TeMA

Journal of
Land Use, Mobility and Environment

This special issue collects a selection of peer-review papers presented at the 8th International Conference INPUT 2014 titled "Smart City: planning for energy, transportation and sustainability of urban systems", held on 4-6 June in Naples, Italy. The issue includes recent developments on the theme of relationship between innovation and city management and planning.

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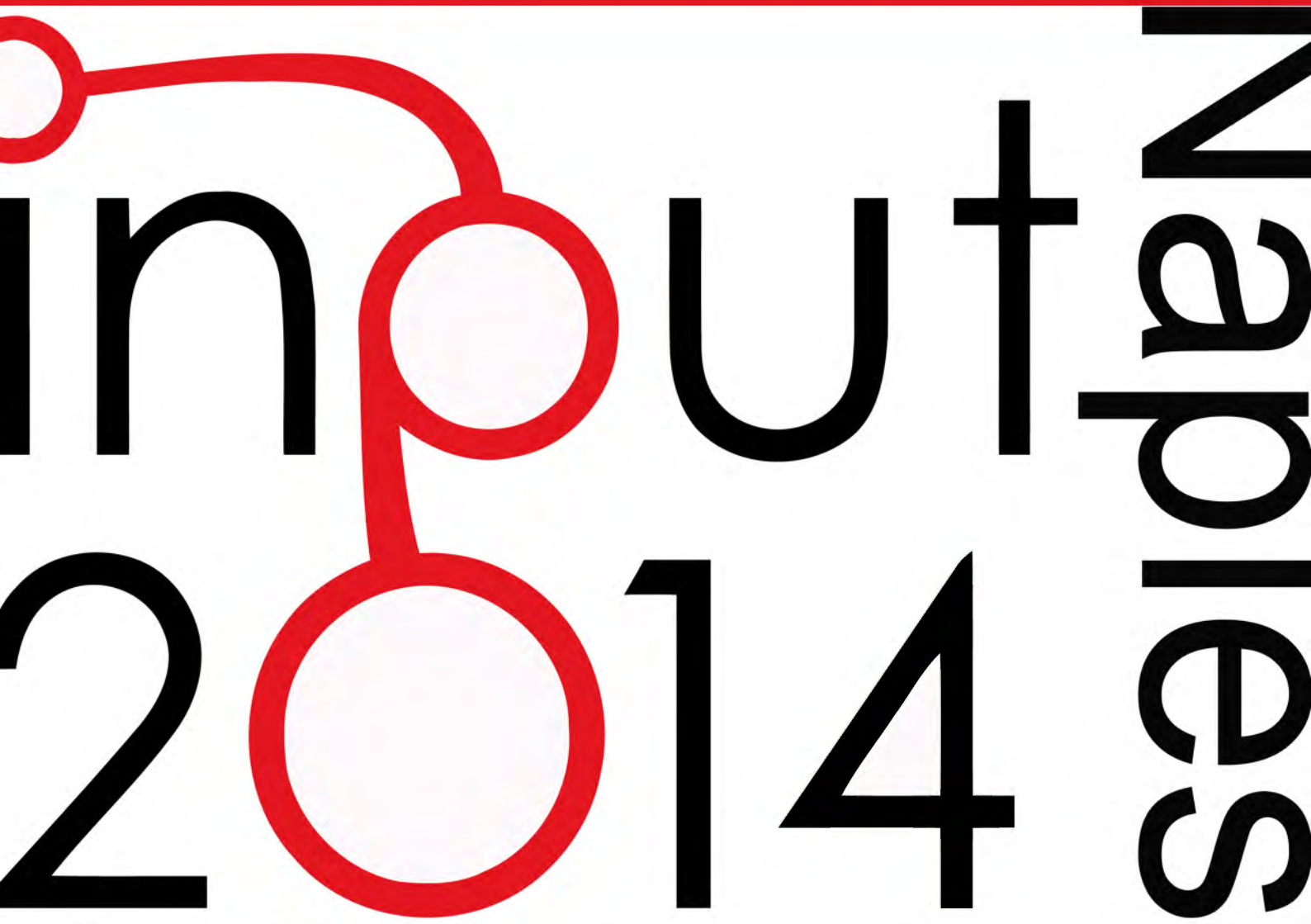


# Smart City

## planning for energy, transportation and sustainability of the urban system

Special issue, June 2014

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# SMART CITY

## PLANNING FOR ENERGY, TRANSPORTATION AND SUSTAINABILITY OF THE URBAN SYSTEM

## Special Issue, June 2014

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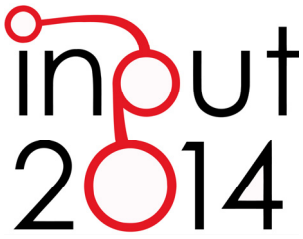
This special issue of TeMA collects the papers presented at the 8th International Conference INPUT 2014 which will take place in Naples from 4th to 6th June. The Conference focuses on one of the central topics within the urban studies debate and combines, in a new perspective, researches concerning the relationship between innovation and management of city changing.

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# EIGHTH INTERNATIONAL CONFERENCE INPUT 2014

## SMART CITY. PLANNING FOR ENERGY, TRANSPORTATION AND SUSTAINABILITY OF THE URBAN SYSTEM

This special issue of TeMA collects the papers presented at the Eighth International Conference INPUT, 2014, titled "Smart City. Planning for energy, transportation and sustainability of the urban system" that takes place in Naples from 4 to 6 of June 2014.

INPUT (Innovation in Urban Planning and Territorial) consists of an informal group/network of academic researchers Italians and foreigners working in several areas related to urban and territorial planning. Starting from the first conference, held in Venice in 1999, INPUT has represented an opportunity to reflect on the use of Information and Communication Technologies (ICTs) as key planning support tools. The theme of the eighth conference focuses on one of the most topical debate of urban studies that combines , in a new perspective, researches concerning the relationship between innovation (technological, methodological, of process etc..) and the management of the changes of the city. The Smart City is also currently the most investigated subject by TeMA that with this number is intended to provide a broad overview of the research activities currently in place in Italy and a number of European countries. Naples, with its tradition of studies in this particular research field, represents the best place to review progress on what is being done and try to identify some structural elements of a planning approach.

Furthermore the conference has represented the ideal space of mind comparison and ideas exchanging about a number of topics like: planning support systems, models to geo-design, qualitative cognitive models and formal ontologies, smart mobility and urban transport, Visualization and spatial perception in urban planning innovative processes for urban regeneration, smart city and smart citizen, the Smart Energy Master project, urban entropy and evaluation in urban planning, etc..

The conference INPUT Naples 2014 were sent 84 papers, through a computerized procedure using the website www.input2014.it . The papers were subjected to a series of monitoring and control operations. The first fundamental phase saw the submission of the papers to reviewers. To enable a blind procedure the papers have been checked in advance, in order to eliminate any reference to the authors. The review was carried out on a form set up by the local scientific committee. The review forms received were sent to the authors who have adapted the papers, in a more or less extensive way, on the base of the received comments. At this point (third stage), the new version of the paper was subjected to control for to standardize the content to the layout required for the publication within TeMA. In parallel, the Local Scientific Committee, along with the Editorial Board of the magazine, has provided to the technical operation on the site TeMA (insertion of data for the indexing and insertion of pdf version of the papers). In the light of the time's shortness and of the high number of contributions the Local Scientific Committee decided to publish the papers by applying some simplifies compared with the normal procedures used by TeMA. Specifically:

- Each paper was equipped with cover, TeMA Editorial Advisory Board, INPUT Scientific Committee, introductory page of INPUT 2014 and summary;
- Summary and sorting of the papers are in alphabetical order, based on the surname of the first author;
- Each paper is indexed with own DOI codex which can be found in the electronic version on TeMA website (www.tema.unina.it). The codex is not present on the pdf version of the papers.

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# SMART CITY
# PLANNING FOR ENERGY, TRANSPORTATION AND SUSTAINABILITY OF THE URBAN SYSTEM
## Special Issue, June 2014

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**SPECIAL ISSUE**

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of the Urban System

*Naples, 4-6 June 2014*

# CO-CREATIVE, RE-GENERATIVE SMART CITIES

## SMART CITIES AND PLANNING IN A LIVING LAB PERSPECTIVE 2

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**ABSTRACT**

A particularly mild approach in money supply over three decades at the international level has encouraged the piling up of substantial amounts of debt through urban investment, particularly in less competitive systems . It appears therefore necessary ato elaborate stringent "urban financial statements", through a kind of digital agenda able to provide geo-referenced economic indicators about structure, value and performance of urban capital, and therefore capable to serve as a guide in future allocative choices of the myriad of holders of some stake of the above urban capital. Recognizing the role of such a multiplicity of stakeholders means to radically reconsider the transcendent assumptions of spatial planning in favor of an immanent view of it, also suitable as reference to integrate, in a single digital guidance framework, both the above geo-referenced economic indicators and the expressions ("images") coming from the stakeholders themselves. But it also means to refer to a model of self-governance of innovation, intended as a socially driven, organic process, embedded in scalable and resilient network ecosystems. This is essentially the mandate of a Territorial Living Lab, for which nevertheless governance is itself a matter for experimentation and innovation, as well of contamination with other models, within the objective of combining capital investments in urban regeneration with the need to attain an effective yield on such investments through diffused and citizen-based ownership of the urban innovation they aim to spark off.

**KEYWORDS**

Urban capital, Immanence, Territorial Living Lab

# 1 INTRODUCTION

As position paper of the "Smart Cities and Planning in a Living Lab Perspective" session of Input 2012 we presented a paper with the same title (Concilio and DeBonis 2012), aimed at outlining first of all a viable framework for a planning approach to the topic of Smart Cities, situated at the intersection of the research on Smart Cities with the theory and practice of the so called Urban/Territorial Living Labs.
In the same year we also contributed to IFKAD-KCWS with a paper (De Bonis, Concilio, Marsh and Trapani 2012) highlighting the need of a much more deeper integration between socio-economic action and spatial planning, through the co-creative approach of Urban/Territorial Living Labs, able to focus not only on merely sectorial ICT R&D issues but rather on the transversal problems of cities and territories (Marsh 2008), in order to pursuit objectives of territorial cohesion and development, directly by socio-economic actors self-organized in "living lab" environments.
As further development of a reflection on the co-creative relationship between socio-economic sphere and urban planning we present here first of all some basic considerations about economic links among monetary policy, urbanization processes and spatial changes in a globalized urban economy, to take carefully into account in planning processes aimed at fostering urban smartness. To this end it appears both possible and necessary to elaborate stringent "urban financial statements" through the effective use of new technologies, as a kind of implementation of a digital agenda for "functional urban systems", able to provide geo-referenced economic indicators about structure, value and performance of available and optional urban capital, and therefore capable to serve as a guide in future allocative processes.
Moreover, as the above considerations about urban economic trends lead inter-alia to recognize the fundamental role played in the urban/territorial systems dynamics by a multiplicity of "stakeholders" (i.e. holders of some stake of urban/territorial capital), interacting each other through distributed and generally uncoordinated decision-making, we outline a radically immanent view of spatial planning. Such a view is also able to serve as strong reference to connect and integrate, in a single digital guidance framework, on the one hand the "expert" information layers aimed at building the above "urban financial statements", and on the other the expressions ("images") of the myriad of interacting entities in the urban/territorial context, from which the visions can emerge, able to orient and polarize, together with the mentioned statements, the multiple processes of molecular interaction.
As a possible form of governance consistent with an immanent view of planning, we hereinafter identify a "social" model of urban and territorial innovation in Living Lab environment, able to overcome the by now hackneyed dichotomy between top-down and bottom-up approaches, in that it is scalable and adaptable to different, appropriate levels of competence, including the institutional ones.
Finally, we illustrate some interpretations, convergent but not necessarily coincident, of the nature and the role that the above kinds of Living Lab environments could play in the dynamics of urban and territorial development.

# 2. SMART CITY AS CAPITAL ALLOCATION INSTRUMENT

The patterns of transformation of urban systems over the past decades seems to have been influenced by monetary policy, with global urbanization being fuelled, to a large extent, by low interest-rates environment prevailing at the international level.
A particularly mild approach in money supply over three decades has delayed a debate on the rationalization of urban capital stock accumulation, particularly in less competitive systems. These, thanks to the

continuous expansion of financial markets and easy money, have benefited from a growing capacity to pile up substantial amounts of debt, before being confronted with the need to enforce fiscal correction policies aimed at ensuring the systems' financial long term sustainability and avoiding painful municipal debt restructuring.

As a result of these monetary policy trends, urban investment - normally having a Keynesian "pull" role to stabilize the economic cycle during recessions – has assumed a "push" pro-cyclical economic mission, with urbanization processes being considered as an economic modernization objective "in their own merit".

A further potentially important, but often unnoticed, spatial effect produced by loose monetary policies seems to be the following: in a monetary union (and overall in the globalized economy) interest rates determine an acceleration of factor mobility and resource transfers from urban systems characterized by relative low productivity and higher (risk-factored) cost of capital towards those system which are enjoying an (often allegedly) higher productivity, employment conditions and relative lower cost of capital (Leanza and Carbonaro 2013).

As a result of the growing impact of globalization correct investment strategies, urban financial performance and appropriate funding of investment, play a relevant role as a constraint (or boost) factor in shaping cities. The economics of single projects/firms (and even production factors) will increasingly be assessed with reference to the overall competitive structure/trends and overall financial features of the systems to which they belong (Moretti 2012).

In urban areas – considered as dense job systems according to OECD (2009) - the performance of the a) human capital factor is deeply bundled with other four types of interconnected productive factors, namely: b) natural resources; c) housing, productive, logistic and infrastructure assets; d) financial capital; as well as e) economically relevant "land and spatial factors".

Urban systems – intended as above – are therefore characterized by a multiplicity of active operators (families and individuals, but also public sector, private enterprises, working unions, as well as not-for-profit entities, and legal entities) which interact through distributed and generally uncoordinated decision-making processes. Interestingly enough, urban stakeholders (as such as a normal citizen or a family located in the city) are potentially carriers of the five types of capital described above.

The lack of a well-defined, pyramidal control chain in an urban system does not preclude the possibility for the authorities to draw pro-form financial statements representing its consolidated structure and performance. Urban financial statements, accompanied by urban econometric models would cover areas with very large populations, above-average revenue-generating capacity and overall financial/taxation base.

In EU large economies, the launch of an innovative digital agenda program (spatially-customized to cover the features of the metropolitan job systems) can help understanding the "true economic performance" or structural indicators of metropolitan or large urban entities and drive the future economic recovery of most ailing systems through better capital-allocative processes.

This element appears to be a prerequisite for the realization of any successful smart city strategy based on capital allocation optimization and a strict financial discipline. The risk is a misallocation of urban capital and over-investment towards city systems which are "spatially" misplaced or obsolescent, therefore conducive to the destruction in the long term of valuable economic and financial resources.

The smart growth process requires a reassessment of the economic role and performance of the majority of the urban players, which represent a major share of the invested capital and debentures as well as of land holdings at city's scale.

The complexity of these processes will require innovative and "smarter" forms of city governance, organisation and controls in order to ensure an effective allocation of scarce capital resources to different

urban systems, in order to maximize the productivity and efficiency of investments and the overall capital accumulation processes.

The smart city approach may result particularly useful in order to tackle the issue of "value creation" and of a correct "capital allocation" in urban systems facing a rapid evolution of their competitive environment. In particular, based on a value creation approach, a stronger emphasis should be attributed in the future to the capacity of the single metropolitan/urban areas to generate sustainable long term wealth growth (as compared to other types of more traditional indicators, as GDP).

By applying such an approach, researchers are confronted with an important issue: urban stakeholders and, more generally, individual urban systems (which remain highly differentiated in terms of: assets/liabilities structure and net debt/credit position) are supposed to be driven mostly by the ambition to increase the cumulative amount of wealth (or value) enjoyed by their stakeholders and citizens. This result would be achieved by maximizing the long-term return (i.e. the sum of "organic" and "speculative" components) on urban net worth (net of financial debentures and other liabilities).

The short-term perspective of most of the urban stakeholders' efforts and the overlapping of many uncoordinated objectives, actions, measures, approaches of the urban players, however, render particularly complex the achievement of the above-mentioned purpose due to lack of coherent approaches and information. The preparation of urban financial statements representing the five types of capital mentioned above and the accurate collection of critical data and information through the digital agenda appear as necessary steps to prepare diagnostic and prognostic scenarios which enable the public sector operators to operate forecasts on the likely evolution of the urban systems economies.

This information is necessary to facilitate the taking of correct investment decisions by urban stakeholders. In this context, a renewed investment in the "smart city" concept, can represent an important and effective "second best" capital allocation device, in order to compensate the lack of discipline and direction normally provided by the activity of central banks in an orthodox monetary context.

## 3. IMMANENCE, TERRITORIAL INNOVATION AND SPATIAL PLANNING

The interaction, multiple and dynamic as well potentially and co-creatively innovative, among a variety of urban and territorial stakeholders (i.e. holders of some stakes of urban/territorial capital), is fundamentally characterized by its social (and environmental) immanence. As such it necessarily requires a radical reconsideration of the assumptions implicit in most of theories and practices of spatial planning, conversely historically prone to transcendence, like indeed many other social and design sciences (Bateson 1972a; De Bonis 1999).

To retrieve an immanent horizon in planning research we can however refer to a relatively recent contribution of J. Hillier[1] (2005), in which she first of all recognize that «Faced with conflicting and seemingly incommensurable decisional imperatives, organizations are under constant pressure to adapt or transform creatively» (Hillier 2005, 272). More generally, i.e. referring not only to "conflicting and incommensurable decisional imperatives" and to "organizations", we could say that the creative transformation (innovation) should always be thought as emerging from the interaction internal (immanent) to the some kind of "self"-individual, infra-individual (part of the self) or inter-individual/trans-human (the social self and

[1] On this topic see also the contributions of De Bonis (1999, 2001), essentially based on the philosophical approach of P. Lévy (1994, 1995) to the general question of the immanence.

environmental), rather than separate instances and higher (transcendent), since there is no other chance to "adapt themselves".

On the contrary, «As planning theorists and practitioners we seem to have had a pervasive commitment to an ontology of being which privileges end-states and outcomes, rather than an ontology of becoming which emphasizes movement, process and emergence». Nevertheless, such a commitment «... may begin to be dissolved by referring to Deleuze and Guattari's concept of "becoming", in which ideas do not come to order from abstract and/or external notions, but develop as part of practical, creative experimentation played out within and between economic and socio-political institutions» (Hillier 2005, 273).

With specific reference to the Deleuze-Guattari's key principle of "movement or change, immanence" Hillier also points out that in such a thought the "becoming" is bound «... to the unpredictable, indeterminate, never-accomplished actualization of virtualities» (Hillier 2005, 281). This also means that the change «... incorporates "traces" of its genealogical past, which both constrain and also create potential opportunities for the future» (Hillier 2005, 280). The conclusion is that «Planning's role is to make the virtual intelligible» (Hillier 2005, 281), but perhaps we should say, with Levy (1994), that it is rather a question to make sensible the purely intelligible, letting this latter pass through the bodies and the behaviors. And we could also maintain that the "actual", intended as the creative and not predeterminable outcome of a virtual meant in turn as a potential (Levy 1995), is implied and must be sought in the folds of the real, rather than in its utopian rejection, so typical of many planning theories and practices.

The waiver of any transcendental rationality is recognized by Mäntysalo, Balducci and Kangasoja (2011) in the (uncertain) revival of Lindblom's partisan mutual adjustment (PMA), which occurred with the advent of the theory of agonistic planning (Mouffe 1999, 2005). According to the authors, an essential complement of this latter in the direction of a revaluation of Lindblom's PMA, it is the "trading zone" approach (TZ), particularly in the declension ("trading with the enemy") of P. Galison (2010).

We leave now aside an explanation of why we do not consider the approach TZ/PMA complementary to the agonistic one[2], but rather potentially alternative and also more productive, to underline that, according to Mäntysalo et al. (2011, 267), the main contribution of Galison's TZ consists essentially in placing at the very center of attention, or rather of trading, the frameworks of exchange between the different systems of meaning of which the "enemies" are bearer rather than the systems themselves. Frameworks able as such to promote locally coordinated interactions even between enemies (or at least adversaries[3]), which may therefore be particularly pertinent also for "local" (or localized) planning practices, similarly interpretable as "exchange languages" through which "thin descriptions" of ideas, proposals and opinions can be communicated between different groups.

In this regard the cited authors point out - and we believe this is a fundamental notation - that the physical nature of the object of planning, i.e. its nature of place that connects the various stakeholders precisely as each of them "holds" a stake (Healey 1997)[4], is a crucial component of this trading zone of planning.

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2 For a slightly more in-depth critique of the agonistic theory see De Bonis (2013).

3 According to Mouffe (1999, 755) it can be said that the aim of democratic politics is precisely to transform antagonism between enemies into agonism between adversaries, this latter to be therefore considered as "legitimate enemies".

4 Let us note that it is not even necessary, for that purpose, to materially "hold" a stake of physical space if this latter is interpreted as a non-linguistic means of communication (medium), interconnecting anyway the different "urban entities", independently from the linguistic meanings (and "values") attributed to it by the same entities (McLuhan 1964; De Bonis 2001, 2009).

Nevertheless, it is worth highlighting that Galison's approach ("trading with the enemy"), to which Mäntysalo *et al.* (2011) refer, could be reformulated in much more general terms than those strictly related to an "enemy" (and "adversary" as well); as it could be assimilated to the conditions of contexts, by now inevitably "intercultural" although not necessarily multiethnic, in which planning processes ordinarily take place Bateson 1972b; De Bonis 2004). Moreover, taking into account the theory of Trading Zones – and assimilating these latter to physical spaces - implies in our view the recognizing of the residual role, although not needless, of professional planners and institutional policy makers in the making of (urban/territorial) policies (Lindblom 1990; Crosta 1998).

A residual but not useless role that can be precisely associated with those exchange frameworks, to better interpret in our opinion as media rather than languages (McLuhan 1964). And through which, anyway, they could inter alia be integrated and connected both the "expert" information layers aimed at building the above "urban financial statements" (see par. 2), and the expressions ("images") of the myriad of interacting entities in the urban/territorial context. Images from which, eventually, some visions can emerge able to orient and polarize, together with the mentioned statements, the multiple processes of molecular interaction (Lévy 1994; De Bonis 2009).

## 4. LIVING LABS AND MODELS OF INNOVATION GOVERNANCE

European policy is currently undergoing a significant transformation from an emphasis on the "knowledge economy" and competitiveness to an approach in which innovation is the driving force for achieving social and territorial cohesion in a "smart, sustainable, and inclusive" society. In this metamorphosis from an essentially sector policy (research) to a transversal policy (societal transformation), innovation itself takes on a deeply spatial dimension. If technological innovation is based on research facilities and knowledge capital, non-technical, institutional, and social forms of innovation are based more on territorial capital (in the broadest sense), and their processes and outcomes are far more a function of territorial specificities.

In this context, the Living Lab model emerges as an operational framework for the governance of such territorial innovation processes, having itself undergone a significant transformation. Born in 2006 as a user-driven research methodology in Information and Communications Technologies (ICT), notably for mobile (now 'smartphone') applications, the Living Lab co-design approach has grown and developed through a range of variations in different settings. The methodology has thus been applied in universities (to promote student engagement), rural community action groups (to strengthen local development with technology innovation) and, more recently, as a tool for local and regional policy. This latter model, often referred to as a Territorial Living Lab, aims to promote territorial innovation as a shared objective in the public interest, capable of generating initiatives that both increase the yield on territorial capital and increase citizen well-being and quality of life as a result of engaging all stakeholders in co-designed innovation processes of value creation.

As Living Labs assume a quasi-institutional framework for the experimentation of new approaches to leveraging urban and territorial capital, transcending the episodic nature of bottom-up initiatives, the issue of governance emerges as a key for guaranteeing the sustainability of territorial innovation processes. From a Living Lab perspective, the rules and processes of governance itself can be seen as situated in a dialectic driven by differing stakeholder perspectives. In regional policy, this translates into the structural conflict between the need to monitor and control the use of public money on the one hand, as against the need to guarantee the openness and creativity of emergent innovation processes on the other.

This "trading zone" can essentially be seen to negotiate between three governance concepts related to territorial innovation. The first 'techno-commercial' model focuses on innovation as the development of new products and services in a logic of efficiency as applied to market dynamics, standards formation, common methodologies and best practice, using rules and regulations, fiscal incentives or direct financing of research as the main policy instruments. This is primarily a top-down approach typical of industrial policy, as reflected in many EU and regional research policies and agendas. The second 'politico-institutional' model focuses on more ethical and spatial policy objectives, such as transparency, fairness, inclusion and cohesion, aiming to influence strategic policy processes in a multi-level model in which innovation is linked to the bottom-up approach. The third 'socio-emergent' model, derived from the Open Source movement, the 'hacker ethic', and emergent self-governance principles, holds innovation as a socially driven, organic process that becomes an ethical principle in itself, with governance embedded in scalable and resilient network ecosystems.
While these three governance models generally consider themselves to be mutually exclusive, the new policy approaches – for instance by requiring to include social innovation in regional innovation policies – leave little choice but to work towards a reconciliation (even a 'partisan mutual adjustment'). This is essentially the mandate of a Territorial Living Lab, for which governance is itself a matter for experimentation and innovation, within the objective of combining capital investments in urban regeneration with the need to attain an effective yield on such investments through diffused and citizen-based ownership of the urban innovation they aim to spark off.

## 5. TERRITORIAL LIVING LABS FOR URBAN REGENERATION

The trend towards spatial interdependence between the places of production of goods and those in which entrepreneurial ideas and social demand are formed has a significant impact on settlement trends in our urban-territorial systems. Economic production is changing shape to address and overcome the crisis, while the social systems are left alone to assure the survival of welfare and quality of life. The delay in any effective political response to these deep structural changes taking place is by now threatening the very political cohesion of the European Union. The different dimensions of community, city, territory, region, Member State, and European Union are by now separate and increasingly distant levels. Government action is inadequate to address the fragmentation caused by positive and negative effects of transformation in the modes of production, the lack of any connection between entrepreneurial activity and economic policies, and company failures that seem to have no effect on natural selection while simply leading to a desertification of prospects of employment. It thus becomes urgently necessary to experiment new methods and above all development policies that abandon the ambition of guiding social, economic, cultural and environmental change, instead building on concrete examples of successful interactions and dynamics in both the socio-economic and the spatial-infrastructural dimensions.
Living Labs, considered as effective ecosystems of agents interacting co-creatively, appear poised to constitute a useful reference for the multi-scalar integration of levels of governance. The diffusion of basic ICT technologies and services in ever-broader spectrums of the population, despite the ample margins for improvement of the web, is transforming the potential of self-organisation. The act of sharing a problem statement or entrepreneurial idea is today the starting point for building a start-up company or community of interest capable of reaching important objectives independently of any institutional support. These processes are born of dialogue more than physical proximity, addressing more or less severe issues of survival or job creation in a process of mutual support. The net is a space to raise issues, search for solutions, find someone to listen, and build together a common initiative that satisfies and convinces the

different stakeholders involved. These simple communities do not need to make any social or political claims in that their requests for support are not directed towards institutions but rather to the consensus of the broader arena of the social networks. Only in a second phase do the institutions step in, providing support and promoting the contribution of external private capital.

The space of social interaction thus extends from the traditional public spaces of streets, square and public buildings to the relational dimension of communication. What is at first a cloud of ideas and visions is driven by a collective tension towards real action, changing a negative situation or grasping an opportunity based on the forces present at a given moment in a given urban space. These urban transformations are quite different from the disruptive transformations caused by heavy investments in grand projects led by local or global funds. Compared to these projects, which in the space of a few years radically change the urban landscape with skyscrapers and immense containers of technology, the transformations of urban spaces brought on by Living Labs appear nearly invisible. Differently from the Business Centres, Olympics, World Cups, and Expos, however, Living Labs are proving capable of acting positively on the connective social fabric of a city, despite their fragmentation and their almost random urban-territorial distribution, far from the grand designs of governments and agencies (far then from urban planning). Above all, they are socially effective despite the apparent lack of resources (far from economic programming).

It is early to interpret and predict what the potential impact on urban and territorial systems would be if institutional planning and programming were capable of fully integrating the Living Lab approach. It is nonetheless important to reflect on the possible relations between these two heterogeneous dimensions: on the one hand the goals and actions of institutional programmes and on the other the spontaneous and unpredictable rise of ecosystems that freely generate co-creation.

## 6. SPACE_BASED INNOVATION IN THE CITIES

The stories collected by Jeffrey Hou (2010) offer a clear understanding of the ways in which the current social, political, economic and cultural challenges are faced in the city, by the cities; these ways are no longer simple spaces (physical or not) of contestation rather they are " insurgents" activities that, through self-produced spaces, temporary events, or even flash mobs, can trigger long-term dynamics of transformations. They are spontaneous processes with relevant potentials for radical changes; many of them are planned by a collective will that, being difficult to analyse, is characterized by self-awareness and therefore is able to be transformed into action.

The dynamics we are observing in many urban realities confirm the existence of important innovation energies. These energies are manifested mostly at the sub-urban scales, neighbourhood or perhaps even more micro scales; it seems to be associated to a collective, spatialized, and localized will, that is unable to distinguish between the private and the collective or better able to integrate private and collective within a broad vision of "citizenship making". At these scales a new way of making the city is emerging: the city is not designed, it is rather experimented; the city is not a service offered to citizens, it is rather created by the citizens through place making experiments; the city is able to give life to bottom -linked institutions (Moulaert 2010) that can sew , and densify, the relationships between citizens and governments; the city is created through the activation of areas in which the rules can be temporarily suspended and new ways of "city making" can be experienced (these are areas of Utopias Temporaire).

The identification of some common characteristics of such (sub)urban innovation processes helps us to refine the concept of Urban Living Lab. Urban Living labs are environments in which innovation is spatialized, i.e. it is generated within a specific spatial environment (not necessarily "for" this specific environment,

although in many cases the improvement of the context is the main aim of the initiative). The scale of these environments is smaller than the urban scale; nevertheless they are able to draw prospects for systemic changes at the scale of the city; often, in fact, they have viral effects that move innovation from the micro-urban scale to the larger city. These are environments in which the openness of innovation manages to transcend the organizational infrastructures that are traditionally operating in the city and to invent new institutional figures for, or ways of, dialoguing between citizens and institutions. Here openness is enhanced by a dynamic nature that is revealed through new forms of temporary partnerships (public-private or public-private-citizens) that, rather than being based on formal agreements, are embedded, hinged in the action: the action becomes the measure of mutual commitment, temporary or long-term, that each actor can guarantee. Yet, in these environments, the openness guarantees experimental approaches that can range from small practices intervening in the city to the experiment-based development of urban transformation policies. Finally, in these Urban Living Lab technologies can play different roles; unlike in the original concept of Living Lab, technologies can be not simply drivers of innovation but also (and perhaps especially) tools that enable or means capable of activating the energies of innovation that are embedded the city.

In many ULLs, it is possible to observe that public administrations are involved in many different ways: they are asked to approve, support, or collaborate actively and their involvement varies from very light engagement (for example, in those cases where their role is limited to sponsor some initiatives) up to deep responsibilities assumed with important resource investment and even complex public decisions.

While local public adiminstrations' role is easy to recognize inside the Urban Living Lab environments, it is not equally easy to understand whether, and to what extent, they look at the Urban Living lab experiences as important contribution to the development of the urban smartness. In most cases it appears that there is no-institutional awareness into this direction; this lack of awareness may depend on their small scale; still, it may also emerge from the distance of many of these initiatives from the most spread concept of urban smartness.

The many challenges that local administrations are called upon to deal with are increasingly highlighting the need and importance for the city to activate, attract, manage, and support innovation. How to strengthen, or better, to develop the innovation capacity of a city towards an "integrated" smartness? Louis Albrechts (2013) recently reiterated: "More of the same is not enough!" In addition to this awareness it is clear that no isolated answer or solution, whatever bright and/or general it may appear, is enough; this also suggests that the sub-urban scale of living labs is the one in which the skills and energies of innovation should be fostered, activated, incurred. It is at this scale that it seems possible for the city to experience multiple, different smart solutions. It would seem, therefore , that the most significant challenge for local governments is precisely to be able to look at the city as a large, however complex, experimental laboratory to which every living lab contributes.

A perspective of management and governance of a smart city based on experiments implies in practice at least three areas in which the action of local governments needs to be rethought: 1) the regulations, 2) the policies and 3) the forms of agreement with citizens and private actors. Many activities in the space of the city are governed by a system of rules that in many cases do not appear adequate to guarantee the life to some of the forms of innovation towards smartness; these forms of innovation have started rooting in the cities although somehow violating rules and regulations. Without compromising the value of social and collective rules, public authorities have to find out how to develop new rules, or forms of rules, that are able to consider the legitimacy, at least temporarily (consistent with the experimental perspective), of ways and forms of action in the city, ways and forms unusual until today.

The reflection on the rules does not differ much from the one that we can start on urban management and transformation policies; it obviously becomes more complex due to the link, which often policies build with values systems. An experimental nature of policy-making requires a significant integration of the focuses: the policy object and the policy process, the policy goals and the policy making. This perspective was already evident in the reflections of Pierluigi Crosta (2006), but it is now enhanced with a strategic significance of "value creation" that goes beyond the more usual perspective, sometimes prevailing, of "values guaranty". The perspective of experimenting at both the level of regulation and that of policy-making inexorably imposes a rethinking of the ways to manage and deal with the relationships between governments, citizens and private actors.

Many formal devices are already available that substantiate different ways of interaction and agreement between different subjects and this somehow helps; some experiences, however, have shown that when the interaction between these subjects happens in a experimental environment, a lower degree of agreements formalization is preferred. When there is a low level of formalization the responsibility mechanism is no longer guaranteed. Therefore it is necessary to imagine new models of "responsibility" of action in the public sphere that does not mortify innovation initiatives such as those emerging in the cities.

The challenges facing local governments can all be summed up in one question: how can the government take advantage of the learning opportunities offered for the urban scale by the numerous smart, innovatiion initiatives that are not at all limited in their potentials by their non-urban scale? A city that is smart, or able to innovate, is a city capable of civic intelligence (Schuler 2013) i.e. a city capable of experimenting and then learn collectively and it is in this direction that local governments needs to rethink their role towards smart cities.

## 7. CONCLUSIONS

Whether with reference to an immanent view of planning and highlighting or to the links between monetary policy and spatial transformations resulting from urbanization produced by the global dynamics, it is easy to recognize the fundamental role played in the evolution of urban and territorial systems by a multiplicity of stakeholders interacting within distributed and generally uncoordinated processes.

The residual action of experts and public administrations should then focus on: i) defining some useful orientation frameworks aimed at enabling the aforementioned stakeholders to take appropriate decisions in terms of creation of urban well-being in the long term; ii) finding the suitable forms of interrelation, outside of any claim of exogenous control, with socio-economic entities related to the phenomena of co-creative innovation, such as the so-called Urban/Territorial Living Labs.

In both cases, it is not only to offer contributions to the coordination of socio-economic actions and of co-creative ferments, but also to overcome urban policies based on the one hand on economic policies of Keynesian-Fordist kind, potentially generating strong socio-economic instability, and on the other on transcendent conceptions of planning, by now unable to grasp the complexity of the co-construction processes of the contemporary urban phenomenon.

## NOTES

Although the paper is the result of the joint work of the authors, L. De Bonis wrote sections 1, 3 and 7, E. Leanza section 2, J. Marsh section 4, F. Trapani section 5 and G. Concilio section 6.

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