TOP

Technology and atmospheric mission platform - OPerations

TOP Price List

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1 INTRODUCTION AND BACKGROUND

1.1 PURPOSE OF THIS DOCUMENT

This document, the TOP price list, summarizes costs related to the use of the TOP platform for data access, data processing, data download.

1.2 STRUCTURE OF THE DOCUMENT

This document provides in the following sections:

- Section 1 gives an introduction to the document (this section)
- Section 2 defines the price list and shows example business cases

1.3 WEB RESOURCES

#	REFERENCE ID / Link	REFERENCE DESCRIPTION
[URL 1]	https://eo4society.esa.int/2018/12/19/eo-network-of-resources-promotion-of-free-trial-resources-for-research-projects/	ESA's Network of Resources

Table 1-1: List of web resources.

1.4 ACRONYMS AND DEFINITIONS

ACRONYM	DEFINITION
BOMP	Business Outline and Marketing Plan
BS	Business Scenario
CAMS	Copernicus Atmospheric Monitoring Service
EEA	European Environmental Agency
ESA	European Space Agency
EU	European Union
EUR	Euro (€)
GB	Gigabyte
GIS	Geographic Information System
GUI	Graphic User Interface
ICT	Information and Communication Technology
PoC	Proof of Concept
RAM	Random Access Memory
TB	Terabyte
WPS	Web Processing Service
ZAMG	Zentralanstalt für Meteorologie und Geodynamik

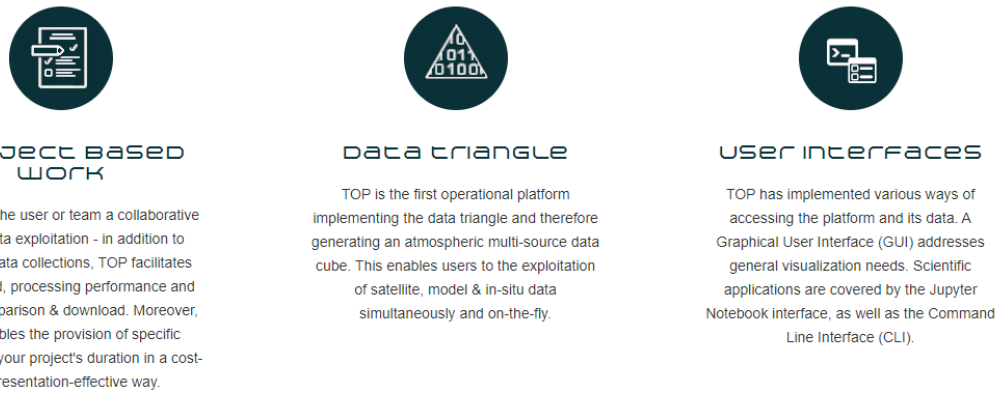
2 PRICE LIST AND BUSINESS SCENARIOS

2.1 TOP INTRODUCTION AND FEATURES

The Technology and Atmospheric Mission Operations Platform (TOP) is a web-based platform offering users from the atmospheric sciences domain a Virtual Research Environment (VRE) to exploit Copernicus atmospheric and climate data products, such as COPERNICUS Sentinel-5 Precursor data, CAMS products and European Environmental Agency ground stations measurements. Deployed on the MUNDI DIAS, it is the first operational platform implementing the data triangle (satellite, models, ground measurements) and hence creates an atmospheric multi-source data cube, stimulating a multidisciplinary scientific approach due to the availability of various collections.

The scopes of TOP are:

- To offer an environment for the exploration and exploitation of atmospheric data products based on the deployment on a DIAS
- To serve operational data products from the atmospheric sciences domain to its users
- To address scientists, meteorological institutions, policy makers and other entities in the atmospheric domain alike
- to provide different user interfaces, a graphical user interface (GUI), mainly for visual data exploration, the Jupyter notebook interface, addressed to scientific applications, as well as the Application Programming Interfaces (APIs)
- to offer different services to its users (project based, service based)
- to define a commercial and operational model
- to take up users based on various outreach and dissemination activities



The TOP project's three cornerstones

2.2 TECHNOLOGICAL AND SCIENTIFIC CHALLENGES

The main challenges being faced during the project evolution were the following:

- **Heterogeneous data management** – big data management

The concept of Big Data is commonly represented by the so-called 4-Vs (Volume, Velocity, Variety and Veracity) each of which is a challenge once declined on a specific field; for Atmospheric

Sciences, in general, the most challenging V is the data variety: multi-dimensional (from 1D to 5D), multi-resolution and multi-format datasets have to be managed within the same platform.
Within TOP, data variety entails operational data from Sentinel 5P, ECMWF CAMS and EEA non-satellite remote sensing stations. Data volume and data velocity play a non-negligible role, as the main scope of TOP is to deliver operational services; both, near-real time data provision (velocity) and storage and handling of the arising data volume are accounted for and rely on the deployment of TOP on a DIAS.

- **Heterogeneous needs**

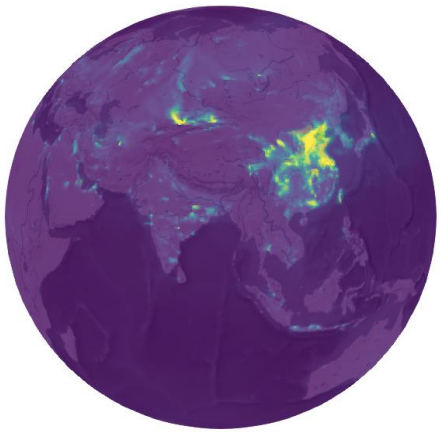
TOPs aspiration to deliver operational services requires to carefully consider manifold needs regarding efficiency and effectivity of the platform's services. This includes a sustainable and effective approach concerning data storage, preparation, and efficient methods in exploring and exploiting data.

- *Remote environment*

The environment has been designed and implemented as a fully remote installation: the traditional paradigm for which most of the activities are performed on user's local infrastructure has been overcome, providing a fully virtualised environment where the user can collect, analyse, process and download and / or publish the results.

- *Data Visualization and Exploitation: DAVE*

An intensive technology exercise has been performed in order to provide adequate visualization capabilities for multi-dimensional data via web interfaces: the following capabilities have been implemented:



CAMS global NO2 analysis and forecast model data [km/m^3] created using DAVE for Feb., 2nd, 2020

- A generic Earth visualization environment that provides globe (3D) capabilities as well as 2.5D and 2D views to display all types of data
- 1D visualization of ground measurements via georeferenced placeholder and time series plot graph
- 2D georeferenced visualization for raster data, with colour, transparency, thresholding and animation capabilities per collection and with the possibility to overlay multiple collections

- *Jupyter notebooks*

The Jupyter notebook environment meets the need of users to run code live on the available collections within TOP on the server side. In addition to the potential of DAVE, this adds additional features to the TOP platform's portfolio and hence covers more potential customers' needs.

2.3 AVAILABLE DATASETS

The following table represents the TOP data availability to the users. Data are updated every 12 hours to provide always updated products.

Name	Start date	End date
Global Model Data		
Global PM10 analysis and forecast	2003-01-01	Today + 5 day
Global NO2 analysis and forecast	2003-01-01	Today + 5 day
Global O3 analysis and forecast	2003-01-01	Today + 5 day
Global SO2 analysis and forecast	2003-01-01	Today + 5 day
Regional European Model Data		
European PM10 analysis and forecast	2016-03-03	Today + 5 day
European SO2 analysis and forecast	2016-03-03	Today + 5 day
European NO2 analysis and forecast	2016-03-03	Today + 5 day
European O3 analysis and forecast	2016-03-03	Today + 5 day
Global Satellite Data		
NO2 tropospheric column	2018-04-30	Today -1 day
SO2 total column	2018-05-06	Today -1 day
CO Vertical column	2018-04-30	Today -1 day
O3 tropospheric column	2018-04-30	Today -1 day
Aerosol index	2018-06-28	Today -1 day
CH4 total column	2018-04-30	Today -1 day
EEA non EO-RS products		
CO	2012-12-31	Today -1 day
NO2	2012-12-31	Today -1 day
PM10	2012-12-31	Today -1 day
SO2	2012-12-31	Today -1 day

Lot 2 requires the support to the following services:

- Service 1: Algorithm optimization for cloud environment
- Service 2: Business model definition and implementation.

For Service 2 SISTEMA proposes staff with high level skills to perform the two services.

Due to the nature of the service provision, namely featuring a high manpower variability depending on the type of support to be performed, it is decided to provide hourly rates to be applied to the services implementation. The overall cost of each service support can be agreed on each service call.

TOP Helpdesk

The TOP helpdesk is the way to reach the support team; the contact e-mail (top-platform@sistema.at).

Each contact is classified as

1. Blocking

2. Critical

3. Routine

For the first two categories (blocking and critical) an immediate action is taken (within one Normal Working Day - NWD). This action shall aim at:

- Restore the system accessibility

- Provide a temporary solution (workaround)

- Define a final solution (to be implemented as routine NC)

For routine issues, a solution shall be provided within one calendar week.