



Press Release

IfEN GmbH · Press Office

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On the way to solve the next challenge for Galileo/GPS – INDOOR Positioning and Navigation

Poing, Germany – As GNSS applications also move into safety-critical areas where service reliability is of concern, users and service providers are now becoming aware of the importance of service qualities, which has generated more and more demand for the availability of GNSS in urban and indoor environments. Although GNSS is capable of providing accurate location information in areas where the satellite signals are available, this is not the case within buildings or in urban areas. Unlike open environments, indoors and urban settings pose a special challenge for location technologies.

Under leadership of IfEN GmbH in Poing a German consortium has been formed, which is composed of **Rohde & Schwarz GmbH & Co. KG** in Munich, **IMST GmbH** in Kamp-Lintfort, **Work Microwave GmbH** in Holzkirchen, **ProDesign Electronic & CAD-Layout GmbH** in Bruckmuehl, the **Fraunhofer-Institute Integrated Circuits IIS** in Erlangen and the **University FAF Munich**, to meet this challenge. A corresponding cooperation contract to this was recently signed.

A multitude of applications and services would benefit from indoor positioning and navigation. The applications range from commercial and residential, such as to track people with special needs, or the elderly in nursing homes, to public safety and military applications, such as to track inmates in prison, or navigating policemen, fire-fighters and search-and-rescue teams to help them complete their mission. However, despite GNSS technology and the positioning capabilities of cellular networks, millions of square meters of indoor space are out of reach.

Within this context, one of the main technological challenges for Galileo/GPS receiver systems has to be called the ability for positioning and navigation within buildings (INDOOR) or near by buildings which, however, have a similar behaviour as in the case of indoor due to shadings and reflections particularly. Advances in location technologies are required to meet these new challenges.

The aim of the consortium is therefore in a first step to analyse the wide spectrum of current state of the art technologies with respect to their efficiency for INDOOR positioning. Based on these results, the most advanced **core technologies** (high sensitivity receiver architectures/algorithms, wireless network positioning, sensor hybridisation, 3D building/map matching to enhance routing and guidance functionality etc.) will then be

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developed. In parallel to these activities, corresponding **core components** on hard- and software level for indoor positioning and navigation will be developed, e.g. HF and baseband ASICs, compact Galileo/GPS antenna, MEMS sensor block etc. along with sophisticated verification tools like IF-, HF- or A-Galileo signal generators to test the equipment. Finally, the combination of the core technologies and components will result in an ensemble of innovative mobile INDOOR Galileo/GPS receivers, ready to be used for different **application scenarios** and driving the navigation market of tomorrow, when Galileo is available.

The main focus of the consortium is related to dedicated applications with a great demand for indoor positioning and navigation technologies. In particular **applications for Public Authorities and Organisations with Special Security Tasks (BOS)** and economically important **traffic logistics applications for the professional area**. Two pilot demonstrations are foreseen at the end of the project from the area Search-And-Rescue and transport logistics, respectively.

The total project budget amounts to about 17 Million Euro. The project is funded by the German Aerospace Centre (DLR) on behalf of the Federal Ministry of Education and Research (BMBF) with nearly 10 Million Euro. The duration of the project will be approximately three and a half year.

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