

PROGRAM

MONDAY, 5TH MARCH 2018

DAY 1. EVENING. OPENING

16:00 hrs - OFFICIAL OPENING OF THE EXHIBITION and CHAMPAGNE WELCOME

Sponsored by **NavCert GmbH**

16:45 - 19:00 hrs - OPENING PLENARY

This event takes place at the „Alte Bayerische Staatsbank“ (Old Bavarian State Bank). The Deputy Bavarian Minister-President and Bavarian State Minister of Economic Affairs and Media, Energy and Technology, **Ilse Aigner**, representatives of various European entities as well as representatives from all over the world are opening the Munich Satellite Navigation Summit 2018 with their view on the topic:

Competition and Cooperation in Satellite Navigation: Who wins?

WELCOME:

- **Prof. Dr. Thomas Pany**, Institute of Space Technology and **Space Applications** (ISTA), Universitaet der Bundeswehr Muenchen, Neubiberg, Germany
- **Prof. Dr. Merith Niehuss**, President, Universitaet der Bundeswehr Muenchen, Neubiberg, Germany
- **Ilse Aigner**, Deputy Bavarian Minister-President and Bavarian State Minister for Economic Affairs and the Media, Energy and Technology, Munich, Germany (via video statement)

MODERATOR:

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

PANEL MEMBERS:

- **Matthias Petschke**, Director, EU Satellite Navigation Programmes, European Commission, Brussels, Belgium
- **Prof. Dr. Johann-Dietrich Wörner**, Director General, ESA, Paris, France
- **Graham Turnock**, Head of UK Space Agency, Swindon, UK
- **Harold Martin**, Director, National Coordination Office for Space-Based Positioning, Navigation, and Timing, Washington, DC, USA
- **Mikhail Khaylov**, Deputy Director General, ROSCOSMOS State Space Corporation, Moscow, Russia
- **Dr. Jun Shen**, Deputy Director, International Cooperation Center, China Satellite Navigation Office, Beijing, China
- **Go Takizawa**, Executive Director of QZSS Strategy, National Space Policy Secretariat, Tokyo, Japan
- **Carlo des Dorides**, Executive Director, European GNSS Agency (GSA), Prague, Czech Republic
- **Simon Plum**, Managing Director for the Galileo Program, DLR GfR, Weßling, Germany

19:30 hrs - BAVARIAN GOVERNMENT RECEPTION AT THE „MAX-JOSEPH-SAAL“ OF THE „RESIDENZ MÜNCHEN“

hosted by **Ilse Aigner**, Deputy Bavarian Minister-President and Bavarian State Minister of Economic Affairs and Media, Energy and Technology

TUESDAY, 6TH MARCH 2018

DAY 2. MORNING.

08:30 - 09:45 hrs - Session 1: GNSS PROGRAM UPDATES – GLOBAL, REGIONAL AND AUGMENTATION SYSTEMS

Presentations inform 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)

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

CHAIRMAN:

- **Dr. John Betz**, Fellow, The MITRE Corporation, Bedford, MA, USA

PANEL MEMBERS:

- **Paul Flament**, Head of Unit, Galileo and EGNOS – Programme Management, European Commission, Brussels, Belgium
Status of Galileo
- **Jean-Marc Pieplu**, EGNOS Exploitation Program Manager, European GNSS Agency (GSA), Prague, Czech Republic
Status of EGNOS
- **Harold Martin**, Director, National Coordination Office for Space-Based Positioning, Navigation, and Timing, Washington, DC, USA
Status and Modernization of the US Global Positioning System
- **Ivan Revnivykh**, Head of GLONASS Application Office, ROSCOSMOS Space State Corporation, Moscow, Russia
Status of GLONASS
- **Dr. Jun Shen**, Deputy Director, International Cooperation Center, China Satellite Navigation Office, Beijing, China
BeiDou Navigation Satellite System Development
- **Go Takizawa**, Executive Director of QZSS Strategy, National Space Policy Secretariat, Tokyo, Japan
Status of the Japanese QZSS Regional System
- **Sharafat Gadimova**, Program Officer, UN Office for Outer Space Affairs, Vienna, Austria
Status of the ICG

09:45 - 11:15 hrs - Session 2: GNSS NEEDS OF AUTONOMOUS CARS AND CYBER-PHYSICAL SYSTEMS

Autonomous cars, naval surface vehicles and unmanned aerial vehicles summarized as cyber-physical systems have a clear demand for navigation capability. The development of those systems is still in progress and GNSS takes quite a different role for each platform. Especially within current prototypes of autonomous cars, GNSS plays often a minor role and is used for route finding only as integrity of a GNSS based position cannot be guaranteed within an urban environment. In this session, we will hear solution providers how they see GNSS in their current developments and what is on their wish list for next generation GNSS receivers and systems.

CHAIRMAN:

- **Dr. Jari Syrjärinne**, Director, Positioning Services, HERE Technologies, Tampere, Finland

PANEL MEMBERS:

- **Gian Gherardo Calini**, Head of Market Development, European GNSS Agency (GSA), Prague, Czech Republic
- **Frank Czopek**, Senior System Engineer, Microcosm, Torrance, CA, USA
- **Roman Lesjak**, Senior Researcher, DIGITAL – Institute for Information and Communication Technologies, Space and Communication Technology, JOANNEUM RESEARCH Forschungsgesellschaft mbH
- **Dr. Martin Metzner**, Institute of Engineering Geodesy, University of Stuttgart, Germany
- **Dr. Luis Serrano**, Technical Marketing Manager, EMEA Automotive and Discrete Group, STMicroelectronics Application GmbH, Aschheim, Germany

11:15 - 11:45 hrs - REFRESHMENT BREAK

11:45 - 13:15 hrs - Session 3: FUTURE OF PRECISE POINT POSITIONING FOR AUTONOMOUS SYSTEMS

The automotive industry is moving towards autonomous driving by typically using a combination of various sensors like INS, odometers, radar, cameras, LIDAR. GNSS Precise Point Positioning using established correction services from satellites and IP is becoming an additional important source for absolute location on earth. Besides autonomy on the road, agricultural tractors and construction machinery are also targeting complete autonomy. Accuracy, convergence, availability, and integrity are important when providing a reliable position for safety critical applications. Different existing implementations, services and ongoing developments will be discussed.

CHAIRMAN:

- **Dr. Herbert Landau**, Managing Director, Trimble Terrasat GmbH, Höhenkirchen-Siegertsbrunn, Germany

PANEL MEMBERS:

- **Dr. Ignacio Fernández Hernández**, Galileo Commercial Service Manager, European Commission, Brussels, Belgium
- **Marcus Reutemann**, Supervisor GNSS Solutions, John Deere, Kaiserslautern, Germany
- **Michael Ritter**, President, Hexagon Positioning Intelligence, Denver, CO, USA
- **Doug Brent**, Vice President Innovation and Technology, Trimble, Sunnyvale, CA, USA
- **Curtis Hay**, Technical Fellow, General Motors, West Bloomfield, MI, USA
- **Michael Baus**, Chassis Systems Control, Project vehicle motion and position sensor, Robert Bosch GmbH, Heilbronn, Germany

13:15 - 14:15 hrs - NETWORKING LUNCHEON

DAY 2. AFTERNOON.

14:15 - 15:45 hrs - Session 4: LEGAL AND REGULATORY ASPECTS ON GNSS AND AUTONOMOUS SYSTEMS

This year's Legal Session will focus on legal and regulatory issues of autonomous systems in air, land and maritime transport, with a special focus on positioning and navigation functions. Leading experts from European and national institutions and academia will present current frameworks and on-going work for regulations for drone, autonomous cars and other type of autonomous vehicles, including aspects of specific interest, e.g. aspects of liability and data protection.

CHAIRMEN:

- **Dr. Ingo Baumann**, Partner, BHO Legal, Cologne, Germany
- **Dr. Oliver Heinrich**, Partner, BHO Legal, Cologne, Germany

PANEL MEMBERS:

- **Philippe Jean**, Head of Unit, EU Satellite Navigation Programmes Galileo & EGNOS: legal and institutional aspects, European Commission, DG GROW, Brussels, Belgium
- **Manfred Dieroff**, ATM/ANS Standardisation and Oversight Section Manager, European Aviation Safety Agency (EASA), Cologne Germany
- **Dr. Christhard Gelau**, Federal Ministry of Transport and Digital Infrastructure (BMVI), Berlin, Germany
- **Erik I. Tvedt**, Special Adviser, Technical Regulation, Naval Architect, FIMarEST, FRINA, Danish Maritime Authority, Korsør, Denmark

15:45 - 17:15 hrs - Session 5: GALILEO ADOPTION OUTSIDE EUROPE: STATUS AND PERSPECTIVES

The launch of Galileo Initial Services last year has paved the way for new services and applications which can foster the adoption of Galileo outside Europe. Europe is supporting European GNSS companies to discover new markets with several actions, with a specific focus on Asia. European companies can be the ambassadors of Galileo around the world, in particular in those countries that are not GNSS providers. What is the viewpoint and what are the necessities of European Commission, companies and other stakeholders? Panellists will guide us to discover the answer to the posed question through their experience in Europe and Asia.

CHAIRWOMAN:

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

PANEL MEMBERS:

- **Pieter De Smet**, Policy Officer, DG GROW, European Commission, Brussels, Belgium
- **Dr. Patrick Henkel**, CEO and Founder, Advanced Navigation Solutions – AnavS GmbH, Munich, Germany
- **Mark Dumville**, Director, Nottingham Scientific Limited, Nottingham, UK
- **Dr. Bruno Bougard**, Director of R&D, Septentrio, Heverlee, Belgium
- **Dr. Gabriella Povero**, Head of Unit „International Cooperation on GNSS“, Istituto Superiore Mario Boella, Turin, Italy
- **Prof. Dr. Tung Hai Ta**, NAVIS Centre, Hanoi, Vietnam
- **Michael Ritter**, President, Hexagon Positioning Intelligence, Denver, CO, USA

17:15 - 17:45 hrs - REFRESHMENT BREAK

17:45 - 19:00 hrs - Session 6: INNOVATIVE MULTI-GNSS SERVICES AND APPLICATIONS MADE IN/WITH JAPAN FOR THE WORLD

In the last years Japan has been bringing its QZSS into operation. Simultaneously a number of services have been developed which build on synergy between ground and space systems to tackle societal challenges such as the need to prepare for an autonomous drive age and mitigation of natural disasters.

CHAIRMAN:

- **Rainer Horn**, Managing Partner, SpaceTec Partners, Munich, Germany

PANEL MEMBERS:

- **Prof. Ryosuke Shibasaki**, Secretary General, Multi-GNSS.asia, Tokyo, Japan
- **Takeyasu Sakai**, Electronic Navigation Research Institute, Tokyo, Japan
- **Yoshikatsu Iotake**, Director, Global Positioning Augmentation Service, Tokyo, Japan
- **Hiroaki Tateshita**, Deputy Director, Cabinet Office, Tokyo, Japan
- **Dr. Hiroshi Koyama**, Executive Fellow, Mitsubishi Electric Corporation, Tokyo, Japan
- **Frederic Doms**, Policy Officer, DG GROW, European Commission, Brussels, Belgium

DAY 2. EVENING. SUMMIT SPACE NIGHT 2018

20:00 hrs - SUMMIT SPACE NIGHT 2018 - Sponsored by **Airbus Defence and Space**

Airbus Showroom - Willy-Messerschmitt-Straße 1 - 82024 Taufkirchen

WEDNESDAY, 7TH MARCH 2018

DAY 3. MORNING.

08:30 - 09:30 hrs - 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.

CHAIRWOMAN:

- **Loredana Bruca**, GSOp Service Provision Manager, spaceopal GmbH, Munich, Germany

PANEL MEMBERS:

- **Dr. Hanno Beckmann**, ISTA, Universitaet der Bundeswehr Muenchen, Neubiberg, Germany
- **Dr. Stefan Bedrich**, Director Engineering, OHB System AG, Weßling, Germany
- **Moises Navarro-Gallardo**, GNSS Applications Expert, Airbus Defence and Space, Ottobrunn, Germany
- **Martin Grzebellus**, Managing Director, NavCert, Braunschweig/Munich, Germany
- **Dr. Guenther Heinrichs**, Head of Customer Applications, Business Development, IFEN GmbH, Poing, Germany
- **Hartmut Runge**, SAR Signal Processing, Remote Sensing Technology Institute, German Aerospace Center (DLR), Weßling, Germany
- **André Bauerhin**, Managing Director, spaceopal GmbH, Munich, Germany
- **Prof. Dr. Guenter Hein**, Acting Director of the Executive Board, Munich Aerospace-Fakultaet fuer Luft- und Raumfahrt e.V., Taufkirchen, Germany

09:30 - 11:00 hrs - Session 8: BEIDOU APPLICATION INNOVATIONS IN CHINA

GNSS applications have been extended as an integral part to every corner of human life in the past decades. The rapid establishment of Chinese BeiDou-2 system, along with the impending global BeiDou-3, has been inspiring innovations for location based services (LBS) applied to both professional fields and mass markets within and beyond China. We will discuss the representative achievements rooted in BeiDou such as but not limited to the National BeiDou Augmentation System of China which paves the way for high precision surveying and positioning, Chinese XiHe System which delivers seamless positions across indoor/outdoor borders, and Baidu/Alibaba/Tencent (BAT, IT superpowers in China) LBS to bolster open and free Mobike and mobile smart positions for the general public. With BeiDou, the Chinese developers, investors and users are more aggressive to attempt, implement and accept dazzling ideas for and beyond LBS to facilitate their lives and raise their fortune. This session will be focused on LBS application innovations stimulated by Chinese BeiDou in China.

CHAIRMAN:

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

OPENING ADDRESS:

- **Qi'An Wang**, Chief of the National Remote Sensing Center China, Beijing, China

PANEL MEMBERS:

- **Prof. Chuang Shi**, Beihang University, Beijing, China
- **Prof. Jianghui Geng**, Wuhan University, Wuhan, China

- **Hongjie Cao**, General Manager, BeiDou Navigation Ltd., Beijing, China
- **Prof. Ruizhi Chen**, Wuhan University, Wuhan, China
- **Zheng`Xuan Zhang**, Beijing BDStar Navigation Co. Ltd., Beijing, China
- **Jian`Tong Zhang**, China Transport Telecommunications & Information Center, Beijing, China

11:00 - 11:30 hrs - REFRESHMENT BREAK

11:30 - 13:00 hrs - Session 9: AUTHENTICATION FOR GNSS: A REAL NEED FOR NEW APPLICATIONS?

In the last few years the introduction of authentication capabilities to their signals seems a new trend for GNSS providers. Galileo might be the first global system implementing such capabilities, starting with Navigation Message Authentication. What is the status of play for the European GNSS? Are there other providers with concrete plans for authentication? Which are the drivers that lead governments and organizations to plan for enhancing trust and authenticity in GNSS? What are the effective needs on the side of application providers? To which extent the introduction of authentication capabilities is going to be an opportunity for new or more reliable services based on GNSS?

CHAIRMAN:

- **Matteo Paonni**, Scientific/Technical Project Officer, European Commission, Joint Research Center (JRC), Ispra, Italy

PANEL MEMBERS:

- **Dr. Ignacio Fernandez-Hernandez**, Galileo Commercial Service Manager, European Commission, Brussels, Belgium
- **Reinhard Blasi**, Market Development Officer, European GNSS Agency (GSA), Prague, Czech Republic
- **Sandy Kennedy**, Vice President Innovation, Hexagon Positioning Intelligence, Calgary, Canada
- **Philip Mattos**, Senior Engineer, u-blox UK Ltd, Reigate, UK
- **Dr. Jari Syrjärinne**, Director, Positioning Services, HERE Technologies, Tampere, Finland
- **Dr. Luis Serrano**, Technical Marketing Manager, EMEA Automotive and Discrete Group, STMicroelectronics Application GmbH, Aschheim, Germany
- **Gerhard Berz**, Focal Point Navigation Infrastructure, EUROCONTROL, Brussels, Belgium

13:00 - 13:45 hrs - NETWORKING LUNCHEON

DAY 3. AFTERNOON.

13:45 - 15:30 hrs - Session 10: Galileo PRS Receiver Development

The deployment of the Public Regulated Service (PRS) of Galileo has successfully continued in recent years and multiple projects and activities on European and national level are ongoing to enable the operational use of PRS in the upcoming years. One essential prerequisite for the future adoption of PRS by multiple user communities is the availability of adequate receivers for different applications. This session will provide an overview on European PRS receiver developments and the way forward.

CHAIRMAN:

- **Dr. Stefan Baumann**, Project Manager, IABG, Ottobrunn, Germany

PANEL MEMBERS:

- **Charles Villie**, PRS Service Manager, Security Department, European GNSS Agency (GSA), Prague, Czech Republic
- **Pierre Bouniol**, Manager, GNSS Product Line, Thales AVS, Région de Valence, France
- **Richard Bowden**, Program Manager, QinetiQ, Malvern, UK
- **Alessandro Ambri**, Product Manager, Leonardo, Florence, Italy
- **Alexander Ruegamer**, Group Manager Specialized GNSS Receivers, Fraunhofer IIS, Nuremberg, Germany
- **Frank Wilms**, Business Development, Septentrio, Leuven, Belgium

15:30 - 17:00 hrs - Session 11: UAV AND GNSS: APPLICATIONS AND SAFETY

Small Unmanned Aerial Vehicles (UAVs) – providing applications without limits for some, a fundamental threat for others. Both sides have their eligible but partly contradicting views. This is addressed in a collaborative approach to the definition of U-Space, the evolutive concept for the future European UAV Traffic Management (UTM). Accurate positioning and control but also surveillance and geo-fencing are important GNSS applications in this area. Are these approaches sufficient, and is GNSS sufficiently reliable to serve the interest of both sides? What other applications and technologies may be needed?

CHAIRMAN:

- **Peter Braun**, Sales Director Satellite Operations, Telespazio VEGA Deutschland, Gilching, Germany

PANEL MEMBERS:

- **Dominique Colin**, Senior expert RPAS certification and standardisation, Eurocontrol, Brussels, Belgium
- **Dominic Hayes**, Manager of the Galileo and EGNOS Signals and Frequencies, European Commission, Brussels, Belgium
- **Prof. Dr. Johann Dambeck**, Flight Navigation and Data Fusion, Institute of Flight System Dynamics, Technical University Munich (TUM), Garching, Germany
- **Prof. Dr. Peter Stütz**, Institute of Flight Systems, Universitaet der Bundeswehr Muenchen, Neubiberg, Germany
- **Dr. Jan Wendel**, System Engineer, Airbus Defence and Space, Ottobrunn, Germany
- **Frank Schmidt-Brücken**, Senior Systems Engineer, System Architect Drone Detection System (DIDIT), Telespazio VEGA Deutschland, Darmstadt, Germany

17:00 hrs - CLOSING OF MUNICH SATELLITE NAVIGATION SUMMIT 2018