



University of
Salford
MANCHESTER

1967 - 2017 50 YEARS

**INTERNATIONAL
RESEARCH
CONFERENCE 2017:
SHAPING TOMORROW'S
BUILT ENVIRONMENT
CONFERENCE PROCEEDINGS**

11-12 SEPTEMBER 2017



International Council
for Research and Innovation
in Building and Construction

WELCOME TO DELEGATES IRC 2017

On behalf of the School of the Built Environment at the University of Salford, we are pleased to welcome you to the International Research Conference 2017.

With its focus on *Shaping Tomorrow's Built Environment: Construction and Design for the Modern World*, the Conference provides a forum for researchers worldwide to debate and exchange ideas on a broad range of issues.

As Co-Chairs of the Conference, we are delighted to have the opportunity to hold this Conference in conjunction with CIB. The CIB is the world's foremost platform for international co-operation and information exchange in the area of building and construction research and innovation and this conference is supported by fifteen of the CIB's commissions.

All the papers to be presented at the Conference were selected on the basis of double-blind peer review by the scientific members and paper reviewers to ensure a good quality standard and we hope that delegates will obtain useful feedback on their ideas, gain insights from the work of others and forge connections that will endure into productive joint activity after the Conference.

We wish you an enjoyable and fruitful experience and thank you for your attendance and for making this Conference a successful event.



Professor Hisham Elkadi
*Dean of the School of the
Built Environment and
Conference
Co-Chair*



Professor Les Ruddock
*CIB Board member and
Conference Co-Chair*

ACKNOWLEDGMENTS

Everyone involved on the Organizing Committee, has provided a source of on-going support that is very much appreciated. In particular, without the hard work over several months of Hanneke van-Dijk and Charlotte Houghton the Conference would not be possible.

We wish to thank all the Coordinators of the CIB Commissions that have joined the Conference viz: W55, W65, W70, TG81, W89, W92, W102, W111, W112, W113, W117, W118, W120, W121, and W122 for their support. The Coordinators of these commissions have worked closely with us in coordinating the paper review process.

Our thanks go to the International Scientific Committee members, who made extensive efforts in reviewing papers to tight time scales in ensuring the high quality of the Conference. They have acted as paper reviewers and together have double blind refereed all the papers, so providing the academic backbone to the Conference.

We also thank the Keynote Speakers for their willingness to stimulate invaluable discussions and debate around the Conference theme and the Session Chairs for ensuring that paper presentations operate in an efficient manner.

Finally, we express our gratitude to the following sponsors, who have kindly supported the Conference and donated awards for best papers:

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Professor Les Ruddock

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Mrs Hanneke van Dijk

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Organised in conjunction with Salford Professional Development

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KEYNOTE SPEAKERS

DR. IR. WIM BAKENS

Senior Program Advisor CIB - International Council for Research and Innovation in Building and Construction



ADVANCED EDUCATION

1975 Eindhoven University of Technology - Department of Architectural Engineering, The Netherlands, Master's Degree

1988 Eindhoven University of Technology, The Netherlands, Doctor of Science

Thesis: "Building 2005: Future perspective for company managers, policy makers and researchers in the Building Industry"

PROFESSIONAL CAREER TO DATE

1976 - 1983 Ministry for Housing, Physical Planning and Environment

Along with general responsibility for project, staff and line management at various levels in the organisation, various positions concerning the programming, execution and management of research and development projects in the areas of housing policy and design and building technology.

1983 - 1994 Bakkenist Management Consultants

Partner and head of the Consultancy Group for the Construction Industry, which is a multi-disciplinary group of consultants, responsible for obtaining and executing policy research and management consultancy assignments in the Building and Construction Industry.

1994 - 2017 CIB - International Council for Research and Innovation in Building and Construction

Secretary General of CIB, which is an international association whose objectives are to stimulate and facilitate international collaboration and information exchange between organisations active in the field of Building and Construction Research and Innovation

2010 - Present Visiting Professor at the University of Westminster, London, UK

2017 - Present CIB - International Council for Research and Innovation in Building and Construction

PROFESSOR ANDREW DAINTY

Andrew Dainty is Professor of Construction Sociology in the School of Civil and Building Engineering at Loughborough University, and Director of Loughborough University Doctoral College.



A renowned expert on the sociologies of construction practice, for the past 25 years Andrew's research has focused on the social rules and processes that affect people working as members of project teams. A concurrent stream of work has developed new approaches to managing people within the construction sector, and for integrating human resource management practices with business objectives. A hallmark of Andrew's work is its interdisciplinary nature; he works with academic collaborators from across the engineering, social sciences, business and economics fields and collaborates with many of the UK's leading construction organisations and client bodies. He advises many large organisations as well as government committees and non-governmental organisations.

Over this research career Andrew has led a research portfolio totalling well over £9m and currently holds grants from the EPSRC, ESRC, European Commission, Institute of Safety and Health and Innovate UK. He is also the UK partner of a major grant with the Australian Research Council. He has published over 400 peer reviewed papers (including 175 peer reviewed journal papers), is author/editor of 10 books and research monographs and has written numerous book chapters and professional reports. He currently holds visiting positions at University of New South Wales (Australia) and Universiti Tun Hussein Onn (Malaysia). He has held numerous leadership positions both within the UK and internationally. These include chairing the Association of Researchers in Construction Management (ARCOM) from 2008 – 2010, a member of the CIB Programme Board (2010 - 2013) and as founder and joint coordinator of CIB TG 76 on 'Recognizing Innovation in Construction' between 2012 and 2014. Andrew has recently been appointed as the editor-in-chief of the leading peer-reviewed research journal Construction Management and Economics having been Associate Editor since 2007.

PROFESSOR HISHAM ELKADI

Professor Hisham Elkadi is the Dean and Head of the School of the Built Environment (SoBE) at the University of Salford.

Prior to his appointment, Professor Elkadi was the Chair and Head of School of Architecture and Built Environment at Deakin University, Australia since 2009. His academic career with a Ph.D. from the University of Liverpool in 1989 includes a research associate at the University of Liverpool, a Senior Lecturer at the University of Plymouth, Director of Architecture programme and a Director of postgraduate studies at the University of Newcastle upon Tyne and Chair and Head of School of Architecture & Design in Belfast.



Professor Elkadi has established a sound research network on both national and international levels in the subject of urban ecology. Professor Elkadi has a large number of publications (140+), 5 books, and graduated 19 Ph.D. students. He acted as an invited external examiner at many Universities including Harvard, the University of Toronto, Liverpool, Edinburgh, Nottingham, Beirut, Newcastle, Kuala Lumpur, Curtin, and Newcastle (Australia). Professor Elkadi has been involved in building up bridges and outreach programmes with the local communities in England, Northern Ireland, Italy, Turkey, and Australia. His appointment to the Ministry Advisory Group for the Built Environment in Northern Ireland, a board member of Geelong Australia Art Gallery, and appointment to the Executive committee of the Association of Ulster Architects are recognitions of his commitment to these outreach programmes.

Professor Elkadi is an Honorary Fellow at the University College London, an Honorary Fellow of the Royal Institute of Chartered Surveyors, a Member of Institute of Egyptian Architects, Affiliate of the Royal Institute of British Architects, and a Fellow of the Australia Institute of Buildings. He is a Member of the Standing Committee of Heads of Schools of Architecture in UK, Australian Association of Heads of Schools of Architecture, Member of the Association of the Australian Deans of the Built Environment (ADBED) and Member of the Board of Examiners, ARB-Victoria.

PROFESSOR PETER MCDERMOTT

Peter is Professor of Construction Procurement in the School of the Built Environment, at the University of Salford

He is Joint Co-ordinator for CIB W92. He has developed procurement and performance management systems with major regional and national public sector clients, and worked with the Treasury (Infrastructure UK) and the Cabinet Office on construction and infrastructure strategies.

He is an independent member of the Board for the North West Construction Hub (NWCH) and chairs Constructing Excellence in the North-West.



CONFERENCE DINNER SPEAKER

ROY CAVANAGH MBE

Roy, like Salford University, celebrates a 50 year anniversary this year, his with leading contractor Seddon.

A life-long interest in education sees him chair the 14-19 Education Group for the Construction & Built Environment (C&BE).

He formerly led the C&BE Diploma, chaired the North West Construction Hub (NWCH) Training Group.

Chaired the award winning Salford Construction Partnership and was on the board of Construction for Merseyside.

Awarded the MBE for his services to Construction in 2009 he also was awarded CIOB's International Innovation & Research Award in 2013.

Outside work, Roy is an after dinner speaker and author of over 20 sporting books.



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COMMISSIONS OVERVIEW

W55 CONSTRUCTION INDUSTRY ECONOMICS

The Commission's objectives are:

- to be the leading international research focus for the economics of the construction industry
- to stimulate the development of a theoretical base for the discipline of construction economics
- to support and develop the perception of the important role of the construction industry in the economy

The Commission will study, evaluate, disseminate, exchange and discuss issues based on these objectives. The main areas of attention for the Commission's research include:

- Characteristics of the Construction Firm: Strategic, managerial and production based theories; Transaction costs and contracting; M&A, market entry and international construction; Technology uptake models and construction firms
- Characteristics of Construction Markets: Identifying construction firms and markets; Imperfect competition in construction; Game theory in construction bidding and contracting; Auction markets and bidding for construction projects
- Applying Macroeconomic Theory: Use of input-output data for analysis of the construction industry; Asset prices, monetary policy and building cycles; Stages of development and construction activity
- Theoretical Issues: Methodology in construction economics; the property market and demand for new building; and, measuring construction productivity
- Cost Studies and Design Economics: Cost modelling; life-cycle costing and sustainability; value management

W65 ORGANISATION AND MANAGEMENT OF CONSTRUCTION

The rapidly changing needs of modern society poses many challenges for organising and managing construction activities: adapting to the continuous changing context. The scope of W65 covers all aspects of the organisation and management of construction. In particular the following broad themes will pervade many of its activities: Projects, Companies, Policy and Processes.

The objectives of the Commission are:

- to be the leading research and innovation focus for the organisation and management of construction
- to support the creation of construction practices and outcomes that equate to, or exceed, the best found in other industries, in terms of imagination, energy, effectiveness and efficiency
- to stimulate, facilitate and communicate research and innovation, stressing the integration essential for successful innovation in a complex environment

W70 FACILITIES MANAGEMENT AND MAINTENANCE

Enabling the transformation to, and supporting the functioning of, the city of tomorrow, will provide significant new challenges to the way Facilities Managers (FMs) view the design and delivery of services and manage the operation, maintenance and refurbishment of their built assets. Existing service design theories and models are already being challenged by the

emergence of distributed service solutions and the performance of existing built assets are coming under increasing pressure from climate change, societal demographics, and new business models. But, how should FM address these challenges? Which of the existing theories and models will work in the city of the future? What will FM's role be in planning and delivering the transition of existing built assets to those that are fit for purpose in 20, 30 or 40 years' time? These are some of the questions that are being addressed by members of CIB W70: Facilities Management and Maintenance.

The Commission aims:

- to foster a deeper understanding of how our built environment influences human behaviour, health and organizational productivity
- to promote the strategic and operational value of facilities management and asset maintenance in meeting emerging business challenges
- to forge closer links and collaboration between the financial, technical, sociological and operational aspects of facilities management and asset maintenance through an integrated resource management approach
- to disseminate the findings of research work on facilities management and asset management to a wider audience
- to provide a forum for the exchange of know-how and best practice in education, research and industry that addresses physical workplace and functional workspace demands
- to communicate the work of CIB W070 by publication of its symposium proceedings

TG81 GLOBAL CONSTRUCTION DATA

In a rapidly changing planet, it becomes more important than ever to measure changes that are taking place in construction industries throughout the world. We need construction industry statistics on total output, types of building and structures, manpower, labour skills, specialist trades and other key factors. How else can we understand and manage the economic, political and social forces at work? Technology is affecting the rate of urban development and infrastructure investment internationally with implications for productivity and profitability. Governments, financial institutions, industrialists and construction firms and their supply chains all need to study what is happening at a global, national and regional level and they need data to indicate the scale of the problems involved.

We have a vision of the global construction industry that provides a built environment fit for all people by producing that built environment in a safe, productive, sustainable and humane way.

The Task Group aims to contribute to improving:

- the effectiveness of national processes for the gathering of data on various aspects of construction
- international availability and comparability of such data

W89 EDUCATION IN THE BUILT ENVIRONMENT

For Education in the Built Environment, technology continues to change the way we learn by offering ubiquitous access to better materials. It also impacts on the landscape for education

and research as it removes boundaries and shrinks distances. We are certainly on a journey, but where will it lead and how will we get there?

The Commission focuses on the broad discipline of the built environment and its constituent fields. The Commission's aims are:

- to foster high quality academic debate about the way knowledge is generated, codified, taught and learnt
- to promote stronger links between research, scholarship, teaching and practice
- to promote the expansion of the international community of educators in the built environment
- to create and disseminate pedagogic knowledge throughout the community of educators and provide a stronger intellectual basis for practice
- to promote collaboration with other groupings of built environment educators

The Commission will accomplish its objectives through:

- organising international symposia to facilitate debate and the advancement of knowledge
- promoting the publication of scholarly articles on education, pedagogy and educational technology, covering empirical pedagogical research, applied educational theory, and practice issues
- drawing from the international community of educators, examining social and cultural issues surrounding built environment education
- engaging with stakeholders to advance the aims of the Commission

W92 PROCUREMENT SYSTEMS

The main objective for CIB W92 is defined to include both the investigation of the use of procurement to deliver wider sustainability (social, environmental, and economic) goals and the use of procurement to help maximize the value jointly created by the stakeholders in construction and the equitable distribution of the resulting rewards.

The Commission's aims are:

- to research into the social, economic and legal aspects of contractual arrangements, appointment systems and tendering procedures used in relation to construction projects
- to establish and comment upon the practical aims and objectives of contractual arrangements and to define the participants and their responsibilities
- to review areas of commonality and differences
- to formulate recommendations and the selection and effective implementation of project procurement systems
- to compare and contrast standard conventions for the various systems of project procurement generally and specifically
- to report and liaise with relevant CIB Working Commissions and Task Groups

W102 INFORMATION AND KNOWLEDGE MANAGEMENT IN BUILDING

Information is an all-pervading ingredient in building, common to research and practice. By giving proper consideration to the flow of information, research results can be usefully translated into innovation and further adapted to provide the knowledge-base for best practice. In an environment in which the tools for making information available are developing at

breakneck speed, it is necessary to manage the whole spectrum of information forms in a way that reflects the realities of decision-making in modern building practice.

In this context the objective for the Working Commission is to cover concerns that are related to information and knowledge management, both theoretical and practical. Special points of attention are the following:

- interface between general information and the building process and especially the dysfunction in the flow of information between researchers and practitioners. The questions why research results are not put into practice, and how research results and feedback information can be converted and refined to be of practical use will be considered
- contemporary information systems bearing on the information needs of the building industry

W111 USABILITY OF WORKPLACES

Within the scope of the Commission there is a focus on the concept of usability of workplaces, as applied in a range of building types, including commercial buildings and buildings for healthcare and education. Research themes within this scope include:

- Usability concepts, tools and methods
- Economy, efficiency and effectiveness
- Context, culture, situation, performance, experience

The Commission's objectives are:

- to conduct a series of case studies and associated workshops, involving users, practitioners and researchers in a programme of action research
- to develop concepts of usability for application in practice
- to promote, develop and share methods, processes and techniques for the evaluation of the built environment in use.

W112 CULTURE IN CONSTRUCTION

The scope for this Commission reflects the array of important business concerns deriving directly from underpinning culture – organizational climate, ethics, corporate social responsibility (CSR) and organizational citizenship behaviour (OCB). The construction industry itself as field of interest is considered on international, national and local scales, focusing on the processes, (project-) experiences, and the parties involved.

Against this background the objectives of W112 are:

- to continue to research National Cultures and Organizational Cultures relating to construction worldwide to maintain and extend the 'Inventory of Culture in Construction'
- to extend the methods of research employed to encompass more longitudinal approaches to enable evolutionary aspects of culture to be included in investigations
- to research into the related cultural topics of organizational climate, ethics, CSR, and OCB; and other related topics to provide a more comprehensive understanding of culture and its consequences
- to enhance relationships with other CIB Commissions, and beyond, to disseminate findings and stimulate further collaborations and investigations.

W113 LAW AND DISPUTE RESOLUTION

The Commission's primary function is to coordinate the identification of, and response to, the multitude of emerging legal challenges faced by the construction and property industries worldwide. In this context the Commission's objectives are:

- to establish a thriving international research community in the fields of law and dispute resolution
- to contribute to the wider building and construction research agendas through encouraging the active engagement of legal scholars with other specialists in the field
- to coordinate efforts to identify and address emerging legal challenges faced by the global construction and property industries through building a coalition of stake-holders from industry, the professions and academia
- to generate interest in the application of law in an international construction and property context amongst legal specialists in the legal professions and law faculties worldwide
- to increase the understanding of obstacles to effective transnational construction operations and building performances management by facilitating the development of comparative legal methodologies and research projects.

W117 PERFORMANCE MEASUREMENT IN CONSTRUCTION

The need to understand and appropriately benchmark and use performance data, together with the consequences of non and inappropriate use, are essential for the development of the construction industry worldwide. Against this background the Commission's objectives are:

- to explore the optimal uses of performance information in the built environment
- to create a worldwide resource centre of knowledge of proven methods for implementing and sustaining performance metrics in an organization or in the industry
- to develop performance measurements as appropriate for different countries by engaging researchers and practitioners worldwide
- to support researchers, scholars and practitioners and like-minded individuals and organizations in their quest to improve their understanding and awareness of Benchmarking Construction Performance Data.

W118 CLIENTS AND USERS IN CONSTRUCTION

Clients and users play a significant role in shaping construction and real estate. Getting a better grasp of their aspirations, needs and behaviour will open up new and important roads for the industry to deliver more value for money. Against this background the aim of the Commission is:

- to bring together the experience and expertise of researchers and practitioners
- to develop, share and disseminate appropriate research theories and practices for the successful client management of procurement and innovation
- to encourage and facilitate new collaborative and multi-disciplinary research both within and outside of CIB.

The Commission will define what constitutes clients and users in construction, will identify appropriate procurement and management strategies, will classify methods for engaging users in decision making processes and will develop appropriate related guidance material for clients and users.

W120 DISASTERS AND THE BUILT ENVIRONMENT

The rapid growth of urban centres presents numerous challenges to humanity, many of which can be addressed through built environment solutions. In the face of more frequent and powerful hazards, the future of vulnerable and growing populations is increasingly perilous. Against this background the objectives of the Commission are:

- to explore optimum means of engaging multiple stakeholders in collaborative projects that address the issues of disaster and development through built environment solutions
- to encourage strategic urban planning through the development of an evidence base supporting built-in disaster risk reduction (DRR)
- to advocate for the deployment of appropriate built environment professionals in support of DRR activities
- to develop tools / frameworks / models to support built environment organizations in complex environments in a variety of global contexts
- to support the embedding of disaster and development issues in the curriculum of built environment disciplines globally, encouraging the consideration of broader career paths.

W121 OFFSITE CONSTRUCTION

The precursor of this Commission, CIB TG74, produced a Research Roadmap for Offsite Construction that emphasized the need for work in such areas as: design / construction / manufacturing, with specific emphasis on ICT integrated solutions, socio-economic drivers, identifiable costs and value streams, including the need for skill development to support the concept of offsite construction. One of the main challenges highlighted for integration, particularly in aspects relating to the design, construction and manufacturing industries, to enable process innovation in offsite construction, which will be the prime focus of the Commission in the 2016 - 2019 period.

Against this background, within the scope of the Commission the focus will be on: Process improvement; innovation; visualization; process models; strategic and operational business models; and, training and development.

W122 PUBLIC PRIVATE PARTNERSHIPS

Amidst mounting global pressures for more effective and efficient forms of PPP, specific current needs were identified and presented in the CIB PPP Research Roadmap. This presents as main research themes: Financing and financial models and structures; risk allocation and management; transparency and accountability including regulatory and institutional frameworks; public policy and private/public sector behaviours; PPP project evaluation; contractual structure; and, PPP Performance Indicators.

New innovations and novel approaches are being developed in the formulation and implementation of PPP around the world. This calls for a new or additional research agenda for PPP, in addition to the roadmap already produced.

The scope of the Commission is informed by the description of Public-Private-Partnerships (PPP) as joint ventures, in which a private consortium and public or governmental bodies cooperate; each applying its strengths to develop a project to deliver public services more quickly, more efficiently and with better value for money. Consequently, the Commission will

facilitate a research forum for academics, practitioners and experts in the field at international, national and regional levels.

ENERGY, BUILDING PERFORMANCE AND ENVIRONMENTS

The issue of energy consumption in both new and existing buildings is a major issue for the built environment. Energy efficiency plays into issues of climate change, fuel poverty and energy security and remains a global challenge. This stream is concerned with understanding the energy efficiency of buildings, how this affects building performance and with the wider issues of how buildings will perform into the future. There is also a focus on how we can use models and measured performance to help us better understand how to address these issues and better understand phenomena such as the performance gap. Examples of research areas include:

- Building energy performance – energy efficiency, building physics
- Internal environments and human factors – thermal comfort, visual comfort, indoor air quality
- Modelling and measurement methods and issues – methods for modelling and measuring buildings and external environments
- Future climate and responses – urban heat islands, future climate, models and decision making
- Eco-innovation and sustainable construction – technical solutions to improving building performance now and in the future

SMART SPECIALISATION STRATEGY: THE TERRITORIAL DIMENSION OF RESEARCH AND INNOVATION REGIONAL POLICIES

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Abstract. The paper aims at investigating how EU Regions should incorporate the place-based approach (Barca, 2009) to plan their Research and Innovation Smart Specialisation Strategy (RIS3) within the current Programming Period 2014-2020. Smart Specialisation Strategies become a key factor to stimulate private investment, and “should be integrated into regional development strategies in order to ensure an effective partnership between civil society, businesses and public authorities at regional, national and European levels” (EC, 2010). The link envisaged between S3 and place-based approach is based on their characterization of a development policy, and on the value of the different geographical, social, economic features that territories can express (Foray, 2000). The transformation of these two theoretical approaches into policy is recognizable in two drivers for programming the Agenda 2020. The first is the Theory of Change, which implies the use of “indicators” related to the value that different territories can express to control and measure the expected change. The second is more related to stimulate at regional level an integrated approach to reach a critical mass of the investment effects/impacts. The MAPS-LED Research Project (Horizon2020) perspective is described as a way to investigate how is possible to regenerate local economic areas through S3 considering place-based approach.

Keywords: MAPS-LED, RIS3, S3, Territorial Dimension

1. INTRODUCTION

The aim of this paper is to highlight how European Regions have incorporated the Place-based approach to plan their Research and Innovation Smart Specialisation Strategy (RIS3) within the current Programming Period 2014-2020 taking into account the “territorial dimension”. The European Union is trying to come out of the recent and severe economic crisis that caused serious socio-economic consequences at the macro and micro level. Measures set by the European Commission have been inspired by the so-called “austerity principles”, pushing the academic and political debate towards the impacts and the effectiveness of regional development policies. National and Regional governments are called to set up innovative solutions in order to boost economic growth and development aiming at empower Cohesion Policy and reduce disparities among European regions. The interest generated by the debate has highlighted the special role that the regional governments play in pushing development towards innovation, being more aware that no change is possible without choices relevant for the context. In this sense a “new” approach based on Smart Specialisation Strategies (S3) drives toward this direction, no more a perspective designed within the Operational Programmes just in responding to the general requirement of European Commission. This approach could represent an interesting way to reach the goal of “Territorial Cohesion” by overcoming the conflict that a European strategy could generate in the implementation of territorial transformations, due to the place dimension of Public-Private investment allocated within Operational Programmes of Structural Funds. The first part of the paper is focused on the territorial dimension of European Policies starting from the introduction of the European

Spatial Development Perspective (ESDP, 1999) and the Place-based concept (2009). Since the 1980s the territorial dimension has been taken into account by the European Union and, from the 1990s, the “spatial approach” came to the light thanks to the ESDP and its “polycentric” view for the spatial development of European Regions. The second part is focused on the Smart Specialisation’s concept introduced by Foray (2009) and the place-based approach introduced by Barca (2009), which became the paradigm of the Cohesion Policy. S3 represent a turning point for the European Cohesion Policy. The increased attention toward regional “specialisations” not just for the regional dimension, as in the past, but toward the external dimension, represents a key point in mitigating negative economic effects deriving from globalisation processes. It is arguable that territorial dimension is crucial in RIS3 plans implementation. The third part of the paper is focused on the implementation of National and Regional RIS3 Plans, introducing the MAPS-LED Research Project (Horizon 2020–MSCA Actions-RISE) perspective as a way to investigate how is possible to regenerate local economic areas through Smart Specialisation Strategies taking into account place-based approach.

2. TERRITORIAL DIMENSION AND COHESION POLICY: FROM POLYCENTRISM TO PLACE-BASED APPROACH

Since the 1980s, the main aim of the Cohesion Policy has been to strengthen the economic and social cohesion in order to reduce disparities between more developed and underdeveloped regions. Although the term “territorial” is not the main word emerging from the Cohesion concept, it is (and it was) embedded and implicit and it is crucial in order to reduce the disparities (also territorial not only socio-economic) among European regions (it was included in EC Treaty in 1997, art. 3 of TEU and art. 2 of TFEU). Territorial Cohesion principle is about ensuring the harmonious development of all these places and about making sure that their citizens are able to make the most of inherent features of these territories (EC, 2008). As stressed by D. Hübn r (Böhme et al 2011), “it is a fundamental objective of regional planning in the Union and provides the *raison d’être* for regional development policy”. The European Union is characterised by a huge territorial diversity among regions that makes necessary the inclusion of territorial aspects in implementing European Policies. “Territorial Cohesion, if taken seriously and on condition that is given a broader interpretation than simply the provision of services of general economic interest, will feed into existing EU Policies by adding a territorial dimension to them, thereby making them more effective and efficient” (Zonneveld and Waterhout, 2005 quoted in Waterhout 2008: 83). According with Waterhout (2008) when referring to policies it is more appropriate to use the term “spatial” rather than “territorial” assuming that “territory refers to socially constructed places, whereas spatial refers to less clearly defined areas, which seem to be of a larger scale encompassing territories” (Waterhout 2008: 14). This conceptual issue has been the core of the scientific debate that have brought to consider the spatial dimension in EU policies and to take into account the spatial impacts of their implementation. In 1999, thanks to the European Spatial Development Perspective (ESDP), European Union Members States defined the relevance of the spatial dimension in order to achieve a more balanced and sustainable development of the European Territory. “Polycentric development is the only substantive spatial planning concept in the European Spatial Development Perspective (ESDP) with the potential to integrate the interests of the many parties involved” (Waterhout 2008: 56). The ESDP Document represented the attempt to put spatial planning on the European policy map (Waterhout 2008). One of the main issues that is animating the current debate (see Faludi 2015) is represented by the deep differences among European Member States, which go beyond the simple territorial characteristics of each European Regions. In 2007 the Territorial Agenda of the European Union (Towards a more

competitive and Sustainable Europe of Diverse Region) confirmed the will to “promote a polycentric territorial development of EU” aiming at the territorial integration and securing a better quality of life with respect of the regional and local potentials. The EU Cohesion Policy has to take into account the territorial needs and characteristics in responding more effectively to the specific geographical challenges and opportunities of the regions and cities (Territorial Agenda of the Union 2007). The Territorial Agenda (2007) was integrated by the Leipzig Charter on Sustainable European Cities, which highlighted the relevance of the urban dimension and the need of an integrated urban development policy, making possible the integration between (urban) development policy and territorial cohesion policy in order to achieve a sustainable development. As defined in the Leipzig Charter (2007) the integrated urban development policy is a process in which the spatial, sectorial and temporal aspects of key areas of urban policy are coordinated. In this perspective cities acquired a central role. They have been assumed as “parts of a polycentric pattern to ensure their added value for other cities in rural and peripheral areas” (Territorial Agenda of the Union 2007). Cities and regions then, arise as key elements for a long-term sustainable development. This new approach has paid attention to crucial cities’ issues of the last decades: the need to ensure high-quality public spaces, the need to modernise the infrastructure networks, innovative educational policies, set up new strategies for upgrading the physical environment, strengthen local economy and labour market policy, efficient and affordable urban transportation. Integrated Urban Development is not just an urban policy focused on spatial planning declined by each member state according with its own administrative structure, it is a policy opened to the integration with other European policies and Funds. The introduction of the Europe 2020 strategy in 2010, which can be seen as the general Road Map of EU policy targets within this decade (Schmitt, 2011), contributed to the review of the Territorial Agenda drawn up in 2007. The first part reinforces the relevance of the Territorial Cohesion for the Union because “it enables equal opportunities for citizens and enterprises, wherever they are located, to make the most of their territorial potentials” (Territorial Agenda 2020: 4). Since the end of the 1980s, urban dimension has been taken into account in the European Structural Funds as a result of the recognition of cities’ role in economic growth and competitiveness (Atkinson, 2014). During the middle of 1990s, the European Commission launched the URBAN Programme, an initiative of the European Regional Development Fund (ERDF) to achieve sustainable development in distressed urban districts, characterised by socio-economic and environmental decay. During the programming period 2000-2006, within the second part of the URBAN II programme, was introduced the URBACT network, which main aim was to support and continue the exchange of information on sustainable urban development across Europe. In 2007-2013 programming period, the ERDF included a “stronger urban element” (Atkison, 2014: 4), providing through the integration of Structural Funds (European Social Fund and Cohesion Fund) a range of initiatives to implement urban development projects (one of the recommendations of the Leipzig Charter was to “coordinate and spatially focus the use of funds by public and private sectors players”). Thanks to the cooperation with The European Central Bank (ECB), the European Commission developed a set of financial engineering mechanisms aiming at contributing to the implementation of the integrated urban development approaches and strategies. This is the case of the JESSICA (Joint European Support for Sustainable Investment in City Areas) and JEREMIE Funds (Joint European Resources for Micro to medium Enterprises), two financial instruments set by the European Central Bank (ECB) and European Commission for leveraging private capitals into the implementation of integrated urban development strategies (Liepzig Charter, 2007). Along this overview on the territorial dimension in implementing EU Policies two main key aspects arise: the “territorial potentials” and the “equal opportunities” principles that represent the basis of the Place-based approach introduced by Barca (2009), considered the core of the European regional development policy

for the programming period 2014-2020 together with the concept of Smart Specialisation Strategy. This new “regional-economic thinking”, as defined by Faludi (2015), is a new paradigm emerged thanks to the Barca Report (2009) that highlight the importance of local contexts on grounds of both efficiency and equity (Faludi 2015). The need to rethink economic development strategies, both on national and regional/local level, remarks the importance of factors “such as human capital and innovation (endogenous growth theory), agglomeration and distance (new economic geography), and institutions (institutional economics) (Barca et al. 2012: 136). These factors are the results of a period of radical political, institutional and economic change started in the late 1980s that brought to the revision of regional economic development policies. Within this context “innovation” acquired an increasing importance as a cross-cutting process able to empower the potentials of places in achieving a more balanced and sustainable development.

3. THE INTRODUCTION OF SMART SPECIALISATION STRATEGY AS POLICY PARADIGM: FROM A THEORETICAL CONCEPT TO EUROPEAN POLICY

The introduction of the concept can be dated back to the European Council of Lisbon (2000) where the European Union set the clear objective to develop a knowledge-based economy. Thanks to the “Knowledge for Growth Group”, in 2009 the “Smart Specialisation Concept” came out (Foray et al. 2009, 2011). According with Dominique Foray (2015), smart specialisation concerns “the capacity of an economic system (a region for example) to generate new specialities through the discovery of new domains of opportunity and the local concentration and agglomeration of resources and competences in these domains”. The original smart specialisation concept was mainly focused to elements aiming at maximise the economic potential in filling the transatlantic productivity gap through the valorisation of entrepreneurial actions (McCann, 2015). Indeed, the core of the “Smart Specialisation” concept is represented by the “entrepreneurial discovery” that can be considered a sort of pre-condition in materialising innovation. Foray (2009) defines it as an essential phase, the crucial link for reorienting and renewing a system. Thus, the entrepreneurial discovery phase is crucial for several factors: first of all, a policy based on the entrepreneurial discovery process as priorities identification is not a policy that says “what to do” but “how to do”, underlying the relevance of the process than the product. The entrepreneurial discoveries effects can be maximised if considered in the potential policy actions (Foray, 2009). Thanks to these information, governments have to choose new activities according with their potential impacts, feasibility, proximity to market, relevance for the regional economy, number of actors involved etc. In the S3 process, sectors are not a key area of intervention. Relevant action relates to activities that enable being aware of regional knowledge economy that can be considered as basis for S3. National and regional authorities across Europe shall design smart specialisation strategies starting from entrepreneurial discovery process in order to use more efficiently European Structural Investment Funds (ESIF), activate synergies among EU, national and regional policies and increase public and private investments (EU, 2012). If we consider the theoretical background of S3 (Foray, 2000), the link envisaged between S3 and place-based approach is based on their characterization of a development policy, and on the value of the different geographical, social, economic features that each territory can express. However, Europe still presents deep differences: regions more competitive and able to compete in the globalised market and regions with unsolved structural weaknesses, highlighting an “innovation gap” among them. Funds need to be coordinated and integrated with other European tools in supporting innovation and research, particularly the Community Innovation Program (CIP) and Horizon 2020 Programme (The European Research Program for the period 2014-2020). S3

allow the setting-up of a strategy focused on innovation, giving a valid answer to problems of regions characterised by unemployment and low growth rate. In this perspective, the concept of “strategic intelligence”, i.e. the capability to develop a responsive mode to change complexity, is necessary in selecting high added value activities offering the opportunity to reinforce regions competitiveness. S3 offer the opportunity to link businesses, research centres and universities in order to identify regional specialisation sectors and the hampering factors of this process. The shift of smart specialisation, from concept into policy, came with the new Rules for the European Structural Funds, the Union’s financial tools in achieving European Cohesion Policy. Particularly, Article 2 of the General European Structural Funds Regulation no. 1303/2013 defines the Smart Specialisation Strategy as “national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts; a smart specialisation strategy may take the form of, or be included in, a national or regional research and innovation (R&I) strategic policy framework” (EU Regulation No. 1303/2013).

3.1 The territorial dimension in research and innovation policies: the RIS3 plans

The European Commission requested to each European region to enlighten in an action plan for RIS3 the regional strategies for the programming period 2014-2020, in order to respond the local demand of innovation and to stimulate new sources for a self steady development. The role of the city together with the horizontal perspective of sustainable urban development, could better drive an effective implementation and adjustment of RIS3 regional plans. The current phase allows outlining the level of completeness, relevance and consistence of the selected actions by each European region to drive economic change through smart specialization strategies/RIS3. National/regional research and innovation strategies for smart specialisation (RIS3) are integrated, place-based economic transformation agendas focused on five key elements (EU, 2012): (i) policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development, including ICT-related measures; (ii) country's/region's strengths, competitive advantages and potential for excellence; (iii) support for technological as well as practice-based innovation and aim to stimulate private sector investment; (iv) stakeholders' involvement and encourage innovation and experimentation; (v) evidence-based and inclusion of sound monitoring and evaluation systems.” (RIS3 Guide 2012). The Barca Report emphasised the need to focus on fewer priorities, to be more transparent, to make sure that programme success is verifiable and to better coordinate place-based policies (Barca, 2009). This step has contributed to transform smart specialisation from a technology and research concept to a place-based concept attuned to regional policy (McCann and Ortega-Argilés, 2013). The Barca report (2009) highlights how regions opted for similar types of innovation priorities, increasing the risk of fragmentation and lack of critical mass, which will prevent regions from developing economies of agglomeration and positive spill-overs. “In order to overcome these problems of fragmentation, mimesis and lack of critical mass, great importance has been given to urging regions to foster new activity sectors or industries, by investing in R&I in a limited number of areas with the greatest strategic potential” (Sörvik and Kleibrink, 2015: 4). In the design and implementation phase of RIS3 process, monitoring and evaluation activities play a central role. In 2011, the S3 Platform was established with the aim to support regions in the preliminary phase of their Smart Specialisation Strategies, particularly for “Research and Innovation Strategies for Smart Specialisation” (RIS3). The Platform has the peer review task of proposed RIS3 and to facilitate

RIS3 knowledge and experiences exchange and is located at the “Institute for Prospective Technological Studies (IPTS) of Seville (ES), one of the European Commissions’ Joint Research Centres. The role of the S3 Platform is to provide information, methodologies, expertise and advice to national and regional policy makers, as well as promote mutual learning, trans-national co-operation and contribute to academic debates around the concept of smart specialisation (S3 Platform, 2015). The platform has set up an evaluation methodology in supporting the construction of regional RIS3 plans and in monitoring those critical factors that represent an obstacle for the plan implementation. This methodology is based on the definition of a relevant set of criteria in order to evaluate the performance of each RIS3 plan elements. It helps to highlight the scientific and methodological appropriateness of the plan, highlighting the peculiarities of the regional context according with the 3 critical factors selected for each step of the process (six steps). The evaluation platform set up by the Seville Platform, in which RIS3 strengths and weaknesses are evident and comparable, allow a better sharing of results in orienting the changes to produce. The Seville Platform, in order to support and address context analysis in the conceptual framework of S3 in regional plans, has developed six tools for the monitoring activity: the EYE@RIS3, the ESIF viewer, the ICT monitoring, the Regional Benchmarking, the EU Trade, the R&I Regional Viewer. These tools help in monitoring the adopted RIS3 of European Regions and the outcome they will produce thanks to specific databases. Particularly, the Regional Benchmarking database aims at identifying the regions’ positioning in the European regional context. This positioning is explained through the “distance index” for each European region with the aim to capture structural similarities in the European context and to guide RIS3 tools toward the so-called competitive advantages. The methodology to obtain the synthetic index has been elaborated by the JRC Technical Support and is reported in the S3 working paper series no. 03/2014 “Regional Benchmarking in the smart specialisation process: Identification of reference regions based on structural similarity” (Navarro et al. 2014). It is arguable, observing that the theoretical basis has shifted from benchmarking to performance analysis, for selecting those factors able to give a picture of how competitive advantage is perceived or boosted in the global market. Contemporary, the inclusion of structural context variables is having a central role in support policy decision in the difficult linkage between innovation systems and local economic development. Despite the relevance of monitoring and evaluation activities for S3 implementation, during the last two years the academic and policy-makers debate was characterised by pro-contra positions. The pro arguments start from the conception of S3 as a territorial strategy going beyond policy. Monitoring and evaluation should focus on the capability of a region to achieve its goals and to monitor and evaluate the policy-mix, not individual policies (S3 Platform, 2015). The contra arguments address the importance of the process of monitoring itself, focusing on the role played by regions, the approaches to monitoring and the importance of traditional rigorous monitoring techniques, “given the experimental, entrepreneurial and innovative nature of smart specialisation” (S3 Platform, 2015). In both cases the entrepreneurial discovery process plays a central role, because it will shape the regional system through priority identification and setting (market processes are central in producing the information about the domains for future priorities) (S3 Platform, 2017). The analysis of the Fraunhofer Institute for Systems and Innovation Research ISI (2016) on EDP perception by policy-makers reveals how EDPs are entering in a second phase of discussion characterised by consultation and exchange, rather than concrete decision making. The survey (2016) highlights how, in the majority of cases, the process is led by universities rather than local firms and businesses, with a scarce presence of civil society organisations. The leading role played by universities could affect the expected outcome related to the entrepreneurial discovery process. It could influence the capability of a territory to produce innovation rather than empower and valorise the local specialisations in finding new market

opportunities. In some case, universities are complemented by intermediaries such as clusters, providing a business sector’s perspective thanks to the presence of firms and businesses (ISI, 2016).

4. TERRITORIAL AND SPATIAL DIMENSION IN S3 IMPLEMENTATION: THE MAPS-LED PROJECT PERSPECTIVE

The territorial dimension is a key element of European Cohesion Policy as emerged from the official documents and scientific literature in the field. However, two questions seem to be less investigated within RIS3 plan: the spatial perspective, in physical, economical and social dimension, and the social perspective, in terms of expression of continuously changing behaviours, which sometimes is not captured from the governance structures (MAPS-LED, 2017). Some concerns arose among scholars and practitioners about the real consideration of territorial dimension in RIS3 plans proposed by national and regional authorities. This consideration leads to better understand and investigate the implications of the territorial dimension (intended as the combination of economic, social and spatial factors) dimension of such policy paradigm (see Figure 1).

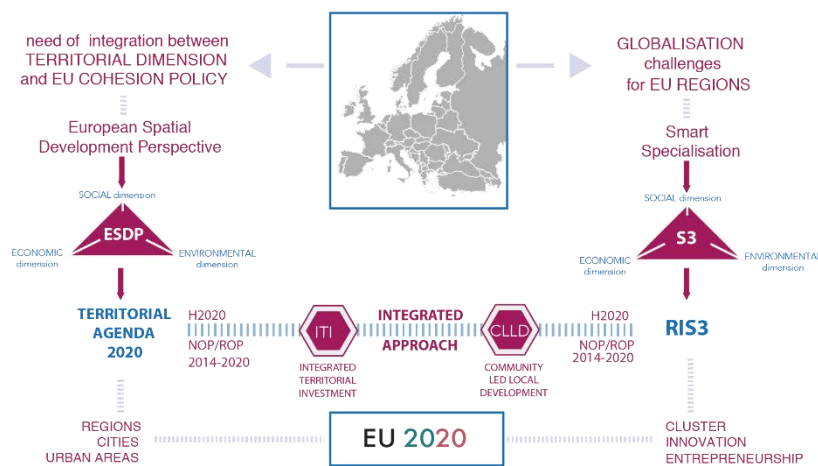


Figure 1. Territorial Dimension and S3. Source: MAPS-LED Project

The MAPS-LED project reflects the progressive attention given to Smart Specialization Strategies (S3) in boosting the implementation of Europe 2020 strategy, at regional and local level. S3 are designed to capture knowledge and innovation dynamics closely connected with characteristics of context. The main challenge is to reverse the current and persistent gap among lagging regions in Europe, which remain at same development stage despite long-term structural funds in research, innovation and technological development. In this sense, contexts conditions, especially in cities located in lagging regions, can significantly affect the implementation of complex policies such as S3 (MAPS-LED, 2017: 12). The joint Exchange programme MAPS-LED is based on a research proposal finalized to examine how smart specialization strategies (S3) to regenerate local economic areas can be implemented, according to the new agenda of Europe 2020. This can be largely achieved by incorporating a place-based dimension. The main objective of the MAPS-LED project is to build and test an evidence-based methodology for recognizing and assessing emerging and potential of S3 in terms of spatial, social and environmental factors. The research project will map out local needs and opportunities in a variety of contexts that could drive regional policy interventions. The resulting S3 will not only emphasize “Key Enable Technologies”, but will also empower the

local innovation process. The MAPS-LED process starts from a place-based framework and will include two important drivers: 1. Cluster policy and cluster-based analysis, 2. Innovative milieu in terms of the local value chains based on the urban-rural linkages. The MAPS-LED project will be built in order to connect three important key-factors including: Governance (in terms of cluster policy and based cluster analysis); Localization (in terms of place-based approach); Territorial network (in terms of innovative milieu based on urban-rural link). The general framework of the research project is organised across four main topics (see Table 1).

Table 1: MAPS-LED Project (Horizon 2020) Main Topics

Topic	Key aspects to investigate
<i>Research and Innovation Strategies</i>	Technology transfer based on "business process"; Business models and partnership research groups and strategic action plan; Entrepreneurship in the research community and social innovation; Clustering entrepreneurial;
<i>Spatial Planning Factors suitable to be mapped in physical terms</i>	Proximity and accessibility (to gateway cities, to infrastructural nodes, to HEI Centres, to broadband facilities...); Spatial pattern ("boundary" of the cluster, network of connections, localisation of place of production and distribution...); Size (dimensional data of the cluster) Critical mass (number of enterprises, size of urban centres involved, number of jobs created....);
<i>Cluster Policy Factors related to the governance systems of the clusters:</i>	Institutional networks, entrepreneurial networks, the global-local nexus between the local area and global systems, the organisation of local value chains, a suitability to be mapped through stakeholder analysis;
<i>Social Innovation Responses to social needs that are developed in order to deliver better social outcomes</i>	(Spatial) identification and GIS mapping of new/ unmet/ inadequately met social needs, related to vulnerable groups.

The originality and innovation in the methodological approach stems from the spatial-led approach to the analysis of US clusters, allowing researchers to draw evidences for a S3 place-based theory testing and implementing pilot S3 areas in European regional contexts. Cluster-based analysis is structured in a spatially oriented logical frame, where the spatial dimension is treated as a combination of the territorial dimension rationale within Cohesion Policy and place-based approach in reforming the Cohesion Policy, both related to Europe 2020 strategy. The cluster based analysis conducted in Boston (case study area) finds its justification in the spatially-led approach to innovation and knowledge dynamics, because cluster includes in its occurrence the specialization process towards innovation. Spatializing cluster acquires the meaning to spatialize innovation, namely, to investigate the nexus between innovation and space/place. The research activities demonstrated that the cluster geographic concentration is characterized by a multi scalar and multivariable geography, in the sense that in each territorial dimension (from state level to city level), clusters provide a conceptual framework to describe and analyse important aspects of modern economies of that territorial dimension. Its role is not to demark a specific area, but to characterize that specific geographic area in terms of innovation, specialization and capacity to activate competitive and comparative advantages (Porter, 1998, 2000; Delgado et al., 2014). Accordingly, the cluster, even with a physical configuration, has been considered as a proxy of innovation concentration because its occurrence is strictly connected (by definition from the Porter's model) to innovation, specialization and job creation (MAPS-LED, 2017b). The research project stages match the implementation of Research and Innovation Strategies for Smart Specialisation (RIS3) regional plans, that are required as ex ante conditionality for Research and Innovation of the current programming period (MAPS-LED, 2017b: 23). The second stage of the MAPS-LED project will take up the final year and will deal with the practice and implementation of the research:

in order to understand the success factors from the US experience on clusters, the selected case studies will be investigated with a view to the S3 concept through an assessment grid based on the above mentioned elements (see table 1), integrated throughout the whole first year research. Multi-criteria approach based on correlation matrix, cluster analysis, hierarchical clustering and Hierarchical Decision Model, and Planning Balance Sheet (PBS) will be applied to analyse, assess and compare: (i) Factors characterizing USA clusters correlated with the EU ones; (ii) Indicators of cluster specialization, spatial factors, organization type; (iii) Success factors with respect to innovation, localization and governance. The data set, ranging from selected data from USA panel information to EU S3 potential data, will be structured in a GIS of Cluster/S3 information system. The proposed methodology under the MAPS-LED project would apply this concept to the wider territorial network and chains, thus allowing to quantitatively assess the potential of the clusters also in social terms and to pave the way to estimate the wider potential of place-based S3 through a two-steps process. The first step aims to develop and test a methodology for Mapping & Assessing Clusters in a place-based and spatial-led perspective. The second step follows the mapping stage and relates to the assessment of the wider impacts of place-based S3, by assessing the clusters' impact in the wider social and environmental perspective, thus leading to discover the extra value generated by the clusters and territorial milieu-nexus.

5. CONCLUSION

Smart Specialisation Strategies represent a turning point for the European Cohesion Policy. The increased attention toward regional "specialisations" not just internal, as in the past, but toward the external dimension represent a key point in mitigating negative economic effects deriving from globalisation processes. Further, the Foray's perspective, highlights the territorial dimension in terms of "specialisation" of activities that are relevant within a territory (i.e. regional). Regions have to be "aware" of their current assets and their potentials and most of all have to make choices in order to drive the "structural changes". The contact point between S3 and Territorial dimension seems to occur in 2009 with the publication of the Barca Report, linking the "spatial" issues introducing the place-based approach in contrast with the "spatially-blind" policies. As highlighted by Barca (2009) it is necessary the shift from a "space-blind" to "place-based" approach. This renovated attention to the "place" could reach the overall aim to satisfy efficiency (the capacity of a region to exploit its territorial potential) and equity principles (capacity of each region to provide equal opportunities to their citizens). Although the territorial dimension has always been part of European Policies (at least since 80s and then since 90s in the European Treaties), it was emphasised at the end of 90s with the introduction of ESDP that highlighted the need of "spatial" vision for European territories. In this perspective the territorial dimension become crucial in RIS3 plans implementation. However, two questions seem to be less investigated within RIS3 plan: the spatial perspective, in physical, economical and social dimension, and the social perspective, in terms of expression of continuously changing behaviours, which sometimes is not captured from the governance structures (MAPS-LED, 2017a). RIS3 are in their implementation phase and it is not possible at this moment to establish, clearly, what effects/impacts these strategies will produce in the mid and long terms (MAPS-LED, 2017). The risk of the so-called "me-too effect" is high and this could mean that regions are not taking into account seriously the potentials (economic and social) of their territories combining the "use" of innovation (more than the production of innovation) with a spatial perspective for European regions (MAPS-LED, 2017a: 33). The "territorial" aspect of Smart Specialisation Strategies of Foray's concept, lies in our opinion, on the "spatialisation" concept, which is understood as a specific activity in a specific space

(region) that has the potentials in contributing to the regional economic growth. Hence, National and Regional Authorities, in implementing Operational Programmes to reach the goals of Europe 2020 Strategy, should focus on an integrated approach, linking together Cohesion, Research and Innovation and Territorial Policies. The expression of the territorial potential is relevant not only for the local dimension but also for the international openness of local markets. A consequence of the complete RIS3 process could be the possibility that the empowerment of local innovation systems could bring toward the entry of SMEs into the Global Value Chain and help the revitalisation of local economic systems (MAPS-LED, 2017a). Faludi (2015) argues that even if the S3 strategy is integrated and effective it could be hard to translate it into a spatially-oriented development policy. The need to develop a multidisciplinary approach to plan smart specialisation strategies emerges as crucial to properly pursue the local economic development's targets. Hence, the MAPS-LED project appears at forefront into this unexplored new research domain (MAPS-LED, 2017a).

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THE ROLE OF PUBLIC AUTHORITIES IN SUPPORTING REGIONAL INNOVATION ECOSYSTEMS: THE CASES OF SAN DIEGO AND BOSTON REGIONS (USA)

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Abstract: The EU has recently recognised the crucial role of public authorities in promoting the interfaces between innovation actors in order to orchestrate regional innovation ecosystems (EU CoR, 2016). This paper aims to contribute to the body of knowledge of regional innovation policy-making by analysing the role that has been performed by the U.S. public sector in boosting two successful innovation ecosystems, namely the Life Science Clusters of San Diego (CA) and Boston (MA). By adopting a policy monitoring methodology, the paper breaks-down the different policy inputs and processes delivered by the public sector, targeting the two Life Science clusters. We conclude that both the public authorities of Boston and San Diego regions have been pushing for the life science industry agglomeration from an urban planning perspective, while they have been adopting different approaches in promoting the interface between innovation actors. In Boston, the public authorities actively intervene in fostering collaboration and co-creation between the several life science-related firms, through the Mass Life Science Center. In San Diego, the public authorities allow the life science ecosystem to self-organize, leaving the orchestration role to not-for-profit organizations, such as CONNECT and BIOCUM.

Keywords: Clusters, Innovation Policy, MAPS-LED, Policy Mix, Regional Innovation Ecosystems.

1. INTRODUCTION

There seems to be a wide consensus among the scientific community that knowledge, education, lifelong learning, creativity, and innovation are the key components for the prosperity and global competitiveness of cities and regions. The post-Fordist societies are more and more characterized by knowledge-based economies and, for this reason, innovation ranks on the top of policy agendas within the regional policy-making field (Todtling & Trippl, 2005). As Judy Estrin reminds us, “innovation is not optional” (Estrin, 2009, p. 1).

Since Harvard Business School professor Michael Porter introduced the connection between clusters and innovation to the policy community (1990), almost ten years have passed for the spread of public strategies in supporting regional economic clusters across every U.S. state. Furthermore, it took ten more years until the U.S. Congress adopted the “regional innovation clusters” (RICs) as the framework for structuring the nation’s economic development policies (Muro & Katz, 2010).

Also for the European Union, innovation represents the key element when it comes to formulating guidelines and legislation for regional policies. For the programming period 2014 – 2020, the EU Commission pointed out the Smart Specialisation Strategy (S3) as the regional policy aiming at placing greater emphasis on innovation-driven regional development, based on each EU region’s strengths and competitive advantages (EU Commission, 2011). The development of regional clusters represents an expected - and desirable - stage within the S3 implementation, since it is recognised the crucial role of clusters’ knowledge spillovers in