



3 Urban TEP Analytic services

Beside data processing, Urban TEP provides also analytical capabilities focused on integration and analysis-ready data visualisation, exploration and analysis based on a City Cube and VISAT toolbox services.

A City Data Cube comprises layers for optical datasets (RGB, false colour), indices (NDVI, ...), geophysical variables and essential climate variables, settlement footprint data, and spatial features (population, ...) in a common data cube with a certain spatial and temporal extent, defined multi-resolution spatio-temporal raster and common interfaces. The data cubes are based on the European Data Cube, particularly on the xcube technology, and will be tailored and provisioned for customers.

Visualization and analytical toolbox (VISAT) delivers highly interactive, user-driven analysis of spatial data, offering very strong support for the transfer of the geo-data based scientific knowledge to the end-users. Concept of application templates enables provision of an attractive, simple, user-friendly and intuitive user interface for multi-dimensional data exploration in 2D/3D, alongside with different types of the charts and tabular presentation modes based on customer needs.

3.1 City Data Cube service

Urban TEP sets up, hosts, and serves a city data cube for the area of a city and its surrounding with a number of thematic variables ranging from RGB to WSF and a certain temporal extent. The City Cube is extended daily with new data and keeps a constant period (one year) available all the time. The data cube can be used within VISAT to combine it with other urban data, and native data cube tools and interfaces like the viewer and the API are available.

3.1.1 Service of Urban-TEP

A city cube service comprises

- A data cube with layers
 - Sentinel-2 RGB, Sentinel-2 false colour, Sentinel-2 NDVI (all 10m),
 - Landsat-8 RGB (pan-sharpened, 15m), Landsat-8 false colour (30m),
 - WSF (8m), WSF Density, WSF Evolution (yearly),
 - 5 variables from ERA5 or CAMS (interpolated, 250m),
 - Land cover from Copernicus Land Monitoring service (100m)
- A spatial coverage of 60 km x 60 km
- A temporal extent of one year, up to daily resolution
- Daily update of the cube, with deletion of old data (rolling archive)
- Hosting of the data cube in the cloud
- Access to the data cube layers in Urban-TEP VISAT
- Access with the data cube viewer
- Access with the data cube API (webservice and Python SDK)

3.1.2 Activities of the Customer

The customer

- defines the geographic location of the city.



3.1.3 Price

The monthly rate for a city cube is

€ 2,750.-

for a 12 months subscription.

This includes

- the provision of the service described above
- up to 400000 processing units per month of the Sentinel Hub for data cube layers served on-the-fly
- six support cases

The monthly rate for new contracts can be adjusted if DCFS/Sentinel Hub changes its prices for layers used.

3.1.4 Options

Cities may have their own data from heterogeneous sources. A data cube is the way to combine them into one service. Optional services by Urban-TEP are provided to create and maintain customised cubes with

- Tailored integration of vector or point data, e.g. administrative units or sensor data
- Additional layers, in particular layers provided by the customer for a specific city, but also e.g. additional high-resolution layers from Copernicus Land Monitoring Service
- Customised integration, e.g. to ensure frictionless functioning within existing systems and processes
- Extended time series, enlarged spatial area
- Virtual Processing Environment (pre-configured Jupyter Lab environment, pay-per use)
- Training





3.2 Visualization and analytical toolbox (VISAT) service

VISAT is the visualisation and analytical component of the Urban TEP platform. The framework enables integration, visualisation and analysis of various datasets from various sources including OGC compliant web services (WMS, WFS, WCS, WPS, WCPS, etc.). In this context it will also provide integration to the products stored in data cubes. Data are categorized based upon the available context – thematic, geo-graphic and temporal - provided by metadata, which simplifies the usage for non-expert while providing more complex tools for expert users and coupled with visualisation and analytical functionalities. Technically, the platform is an integration of multiple tools and applications, deployed in a single container together with underlying infrastructure. The VISAT platform is open source and the code is available via GitHub under the Apache Public License v2.0.

Concept of User Templates is introduced to scale VISAT service offer. A template is a type of user interface with predefined data connections and tools to meet the objective of a specific VISAT application.

3.2.1 Service of Urban-TEP

A VISAT service comprises based on

- Access to various data sources including data cubes
- Access to user-defined data
- Access to existing Urban TEP functionalities
- Access to existing Urban TEP templates

Service volume is scaled into following packages:

P0 - Single

- Up to 3 applications in VISAT
- Max. 50 GB of disk space for long-term data
- 50 credits per month (= 500 core-hours ~ 24 cores for 20h / 48 cores for 10h)
- 1 private community
- 1 user account
- User Support (5 x 9 CET business day – 1 support case)

P1 - Basic

- Up to 5 applications in VISAT
- Max. 500 GB of disk space for long-term data
- 100 credits per month (= 1,000 core-hours ~ 24 cores for 40h / 48 cores for 20h)
- Up to 5 private communities
- Up to 20 user accounts
- User support (5x9 CET business day – 5 support cases)

P2 - Enhanced

- Up to 10 applications in VISAT
- Custom styling for VISAT
- Max. 1TB of disk space for long-term data
- 400 credits per month (= 4,000 core-hours ~ 24 cores for 160h / 48 cores for 80h / 72 cores for 27h)
- Up to 10 private communities
- Up to 50 user accounts
- User support (5x9 CET business day – 20 support cases)





P3 - Highline

- Custom offering, new functionalities
- Individual Service Level Agreement (SLA)

In addition, VISAT User templates customisation and/or development is offered:

T1 - Branding, minor customisation of existing template

- Minor customization of an existing template such as different colours and or specific logos, naming etc.

T2 - New custom template - standard

- New template development based on existing VISAT functionalities

T3 - New custom template – complex

- New template development based on existing and/or new custom VISAT functionalities

3.2.2 Activities of the Customer

The customer

- defines the geographic location, temporal period, thematic interests
- defines analytical needs for the VISAT application
- defines user profiles or user communities

3.2.3 Price

The monthly rates for a VISAT service are

P0 - Individual - € 190.-

P1 - Basic - € 440.-

P2 - Enhanced - € 1,250.-

P3 - Highline (price based on SLA)

T1 - Branding, minor customisation of existing templates - € 1,250.-

T2 - New custom template – standard - € 7,500.-

T3 - New custom templates – complex - € 25,000.-

In case of P0-P2, this is valid for the provision of the service described above (3.2.1) for a 12 months subscription.

3.2.4 Options

Cities may have their own visualisation and analytical needs. Optional services by Urban-TEP are provided to create and maintain customised VISAT templates and customised access as described above. Following activities can be requested in addition to the VISAT service.as

- Service design concept support
- Tailored integration into user environment
- Webinars
- Training