The People´s Smart Sculpture

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Abstract

The People's Smart Sculpture (PS2) panel discusses future oriented approaches in smart media-art, developed, designed and exploited for artistic and public participation in the change and re-design of our living environment. The actual debate about a smart future is not taking into account any idea of media art as an instrument for to realize the social sculpture, mentioned by Beuys [1] or as social sculpture itself. The People's Smart Sculpture is the only large scale Creative Europe media-art project (2014-2018) in this context. It fosters participative-art and collaborative media-art-processes. The artistic results and the open approaches of the project will be discussed by 5 panelists from 5 countries. The project itself is constituted by 12 project-partners in 8 European countries with more than 350 artists and creatives from 29 countries worlwide. The approach works on two levels: the implementation of cultural participation-projects by media-artists and the ongoing optimization of the art and participation aspects. PS2 integrates diverse groups of people to participate in the non-institutional set up of structures for the people´s re-design of their urban, societal and living environment. Artists, citizens, creatives with a new user's perception and new skills are able to „medialize" the Cultural Revolution of art, culture, society and science: into spaces of a new public.

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The New Social Sculpture

The People's Smart Sculpture with the people´s participation in several sub-projects and its individual interpretation of it are inextricably related to one another. The collaboration between artists and citizens is pioneer of the future integrative media art culture of social art, social collaboration, digital art, collaborative design, e-decision-making, liquid democracy, social inclusion, urban play - sometimes analogous, sometime with new tools on computers, mobile devices, interactive screens or projections.

Participation will become a part of the general culture techniques. To encounter today's societal and cultural complexity means to integrate diverse forms of cultural practice and diverse groups of people. Here we learn about how to create places for our own interaction. Social spaces that grow immensely popular: spaces for art, spaces for knowledge, and spaces for communication. As soon as we enter these spaces through our and other people´s activities, we unavoidably regenerate the. It's a carousel of influence, participation and anticipation. It expresses the cooperation between everyone involved – participatory art work in an utopian aesthetic, bringing with it the promise of partaking therein also through production, comments, selection, evaluations and critique. *"The real voyage of discovery consists not in seeking new landscapes, but in having new eyes." Marcel Proust* [2]

The common activities in our project are inspired by the idea of connecting more purposefully artistic works from local, European and international artists and creatives with local social dynamics. It is intended to be directly linked to the development of our collective living circumstances, a cultural charrette, play, test-field and art place. In the People's Smart Sculpture, a project cooperation of artists, creatives, cultural media activists, citizens and digital media researchers work towards the realizing of this vision: hybrid open environments where everybody can follow – even change – the ideas concerning collaborative re-design and development of media art. Digital media (computers) should be used to create "alternative worlds". Vilem Flusser [3]

Right now actual software systems, methods and tools target more or less only on the relevant experts, policy-makers, lobbyists and other professionals. While professionals, for example, are used to work with highly abstract data and visualizations for planning, decision-making, etc. participating artists, creatives and citizens require a much more direct access and feedback methodology. It´s to provide different options for a high diversity of social groups that want to partake in public urban art and space development and cultural city evolution. This remains in the context of the need of a highly sustainable culture development strategy for the future by integrating liquid democracy, opinion sharing games, cross-cultural social inclusion processes, distinct communication of ideas, performative communication acts, new cultural expressions and informal learning capacities and will give the best practice examples to others - worldwide.

The project is also the base for a new deal between artists, experts, citizens, learners, creators and the social activists. It is a performative sort of integrated art to combine social and cultural sustainability in the Cultural R>evolution. PS2 supports small groups and areas, but will also work on more complex problems like the digital transformation of historical areas and cultural heritage. On the other hand the proof and evaluation of all participation activities of PS2 becomes sustainable through an experimental exchange within this ISEA2016 panel.

The common goal is a "Smart Sculpture" as a new version of the "Social Sculpture" [1], but today designed by media artists, creatives and citizens which profits from the interplay of a high diversity of culturally different approaches, combined through participative media art.

4D – Virtual Urban Art

People today use new media, for creating identity, communication, social effects, fun or learning. Participation in cultural heritage learning not only means to integrate the "active visitor" into the museum, it means to generate an environment in which one can take part and can realize his- or herself in complex processes more easily – emotionally as well as cognitively – and in social exchange with others in-situ at place of origin.

The general idea behind this project is, that the more and more upcoming cultural use of new media in the knowledge society, like e-learning, technology-enhanced learning (TEL), e-culture, infotainment, gaming, Web2.0, interactive media and mobile technology shows, that a new desideratum of action-learning is emerging. Whenever people learn, create or explore something, it will be discussed, exchanged, and reflected from different perspectives. People learn by doing something at the point of immersion and rediscover to learn playfully in augmented reality environments.

Fig 1. *Site exploring with augmented reality platform,* 2015, all rights: Gauss Institute Bitola

The 4D Virtual Urban Art is a solution based on a precise 3D model of an urban environment, in which the users can explore past and suggest changes of the areas they live in and upload their ideas to the online database. The decision making process of urban art, urban development and planning is closely connected to the history of the selected areas and their cultural heritage value. Thus we create augmented reality platform with the historical information and the cultural value of match of the diverse interpretations and cultural expressions. Adding the dimension of time (3D+time=4D), the users can explore their habitat and receive time related information on certain objects or areas. For example, the user can "travel in time", and see historical data about the area of interest, which can be inspiration plus for the suggested future solution. The app is developed on the basis of the following techniques:

- AR aligning and serving rich media content
- Data Filtering and Flow Optimization trough
    - GPS Location Filtering
    - User Orientation Filtering
    - User Movement Prediction Filtering
    - User Preference Filtering
    - Non repetitive content optimization
    - Content Storing
- Engagement trough interactive tools
- Active Viewer concept trough interactive Games and Quizzes

The project is implemented in the City of Bitola, Republic of Macedonia. Bitola is very rich in monuments and cultural heritage from the prehistoric period to the present day. It is settled on Via Egnatia in the center of the Balkans and all the crossroads of time and history. Bitola has a strong cultural blend that reflects in its architecture and cultural heritage. Širok Sokak (Macedonian: Широк Сокак, meaning "Wide Alley") is a long pedestrian street in Bitola. It is graced with neo-classical buildings that contain stores, cafés and restaurants. Širok Sokak is also home to several consulates. This street has a great historical value and is part of modern culture and life today. 4D Virtual Urban Art propose AR installation containing the main interesting buildings in the street as a educational time travel content so the user can experience first hand the cultural heritage trough historical events on places trough rich media content. All data have the option to be binded to a temporal parameter thus enabling the users to experience a location through a form of VR or AR time travel. This will enable content providers for example to present temporal cultural data of how the location, landmark, traditional customs or society changed over a certain relevant period of time. Besides data views the platform in order to engage the audience can support integration of interactive games, guides and tests. Depending on the subject and preference of the creator this content engagement can vary, for example:

1. Imagine visiting Sirok Sokak as it was in the Middle Ages or the Ottoman Period. When standing in front of the landmark activating it the engagement app will provide you with interesting educational content on the

landmark and then pose you some questions regarding the landmark, or an animated character can tell them the story through a short cartoon video.
2. The time component is added to make the users virtual time travelers in order to learn through resolving the clues and answering the questions trough time
3. To add on the social component visitors will be able to add virtual content like comments, ideas, photos, videos, experiences rating and choose weather to keep them as a private memoir, share them in their group or make them public with the world to see.
4. As a example, AR content is developed for the house where lived Milto Manaki (see fig. 2). Milto Manaki and his brother Yanaki were pioneering photographers and the first filmmakers in the Balkans. In honor of their work, the International Cinematographers' Film Festival "Manaki Brothers" is held every year in Bitola, the city where most of their activities were organized.

Fig 2. *House of Milto Manaki - Case study for using AR application for providing location based content,* 2015, all rights: Gauss Institute Bitola

Neighborhood Living Room

Today museums are looking for new ways to attract and engage audience. These include virtual museums, augmented reality and 3D modelling based applications and interactive digital storytelling. The target of all these activities is to provide better experiences for audience who is very familiar with digital world.

The Neighborhood Living Room sub-project, which is part of Creative Europe funded People's Smart Sculpture Project, studies different methods to create a more dynamic, participatory audience relationship with museum. The vision is that the Museum of Technology could be integrated as a part of the Arabianranta district community in Helsinki, Finland. The Museum aims to offer an emotional and participatory experience for the residents, especially the youth. The target group, namely young residents, has a natural way of using information technology (IT), which is ex-pected to be involved in almost all activities. Most of the young residents have a smart phone, a tablet, or both. In Finland 88% of the age group 16 - 24 years old use In-ternet several times a day; 87% use mobile phones and 35% tablets when accessing internet outside of home or office [4].

In augmented reality (AR) systems and interactive digital storytelling (IDS) systems visual presentation has been dominant. In contrast to this trend, we chose to concentrate to auditory presentation which in the augmented reality context can be built with soundscapes in museum environment. Two key elements when developing AR, IDS and soundscape systems are the user applications and the backend service supporting these applications.

The following figure describes the overall system including also audio digital asset management system supporting mobile applications.

Fig 3. *Overall software architecture,* 2015, all rights: Gauss Institute Bitola

As can be seen from the figure 2 the overall system is a distributed system consisting of audio digital asset management system, management application and mobile applications. Audio digital asset management system provides functionalities to manage assets and offers interfaces for both for management application and mobile applications over internet. Management application is basically administration console to manage assets and users. Mobile applications are for example audio augmented reality, soundscape design, audio story recording and listening, or audio memory sharing applications.

Our aim was to develop an open source based audio digital asset management system, which is easy to use and fairly easy to take into the usage. Let's have a look at the two main areas when designing audio digital asset management system: APIs and metadata. In our case three APIs were required: an authentication, an upload, and a search API. The authentication API is needed specifically by the mobile applications so that they can receive an access key which will in turn be used with the search and upload API. This authentication provides an access key which is required when using search and upload APIs. The search API is a HTTP get request containing api_key and predefined search parameters. The response in JSON format contains links to audio files and respective metadata based on search parameters. The upload API lets users who possess a valid authentication key upload their audio files along with metadata.

In order to utilize, search and find relevant media files it essential to utilize metadata. There are several metadata standards available for different purposes, like metadata exchange between systems, general metadata for broad range of domains, and audio specific structural and administrative metadata. We ended up to metadata which enables in the future exchange of assets by supporting Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). This requires in minimum that we need to be compatible with unqualified Dublin Core. In addition, it was clear that we cannot call our audio files as assets unless we introduce at least rights metadata field. Most of the metadata will be input manually during the storage of audio file. Only some of the metadata will extracted automatically from the audio file properties.[5]

In order to utilize audio digital asset management system we need mobile applications. These applications will access and save audio files in the audio digital asset management system. We have envisioned the following type of mobile applications which can be used in several scenarios:

- Create a soundscape which describes the acoustic environment of an artefact or a building or a space, etc. This scenario can be varied a lot: artefact could be real or virtual, soundscape for a different era, predefined adjective describing soundscape, realistic vs. imaginary soundscape, etc.
- Using NFC-tags to pick up audio components from different parts of a museum and create soundscapes
- Listen audio stories related to artefacts
- Record and share your memories related to an artefact or a building or a space, etc.

We have implemented and tested the first scenario. A soundscape can be a musical composition, a radio program or an acoustic environment [6]. A soundscape is created out of multiple, time-varying sound sources [7]. Many of the soundscape systems – such as Klang.Reise [8] and the Sound Design Accelerator (SoDA) [9] – are either targeted to sound designers and need a lot of knowledge to operate, or require a dedicated space. We have combined these two concepts - soundscapes and audio AR. Our approach aims at ease-of-use and interaction without previous knowledge on sounds and soundscapes. Thus, the user is the active party and technology is in the supporting role either for searching relevant sounds with the help of mobile applications or producing the acoustic environment using her creativity and imagination. The user is not expected to be familiar with acoustic terms or dependent on extra devices for tracking her head and hand movements, when creating soundscapes.

In order to design and develop mobile soundscape mixer application we involved students from Metropolia University of Applied Sciences (UAS), Helsinki, Finland. The students came from two courses: design-oriented course called Usability and Interface and Android programming course called Android Advanced Application Development. In addition, sound design students created the sounds to be used in soundscape creations.

Within the deadline we received four fully functional applications which provided the following capabilities:

- Login into Audio Digital Asset Management System (ADAM);
- Search content (audio files) in ADAM utilizing metadata;
- Download, save and play selected files either in MP3 or raw (PCM) format;
- If needed convert audio file format;
- Mixing, i.e. define combination of saved files that will played, possibility to loop, change volume, etc. of each audio file separately;
- Record audio file, convert the audio format and upload together with metadata into ADAM.

Each application was different from the design point of view. As we did not give too strict functional requirements also the implementation of applications varied. The figure 4 gives an example how the mixer functionality looks like.

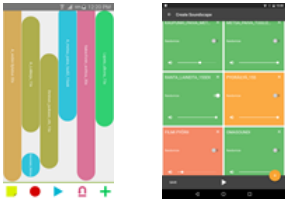

Fig 4. *Overall software architecture,* 2015, all rights: Helsinki Metropolia University of Applied Sciences

Together with the Museum of Technology we arranged a workshop to test our first scenario. The target group of the workshop was age group from 15-17. A school class with a teacher was invited to take part in the workshop. The class was from secondary school in Helsinki, Finland and fitted well the target group. During the workshop we used 3 different mobile apps (Fig. 5). Feedback from the workshop was very positive both from the pupils and museum staff [10].

Fig 5. *A teacher observing, and answering questions from a user group of two persons,* 2015, all rights: Helsinki Metropolia University of Applied Sciences

Our overall system consists of pretty simple audio digital asset management system and smart clients. This type of architecture enables to utilize full power of mobile platforms when developing audio related applications, like soundscape mixer. This in turn results into innovative applications. Selecting auditory presentation instead of visual one enables faster communication between mobile clients and backend service as transmitted audio files are typically smaller than video or 3D model files. We believe that our approach is viable innovation platform also for smaller museums and other culture sector's actors who have a tight budget and at the same time want to utilize audio as a part of their creative activities.

Express your-self/city

Virtual urban art invites all citizens to participate in attending, responding and modifying 3D sculptures, linked to real spaces. These may be art works, fictional buildings, provoking sculptures or informative objects. Participants use their tablet device to create an augmented reality view and do modify 3D objects proposed by others. This fosters a creative process to develop virtualized objects by and for the community of interested citizens, creative industries and artists. The aim is to create an augmented reality view containing an image of action on and beside urban areas and places and in change. Their usage in past and present will be compared, the change of a place in different decades as well as to create fictional views of future use of the space, future architecture for creative processes and art works.

In PS2 we make use of the Betaville System [11]. Beside server capabilities, no more technical installation work is needed – people just their own devices. The project addresses and profits from the fast growing percentage of people already make use of pads, tablets and/or smart phones, and invites all citizens to participate in attending, responding and modifying these sculptures, at the real spaces in the city of Bremen (like in the inner city development area "Rembertiring" or the "Überseestadt", the old sea harbor).

Web and social media are used to communicate progress during the duration of the implementation process. Users are able to upload 3D proposals to modify (others') proposals and to vote for them (by one-to-one comparison with existing proposals). The input is curated by local and European artists from the project partners' countries while an overall curator coordinates the creative and technical activities and people´s access and collaborative processes between citizens and artists. Currently, we already have integrated cultural projects as collaborators: The Bremen based "ZZZ – ZwischenZeit-Zentrale" is a public project, mainly driven by young architects, that cares about vacant buildings and fallow areas in order to establish temporary use by artists and creatives as an innovative tool for urban development. In June 2015 they had set up a workshop within PS2 to play with the different Betaville clients and create ideas and designs for a future permanent use of vacant buildings for artists, culture and creativity at the Bremen location of the former Wurstwarenfabrik (Sausage Factory) in Hemelingen. Another example: in the context of the cultural project "Rememberti" under the direction of the media artist Jürgen Amthor, an old Pub that was torn down during the 60th to be replaced by a large roundabout was reanimated during an event in Sept. 2015. Beside other, a vitual model of the house that contains the pub could be seen in augmented reality mode at that very spot (see fig. 6: "Sternenklause" event). During the ongoing project another partner will be involved: the koopstadt – a governmental project (state ministry) for urban development in Bremen, Leipzig and Nürnberg. It will be integrated for to exchange the results of our experimental project with policy and municipal administration in Bremen.

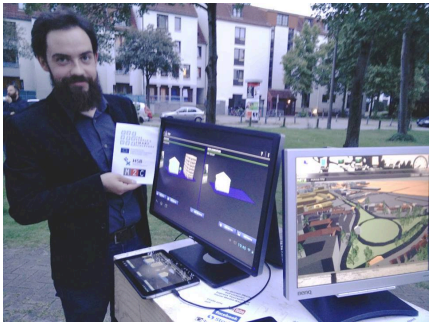

Fig 6. *Sternenklause event in Bremen, 2015,* all rights: M2C Institute Bremen

The Public Space as SHARED.museum

The SHARED.museum is a continuing chain of district-related art and creative (e.g. conceptual and social) interventions as an experimental art, exchange and exhibition practice with a main focus on digital art. Through an open call to cultural activists (artists, cultural and creative activists), tipping points are identified and selected by the curatorial teams under the use of e.g. public calls over social media, flyer, public radio and cultural networks for to find them. A tipping point is a real materialistic or abstract cultural or daily-cultural configuration in real space, which is characterized by their fragility and therefore, systemically and cognitive psychologically speaking, bears (as yet unknown) the potential for an early change in the situation in itself. A tipping point may also be a focal point, it is locally often referred to a gap, problem, as an object of cultural,

intercultural, societal and social conflict, upcoming contradistinctions or can be interpreted as a special local chance. A focus lies on dimensions that are affected by transformation processes in the city that emerge the disappearance of art and culture in public or cultural disconnectivity.

Selected artists (or groups of artists/creatives) start the artistic confrontation and interpretation with the tipping point situation. The submitter of the respective tipping point, for example a citizen, a cultural activist, a social-cultural institution, or a neighborhood association in the district serves as a local knowledge provider for the local context of the tipping point and the art/creative intervention. A member of the curatorial team moderates this process. A public participation workshop is implemented by the M2C and the artists at the local district. This first process should result in a participatory artwork that invites local people and provides a reflection about the situation or a creative cultural solution for possible cultural/aesthetical problems/chances of the tipping point. The artwork are exhibited at the place of origin (if it is a materialistic artwork) or are distributed to be perceivable at the place of origin (e.g. if it is more conceptual) by useful sorts of media (e.g. projection, posters, online, flyer, etc) or at the PS2 Gallery in Bremen. In any case the whole process will be published to the general public over social media.

In context of publishing the results and process of the art activity around the first tipping point, another one is to be identified and selected by the curatorial team together with the artist or groups of artists/creative as co-curator, again under the use of a public call over social media, flyer, public radio and cultural networks for to find tipping point no. 2. Artist 1 acts as an artistic/creative consulter for artist 2. The curator moderates this process. The next steps follow the same procedure then before. The process should result in a participatory chain of artwork that invites people (e.g. local people) and provides a reflection about the situation and the potentials of creative solutions. The project creates an informal knowledge acquisition and exchange for artists/creatives about participatory art practice, integration of local people and creative role changes (artists/creatives as co-curator, knowledge provider, consulter). This PS2 sub-project also addresses young artists/creatives and integrate people with a migrant or refugee background in Bremen.

Supporting the collaborative learning process, the project is accompanied by creative and participation workshops through the M2C. The project serves with its inclusion and treatment of local, district-related issues as well as with its participatory approach at the level of the art and at the level of the local residents an attractor for new audiences beyond the traditional art lovers.

The appropriate horizontal communication, mutual understanding through practical cooperation, creative exchange and excellent networking - the key measures for learning, understanding, rethinking, reflexion, creativity, collaboration and identity - so the most important attributes for creative processes and structure building moments often come too short. It is rare that ideas, demands, needs, and wishes of artists, creatives, cultural workers and citizens match each other so directly. The SHARED.museum should be a model for a new kind of networking and communication, creativity and sustainability in the game of participation, urban re-design and socio-cultural development of our living environment. It is transferable and applicable to other places, other actors, and different compositions of actor groups, scalable. The directly productive chaining between artists and citizens from the different geographical and cultural contexts is an open-minded, open-ended, constructive dialogue that is to be continued.

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