

Agenda



Item	Speaker
Welcome and introduction	<i>Fiammetta Diani (GSA)</i>
Galileo and GNSS positioning in IoT	<i>Justyna Redelkiewicz (GSA)</i>
How to achieve accurate positioning without draining your battery – main innovations	<i>Omar Valdes (GSA)</i>
R&D developments: Apollo, GoT and Geonav IoT	<i>Thierry Torlotin (Apollo - Syntony), Samuel Ryckewaert (GoT - Ubiscale), Laurent Arzel (Geonav IoT – Telespazio France)</i>
Perspective from chipset manufacturers: STMicroelectronics & U-blox	<i>Luis Serrano (STMicroelectronics) Oreste Concepto (U-blox)</i>
Q & A	



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Teseo LIV-3F GNSS module for IoT

STMicroelectronics

Dr. Luis Serrano

Power-Efficient Positioning for IoT
GSA Webinar, Prague, 18 June 2020



Teseo-LIV3F Features

GNSS for IoT

Best In Class precision

Multi Constellation

Low-Power Modes

 Assisted GNSS

DGPS (SBAS & RTCM)

Odometer

Data logging

Geo-fencing

Free FW Configuration

Firmware upgrade





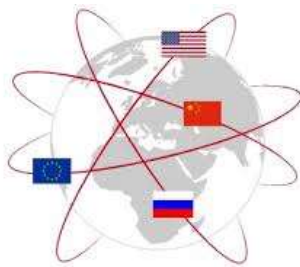
Teseo-LIV3F Features

GNSS for IoT

Multi constellation

GPS (USA),
GLONASS (Russian),
Galileo (European),

Up to 3 simultaneous active constellations



Differential-GPS

S-BAS (satellite-based augmentation system):

WAAS (USA), EGNOS (Europe), MTSAT (Japan), GAGAN (India),

QZSS (Japan & Australia)

RTCM v3.1



Algorithm

Teseo-LIV3F has **NOT** a reduced GNSS algorithm capability

On Teseo-LIV3F, ST provides the **same** algorithm car-makers use.



Teseo-LIV3F Features

GNSS for IoT – Assisted GNSS

Self Trained



ST-AGNSS
predicts satellite data
based on previous
observation of
satellite broadcast
data

Internet connection
NOT needed

5/6-days prediction

Available for free

TTFB ~ 1-4s

Predicted

P-AGNSS
predicts satellite data
based on data
downloaded by an
assistance server

Internet connection
NEEDED
(10~16KB data for each download
based on constellations)

14-days prediction

Assistance server
available for free

TTFB ~ 1-4s

Real Time

RT-AGNSS
uses real-time
satellite data
downloaded by an
assistance server

Internet connection
NEEDED
(16KB data for each 4h
based on constellations)

Continuous/Real-Time

Assistance server
available for free

TTFB <= 1s





GNSS for IoT – Different low-power modes

Continuous Fix (Adaptive option)

applications requiring certain accuracy

Average Power
(GPS+GLO @1Hz)

GLONASS RF OFF
when not needed

Periodic Fix

5sec to 18hour fix period

Average Power
(GPS every 1min)
GPS Only

Fix On Demand

Device always in standby

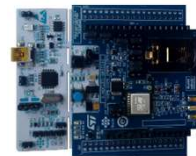
GNSS woken-up through the wakeup-pin based the host's needs

Management over proprietary NMEA commands



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Teseo-LIV3F Features



Teseo-LIV3F

Datasheet	Software User Manual
Hardware User Manual	Videos training
Application Note	

EVB-LIV3F

Datasheet	Schematic/BOM/Gerber
User Manual	Quick Start Guide

X-Nucleo-GNSS1A1

Datasheet	Schematic/BOM/Gerber
User Manual	C-Code STM32 drivers

Teseo Suite PC Tool

Datasheet	Videos training
Quick Training Guide	User Manual

Thank you

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