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**→ WORKING GROUP SESSION ON
“DATA SOURCING FOR THEMATIC
EXPLOITATION PLATFORMS”**

13 April 2016 – Executive Summary

BACKGROUND

In 2014 ESA has started a set of R&D activities that in the first phase (up to 2017) aims to develop an ecosystem of interconnected Thematic Exploitation Platforms (TEPs) on European footing, addressing specific themes (Coastal, Forestry, Hydrology, Polar, Urban, Geohazards and later Food security). In short, an EO exploitation platform is a collaborative, virtual work environment providing access to EO data and the tools, processors, and Information and Communication Technology resources required to work with them, through one coherent interface.

In this context the future availability of non-ESA data in the TEPs is a crucial topic. For commercial data providers, TEPs may become a promotion channel towards scientific and/or operational end-users of EO data. TEPs should develop capabilities to make accessible EO data from various providers to their customers within the platform environment.

The working group session was organized by ESA to address potential technical solutions of data access in the TEPs, (i.e. data mirroring on TEP infrastructure, caching, remote access, linking to external catalogues, data ordering, interfacing to external cloud processing infrastructures etc.) and the related organizational and legal concepts.

The objective was to start a dialogue between TEP projects and commercial data providers on future data provisioning agreements. ESA intends to facilitate these iterations and to harmonise the approach of data provisioning in the TEPs.

WORKSHOP HIGHLIGHTS

The workshop took place on April 13, 2016 in ESRIN, Frascati and was attended by representatives of five European commercial data providers, representatives of the six TEPs consortia (some remotely connected) and ESA colleagues responsible for the TEP projects and data sourcing in general.

ESA OVERVIEW

ESA provided an overview of the topic and its relation to the overall context of platform based approaches in Earth observation data access and applications, called EO-Innovation Europe (see presentation)

The concept of TEPs foresees a number of new requirements for data sourcing as summarized below.

Access to EO data will gradually complement the current data distribution via download (data pull). New approaches allow users to process EO data remotely in IT infrastructure, skipping the cumbersome need to download and store large amount of data. With the concept of EO exploitation platforms, ESA intends to maximize the accessibility and usage of data from its' own missions, complemented by relevant other EO missions' data. Any harmonization in data sourcing agreements and interfaces for TEPs may serve also as a starting point for future cooperation in the context of EO Innovation Europe.

For TEPs, the system and management requirements for data-sourcing is defined in the project contracts. Access to commercial EO data should be facilitated by mirroring data constantly on TEP infrastructure, caching the data for a limited time period on TEP infrastructure or connecting remotely to external data storage. TEPs should develop the capacity to manage users' access to data according to access restrictions, payment requirements, licence acceptance etc.

With regard to data sourcing agreements between TEPs and commercial data providers, a number of contractual options and challenges need to be addressed. Data providers could grant licences to TEPs, with them sub-licensing to users. In addition, TEPs could act as a broker of a licence from the data provider directly to the user.

"Data-as-a-Service" licences will have new content compared to the classical download licences. Pricing schemes and user authorization management for a variety of different data sources present a challenge to the platform concept.

TEPS PERSPECTIVE

Representatives of the on-going six TEPs projects presented the current state of data sourcing and related future concepts. All projects would benefit from access to commercial EO data, complementing the use of Sentinels, Earth Explorer and Meteorological data. In particular Very-high-resolution optical and SAR data is required.

Interfacing to data providers' catalogues and data ordering tools are identified as challenges. TEP representatives highlighted the need for simple pricing schemes and harmonized licences. The sharing of revenues for EO data usage is a potential sales concept with data providers.

DATA PROVIDER'S CONCEPTS

Data providers presented their current and future concepts for giving access to their EO data in platform/cloud infrastructure. All presentations highlighted the need to combine EO data and processing capabilities in order to serve the customers' needs. Existing interfaces, e.g. to the Copernicus Data Warehouse system, could be further developed for connecting to TEPs.

Some data providers have already implemented the platform approach. The existing platforms foresee payment per data usage, or payment of APIs to access the platform. Data providers are interested in setting-up arrangements with TEPs, given the prospect of market growths in this field.

Generally, data providers face a lack of powerful cloud infrastructure providers on the European ICT market. Setting-up platforms with processing and data storage capacities, data providers tend to rely on the US internet giants (e.g. Amazon web services, Google Cloud).

Reportedly, the offerings of US ICT providers are perceived as both cheaper and better than its' European counterparts. In particular:

1. European ICT providers offer lower service levels: European ICT providers typically provide 'bare metal' IaaS without the higher level services found on US ICT providers. The latter offer strong elements of Platform as a Service and Software as a Service, including advanced compute (containers, event driven computation, easy app deployment, auto scaling and load balancing to name a few), storage and content delivery, database functionalities, advanced analytics, development support, mobility services, IoT etc.

2. Noncompetitive pricing: The prices of European ICT providers cannot compete with the much cheaper offerings of US providers

In short, the offering of US ICT providers is perceived as both cheaper and better.

All participants from data provider and TEPs side welcome ESA's initiative and recommended to organise further iterations to harmonise licensing and interfacing to platform concepts.

CONCLUSIONS AND RECOMMENDATIONS:

The availability of European EO data in Data-as-a-Service offers in crucial not only for the current development of TEPs, but will also form the use-case and set the standards for future approaches in ESA and other partners' programmes (e.g. EO Innovation Europe). Access to commercial EO data in TEPs should be ensured by setting-up data sourcing agreements between data providers and TEPs, making use of existing interfaces and platform concepts.

1. ESA should further facilitate the agreements process between TEPs and commercial data providers, focusing on pilot activities based on priorities from TEPs and availability of data providers

2. ESA should coordinate a discussion to harmonize licensing schemes and interface development for EO platform approaches, with the participation of data providers, platform providers and potentially the European Commission.