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Determination of the Smartness of a University Campus: the case study of Aveiro

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Abstract

This study introduces the reader to a "people centered" and multidimensional definition of the "smartness" of an ecosystem and to its bottom-up detection, that here has been specialized to the case of a learning ecosystem: a university campus. The methodology developed and validated by a European consortium composed by members of the ASLERD – Association for Smart Learning Ecosystem and Regional Development (www.aslerd.org) – has been used to benchmark the smartness of the Aveiro University, Portugal. Actors animating the learning processes and the campus' life – bachelor students, master students and professors – have been asked to fill an electronic questionnaire to detect their perceptions. The quantitative and qualitative data analysis, reported in this paper, allows to identify the overall perceived degree of smartness of the Aveiro University and to highlight actors' expectations on how to improve the smartness of the campus. The "affordance" of a smart territory is also presented and discussed, drawing on recent practices that promote rethinking universities based on the smartness concept.

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Keywords: Campus Smartness; Smart Learning Ecosystems; human-centric design.

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1. Introduction

The concept of ecosystem's smartness is acquiring an increasingly interest for university campuses. It is not by chance that new and old universities tend to use more and more the adjective "smart" to define their policies and, more in general, the campus as a whole. However the tendency is to attach, almost exclusively, a top-down infrastructural meaning to the adjective "smart", and to make reference to the Giffinger's indicators used to benchmark smart cities: i.e. smart economy, smart mobility, smart environment, smart people, smart living, smart governance" (Giffinger & Pichler-Milanović, 2007). In the recent past, other models have also been used in attempting to properly describe and, possibly, benchmark smart ecosystems, such as the Triple Helix (Etzkowitz, 2008; Leydensdorff, L & Deakin, 2011) and the three Ts (Florida, 2002) but, regardless of their appropriateness, their popularity has been, so far, quite limited (Giovannella, 2015a).

One of the problems common to all such models is the lack of strategies suitable to make emerge the relationships between the "infrastructural smartness" of the ecosystems and the human dimension.

A similar problem affects also all procedures that have been developed up to now to rank Universities, see the critical analysis presented in Giovannella, (2014) and *Global University Rankings Impact - Report II*, (2013). University rankings, in fact, do not consider in the underlying evaluation processes the perceptions of the university's actors: bachelor students, master students, professors, etc. -

To progress toward the inclusion of the human dimension one may consider another definition of smart territory: "a digital infrastructure within the physical city to improve, among other aspects, environmental impact, quality of life and economic growth". (Jensen, Michael ; Gutierrez, Jose; Pedersen, 2014) that integrate human, technological and institutional dimension and, as well, refer to the paper by Taewoo & Pardo, (2011) that promotes a conceptual shift by introducing the relevance of meanings in real interaction contexts.

Shifting the focus on campuses, to better understand the relationship between their smartness and the human dimension one may refer to various studies published by (Abuelyaman, 2008; Jensen, Michael ; Gutierrez, Jose; Pedersen, 2014; Jucevicius, Robertas;Patašiene, Irena;Patašius, 2014; Streitz, 2011). However to make fully emerge the human dimension and put in relationship territories and campuses we need to move some steps forward: we need to elaborate a definition of *smartness* and a benchmarking framework that can be adapted to investigate any kind of ecosystems, included those of our interest.

Everything that will be presented in the following make reference to definition of smartness given in (Giovannella, 2015b):

"*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*, i.e. those placed at the lower levels of the Maslow's pyramid ".

Starting from this definition a new bottom-up benchmarking approach, based on Maslow's motivational theory (Maslow, 1943) has been designed and described in (Giovannella, 2015b). To follow a questionnaire has been developed and adapted to monitor the smartness of territories, schools and universities. While referring the reader for a detailed description to previous publications, here we resume briefly the procedure that has been developed. First internal and external elements composing a learning eco-system - infrastructures, services, social life, challenges, skills, etc. - and data typologies (subjective and objective, qualitative and quantitative) have been mapped onto the Maslow's Pyramid of needs, slightly redefining its inner layers. Afterwards, using such mapping as guidelines, a questionnaire aimed at collecting the opinions of all actors operating within a learning eco-system have been elaborated to collect both numerical indicators and textual opinions on all levels of the Maslow's pyramid of needs and, as well, parameters strictly related to the achievement of the state of flow (Czisikszentmihalyi M. 1990).

The questionnaire is available as part of (Giovannella, C; Andone, D; Dascalu, M; Popescu, E; Rehm, M; Roccasalva, 2015) and has been validated recently by investigating the degree of smartness of six European universities. In the following we report on the application of this method to the Aveiro University that allowed to compare this latter with the others investigated previously and to detect the feeling of the local actors on how it would be possible to achieve a higher level of smartness in the campus.

How individuals whish the campus to be transformed? How can technology improve quality of life in the campus ?

These are some of the questions that one may wish to answer and the analysis of the questionnaire's outcomes demonstrates how the feeling of the actors can be transformed in a collective fresco capable to make emerge problems, opportunities, wishes and expectations.