



TILAS

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<https://www.celticplus.eu/project-tilas/>

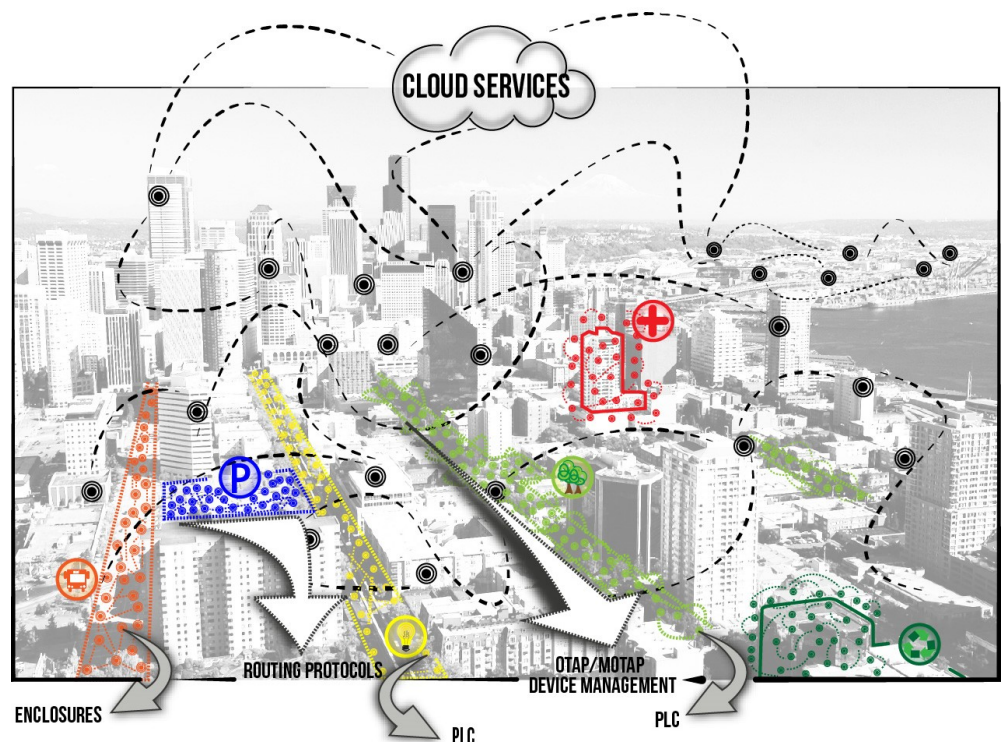
Technology Improvement for LArge scale Smart cities deployment

TILAS project objective is to exploit the initial outcomes of different Smart City related projects with an associated large-scale IoT (Internet of Things) test-bed deployment. Thus overcoming the problems derived from moving from typical experimental laboratory tests to integrate large scale ones.

Main Focus

The smart city scenarios have raised new challenges derived from the large amount of devices (networking, power, management and security) and also from how these devices share and make available the information they produce. These problems were not suffered in controlled environments and small deployments and require specific solutions for addressing the leaks detected so far. Within the

framework of TILAS project these topics will be deeply studied thus proposing beyond the state of the art mechanisms so as to solve the selected problems. The solutions will cover the development of effective cloud services able to handle the amount of data generated in such deployments; a common middleware aiming at the efficient delivery and exchange of data between devices and servers, optimization of routing protocols including security features, adoption of effective device management procedures, remote reprogramming of nodes with new OTAP and MOTAP protocols; the integration of heterogeneous technologies; and finally the development of packaging solutions integrated into the city, reducing visual effect without affecting radiating elements characteristics.



Approach

The TILAS project will develop solutions mainly focused on two big fields of action: Network level improvements, and Device level improvements. A subset of the technical solutions developed in the project will be integrated in a real demonstrator.

Network level improvements

- ◆ Deployment of a common middleware. The objective with the deployment of a common middleware is to create a new communication and data abstraction layer capable of communicating with different devices with different protocols and to provide common data structures to be able to integrate the devices easily into the developed applications.
- ◆ Optimized Routing Protocols. TILAS proposes a new routing protocol between machines (i.e. sensors, robots, etc.) with respect to the i) node mobility, ii) energy consumption and iii) the Quality of Experience (QoE) perceived by the end-user.
- ◆ Security at network level. The project will create adaptive and self-protective security solutions that can be used to secure systems and applications, which are built on heterogeneous sensors and devices.

- ◆ Cloud services. The objective is to create a common cloud based architecture. The solution focus on offering a way to access information to the users, but also the possibility of dynamically configure the cloud resource needed for applications following IaaS paradigm.

Device level improvements

- ◆ Optimized device management. The objective is to design and develop an open platform for WSN management in the framework of smart city applications.
- ◆ Over the Air Programming (OTAP) and Multihop OTAP. To achieve an efficient protocol, new intelligent algorithms will be proposed in order to take into consideration the quality of monitoring (detection and false alarms probabilities), connectivity and network lifetime.
- ◆ Optimized device enclosures. The main objective is to identify proper enclosure solutions which allow embedding radiating elements with the objective of guaranteeing optimized radiation patterns and reducing the significant visual impact that a massive IoT deployment might cause.
- ◆ Use of heterogeneous technologies. The integration of wired

and wireless solutions enrich the possibilities of offering global services for Smart Cities thus reducing the impact, cost and increasing reliability.

Impact

The TILAS project will create solutions to overcome the already detected technical problems in current large scale SmartCities deployments. The demonstrator will highlight the main achievements in the different fields including figures that asset the benefits of the proposal in terms of capabilities and economic savings compare with existing solutions.

About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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