



GNSS

providing solutions for
life on earth

Munich, March 16–17, 2021



ONLINE
CONFERENCE

2nd ANNOUNCEMENT

After the cancellation of the **Munich Satellite Navigation Summit** due to the COVID-19 pandemic we are very much looking forward to an up-to-date version of the conference, to be held from **March 16–17, 2021!**

Being held virtually, the Munich Satellite Navigation Summit 2021 will provide you as always with highlevel speakers, inspiring discussions and first hand information about the current developments in the field of GNSS.

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 – providing solutions for life on earth”** and will cover the following:

TRENDING TOPICS of the **2021** 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
- Modern Agriculture under the use of GNSS
- Sensing the Earth’s atmosphere and surface with GNSS
- Autonomous systems, related legal issues and related PPP technology
- Galileo and the civil use of the Public Regulated Service (PRS)
- Megaconstellations, Kepler, SSV, future trends and technologies for PNT
- Impact of COVID-19 on GNSS

...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.

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 Tuesday, March 16, 2021

13:00–14:30 hrs

OPENING PLENARY

The Bavarian State Ministry of Economic Affairs and Media, Energy and Technology, 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 2021.

Moderator:

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

14.30–14.45 hrs

Have a break

14.45–16.15 hrs

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

We present 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

16.15-17.00 hrs

IMPACT OF COVID-19 ON GNSS

Presentations on satellite-based antivirus-solutions in Asia and Europe and on the impact of COVID-19 on labour and business in the space sector.

17.00–17.15 hrs

Have a break

17.15–18.15 hrs

Session 2. 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.

Chairwoman:

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

18.15 hrs

Evening. End of first day

13.00–14.30 hrs

LIFE APPLICATIONS

IMPROVING TECHNIQUES

Session 3.**THE (R)EVOLUTION OF FARMING WITH SATELLITE NAVIGATION**

Over the past decade, the agricultural sector adapted quickly to new and digital technologies, increasing the use of satellite navigation for day-to-day farming. With modern equipment and big-data solutions, it is possible to use more efficiently fertilizer with the method of “Precision Farming”. Farmers are nowadays able to collect a multitude of data and gather broad knowledge about their crops and livestock in order to increase in profitability as well as sustainability. Autonomous robots are already operational for mechanical weeding in vegetable crops and vineyards to avoid spreading herbicides. In this session, representatives of farm equipment manufacturers and experts in the field of modern agriculture will present and discuss current trends and solutions that take advantage of the benefits of satellite navigation for the future of farming.

Chairman:

Thierry Chapuis, Expert Space Applications, CNES, Toulouse, France

**Session 4.****CRITICAL TRENDS FOR FUTURE NAVIGATION & TIMING SYSTEMS**

In the last decades, Navigation & Timing Systems design has been MEO satellites constellation based and pivoted around 3 main drivers, the individual satellites ranging accuracy, the reduction of the dilution of precision/optimization of constellation geometry and the optimization of acquisition/tracking performance through different space and ground based techniques. Due to the vast adoption of PNT as one of the key engines for industrial growth across all sectors, the diversification of user communities and associated advanced needs is leading to a Navigation & Timing Systems Design revolution. This panel will address critical trends that may play a key role in future systems design (hybrid constellations including role of mega constellations, higher frequency bands usages including optical, usage of signals of opportunity for navigation, terrestrial vs satellite navigation systems complementarity,...). These topics will be addressed through a round table of public and private entities and international representatives that are currently leading the world vision into the future of navigation.

Chairman:

Miguel Manteiga Bautista, Head of GNSS Evolution Programme and Strategy Division, ESA, Noordwijk, The Netherlands

14.30–15.00 hrs

HAVE A BREAK

15.00–16.30 hrs

LIFE APPLICATIONS

IMPROVING TECHNIQUES

WHAT COMES NEXT?

Session 5.
GNSS REMOTE SENSING: HIGH-LIGHTS AND PROSPECTS

Ground and satellite based GNSS Remote Sensing (GNSS-RS) developed during the recent two decades into a powerful and versatile tool for Earth System Research. A highlight and established application is the operational use of spaceborne GNSS radio occultation data from several satellite missions to improve the day-by-day global weather predictions of the leading forecast centers. The status and future developments of this key GNSS-RS application are reviewed. GNSS signals, reflected from water, ice and land surfaces (GNSS-Reflectometry, GNSS-R), enable versatile geophysical applications such as sea surface altimetry, observation of wind speed and precipitation over oceans, and soil moisture or snow height observation on land. GNSS-R principles and applications are introduced and promising developments for a comprehensive Earth Observation with small satellite constellations are presented.

Chairman:
Jens Wickert, German Research Centre for Geosciences, Technische Universität Berlin

Session 6.
THE FUTURE IN SPACECRAFT NAVIGATION - CONCEPTS, TECHNOLOGIES AND APPLICATIONS

The session will cover concepts, technologies and also applications related to the wide field of spacecraft navigation. In this context, the activities of the UN - International Committee on GNSS (ICG) for establishing an interoperable GNSS Space Service Volume (SSV) and associated standards will be addressed. The status of Kepler satellite navigation concept exploiting optical links and quantum technology is outlined and related to benefits in user applications. Further, mega constellations in LEOs as a second shell beyond the conventional GNSS MEO constellation will be addressed and linked to the enormous benefits on user level for accurate and reliable carrier phase or Doppler based spacecraft navigation.

Chairman:
Prof. Dr. Werner Enderle, Head of Navigation Office Ground Systems Engineering Department, ESA, Darmstadt, Germany

Session 7.
INSIGHTS IN STATUS AND FUTURE OF GALILEO

Following the 2016 declaration of Initial Services, the performance of Galileo will gradually improve as additional satellites and services are added. The session will provide the status of the system deployment, including an overview on the most innovative added-value elements and services to be introduced in the next few years. Some highlights on the various activities being performed towards the Galileo 2nd Generation (G2G) will be presented, too. The session will also provide up-to-date information on the Public Regulated Service (PRS) and its user segment technology, including some innovative development.

Chairmen:
Matteo Paonni, Project Manager, European Commission, Joint Research Centre (JRC), Ispra, Italy
Dr. Stefan Baumann, Programme Manager, IABG, Ottobrunn, Germany

16.30-17.00 hrs

HAVE A BREAK

17.00-18.30 hrs

LIFE APPLICATIONS

Session 8. REGULATORY AND CYBERSECURITY ASPECTS OF AUTOMATED/ AUTONOMOUS SYSTEMS

This year's Legal Session will focus on regulatory and cybersecurity aspects for automated and autonomous systems. Co-organized again by BHO Legal, the session will include high-level speakers from relevant international organizations, national ministries and industry providing insight on the current state in the development of suitable regulatory frameworks and on efforts in coping with ever-increasing cybersecurity threats. On the way from automated to increasingly autonomous systems, there are significant technical hurdles, including proper cybersecurity. The development also raises completely new aspects with regard to established legal principles such as causality, responsibility and – ultimately – liability.

Chairmen:

Dr. Ingo Baumann, Partner,
BHO Legal, Cologne, Germany

Dr. Oliver Heinrich, Partner,
BHO Legal, Cologne, Germany

IMPROVING TECHNIQUES

Session 9. PPP FOR SAFETY OF LIFE APPLICATIONS, DREAM OR REALITY?

Over the last years Precise Point Positioning (PPP) techniques have demonstrated their capability to provide high accuracy positioning services at any location, reducing the support of any dense local or regional infrastructure. This paved the way for the provision of low cost high accuracy positioning services. Nowadays, many user communities, such as automotive, rail, maritime, agriculture, etc. are becoming enthusiastic about the potential of PPP techniques, and are now looking for, or implementing solutions able to deliver certain levels of integrity. Some years ago the provision of safe PPP solutions was a dream, but today it is becoming a reality. This will enable a wide range of low cost new autonomous and safety of life applications.

Chairman:

Miguel Romay Merino, GNSS
Executive Officer, GMV, Madrid, Spain

18.30 hrs

Evening. Conclusion and Farewell by the Summit Team

REGISTRATION

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

Registration fee:

Full Summit Rate
€ 250,00

The registration fee includes the following:

- access to all online sessions
- active participation in the discussions
- download of the proceedings

CANCELLATION/REFUND POLICY

Written cancellations until March 2, 2021 are refundable less €95 cancellation fee. After March 2, 2021 there will be no refunds. We regret that individual registration benefits are not transferable.

EXHIBITION & SPONSORING

Interested in supporting this unique event and to present your company in a new virtual format? Please contact us, so we can discuss about details.

CONTACT

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