



MUNICH SATELLITE NAVIGATION SUMMIT 2008

Session 6:

Chairman: Glen Gibbons

Peter A. Grognard, founder and CEO of Septentrio nv gave a brief overview of the new Septentrio services and products that have been developed since the last Summit. The GReCo3 receiver, the new state-of-the-art core for all GNSS signals was presented to the audience and different features of interest discussed.



Discussion – Session 6

As underlined by Mr. Grognard, unlike current architectures, the day of tomorrow receivers will be capable of accommodating at least 120 channels at the same time, each with flexible architectures compatible with GPS, GLONASS, SBAS, GALILEO, BEIDOU and any imaginary signals, supporting thus all known modulations today. After this, the Galileo Receiver Upgrades to GeneRx1 were presented. As stressed in the presentation, this receiver was the first to track Beidou and in its new version it will also be MBOC compatible. The updated version of it, GeneRx2 will be fully IOV-compliant and will be capable of receiving all Galileo signals and services. Finally, to complete the family of state-of-the-art versatile GNSS receivers for all high-end users, the AsteRx and PolaRx were introduced.

Ron Hatch, Director of Navigation Systems in NavCom Technology, Inc. presented the new products of his company. The new GPS receiver, SF-2110 L1 StarFire presents several improvements of relevance ranging from

redundant satellite coverage to enhanced performance with ultra RTK and RTK Extend. The High Precision StarFire L1 GPS Receiver will have a better than 50 cm real-time global accuracy without a base station and will have 16 channels all-in-view tracking among other additional characteristics such as extremely fast acquisition and reacquisition and dual band antenna. Additional key innovations for ultra RTK were also presented, concentrating mainly on the time to first fix, RTK fix reliability and RTK positioning accuracy. The extend TRK will allow for continuous RTK positioning during radio outages with a centimeter-accurate positioning maintained for up to 15 minutes.

Dr. Günter Heinrichs, responsible for the Business Division of IfEN GmbH, presented the Multi-Constellation & Multi-Frequency RF Navigation Constellation Simulator or NavX®-NCS for short. The Navigation Constellation Simulator belongs to the family of IFEN's NavX® Products which also includes the Navigation Software Receiver (NSR) and the Receiver Professional Series (RPS). Among the main key features of NCS, Dr. Günter Heinrichs mentioned the capacity of up to 108 channels per chassis, the support of both static and dynamic applications, various upgrade and configuration options as well as various input and output interfaces. In addition, other NCS software features were also presented, underlining the simulation definition and configuration of different simulation parameters such as space segment, signal propagation, user environment, combined GPS/Galileo/SBAS constellations, simulation of user trajectories, etc.

Rainer Horn, Managing Partner of SpaceTec Capital Partners AG provided the audience with an overview of the dynamics in the satellite information business. As he clearly stated, his focus is the "Satellite Information Business", which he described as the interface between information and satellite technology. This can be achieved by investing in application companies at early stages, creating deals and investment opportunities and consulting. SpaceTec is an



independent partnership backed by private investors and founded in 2007 in Munich. According to the philosophy of the company, satellite navigation is the glue for applications in the Satellite Information Business where innovation in IT is enabling integrated space applications. The synergies of infrastructure, software, user hardware and management, may lead to results which are especially suited for applications such as environmental monitoring, traffic coordination, forest fire early warning or automated surveillance. According to Mr Horn, the proof that the satellite information business has a great future, is that stock markets believe in it. An index comparison of GNSS and NASDAQ between 1999-2007 was used by the speaker to show the enormous potential in the sector. To conclude, Private Equity in the satellite navigation business was object of brief discussion and comparison with other sectors that have followed this path in the past. Indeed, Mr Horn concluded reaffirming that private players are positioned to finance ventures.

Herbert Landau, CEO of Trimble Terrasat GmbH, held a presentation on the new Trimble GNSS receiver products and services. The GNSS receiver hardware with GPS L2C, L5 and GLONASS was introduced in spring 2006. After quickly reviewing the capabilities of the new products and the relevance for different sectors, the Trimble Virtual Reference Station (VRS) concept was briefly explained and the application of Trimble VRS software today in different countries highlighted. With it, real-time positioning (cm...0.5m) services for surveying, construction, agricultural and mapping/GIS Applications are expected to profit in a special manner. Now, UK, Ireland, USA and Germany make use of it. The different coverage details as well as connectivity and partners in each particular country were equally presented.

Henk Luinge, Research Manager of Xsens Technologies, has presented today the last developments and information on supplies products for measurement of motion, orientation and position, based upon miniature MEMS inertial sensors. Mr Luinge started giving a quick overview of what he described as the world's smallest attitude and heading reference system that his company is producing for machine motion applications. After that he moved to

human motion, concentrating on products and applications with special focus on character animation, virtual reality and movement science. To conclude, the presenter concentrated on revealing future developments, giving particular details on products, purposes and applications.



Gerein, Landau, Heinrichs, Grognard, Hatch, Sassen, Gibbons, Horn, Luinge (left to right)

Neil Gerein, Senior GNSS Systems Engineer of NovAtel Inc., has announced the new NovAtel Wideband Choke Ring Antenna, that is planned to work for GPS, GLONASS, Galileo, Compass, OmniStar and CDGPS. The new Novatel product consists of a 3D slotted choke ring with pinWheel™ elements, element lens and is based on advanced LNA design. The new antenna could be applied to the EuroPak15ab which will be capable to receiving GPS L1/L5, SBAS L1/L5, Galileo L1/E5a/E5b and GIOVE, presenting a superior tracking and improved pulse blanking. Novatel also pursues the use of the new Wideband Choke Ring Antenna after integration of GTR into the Galileo Experimental Sensor Station (GESS) with GIOVE A & B monitoring network obbexing to the fact that two new GESS sites are being planned in Canada.

Dr. Stefan Sassen, Director of Navigation Services in Astrium, held a short presentation on his views regarding the added value of the GNSS Services. Dr. Sassen has concentrated in his presentation on the different elements of the business chain in satellite navigation starting with the global satnav infrastructure, followed by the value added services, then the terminals and products and to conclude with the applications and solutions. Regarding the global satnav infrastructure, he concentrated mainly on the navigation market and the navigation market development, providing figures of interest to the



audience. According to Dr. Sassen, the navigation services and solutions are expected to grow over-proportionally to 36%. Another main point in his presentation was the analysis of the value added services to which he dedicated special attention focusing on the network-augmentation service ASCOS provided by AXIO-NET. As Dr. Sassen explained, ASCOS is a network based enhancement for real-time position services, based on GPS and GLONASS. It is based on a reference station network of more than 300 stations all over Germany and provides service to users via terrestrial mobile communications. Finally, the speaker concentrated on a quick analysis of the value added dimensions as a means to serving the customer needs, by increasing accuracy, usability and reliability.