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**The role of small satellites in sustainable development and in national Earth Observation systems.**

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Demand and interest in high temporal resolution satellite data has been increasing in the past year through a number of new commercial initiatives. This has been driven by the ability to build new business models now, using small reliable low-cost satellites to create valuable cloud-based data archives, which can be widely accessed. These systems plan to support the traditional Earth Observation services, but attempt to explore emerging markets in location based services, news and mass media, and market analytics. This has also seen the emergence of video-from-space systems. The focus in these systems is not the scientific quality of the imagery, but to fill the gaps in Earth Observation imagery and systems from traditional government and institutional satellite missions. These gaps include significant improvements in price and availability of imagery, as well as capability gaps in temporal resolution and coverage.

As the cost of ownership for space systems has come down, an increasing number of nations are also getting involved in operating their own small satellites, to get access to the data they need, and get it when they need it.  In 2014 over 50 individual nations have now launched a small satellite. In many cases this helps develop support and infrastructure for egovernment systems which can help in the review of the effects of national policies, help make policies and decisions based on real information, or monitor resources and events outside its own borders such as waterways, crops, pollution or illegal activities.

This paper will provide an overview of small Earth Observation satellite constellations systems which have been operational for well over a decade now, including DMC, RapidEye and COSMIC, and then look forward to the systems which are planned to become available. It is shown how such systems are utilised to gain benefits of higher temporal resolution and coverage in times of disaster, or as part of government, scientific or commercial imaging campaigns. The applications which are addressed through such constellations are outlined including precision agriculture, resource and environmental monitoring and meteorology. Examples are also provided on how the various nations are using such small Earth Observation satellites as vehicles for sustainable development and training.

The paper will also look towards the future and consider the trends in reducing costs and increasing capability. The SSTL-15 and SSTL-50 series spacecraft are introduced which are designed for automated manufacture and test to drastically reduce space infrastructure costs, and stimulate new opportunities for much more specialised and dedicated space missions.