A reference model for designing public self-service environments in Estonia

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Abstract
In this position paper we give an insight to the process of developing a reference model for the design of public self-service environments in Estonia. First an overview of the initial goals set by the Ministry of Economic affairs tender is given. Then an abstract theory-based approach on how the goals could have been achieved is described, and finally an overview of the actual practices as they were carried out by the contractor that won the tender is depicted. The paper ends with a short comparison of both approaches while providing questions to be addressed in the workshop.

Author Keywords
A reference model for designing public self-service environments in Estonia

ACM Classification Keywords
H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

General Terms
Reference model, harmonization

Introduction
Self-service environments are widespread in Estonia [1] and some are highlighted by the OECD and the European
Commission as top examples worldwide [2]. However, a recent report identifies interaction and service design inconsistencies as a major drawback for wider uptake of the available self-service environments. Figures 1, 2 and 3 depict some of the available environments.

Although the overall opinion of users is that all of the public services have become more accessible and easier to use when compared to the offline versions [9], it is necessary to make the e-services even more intuitive and simple in order to encourage people less skilled in using IT solutions to use e-services [8].

In order to encourage consistency in the design and re-design of future and existing e-services in Estonia, the Ministry of Economic Affairs procured a study for to develop a framework that would scaffold the outsourcing processes of software developing services for the public sector and result in more comfortable and customer centred self-service environments. The procurement foresaw the establishment of the methodology and the development of an exemplary prototype that could be used as reference model [6].

The following section describes the proposed systematic and theory-based approach.

Theory-based approach
The following three steps convey the approach outlined to address the challenge of harmonising public self-service environments in Estonia.

1st step Evaluation of existing self-service environments
This first step focuses on assessing the state of existing self-service environments with the goal of identifying and understanding successful and failed self-service environments. The main purpose is to pinpoint the success factors and to highlight the breakdowns in communication between the service provider and its beneficiary while understanding the underlying reasons. A secondary purpose is the identification of the typical user traits and workflow components that will enable the identification of predominant user profiles and workflows. A third but not less important purpose is to establish a user acceptability baseline for self-service environments that can later be used as a reference benchmark.

This will be achieved through:

- Semiotic inspection: Expert evaluation of designer to end-user communication of the selected self-service environments to identify potential breakdowns in communication between the service provider and its beneficiary [5];
- Expert review: Expert inspection of the selected self-service environments to identify major accessibility and usability strengths and improvement opportunities [7];
- Pluralistic walkthrough: The purpose of this method is to identify successful and failed self-service environments involving representative users, product developers and interaction designers. Users should be representative of the target audience, and are considered the primary participants in the usability and user experience evaluation. Product developers answer questions about design and suggest solutions to interface problems users have encountered. Interaction designers serve as the facilitators and are also there to provide feedback on the design as well as recommend design improvements. The role of the facilitator is to guide users through tasks and facilitate collaboration between users and developers [4];
Remote testing: The purpose of this approach is to refine the findings of the pluralistic walkthrough involving larger numbers of users in selected tasks. It addresses accessibility, usability and user experience issues [10];

User testing: The purpose of this final step is to refine the findings of the remote testing and also included the collection and analysis of eye tracking and neurophysiological data to clearly identify specific issues [3].

In this step two rounds of meetings are needed: one before the start of the evaluation process to collect the information needed to design the evaluation procedures; and one with each of the institutions providing the self-evaluation services we will be evaluating with the Pluralistic Walkthrough.

The envisioned outcomes are: a set of success cases to be generalised; a set of failed cases; the diagnosis of the main communication breakdowns; an established baseline for user activity (how fast something works, what is the limited of information needing to be presented. . . ); and common user profiles and workflows.

[2nd step] Development of the reference model for designing self-service environments

This second step focuses on developing a reference model for designing self-service environments, combining the outcomes of the first step with state-of-the-art knowledge on the design and evaluation of interactive systems.

This is achieved through:

- Developing a collection of user traits to facilitated the identification of service-specific user profiles;
- Developing of workflow components to facilitated the description of service-specific user workflows;
- Developing design templates for service presentation based on the identified success cases;
- Developing design templates for consistent user interface design based on accessibility recommendations, usability heuristics and the identified success cases; and
- Developing an articulated evaluation strategy to ensure adequate levels of user experience, based on reference benchmark identified in the first step.

Two rounds of meetings with the stakeholders are needed: one in the beginning of the development of the reference model and another when a draft version exists of all parts of the reference model.

The outcome of this second step is a reference model that provides: procedures for the identification of predominant user profiles and workflows; design templates for service presentation based on predominant user profiles and workflows; design templates for consistent user interface design based on predominant user profiles and workflows; and procedures, metrics and success criteria for the evaluation of self-service environments designed with the proposed design templates.

[3rd step] Proof of concept

Finally, step three aims to demonstrate the application of the reference model to an existing self-service environment. This includes selecting an existing self-service environment and explore the application of the reference model for illustration purposes. Working in this proof of concept also serves the purpose of validating the proposed reference model. One plenary meetings with the stakeholders is needed to showcase the results of the
application of reference model to an existing self-service environment. The expected outcomes are: a limited functionality prototype of the selected self-service environment built upon the design templates prescribed by the reference model; and an assessment of the proposed reference model, through the evaluation of the limited functionality prototype, based on the evaluation procedures, metrics and success criteria prescribed by the reference model.

But actual practices differ from the above described theory-based approach. These are described in the next section.

**Overview of the actual practices**

This section provides an overview of the activities carried out by the Estonian state contractor that won the invitation to tender for the development of a reference model for designing public self-service environments.

The contractor adhered to the following procedure (see also figure 4):

1. Stakeholder interviews to clarify the goal while confirming the reasons behind the project in hand;
2. Studying existing self-service environments to identify patterns in common features and processes. However, no user studies were undertaken in this stage. There was no direct feedback from end-users.
3. Interviews with key persons responsible for existing self-service environments. The goal was to identify good and bad practices from all phases of the design, development, implementation and deployment lifecycle.
4. Prototype development. The goal of the prototype was to illustrate how should the selected features identified by studying the existing self-service environments be used to achieve higher levels of user experience.
5. Prototype evaluation. To validate with end-users, to some extent, the underlying assumptions.
6. The project ended with the description of guidelines, based on the results of the previous steps, to support the process of outsourcing future (re-)development of public sector self-service environments.

**Closing remarks**

Although there are certainly similarities between the described theory-driven approach and the contractor’s pragmatic process, there are also clear breadth and depth differences, the main one being a total absence of end-user input in the early stages of the contractor’s process.

When questioned about this, the contractor claimed that the rational behind this approach was twofold: (1) to build on end-user acquired knowledge about existing self-service environments, and (2) to improve overall user experience by providing a coherent and consistent set of features across public self-service environments in Estonia.

Although the claims seems reasonable, one questions whether or not this is a missed opportunity to thoroughly address the challenge while aiming for a sounder outcome.

The aims of bringing these issues to this workshop are:

- To discuss the commonalities and specificities of designing (or supporting the design) self-service environments;
• To foster an understanding how to achieve an adequate balance between theory-driven goals and pragmatic achievements; and
• To short-list the potential theoretical contributions, critiquing and maturing the proposed theory-driven approach, as well as the described concrete practices.

References