

IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Interactive Presentations - IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (IP)

Author: Mr. Ilham Suleymanov
Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

Mr. Nurlan Abdullayev
Azerbaijan State Oil and Industry University (ASOIU), Azerbaijan

LEVERAGING SATELLITE DATA FOR SUSTAINABLE URBAN DEVELOPMENT: A PARADIGM
SHIFT IN URBAN PLANNING

Abstract

The unprecedented urbanization of the 21st century presents both challenges and opportunities for sustainable development. As cities expand and populations increase, urban planners and policymakers are tasked with making data-driven decisions to ensure the sustainability and livability of urban environments. This abstract proposes a comprehensive review of how satellite data, as an innovative and powerful tool, is revolutionizing urban planning and development towards sustainability goals.

Satellite technologies offer a unique vantage point for monitoring urban sprawl, a critical issue for cities worldwide. Through high-resolution imagery, satellite data enables the precise mapping of urban extents, revealing trends in spatial development, encroachment on natural habitats, and the effectiveness of land use policies. This capability is vital for planning sustainable urban expansions, preserving green spaces, and mitigating environmental impacts.

Traffic congestion is a perennial challenge in urban areas, directly affecting air quality, energy consumption, and quality of life. Satellite navigation systems, integrated with ground-based IoT sensors, provide real-time traffic data, facilitating the optimization of traffic flows. By analyzing these data, urban planners can implement dynamic traffic management strategies, reduce congestion, and promote alternative, greener modes of transportation.

Resource management within smart cities is another area where satellite data plays a pivotal role. Satellite observations, coupled with Earth observation technologies, offer critical insights into water management, energy usage, and urban heat islands. By harnessing this information, cities can optimize resource distribution, improve energy efficiency, and enhance urban resilience against climate change impacts.

In conclusion, satellite data is a cornerstone for sustainable urban development, offering unparalleled insights that empower urban planners to make informed decisions. By integrating satellite-based applications into urban planning frameworks, cities can address the complex challenges of urbanization, achieve sustainability objectives, and foster environments that are livable, resilient, and conducive to the well-being of their inhabitants. This paradigm shift towards data-driven urban planning paves the way for a sustainable future, aligning with the UN Sustainable Development Goals and contributing to the global effort against climate change.