EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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A MILLION SQUARE KILOMETER OPTICAL SATELLITE FOR KAZAKHSTAN

Abstract

The Republic of Kazakhstan is leveraging Earth Observation satellite capability to create a national system which supports the government with information gathering for its policy and decision making. The system will be implemented by a team comprising EADS Astrium and SSTL, and will include a high resolution mapping spacecraft and a wide-swath medium resolution multispectral mapping spacecraft. The project is the first collaboration between SSTL and Astrium since its ownership change and highlights how small satellites can be employed in complex satellite systems to complement larger spacecraft.

The Medium Resolution (MRES) mission will focus on delivering multispectral imagery of the Kazakh territory and other parts of the Earth. Its heritage lies in SSTL's previously successful SSTL-150 class missions that include TopSat, Beijing-1, CFESAT and the RapidEye constellation of 5 spacecraft. Furthermore the Kazakhstan MRES system shall implement some key subsystems from SSTL's upcoming NigeriaSat-2 mission to enhance the data handling and downlink capabilities of the satellite. This results in a spacecraft that is less than 200 kg in weight, can image and downlink 1,000,000 km2 of image data per day and has exceptional attitude control capabilities for its class. The satellite will use the imager that was successfully flown on the RapidEye mission.

This paper aims to describe the Kazakhstan MRES mission and satellite design. It will discuss the mission's heritage within the SSTL mission history and discuss areas where the design had to be improved to meet the challenging mission requirements.