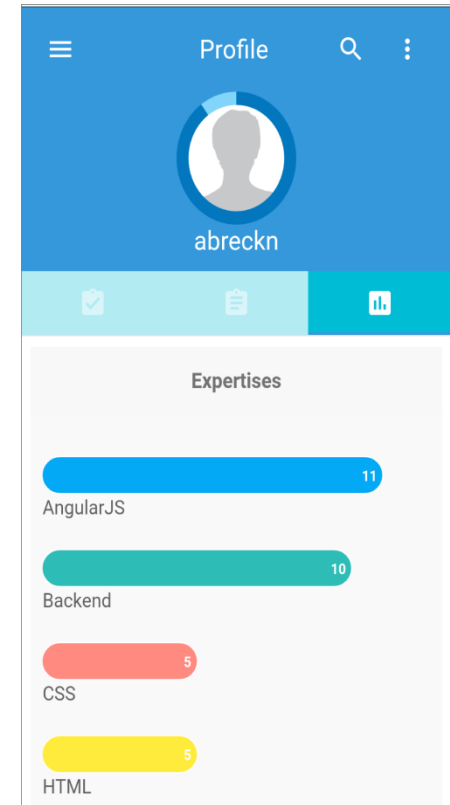
Open Tasks



The screenshot shows the same mobile app interface, but the bottom navigation bar has the clipboard icon highlighted in teal. The main content area is titled 'Open Tasks' and lists three upcoming tasks, each with a date in a grey box and a progress bar.

Open Tasks	
13 Jul	Conduct user evaluation and result analysis Thesis
20 Jul	Initial presentation Master's Thesis Michael Ostner
31 Jul	Implementation of the mobile interface Thesis

Expertises



The screenshot shows the same mobile app interface, but the bottom navigation bar has the bar chart icon highlighted in teal. The main content area is titled 'Expertises' and lists four skills with horizontal progress bars and counts.

Expertises	
AngularJS	11
Backend	10
CSS	5
HTML	5