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## **CNES expert Laurent Lestarquit wins European Inventor Award 2017**

**Laurent Lestarquit, a CNES expert in GNSS signal processing, with his European team of José Ángel Ávila Rodríguez (Spain), Jean-Luc Issler (France, CNES), Lionel Ries (France and Belgium, with CNES when the invention was patented) and Günter Hein (Germany), has won the European Inventor Award 2017 from a field of 400 inventors.**

The 12<sup>th</sup> European Inventor Award for innovation was presented today by the European Patent Office (EPO) to Laurent Lestarquit at a ceremony in Venice, distinguishing a team of experts working on the Galileo programme. This distinction for Laurent Lestarquit and his team in the Research category is for two patents in the domain of radio signal processing that affords unique accuracy to Europe's Galileo satellite navigation system. As well as designing almost all of the signals used by Galileo, the team has developed patented spread-spectrum signal modulation techniques that augment Galileo's precision while assuring its interoperability and compatibility with other satellite navigation systems such as the U.S. Global Positioning System (GPS).

Thanks to this technology and when it becomes fully operational in 2020, Galileo will be the most advanced system in the world, enabling extremely precise geolocation. It is set to serve a broad range of applications from multimodal logistics, smart cities and farming to definition of geodetic reference systems, smart power grids and telecom network synchronization, vital for broadband services, Earth-to-space links and 5G.

The five inventors helped to conceive the Galileo satellite navigation system in the early 2000s and have been working tirelessly to improve it ever since, the goal being to develop for Europe a technology independent from GPS guaranteeing even better performance.

In 2004, the European Union and the United States signed an agreement enabling Galileo and GPS to co-exist, but the European system was assigned a relatively narrow range of frequencies in the reference band already used by GPS. This constraint posed a true challenge to the team, which hit on the idea of a waveform using a new modulation technique called CBOC (Composite Binary Offset Carrier) to optimize available bandwidth.

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