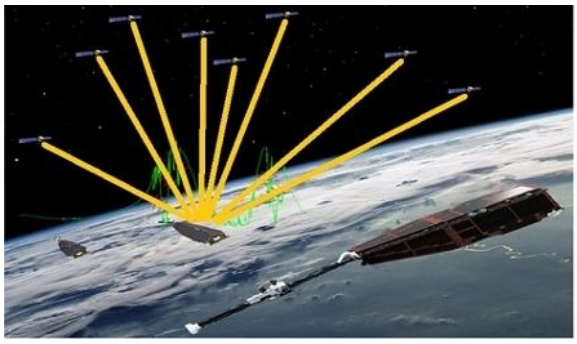

WORKSHOP ON SPACEBORNE GNSS RECEIVERS

NEEDS AND SOLUTIONS

Nov 14th, 2017

ENAC Campus, Toulouse, France

Organized by:

CCT Communautés de Compétences Techniques

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Hosted by:

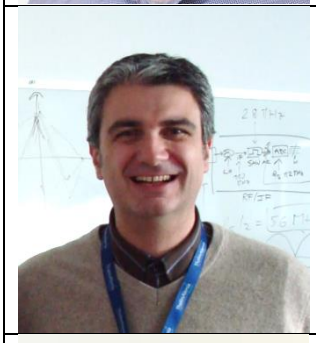
ENAC ECOLE NATIONALE DE L'AVIATION CIVILE

Programme

Nov 14th, 2017 – Morning **Everything you always wanted to buy but were afraid to ask**		
08:30 – 09:00	*Welcome and Coffee*	
09:00 – 09:30	Opening and introductory speech	Organizers + Pietro GIORDANO, ESA, Netherlands
09:30 – 10:00	Reference Model for End-to-End Simulation of Spaceborne GNSS Receivers	Bernhard FUCHS, RUAG Space, Austria
10:00 – 10:30	Recent Developments in TAS-I Spaceborne Receivers	Alberto ZIN, Thales Alenia Space, Italy (*)
10:30 – 11:00	*Coffee break*	
11:00 – 11:30	New GNSS Capabilities Demonstrated on the TechDemoSat-1 Small Satellite	Martin UNWIN, SSTL , United Kingdom
11:30 – 12:00	Characteristics and Performances of the TOPSTAR G2 Receiver for the MERLIN and SWOT Programs	Stephane SERRE, Thales Alenia Space, France
12:00 – 12:30	SY2001: A Rad-hard, Ultralow-noise PLL Frequency Synthesizer for Advanced Spaceborne GNSS Units	Yuval BAR YOSSEF, Saphyrion, Switzerland (*)
12:30 – 13:45	*Lunch*	
Nov 14th, 2017 – Afternoon **Constellations getting bigger, satellites getting smaller, receivers getting smarter**		
13:45 – 14:15	Future GNSS Receiver for LEO Missions – Lower Cost and Higher Performances	Florent HENNART, Airbus Defence & Space, France
14:15 – 14:45	GNSS Receiver Solution Based on SoC Architecture	Gwenael SABIN, Syrlinks, France
14:45 – 15:15	Space-Friendly™ GPS Solutions for CubeSats and Small Satellites	Jaroslav LAIFR, Skyfox Labs, Czech Republic (*)
15:15 – 15:45	*Coffee break*	
15:45 – 16:15	DARWIN: A Highly Integrated Avionics Architecture	Pierre SPIZZI, CNES, France
16:15 – 16:45	Positioning Strategies of the EntrySat and EyeSat Nanosatellites	David MIMOUN, ISAE-Supaero, France
16:45 – 17:15	GNSS Receivers Based on AGGA Devices and EO Scientific Applications	Michel TOSSAINT, ESA, Netherlands
17:15 – 17:30	*Closing remarks and farewell*	

(*) These companies are also showcasing products and/or displaying posters and flyers.

Speakers

	**Pietro GIORDANO** Pietro Giordano holds a M.Sc. in Telecommunication Engineering from University of Padua (Italy) and a second level specializing M.Sc. in navigation and related application from University of Torino (Italy). He worked in Thales Alenia Space (Italy) as GNSS receiver engineer before joining ESA in 2009, where he worked first as GNSS receiver support to Galileo project (from TEC directorate) and later as GNSS security engineer in the Galileo project (NAV directorate). Currently he is in charge of multiple activities related with space GNSS receivers and R&D in space GNSS receiver technology in the ESA Technical Directorate.
	**Bernhard FUCHS** Bernhard Fuchs holds a M.Sc. in computer engineering from the Technical University of Vienna. Since 2009 he has been with RUAG Space GmbH where he has been working on flight software development for various GNSS and GNSS-R projects, requirements definition, test and analysis scripts development and evaluation of multi-core solutions.
	**Alberto ZIN** Alberto Zin holds a M.Sc. and a Ph.D. in science and space technology both from the University of Padova. Since 2002 he has been with Thales Alenia Space Italy where he is R&D study manager and project leader for GNSS receiver design. He contributes to the development of GNSS instruments for navigation purposes (in both space and ground environments), scientific sensors and timing calibration facilities.
	**Martin UNWIN** Martin Unwin heads up the GNSS team at Surrey Satellite Technology Ltd., responsible for spaceborne GNSS receiver design and operation. He holds a B.Sc. from Lancaster University and a Ph.D. from the University of Surrey.

Speakers

	**Stephane SERRE** Stephane Serre is a product manager on spaceborne GNSS receivers with Thales Alenia Space France. He is in charge of the product policy definition and receivers' development and system studies in the signal processing lab of the electronic department. He has been with Thales Alenia Space since 1995 where he originally studied and developed digital ASICs and FPGAs, boards and equipment for transparent and regenerative payloads for telecom applications. Within this field of applications, he designed various functionalities including channelizers, on-board controllers, routers and a packet switch. Since 2004, he is the technical manager in charge of the TOPSTAR 3000 GPS receiver production and of the R&D studies preparing the next generation of GPS/GALILEO receivers. These advanced activities, funded by ESA and CNES, are today coming to fruition with the development and qualification of the TOPSTAR G2 GNSS receiver for the MERLIN and SWOT programs.
	**Yuval BAR YOSSEF** Yuval Bar Yossef obtained the degree in Nuclear Engineering summa cum laude in 1984. In 1986 he joined the R&D division of the Pirelli Group, and played a major role in the deployment of erbium-doped fiber amplifiers, where he was one of the three co-authors of the main Pirelli patents. After having expanded his activity towards other innovative areas like cladding pumped fiber lasers and fiber optic components, in the period 1990-1996 he managed the Pirelli R&D in the domain of ultrafast fiber optic transmission, where he invented with co-workers) the acoustooptical modelocked femtosecond fiber laser ASFODEL, awarded in 1994 of the Philip Morris Prize for Scientific Innovation, and demonstrated the first 1000km, Nx10 Gb/s WDM link based on nonlinear transmission concepts. In the period 1996-2007 he was the chief scientist of the Pirelli Group, and promoted the successful kick-off of the Pirelli Nanophotonics unit, the first EU factory of nanofabricated optical devices. In 2008 he moved to Israel where he managed in Tel Aviv the start-up company PAT Ltd., active in the field of defence and optical engineering. In 2012, after having joined INTEL, he coordinated several R&D projects in the area of scatterometry and critical dimension assessment. Returned in EU at the end of 2012, he has been responsible for optical engineering projects related to ESA contracts (SENTINEL-4, Proba-3) at Micos Engineering GmbH in Zurich. In February, 2015, he joined SAPHYRION Sagl where he is in charge of business development activities with additional assignments on specific R&D projects. He is the author of more than 50 papers or written contributions to major journals and conferences.

Speakers

	**Florent HENNART** Florent Hennart graduated from ISAE in 2010 with a M.Sc. in automatics, and consecutively joined the development team of Airbus Defence and Space on the BepiColombo program. Since 2011 he is a member of the advanced studies team in GNC, specialized in vision-based navigation and GNSS. His working fields are therefore sensor hybridization, image processing and measurement filtering for navigation, and GNSS-based orbit restitution.
	**Gwenael SABIN** Gwenael Sabin worked in digital terrestrial television for 6 years as signal processing engineer. He has worked on the development of professional's receivers as well as on new standards. He works at Syrlinks since 2014 where he joined the GNSS development team as signal processing engineer. He has been involved in the development of various GNSS products. He is currently responsible for GNSS projects.
	**Jaroslav LAIFR** Jaroslav Laifr is CEO and Founder of the SkyFox Labs s.r.o. company located in Czech Republic, focusing on development of Space-Friendly components for CubeSats and Small Satellite market. In parallel, he is responsible technical lead of the power supply unit for scientific instrument aboard ESA JUICE mission. Since April 2017 he is also the mentor member of the ESA BIC opened recently in Prague.
	**Pierre SPIZZI** Pierre SPIZZI is a CNES engineer in electrical and avionic architecture department, where he has been working on Earth observation programs (SPOT/HELIOS) and on development of the small satellite TARANIS (Myriade platform). He has been leading the demonstration program DARWIN in collaboration with the CO3D observation program for a year.

Speakers

	**David MIMOUN** David MIMOUN has been an associate professor in space systems at ISAE-Supaero since 2007, and is also in charge of the master in astrophysics at Universite de Toulouse. He graduated from Supaero and Universite Paul Sabatier in 1993 and started his career working for Airbus DS, Alcatel Space and CNRS. He leads the "space systems for planetary science" team which is involved in mission and instrument design for the exploration of the solar system. He is also an investigator for the InSight 2018 martian mission and will collaborate with NASA on its future Mars 2020 rover. Last but not least, he is involved in the development of ISAE-Supaero's first cubesat, EntrySat.
	**Michel TOSSAINT** Michel Tossaint is system engineer at the Earth observation – future mission division at ESTEC for the European Space Agency (ESA), the Netherlands. He graduated M.Sc. in aerospace engineering from Delft University of Technology in 1997. He joined the space systems department of the Dutch NLR in 1998. In 2001 he joined ESA working on navigation related topics like EGNOS design and validation, Galileo experimentation with GIOVE satellites and GNSS evolutions in general. From 2008 he was navigation technical officer in the Galileo project and evolution program working on ISL and G2G design. Currently he is involved in the design of new AGGA GNSS ASIC/FPGA, GNSS and clock technology for EO missions and Earth explorer studies.

Organization team

François-Xavier MARMET, Thomas JUNIQUE	Co-organizers/Chairmen
Catalina RODRIGUEZ, Marion AUBAULT, Sonia CAZALENS	CCTs Organization Team

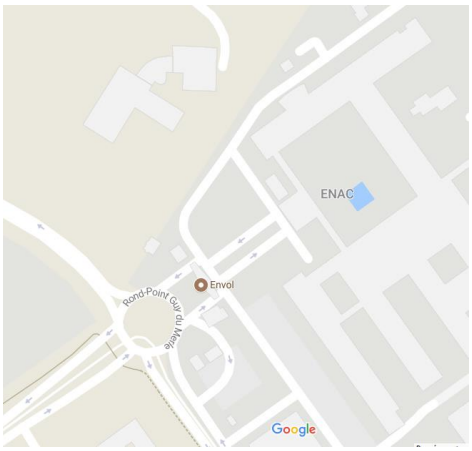
Internet access

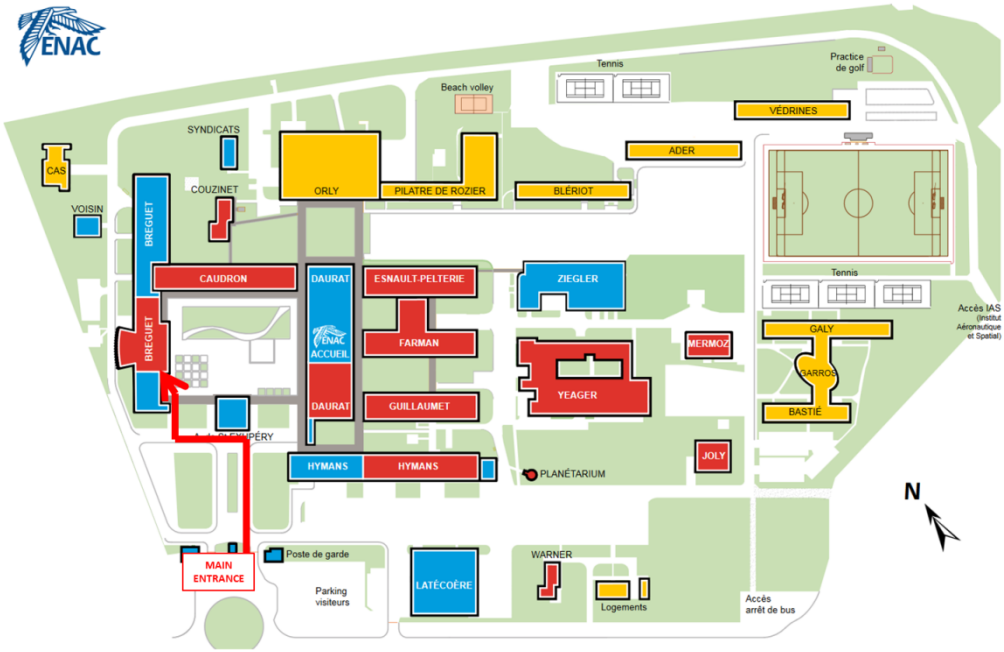
You can use ENAC's public WiFi network (*Enac_Public*). You will be asked to fill out a short form in order to create your user ID and password, which will be sent to you as a text message on your phone. Note that a given user ID cannot be simultaneously used on more than three devices.

Venue and directions

The *Workshop on Spaceborne GNSS Receivers* is held at ENAC premises, Toulouse, France, in amphitheater Bellonte. Full address and maps are provided below:

Ecole Nationale de l'Aviation Civile
7 Avenue Edouard Belin
Amphithéâtre BELLONTE
31400 Toulouse
France





Keep in touch! The event's website is your one-stop resource for registering, glancing at the programme, contacting the organizers and much more: http://cct-workshop-on-spaceborne-gnss-receivers.evenium.net/.

Advertisement – CNES CCT websites

The *Workshop on Spaceborne GNSS Receivers* is organized with the help of two CNES CCTs:

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CCT Traitement du Signal et des Images (TSI)	http://cct.cnes.fr/content/traitement-du-signal-et-des-images

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