AIX
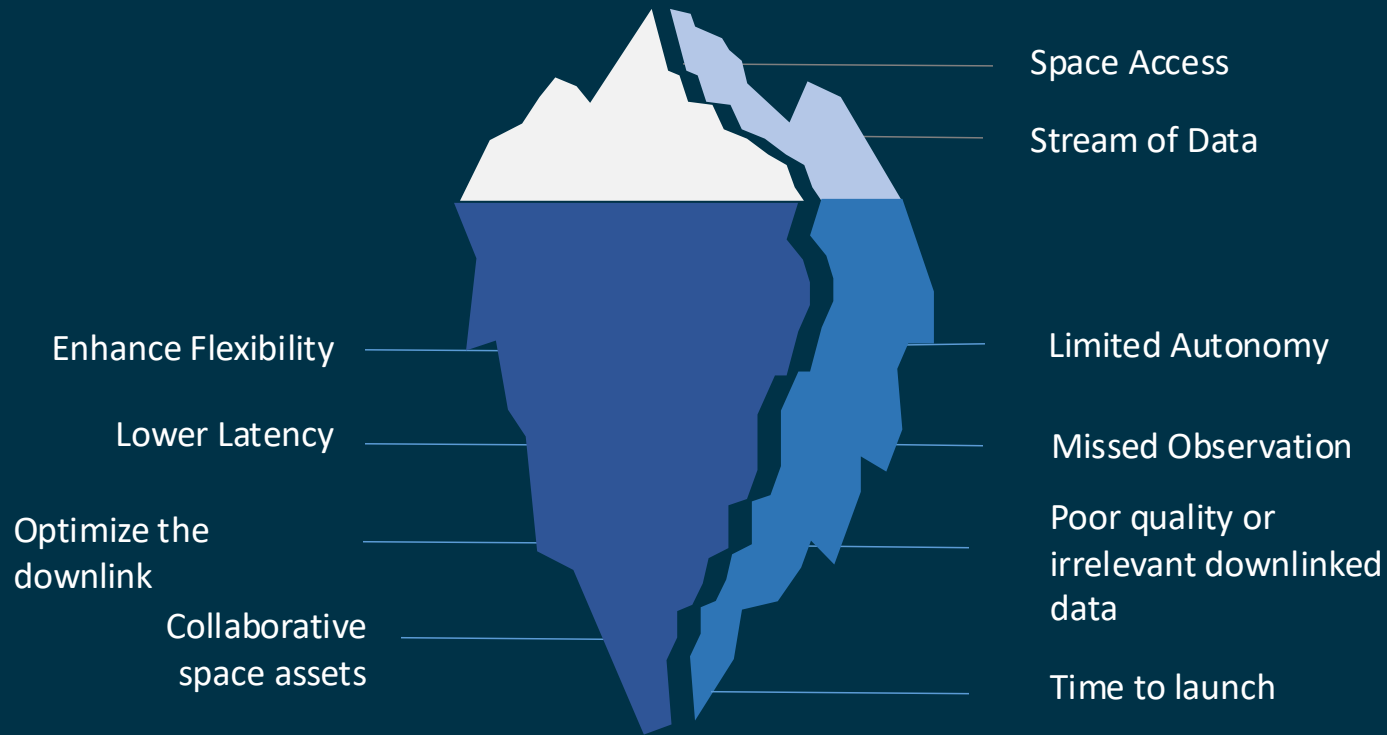
AI-eXpress IN3 Activity

The 2nd EO commercialisation forum
November 27th, 2024,
KAP Europa, Frankfurt

PLANETEK ITALIA | AIKO | D-ORBIT

aix

ESA INCUBED

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D-ORBIT
NEW SPACE SOLUTIONS

AIKO

The Challenges of the current EO Value Chain

Space Access

Stream of Data

Enhance Flexibility

Lower Latency

Optimize the downlink

Collaborative space assets

Limited Autonomy

Missed Observation

Poor quality or irrelevant downlinked data

Time to launch

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A user-centered laboratory
in Space

A technological framework composed of hardware, software and services. These provide a set of basic and advanced building blocks that AI applications can be built upon. In other words, a testbed for AI (and not only)

provide access to information acquired directly from assets in orbit exploiting and privileging a service-based approach
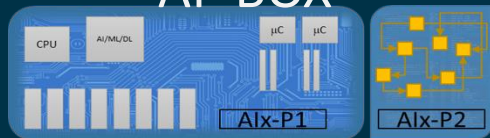
improving the implementation and validation of space services, with effects on time-to-market, operational and commercial efficiency

devising and testing new mission concepts in orbit

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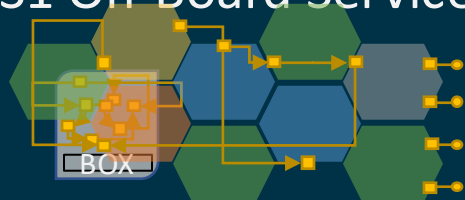D-ORBIT

AIX products/services

AI^X BOX

Includes the AI^X-BOX and a software framework enabling the **on-board services** intended to the other sub-systems and payloads. It includes also the SW development kit, with a set of ready-made applications, and the tools allowing the development of new ones

S1 On-Board Services

The AIX-BOX is embedded in a satellite Carrier (e.g. D-Orbit's ION) and provides its services to payloads hosted onboard. In this way several payloads can pay-per-use the access to the AIX capabilities, services and environment
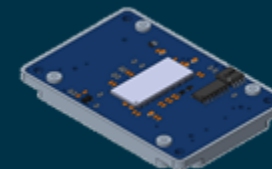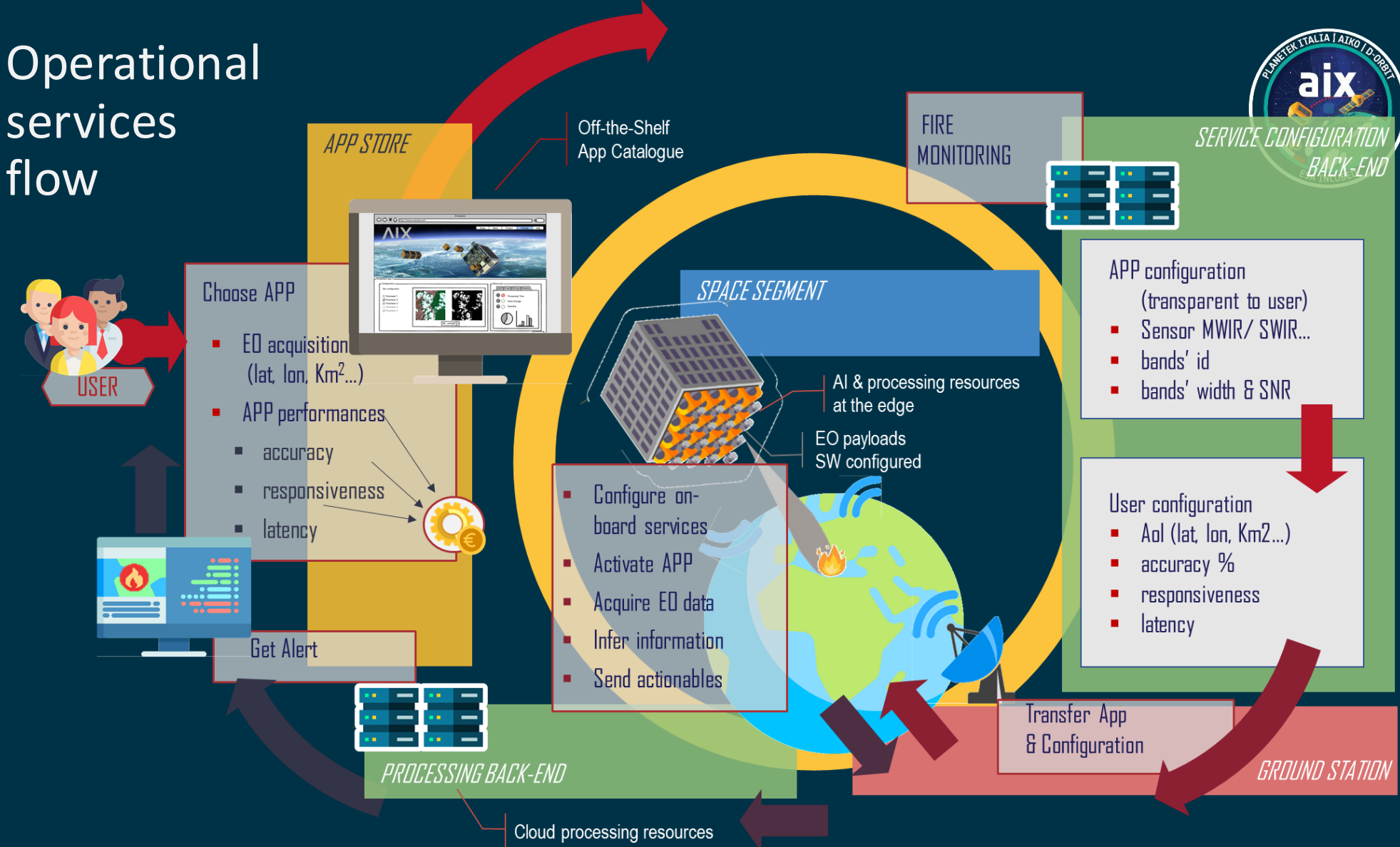
S1a & S2 App Library

A set of services à la carte based on AI^X On-Board framework with a public catalogue and an "app store" approach. Services will include EO data acquisition, processing (actionable info extraction) and downlink. They can be combined together to build custom applications. Ready-made applications (e.g. fire detection and warning service) are available on the app-store.

AI^X Dev kit

A development kit (SW only) intended to the implementation of applications that are based on the AISF framework and that can be run on any AIX On-Board Service. This will enable the "app-store" selling model.

4

Operational services flow

APP STORE

Off-the-Shelf App Catalogue

FIRE MONITORING

SERVICE CONFIGURATION BACK-END

USER

Choose APP
- EO acquisition (lat, lon, Km^2...)
- APP performances
  - accuracy
  - responsiveness
  - latency

Get Alert

SPACE SEGMENT

AI & processing resources at the edge

EO payloads SW configured

- Configure on-board services
- Activate APP
- Acquire EO data
- Infer information
- Send actionables

PROCESSING BACK-END

Cloud processing resources

Transfer App & Configuration

GROUND STATION

APP configuration (transparent to user)
- Sensor MWIR/ SWIR...
- bands' id
- bands' width & SNR

User configuration
- AoI (lat, lon, Km2...)
- accuracy %
- responsiveness
- latency

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Sensor in-the-loop

Low-latency edge processing

Narrow FOV
Nadir looking
8,5m GSD Optical Multi-Spectral sensor

Wide FOV Forward looking
Low-res (120-250m)
sensor

8 spectral bands

Camera system by TSD space
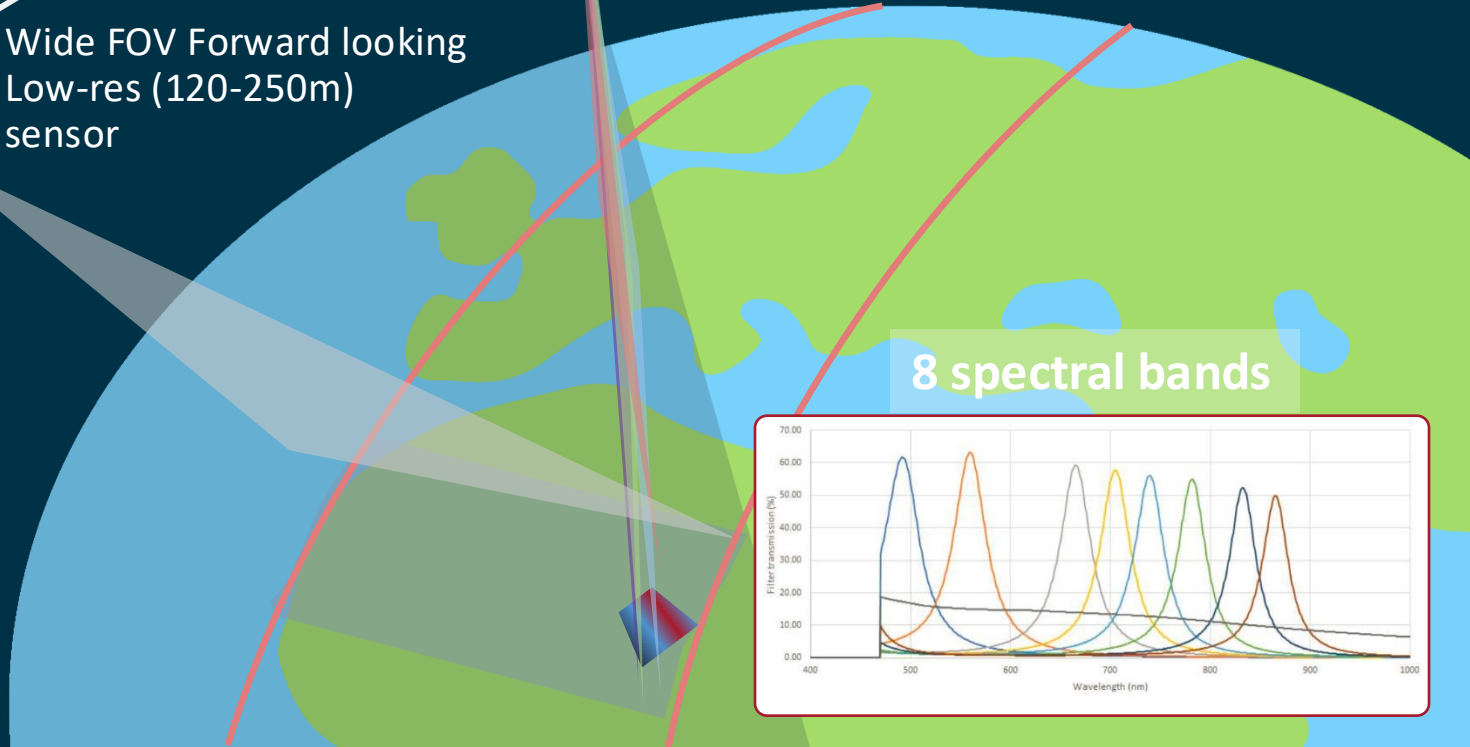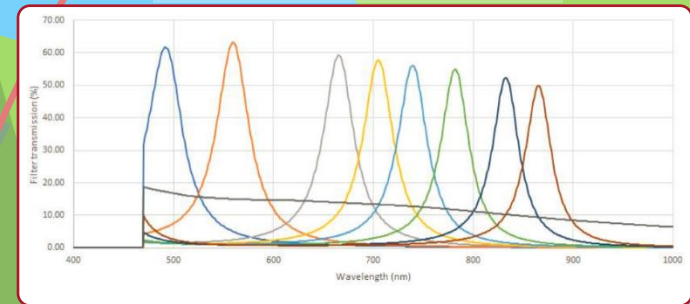
Establishing a new business model
a multi-sided approach

In Orbit Data Gateway

Provides network, storage & processing services at the SPACEDGE

Satellite Data Providers

Provide Data and Information-based Services & Get Services from the ecosystem

Spacedge hybrid platform and devices

App / Service Providers

Get Information and Services, Provide value added Services Attract Users and generate Revenues

Ground Facility Providers

Downlink, Network, storage & processing services on the ground

App / Service Final Users

Use commercial App / Services

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What's next

AIX-1p

January 2025:

- F9 - Transporter-12
- SSO +/- 0,1 deg
- 500-600km +/- 20km
- LTDN 10:30 + 60min

AIX-1

June 2025:

- F9 - Transporter - 14
- LTDN 13:00 + 2h / - 0h
- SSO +/- 0,1 deg
- 500-600km +/- 20km

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Evolutions:
AIX is not an EO satellite

Ceci n'est pas une pipe.

"The famous pipe
reproached me fo
you stuff my pipe
representation, is
written on my pict
pipe", I'd have bee

René Magritte