What will we cover in this class?

This lesson **is not** about:

- Satellites
- Earth Observation toolboxes
- Processing Services
- EO algorithm
- Cloud infrastructure

This lesson **is** about:

- Environments where you can exploit Earth Observation data
- Cloud Computing and the ESA Exploitation Platforms

If you are familiar with the following topics:

- Web services
- OGC Standards
- Python
- Virtualization
- Container

It might helps but it is not required

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Exploitation Platform

"*Move User activities to the Data*"

Exploitation platforms

EO software	ICT resources	EO data In-situ data

Community

Collaboration

A complementary operations concept: users access a work environment containing the data and resources required, as opposed to downloading and replicating the data 'at home'.

→ An R&D scenario for data intensive exploration gradually complementing the traditional operations concept for the ground segment

Exploitation platform (or community platform)
=
Virtual open and collaborative environment

bringing together:
• data centre (EO and non-EO data)
• computing resources and hosted processing
• collaborative tools (processing tools, data mining tools, user tools, …)
• development tools and test bench functions
• communication tools (social network) and documentation

Exploitation Platforms Principles

- **Open** data, **open** access, **open** tools, **open** source
- **Standards-based** – to ensure interoperability
- **Infrastructure independent** – to avoid vendor lock-in, and allow reuse of public and commercial available ICT
- **Pay-per-use** – to avoid capital investment and allow for cost-sharing
- Cater also to **commercial providers** – to allow (affordable) access to commercial software, data, and infrastructure, when required
- **Secure IPR** – to ensure that users and providers retain property rights
- **Community and impact driven** – implement with deep participation of the scientific and application communities, to ensure user buy-in, relevance
- **Enable sustainability** – investigate funding and revenue models and sources to maximize the probability of economic sustainability of the platforms in operations phase
- **Open and fair governance**: The TEP shall be **open** to registered users; i.e. not restricted by affiliation, nationality, or other characteristics, beyond what is imposed by policy agreed with data and IPR providers
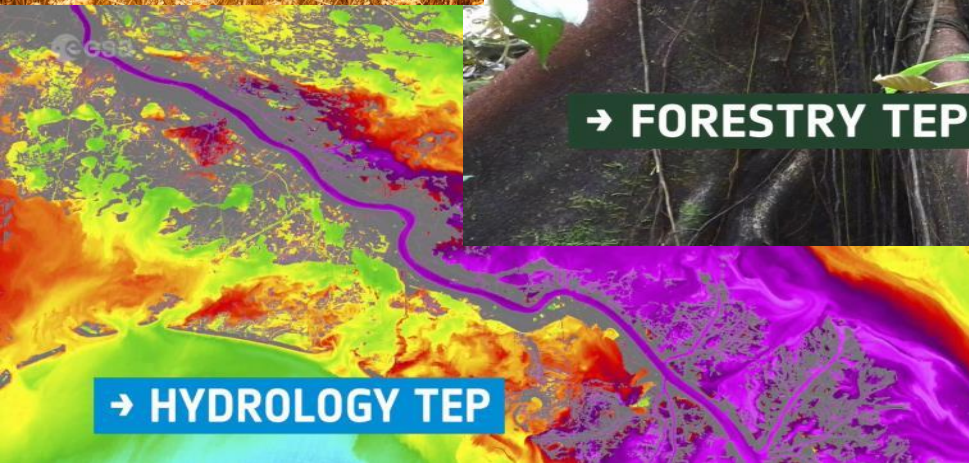
→ TEP FOOD SECURITY

→ FORESTRY TEP
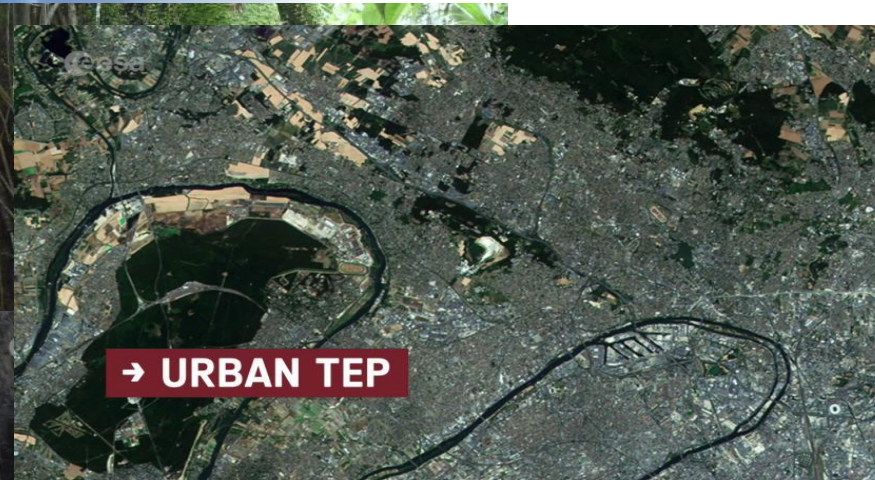
→ URBAN TEP

→ HYDROLOGY TEP

→ GEOHAZARDS TEP

→ COASTAL TEP

→ POLAR TEP

esa

Practical Lesson Schedule

9:30 -9:50 Introduction to the TEPs (presentation)

9:50 -10:15 What A TEP looks like (PTEP session)

10:15 - 10:45 Coffee break

10:45 – 11:00 Invoke existing service and share results (GEP)

11:00 - 11:20 deploy your application and analyze your results (CTEP)

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12:20 - 12:30 Fill the on line questionnaire with feedback

Project Logic

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Exploitation Platform elements

Actors

Software vendor

ICT providers

Data providers

End User

Developers

Service Provider

Community

[...]

Elements

Portal (web interface)

Data

Software and Toolboxes

Services/ Application

Processing resources

velopment environment

Results

Publications

Canonical Scenarios

TEP Canonical Scenario 1 – **EO Data Exploitation** : which allows a user to discover/select data and pre-existing processing service; process data; and visualize/analyse or select and apply data manipulation tools to the result

TEP Canonical Scenario 2 – **New EO Service Development** : which allows a user to develop and validate an application (such as a processor); and deploy the application on the platform for use also by other users.

TEP Canonical Scenario 3 – **New EO Product Development** : discover/select data; process the data; and eventually publish the resulting product.
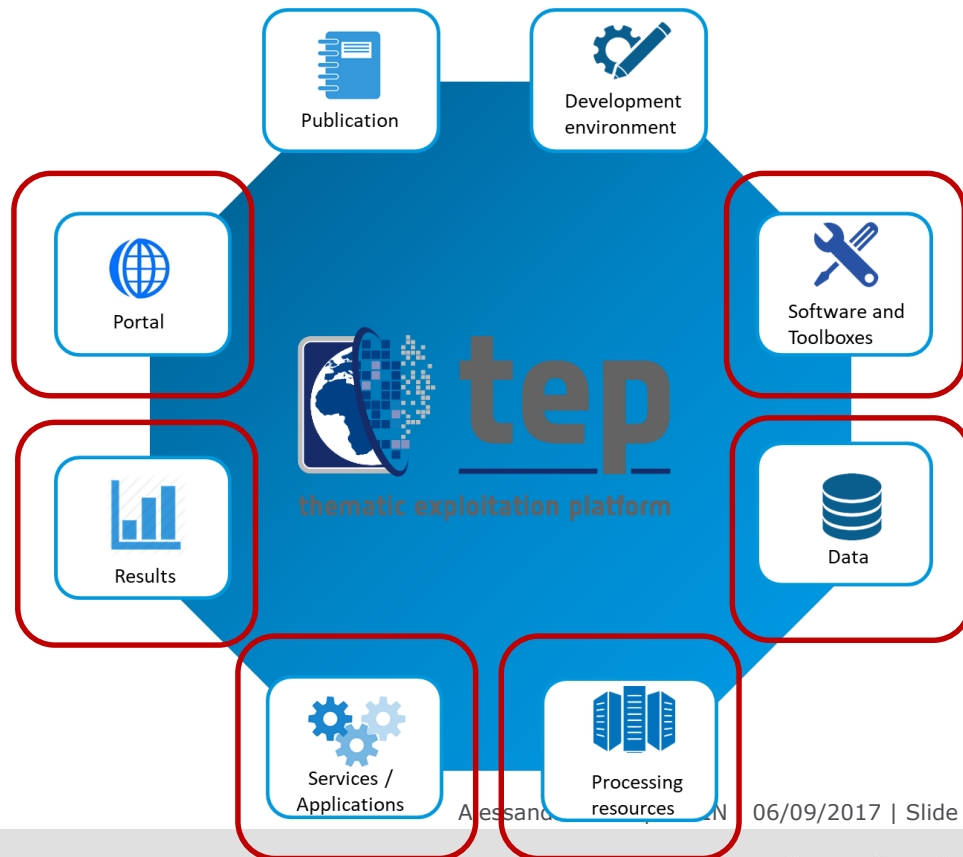
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Canonical Scenarios 1

TEP Canonical Scenario 1 – EO Data Exploitation : which allows a user to discover/select data and pre-existing processing service; process data; and visualize/analyse or select and apply data manipulation tools to the result

Canonical Scenarios 2

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Your user Id

We have created a set of user for this training:

Users' IDs are from "TEP_LTC_user1" up to "TEP_LTC_user20". The EOSSO password is "Password<#>!" for each user (<#> corresponds to the number of the user).

e.g.

User	TEP_LTC_user17
Password	Password17!

ESA Single Sign On to access all the TEPs

https://polar-tep.eo.esa.int

Canonical Scenario-1 : Data Search and processing

- Data discovery (catalogue and collections)
- Data management (datapack)
- Service invocation (https://polar-tep.eo.esa.int/wiki/tiki-index.php?page=Iceberg+detection+%28IDET%29)

Canonical Scenario-3 : Sharing

Canonical Scenario-2 : Development and Testing

- Access a development environment
- Manage your applications/processor

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Invoke existing service and share results

https://geohazard-tep.eo.esa.int

geohazards tep

Canonical Scenario-1

1. Access to a service (SNAP Sentinel-1 IW SLC Interferogram and Displacements) and execute the tutorial http://terradue.github.io/doc-tep-geohazards/tutorials/rss_snap_s1_insar.html

2. Social sharing functionality and zenodo https://zenodo.org/communities/geohazards-exploitation-platform/?page=1&size=20

3. Service portfolio overview https://geohazards-tep.eo.esa.int/#!pages/informationProcessing

Canonical Scenario-3

1. Insar browse

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Deploy your application and analyze your results

https://coastal-tep.eo.esa.int

Canonical Scenario 2

- Follow tutorial https://gitlab.acri-cwa.fr/coastal-tep/tutorial/wikis/timeseries-processor

- Users run one job on the portal as per tutorial see result on the portal

Canonical Scenario 1

- Show platform capabilities to analyze results in a container

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https://forestry-tep.eo.esa.int
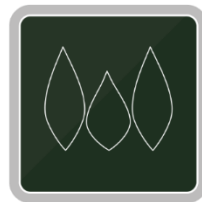
Canonical Scenario 1

1. Overview of existing services/ apps
2. User performs search on the catalogue
3. User opens a S2 image on a SNAP container

Canonical Scenario 2

1. Overview of the developer tab
2. User see an existing service using a snap graph

Canonical Scenario 3

1. (an overview of group/project area)
2. (Reference to tutorials)

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Combine and analyze different dataset

https://urban-tep.eo.esa.int/

- UTEP products portfolio

- PUMA tutorials
  (https://www.youtube.com/playlist?list=PLyL8VjBA5xL6ewRX7Ft_9jKXHOkrA4c6l):

  1. Introduction to the usage of Visualisation and analysis toolbox (Video 1)
  2. Selection of areas based on the multiple criteria (Video 2)
  3. Create new charts (Video 5)
  4. Create Choropleths and display them on the map (Video 6)

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Questionnaire

https://goo.gl/forms/wTRqZ8N0nYNOud853

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TEP contacts

Tep website <thematic>-tep.eo.esa.int

Mail : <thematic>-tep@esa.int

Next opportunity

Integrate your own algorithm!

→ EO OPEN SCIENCE 2017

25–28 September 2017
ESA–ESRIN | Frascati (Rome), Italy

European Space Agency

Contact us:
tepcoreteam@esa.int

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https://tep.eo.esa.int

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