IoT4EO Workshop 2023 – Welcome

Josep.Rosello@esa.int, Frank.Zeppenfeldt@esa.int, Steven.Georges@ext.esa.int

EO Technology Coordination & Frequency Management, EOP-FMT,

Future Missions & Instruments Division

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ESA IoT4EO Team

Josep Rosello
EO Future Missions & Instruments
H/ Tech Coord.& Freq. Mgmt Sct.
Josep.rosello@esa.int

Frank Zeppenfeldt
Telecom Technologies, Product & Systems
Communications System Engineer
frank.zeppenfeldt@esa.int

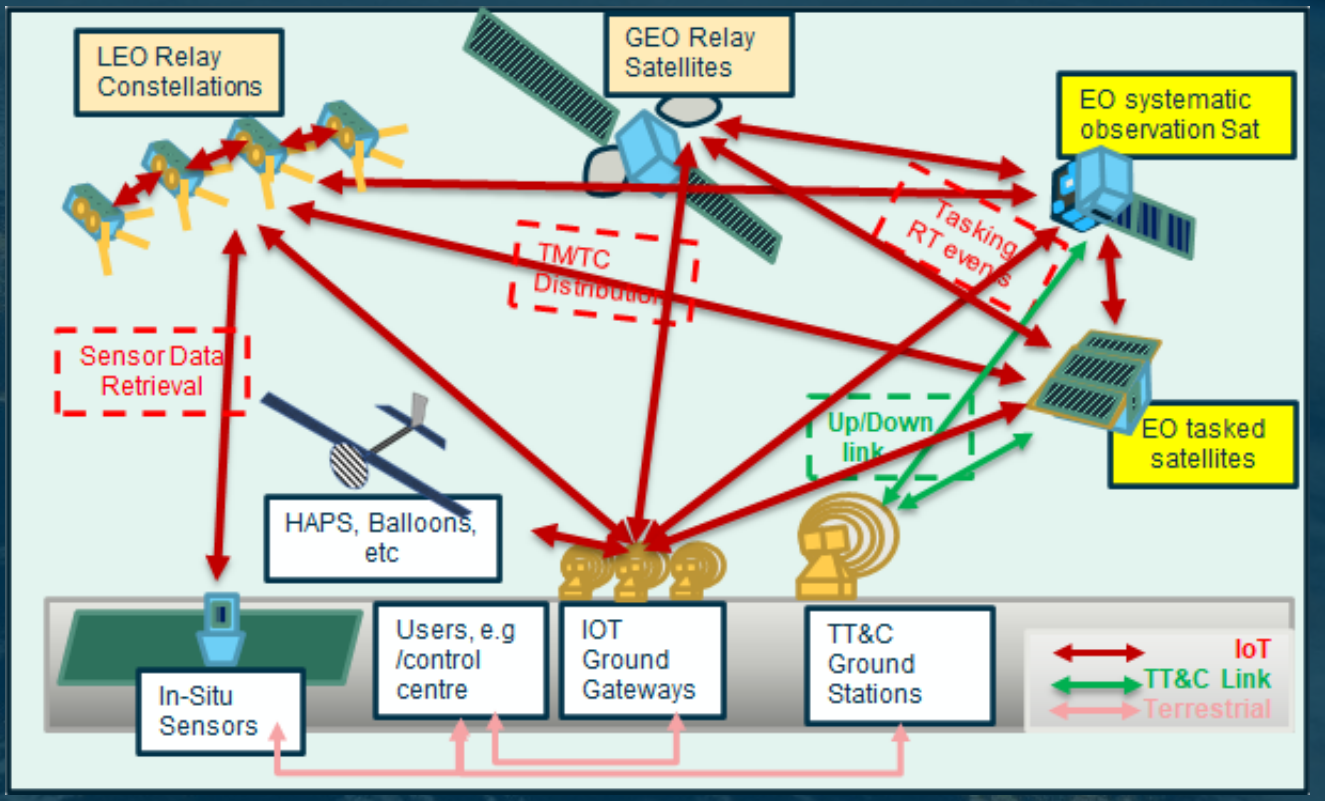
Steven George
EO Future Missions & Instruments
Systems & Technology Engineer
Steven.george@ext.esa.int

IoT4EO Workshop Overview

Potential of seamless & rapid connectivity to Earth Observation satellites in LEO orbits

What is possible today ?

Requirements and future needs for potential standardization.



Agenda – [Session 1 – EO User Needs]

13:00 → 15:30 **Session 1: Earth Observation User Needs**

13:00	**Welcome** Speaker: Steven George (European Space Agency)	10m
13:10	**EMSA EU's eyes on the sea – EO requirements** Speaker: Ricardo Vicente (EMSA)	20m
13:30	**IoT for Earth Observation - Motivation & Logic** Speaker: Josep Rosello (ESA/ESTEC/EOP-SFT)	20m
13:50	**IoT for Earth Observation - Use Cases incl. zoom into VHR constellations** Speaker: Vinney Languille (Airbus)	20m
14:10	**IoT for Earth Observation - Use Cases incl. zoom into VHR constellations** Speaker: Stephen Holsten (OHB)	20m
14:30	**Novel Observing Strategies for NASA Future Earth Science Missions** Speaker: Jacqueline Lemoigne-Stewart (NASA)	20m
14:50	**ESOC Perspective on operations with IoT** Speaker: Vemund Reggestad (European Space Agency)	20m
15:10	**IoT for Earth Observation - Weather Applications** Speaker: Antoine JeanJean (EUMETSAT)	20m

Session-1: EO User needs
High Level Requirements (EMSA) – KEY NOTE SPEAKER
• EO data used / interests • Current process + delivery time from request to data delivery • continuous connectivity (worth it at low data rate) • Future needs and drivers ?
Use cases incl. zoom on VHR constellations
• Which EO use cases ? • How do current VHR EO systems connect currently ? • What services (e.g., GEO & LEO) would you consider today • Recommendations for the future
IOAG Presentation (NASA)
• New Observing Strategies (NOS) and Analytic Collaborative Frameworks (ACF)
Operations (ESOC)
• How can near-continuous connectivity can change operations?
Meteorological missions (EUMETSAT)
• Current broadcasting services in Meteorology • Could near-continuous (low data rate) help future Meteo services ?

COFFEE BREAK

We resume at 15:45

Agenda – [Session 2 – EO Upstream Users of IoT]

15:45 → 18:35 **Session 2: Earth Observation Upstream Users of IoT**

15:45	**SAR Data and IoT** **Speaker**: Tero Vauraste (Iceye)	15m
16:00	**Rapid & Resilient Crisis Response System Study** **Speaker**: Donatella Giampaolo (e-GOES)	15m
16:15	**R3 Study: End-user is Everything!** **Speaker**: Vorobiev Alex (RHEA)	15m
16:30	**Optical Imagery and IoT** **Speaker**: Kattia Pozo (Planet Labs)	15m
16:45	**Meteorological Data and IoT** **Speaker**: Jeroen Cappaert (Spire)	15m
17:00	**PERsistent Satelliite InterLink Service (PERSILS): Outcome of Definition phase and way forward.** **Speaker**: Pierre Wilhelm (Aerospacelabs)	15m
17:15	**Internet of Things in Space Networks** **Speaker**: Vincenzo Schena (TAS-IT)	15m
17:30	**SAR Data for IoT** **Speaker**: Christian Lenz (Capella)	15m
17:45	**Realtime Wildfire Detection and IoT** **Speaker**: Martin Langer (OroraTech)	15m
18:00	**Contribution of data-relay constellations to the UNSEENLABS service for Maritime Domain Awareness** **Speaker**: Rosario Ruiloba (Unseenlabs)	15m
18:15	**IoT Space Challenge: prototyping campus for fast innovation on EO and IoT** **Speaker**: Anna Burzykowska (European Space Agency)	15m

18:35 → 20:05 **Networking Drinks / Food Buffet at ESTEC**

Session-2: D/TIA studies + EO upstream users of IoT
Rapid & Resilient Crisis Response System Study (RHEA & e-GEOS in TIA contracts)
• System Requirements & user needs • services for near-continuous (low data rates) today ? • services evolution?
EO Upstream Users of IoT (All other companies)
• services for fast data delivery data provided today & future? • current E2E data latency – time-to-quire to end user. • worth having continuous connectivity to the satellite (at low data rate)? • needs and driver(s) to use faster connectivity?

Agenda – [Session 3 – IoT Providers (GEO & LEO)]

09:00 → 10:15 **Session 3A: IoT Providers: GEO** **GEO**

09:00	**Data Relay Providers - An Introduction** **Speaker**: Frank Zeppenfeldt (European Space Agency)	15m
09:15	**Viasat support to IoT Connectivity to EO Satellites** **Speaker**: Nathan Welborne (Viasat)	15m
09:30	**Inmarsat Facilitated Data Relay Services for Delivering Always-On / On-Demand Connectivity to LEO Satellites** **Speaker**: Eyal Trachtman (Addvalue)	15m
09:45	**SES support to IoT Connectivity to EO Satellites** **Speaker**: Maarten Verhaegh (SES)	15m
10:00	**Neosat support to IoT Connectivity to EO Satellites** **Speaker**: Kai-Uwe Storek (NeoSat)	15m

10:15 → 11:15 **Session 3B: IoT Providers: LEO** **LEO**

10:15	**Lacuna Space support to IoT Connectivity to EO Satellites** **Speaker**: Thomas Telkamp (Lacuna Space)	15m
10:30	**Sateliot support to IoT Connectivity to EO Satellites** **Speaker**: Marco Guadalupi (Sateliot)	15m
10:45	**Astrocast support to IoT Connectivity to EO Satellites** **Speaker**: Federico Belloni (Astrocast)	15m
11:00	**Data collection systems for Earth observation : 40-year experience and ongoing evolutions** **Speaker**: Bahri Assia (Kineis (FR))	15m

Session-3: Simple Low-Rate service providers
Service providers (GEO/LEO - All companies)
• Services do you offer EO satellites today ? • Evolution of near-continuous connectivity ? • Technologies and non-technical aspects - Criticalities?

COFFEE BREAK

We resume at 11:35

Agenda – Round Table

EO Use Cases with near-permanent connectivity

- Benefits ?
  - e.g. for VHR EO systems, meteo-services, small sats, operations, rapid response systems, …
  - Does it complement higher speed [Gb/s] connections ? or a all-in-one would be better ?
  - Attractiveness of EO market for connectivity service providers
- Prioritises:
  - Simplicity (is low data rate & no steering a reasonable assumption)
  - OR performance (data rate [at kb/s], availability, service cost)
- Is it feasible ?
  - are today services sufficient ? - e.g. delivery time
  - evolution needed ?
    - Standardisation: e.g. frequency, Bw, ITU service, other ?
    - Capacity / availability needed: availability, number of sats orbit(s), …
    - Flexibility: e.g. possibility of multiple providers like for phones?