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Can a small city be considered a smart city?

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Abstract

The term "smart cities" has been widely used over the last years. The main goal of the smart cities initiative is to enable cities to manage their assets efficiently, investing in innovation and creativity as a way to promote sustainable and inclusive urban development. When tackling such an emerging and promising area, it is important to know whether all cities can be fitted into this concept regardless of their size or location, thus promoting social equity throughout the whole territory. The Portuguese Smart Cities Network includes 46 municipalities throughout the national territory. There are a lower number of such cities located in the interior part of the country. This was one of the reasons leading to this research work aiming to find out whether a small/medium inland city can be considered a smart city. There are a number of measures of action that a city can explore in order to be considered a smart city. Considering the place under study, the aims of this research work are to ascertain what measures are being adopted to increase the efficiency of the city's resources and services management and to what extent it can be considered a smart city.

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1. Introduction

A general analysis of the evolution of cities and urban areas awakes us towards a new reality. At present, over 50% of the world population lives in urban areas and this figure has been increasing significantly, note that only 34% of the world population was living in urban areas in 1960. It is already known that in Western Europe, about 80% of the population will be living in urban areas by 2020.

This reality gives cities a new commitment. How will they turn urban spaces into more innovative, participatory, connected and sustainable places without neglecting their populations' quality of life?

The answer can be translated into several designations, among which: intelligent and/or sustainable cities; new technologies communities; smart cities; etc.

One thing is for sure, the intention underlying any of these situations is to make the city a community which can be friendly to people and for the people.

The concept of "smart cities" has come to dominate both the academic literature and the public policies agenda. Several worldwide projects are being conceived and implemented, with different characteristics, motivations, maturity levels, government models and funding sources. However, the motto is always the use of information and communication technologies to make urban life easier[1].

Nonetheless, how can we define a Smart City? The International Data Corporation, defines a Smart City as a city which has stated its intention to use information and communication technologies to transform its modus operandi in one or more of the following areas: energy; environment; governance; mobility; buildings and services. The main goal of a Smart City is to improve the quality of life of its citizens ensuring sustainable economic growth[2].

An intelligent city can be defined as a multidisciplinary domain gathering several fields of action and skills in order to achieve development. These fields are at their core supported by information technologies, hence the designation of intelligent, but they must also be strongly targeted at a governance model anchored in civic participation and they must be a source of economic development[3].

Nowadays, cities are facing several challenges related to climate change, demography, energy dependency and social exclusion, which calls for new urban development paradigms. In this context, concrete smart city projects are being implemented around the world and an exponential growth is expected in the smart city market[4] .

The present paper is structured as follows. After this introduction, a brief outline is given of the Portuguese Smart Cities Network. We then describe the several areas in which municipalities can act in order to be considered Smart Cities. This is followed by the presentation of the municipality under study as well as of the research method used in this study. Afterwards, we present the main results of the study. The paper ends with the conclusions drawn from the research and with suggestions for future works.

2. The Portuguese Smart Cities Network

The Portuguese Smart Cities Network (RENER) was started in 2009 with 25 municipalities as a pilot network for electric mobility launched by the Portuguese government. The cities acted as test sites for electric charging points and intelligent mobility systems[5] . Among these 25 municipalities, 18 are the Portuguese district capitals, and the others are the cities of Vila Nova de Gaia, Almada, Loures, Sintra, Cascais, Torres Vedras and Guimarães.

In 2013, RENER invested in the thematic extension of its action, incorporating other areas such as energy efficiency, renewable energies, water and waste management, governance and citizenship, culture and tourism, all in the sense of a holistic model of smart cities. Over the last year, it has also promoted the geographic extension of the network with the integration of 18 more national municipalities, thus gaining scale, critical mass and cooperation capability[5] .

The Portuguese Smart Cities Network was thus formalized in November 2013 as a natural evolution of the Renewable Energy Living Lab (RENER), which had been created in 2009 by INTELI – Association Intelligence in Innovation.

In 2015, the network incorporated three more municipalities, namely Macedo de Cavaleiros, Miranda do Douro and Lagoa.

The Portuguese Smart Cities Network is currently composed of 46 municipalities throughout the national territory.