# IOrT with Direct-to-Satellite Connectivity

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**Abstract**

As the demand for environmental data grows, monitoring remote areas like oceans and forests presents significant challenges due to the absence of traditional communication infrastructure. Therefore, this study focuses on developing a LoRa-based End-Device with Direct-to-Satellite connectivity, enabling reliable data collection from isolated regions. By overcoming connectivity gaps, this research contributes to enhanced ecosystem management and the advancement of digital twins for remote environments. Furthermore, it contributes to the field of the Internet of Remote Things (IOrT), which is a concept centred on smart, autonomous devices operating in remote regions.
Several companies, including Lacuna Space, are actively advancing these technologies, focusing on developing LoRa-based communication systems for the space industry, providing essential connectivity to areas lacking terrestrial network infrastructure.

**Keywords:** IoT device, LEO, IoT via Satellite, Direct, to, Satellite, LoRa.

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