

## INVITED LECTURE

# The Future in Space : Smarter, Smaller and More Cooperative Satellites?

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A paradigm change in spacecraft engineering can currently be observed: from traditional multi-functional, large spacecraft towards robust systems of networked, cooperating, distributed very small satellites. Similar trends emerged in computer systems since 1970, where the large mainframe computers were replaced by today's smart phones, networked via Internet to form the basis for cloud computing. In addition, modern miniaturization technologies support production of robust, cost-efficient small satellites with increasing performance in terms of their control capabilities. The deficits of miniaturization are to be compensated by advanced control, redundancy management and operations software. Those principles for future multi-satellite systems will be illustrated by examples of current formations of nano-satellites as cooperating sensor networks in space for application fields like Earth observation, navigation and astronomy.

