

EDITORIAL

The world's population increases every year and resources are limited, consequently the humanity faces the need to reinvent the way of living. As population grows, it is expected that in the coming years, the majority of people will live in urban areas. Thus urgent need to have cities where the well-being of people and the sustainability of the environment can be guaranteed [1]. In the last decade, the integration of sensor technologies, mobile internet, and information technology, has allowed the development of countless systems seeking to achieve the aforementioned objectives for the cities of the future. **A Smart City** can be defined as one that is able to take advantage of its own data, produced during its daily operation, in order to generate new information that allows it to improve its management and be more sustainable, more competitive, and offer better quality of life, thanks to participation and collaboration of all agents involved [2].

A broader definition of a *Smart City* is the one that can be called intelligent when investments in human and social capital and modern ICTs lead to a sustainable economic growth and a high quality of life, as well as the rational management of natural resources, through participatory government [3]. *Smart Cities* are the result of the increasingly urgent need to direct our lives towards sustainability, taking advantage of infrastructure, innovation and technology, to reduce energy consumption and reduce CO₂ emissions. In a similar way, *Smart Cities* use a variety of resources such as photovoltaic panels in the communities, means of transport and electric vehicles, windmills in street lamps, solar panels for traffic lights or signals, promotion and development of the use of bicycles; small acts that lead these cities to become more efficient and sustainable [4]. In the *Smart Cities* mission approach, the main objective is to promote cities that not only provide basic infrastructure and decent quality of life for their citizens, but also act as examples for the establishment of emerging life. Likewise, a smart city includes the application of "smart" solutions, focusing on sustainable and inclusive development. With the ability to take advantage of the technology that leads to "smart" solutions, their applications would allow cities to use ICT and data to improve infrastructure and services [3].

As with other applications of the Internet of Things, *Smart Cities* require a set of devices, sensors, communications networks, storage and processing capacity, and solution management platforms to improve the provision of city services. Specifically, the sensors and actuators, which will be installed throughout the city, play an important role. The sensors have a large capacity for data acquisition,

but require renewable power mechanisms, such as solar energy, to achieve scalability and minimize their impact on the environment. At the same time, the installation of large amounts of sensors and predominantly the generation of increasing volumes of data, will require network infrastructures that support high traffic as well as adaptation to different conditions according to the application and the types of transported data. Finally, with the reduced costs of solar panels and other unconventional electric power generation systems, such as wind power, homes, industries and in general, institutions begin to venture into electric self-generation. The resulting micro-grids need to be smart (Smart grids), not only for their efficiency but also to achieve integration with conventional transmission networks.

In this issue, the Revista Facultad de Ingeniería publishes 11 selected and expanded articles from two international academic events held in 2018, presenting developments, experiments, and pilots framed in the topics described above.

In September 2018, the I Ibero-American Congress of Smart Cities (ICSC-CITIES 2018) was held in Soria-Spain with the sponsorship of the Ibero-American Program of Science and Technology for Development (CYTED). The event was an opportunity to create synergies between different research groups in order to favor the development of *Smart Cities*, and contribute to their knowledge and integration in different scenarios, their possible development, and the strategies to address them [5].

The thematic areas covered in the congress were:

- Energy Efficiency and Sustainability
- Infrastructure, Energy and Environment
- Mobility and Internet of Things (IoT)
- Governance, Planning and Citizenship

Previously, in May 2018, the XI IEEE Colombian Conference on Communications and Computing, COLCOM2018 took place in the city of Medellín, Colombia. Also with the participation of researchers from other countries, IEEE COLCOM is the most important ICT academic area conference in Colombia, and aims to show the progress and development of the academic, scientific and industrial use of the different areas of telecommunications and computing. In this version, the main topic was "Future Internet". Information and communication technologies (ICT) are considered the driving force for the development

of a country, which reduces the digital gap. To achieve this, it is necessary to expand the coverage of access and transport networks, and provide services and applications that bring technology to society [6].

References

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