

**Interconnections among ICT, social practices, public space and urban design. The project CyberParks - COST-Action TU 1306**  
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**As interconexões entre as TICs, as práticas sociais, o espaço público e o desenho urbano. O projeto CyberParks COST Action TU 1306**

**Resumo:** O Projeto CyberParks visa criar uma plataforma de intercâmbio e conhecimento que, relevante para um processo de desenho urbano participativo, articule as Tecnologias de Informação e Comunicação (TIC) na produção e práticas de uso de espaços públicos urbanos. Apresenta-se o Projeto e discute-se os principais resultados de estudos de pequena escala desenvolvidos no âmbito do Projeto. A discussão centra-se nas TIC como interface ativa entre a produção de conhecimento sobre o uso do espaço público urbano – investigação –, e a definição de eixos orientadores de intervenção – desenho urbano.

**Palavras-chave:** Espaço público urbano, TIC, práticas sociais, mediação, espaço híbrido.

**Abstract:** The Project CyberParks aims to create a platform for exchange knowledge and experiences on the role of Information and Communication Technologies (ICT) in promoting participatory urban design process and on the production and use practices of public open spaces. In this paper, the Project scope is presented along an analysis of the main results of several small-scale studies undertaken within the Project. The discussion is centred around ICT as an active interface between the production of knowledge about the use of urban public space – for research purposes, and guidance for interventions – for urban design practices.

**Keywords:** Urban public space, ICT, social practices, mediation, hybrid spaces.

## **1. Introduction**

The real and virtual worlds are melting together, and this creates new forms of social interactions and practices, socio-spatial representations, spatialities, and shows the need for a

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re-thinking of urban design practices. The real and virtual worlds coexist alongside each other – at times peacefully, at times conflicted, juxtaposed or interlinked. The intertwining of real and virtual spheres opens new ways of advancing knowledge, interpreting the phenomena, and for disseminating the acquired knowledge. This, in turn, makes a call for (re)inventing notions that contribute as tools for reading, understanding and guiding of knowledge about social space and, more specifically, about socio-spatial relationships (Menezes, 2012). In this sense, the Project CyberParks aims at advancing and sharing of knowledge about the interactions among people, social practices, public space, urban design and the role of Information and Communication Technologies (ICT) as a mediator or the fuel that could support the creation of a more inclusive urban environment. The Project focusses on investigating how new digital devices can contribute:

- To attract more users to interact in public spaces;
- To create more inclusive public spaces, aiming at improving the physical and mental condition and the well-being of people;
- To the development new research methodologies that can support the production and enhance the use of public spaces.

The leading questions in the Project are:

- What is the contribution of ICT to transform our cities into more social and inclusive environments, rather than just more high-tech?
- What opportunities ICT offer to better understand the way people use or want to use the public spaces?
- How can ICT provide support for those involved in the production, design, and maintenance of public spaces?

The Project CyberParks (TU 1306) – Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness – is financed by the European Programme COST (2014-2018). The Project, coordinated by the Interdisciplinary Research Centre for Education and Development - CeiED, of the Lusófona University, in Lisbon, Portugal, counts with 80 participants from 29 European countries, and from different areas of interest, like urban design and planning, education, communication, sociology, anthropology, psychology, public

health, urban law, information technology, new technologies and economy.<sup>4</sup> The Project CyberParks is organised in five transdisciplinary working groups. The central questions of each working group are:

- (1) Digital methods: How can we use ICT and new media technology to enhance our understanding of the uses and users of public spaces? What can we learn about public spaces through the use of tracking technologies or scraping public data that users of public space have produced?
- (2) Urban ethnography: What is known about the relationship between new media use and spatial practices? What do people want from public space? How this differ by socioeconomic status, gender, age? What technological developments are most likely to enhance current user behaviour or develop new user behaviours?
- (3) Conceptual reflection: What can we learn from links between digital media in public spaces? Are new media practices changing the character, meaning, significance and functions of public spaces? What new possibilities new media offer for public spaces future development and design, and what are the problems and obstacles they are bringing?
- (4) Creating a technologically mediated space (cyberpark): How do ICT challenge the design of public spaces? What could be the added value of the new technologies for inclusive public spaces? How can designers operate on these conclusions in the production of public spaces? What is the contribution of various disciplines and how should they work together in the process of making better public open spaces? What is our model for promoting inclusive and attractive public open spaces?
- (5) Networking & dissemination: is in charge with the dissemination strategy for tailoring and transferring knowledge, contacting interested persons and organisations (policy makers, internet service providers, legal experts) and the legacy plan with research perspectives.

This paper presents a reflection on the future challenges with regard to the role ICT can have in the production of knowledge about the social use of urban public spaces (social

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<sup>4</sup> To learn more about the project and partners visit the [www.cost.eu/domains\\_actions/tud/Actions/TU1306](http://www.cost.eu/domains_actions/tud/Actions/TU1306) and [www.cyberparks-project.eu](http://www.cyberparks-project.eu).

practices), and from this to draw guidance for urban design. It is based on the main results obtained by small-scale studies undertaken within the Project CyberParks. It encompasses some aspects of three initial case studies in Lisbon, Barcelona and Bristol and an analysis of the main results of five Short Term Scientific Missions (STMS) organised within the Project.

In the context of digitally mediated public open spaces, the Project CyberParks coins the term *cyberpark*, and from two different perspectives: From a *spatial planning perspective*, cyberpark is a new type of urban landscape where nature, society, and cybertechnologies blend together to generate hybrid experiences and enhance quality of urban life. From a *media perspective* - cyberpark are media spaces, channels and platforms concerned with the development of public open spaces. In contradiction to postmodern attempts that were focusing on redefining public space as a construct of solid actual place along with the reflection of its physicality on people, the conception of cyberpark – as a hybrid mode of man/space communication – puts emphasis on the indigenous application of outdoor mobile technologies on user’s experience. In this hybridism, cyberpark emerge while postmodern attempts are taking a postdigital turn. The use of sensor technologies in a connectable space, accessible to the public through ubiquitous technologies. Ubiquitous technologies used in sociable and sharable ways where the virtual is made visible, or augments the actual landscape exemplifies this turn. Frick’s definition of the supportiveness of public space that concerns the relationship between “people and things” beyond its clearly physical-spatial characteristics (Frick, 2007) seems to confirm some of the ideas behind the emergence of cyberpark – that we need to relocate our appreciation of “things” and connect their materiality to a growing digital world. With the postdigital turn, public spaces become more hybrid, as human outdoor activities and actions adapt to a fast growing man/space/machine synergism that unfolds beyond the physical. To face this challenge, the research explores the role of ICT on the basis of the mending mechanisms that space induces to users as a result of the human/environment interaction (Rapoport, 1990, 2007) following a rather synergistic human-agent methodology (Jennings *et al.*, 2014). Cyberpark’ hybridism is deliberately not approached as a purely spatial dimension; in fact, it is often a formless aspect that dramatically affects the development of our internal cognitive constructs. However, the way

it reflects on the shaping of our outdoor behaviour, preferences and choice is yet unexplored (Ioannidis *et al.*, 2014).

## **2. Dynamics of technologically mediated spaces: initial case studies in Lisbon, Barcelona and Bristol**

The first three initial small-scale case studies, aimed at capturing socio-spatial dynamics in public spaces using digital device, share the following general characteristics:

- (1) Jardim da Estrela in Lisbon (June 2014): In this urban park in Lisbon locative monitoring devices (GPS) were employed to gain knowledge about user's behaviour in public open space. Users, split into groups, were asked to visit the park; each group carried a GPS device. The analysis focused on identifying users' moving patterns, in order to understand how factors, as spatial configurations, attractions and services in an open space, can influence these moving patterns. A survey by questionnaire accompanied this pilot study, aiming to gather views about use of digital device and on how the dynamics within the group worked. In Smaniotto *et al.*, (2014) the results of this survey are broadly discussed.
- (2) Fòrum de les Cultures e Carrer d'Enric Granados, in Barcelona (November 2014): In both open spaces, the digital tool WAY CyberParks<sup>5</sup> has been applied. This tool, composed by a mobile platform, a monitoring web and cloud service, allows researchers to track the movements of people outdoors in real time, along with gathering information about the users (age, gender, profession) and the reason for the visit of the space. Through the augmented reality, it enables on the one hand, the collection of opinions and suggestions, via text messages, photos, and videos. On the other, it permits a user to get more contextual information about the spaces, its equipment and history. This study was aimed to understand how the experience of users in real time in a given space could be recorded and visualised in maps and graphics.
- (3) Public spaces in Bristol (April 2015): In the British city several public spaces, with different characteristics (historic, requalified and new implementations) were

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<sup>5</sup> <http://cyberparks-project.eu/app>

considered along the project “Playable City”<sup>6</sup>. This project aims to increase the interaction between people, space and digital platforms, by creating sensory experiences in the context of perception, cognitive and behavioural experiments.

These three studies enable the identification of the first set of advantages and disadvantages in the use of digital tools for research purposes, as described in Table 1.

**Table 1: Synthesis of the results obtained on the relation social practices in public space – digital device – urban design practices**

<i>Studies</i>	Advantages	Disadvantages
(1)	<p>As position informatics the GPS device allows to:</p> <ul style="list-style-type: none"> <li>- track static and movement patterns;</li> <li>- locate users on a map, enabling to visualise their actions within the space;</li> <li>- detect most used/visited sites;</li> <li>- record the stay time in different sites and during the movements.</li> </ul> <p>The use of digital devices does not inhibit a “traditional use / appropriation” of space.</p>	<p>This device does not allow to:</p> <ul style="list-style-type: none"> <li>- identify social practices or lifestyles;</li> <li>- send or get comments about the context;</li> <li>- identify the users and their profiles;</li> <li>- record / detect sensory experiences.</li> </ul> <p>The information gathered is too little to enhance urban design or to contribute to a behaviour change.</p>
(2)	<p>The app WAY CyberParks allows to:</p> <ul style="list-style-type: none"> <li>- track and monitor movement and static patterns,</li> <li>- send and get contextual information;</li> <li>- record and share specific sensory content and experiences;</li> <li>- send opinions and suggestions on the context (texts, photos, videos), and register the reason for visiting the space;</li> <li>- relate movements’ with users’ profile.</li> </ul> <p>Gathering information from different users enables a broad basis for comparisons. The contextual information to be provided can be tailored according to the user’s preferences.</p>	<p>The app does not allows to:</p> <ul style="list-style-type: none"> <li>- create a true interactive platform with other users, although it allows to online navigate and gain experiences;</li> <li>- detect symbolic meanings of public spaces.</li> </ul> <p>The quality of information depends on the patterns of interaction. The link between the gathered information and its input for urban design and behaviour change is not yet very clear for many users. Will the increase of use of public space make them better?</p>
(3)	<p>This approach allows to:</p> <ul style="list-style-type: none"> <li>- generate social interactions from technologically mediated and shared games;</li> <li>- create narratives about space;</li> <li>- experience the space from a joyful perspective;</li> <li>- develop sensory experiences.</li> </ul> <p>It can progress from a merely data storing process (ex. locational data, sensory data, user profile) to a collaborative process in which cognitive mapping contributes “to rewrite” places. Technological mediation contributes to interpreting and enhancing the interaction of citizens with ICT and the physical space.</p>	<p>This approach:</p> <ul style="list-style-type: none"> <li>- allows in particular, to generate experiences for entertainment, with no clear effects on behavioural and sensory stimulation from the social and physical not-virtual worlds;</li> <li>- does not contribute to identify whether the symbolic meanings of the “urban being” are being captured;</li> <li>- can contribute to diminish the perception of the physical and social / real space, due to strong influence of the digital interface.</li> </ul>

<sup>6</sup> <http://www.watershed.co.uk/playablecity/overview>

### 3. Technology to enhance the understanding of social practices and needs on urban public spaces

In order to increase the knowledge about the role of digital technology to support the creation of more inclusive urban environment the Project CyberParks organises the so-called Short Term Scientific Missions (STSM). STMS are exchange visits aiming at strengthening the existing networks by allowing individual scientists to go to a partner institution to increase knowledge on the use of methods and tools, and to foster collaboration. Several STSMs took already place; all reports are available at <http://cyberparks-project.eu/stsm>. Five of these STMS tackled topics that permit to enhance the discussion on the risks and potentialities in uses of digital devices to increase the understanding on the relationship between the process of knowledge production about the use of public spaces and the process of creating insights to support urban design (see Table 2).

**Table 2: Small-scale studies (STMS) analysed in this work**

<i>Topic, Dates and Author</i>	<i>Local of Study</i>	<i>Main objectives</i>
(1) <a href="#"><i>The importance of new technologies in the study of public spaces</i></a> (Nov. 2014) – <b>Tiago Duarte</b>	City of Barcelona	Analyse the collected data from digital tool WAY CyberParks. To assess the ability of the app as a tool for capturing patterns of use and related practices / paths. Identify the potential of this app and the use of ICT to improve urban design practices.
(2) <a href="#"><i>Capturing movements and opinions in urban open spaces through the analysis of user generated data</i></a> . (Jan 2015) – Elena Masala.	Barcelona	Explore the potential of user's generated data from social networking platform (Twitter) and digital tool WAY CyberParks for urban planning and design projects.
(3) <a href="#"><i>Improving the WAY CyberParks Monitoring Tool: Augmented Reality and Behavioural Mapping</i></a> (May 2015) – <b>Alfonso Bahillo Martínez</b> .	Ljubljana	Emphasize a new digital unobtrusive tool as a potential to intermediate the relationship between the public space and the people. Improve the digital tool WAY CyberParks with new functionalities. Draw considerations about capacities of this app to promote a participatory and collaborative urban public space planning process.
(4) <a href="#"><i>Pre-defined literature study on the relations between ICT and experience of public space</i></a> (May 2015) – <b>Petja Ivanova-Radovanova</b> .	Amsterdam	Review some actual urban projects to identify the role of digital media platforms to contribute to the process of collaborative city making.
(5) <a href="#"><i>The Playful City: play and games for citizen participation in the smart city</i></a> (March-April 2015) – <b>Michiel de Lange</b> .	Bristol	Explore digital play and games (the playable city concept) to contribute to increase citizens' engagement and participation in the smart city.

Sources: (1) Duarte, 2014; (2) Masala, 2015; (3) Bahillo Martínez, 2015; (4) **Ivanova-Radovanova, 2015**; (5) **Lange, 2015**.

One of the main objectives assigned to Project CyberParks is to identify and test the usability of digital tools to gather information about different aspects on the use of public spaces, and based on an analysis to develop guidance towards improving urban design practices. The WAY CyberParks is one of the analysed digital tools. It consists in an application smartphone (app), cloud and a web service running real-time. This digital tool is still in testing phase, and in the study performed by Duarte (2014), its mayor employment potential has been analysed. In two public spaces in Barcelona, Carrer d'Enric Granados and Fòrum de Les Cultures it was employed for collecting information about users' movement paths of associated to user's profiles (age, sex). It was also used to receive views from users, via in the tool posted questions, and get feedback about applicability of the tool and the visited spaces. Besides these functions, a user can identify points of interest through augmented reality. The author posed the following research questions: How important is the use of new technologies in the study of public spaces? How relevant is the tool on the analysis of these public spaces? Citing the "New Charter of Athens" (2003), the author stresses the importance of ICT in the provision of a variety of transportation systems for both persons and goods, and information flows (Duarte, 2014: 1). Furthermore, the author highlights the interest of digital tools, like the WAY CyberParks, to increase the knowledge on the practices and needs of users (see Table 3).

Interested in better understanding how Open and Big Data can contribute to urban design, the study of Masala (2015) identifies the potential of these data for understanding the socio-spatial flows and their concentrations in function of time, in certain urban areas. The author analyses in a pilot test in Barcelona the data generated by two digital platforms: Twitter and the digital tool WAY CyberParks. According to Masala (2015: 2), "since smartphones include Global Positioning System (GPS), the data outgoing from each device can be geo-referenced. Thus, the large amount of data coming from smartphone can be geo-located with temporal information. The consequence is the constant production of 'Big Data' which can be overlaid on maps and analysed not only by mathematical or semantic techniques, but also by means of spatial analysis methods". According to the author, the Twitter data also enabled to understand spatial dynamics. Through gathering of Tweets, sent within the metropolitan area of Barcelona on a certain period, she developed maps of messages density. About the



tool WAY CyberParks, the author mentions that it registers users' movements twice a second and the result as she mentions, "... is a point database which allows to build up the timeline with the full path travelled by users, with continuity and precision" (see Table 3).

In order to improve the applicability of the digital tool WAY CyberParks for behavioural mapping, Bahillo Martínez (2015) crosses this aspect of knowledge with other factors, as time of day, the day of the week, the season, weather conditions, special events and calendar holidays. Therefore, it enhances the collection of contextual information, answers to questions regarding the context and the user's profile as well as the use of augmented reality, through which one can send suggestions or complaints about a previously selected area. "This tool, easy to use and unobtrusive, is an attempt to better understand how participants use public open spaces and to investigate the crucial elements to be responded by design, research, and policy making aiming to produce more responsive, stronger, safer and inclusive cities" (Bahillo Martínez, 2015: 3). In this sense, the author mainly aims at increasing the digital tool in terms of better enable researchers to use it for behavioural mapping, thus facilitating the identification of patterns in terms of paths and movements made by users, associating to this data to suggestions that are sent by the users, to the contextual information and to the user's profile. Regarding the features of the tool, the work done in Ljubljana enabled the introduction of new features, including: "(1) improving the suggestion box using an augmented reality engine, (2) giving the WAY-CyberParks user the opportunity to login the app from their Facebook account, (3) attaching the actual weather conditions to each suggestion based on their location, and (4) reproducing audio text with contextual information for helping the inclusion of the blind in the public space". On the other hand, for the web service, the author developed the following other features: "(1) creating contextual information zones, (2) including buildings information plans, and (3) enabling and administrator profile for easily uploading the contextual information related to the public space" (Bahillo Martínez, 2015: 4). As the mobile app comprises a location engine, it operates an "ideal platform for developing new location based services (LBS) that will provide the participant with context based information" (Bahillo Martínez, 2015: 6). On the other hand, the web service contributes for experts carrying out users' analysis based on behavioural maps (see Table 3).

The current and accelerated societal changes challenge a more active citizen participation in urban planning and design, and consider what Ivanova-Radovanova (2015) calls *amateur* expertise in the practise. Thus, Ivanova-Radovanova (2015) bases her STSM study on literature review, site visits to public spaces and an analysis of projects “playable city”, “play the city” and “hackable city” developed in Amsterdam, and relate this to the role of ICT in the process. The author also consider the Amsterdam Creative Industries Network<sup>7</sup>, from where she explores “citizen empowerment” in relation to creative industries and ICT sectors. The author observes that not only the city’s approach but also its dynamic are new, and calls for more fundamental research that investigates also the public opinion. This is because public participation in master plan and investment procedures has been more or less identified and formalized, not happening the same with public opinion (see Table 3).

A next, user-centered step was analysed by Michael de Lange (2015) embedding the concepts of games and play in the way people interact with the outdoor human/machine interface (see Table 3). According to the author, when people are invited to engage in various forms of artistic or scenography events through digitally mediated environments, like those developed by the Watershed Center in Bristol under the framework of “Playable City”, public open spaces can carry new emerging forms of meaningful activities. The author further argues that such activities can retain the user-appropriation capacity in an era where tendencies want user to be isolated inform of indoor screen action (surfing, chatting etc.). To explore such media-driven engagement opportunities with the city through games and play raises the hypothesis on a strong connection between user’s interest, professionals’ engagement with urban space design and finally space’s identity. His work sheds light on the fascinating concept of the Playable City as an alternative strategy to offer back to people their public spaces so violently taken by postmodern attempts of the last decades. Lange developed his study from the perspective of thinking the playable city as an alternative idea to the smart city agenda, which is more oriented on control, efficiency and predictability, rather than about encountering the unexpected and dealing with differences. The smart city perspective is obsessed with high-tech solutions “... with high-tech seems to unproblematically assume that

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<sup>7</sup> <http://www.amsterdamuas.com/create-it/research/amsterdam-creative-industries-network/labs/citizen-data-lab/citizen-data-lab.html>

“technological fixes” can by themselves solve complex urban problems”. Many of these technology-driven solutions ignore the active role and contributions of citizens. Such neglect can even have adverse effects on urban public life and identities at large by thwarting initiative and a sense of ownership (...). Many smart city policies do not empower citizens to become active “players” and “hackers” of their own cities” (Lange, 2015: 1).

**Table 3. Synthesis of the results obtained by the STSM studies on the relationship between social practices in public space – digital devices – urban design practices**

<i>Studies</i>	Positive aspects	Aspects for improvement
(1)	<p>It demonstrates the ability of tool WAY CyberParks to increase the understanding of how spaces are being used (user’s paths, movements, most used sites, etc.) This digital tool is appropriated to gather opinions and suggestions from users regarding the spaces they are using.</p> <p>The possibility of using a digital tool attracts a larger number of users.</p> <p>It works both online and offline.</p>	<p>Taking into account that this digital tool works only in predetermined contexts, issues (questions and information) have also be tailored to each specific area.</p> <p>The use of augmented reality has to be improved in terms of practicality (like speed for uploading images).</p> <p>The tool needs a broad disseminated in order to bind a large number of users.</p> <p>The use of the tool has to overcome certain constraints regarding the use of personal data. A claim that is unsupported than the tool does not link any data to a person.</p>
(2)	<p>The tool WAY CyberParks makes the identification of the users’ paths easier, since the generated information is denser and provided with good continuity.</p> <p>It is a resource with an advantage for small-scale spatial analysis, while tweets are more useful for spatial analysis on large scales.</p> <p>The tool WAY CyberParks provides detailed information about specific spaces (previously fixed). Its users are aware that the data generated will be used in spatial analysis. This promotes a more participatory and collaborative approach towards facilitating urban planning and design.</p> <p>Tweets cover broad areas (from a city, to region, country, continent and globe),after filtered, the information provided is detailed in relation to paths followed by users in different places, providing a hierarchy of places in terms of spatial and non-spatial references.</p> <p>The tool WAY CyberParks provides real information about the paths of users.</p> <p>It does not depend on internet access; it works in both situations online and off line.</p> <p>Tweets provide general information about mobility, as it allows the identification of variations in the flows according to the days of the week or along of 24 hours period.</p> <p>According to the language setting to access Twitter, maps can be generated on the use of the city made by local or tourist people.</p> <p>The data generated by tweets provides information on the movement flows and the points of concentration of users.</p>	<p>The data provided through tweets are more diffuse (in terms of time and space), and is more difficult to capture the paths of users.</p> <p>The digital tool WAY CyberParks does not provide comprehensive information on spatial and non-spatial elements, as it is restricted to a selected space.</p> <p>Twitter users are unaware that data they generate can be used in spatial analysis, which does not facilitate the development of collaborative action and participation in terms of urban design and planning.</p> <p>Tweets do not allow generating information about the real paths of users. As such, it is not a useful tool, for example for the transportation planning.</p> <p>Tweets neither provide information about the mode of transport nor about travel time.</p> <p>The tweets users represent a small part of the population. This calls for attention in generalizing the gathered data generated.</p> <p>The contents of Twitter posts, in order to be used for spatial analysis, have to be first filtered, and this can be time consuming.</p> <p>The use of Twitter depends on access to internet.</p>

<p>(3)</p>	<p>Increased of functionalities of the digital tool WAY CyberParks; it records the weather conditions, reported by a nearer weather forecast station, as for the use of open spaces the weather is an important issue.</p> <p>The tool is an ideal platform for developing new location based services (LBS).</p> <p>The web services provide different opportunities for research, as it allows a comparison of results from different case studies.</p> <p>The tool records users' positions, allowing to visualise in maps their positions and movements in real time or to search for a specific period of past time.</p> <p>It enables to visualise on the map from where the feedback (content, subject and description) is sent, as well as mean used: photo, video, audio, email, telephone.</p> <p>It allows adding and editing points of interest (e.g. attractive sites in an open space) characterized by a radius of influence and supplying contextual information to the users.</p> <p>It allows posing questions to be answered by the user, when he/she reaches the points of interest. The question contains a short description and several optional answers.</p> <p>It can also create alarm zones (or areas of interest), and enables to visualise in maps where these zones are, their shape, who enter and when, the time spend inside it, and when the user leaves it. Within these zones, the user can be asked to perform actions, such as send email, SMS or activate some sensors.</p> <p>It allows add/edit/delete audio tracks on the map, also characterized by a radius of influence and the text describing the track that is going to be reproduced when the user enters the zone of influence.</p>	<p>The main challenge remains the how to encourage the use of the tool.</p> <p>Instead of using Google Maps in the web services, is better to make use of collaborative information provided by openstreetmaps.</p> <p>Again, the issue of privacy and data protection is referred. The author points out that once for spatial planning or behavioural analysis the real time position of a single user or a group seems to be too detailed, whereas for these kind of analysis past and long periods of time are more appropriate, viewing the data as a bulk of users makes the question of privacy irrelevant.</p> <p>The author lists two ideas floated during the meetings he had for presenting the tool: to develop “a kind of social game” to encourage its use and add contextual information in order to make it also interesting for tourists.</p>
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(4)	<p>Public screens for stimulating people to stay longer in public spaces or even to attract people.                  Creation of maps of accessibility to city and preferred routes through it.                  Gaming as alternative to standard formats of public consultations.                  Development of an inviting environment for games, freed from jargons, based on various ideas, plans and projects, enables solving conflicts in a collaborative way.                  Interaction in the design of products and services improve the quality of live for both individuals and communities.                  Fostering the role of play and digital technology in urban re-development processes.                  Creation of a new tool for public participation in urban planning, considering new players and accessible database and GIS mapping.</p>	<p>Define variables and indicators for collecting information from the public, in order to identify important bottlenecks.                  More easily readable information about the devices is needed, because a high number of apps could make users confused.                  Incentives for longer-term motivation for using the apps need to be developed.                  It is helpful in the process of intra-sectorial communication between different stakeholders to have a strong and experienced mediator with relevant professional background.                  Focusing on local level (neighbourhood) for starting with improvements.                  Any initiative for using social media has to be seen in local context, also in terms of laws and regulations.                  The analysed games evidences the lack of involvement of urban planning professionals.                  Games like “play the city” in order to be efficient or successful for problem solving at city and district level, require resources, in terms of finances, time, specific knowledge and skills.</p>
(5)	<p>Playful digital events in urban space can foster citizen engagement and active participation in the smart city experience.                  New multidisciplinary networks emerge under the concepts of “playful city” or “playable city”. Through these, ideas exchange can also be fostered and enhanced for further research on various fields related to the smart city.                  Technology-driven solutions are now challenged to move beyond their computational turn and challenge the active role and contributions of citizens in the cities.                  The interrelationships between urban culture and playfulness can generate participatory ideas for thinking and making better cities.                  Considering games and play the author lists several aspects, as they:</p> <ul style="list-style-type: none"> <li>- might awaken interest of new audiences to get involved with their city, and therefore help to forge social bonds and collective strength;</li> <li>- allow people to have new experiences in their environment (people remain even long after the play or game is over);</li> <li>- offer a design agenda for urban space based on a different politics and ethics;</li> <li>- can lead to new outcomes, ideas, events, services;</li> <li>- can generate new strategies not only for planners and designers but also for policymakers, municipalities and citizens’ groups.</li> </ul>	<p>The rules and codes of play can discourage specific user groups of participating in the urban stage (be it a square, a street, an open area, etc.), especially if rules promote specific individual readings and interpretations.                  Games tend to be planned and designed as universally applicable platforms. The idea of locality and “genius loci” for their deployment is on a threshold.                  Playful city tends to be dominated by the artistic sphere. The engagement of other domains is left rather behind. Therefore, expertise fields like urban planning and landscape design are largely ignored.                  The idea of connecting professional and use playfulness as a communication channel between them needs further development.                  To ease tensions that may emerge between the playmaker and people’s own ways of city making.                  To ease tensions between play technics as autotelic (valuable and entertaining in itself) versus play as goal-oriented, yielding tangible output and results.                  To ease concerns and fear of using new technology, and on the other hand, to handle when it becomes a distraction rather than an interface.                  To measure and assess the impact and the effectiveness of playful approaches.</p>

Source: (1) Duarte, 2014; (2) Masala, 2015; (3) Bahillo Martínez, 2015; (4) Ivanova-Radovanova, 2015; (5) Lange, 2015.

#### 4. Final considerations

From the here analysed three initial studies and five short-term scientific missions, three interesting and fundamental lessons can be detected:

Innovativeness: some topics and approaches tackled are bold and innovative, but due to these characteristics, the knowledge gained cannot *yet* be fully transformed into design guidance. This calls for more research. In fact, the use of Twitter data seems to be promising to show the intensity/concentration of users in public spaces. Masala (2015) lists some possible uses for the produced maps in different fields: human geography, spatial and transport planning or social issues.

In the same manner, the “playable city” or the “hackable city” are more than a mere alternative to smart city concept, as Lange (2015: 11) points out, as they contribute in particular to emphasize an active and innovative form of *smart* citizenship. Both even allow “smartness” to be truly operationalised, and provide a far more view of “cityness”. According to the author, this “cityness” is fundamentally relational, as it understands urban life to be about engaging with the environment, with other people, and with oneself. “It stimulates and celebrates serendipity, messiness, publicness, delay and recurrence, and the importance of meeting strangers”. All this emphatically support the idea of a *smart* citizenship in a *smart* living environment.

Partnership: given the complexity and the interconnected nature of the challenges being addressed in the relationship among ICT, social practices, public space and urban design only an interdisciplinary approach can deal and cope with the challenges. Bahillo Martinez (2015) draws for this a good conclusion, concerning the use of the tool WAY CyberParks “...was very well welcomed ... not only for behavioural mapping experts but also for ICT and urban planner experts.” On the other hand Lange (2015) highlights that a concept like “Playful city” although with good potential to increase the people’s engagement with their environment through an innovative and entertaining approach fully ignores “urban experts”. The author emphasises that when users are aware that the data generated will be used in spatial analysis and to enhance their environment, this awareness fosters a more participatory and collaborative approach.

People’s involvement and building partnerships is a constant issue in all approaches analysed, and in a tool, as the WAY CyberParks that promotes this consciously and invite citizens to take active part, is a valuable asset. Although concerns about data protection and privacy issues have to be addressed.

Knowledge transfer: the outcomes analysed for this work show that whilst research on social practice is well developed, the use of ICT devices and tools for this purpose are in an early stage, but they open new and innovative ideas with a huge potential to be explored. Devices and tools have to be further tested and analysed to be put into practice, as noted by Lange (2015) and Ivanova-Radovanova (2015). For this, a platform as CyberParks Project seems to provide a fruitful framework – as the diversity of approaches and results testify, and through ensuring transferability, the Project CyberParks is paving the way to create the link between the process of knowledge production about the use of public spaces and the process of creating insights to support urban design.

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Amsterdam Creative Industries Network: <http://www.amsterdamuas.com/create-it/research/amsterdam-creative-industriesnetwork/labs/citizen-data-lab/citizen-data-lab.html>

Project CyberParks: [http://www.cost.eu/COST\\_Actions/tud/TU1306](http://www.cost.eu/COST_Actions/tud/TU1306); <http://cyberparks-project.eu/>; <http://cyberparks-project.eu/app>; <http://cyberparks-project.eu/stsm>

*Watershed – Playable City*: <http://www.watershed.co.uk/playablecity/overview>

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