



„AI in GNSS – Intelligence brought to Navigation“, this will be the theme of the 2022 edition of the **Munich Satellite Navigation Summit**, taking place from **March 7–8, 2022!** In the light of the ongoing pandemic the Summit will be held virtual.

We are very proud to announce the cooperation of the Institute of Space Technology and Space Applications of the University of the Bundeswehr Munich and the Institute of Communications and Navigation of the German Aerospace Center (DLR). Both institutes pool expertise in organizing the Munich Satellite Navigation Summit.

The conference program will run under the theme „AI in GNSS – Intelligence brought to Navigation“ and will cover the following:

#### TRENDING TOPICS of the 2022 edition

- First and Second Generation of the European Satellite Navigation System Galileo
- Modernization of the US Global Positioning System
- Status and modernization of the Russian Global Satellite Navigation System GLONASS and the Chinese Beidou System (BDS)
- Developments of regional systems like the Japanese QZSS and the Indian IRNSS and the Korean Positioning System (KPS)
- Use of AI within the navigation world and its implications
- Jamming, spoofing, interference, and countermeasures; understanding secure Galileo services (OSNMA, PRS)
- GNSS and the new race to the Moon; upcoming space mission related to PNT
- Advanced technologies for PNT (quantum, optical) even beyond Galileo 2nd Generation

...and many more up-to-date topics on GNSS!

**The Galileo High Accuracy Service will be addressed in selected sessions.**

#### ABOUT THE MUNICH SATELLITE NAVIGATION SUMMIT:

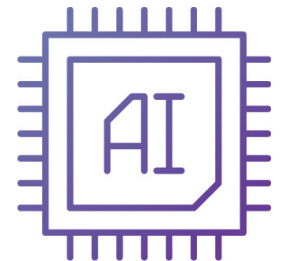
The Munich Satellite Navigation Summit is a conference with global impact dealing with satellite navigation now and in the future. The one-of-a-kind convention of high-ranking worldwide speakers from industry, science and governments provides the participants with a broad overview and different perspectives on the latest developments in the field of GNSS.

**The Summit is part of the efforts of the Bavarian government and the cluster on aerospace and satellite navigation to stimulate applications and services in this high-tech field.**

**REGISTRATION** is possible via <http://www.munich-satellite-navigation-summit.org>.

For any questions, please contact:

Munich Satellite Navigation Summit, Phone +49 89 6004 3425 or email to [info@munich-satellite-navigation-summit.org](mailto:info@munich-satellite-navigation-summit.org)



**FREE  
ADMISSION!**

**DAY 1.**

**Lunchtime. PRE-OPENING** Monday, March 7, 2022

Get familiar with our new conference platform. We will be happy to show you around.

**JOB MARKET – DISCUSSION AND PITCHES**

We especially invite graduates, doctoral candidates and young researchers to our job market. Firstly, a high level panel will discuss from different perspectives:

**Working in Space – European Competitiveness in GNSS**

The competitiveness of the European Space Sector is highly dependent on the availability of highly educated and skilled professionals. It requires an educational landscape which is able to provide basic as well as further education and a highly ambitious research and innovation community driving developments in space to the extent of commercialisation. Is there a match between needs and offers across the EU? What are the needs of industry? What does the job market look like? What effort is needed from the side of universities, politics and industry? Is there enough co-operation between relevant stakeholders across the EU and what is needed from students' point of view? The panel is discussing chances and challenges of working in the space sector.

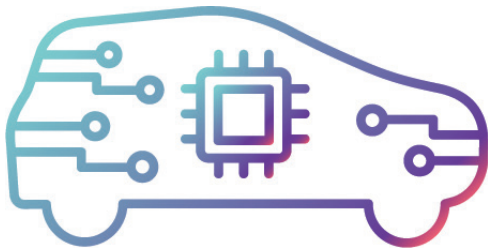
Secondly, our companies' pitches:

All companies active in the space sector are kindly invited to present themselves. Are you looking for new talents and possible colleagues? Here you have the chance to appeal to them.

**Please apply for presenting your company in our job market and write an e-mail to:**  
[info@munich-satellite-navigation-summit.org](mailto:info@munich-satellite-navigation-summit.org)

**Chairwoman:**

**Bärbel Deisting**, Director Space and Space Applications, bavAIRia e.V., Gilching, Germany



## DAY 1.

13.00 CET

### Afternoon. OPENING

#### OPENING PLENARY

A representative of the Bavarian State Ministry of Economic Affairs, Regional Development and Energy, representatives of the European Commission, the European Space Agency, National Space Agencies as well as representatives from USA, Russia and China are opening the Munich Satellite Navigation Summit 2022.

#### Moderator:

**Claus Kruesken**, Presenter, Bayerischer Rundfunk (Bavarian Broadcasting), Munich, Germany

#### BREAK

#### Session 1. GNSS PROGRAM UPDATES – GLOBAL, REGIONAL AND AUGMENTATION SYSTEMS

Presentations are informing about news from the worldwide global, regional and augmentation satellite navigation systems in operation and under development.

**Global:** GALILEO (EU), GPS (USA), GLONASS (Russia), BeiDou (China)

**Regional:** QZSS (Japan), IRNSS/NAVIC (India)

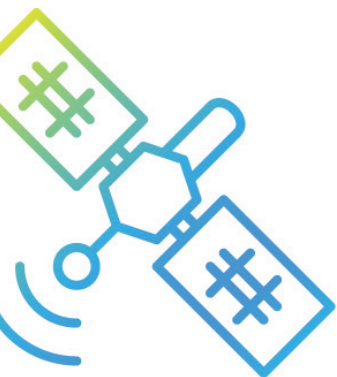
**Augmentation:** EGNOS (EU), WAAS (USA), MSAS (Japan), SDCM (Russia), Gagan (India)

#### Chairman:

**Mike Swiek**, Mike International, LLC, Washington, DC, USA

#### BREAK





### **Session 2. AI AND ADVANCED TECHNOLOGIES FOR NEXT GENERATION GNSS**

Artificial intelligence opens new doors in navigation. It will create a path to greater autonomy and automation of systems and automated decision making. Additional advanced technologies will complement this potential to lift GNSS performance to a new level in terms of accuracy, integrity, robustness. The session will address these potentials and show how applications, user-side and system-side techniques and processes will benefit.

#### **Chairman:**

**Zak M. Kassas**, University of California, Irvine & The Ohio State University, USA

### **Session 3. SECURE PNT SERVICES**

The increasing dependency of many commercial and safety & security related applications on GNSS has led to multiple approaches to enhance the confidence we have in PNT-information derived from GNSS since many years. Whereas some approaches are based on the usage of multi-constellation GNSS, the usage of complementary radionavigation systems or sensor-fusion, also improvements and additional services of the GNSS itself are under discussion or even under implementation for different GNSS at the moment to achieve such confidence on the PNT for different applications. However, while this may be achieved through various authentication solutions for example on Galileo, with OSNMA and later with the CAS, being available to the wide GNSS community, other services, such as PRS, will provide end to end security adapted to other kinds of usage and another user community under governmental control. This session will provide an overview on the Galileo OSNMA, CAS and PRS and highlight their different and corresponding use cases.

#### **Chairmen:**

**Stefan Baumann**, Programme Manager, IABG, Ottobrunn, Germany

**Jérémie Godet**, Deputy Head of Galileo and EGNOS Unit, DG DEFIS, EC, Brussels, Belgium

**End of Day 1**

## DAY 2.

**Morning.** Tuesday March 8, 2022

### **Session 4. A NEW REGIONAL SYSTEM IS BORN: THE KOREAN POSITIONING SYSTEM (KPS)**

This session will present a general overview of KPS, the signal design concept, the satellite configuration and the KPS deployment plans.

**Chairman:**

**Guenter Hein**, Chairman of the Executive Board, Munich Aerospace, Taufkirchen, Germany

### **Session 5. DEMONSTRATION OF GNSS+AI APPLICATIONS IN CHINA**

Satellite navigation and location services are rapidly merging into various applications in the digital society in China. The recording of a large amount of spatiotemporal data provides a wealth of application scenarios for the use of artificial intelligence technology to improve the convenience and safety of applications, and new applications continue to emerge. AI technology is exploring innovative ways of sustainable urban development, covering many fields such as traffic management, green travel, spatial planning, and human ecology, which are widely used in satellite navigation and location services.

**Chairman:**

**Gui'Fei Jing**, Head of BeiDou Silk-Road School, Beihang University, Beijing, China

## BREAK

### **Session 6. NEW LEGAL ASPECTS FOR NEW SPACE CHALLENGES**

The Legal Session, organised by BHO Legal as in past years, will this time focus on future Navigation and Communication Systems for the Moon. Around the globe, space agencies and companies prepare for numerous moon missions and the development of a lunar economy. All future lunar activities will have to rely on reliable navigation and communications systems. The session will discuss policy, legal, regulatory and standardisation aspects with experts from the European Space Agency, the ITU, and industry.

**Chairmen:**

**Ingo Baumann**, BHO Legal, Cologne, Germany

**Oliver Heinrich**, BHO Legal, Cologne, Germany

### **Session 7. MUNICH FLASHLIGHTS – NEWS FROM BAVARIA**

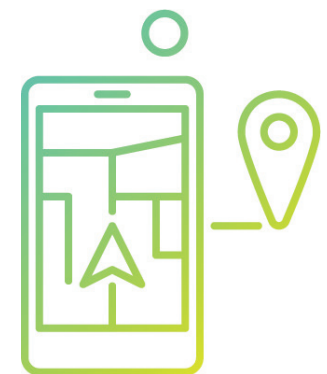
Brief presentations from the Munich scene reporting on news and activities of the Bavarian satellite navigation network of excellence and of the high-tech cluster of satellite navigation.

**Chairman:**

**Harald Hofmann**, Acting Director of Administration and Infrastructure, Galileo Competence Centre, Oberpfaffenhofen, Germany

## BREAK

**FREE  
ADMISSION!**



## DAY 2.

### Afternoon.

**FREE  
ADMISSION!**

#### Session 8. JAMMING AND SPOOFING IN GNSS

Intentional radio interference, namely jamming and spoofing, is considered a critical threat to GNSS. Especially with the increased level of autonomy and automation in safety-critical applications, these threats need to be assessed and mitigated. The same applies to security-critical applications and applications of GNSS in critical infrastructures. The session will address both the analysis of the risk related to jamming and spoofing as well as ways to limit and mitigate the risk by technical solutions.

##### Chairman:

**Todd E. Humphreys**, University of Texas, Austin, TX, USA

#### Session 9. SPACE PNT IN EUROPE, INNOVATION AND FUTURE TRENDS IN EUROPEAN SATELLITE NAVIGATION

This session will cover the future of Space PNT beyond the current Galileo / EGNOS systems and their future evolutions.

The session will take off with one of the latest Services introduced by Galileo (The High Accuracy Service) to later introduce a selection of projects from H2020, Horizon Europe, NAVISP, Moonlight, Science satellites and other national programs. The panellists will provide an overview of Europe's PNT ambitions to not only secure Europe's leadership in Satellite Navigation today, but to also further expand its relevance over future decades. Orthodox and out of the box ideas on future PNT will find their home in this session.

##### Chairmen:

**Javier Benedicto**, Director of Navigation, ESA, Paris, France

**Miguel Manteiga Bautista**, Head of Unit, ESA, Noordwijk, The Netherlands



### BREAK

#### Session 10. SPACE MISSIONS AND TECHNOLOGY VALIDATION

New technologies are the key-enabler for next generations of satellite navigation systems. Developing such technologies and lifting them to the necessary level of maturity requires testing, validating and demonstrating such technologies in space. New-space approaches offer further potentials along these lines. The session will address ongoing activities in various locations to plan and execute space missions to achieve this goal and will give an insight on what's coming next...

##### Chairman:

**Christoph Günther**, German Aerospace Center (DLR), Oberpfaffenhofen & Technical University of Munich, Munich, Germany

#### Session 11. NEW GNSS SYSTEMS FOR EARTH AND MOON

The GNSS landscape is changing fast. New developments in the area of GNSS for earth and moon have their synergies but also individual challenges. Several ambitious undertakings are planned around the globe in low earth orbit, augmenting existing MEO and GEO based solutions and providing services on their own. In the context of the evolution driven by key applications like 5G, autonomous cars, as well as in the frame of the new race to the Moon and beyond, more and more missions will rely on additional navigation services guiding the way also in this new environment. The sheer number of projects and the satellites needed to realise them will change productions, time to market, operations and the services that can be provided. This session will provide an outlook into what will be coming.

##### Chairman:

**Michel Monnerat**, Director Bid & Advanced Projects - Navigation Domain, Thales Alenia Space France, Toulouse, France

**End of Day 2 and Closing of the Summit**

## REGISTRATION

The online registration is possible via the website [www.munich-satellite-navigation-summit.org](http://www.munich-satellite-navigation-summit.org)

### Registration fee:

**Virtual participation**  
**€ 250,00**  
valid at all times

### Free admission:

**Virtual participation**  
**€ 0**  
valid for selected sessions

The **registration fee** online includes the following:

- access to all online sessions
- download of the proceedings
- download of session recordings

The **free admission** includes the following:

- Pre-Opening and Job Market
- access to online sessions 4-11
- download of session recordings

## CANCELLATION/REFUND POLICY

Written cancellations until February 18, 2022 are refundable less € 95 cancellation fee. After February 18, 2022 there will be no refunds. We regret that individual registration benefits are not transferable.

## EXHIBITION

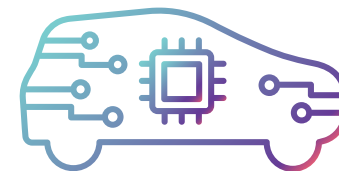
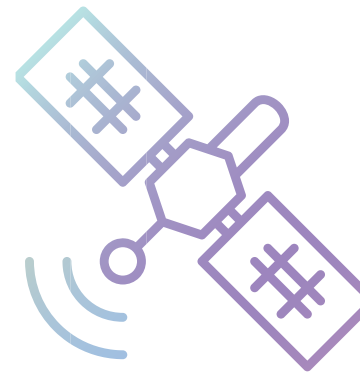
The Munich Satellite Navigation Summit will give your business a unique opportunity to position your latest products, services and technologies. Manufacturers, organisations and service providers are invited to exhibit at this event. Join our sophisticated online exhibition. Please contact us for further information.

## SUPPORT

We offer different packages for companies and institutions that are interested to be an official partner of the conference. If you would like to contribute, please contact us for further details.

## CONTACT

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