GALILEO AVIATION AUGMENTATION

Plans to harness Galileo and other satellite navigation systems for next-generation satellite augmentation systems for aviation and other high-performance uses took a significant step forward at the latest gathering of worldwide operators and experts, reported by the European Space Agency in mid-February.

Satellite augmentation systems combine additional ground stations and satellite transponders to sharpen navigation accuracy and reliability across given geographical regions – based on the US GPS for now, but with plans to move to a multi-constellation design additionally employing Europe’s Galileo, China’s Compass and Russia’s Glonass systems in the post-2020 era.

The 26th Satellite Based Augmentation Systems (SBAS) Interoperability Working Group (IWG) took place in New Delhi, India from 5th to 7th February.

Among its achievements was to converge on a standard message definition for one of the channels – known as L5 – of the planned second-generation SBAS systems, which will utilise dual-frequency, multi-constellation signals.

Explained ESA’s Didier Flament, co-chair of the IWG, “Two solutions had been put forward, one by ESA based on work by European industry and one from the US Federal Aviation Administration and Stanford University. A single definition co-ordinated between both bodies has been presented, combining the benefits of both solutions. The formal IWG review and approval loop has now been started with the objective of finalising it for September’s IWG meeting.”

He continued, “The aim is to have it ready to submit to the official international SBAS standardisation bodies – the International Civil Aviation Organisation and the Radio Technical Commission for Aeronautics – as soon as October.”

The meeting also marked the significant progress made by India’s own SBAS system GAGAN, which underwent its final stability test last summer, followed by its safety certification in December.

At this point GAGAN was declared certified for non-precision approach users, followed by its safety-of-life service being formally offered to civil aviation users on 14th February.

GAGAN has been jointly undertaken by the AAI and the Indian Space Research Organisation, intended to provide improved accuracy, availability and integrity necessary to enable users to rely on satellite navigation signals for all phases of
flight – from en route as well as approach to all qualified airports within the GAGAN service area.

GAGAN is the fourth certified SBAS to enter service worldwide. Europe has the European Geostationary Navigation Overlay Service (EGNOS), which was designed and built by ESA then turned over for operation by the European Satellite Service Provider, ESSP, overseen by the European Global Navigation Satellite System Agency (GSA) – both of which also participated in the meeting. ESA retains responsibility for the future evolution of EGNOS.

**Picture captions**

EGNOS 1
*Working Group participants*

EGNOS 2
*Opening of the Working Group, New Delhi*

EGNOS 3
*EGNOS sharpens GPS accuracy over Europe*

EGNOS 4
*GAGAN service coverage, India*