A critical approach to ICT to support participatory development of people centered smart learning ecosystems and territories

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ABSTRACT
This contribution aims at fostering a collaborative effort by relevant stakeholders - policy makers, entrepreneurs, researchers, teachers, students, etc. – to critically explore the role of ICT in supporting a participatory development of people-centered "smart" learning ecosystems, able to produce social capital and to drive social innovation and territorial development. All this assuming that: a) it can help in identifying the driving factors that in the past have produced time and space singularities (eg. Renaissance, Belle Epoque, Big Deal, etc.) capable to attract people to experience a collective state of "flow"; b) the smartness of a learning ecosystems is strongly correlated with that of its region of reference; c) smartness is an emergent property of any entity that interacts with ICT infrastructures but is not fully determined by this latter. Unavoidably, all this also implies a reflection on the interplay between globality and locality and, as well, virtuality and physicality.

Author Keywords
People Centered Smart Cities; Techno-ecosystem for smart communities; Smart Learning ecosystems; flow state; system smartness; social capital

ACM Classification Keywords
H.m Information Systems: Miscellaneous;

INTRODUCTING THE THEME
Since 2005 we are assisting to a rush to transform cities into *smart cities*. At present, however, still doesn't exist a fully shared definition of *smart city*: in the understanding of the majority a smart city is a sort of *dream-city*, i.e. a complex and optimized environment, or eco-system, where it could be desirable to live. Basically because this latter promises to maintain, and even improve the wellbeing of the society, exploiting information and communication technologies (ICT) as an infrastructural backbone capable to positively influence key factors like mobility, environment, people, quality of life and governance [1,2]. However, going beyond the most popular top-down functionalist approach a new vision of regional and city smartness driven by a 'people in place centered design' approach is emerging. Not by chance, recently we have assisted to a shift of the meaning ascribed to the adjective 'smart' to incorporate a higher consideration for the centrality of individuals, their characteristics, expectations, quality of the experiences and well-being and, as well, for the characteristics of the contexts in which they work and live, to include also its preservation. Not by chance if one takes into account the opinions of individuals/citizens on what a city should become in order to get smarter [3], one comes to the conclusion that traditional economy - although considered a booster of opportunities - does not represent a primary goal for people. In fact - beside the satisfaction of basic needs, the optimization of mobility and personal time, the circulation of information and a better support to culture and education - individuals consider the environment and the economic activities related to its preservation, together with a careful consumption of resources, the leading key-factors capable to sustain the territorial 'smartness'. Both territorial development and technology penetration are expected to be harbinger of a positive tension, perceived not only as an enabling factor but even as a driving force capable to foster creativity and innovation. All this supports the idea that the attractiveness of an eco-systems is determined by its state of flow [4]. By transliterating from a person to a context (schools, university, city, etc.), we can state that *a smart context is a context where the human capital* (and more in general each individual) *owns not only a high level of skills, but is also strongly motivated by continuous and adequate challenges, while its primary needs are reasonably satisfied* [5].

In this framework the interaction with the environment is moving from the metaphor *"being able to use"* towards the metaphor *"actively influence and critical build";* individuals transformed from consumers into *"digital enactive"* and produce an increasingly amount of *"traces"* and *"artifacts"* that actively contribute to the re-definition of places and spaces. Accordingly, learning cannot be considered any longer only a way to adequately train the human capital but should be considered as one of the driving forces of the "smartness" and if the well being of a

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community. The potential development of a smart eco-system, in fact, was found to be strongly related to the high-skill level of its inhabitants and, as well, to the possibility to attract and/or locally produce high-skilled people. For example in the case study discussed by Glaeser and Berry [6] the presence of a high density of high-skilled people in a given area turned out to be the driving factor of the economic development of that area. As an additional example, recently for the case of Italy, it was possible [7] to highlight the close relationship existing between smart cities/territories benchmarking and those of the corresponding universities. A similar study is under way for schools. Overall, the picture that emerges from such and other findings is not very different from what in all historical periods marked the refulgence of specific geographical areas. Let's consider, for example, the Renaissance in Tuscany. It was characterized by the concentration of high-skilled people: among them artists, artisans, traders, bankers and administrators. Knowledge and skills were acquired in a very diffuse and active manner, for example into workshops, and the most renowned artists were attracted not only by the highest reward but also by prestige and visibility of the proposed commitments i.e. by level of the challenges.

Coming back to the present, it is quite evident that schools, universities, and less formal leaning systems compose a learning ecosystems which value and potentialities are determined by the ability to produce social capital that, as well known, includes trust and sharing of meanings and goals and that cannot be achieved without intercepting individuals' expectations. In this context ICT, rather than acting as a tech backbone aimed at optimizing the consumption of goods (contents and time included), are expected to play a mediation and facilitation role to amplify the number of meaningful relationships, to disclose cultural models, symbols and codes. Learning, in fact, in a relational perspective [8], cannot be confined any longer neither in the minds of the students nor in restricted physical places, like those of classrooms or labs. This is especially true nowadays since by now the *web* represents the playground, although virtual one, where a new set of "quasi" self-directed activities take place and counterbalance the heterodirected ones usually proposed/organized by parents and formal learning environments. In terms of game theory we may say that the web represents the *Paidia* and counterbalances the *Ludus*. The main problem is that, due to its pervasive characteristic, the web embraces at the same time the meso-, eso, and macro- dimensionsalities [12] of the relationships among individuals and bodies. Such system of relationships, not necessarily identifiable as social capital, is usually very robust and may represent a veritable danger. Individuals, in fact - in particular the youngest ones - do not own always do not own always a sufficiently developed critical apparatus, able to disclose all characteristics of the environment and thus to activate the mechanism that leads to the free decision to accept or remodel it, and that is at the basis of the individual, and more in general, human development. In other words this means that the individual have to acquire the competences needed to tame the complexity of the present techno-systems and the mediation role of ICT to:

- foster awareness about complexity and its government (orchestration)
- support the acquisition of appropriate behaviors, skills & competencies
- promote open access to space, tools, services, practices, content/data, people/skills
- tame discontinuities (time - space/place - technological - process - learning practices)
- identify the driving factors of the smartness including those from the characteristics of local cultures and contexts
- support policy and decision making
- promote social innovation & learning, capacity building and a sustainable economy
- develop adequate monitoring and benchmarking approaches
- tame privacy, data control, security and safety

Just to list some of the hot topics for the close future. Topics that are in the agenda of the Observatory for Smart City Learning:

http://www.mifav.uniroma2.it/inevent/events/sclo/index.php

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