

# Europeans Launch Improved Satellite Positioning System

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The European Commission introduced a new satellite-based navigation system Thursday that vastly improves the accuracy of signals delivered to Europe by American GPS satellites. Called EGNOS -- short for European Geostationary Navigation Overlay Service -- the new "open" technology promises to revolutionize navigation for European professionals and consumers alike.

The primary EGNOS service is free to users equipped with compatible navigation receivers. Most mass-market personal navigation devices being sold in Europe are ready for EGNOS, the EC said.

"European users of the EGNOS GPS system will be able to determine their position within two meters, compared to the 10-meter (32.8 feet) radius provided by the GPS alone," said EC Vice President for Transport Policy Antonio Tajani.

## **A Crucial Enhancement**

The space component of the EGNOS system consists of two-way communications channels called "transponders" installed aboard three satellites occupying geostationary orbits over the equator. These extraterrestrial relay stations are designed to communicate with a ground-based network of four control centers and 40 ground stations.

"In simple terms, the ground stations measure the GPS signal and send the data to the computing centers where the

correcting GPS signals are calculated," Tajani said. "And then the computing centers send out the corrective signals to the EGNOS satellites," which then relay the more accurate signals to users' GPS receivers.

Improving the accuracy of GPS signals to two meters is crucial for many applications related to safety, said Hans Fromm, retired deputy head of the navigation department at the European Space Research and Technology Centre. For example, the EGNOS system provides a navigation signal for aircraft, ships, trains and other forms of transport.

"A train needs to know which rail it's traveling on," Fromm said. "It's important for safety -- especially where life could be at risk."

### **Guaranteed Level of Service**

EGNOS represents a vast improvement over the navigation systems previously available. "Once, when I was sailing along the coast, my navigational signal -- a terrestrial one at the time -- told me I was on the land," Fromm recalled. "Obviously, I knew it was out and could estimate by how much."

In absence of such an obvious marker, however, Fromm said he would have had no way to ascertain the accuracy of the navigation signal. With EGNOS, he said, Europeans now have access to a guaranteed level of service that informs users of any errors in the position measurements as well as warn within six seconds whenever a disruption to a satellite signal has occurred.

Using EGNOS, airline pilots will be able to assess their positions with a far higher degree of accuracy -- especially during critical takeoff and landing phases, Tajani said.

"At the small airports where conditions aren't always easy for landing, we think with EGNOS the pilots will be able to work more effectively and the passengers will be able to travel more safely," he said. "It also will enable a helicopter to land safely at the nearest hospital -- especially when weather conditions are difficult."

### Improving Safety

Tajani also noted that EGNOS will play an integral role in improving highway safety in Europe. "With EGNOS it will be possible to reach the place of an accident with absolute precision," Tajani explained. It also will become possible to pinpoint the location of a hiker "in the mountains who is stranded in the snow."

However, Tajani stressed that the technology is not just for use by pilots, emergency responders, and specialized experts. "It will also be used by people with disabilities," for example by helping "the visually impaired to lead more independent lives by making them more mobile," Tajani said.

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