
'Station of Being' – Design Research into Practice

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Abstract

In this paper we present 'Station of Being', a prototype of a smart bus station in the Northern Swedish city of Umeå. This project emerges in a space between design practice and design research: it involved extensive development and production of a permanently deployed artefact, while the process leading to its design and its function as a prototype, as well as the reflection on its impact, revolve around design research. We sketch the particular context and actors involved in this project, its process and we describe the end-result. We conclude with reflections on such process, on the outcomes and impact of this prototype as design researchers.

Author Keywords

Design research; prototype; design practice; experience

CSS Concepts

• **Human-centered computing~Interaction Design**; *Empirical studies in interaction design*;

Introduction

The 'Station of Being' was a design research project centered on the design, development and production of a prototype smart BRT (Bus Rapid Transit) station in the Northern Swedish city of Umeå. Together with a number of other European cities, the city of Umeå is

part of the H2020 European Smart City Lighthouse Project RUGGEDISED. In this research and innovation project, public sector partners work with businesses and research centers to demonstrate how combinations of ICT, e-mobility and energy solutions can be leveraged to design a smart and resilient city for all [1]. Each city involved in this endeavor executes a number of projects, the design and development of a smart bus station being one of such projects in the city of Umeå.

Assignment

The project was funded by a public procurement procedure, initiated by the city of Umeå in spring of 2017. The procurement sought offers for processes to design and produce a Smart BRT Station, replacing a specific bus stop in the university district. In addition to practical and functional requirements, the assignment stated the station was to be of a highly innovative and sustainable character, it had to promote the feeling of safety; the process was to involve citizens in its development and the final result was to be a (semi-) permanently deployed artifact.

Actors

The winning tender was submitted by a consortium consisting of RISE Prototyping Societies and Rombout Frieling Labs. RISE Prototyping Societies specialises in design research and is a department of RISE, the national polytechnical research institute owned by the Swedish state. Rombout Frieling Labs is an independent design and engineering consultancy based in the Netherlands. The project was led by RISE in the design and research phase, and by Rombout Frieling Labs in the design and production phase. The Urban Planning Department of the city of Umeå acted as project owner, the Street and Parks department as client.

A large number of other stakeholders were involved throughout different stages of the project. These include those involved in the design and research process, such as for example students and staff from the local design school (Umeå Institute of Design), actors within the system this design project addressed (e.g. public transport company, a real estate owner, a local power company, etc.) and several companies involved in the production of the station.

Process

The process was based on the *Design Research and Innovation for Transformative Practices Framework* [2], which aims at supporting multi-stakeholder teams to research, design and innovate towards tackling societal challenges that are inherently wicked and systemic. This enables people, communities and society to with to propose and realise more sustainable futures. Actors that could work independently only a few years ago, today feel the need to connect and collaborate. Different agendas have to relate: social, economic, political agendas, as well as the civil society's agenda; all of them feel the increasingly urgent call to connect to the higher goal of environmental sustainability. There is a need for All actors involved in this system to collaborate to produce transformations where all points of view are considered. The process adopted in the case of Station of Being followed these notions and included all actors along the way, gathering perspectives and emerging needs. Design and prototyping were used continuously throughout the process, in order to explore opportunities, understand needs and communicate design directions with the stakeholders. The design research process started with a course for 2nd year design students, that explored potential interventions for bus stops throughout the city using

prototyping-in-the-wild methodologies and observing travelers' behavior.

The Station of Being

The fully functional prototype of the 'Station of Being' was completed and officially opened in 2019. The station is to be in use for an undetermined amount of time, with a minimum of seven years after delivery. The design [3,4] is aimed at providing a more pleasant waiting experience for commuters, turning waiting time into time to reflect, to feel, to be, hereby making public transport more attractive, promote an increase in use, thus having impact on lowering the carbon emissions of the city. The design includes two main components that contribute to this goal:

Firstly, the bus station actively aids travelers to keep track of incoming busses. The roof features integrated LED lights and speakers. A light- and soundscape is triggered by busses that are nearing the station, with every bus line having its own, subtle, light and sound scape referring to the colour of the line (light) and character and history of its final destination (sound). This light and soundscape can be seen by those approaching the station, and from anywhere inside the station, removing the necessity for travelers to constantly watch up the road for incoming buses. Secondly, the bus station aims to make travelers physically comfortable in being outside while contributing to the feeling of safety. To this end, 8 'pods' made from bent wood hang from the ceiling. These pods invite travelers to lean comfortably in a semi-enclosed space that provides a sense of comfort and warmth without consuming electrical power. The pods can be rotated to offer protection from any wind direction or to mindlessly waggle and weave, slowly

moving while waiting for the bus. Moreover, the pods can be positioned to create different social situations, turning them towards one another, to protect others or to close oneself off from others.

In addition, a number of other features contribute to the functionality and experience of the station. These include additional seating and circular LED screens that provide bus arrival times in a more traditional manner. Keeping in mind safety, accessibility and maintenance, the design has been optimized for a snow-plough to drive straight through the station instead of the typical use of ground heating or manual labor. The main component of the structure, the roof, is largely made out of locally produced timber. The power usage of the station is comparable to typical bus stops, and is provided by the city's own hydro-electric power generator.

Reflections on Station of Being as RtD

In the following sections, we offer a number of brief reflections on different themes that have emerged over the course of the project or are currently emerging.

Reframing the Assignment

The initial assignment has been quite dramatically reframed over the course of the project. The original procurement demanded a description of a process to tackle the challenge rather than a finished proposal which is more typical of these competitions. This provided some space for innovation during the process. Still, the nature of a public procurement procedure and the standardized contracts involved in this process implicitly frame a problem and solution space. Significant work was needed to allow early outcomes of explorations, driven by design (such as the exploratory

design student course) to highlight inherent tensions and opposing viewpoints to be reconciled and reprioritized.

Competence Development in Collaboration

Urban planning and mobility are complex topics and many actors were involved in the process. Following the Transformative Practices methodology [2], this process relied on participatory and co-creative activities. Prototypes of different types were used to foster a constructive dialogue between those involved. We found this type of dialogue to aid in building trust between collaborators, providing space for exploring the unknown and navigating formalities. Co-creation and experienceable prototypes empowered and engaged individuals (e.g. the client representatives, or snow ploughers and maintenance crews) in the process more actively than they expected to be. Allowing them to become ambassadors was vital in aligning the complex networks of stakeholders and find support for more radical ideas. At the same time, stakeholders that had difficulty engaging in this type of dialogue became further removed from the process. This process also showed that a significant part of the impact of this project was competence development within different institutions: to contribute to the design and development of a radical new proposal required individuals to engage in a process dealing with the unknown and take an active stance in navigating the complexity of existing norms, ways of working and policies.

Role of citizen participation and public debate on impact

The public was involved in the design and research processes through many public interventions in the form of probes and prototypes. This part of the process

was essential in framing and developing the concept. However, in the production phase of the project it became more difficult to involve the public despite attempts to communicate about the coming intervention. There was public debate in newspapers and other forums after the station was opened, with heated opinions being voiced both positively and negatively. For us as design researchers, the public debate highlighted a need for transformative and explorative proposals to be framed in the right lens. Those that understood the prototype as a stepping stone along a long term strategy for the city to explore what could be done to radically alter the built environment in relation to climate change, understood the value of the design. Those that only saw it as a more expensive version of a typical bus stop, did not. An initial user evaluation [5] of the station has shown that the station scores positive for appreciation, and is appreciated slightly more by women in comparison to men.

Prototype as a Platform

Although this project was not without challenges and tensions, many of those involved in the process are pleased with the end result according to a recent joint evaluation. As a prototype that has been realized, the station is starting to become a platform and example for addressing other systemic or complex challenges in the city in this manner. Several new project opportunities to address mobility in the growing city of Umeå are currently being discussed as prototype-driven and building upon the same core network of stakeholders.

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