

GISTDA's Microsatellite Project Plan

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ABSTRACT

High resolution, wide coverage and the ability to provide frequent revisits are known to be very beneficial for Earth Observation (EO). In general, high resolution and high coverage is easy to achieve with a large satellites. However, frequent revisit is not really achievable with a single satellite and there are clearly significant size/cost barriers to overcome to setup affordable satellite constellations. A single large satellite is complex and heavy which leads to high development, manufacturing and launch costs. These cost factors can be reduced by shrinking size and complexity. Thus, the satellite technology tends to move towards smaller scales such as microsatellites. EO microsatellites such as Disaster Monitoring Constellation (DMC) and RapidEye have already demonstrated their capabilities.

Thailand currently has in operation its Earth Observing Satellite Thaichote. This satellite has exceeded its design lifetime of 5 years and its successor is planned. However, due to number of parties involved and large budget, it has not yet finalised. Besides, the Geo-Informatics and Space Technology Development Agency (GISTDA) who is responsible for activities related to space in Thailand is considering microsatellite options. This is to ensure that in the future Thailand will own at least one operational satellite at a minimum budget. A Space Technology development plan has been initiated and a microsatellite is part of it. This is an indication that Thailand is foreseeing the benefits of low cost microsatellite and its capabilities.

The plan is to develop a 50kg microsatellite, suitable for applications such as disaster monitoring. The first 1-2 years, the focus lays on a simple optical payload. The second phase, 3-4 years will be on the platform integration and testing. Then the final phase will be compatible test and launch. In the future more complex payloads, multiple microsatellites or joint constellation could be considered. This development is also an ideal opportunity to start GISTDA's space-engineering venture as it is clear to us that developing and implementing our own technology and products is the key to success. Therefore, the mission plan will be emphasised on the capacity building, hand on development and technology transfer as well as applications. International partners with extensive experience in microsatellite development are significant to contribute for the success of this mission.

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