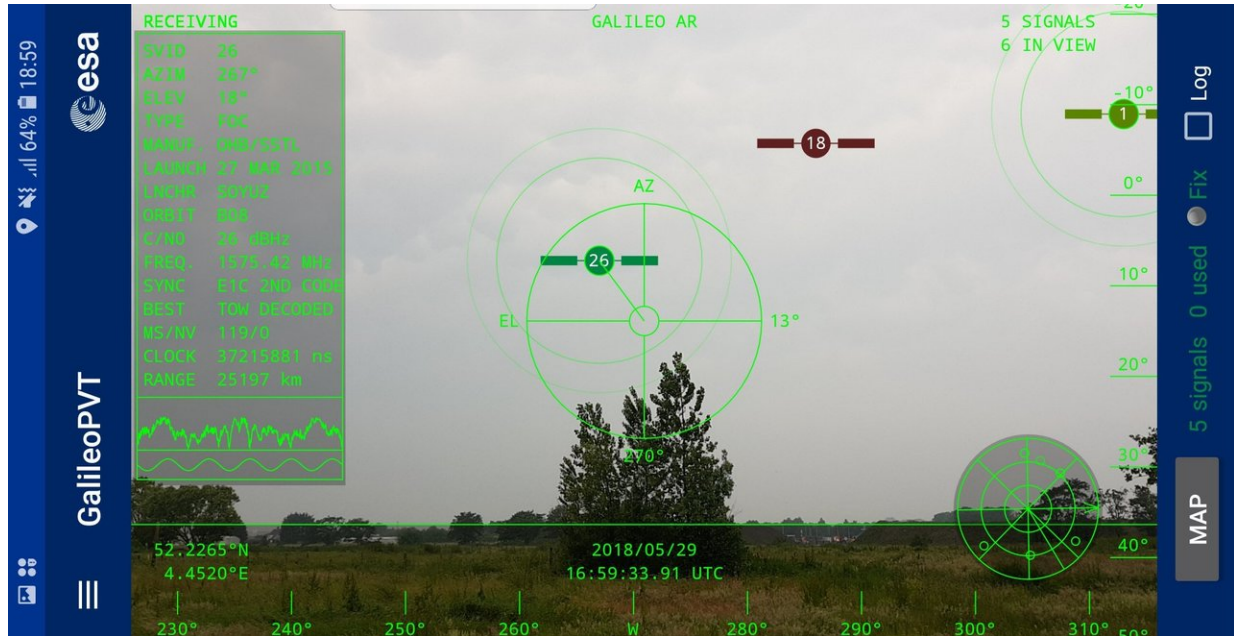


Galileo satellites viewed in smartphone app

July 11 2018



Credit: European Space Agency

An augmented reality view of Galileo satellites in the sky close to ESA's technical centre in the Netherlands. It comes from a Galileo-focused satnav app for Android smartphones, developed by ESA engineers.

ESA ran an internal competition for its trainees to develop an [app capable of making positioning fixes using only Galileo satellites](#).

"As part of our support for the competition, we developed our own app

on a voluntary basis to serve as a benchmark," explains Paolo Crosta of ESA's Radio Navigation Systems and Technology section. "We included this augmented reality view, so users can 'see' the satellites their smartphone is using as they hold it up to the sky."

The positioning calculations and assistance data functions for the app were developed by Paolo, with telecom engineer Tim Watterton contributing the main structure of the app, together with how it looks and its user interface.

Tim adds: "The satellites are overlaid in real time on the camera view in their predicted positions in the sky, based on 'ephemeris' information, assistance data that describes the current satellite orbits with high precision.

"When a signal is being received, the satellite is shown in green, overlaying the predicted position. The satellite shown in red is [one of the two placed in elongated orbits, but these satellites are expected to be used soon in the operational constellation](#). Satellites coloured orange are transmitting, but the signal is not detected, which may be due to obstruction by terrain or buildings."

Panning the phone around to position the crosshair over a green coloured satellite adds additional information about it, such as its signal status, 'pseudo-range' (the uncorrected distance the signal has travelled to reach the receiver) plus the [satellite](#)'s manufacturer, launch date among other items.

The reference app is now being tested with the hope of making it publicly available on the Android Play Store. The trainees are also testing their own apps following the competition with the goal of releasing them.

There are 22 Galileo satellites in orbit, with four more satellites set for launch on 25 July.

Provided by European Space Agency

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