DAME Data Intensive Technologies for Multimission Environments

Final Presentation (FP)

Project final presentation
(objectives, achievements)

DAME overall objectives

- To develop the prototype of a software system for the exploitation of Earth Observation data

- To setup this system in the context of the Italian Collaborative Ground Segment infrastructure

- To execute a proof-of-concept demonstration of its operational concept aimed at highlighting the benefits that the establishment of such a system can bring to different user communities

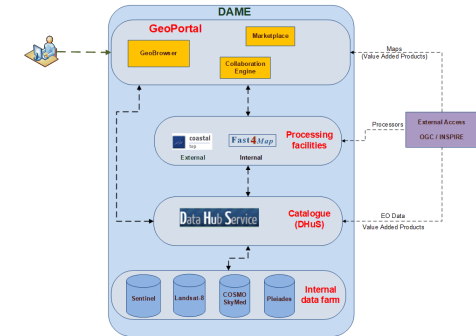# DAME achievements
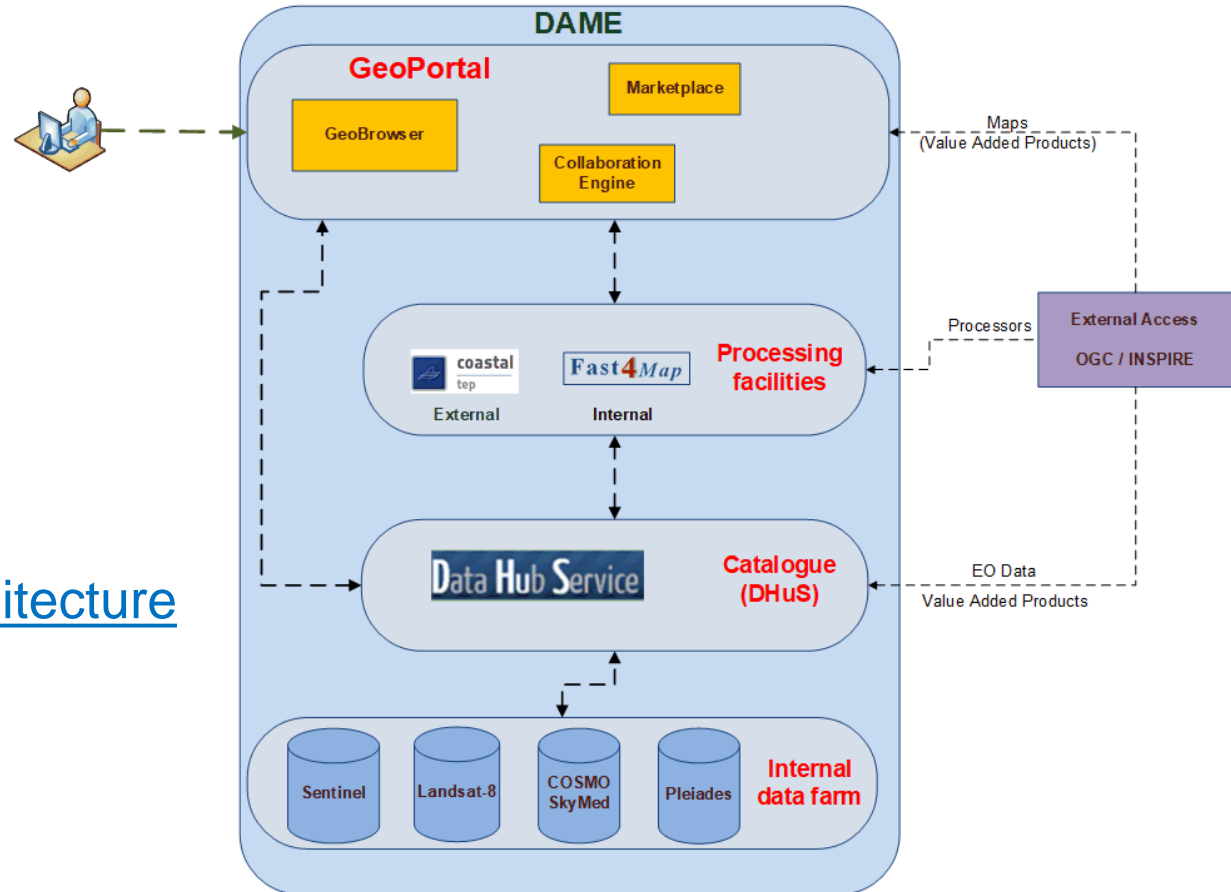
DAME architecture

DAME main achievements

➢ *To develop the prototype of a software system for the exploitation of EO data*

Standards and solutions adopted for development

❖ Architecture based on Docker technology

❖ Use of OGC standards: WPS, WMS, OWS Context, ...

❖ Processors → as WPS → as Docker containers

❖ Support of INSPIRE

❖ Deployment of a processor on C-TEP and invoked within DAME through WPS

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DAME main achievements

➢ *To develop the prototype of a software system for the exploitation of EO data*

Functionalities

❖ DHuS improvement (add-ons) for Landsat8, COSMO SkyMed, Pléiades and VAPs

❖ 11 coastal thematic processors available to the users

❖ Easy-to-use Geobrowser

❖ Collaborative functionalities

❖ Marketplace for processors exchange

❖ Dedicated web site, including also tutorials and documentations
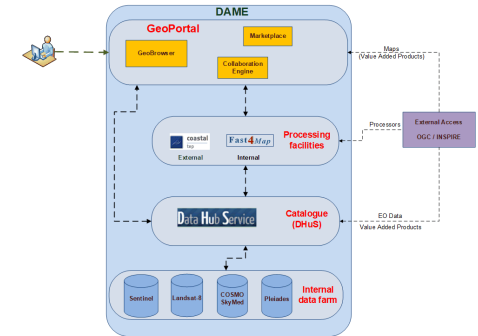
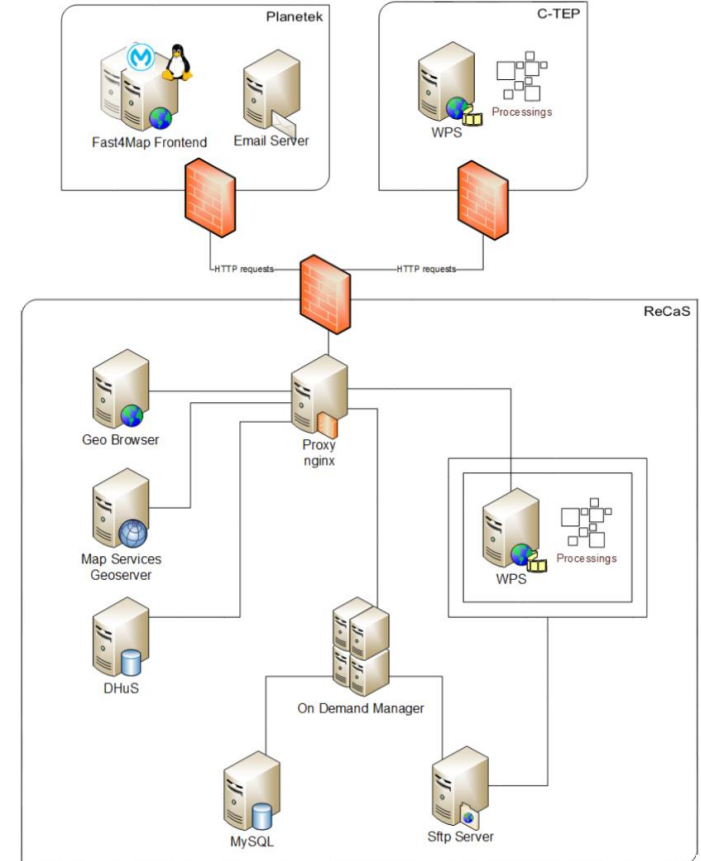# DAME main achievements

➢ *To setup this system in the context of the Italian Collaborative Ground Segment infrastructure*

Deployment

❖ Deployment at ReCaS facilities, where temporary Coll-IT is deployed

❖ DAME portal accessible at:

http://dame-geoportal.planetek.it

❖ Non-registered users can search and display EO data and VAPs

❖ Official Coll-IT (Matera) is based on DHuS

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DAME main achievements

➤ *To execute a proof-of-concept demonstration of its operational concept aimed at highlighting the benefits that the establishment of such a system can bring to different user communities*

Platform demonstration

❖ Identified users' categories: scientific, service providers and institutions

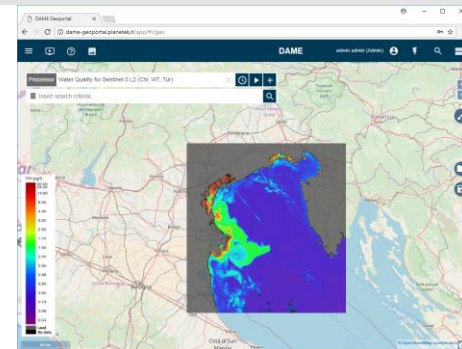❖ Platform available for more than one month

DAME main achievements

➢ *To execute a proof-of-concept demonstration of its operational concept aimed at highlighting the benefits that the establishment of such a system can bring to different user communities*

Platform demonstration

❖ Platform used and evaluated by:

- Scientific users:
    - Geomatics Laboratory of DICEA (Department of Civil, Constructional and Environmental Engineering) of La Sapienza University
    - Institute of Bio-Physics of the Italian National Research Council (IBF-CNR)

- Service providers:
    - Survey Lab
    - Geospatial Applications Processing (GAP)
    - ACRI-ST for C-TEP team

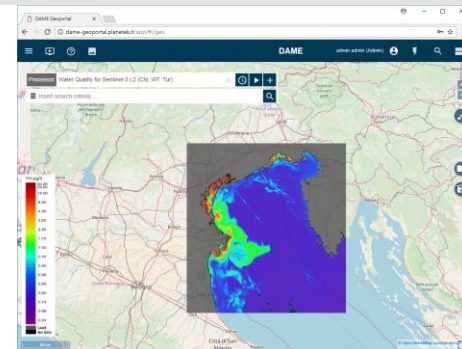- Others:
    - ASI

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DAME main achievements

> *To execute a proof-of-concept demonstration of its operational concept aimed at highlighting the benefits that the establishment of such a system can bring to different user communities*

Basic scenarios

Scenario 1: Data Ingestion and cataloguing

Scenario 2: NRT Processing chains

    I.   Water quality from Sentinel-3

    II.   Water quality from Sentinel-2 and Landsat8

    III. Oil spill from Sentinel-1 and CSK

Scenario 3: On-demand Processing chains

    I.   Water quality from Sentinel-2, Landsat8, Pléiades

    II.   Water quality temporal and spatial indexes

    III. Water quality from PRISMA

    IV. Costal subsidence from Sentinel-1 and CSK

    V.   Coastline from Sentinel-1 and CSK

Utilization scenarios

Research activities

Service development activities

Virtual Laboratory initiatives

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DAME main achievements

> *To execute a proof-of-concept demonstration of its operational concept aimed at highlighting the benefits that the establishment of such a system can bring to different user communities*

Main achieved benefits to users

- ✓ Easy and uniform access to a catalogue of multi-missions EO data sensors

- ✓ Cataloguing and of VAPs and their use as input for processors

- ✓ Simple interface to provide input to and to launch a processor

- ✓ Collaborative functionalities to sharing results

- ✓ Marketplace to share/use/provide processors

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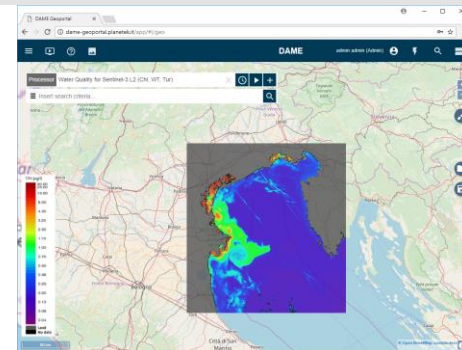
Project final presentation

(future perspectives)

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DAME Perspectives

Collocation of DAME in the landscape of "platform layers", according to ESA vision of platforms
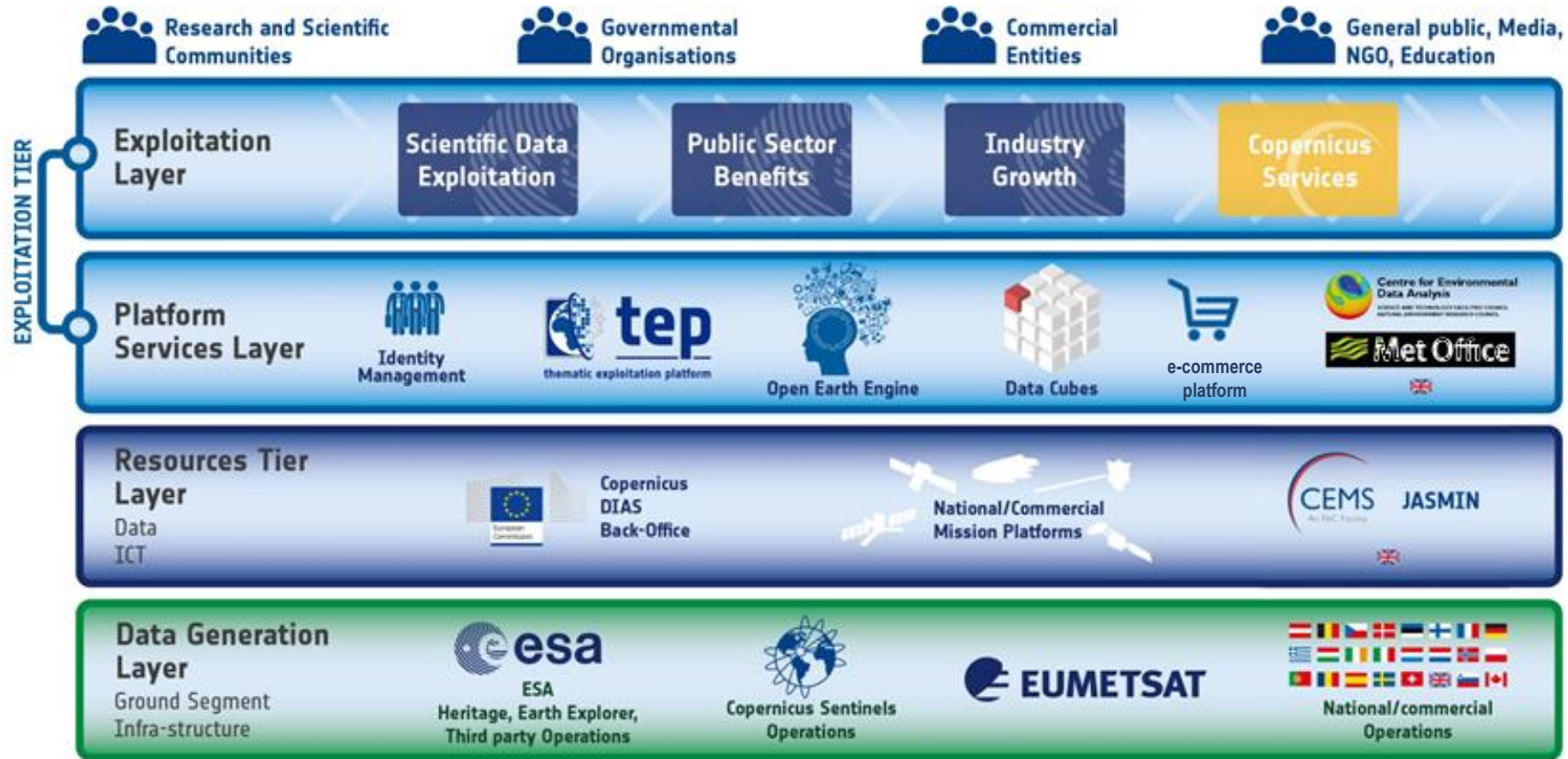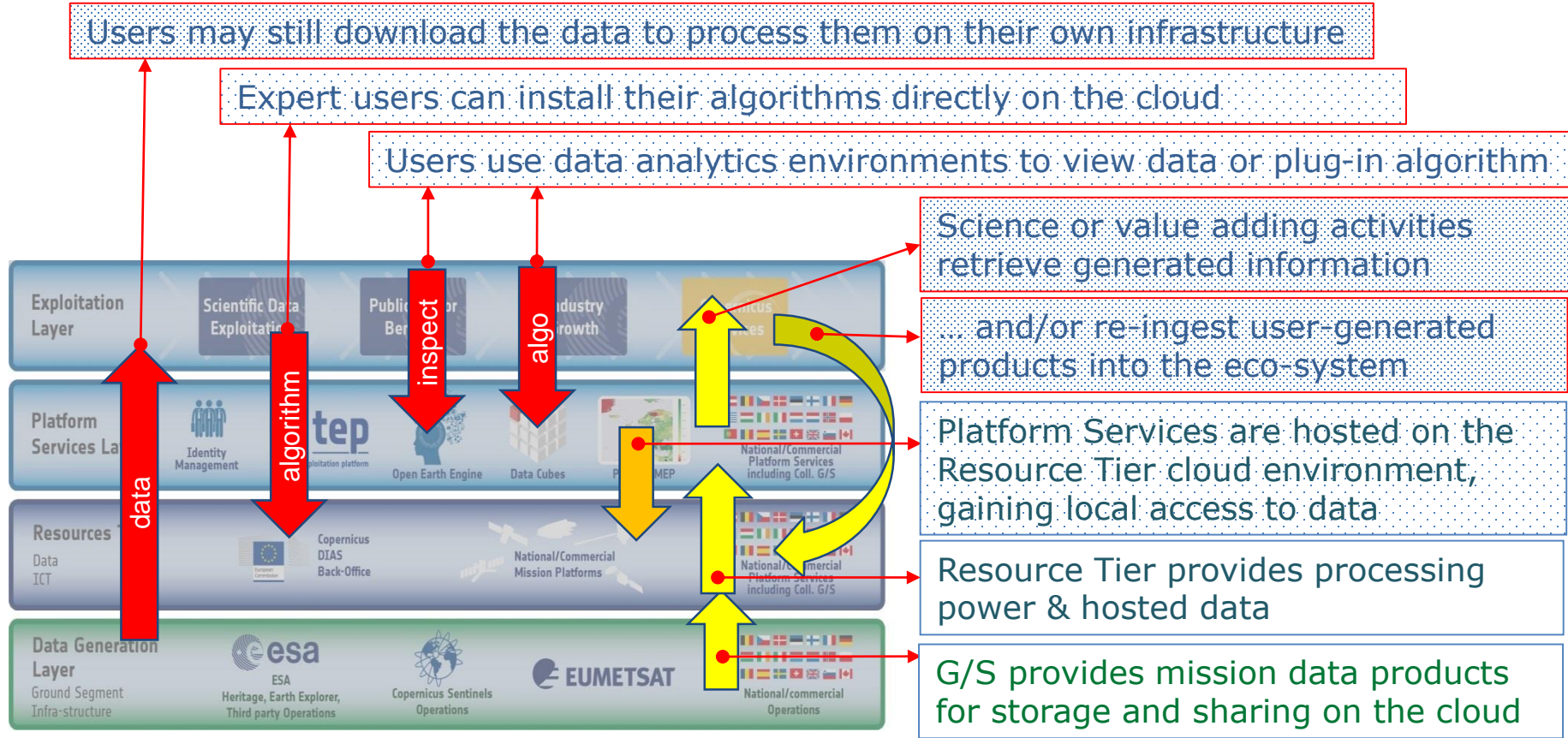
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The EO Ecosystem: a platform-based economy

EO Science for Society Information Day
22 March 2018

Guenther Landgraf
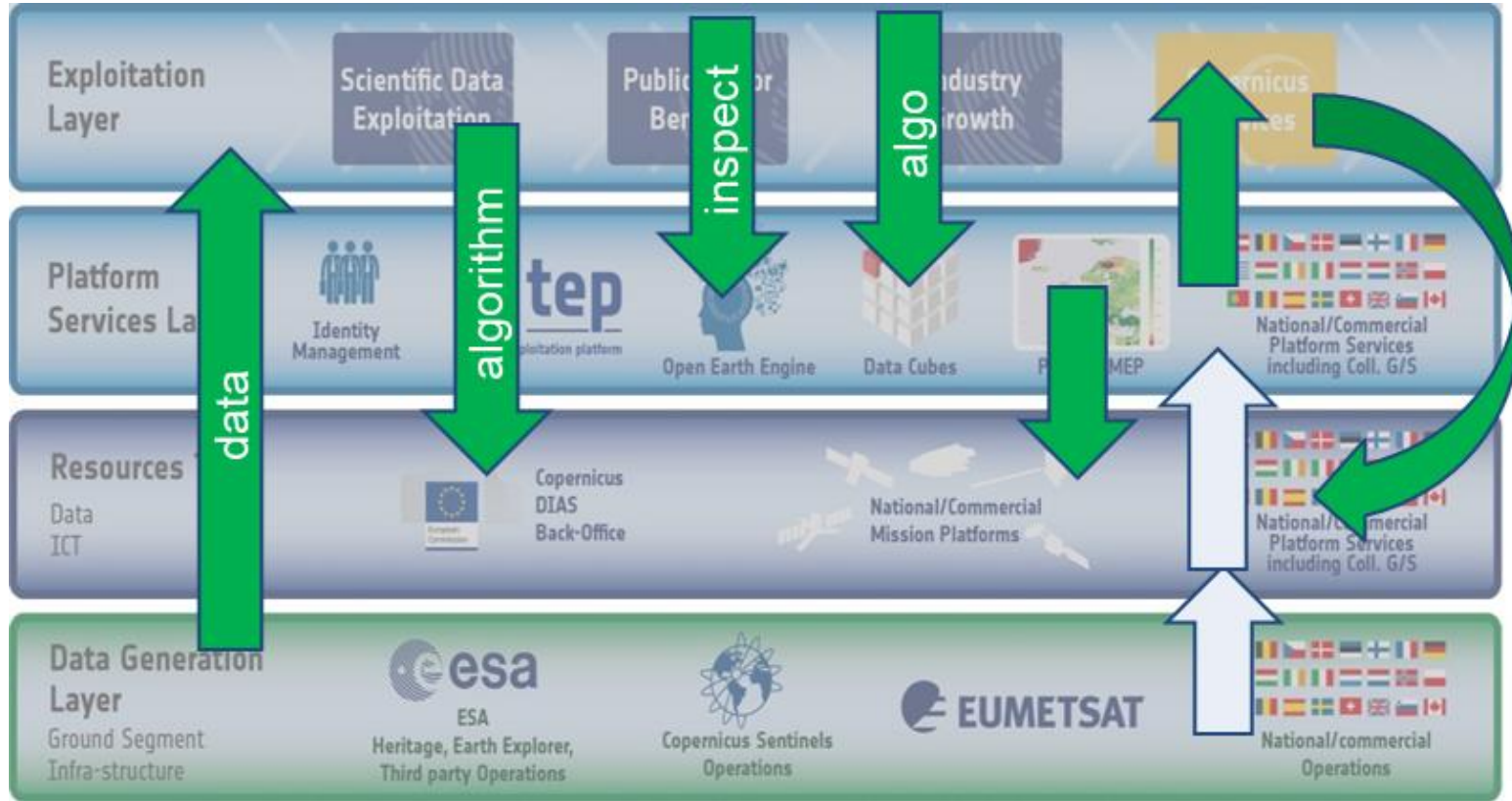Data Application Division, EOP-SD

The EO Ecosystem: Interfaces

Users may still download the data to process them on their own infrastructure

Expert users can install their algorithms directly on the cloud

Users use data analytics environments to view data or plug-in algorithm

Science or value adding activities retrieve generated information

... and/or re-ingest user-generated products into the eco-system

Platform Services are hosted on the Resource Tier cloud environment, gaining local access to data

Resource Tier provides processing power & hosted data

G/S provides mission data products for storage and sharing on the cloud

Exploitation Layer — Scientific Data Exploitation, Public Benefit, Industry Growth, Copernicus Services

Platform Services Layer — Identity Management, tep exploitation platform, Open Earth Engine, Data Cubes, P... MEP, National/Commercial Platform Services including Coll. G/S

Resources Tier — Data ICT — Copernicus DIAS Back-Office, National/Commercial Mission Platforms, National/Commercial Platform Services including Coll. G/S

Data Generation Layer — Ground Segment Infra-structure — esa ESA Heritage, Earth Explorer, Third party Operations, Copernicus Sentinels Operations, EUMETSAT, National/commercial Operations

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EO Science for Society Information Day
22 March 2018

Guenther Landgraf
Data Application Division, EOP-SD

The EO Ecosystem: Interfaces

Dame placement as a single system (Platform Service Layer) or as a set of single functionalities (green arrows).

DAME Perspectives

Perspectives within ASI initiatives

❖ Use of the DAME platform at the final Coll-IT

Easy to deploy / Coll-IT catalogue based on DHuS.

Examples of possible synergy with the COSTELab project:

- DAME as a backbone for COSTELab building up on its current capabilities
- DAME as a stand-alone platform at the Coll-IT which can be exploited by COSTELab to expand (access to other processors and/or EO and non-EO data)

❖ Re-use of the DAME platform for future activities/projects

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