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Author: Dr. Francois Spiero
Centre National d'Etudes Spatiales (CNES), France

Prof. Su-Yin Tan
International Space University, France
Mr. Ritesh Jain
HE Space Operations, The Netherlands

SPACE TECHNOLOGY FOR SMART TRANSPORTATION AND MOBILITY

Abstract

Traffic congestion, less-than-optimal public transit infrastructure, and the inconveniences of transportation systems are common occurrences in many cities worldwide. Smart transportation systems are founded upon the communication of data and have been revolutionized by global navigation satellite technologies, the Internet of Things, electric vehicles and mobile technologies.

The participants of the Space Studies Program of the International Space University (ISU) – held at Rice University, Houston, Texas, during the summer of 2024 – have worked on a Team Project that explored present and future opportunities for space data and satellite solutions in the smart transportation and mobility sector. Such applications could integrate the use of additional technologies such as artificial intelligence, machine learning, augmented and virtual reality, cloud computing, and supplementary remote sensing data sources from drones. New innovations such as driverless cars, electric vehicles, service-based apps, and new forms of transport are all potential game changers in smart urban planning.

This paper presents the Team Project findings on smart transportation systems and identifies emerging space-related technologies (satellite data, location-based services, artificial intelligence, Internet of Things, etc.) that could positively impact the sector. Opportunities for the use of space data in improving the transportation, mobility, and logistics sector are addressed, while exploring case studies of smart cities along with current and potential future applications of relevant space technologies.