

## REFRAMING DIGITAL PRACTICES IN MEDIATED PUBLIC OPEN SPACES ASSOCIATED WITH CULTURAL HERITAGE

**Carlos Smaniotto Costa**

Universidade Lusófona de Humanidades e Tecnologias, Lisbon (PT)  
smaniotto.costa@ulusofona.pt

**Georgios Artopoulos**

The Cyprus Institute, Nicosia (CY)  
g.artopoulos@cyi.ac.cy

**Aleksandra Djukic**

University of Belgrade, Belgrade (RS)  
adjukic@afrodita.rcub.bg.ac.rs

### ***Abstract***

This article addresses the relationship between digital media technologies (delivered via smart phones, tablets, wi-fi connections) and their use in public open spaces (parks, gardens, squares, plazas, streets, etc.). In the age of ubiquitous and pervasive computing, digital technology is entering the context of the everyday appropriation of the urban environments. Due to the rapid development and increasing possibilities of ICTs for application in the public realm, digital tools challenge a better understanding of the consequences by social scientists and urban designers. This leads to questions about the many ways ICTs affect the use of public open space, the risks included as well as the degree to which these new, emergent, uses fit into the concept of a virtual society. This article focuses on the capacity of ICTs to transform our cities into more social places and contribute to more interesting and engaging ways to navigate and interact with public spaces. It is based on the European COST network CyberParks, in the framework of which several aspects of the relationship of ICTs with public spaces and urban design have been analysed. The results show that ICTs cause and enable innovative outdoor social practices, which provoke spatial and social experts to use them in policies, design and research, in order to produce responsive and inclusive urban spaces. Therefore, aspects such as promoting leisure and recreation, integrating social media and enabling association with heritage will be explored and discussed on the basis of examples already studied in three different countries (Serbia, Portugal and Cyprus). Cultural heritage can be used to influence positively the social cohesion, as it can be promoted in such a way that, instead of provoking tensions and division, would offer spaces of inclusion, increasing everyday experiences and provide a sense of belonging to socially excluded communities.

***Keywords:*** mediated public spaces, mobile technology, cyberparks, spatially distributed narratives, historic cities.

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## 1. Introduction - digital practices in accessing public space

This article is concerned with how ICTs (Information and Communication Technologies) can contribute to transform our cities into more social places, able to respond to people's needs, and an easy and safe place to navigate through and appropriate. It sets up the scientific approach of the Project "CyberParks<sup>1</sup> - Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces", financed under the H2020 COST-Programme. The Project tackles the opportunities ICTs and their devices (smart phones, tablets, wi-fi connections, etc.) are opening for attaching people to public open spaces- mediating their socio-spatial practices. This is enabling ICTs to be also a tool for social research.

There are many ways to define public open spaces (parks, gardens, squares, plazas, streets, etc.). For simplicity's sake, and because it best captures what people care most about, this work uses the term public space, as places for gathering, social interactions and sharing. It is occupied with the kind of spaces that are characterised as open, inclusive, planned and unplanned, of uncertain function, or lightly regulated (Sennett, 2006).

Williams et al. (2009) suggest that ICTs can promote and facilitate the collective uses through digital media and platforms (such as wikis) that enable collective management and valuation of planning solutions. ICTs could potentially contribute greatly to interpretation and inference of meanings through space occupancy (Hampton et al., 2010). In CyberParks, ICTs are considered as potential for social innovation, by intertwining the real and virtual places, what can bring new and more users outdoors. ICTs can become a motor for enhancing and building up (digital) sense of (real) places (Menezes & Smaniotto, 2017). Indeed, the idea behind CyberParks' approach, is that ICTs can provide tools to exploit intangible cultural heritage assets and their birth territories as shared resources, and through this process to achieve both citizen engagement and participation to heritage preservation and enrichment. Heritage is here defined as anything that helps us collectively understand our present and speculate about our future conditions<sup>2</sup>. The opportunities for habitual interaction and familiar encounters are arguably limited in contemporary urban everyday life (Gilroy, 2004).

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<sup>1</sup> COST Action TU1306 CyberParks – is a network funded under the H2020 Framework Programme COST. [www.cyberparks-project.eu](http://www.cyberparks-project.eu)

<sup>2</sup> <http://www.heritageexchange.co.uk/>, 2014

## 2. The lure of mediated public spaces

The Project analysed several aspects of this relationship, and the results show that ICTs cause and enable innovative outdoor social practices which challenge spatial and social experts to use them in policies, design and research in order to produce responsive and inclusive urban places. At the same time, ICTs enable people to capture and share personal experiences in new ways that create new forms of learning, gathering and communication across multiple contexts (Buchem & Sanagustín, 2013).

The consequences of technology pervasiveness in the context of the everyday operation of urban environments are not yet fully investigated. Due to the rapid development and increasing possibilities of ICTs for application in the public realm, digital tools challenge how urban designers and social scientists study and benefit from the technology pervasiveness. This raises questions about the different ways ICTs affect the use of public open space, about the risks that the extensive penetration of ICTs in public space entails, and the processes through which new, emergent, uses and methods of space appropriation fit into the concept of a virtual society (De Souza and Frith, 2012). There are several ways to tackle the degree of integration of ICTs into a cyberpark. The Cyberparks Project focuses on increasing existing knowledge and better understanding current approaches to the co-creation of public open spaces with the support of digital tools and interfaces. In recent years, it has become increasingly clear that interventions designed to encourage citizens (community participation) in policymaking and local development is a practice that offers many important and long-lasting benefits to the space and its users.

Co-creation is the new buzz word in planning. It indicates a *hybridisation* turn in modelling and use of collaborative environments and strategies for planning – hybrid in a sense that these practices go beyond typical participatory design methodologies and involve the appropriation of the space, or the sharing of a common resource, after the policy or design process. Co-creation transcends the mere gathering of facts and involvement of diverse stakeholders, by providing, maintaining, and nourishing a space. Co-creation goes beyond intellectual discussions, and involves sessions of the users talking together, a characteristic which in itself has a positive effect on the implementation of alternatives uses/concepts of designing and appropriating public spaces. Through co-creation, the design and use of these spaces can be more locally rooted and therefore pave the way for fostering willingness and capacities for future collaboration.

### 3. Post digital era and the mediated public spaces

With the *hybridisation* turn, ICTs add a new layer of interface to public spaces. ICTs deliver therefore another mediation between space and its users. This work argues for the conditions under which ICTs can be used creatively for enhancing the appropriation of public spaces, especially those associated with heritage and historic sites in urban environments. ICTs render the occupation of mediated public spaces even more sensitive to regulation than their equivalent of pre-digital spatial conditions. ICT-enabled mediation can bring back to the contemporary historic city-scapes the micro- and nano-scales of relations that enable place-making and promote social interaction and belonging. ICTs can enhance the capacity of historic sites in hosting intercultural dialogue, communication and shared activities. This can be achieved through the creative application of technological solutions which are capable to facilitate, and sometimes accelerate, the self-organisation of thematic communities that form groups around topics and sites of interest, and actively contribute relevant knowledge to the relevant social groups.

Contextualised in societal challenges for the resilience of urban space, these approaches differ to typical, corporate visions of smart cities. The former differentiates from the latter, which interpret the user of ICT-networked information as consumer. Current corporate visions of smart cities focus on data-consumption and the commodification of access to the big-data of the city (Schnitzer, 2013), and value the citizens' well-being by the ease of access to such resources as public transport, infrastructure and digital media (Peugeot, 2013). These visions of smart cities produce a false sense of accessibility to what is actually a representation of the city as a (cybernetic) machine, and the notion of acquiring a lightweight control over the city's non-interpretable complexity. Alternatively, the approaches to ICT-augmented public spaces tackled in the article are concerned with issues of equal opportunities in accessing other types of urban commons (Bollier & Helfrich, 2015), such as historic sites and public spaces associated with heritage and the patrimony of historic European cities. The ICTs solutions discussed hereafter are responding to this challenge, as they aim to augment and multiply, in a pluralistic way, these opportunities for interaction across space and time, in the virtual projection of historical and individuals' narratives on the physical space of common urban recourses.

Using the capacity of digital tools in data transfer and communication of information of technologies such as GPS, RFID, Bluetooth, wireless beacons, surround sound, augmented reality and mixed reality, can enrich users' experience of public historic spaces as

urban commons, by means of interaction. This becomes possible by the likes of blogs, mobile apps for video and photo sharing, and other Web 2.0 applications (O'Reilly, 2009) that can enhance the degree of personalisation, openness and participation of users and citizens in the management of the public space (Rheingold, 2001). The engagement of users through activism, participation and smart citizenship is further facilitated not only by the operation of large-scale screens and projections in space that are open to everyone (Brignull and Rogers, 2003), but mostly by developing virtual communities, which can be established by specific technological interfaces (Boyer, 1996). The authors suggest that the following steps of user engagement in co-creation could benefit from the use of ICTs:

- Mapping of assets by means of spatially-distributed individual narratives, collective meanings and geo-location of stories;
- Visualisation of real-time (observation) data, and tools for user co-development of visualisation workflows that would be meaningful to them;
- Open-ended practices of data interpretation and enabling users to have meaningful access to real-time data.

#### **4. Heritage, historic sites and spatial narratives**

This article proposes that the hybrid condition of physical presence in public space and augmented experience of cultural heritage by digital technologies facilitates the generation of new meanings and interpretations of complex cultural interactions embedded in built and intangible heritage expressions and artefacts. The cognitive process of interpreting data and associated metadata of cultural heritage assets transforms the relationship of the visitor/user from that of a mere encounter with the place into a closer relationship with it, introducing anchors to localised narratives and individual interpretations of the cultural heritage, as this enhanced with digital technologies. The central idea of this understanding is that the cultural expressions could be experienced based on spatial, temporal and other contextual conditions (Calabrese, 2009). This work centres its attention in spatialised assets, i.e., the emergence of cultural heritage associated with a specific public space. Analysing social context would add dimensions to the experience, such as following cultural expressions or experiences by related persons, thus adding a personalised dimension to the cultural heritage.

The three cases below address, and exemplify, the relationship between public spaces, intangible cultural heritage, and associated creative expressions of activities and identities aggregated to them, and opportunities the digital technologies are opening to engage people

with both places and heritage. This work focuses on the possibilities of technology to involve people in the construction, enrichment and enhancement of immaterial heritage via adding to them individual narratives. (Intangible) cultural heritage being a social construct, is subject to changes driven by socio-cultural, economic and technological forces and beliefs. Moreover, heritage is susceptible to tension between conservation of authenticity and these driving forces. It is therefore not in a frozen state, and this poses the challenge how to provide continuity to it in times of growing and rapid development and globalization. The issue is how to enable an environment for co-creation and embodiment of heritage, through individual and crowd narratives, and in present cases, the exploitation of spatial-geographic information related to the heritage and the narratives, in the sense of space appropriation. This leads back to the above-mentioned forces, as they can also provoke the transformation of the layout of the spaces wherein the cultural heritage expression has emerged. Moreover, the interrelation between space, place and heritage, as the *locus* for the construction of identities, connotes to space a subjective, symbolic level, adding to it the “marks” of the people who use it. In this sense, the “issues” - cultural heritage, place, people - are relational. They are interrelated and integrated, assuming dynamics and fluidity across them. Therefore, the mediated public space is considered as the hybrid place for the construction of narratives. The examples below explore the capacity of digital tools to enable users to better interpret and understand the interrelation of intangible cultural heritage and associated spaces.

### **Serbia: Roman cultural routes**

The Roman footprints were left all around the Europe. The Roman Emperors Routes which permeate with Wine Routes along the Danube river gather 20 roman sites and 12 wine regions in the lower Danube. The parts of the Route located in Serbia, consist of archaeological sites and present one of the most important cultural route in the South-Eastern Europe. The Danube was the frontier of the Roman Empire (*limes*) for the long time. The Roman cities that were positioned along the frontier were the military camps and important strategic nodes. Belgrade (Singidunum), Nis (Mediana), Sremska Mitrovica (Sirmium), Viminacium (near Kostolac) were among the most important cities during the Roman times. Sirmium was the capital of the Roman province of Pannonia Inferior, and Viminacium the capital of Moesia Superior. Nowadays, all above mentioned cities, except Viminacium, are the major cities in their regions, and attractive tourist destinations. Cultural tourism and creative cultural tourism are planned to be the milestones for triggering their development, both at the level of policy and master plans. The fruitful combination of culture

and creativity has been the backbone of their development which has boosted tourism (Kumral & Onder, 2009).

ICTs play a very important role for introducing cultural heritage to the tourists, for the education of visitors, and for connecting similar heritage sites. The application of 3D documentation and reconstruction technologies gives incredible opportunity of perceiving non-existing or at least partially visible historical objects and cities. In Roman cities along the Emperor Route in Serbia, several archaeological fragments have been found that together complement the image of the habits and life of its former inhabitants. However, because there are no significant visible remains of their above-ground construction, the historical objects and urban patterns cannot be perceived in their entirety as they once were. Augmented reality is one of the technologies that can add the new dimension to the understanding of important historical moments and events. It combines on the screen of smart phones or tablets information from real world with digital content in popular and innovative ways interpreting archaeological and historical data. Currently the cities of Sirmium, Mediana and Viminacium operate Augmented Reality Infoboards. When accessed from a smart phone, the boards trigger virtual presentation and offer contextual info to the visitors, thus transforming the routes into virtual open-air museum (Figure 1).

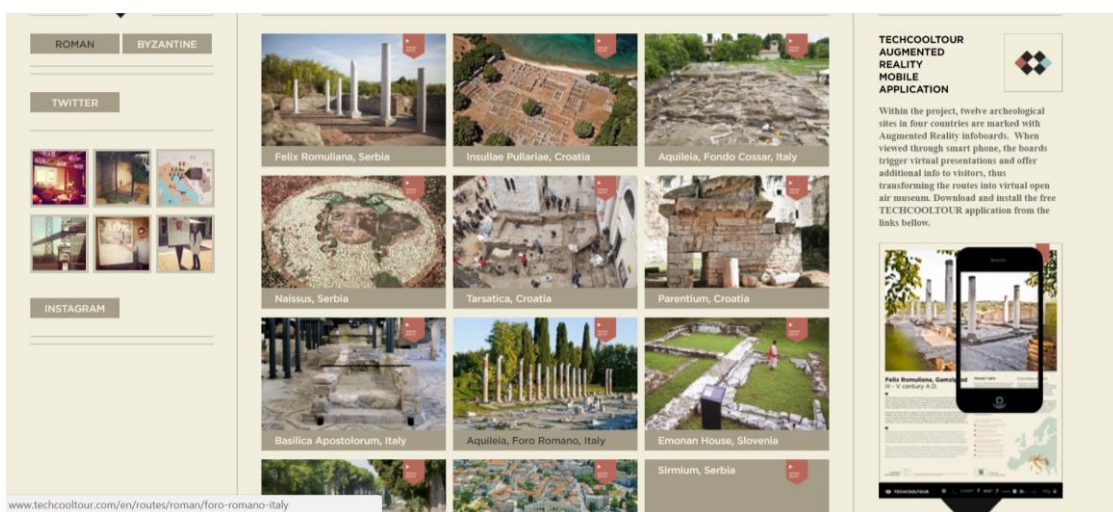


Figure 1: Augmented reality application for Sirmium and other Roman cities.

For example, the Augmented Reality Infoboard of Sirmium includes an animated 3D presentation of Emperor Constantinos II who invites the visitors to come to Sirmium and its imperial palace. Similarly, in Mediana, where the villa of Constantinos the Great was excavated, digital tools were used for the creation of tourist guides and educational platforms. Specifically, Mediana Explorer Elfak app. (Figure 2.) is a game and an education tool at the

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same time. The players can learn the facts about history and monuments from the Mediana site, while they are searching for the selected objects (by means of ID markers). When visitors discover an artefact with an ID marker they can explore and interact with its 3D reconstruction. Together with the Medijana app, there is available an Augmented Reality application that enables the users to see hidden floors of the villa decorated with mosaics. This app then serves as a tourist guide for the site presenting historic information in the form of text, photos, video and audio records.

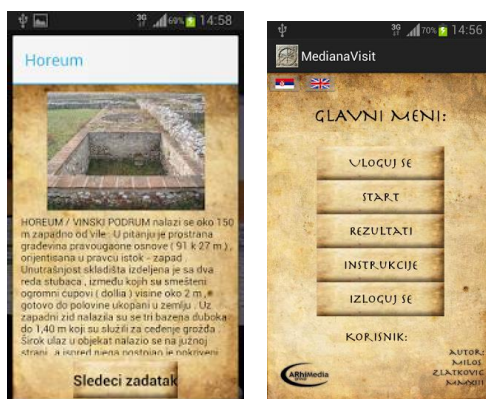


Figure 1: Mediana Explorer Elfak app. (exploring Horeum - Vine cellar in a villa and Main Menu).

Another example is the Infoboard of Viminacium that includes the Viminacium GPS Guide and the Viminacium app, both of which applications serve as tourist guides for the archaeological site. They provide contextual information about the site, including different maps and locators (Figure 3).



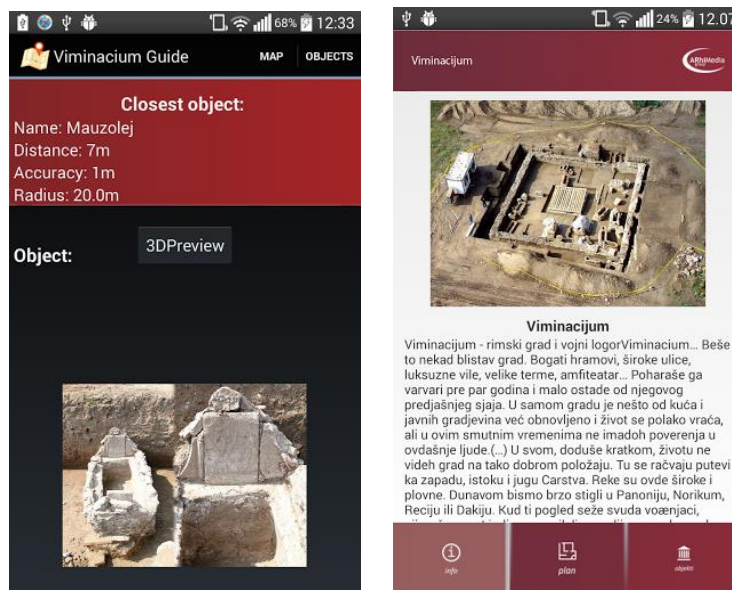


Figure 3: *Viminacium GPS Guide application and Viminacium application.*

Belgrade's Roman fortress is one of the most visited attractions for tourists in the city, but also a very popular place for citizens. Dozens of monuments are located in the Roman fortress. An interactive map (Figure 4) and a tourist guide app provide to its visitors the necessary information about past and present condition of this important site.

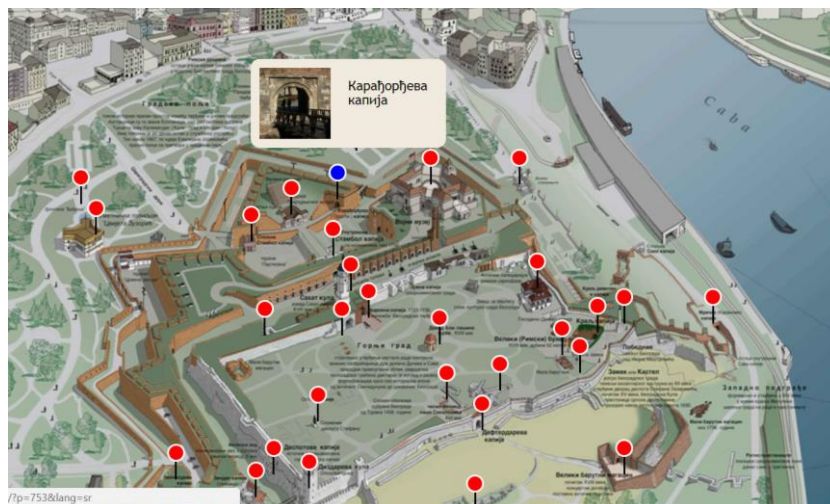


Figure 4: *Interactive map of Belgrade's fortress.*

### **Lisbon: Mouraria and fado**

Fado, the traditional folk music popular in the area of Lisbon in Portugal, has a long history that can be traced back to the early 1800's. Fado is listed as Intangible Cultural Heritage by the Intergovernmental Committee for the Safeguarding of the Intangible Cultural

Heritage of UNESCO since 2011. Fado comes from the word fate, and correspondingly the poetic lyrics are mourning, sorrowfully and melancholy ballads about broken hearts, leaving the city/country, lost sailors, sad widows and bittersweet romances. It is rooted in the working-class neighbourhoods, with Alfama and Mouraria being regarded as the most traditional places to listen to fado. Here fado singers (called *fadistas*) sing fado in small neighbourhood restaurants (*tascas*) and bars, fado clubs, and in professional *casas de fado* (lit., fado houses). The performance comprises a solo singer accompanied by a classical Portuguese guitar. Fado and the fado places boosted the establishment of fado tourism; fado places are celebrated in tour guides, and even some as insider tips. The tourism industry is one of the most relevant economic sector in Portugal, contributing in 2016 with 16.6% to country's GDP<sup>3</sup>.

Being haunting and about leaving, many fado play in Lisbon and around the River Tagus, building so a strong relationship to the urban fabric and landscape. The texts are usually written by authors who are themselves directly connected to the city, because they live (lived) or grow up there, and ultimately build there their *fadista* identity. Fado (lyrics and music) is therefore a form of storytelling. It keeps alive stories and memories passed down through generations. The traces of the built environment of Lisbon depicted in fado lyrics started attracting the interest of researchers and scholars expanding the existing knowledge about historical conditions and spatial relationships in the city. The search for spatial clues in the lyrics has a scientific perspective that can be used in policies and design of public space towards increasing attraction and the attachment of people.

Situating fado geographically however bears some risks, since the space described in a fado lyric is a fabricated one, even though it is related to reality. Yet, the spatialised data about fado is an emerging research topic, and the article acknowledges that it is a very demanding process to examine the excerpts and song texts in order to disclose information about a spatial connection. There is some pioneer work already done, e.g., Queiroz et al (2014), but an extended study is still awaited.

Mouraria has several interesting characteristics, as it is an ancient and iconic central neighbourhood. It moved from a ghetto of the moors (*mouros*) after the Christian reconquest, to a working-class neighbourhood, declined from the 1970s and is currently being repopulated mainly by new migrants. Recent rehabilitation programmes and population movement are changing the character of Mouraria. The neglected and vacant buildings attracted different migration waves, especially in the 1970s and later in the 1990s, hosting today

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<sup>3</sup> World Travel and Tourism Council (2017). Travel & Tourism Economic Impact 2017 Portugal, WTTC

strong Bangladeshi, Nepali and Pakistani communities. The immigrants helped to stop the downgrading spiral in Mouraria, recuperating old buildings, opening shops and restaurants. Today the cultural values and identity of the historical fabric and the new inhabitants provoke a clear transformation of the image of the area, making Mouraria a new destination in the city, featuring trendy shops and bars. Through the rehabilitation programme several new open spaces were created (Figure 5), and the existing ones got improved. The creation of these new open spaces was made possible through new types of ownership and provokes a higher frequency of use of public spaces than before.



Figure 5: The winding streets in Mouraria and a new developed pocket park on an empty plot. Photo: Smaniotto 2017

Within the Project CyberParks, the application WAY CyberParks<sup>4</sup> was tested in Mouraria, in the context of several workshops. This app, composed by smartphone app and a web platform, is meant to be an interface between users and planners (Figure 2). It enables planners to obtain (1) the opinion of different users on specific issues and sites; (2) maintain

<sup>4</sup> Developed by the CyberParks partner Universidad de Deusto, Bilbao (ES), <http://cyberparks-project.eu/app/monitoring-tool>

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an updated database, (3) analyse different users' activities in the same space, and (4) social reporting via text, video or images. The transmission of information between the two components (smartphone app & web) is performed automatically through the cloud. Through the app researchers can pose questions to the users, these are popped up when the last reach pre-defined points of interests. The app enables therefore the users to give their opinion and feedback. The potential of the app results from the interplay of the mobile application (app) with the web platform, while the app is more directed to the user, the web platform that hosts the database, and enables the collection, storage and interpreting of gathered data, is targeted to serve research and planning purposes. This functionality is useful when is applied to the Fado relevant-sites in Mouraria. In the evaluation of the workshops almost all participants mentioned that the engagement with the place was a new and an interesting experience, as they “learned” to see and reflect the Mouraria and its places with a new understanding.



*Figure 2: The web app and the web platform. Here, the user's paths and the distance covered. Photo: T. Duarte 2017.*

In view of the strong economic and tourist dynamics that are currently taking place in Lisbon, especially in Mouraria, the documentation of historic narratives can become challenging, given the strong "ephemeral" character of the way public space is used by visitors. Moreover, new opportunities arise in historic areas like Mouraria which is now inhabited by migrants who are probably not aware of the existence of fado and its heritage despite of their occupation of the place that is considered as one of the birth places of fado. The use of ICT's tools like the WAY CyberParks enables the documentation of a completely different interpretation of fado, this time collected from the new inhabitants of the place.

### **Nicosia: the moat of the Venetian Walls in the last divided capital in Europe**

The Eastern Mediterranean preserves significant examples of cities whose continuous history can be traced all the way back to Prehistory and Antiquity. In particular, Nicosia, the capital of Cyprus, is considered amongst the most contested urban environments having historically layered pasts and perplexing present-day, as the last divided capital in Europe. Originally the Italian architect Giulio Savorgnan<sup>5</sup>, who designed the 16<sup>th</sup> century Venetian Walls (1567-70) of the historic city, which were fortified by eleven heart-shaped bastions, designated the 80 metres wide moat as a clear flat space to expose anyone who would try to approach the city walls, the canonical design rule of medieval fortifications (Grivaud, 1992).

Since the beginning of the 20<sup>th</sup> century numerous activities and uses were hosted into the moat, from sporting events, livestock trade and markets to parades and leisure spaces, waste disposal and farming. In every one of these cases the moat was treated as plains for discharging the outwards pressure of the life and need for expansion of the walled city. The conservation, promotion and re-identification of the Walls by George Jeffery<sup>6</sup>, the first Director of the Department of Antiquities during the British rule, offered a new opportunity for the moat, which beyond its use as an empty space now acquired a symbolic role, that of framing the city and being framed by the walls.



*Figure 3: Aerial view of the moat highlights its occupation by multiple uses (park parks, tennis courts, football fields and others). Photo: Google Maps 2017*

Despite the reinvented potential of the moat for foregrounding and highlighting the presence of the walls as Cypriot patrimony, after the war of 1974 and the division of the island, and consequently of Nicosia, the urgent and ever growing needs of the city for empty

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<sup>5</sup> [www.nicosia.org.cy/en-GB/discover/sights/the-medieval-walls](http://www.nicosia.org.cy/en-GB/discover/sights/the-medieval-walls)

<sup>6</sup> [www.archmap.org/britishcypru](http://www.archmap.org/britishcypru)

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plots to support its infrastructure and operation led to the fragmentation of the moat, as illustrated in Figure 3. This new reality of the city was intensified by the lack of long term masterplan for the expansion of the built environment with clearly set targets that would preserve and safeguard the identity of the place and exploit the added value of the legacy of the city for social - and tourism - purposes.



*Figure 4: The form and dimensions of the old city-walls-moat-newer city section vary along the moat, and arguably this variation impacts the relationship of the moat with the Walls and the two sides of the city. Photo: Georgios Artopoulos, 2017*

This has been a great challenge for the Municipality of Nicosia, the local stakeholders and all planners, designers, academics and scholars that are occupied with the study of the city, as it is clearly illustrated in the relevant literature (cf. Pilides and Alpha, 2012: 218). The apparent continuity both in terms of use as well as with regard to the spatial condition, as it is clearly illustrated in the topographical section of this zone of the city (Figure 4), suggests that the moat could become a unique opportunity for the city and play the role of the central open-air resource of Nicosia, where social interaction is nurtured together with history and nature in a contemporary approach to heritage in public space. In doing so the moat offers valuable free space to host various functions, stage social performances, serve the historic core and be appropriated collectively by the citizens and ephemeral users of Nicosia. In this context the moat is not a monument that captures and tries to preserve a static image of the past in order to communicate a hegemonic narrative that is imposed (top-down) to characterise the identity of the place, but rather becomes an active space of the everyday life of the inhabitants of the city.

Within the CyberParks Project, numerous concepts and ICT-enabled practices were generated. In particular, innovative models of user-driven digital platforms were proposed (Bagni et al., 2018), with the aim to facilitate the temporary accommodation of community-

managed activities in the spaces of the moat within the medieval Venetian walls. By enhancing the perception of an overall coherent public space, the platform developed by Bagni et al. attempts to re-establish “the connection of the historical value of the old city wall and the moat with the citizens’ various contemporary social, physical and communal activities, (ibid.) (Figure 5). Additionally, this proposal promotes a self-organised appropriation of the moat through a mobile application that will be freely available, and open, to the public. It is relevant to the argument of this work that this approach to ICTs is expected to enable the enhanced experience of the moat area by citizens and visitors. The authors suggest that some of the activities that could potentially take place in the moat include urban community gardening, social kitchen, social working activities, i.e., public area cleaning, open-air cinema, etc.

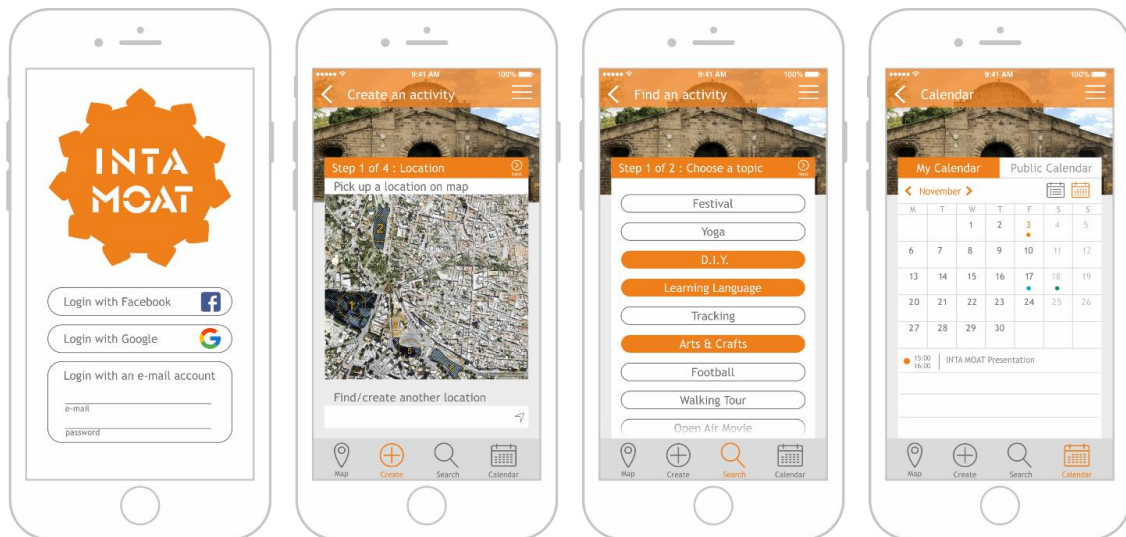


Figure 5: Main sections and login screens. Photo: Joatan Preis Dutra

These ideas envision the positive impact the use of ICTs would have on promoting the moat of the medieval fortification of the old city as a public space that highlights one of the few legacies that unite the two sides of the divided city, that is, its Medieval Walls. It claims that ICTs could contribute to better understanding the role of the moat and reflecting on its current use and level of integration in the public infrastructures of the city.

## 5. Possible (future) pathways: Enriching Public Spaces with Unique Experiences of Cultural Heritage

Despite the significant spread and use of ICT-based devices in public spaces, there is a lack of coordinated and interdisciplinary exchange of knowledge between researchers and experts from different scientific domains, a gap that the CyberParks Project intends to bridge. The Project and this article suggest that the process of narratives growth is open to the community. Anyone who is interested in and motivated can contribute with own stories to enliven the heritage. Under the right conditions, ICTs could aid and accelerate the following activities, which are expected to promote social engagement and identity building:

- Participation, co-creation and co-management of built heritage and historic sites;
- Promotion of civic interaction in public historic spaces;
- Integration of forgotten sites in the everyday of the city;
- Creating/enhancing narratives from different points of view;
- Use of open air heritage space as a common pool resource;
- Expressing knowledge of historic sites and
- Boosting patrimonial and territorial education (for all).

Mouraria and Fado in Lisbon, the moat in Nicosia, and the Roman sites in Serbia are more than a tradition or a preservation of history, they are a live resource of the cities that can be exploited through modern forms of storytelling, and this with an emergent opportunity: being spatially rooted they can be the motor of creating narrative involving uncountable amount of people and views. This in turn, can result, in a snowball effect, in the production of more narratives and changes. ICTs can support keeping the spatially disseminated assets (and their associated narratives) alive through the next generations – they can inspire people, especially the young ones, to embrace heritage as a source of identity and cultural value.

Co-occupation of public space and co-use of urban resources is a challenge that digital technologies can arguably respond to, and this article promotes the role of heritage as a driver for user interaction in ICT-rich urban environments, in the context of this challenge. The value of heritage is assigned in all types of culturally embedded commons of an urban environment, including squares, parks, sidewalks and riverbanks, buildings and monuments. Hence historic public spaces, bearing cultural values are places that offer opportunities for learning and social interaction – both of which are activities that facilitate engagement of



their users and association with the space (Artopoulos, 2017). Adding value to places through heritage has great potential and this makes it perfect sense to expand, as much as possible, the collection of data on how people represent the heritage in their histories and narratives.

Each of the discussed cases in this article applies the concepts of space, time, and place to problems central to an understanding of society and culture, employing deep maps to reveal the confluence of actions and evidence and to trace paths of intellectual exploration by making use of a new creative space that is visual, structurally open, multi-media, and multi-layered. The overarching goal of this effort is to contribute with insights on the impact of the use of ICTs on citizens' accessibility to urban heritage commons, as pointed out in the "Culture, Cities and Identity in Europe"<sup>7</sup>.

'Devices' of engagement sourced from narrative-based cultural and creative industries, such as an 'exploration for learning' incentive, when integrated in communication interfaces, can serve as a vehicle to empower users. In this approach visitors and citizens of the city, as well individuals and communities that may be excluded could be enabled to raise their voice and participate in the future appropriation models of the public space they relate with (Páez and Darren, 2005). The article suggested that the proliferation of smartphones and ubiquitous Internet access, together with new technical means for user engagement could enable under the right conditions the users, citizens and visitors of historic cities to experience cultural heritage in novel ways. This research is contextualised in the broader inquiry about the parameters and conditions under which strategies that exploit ICTs could add significant value to urban heritage in order to complement corporate approaches to the concept of smart city. The article claimed that digital tools could do so by offering new mediation opportunities to the visitor of a public space, or a historic urban site. Finally, it was proposed that the hybrid condition of physical presence in space and augmented experience of cultural heritage by digital technologies facilitates the generation of new opportunities for appropriation and use of historic public spaces.

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<sup>7</sup> European Economic and Social Committee, and in the Culture Action Europe network, <http://cultureactioneurope.org>

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**Carlos SMANIOTTO COSTA** (PhD) holds a diploma degree in Landscape Architecture and Environmental Planning and a PhD degree in Urban and Landscape Planning from the Leibniz University Hannover/Germany. He is professor of Landscape Design and Urban Ecology in the Department of Architecture and Urban Planning at Lusófona University, teaching in master's and PhD programmes. Smaniotto is member of Lusófona's Interdisciplinary Research Centre for Education and Development, where he leads the Experimental Lab on Education, Space and Memories. Smaniotto has been working on a number of national and international research projects covering different issues but all centred on sustainable urban development and transforming cities into more liveable spaces. He has published widely on environmental, social, urban geography as well as urban planning and design issues in professional journals in Portuguese, German, English and Italian. He is one of the initiators and the chair of the COST Action TU1306 CyberParks.

**Georgios ARTOPOULOS** (PhD), Assistant Professor, Science and Technology in Archaeology Research Center, Cyprus Institute, works on immersive and performative spaces, on virtual environments, modelling and simulation for the study of built heritage and the creative exploration of historical narratives in the context of public open space. Giorgos holds a Master of Philosophy and a PhD, University of Cambridge (UK) with a Doctoral Award from the Arts and Humanities Research Council. Previously he was employed by the Heriot-Watt University, UK, the University of Melbourne, the University of Cambridge and the Aristotle University of Thessaloniki, Greece. Giorgos has contributed in more than 12 International Research Programs and received the Best International Short Film award in Mestre Film Festival, Venice. His work was presented at La Biennale di Venezia, the Royal Institute of British Architects, London, the London Design Festival, Seoul Biennale of Architecture & Urbanism 2017, the Ukrainian Institute of Modern Art, Chicago, the ISEA 2006 and 2008, the British Council, Brussels, the Hong Kong and Shenzhen Bi-City Biennale of Architecture and Urbanism, and in many art exhibitions. His work was published in more than 28 peer-reviewed journals and books of architecture and 35 International Conference proceedings and exhibition catalogues.

**Aleksandra DJUKIC** (PhD) is Associate Professor at Faculty of Architecture, University of Belgrade, Department of Urban Planning and Urban Design. Her field of professional activities and research is directed on urban design and planning, urban morphology, urban renewal and heritage. She has published four monographies, more than 180 articles and chapters in international and national scientific journals, books, proceedings. She has participated in numerous national and international research projects and workshops and she was a leader of one national research project with international cooperation and Project manager of Interreg Danurb project for Serbia. She was a keynote speaker at three International conferences and she gave a lectures at Universities in Granada, Graz and Bari. She is in the Editorial board of two international scientific journals in the field of architecture and urbanism, and in one national. As an architect and urban planner in practice, she has done more than 50 urban plans and designs, 10 realized buildings and 5 studies in Urban renewal and planning (for UNDP, Ministry, Local government). She has received numerous awards in international architectural and urban competitions, awards in urban practice and two rewards for the best paper at International congressis. She is vice president of Town Planning Association of Serbia and representative in ECTP-CEU.

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