

# SMALLGEO TELECOMMUNICATIONS SATELLITES

## HEINRICH HERTZ SATELLITE MISSION



The Heinrich Hertz Satellite Mission for the customer German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) is a platform for communication technology development as well as infrastructure for German institutions and governmental use.

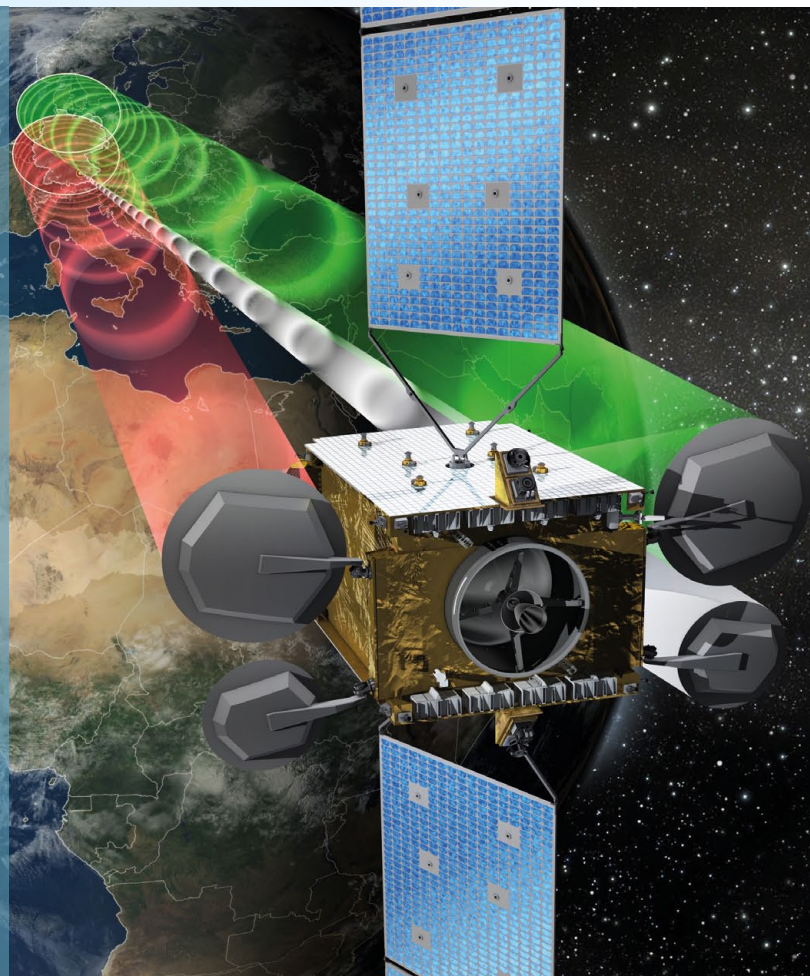
Primary objective of the scientific part of the mission is the development, in-orbit verification and follow-on usage of enabling technologies integrated into a dedicated scientific payload and to gain space heritage for scientific institutions and small and medium-sized enterprises. The Heinrich Hertz Satellite Mission is aiming beyond the limits of conventional repeater technologies enabling numerous participating institutions and companies to develop prototype units and thus, as a result, paving the way for highly flexible and efficient payload configuration.

The Heinrich Hertz Satellite Mission relies on the FAST platform configuration of OHB System AG's SmallGEO product line providing orbit transfer using a hybrid high thrust bi-propellant propulsion for transfer to GEO combined with a highly efficient electrical propulsion system used for north-south station keeping.

This platform embarks the Heinrich Hertz payload with a mass of up to 430 kg and provides 3.6 kW of continuous payload power over a mission lifetime of at least 15 years.

### Heinrich Hertz Satellite Mission key features

- Dual purpose mission undertaken by the Space Administration of the German Aerospace Center (DLR) on behalf of the German Federal Ministry for Economic Affairs and Energy (BMWi) and participation of the German Federal Ministry of Defence (BMVg).
- Stringent reliability and security requirements for the military mission.
- The scientific mission features cutting-edge technologies for flexible payload configurations:
  1. Gaining in-orbit heritage for new technologies and devices
  2. Providing in-orbit laboratory for scientific users
  3. Allowing verification of on-ground technologies
  4. 20 communication experiments by scientific users planned (2015).



The Heinrich Hertz Satellite Mission is intended to verify payload and platform technologies such as:

- Highly efficient multistage plasma thrusters for station keeping
- High-speed, in-orbit reconfigurable on-board processors
- Broadband telecommunication services for mobile end users
- Advanced modulation schemes with high spectral efficiency
- In-orbit tuneable input and output multiplexers
- Dedicated bus topology networks for efficient sensor acquisition
- High power Ka/Ku band amplifiers with tuneable output power
- Multibeam antenna
- Ultra-lightweight reflector antenna fully based on CFRP structures.

Thus, the Heinrich Hertz Satellite Mission is aiming at improving payload capabilities by deploying innovative technologies in a smart way in order to exploit a given bandwidth beyond the limits of conventional repeater technologies.

Primary objective of the military mission is to provide reliable and secure communication services to the German Federal Ministry of Defence (BMVg). The particular needs are served with a dedicated military communication payload.

Phase A1/B has been accomplished by OHB System AG as system prime in cooperation with several project partners. Phase A1/B for the Heinrich Hertz Satellite Mission has been funded by the German Aerospace Center (DLR) based on a resolution of the German Federal Parliament

(German Bundestag) using resources of the German Federal Ministry of Economic Affairs and Energy (BMWi) and contribution of the German Federal Ministry of Defence (BMVg). Currently, OHB System AG is preparing for the next project phases.



**We. Create. Space.**

#### **About OHB System AG**

OHB System AG is one of the three leading space companies in Europe. It belongs to listed high-tech group OHB SE, where around 2,000 specialists and executives work on key European space programs. With two strong sites in Bremen and Munich and more than three decades of experience, OHB System specializes in high-tech solutions for space. These include low-orbiting and geostationary satellites for earth observation, navigation, telecommunications, science and space exploration as well as systems for manned space flight, aerial reconnaissance and process control systems.