

Online Smart City Simulator^{*}

Ricardo Martins¹[0000-0002-3776-9302], Henrique Santos²[0000-0001-5389-3285],
Joel Barbosa³, and Carlos Silva⁴

¹ DigitalSign, Guimarães, Portugal rmartins@digitalsign.pt

² Minho University, Guimarães, Portugal hsantos@dsi.uminho.pt

³ Minho University, Guimarães, Portugal joelbarbosa10@gmail.com

⁴ Minho University, Guimarães, Portugal carlosjbsilva1996@gmail.com

Abstract. With the technological revolution we are living in and with the recent introduction of the Internet of Things (IoT) paradigm, some new applications start to be researched, becoming the focus of important innovations. Smart City is such an application, including functions like keeping track of environmental factors, remotely and smartly controlling of traffic lights, and following the trash level in rubbish bins, to name just a few. In this context, Smart means being capable of analyzing huge amounts of data and taking better decisions. This natural evolution (supported mainly by technology miniaturization, bandwidth access and ubiquity) is happening faster than expected, leading to some real practical applications of Smart Cities, but in a very vertical fashion and not exploring the possibility of dealing with all the information that can be provided in such an environment which means not being as smart as possible.

Everyone and everything becomes connected, expecting to be supported by an infrastructure able to deal with a lot of low-level information, but for which current solutions were not properly tested, or are not available. In other hand, since the city is the place where everyone lives and works, it should not be used as a prototype for testing purposes, which obviously limits de development capacity.

Trying to address the above limitation, this project aims to provide a proper workbench, where several devices can be simulated, disposing also a set of metrics to benchmark alternative solutions for Smart City architectures. Furthermore, as the simulator runs fully online with no restrictions, it is expected that users can also test different application protocols. To promote a common simulated physical environment among devices, a service-based platform was developed to simulate devices sensors information source. These services also run online and are intended to allow users to develop their own services, or even test/create mathematical modules to shape different services. Finally, all the devices can be seen online in a common attractive and dynamic city map, holding the public's attention, and also serving for educational purposes.

Keywords: Smart City · Internet of Things · Simulation · Online · Cyber Physical System.

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