

IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Integrated Applications End-to-End Solutions (2)

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SPACE-BASED SOLUTIONS FOR SMART CITIES

Abstract

This paper is based on a team project of the International Space University, providing an international and interdisciplinary view on space for smart cities, with a special focus on the use of space data for the development of smart cities in Brazil (the host country of the ISU Space Studies Program in 2023) and other countries in Latin America.

The concept of Smart Cities (SC) is growing around the world. This concept uses technology to solve complex problems and optimize resource usage, thus improving quality of human life. The SC concept is often associated with the design from scratch of new urban areas based on efficient and sustainable technological solutions. However, existing cities have also been trying to promote innovation and adopt good practices following this concept. In Brazil, São José dos Campos became the first city to qualify as a SC. Several other Brazilian cities are working to achieve the SC qualification.

The reality in big cities in Brazil, but also in Latin America, Africa, Asia and other developing countries, deals with high population densities, irregular housing, vulnerability to climate change, reduced mobility, environmental and noise pollution, high crime rates, poor public services, and low sanitation. The adoption of SC solutions can help to address these cities' main issues. The UN is also concerned about the SC concept in its 2030 Agenda, under the theme of Responsible Cities and Communities, as part of Sustainable Development Goal 11 (SDG 11).

Modern technologies allow authorities to interact with community and city infrastructure, tracking how the city is evolving. Space data can play an important role in the development of SCs. Earth observation data provides information on key urban problems, while GNSS and satellite communication data provide opportunities for smart transportation, surveillance, timing, and improved (data) communication, including concepts like IoT.

This paper looks at the gaps between major problems and challenges of cities, and the solutions offered (or not yet offered) by space data capabilities in Brazil, Latin America, and the rest of the world. Moreover, it looks at how space technology can be used to learn, adapt and innovate, allowing cities to respond more effectively.

The presentation will include practical recommendations for cities to make better use of space data, for space data providers to develop better adapted solutions for cities, and for aspiring entrepreneurs and SMEs to build businesses based on integrated space data solutions for smart cities.