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HIGHLY AUTOMATED FULLY VIRTUALISED AND SOFTWARE DEFINED GROUND SEGMENT OF THE KAZSTSAT MISSION

Abstract

The KazSTSAT mission was launched in 2018. Its distributed software defined ground segment is a good example of how a right combination of innovations can enable significant real-life beneifts in the efficiency and costs of routine and contingency operations, including the needs of the commercial services.

KazSTSAT spacecraft was designed and built by a first truly collaborative Kazakh-British team, demonstrating a wide range of experiments both on-board and on the ground. Following more than a year of successful in-orbit operations, Ghalam would like to share the lessons learned and practical results up to now.

The paper will discuss in detail the ground segment architecture and technologies contributing to its unique capabilities: full virtualisation, extensive automation using in-house developed tools, organic and dependable implementation of software defined radio in ground stations, and the software defined networks that are instrumental for the distributed nature of the ground segment.