

# Galileo

## The Future of Positioning and Navigation

Galileo is the first civilian Global Navigation Satellite System (GNSS) and has an estimated cost to the European Community (EC) of Euro 3.6 billion. It has been created to provide a highly accurate positioning and navigation service designed specifically for civilian purposes and run solely by civilians. KONGSBERG has been involved in the Galileo project as a key contractor and is promising to ensure that the maritime community can make the most out of this expansive project.



*Bjørn A. Fossum, President at Kongsberg Seatex AS, is very enthusiastic about the new possibilities in Satellite Navigation when Galileo goes live during 2008.*

The existing American Global Positioning System (GPS) and Russian Global Navigation Satellite System (GLONASS) are both owned and operated by the military, meaning that it is possible, and indeed has happened, that sometimes service can be restricted.

Satellite positioning has become the standard way of navigating at sea, in air and on land. This demands availability of the satellite signal, independent from military situations and national crisis whereas both GPS and GLONASS can be turned off or at least downgraded to much lower accuracy in order to avoid possible aggressors taking advantage of it. And as satellite positioning continues to expand in use, a sudden loss or degradation of signal in a few years time could prove catastrophic.

How will Galileo improve this situation though? We asked Bjørn A. Fossum, President of Kongsberg Seatex, the division of Kongsberg Maritime that is heading up Galileo activities:

"The reality of a civilian GNSS of equal, if not greater accuracy and application to the existing military systems is something that is very exciting for the marine industry. Once Galileo is operational, navigators will have a guaranteed signal and equipment manufacturers will be able to develop and market new and improved navigation and positioning systems to make best use of those signals."

### **Integrity and accuracy**

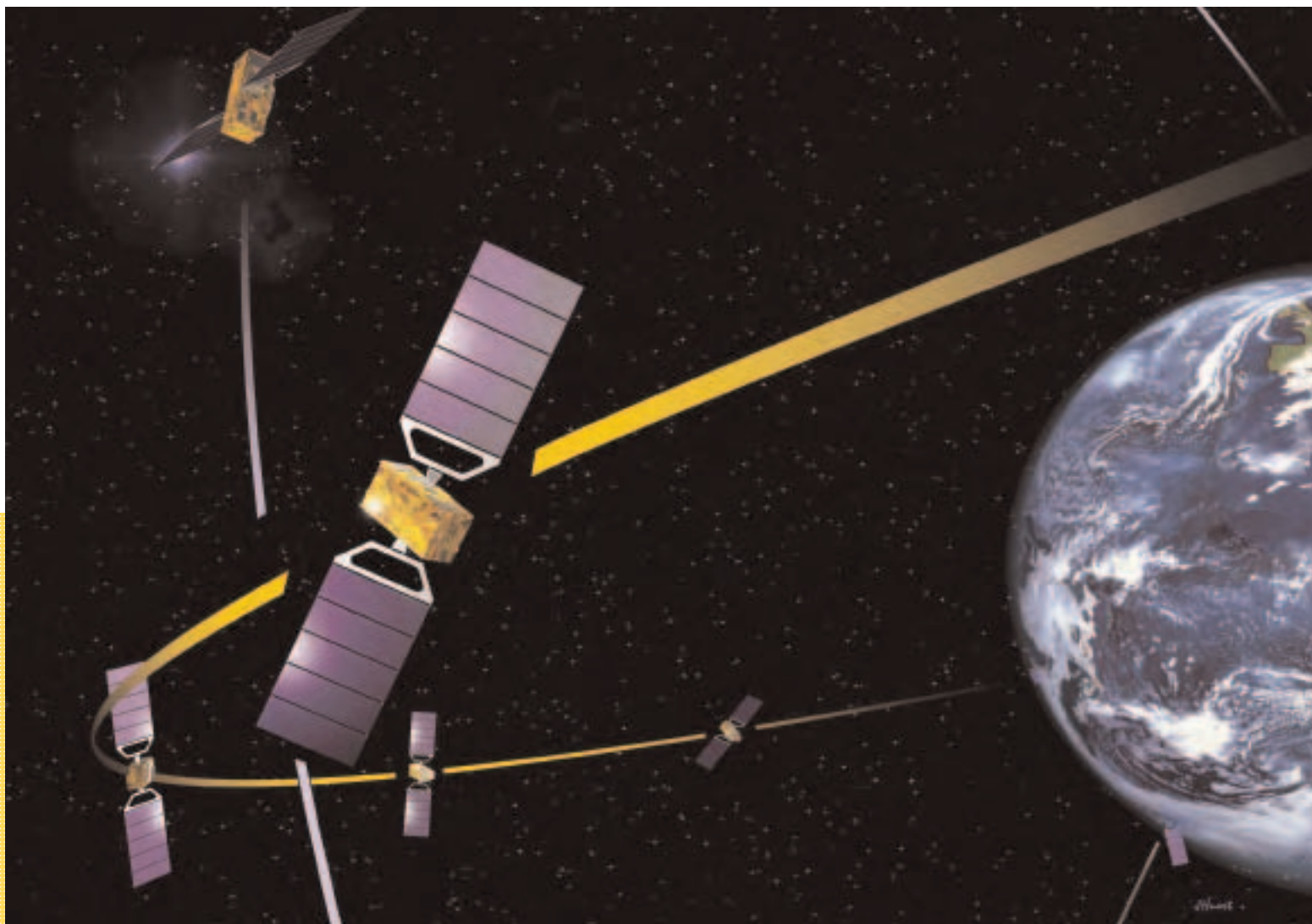
Galileo will improve all forms of onboard navigation for all sectors of the industry including ocean and coastal navigation, port approach and manoeuvres and even inland waterways. Together with GPS and GLONASS Galileo will create the 'backbone' for navigation purposes.

Galileo benefits greatly from its interoperability with other systems and sensors, which makes it an ideal complement to inland waterway navigation even in critical environments. This has already been recognised by the EU as Galileo will form a crucial part of the European River Information System (RIS) – the planned Europe wide 'traffic picture' of rivers and inland waterways.

Galileo has many years of technological advancements over GPS and GLONASS and will diversify from the systems through its ability to broadcast different kinds of data, for instance, integrity information. Here, users will receive a warning if the system ever fails to obtain stated accuracy, which is especially important for Safety of Life (SoL) operations where slight deviations in accuracy could mean the difference between life and death.

### **Huge benefits**

According to Bjørn A. Fossum, when the Galileo service is fully up and running, it will benefit the maritime com-



munity in several sectors and many different ways: "The oil and gas sector will have the ability of greater accuracy during seismic exploration through a positioning service for both the seismic vessel, the seismic streamer and the gun arrays. Rigs and anchor handling vessels will also benefit due to more accurate and safer positioning, increased by the integrity information inherent in Galileo."

With the trend in the oil and gas sector of moving into deeper waters and harsh environment, the importance of the role that positioning and communications play in operations is drastically increased. Oil companies need to make sharp decisions in these areas so real-time data transmission combined with position determination is a must.

#### **Interoperability**

KONGSBERG will make use of all these benefits to provide equipment that makes use of not just the Galileo signal, but will also be interoperable with the other GNSS services. This will ensure that the maritime community has the best of all three services to make satellite positioning and navigation the strongest, safest, most accurate and reliable ever. Though there may be competition between the services, users will benefit as companies like KONGSBERG will be developing equipment that can receive and process all of the signals.

"With navigation systems capable of utilising the different signals, precision and safety will be at it highest ever. If one signal becomes degraded the technology will compensate by using an alternate signal. Additionally, in areas where existing satellite positioning is not as efficient, due to shading for instance, the increased number of overall satellites will provide better operational performance," concludes

Bjørn A. Fossum. ■

#### **FACTS ABOUT**

Galileo will provide the first highly accurate, guaranteed global positioning services under civilian control. The fully deployed Galileo system will consist of 30 satellites and associated ground infrastructure and is scheduled to be fully operational by 2008.

Galileo's new technology will revolutionize transport systems, increase safety and improve efficiency. Galileo will also bring benefits in other aspects of everyday life, with precision farming raising yields, improved information for emergency services speeding up response times, and more reliable and accurate time signals underpinning the most vital computer and communications networks.

Galileo will together with GPS and GLONASS create a backbone for all navigation equipment utilising satellite signals.