Satellites 11 and 12 join working Galileo fleet

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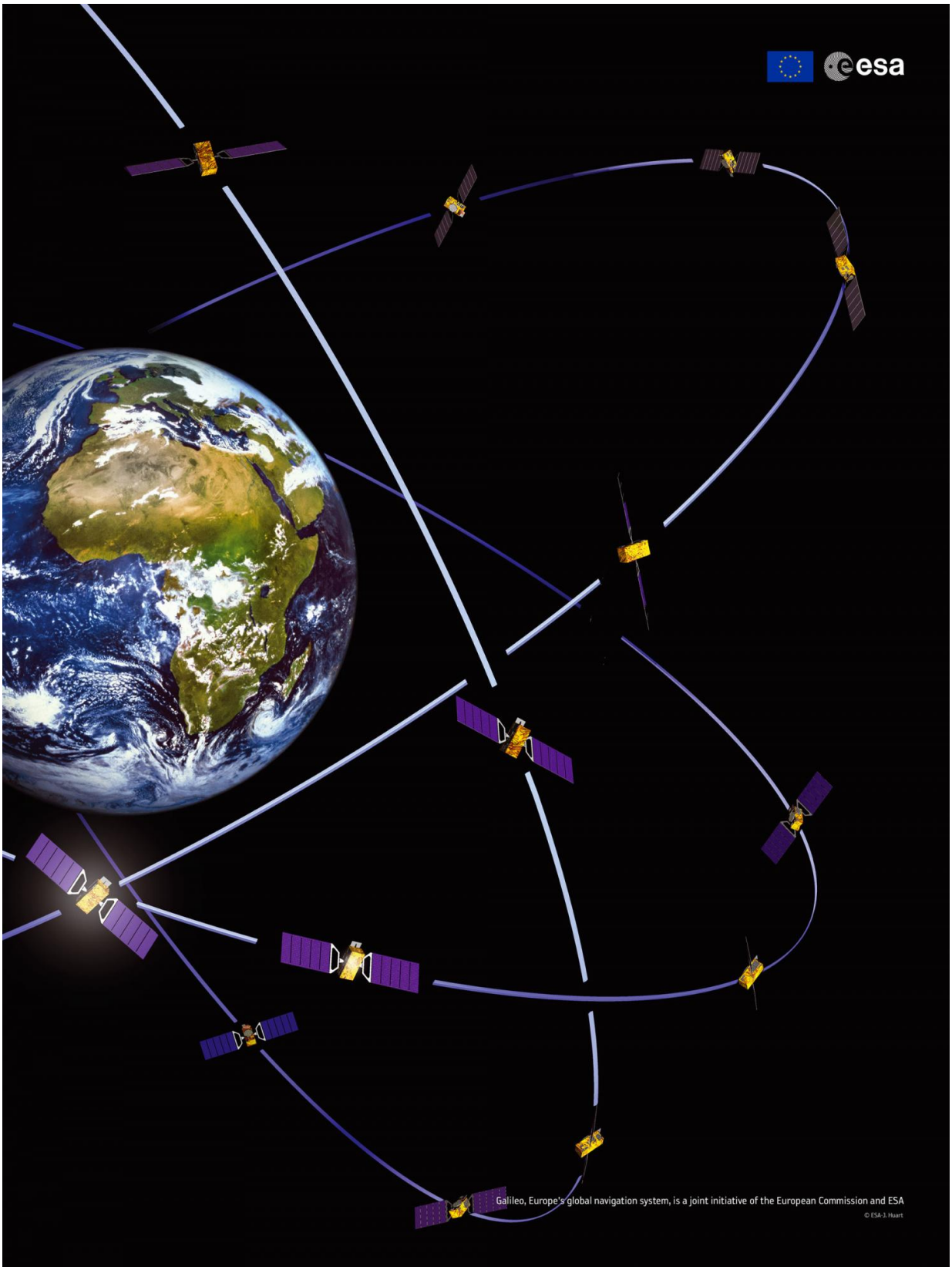
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Galileo, Europe's global navigation system, is a joint initiative of the European Commission and ESA
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Galileo, Europe’s global navigation system, is a joint initiative of the European Commission and ESA. Credit: ESA-Jacky Huart

Europe's latest navigation satellites, launched last December, have been officially commissioned into the Galileo constellation, and are now broadcasting working navigation signals.

Galileos 11 and 12 were launched together on a Soyuz rocket from Europe's Spaceport in French Guiana on 17 December.

The satellites' navigation payloads were submitted to a gamut of tests, centred on ESA's Redu centre in Belgium, which possesses a 20 m-diameter antenna to analyse the satellites' signals in great detail.

For users to navigate with metre-level accuracy, Galileo must keep extremely accurate time. Because light travels at a fixed speed – just under 30 cm every billionth of a second – the time it takes for Galileo signals to reach a user's receiver on the ground can be converted into distance.

All the receiver has to do is multiply the travel time by the speed of light, pinpointing its location from at least four satellites.

The satellites' onboard atomic clocks – while the most precise ever flown for navigation purposes – must be kept synched by Galileo's global ground segment, which also keeps track of the satellites' exact positions in space.

The tests were therefore essential to ensure these latest additions to the fleet met their performance targets while also meshing with the global Galileo system.

Coordinated from the Galileo Control Centres in Oberbfaffenhofen in Germany (which controls the satellite platforms) and Fucino in Italy (which oversees the provision of navigation services to users), the success of these tests mean these satellites have now been integrated into the Galileo constellation.

Four satellites have now completed commissioning since the beginning of this year – satellites 9 and 10 joined the constellation in February.

Information about the status of the constellation is published on the European Service Centre website.

Two more satellites will be launched by Soyuz from French Guiana in May and, for the first time for Galileo, four will be carried on a customised Ariane 5 this autumn.

If all goes as planned, Galileo will end this year with a total of 18 navigation satellites in orbit.

Provided by European Space Agency