GNSS —

EMPOWERING MOBILITY FOR AIR, LAND, SEA … AND BEYOND!

Munich, March 13–15, 2023

2nd ANNOUNCEMENT

MUNICH SATELLITE NAVIGATION SUMMIT 2023

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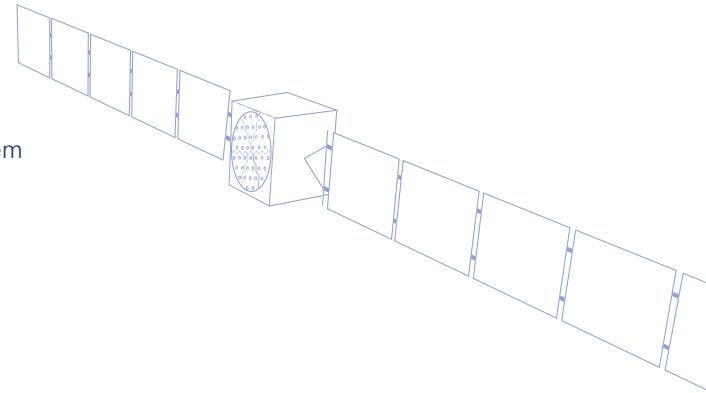
"GNSS - EMPOWERING MOBILITY for AIR, LAND, SEA…and BEYOND!", this will be the theme of the 2023 edition of the Munich Satellite Navigation Summit, taking place on March 13–15, 2023!

We are glad to continue the cooperation between the Institute of Space Technology and Space Applications (ISTA) of the Universität der Bundeswehr München and the Institute of Communications and Navigation of the German Aerospace Center (DLR).

Make sure to check our website for the latest information: www.munich-satellite-navigation-summit.org

The conference program will run under the theme "GNSS - EMPOWERING MOBILITY for AIR, LAND, SEA…and BEYOND!" and will cover the following:



TRENDING TOPICS of the 2023 edition

- First and Second Generation of the European Satellite Navigation System Galileo
- Status and Modernization of the US Global Positioning System and of the Chinese BeiDou System
- Regional Systems of India, Japan and Korea
- Solutions for Transportation with Precise Point Positioning and Sensor Fusion
- Secure Navigation with Authentication and with the Galileo Public Regulated Service
- Positioning from Low Earth Orbit and with Alternative Terrestrial Technologies
- Legal Aspects of Space Sustainability

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

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. Meet at the welcome reception, discuss upcoming projects at the Space Night and enjoy the closure of the Summit with a Bavarian networking event!

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.

DAY 1.

Afternoon. OPENING Monday, March 13, 2023

OFFICAL OPENING OF THE EXHIBITION AND CHAMPAGNE WELCOME

OPENING PLENARY

Representatives of the Bavarian State Government and of the Federal Government of Germany, representatives of the European Commission, the European Space Agency, National Space Agencies as well as representatives from USA and China are opening the Munich Satellite Navigation Summit 2023.

Welcome:
Thomas Pany, ISTA/FZ Space, Universität der Bundeswehr München, Neubiberg, Germany
Michael Meurer, German Aerospace Center (DLR), Oberpfaffenhofen, Germany
Eva-Maria Kern, President, Universität der Bundeswehr München, Neubiberg, Germany
Anke Kaysser-Pyzalla, Chair of the Executive Board, German Aerospace Center (DLR), Cologne, Germany
NN, Bavarian State Government, Munich, Germany
Anna Christmann, Member of the Bundestag, Federal Government Coordinator of German Aerospace Policy, Federal Ministry for Economic Affairs and Climate Action, Berlin, Germany

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

Evening Reception

DAY 2.

Morning. Tuesday, March 14, 2023

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

Speakers from the respective organizations and countries present news from the worldwide global, regional and augmentation satellite navigation systems in operation and under development.
Global: GALILEO (EU), GPS (USA), BeiDou (China)
Regional: QZSS (Japan), IRNSS/NAVIC (India), KPS (Korea)
Augmentation: EGNOS (EU), WAAS (USA), MSAS (Japan), Gagan (India)

Chairman:
Mike Swiek, Mike International, LLC, Washington, DC, USA

Session 2. FUTURE AIR TRANSPORTATION – VISION, CHALLENGES AND TECHNOLOGIES APPROACHING AUTONOMY AND AUTOMATION

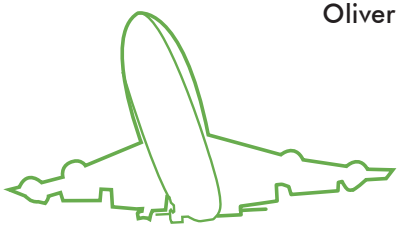
Aeronautics is facing major challenges like decarbonization, reduction of noise or increase of freight and passenger traffic, while keeping a high level of safety and (cyber) security. Substantial transitions are ongoing from controller guided aviation to autonomy and automation or from uniform to mixed airspaces with new entrants including air taxis and unmanned aerial vehicles (UAV). Very low airspaces will allow for urban air mobility of freight and passengers. Reliable, safe and secure navigation is paramount for future concepts. The session will address the challenges as well as technologies and systems to enhance safety, robustness, and efficiency of airborne operations both for classic aircrafts but also for air taxis and small UAVs in lower air spaces.

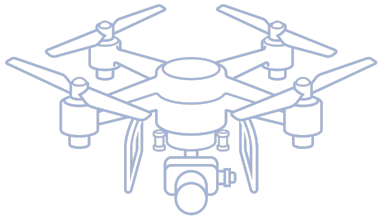
Chairman:
Michael Meurer, Head of Navigation Department, German Aerospace Center (DLR), Institute of Communications and Navigation, & Full Professor, RWTH Aachen University, Aachen, Germany

Session 3. GNSS AND SPACE SUSTAINABILITY

This year´s Legal Session, organized and moderated by BHO Legal, will focus on GNSS and space sustainability. Space sustainability and specific aspects such as space debris mitigation are high on the space policy agenda worldwide. However, GNSS in MEO have so far not been in the focus. The session will present the overall issue of space sustainability, the different action streams in this regard, the space debris situation in MEO, current mitigation policies by GNSS operators and further aspects.

Chairmen:
Ingo Baumann, BHO Legal, Cologne, Germany
Oliver Heinrich, BHO Legal, Cologne, Germany





DAY 2. **Afternoon.**

Session 4. FUTURE TRANSPORTATION ON LAND AND AT SEA

Trends such as increasing traffic volumes, autonomy and automation, cyber threats, decarbonization, and urbanization pose a real challenge for future transportation systems on land and water. The needs of pedestrians, road and rail users, and maritime and inland waterway users require new approaches to positioning and navigation to meet increased demands for accuracy, integrity, resilience, availability, and flexibility. Technologies such as sensor fusion, 5G integration, artificial intelligence and machine learning, GNSS augmentation, and authentication can help to meet these requirements. The session will explore the topic from different angles from both a user and system perspective.

Chairwoman:
Karen van Dyke, Director, Office of Positioning, Navigation, and Timing (PNT), DOT, Washington DC, USA

Session 5. SECURE NAVIGATION

Safety & Security related applications have very stringent requirement for the robustness, integrity and cyber-security of the GNSS-signals used. To fulfill these user requirements dedicated Galileo services are under implementation. For private and commercial applications the Galileo Open Service Navigation Message Authentication (OS-NMA) and later on the Commercial Authentication Service (CAS) will be introduced and for governmental authorized users the Galileo Public Regulated Service (PRS) is foreseen. This session will provide an up-to-date overview on the current implementation status of these services, receiver developments and planned next steps with a focus on test-and validation-campaigns for various safety & security related applications.

Chairmen:
Stefan Baumann, Programme Manager, IABG, Ottobrunn, Germany
NN, Representative of the EC, Brussels, Belgium

Session 6. MULTI-SENSOR INTEGRATION

Virtually all mobile platforms use multi-sensor navigation systems to increase robustness, accuracy and availability. A good understanding of novel and traditional sensors characteristics and methods to integrate these sensor measurements are essential to provide solutions for upcoming space-, air- and land-borne applications. This understanding is also necessary to shape future GNSS services (from MEO or LEO) to ensure a maximum of synergy for the users benefit. This panel will highlight current integration trends and discuss challenges for future developments.

Chairwoman:
Jade Morton, Director of CCAR, Colorado Center for Astrodynamics Research (CCAR), University of Colorado, Boulder, CO, USA

Evening. EVENING RECEPTION: Munich Space Night 2023

We are looking very much forward to meeting you for drinks and food and great networking opportunities.

DAY 3.

Morning. Wednesday March 15, 2023

Session 7. PRECISE POINT POSITIONING (PPP)

Although more than 20 years old, precise point positioning is still considered a very advanced and demanding technique within satellite navigation due to its high precision and global coverage. Commercial service providers provide proven PPP solutions to support autonomous systems and are recently challenged by public services. The discussion of ongoing technological developments for PPP and a glimpse into what can be expected from PPP by using future technologies like inter-satellite-links or supporting satellites in a low Earth orbit will help to understand the market in a better way and the PPP applications to come.

Chairwoman:
Carla Filotico, Partner, SpaceTec Partners, London, UK

Session 8. GNSS-PROMOTED INTELLIGENCE IN MOBILITY IN CHINA

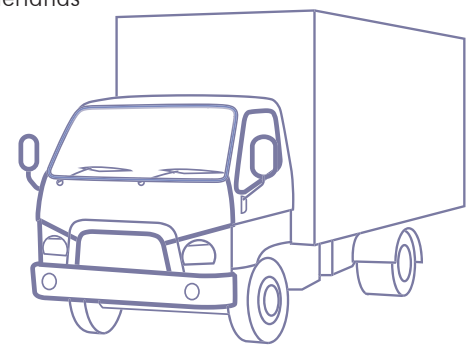
The applications of multi-constellation GNSS have improved the intelligent level of travel services in China. Innovation of GNSS accuracy, reliability, ubiquity and its integration with navigation information is constantly developing. GNSS have been continuously used to improve the digitalization level and AI application scenarios in the fields of urban mobility, aviation air traffic control and airport services, marine S&R and shipping. In this session four speeches about these innovated applications in urban/air/marine in China are going to be arranged, and relevant topics will be discussed with the participants after presentations.

Chairman:
Gui'fei Jing, Research Institute of Frontier Science, Beihang University, Beijing, People's Republic of China

Session 9. POSITIONING, NAVIGATION AND TIMING FROM LOW EARTH ORBIT

The major success of GNSS results in an increased demand of performance and robustness by current and future users. In order to meet such demands, GNSS may be complemented by satellites in different orbits. In this context, a Positioning, Navigation and Timing (PNT) system from Low Earth Orbit (LEO) is able to provide a number of benefits contributing to seamless, reliable, resilient and accurate PNT services. This session will discuss the status and opportunities related to various international LEO PNT initiatives both with dedicated satellites/payloads or signals of opportunity.

Chairmen:
Roberto Prieto Cerdeira, G2G Satellite Payload Manager/LEO-PNT Project Manager, ESA/ESTEC, Noordwijk, The Netherlands
Jérémie Godet, Deputy Head of Galileo and EGNOS Unit, DG DEFIS, EC, Brussels, Belgium



DAY 3.

Afternoon.

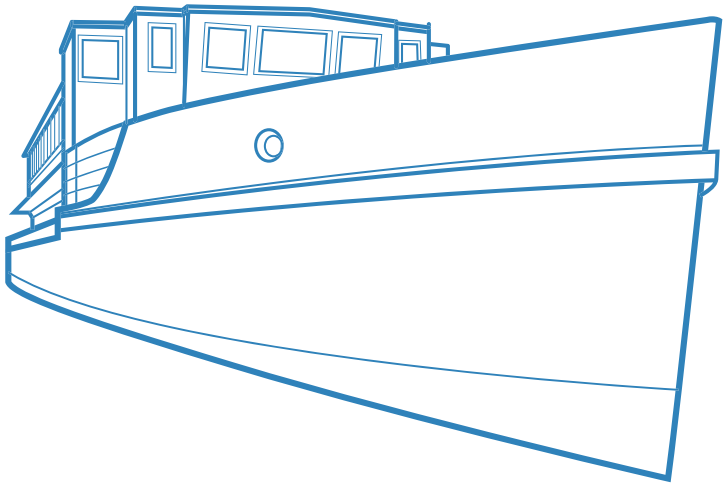
Session 10. Alternative Positioning, Navigation and Timing (APNT)
Complementing space based PNT by terrestrial navigation signals increases the general PNT-resilience against jamming/spoofing and/or provides higher accuracy and availability in areas that are difficult to access for space borne signals. Efforts conducted by the mobile communications community (4G, 5G and beyond) will be discussed here, as well as developments of dedicated terrestrial navigation systems following the signal-of-opportunity (e.g. television broadcast signals) or Pseudolite concept (as an overlay to existing GNSS signals or within new frequency bands). The implications of those technologies for transportation are a core focus in this session.

Chairman:
Sunwoo Kim, Department of Electronic Engineering Hanyang University; Director, 5G/Unmanned Vehicle Research Center (ITRC), Seoul, Korea

Session 11. BAVARIAN & MUNICH FLASHLIGHTS – NEWS FROM GNSS & MOBILITY
Experts from the Bavarian satellite navigation network of excellence, the Bavarian Cluster Aerospace as well as from other high-tech companies report on their developments and activities. This year a special emphasis will be put on mobility solutions. You are invited to experience more from the highly innovative scene contributing to future mobility.

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

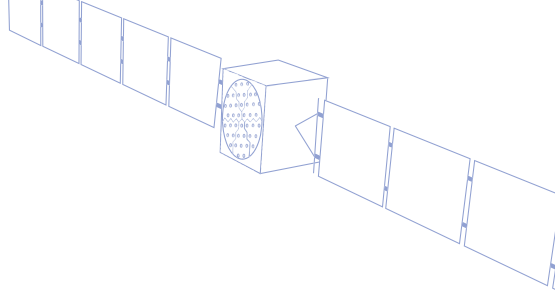
Closing of the Summit and Invitation to the Bavarian Networking Event.



Bavarian NETWORKING

This year the Summit will close with a special Bavarian Networking Event in the exhibition area, offering a glimpse into Bavarian cuisine and beer culture.

At this reception you will have the possibility to let the conference end in a relaxed way. There is room to get into conversation with people from companies in and outside Munich, with stakeholders and potentially interesting partners.



REGISTRATION

Online registration is possible via the website www.munich-satellite-navigation-summit.org

Virtual participation fee:

Virtual participation
€ 350,00
valid at all times

On site participation fees:

Early Summit rate	Regular rate	Speaker rate
€ 750,00	€ 900,00	€ 250,00
valid from November 1, 2022 – January 31, 2023	valid from February 1, 2023	valid at all times

The registration for the virtual participation includes access to all online streams.

The registration fee includes access to all sessions (onsite and via online stream), to various networking opportunities like the reception on the first evening as well as visiting the technical exhibition, admission to the lunches, coffee/tea, snacks and refreshments during the conference and the retrieving of the conference proceedings.

Which Registration Suits You Best?	In-Person	Virtual
Access to the latest GNSS Developments and Program Updates	✗	✗
▪ Access to all Sessions	✗	
▪ Attendance to Premium Talks	✗	
▪ Access to Online Session Streaming	✗	✗
▪ Real-Time Q&A and Discussions with Presenters	✗	
▪ Receive Electronic Conference Proceedings	✗	
Participation in Various Networking Events	✗	
▪ Welcome Reception	✗	
▪ GNSS Space Night	✗	
▪ Various Round Tables	✗	
▪ Access to lunches, coffee/tea breaks with snacks and refreshments	✗	
Connect and network with Peers, Employers, GNSS Experts in Person	✗	
Attend the Exhibition Trade Show in Person	✗	
Identify Market, Programmatic and Research Trends	✗	
Experience New Cultural Location	✗	
No Travel Required		✗

CANCELLATION/REFUND POLICY

Written cancellations until February 18, 2023 are refundable less € 95,00 cancellation fee. After February 18, 2023 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. 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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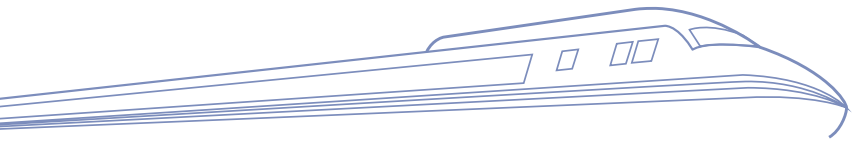
www.munich-satellite-navigation-summit.org



The Munich Satellite Navigation Summit 2023 is organized by

ISTA Institute of Space Technology & Space Applications & FZ Space Forschungszentrum Space Universität der Bundeswehr München & ITIS of Universität der Bundeswehr München & DLR Deutsches Zentrum für Luft- und Raumfahrt German Aerospace Center Institute of Communications and Navigation

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