

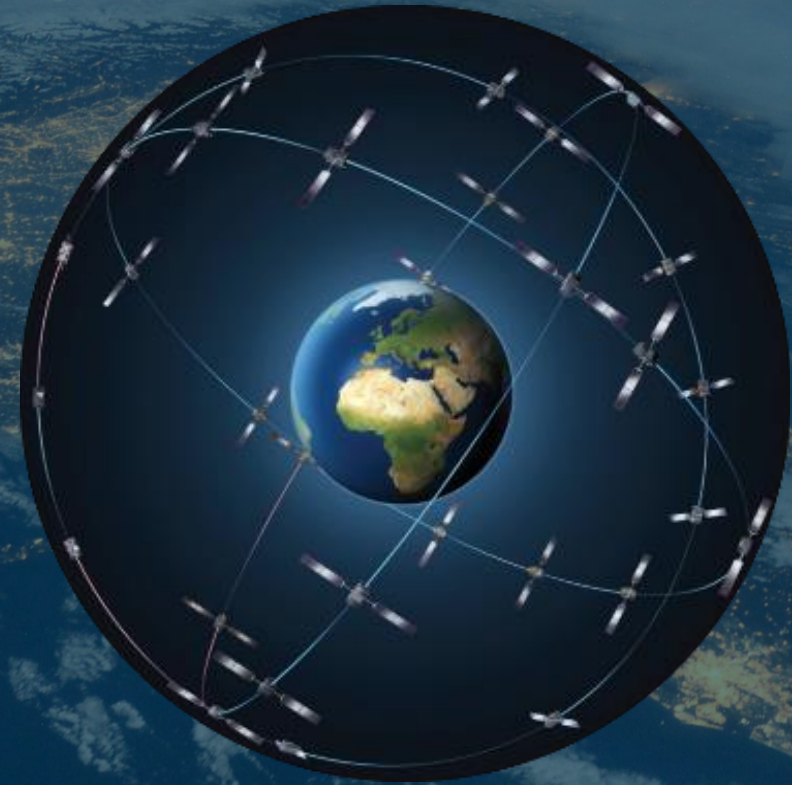
GALILEO: a major enabler for smart city applications

Dr Javier Ventura-Traveset, European Space Agency

How many cars are in the world?



How many satellite navigation receivers are in the world?



- It is estimated that today there are about **8 billion** satellite navigation receivers worldwide (Source: GNSS Market Report GSA) against 1.4 Billion cars.
- According to European Commission, **Europe's dependence** on the satellite radio navigation is **estimated** to represent **10 % of the EU total GDP**.

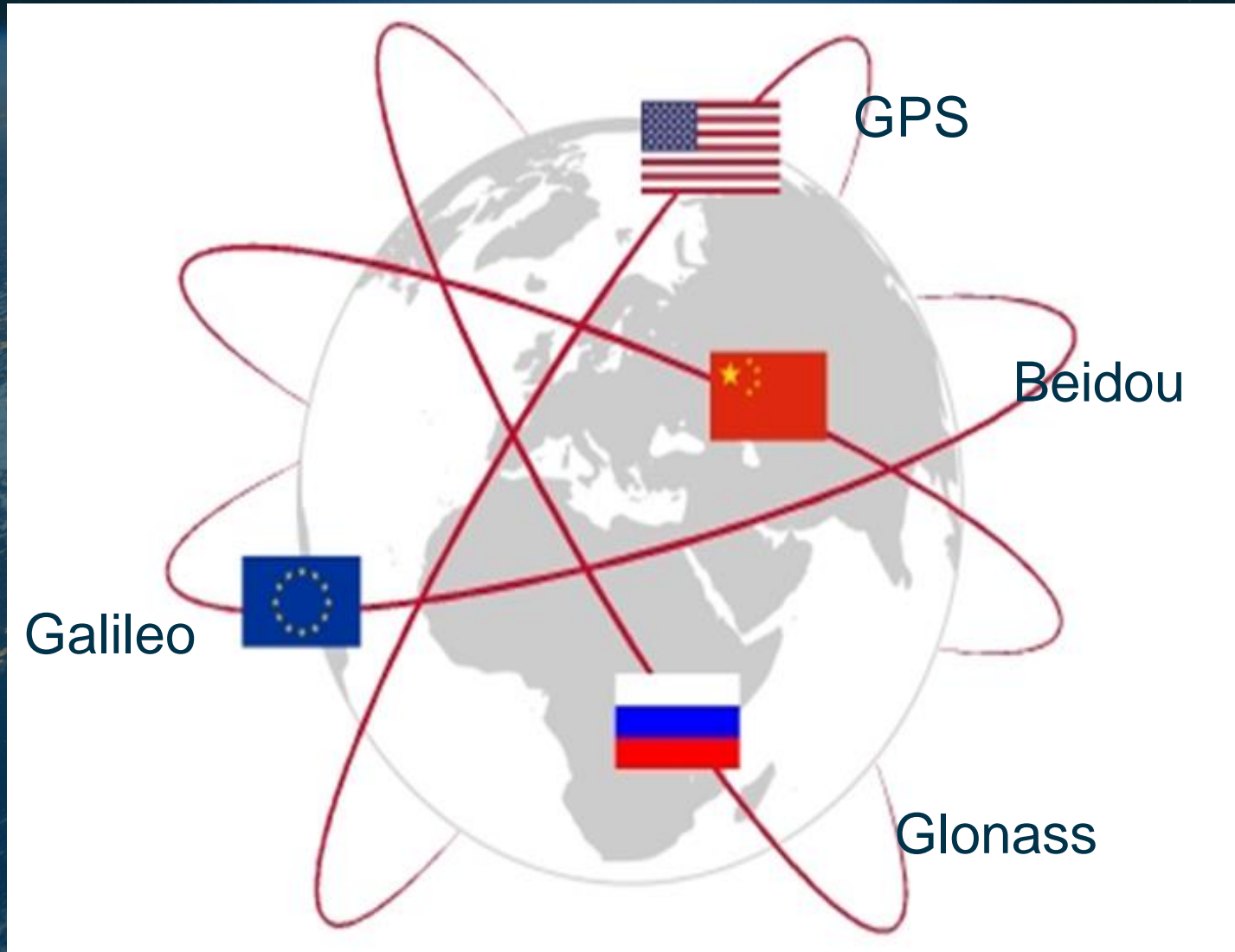


AN UNCOUNTABLE NUMBER OF APPLICATIONS



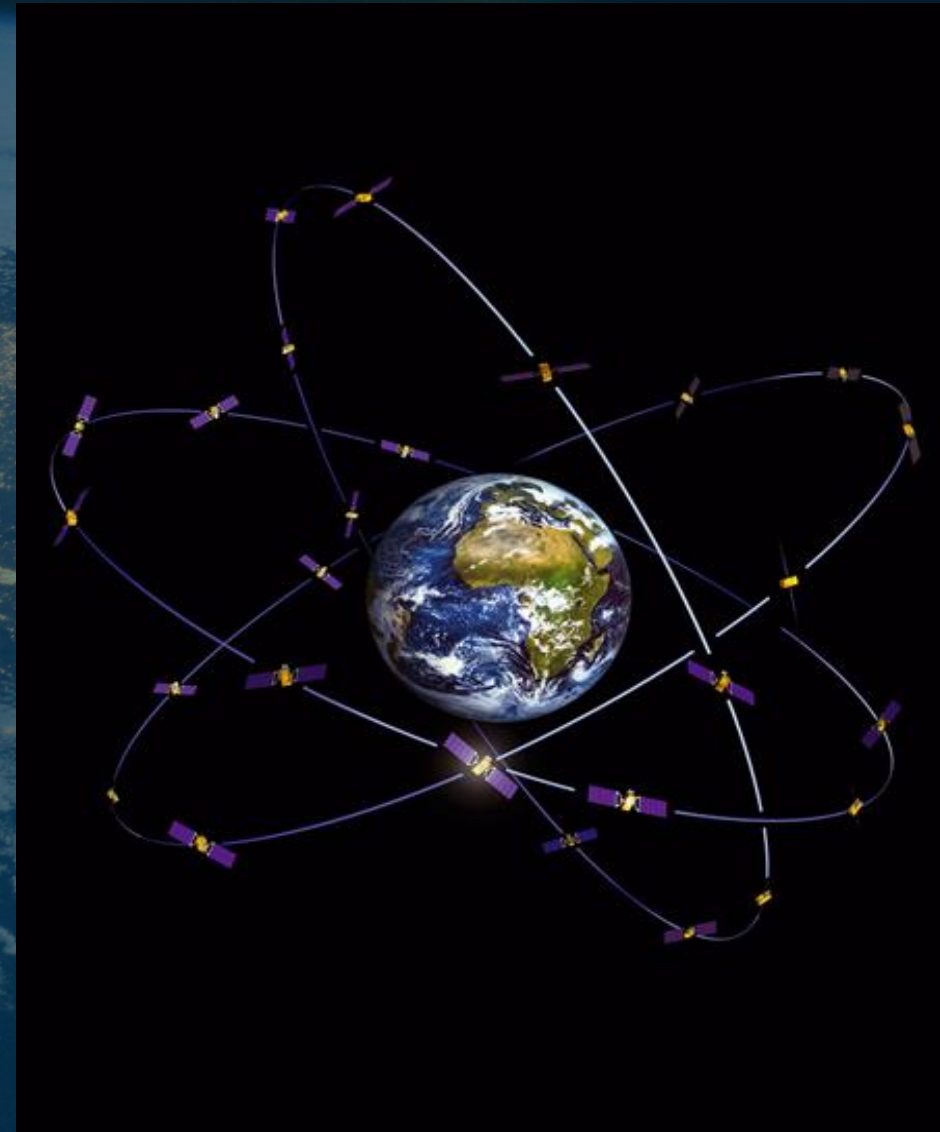
→ THE EUROPEAN SPACE AGENCY

THE FOUR GLOBAL SATELLITE NAVIGATION SYSTEMS

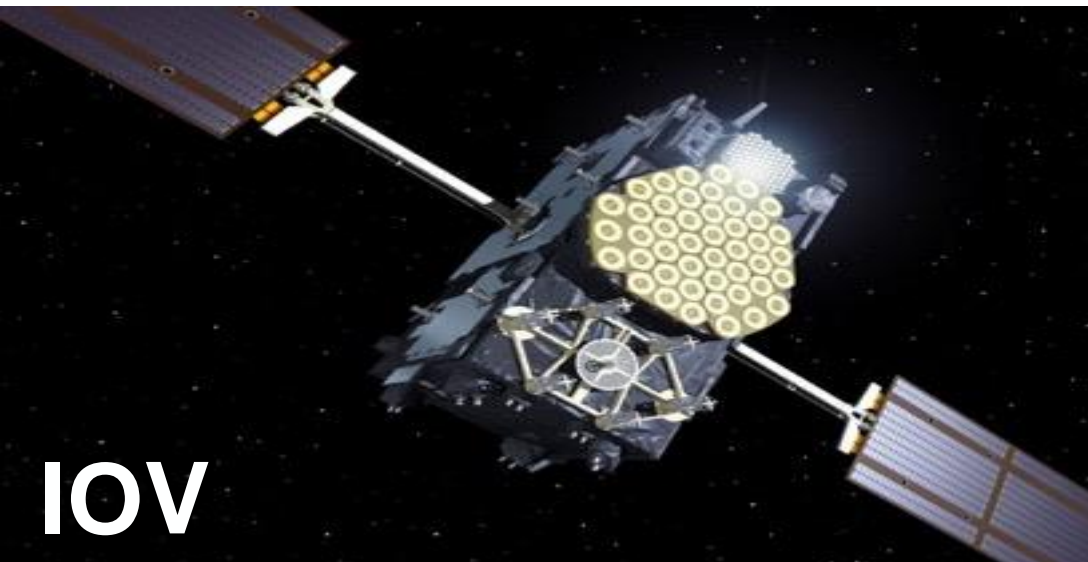


GALILEO IN FOUR BASIC MESSAGES

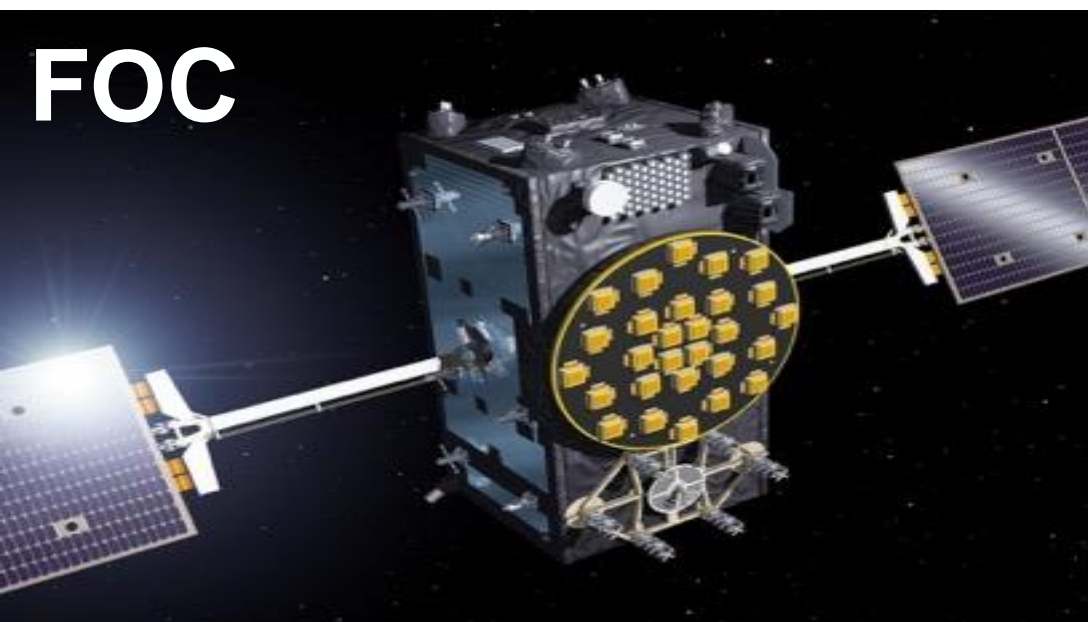
1. Galileo is the global navigation satellite system of Europe, providing a highly accurate and guaranteed global positioning and timing services at worldwide level.
2. Galileo is under European and civilian control. Designed, developed and controlled in Europe, Galileo gives Europe independence in satellite navigation.
3. Galileo has been conceived to be compatible and interoperable with GPS. The joint use of GPS and Galileo offers additional important benefits to the users.
4. Galileo includes several differentiators with respect to the other Global GNSS systems, allowing the development of a new services and applications in all fields of the economy.



26 Galileo Satellites now in orbit

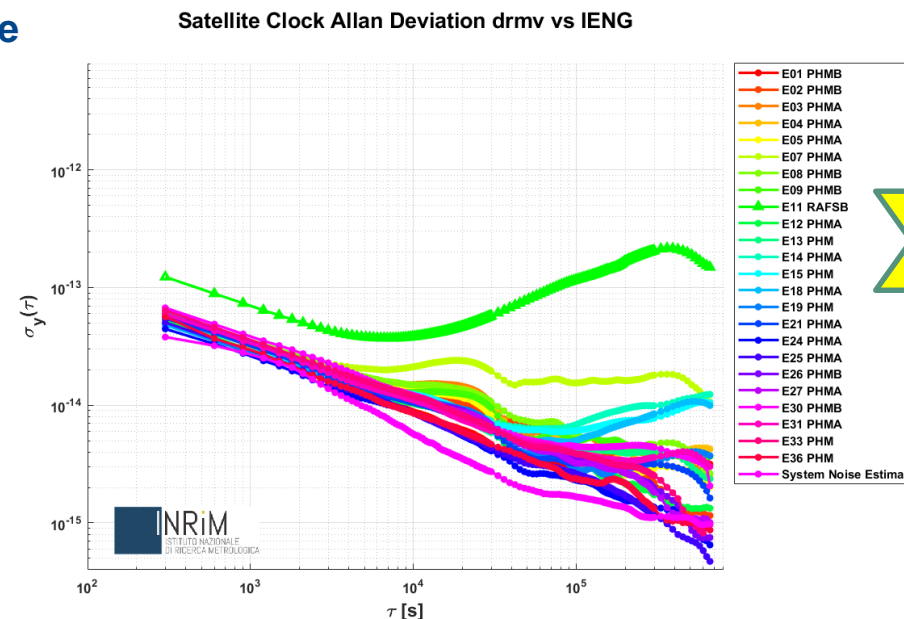


IOV



FOC

Airbus Defence
& Space
4 satellites



24
SIS

Embarked Clocks:
Rubidium Atomic Frequency Standard
Passive Hydrogen Maser

OHB Systems GmbH
SSTL Ltd
22 satellites

+ 12 under production



From 15 December 2016



GALILEO INITIAL SERVICES

GALILEO GOES LIVE

1 billion Galileo receivers was reached in only 34 months !



USE **GALILEO.EU**

FIND A GALILEO-ENABLED DEVICE TO USE TODAY

34 months

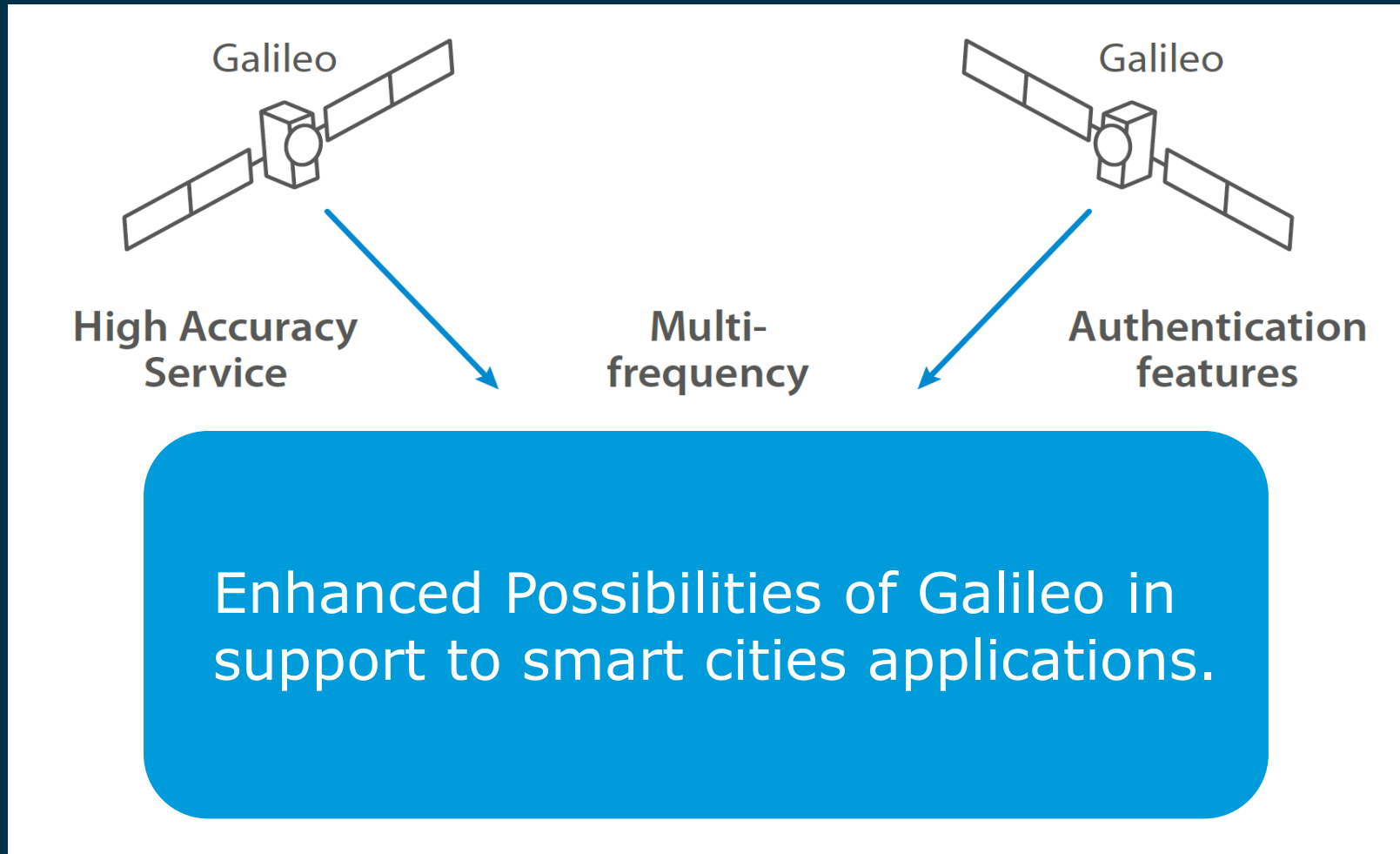
In 2019 there are a **billion**
Galileo enabled smartphones

Today about 1.8 Billion Galileo users estimated

About 500 different models of mobile phone are
today Galileo-compatible



SOME GALILEO DIFFERENTIATORS vs GPS

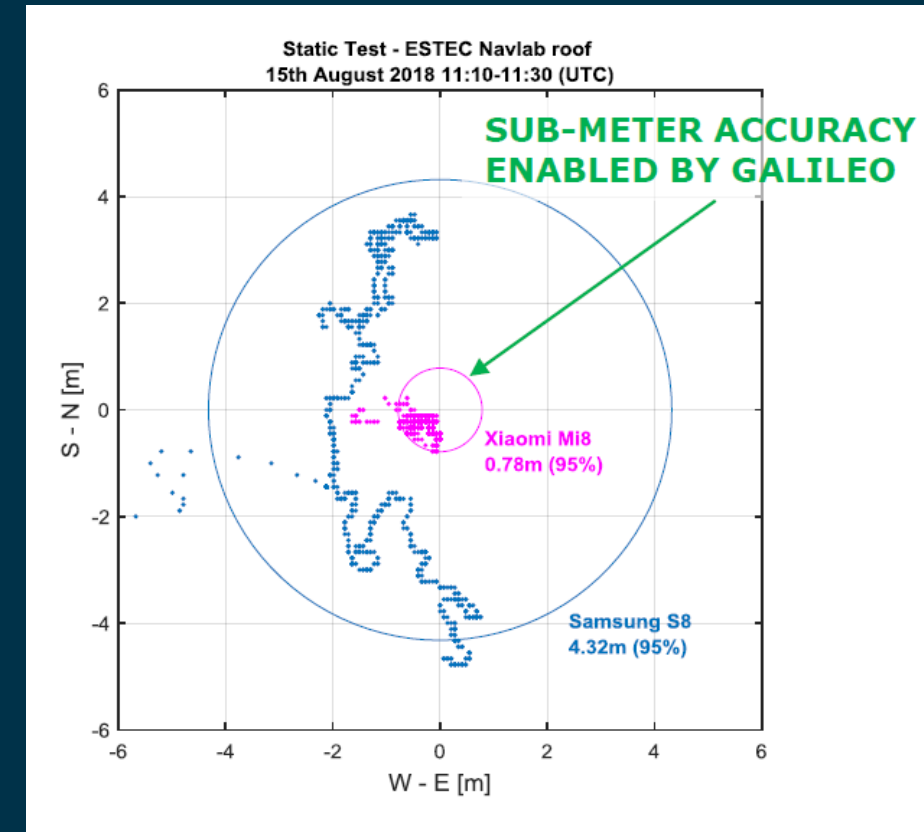


Galileo dual frequency service



TEST #1 15-08-2018
6-8 Galileo satellites in view during the test

Galileo phones display excellent performance thanks to advanced Galileo signal features



- Dual Frequency (DF) measurements along with GNSS chipset algorithmic enhancements enable a significant reduction of positioning error



GALILEO will soon
provide High Accuracy
Services (decimetre)

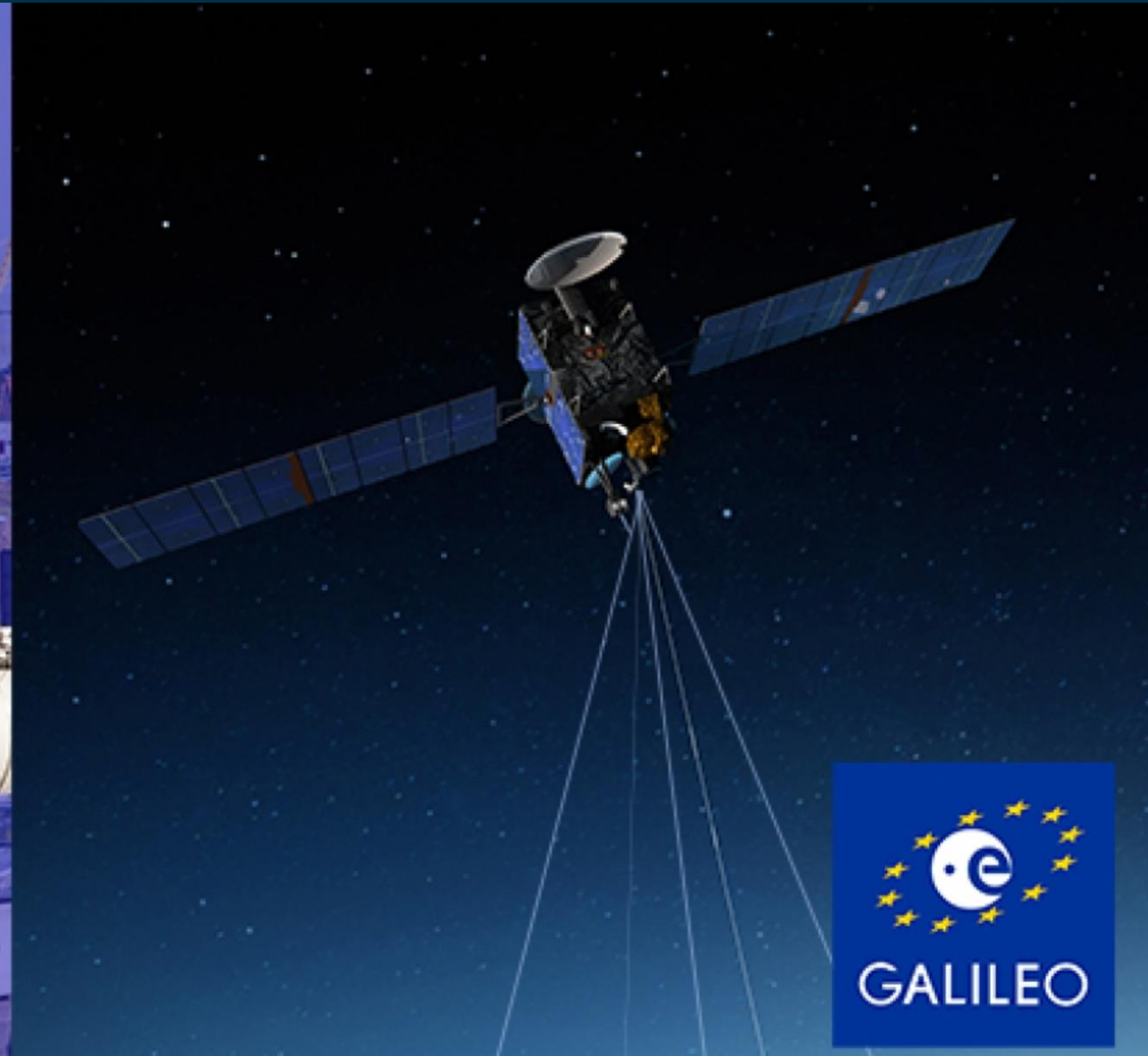
#USEGALILEO



European
Global Navigation
Satellite Systems
Agency



GALILEO Authentication Service



Public transport optimisation ...

... Location Based services

Management of street lights, smart lighting ...

Smart parking, geofencing...

... Autonomous electric transportation ...

Real time monitoring of noise and pollution ...

Disaster and Emergency tracking...

Supporting advanced urban planning...

... IoT and city Assets tracking, etc, etc, etc, etc ...

