

**Duration: 08:30 - 17:50**

**Room: Kopenhagen**

**WF-05**

## **The Internet of Space, a New Satellite Communication Technique**

### **Organiser:**

Ingo Wolff, IMST GmbH, Germany

### **Abstract**

Satellite communication is facing disruptive changes in communication applications, used technologies and production methods to meet the upcoming requirements for globally accessible Low Earth Orbit (LEO) satellite systems. They will have hundreds or even thousands of small satellites in an orbit of about 1,000 km height and establish a global internet and communication system which can be accessed from each place on earth using small base stations or even a mobile phone.

In this workshop an overview of the new upcoming satellite systems is given. They need a totally new approach for the satellite construction, the used technologies, production techniques and business models. Onboard processing, still not used very often in satellites, is a must for the new systems. The application of modern highly integrated semiconductor technology to reduce the weight and the replacement of old waveguide technologies of partly large mass by new light weight components is a strong requirement. Miniaturised, reconfigurable, tunable, and easily producible components, circuits, systems and antennas must be designed. These new technologies must meet space requirements but at the same time should be off the shelf products of low price and short production time. Therefore new production strategies and a change in standardisation philosophy are needed. First approaches of technologies meeting these requirements will be discussed in the presentations.

### **Programme**

#### **8:30 - 09:00 The "Internet of Space" and New Applications of LEO-Satellite Systems**

Ingo Wolff, IMST GmbH, Germany

#### **09:00 - 09:35 Highly Integrated Satcom Payload Equipment for New Space Systems with a Large Number of Satellites**

S. Martin, Tesat-Spacecom GmbH & Co. KG, Germany

#### **09:35 - 10:10 Onboard Processing, Necessity, Tasks and Technologies**

R. Wansch, Fraunhofer Institut IIS, Germany

#### **10:10 - 10:50 Break**

#### **10:50 - 11:25 250 nm and 130 nm SiGe BiCMOS Design Kits for Space Applications**

René F. Scholz, Th. Mausolf, Dietmar Kissinger, Milos Kristic, IHP, Germany

#### **11:25 - 11:55 GaN Semiconductor MMICs for Space Applications**

C. Friesicke<sup>1</sup>, E. Ture<sup>1</sup>, D. Schwantuschke<sup>1</sup>, P. Feuerschütz<sup>2</sup>, S. Samis<sup>2</sup>, A. F. Jacob<sup>2</sup>, R. Quay<sup>1</sup>, O. Ambacher<sup>1</sup>, <sup>1</sup>Fraunhofer Institut IAF, Germany, <sup>2</sup>Hamburg University of Technology, Germany

#### **11:55 - 12:30 Tunable Microwave Component Technologies for SatCom-Platforms**

H. Maune, R. Jakoby, M. Jost, Technical University Darmstadt, Germany

#### **12:30 - 13:50 Break**

#### **13:50 - 14:25 Hybrid-Integrated Models in LTCC Technology for Reconfigurable and Lightweight Satellite Payloads**

A. Ebert, S. Spira, J. Müller, M. A. Hein, Technical University Ilmenau, Germany

#### **14:25 - 15:00 Satellite Antennas for the Internet of Space**

M. Geissler, IMST GmbH, Germany

#### **15:30 - 16:10 Break**

#### **16:10 - 16:45 Industrialization of the Satcom Payload**

E. Auer, Tesat-Spacecom GmbH & Co. KG, Germany

***16:45 -17:20 High Performance and Low Cost, the Next Generation of Mass Manufacturable Small Satellites Made in Berlin***

T. Segert, Berlin Space Technology GmbH, Germany

***17:20 - 17:50 Final Discussion***