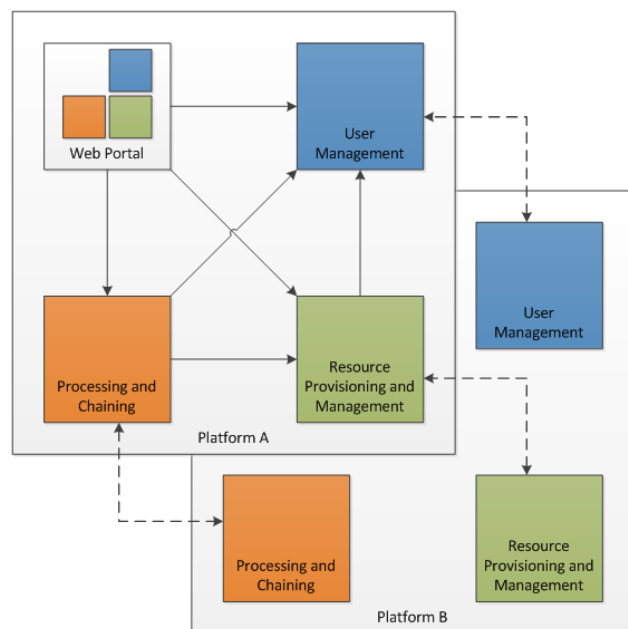


EOEPCA

Earth Observation Exploitation Platform Common Architecture

Demonstration



25th May 2021





Welcome

Agenda

- Overview (15 mins)
- Demonstration (30-40 mins)
- User Management Presentation (10 mins)
- Processing Presentation (10 mins)
- Resource Management Presentation (10 mins)
- Q&A (15+ mins)

Please post questions to the meeting chat or at our forum <https://eoepca.org/forum/>

Overview

Demonstration

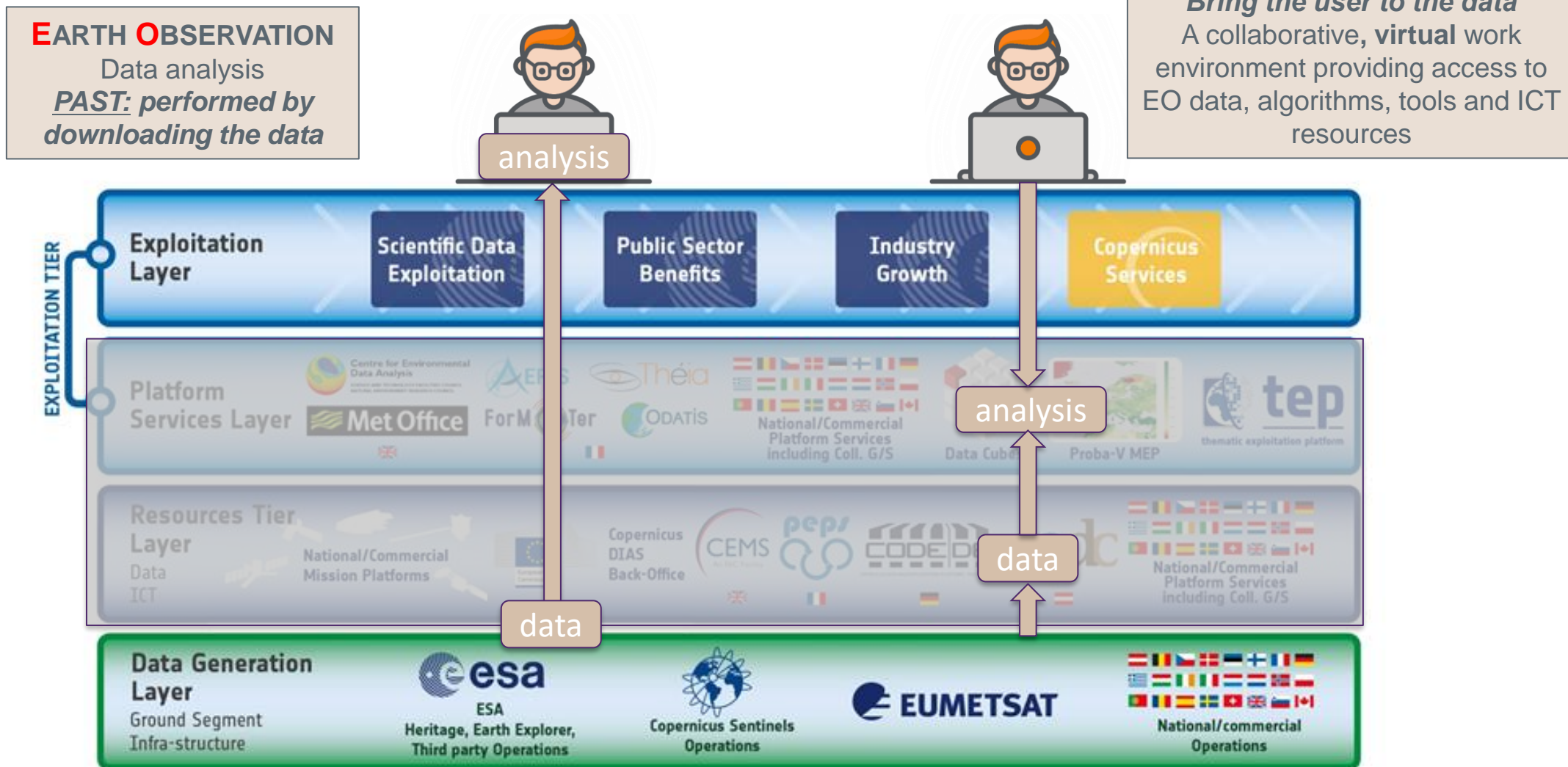
User Management Presentation

Processing Presentation

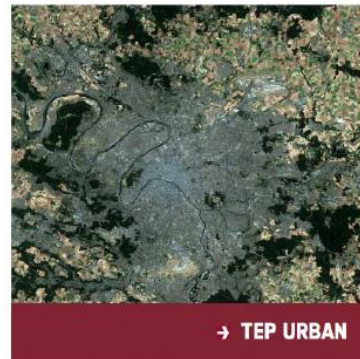
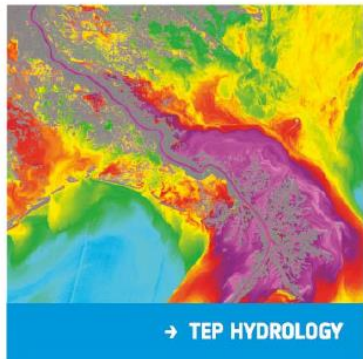
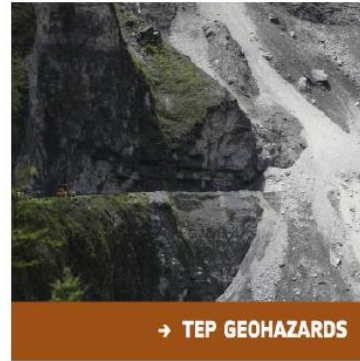
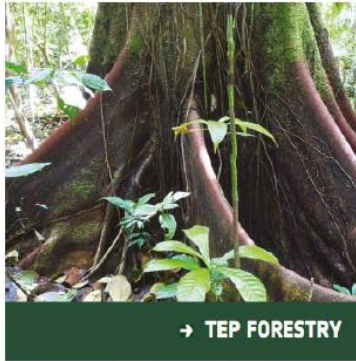
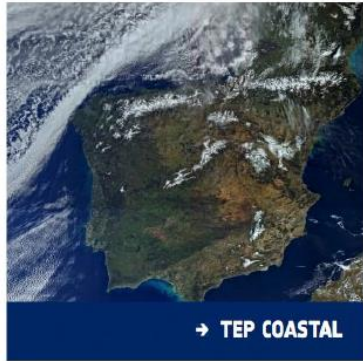
Resource Management Presentation

Q&A

Exploitation Platform



Platform Federation



Wouldn't it be nice if ... I didn't need to be an ICT wizard or instrument expert to integrate different data into my research or application?

NETWORK of RESOURCES (NoR)

Ever growing collection of EO data centres, services and platforms

So how can I login once and use multiple platforms?

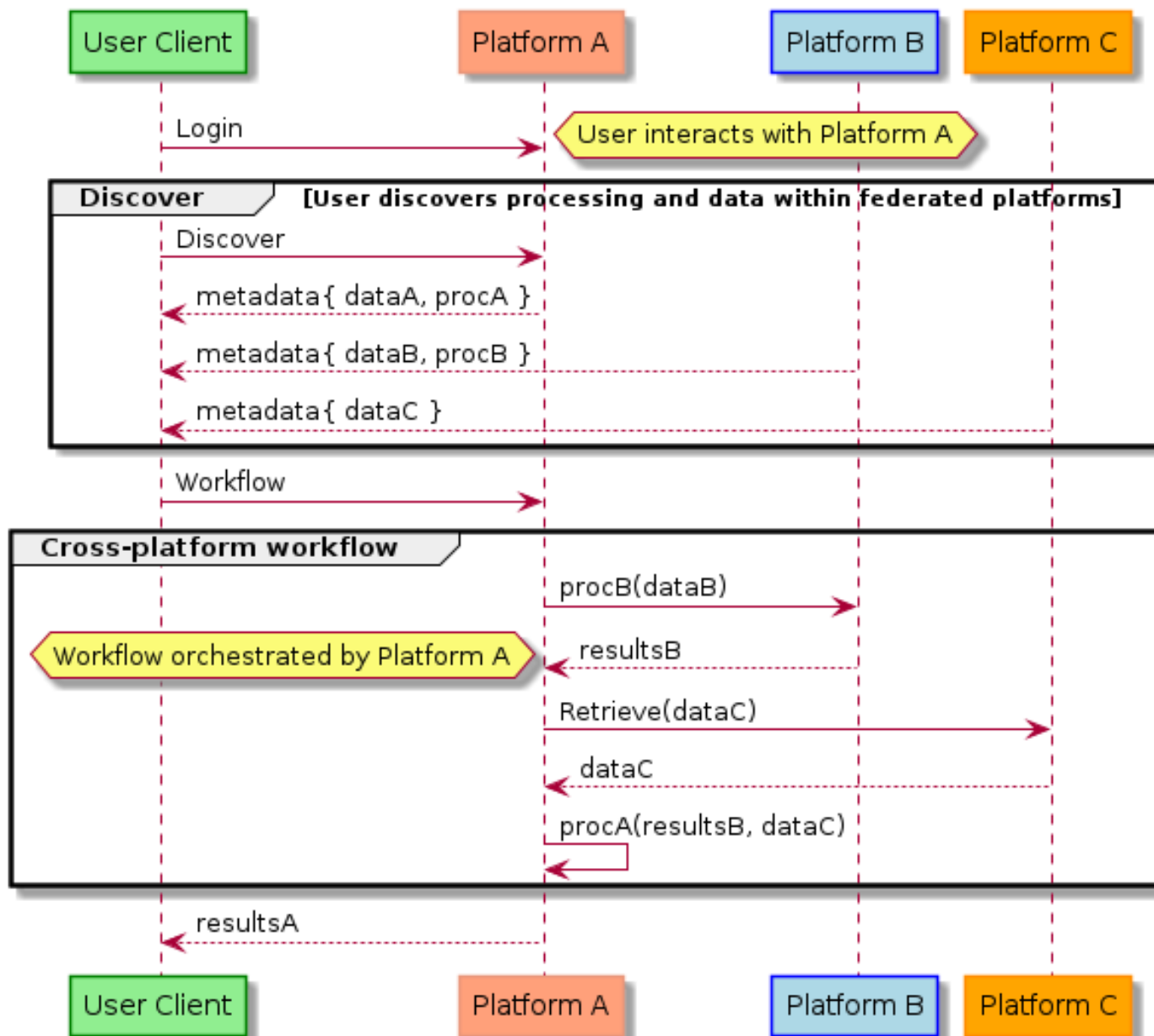


EARTH OBSERVATION EXPLOITATION PLATFORMS COMMON ARCHITECTURE (EOEPCA)

Federation of EPs through an open consensus-based architecture for EPs in the Network of Resources

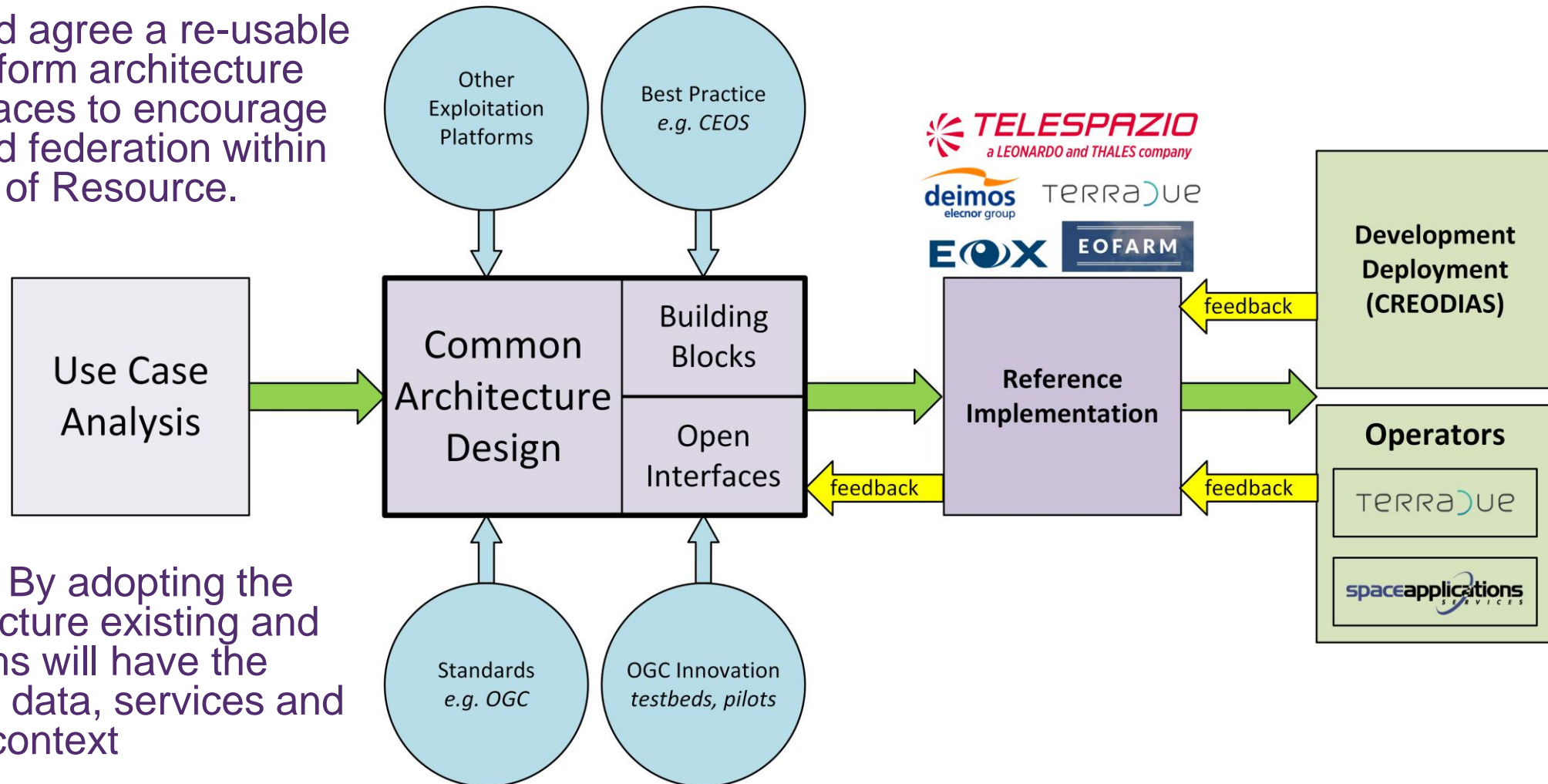
The Common Architecture and Reference Implementation provide a common framework that harmonises access to data and services in the NoR

Federated Workflow



Our Approach

GOAL - Define and agree a re-usable exploitation platform architecture using open interfaces to encourage interoperation and federation within the Network of Resource.



MOTIVATION - By adopting the Common Architecture existing and future platforms will have the capability to share data, services and user context



Use Cases

Consumer

- Consumer **discovers and visualises products**
- Consumer uploads data to their workspace
- Consumer **discovers and executes On-demand Processing Service**
- Consumer discovers and executes Interactive Applications
- Consumer executes **Systematic processing**
- Consumer analyses value-added product
- Consumer performs Open Science
- Consumer accesses EP services with External Application
- User creates **ML annotations**

Federation

- **User** accesses Platform services
- User uses **federated services** from another platform

Expert

- Expert user **builds new processing service**
- Expert user builds new processing **chains**
- Expert develops with **interactive development environment**
- Expert user builds new **value-added** products
- Expert user builds new interactive application
- Expert performs training
- Expert creates a new ML annotation campaign
- Expert performs **ML training**

Domain Areas & Building Blocks



User Management

Federated user identity, access management and accounting

- **Login Service / Policy Enforcement Point (PEP) / Policy Decision Point (PDP) / User Profile**
- *License Manager / Accounting/Billing Service / Pricing Engine*



Processing & Chaining

Application/workflow development, deployment, execution and interactive analysis

- **ADES (Application Deployment & Execution Service) / Workflow Engine / PDE (Processor Development Environment)**
- *EMS (Execution Management Service) / Interactive Analysis Tool*



Resource Management

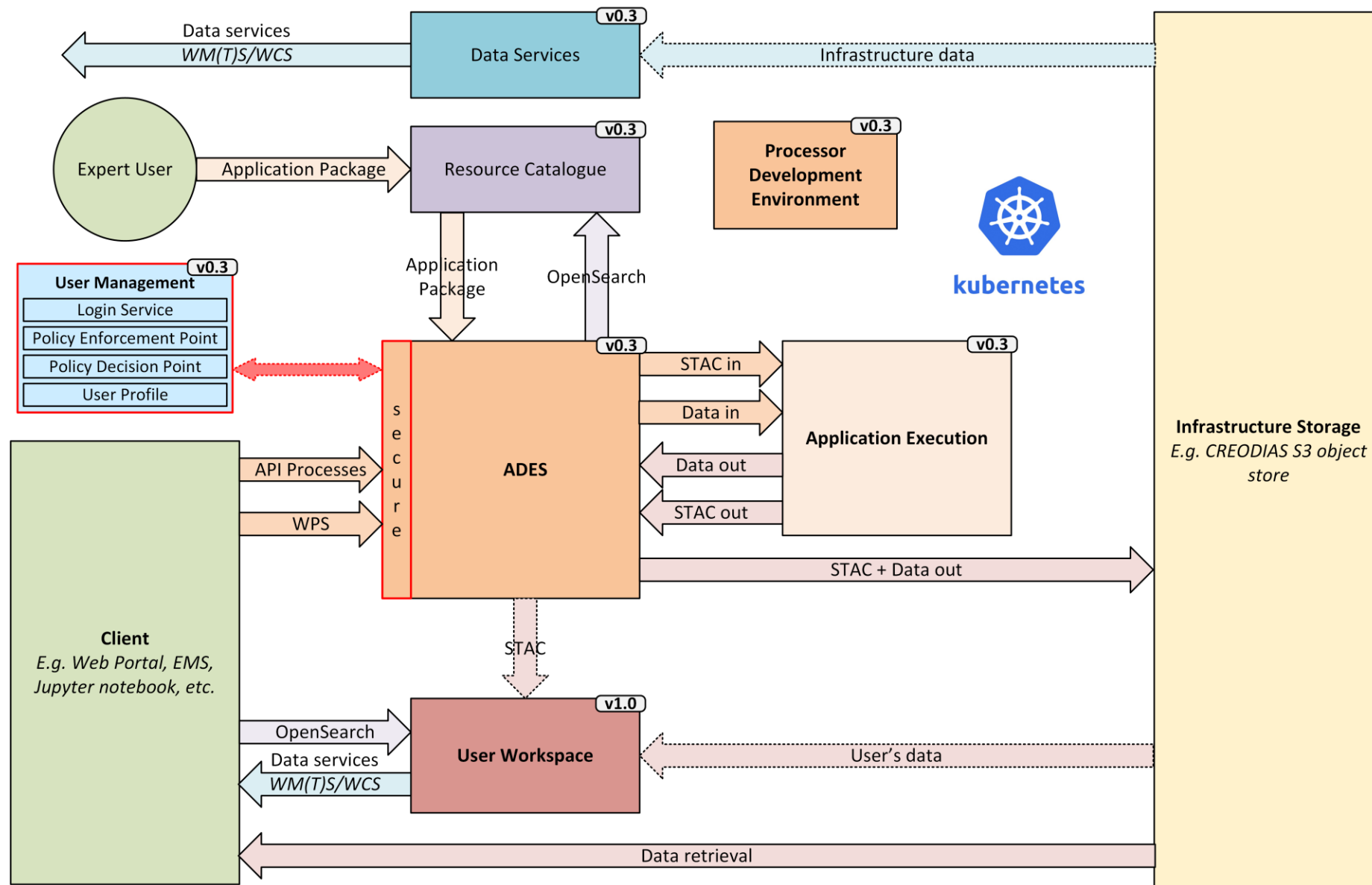
Management, discovery, visualisation and access to platform resources (data, applications, docs, etc.)

- **Resource Catalogue / Data Access Services / Workspace**
- *Data Ingestion / Data Access Gateway/Library*



Current Capabilities

- Containerised components
- Helm charts for Kubernetes
- Deployed to CREODIAS
- Secured ADES (WPS/API-Processes)
- Dynamic resource security (deploy, job)
- Resource Catalogue with OpenSearch processing input references
- Stage-out to S3
- Standalone PDE with ADES emulation



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Q&A



Demonstration Scenario

Using the Processor Development Environment...

- **(1) Alice - Application Developer**
Develops an application 'nhi' that generates Normalised Hotspot Indices
 - Uses the PDE (Processor Development Environment) to develop and test the nhi application
 - Alice publishes the application to her Workspace in the platform

Key endpoints demonstrated...

- System Resource Catalogue: CSW, OpenSearch
- System Data Access Services: WMS
- ADES: API Processes + transactions
- Workspace API
- Workspace Resource Catalogue: CSW, OpenSearch
- Workspace Data Access Services: WMS
- IAM Policy enforcement, query and management
- IAM Token endpoint with UMA flow

Using Jupyter Notebook as a Platform Client...

- **(2) Eric – Application Consumer**
Uses the platform to analyse Mount Etna lava flows using Alice's nhi application
 - Authenticates to the platform
 - Interrogates the catalogue to discover suitable data
 - Visualises the intended input data
 - Discovers Alice's application
 - Deploy the nhi application and execute using the discovered input data
 - Monitor job execution
 - Visualise and access the processing results from his Workspace
- **(3) Bob – Collaborates with Eric**
Obtains access to Eric's deployed application
 - Eric updates policies to grant Bob access to his resources
 - Bob obtains details of Bob's deployed application

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Resource Management

https://docs.google.com/presentation/d/1IFD60mr4aGU3MQ0A6eDw3-qNvz0oZY6lw-1rBDWfyNY/edit?usp=sharing_eip_dm&ts=60abf320

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Summary

Q&A



Release Roadmap

Release	Date
V0.1	22/06/2020
V0.2	23/11/2020
V0.3	10/03/2021
V1.0	30/06/2021
V1.1	31/08/2021
V1.2	31/10/2021
V1.3	31/12/2021

- Release v1.0
 - Protected user workspace resources
 - Workspace data & application management
 - User-integrated PDE
 - COIH identity provider
- Release v1.1
 - Platform federation (processing)
 - Processing job history and logs
 - Protected platform data
 - Data & AP publishing and sharing
 - Protected PDE
 - Secure dynamic clients
 - User container registry



Project Resources

Where to find us...

- **Web Portal:** <https://eoepca.org/>
- **Github:**
 - Reference Implementation: <https://github.com/EOEPCA>
 - EOEPKA System: <https://github.com/EOEPCA/eoepca/blob/develop/README.md>
 - Pages: <https://eoepca.github.io/>
- **Release v0.3:** <https://github.com/EOEPCA/eoepca/releases/tag/v0.3>
- **Documentation:** https://eoepca.github.io/#_documents

Further Questions...

- **Forum:** <https://eoepca.org/forum/>

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THANK YOU
FOR YOUR ATTENTION

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