

## GALILEO OPPORTUNITIES



# No Longer Talking — Doing

By Tony Murfin, Vice President, Business Development, NovAtel

**T**he December 28, 2005 launch of the first Galileo test satellite is perhaps the first visible milestone for casual Galileo-watchers, but there a huge amount of progress on many fronts has already occurred. Europe has prepared for Galileo for more than a decade. The implications of this program are more than just its technical achievements. Galileo will give Europe sovereign control over its own navigation destiny and it will become the catalyst for a European satellite navigation industry.

While the European Space Agency (ESA) develops the ground and satellite infrastructure of Galileo, the European Commission (EC) through the Galileo Joint Undertaking (GJU) has provided the seed money to create the technologies and applications that will capitalize on the use of these new signals from space.

Commercially available receivers, with dual GPS/Galileo functionality, are the keys to unlock those forecast financial benefits.

NovAtel Inc. has been involved since 2000 in the pre-development and fielding of the Galileo system. How does a Canadian company get to participate in this clearly European program? Canada is a participating member of ESA, and has signed up to participate in the development phase of Galileo. Participation means funding, and funding mean GEODIS – or geographic return. This is how the European countries cut up the industrial pie. Each country is supposed to get back work for its industries

which is equivalent in value to the funding provided by each Government.

NovAtel's programs have included a number of initial feasibility studies starting in 2000, BOC(1,1) concept demonstration in 2003, GPS/Galileo Test Receiver development in 2005, release of the GPS/Galileo EuroPak-L1L5E5a commercial receiver in 2006, and the on-going development of the actual Galileo ground control system reference receiver with our European partner.

These programs have developed production-standard hardware; working receivers ready to track those initial In Orbit Validation (IOV) satellites; and reference receiver hardware which will form part of the actual Galileo control system — part of the development of the Galileo system, underway and on track. We are no longer talking about creating a new, independent satellite navigation system, we are doing it.

So begins a new era in satellite navigation. As the GLONASS constellation continues to grow and the Galileo program progresses through IOV and into Final Operational Capability (FOC), we may have between 60-90 satellites to track, with potentially more than 30 in view at any one time to use and with which to generate a multi-constellation navigation solution. For all users with multi-system receivers, this means a new level of accuracy and performance.

Unprecedented signal reliability and positioning availability, no matter what the ap-

plication — marine, air, land vehicles, survey, agriculture — all applications will see more satellites resulting in more reliable, solid navigation. Code and carrier tracking, differential and real-time kinematic (RTK) will all have more reliable, more accurate, more available outputs for users with improved overall performance. The new signals have better multipath performance, which will help improve accuracy; improved geometry from so many satellites will also improve accuracy. Multiple frequency signals will reduce ionospheric errors.

For NovAtel, a significant part of our future is connected to GIOVE-A, and her sister satellites which will follow in the next few years. Today, NovAtel has already fielded a GPS/Galileo first-generation dual-mode receiver, and we are helping build the Galileo ground reference receiver infrastructure. These activities will keep us directly connected to the program as it unfolds, and the technology will evolve and be incorporated in our main-line OEM products and in our partner airborne products.

NovAtel looks forward to a future of multi-constellation, multi-frequency, high-precision products, with which we expect to enable many new precise positioning applications for our customers. 🌐

