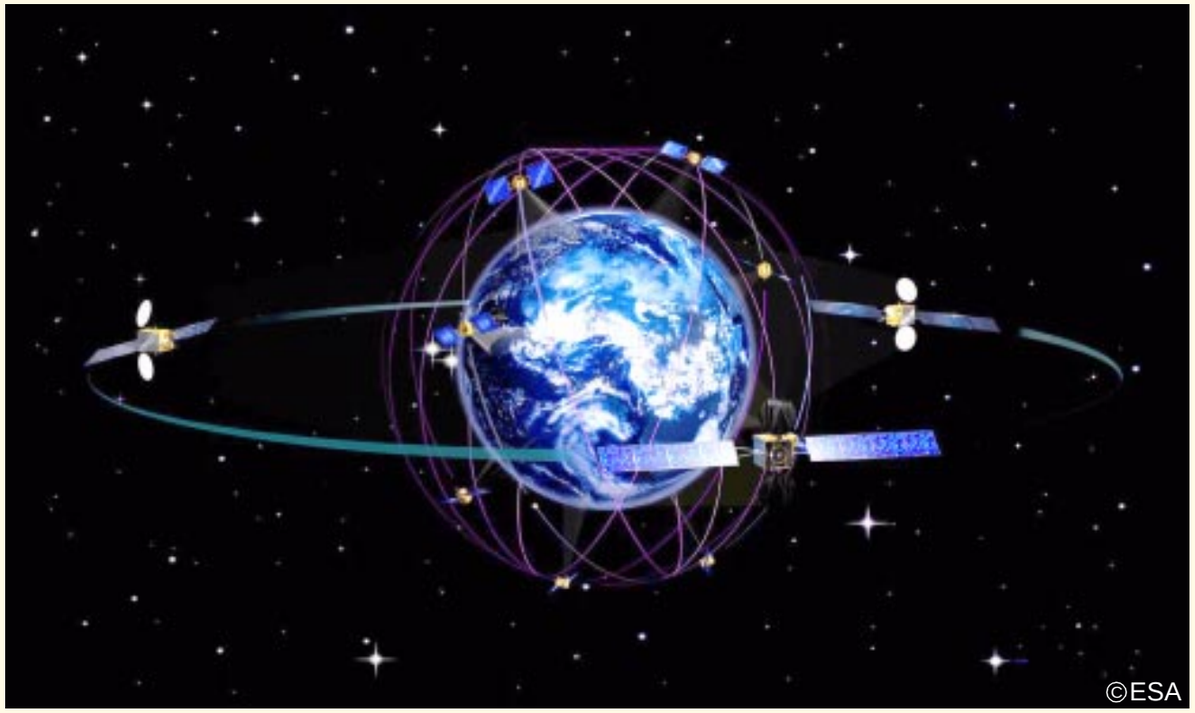
ATM-Sat – ATM Technology for Global Multimedia Communication via LEO Satellites

Objectives

- Development of an ATM-based multimedia communication infrastructure for Low Earth Orbit satellite networks
- Support of fixed, portable and mobile terminals
- Integration of satellite Internet services and applications
- Development of ATM, Media Access Control (MAC), routing, resource management and Inter-Satellite Link (ISL) protocols for mixed GEO/LEO constellations
- Development of active, intelligent Ka-Band (20/30GHz) antennas
- Experimental validation of project results by lab-demonstrator



characteristic \ type	LEO Low Earth Orbit	MEO Medium Earth Orbit	GEO Geosynch. Earth Orbit	HEO Highly Elliptical Orbit
orbit altitude	< 3.000 km	< 30.000 km	35786 km	perigees < 3000 km apogees > 30000 km
round trip time	< 30 ms	60 - 200 ms	240 ms	> 200 ms
typical number of satellites for global coverage	48 - 840	total of 7 - 20 in max. 3 orbit planes	3 -12	9
local horizon for an observer on the earth	up to 20 min	few hours	always	few hours
examples	Celestri, Global-star, Iridium, Sky-bridge, Teledesic	ICO, Odyssey, Orblink, StarLynx	Aster, Astrolink, Euroskyway, Galaxy/ Spaceway	Pentriad (Russian television)

Expected Results

- Complete set of protocol specifications and simulation results
- Provision of a reference solution for ATM satellite networks with Inter-Satellite Links and on-board processing capabilities
- Specification of a global multimedia service architecture and suitable application scenarios
- Set-up of an ATM-Sat demonstrator system for validation and demonstration of project results

Partners and Project structure

- Project Partners:
- Project Funding: BMBF, HGF, Bosch Telecom
- Project Structure:

WP1000: System Concepts	WP 2000: Interfaces and Protocols	WP 3000: Technology	WP 4000: Experiments and Demonstrations	WP 5000: System Evaluation