SATURNE

Microsystems Based on Wide Band Gap Materials for Future Space Transmitting Ultra Wideband Receiving Systems

DEVELOPING MORE FLEXIBLE SATELLITES

The next generation of satellites is set to be lighter, cheaper, and more flexible. Such a technological leap forward is dependent on the development of novel Radio Frequency (RF) front ends, empowering operators to tune the characteristics of the payloads, even when the satellites are in orbit. The project SATURNE addresses this challenge.

When predicting the future, a basic known is the unknown. However, today when companies commission satellites, they are asked to anticipate and define requirements for the whole of the lifetime of the satellite, which might be 15 years.

Indeed, today each satellite is tailor made for its specific purpose. This increases its cost, and limits flexibility as to its use, since once launched, changing the wavelength of the signal the satellite sends back to Earth is impossible. The next generation of satellites is set to be radically different.

Developing flexible RF front ends that enable changing the wavelength of satellite signals in orbit amounts to a technological breakthrough: Mass production of satellite components would be possible - supporting future satellite payloads at lower cost, with smaller mass and with more flexibility, since operators would no longer be required to think decades ahead, but instead simply progressively adapt satellites to new use.

The main concept of the SATURNE project is to realise such novel types of microwave functions. By means of Wide Band Gap (WBG) semiconductors and RF-MEMS switches, the project seeks to enable the development of re-configurable and highly power efficient communication satellite payloads with narrow-, multi- or wide-band channel allocation, at the benefit of operators, including environmental monitoring and cartography in X-band.

For the European space industry, a world market leader in the domain of commercial satellites, the prospect of such mass production of light and flexible satellites represents a significant industrial potential.

AFSHIN **ZIAEI**
IS PROJECT COORDINATOR

Neo Edmund © Fotolia.com

SATURNE promotes the establishment of European technological leadership in microwave components technology used in satellite communication and navigation payloads.

QUESTIONS & ANSWERS

What do you want to achieve with this project?

SATURNE's objective is to prove the feasibility and inherent advantages of using wideband gap and RF-MEMS based technologies in Intelligent Micro Systems for future space ultra wideband systems.

Why is this project important for Europe?

SATURNE technology will be used in future satellites. This technology will meet the demands from providers and operators for more flexibility and mass reduction, and consequently offer new services. SATURN will also preserve EU independence in the satellite domain.

How does your work benefit European citizens?

Multiband satellites will allow more users and services per satellite. This will reduce the number of satellites needed and then reduces the cost for the final user. Mastering this technology in Europe will help keeping high-tech employment in Europe.

SATURNE

Microsystems Based on Wide Band Gap Materials for Future Space Transmitting Ultra Wideband Receiving Systems

LIST OF PARTNERS

- THALES SA (THALES Research & Technology), France
- Thales Alenia Space Italia Spa, Italy
- EADS Deutschland GmbH, Germany
- Uppsala Universitet, Sweden
- TOP-GAN SP ZOO., Poland
- Centre National de la Recherche Scientifique, France

COORDINATOR

THALES SA (THALES Research & Technology), France

CONTACT

Afshin ZIAEI
Tel: +33 1 69415777
E-mail: afshin.ziaei@thalesgroup.com

PROJECT INFORMATION

COnverters broadband low power high perforMancE for Telecommunications in Space (SATURNE)
Contract no: 242458
Starting date: 01/04/2010
Duration: 36 months
EU Contribution: € 1.876.237
Estimated total cost: € 3.161.259,60

DEVELOPING CRITICAL TECHNOLOGIES