

TUESDAY 30 MAY, 2023

Location	GRC (Galileo Reference Centre)
14.00	European Journal of Navigation (by invitation only)
14.40	Coffee break
15.00	EUGIN (European Group of Institutes of Navigation) Council & General Assembly (by invitation only)
16.00	Tea break
16.30	IAIN (International Association of Institutes of Navigation) Officers' Meeting (by invitation only)
18.00 - 19.30 Ice Breaker Reception	



WEDNESDAY 31 MAY, 2023

10.00 PLENARY - OPENING

HIGHBAY

10.00 - NIN Welcome - **Bart Banning** / **Merle Snijders**, ENC LOC

10.05 - EUGIN - **Terry Moore**, Chairman

10.10 - Opening Speech - **Mark Harbers**, Dutch Minister of Infrastructure and Water Management

10.25 - ESA ESTEC - **Dietmar Pilz**, Director

10.35 - ESA Navigation - **Javier Benedicto**, Director

10.55 - ESA G2 announcement - **E. Guarino**, **M. Manteiga**, ESA / **T. Sassorossi**, TAS-IT / **S. Sandrone**, ADS-DE / **M. Romay**, GMV / **B. Broudy**, TAS-FR / **P. Jeanne**, TSIX-FR / **J-C Castellanos**, TEC-ES, LEO-IT / **G. Moura**, SAF-FR / ESA G2 PM / Heads of industry



Mark Harbers



Javier Benedicto

11.30

Coffee break

12.00 PLENARY - KEYNOTES

HIGHBAY

12.00 - EUSPA - **Alvaro Mozo**, GNSS Exploitation Service Engineering Manager

12.18 - Spaceopal - **Marco Folino**, CEO

11.30 - GPS status update - **Robert Wray**, Commander of 2nd Space Operations Squadron, US Space Force



Pascal Claudel



Robert Wray

13.00

Lunch

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2
Session:	1. Interference and Jamming 1	7. Advanced GNSS Techniques	3. Performance Prediction, Monitoring and Assessment 1	5. Multi-Sensor and Augmented PNT 1
	Chair: Jim McDonald Co-chair: Alexandru Budianu	Chair: Tom Willems Co-chair: Noori Bni Lam	Chair: Maarten Uijt de Haag Co-chair: Nityaporn Sirikan	Chair: William Roberts Co-chair: Anna Jensen
14.20	P Jammertest 2022 Jamming and Spoofing Lessons Learned Aiden Morrison Senior Researcher, SINTEF AS	Multibeam GNSS using Phased Array Antenna Lionel Tombakdjian Phd. Student, LEAT CNRS UMR7248	GNSS-Finland: Resilient PNT Monitoring at a National Level Toni Hammarberg Researcher, Finnish Geospatial Research Institute	P Quantum-based Relative Inertial Navigation with Velocity-aided Alignment and Initialization Pieter De Vries Scientist Innovator, TNO
14.40	P Continuous Localization Assisted Collaborative RFI Detection using the COTS GNSS Receivers Naveed Ahmed Researcher, Norwegian University of Science and Technology (NTNU)	Real-time Multi-GNSS Precise Point Positioning with Ambiguity Resolution Based on the BDS-3 Global Short-message Communication Dr. Ziyuan Song China, Shanghai Astronomical Observatory	P Precise Positioning for Mass-Market: Optimal Data Dissemination Demonstrator Delphine Isambert Phd Student Exagone - Telecom SudParis	Resilient Navigation Through a Novel Fusion Approach for Multiple Inertial Measurement Units Marcel Maier PhD Student, Institute of Navigation, University of Stuttgart
15.00	P The Vulnerability of Inland Waterway AIS to GNSS Radio Frequency Interference Jakub Steiner GNSS Specialist, GNSS Centre of Excellence	P Multi-constellation/ Multi-frequency GNSS Signal Degradation due to Foliage Uttama Dutta PhD Student, Chalmers University of Technology	Galileo Receiver Performance Analysis with New I/NAV Improvements Live Data Rui Nunes Gnss Engineer, Deimos Engenharia	QGyro - quantum Sensors for Inertial Navigation Steffen Schön University Professor, Institut Für Erdmessung, Leibniz Universität Hannover
15.20	P Beamforming Techniques For Resilient Navigation With Small Antenna Arrays Lucía Pallarés-Rodríguez Research Intern, Universitat Autònoma de Barcelona	P Galileo Performance Improvements employing Meta-Signals – Robustness Analysis against Payload and Receiver Distortions Florian C. Beck Research Associate, German Aerospace Center (DLR)	Galileo High Accuracy Service (HAS) Performance Assessment Alexandre Ramos Cnes	P IMU and GNSS Postprocessing for High-resolution Strapdown Airborne Gravimetry Dr. Vadim Vyazmin Leading Researcher, Lomonosov Moscow State University

WEDNESDAY 31 MAY - CONTINUED

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2
15.40	<p>P LO and Calibration Signal Distribution in a Multi-Antenna Satellite Navigation Receiver Uwe Stehr <i>Scientific Assistant, TU Ilmenau</i></p>	<p>P Quad-band Multi-constellation GNSS Receiver Development Platform with System-on-Chip Architecture Muhammad Saad <i>Senior Engineer, Fraunhofer IIS Nürnberg</i></p>		<p>LiDAR-inertial Odometry Quality Control Method Based on Reliability Theory Dr. Guoliang Liu <i>Nanjing, P.R.China, Southeast University</i></p>
14.30	ESTEC Test Centre Tour 1 at 14.30 - 15.30. Meeting point: Registration desk (pre-registration required)			
16.00	Tea break			
Session:	1. Interference and Jamming 2	3. Performance Prediction, Monitoring and Assessment 3	3. Performance Prediction, Monitoring and Assessment 2	5. Multi-Sensor and Augmented PNT 2
	<p>Chair: Barend Lubbers Co-chair: Ruediger Matthias Weiler</p>	<p>Chair: Stephan Procee Co-chair: Elizabeth Laier English</p>	<p>Chair: Dana Goward Co-chair: Olivier Raphael Smeyers</p>	<p>Chair: Alain Geiger Co-chair: Carlos Jahn</p>
16.30	<p>P Interference Detection, Localization and Mitigation Capabilities of Controlled Reception Pattern Antenna for Aviation Annemarie Van Zwol <i>R&D Engineer, Netherlands Aerospace Centre</i></p>	<p>P A Comparative Experimental Performance Assessment of RTK+OSNMA Based Positioning for Road Vehicle Applications Dr. Susanne Schweitzer <i>Scientist, Joanneum Research Forschungsgesellschaft mbH</i></p>	<p>P EGNOS Performance Prediction Dr. Pieter Bastiaan Ober <i>Senior Navigation Engineer, INTEGRICOM</i></p>	<p>P Experimentation of Vision-aided Inertial Navigation System (VaINS) on a Small Fixed-wing UAV Baheerathan Sivalingam <i>Senior Researcher, Norwegian Defence Research Establishment (ffi)</i></p>
16.50	<p>P GNSS Radio Frequency Interference mitigation in Collins Commercial Airborne Receivers Patrick Bartolone <i>Sr System Engineer, Collins Aerospace</i></p>	<p>P Reliability of Smartphone Positioning in Harsh Environment Prof. Salvatore Gaglione <i>Full Professor, University of Naples "Parthenope"</i></p>	<p>EGNOS Service Provision & Evolutions José Manuel Alvarez López <i>Service Development Manager, European Satellites Services Provider (ESSP-SAS)</i></p>	<p>P Local Differential GNSS Augmentation for Integration into Urban Air Mobility Daniel Gerbeth <i>Researcher, German Aerospace Center (DLR)</i></p>
17.10	<p>P GNSS Interference Monitoring and Detection (GIMAD) System Enric Obiols Bernaus <i>Technical Manager, Indra Sistemas S.a.</i></p>	<p>Worldwide SBAS Broadcast Between 2017 and 2023: a Comparative Study Alessandra Calabrese <i>Gmv Aerospace And Defence S.a.u.</i></p>	<p>Evaluation of Galileo High Accuracy Service (HAS) with real-world Android smartphone navigation dataset Dr. Frank van Diggelen <i>Distinguished Engineer, Google</i></p>	<p>Multibeam GNSS Antenna Based on Flatten Luneburg Lens Prof. Fabien Ferrero <i>Professor, UCA</i></p>
17.30 17.50		<p>P Advanced Receiver Autonomous Integrity Monitoring (ARAIM) for Unmanned Aerial Vehicles Heiko Engwerda <i>Royal Netherlands Aerospace Centre</i></p>	<p>P On the Performance of Direct Position Estimation for VDES R-Mode Markus Wirsing <i>Researcher, German Aerospace Center (DLR)</i></p>	<p>P Cooperative Swarm Geometry Optimization for Assured Navigation with Range Radios in GNSS Denied Environments Mats Martens <i>Scientific Assistant, TU Berlin</i></p>

19.00 - 23.30
Beach Dinner



Thursday 1 June, 2023

09.00	PLENARY - Lunar Navigation and Exploration: a New Paradigm					HIGHBAY
I 09.50	Opening - Chair: <i>Edward Breeuwer, ESA</i> Lunar Navigation and Moonlight Programme Overview - <i>Javier Ventura, ESA</i> Lunar Pathfinder Navigation Experiment - <i>Pietro Giordano, ESA</i> Q&A					  <i>Edward Breeuwer</i> <i>Javier Ventura</i>
Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2	EINSTEIN	
Session:	17. Space Navigation	8. Integrity Algorithms	4. Alternative and Complementary PNT 1	11. Use of AI and Machine Learning 1	1. Interference and Jamming 3	
	<i>Chair: Terry Moore</i> <i>Co-chair: Pietro Giordano</i>	<i>Chair: Bas Ober</i> <i>Co-chair: Sandra Verhagen</i>	<i>Chair: Hein Zelle</i> <i>Co-chair: Salvatore Gaglione</i>	<i>Chair: Axel van den Berg</i> <i>Co-chair: John Pottle</i>	<i>Chair: Barend Lubbers</i> <i>Co-chair: Ruediger Matthias Weiler</i>	
10.00	Benefits for Space Geodesy from the Galileo System Prof. Dr. Krzysztof Sośnica <i>Professor, Institute of Geodesy And Geoinformatics, Wrocław University of Environmental And Life Sciences</i>	 Integrity Algorithms for Galileo Timing Receivers Dr. Ciro Gioia <i>External Consultant at the Joint Research Centre, Independent Researcher</i>	Performance Assessments of a Low-RF Navigation System for Emergencies and Harsh Environments Alejandro Pérez Conesa <i>Project Manager, GMV</i>	ProNet: A Hybrid Adaptive Navigation Filter Nadav Cohen <i>Phd Student, University of Haifa</i>	 Robustness Levels of Critical Infrastructures Against GNSS Global Navigation Satellite System Signal Disturbances Andre Bos <i>Founder, S[&]T</i>	
10.20	Simulation and Analysis of the Precise Orbit Determination for the High-orbit Satellite using Kal/GNSS Observations Dr. Kecai Jiang <i>Postdoctoral fellow, Wuhan University</i>	 Preliminary Assessment of Integrity Parameter Performance for Nation-Wide PPP-RTK Service in South Korea Jaeyoung Song <i>Researcher, Maritime PNT Research Office, KRISO</i>	National Sovereignty and Resilient PNT Dana Goward <i>President, Resilient Navigation and Timing Foundation</i>	Leveraging Artificial Intelligence for Algorithm Design and Trial to Enhance Raw Measurements Oliver Towlson <i>Gmv Nsl Limited</i>	Integral System for Jamming and Spoofing Events Classification and Location to ensure Safe PNB Operations Isaac Ballesteros <i>CTO, Centum Research & Technology</i>	
10.40	Analysis of OD&TS using ISL for MARCONI Constellation around Mars Including user Positioning Performance Serena Molli <i>Phd Student, University La Sapienza Of Rome</i>	Navigation and Orbit Determination for a Geostationary Satellite using Onboard GPS and BDS Observations Dr. Wenwen Li <i>Post Doctor, Wuhan University</i>		 Antiference: New Concept for Evolutive Mitigation of RFI to GNSS Shahzad Afroozeh <i>Senior Researcher, OHB Digital Solutions</i>	GNSS RFI Geolocation using Real-world Data from Android Smartphones Søren Skaarup Larsen <i>Ph.d. Student Technical University of Denmark</i>	
10.15	ESTEC Test Centre Tour 2 at 10.15 - 11.15. Meeting point: Registration desk (pre-registration required)					
11.00	Coffee break					
	POSTER SESSION at Newton Foyer					
Session:	18. Moon/Mars Navigation Services	10. High Accuracy Techniques 1	4. Alternative and Complementary PNT 2	11. Use of AI and Machine Learning 2	1. Interference and Jamming 4	
	<i>Chair: Frank van Diggelen</i> <i>Co-chair: Terry Moore</i>	<i>Chair: Maarten Uijt de Haag</i> <i>Co-chair: Irma Rodriguez</i>	<i>Chair: Dana Goward</i> <i>Co-chair: William Roberts</i>	<i>Chair: Paolo Crosta</i> <i>Co-chair: Anna Jensen</i>	<i>Chair: Jim McDonald</i> <i>Co-chair: Alexandru Budianu</i>	
11.30	Cooperative Positioning-GNSS applied to the NaviMoon High-sensitivity Lunar Receiver Anaïs Delépaut <i>PhD Student, Politecnico Di Torino</i>	 AI-Driven GNSS Carrier Phase Ambiguity Resolution: A Conceptual Approach Amarildo Haxhi <i>Phd, National Technical University of Athens</i>	 Radar Absolute Positioning Lydia Hyde <i>Principal Engineer, GRAD (GLA UK & Ireland)</i>	 Satellite Navigation Signal Interference Detection and Machine Learning-Based Classification Techniques towards Product Implementation Jelle Rijnsdorp <i>S[&]T</i>	 Performance Characterization of NovAtel's Robust Dual-Antenna Receiver (RoDAR) during the Norwegian Jamming Trial 2022 Ali Broumandan <i>Resilient GNSS Lead, NovAtel</i>	

THURSDAY 1 JUNE - CONTINUED

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2	EINSTEIN
11.50	Navigation Performance of a Lunar Surface Rover Using LCNS Positioning Assuming Realistic ODTS Performances Yoann Audet Young Graduate Trainee, European Space Agency	PATHfinder. PNT as A Technology to support a scalable Fleet of IINKed Drones operating in BVLOS scenarios for preventive monitoring and Emergency missions Marco Nisi Head Of Integrated Space Solutions, Sistematica S.p.A.	AoA-based Coarse Positioning for GNSS Applications Dr. Noori Bni Lam Research Fellow, ESA	Flight Tested Results and Performance Analysis of a Machine-Learning Software-enhanced Inertial Navigation System Dr. Carl Sequeira Head of Engineering, Flare Bright	Aviation resilience to GNSS frequency jamming and cyber threats (AIRING) Luis Javier Álvarez Antón Gmv
12.10	Examining Galileo E6 HAS in Space Environment Using N-SPHERE Syrlinks Receiver and Orolia GNSS Simulator Benoit Legru Software Navigation Engineer, Syrlinks	Estimating Satellite Navigation Broadcast Ephemeris via Inter-Satellite and Ground-to-Satellite Ranging Manuele Walter Josef Dassié Scientific Researcher, German Aerospace Center (DLR)	Orbits-as-a-Service for Signals of Opportunity based Position, Navigation and Timing (PNT) Dr. Luis Enrique Aguado Bayon Section Head, PNTUK GMV	Accurate Orbit Corrections for Single-frequency GNSS Receiver with Transformer Deep Learning Alejandro Pérez Conesa Project Manager, GMV	
12.30	Lunar Navigation System ODTS Signal In Space Error Analysis Martina Cappa Time and Frequency Engineer Thales Alenia Space Italia	Cycle slip Detection of Single-frequency Measurement in Drone Platform Chan-hee Lee Master's Course, Hongik University			

11.30 **ESTEC Test Centre Tour 3 at 11.30 - 12.30.** Meeting point: Registration desk (pre-registration required)

12.50

Lunch

13.00 - 13.20
Lunch Session

U.S. President's National Space-based PNT Advisory Board (room: Highbay)
Dana Goward, Resilient Navigation and Timing Foundation
Frank v Diggelen, Google
Terry Moore, Royal Institute of Navigation



Dana Goward Frank van Diggelen

Session:	15. Reference Trajectory Optimization 1	10. High Accuracy Techniques 2	4. Alternative and Complementary PNT 3	19. Simulation, Testing, Analysis Tools and Results	2. Spoofing and Meaconing 1
	Chair: Axel van den Berg Co-chair: Frank van Diggelen	Chair: Valérie Renaudin Co-chair: Anna Jensen	Chair: Sherman Lo Co-chair: Rafael Lucas Rodriguez	Chair: Sandy Kennedy Co-chair: Nityaporn Sirikan	Chair: Jim McDonald Co-chair: Alexandru Budianu
14.20	The Galileo Return Link Service for Space Debris Collision Avoidance Jesus Cegarra Head Of Division, Gmvdad	LAMBDA 4.0: an Enhanced Toolbox for high Dimensional Ambiguity Resolution Lotfi Massarweh Gnss Researcher, Delft University of Technology	Effect of Carrier Frequency Offset on Range Estimation Performance in VDES R-Mode Receiver Jang Hwan Shin South Korea, Chungnam National University	Hardware in the Loop Laboratory Test Systems for Medium Frequency R-Mode Receivers Lars Grundhöfer Phd Student, German Aerospace Center	PASSport Project. An OSNMA enabled GNSS receiver to Support Port Operations with Drones Dr. Marco Nisi Head of Integrated Space Solutions, Sistematica S.p.A.
14.40	Safety Critical Optimization of IFR - Low Level Trajectories in Alpine Areas Alain Geiger Prof. Em., ETH	Assessing the Galileo High Accuracy Service at High Latitudes Jihye Park Oregon State University	Classical Positioning with Modern Optical Sensors Anton Scheele Assistant Professor, Netherlands Defence Academy	Behaviour of COTS Receiver under Simulated Multi-Frequency GNSS Induced Spoofing Sowmyashree Lakshmaiah GNSS Engineer, Work Microwave GmbH	Feasibility of Snapshot OSNMA for Spoofing Detection in Urban Scenarios Husnain Shahid Universitat Autònoma de Barcelona

THURSDAY 1 JUNE - CONTINUED

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2	EINSTEIN
15.00	<p>WASP1 Route Optimization using Short Span High Accuracy Weather Forecast</p> <p>Stephan Procee Sr. Lecturer, Maritiem Instituut Willem Barentsz</p>	<p>Interval Bounding Analysis for Precise Point Positioning</p> <p>Rui Wang Research Associate, Institute of Navigation, University of Stuttgart</p>	<p>Development of a Software-Defined-Radio-based Real-Time Maritime Positioning System</p> <p>Nhat Minh Hoang Research Engineer, Covadonga GmbH</p>	<p>Performance Improvement of GNSS Foresight in Deep Urban Environments</p> <p>Raphael Grech Technical Strategist Spirent Communications</p>	<p>E1-E6 SDR Platform Based on BladeRF for testing Galileo Assisted Commercial Authentication Service</p> <p>Rafael Terris-Gallego Researcher, Univ Autonoma de Barcelona (UAB)</p>
15.20	<p>Urban Route Planning Based on Network-RTK Positioning Integrity Prediction</p> <p>Ali Karimidoona Ph.d. candidate, Leibniz University Hannover</p>	<p>Achieving Sub-decimetre Accuracy with the Galileo High Accuracy Service: Results from GMV's HAS Positioning Engine</p> <p>Jorge Duran Zafrilla GMV</p>	<p>Integration of GNSS and 5G for Precise Positioning</p> <p>Marianna Alghisi Phd Student, Politecnico Di Milano</p>	<p>Realism-oriented Design, Verification and Validation of Novel Robust Navigation Solutions</p> <p>Dr. Ivan Petrunin Senior Lecturer, Cranfield</p>	<p>Tests of Galileo OSNMA for Protection Against GNSS Time Spoofing Attacks</p> <p>Dr. Harald Hauglin Chief Engineer, Justervesenet - Norwegian Metrology Service</p>
15.40	<p>Predicting offshore workability for platform supply vessels using IoT and machine learning</p> <p>Reinier Dick Fleet Manager Offshore Supply Vessels, Peterson Den Helder B.V.</p>	<p>A new Real-time PPP-RTK Positioning Service for Germany</p> <p>Franziska Riedel Scientific Employee, Federal Agency for Cartography and Geodesy (BKG)</p>	<p>Positioning System Based on GSM Signals of Opportunity for Aerial Applications for GNSS Denied Areas</p> <p>María Dolores Tristán del Barrio Hardware Engineer, Skylife Engineering SL</p>		<p>S-TrackS: a Secure Snapshot-Based Solution for Positioning and Timing</p> <p>Thomas Daniel Van Den Oever Gnss Engineer Cgi</p>
14.30	ESTEC Test Centre Tour 4 at 14.30 - 15.30. Meeting point: Registration desk (pre-registration required)				
16.00	Tea break				
16.30	ESTEC Test Centre Tour 5 at 16.30 - 17.30. Meeting point: Registration desk (pre-registration required)				
Session:	15. Reference Trajectory Optimization 2	10. High Accuracy Techniques 3	4. Alternative and Complementary PNT 4	16. End-to-End navigation systems 1	2. Spoofing and Meaconing 2
	<p>Chair: Frank van Diggelen Co-chair: Sandy Kennedy</p>	<p>Chair: Christian Tiberius Co-chair: Paolo Crosta</p>	<p>Chair: Hans Visser Co-chair: Rafael Lucas Rodriguez</p>	<p>Chair: Okko Bleeker Co-chair: Erik Frank Van Der Wenden</p>	<p>Chair: Barend Lubbers Co-chair: Elizabeth Laier English</p>
16.30	<p>Ice Navigation in Arctic Offshore Wind Parks: Traffic Coordination using Route Exchange and Moving Havens</p> <p>Prof. Thomas Porathe Professor of Interaction Design, NTNU, Norwegian University of Science And Technology</p>	<p>Performance Analysis of Maritime PPP-RTK Service in Korea</p> <p>TaeHyeong Jeon Researcher, Maritime PNT Research Office, KRISO</p>	<p>Preliminary Field Results of a Dedicated 5G Positioning Network for Enhanced Hybrid Positioning</p> <p>Dr. José A. Del Peral Rosado Senior R&D Navigation Engineer, Airbus Defence and Space</p>	<p>Required Navigation Performances for Drone Flight Operations</p> <p>Giovanni Lucchi Cristofaro Mdi Officer EUSPA</p>	<p>Assessing the Resilience of GNSS COTS Receivers Against Sophisticated Spoofing Attacks by the SQM Methods</p> <p>Dr. Amir Tabatabaei CTO, IGASPIN GmbH</p>
16.50	<p>Risk-based UAV Flight Path Optimization in Accordance with SORA</p> <p>Jannik Heinze Student, Technische Universität Berlin</p>	<p>Breaking the One-meter Accuracy Level with Smartphone GNSS Data</p> <p>Marcus Franz Glaner University Assistant, TU Wien - Higher Geodesy</p>	<p>Performance Evaluation of Terrain-Aided Navigation for Helicopters</p> <p>Milos Vesely Honeywell International</p>	<p>High Accuracy Performance Based Navigation Aircraft Approach Paths Combined with Precision Final based on GNSS</p> <p>Thomas Dautermann Dlr</p>	<p>GNSS Threat Scene: Four Years since STRIKE3 Success</p> <p>Mark Dumville Gmv</p>

THURSDAY 1 JUNE - CONTINUED

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2	EINSTEIN
17.10	<p>Automated Route Planning from LiDAR Point Clouds for Agricultural Applications Dipl.-Ing. Fabian Theurl University Research Assistant, Graz University Of Technology</p>	<p>A Satellite-datum-based PPP-RTK Model for All-in-view GNSS Networks Dr. Pengyu Hou PhD Student, Innovation Academy for Precision Measurement Science and Technology, Chinese Academy of Sciences</p>	<p>5G Positioning: Preliminary Analysis of Early Data Sets Chiara Pileggi Politecnico Di Milano</p>	<p>Towards Less Fuel Consumption utilizing Semi-autonomous Operations of the Vessels Ghazaleh Kia R&D Project Manager, Seafar</p>	<p>Collaborative Processing of Distributed Receivers of Opportunity Dr. Shishir Priyadarshi Machine Learning Engineer, GMV, Uk</p>
17.30 17.50	<p>Concept of a Human-machine Interface for Visualizing Route Progress Robbert Vis Chief Officer Stena Line</p>	<p>Living on the Edge of High Precision PNT Resilience and Security Gustavo Lopez Market Access Manager, Septentrio</p>	<p>A Hybrid Optical-wireless Network for dDecimeter-level Terrestrial Positioning Dr. Jeroen Koelemeij Assistant professor, Vrije Universiteit Amsterdam</p>	<p>Smart Port Shuttle: Sensor-based Navigation for Inland Waterway Transportation Katrin Dietmayer Senior Engineer, Fraunhofer Institute for Integrated Circuits IIS</p>	

18.00 - 21.30

Canal Cruise Amsterdam

Meeting point: Bus stop outside ESTEC
(Pre-registration required)



Friday 2 June, 2023

09.00		PLENARY - LOW EARTH ORBIT PNT PANEL		HIGHBAY	
09.00	Opening - Chair: Sandra Verhagen , TU Delft				
09.50	LEO PNT Introduction - Peter Teunissen , TU Delft				
	Future NAV LEO PNT in-orbit demonstration program - Roberto Prieto , TU Delft				
	PULSAR LEO PNT GNSS augmentations - Bryan Chan , XONA				
	Panel discussion: Guenter Heinrichs , Spirent / Patrick Shannon , Trustpoint / Jim McDonald , Honeywell / Patrick Bartelone , Collins Aerospace				
				Sandra Verhagen Roberto Prieto	
Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2	
Session:	13. LEO-GNSS Synergism	10. High Accuracy Techniques 4	4. Alternative and Complementary PNT 5	16. End-to-End Navigation Systems 2	
	Chair: Sandra Verhagen Co-chair: Noori Bni Lam	Chair: Axel van den Berg Co-chair: Irma Rodriguez	Chair: Hans Visser Co-chair: Olivier Raphael Smeyers	Chair: Alain Geiger Co-chair: Rafael Lucas Rodriguez	
10.00	P Exploring the contribution of PNT LEO Satellites to Precise Positioning Applications Jorge Duran Zafrilla GMV	Prototype Implementation of Gridded VRS Service based on SSR Messages Dr. Kwan-Dong Park Professor, Inha University	Airspace Surveillance with Unsynchronized low-cost ADS-B Receivers using Time Difference of Arrival Observations Clemens Sonnleitner Research Associate, University of Stuttgart - Institute of Navigation	Secure GNSS and the Role with Autopilot Control Systems Gustavo Lopez Market Access Manager, Septentrio	
10.20	P Analysis of Multipath Code-range Errors in Ruture LEO-PNT Systems Sibren De Bast Septentrio Nv	P Testing the Galileo HAS with the Galileo High Accuracy Reference Algorithm and User Terminal Emilio González Galileo User Services Coordinator, Spaceopal	LEO-based PNT Augmentation Dr. Jaz Hill-Valler Systems Engineer, Satellite Applications Catapult	True North Reference System for Aviation by Eliminating Magnetic Conversion by 2030 Anthony MacKay Vice President And Chief Safety And Quality Officer, Nav Canada	
10.40		Norsat-TD: First in-orbit Demonstration of Real-time Precise Point Positioning using GPS and Galileo Dr. Javier Tegedor Product Owner, Fugro Norway As	Centimetres and Picoseconds without Satellites or Atomic Clocks- Independent EU Test Results of Locata Alt-PNT Nunzio Gambale Ceo, Locata Corporation Pty Ltd	P Resilliance in the Maritime Transport for the Next Decade Stephan Procee Sr. Lecturer, Maritiem Instituut Willem Barentsz	
11.00 Coffee break					
11.30 ESTEC Test Centre Tour 6 at 11.30 - 12.30. Meeting point: Registration desk (pre-registration required)					
Session	14. LEO user Equipment Considerations	10. High Accuracy Techniques 5	9. Atmospheric Modelling and Sensing	16. End-to-End Navigation Systems 3	
	Chair: Tom Willems Co-chair: Ruediger Matthias Weiler	Chair: Hein Zelle Co-chair: William Roberts	Chair: John Pottle Co-chair: Terry Moore	Chair: Stephan Procee Co-chair: Okko Bleeker	
11.30	P Analysis on Baseband Algorithms for LEO PNT Dr. Fran Fabra GNSS Engineer, IECC-UAB	Global Assessment of Galileo HAS and Ambiguity-fixed Precise Point Positioning using Fugro Reference Station Network Dr. Javier Tegedor Product Owner, Fugro Norway As	P Comparison of Interpolation Methods for Ionospheric Slant TEC from Maritime PPP-RTK Service in Korea Gimin Kim Researcher, Maritime PNT Research Office	Coordinated Path Planning and Control Law Architecture Design Considering Navigation Performance and Resilience Reiko Mueller Researcher, German Aerospace Center (DLR)	
11.50	Coordinating International LEO PNT Productively Dr. Patrick Diamond Ceo, Leopnt Llc	P The Galileo High Accuracy Service: Quality Evaluation of the Corrections and Initial PPP Performance Camille Parra Phd Student, Technische Universität München	P Comparison of NeQuick-G and Klobuchar Model Performances at Single Frequency User Level Ulrich Ngayap Service Performance Engineer, Euspa	Future Role of the Human in Resilient Maritime Navigation Hugo Ammerlaan Head Of Maritime Operations, MARIN	

FRIDAY 2 JUNE - CONTINUED

Room:	HIGHBAY	AUDITORIUM	NEWTON 1	NEWTON 2
12.10	<p>P Performance Analysis of the Pilot- and Data-Component of a CSS Signal for LEO-PNT Daniel Egea-roca Postdoctoral Researcher, Universitat Autònoma De Barcelona (uab)</p>	<p>P Multipath Mitigation and NLOS Rejection with Supercorrelation on FocalPoint's Rreal-time Development Platform Javier Gonzalo Garcia Perez Principal Gnss Engineer, Focalpoint</p>	<p>Characterization of the ML Ionosphere model's Extrapolation Performance using "Date to Forecast" Dr. Shishir Priyadarshi Machine Learning Engineer, GMV, Uk</p>	<p>Where do we go now? Presenting a Model for Human Navigation in Automated Vehicles Chloe Jackson PhD Candidate, University of Nottingham</p>
12.30 12.50	<p>Performance Analyses of User Equipment Technologies and Techniques for LEO-PNT Dr. Thomas Janssen Postdoctoral Researcher, imec</p>		<p>GNSS Monitoring and Grabbing Station Based on Software-Defined Radio and Docker Containers Iman Ebrahimi Mehr Ph.d Student, Politecnico Di Torino</p>	<p>P DEGREE (DronEborne Galileo RecEivEr), Development of a GNSS Receiver for Specific Category UASs Operations Sergi Dueñas Pedrosa Gnss Engineer, Qascom</p>
13.00	<p>PLENARY - CLOSING SESSION</p> <p>13:00 - Next Big Thing - Maarten Uijt de Haag, TUBerlin 13:20 - Award ceremony - Okko Bleeker / Valerie Renaudin, TEC 13:25 - IAIN announcements - Zhang Baochen / Kristof Czaplewski, Chairman 13:35 - EUGIN announcements Terry Moore, Chairman / Janusz Uriasz, Chairman 13:50 - NIN farewell - Bart Banning / Merle Snijders, LOC</p>			<p>HIGHBAY</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Maarten Uijt de Haag Terry Moore</p>
13.50 14.50	<p>Lunch</p>			

Posters

Thursday 1 June, 11.00 - Poster Session at Newton Foyer

P An Approach to Cooperative Azimuth Estimation using Multiple Distributed Position Receivers
Marvin Banse
Scientific Assistant, Carl Von Ossietzky Universität Oldenburg

Resilient 3D Position and Navigation using Terrestrial Beacons and Cellular Signals
Rabih Chrabieh
VP Engineering, NextNav, LLC

Effect of Sounding Rocket Attitude in GNSS Carrier Phase Tracking
Iñigo Cortés
Senior Scientist, Fraunhofer IIS

Over-the-air Jamming and Spoofing Tests of GNSS Timing Devices
Dr. Harald Hauglin
Chief Engineer, Justervesenet - Norwegian Metrology Serviceeee

Performance of Real-time PPP Time Transfer between UTC(k) Time Scales
Dr. Harald Hauglin
Chief Engineer, Justervesenet - Norwegian Metrology Serviceeee

What Users may want: Eetermining Navigation-Specific User Requirements for Drivers in Automated Vehicles
Chloe Jackson
PhD Candidate, University of Nottingham

P Complementary Corrections of the Ionospheric Model For Spaceborne GPS Receiver
Eun-hyouek Kim
Senior Researcher, Satrec Initiative

P Design of a Signaling Scheme for Three Equal-power Signals in a New Navigation Satellite System
Hyoungsoo Lim
Principal Researcher, Electronics And Telecommunications Research Institute

Statistical Tests of Some Binary Chaotic and Pseudorandom Sequences
Prof. Hong-Yeop Song
Professor, Yonsei University

Receiver Clock Characteristics and Modeling in the Multi-GNSS Precise Point Positioning Solutions
Prof. Dr. Krzysztof Sośnica
Professor, Institute Of Geodesy And Geoinformatics, Wrocław University Of Environmental And Life Sciences

P On the Quantification of the GNSS Signals' Quality for Radiofrequency Interference (RFI) Detection
Naveed Ahmed
Researcher, Norwegian University of Science and Technology (NTNU)

P Addressing the Potential of L5/E5a Signals for Road ITS Applications in GNSS-harsh Environments
Amarildo Haxhi
Phd, National Technical University of Athens

INTERNET ACCESS

Wi-Fi is available at the venue. Connect to the "esa-public" Wi-Fi; you will be automatically taken to the browser where you can provide your login details. You will find your Wi-Fi login details at the back of your badge. The login details are valid for 3 days.

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TRANSPORT ON CONFERENCE DAYS

A shuttle service is available on conference days from the NH Leeuwenhorst Hotel, the Two Brothers Noordwijk Beach Hotel and Leiden Central Station to ESA ESTEC and return.

Please see the shuttle service times below.

Transport is offered on a first come first served basis.

Shuttle Service Times

30 May 2023

To Galileo Reference Centre (GRC) from:

17.45 NH Leeuwenhorst – 17.55 Two Brothers Noordwijk Hotel (50 pax)

17.40 Leiden Central Station (50 pax)

*Pick-up location in Leiden: Stationsplein 107,
 2312 AJ (Morssingel/Schipholweg)*

Return, from Galileo Reference Centre (GRC) to:

19.30 Two Brothers Noordwijk Hotel - 19.40 NH Leeuwenhorst (50 pax)

19.30 Leiden Central Station (50 pax)



Pick-up and drop off location at Leiden Central Station on 31 May, 1 June and 2 June: bus station outside the train station (see map). At the bus stop for the Soldaat van Oranje shuttle, there is sign indicating this stop.

Other pick up location:

- Noordwijkerhout: outside the Hotel NH Noordwijk Conference Centre Leeuwenhorst
- Noordwijk: outside the Two Brothers Noordwijk Beach Hotel
- ESTEC: public bus stop just outside ESTEC

31 May 2023

To ESTEC from:

08.15 NH Leeuwenhorst – 8.25 Two Brothers Noordwijk Hotel (50 pax)
08.30 NH Leeuwenhorst – 8.40 Two Brothers Noordwijk Hotel (50 pax)
08.45 NH Leeuwenhorst – 8.55 Two Brothers Noordwijk Hotel (50 pax)

08.15 Leiden Central Station (50 pax)
08.30 Leiden Central Station (50 pax)
08.45 Leiden Central Station (50 pax)

Return from ESTEC to:

17.45 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)
18.00 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)
18.00 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)

17.45 Leiden Central Station (50 pax)
18.00 Leiden Central Station (50 pax)
18.00 Leiden Central Station (50 pax)

Beach dinner, to Tulum Beachvilla Noordwijk from:

19.00 Leiden Central Station – 19.20 NH Leeuwenhorst (60 pax)
19.15 Leiden Central Station – 19.35 NH Leeuwenhorst (120 pax)

Return from Tulum Beachvilla Noordwijk to:

22.30 NH Leeuwenhorst – Leiden Central Station (60 pax)
23.00 NH Leeuwenhorst – Leiden Central Station (60 pax)
23.40 NH Leeuwenhorst – Leiden Central Station (60 pax)

1 June 2023

To ESTEC from:

08.00 NH Leeuwenhorst – 8.10 Two Brothers Noordwijk Hotel (50 pax)
08.15 NH Leeuwenhorst – 8.25 Two Brothers Noordwijk Hotel (50 pax)

08.00 Leiden Central Station (50 pax)
08.15 Leiden Central Station (50 pax)

Return from ESTEC to:

17.45 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)
18.00 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)

17.45 Leiden Central Station (50 pax)
18.00 Leiden Central Station (50 pax)

Amsterdam Canal Cruise (for participants pre-registered for the cruise only)

18.00 from Estec > to Amsterdam
21.30 from Amsterdam > to Leiden Central Station – NH Leeuwenhorst – Two Brothers Noordwijk Hotel

2 June 2023

To ESTEC from:

08.00 NH Leeuwenhorst – 8.10 Two Brothers Noordwijk Hotel (50 pax)
08.15 NH Leeuwenhorst – 8.25 Two Brothers Noordwijk Hotel (50 pax)

08.00 Leiden Central Station (50 pax)
08.15 Leiden Central Station (50 pax)

Return from ESTEC to:

15.15 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)
15.45 Two Brothers Noordwijk Hotel – NH Leeuwenhorst (50 pax)

15.15 Leiden Central Station (50 pax)
15.45 Leiden Central Station (50 pax)

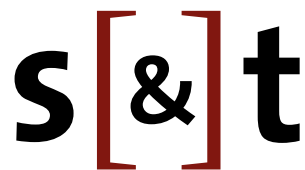
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