



INSTALLATION AND CONFIGURATION MANUAL

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1. Introduction

1.1. Purpose and Scope

The purpose of this document is to describe the installation and configuration procedure of the Copernicus Space Component Interface (COPSI). This document has been prepared in the frame of the Collaborative Data Hub Software Maintenance and Evolution Services for Digital Twin Earth (*hereinafter referred to as "the Collaborative Service"*).

1.2. Applicable and Reference Documents

ID	Document Title	Reference	Issue
AD-1.	Collaborative Data Hub Software - Maintenance and Evolution Services - Ready for Digital Twin Earth -System Design Document	COPE-SERCO-TN-21-1171	1.0
AD-2.	Statement of Work: COLLABORATIVE DATA HUB SOFTWARE - MAINTENANCE AND EVOLUTION SERVICES - READY FOR DIGITAL TWIN EARTH	ESA-EOPG-EOPGC-SOW-12	1.0

Table 1 Applicable Documents

ID	Document Title	Reference	Issue
RD-1.	DHS Operational Concept Document	COPE-SERCO-TN-21-1174	
RD-2.	DHS Master ICD	Annex_COPE-SERCO-TN-21-1171 (TBW)	

Table 2 Reference Documents

1.3. Acronyms

Acronym	Description
API	Application Programming Interface
BE	Back-End
COPSI	Copernicus Space Component Interface
CORS	Cross Origin Resource Sharing



CPU	Central Processing Unit
CSC	Copernicus Space Component
DAS	Data Access Service
DHS	Data Hub Software
EO	Earth Observation
ESA	European Space Agency
FE	Front-End
GS	Ground Segment
GSS	Gael System Software
HEX	Hexadecimal
HTTP	Hyper Text Transfer Protocol
HW	Hardware
IDP	Identity Provider
JSON	JavaScript Object Notation
LTA	Long Term Archive
OGC	Open Geospatial Consortium
OIDC	OpenID Connect
OS	Operative System
PKCE	Proof Key for Code Exchange
PRIP	Production Interface delivery Point
RAM	Random Access Memory
SSL	Secure Sockets Layer
STAC	SpatioTemporal Asset Catalog
SW	Software
URI	Uniform Resource Identifier



URL	Uniform Resource Locator
VM	Virtual Machine
WMTS	Web Map Tile Service



2. Document Overview

The overall structure of the document is described below:

- Chapter 1 is an introduction with reference and applicable documents
- Chapter 2 is the document overview
- Chapter 3 contains the system overview
- Chapter 4 describes the installation and configuration procedure based on docker compose
- Chapter 5 describes the installation and configuration procedure in legacy mode
- Appendix A contains the detail of the configuration file
- Appendix B contains Keycloak configuration instruction for COPSI
- Appendix C contains an example of how to configure a HAProxy for COPSI

3. Application Overview

The Copernicus Space Component Interface (COPSI) meets the needs of having a brand-new web-based Front-End for the Copernicus Space Component services (i.e., LTA, PRIP, DAS), that, thanks to the ESA's effort to standardize the Copernicus Space Components ICDs, expose analogous APIs for Sentinel products discovery and download.

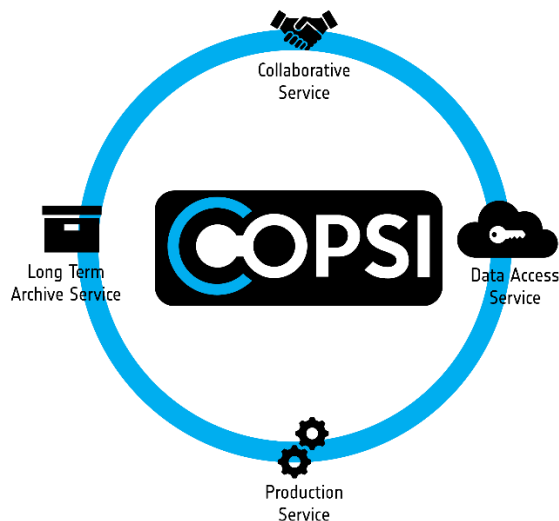


Figure 1 COPSI Concept

COPSI is based on Angular, a platform and framework for building single-page client applications using HTML and TypeScript.

The basic building blocks of an Angular application are the components, organized into *modules*. Components define *views*, graphical elements that the application can choose and modify according to program logic and data.

Components use *services*, which provide specific functionality not directly related to views. Service providers can be injected into components, making the code modular, reusable, and efficient.

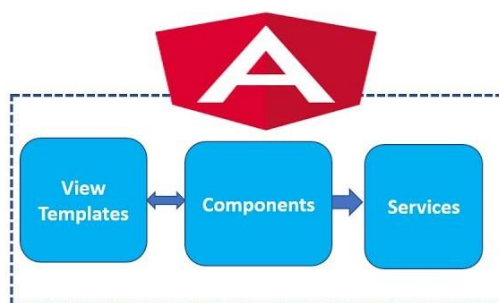


Figure 2 Basic Angular Architecture

The main goal of COPSI is to provide an instrument to the user to search, visualize and download the Copernicus Sentinels products. For this reason, its design is based on the following principles:

- Modern: this is achieved taking inspiration from the most popular, used and trendy applications.
- Clean: this implies avoiding the usage of graphical elements not associated with functionalities needed by the application. The main goal of COPSI is to provide an instrument to the user to search, visualize and download the Copernicus Sentinels products.
- Intuitive: users should be able to use COPSI without reading any manual.

COPSI is free and open source, in line with the Collaborative DHS recommendation to offer a service to the community and take advantage of feedback and contribution coming from the users.

4. Installation and Configuration Procedure (Docker)

4.1. Pre-requirements

This procedure assumes that COPSI is deployed on one VM. In addition, since COPSI is a pure Front-End designed and developed to access the CSC OData Server API via HTTP, it is assumed that a proxy will be setup to handle cross-origin requests from COPSI towards a target CSC OData Server. For more information, please refer to Appendix C.

The recommended SW and HW requirements for the COPSI VM are:

- OS: Centos7 64 bit
- RAM: 8 GB
- CPU: 4 Cores
- Storage: 100 GB

The following software must be pre-installed on the COPSI VM (the reported version is recommended):

- Docker Engine v.20.03.5 (*API version 1.40*),
- Docker Compose v.1.24.1

The required version of the Docker Compose can be installed following the steps below (*as root or sudoer*):

```
curl -L https://github.com/docker/compose/releases/download/1.24.1/docker-compose-`uname -s`-`uname -m` -o /usr/local/bin/docker-compose

chmod +x /usr/local/bin/docker-compose

ln -s /usr/local/bin/docker-compose /usr/bin/docker-compose
```

The docker daemon must be active on each VM. Please find below the command useful to check the docker daemon status (*to be executed as root user*):

```
systemctl status docker
```

If the docker daemon status is “inactive”, it must be started using the command (*to be executed as root user*):

```
systemctl start docker
```

4.1.1. Users and groups

The “**copsi**”¹ user must exist on the COPSI VM and should belong to the “**docker**” group. This step allows the copsi user to run docker and docker-compose commands.

¹ It is possible to use an already existing user as long as it belongs to docker group.



On the COPSI VM the /data folder must exist, owned by `copsi:docker`

This folder will contain (by default) the COPSI persistent data and the configuration files

Please consider that the /data folder could be replaced by any other file system or NAS folder. In this case, the management of this folder will be in charge of the Operation Team

4.1.2. Traffic matrix

The COPSI VM must be able to reach (and to be reached by) the Destination (or Source) reported in the connectivity matrix below²:

Source	Destination	Protocol/Ports
Internet	Front-End	HTTPS/443
Front-End	Keycloak	HTTPS/443
Front-End	CSC OData Server	HTTPS/443

Table 3 COPSI VM Connectivity Matrix

4.2. Installation procedure

The COPSI installation procedure requires the access to the release package, directly downloaded from GitHub at <https://github.com/DHS-CopernicusSpaceInterface/COPSI-Deployment/releases> or provided by COPSI Development Team.

The docker image of COPSI is available in the collaborativedhs/copsi public repository on the official Docker registry <https://hub.docker.com/r/collaborativedhs/copsi/tags>.

Log in to the COPSI VM as `copsi` user.

Download the last COPSI release as zip on a local folder (e.g. /data folder, but generally on any folder owned by `copsi` user), unzip it and enter the decompressed folder.

Execute the installation script:

```
sh install.sh <version>3
```

Check if the docker image of COPSI has been downloaded locally, executing the following command:

```
docker images
```

You should see the following image among the listed images:

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
<organization>/copsi	<version>	xxxxxxxxx	5 days ago	162MB

² Please note that this traffic matrix refers to operational environment.

³ e.g. `sh install.sh 1.1.0`



where <version> is the tag to be installed.

The installation script creates the directories containing the application configuration files and copies the default configuration files in the proper folder.

An example of the folders structure is reported in the table below:

Parameter Name	Description
/data/copsi/config	Contains the COPSI Front-End configuration files
/data/copsi/html	Contains the COPSI Front-End index.html page, to be mounted in case of no-proxy configuration

The installation script creates the symbolic link /data/copsi which points to the installation folder of the current release of COPSI, i.e. /data/copsi_<version>. The creation of symbolic link allows to restore the previous version of the software more easily.

Please note that this folder structure is the default one, managed by the installation script. If a different folder structure should be used, the creation of this alternative folder structure should be handled manually.

In addition:

- the default configuration files provided in the release package under the *data* folder should be copied manually in the new destination directory
- the symbolic link /data/copsi which points to the installation folder of the current release of COPSI, i.e. /data/copsi_<version>, must be created manually using the command:
`ln -s /data/copsi_<version> /data/copsi`
- the following command must be executed manually from the same folder location of the installation script, to pull the docker images:
`docker-compose pull`

4.3. Configuration procedure

4.3.1. Docker-compose configuration

The *docker-compose.yml* file is located in the folder <base_dir>/COPSI-Deployment, where <base_dir> is the local directory where the release package was downloaded and unzipped (e.g. /data). The content of this file is reported below:

```
version: "3.1"
services:
  copsi:
    image: "collaborativedhs/copsi:<version>"
    container_name: copsi
    hostname: copsi
    restart: always
    build: .
    ports:
      - "8090:80"
    networks:
      - copsi
    volumes:
      - /data/copsi/config:/usr/local/apache2/htdocs/assets/config
```

```
# uncomment the following line in case of deployment without proxy
#- /data/copsi/html/index.html:/usr/local/apache2/htdocs/index.html
```

```
networks:
  copsi:
    driver: bridge
    ipam:
      driver: default
      config:
        - subnet: 172.16.0.0/16
```

Furthermore, in case no proxy has been set up in front of COPSI, please uncomment the line `#- /data/copsi/html/index.html:/usr/local/apache2/htdocs/index.html` in the copsi service section, to grant the proper visualization of the COPSI web client⁴.

Besides this, there is no need to change the content of this file in the default environment. The coloured and bold parameters could be changed, if necessary, as explained below:

Parameter	Description
8090	This is the COPSI HOST PORT, i.e. the port used to expose the Front-End application. This port can be changed if the default one is used by another service.
<code>/data/copsi/config</code>	This folder hosts the COPSI configuration file <code>config.json</code> , <code>product_details.json</code> and <code>footprints_customization.json</code> . It is possible to replace this folder with a different one, if needed. In this case, the <code>config.json</code> provided in the installation kit must be copied in the new folder.
subnet: 172.16.0.0/16	The definition of the subnet parameter grants that the docker swarm will use a specific subnet, instead of any available subnet. The default value <code>172.16.0.0/16</code> of the subnet could be changed in conformity with the Operations network environment. Please consider that also a default gateway could be defined. In this case the syntax to use should be: subnet: <code>xxx.xxx.xxx.xxx/yy</code> gateway: <code>xxx.xxx.xxx.y</code>

Table 4 docker-compose configuration parameters

The other docker environment variables are described in detail in Appendix A

⁴ Please note that, since COPSI is a pure Front-End, it needs a proxy to avoid CORS issues, unless the target CSC OData Server allows CORS.

4.3.2. Application Configuration

On the COPSI VM, open the configuration file at `/data/copsi/config/config.json` and update the following properties as indicated below:

`"baseUrl"` : This defaults to `"/copsi/"`, which is the COPSI base href.

`"serviceUrl"` : The GSS OData catalog url in the format `http(s)://<domain>/<api-context>` (e.g. `https://dhs-test.onda-dias.eu/gss-odata-cat`). The value of `<domain>` should correspond to the COPSI domain, to avoid CORS issues.

`"serviceUrlStac"` : The GSS STAC catalog url in the format `http(s)://<domain>/<api-context>` (e.g. `https://dhs-test.onda-dias.eu/gss-stac-cat`). The value of `<domain>` should correspond to the COPSI domain, to avoid CORS issues.

`"odataVersion"` : The OData version to be added to the OData catalog url to get products data. As an example if `"v2"` is used as value, when retrieving products the final url will be `<service-url>/odata/<odata-version>/Products?$expand=Attributes`

`"keycloak.issuer"`: The value of the property corresponds to the URL of the Identity Provider, in the format `http(s)://<keycloak_url>/auth/realms/<realm>`. This parameter is needed for the proper redirect on the IDP login page when accessing COPSI.

`"keycloak.clientId"`: The value of the property corresponds to the identifier of the client created on the Keycloak REALM for the CSC OData Server. This parameter is needed for the proper redirect on the IDP login page when accessing COPSI.

`"keycloak.useSilentRefresh"` : The value of the property must be set to true if you want to use silent refresh together with code flow. As silent refresh is the only option for refreshing with implicit flow, you don't need to explicitly turn it on in this case. The default value is false.

The COPSI configuration files are described in detail in Appendix A

4.4. Getting Started

4.4.1. Start Execution

After executing the instructions provided in 4.2 and 4.3, you are ready to launch COPSI.

On the COPSI VM, from the same directory of the `docker-compose.yml` file, execute the following command:

```
sh start.sh
```

Check if the application is properly started using the command

```
docker ps
```

The expected result should be similar to what is reported below

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
e4217e4b729e	<organization>/copsi:<version>	"httpd-foreground"	2 days ago	Up 2 days	0.0.0.0:8090->80/tcp	copsi

Check if there is any error executing the following command:

```
docker logs -f copsi
```

4.4.2. Monitoring

In order to check that the application is running, execute the following command:

```
docker ps
```

The expected result should be similar to what is reported below

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
e4217e4b729e	collaborativedhs/copsi:1.0.0	"httpd-foreground"	2 days ago	Up 2 days	0.0.0.0:8090->80/tcp	copsi

You should be able to see the COPSI login button on a browser, going to [http\(s\)://<copsi_url>/copsi/home](http(s)://<copsi_url>/copsi/home). After the login, the COPSI main page should appear.



Figure 3 COPSI Main page

Please note that, in case of COPSI logos update, the browser cache should be cleaned to display the changes. Please refer to Appendix A for updating COPSI logos.



4.4.3. Stop Execution

On the COPSI VM, from the same directory of the *docker-compose.yml* file, execute the following command:

```
sh stop.sh
```

Verify that there is no instance running using the command

```
docker ps
```

The expected result should be like the extract reported below

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
--------------	-------	---------	---------	--------	-------	-------

5. Installation and Configuration Procedure (Legacy)

5.1. Pre-requirements

This procedure assumes that COPSI is deployed on one VM. In addition, since COPSI is a pure Front-End designed and developed to access the CSC OData Server API via HTTP, it is assumed that a proxy will be setup to handle cross-origin requests from COPSI towards a target CSC OData Server. For more information, please refer to Appendix C.

The recommended SW and HW requirements for the COPSI VM are:

- OS: Centos7 64 bit
- RAM: 8 GB
- CPU: 4 Cores
- Storage: 100 GB

The following software must be pre-installed on the COPSI VM:

- Apache HyperText Transfer Protocol (*HTTP*) server 2.x (*2.4 preferred*)

More information about how to install the required software can be found at the following links:

- <https://www.digitalocean.com/community/tutorials/how-to-install-the-apache-web-server-on-centos-7> (for the installation of Apache2)

The Apache service must be active on the COPSI VM. Execute the following command to check the status of the service:

```
systemctl status httpd
```

If the Apache service status is “inactive”, it must be started using the command (*to be executed as root user*):

```
systemctl start httpd
```

5.1.1. Users and groups

The “**copsi**” user must exist on the COPSI VMs.

On each COPSI VM the following folders must exist, owned by copsi user:

/data folder

Please consider that the /data folder could be replaced by any other file system or NAS folder. The management of this folder should be in charge of the Operation Team

5.1.2. Traffic matrix

Please refer to paragraph §4.1.2

5.2. Installation procedure

5.2.1. COPSI Installation

The COPSI installation procedure requires the access to the release package, directly downloaded from GitHub at <https://github.com/DHS-CopernicusSpaceInterface/COPSI-Deployment/releases> or provided by COPSI Development Team.

Log in to the COPSI VM as copsi user.

Download the asset copsi.zip provided with the last COPSI release on a local folder (e.g. */data folder, but generally on any folder owned by copsi user*), unzip it, enter the decompressed folder and, as root or sudoer user, copy the content of the directory into the default apache folder `/usr/local/apache2/htdocs`:

```
cp -R * /usr/local/apache2/htdocs
```

Create a file on the apache folder `/usr/local/apache2/htdocs`, named `.htaccess` and copy the following rows in the file:

```
RewriteEngine on
RewriteCond %{REQUEST_FILENAME} -f [OR]
RewriteCond %{REQUEST_FILENAME} -d
RewriteRule ^ - [L]
RewriteRule ^ index.html [L]
```

Save the file and restart the Apache service to save the changes:

```
systemctl restart httpd
```

5.3. Configuration procedure

5.3.1. Application Configuration

On the COPSI VM, open the configuration file at `/usr/local/apache2/htdocs/assets/config/config.json` and update the following properties as indicated below:

`"baseUrl"` : This defaults to `"/copsi/"`, which is the COPSI base href.

`"serviceUrl"` : The GSS OData catalog url in the format `http(s)://<domain>/<api-context>` (e.g. <https://dhs-test.onda-dias.eu/gss-odata-cat>). The value of `<domain>` should correspond to the COPSI domain, to avoid CORS issues.

`"serviceUrlStac"` : The GSS STAC catalog url in the format `http(s)://<domain>/<api-context>` (e.g. <https://dhs-test.onda-dias.eu/gss-stac-cat>). The value of `<domain>` should correspond to the COPSI domain, to avoid CORS issues.

"odataVersion" : The OData version to be added to the OData catalog url to get products data. As an example if "v2" is used as value, when retrieving products the final url will be <service-url>/odata/<odata-version>/Products?\$expand=Attributes

"keycloak.issuer": The value of the property corresponds to the URL of the Identity Provider, in the format `http(s)://<keycloak_url>/auth/realms/<realm>`. This parameter is needed for the proper redirect on the IDP login page when accessing COPSI.

"keycloak.clientId": The value of the property corresponds to the identifier of the client created on the Keycloak REALM for the CSC OData Server. This parameter is needed for the proper redirect on the IDP login page when accessing COPSI.

"keycloak.useSilentRefresh" : The value of the property must be set to true if you want to use silent refresh together with code flow. As silent refresh is the only option for refreshing with implicit flow, you don't need to explicitly turn it on in this case. The default value is false.

The COPSI configuration files are described in detail in Appendix A

5.4. Getting Started

5.4.1. Start Execution

After executing the instructions provided in 5.2 and 5.3, you are ready to launch the COPSI application.

On the COPSI VM, restart the Apache service to finalize the installation (*as root or sudoer*):

```
systemctl restart httpd
```

5.4.2. Stop Execution

On the COPSI VM, stop the Apache service to terminate the application:

```
systemctl stop httpd
```

Appendix A – COPSI configuration files

In COPSI there are three configuration files:

- **config.json**
- **products_details.json**
- **footprints_customization.json**

In the table below are described the main configuration parameters of COPSI, contained in the `/data/copsi/config/config.json` file. Please consider that the parameters in bold are those which needs to be updated to allow the correct functioning of COPSI.

Any update to the file requires a refresh of the browser page with the COPSI web application.

Section/Parameter Name	Description
"version"	COPSI version. The default value corresponds to the current version of the application installed.
"centreInfo.name"	The name of the Collaborative centre. Please note that if no name is configured, the Copernicus Space Interface text will be displayed by default. The default value is an empty string.
"centreInfo.image"	The link to the Collaborative centre logo image. The link can be an URL or it is possible to put the image in png format in the <code>/data/copsi/config</code> folder ⁵ . The value must be in the format <code>./assets/config/<image_name>.png</code> . Please note that if no image is configured, the COPSI logo will be displayed by default. The default value is an empty string.
"centreInfo.link"	The link to the Collaborative centre web site. Please note that this parameter is not mandatory for Collaborative centre header customization. The default value is an empty string.
"centreInfo.alt"	A text to be show as alternative to the Collaborative centre image in case of limited internet access. Please note that this parameter is not mandatory for Collaborative centre header customization. The default value is an empty string.
"centreInfo.title"	A text shown on the Collaborative centre image mouseover. Please note that this parameter is not mandatory for Collaborative centre header customization. The default value is an empty string.
"baseUrl"	This defaults to <code>"/copsi/"</code> , which is the COPSI base href
"serviceUrl"	The GSS OData catalog url in the format <code>http(s)://<domain>/<api-context></code>
"serviceUrlStac"	The GSS STAC catalog url in the format <code>http(s)://<domain>/<api-context></code>
"odataVersion"	The OData version to be added to the OData catalog url to get products data. As an example if <code>"v2"</code> is used as value, when retrieving products the final url will be <code><service-url>/odata/<odata-version>/Products?\$expand=Attributes</code>

⁵Please note that the new logo should be put in `/usr/local/apache2/htdocs/assets/config` in case of legacy installation. Please note also that the recommended path `/data/copsi/config` is the one where the configuration file is mounted in the default docker installation and points to the folder `/usr/local/apache2/htdocs/assets/config` of the COPSI docker container.

"searchOptions.productsPerPage"		The number of products displayed in the list for OData results, i.e., the results page size. This value will be used as \$top parameter in the odata/v1/Products request. The default value is 100.
"searchOptions.productsPerPageStac"		The number of products displayed in the list for STAC results, i.e., the results page size. This value will be used as "limit" parameter in the STAC request body. The default value is 100.
"searchOptions.orderByOptions"		Array of JSON objects containing the list of Product properties that can be used to order the entities in the search response. The list of values is available in the <i>Order by</i> drop down menu of the COPSI Advanced Search panel. The selected value will be used as part of the \$orderby parameter in the odata/v1/Products request and as the "field" parameter into the "sortby" object for the STAC search body. The default value is the first in the Array.
"searchOptions.orderByOptions"	"name"	The label representing the Products property used to order the entities in the search response, as shown in the <i>Order by</i> drop down menu of the COPSI Advanced Search panel. Default values are "Publication Date" and "Sensing Date".
	"value"	The name of the Products property used to order the entities in the search response, corresponding to the label shown in the <i>Order by</i> drop down menu of the COPSI Advanced Search panel. Allowed values are valid OData Products Properties. Default values are PublicationDate (corresponding to "Publication Date" label) and ContentDate/Start (corresponding to "Sensing Date" label).
	"stacValue"	The name of the same property used in the STAC request body.
"searchOptions.sortByOptions"		Array of JSON objects containing the list of sort criteria used as part of the \$orderby parameter in the odata/v1/Products request and as the "direction" value into the "sortby" object in the STAC request body. The list of values is available in the <i>Sort by</i> drop down menu of the COPSI Advanced Search panel. The default value is desc, which is the first value in the array. Allowed values are desc or asc.
"searchOptions.sortByOptions"	"name"	The label representing the sort criteria used in the search response, as shown in the <i>Sort by</i> drop down menu of the COPSI Advanced Search panel. Default values are "Descending" and "Ascending".
	"value"	The sort criteria used in the search request, corresponding to the label shown in the <i>Sort by</i> drop down menu of the COPSI Advanced Search panel. Allowed values are valid OData and STAC sort criteria (the two coincide). Default values are DESC (corresponding to "Descending" label) and ASC (corresponding to "Ascending" label).
"searchOptions.hideFilterOutputTimeout"		The value, in milliseconds, of the timeout after which the Filter Output section is hidden if not pinned. The default value is 2000.
"searchOptions.filterOutputsPinnedByDefault"		This property indicates if the Filter Output section showing the OData filter applied to a search request must be pinned by default. The default value is true, which means that the panel is pinned by default.
"searchOptions.useMultipleAttributesInOption"		This property indicates if the special 'IN' OData filter, to search for multiple values of the same attribute, has to be used or not, depending whether it is supported or not by the catalog.

"gssSupportedProtocols"		The list of supported protocols to choose from. Available protocols are: "OData" and "STAC". If one of the two modules is not installed in the GSS instance, it can be omitted from this array, so the option will not be visible in the UI.
"defaultGssProtocol"		The gss protocol which is chosen by default when the COPSI UI is opened.
"headerSettings.showUserEditButton"		This property indicates if a link button to the user settings has to be shown in the user menu.
"headerSettings.showPasswordChangeButton"		This property indicates if a link button to change the user password has to be shown in the user menu.
"headerSettings.menuAutoHideTimeout"		The value, in milliseconds, of the timeout after which the Settings menu and the profile menu are hidden if not closed by the user. The default value is 3000.
"mapSettings"	"initialViewState.longitude"	Default longitude at which the COPSI map is centred on page loaded. Default value is 2.27.
	"initialViewState.latitude"	Default latitude at which the COPSI map is centred on page loaded. Default value is 38.86.
	"initialViewState.zoom"	Default zoom of the COPSI map on page loaded. Default is 3.0.
	"initialViewState.minZoom"	Minimum zoom allowed on the COPSI map. Default is 2.5.
	"initialViewState.maxZoom"	Maximum zoom allowed on the COPSI map. Default is 12.
	"projection"	Default projection of the COPSI map on page loaded. Default is <i>globe</i> . Possible values are <i>globe</i> or <i>plane</i>
"geoSearchSettings"	"showGeoSearchToolbar"	This property indicates if the geo search toolbar should be visible by default
	"defaultCircleRadius"	Radius, in pixels, of the circles placed at each polygon vertex. Default is 8.
	"bigCircleRadius"	Radius, in pixels, of the highlighted circles at hovered polygon vertex and of the circle at the first vertex of the polygon while drawing Default is 12.
	"smallCircleRadius"	Radius, in pixels, of the circles at each vertex of the polygon other than the first, while drawing. Default is 3.
	"latitudeLimit"	Latitude limit after which is not possible to draw or drag a polygon.
	"fillColor"	Color of the polygon area as an array with alpha channel. Default is [220, 255, 100, 80]
	"borderColor"	Color of the border of the polygon as an array with alpha channel. Default is [180, 220, 50, 255]
	"fillColorActive"	Color of the polygon area while drawing or dragging it as an array with alpha channel. Default is [255, 220, 60, 50]
"loginSettings.text"		The text shown in the login dialog. The default value is <i>Please Sign in to access our service</i> .

"loginSettings.buttonText"		The text shown in the button of the login dialog. The default value is <i>Sign in</i> .
"keycloak"	"issuer"	The value of the property corresponds to the URL of the COPSI home page, in the format <code>http(s)://<copsy_domain>/copsi/home</code> . This parameter is needed for the proper redirect on the COPSI home page after the login on the IDP.
	"editProfileUrl"	The value of the property corresponds to the URL which the user is redirected to when clicking on the <i>edit user settings</i> button. Default URL is set for the Keycloak authentication service.
	"changePasswordUrl"	The value of the property corresponds to the URL which the user is redirected to when clicking on the <i>change password</i> button. Default URL is set for the Keycloak authentication service.
	"clientId"	The value of the property corresponds to the identifier of the client created on the Keycloak REALM for the CSC OData Server. This parameter is needed for the proper redirect on the IDP login page when accessing COPSI.
	"responseType"	This parameter is considered only if the IDP supports the code flow + PKCE. The default value is <code>code</code> .
	"scope"	Set the scope for the permissions the client should request. The default value is <i>"openid profile email"</i> .
	"requireHttps"	This parameter indicates if Https is required for the IDP. The default value is <code>false</code> . Allowed values are <code>false</code> or <code>true</code> .
	"showDebugInformation"	This parameter indicates if debug information must be shown in the browser console. The default value is <code>false</code> . Allowed values are <code>false</code> or <code>true</code> .
	"disableAtHashCheck"	This property has been introduced to disable <code>at_hash</code> checks and is intended for Identity Provider that does not deliver an <code>at_hash</code> EVEN THOUGH it is recommended by the OIDC specs. The default value is <code>true</code> . Allowed values are <code>false</code> or <code>true</code> .
	"useSilentRefresh"	The value of the property must be set to <code>true</code> if you want to use silent refresh together with code flow. As silent refresh is the only option for refreshing with implicit flow, you don't need to explicitly turn it on in this case. The default value is <code>false</code> .
"quicklookURL"		The parametric endpoint useful to request products' quick look. The default value is <code><base_url>/odata/v1/Products(<uuid>)/AttachedFiles('quicklook.jpg')/\$value</code>
"quicklookURLStac"		The parametric endpoint useful to request products' quick look. The default value is <code><base_url>/stac/download/quicklook/<productName></code>
"infoLogosLeft"		Array of JSON objects containing the logos of the Collaborative DHS participants. Each JSON object property is detailed below.
"infoLogosLeft"	"link"	The link to the Collaborative DHS participant web site.
"infoLogosLeft"	"image"	The link to the Collaborative DHS participant logo. The link can be an URL or it is possible to put the image in png format in the <code>/data/copsi/config⁶</code> folder. The value must be in the format <code>./assets/config/<image_name>.png</code> . Default logos are already part of the COPSI distribution.

⁶ See note 5

"infoLogosLeft"	"title"	A text to be show as alternative to the DHS participant logo in case of limited internet access.
"infoLogosLeft"	"alt"	A text shown on the DHS participant logo mouseover.
"infoLogosRight"		Array of JSON objects containing the logos of the Collaborative DHS contractors and partners. Each JSON object property is detailed below.
"infoLogosRight"	"link"	The link to the Collaborative DHS contractor/partner web site.
"infoLogosRight"	"image"	The link to the Collaborative DHS contractor/partner logo. The link can be an URL or it is possible to put the image in png format in the /data/copsi/config ⁷ folder. The value must be in the format ./assets/config/<image_name>.png. Default logos are already part of the COPSI distribution.
"infoLogosRight"	"title"	A text to be show as alternative to the Collaborative DHS contractor/partner logo in case of limited internet access.
"infoLogosRight"	"alt"	A text shown on to the Collaborative DHS contractor/partner logo mouseover.
"footprints"	"fallbackColor"	Fill color of the product footprints displayed on COPSI map, in HEX value with alpha channel. The default value is #ff640070.
	"fallbackBorderColor"	Border color of the product footprints displayed on COPSI map, in HEX value with alpha channel. The default value is #882200dd
	"fallbackHoverColor"	Fill color of the product footprints when hovered, in HEX value with alpha channel. The default value is #a0a0a0ee
	"fallbackHoverBorderColor"	Border color of the product footprints when hovered, in HEX value with alpha channel. The default value is #a0a0a0ee
	"defaultBorderWidth"	Border width of the product footprints displayed on COPSI map, in pixels. The default value is 2.
	"selectedBorderColor"	Border color set to highlight the selected product footprints on COPSI map, in HEX value with alpha channel. The default value is #33dddf
	"selectedBorderWidth"	Border width set to highlight the selected product footprints displayed on COPSI map, in pixels. The default value is 4.
	"hoveredBorderWidth"	Border width of the product footprints displayed on COPSI map on mouseover, in pixels. The default value is 2.
"styles"	"maxPickableObjectsDepth"	Max number of footprints that can be found when hovering with the mouse and shown in the hovered footprints list. Please take into consideration that the bigger is this value, more computational resources are required. Default value is 15.
		Array of JSON objects containing the list of available WMTS layers that can be used in the COPSI map. Each JSON object property is detailed below.
	"name"	Name of the layer. This value is displayed in the COPSI layer drop down menu, available in the Map settings panel.
	"url"	WMTS url exposing the layer tiles. Standard OGC WMTS layers are supported. Leave it empty for included vectorial stylings.
	"path"	Path to the world tile preview image

⁷ See note 5

"styles"	"seaColor"	When selecting vectorial styling, sets the color of the water zones in the format [r, g, b] (0-255)
"styles"	"terrainColor"	When selecting vectorial styling, sets the color of the terrain zones in the format [r, g, b] (0-255)
"styles"	"borderColor"	When selecting vectorial styling, sets the color of the borders in the format [r, g, b] (0-255)
"platformDetails List"		Array of JSON objects containing the footprint color, the tags and the advanced search filters to be shown grouped by platform. Each JSON object property is detailed below.
"platformDetails List"	"name"	The label shown at the left of each mission specific section. The default value is <i>Mission</i>
	"mission"	The platform name that the JSON object is referred to. This should correspond to the OData Attributes defined to identify a mission, e.g. <i>Sentinel-1</i>
	"value"	The value of the OData Attributes indicating the identifier of a mission. Allowed values are those specified in the Sentinels Metadata ICD, e.g.: SENTINEL-1, SENTINEL-2, SENTINEL-3, SENTINEL-5P.
	"attributeName"	The name of the OData Attributes indicating the identifier of a mission. The allowed values are specified in the Sentinels Metadata ICD, e.g.: platformShortName. This property is necessary to build in the proper way the query by Attribute in compliance with the OData syntax.
	"attributeType"	The OData attribute type. The allowed values are specified in the Sentinel Metadata ICD, e.g: OData.CSC.StringAttribute. This property is necessary to build in the proper way the query by Attribute in compliance with the OData syntax.
	"fillColor"	Fill color applied to the footprints that match the relative JSON object platform.
	"borderColor"	Border color applied to the footprints that match the relative JSON object platform.
	"hoverColor"	Fill color applied to the hovered footprints that match the relative JSON object platform.
	"hoverBorderColor"	Border color applied to the hovered footprints that match the relative JSON object platform.
	"tags"	Array of JSON objects containing the detail of each tag to be shown in the product list for each platform (OData). Each JSON object property is detailed below.
	"tags.name"	The name of the Product Attribute to be shown as tag.
	"tags.color"	The background color used in the product list item for the specified tag, in HEX notation.
	"tags.title"	The description of the Product Attribute to be shown on tag mouseover.
	"stacTags"	JSON object containing the mapping of each tag to be shown in the product list for each platform (STAC) which refers to the name, title and color of the OData tags settings. Each stacTag is written as a key/value parameter, in which the "key" is the OData tag name and the "value" is the corresponding STAC attribute

	"filters"	Array of JSON objects containing the metadata shown for each mission specific filter in the COPSI Advanced Search panel for the OData searches. Each JSON object property is detailed below
"platformDetails List.filters"	"name"	The label shown to represent the mission-specific metadata, e.g.: Platform Identifier.
	"attribute Name"	The name of the OData Attribute representing the mission-specific metadata, e.g.: platformSerialIdentifier. This property is necessary to build in the proper way the query by Attribute in compliance with the OData syntax.
	"attributeT ype"	The type of the OData Attribute representing the mission-specific metadata, e.g.: OData.CSC.StringAttribute. This property is necessary to build in the proper way the query by Attribute in compliance with the OData syntax.
	"value"	Array of string representing the allowed values of the mission-specific metadata, in compliance with the Sentinels Metadata ICD. If this property is set in the JSON Object, a drop-down menu with the configured values is shown in the COPSI Advanced Search panel.
	"selectedV alues"	This parameter is an empty array and it is needed by the software. Please leave it empty.
	"manualln put"	Allowed value: true. If this property is set in the JSON Object, a free input text is shown in the COPSI Advanced Search panel, to allow the user to insert the value of the metadata to filter with. A typical metadata for which this property is used is the TileId.
	"needsMin MaxValue s"	Allowed value: true. If this property is set in the JSON Object, two free input texts are shown in the COPSI Advanced Search panel, to allow the user to insert a range of values of the metadata to filter with. A typical metadata for which this property is used is the cloudCover or, in general, metadata with numeric type.
	"minValue "	This property can be used only in combination with the "needsMinMaxValues" property and contains the minimum value allowed for the configured metadata.
	"maxValue "	This property can be used only in combination with the "needsMinMaxValues" property and contains the maximum value allowed for the configured metadata.
	"step"	This property can be used only in combination with the "needsMinMaxValues" property and contains the allowed step useful to increment or decrement the minimum and maximum values of the range with the up and down arrows keys.

An example of the main configuration file is reported below:

```
{
  "version": "4.1.0",
  "centreInfo": {
    "name": "",
    "image": "",
    "link": "",
    "alt": "",
    "title": ""
  },
  "baseUrl": "/copsi/",
  "serviceUrl": "http(s)://<domain>/<api_context>",
  "serviceUrlStac": "http(s)://<domain>/<api_context>"
}
```



```
"odataVersion": "v2",
"keycloak": {
  "issuer": "https://<keycloak_url>/auth/realms/<realm>",
  "editProfileUrl": "<issuer>/account/?referrer=<clientId>#/personal-info",
  "changePasswordUrl": "<issuer>/account/?referrer=<clientId>#/security/signingin",
  "clientId": "<client_id>",
  "responseType": "code",
  "scope": "openid profile email offline_access",
  "requireHttps": false,
  "showDebugInformation": false,
  "disableAtHashCheck": true,
  "useSilentRefresh": false
},

"searchOptions": {
  "productsPerPage": 100,
  "productsPerPageStac": 100,
  "orderByOptions": [
    {
      "name": "Publication Date",
      "value": "PublicationDate",
      "stacValue": "properties.published"
    },
    {
      "name": "Sensing Date",
      "value": "ContentDate/Start",
      "stacValue": "properties.datetime"
    }
  ],
  "sortByOptions": [
    {
      "name": "Descending",
      "value": "DESC"
    },
    {
      "name": "Ascending",
      "value": "ASC"
    }
  ],
  "hideFilterOutputTimeout": 2000,
  "filterOutputIsPinnedByDefault": true,
  "useMultipleAttributesInOption": true,
  "gssSupportedProtocols": [
    "OData",
    "STAC"
  ],
  "defaultGssProtocol": "STAC"
},
"headerSettings": {
  "showUserEditButton": true,
  "showPasswordChangeButton": true,
  "menuAutoHideTimeout": 2000
},
"mapSettings": {
  "initialViewState": {
    "longitude": 2.27,
    "latitude": 38.86,
    "zoom": 3.0,
    "minZoom": 2.0,
    "maxZoom": 12
  },
  "projection": "globe"
},
"geoSearchSettings": {
  "showGeoSearchToolbar": true,
  "defaultCircleRadius": 8,
  "bigCircleRadius": 12,
  "smallCircleRadius": 3,
  "latitudeLimit": 85.05,
  "fillColor": [220, 255, 100, 80],
  "borderColor": [180, 220, 50, 255],
  "fillColorActive": [255, 220, 60, 50],
  "borderColorActive": [220, 150, 0, 255]
},
```

```
"loginSettings": {
  "text": "Please Sign in to access our service",
  "buttonText": "Sign in"
},
"quicklookURL": "<base_url>/odata/<odata_version>/Products(<uuid>)/AttachedFiles('quick-look.jpg')/$value",
"quicklookURLStac": "<base_url>/stac/download/quicklook/<productName>",
"infoLogosLeft": [
  { "link": "https://www.esa.int/", "image": "./assets/images/ESA_logo_2020_White_cut.png", "title": "Visit ESA website", "alt": "ESA logo" },
  { "link": "https://european-union.europa.eu/", "image": "./assets/images/logoEU.svg", "title": "Visit EU website", "alt": "EU logo" },
  { "link": "http://www.copernicus.eu", "image": "./assets/images/copernicus_eu_logo_blu_white.png", "title": "Visit Copernicus website", "alt":
"Copernicus logo" },
  { "link": "https://ivvproxy.onda.onda-dias.com/col-dhs-website/", "image": "./assets/images/logoDHS.png", "title": "Visit DHS website", "alt":
"DHS logo" }
],
"infoLogosRight": [
  { "link": "https://www.serco.com/", "image": "./assets/images/logo-serco-grey_cut.png", "title": "Visit Serco website", "alt": "Serco logo" },
  { "link": "http://www.alia-space.com/", "image": "./assets/images/logo_alia_white.png", "title": "Visit Alia website", "alt": "Alia Space logo" }
],
"footprints": {
  "fallBackColor": "#808080cc",
  "fallBackBorderColor": "#303030ff",
  "fallBackHoverColor": "#a0a0a0ee",
  "fallBackHoverBorderColor": "#808080ff",
  "defaultBorderWidth": 2,
  "selectedBorderColor": "#00aeefff",
  "selectedBorderWidth": 4,
  "hoveredBorderWidth": 2,
  "maxPickableObjectsDepth": 15
},
"styles": [
{
  "name": "OSM",
  "url": "https://c.tile.openstreetmap.org/{z}/{x}/{y}.png",
  "path": "./assets/images/Preview_OSM.png",
  "seaColor": [0, 0, 0],
  "terrainColor": [0, 0, 0],
  "borderColor": [0, 0, 0]
},
{
  "name": "Flat - Natural",
  "url": "",
  "path": "./assets/images/Preview_Flat_Natural.png",
  "seaColor": [30, 70, 140],
  "terrainColor": [80, 120, 60],
  "borderColor": [0, 0, 0]
},
{
  "name": "Flat - Grey",
  "url": "",
  "path": "./assets/images/Preview_Flat_Grey.png",
  "seaColor": [60, 60, 60],
  "terrainColor": [120, 120, 120],
  "borderColor": [0, 0, 0]
}
],
"platformDetailsList": [
{
  "name": "Mission",
  "mission": "Sentinel-1",
  "value": "SENTINEL-1",
  "attributeName": "platformShortName",
  "attributeType": "OData.CSC.StringAttribute",
  "fillColor": "#b31b1b64",
  "borderColor": "#b31b1bff",
  "hoverColor": "#ff0000aa",
  "hoverBorderColor": "#ff0000ff",
  "tags": [
    {
      "name": "productType",
      "color": "#ff6400",
      "title": "Product Type"
    }
  ]
}
]
```



```
"name": "operationalMode",
"color": "#00338D",
"title": "Operational Mode"
},
{
  "name": "polarisationChannels",
  "color": "#0CCE6B",
  "title": "Polarisation"
},
{
  "name": "orbitNumber",
  "color": "#b81365",
  "title": "Orbit Number"
},
{
  "name": "timeliness",
  "color": "#C47AC0",
  "title": "Timeliness"
}
},
"stacTags": {
  "productType": "product:productType",
  "operationalMode": "sar:instrument_mode",
  "polarisationChannels": "sar:polarizations",
  "orbitNumber": "sat:absolute_orbit",
  "timeliness": "product:timeliness"
},
"filters": [
  {
    "name": "Platform Identifier",
    "attributeName": "platformSerialIdentifier",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "A",
      "B",
      "C",
      "D"
    ],
    "selectedValues": []
  },
  {
    "name": "Product Type",
    "attributeName": "productType",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "S1_RAW_0S",
      "S2_RAW_0S",
      "S3_RAW_0S",
      "S4_RAW_0S",
      "S5_RAW_0S",
      "S6_RAW_0S",
      "IW_RAW_0S",
      "EW_RAW_0S",
      "WV_RAW_0S",
      "S1_SLC_1S",
      "S2_SLC_1S",
      "S3_SLC_1S",
      "S4_SLC_1S",
      "S5_SLC_1S",
      "S6_SLC_1S",
      "IW_SLC_1S",
      "EW_SLC_1S",
      "WV_SLC_1S",
      "S1_GRDH_1S",
      "S2_GRDH_1S",
      "S3_GRDH_1S",
      "S4_GRDH_1S",
      "S5_GRDH_1S",
      "S6_GRDH_1S",
      "IW_GRDH_1S",
      "EW_GRDH_1S",
      "S1_GRDM_1S",
      "S2_GRDM_1S",
      "S3_GRDM_1S",

```

```
"S4_GRDM_1S",
"S5_GRDM_1S",
"S6_GRDM_1S",
"IW_GRDM_1S",
"EW_GRDM_1S",
"S1_OCN_2S",
"S2_OCN_2S",
"S3_OCN_2S",
"S4_OCN_2S",
"S5_OCN_2S",
"S6_OCN_2S",
"IW_OCN_2S",
"EW_OCN_2S",
"WV_OCN_2S"
],
"selectedValues": []
},
{
  "name": "Polarisation",
  "attributeName": "polarisationChannels",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "HH",
    "VV",
    "VV,VH",
    "VH,VV",
    "HH,HV",
    "HV,HH"
  ],
  "selectedValues": []
},
{
  "name": "Operational Mode",
  "attributeName": "operationalMode",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "SM",
    "IW",
    "EW",
    "WV"
  ],
  "selectedValues": []
},
{
  "name": "Orbit Direction",
  "attributeName": "orbitDirection",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "ASCENDING",
    "DESCENDING"
  ],
  "selectedValues": []
},
{
  "name": "Timeliness",
  "attributeName": "timeliness",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "NRT-10m",
    "NRT-1h",
    "NRT-3h",
    "Fast-24h",
    "Off-line",
    "Reprocessing"
  ],
  "selectedValues": []
}
]
},
{
  "name": "Mission",
  "mission": "Sentinel-2",
  "value": "SENTINEL-2",
  "attributeName": "platformShortName",
```

```
"attributeType": "OData.CSC.StringAttribute",
"fillColor": "#17724564",
"borderColor": "#177245ff",
"hoverColor": "#adff2faa",
"hoverBorderColor": "#adff2fff",
"tags": [
  {
    "name": "productType",
    "color": "#ff6400",
    "title": "Product Type"
  },
  {
    "name": "cloudCover",
    "color": "#ff006e",
    "title": "Cloud Cover Percentage"
  },
  {
    "name": "tileId",
    "color": "#6400ff",
    "title": "Tile Identifier"
  },
  {
    "name": "orbitNumber",
    "color": "#b81365",
    "title": "Orbit Number"
  },
  {
    "name": "datastripId",
    "color": "#0f7173",
    "title": "Datastrip Identifier"
  }
],
"stacTags": {
  "productType": "product:type",
  "operationalMode": "sar:instrument_mode",
  "polarisationChannels": "sar:polarizations",
  "orbitNumber": "sat:absolute_orbit",
  "timeliness": "product:timeliness"
},
"filters": [
  {
    "name": "Platform Identifier",
    "attributeName": "platformSerialIdentifier",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "A",
      "B",
      "C"
    ],
    "selectedValues": []
  },
  {
    "name": "Product Type",
    "attributeName": "productType",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "S2MSI1C",
      "S2MSI2A"
    ],
    "selectedValues": []
  },
  {
    "name": "Tile ID",
    "attributeName": "tileId",
    "attributeType": "OData.CSC.StringAttribute",
    "manualInput": true
  },
  {
    "name": "Datastrip Identifier",
    "attributeName": "datastripIdentifier",
    "attributeType": "OData.CSC.StringAttribute",
    "manualInput": true
  }
]
```

```
"name": "Cloud Cover %",
"attributeName": "cloudCover",
"attributeType": "OData.CSC.DoubleAttribute",
"minValue": 0.00,
"maxValue": 100.00,
"step": 0.001,
"needsMinMaxValues": true
}
],
{
"name": "Mission",
"mission": "Sentinel-3",
"value": "SENTINEL-3",
"attributeName": "platformShortName",
"attributeType": "OData.CSC.StringAttribute",
"fillColor": "#0023b964",
"borderColor": "#0023b9ff",
"hoverColor": "#0000ffaa",
"hoverBorderColor": "#0000ffff",
"tags": [
{
"name": "productType",
"color": "#ff6400",
"title": "Product Type"
},
{
"name": "orbitNumber",
"color": "#b81365",
"title": "Orbit Number"
},
{
"name": "relativeOrbitNumber",
"color": "#48a9a6",
"title": "Relative Orbit Number"
},
{
"name": "timeliness",
"color": "#C47AC0",
"title": "Timeliness"
},
{
"name": "instrumentShortName",
"color": "#4B9CE7",
"title": "Instrument"
}
],
"stacTags": {
"productType": "product:type",
"operationalMode": "sar:instrument_mode",
"polarisationChannels": "sar:polarizations",
"orbitNumber": "sat:absolute_orbit",
"timeliness": "product:timeliness"
},
"filters": [
{
"name": "Platform Identifier",
"attributeName": "platformSerialIdentifier",
"attributeType": "OData.CSC.StringAttribute",
"value": [
"A",
"B"
],
"selectedValues": []
},
{
"name": "Product Type",
"attributeName": "productType",
"attributeType": "OData.CSC.StringAttribute",
"value": [
"OL_1_EFR___",
"OL_1_ERR___",
"OL_2_LFR___",
"OL_2_LRR___",
```



```
"SR_1_SRA___",
"SR_1_SRA_A_",
"SR_1_SRA_BS",
"SR_2_LAN___",
"SR_2_LAN_HY",
"SR_2_LAN_LI",
"SR_2_LAN_SI",
"SL_1_RBT___",
"SL_2_LST___",
"SL_2_FRP___",
"SY_2_SYN___",
"SY_2_VGP___",
"SY_2_VG1___",
"SY_2_V10___",
"SY_2_AOD___",
],
"selectedValues": []
},
{
  "name": "Instrument",
  "attributeName": "instrumentShortName",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "OLCI",
    "SRAL",
    "SLSTR",
    "SYNERGY"
  ],
  "selectedValues": []
},
{
  "name": "Processing Level",
  "attributeName": "processingLevel",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "1",
    "2"
  ],
  "selectedValues": []
},
{
  "name": "Timeliness",
  "attributeName": "timeliness",
  "attributeType": "OData.CSC.StringAttribute",
  "value": [
    "NR",
    "NT",
    "ST"
  ],
  "selectedValues": []
},
{
  "name": "Cloud Cover %",
  "attributeName": "cloudCover",
  "attributeType": "OData.CSC.DoubleAttribute",
  "minValue": 0.00,
  "maxValue": 100.00,
  "step": 0.001,
  "needsMinMaxValues": true
}
]
},
{
  "name": "Mission",
  "mission": "Sentinel-5p",
  "value": "SENTINEL-5P",
  "attributeName": "platformShortName",
  "attributeType": "OData.CSC.StringAttribute",
  "fillColor": "#64539464",
  "borderColor": "#645394ff",
  "hoverColor": "#ff00ffaa",
  "hoverBorderColor": "#ff00ffff",
  "tags": [
    {
```

```
"name": "productType",
"color": "#ff6400",
"title": "Product Type"
},
{
  "name": "processingMode",
  "color": "#5B486A",
  "title": "Processing Mode"
},
{
  "name": "orbitNumber",
  "color": "#b81365",
  "title": "Orbit Number"
},
{
  "name": "processingLevel",
  "color": "#E71D36",
  "title": "Processing Level"
}
},
"stacTags": {
  "productType": "product:type",
  "operationalMode": "sar:instrument_mode",
  "polarisationChannels": "sar:polarizations",
  "orbitNumber": "sat:absolute_orbit",
  "timeliness": "product:timeliness"
},
"filters": [
  {
    "name": "Product Type",
    "attributeName": "productType",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "L1B_IR_SIR",
      "L1B_IR_UVN",
      "L1B_RA_BD1",
      "L1B_RA_BD2",
      "L1B_RA_BD3",
      "L1B_RA_BD4",
      "L1B_RA_BD5",
      "L1B_RA_BD6",
      "L1B_RA_BD7",
      "L1B_RA_BD8",
      "L2_AER_AI",
      "L2_AER_LH",
      "L2_CH4___",
      "L2_CLOUD_",
      "L2_CO___",
      "L2_HCHO___",
      "L2_NO2___",
      "L2_NP_BD3",
      "L2_NP_BD6",
      "L2_NP_BD7",
      "L2_O3_TCL",
      "L2_O3___",
      "L2_O3_PR",
      "L2_SO2___",
      "AUX_CTMFCT",
      "AUX_CTMANA"
    ],
    "selectedValues": []
  },
  {
    "name": "Processing Mode",
    "attributeName": "processingMode",
    "attributeType": "OData.CSC.StringAttribute",
    "value": [
      "NRTI",
      "OFFL",
      "RPRO"
    ],
    "selectedValues": []
  }
],
{
```



```
"name": "Processing Level",  
"attributeName": "processingLevel",  
"attributeType": "OData.CSC.StringAttribute",  
"value": [  
  "L1b",  
  "L2"  
],  
"selectedValues": []  
}  
]  
}  
]  
}
```

In the table below are described the product details configuration parameters of COPSI, contained in the */data/copsi/config/product_details.json* file.

Any update to the file requires a refresh of the browser page with the COPSI web application.

Section/Parameter Name		Description
"Properties"		Array of properties which will be shown in the details panel.
"Attributes"		Array of JSON objects, each of which is a list of configurable attributes to be shown in the details panel, one for each possible mission. Each JSON object property is detailed below
"Attributes"	"platform ShortName"	The value of the OData Attributes indicating the identifier of a mission. Allowed values are those specified in the Sentinels Metadata ICD, e.g.: SENTINEL-1, SENTINEL-2, SENTINEL-3, SENTINEL-5P.
	"Attributes"	Array of attributes to be shown in the attributes section of the product details panel.
"StacProperties"		Array of STAC properties which will be shown in the details panel.

An example of the product details configuration file is reported below:

```
{
  "Properties": [
    "Id",
    "Name",
    "ContentLength",
    "OriginDate",
    "PublicationDate",
    "Checksum",
    "ContentDate",
    "Footprint",
    "GeoFootprint"
  ],
  "Attributes": [
    {
      "platformShortName": "SENTINEL-1",
      "Attributes": [
        "beginningDateTime",
        "endingDateTime",
        "platformShortName",
        "platformSerialIdentifier",
        "instrumentShortName",
        "operationalMode",
        "swathIdentifier",
        "productClass",
        "productType",
        "productGeneration",
        "timeliness",
        "sliceNumber",
        "polarisationChannels",
        "orbitNumber",
        "relativeOrbitNumber",
        "cycleNumber",
        "orbitDirection",
        "processingDate",
        "processingCenter",
        "processorName",
      ]
    }
  ]
}
```

```
"processorVersion"
]
},
{
  "platformShortName": "SENTINEL-2",
  "Attributes": [
    "beginningDateTime",
    "endingDateTime",
    "productType",
    "processorVersion",
    "processingCenter",
    "processingDate",
    "platformShortName",
    "platformSerialIdentifier",
    "instrumentShortName",
    "operationalMode",
    "orbitNumber",
    "lastOrbitNumber",
    "relativeOrbitNumber",
    "cloudCover",
    "productGroupid",
    "datastripld",
    "tileid",
    "qualityStatus",
    "qualityInfo"
  ]
},
{
  "platformShortName": "SENTINEL-3",
  "Attributes": [
    "beginningDateTime",
    "endingDateTime",
    "platformShortName",
    "platformSerialIdentifier",
    "instrumentShortName",
    "operationalMode",
    "productType",
    "timeliness",
    "baselineCollection",
    "brightCover",
    "snowOrIceCover",
    "salineWaterCover",
    "coastalCover",
    "freshInlandWaterCover",
    "tidalRegionCover",
    "landCover",
    "closedSeaCover",
    "continentalIceCover",
    "openOceanCover",
    "cloudCover",
    "orbitNumber",
    "lastOrbitNumber",
    "orbitDirection",
    "lastOrbitDirection",
    "relativeOrbitNumber",
    "lastRelativeOrbitNumber",
    "cycleNumber",
    "processingLevel",
    "processingDate",
    "processingCenter",
    "processorName",
    "processorVersion"
  ]
},
{
  "platformShortName": "SENTINEL-5P",
  "Attributes": [
    "platformShortName",
    "instrumentShortName",
    "processingLevel",
    "beginningDateTime",
    "endingDateTime",
    "processingCenter",
    "processorName",

```

```
"processorVersion",
"processingDate",
"processingMode",
"orbitNumber",
"productClass",
"baselineCollection",
"productType",
"doi",
"identifier",
"parentIdentifier",
"acquisitionType",
"qualityStatus",
"processingBaseline"
]
},
"StacProperties": {
  "Id": "id",
  "ContentLength": "file:size",
  "OriginDate": "origin_date",
  "PublicationDate": "published",
  "Checksum": "file:checksum"
}
```

In the table below are described the footprint customization parameters of COPSI, contained in the */data/copsi/config/footprint_customization.json* file.

Any update to the file requires a refresh of the browser page with the COPSI web application.

Section/Parameter Name		Description
"customAttributesList"		Array of JSON objects, each of which contains the configurations for an attribute to be customized. Each JSON object property is detailed below
"customAttributesList"	"name"	The name of the OData Attribute which the value refers to.
	"value"	The value of the OData Attribute to be customized.
	"fillColor"	Fill color of the product footprints containing the customized attribute, in HEX value with alpha channel. Value format is #rrggbbaa.
	"borderColor"	Border color of the product footprints containing the customized attribute, in HEX value with alpha channel. Value format is #rrggbbaa.
	"hoverColor"	Fill color of the hovered product footprints containing the customized attribute, in HEX value with alpha channel. Value format is #rrggbbaa.



	"hoverBorderColor"	Border color of the hovered product footprints containing the customized attribute, in HEX value with alpha channel. Value format is #rrggbbaa.
--	--------------------	---

The footprint customization configuration file is empty by default.

An example of the footprint customization configuration file is reported below:

```
{
  "customAttributesList": [
    {
      "name": "instrumentShortName",
      "value": "SYNERGY",
      "fillColor": "#b3ffee64",
      "borderColor": "#b3ffeeff",
      "hoverColor": "#ddfff3aa",
      "hoverBorderColor": "#ddfff3ff"
    },
    {
      "name": "productType",
      "value": "IW_SLC__1S",
      "fillColor": "#ffaa8864",
      "borderColor": "#ffaa88ff",
      "hoverColor": "#ff0000aa",
      "hoverBorderColor": "#ff0000ff"
    },
    {
      "name": "operationalMode",
      "value": "IW",
      "fillColor": "#b3ffff64",
      "borderColor": "#b3ffffff",
      "hoverColor": "#00ffffaa",
      "hoverBorderColor": "#00ffffff"
    }
  ]
}
```

Appendix B – Keycloak configuration for COPSI

Since COPSI is the Graphical User Interface of a CSC OData Service, it shall use the same Keycloak Client of the related CSC OData Service.

This approach will ensure to have the same CSC OData Service Client Roles and moreover will avoid maintaining additional Keycloak Client Roles mapping for COPSI.

Although no specific client is required for COPSI, the following settings are needed to grant the proper functioning of COPSI.

In the CSC OData Service Client Section of the CSC OData Service Realm, please ensure that the following Valid Redirect URI is added among the Valid Redirect URIs list:

`http(s)://<copsi_domain>/copsi/*`

where <copsi_domain> should match with the CSC OData Service domain.

In addition, add the value '+' in the Web Origin property.



Click on the Save button to make the changes operational

The screenshot displays the Keycloak Admin Console interface. On the left, a dark sidebar contains a navigation menu with sections like 'Configure', 'Manage', and 'Tools'. The 'DHS' client is selected, and its configuration page is shown. The page has a top navigation bar with tabs for 'Settings', 'Keys', 'Roles', 'Client Scopes', 'Mappers', 'Scope', 'Revocation', 'Sessions', 'Offline Access', and 'Installation'. The 'Settings' tab is active, showing various configuration options for the 'DHS' client. These include text input fields for 'Client ID', 'Name', and 'Description'; toggle switches for 'Enabled', 'Always Display in Console', 'Consent Required', 'Standard Flow Enabled', 'Implicit Flow Enabled', 'Direct Access Grants Enabled', 'OAuth 2.0 Device Authorization Grant Enabled', and 'Front Channel Logout'; dropdown menus for 'Login Theme', 'Client Protocol', and 'Access Type'; and input fields for 'Root URL', 'Base URL', 'Admin URL', 'Logo URL', 'Policy URL', 'Terms of service URL', and 'Web Origins'. The 'Valid Redirect URIs' field contains a pattern: 'http(s)://<copssi_domain>/copssi/*'. The 'Web Origins' field has a '+' button to add more origins.

Figure 4 Keycloak DHS client settings for COPSI

Appendix C – HAProxy configuration for COPSI example

COPSI is a pure Front-End, designed and developed to access the API exposed by a CSC OData Service via HTTP. For this reason, in production environment, it needs a proxy to handle cross-origin requests from COPSI towards a target CSC OData Server.

In this example, we assume that:

- Both COPSI and the CSC OData Service are installed on the same VM
- An HAProxy is used as reverse proxy⁸. For more information about HAProxy installation, please visit <http://www.haproxy.org/>
- HAProxy listens on default port 80 and forward requests to COPSI and the CSC OData Service, acting as backends

HAProxy configuration file is located in `/etc/haproxy/haproxy.cfg`.

The frontend section of the file is reported below

```
frontend http
    bind *:80

    http-request add-header X-Forwarded-For %[src]
    http-request set-header X-Forwarded-Proto https if { ssl_fc }
    http-request set-header X-Forwarded-Proto http if !{ ssl_fc }

    http-request redirect scheme http drop-query append-slash if { path -m str /copsi }
    acl copsi-fe path_beg /copsi/
    use_backend copsi-fe1 if copsi-fe

    http-request redirect scheme http drop-query append-slash if { path -m str /copsi-be }
    acl copsi-be path_beg /copsi-be/
    use_backend copsi-be1 if copsi-be
```

The **green line** indicates that the proxy listens on the 80 port

The **blue lines** contain the definition of the forwarding protocol rules. If SSL is enabled, it forces HTTPS protocol instead of HTTP

The **orange lines** contain the forwarding rules defined for COPSI. The rule at first line adds a trailing slash to the URL if it ends with `/copsi`, to avoid errors with the COPSI base href (which is `/copsi/`). The rule at second and third lines indicates that the `copsi-fe1` backend will be used if the URL starts with `/copsi/`

The **purple lines** contain the forwarding rules defined for the CSC OData Server, and are similar to the ones defined for COPSI.

The backend section of the file is reported below

```
backend copsi-fe1
    balance roundrobin
    server copsi-fe 135.125.10.87:8090 check
    http-request set-path "%[path,regsub(^/copsi/,/)]"
```

⁸ Please note that a different reverse proxy can be used to meet the need.



```

backend copsi-be1
    balance roundrobin
    server copsi-be 135.125.10.87:8091 check
    http-request set-path "[%path,regsub(^/copsi-be/,/)]"

```

The **orange lines** refer to the COPSI backend (BE from HAProxy point of view) and indicate that COPSI is available at the IP and port specified and that the IP and port will be mapped to /copsi/ context

The **purple lines** refer to the CSC ODATA Server backend (BE from HAProxy point of view) and indicate that CSC ODATA Server is available at the IP and port specified and that the IP and port will be mapped to /copsi-be/ context

In simple terms, requests towards http(s)://<haproxy_host>/copsi/ will be forwarded to COPSI base URL, while requests towards http(s)://<haproxy_host>/copsi-be/ will be forwarded to CSC OData Server base URL.

Please consider that this is just an example of how to configure a reverse proxy in the context of Collaborative DHS Service and that it is possible to achieve the same results in more than one way.

The full content of haproxy.cfg file is reported below.

```

global
    log 127.0.0.1 local2 info
    maxconn      400000
    log          127.0.0.1 local2
    daemon
    stats socket /etc/haproxy/haproxysock1 mode 0777 level admin process 1
    # Default SSL material locations

defaults
    mode http
    log global
    log-format %{+Q}o\ %{+Q}ci\ -\ -\ [%t]\ %ST\ %B\ ""\ ""\ %cp\ %ms\ %ft\ %b\ %s\ %Tq\ %Tw\
    %Tc\ %Tr\ %Tt\ %tsc\ %ac\ %fc\ %bc\ %sc\ %rc\ %sq\ %bq\ %CC\ %CS\ %hrl\ %hsl\ %r
    option http-server-close
    option forwardfor
    timeout connect 1500s
    timeout client 3600s
    timeout server 3600s
    timeout check 120s
    errorfile 502 /etc/haproxy/errors/502.http
    errorfile 503 /etc/haproxy/errors/503.http

frontend http
    bind *:80

    http-request add-header X-Forwarded-For %[src]
    http-request set-header X-Forwarded-Proto https if { ssl_fc }
    http-request set-header X-Forwarded-Proto http if !{ ssl_fc }

    http-request redirect scheme http drop-query append-slash if { path -m str /copsi }
    acl copsi-fe path_beg /copsi/
    use_backend copsi-fe1 if copsi-fe

    http-request redirect scheme http drop-query append-slash if { path -m str /copsi-be }
    acl copsi-be path_beg /copsi-be/
    use_backend copsi-be1 if copsi-be

backend copsi-fe1
    balance roundrobin
    server copsi-fe 135.125.10.87:8090 check
    http-request set-path "[%path,regsub(^/copsi/,/)]"

```



```
backend copsi-bel
  balance roundrobin
  server copsi-be 135.125.10.87:8091 check
  http-request set-path "%[path,regsub(^/copsi-be/,/)]"
```



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