

# TEPs @ LTC 2017 Practical lesson

### Alessandro Marin (Solenix c/o ESA, Italy) - TEP CoreTeam



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# 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:

If you are familiar with the following topics:

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

It might helps but it is not required

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

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# **Exploitation Platform**



### "Move User activities to the Data"



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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'.

 $\rightarrow$  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

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# **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

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### → FORESTRY TEP

→ URBAN TEP

### → HYDROLOGY TEP

→ COASTAL TEP

→ TEP FOOD SECURITY

and the

### → GEOHAZARDS TEP

→ POLAR TEP



- 9:30 -9:50 Introduction to the TEPs (presentation)
- 9:50 -10:15 What A TEP looks like (PTEP session)
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- 10:45 11:00 Invoke existing service and share results (GEP)
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# Exploitation Platform elements



Actors Software vendor ICT providers Data providers Fnd User Developers Service Provider Community

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[...]





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**

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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



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# Canonical Scenarios 2

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.





# Canonical Scenarios 3

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



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### The set of th

### 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

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# What a TEP looks like (PTEP session)

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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/tikiindex.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



Canonical Scenario-1

- 1. Access to a service (SNAP Sentinel-1 IW SLC Interferogram and Displacements) and execute the tutorial <u>http://terradue.github.io/doc-tep-geohazards/tutorials/rss\_snap\_s1\_insar.html</u>
- 2. Social sharing functionality and zenodo https://zenodo.org/communities/geohazardsexploitation-platform/?page=1&size=20
- 3. Service portfolio overview <u>https://geohazards-</u> 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 <u>https://gitlab.acri-cwa.fr/coastal-</u> 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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# **SNAP** integration



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\_9jKX HOkrA4c6l):

- 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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# TEP Contact points / next opportunity

TEP contacts

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

Mail : <thematic>-tep@esa.int

Next opportunity Integrate your own algorithm!



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Contact us: tepcoreteam@esa.int



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