# iCiTy

enhancing places
through technology

## International Conference

## Conference Programme

Antoine Zammit
Therese Kenna *Editors*

**COST Action TU1306 CyberParks**

Fostering Knowledge about the
Relationship between Information and
Communication Technologies and
Public Spaces

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EUROPEAN COOPERATION
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18 -19 April 2016
VALLETTA, MALTA

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Fostering Knowledge about the Relationship between Information and Communication Technologies and Public Spaces

*www.cyberparks-project.eu*

ICiTy. Enhancing Places through Technology.

International Conference

18th April 2016 -19th April 2016
Valletta, Malta

Conference Chair
Dr Antoine Zammit
Department of Spatial Planning and Infrastructure, Faculty for the Built Enviroment, University of Malta

Chair of COST Action TU1306
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# ICiTy

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## An International Conference

organised by

**COST Action TU1306 CyberParks**

Fostering Knowledge about the Relationship between Information and Communication Technologies and Public Spaces

cyberparks

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18th - 19th April 2016

# ICiTy

enhancing places through technology

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| | |
|---|---|
| Therese Kenna | Chair **Scientific Committee** / University College Cork, Republic of Ireland |
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| Catherine Woods | CyberParks Member / Dublin City University, Republic of Ireland |

Keynote Lecturers:

| | |
|---|---|
| Alessandro Aurigi | Plymouth University, UK |
| Matthew Carmona | University College London, UK |
| Dave Carter | University of Manchester, UK |
| John Cook | University of the West of England, UK |
| Eva Savina Malinverni | Università Politecnica delle Marche, Italy |
| Matthew Montebello | University of Malta, Malta |

Track Rapporteurs / Moderators:

*Track 1* ***Digital methods and social practices in public space***

| | |
|---|---|
| Ognen Marina | CyberParks Working Group 5 member / University Ss. Cyril and Methodius in Skopje, Macedonia |
| Gabriela Maksymiuk | CyberParks Working Group 2 member / University of Life Sciences, Poland |

*Track 2* ***Ethnographic challenges and the creation of digitally mediated urban places***

| | |
|---|---|
| Therese Kenna | CyberParks Working Group 2 leader / University College Cork, Republic of Ireland |
| Paschalis Arvanitidis | CyberParks Working Group 2 member / University of Thessaly, Greece |

*Track 3* ***Reflecting on the relationships between people, spaces and technology***

| | |
|---|---|
| Catarina Patrício | CyberParks Working Group 3 member / Nova University of Lisbon, Portugal |
| Catherine Woods | CyberParks Working Group 2 member / Dublin City University, Republic of Ireland |

*Closing plenary session*

| | |
|---|---|
| Martin Rieser | CyberParks Working Group 4 member / University of the West of England, UK |

# contents

Antoine Zammit
Conference Chair

## Welcome to ICiTy

It is with immense pleasure that I welcome you all to the two-day International Conference, ICiTy – Enhancing Places Through Technology, being organised within the remit of COST Action TU1306 (CyberParks), and to Valletta, UNESCO World Heritage City and upcoming European Capital of Culture 2018. This conference signifies an important milestone in terms of the objectives, and deliverables, of this COST Action and it is a fantastic opportunity to expose, debate and reflect upon some of the most current and relevant concepts, challenges and opportunities dealing with the interfaces between ICT, people and the physical urban space. These three dimensions form the vertices of an important triangle, having far-reaching implications, be it in the development of new technologies, in the understanding of human behaviour and in the definition, and possibly rethinking, of urban spaces.

There is no denying that the proliferation of, and accessibility to, new technologies has raised significant questions to both research and practice. Technology has redefined our lifestyles on a day-to-day basis and our relationships with one another. It has challenged our conventional outlook towards time and distance and required us to re-evaluate our connection with physical space. It has also made us re-question the value of urban space and the extent to which we may still create meaningful 'places' as opposed to anonymous 'spaces' – certainly an increasingly challenging concept given the risk of alienation brought about by technology and that constitutes an unfortunate, but very real, prospect. All these issues, and more, augur for an exciting and healthy debate that I am sure will be generated throughout these two days. At the heart of these discussions, and an important keyword within the conference title, lies the term 'enhancement', understood in terms of the added value that ICT may bring about, contributing to broader quality of life objectives. The play on words suggested by the name of this conference is not incidental but it tries to portray the 'blurriness' between ICT and the city (as a representation of the urban realm) that is being faced today. This, I hope, may enable us to discuss the various thematics at hand holistically, not short-sightedly, and remind us that we should strive to remain constantly focused on the important overlaps, and interfaces, between the three pillars constituting our discussion.

This conference would not have been possible without the dedication, hard work and contribution of a superb team that has backed me throughout the past months. First, the COST Office, without which this project would not be possible and the Cyberparks project chair, Carlos Smaniotto Costa for his constant help and support, backed by a superb administrative team at the CeiED, led by Filipa Lourenço. I am grateful to our conference partners and sponsors – the University of Malta, the Planning Authority, Valletta 2018 Foundation, the Malta Communications Authority and studjurban. I must also thank the internationally renowned keynote speakers who have kindly accepted our invitation to share their expertise and deliver inspirational lectures within the plenary session. On behalf of the Cyberparks project, I would like to wholeheartedly thank Therese Kenna for the coordination of the International Scientific Committee and its members who reviewed all the abstracts and papers that were submitted for this conference, as well as the Cyberparks members who have kindly accepted to be session moderators and rapporteurs. On the local front, I am indebted to the Project Support Office at the University of Malta, notably Angie Aleksovski and Glen Farrugia, Lucienne Bugeja and her logistics and events team, the IT Services at the University of Malta, and Constanta Dohotaru from studjurban who has professionally created the conference logo, poster and this very publication. Last, but certainly not least, my thanks goes out to all the conference participants who have enthusiastically shared their knowledge and research within the submitted papers that they shall present in this conference. I am sure that a lively and stimulating debate will be generated by these highly varied, equally relevant contributions.

I wish you all an invigorating experience at the ICiTy conference!

Carlos Smaniotto Costa
Chair of COST Action TU1306

## Places and Technology: Advances towards Digitally Mediated Spaces.

ICiTy – Enhancing Places through Technology is the first interdisciplinary conference organised in the context of the Project CyberParks (COST Action TU 1306). It opens an opportunity to widely discuss the emerging challenge that the fusion of the virtual into the real world poses. The advancement in technology, also with regard to the urban environment, becomes challenging for all, from policy makers and urban designers to social scientists and ICT experts, to citizens – in our case the public open space users.

The Project CyberParks – Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces supported by strategies to improve their use and attractiveness, takes on this new challenge. The Project, financed by the European Programme COST (2014-2018), is conceived as an interdisciplinary research/exchange platform. It aims at enhancing knowledge on the relationship between ICT (mobile devices, wi-fi, interfaces, etc) and the production and use of public open spaces (parks, squares, plazas, public gardens, etc). CyberParks centres its attention around ICT as an active interface between the production of knowledge about the use of urban public space (research purposes), and guidance for interventions (urban policies and design practices). CyberParks, grasping the ideas of hybrid space and mediated spaces, those real spaces 'mashed-up' with digital technology, investigates the shape and scope of impacts and the opportunities generated by emerging applications to improve legibility and liveability of urban spaces, as well as new forms of integrating people into the urban design processes. The challenge is how to make use of the opportunities offered by ICT, so that they can provide support to decision-making in planning, production, and maintenance of public spaces, providing them with the features that best meets the needs of their users.

This conference, conceived as a midterm evaluation of the Project, will explore the benefits of interweaving an outdoor experience with digital engagement, via sharing knowledge, discussing experiences and ideas, and analysing the production and uses of public open spaces. Hence, in the ICiTy Conference our major objective is to advance knowledge on the contribution of ICT to transform our cities into more social environments, rather than just more high-tech.

The ICiTy Conference and this publication is a product of hard work and shared commitment by the Project partners involved, especially the University of Malta, as an institution, and Antoine Zammit, as a person. A debt of gratitude is owed to him and his team, without whose vigorous engagement and dedication the work in hand would be not possible in such an exciting manner.

## ICiTy – Enhancing places through technology

ICiTy is the international mid-term conference for COST Action TU1306 CyberParks: *Fostering Knowledge about the Relationship between Information and Communication Technologies and Public Spaces*. It is an interdisciplinary scientific conference open to academics, researchers, practitioners and students alike that focuses on the opportunities and challenges to public spaces, brought about by the advancements of ICT. This conference provides a significant opportunity to synthesise the current 'state of the art' with regard to the development of ICT and the re-questioning of public spaces, from technological, human, philosophical and design perspectives.

ICT may add value to public spaces and to the user experience therein. Understanding fully the implications of ICT to place-making requires, in turn, a complete understanding of the relations between users and their behaviour, new media and the spatial practice, as well as new methodologies using technology that are being developed.

### Conference objectives

ICiTy aims to expose participants to novel ideas about future ICT development and contemporary knowledge about new ways of urban life people are tending or searching for in connection with new media. It showcases a vast array of case studies – both in terms of field experiments with new methodologies and innovative design approaches related to the development of urban open spaces.

The discussion is being articulated within three main parallel research tracks as follows:

**1 track**
**Digital methods and social practices in public space**

Papers in relation to this track deal with recent and novel ICT-tools that have been (or are being) developed in order to research the use of, and user-behaviour within, public spaces.

**2 track**
**Ethnographic challenges and the creation of digitally mediated urban places**

Papers in relation to this track:

- explore contemporary design research and innovative open space development practices, illustrating the design challenges of new media to urban and landscape design; and
- discuss cultural and sociological fieldwork using innovative theoretical and methodological approaches, addressing contemporary knowledge about the use of new media technologies in public spaces from an ethnographic viewpoint.

**3 track**
**Reflecting on the relationships between people, spaces and technology**

Papers in relation to this track reflect on philosophical and methodological approaches and illustrate evidence-informed practice that seeks to understand the complex relationships between humans, public spaces and new media development and how it is (or should be) reflected in the urban fabric and place design.

# monday 18 april 2016

| | |
|---|---|
| 8:30am - 9:00am | **Registration** |
| 9:15am - 12:30pm | **Morning plenary session** |
| 9:15am · 9:45am | Welcome speeches |
| | Dr Antoine Zammit // Conference Chair |
| | Dr Carlos Smaniotto Costa // Chair of COST Action TU1306 |
| | Professor Janet Mifsud // Malta COST National Contact |
| | Professor Alex Torpiano // Dean, Faculty for the Built Environment University of Malta |
| | Professor Alexiei Dingli // Mayor, Valletta Local Council |
| 9:45am · 10:30am | Keynote presentations |
| | Hon Dr Deborah Schembri, MP // Parliamentary Secretary for Planning and Simplification of Administrative Processes, Office of the Prime Minister<br>Empowering local citizens through a new Planning App |
| | Dr Odette Lewis and Perit Sarah Scheiber //<br>Faculty for the Built Environment, University of Malta<br>Transport modelling as a tool for reclaiming public space |
| | Mr Neville Borg // Valletta 2018 Foundation<br>Technologically-driven community regeneration within the European Capital of Culture |
| 10:30am · 11:00am | Coffee break |
| 11:00am · 12:00pm | Keynote lectures |
| | Professor Matthew Carmona // Bartlett School of Planning<br>University College London<br>Public Space: A new narrative and a new normative |
| | Professor Alessandro Aurigi // School of Architecture Design and Environment<br>Plymouth University<br>The challenges for urban design and place-making in the information age |
| | Professor Matthew Montebello // Faculty of ICT, University of Malta<br>Ambient Intelligent Environments – accommodating the citizen |
| 12:00pm · 12:20pm | Questions from the floor/discussion |
| 12:30pm - 1:30pm | **Lunch** |
| 1:30pm - 3:00pm | **Afternoon plenary session** |
| 1:30pm · 2:30pm | Keynote lectures |
| | Professor John Cook // Centre for Moving Images<br>University of the West of England<br>Citizen interactions in Smart cities: The Zone of Possibility |
| | Professor Eva Malinverni // Dipartimento di Ingegneria Civile, Edile e Architettura, Università Politecnica delle Marche<br>CyberParks ICT-Tools: from large-scale geomatic applications to single user benefits in a Smart City |
| | Mr Dave Carter<br>Centre for Urban Policy Studies, University of Manchester<br>Developing Inclusive and Sustainable Smart Cities with Smart Citizens |
| 2:30pm · 2:50pm | Questions from the floor/discussion |
| 3:00pm · 3:30pm | Coffee break |

3:30pm - 4:30pm **Parallel sessions organised around three conference tracks – Session 1**

*Track 1* **Digital methods and social practices in public space**
Moderators/rapporteurs: Ognen Marina, Gabriela Maksymiuk

*Track 2* **Ethnographic challenges and the creation of digitally mediated urban places**
Moderators/rapporteurs: Therese Kenna, Paschalis Arvanitidis

*Track 3* **Reflecting on the relationships between people, spaces and technology**
Moderators/rapporteurs: Catarina Patricio, Catherine Woods

4:45pm - 6:15pm **Site visits**

**Biccerija site, Pjazza de Vallette** (Group 1)
**Upper Barrakka Gardens, Argotti Gardens** (Group 2)

7:30pm **Transfer to Mdina by night for a walking tour followed by a social dinner at Palazzo de Piro**

## tuesday 19 april 2016

9:00am - 10:00am **Parallel sessions organised around three conference tracks – Session 2**

10:00am - 10:30am Coffee break

10:30am - 11:30am **Parallel sessions organised around three conference tracks – Session 3**

11:30am - 12:30pm **Closing discussion within each of the three conference tracks – Final Session**

12:30pm - 1:00pm Dr Konstantinos Ioannidis and Dr Hélène Veiga Gomes

**Mediated Urban Landscapes: Reflective Digital Commons in Action Learning Environments.**
A presentation about the CyberParks TU1306 Training School 'Enhancements: Mediated Urban Landscapes', Aristotle University of Thessaloníki, School of Architecture, Hellas

1:00pm - 2:15pm **Lunch followed by coffee**

2:15pm - 3:45pm **Closing plenary session // Moderator: Martin Rieser**

2:15pm - 3:00pm Presentation of the main outcomes discussed within the three parallel sessions by Track Rapporteurs

3:00pm - 3:45pm Panel discussion with invited speakers

3:45pm - 4:00pm Closing speeches

4:00pm - 5:30pm **Site visits**

**Biccerija site, Pjazza de Vallette** (Group 2)
**Upper Barrakka Gardens, Argotti Gardens** (Group 1)

## monday 18 april 2016

4:45pm - 6:15pm

Group 1:
1. Biccerija site
2. Pjazza de Vallette

Group 2:
3. Upper Barrakka Gardens
4. Argotti Gardens

## tuesday 19 april 2016

4:00pm - 5:30pm

Group 1:
3. Upper Barrakka Gardens
4. Argotti Gardens

Group 2:
1. Biccerija site
2. Pjazza de Vallette


Source: Google Maps

## Hon Dr Deborah Schembri, MP

Parliamentary Secretary for Planning and Simplification of Administrative Processes in the Office of the Prime Minister.

### Empowering local citizens through a new Planning App.

A Mobile App using the device's current location, has been developed to load dynamic data related to planning applications, enforcements and display the relevant details and status in an intuitive manner. The map-based application, available on multiple platforms, gathers information depending on the user's current location so as to perform such actions. It can also be used to enquire about the status of a planning application or enforcement notice, or report a claimed infringement and/or alleged illegalities through a user-friendly spatial interface and attach a photograph taken from the same device.

## Neville Borg
Valletta 2018 Foundation

Neville Borg holds a BA (Hons) degree in Sociology from the University of Malta and an MA in Cultural Studies from Goldsmiths College. He has carried out research within a variety of fields, ranging from social equality to economics, and has held research posts at the National Commission for the Promotion of Equality and the University of Surrey's Departments of Economics and Sociology, amongst others. He is currently reading for a PhD in Digital Media at the University of Hull's School of Drama, Music and Screen, with a topic focusing on the intersection between shared memory, cultural identity and digital media. This study forms part of the Media and Memory Research Initiative (MaMRI) at the University of Hull.

### Technologically-driven community regeneration within the European Capital of Culture.

Valletta's upcoming hosting of the European Capital of Culture (ECoC) title in 2018 represents an opportunity for the country to not only develop and celebrate its cultural product, but also to critically reflect upon the role that culture and cultural activity play in social life, public interaction, and community regeneration. The Valletta 2018 Foundation seeks to pose these questions through its diverse cultural programme – which adopts an inclusive and participatory approach to cultural engagement – and its extensive research work, looking into the various intersections between cultural activity, public space, and social interaction.
The ECoC recognises the vast potential that digital technology carries within the field of culture, in terms of digital engagement across different artistic disciplines, as a tool for creative expression, and within cultural management processes, amongst others. Taking the Valletta 2018's Cultural Mapping project – and its online interface at www.culturemapmalta.com – as a case study, this paper will examine the ways in which digital technology is serving as a tool for urban regeneration, taking into account other instances whereby the mapping of tangible and intangible cultural heritage or resources has served as a catalyst for community regeneration (Duxbury et al, 2015, Evans, 2008 and Roberts, 2012).

## Transport modelling as a tool for reclaiming public space.

The Transport Authority in Malta has developed a National Transport Model to support the development of a National Transport Strategy and Masterplan. For the first time, the outputs of the model provide a holistic understanding of the movement dynamics in Malta, particularly informing how the urban agglomeration functions as a 'City' rather than a number of towns. This analysis has created the opportunity to re-think movement with the aim of reducing vehicular use and improving mobility in Malta. The University of Malta will be presenting this analysis and together with students' projects illustrate how such analysis and thinking could recreate opportunities for improved public spaces.

Odette Lewis
Department of Spatial Planning and Infrastructure, Faculty for the Built Environment, University of Malta

Sarah Scheiber
Department of Architecture and Urban Design, Faculty for the Built Environment, University of Malta

Matthew Carmona
Bartlett School of Planning, University College London

Matthew Carmona is Professor of Planning & Urban Design at UCL's Bartlett School of Planning. His research has focused on urban design, processes of design governance and on the design and management of public space. Matthew was educated at the University of Nottingham and is a chartered architect and planner. He Chairs the Place Alliance which brings together organisations and individuals who share a belief that the quality of the built environment has a profound influence on people's lives. He is currently Specialist Advisor to the House of Lords Select Committee on National Policy for the Built Environment.

## Public Space: A new narrative and a new normative.

The global public spaces literature has been critical of contemporary manifestations of public space on a number of grounds. This talk reports on a research project that attempted to gauge the validity of these critiques through an examination of new and regenerated public spaces in London. The dominant critiques around public space will be introduced as well as the mixed methods approach used to interrogate them. The key findings from this work will be summarised before the nature of contemporary public space is re-theorised in a more avowedly positive and pragmatic manner than is often the case; one that celebrates a return of a public spaces paradigm through tentatively advancing a new narrative and set of normative principles for public space generation. The work concludes that a more balanced view of public space is required, one that recognises the multiple complex types, roles and audiences for public spaces in cities today.

## Tech is new, the challenge isn't. Keeping augmented urban design grounded.

Alessandro Aurigi
School of Architecture, Design and Environment, Plymouth University, UK

Alessandro Aurigi [Laurea Arch (Florence), PhD (Newcastle)] is Professor of Urban Design and Head of the School of Architecture, Design and Environment at Plymouth University. Alex was previously Director of Architecture at Newcastle University; Lecturer at the Bartlett School of Planning and Research Fellow at the Centre for Advanced Spatial Analysis, UCL.
His research focuses on the relationships between our increasingly digital society and the ways we conceive, design, and manage urban space, to enhance and support place quality. Alex has published a multi-disciplinary book Augmented Urban Spaces (Ashgate, edited with Fiorella De Cindio), and Making the Digital City (Ashgate). He has also written in international journals, including the Journal of Urban Technology, the Journal of Architectural and Planning Research, Urban Design International amongst others. He has given speeches in Brazil, Japan, South Korea, China, Singapore, The Netherlands, Belgium, Finland, Portugal, Spain, as well as the UK and Italy

Over many decades, a fascination with the disruptive power of mediated communication in re-configuring our spaces has existed, and fuelled bold utopian and dystopian visions of the future. Despite the frantic pace of change of high technology in the past twenty years, the major principles that guided such visions are still powerfully informing current attitudes towards the conception and shaping of contemporary 'smart' spaces. These remain prevalently driven by dichotomies of physical and digital, where the former ends up being a platform for the latter to be added to and overlapped on, catalyse change, multiply opportunities, or fix otherwise problematic futures. And whilst this is most easily observable in the grand plans for corporation-pushed smart urbanism (in a very similar way to 'starchitect' produced built environment), it is not limited to major, top-down approaches. Most visions of high tech augmentation of space end up hinging on perspectives where an 'intervention' is designed and 'located' in an urban space, receiving and hosting it. In this sense, the act of designing augmented spaces is seen as needing to respond to its own logics and mainly tech-related frameworks, to somehow play a new game, under new rules.

This contribution to the conference will argue that there should be no new and old games. It will try to focus on the importance of bringing back our discourses and practices to a place-based logic, where space too has agency, and 'good' design needs to incorporate the opportunities and threats of digital augmentation to extend, rather than replace, the knowledge, processes and indeed scrutiny with which we are already familiar. Therefore the talk will reflect on how to re-frame augmented space projects through more precise considerations of underlying values, needs and intentions, how these apply to different layers of a design process, and how they implement aspects of accessibility, legibility and thresholds, experience and sense of place, public-ness and private-ness, and democratic design, to name a few.

Matthew Montebello
Faculty of ICT, University of Malta

Prof Matthew Montebello is an associate professor and head at the Department of Intelligent Computer Systems at the Faculty of ICT, University of Malta. He heads the Agent Technology Research Group at departmental level, as well as coordinates a number of Interest Groups within the same faculty.

Before joining the University in 1999 with a PhD in Computer Science he was already heavily involved in Education in secondary schools after graduating in 1990 at the University of Malta B.Ed.(Hons) degree. Having obtained an extensive teaching experience and having been involved with the introduction of computer labs through the Ministry of Education, he proceeded to follow the Computer Science domain when he pursued his post-graduate studies obtaining a Masters and a Doctorate at the Cardiff University in Wales.

Apart from his academic interests, Prof Montebello nourishes a common interest with local Marine Archaeologists and in 2010 read a Masters in the area at Ulster University in Ireland. He regularly assists the department of Classics and Archaeology at summer field schools and education forums about use of ICT in deep diving especially in relation to local marine archaeological heritage.

## Ambient Intelligent Environments - accommodating the citizen.

In this keynote ambient intelligence will be the main theme with numerous interventions of latest ICT technologies that are contributing to its adoption. A number of scenarios will help to better illustrate the extent and the potential of such technologies. Domains that will be used as a showcase include assisted living, education, gaming, tourism and industry. The citizen is being included through ICT technologies at all strata of society bringing in an elevated meaning of what participation is. The ambient changes around the citizen from a personal environment at home, in the car, or at the office, to an extended concept within a building, a town, as part of a larger network. The keynote will focus on the beneficial aspects of such practices from real situations, while being well aware that numerous downsides exist but which do not fall within the scope of this talk.

## Citizen interactions in Smart cities: The Zone of Possibility.

The work reported in this talk explores the development of citizen led 'hybrid cities' in which social web technologies mediate citizen interactions in what I term the Zone of Possibility. The term 'hybrid cities' is not new and has been used in a similar context to this talk's research focus by de Almeida [1] and by Zilvetti and Brevi [2]. I am building on this work, but for me a key design and research challenge in the context of socio-technical environments is: how can the design process and design thinking advance or bridge our social/cultural capital? The focus for me is to design for what I call the Zone of Possibility or ZoP. Helping citizens participate with each other in groups (a Zone) calls for orchestrating social supports (via navigation and bridging aids) so that citizens can benefit from the ideas of others (Possibility).
Designing for the ZoP needs to take into account the 'reality' of formal and informal social structures in terms of power and control in an activity system, i.e. the role I adopt or are positioned into in terms of structural relations of the power and control in institutional, cross-institutional and cross-city settings. What are the rules? How do I play the game? Who are the players? I have developed various meta-design principles to guide the development of our social web technologies. For example, see Respect Learners' Zone of Possibility at http://ilde.upf.edu/layers/v/brn. The Hybrid Cinefest app is given as an example to illustrate the above key concept.
The Hybrid Cinefest app is an adapted version of the Ach So! App (http://learning-layers.eu/ach-so-to-record-and-annotate-videos-on-android/) which has been developed in the Learning Layers project; users record short videos, add text-based annotations to them and share the annotated videos with their collaborators. This can be used in various iCity events. We are using the International Festival of Cinematography, held in Bristol every year (see: http://www.cinefest.co.uk/) as a test bed. A local cloud based solution is being implemented to allow the public (e.g. students/earlier career practitioners, Cinematography professionals, etc.) to capture, annotate and share their own video clips during Cinefest 2016. Backend recommender algorithms will be use to suggest city-wide people, resources and conversations that are relevant to the context-based conversations at Cinefest 2016; in this way the Hybrid Cinefest app will create and emergent Zone of Possibility.
The talk will conclude on progress to generalise the Hybrid Cinefest app into a ZoP app that can be customised to work in multiple iCity contexts; this will in turn will allow me to further investigate my design and research challenge.

John Cook
Centre for Moving Images, University of the West of England

John Cook is Professor of Learning Innovation in the Centre for Moving Images at UWE Bristol. Previous to this he was Professor of Technology Enhanced Learning (TEL) and Director at Learning Technology Research Institute, London Metropolitan University. John has over 14 years previous experience as a full-time lecturer at various Higher Education Institutions. He has over 10 years project management experience and has been part of research and development grant proposals that have attracted over £5 million in competitive external funding. FP7 examples include MATURE IP and Learning Layers IP. In addition, he has published/presented around 280 refereed articles and invited talks in the area of TEL, having a specific interest in several related areas: hybridity for urban regeneration in hybrid cities, informal learning, mobile learning in all sectors, augmented reality, 3D web and visualizations, social web, and work-based learning. John is a founding member of The London Mobile Learning Group (www.londonmobilelearning.net/). He was Chair/President of the Association for Learning Technology (2004-06) and Chair of ALT's Research Committee (2008-2012). John sits on various journal editorial boards and conducts Assessor and review work for the EU and UK Research Councils.

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2. Zilvetti, M. & Brevi, F. (2014). Moving in the digital era. Innovative mobility for responsive urban spaces. In Proceedings of The Mediated City Conference, London 01 – 03 April, 2014.

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Eva Savina Malinverni
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Eva Savina Malinverni is currently an Associate Professor in Surveying and Photogrammetry (Geomatic) at the Università Politecnica delle Marche, Engineering Faculty. She received her Architectural degree and the PhD in Geodetic and Surveying Sciences from the Polythecnic of Milan. Her research areas of interest include surveying techniques, remote sensing image analysis, GIS data processing, thematic mapping and web geo-exploration data. She applied a lot of research projects about methods of collection, processing and representation of landscape and urban data. The organization and management of spatial data in 3D open her research to 3D CityModel.

## CyberParks ICT-Tools: from large-scale geomatic applications to single user benefits in a Smart City.

Remote sensing and geospatial applications have been widely adopted during the last two decades. The reasons are countless and range over LC/LU thematic mapping, planning purposes and common users usage. Exploiting punctual information about territory and environment gives the possibility to deliver needful instruments to know, explore and decide. The high accuracy of satellite imagery and the location based services (LBS), provide information on the geographical position of the mobile devices. This has become more and more important with the expansion of the smartphone and tablet markets. These growing capabilities of end-user devices have created the condition to provide an incredible set of ashore services.
Given the above, it is interesting to underline how this huge amount of services is pervasive and human scale, although arising from high-scale data. 3D data, collecting with any other kind of information in a GIS, deliver a CityGML useful for Smart Cities, pursuing the aim of improving the quality of life.
This talk aims to explore the main issues involved with the use of geo-spatial data and how they have become needful for almost every domain. It will overview state-of-the-art solutions, open challenges and research agenda in this area. Moreover, the talk will present the results of some research projects, which has been focused on the design and implementation of mobile services for monitoring purposes.

## Developing Inclusive and Sustainable Smart Cities with Smart Citizens.

Dave Carter
Urban Policy Studies (CUPS)
University of Manchester

Dave Carter is currently Honorary Research Fellow at the Centre for Urban Policy Studies (CUPS) at the University of Manchester, working on smart cities and digital inclusion. Previously he was Head of the Manchester Digital Development Agency (MDDA), part of Manchester City Council, from 2004 to 2014, which coordinates the Manchester Living Lab, an innovation centre focusing on digital technologies and their applications to support smart, inclusive and sustainable economic growth. He is a founder member of the Telecities network set up in 1993, now the Eurocities Knowledge Society Forum (KSF), and the first President of Telecities (1994-96), and a founder member of the European Network of Living Labs (ENoLL). He was the first Chair of the European Connected Smart Cities Network (2010-15).

This presentation draws upon the experience of the City of Manchester (UK) in working for more than 25 years to develop a 'creative city' and a 'digital city'. Starting with the emergence of a 'new urban politics' in UK cities in the 1980s embracing ideas about innovation, creativity and civic entrepreneurship as a way of creating new jobs, skills and economic growth. As these ideas developed a number of strategic initiatives emerged around a civic based "digital agenda". In Manchester this led the city to establish a strategic agency, the Manchester Digital Development Agency (MDDA) in 2004, to coordinate this work, centred on the idea of a Manchester 'Living Lab' promoting open innovation, open data and open networks.

At the same time cities across Europe were collaborating around the "digital agenda", establishing Telecities (as part of the Eurocities network) in 1993 and the Connected Smart Cities Network in 2010. These collaborations continue today focusing on the importance of developing a smart, sustainable and inclusive world and challenging ideas that technology alone is somehow the "answer".

Smart Cities need to have smart citizens at their heart, enabling them to have the capacity and confidence to use state-of-the-art future internet technologies to transform the way they live and work and their quality of life. Future internet-enabled smart citizens need to be enabled to collaborate in new and dynamic ways, co-owning new ways of planning and delivering services and co-producing services both for themselves and for those that they live with, care for and work with. Smart cities will only truly be 'smart' when they are more democratic, resilient and attractive, using future internet-enabled services to generate and celebrate creativity, innovation and diversity.

This paper draws on an analysis of both the practical and strategic work of the MDDA and aims to set this in the context of the wider political, social and cultural changes taking place in Manchester during, prior to and after the MDDA's existence.

The SMARTiP project starts from the premise that the development of Future Internet enabled services in 'smart cities' should be driven by conscious efforts to ensure that digital technologies are used to improve living and working conditions and the overall quality of life, so that, in doing so, a more inclusive and sustainable urban environment can be developed. One of the main objectives of this approach is to develop user-driven open innovation in ways which maximise the active engagement of users and citizens thus enabling the co-creation and co-production of new services. The SMARTiP project is working to take the experience developed by a wide range of existing user-driven open innovation initiatives in Europe, particularly those developed through Living Labs, and to apply this experience to the challenge of transforming public services by empowering 'smart citizens' to be able to co-create and co-produce innovative Internet-enabled services within emerging 'smart cities'.

# 1 track
## Digital methods and social practices in public space

Papers in relation to this track deal with recent and novel ICT-tools that have been (or are being) developed in order to research the use of, and user-behaviour within, public spaces.

# The contribution of ICT in planning of public open spaces. Reflections on the City of Lisbon.

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CeiED, Lusófona University
Lisbon, Portugal

Diogo Mateus
CeiED, Lusófona University
Lisbon, Portugal

This paper discusses the importance of open public spaces, and how information and communication technologies (ICTs) can enhance the understanding of the relationship between spaces and their users, towards the production of inclusive and cohesive urban spaces. The analysis is built on the Project CyberParks, which aims to increase the knowledge about this challenging relationship. Through this, we intend to analyse how these digital forms of communication can help planners to improve public open spaces, based on the case study of Lisbon.

The growth of our cities, throughout history, has always been linked to the public space, and how it was built. Its function was in constant change, according to the needs that were appearing at different times. However, these transformations were being made with one goal – to adapt public spaces to their users. Currently, what occurs is a kind of extension of the existing public spaces, by the appearance of enclosed public spaces, for example. And we have some theories that suggest the Internet as a public space.

Nowadays, the use of new technologies is becoming a reality. It is already possible to find public places with free internet access, often functioning as attractive for tourists. It is very common to see people who have smartphones and other portable technologies that are constantly connected to the internet.

The discussion will be centred on the contribution that ICTs can have to help planning public open spaces, with the presentation of some examples of experiences made with ICTs on improvements of these public spaces. With the technological growth that we observed, the ICT must be used to improve the participatory methods, but also as a tool to bring people to be more outdoors and use public spaces.

## Digi-Tel: A Personalized, Interest and Location-based City for You.

Zvi Weinstein
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The paper describes a unique technology developed by the Tel Aviv Municipality, Israel. The project is called Digi-Tel, which is a combination of the words – Digit and Tel Aviv. The project aims to engage, involve and connect city residents directly to municipal departments, and enable them to benefit from the efficient use of Information Communication Technologies. Digi-Tel delivers updated information in a variety of domains, providing municipal services, encouraging residents' engagement, transparency and mobility, with the aim to improve their quality of life.

Digi-Tel is composed of three basic elements – the first is the people (citizens, residents and visitors), the second is a friendly city (quality of life) and the third is data (technology). These essential elements are integral to the city's vision to create a city for all residents, to implement a resident-oriented government, to maintain an appealing urban environment and to advance the city's status as a financial and cultural centre.

Digi-Tel operates as a two-way street. The local municipality promotes a policy of transparency of the information provided to the general public, enabling residents to access the municipal database on one hand. This also encourages residents to proactively engage the municipality, while additionally reporting on events, activities and concerns on the other hand. It manages a variety of components divided into three main classifications – applications, logistical infrastructure and physical infrastructure.

Digi-Tel raises two questions: (1) what is new and original with this endeavor in comparison to past and present endeavors and (2) what are the actual impacts in terms of effective involvement of ordinary citizens in knowledge-production and creation processes?

## A Connectivist Approach to Smart City Learning – Valletta City Case Study.

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A connectivist approach will be adopted to design and evaluate learning in technology-enhanced open spaces in Valletta city. Learning is considered as a process of creating connections between a learner's inner cognitive and affective systems with the external physical and social worlds. These interactions are organised within a model comprising dimensions and levels of interactions. The experience for a learner in a technology-enhanced historical place will be designed considering interactions with the content domain (history, botany, art), the technological dimension (interaction between handheld devices and the available signals such as 3/4G, wifi or GNSS) and the social dimension comprising interactions with fellow learners /citizens and domain experts. The levels of interactions are related to a learner's experience within the subject domain, with technology and one's status or role in learning community or community of practice. Thus learning experiences have to be designed considering acquisition level for novice learners, participatory learning for more experienced learners and contributory learning for highly competent learners. This connectivist model will be applied to identified historical or educational places in Valletta city to design different modes of learning mediated through interactive technologies. The concept of Personal Learning Environments in Smart cities (Buchem & Perez-Sanagustin, 2013) will be used to provide technology-enhanced learning experiences in Playful learning, Seamless learning, Geo-learning, Citizen enquiry and Crowd learning.

A number of these technology-enhanced learning experiences developed in collaboration with CYBERPARKS Action's WG1 will be contextualised in Valletta city. The University of Malta will provide the domain content and resources, together with the pedagogical strategy for each learning experience. Researchers from WG1 will design and develop the technological model and infrastructure, mainly through the use of the Way-Cyberparks App based on Android that will integrate GNSS-based learning, Augmented Reality, Navigation tracing and other functionalities used for specific tasks and type of data collection. An interactions-based methodology will be used to evaluate learning along the identified dimensions.

# When Internet became Geography. Spatial patterns on urban open spaces through the analysis of user-generated data in Barcelona.

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The main objective that motivates the paper concerns the study on user-generated data (UGD) for exploring new methodologies that could support and improve the understanding of spatial patterns for urban planning and design of open spaces in urban areas. This paper aims at taking a step forward from current literature, providing on the one hand a method for social science analysis and, on the other hand, expecting to motivate the possible outcomes of user-generated data coming from two ICT platforms into policy-driving strategies in order to improve quality of life.

In order to do so, this paper examines UGD coming from social network platforms and apps to provide a visual and scientific exploration of the resulting spatial pattern, specifically of locals, visitors and tourists who have used two urban open spaces (UOS) in Barcelona, Enric Granados Street and Forum. In addition, for the purpose of analysis, the spatial patterns have been discriminated by language to study in further depth the manner with which diverse population groups construct different spatial patterns given by their preferences when visiting a city.

# The integration of an augmented reality module within the Way-Cyberparks App. The case study of Valletta City.

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Latest improvements on mobile devices' functionalities are changing the way people interact with their surrounding environments. Current handheld devices are able to sense the space around a user's location, enabling improved experiences through digital services. This plays a key role in enhancing public spaces for supporting planners and local managers to make open spaces even more accessible, interactive and enjoyable. A powerful technological solution enabling innovative services is Augmented Reality (AR) which allows users to display on their handheld devices (Smartphone, tablets, other) real-time virtual information about the physical objects of the surrounding real world. AR provides innovative way-finding widgets and context-awareness services.

In line with the scopes of the Cyberparks COST Action, our aim is to enrich the App designed during the first stages of the project (Way-Cyberparks) with AR functionalities. This will be done by integrating a location-based AR module tailored for the Way-Cyberparks App.

The AR module will link virtual geo-tagged annotations displayed to the user through a (geo) spatial and attribute data widget. The overarching idea is to populate the App with virtual signage that simplifies and enriches the fruition of public spaces by allowing users to experience new ways of moving within specific places. This will enhance the App in two ways. The App will serve as an interactive path-finding tool, guiding visitors towards the most interesting locations or landmarks within a specific area (Points of Interest or POIs). It will also enable users to create their own contents and upload them into the network of available POIs, enabling a true participative community. These added functionalities will be piloted in city of Valletta, Malta; here the AR module will be tested in locations having historical or scientific value which will act as contextual objects for the Way-Cyberparks App.

## Visual practices and the mediated tourist experiences of the city of Antwerp: reflections on the creation of a digital research tool.

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The present paper aims at discussing the use of smartphone apps as tools for ethnographic research. Focusing on material gathered within the framework of an FWO (the Research Foundation Flanders)-funded research proposal entitled “The Media Tourist” the presentation discusses some preliminary insights on tourist practices in ICT-mediated environments (that is, in contexts with a high density of exposure to information and communication technologies). The core of this work will be the description of a digital tool called Ethnograpp that has been designed in response to necessities grown while conducting visual research in semiotically dense urban environments. This tool will be made available to researchers globally, and it was developed through the interdisciplinary encounter between an anthropologist and ICT experts that was made possible by the CyberParks COST Action.

Centred primarily on the exploration of the visual field, the tool in question aims at bringing together also written, sonic, locative and geosocial information. It hence provides the researcher with complex and layered information that, if brought in dialogue with conventional ethnographic methods, can give birth to an integrated methodology able to bring in dialogue visual, material and digital culture.

During the presentation we will highlight the path that has lead to the design and development of the digital tool. We will also offer a critical overview of available commercial apps that can be adopted as tools for ethnographic research. Attention will be given also to the ethical implications of such research practices and to the possible expansions in other fields of enquiry.

This research tool has been developed in collaboration with Eva Theunissen, Fernando Alvarez and Ali Zaidi.

# Simulating Bodily Movement as an Agent for the Reactivation of Forgotten Open Air Spaces in the City.

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The experience of historic urban environments remains an ideal context to probe questions of socio-economic development and cultural identity. The Eastern Mediterranean preserves significant examples of cities whose continuous history can be traced all the way back to Prehistory and Antiquity. In particular, the capital of Cyprus, Nicosia, is considered amongst the most contested urban environments having historically layered pasts and perplexing present-day realities in Europe. This paper proposes a methodology for the cross-disciplinary study and analysis of complex urban realities, like the historic city of Nicosia, with the use of advanced digital applications for the formulation of real-time virtual environments for collaboration that capture data of users' behaviour in space. In addition to the use of cutting-edge methods of capturing and analysing on-site information, this research framework, implemented in the on-going study of Paphos Gate area of historic Nicosia which lies on the infamous Green Line that still divides the city, explores the potential of storytelling and narrative-led visualization in order to enable personal interpretations of space and its history.

This virtual environment hosts reconstructions of the Paphos Gate neighborhood which were produced based on archival material and via 3D data acquisition (LiDAR, UAV and terrain Structure-from-Motion techniques), in order to explore the associations between the transformation of the monument through the years – from its construction to present day – and the bodily experience of the visitors sojourning in its surrounding part of the city. The data collected by this research can enhance the understanding of social pressures in Nicosia's contested urban environment. Recognizing the body of work produced by CASA Centre (the Bartlett, UCL) and the application of Space Syntax on urban environments, the vision of this research is to develop a digital platform which through immersion, cinematic language, storytelling and opportunities of role playing will enable the evaluation of alternative scenarios and design interventions in the context of the management plan of forgotten open air spaces that used to be popular within the urban fabric of European cities.

## Determination of electromagnetic field exposure in public spaces.

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The monitoring of electromagnetic (EM) field, caused by presence of radio frequency (RF) and microwave radiation from ICT devices as various sources of EM field, has emerged as an important technical and social challenge in terms of planning, management and usage of open public spaces. Considering the necessity of EM field level determination in context of using ICT devices in service areas, as well as monitoring of EM field exposure in public spaces, the several technical issues have been foreseen in the analyses based on corresponding examples. This ranges from the method for modelling of EM field propagation in vicinity of RF and microwave sources – base stations for mobile networks, broadcasting transmitters, local wireless networks – together with the distribution of EM field from ICT devices, through the appropriate measurement and exposure assessment methods, to the adequate software support for geo-visualization, the data acquisition and processing.

# A Dependents' Cooperative Location Network for Behaviour Analysis in public spaces.

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Improving dependents' mobility in terms of their safety and security is one of the major concerns. Many dependents such as children, elderly or disabled people get lost or missing, but as dependents, they often lack the skills to protect themselves, and carers cannot keep their dependents in sight all of the time. Therefore, the challenge to be tackled in this paper is to develop a dependents' cooperative location network over which carers could monitor the dependents' positions in real time, giving them more freedom to safely roam. Not only in open spaces such as crowded parks or streets, but also inside buildings such as city malls, museums or residences for the elderly. The aim of this paper is twofold: (i) to create a cooperative and dynamic network of carers which monitors the position of their dependents by means of standardized technologies (online stage), and (ii) to understand how the physical environment could influence dependents' activities by means of behavioural mapping both indoor and outdoor public spaces (offline stage).

In the online stage, the solution will allow the confidant to look up only the location of his/her dependents. It will be based on a cooperative network of confidence devices: dynamic such as smartphones; or fixed such as reference notes. The dependents' position will be estimated within the range of those confidence devices throughout a wristband carried by the dependent. In the offline stage, implementation of behaviour mapping methods will provide a variety of information about dependent-carer-spatial relationships. These relationships will be examined on an individual basis, studying each single situation, analysing distances and characteristics of places between carer and dependent to address ease of wayfinding between them, as well as legibility of sequences of places they are involved with. Studying all dependent-carer behaviour patterns in the given area, the paper will address cumulative carrying capacity of place for ease to navigate through the place and search for spatial clues, where it is more likely that people get lost or confused, and how these clues can be similar for different users; different types of dependents and their carers.

## 2 track
### Ethnographic challenges and the creation of digitally mediated urban places

Papers in relation to this track:

- explore contemporary design research and innovative open space development practices, illustrating the design challenges of new media to urban and landscape design; and
- discuss cultural and sociological fieldwork using innovative theoretical and methodological approaches, addressing contemporary knowledge about the use of new media technologies in public spaces from an ethnographic viewpoint.

## ICTs and Urban Green Engagement: An exploratory analysis.

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It is widely acknowledged that the new mobile information and communications technologies (ICTs) expand our spheres of communication to reconfigure public and private life and to transform urban spatialities, generating a kind of fluid social space that spans personal and impersonal, absence and presence, local and global. Thus, mobile ICTs integrate and blur the space and time boundaries of business, leisure, travel and inhabitance (at least for certain groups) giving rise to novel needs for, and practices of, public space usage. In addition, they facilitate new kinds of social interaction and networking, enabling communities of shared interest to form and function, with major implications for public participation and collective action. As such novel ways of public space engagement and management become a possibility.

Of course, there are people who do not embrace these new ICTs, either by choice or by lack of means, or due to various kinds of social exclusion. On these grounds, the extent to which these new practices impact on public life and public space on the whole, remains somewhat unclear. In addition variation may be due to differences in the local culture, climate, the built environment, or in the way Wi-Fi is deployed (e.g. free vs. paid).

The current research sheds some preliminary light on these issues, using the city of Volos (in Greece) as a case study. Drawing on a survey of approximately 500 people it explores how citizens use ICTs and green space in the city, what are their views regarding urban green quality and quantity, what changes they consider as essential for green to be improved, and whether people themselves could take part in urban green management. The results indicate that while ICTs provide the means, daily life remains firmly connected to well-established practices of little engagement and collective action.

# Behaviour, expectations and preferences of 'digital natives' in regards to design of urban public spaces.

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Kinga Kimic
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Modern life of majority of urban citizens revolves around the favours of civilization, but it is also linked with its negative effects, such as less contact with nature. Current realities and society expectations impose on people a new way of working, leisure and lifestyles. One of the determinants of this changing society which has been omnipresent for more than two decades is the generation of 'digital natives' – people who feel safe only in an environment dominated by electronics, and who avoid spending time outdoors.

The possibility of ICT application in designing outdoor public spaces is essential. In order to enhance a healthy lifestyle and bring people outdoors, it is crucial to study the behaviour of ICT users and understand their expectations related to attractive public spaces. Currently, in Poland Wi-Fi technology is widespread mainly in buildings, and outdoor hot-spots are still somewhat exceptions.

The aim of the study was twofold. First, to identify behaviour of wireless Internet users in public spaces, and second, to examine their expectations and preferences in regards to organization of public spaces enabling use of new technologies in open areas.
The performed research included three stages:
1) passive observations of Wi-Fi users in urban public spaces (both indoor and outdoor),
2) individual interviews with selected users, and
3) anonymous on-line surveys aimed at understanding their preferences. Additionally, the research was complemented by a survey among suppliers of mobile Internet.

The research results let us identify four main groups of Wi-Fi users characterised by different performed activities in urban spaces: focused on work, focused on entertainment, transit pedestrians or tourists. For each studied user group, their preferences, needs and expectations with regard to successful and attractive public open spaces were identified. The research results enable further elaboration of design guidelines and principles for modern outdoor ICT-friendly public space, such as a cyberpark.

# Outdoor hotspots as a tool for enhancing healthy lifestyles of ICT users. Design and development principles.

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In today's world human activities associated both with work and leisure are commonly based on the use of the Internet and require the application of modern technologies. For many people, spending time in virtual reality results in less time spent outdoors, which can create a negative impact on their health. The way to counteract the effects of this situation is to use solutions enabling at least a partial shift of activities, associated with entertainment, learning or work, outside the buildings. At the same time public spaces, including urban green spaces, in most Polish cities are not designed to meet ICT users' expectations related to quality of urban space.

The authors of the presented study formulated research assumptions that the Internet and new technologies can interact with the landscape architecture, and the presence of hot spots in public spaces can help to increase the amount of time spent outdoors, improve relationships between users and enhance their quality of life. The aim of the study was to elaborate design guidelines and principles for development of hotspots in public areas, including urban green spaces. The work out of such guidelines could enhance development of top quality urban public spaces reflecting expectations of modern users.

The conducted research included a review of literature related to ICT, as well as a survey of global design solutions concerning the introduction of ICT components into public spaces. Moreover, the study was based on the results of previous research by the same authors on behaviour and social expectations of ICT users in relation to leisure spaces.

The research results allow us to elaborate design guidelines and principles for the development of outdoor hotspots. The developed guidelines apply both to technological and spatial solutions, including: the location of hot spots, rules of design of urban furniture, vegetation, pavements and architectural details.

# A Critical Assessment of Visual Methods and Technologies for Researching the Urban Realm.

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In this paper I explore and critically discuss the wide variety of visual resources and visual research techniques to study and communicate key aspects of the mediated and unmediated city from a socio-cultural and 'communicative' research perspective. Observing and recording the actual behaviour of city dwellers or the material impacts of that behaviour can help to bring about the actual, changing and often hybrid experience and appearance of urban areas and the ways they 'communicate' advertently and inadvertently, through a host of 'media' and visual expressions, the urban condition. But citizens can also be more actively involved through responding to visual stimuli or by creating their own visual products as input for further research. The results of these methods and techniques can be presented in a variety of ways, through synergetic combinations of images, sounds, words, layout and design features. Special attention will be paid to emerging technologies as it is interesting to observe that the 'communicative city' and the city dwellers' technologically enhanced ways of experiencing urban space, to an important degree can be researched by using the same or similar technologies that tend to shape the current heavily mediated city. The task ahead is to translate these emerging technological opportunities into innovative methodologies.

## Cyber enhancing the Urban Soundscape.

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Sound is one of the most direct pathways to a person's mood and emotions. Tuning the urban soundscape by enhancing the experience of existing elements or by introducing new sounds therefore allows to create more pleasant and restoring public spaces or to nudge the crowd towards a more social behaviour. For all of these goals, sounds produced by some sort of loudspeaker or mechanical system have been used (e.g. Berlin, Stockholm, Brighton). Such devices can be coupled to a straightforward observation of events occurring in the environment, such as the emergence of disturbing sounds. Apart from some sonic exhibitions, the installations used in this context today do not allow for much user interaction.

Machine listening techniques allow to identify environmental sounds that are expected to pop-out of the acoustic environment for the average listener. It has been shown that a couple of dozen of automatically selected sounds allow people with knowledge of the place to identify it on the basis of this acoustic summary. This sonic ambiance changes over time at different length scales: diurnal, weekly, seasonal. Machine listening-enabled sound observatories embodied in whatever object found in the public space allow to experience this sound ambiance remotely and/or to steer the artificial sound contributing to it dynamically based on some sort of control algorithm.

Restoration in outdoor environments and the soundscape supporting them is enabled by a feeling of "being away", fascination and escape. Interactive soundscape elements that expand the experience in time – to the soundscape of the recent past – and space – to a remote soundscape – could increase these aspects. Moreover, if designed well, sound-enabled urban furniture could make public spaces more playable. These cyber-aspects thus become part of the creation of soundscapes that promote restoration and social behaviour.

## Greenview: The Gorilla in the Library (Smart Sensing and Behaviour Change).

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The paper provides a description and analysis of the Greenview project, an experiment in smart sensing leading to behaviour change in building users. Greenview was an innovative app built on the back of the successful DUALL project (funded by JISC). Where DUALL created a simple web-base information-feedback tool , that could report electrical consumption in specific university buildings back to users via a simple dashboard using Yahoo widgets; Greenview refined the ICT tool further into a sophisticated smart phone application which could connect staff and students in De Montfort University (DMU) to monitor the relative energy consumptions of their buildings.

The developed iPhone 'app' visualised comparative energy use in buildings on the DMU campus through a narrative of improving or declining habitats for endangered species, represented by animated cartoon characters living as virtual mascots in each university building. Based on the emotive nature of the 'Tamagochi' concept, the app tested an engaging way to encourage care for the environment. When consumption levels exceeded those of the same day of the previous year, the species wellbeing would change. The app also provided real-time data through meter readings provided on a half-hourly basis, allowing the inclusion of graphical data options, appealing both to emotional identification with the building mascot and to the range of preferences individuals have for viewing and interpreting data.

## Urban development in respect of social media – applicability of the Amsterdam city experience in other European cities.

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It is a time for rapid societal changes that requires more active involvement by citizens as amateur-experts, active participants and agents in the process of urban planning and design. Social media and digital methods are the tools providing people with mechanism tools that allow them to organise themselves around collective issues, mobilise the public, and to manage social and infrastructural resources in new collaborative ways.

The results of the best practices and case-studies of social media application in the process of urban planning and design and social networking gained under the Short-Term Scientific Mission (STSM) within the framework of COST Action TU1306 will be discussed.

During the STSM a variety of projects and initiatives have been discovered. Particular attention will be given to the initiative called “Hackabe city” raised by the Mobile cities company that took place in the northern part of Amsterdam – as a place that allows citizens to see themselves as agents of economic and social change.

The main aim of the paper is to present the results from a short-term survey, carried out by students from the University of Structural Engineering & Architecture in Sofia, Bulgaria. The survey has been planned to explore critical points concerning local context, culture and experience in respect of the results of the STSM within the framework of COST Action TU1306. A short-term survey and face-to-face interviews with park visitors have been undertaken selected public open spaces in Sofia. The results show the possibility of the advanced experience in using social media for contemporary urban re-development in Amsterdam to be applied in Sofia in order for urban resilience to be achieved.

# People, public space, digital technology and social practice: an ethnographic approach.

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Ethnography matters when to provide sustainable and inclusive urban spaces becomes an issue. Advancing knowledge on the relationship between social practices and public space is therefore crucial. This paper seeks to contribute to widening the debate about this relationship, added now by the phenomenon of the penetration of ICT into public spaces. It draws upon the inter-disciplinary research within the Working Group on Urban Ethnography of the COST Action TU1306 – Project CyberParks. The main goal is to propose a methodological framework to guide the research in the field of urban ethnography. This framework is based, on the one hand, on broad experience in ethnographic studies around public spaces, with the goal of identifying the relationship between social practices and the space in the configuration of representations and the creation of socio-spatial images, particularly in urban transformation processes. On the other hand, on a detailed analysis of the CyberParks Project objectives. Both allow us to better define the analysis dimensions and to identify their variables and indicators. This framework will guide future ethnographic research to be undertaken within CyberParks and beyond it.

This approach is built on the following two phases of analysis along with their dimensions:

Phase 1: Intersections between ICT and public open space (POS). It aims to identify the liaison between ICT and the use of POS, and the resulting social interactions. This through the analysis on the use / social appropriation of POS, their representations, images and imagination regarding the POS, aspirations, needs, and level of satisfaction with POS.

Phase 2: Intersections between ICT, planning and citizen participation. It aims to identify the effect of ICT on use and intensity, number of users, citizens' participation and on the production of POS. This through the analysis of the relationship between use of ICT, POS and citizenship; of particular interest are local participatory practices, expectations on the POS and the relationship between the logic of socio-spatial exclusion and digital divide, as well as results for urban planning and design of participatory methods.

Exemplary for some dimensions, variables will be identified, as well as their analytical indicators, pointing out potential methods and technical support. Although this paper proposes a methodological approach, it will be illustrated with examples collected along several ethnographic and design projects.

## 3 track
**Reflecting on the relationships between people, spaces and technology**

Papers in relation to this track reflect on philosophical and methodological approaches and illustrate evidence-informed practice that seeks to understand the complex relationships between humans, public spaces and new media development and how it is (or should be) reflected in the urban fabric and place design.

## Cyberparks and Geoaesthetics: Reading modern technology after Nietzsche.

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Although Nietzsche never mentioned the term geophilosophy or geoaesthetics, from his work emanates a thought connected to the Earth, and to a new direction for the Earth, in order to achieve the Übermensch.

Geoaesthetics is assumed as the latent purpose of nietzschean geophilosophy, aiming to build the world from the artist's figure. And everyone can be artists, when thinking and constructing, critically and creatively, one direction to Earth (Sinn der Erde). This construction presupposes a Menschen-Erde, that is, a planetarian humanity – that might be attained communally through new medial practices. Now, with the expansion of territories through technics, construction is not exclusive to real space, but also concerns virtual or outer space architectures.

This paper attempts to read the notion of cyberparks through nietzschean perspective and regards the implementation of land art and site-specfic art projects as further developments of a cyberpark.

## Public Spaces as Evolving Frameworks: Applying Principles of Co-creation in Urban Planning.

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Due to exponential development and growth of urban areas worldwide, public spaces are becoming increasingly important. However, development of such spaces often depends on bureaucratic processes and lacks a social dimension. There is a growing body of literature that recognises the advantages of collective human actions in various contexts. People can have more insights and social experiences when they collaborate in groups and can achieve better results than any single individual. In this paper, we argue that co-creation can be used in urban planning by treating citizens as active, creative, decision-making equals rather than passive recipients of top-down design. Rather than asking for citizen commentary on already set initiatives, collaborative techniques view city population as agents of positive change, giving communities tools of direct involvement in outlining their needs and priorities, collaboratively finding solutions, influencing decisions and achieving better outcomes. Contemporary channels of communication and information enable new ways for broader groups of people to collaborate in shorter amounts of time. It also allows officials to develop dynamic dialogues with citizens through shared networks, virtual collaboration tools. This leads to deeper relationships reinforcing development of a smart and inclusive society. The focus of this paper is the creation of a typology of public engagement in smart city initiatives, which sheds light on broader issues around the relationship between technology, urban development and public participation. By exploring and critically assessing case studies of co-creation in the city context, we attempt to show how online and offline collective citizen activity may lead to the construction and redefinition of public spaces.

# Tweeting in open public space: Case study Belgrade.

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Public spaces represent essential elements of vibrant, inclusive, and smart cities. Being attractive, safe, comfortable, active and sociable, open public spaces play the main role in revitalising communities, supporting their sense of identity and culture and triggering their economic development. Considering the current trends and demands in design and use of the open public spaces, the role of ICT becomes more important. This paper will present and analyse the connections which are established and intensified between users and open spaces via online social networks. The emphasis will be on Twitter which currently has around 300 million active users. Twitter is one the most popular data sources for research because of its open network allowing access to information published through the platform. Furthermore, it is an important social medium that allows creative participation of users and social maps are important indicators for measuring the concentration of users and their satisfaction about the quality of open public spaces.

The case study is a network of several open public spaces placed in the historical urban core of Belgrade. The analysed network presents one of the most attractive and important urban environments. The method that was used in analysis is the method of mapping users on the social maps (via social networks) and through the other ICT tools. It was based on a new software application Twitter search engine developed at University of Nis - Faculty of Electronic Engineering, during the PhD course “Advanced topics in data and knowledge engineering”. The aim was to measure the intensity of pedestrian movements in the monitored territory and concentrations of users in open public spaces. The obtained results have enabled the determination of the image of the open public spaces perceived by the users, as well as the intensity of users and tweets through the social networks, with the aim of measuring the quality of open public spaces and concentration of users. This research has indicated the potential of the analysed area for the formation of transverse and longitudinal pedestrian flows. On the one hand they could enable active use of a selected segment of the network as one of the most important urban environments of the city, as well as to improve its image.

## Reviewing the Conceptual Dimensions of Smart Cities: Knowledge and Attitudes of Citizens in Spain.

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Smart cities are defined as those that use information and communication technologies (ICTs) in order to generate an infrastructure able to ensure their economic, social and environmental sustainability. In such a process, it is understood that services provided to citizens by either local administrations or public-private consortia should be repackaged in a more collaborative, sustainable and creative way, thus making the most of any opportunity and potential for socioeconomic development and quality-of-life improvement. However, we cannot assume that citizens have a proper knowledge and understanding of smart cities-related concepts and variables and their consequences in daily and future living. Particularly, citizen knowledge on the opportunities of ICTs to improve their experience in public spaces is likely to be scarce.

This research deals with the design and implementation of a questionnaire on a representative sample of urban citizens in Spain to provide evidence on their knowledge and attitude towards the concept of 'smart cities' and the dimensions (governance, mobility, environment, economy, people and living) that should be included in it. Around this goal, aspects related to the potential use of interactive technologies to engage citizens in urban development strategies are also considered.

The research findings provide valuable data, insights and recommendations for further actions to help those people responsible for the design and implementation of policies and actions. In particular, special attention is paid to the contributions of the study to the previous literature devoted to improve the use and attractiveness of ICTs in public spaces. In addition, results provide examples of best practices on how to get a majority of citizens involved in the process as co-creative agents and integral actors for city transformation, thus improving previous knowledge on the complex relationships between citizens, urban spaces and digital technologies, and how to apply such knowledge to space design.

# Does the human brain really like ICT tools and being outdoors? A brief overview of the cognitive neuroscience perspective of the cyberparks concept.

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The paper presents an overview of the latest studies on cognitive neuroscience that can help evaluate concepts that promote technologically-enhanced outdoor activities, such as cyberparks. The following questions are asked in the paper: does the human brain really like ICT tools? Does the human brain really like being outdoors? And finally: does the human brain really like technologically-enhanced outdoor activities?

The results of the studies presented show that the human brain rather does not like ICT tools and, on the other hand, it likes being outdoors very much. At the same time, it was shown that outdoor activities may be encouraged by ICT tools, yet outdoor activities themselves should be free from ICT tools. Using ICT tools and physical activity at the same time is a form of a dual task, a type of activity that leads to cognitive and physical processes being destabilised, which leads to weakened effects of both cognitive and physical tasks. From the perspective of cognitive neuroscience, cyberparks are not a solution that the human brain really likes.

# Review and critical assessment on the interaction of urban spaces and technology. The case of the urban road.

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In the last decades, it is argued, public space has changed and has become alien to its original use and function. As technology has entered dynamically in our lives, enabling us to replicate activities in public that use to be private, it is considered that the lines between public space and private territory, human interaction and human alienation are becoming more and more blurred. The more the interaction between digital and physical environments is increasing, the more our cities are changing. Cities are like living bodies which have complex technical, political, social and economic characteristics. A person, a group of people, public and private companies influence, and are influenced by, the decisions taken for the city. All these decisions are shaped according to the possibilities offered by technology at the present time. This paper aims to explore how urbanization and spatial hierarchies are redefined by technological transitions.

The first part of this research is a literature review, aiming to establish a “state of the art” on the studies that concern the digital and physical interaction of environments. The review is performed by exploring the existing literature that relate three key components: people, space and ICT. The increasingly strong and complex relation of these, has drawn the attention of several authors that are assessed in this paper. The second part of this research highlights the proven consequences of technological progress in the shape and structure of the city by studying the evolution and interaction of the urban road and transport technologies. Technology has dramatically reshaped cities, especially in the first part of the last century, through transportation technologies (automobiles, public transport, etc) and infrastructure technologies (highways). On the one hand these new technologies drove the emergence of more dispersed cities having consequences on the urban environment but on the other hand spurred growth in less developed regions.

The results of this research aim to map the current knowledge concerning the interaction between people, public space and ICT.

# The Principle of Geotagging. Cross-linking archival sources with people and the city through digital urban places.

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A researcher or traveller can mostly best absorb the knowledge of urban places by exploring the place on site. Unfortunately a lot of information is not visually available. To get detailed information about a requested place and its historical development, a common networking between the visitor, the sources of knowledge and the place itself is necessary. This was, and still is, not always possible.

Travel- or city-guides present only secondary information that report in a very reduced manner way and do not allow any immediate addition. With today's mobile technologies it is possible to move between different, real and virtual spaces as well as to supplement collective knowledge. Therefore the information can be reduced, represented or amplified. An increasing number of applications (Jodl, toothing, nachbarschaft.net, etc) are already made for location-based networks. Moreover impressions and experiences can be already organised (through iPhoto, iCloud, WhatWasThere, and the like).

The digitisation of the estate of the architectural historian Heinrich von Geymüller was the starting point to create a data model, which sets up a chronological, thematical and publications oriented network for scientific and semantic research. The relationship of different types of real objects (picture, text and video sources) is now visible in a way that has recently only been possible with an all-embracing knowledge of the entire estate.

Geymüller obtained his research mainly from his observations in Florence. The presented research project now concludes with the idea of bringing back all digitised represented objects (notes, sketches, photographs, etc.) to their original recording location in Florence. This will be carried out in a case study with the help of mobile technologies. New, contextual findings will be possible for scientists and travellers in place.

Which digital methods should be used? How can digitised and non-digitised information be best complemented? Different approaches will be worked out for different types of objects. At the Karl-Franzens University in Graz we specifically focus on image sources and develop solutions for general, digital on-site representation of archival documents, images and plans, as well as for secondary literature.

# Evaluating Smart City Learning.

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Measurement and analysis of individually interpreted learning experiences can build a knowledge picture of how learners perceive immersive technology mediated learning in smart cities. Comparison of these learning experiences with theoretical factors derived from relevant literature may then shed light on the usefulness of theory in practical learning design, and approaches to the evaluation of immersive learning environments analysed from a theoretical basis. In turn this may contribute to current approaches of urban smart city environment planning for citizen-engaged 'human smart cities' (Giovanella et al., 2016).

This paper discusses potential methodologies for designing a measurement of the effectiveness of learning experiences and associated learning design for immersive urban learning environments mediated by mobile and networked technologies. Acknowledging the hybrid nature of smart city learning, interactions between digital tools, content and community, measuring both intra- and inter-learner experiences is anticipated. Identifying and quantifying these dimensions of interactions will help us understand more about how urban smart learning activities create immersive experiences for each learner, engaging them in a variety of internal and social cognitive processes. To clarify mutual interaction between theoretical and empirical factors, a system of theoretical factors of significance is proposed to be developed and then be correlated with learning experience analysis factors.[1]

A brief review of hybrid learning environment research including ubiquitous learning (Bonanno, 2011) manifested in hybrid (Cook et al., 2013), mobile (Cochrane, 2014) and smart city (Andone et al., 2014, Buchem and Pérez-Sanagustín, 2013) environments provide the context for how analysis methodology might be applied to an interactive learning system in smart cities. Phenomenography techniques of variation and outcome space are investigated, together with the Dialogic Space (Wegerif and Yang, 2011) concept for conversation interaction dialogue analysis.

[1] The system of evaluation of these learning experiences, and further analysis in relation to common theoretical relevant factors of significance found in the field of smart city learning pedagogy is part of a doctoral research based in the Faculty of Education at the University of Malta, entitled 'Designing Effective Smart City Learning'.

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