Peacox – Persuasive Advisor for CO2-reducing cross-modal trip planning

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D.5.4.1

Detailed Design Persuasive Eco-feedback Strategies - Version 1

[CURE]

Author(s)

Mariella Hager

Sebastian Prost

Marc Busch

Johann Schrammel

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Abstract

This deliverable presents the first version of the PEACOX user interface design, including eco-feedback and persuasive strategies. It describes the design process from user and technical requirements and selection of persuasive strategies, the construction of personas and scenarios to the user interface mock-up design. Work was guided by the UID expert working group formed by CURE, FLU and TMX. The design draft presented represents the state of the outcome of the design process. It covers work completed up to month 12 and will be updated in the second version of this document.

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1. Introduction

1.1 Background

Within task 5.2 we developed the detailed design of the interface of PEACOX. Persuasive strategies and personalized feedback were implemented as they are very important parts of the user interface design.

For the development of the PEACOX user interface design a **User interface design working group (UID working group)** was formed with three experts of the consortium (CURE, FLU, TMX). In the framework of the UID Working group the participating experts met several times to develop the user interface. A heuristic expert evaluation was carried out and an evaluation by users was integrated.

The developed user interface will be implemented in the first prototype and will be tested in the first field trial. Based on feedback from the users, this interface will be adjusted and improved for the second prototype.

1.1.1 Scope of this Deliverable

The first version of this deliverable presents the work of the PEACOX user interface design and the concept of PEACOX mock ups in detail. The PEACOX user interfaces design is enriched with persuasive eco-feedback strategies and personalized eco-feedback. After a first evaluation of the current PEACOX user interfaces a detailed fine design will be created and evaluated. Accordingly, this deliverable will then be updated with the second version to reflect the changes made.

1.2 The UID Expert Working Group

Starting point of the development of the PEACOX user interface was the formation of the UID expert working group. The group was constructed to integrate different skills and expert perspectives and to jointly develop the first version for the PEACOX user interface design. It consists of 7 experts (see Figure 1) coming from different scientific fields (computer sciences, design, psychology, and sociology).

Through regular expert meetings and workshops the current PEACOX user interface design was created. Personalised eco-feedback and persuasive eco-feedback strategies were presented, discussed, developed and integrated during the creation and design of the user interfaces. The following meetings took place in Vienna:

1. **Pre-Kick-off-meeting – 11 June 2012:**

   Definition of the framework of the UID working group, preparation of kick-off meeting.

2. **Kick-off meeting – 17 June 2012:**

   Discussion on first draft of PEACOX UI design, existing design patterns, persuasive strategies, requirements, use cases and scenarios, and the initial design concepts for PEACOX mock-ups.

3. **Workshop I – 19 July 2012:**

   Discussion on initial design concept for the PEACOX mock ups, important components for the PEACOX app, template for use cases and scenarios, two PEACOX apps (route planner and navigation app), completion of existing patterns.

4. **Expert UID evaluation – 23 August 2012**

   Interim evaluation between CURE and FLU, discussion of design changes after Workshop I and discussion on changes to be made for Workshop II.

5. **Workshop II – 29 August 2012:**

   Mock-up presentation (CURE), discussion on design aspects and integration with technical components, usability test for mock-ups.

Between the aforementioned official meetings multiple informal design critique and feedback sessions have taken place both at CURE and at FLU. While the main design iterations took place after the kick-off (first iteration), workshop I (second iteration), and workshop II (third iteration), several smaller iterations have been generated based on these informal sessions.

Members and responsibilities of the UID working group

Core Participants of the User Interface Design working group were researchers, interaction and interface designers, developers, psychologists and sociologists.

Division	Person	Function
Design	Sebastian Prost (CURE)	Main Designer
	Martin Lugmayr (CURE)	Support, QA
Development/Design	Eva Potrusil (FLU) Tilman Harmsen (FLU)	Main developer/designer
	Mirjana Artukovic (FLU)	Support
Research and evaluation	Mariella Hager (CURE)	Main researcher
	Marc Busch (CURE)	Support, QA

Figure 1: Core Participants of the User Interface Design working group.

Participation of end users:

For issues regarding the evaluation of the PEACOX user interfaces end users were involved by undergoing specific usability tests (see chapter 2.1.8 Evaluation of first prototype).

2. Persuasive Strategies Relevant for the PEACOX App

2.1 Overview of persuasive strategies from literature

In literature there are several different principles of persuasion published, two of the most commonly used are from Cialdini (2001) and Fogg (2003). These two sets of strategies formed the basis of our work in analysing strategies for the PEACOX App. A detailed report about the research strategies can be found in Deliverable D.5.1 Persuasive Strategies Report.

The following table shows how individual PEACOX features map to persuasive strategies from literature.

Table 1: Mapping of PEACOX features map to persuasive strategies from literature

Persuasive strategy	Description/example	Related PEACOX feature (?)
Cialdini (2001): Six principles of Persuasion		
Social Proof	"People follow the lead of similar others": Show what others are doing.	Facebook integration of challenges, sharing of achievements
Reciprocity	"Give what you want to receive", Be kind. Give gifts if you want something in return.	Unrequested rewards. Initial rewards, credits also for non-committing users.
Consistency	"People align with their clear commitments", Get people to commit to future actions.	Challenges (*Scarcity)
Liking	"People like those who like them". Be a friend. Be attractive. Show similarity. Give compliments. Show cooperation.	Friendly and attractive user interface, free of errors (?). Give supportive feedback – progress bar in achieving challenges, Eco-Pet; Praise
Scarcity	"People want more of what they can have less". This applies to good and (exclusive) information	Limited badges – only limited time or number available.
Authority	"People defer to experts"	Eco-Statistics, technical details for emissions and exposure models
Fogg (2003): Seven principles of Persuasion		
Tailoring	Personalisation	User profile, learning from history
Reduction	Simple workflows, reduce cognitive load	Effective interaction design
Self-monitoring	Personal statistics, tracking	Trip history, statistics of emissions

		and exposure
Suggestion	Suggest better behaviour	Pro-active pop-ups to alternative routes (PT, P+R, more fuel efficient driving)
Conditioning	Give incentives and rewards	Rewards when using PT and Bike (credit points)
Surveillance	Tracking. "The system knows how ecological damaging you are."	Eco-Pet is degenerating when driving car all the time
Tunnelling	Take the user and show them the way.	Trip planner leads people to eco-friendliest alternative

Out of the 13 persuasive strategies from literature listed above a selection was made during expert workshop identifying the most promising ones in the context of PEACOX. The focus of design and implementation was put on the following persuasive strategies:

- Social Proof
- Consistency
- Authority
- Tailoring
- Reduction
- Self-monitoring
- Suggestion
- Conditioning
- Tunnelling

The strategies and their mapping onto the PEACOX application are described in the following section.

2.2 Persuasive Strategies Used for PEACOX Mock-Ups

The selected persuasive strategies were further supplemented by a set of *motivational techniques* by Froehlich et al. (2010) (adapted to better meet the purpose of PEACOX) to form the final set of strategies to be incorporated into the PEACOX application. Froehlich et al. refer to motivational techniques as design elements that motivate, or gently "push" the user into a desired direction of behaviour. The following list contains the techniques to be

used and in brackets the strategies that they supplement. Furthermore, it lists important aspects that need to be considered when designing these techniques.

- Information (**Self-monitoring)**
  - Easy to understand
  - Trusted
  - Attention grabbing
  - Remembered
  - Contextual (time and place)
- Comparison
  - Current behaviour to past behaviour (**Self-monitoring)**
  - Social comparison (**Social Proof)**
- Goal-setting/Commitment (**Consistency)**
  - Voluntary
  - Public
- Rewards (**Conditioning)**
  - Game-like (points, levels, achievements)
- Feedback (**Self-monitoring, Tailoring, Reduction**)
  - Low-level feedback (detail)
  - High-level feedback (summative)
- Recommendations (**Tunnelling/Suggestion**)
  - Proactive
  - Personalised

3. User Interface Design – Process and Outcome

The initial situation of the joint work was a first rough draft of an interaction/ interface design which was also presented at the consortium meeting in Dublin in May 2012. The initial draft in form of an interaction design was an important basis for further work of the taskforce. The main purpose of the rough draft pointed out the main features of the PEACOX app. It served as a basis for discussion and further elaboration of functionalities.

The Deliverables D2.1 Description of User Groups and Travelling Context, D2.2 Requirements Document and D2.3 Stakeholder and Technical Requirements built an important basis of the work on functionalities and requirements in relation to the PEACOX app.

3.1 Analysis and Creation of Patterns

As a basis for the creation of the mock ups, already existing basic patterns from related apps (provided by FLU) were partly used. The patterns were analysed, amended and completed. New patterns had to be developed, e. g. for the implementation of persuasive elements, for personalisation, for the creation of avatars, and for sharing in social networks. A detailed description of the patterns is beyond the scope and therefore not part of this deliverable.

3.2 Creation of Personas, Scenarios and Use Cases

There were various personas, use cases and scenarios developed and described.

3.2.1 PEACOX Personas

A persona is a description of a user archetype that can serve as a guide in the design process. The descriptions are summarised below including education, goals, skills, attitudes, job description and personal details such as name, education, marital status, or favourite sport to bring the character to life.

Different personas (male and female, different age groups, diverse marital status, with or without children, different jobs, diverse environmental attitudes) in different situations should contribute to a variety of use cases and scenarios. Their characteristics allow us to reach a wide target group for PEACOX functionalities.

The following PEACOX personas were created and described:

- Rihanna, 33 years of age, 1 child, unemployed, married, ecological aware
- Jack, 40 years of age, independent employee, single
- Michael, 53 years of age, manager, married, no kids, status conscious
- Emily, 23 years of age, student, in a relationship, ecological aware

<u>Rihanna, 33 years of age, married, ecological aware</u>

Rihanna is married and has a daughter Mina. She is momentarily unemployed since she wants to spend more time with her daughter. She is concerned about climate change and is therefore interested in ecological way of living. Rihanna wants to use ecological friendly transport modes in the future.

Jack, 40 years of age, single

Jack is 40 years of age and lives on the outskirts of a city. He works as an independent employee in a downtown lawyer office. He likes to travel with public transportation to be able to read and work while travelling.

Michael, 53 years of age, married, no kids, status conscious

Michael is 53 years old and C.E.O. of a middle-sized industrial company producing car engine parts. He is a home owner in the outskirts of town with only minimal public transportation available. He drives a big company car and is well aware of the status it represents. He is not a climate change sceptic, but he needs the car for business trips. He likes its comfort, privacy, and speed. In his opinion, only congestion in rush hour traffic represents a disadvantage of the car usage.

Emily, 23 years of age, in a relationship, ecological aware

Emily is a 23 year old studying communication and politics. She is living in a shared flat, from which she usually takes her bike to university or other places when she visits friends, goes for a swim or go to see her sister. In case of bad weather she usually takes public transportation. As she doesn't know the network that well, she frequently needs to look up connections and time tables to find her way.

3.2.2 PEACOX Scenarios

A scenario is a narrative explaining how the user uses PEACOX in his or her daily life. It uses plain language free of technological specificity, but detailing the user's intentions and motivation. The scenarios below show how the user is solving a problem, getting decision support, and changing behaviour by using PEACOX. The aim is to tell a common story of what PEACOX will do without entangling in implementational specificities that will be tackled in a next step. In particular, specific user interfaces are not part of the scenarios.

Different scenarios were created in order to cover an exemplary subset of PEACOX functionalities and to make it conceivable. The scenarios cover various aspects of user's life (e. g. leisure, business, and official routes) and demonstrate how PEACOX functionalities can be used in practice.

The following scenarios were created and described:

- In a hurry to the dentist
- Reviewing personal travel behaviour
- Creating a profile
- Navigate to the supermarket
- On the way to the office
- Switching over to public transportation
- Getting aware of your impact
- Rediscovering the city by bike
- Challenging your environmental impact

In a hurry to the dentist

Rihanna has an appointment at the dentist and is late. She wants to use her new smartphone app Peacox to find the shortest way to the dentist by use of public transport. The dentist is at the other end of the town. She switches on her smartphone and starts the Peacox application.

Rihanna uses PEACOX to learn about different routes suggested by PEACOX between her home and the dentist. Rihanna is in a hurry, so she wants to take the fastest route. She compares all possible routes with each other in order to have a basis for decision making, which means of public transport and which route she wants to take.

Peacox offers information and feedback about the eco-friendliness of the suggested routes. As she is running late she decides to take the fastest route (underground).

Reviewing personal travel behaviour

Rihanna arrives at the dentist and has to wait. She starts the Peacox app to view the routing details, the produced emissions and the travel time of her latest routes. She is happy as the routes she chose are eco-friendly and decides to post her travel behaviour on Facebook. She is very proud about the fact that she made a small contribution to saving our planet.

Creating a profile

Rihanna has to pick up her daughter from the kindergarten but she recently sold her car. Therefore, she is not interested in car routing information anymore. She personalises her profile to get optimised routing information. She starts the Peacox app and requests the route to the kindergarten by public transportation. She compares the routing possibilities. Because she has to carry heavy bags with her she decides to take the route with the shortest pathway from the station to the kindergarten.

On the way to the office

Jack has to leave home early to be on time to a meeting with a very important client. Because he had to work very late yesterday he needs to prepare while travelling and decides to go by public transportation. To make sure he will be at the office on time he starts the PEACOX application. He already is in a hurry and does not want to enter a Route. He starts the Live-Tracking the time he walks through his door. The app tells him the real time information of the public transportation in his vicinity. He discovered that there is a disturbance on the subway he usually takes and decides to take the bus and the tram. During travelling the application tells him which bus and tram he uses and how many stations are still left. He prepares for the meeting while he travels comfortably on a bus and a tram to his office. When he leaves the tram in front of his office building he stops the Live-Tracking. Because he has still some minutes left until the meeting starts and he already is well prepared, he decides to drink a coffee and relax a minute before his client arrives.

Going to work / use park + ride (P+R) to reach the office

Michael is on his way to work, an office tower in the city. It's morning and once again he is stuck in heavy traffic. Recently he started using PEACOX because it offers turn-by-turn navigation and live traffic data. He hoped it would guide him around the traffic jams to get him to work quicker. Some days however, there is just no faster way. Suddenly PEACOX points out a P+R facility a few blocks down the road, and estimates that switching to subway there would save him at least 15 minutes in time. He never tried P+R before, but is intrigued to do so, considering the time savings. Once at the P+R PEACOX tells him witch trains he has to take to arrive at his company's headquarter.

At the end of the day, he takes the same connection back to the P+R and from there his car to get home, avoiding 5 o'clock rush hour. He decides that from now on he will more frequently use P+R in combination with PEACOX.

Getting aware of your impact

After using the app for a while, Michael finally decides to connect the app to Facebook to share his P+R discovery with his friends and family. The app allows him to see his trip history and what emissions he produced. He is impressed to see how big a difference it made switching from car-only to P+R. Also, he realises that during his daily traffic jam he was exposed to bad emissions from the other vehicles. Air quality certainly improved once he got away from the street and started using the subway.

Rediscovering the city by bike

It's a sunny day and Emily is riding her bike to University. After the lecture she decided to visit her friend Sue, who recently moved to a new flat. Although she knows the city well, she doesn't always know the best – or most comfortable – route for bicycles, especially if it's a place she hasn't been to before. Recently she downloaded the Peacox app onto her smartphone, because it nicely integrates trip planning for bikes and public transport, which are her usual ways of getting around in the city. She tries Peacox this time to see if there is an alternative, safer route she could take to her friend. Peacox suggests a nice route she hasn't taken before. She also has the option to get turn-by-turn instructions while riding and having her phone mounted on the handle bar.

Challenging your environmental impact

At her friend's place Emily talks about the PEACOX app and demonstrates the trip planner. Being able to see how little carbon emissions riding a bike or taking a train produces compared to using the car is a good reinforcement and motivates her to discuss this with some of her friends who are frequent car users. PEACOX not only tells her how much an individual trips saves, but with the tracking function she can see how much she has emitted last week or from the beginning of use. While playing with the app, she discovers the "challenges" offered by PEACOX. She and her friend both decide to commit to the challenge

"Ride your bike at least 3 days a week". Once completed, they will earn a reward, which they can share on Facebook. They compete against each other and can see who is being more environmentally friendly.

3.2.3 PEACOX Use Cases

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. The use case should contain all system activities that have significance to the users (Margaret Rouse 2007). Due to different requirements of the PEACOX project partners involved, input from the partners was important.

In the framework of the UID working group a table in form of an excel sheet was developed, in which the PEACOX partners wrote all important use cases and scenarios. This enabled and guaranteed the acquisition of all necessary functionalities for the PEACOX app. The following high level use cases were defined:

- Personalisation
- Route information
- Navigation
- Live-Tracking
- Feedback
- Challenges/ rewards

Detailed information about the PEACOX use cases will be found in Deliverable 6.1 Report about Use Case Scenarios which will be available at the end of month 14 (November 2012).

3.3 User Interface Mock-ups Design Process

Based on the results of WP2, the initial ideation concepts, together with the identified persuasive strategies, ideas have been incorporated into paper drafts that explored design possibilities for an Android-based PEACOX smartphone app. Travel planner, live-feedback component, user profile, trip history, and social sharing and challenging components were included in these drafts.

The first iteration drafts were discussed at Workshop I of the UID expert working group concerning the design itself and its technical feasibility. After this initial evaluation, software-based mock-ups were designed as a second iteration. After several internal revisions as well as an interim session of the persons responsible for design from CURE and FLU, the improved design was again presented and discussed in Workshop II of the UID expert working group. The third large iteration that followed this workshop was again internally refined and resulted in a pseudo-interactive mock-up to be presented to all partners at the consortium meeting in Athens 24 and 25 September 2012.

The work of the UID expert working group will continue and after further feedback and input from all partners at the consortium meeting a forth iteration will be generated. The final design of the PEACOX app will be included in the second version of this deliverable available in month 25, (October 2013).

4. The PEACOX Interface

4.1 Conceptual overview of the PEACOX app structure

The PEACOX interface structure consists of 4 main parts: Travel, Live, Activity, and Me.

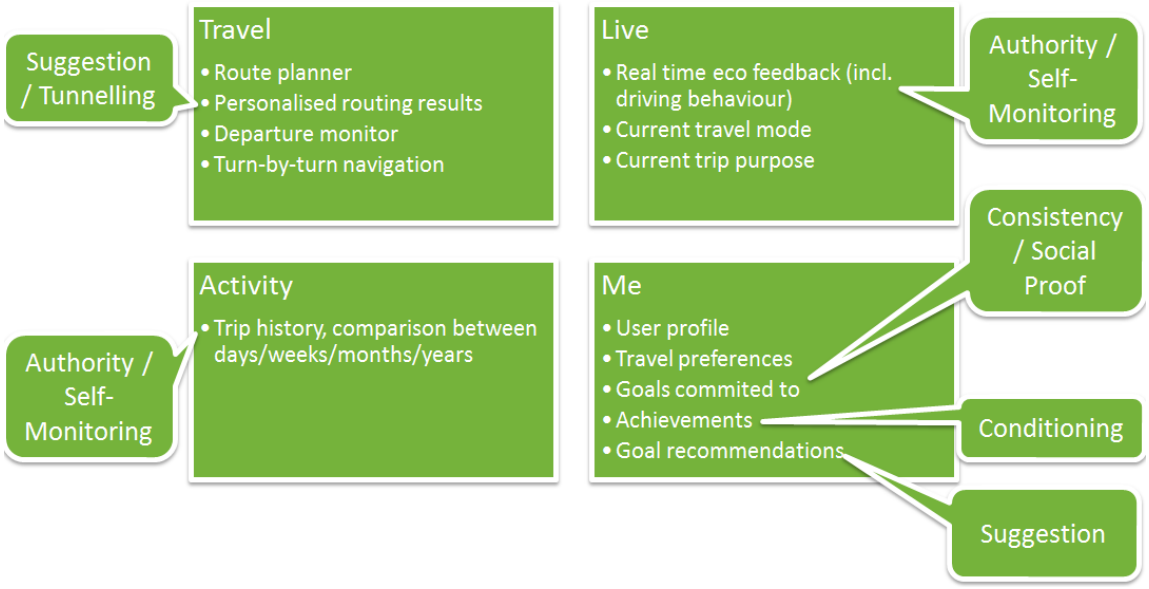


Figure 2: Structure of PEACOX Interfaces

Each of the main parts of the app's structure includes several functions which support the user before, during or after traveling and caters to his personal needs and preferences. In

order to make the user travel in an ecofriendly way persuasive strategies were implemented into the app.

The following persuasive strategies are related to certain PEACOX functions: **Suggestion and Tunnelling** are related to the function **personalised routing results**. When personalised routes are offered to the user, at least one environmentally friendly route is suggested to the user. Tunnelling is also implemented to the routing results function meaning that the user is instructed to choose environmentally friendly routes and to travel eco- friendly.
Authority and Self-Monitoring are used as persuasive strategies for **real time eco feedback** (incl. driving behaviour) and the **activity** section**. Authority/Suggestion** gives the user very direct instructions and recommendations for eco-friendly travelling and should persuade him to accept and follow the expert advice. **Self-Monitoring,** also incorporation the strategies **tailoring** and **reduction** offers in-context (tailored) real time eco feedback for travel behaviour to the user. An emphasis lies on an easily understandable representation of complex data (reduction). The user can track exactly how eco-friendly he currently is on the road. Self-Monitoring is also used in combination with the trip history function. This function enables an overview over the environmental impact of past travel periods and to compare former travel periods (days, weeks, moths, years) with each other.
The function **goals committed to** is related to **consistency and social proof** as persuasive strategies. Consistency means that a user can commit to challenges (e. g. travel without the car for one week) which appear to be meaningful for him. If a user has reached a goal/a challenge he can share it on Facebook (Social proof) to encourage his friends to drive eco-friendly.

4.2 Representation of mock-ups and first prototype

Four tabs are important for the PEACOX app:

- Travel
- Live
- Me
- Activity

An overview over main tabs and associated screens is given in the following table:

Tab Travel
• Start Screen
• Set Destination
• Type Destination
  ○ Select from Recent, Favourites, Maps, Contacts
  ○ Set Departure / Arrival Time
• Browse Results as List or Map
• See Trip Details as List or on Map
• Start Tracking or Turn-by-Turn Navigation
	Tab Live
	• Eco Avatar: Eco-Behaviour for the day
	• Travel Mode (correction)
	• Travel Purpose (correction)

Tab Me • Profile Data • Achievements • Recommendations (new Goals) • Goals Committed to • Personal & Travel Preference	**Tab Activity** • Long-term travel behaviour feedback • Daily, weekly, monthly, yearly • Trip details

4.3 Detailed description of PEACOX mock ups

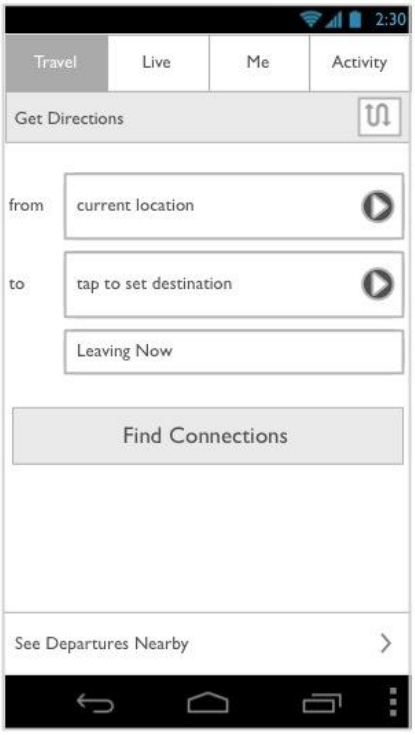
Bellow a detailed description of the mock ups and their functionalities is presented.

For each screen we include:

- Corresponding main tab
- Name of screen
- Picture of screen
- Description of corresponding functionalities

4.3.1 Tab Travel

Start Screen



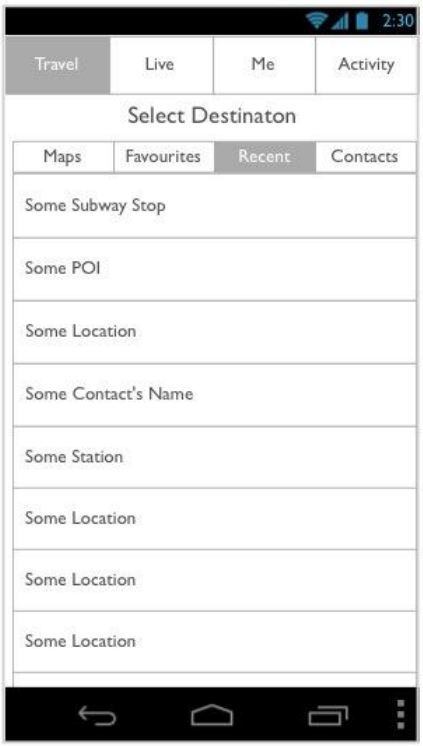
The start screen offers a search function to find suitable connections and routes.

Set destination

Type destination

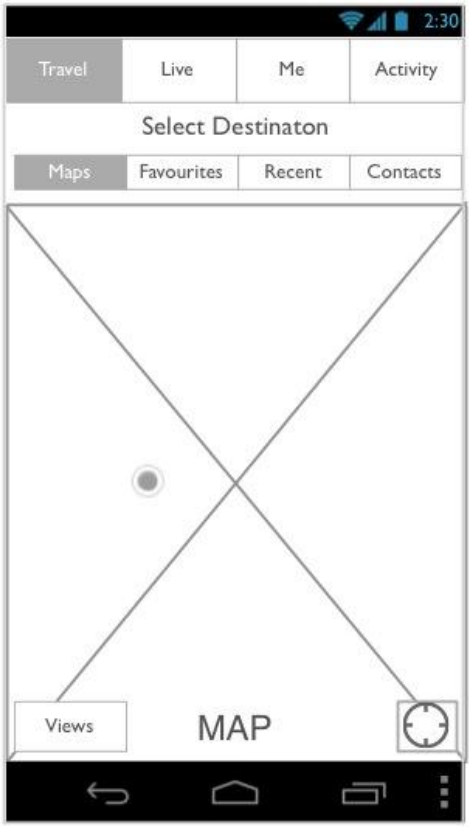
When the user clicks on the field "tap to set a destination" a keyboard is opened to define the destination. The user can then enter a destination or choose one from various possible destinations proposed by the system, which help the user to find the right destination quickly.

Select destination from recent locations



To find a destination quickly it can also be selected by clicking on a recently defined location or destination on a list (Recent or Favourites). The prerequisite for this is that the destination has already been entered once.

Select destination from map



By clicking on the tap Maps the user can call for a map, were the respective destination is shown.

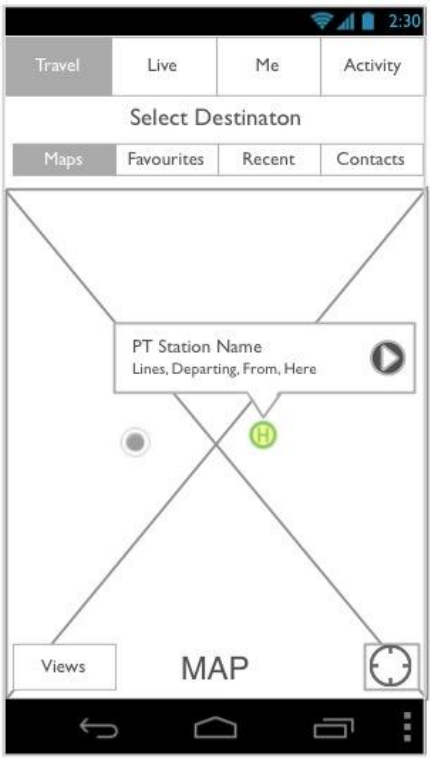
Pin pop up

The destination can be shown by a pin pop up in a map, a dropped pin is included which refers on geo referenced-resolved address.

Pin pop up info box

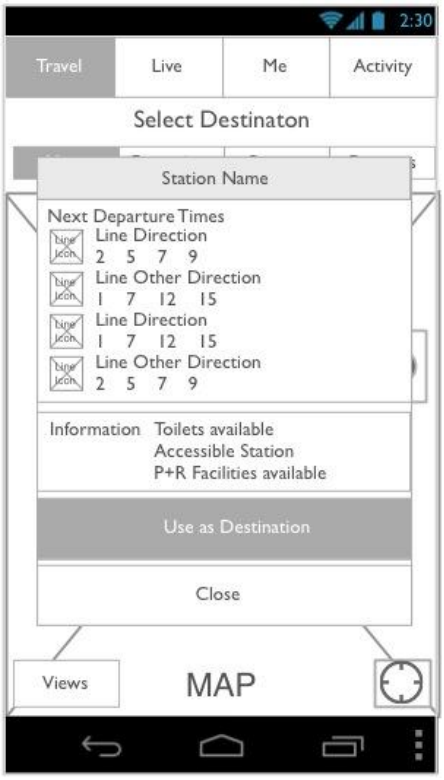
By clicking on a point on the map an info box pops up to give additional information related to route and destination, e. g. different address lines, phone number, pictures, info text.

Station pin pop up



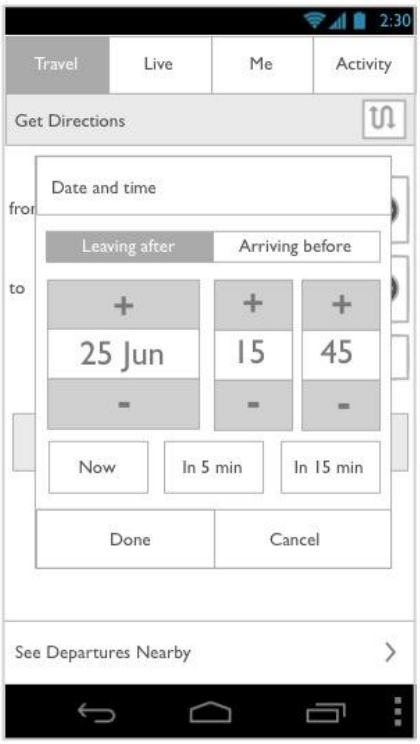
By clicking on a specific station on the map the user can demand additional information related to the defined relevant station or traffic point.

Station pin pop up info box



By clicking on a selected station on the map a pop up info box will appear. The user can get some information about next departure times, different lines, toilets available, accessibility of the station, P+R facilities. He can decide whether to use the proposed route as a destination or not and close the pop up info box.

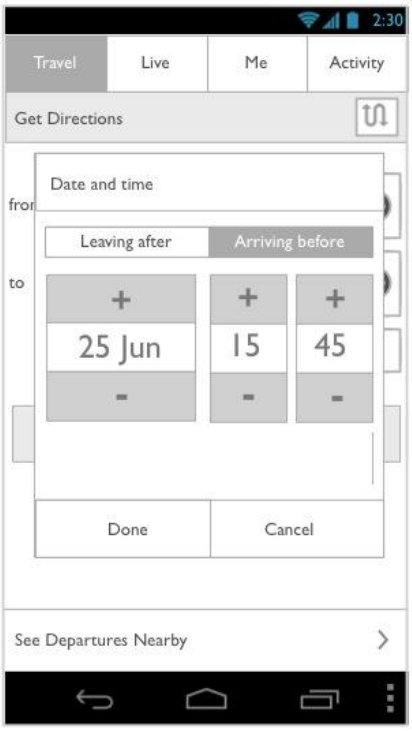
Set departure time



The user can set the departure time within a pop up box related to the first screen. The exact date and time can be defined by different given opportunities and suggestions on the screen.

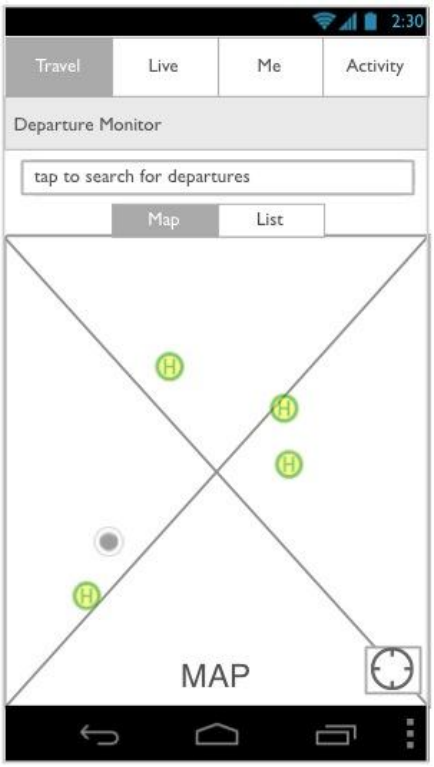
The tab *Leaving after* enables to find possibilities to travel later very quickly.

Set arrival time



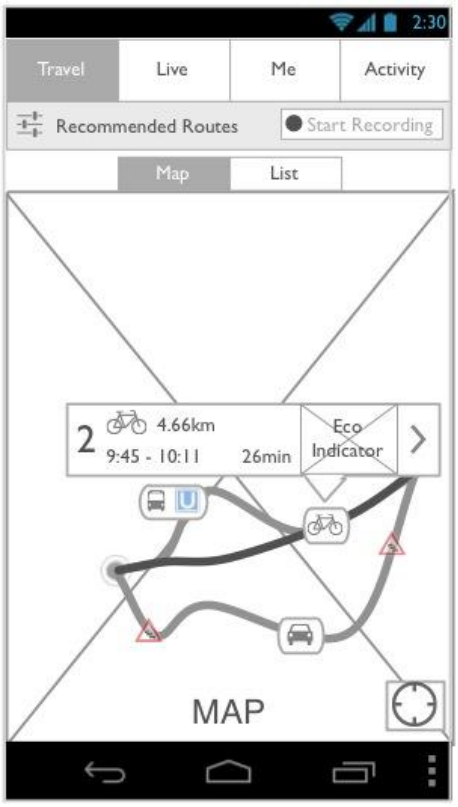
By clicking on the tab *Arriving before* the PEOCAX app offers possible routes to travel and arrive earlier.

Departure monitor



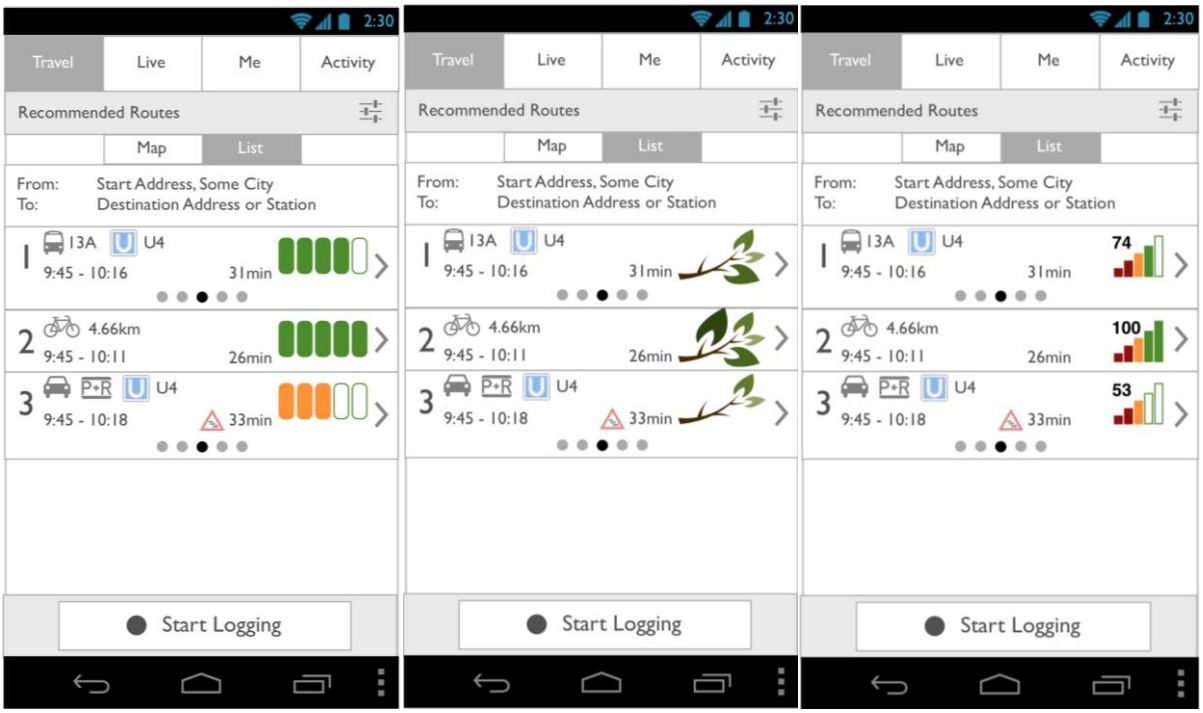
If the user wants to know more about departure times he can click on illuminated and marked traffic points on the map.

Routing results map



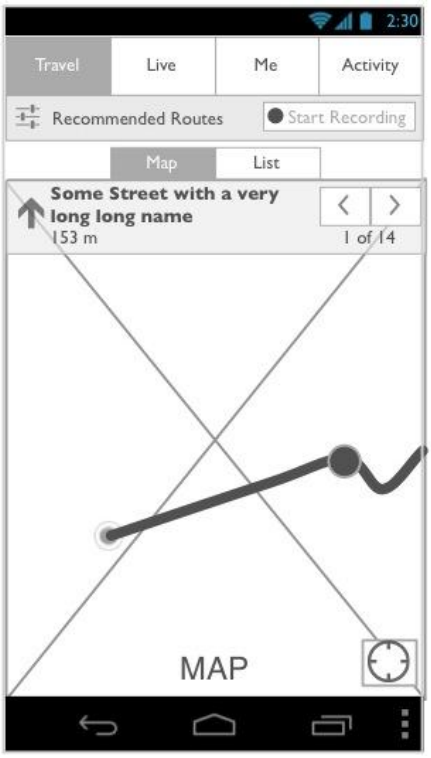
Different recommended routes are visualized graphically on a map, so that the user gets a good visual overview over the travel possibilities suggested by PEACOX. Different icons are included as well as concrete information about trip mode, departure and arrival time, travel time, length of route, and eco friendliness. The user can demand the information for each route by clicking on it.

Routing results list



This screen includes the visualization of recommended routes, including different icons, an eco-indicator and concrete information about trip mode, departure and arrival time, travel time, length of route, and eco friendliness. The user can switch to that list by clicking on the tab List. Currently several alternatives for visualising the eco-friendliness of a given route are explored, as illustrated in the three figures above.

Routing results map details



By clicking on the map the user can have a detailed picture of the route and can zoom for more details.

Routing results list details

The user can have additional information listed for a selected route. The list gives an overview over the entire route and relevant track sections in real time information. So the user gets important information about e. g. the current traffic situation, congestions, and construction sites.

4.3.2 Tab Live

Live feedback

By clicking on the tab Live a Daily tree emerges and gives live feedback to the user by visualizing his travel behaviour and environmental input by the green coloration of the tree. If the user travels eco-friendly the tree becomes green throughout the day.

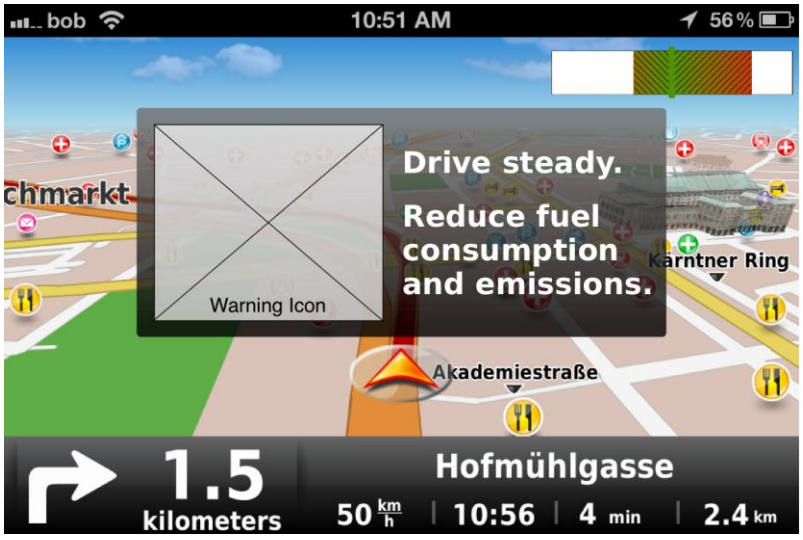
Peacox will also incorporate live driving behaviour feedback that will be integrated in to the existing Dynavix turn-by-turn navigation solution operated by TMX. Such feedback aims at suggesting ecologically friendlier driving style. The following behaviours have been identified as decreasing carbon emissions:

- Slowing down: Speeds above a 100km/h produce substantially higher emissions
- Steady driving: Constant accelerating followed by rapid breaking (e.g. with red lights) increases emissions. Drives are recommended to keep distance to the car in front to avoid sudden breaking and acceleration.
- Smooth acceleration: Drivers are suggested to slowly accelerate to reduce emissions

- No idling: Drivers are recommended to turn off the engine when idling for more than 10 seconds, as it already saves emissions. Also, idling the engine before starting a trip to warm up the engine is discouraged. It is better to warm by start driving carefully in the beginning. Drivers are also asked to finish all preparations (fasten seatbelts, adjusting mirrors etc.) before starting the engine.

As shown in the figures below the feedback needs to take into account that the majority of screen real estate still needs to be reserved for turn-by-turn instructions. Therefore, the design proposes in the normal state an accelerometer/decelerometer bar on the top right corner that indicates how smooth the car is going.

Whenever a driver is not driving not smoothly, too fast, or idling the engine for an extended period of time, a large suggestive message appears in the centre of the screen.



It consists of an easy to recognise icon and a short text message that explains what is recommended. After a few seconds, the pop-up is reduced in size and moved to the top left corner where it remains until the driver changes his or her driving style (see figure below).

4.3.3 Tab Me

Me without Facebook

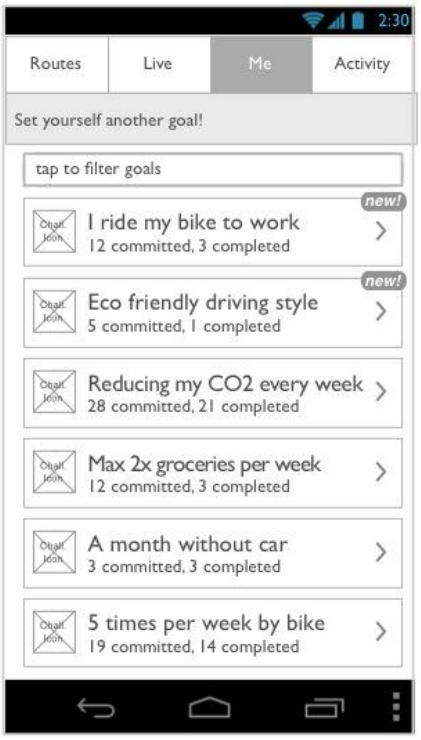
In the framework of the tab *Me* the user can connect with Facebook. The system is also usable without having an account or being connected with Facebook.

With *Me* the user can define goals that he wants to achieve. Different recommendations are given to the user for him to accept or reject. An overview over on-going and reached goals and recommendations is shown on the screen by the PEACOX garden, small trees and numbers.

Me with Facebook

If the user decides to use his Facebook account with PEACOX he can share e. g. objectives, achievements, status of goals and compare to others on Facebook.

Me add goals



The user can define which recommendations he wants to accept and which goals he wants to reach by marking on a given list. New goals are labelled to help the user decide which goals he wants to accept and reject.

Goal details

The user can request additional information before he commits to a goal, e. g. how many other users have committed to the goal, how many users have completed it, and how many trees will grow in the PEACOX garden.

User preferences

The tab *Me* offers the possibility to define or change user specific preferences related to personal options (e. g. means of transport) or transport options (e. g. public transport, cycling, walking, driving)

Preferences of means of transport

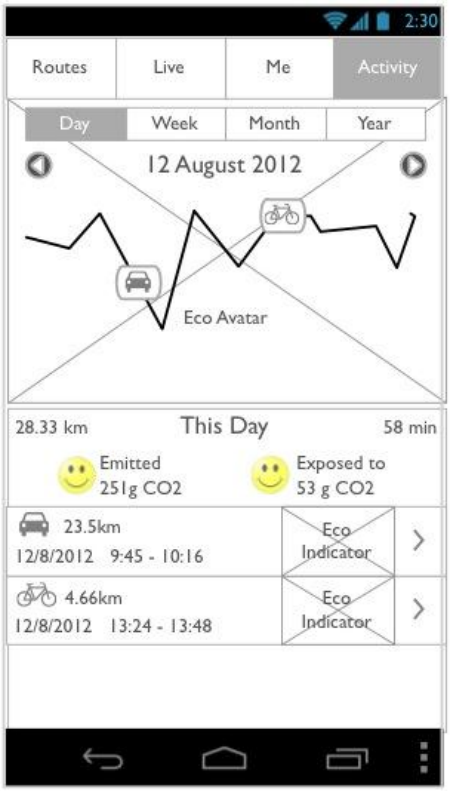
Within the tab *Me* the user can modify certain settings related to transportation preferences. Transport options which are accessible for the user and which he normally uses can be selected by marking the relevant check-boxes. Unused means of transportation remain unmarked and are thus not taken into account in the search.

Preferences caused by disabilities

Further preferences regarding accessibility can be set by marking relevant check-boxes. This is especially important for users with disabilities, who could have travel barriers.

4.3.4 Tab Activity

Activity log

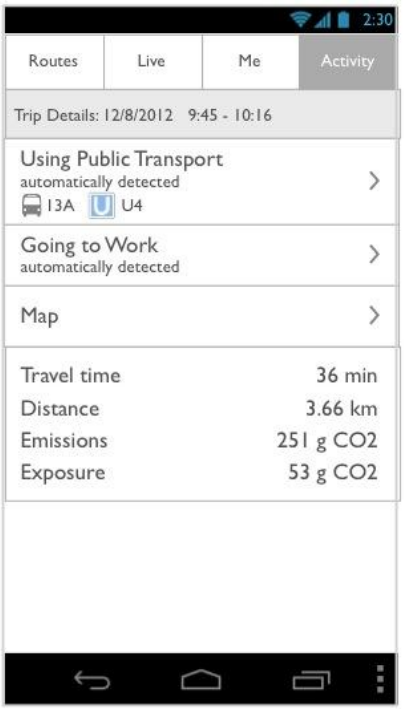


The tab *Activity* gives an overview of the user's activities of the past day, week, month or year. The user can define the preferred period of time by clicking on a tab.

A graph gives the user feedback about his travel activities and information about savings of CO_2 and emission fuel.

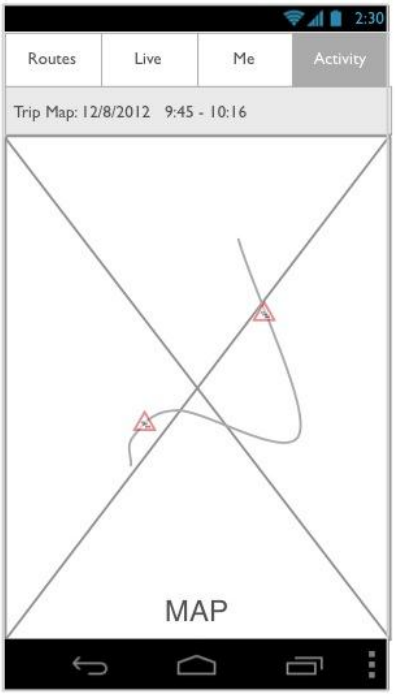
Additional information and feedback is given to the user by a list which shows the history of routes and information of amount of CO_2 consumption.

Trip history



The Trip history is an important part of the tab *Activity* where the user gets trip details for the latest trips. He gets a detailed overview of date, used means of transport, trip purpose, maps, travel time, distance, emissions and exposure. The overview is carried out here in tabular form.

Trip history map



The PEACOX app also offers a graphical representation of the trip history. Therefore the particular route is traced on a map; information is also included (at the bottom of the screen).

5. Evaluation plan for the first version of the PEACOX interfaces

In the 1st Peacox Evaluation the PEACOX-mock-ups will be evaluated by potential end-users and usability experts – as planned in T5.2 Designing and evaluating persuasive strategies for eco-feedback technologies.

Potential end users and usability experts (as evaluators, not only evaluation leaders) are included in the evaluation. The 1st PEACOX Evaluation will be implemented in the usability laboratories at CURE in Vienna with 16 potential end users (recruited from CURE-internal database of evaluation participants) and 4 usability experts (employees at CURE).

The 1st PEACOX Evaluation has the main aims of:

- Provide input for the further design and iteration of the PEACOX-mock-ups
- Explore the implementation and effect of persuasive strategies of the PEACOX mock-ups

6. References

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