

## Is There a Need for Communications Satellites in the 21st Century?

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Since the beginning of the commercial era of satellite communications nearly half a century ago the telecom landscape has changed dramatically. In the industrialised nations optical fibre networks and terrestrial wireless systems dominate the infrastructure. Broadcasting on the other hand depends to a very high degree on satellites. New services such as HDTV and 3D television require more and more of the finite natural resource of the electromagnetic spectrum. A move to higher frequencies will therefore be inevitable. The Q/V-band is clearly the next frontier. Starting in 2012 wave propagation and communications experiments will pave the way for the future commercial exploitation of the 40/50 GHz bands. Free-space optical communications, successfully demonstrated for inter-satellite links, could also be used for optical feeder links in the future, making precious radio spectrum free for bandwidth-intensive applications.

Internet access by satellite, considered as an efficient way to support under-developed regions, still suffers from the high costs of satellite capacity. Advanced technologies such as smart antennas, dynamic spot beams, intelligent satellite payloads and adaptive transmission techniques could reduce the transmission costs significantly. This fact and new mobile and nomadic applications will ensure a safe market share for satellite communications, which is also an environmentally-friendly technology.



### **Biography – Otto Koudelka**

Otto KOUDELKA is professor at Graz University of Technology. He is head of the Institute of Communication Networks and Satellite Communications at TU Graz and head of the Space and Acoustics Group at Joanneum Research. His research and teaching activities are in the fields of satellite and terrestrial broadband wireless communications as well as space applications. He is PI of the BRITE-Austria nanosatellite mission and Co-I of the Miller-Urey in Space Experiment for the ISS. He is Austrian delegate to the COST Domain Committee ICT, acted on numerous working and advisory groups of European Space Agency. He is Member of the International

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