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Economic analysis of both actual and potential future benefits from space activities and applications to
nations and peoples. (3)

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THE ECONOMY OF SPACE DATA

Abstract

The space sector is witnessing a paradigm shift with the growing importance of the data economy. Consciously or unconsciously, for a person on Earth, not a day goes by without using data provided by satellites or relying on space infrastructures. Today, all sectors benefit from space, whether for telecommunications, Earth observation, geolocation or a combination thereof. With the emergence of new private players, the space becomes a new business development axis based on applications that use the full potential of data. Data must be available everywhere, all the time, quickly and at a large scale. This dynamic responds to a growing need for information, which is contained in the data. To meet these requirements, an unprecedented transformation of the architecture of the space infrastructures and of the of data is essential. This trend aims to create a data continuum between Earth and space. Earth observation and telecommunication are at the heart of these strategies. We are now seeing a change of scale with the planned deployment of constellations of tens of thousands of satellites in Low Earth Orbit (LEO) accompanied by appropriate ground infrastructures and AI. In the short and medium term, all orbits will be impacted due to the opportunities created by these new space actors and these new technical and financial capabilities. In coming decades, we can imagine the implementation of space clouds and many other applications that will leverage the potential au space data economy. The perspective being to create an Earth Digital Twin, based on an infrastructure enabling an ecosystem of data to live (via the creation, collection and processing of it) with multiple temporal (past, present, future) and spatial dimensions (different information layers with the same georeferencing system). We observe massive investments in advance to create this new ecosystem. Only the imagination will limit the potential applications offered by this global dynamic. At the same time, many challenges related to the organization, processing, security, ownership, quality, and traceability of data are emerging. This paper aims to address all these aspects by providing an overview of the market to identify the opportunities of the coming decade for the overall economy and society.