

ISPA 2017

**International Symposium on Precision Approach
and Performance Based Navigation**

08 - 09 November 2017, Munich

Programme



**organised by the
German Institute of Navigation**
Deutsche Gesellschaft für Ortung und Navigation e. V. (DGON)

in cooperation with



German Aerospace Center
Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)

Tuesday, November 07, 2017

19:00 - 21:00 **Get Together Party** (Maritim Munich hotel bar)

Wednesday, November 08, 2017

08:00 **Conference Registration**

09:00 **Conference Opening**

Dirk KUEGLER, General Chair
Maurizio SCARAMUZZA, Technical Chair

09:10 **Key Note**

Michael STANDAR, Chief Strategy & External Affairs
SESAR Joint Undertaking, Brussels, Belgium

Session 1 Flight Procedures & Surface Navigation

Chair: *Werner LANGHANS*

Co-Chair: *Thomas FEUERLE*

09:30 **PBN Hybrid Procedures as an Enabler for Airport Accessibility in Challenging Terrain**
Philipp Daniel SCHAAD, Austro Control, Vienna, Austria

10:00 **On the feasibility of SBAS LPV approaches in complex terrain: the case of Innsbruck from the procedure design perspective**
Carlos GONZAGA-LÓPEZ, *Florian BUCHMANN*, Austro Control, Vienna, Austria
Thomas DAUTERMANN, *Thomas LUDWIG*
German Aerospace Center (DLR), Braunschweig, Germany

10:30 **Coffee**

11:00 **Adoption of True North as the Reference for Aviation Headings**
Bart BANNING, Netherlands Institute of Navigation, The Netherlands
Simon GASKIN FRIN, International Association of Institutes of Navigation, United Kingdom
Anthony MACKAY, NAV CANADA, Canada

11:30 **Risks of ground operations in general**
Karel MÜNDEL, Honeywell International, Brno, Czech Republic

12:00 **Independent RNP Approaches to enable Noise Abatement Approach Procedures on parallel Runways**
Bernd KORN, German Aerospace Center (DLR), Braunschweig, Germany

12:30 **Lunch**

Session 2 Flight Guidance & Automatic Landing

Chair: *Maarten UIJT DE HAAG*

Co-Chair: *Jochen BREDEMEYER*

13:30 **Advanced RNP to xLS Approaches with Optimized Speed Profiles and Automatic Landings: Flight Testing Procedures with an A320**
Thomas DAUTERMANN, *Thomas LUDWIG*, *Robert GEISTER*, *Lina ALTENSCHIEDT*
German Aerospace Center (DLR), Braunschweig, Germany

- 14:00** **C2LAND – Increasing Safety of Automatic Landing Systems for General Aviation Aircraft by Optical Runway Detection**
Nils Christian MUMM, Martin KÜGLER, Florian HOLZAPFEL
Technical University, Munich, Germany
Alexander SCHWITHAL, Technische Universität Braunschweig, Germany
- 14:30** **Evaluation of the Flight Technical Error of a Trajectory Controller during Final Approach**
Nils Christian MUMM, Simon SCHATZ, Florian HOLZAPFEL
Technical University, Munich, Germany
- 15:00** **Coffee**

Session 3 **Ground Based Augmentation System (GBAS)**

Chair: *Jolana DVORSKA*

Co-Chair: *Pascal TRUFFER*

- 15:30** **Inspection of GAST-D Approach and Taxi Guidance Systems**
Claus-Sebastian WILKENS, Patrick THOMSEN, Aerodata AG, Braunschweig, Germany
Per Martin SCHACHTEBECK, Mirko STANISAK, TU Braunschweig, Germany
- 16:00** **GBAS Flight Trials with General Aviation Aircraft**
Thomas FEUERLE, Mirko STANISAK, TU Braunschweig, Germany
Erik WISCHMANN, Stefan MUHR, Felix BLUMRICH
f.u.n.k.e. AVIONICS GmbH, Ulm, Germany
- 16:30** **Future dual-frequency multi-constellation GBAS modes**
Michael FELUX, Mihaela-Simona CIRCIU, Daniel GERBETH, Maria CAAMANO
German Aerospace Center (DLR), Wessling, Germany
- 17:00** **End of Day 1**
- 19:00 - 21:30** **Symposium Dinner**

Thursday, November 09, 2017

Session 4 **Radio Frequency Interference (RFI) & Monitoring**

Chair: *Erich KLOCK*

Co-Chair: *Marc TROLLER*

- 09:00** **Clustering-based Solution Separation Algorithm against GNSS Spoofing Attacks**
Kewei ZHANG, Panos PAPANIMITRATOS
Networked Systems Security Group, KTH Royal Institute of Technology, Stockholm, Sweden
- 09:30** **Assessment of the susceptibility of pseudo range to RF interference**
Pascal TRUFFER, Maurizio SCARAMUZZA, Marc TROLLER
Skyguide, Swiss Air Navigation Services Ltd., Wangen, Switzerland

10:00 **Assessment of the GPS Constellation Variation and its Impact to the Navigation Performance in Mountainous Area**
Marc TROLLER, Maurizio SCARAMUZZA, Pascal TRUFFER
Skyguide, Swiss Air Navigation Services Ltd., Wangen, Switzerland
Alain GEIGER, ETH Zürich, Switzerland

10:30 **Assessment of Aircraft Tracks by Automated, Passive, High Precision Optical Tracking with Q-Daedalus**
Sébastien GUILLAUME, Alain GEIGER, ETH Zurich, Switzerland
Maurizio SCARAMUZZA, Skyguide, Swiss Air Navigation Services Ltd., Wangen, Switzerland

11:00 **Coffee**

Session 5 Alternative Positioning Navigation and Time (APNT)

Chair: *Stefan NAERLICH*

Co-Chair: *Dirk KÜGLER*

11:30 **Achievable Navigation Performance with LDACS as Upgrade of VDL Stations**
Giuseppe BATTISTA, Rachit KUMAR, Thomas GRÄUPL, Okuary OSECHAS
German Aerospace Center (DLR), Wessling, Germany

12:00 **Mode N - Modern Navigation & APNT for Aviation**
Steffen MARQUARD, DFS Deutsche Flugsicherung GmbH, Langen, Germany

12:30 **Preliminary Model for Modular-APNT Service Provision**
*Rachit KUMAR, Giuseppe BATTISTA, Okuary OSECHAS, Michael MEURER**
German Aerospace Center (DLR), Wessling, Germany
* as well Chair of Navigation, RWTH Aachen University, Germany

13:00 **Lunch**

Session 6 Unmanned Aircraft System (UAS)

Chair: *Robert GEISTER*

Co-Chair: *Maurizio SCARAMUZZA*

14:00 **Augmentation of Ground-based ILS Measurements using UAS**
Jochen BREDEMEYER, FCS Flight Calibration Services GmbH, Braunschweig, Germany
Thorsten SCHRADER, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany
Ralf DIETZEL, Heiko MÜLLER, DFS Deutsche Flugsicherung GmbH, München, Germany

14:30 **DEMONA (Demonstration of UAS Integration for VLL Airspace Operations)**
Julia Sophie SCHATNER, Sascha BARTL, Philipp BERGLEZ
TeleConsult Austria GmbH, Graz, Austria
Klaus KAINRATH, FH JOANNEUM, Graz, Austria
Bernhard HOFMANN-WELLENHOF, TU Graz, Austria

15:00 **Innovative and Efficient Visual Inspection Method of Air Navigation Facilities with the Help of Drones**
Marco HAPPENHOFER, Erich KLOCK, Austro Control, Vienna, Austria

15:30 **Assured Cooperative Navigation of a Small UAS Swarm**
Maarten UIJT DE HAAG, Joel HUFF, Adam SCHULTZ, Ohio University, Athens, USA

16:00 **Closing Remarks**

16:15 **End of Symposium**