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## INCREASING THE VALUE OF SMALL SATELLITE PROGRAMS FOR DEVELOPING COUNTRIES

### Abstract

The paper will report on a different approach to execute small satellite programs in two ways to increase the overall impact of know-how transfer and the utilisation of the small satellites for developing countries.

Ensuring a multi-element approach is important to underpin the technology build up for new small satellite programs in developing countries and to assist in determining the business case for the space programs of emerging space nations.

Existing programs for small satellite technology consists of a satellite that is provided by a satellite supplier in a turn key program with training and know-how transfer as part of the program. Recently, new satellite engineering teams start out with cubesat missions to build up local capability. Existing models of utilisation is a single satellite or as part of the vendor constellation (DMCii).

A new approach for satellite engineering on the one hand and data sharing on the other hand enables small satellite programs to increase their value and hence contribute to a more sustainable capability establishment.

The authors are pioneering a small satellite engineering approach with existing off the shelf components interconnected to a standard bus that allows new satellite engineering teams to achieve an operational satellite in an early mission. The details of this approach with available components will be described as part of the paper.

Once small remote sensing satellites are launched, the effective utilisation of their image data is imperative to convince national sponsors for future programs. The experience reported on Sumbandilasat for example indicates the kind of mission obstacles that can occur at a satellite level. Even with full operational satellite capability, small satellites need to be combined into collaborative networks to enable operational data utilisation.

The paper will describe the two elements, satellite engineering based on proven components and data collaboration, that can significantly increase the value of a small satellite program. The paper will conclude with a cost-benefit model for adding the two elements to a traditional small satellite program.