Staging the Interaction – Explorative Interventions for Engaging Citizens in the Development of Public Knowledge Institutions

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Abstract

In this paper, six different classes of methods of exploratory interventions for engaging citizens in the development process of public knowledge institutions will be presented. The classification is based on twelve implemented and tested exploratory installations, and can be used as inspiration for stakeholders in order to work systematically with the stakeholder-citizens' interaction. The discussion is centered on intertwining the physical and the digital, and exemplified through the development process of a new culture house. The contribution of this paper is the classification of methods that a) address the unification of physical and digital spaces and b) stage the interaction between different actors relevant for the development of the design process, through interactive tools that can be a complement to using the traditional virtual 3D-models, physical architectural models, or public hearings.

Keywords

Introduction

In recent years, there has been a growing understanding among both public and private stakeholders of the importance to interact with and engage citizens in the development of public buildings and spaces. Ideally, all public building projects should be initiated by defining the future users, define how to communicate around the project, and to engage the citizens. Though, most often the project is almost completed before the users gets involved. In the development of public knowledge institutions, here defined as places accessible to the community whose functions are to serve as repositories for and disseminators of knowledge, such as libraries, museums, theatres, science centers and culture houses, the purpose of engaging the citizens is firstly to make the public aware of the project in order to create interest. Secondly, it is also about introducing a participatory design process, where the citizens become co-creators, inform the architectural program and city planning processes, and finally provide stakeholders with decision making material.

Already some decades ago, Alexander stressed the importance of involving the citizens and future users of the building in the development process, and developed a common language (Alexander, 2005). Though, not many have taken up the mantle, and there is a lack of best practice models (Dalsgaard & Eriksson, 2013). User centered design and participatory design have been used in interaction design for decades. Though, voices within the interaction design community are starting to rise to transfer this knowledge to design projects of larger scale (Shapiro, 2005), extending the tradition of applying this approach toprojects of smaller scale (Oostven & Besselar, 2004; Simonsen & Hertzum,

2008). Large-scale projects are typically characterized by one or several of the following factors: long time spans, large or diverse groups of users, and result in products that are complex or extensive in scope. User involvement has had great influence in interaction design, but has in recent years become an important factor also in architecture and urban development (e.g. Sanders, 2010). An example of this is the development of the new main public library in Aarhus in Denmark (Aarhus municipality, 2013), where the winner of the architectural competition was appointed due to how they would involve the users in their development process. This is in opposition to the tradition where projects of this nature and scale more often are developed top-down, such as in for instance the Bibliotheque National in Paris, France (McCrady, 1998).

The case in question in this paper has been initiated by the municipality of Lundby in co-operation with researchers in architecture and interaction design at Chalmers University of Technology in Gothenburg, Sweden. The aim of the project is to develop methods and tools for stakeholders to create engagement from the citizens around the planning and development of a new cultural house.
The prototypes are intended to stage the interaction between the citizens and the stakeholders in the development process. The concept of staging is used here as a unifying synonym to bringing out, presenting, showing, and performing. Staging also refers directly to "putting something on the stage", using the theatre stage as conceptual metaphor (Lakoff & Johnson, 1980; Ricouer, 1978). This conceptual metaphor includes and induces other usable metaphors, such as roles, actors, audiences, storytelling, play, and set. All of these are viable concepts in the use of interaction design as a method in participatory design processes.

This paper aims for public institutions, private interests, researchers and practitioners, to explore methods for how to work with citizen engagement in large-scale development projects using interactive tools. In this paper we offer an analysis of twelve different implemented prototypes for a case centered on the development of a new cultural house. The prototypes serve as examples and shape the foundation for a classification system that can be used by stakeholders, researchers and designers in the development of public knowledge institutions. The purpose of this approach is to contribute to existing methods for engaging the citizens, and to provide the stakeholders with a classification of methods that can be used in order to work systematically with the stakeholder- citizens' interaction.

The contribution of this paper is twofold. Firstly, we offer a case description of the development of a new cultural house with twelve alternative ways to create citizen engagement through intertwining the physical and the digital space. The second contribution is a classification system, where six types of methods for how to systematically engage citizens in large scale development projects are identified and described. Though, this is based primarily on experiences from this project, it is our hope that this can inform and inspire other stakeholders involved in similar projects.

Working Definition of Involvement

Alexander states that "Even in the biggest building, people must be the core" (Alexander, 2005), meaning that involving the citizens and stakeholders is essential. Citizen involvement is a mutual relationship in which the visitor in a public knowledge institution encounters a framing of his or her experience and inquiry and gives something to the space through her actions. This contribution may be understood in a very literal sense, e.g. comment on a prospect, or it may have to do with enriching the place through engaged interaction, e.g. through participating in an event. Most common methods used today are virtual models, web services, social media, physical architectural models, or

public hearings. Stakeholder involvement is when the different stakeholders have methods and inspiration enough in order to be curious and do new types of explorations and interventions to engage citizens, employees and contributors, both before and after the program. This will eventually provide material to support the decision making process. The drawback of involvement can for instance be the cost, or the lack of knowledge of methods and tools. There is a risk with user involvement that the process leads to a result that is merely acceptable for everyone and fulfilling expressed demands, rather than being visionary and fulfilling true needs (Dalsgaard & Eriksson, 2013). In despite of this, user involvement is an ongoing qualification of vision, idea, and product, and provides the stakeholders with empowerment and influence. An overarching argument for using involvement is to develop something that fits stakeholders' needs, but it also provides political leverage (Dalsgaard & Eriksson, 2013).

Culture House – Aims and Background

In 2010, a proposal for a new cultural house in Lundby was approved by the Gothenburg city council, making the project realizable in about 5-10 years. The concept builds on the idea that cultural activities and expressions are important for the life quality of the citizens, and that a culture house is a service that the district Lundby should provide.
The intended content of the culture house is a library, exhibition areas, a multi-purpose hall for lectures, cinema, concert and theatre, rehearsal rooms, meeting rooms, workshops, a café, and possibly other facilities. The activities are meant to be run by three different actors; the district of Lundby, other cultural institutions of Gothenburg, and commercial actors. The vision is that the content and design of the cultural house is developed in close collaboration with the citizens of Lundby, making it flexible and updated for the different and ever-changing activities of the local communities.

In the proposal for the culture house, user involvement is emphasized, both regarding the ongoing planning process and for the future management. The overall goal is that the culture house will be a well-known meeting point and cultural center, both for local citizens and for visitors to Gothenburg. The proposal also points out that the culture house will be built using the latest technology, for sustainability reasons but also for the flexibility and interactivity of the physical space.
So far, a physical prototype space for the culture house, called Culture Warehouse, has been established. The building is a huge and empty warehouse situated in a void urban space. Since 2011 different artists have used the space for performances and exhibitions. The purpose of this temporary physical space is to give room to cultural activities that contribute to the citizens' creativity in projects that have low or no budget.

One of the initial steps in developing the culture house is to define a Virtual Culture House. This has three aligning purposes; to realize a set of virtual spaces where cultural activities and expressions can take place and later complement the physical culture house, to inform and support the ongoing design process of the culture house, and also to promote it to the citizens. The prototypes and methods presented in this paper should be seen through the aspects of these purposes.

Classification of Interactive Exploratory Interventions

In the ongoing planning stages of the culture house, the Lundby council has expressed their interest in encouraging as much citizen involvement as possible in its planning and realization. However, as for now neither traditional public hearings nor social media interaction have led to good quality input from the citizens. In the recent co-operation between the municipality of Lundby and researchers at Chalmers University of Technology, the mission has been to develop exploratory interventions as method for stakeholders to stimulate engagement from the citizens around the planning and

development of this new cultural house. The outcome, so far, has been twelve different prototypes, all tested in the municipality. Based on analysis from these experiments, a model describing six categories of methods of exploratory interventions mixing the digital and the physical in order to stimulate involvement in the development of public knowledge institutions will be presented, see Table 1.

The twelve exploratory interventions are used as exemplars of the six different categories, which differ in purpose, concept and method. A common concept for all six classes of methods presented is that they a) address the unification (co-existence) of physical and digital spaces and b) stage the interaction between different actors relevant for the development of the design process (citizens, stakeholders, planners, decision makers, and designers).

The six classes of methods are labeled A-F and are presented below in close connection to examples. The examples are small projects developed by groups of Master students in interaction design at The University in close co-operation with actors in The District. The classification is summarized in this table:

Class	Interface	Purpose	Target
A	Visitors / culture house	Create new experiences	Culture house visitors
B	Citizens / culture activities	Content and community building	Local citizens
C	Citizens / culture house program	Inform design process	Local citizens
D	Visitors / content	Inform citizens about content	Culture house visitors
E	Creators / citizens	Staging cultural content	Local citizens
F	Visitors / visitors	Sharing experiences and community building	Culture house visitors

Table 1. Model of categories for exploratory interventions

A) INTERACTIVE ART INTERVENTIONS

Purpose: To evoke the experience of presence in, and interacting with, the physical public space before it is realized. The intention is to create interest and expectations from the citizens.
Concept: To create an interface between visitors and the physical culture house, in order to make visitors' presence in public space matter.
Method: To display an interactive art installation, related to the context of the intended public space that can give the users an experience of interactivity and presence.
Examples:

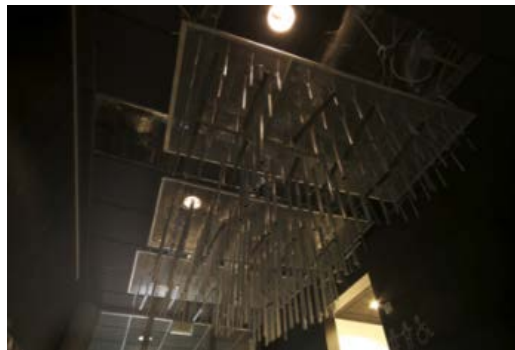Fig. A1: The E-Motion Wall   Fig. A2: The ChimeCloud

The *E-Motion Wall* is a large screen (2x3 m) installation where multiple users in front of the screen leave traces in the form of shadows in different colors (Fig. A1). These shadows stay on the screen even after a user has left the space in front of the screen. The shadows interact with each other, erasing, mixing and enhancing the shadows. Different sounds also appear in this playful interaction.

Chimecloud is an evocative, responsive auditory and visual installation aiming to make users actively take part in the creation of soundscapes using their body and movements in interaction with the space surrounding them (Fig. A2). It takes its idea from nature, where the wind is the main element creating natural soundscapes. *Chimecloud* is using this as a metaphor, making peoples presence and movement matter and bringing the space to live. The 2x3 m installation hangs from the ceiling and consists of a Kinect camera, and 36 servos connected to 216 aluminum tubes that play notes according to people's movements.

B) VIRTUAL (MOBILE) SPACES

Purpose: To strengthen and develop local cultural networks and communities.
Concept: To create an interface between citizens and local culture activities.
Method: To introduce virtual spaces that is filled with cultural content, as activities and/or results of cultural activities.

Examples:

Fig. B1: Virtual Rooms   Fig. B2: Culture House App

Virtual Rooms is a mobile application for integrating virtual and physical space in a cultural context (Figure B1). Artistic content in digital form, such as visual art, music and texts, are connected to certain physical spaces in District. The concept is to make these physical spaces important in relation to the cultural content of The Culture House and to enrich public spaces with cultural content through virtual spaces. The implemented project focus on visual art, showing the potential to overcome some of the limitations of the physical art gallery as well as the web based art gallery. This project is a direct contribution to the stakeholders' need of a Virtual Culture House that in the future also could complement or even replace some of the parts of the planned physical culture house.

The *Culture House App* addresses the problem highlighted by the stakeholders at Lundby, that culture houses in general lack in reaching out to the public and in communicating with members of the public (Figure B2). In order to solve this, a concept of a service with connected avatars was created. The service holds data about culture houses as well as conversations about the culture houses and their offerings. The avatars work as an interface between citizens and local culture activities that allow the members of the public to take part of the information as well as participate in conversations. A prototype of the service and one avatar, in the form of an iPhone application, was created to demonstrate the concept. The resulting prototype was received as an important contribution to the

Virtual Culture House as a means to strengthen and develop local cultural networks and communities.

C) DESIGN PROCESS CONTRIBUTIONS

Purpose: To inform the design process
Concept: To create an interface between citizens and the programme of the cultural house.
Method: Through data gathering

Examples:

Fig. C1: MCN web   Fig. C2: MCN installation

My Culture Now (*MCN*) is a project with three tracks, that each addresses different aspects of engaging the citizens in the public space development process. *MCN* includes: A website where the collected data informs the design process and the program development of the culture house (Fig. C1), an interactive installation to create cultural expression of the citizens (Fig. C2), and a gallery showing these cultural expressions and promoting the culture house. The need for user involvement has been a key point for the *My Culture Now* project team as The District sought out an Interaction Design perspective to implement the idea of a virtual culture house that would precede and contribute to the physical one.

D) EDUTAINMENT INSTALLATIONS

Purpose: To inform citizens of the content
Concept: To create an interface between visitors and content
Method: Interactive media installations

Examples:

Fig. D1: The Gate   Fig. D2: Live Tree

The Gate is a concept connected to the library activities of the culture house (Fig. D1). The concept is to make books alive by transforming the content into interactive media installations that can be explored by the visitors to the culture house. The idea is to inform the citizens, evoke interest in book reading and enhance the library.

Live Tree is an interface between the visitors and the content of the culture house (Fig. D2). The project aims to introduce a novel experience in public space to represent the content and activities of the culture house and to encourage human-human social interaction. The work suggests a design approach to embed information into architectural elements as a design material that can facilitate rich information processing, thus increased efficiency and overall public space experiences.

E) INTERFACE BETWEEN CREATOR AND AUDIENCE

Purpose: Stage artistic work and content related to culture
Concept: To create an interface between creators of content and citizens
Method: To stage the space framing of the content for exploration and experience

Examples:

Fig. E1: The Invisible Showroom   Fig. E2: Digital Window

Culture will find you use the bus stop as interface for connecting creators of content with new audiences. The project is a service for bridging the gap between the digital and physical world in the context of cultural expressions. The service allows artists to share their creations not only in the crowded digital space, but also in the public bus stop. The project suggests an interface between creators of the content and citizens, aiming to help promote the cultural house and local artistic expressions and activities reach a broader audience, people that otherwise would not visit the culture house.

The Invisible Showroom is a prototype of projection mapping as a tool for exhibiting art (Fig. E1). Projection mapping involves hand-held projectors that can show digital content mapped onto a physical environment, used in exhibitions and public performances. The idea of is to stage artistic work and content related to culture in a flexible and exciting way. The prototype shows how visual art can be displayed in physical public space, such as the culture house, without using a traditional gallery space.

Digital Window aims to create a connection between the virtual and physical space (Fig. E2). By tracking a user looking at a screen, showing a 3D environment, the projection of the 3D environment adapts to the position of the user enabling a spatial 3D effect as if the user was looking through a window. The content of the 3D environment is provided by visual artists that upload their work to a server, which is connected to the *Digital Window*. This window is meant to be a part of the actual façade of the culture house, so that people outside the building can get an experience of looking into the digital space of the culture

house. This installation can be realized already in the early phases, in order to create interest among the citizens and to support cultural activities that can become part of the culture house in the future.

F) SOCIAL INSTALLATIONS

Purpose: To share experiences and support community building
Concept: To create an interface between visitors
Method: To stage interventions, installations and spaces that trigger social interaction through exploration

Examples:

Fig. F1: Tile Voting   Fig. F2: Backa Orchestra

Tile voting is an installation that encourages social human-human interaction in physical space, using an interactive game that let people together change the ambience of the physical space (Fig. F1). The prototype uses multi-colored floor tiles as buttons for the interaction and the outcome of the game is that the leading color affects the atmosphere and the theme of the room, in the form of music and lights associated with this color. One aspect of this project is that it in some aspect takes the lead from the architectural design process, as it becomes the founding concept of the design of the culture house interior, rather than merely existing as a decorative element in a given physical space.

Backa digital orchestra is designed to enable co-creation in public space, connecting two important cultural spaces; the jamming culture of musical get-togethers and Swedish coffee drinking culture (Fig. F2). These two cultures come together around an interactive music table, using tangible interaction and augmented technology. This project serves two of the main tasks addressed by the Lundby municipality; to support social interaction through shared experiences and to support community building through everyday activities.

The examples of exploratory interventions described here are implemented prototypes that have all been tested by citizens and stakeholders in the municipality for at least three days, at minimum one occasion.

The Stakeholders View on the Exploratory Interventions

In the initial results from using exploratory interventions in The Culture House project, one main point from the stakeholders' point of view is that the methods have been an eye-opener to them, and a support to force them to think out of the box. The use and involvement that has been staged through the exploratory installations has acted as an inspiration to the program. The whole thought around how humans can affect both the building and the content has been new to them. The stakeholders' basic understanding for materials in general and IT specifically has truly extended their design space. The

playfulness that has come to life through the installations has been highly appreciated. The stakeholders believe that these types of methods will inspire and involve the citizens in a completely different way than the questionnaire and one way media communication they have used so far. The exploratory installations developed in this project have provided the stakeholders with new means, arguments and ideas to share with other decision makers.

Methods for User Involvement

Although user involvement in urban planning has existed for decades (e.g. Al-Kodmany, 1999), it is not common practice (Bratteteig & Wagner, 2012). Modern urban planning involves a wide variety of interests and individuals, consequently new methods and tools are needed to assure the active involvement of all parties in the planning process. The classification model presented in this paper is a try to categorize different types of interaction design installations that can be used to raise involvement of citizens in the development of a public knowledge institution.

The traditional way to raise awareness of new urban development projects and of incorporating citizens and future visitors and employees into the development process, is mostly public hearings, advertisement in local media, web, physical architectural models, renderings, 3D models, and similar. These are all mostly one way communication tools, informing rather than being actual working tools. In extension to this, there are different tools for fostering involvement that visualize possible futures through tangible interaction, e.g. Urp (Underkoffler & ishii, 1999) and Colourtable (Bratteteig & Wagner, 2012). The use of visualization tools in planning processes can enable strong community participation and contribute to greater equity among participants (Al-Kodmany, 1999).

Technology enhanced exploratory games as a tool for participation is a growing area in urban development. Games provides a set of formalized rules, which makes everybody participating on equal ground, no matter preferences, qualifications and ambitions (Løssing et al, 2007). Participants often have different interests but instead of utilizing this for competition the aims are to take advantage of the various skills represented and jointly explore various design possibilities within a game setting (Brandt, 2006). In the game, the future possibilities can be explored without the fear of spending money, or putting prestige on play, as it is a non-existing space.

The process model AELIA is a strategic tool for user involvement in urban development. It is concerned with getting the Attention of citizens, keeping them interested through novel Experiences, building capacity by introducing an element of Learning, giving the citizens Influence, and supporting Action by relevant actors – in short AELIA (Delman & Nielsen, 2009). It is of relevance for large-scale development projects with a long time span, aimed at very diverse groups of users.

The classification model presented in this paper can be used in combination with these and other methods, and is meant as an aid to make it clearer what should be explored, how, and who is the target. The strength with the methods described in the classification model are that they explore the building as well as the use, users, services and content of the future culture house, as these are dependent on each other and should therefore be intertwined in the development process.
The categorization table can support a design process in opening up the possible design space to create interventions of different kinds aiming to engage, inspire and inform stakeholders and citizens in the process. Active use of the prototypes represents different ways of contributing to the specific places, rather than merely accessing information. These contributions occur both on the level of adding some sort of information, be it

leaving a shadow on the wall, adding an event in an app or the creating of piece of art, as well as on the level of engaging oneself in social interactions tied to the place, , or by piquing the curiosity of fellow visitors by moving about the cultural house while interacting with the walls or ceiling.

Discussion

Planning for and building a public knowledge institution is not only a large-scale development project, it is also a project in need of citizen and stakeholder involvement as design inspiration for developing the city, the identity of the organization and institution, new services, roles, and use, meanwhile developing and building the new house and city area. There are many issues facing public knowledge institutions when interactive technologies challenge their fundamental roles and practices, and have forced a shift of focus from their collections towards visitors and experiences. The case presented here offers examples of how these challenges can be explored and addressed in the development process through explorative interaction involvement initiatives. What is promoted here is not that all future public knowledge institutions should have a Backa orchestra installation or a virtual cultural house, but rather to see the possibilities there are in creating exploratory interventions in order to engage citizens in the development process, and to inform the stakeholders and the design process.

Staging With the Use of Exploratory Interventions

Architecture as a domain is no longer static and unresponsive: it is being transformed by new materials and new technology and is becoming dynamic and conversant. This development changes our understanding of space and even our relations. Buchanan stresses that interaction design, not only refers to interaction with a digital material, but also to the design of other interactions (Buchanan, 2001). An interesting aim is then to investigate how an interaction design understanding of space in relation to human beings may be used to stage interactive spaces as well as passive ones. The combination between interaction design and architecture may help to open up the traditional understanding of space when it becomes a dynamic set of potential functionalities open to augmentation. Some may say that interaction design has nothing to do with large-scale projects such as planning and building a new house and that it is enough to consider interaction design in relation to the building when it is completed. Though, in this paper, it is argued for involving interaction designers from the very start in large-scaled public development projects, to foster conversation and participation.

Media and technology changes rapidly, why we have to design structures with a high degree of flexibility in order to engage and support the users of the public knowledge institution in the long run, as well as in the development process. The main question is how to create environments that will provide users with an experience that makes it worthwhile for them to visit the public knowledge institution. It is argued in this paper to involve the users in the development process, through exploratory interventions that inform and promote the future institution through interactive experiences in both the digital and physical space. Combining interaction design and physical space may yield new ways of understanding functionality and the use of artefacts and services in a larger perspective. The design of the content and services of the public knowledge institution is just as much a part of the artefact or building as the artefact or building itself. By using different forms of digital services and interventions, the development of public knowledge institutions can be supported to move from single-user to multi-user experiences, from individual design to social design, from closed to extendable and open institutions, from regulated designs to evolving designs, and from systems and processes designed merely to act as information providers to dialogical systems.

Opening the public knowledge institutions to noise, clutter, and aesthetics differing from what people are used to, or to what might seem as pointless activities, can be a challenge or even provocation to many people. Though, the effects of seeing the public knowledge institution in a different light might seem to prove worthwhile, and opens for dialogue between the different stakeholders.

The model for exploratory interventions presented in this paper should be seen as a complement to other methods. It has its strength in containing methods to support the citizens in seeking their attention, stimulate through novel experiences, introduce elements of learning, give them influence and the possibility to act and interact, in line with the AELIA model (Delman & Nielsen, 2009). Elements of exploratory games can be found in the model for exploratory interventions, and can be extended further by an increased focus on game design and role playing in the design of the interventions (Brandt, 2006; Løssing et al, 2007).Though, the different categories of exploratory interventions are more flexible and reach a wider audience than exploratory games, as they are more directed towards the public space rather than invited guests or staged sessions, and are not in need of a moderator. The interventions can be used as interactive elements in the exploratory games and in other methods.

Conclusion

In this paper, a model for exploratory interventions that intertwine the digital and the physical in order to stimulate citizen engagement in the development of public knowledge institutions have been proposed. Twelve different implemented interventions are classified into six different categories of methods that can be used for enhancing citizen and stakeholder involvement in the development of public knowledge institutions. The interventions have been used in a case where a new cultural house is about to be developed. The model is a complement to traditional methods for stakeholders to engage citizens, and introduces interaction design into the planning process, the dialogue and the actual building. By introducing a practice-based classification of methods we have given structure to the use of interaction design and exploratory interventions in the development of public knowledge institutions.

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