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Contribution of Space Activities to Solving Global Societal Issues (2)

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THE ÜBER-CONNECTED SOCIETY – THREAT AND CHANCE - FOR NEXT GENERATION
SPACE BASED SYSTEMS IN SUPPORT TO GLOBAL MEGATRENDS

Abstract

The development of our multifaceted global societies is shaped by several Megatrends, such as globalisation, health, individualization, new work, urbanization, mobility, safety and knowledge culture of which most depend on connectivity. Access to the internet is an essential precondition to enable the societal, economical and industrial change towards the digital society. Whilst the space sector always inherited support to these developments, it was traditionally a rather enclosed environment. The digitization is now demanding to deeply integrate space-based solutions into our digital world. In telecommunications the future network-of-networks needs to overcome a multitude of current fragmentations of technologies (e.g. fixed, mobile, satellite, fibre, wire, . . .), standards (e.g. 2G, 3G, 4G, 5G), regions (cross border regulations) and also in the service provision (individual contracts). The advent of so-called 4.0 revolutions in several economic sectors are creating even more complex scenarios for applications like the Internet-of-Things, cyber security and autonomous mobility on land, sea and air with the need for secure communications in today's cyber domain. Positioning services from space by GNSS systems is currently being combined with regional augmentation systems and local non-space solutions using Bluetooth or Wi-Fi based methods for example. In Earth Observation, innovative concepts for the cloud based operations of the potential plethora of next generation (very) small satellites and the exploitation of information from gathered imagery, radar and sensor data, like recently included in Amazon web services are opening completely new potentials for the space sector. Terrestrial solutions are getting more and more powerful, with very dynamic and quick innovation cycles. The space sector, without doubt, has unique additional capabilities in LEO, MEO and GEO orbits. Only if it can take up the momentum and get actively involved in the support of the Megatrends, we will see the success of the already initiated change. Satellites are increasingly becoming part of our critical infrastructures and have to be cared for accordingly. This paper gives a critical opinion on the transition of the space sector and provides a view on the demand for new approaches in design, manufacturing and operations, as well as the potentials of embedding services with non-space sectors to eventually enable addressing the current digitization of our über-connected society successfully.