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UX/UI design for Transparent Charging Station

Proposal - Update

April 2018
Version 1

Introduction

For the pilot of the Transparent Charging Station (TCS) in Amsterdam, there is a need for a compelling design of the user interface that will allow users and citizens to understand the decision-making and prioritisation in the smart charging process.

Debrief

The design for the pilot TCS will be grounded in the design principles explored in the preceding project that ultimately led to the TCS prototype. However, it needs to be acknowledged that the TCS prototype was designed with a particular impact in mind: a (mild) provocation to spark reflection on — among other aspects — the potentially discriminatory implications of smart city algorithms. In his book Future Ethics, author Cennydd Bowles considers the TCS an example of a provocatype (a provocative prototype) intended to 'shock' an audience and trigger reflection the implications of such service.

The pilot for the TCS serves a different purpose than the prototype. Foremost, the charge point is an object of research to evaluate the perception of a transparent algorithm by users and citizens. Secondly, the TCS can serve as a demonstrator of Amsterdam's commitment to transparency of smart city solutions. Either way, the purpose informs the intended user experience, the design of the interface, and potentially the design of the charging station (laadplein) beyond the screen.

Some other aspects of this pilot are different from the prototype, and relevant to the design brief. A simple challenge is introduced by physically disconnecting the charging experience from interacting with the charging algorithm, ie. when starting or terminating a charging action, right now, there is no immediate urgency to walk a couple of meters and reflect on the treatment by the smart charging algorithm. This implication hints at the need for a spatial intervention in the space round the TCS to build a coherent user experience.

Another design challenge is to build a meaningful user experience with the factors taken into account by the algorithm. The Flexpower 2 factors are less 'provoking', than those in the prototype, thus affecting the impact of transparency. This is not a problem per se, but the intended impact of transparency could be something to design for. It may also be debated to what extend the design should cater for the actionable perspective of citizens, in case they don't agree with the decisions made by the algorithm.

All the aforementioned considerations call for a grounded design process that involve all consortium partners. This process is scoped in the next section, after a brief elaboration on two practical matters from the briefing; the server infrastructure and public monitor.

Server infrastructure

ElaadNL [redacted] has offered to run and maintain the server needed to host the interface.

Public monitor

The public monitor will be sourced in collaboration with the department of Ruimte & Duurzaamheid of the city of Amsterdam. An appropriate moment for the specification of the hardware should be determined in collaboration with the project partners; preferably this happens in the design phase.

Process & planning

We propose a 5 stage process to develop the TCS. In the first 3 phases (scoping, design, development), the design team will work towards a functional application.

In addition to the software deliverable, we predict the need for an intervention in the public space around the TCS to provide a coherent user experience (think of elements that connect display and charge points, signs, painted sidewalks, etc.). The engineering and realisation of such intervention is set to take place in a 4th phase, commencing in July.

We also assume that the evaluations executed by the research partner of the consortium will call for optimisations. Throughout the year of operation, the design team will support the research partner with design and development to optimise the experience of the TCS (based on intended impact).

NB: The proposal is crafted to make the early July deadline, but we have to raise some caution here: this is a very ambitious deadline and some corners will have to be cut to make this possible.

May
1. Scoping

The user experience and interface of the TCS should serve the objectives of the pilot. The starting point for the design process is to collaboratively understand

these objectives and scope a detailed program of requirements in an actionable language for the design process. This is done in the format of a structured, half day workshop hosted by The Incredible Machine.

Deliverable: detailed program of requirements

The outcomes of the workshop are processed and shared with the consortium partners in a Google Document. After a set period of 5 days for feedback, a final document with requirements is created. This document is primarily meant for the designers, but may also include a section of roles and responsibilities for the partners.

May - June
2. Design phase

Based on the established criteria, the design team will create a series of ideas to evaluate with partners. In a co-design session, partners can provide input on the ideas to inform the final design iteration.

At the concluding presentation of the design phase, the technical requirements will be established and tasks and responsibilities for realisation are appointed to the appropriate project partner.

Deliverable: UI-design, charge station design

Based on the evaluation of ideas, the design team creates sketches and wireframes of the UI-design. Potentially, sketches of the entire charge station experience are created.

A presentation of the design concludes the design phase and initiates the application development phase.

June - July
3. Application development

In collaboration with ElaadNL an application is developed that runs on the Flexpower 2 APIs. The design team wil take on the responsibility for all user-facing aspects of the digital interface; including but not limited to interaction design, visual design, animations, iconography, etc.

Other aspects of the technical realisation, like back-end development, infrastructure, back-office, operations, installation of the public display, configuration of the hardware, maintenance of the hardware, development of custom hardware (eg. an RFID scanner at the public display), etc. are not in scope for the design team.

If the design from phase 2 calls for physical interventions (beyond the digital interface), a detailed design and work plan is made. With the work plan proposals from contractors can requested.

Deliverables: application, work plan

The application will be developed as a web-application that runs on the ElaadNL servers. This allows for remote updates, maintenance, etc. If possible, a privacy-friendly analytics solution will be implemented to help quantify how users interact with the application.

A version-control (git) repository is made available to the project partners to contribute to the development or interface their part of the solution. Documentation is made available in the repository.

If all goes well, the application is ready for testing in the field Mid-July.

For potential physical interventions, designs are provided with a level of detail to solicit proposals from contractors.

August - September
4. Testing & Realisation physical interventions

Early July the application can be tested for stability. The design-team will be available for troubleshooting remotely and on-site.

If physical interventions are commissioned, the design team can oversee and support the development and realisation of such additions.

Deliverables: bug-fixes, physical interventions

Bug-fixes will be committed to the repository. Physical interventions are installed.

September - June ‘20
5. Operation, research & optimisation

When all elements are in place and running, researchers can start to evaluate the user experience and impact of the TCS. In collaboration with the research-team, optimisations to the interface can be made.

Deliverables: optimised versions of the application

Improvements will be committed to the repository. Physical interventions are installed.

Budget

Depending on the fidelity and features of the design, we can make the definite proposal for the development and implementation. At this state we can only make a definitive budget for the design phases.

PHASE	HRS	TOTAL
1. Scoping		
Site visit, research	6	€ [redacted]
Prepare and host kick-off workshop	8	€ [redacted]
Processing, Documentation & Implementing feedback	16	€ [redacted]
Project management (10%)		€ [redacted]
2. Design		
Ideation phase	40	€ [redacted]
Idea presenation	4	€ [redacted]
Final design	40	€ [redacted]
User testing	4	€ [redacted]
Project management (10%)		€ [redacted]
TOTAL		**€** [redacted]

The following overview is an estimate of costs for the development and beyond. Note that all of these costs are subject to change depending on the design.

PHASE	ESTIMATE
3. Development	
Software development	€ [redacted]
Visual design (2 iterations)	€ [redacted]
Additional media (videos)	€ [redacted]
Deployment, testing on-site	€ [redacted]
Detailed designs & work plan physical interventions	€ [redacted]
4. Testing	
Troubleshooting & bugfixing	€ [redacted]
Oversee realisation physical interventions	€ [redacted]
5. Optimisation	
Support research-team with optimisations (3 iteratations)	€ [redacted]
OTHER	
Prototype materials	€ [redacted]
Physical interventions around the TCS	€ [redacted]
TOTAL	**€** [redacted]

Licence

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