

PRESS RELEASE

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Research for Europe's technological independence in space

Project UN:IO: Fraunhofer Institutes INT and IAF support preparations for a sovereign European satellite network

The Fraunhofer Institutes INT and IAF and the Fraunhofer Lead Market Aerospace Economics, together with an international consortium of medium-sized space companies and start-ups, have won the 1.4 million euro tender for the preparatory study of an independent European satellite network. With this network, the European Commission (EC) plans to ensure the data and technology sovereignty of the European Union in the future. Under the project title UN:IO, the selected study envisions a new type of satellite constellation with high-performance communications technology in various orbits whose satellites return to Earth after their operating lives, thus avoiding space debris.

By 2025, Europe is to have its own constellation of satellites to ensure sovereign capacities for commercial as well as institutional communication channels. Through such a satellite-based communications infrastructure with high bandwidths and short latencies, even in remote regions, the European Union aims to secure its sovereignty in numerous future technologies, including autonomous mobility and digitalized production processes. A consortium of around 20 medium-sized space companies and start-ups have developed the project UN:IO for this purpose. A study on the implementation of this project, in which the Fraunhofer Institute for Scientific and Technical Trend Analysis INT and the Fraunhofer Institute for Applied Solid State Physics IAF are involved in an advisory capacity, is now being funded by the EC for six months with 1.4 million euros.

The EC-funded study addresses the analysis, research and evaluation of several technology complexes that will increase the level of innovation of the UN:IO constellation. These include linking radio links with optical communications, satellite operation independent of GPS data and the use of quantum key distribution concepts to increase data security. Another aspect to be investigated is the interoperability of UN:IO with two other major European satellite constellations, Galileo (navigation) and Copernicus (Earth observation).

Editor

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Consulting in the field of high-frequency electronics and quality assurance of the study

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Researchers from Fraunhofer IAF are advising the consortium on the use of high-performance satellite communication technology. In several reports, they assess the opportunities and limitations of broadband E and W band frequencies for applications in the UN:IO constellation, analyze possible solutions for technical implementation, and recommend suitable electronic components, such as for energy-efficient transmitters and highly sensitive receivers. In this way, Fraunhofer IAF contributes to the implementation of high-performance semiconductor components in the project, which are needed for a long-term realization of the aforementioned future technologies.

Fraunhofer INT, with its business unit Corporate Technology Foresight (CTF), is in charge of the cross-sectional Work Package (WP) 6. The WP serves the scientific quality assurance of the methods used and the assurance of well-founded results. As part of this task, Fraunhofer INT systematically evaluates a very large number of existing studies, publications and databases to identify and verify the global state of the art in secure communication technologies. This knowledge is an important prerequisite for the project consortium to go beyond this state of the art with the project and to develop as well as implement real innovations.

CTF is supported in this by the central office of the Fraunhofer Lead Market for Aerospace Industry, which is also located at Fraunhofer INT. The central office is optimally networked in the field of space research within the Fraunhofer-Gesellschaft and beyond and will thus make a valuable contribution to the development of the data basis.

About Fraunhofer INT

The Fraunhofer Institute for Technological Trend Analysis INT provides scientifically sound analysis and assessment capabilities across the entire spectrum of technological developments. This overview is deepened by own expert analyses and forecasts in selected technology areas and by own theoretical and experimental work in the field of electromagnetic and nuclear effects.

www.int.fraunhofer.de/en

About the Fraunhofer Lead Market for Aerospace Industry

Aerospace is a technology-intensive industrial sector that has a significant impact on economic and sociopolitical life. Fraunhofer supports the strategies of the European aerospace industry with a

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broad portfolio of competencies and helps to secure and expand its competitive position. This portfolio is brought together in the Fraunhofer lead market for the aerospace industry. The lead market is organized via a central office that addresses the closely related aerospace sectors. Here, industry, science and politics can access the technology portfolio of the Fraunhofer Gesellschaft for these sectors. Among other things, the office provides support in identifying suitable contacts in the institutes and organizes cross-institute technology offerings.

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About Fraunhofer IAF

The Fraunhofer Institute for Applied Solid State Physics IAF is one of the world's leading research institutions in the fields of III-V semiconductors and synthetic diamond. Based on these materials, Fraunhofer IAF develops components for future-oriented technologies, such as electronic circuits for innovative communication and mobility solutions, laser systems for real-time spectroscopy, novel hardware components for quantum computing as well as quantum sensors for industrial applications.

With its research and development, the Freiburg research institute covers the entire value chain - from materials research, design and processing to modules, systems and demonstrators.

www.iaf.fraunhofer.de/en

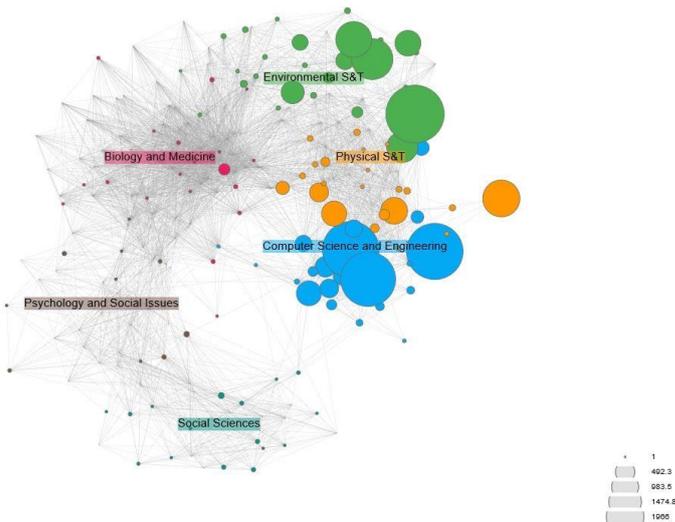
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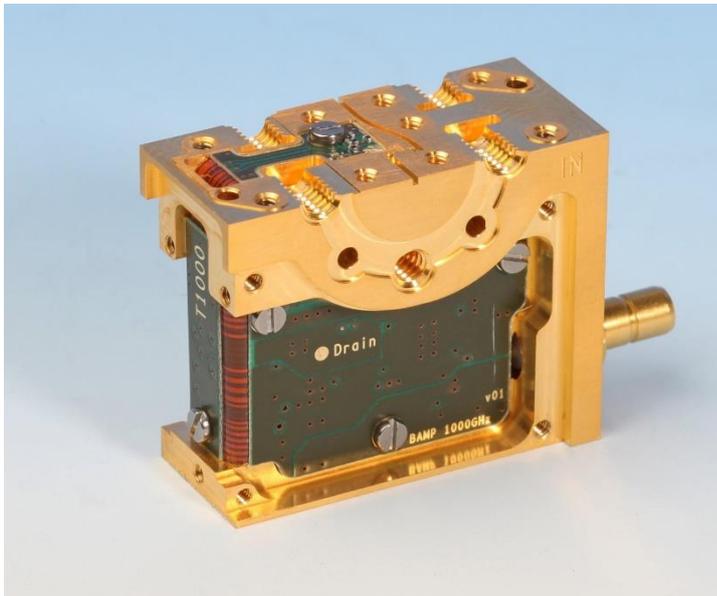
Project UN:IO aims to provide Europe with an independent satellite network.
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Quantitative representation of publications and scientific categories on the topic of "Satellite Constellations" in the KATI system of Fraunhofer INT.
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Researchers at Fraunhofer IAF are contributing their expertise in the field of high-performance semiconductor technology for satellite communications in the project UN:IO.
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The **Fraunhofer-Gesellschaft**, headquartered in Germany, is the world's leading applied research organization. With its focus on developing key technologies that are vital for the future and enabling the commercial exploitation of this work by business and industry, Fraunhofer plays a central role in the innovation process. As a pioneer and catalyst for groundbreaking developments and scientific excellence, Fraunhofer helps shape society now and in the future. Founded in 1949, the Fraunhofer-Gesellschaft currently operates 75 institutes and research institutions throughout Germany. The majority of the organization's 29,000 employees are qualified scientists and engineers, who work with an annual research budget of 2.8 billion euros. Of this sum, 2.4 billion euros is generated through contract research.