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Connecting physical things to a Smart City-OS

A Smart City can be seen as a system in which different Internet of Things (IoT) solutions coexist and cooperate. According with this vision, the number of IoT deployments is, nowadays, in continuous expansion and it involves disparate scenarios, from street lighting, waste management, etc. However those initiatives are standalone, based on different protocols and standards, while the Smart City concept requires, on the other hand, integration and interoperability among all its stakeholders. To face this problem, in this paper we introduce the VITAL-OS architecture, that can monitor, visualize, and control all the operations of a city. Then, we present a practical use case of connecting a Sensor Network to this OS and we describe eCACHACA, a ranking mechanism that facilitates the discovery of services provided by each sensor. Performance has been evaluated via experimentation on the FIT IoT-LAB, and results demonstrate the effectiveness in the discovery of resources.