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THE DIGITAL TRANSITION AND ITS IMPACT ON THE NEW SPACE SECTOR

Abstract

The impact of new technologies and digitalisation throughout the space value chain brings an array of new opportunities, but also new challenges. At the production level, for instance, artificial intelligence and robotics, as well as additive manufacturing, together with the use of COTS components, are allowing mass production of space objects, whilst autonomous operations resorting to AI and blockchain are also becoming increasingly relevant. Downstream, the provision of electronic communication services, of PNT and of EO services resorting to satellites is also being affected by the digital transition: IoT enabled by 5G, increasingly accurate location-based services and Big Data analytics and sharing, are all resorting to and harnessing satellite networks. Digital technologies are playing an increasingly relevant role in opening the space sector to new actors as they help in increasing efficiency and decreasing costs. They are thus an important element in the success of NewSpace companies, contributing to important technological and market evolutions such as small satellite constellations, reusable launchers, innovative downstream services, among others. The use of digital technologies in the space sector also has important implications at the regulatory level. This paper analyses such regulatory implications at two main levels. Firstly, with relation to access to activity, i.e., licensing of upstream and downstream activities, with a focus on space activities (upstream) and satcom services (downstream) as these areas are subject to specific provisions when it comes to market access. The paper examines the challenges of licensing space activities considering the digital transition and the new space trends, including with relation to special licensing regimes, requirements to be met (e.g., on safety, security, debris, frequencies and orbital slots) and the procedures to be followed (e.g., on time and costs), taking also into consideration the specific legal challenges of new technologies, especially of AI, IoT and Big Data. It further examines the provisions on market access for downstream satcom services considering the development of IoT and M2M and paying special attention to the EU framework. Secondly, this paper analyses the potential liability that may arise from space activities taking into consideration the use of autonomous systems and smart devices, the role of different stakeholders in the value chain (including manufacturers and providers) and how liability (and insurance) provisions may be impacted by and promote the digital transition. The paper concludes with recommendations aimed at ensuring that laws can be effectively used to encourage borderless innovative NewSpace activities.