Data Browser - User Manual

Release 4.0

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ACRONYM AND GLOSSARY

.NET Core

Free and open source software development framework for different operating systems: Microsoft Windows, MacOS e Linux

IIS

Internet Information Services

Data Browser Hub WS

Data Browser Hub Web Services

CHAPTER

TWO

ABOUT

This User Manual describes the Data Browser project giving an overview of its functionalities from a technical and practical point of view.

All sections fully describe configuration, management and organization of each single component in order to make it easy for the reader to understand and know how to directly move inside the system.

2.1 License

European Union Public Licence V. 1.1

2.2 Product overview

The **Data Browser** project is a web portal for sharing, integrating and disseminating macro-data produced by Sistan or other statistical agencies which fulfill functions or services of public interest. The system implements a distributed data warehouse based on the **SDMX** standard ***(ISO IS-17369)*** which can be freely queried by external users via a web interface.

The strategic aim of this innovation is to:

- create a "network" of distributed databases;
- integrate datasets with the ones already available from the agencies;
- make sure that the created network contains statistical data of good quality;
- combine data and meta-data with a view to semantic interoperability;
- share international best practices on statistical dissemination systems.

The **"Hub"** architecture is based on the fact that the dissemination of data is carried out through the nodes of the system, each of which is managed by every individual entity participating in the network. Data publication on a system node, implies that the information entered is now available inside the network and easy to browse in the Hub.

The hub is, therefore, the only point from which data can be queried.

To get more specific about the application, from a more technical and implementation point of view, the Data Browser project is the result of the combination of the following functional components:

1. Administration component
2. Browsing component

3. Data Visualization component
4. Sharing component
5. Search component

This User Manual gives an overview of the functionalities of the Data Browser and explains in detail how to configure and manage the application and the nodes (Administration) and how to visualize, search and share data (Data Browsing) .

CHAPTER

THREE

INSTALLATION

In this section we will show the steps needed in order to install the application.

3.1 Pre-requisites

Operating system

The supported operating systems are the same ones supported by .NET 6. The minimum Microsoft Operating System supported is **Windows Server** 2012 R2 x64.

IIS

IIS has to be installed in a version supported by the used Windows operating system. Make sure that the *.json* and the *.less* MIME types are available, by performing the following steps:

- click on the IIS Web Site under which the application has to be installed;
- double click the *MIME Types*;
- ensure that **.json (application/json)**, **.less (text/css)** mime types are present;
- if they are missing, add them by right clicking and selecting "Add".

.NET 6

The **.Net 6 hosting bundle for IIS** has to be installed. In order to check if .NET 6 has been already installed, just access: *Control Panel/Programs/Programs and functions.* If .NET 6 has not been installed, it is possible to proceed as follows:

a. Download the package from here b. Install the .NET 6 package and all software dependencies

SSL CERTIFICATE

In order to publish the web services in https, an SSL certificate is needed. The instructions for creating such certificate depend on the certificate type and on the IIS version. Instructions for IIS are available here.

3.2 Prevent IIS Tilde Enumeration

The IIS Tilde vulnerability consists in the threat caused by the tilde character. It could happen that a remote hacker discloses files and folder names because of leakage of elements containing sensitive data (such as credentials, configuration files, maintenance scripts, etc..) as a result of exploiting this vulnerability. However, some simple steps could defend against these attacks. Instructions to prevent IIS Tilde Enumeration are as follows.

On the server that hosts IIS, considering for example that installation is been made under the *wwwroot* folder:

- open command prompt with administrator permissions
- disable creation of file names in 8.3 format with the command:
  - *fsutil 8dot3name set 1*
- remove all the names in the 8.3 format present in folders and subfolders (/s) concerned.
  - *fsutil 8dot3name strip /s C:\inetpub\wwwroot* (WARNING: don't run the command on the whole filesystem e.g.: C:, you may have unpredictable side effects on already installed programs)
- verify that all 8.3 filenames have been deleted
  - *fsutil 8dot3name scan /s C:\inetpub\wwwroot*

scan and strip parameters generate a log file (the path is visible in the command output) in which is possible to check concerned files and possible problems (e.g. files not processed due to lock by other applications).

3.3 Software package

PACKAGE DESCRIPTION

The software package ***databrowser_x.x.zip*** contains two folders ***app_first_installation*** and ***app_upgrade***.

Both contain the following folders:

- databrowser: configuration for client side.
- databrowserhub: configuration for server side.

app_first_installation is used for the first installation and includes: configuration files, customizations and application files.

app_upgrade is used to upgrade an already configured application. In this case, the package contains also translations but configurations are removed.

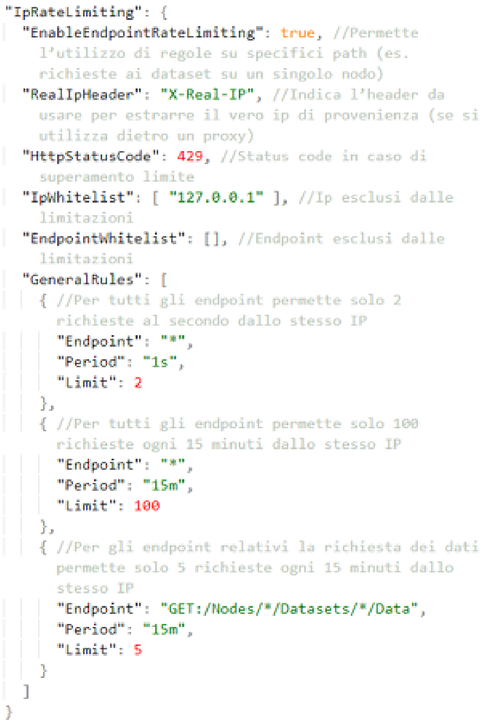
3.4 Configurations

In agreement with the latest architectural design patterns, the software architecture is organized into microservices:

- a "core" microservice, which encapsulates all the main functionality of the application
- a microservice dedicated to Dashboards
- a microservice dedicated to News management
- a microservice dedicated to the management of CustomPage
- a microservice dedicated to Widgets

All external microservices (e.g., news, custompage, . . .), while having an independent domain from the rest, communicate with the "Core" web API through the HTTP protocol, for various reasons, including verifying the tokens received for all requests that require special permissions (e.g., special permission is required for news creation for custompage creation, etc.).

Communication between the client and microservices is done in "direct" mode: in this approach, the client application makes requests directly to the API of the dedicated microservice (e.g., News, CustomPage, ..). In order to limit the number of requests to the microservices, the Open Source *AspNetCoreRateLimit* library was be installed https://github.com/stefanprodan/AspNetCoreRateLimit, which provides two configurable Middlewares to control the frequency of requests that clients can make to a Web API, based on the IP address or client ID. With each Middleware, multiple limits can be set for different scenarios, such as allowing an IP or client to make a maximum number of calls in a time interval. The Core's rate limiting configuration follows the one proposed by the AspNetCoreRateLimit library, which can be found in its documentation at https://github.com/stefanprodan/AspNetCoreRateLimit/wiki/IpRateLimitMiddleware#setup. The following is an example of minimal configuration of the rate limiting:



```
"IpRateLimiting": {
  "EnableEndpointRateLimiting": true, //Permette
    l'utilizzo di regole su specifici path (es.
    richieste ai dataset su un singolo nodo)
  "RealIpHeader": "X-Real-IP", //Indica l'header da
    usare per estrarre il vero ip di provenienza (se si
    utilizza dietro un proxy)
  "HttpStatusCode": 429, //Status code in caso di
    superamento limite
  "IpWhitelist": [ "127.0.0.1" ], //Ip esclusi dalle
    limitazioni
  "EndpointWhitelist": [], //Endpoint esclusi dalle
    limitazioni
  "GeneralRules": [
    { //Per tutti gli endpoint permette solo 2
      richieste al secondo dallo stesso IP
      "Endpoint": "*",
      "Period": "1s",
      "Limit": 2
    },
    { //Per tutti gli endpoint permette solo 100
      richieste ogni 15 minuti dallo stesso IP
      "Endpoint": "*",
      "Period": "15m",
      "Limit": 100
    },
    { //Per gli endpoint relativi la richiesta dei dati
      permette solo 5 richieste ogni 15 minuti dallo
      stesso IP
      "Endpoint": "GET:/Nodes/*/Datasets/*/Data",
      "Period": "15m",
      "Limit": 5
    }
  ]
}
```

As an alternative/add-on to this solution, one can limit the number of API accesses by acting on specific configurations of IIS, reverse proxy or firewall.

On the client side, there are two configuration files for all features implemented in microservices:

- modulesConfig.json, which allows enabling/disabling the functionality made available by the microservices

  ```
  {
    "modules": [
      {
        "id": "news",
        "enabled": true,
        "config": {
          "homepageNewsCount": 3
        }
      },
      {
        "id": "dashboard",
        "enabled": true
      },
      {
        "id": "custom-page",
        "enabled": true
      },
      {
        "id": "view-widgets",
        "enabled": true
      },
      {
        "id": "dashboard-widgets",
        "enabled": true
      }
    ]
  }
  ```

  For the view-widgets and dashboard-widgets modules, it is possible to set the parameter “coreDataRetrieverUrl” in order to configure the custom base url for calls to services. This parameter, if present, redirects calls for widgets to the indicated API otherwise the widget microservice will be used;

- config.json, which allows you to configure the URLs related to the microservices.

  ```
  {
    "baseURL": "http://dev.core.sister.it/api/core/",
    "externalServices": {
      "news": "http://dev.core.sister.it/api/news/",
      "customPages": "http://dev.core.sister.it/api/custompage/",
      "dashboard": "http://dev.core.sister.it/api/dashboard/",
      "view-widgets": "http://dev.core.sister.it/api/widget/",
      "dashboard-widgets": "http://dev.core.sister.it/api/widget/"
    }
  }
  ```

So as to ensure proper functioning regarding machine-to-machine interaction (e.g., clearing data cache from the Meta&DataManager environment, communication between microservices), it is mandatory to set a password for machine-to-machine interaction (which can be done by the superadmin from the databroser interface). Once set, the password will be saved and automatically acknowledged from the microservices. Furthermore, when handling upoload operations in databrowser (e.g. image upload, nodes import, etc) it is useful to configure the maximum size of allowed content lenght in order to avoid particular errors during these steps. In the web.config file, present in the core microservice, content limit can be set up by updating or adding the following section:

```
<system.webServer>
    ...
    <security>
        <requestFiltering>
            <requestLimits maxAllowedContentLength="52428800" />
        </requestFiltering>
    </security>
    ...
</system.webServer>
```

News microservice configuration

In the appsettings.json file of the news microservice, it is possible to set database configurations related to the news. In particular:

```
"Database": {
  "DbType": "SQLite",
  "ConnectionString": "Data Source=DB/NewsDB.sqlite;Pooling=False;",
  "UseMigrationScript": true
}
```

where:

- *DBType* is the server storage's type.
- *ConnectionString* is the path of the sqlite database concerning the storage directory and the "1" identifies Pooling=False.
- *UseMigrationScript true/false* indicates if the new version of the software can automatically update the used database (recommended value is true).

In case SQL server support (alternative to SQLite) is adopted configuration will change as follows:

```
"Database": {
  "DBType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  "UseMigrationScript": true
},
```

Custom page microservice configuration

The following code extract from appsettings.json, shows configurations related to the custom page microservice.

```
{
  "SWAGGER": false,
  "AuthServiceConfig": {
    "Url": "http://localhost/databrowserhub/api/core"
  },
  // SqlLite Database configuration
  "Database": {
    "DbType": "SQLite",
    "ConnectionString": "Data Source=DB/CustompageDB.sqlite;
↪Pooling=False;",
    "UseMigrationScript": true
  },
  // SqlServer Database configuration
  //  "Database": {
  //    "DbType": "SqlServer",
  //    "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  //    "UseMigrationScript": true
  //  },
  "General": {
    "CORS": {
      "Enable": false
    }
  }
}
```

Widgets microservice configuration

The following code extract from appsettings.json, shows configurations related to the widgets microservice.

```
{
  "SWAGGER": false,
  "AuthServiceConfig": {
    "Url": "http://localhost/databrowserhub/api/core"
  },
  // SqlLite Database configuration
  "Database": {
    "DbType": "SQLite",
    "ConnectionString": "Data Source=DB/WidgetDB.sqlite;Pooling=False;
↪",
    "UseMigrationScript": true
  },
  // SqlServer Database configuration
  //  "Database": {
  //    "DbType": "SqlServer",
  //    "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  //    "UseMigrationScript": true
  //  },
  "General": {
```

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```
    "CORS": {
      "Enable": false
    }
  }
}
```

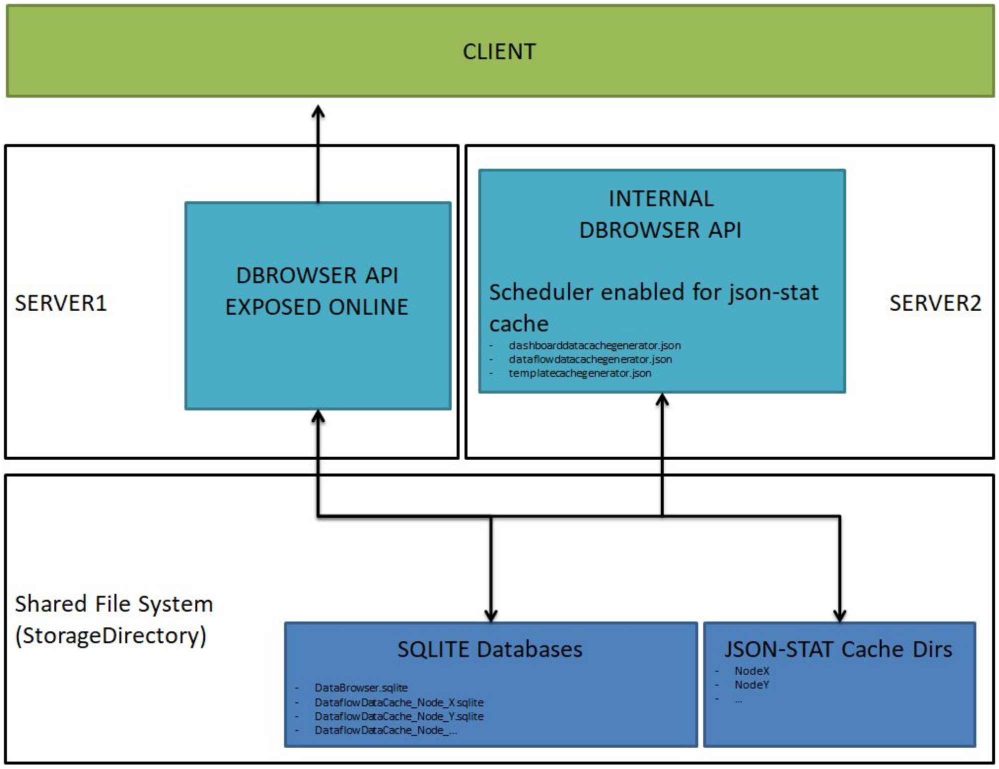
Dashboards microservice configuration

The following code extract from appsettings.json, shows configurations related to the dashboards microservice.

```
{
  "SWAGGER": false,
  "AuthServiceConfig": {
    "Url": "http://localhost/databrowserhub/api/core"
  },
  // SqlLite Database configuration
  "Database": {
    "DbType": "SQLite",
    "ConnectionString": "Data Source=DB/DashboardDB.sqlite;␣
↪Pooling=False;",
    "UseMigrationScript": true
  },
  // SqlServer Database configuration
  //  "Database": {
  //    "DbType": "SqlServer",
  //    "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  //    "UseMigrationScript": true
  //  },
   "ImportNode": {
    "Version": 3
  },
  "General": {
    "CORS": {
      "Enable": false
    }
  }
}
```

Storage Directory

It is possible to configure the path of the base directory dedicated to data (databases and cache files (json-stat format)); this will potentially allow 2 installations of Data Browser, one dedicated to front-end and one dedicated to cached data update, that share database and cache files.


CLIENT
SERVER1
DBROWSER API
EXPOSED ONLINE
INTERNAL
DBROWSER API
Scheduler enabled for json-stat cache
- dashboarddatacachegenerator.json
- dataflowdatacachegenerator.json
- templatecachegenerator.json
SERVER2
Shared File System
(StorageDirectory)
SQLITE Databases
- DataBrowser.sqlite
- DataflowDataCache_Node_X.sqlite
- DataflowDataCache_Node_Y.sqlite
- DataflowDataCache_Node_...
JSON-STAT Cache Dirs
- NodeX
- NodeY
- ...

This configuration is optional: if no base directory for storage is set, the software will automatically create a directory in the installation root directory.

```
"StorageDirectory": "C:/StorageDirectory"
```

DataflowDataCache

In this part of the configuration, the user defines all settings regarding the storage of the cache files (json-stat format) for dataflow data. All configuration times regarding cache, are specified in UTC.

```
"DataflowDataCache": {
  "Type": "NoSql",
  "ConnectionString": "Data Source=DB\\DataflowDataCache.sqlite;
↪Pooling=False;",
  "IsEnable": true,
  "SaveDataOnFile": true,
  "SavedDataFilePath": "_DataflowDataCacheContainer",
  "MaxSize": 12999, //Mb
  "Expiration": -1 //Never
},
```

Specifically:

- *Type* is the server storage's type (supports only "NoSql").
- *ConnectionString* specifies the path of the sqlite database.
- *IsEnable (true/false)* indicates if the Data Browser can use (or not use) the cache.
- *SaveDataOnFile* specifies if the jsonstat will be saved in a separated file.

- *Expiration* indicates the default value, in seconds, for the validity of the jsonstat in cache. If value is 0 (zero), cache is never generated. If the value is -1 cache never expires. At application level, it is possible to disable cache by setting the flag IsEnable = false. By default Expiration is always set to -1

In case SQL server support (alternative to SQLite) is adopted configuration will change as follows:

```
"DataflowDataCache": {
  "Type": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  "IsEnable": true,
  "SaveDataOnFile": true,
  "SavedDataFilePath": "_DataflowDataCacheContainer",
  "MaxSize": 12999, //Mb
  "Expiration": -1 //Never
},
```

CatalogCache

In this part of the configuration, the user defines expiration for catalogs. All configuration times regarding cache, are specified in UTC.

```
"CatalogCache": {
    "Expiration": -1
  },
```

It indicates the default value, in seconds, for the validity of the jsonstat in cache. If value is 0 (zero), cache is never generated. If the value is -1 cache never expires. By default Expiration is always set to -1.

Database

In this part of the configuration, the user defines all settings necessary for the storage of information regarding the Data Browser (nodes, dashboards, views, templates, users and so on).

```
"Database": {
    "DbType": "SQLite",
    "ConnectionString": "Data Source=DB/DataBrowserDB.sqlite;
↪Pooling=False;",
    "UseMigrationScript": true
},
```

Specifically:

- *DBType* is the server storage's type.
- *ConnectionString* is the path of the sqlite database concerning the storage directory and the "1" identifies Pooling=False.
- *UseMigrationScript true/false* indicates if the new version of the software can automatically update the used database (recommended value is true).

In case SQL server support (alternative to SQLite) is adopted configuration will change as follows:

```
"Database": {
  "DBType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  "UseMigrationScript": true
},
```

No other settings will be needed.

Geometry Database

In this part of the configuration, the user defines the path of the database needed for the default geometries. In the package provided, for example purposes, there are geographical data referring to Eurostat NUTS and ISTAT Italian municipalities.

```
"GeometryDatabase": {
  "DbType": "SQLite",
  "ConnectionString": "Data Source=DB/Geometry.sqlite;"
},
```

It is also possible to customize the geometries that overwrite the default configuration, simply by adding in the same directory some databases in the same format as "GeometryDatabase", whose name must respect the following format: Geometry_Node_{NodeID}.sqlite

The geographical database in sqlite is structured through a dedicated database, containing the table "Geometry" with the following fields:

- *UniqueId*: unique numeric identifier (mandatory)
- *Id*: unique identifier, used to make the join with codelist codes (mandatory)
- *Label*: territory label; this information is optional and not used by the application
- *Country*: country identifier; this information is optional and not used by the application
- *NutsLevel*: NUTS level; this level is used by the application. It is a string which can be translated by the client, whose key must be in the format "nutsLevel{NutsLevel}". Here a possible example:

  ```
          .
          .
          .
  "nutsLevel0": "Country",
  "nutsLevel1": "Territorial divisions",
  "nutsLevel2": "Regions",
  "nutsLevel3": "Province",
  "nutsLevel4": "Municipality",
          .
          .
          .
  ```

- *Source*: data source; this information is optional and not used by the application
- *WKT*: territory geometry in WKT format; for more details about the format see: https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry
- *AlternativeIds*: alternative identifiers for the current territory. In case the same territory is present in the codelist with different identifiers, in order to avoid adding more rows with

the same geometry, in this field it is possible to insert the concatenation of the identifiers so that the system can receive them.

If the user needs to specify more than one field, the “pipe” | separator must be inserted between the values.

In case SQL server support (alternative to SQLite) is adopted, configuration will change as follows:

```
"GeometryDatabase": {
  "DbType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True"
},
```

CORS policies

In this part of the configuration, the user decides if CORS policies must be enabled or not (for more information on CORS check https://en.wikipedia.org/wiki/Cross-origin_resource_sharing).

```
"General": {
  "CORS": {
    "Enable": true
  },
```

External and internal rules

```
"EndPointResponseLogForDebug": false,
```

If true and log level is “debug”, all responses from NSI will be saved on log file.

```
"InternalRestUrl": "",
```

Specifies the URL used for calling the DataBrowserAPI from the installation server.

```
"ExternalRestUrl": "http://localhost/databrowser/api/core",
```

Specifies the URL used for calling the DataBrowserAPI from outside the installation server.

```
"ExternalClientUrl": http://localhost/databrowser
```

Specifies the URL used for calling the Data Browser frontend from outside the installation server.

Authentication

Some functionalities, exposed via API, are accessible by all types of users (anonymous and authenticated), others, on the other hand, are subject to profiling. In this part of the configuration, settings regarding login for authenticated users are defined.

```
"Authentication": {
  "IsActive": true,
  "Key": "8CF07358F9BB4CA98C0EE4D26A97858C",
  "Issuer": "DataBrowserIssuerApi",
  "Audience": "DataBrowserApiUser",
```

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```
"JwtTokenLifeTime": 100, //Minute
"DataProtectionTokenLifespan" : 10, //Minute
"EnableRefreshToken": true,
"EnableAuditLogin": false,
"AuditOptions":
{
  "TryLoginMax": 0,
  "TryLoginTime": 60, //Minute
  "DelayLogin": 2000, //Millisecond
}
```

Specifically:

- *IsActive* if set to false, all APIs will be accessible from anonymous users.
- *Key* represents the symmetric security key which is used for the generation of the hash token needed for login. The usage of the key is necessary for security encryption.
- *Issuer* identifies the principal that issued the token.
- *Audience* identifies the recipients that the token is intended for. If the principal processing the claim does not identify itself with a value in the "audience" claim when this claim is present, then the JWT MUST be rejected.
- *JwtTokenLifeTime* specifies the time to live of the generated token.
- *DataProtectionTokenLifespan* is the validity time of the token generated during a user's registration and it indicates the time the user has to confirm the email. Default value is 120 minutes.
- *EnableRefreshToken* tells the system to regenerate a new token from cookie instead of recalling token with user and password.
- *EnableAuditLogin* saves all attempts to login by all user on database. Information are saved in the AspNetUsersAudit table of the applicative database.
- *AuditOptions* including:
  - *TryLoginMax* sets the maximum number of login before activating the system of delay response.
  - *TryLoginTime* sets time (minutes) in which incorrect logins are considered.
  - *DelayLogin* (ms) specifes the time of delay of login response (time is incremented by this value for each invalid login).

It is important to point out that for the AuditOptions (TryLoginMax, TryLoginTime, and DelayLogin) parameters to be received, the EnableAuditLogin parameter must be set to "true".

Incorrect login blockage

In the event of an attempt to login the system with an existing user, after a configurable number of incorrect attempts, access will be blocked for a configurable period of time in order to prevent brute force attacks. The mechanism is implemented in-memory and resets for all at each application startup, or on the individual user in the event that the password is successfully reset. In addition, it will not retain the access history beyond the period of user lockout in order to avoid memory space problems. In case of an attempt with a user who does not exist in the system, this will obviously always be rejected without any lockout mechanism. In any case, for the cases which include valid user with wrong credentials, valid user blocked or invalid user, the error message will always be the same, i.e., a generic "wrong credentials", in order to not allow an attacker to figure out whether a user is or is not registered in the system and also to avoid the unsuspecting user from knowing that the system has been attacked with his login, alarming him unnecessarily. The user who has been locked out without his knowledge will be led to try a password reset, as well as guided by an appropriate message about it that will always be visible or associated with the incorrect credentials message. The configuration settings for blocking options are included in the appsettings.json file of the "core" web service. The following code extract shows such configuration:

```
"Authentication": {
  ...
  "LoginAttempts": {
    "BlockAfterFailures": 5,
    "BlockBaseDurationInSeconds": 60,
    "BlockLinearMultiplier": 1,
    "BlockMaxDurationInSeconds": 86480
  }
}
```

Specifically:

- *BlockAfterFailures* indicates the number of attemps after which the user will be blocked;
- *BlockBaseDurationInSeconds* indicates the block base duration in seconds.
- *BlockLinearMultiplier* is used to calculate the block duration increment for each successive failure, given by BlockBaseDurationInSeconds*BlockLinearMultiplier
- *BlockMaxDurationInSeconds* indicates the maximum block duration time in seconds

To further clarify the operation, the following observations can be considered:

- the block is triggered when the numbers of attempts reaches the value of "BlockAfterFailures"
- the block starts running immediately
- the block is not extended if an incorrect attempt occurs during the block (i.e., in the default scenario, attempt 6 is the first attempt made 60s after attempt 5, any attempts made before the block expires are ignored)

The combination of these 3 points means that the block may appear shorter than expected if tested incorrectly, for example:

- fifth attempt at 16:00.00, the user is blocked until 16:01.00
- sixth attempt, which is believed to be the first to block at 16:00.15
- any further attempts before 16:01.00 do not lengthen the block, regardless of whether the password is correct
- the first attempt after 16:01.00 will allow access if correct or will lengthen the block to 16:03.00 (or 16:02.00 with the old formula) if incorrect

Refresh cookie options

In this part of the configuration, the user defines the cookie's settings to refresh the token.

```
"RefreshCookieOptions": {
  "HttpOnly": true,
  "SameSite": "Lax", //null, "Unspecified", "None", "Lax", "Strict"
```

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```
  "RefreshTokenLifeTime": 14400, //Minute
  "Secure": true
```

Specifically:

- *HttpOnly* helps mitigating the risk of client side script accessing the protected cookie. It is recommended to always set it to true.
- *SameSite* allows you to declare if the cookie should be restricted to a first-party or same-site context. *Lax* is the default value and it ensures that users have reasonably robust defense against some classes of cross-site request forgery (CSRF) attacks. If it is necessary to use crossdomain cookie, set it to "None" and use an Https connection. For all possibile values of the SameSite parameter, check https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers/Set-Cookie/SameSite
- *RefreshTokenLifeTime* defines validation time (in minutes) of the cookie.
- *Secure* is used to prevent cookies from being observed by unauthorized parties due to the transmission of the cookie in clear text. True is the recommended value for its setting.

User policy for password

In this part of the configuration, the user defines settings for password policy and mail in order to enable the user to create or change password.

```
"UserPolicy": {
  "PasswordRequiredLength": 8,
  "PasswordRequireNonAlphanumeric": true,
  "PasswordRequireLowercase": true,
  "PasswordRequireUppercase": true,
  "PasswordRequireDigit": true
}
```

For the creation/change password configuration, it is necessary to set SMTP information important for email exchange from DataBrowserAPI.

```
"Mail": {
  "Smtp": {
    "Host": "",
    "Port": 1234,
    "Secure": false,
    "Username": "user",
    "Password": "pass"
},
"DefaultMail": "info@databrowser",
"Templates": {
  "ConfirmEmail": {
    "Sender": "",
    "Subject": "",
    "Message": "config/Template/confirmationEmail.html"
  },
  "ResetPassword": {
    "Sender": "",
    "Subject": "Recovery Password",
    "Message": "config/Template/recoveryPassword.html"
  }
```

In particular:

- *Mail* contains the information needed to configure the SMTP server for email exchange in case of recovery/change password necessity. In particular, the “Secure” field specifies if there is a SSL protocol or not.
- *DefaultMail* is the default sender’s email address.
- *Template* contains all html templates used for sending email. The ones available relate to ConfirmEmail and ResetPassword. In this section, “Subject” is the subject of the email sent to confirm user’s email or reset his password. “Message” is the body of the email sent in html format. Usually the path to the html is specified. In this case the folder must be inside of DataBrowserAPI folder. This message can be overwritten by UserLang used from request. If the folder contains the config/Template/recoveryPassword.{UserLang}.html, that will be used as file for the message. The file is in HTML/CSS format and it can be modified as needed from the one delivered in the installation package.

New Users Mail Verification

If a new user signs up to the platform, he will receive a confirmation email which enables him to complete the registration. Mail verification can be set in the appsettings.json file and depending on the configuration, confirmation can also be avoided.

```
"SkipNewUsersMailVerification": false
```

False is the default value, this means that the new user will recive the confirmation email. When set to *True*, new registrations will have the email confirmed automatically (i.e., they will skip the email confirmation process).

Disable registration

It is possible to disable the possibility for an external user to sign up and create an account independently. This configuration can be set in the appsettings.json file by changing the “DisableRegistration” option’s value.

```
"DisableRegistration": true
```

If this option is missing or set to false registration is disabled.

Swagger

In case this option is set to true the user can see the requests defined in Data Browser and that can be sent to the application. If this option is missing or set to false swagger is disabled.

```
"Swagger": true,
```

Special cache management

When talking about *cache* we refer to data stored so that future requests for that data can be served faster; the data stored in a cache might be the result of an earlier computation or a copy of data stored elsewhere. In this application, cache is very important especially when considering filterable dashboards that hold territorial dimensions and allow users to query results by changing these dimensions. For this reason timing is very important and a key component for a responsive and functional application. In order to manage these requests, we consider services for handling cache regeneration depending on whether we are considering filterable or non-filterable dashboards (see section *Dashboards* for more information). In particular, in the appsettings.json file a scheduler is defined in which a timer is set to specify the interval to check if there is any work to do (usually five minutes is the recommended interval 00:05:00). This scheduler picks the four files present in the config folder (config\dashboarddatacachegenerator.json, config\dataflowdatacachegenerator.json, config\cataloginmemorycachegenerator.json, config\templatecachegenerator.json) and launchs services. All configuration times regarding cache, are specified in UTC.

```
"Scheduler": {
  "IsEnable": true,
  "Timer": "00:05:00",
}
```

In particular:

DashboardDataCacheGenerator refreshes all dataflows assigned to static not-filterable views in a dashboard.

The service settings are specified in file: config\dashboarddatacachegenerator.json which contains the following lines:

```
{
  "DashboardDataCacheGenerator": {
    "IsEnable": true,
    "StartTime": "20:30:00",
    "Days": [ 0, 1, 2, 3, 4, 5, 6],
  }
}
```

In particular:

- *IsEnable* is true if the service is enabled.
- *StartTime* defines the starting time.
- *Days* indicates the day the worker runs (0 = Sunday and 6 = Saturday).

CatalogInMemoryCacheGenerator refreshes cache's catalog for all active nodes.

The service settings are specified in file: config\cataloginmemorycachegenerator.json which contains the following lines:

```
{
  "CatalogInMemoryCacheGenerator": {
    "IsEnable": true,
    "StartTime": "10:15:00",
    "Days": [ 0, 1, 2, 3, 4, 5, 6 ]
  }
}
```

In particular:

- *IsEnable* is true if the service is enabled.
- *StartTime* defines the starting time.
- *Days* indicates the day the worker runs (0 = Sunday and 6 = Saturday).

TemplateCacheGenerator regenerate the cache on the data for all templates present.

The service settings are specified in file: config\templatecachegenerator.json which contains the following lines:

```
{
  "TemplateCacheGenerator": {
```

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```
    "IsEnable": false,
    "StartTime": "13:20:00",
    "Days": [ 0, 1, 2, 3, 4, 5, 6 ]
  }
}
```

In particular:

- *IsEnable* is true if the service is enabled.
- *StartTime* defines the starting time.
- *Days* indicates the day the worker runs (0 = Sunday and 6 = Saturday).

DataflowDataCacheGenerator refreshes all dataflows configured in the DataflowDataCache section config.

The service settings are specified in file: config\dataflowdatacachegenerator.json which contains the following lines:

```
{
  "DataflowDataCacheGenerator": {
    "IsEnable": true,
    "StartTimer": "20:30:00",
    "Days": [ 0, 1, 2, 3, 4, 5, 6],
    "DataflowsRefresh": [
      {
        "Id": "Agency+Id+Version",
        "Dimensions": [ "DimensionId" ],
        "NodeCode": "NodeId",
        "GruopByNumber": {
          "GroupSize": 20
        }
      }
   }
}
```

In particular:

- *DataflowsRefresh* is an array that contains the list of all dataflows that need to be refreshed in cache.
- *Dimensions* can have only one value and defines the dimension's ID to refresh.
- *NodeCode* defines the node's ID that contains the dataflowid to refresh.
- *GroupByNumber* contains the configuration for grouping the number of the items of the dimensions' codelist to get the data that needs to be inserted in cache.
- *GroupSize* defines the number of codes that will be send for each request to the endpoint.

CriteriaCache refreshes cache of the *Partial Codelist*.

To enable Partial Codelist caching, the "CriteriaCache" section must be added to the appsettings.json file, as shown in the example below:

```
"CriteriaCache": {
  "DbType": "SQLite",
```

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```
  "ConnectionString": "Data Source=DB/CriteriaCache.sqlite;
↪Pooling=False;",
  "Enable": true
},
```

In particular:

- *DbType* is the database provider type (SQLite for example)
- *ConnectionString*: connection string to the database

In case SQL server support (alternative to SQLite) is adopted, configuration will change as follows:

```
"CriteriaCache": {
  "DbType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  "Enable": true
},
```

ArtefactCache refreshes cache of the *Partial Codelist*.

In order to minimize the exchanges with the NSI WS, a persistent (in-database) cache is introduced for the following artefacts: Dataflow, Dsd, Codelist, Concept Scheme. This cache will come into play whenever the databrowser needs to request such an artifact and any supported artifacts referenced by it. To enable this caching, the “ArtefactCache” section must be added to the appsettings.json file, as shown in the example below:

```
"ArtefactCache": {
  "DbType": "SQLite",
  "ConnectionString": "Data Source=DB/ArtefactCache.sqlite;
↪Pooling=False;",
  "Enable": true
},
```

In particular:

- *DbType* is the database provider type (SQLite for example)
- *ConnectionString*: connection string to the database

In case SQL server support (alternative to SQLite) is adopted, configuration will change as follows:

```
"ArtefactCache": {
  "DbType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True",
  "Enable": true
},
```

Tracing Query Database

In order to keep track of all queries towards the NSIWS, the “TracingDatabase” section must be added to the appsettings.json file, as shown in the example below:

```
"TracingDatabase": {
  "DbType": "SQLite",
  "DbPath": "DB/TracingQuery.sqlite"
},
```

In particular:

- *DbType* is the database provider type (SQLite for example)
- *DbPath*: is where the sqlite element is saved.

In case SQL server support (alternative to SQLite) is adopted, configuration will change as follows:

```
"TracingDatabase": {
  "DbType": "SqlServer",
  "ConnectionString": "Data Source=data_source;Initial␣
↪Catalog=database_name;Persist Security Info=True;User ID=user;
↪Password=password;TrustServerCertificate=True"
},
```

Logconfig

In order to configure logs it will be sufficient to set the parameters in the file “datarowser-hub/config/base/logconfig.xml”. This configuration allows the user to distinguish web application logs from those of the scheduled services. Possible log’s level that can be set are: Debug, Information, Warning, Error.

Export Excel

In this part of the configuration, the user can define all the settings required for the correct and useful functioning of the export to Excel for multidimensional tables.

```
"Export": {
  "MaxExcelSheets": 50
  "MaxColsPerSheet": 100,
  "MaxRowsPerSheet": 1000,
  "CsvSeparator": ",",
  "CsvTextQualifier": "'",
  "CsvMaxRows": 50000
},
```

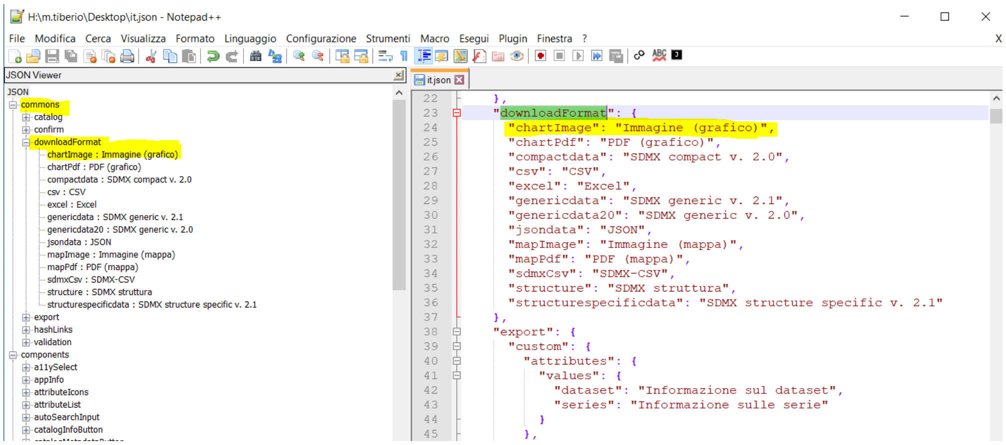
Specifically:

- *MaxExcelSheets* is the maximum number of sheets to be created.
- *MaxColsPerSheet* specifies the maximum number of columns per sheet.
- *MaxRowsPerSheet* specifies the maximum number of rows per sheet.
- *CsvSeparator* specifies the separator to use when exporting a csv file.
- *CsvTextQualifier* specifies the text qualifier to use when exporting a csv file.
- *CsvMaxRows* specifies the maximum number of rows exportable in a csv file.

Having to manage the occupation of resources on the server and waiting times for the end user, these configurations make it possible to limit the number of objects that can be exported by the user. The limitations set are by default but can be modified according to specific needs.

Ability to customize translations for an installation

The translation customizations, in json format, must be deposited in the databrowser/config/i18n_custom/ folder (one file per language); each translatable string has a unique path and identifier; for a custom translation to be correctly transposed, exactly the same path/identifier present in the original translations file must be used in the custom translation file. For example, if you wanted to customize in Italian the only label present in the chart download as an image (”Image (chart)” , highlighted in the following screenshot



```
JSON
commons
  catalog
  confirm
  downloadFormat
    chartImage : Immagine (grafico)
    chartPdf : PDF (grafico)
    compactdata : SDMX compact v. 2.0
    csv : CSV
    excel : Excel
    genericdata : SDMX generic v. 2.1
    genericdata20 : SDMX generic v. 2.0
    jsondata : JSON
    mapImage : Immagine (mappa)
    mapPdf : PDF (mappa)
    sdmxCsv : SDMX-CSV
    structure : SDMX struttura
    structurespecificdata : SDMX structure specific v. 2.1
  export
  hashLinks
  validation
components
  a11ySelect
  appInfo
  attributeIcons
  attributeList
  autoSearchInput
  catalogInfoButton
```

```
    },
    "downloadFormat": {
      "chartImage": "Immagine (grafico)",
      "chartPdf": "PDF (grafico)",
      "compactdata": "SDMX compact v. 2.0",
      "csv": "CSV",
      "excel": "Excel",
      "genericdata": "SDMX generic v. 2.1",
      "genericdata20": "SDMX generic v. 2.0",
      "jsondata": "JSON",
      "mapImage": "Immagine (mappa)",
      "mapPdf": "PDF (mappa)",
      "sdmxCsv": "SDMX-CSV",
      "structure": "SDMX struttura",
      "structurespecificdata": "SDMX structure specific v. 2.1"
    },
    "export": {
      "custom": {
        "attributes": {
          "values": {
            "dataset": "Informazione sul dataset",
            "series": "Informazione sulle serie"
          }
        },
```

it will be sufficient to create, in the folder databrowser\config\i18n_custom\ , a new json file (en.json) as follows:

```
{
 "commons" :
 {
  "downloadFormat" :
  {
   "chartImage" : "PNG (Chart)"
  }
 }
}
```

3.5 Customizing Hub and nodes styles

In the client folder, when starting configuration of the application, it is also possible to set a personalization of the styles of the application itself or a single node inside the application. User can perform this operation by changing the appConfig.json and custom.css files inside the databrowser\config folder. The following sections show examples on how to customize parts of the application modifing the previously mentioned files.

ENTIRE HUB PERSONALIZATION

It is possible to customize colors for principal structures (Header banner background, principal application buttons, text color in databrowsing windows) and/or for secondary structures (background color in buttons in hub’s main page, rendering messages when opening files or applying configurations, loading bars). The change should be made in the appConfig.json file. Example:

```
"colorSchemes": {
        "hub": {
                "palette": {
                        "text": {
                                "primary": "#00295a"
                        },
                        "primary": {
                                "main": "#00295a",
                                "contrastText": "#ffffff"
                        },
                        "secondary": {
                                "main": "#f8a81e",
                                "contrastText": "#00295a"
                        }
                }
        },
```

SINGLE NODE PERSONALIZATION

The following json code (included in the appConfig.json file) sets style's personalization to a node which ID is "CUSTOM". In particular considers the main and secondary colors of the structures. As in the previous section, structure customized are always the same but in this case, changes are applied only to a specific node. So new colors impact the Header banner background color, the principal application buttons, the text color in databrowsing windows for the main structures, and background color in buttons in node's main page, rendering messages when opening files or applying configurations, loading bars on the secondary structures.

```
"nodes": {
        "CUSTOM": {
                "palette": {
                        "text": {
                                "primary": "#00295a"
                        },
                        "primary": {
                                "main": "#00295a",
                                "contrastText": "#ffffff"
                        },
                        "secondary": {
                                "main": "#f8a81e",
                                "contrastText": "#00295a"
                        }
                }
        }
}
```

It is also possible to set custom colors to tables of a specific node. In the next code example (taken from the custom.css file), colors of borders and background of cells are modified for the node with ID "CUSTOM". Every line of code modifies a specific part of the table (borders, rows and columns).

```
/*****EXTERNAL TABLE BORDER (red border) ************/
/* Top border first row of the table */
#node__CUSTOM thead tr:first-child th.c{
        border-top-color: #da0d14 !important;
```

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```
}

/* Left border first column of the table (head section) */

#node__CUSTOM thead tr th.c.cfm.ch.cl0{
        border-left-color: #da0d14 !important;
}

/* Left border first column of the table (body section) */

#node__CUSTOM tbody tr th.c.cfm.csh.cl0{
        border-left-color: #da0d14 !important;
}

/* Right border last column of the table */

#node__CUSTOM .c.c-rb{
        border-left-color: #da0d14 !important;
}

/* Top border of the last row (not visible with data) of the table */

#node__CUSTOM .c.c-bb{
        border-top-color: #da0d14 !important;
}


/***** END EXTERNAL TABLE BORDER ****************/

/***** TABLE'S BODY ROW BACKGROUND *************/

/* Alternating rows color (grey even and white odd)*/
#node__CUSTOM tbody tr:nth-child(even) td.c.cfm{
        background-color: #dcdcdc !important;
}


/******* END TABLE'S BODY ROW BACKGROUND *********/

/******* TABLE'S LAYOUT **************/

/*Background color and text color
for dimensions set in rows (dimensions' titles)*/

#node__CUSTOM thead tr[data-row-key="hh"] th.c.cfm.ch{
        background: #fff !important;
        color: #000000;
        text-decoration: underline;
}

/*Background color for dimensions set in rows
(cells componing rows with no titles)*/
```

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```
#node__CUSTOM thead tr[data-row-key="hh"] th.c.cfm.csh{
        background: #fff !important;
}

/*Background color and text color
for dimensions set in sections */

#node__CUSTOM tbody th.c.cfm.cs{
        background-color: #da0d14 !important;
        color: #ffffff;
}

/*Background color and text color for dimensions
set in columns (dimensions' titles)*/

#node__CUSTOM .c.cfm.ch{
        background: #aaa !important;
        color: #000000;
        text-decoration: underline;
}

/*Background color and text color for dimensions
set in columns (dimensions' single items)*/

#node__CUSTOM thead th.c.cfm.csh{
        background: #aaa !important;
        color: #ffffff;
}
```

Last but not least, user can also change the map colors in the application or just in a specific node. In case of node customization, remember to always write the node's ID (like in the example "CUSTOM").

```
.map__start-color {
    color: white;
}
.map__end-color {
    color: black;
}
.map__node__CUSTOM__start-color {
    color: orange;
}
.map__node__CUSTOM__end-color {
    color: red;
}
```

Another important functionality contained in the Data Browser application is the web accessibily. It is also possible to configure a personalized style of the page, when this functionality is enabled, by changing the appropriate configuration in the appConfig.json file.

```
"a11yColorSchemes": {
```

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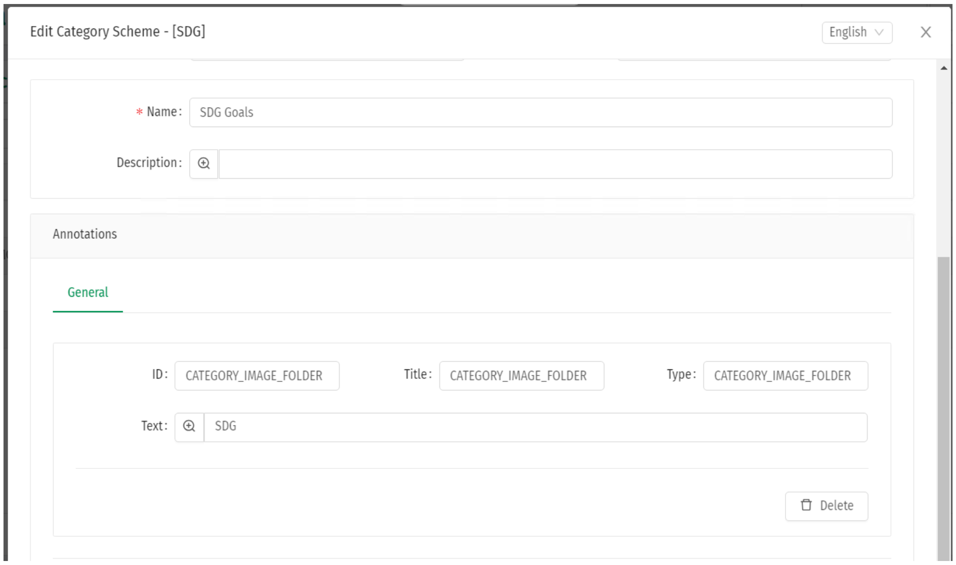
```
        "hub": {
                "palette": {
                        "text": {
                                "primary": "#00295a"
                        },
                        "primary": {
                                "main": "#00295a",
                                "contrastText": "#ffffff"
                        },
                        "secondary": {
                                "main": "#f8a81e",
                                "contrastText": "#00295a"
                        }
                }
        },
        "nodes": {
                "NODE_CODE": {
                        "palette": {
                                "text": {
                                        "primary": "#00295a"
                                },
                                "primary": {
                                        "main": "#00295a",
                                        "contrastText": "#ffffff"
                                },
                                "secondary": {
                                        "main": "#f8a81e",
                                        "contrastText": "#00295a"
                                }
                        }
                }
        }
}
```

CUSTOMIZING THE CATEGORIES IMAGES OF A NODE

It is also possible to assign images to the categories of a node and to personalize them. Two possible solutions can be perfomed in order to achieve this final result:

- images can be stored in the server folder ”***\databrowserhub\api\core\wwwroot\images\categories[NODE_ID]***” (where NODE_ID is the alphanumeric node identifier assigned during the creation step). In the databrowser, the respective node with categories images, must be configured to show categories in grid mode and not list (in the *node configuration*, under the VIEW tab, the *“Catalogue navigation mode”* field must contain *Card* as value. From this same setting page it is also possible to hide or show the category label).
- use the folder “***\databrowserhub\api\core\wwwroot\images\default_categories***” containing images for use in specific category schemes. To associate a folder with a category scheme, the user can use the CATEGORY_IMAGE_FOLDER annotation on the Meta&Data Manager side editing the category scheme, in which it is specified the name of the folder present in “default_categories”. The association between images and categories is made by matching image name and category id. The following image shows an example of the annotation



Edit Category Scheme - [SDG]

* Name: SDG Goals

Description:

Annotations

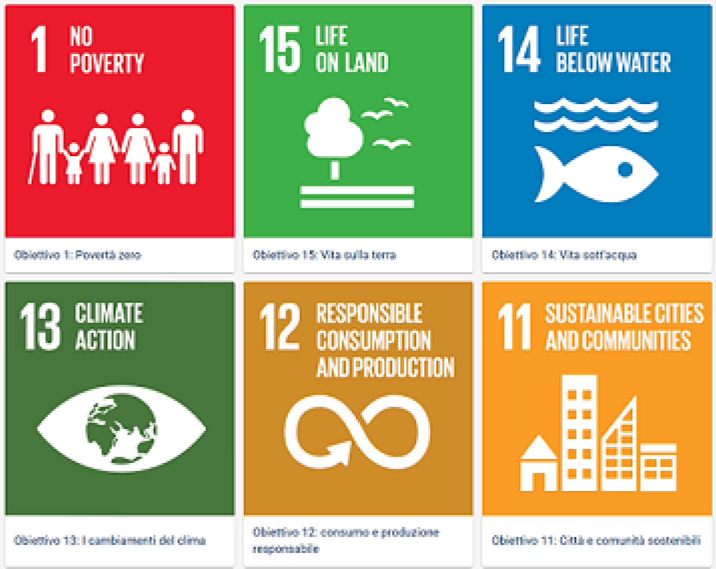
ID: CATEGORY_IMAGE_FOLDER

Title: CATEGORY_IMAGE_FOLDER

Type: CATEGORY_IMAGE_FOLDER

Text: SDG

The only supported format is PNG and the images will always preserve their proportions without being cut, adapting them in width to the single card so as to have a maximum of 3 cards for each line. It is possible to assign an image only at the first level of the categories, and the image name must be the same as the item identifier (only the ID) of the category element. The following image shows an example of the final result of the configuration and how categories are shown on the databrowser.



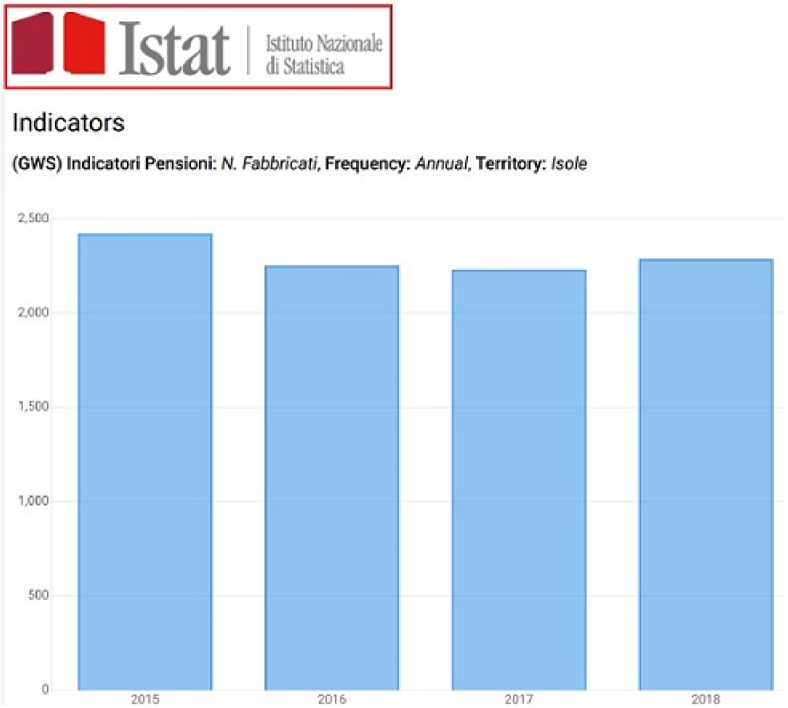
1 NO POVERTY
Obiettivo 1: Povertà zero
15 LIFE ON LAND
Obiettivo 15: Vita sulla terra
14 LIFE BELOW WATER
Obiettivo 14: Vita sott'acqua
13 CLIMATE ACTION
Obiettivo 13: I cambiamenti del clima
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Obiettivo 12: consumo e produzione responsabile
11 SUSTAINABLE CITIES AND COMMUNITIES
Obiettivo 11: Città e comunità sostenibili

ADD PERSONALIZED LOGO TO PDF EXPORT

When downloading a chart or a map in pdf format from the Data Browser application, it is possible to add a logo to the pdf. This path of where the logo is positioned, must be set in the ***appConfig.json*** file as follows:

```
"exportSettings": {
    "logoURL": "./config/footer/logo.png"
  },
```

the lines just mentioned, indicate that, starting from where the ***appConfig.json*** file is positioned, move one level up, enter the config folder and, subsequently, the footer folder. The logo image should be placed in the latter folder. Here an example of the final result:



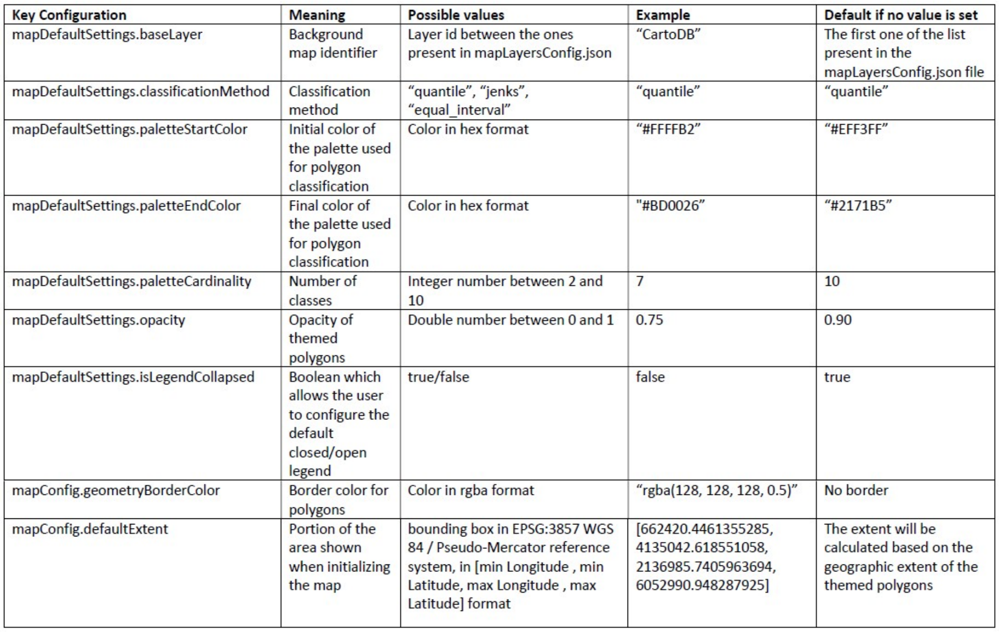
Indicators

(GWS) Indicatori Pensioni: *N. Fabbricati*, Frequency: *Annual*, Territory: *Isole*

If no logo is set, no image will be present in the downloaded pdf.

3.5.1 Map Configuration

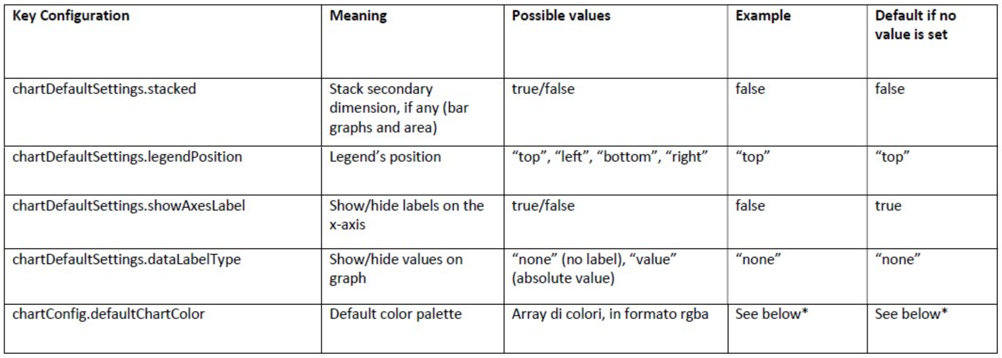
Background maps will be configurable via the ***databrowser\config\mapLayersConfig.json*** file. A configuration file including all supported maps is included in the release package. The default behaviors for the map will be configurable via the ***\databrowser\config\appConfig.json*** file. All possible configurations, with their defaults, are delivered in a file included in the release package. Below are the configuration keys and possible values:



Key Configuration	Meaning	Possible values	Example	Default if no value is set
mapDefaultSettings.baseLayer	Background map identifier	Layer id between the ones present in mapLayersConfig.json	"CartoDB"	The first one of the list present in the mapLayersConfig.json file
mapDefaultSettings.classificationMethod	Classification method	"quantile", "jenks", "equal_interval"	"quantile"	"quantile"
mapDefaultSettings.paletteStartColor	Initial color of the palette used for polygon classification	Color in hex format	"#FFFFB2"	"#EFF3FF"
mapDefaultSettings.paletteEndColor	Final color of the palette used for polygon classification	Color in hex format	"#BD0026"	"#2171B5"
mapDefaultSettings.paletteCardinality	Number of classes	Integer number between 2 and 10	7	10
mapDefaultSettings.opacity	Opacity of themed polygons	Double number between 0 and 1	0.75	0.90
mapDefaultSettings.isLegendCollapsed	Boolean which allows the user to configure the default closed/open legend	true/false	false	true
mapConfig.geometryBorderColor	Border color for polygons	Color in rgba format	"rgba(128, 128, 128, 0.5)"	No border
mapConfig.defaultExtent	Portion of the area shown when initializing the map	bounding box in EPSG:3857 WGS 84 / Pseudo-Mercator reference system, in [min Longitude , min Latitude, max Longitude , max Latitude] format	[662420.4461355285, 4135042.618551058, 2136985.7405963694, 6052990.948287925]	The extent will be calculated based on the geographic extent of the themed polygons

3.5.2 Graph Configuration

Default behaviors can be configured via the \databrowser\config\appConfig.json file, under appropriate "chartDefaultSettings" configuration key, while colors will be configurable under the "chartConfig" key. All possible configurations, with their defaults, are delivered in a file included in the release package. Below are the configuration keys and possible values:



Key Configuration	Meaning	Possible values	Example	Default if no value is set
chartDefaultSettings.stacked	Stack secondary dimension, if any (bar graphs and area)	true/false	false	false
chartDefaultSettings.legendPosition	Legend's position	"top", "left", "bottom", "right"	"top"	"top"
chartDefaultSettings.showAxesLabel	Show/hide labels on the x-axis	true/false	false	true
chartDefaultSettings.dataLabelType	Show/hide values on graph	"none" (no label), "value" (absolute value)	"none"	"none"
chartConfig.defaultChartColor	Default color palette	Array di colori, in formato rgba	See below*	See below*

*configuration for defaultChartColor ["rgba(30, 136, 229, 0.5)", "rgba(194, 24, 91, 0.5)", "rgba(253, 216, 53, 0.5)", "rgba(14, 157, 89, 0.5)", "rgba(240, 98, 146, 0.5)", "rgba(255, 112, 67, 0.5)", "rgba(139, 195, 74, 0.5)", "rgba(0, 188, 212, 0.5)", "rgba(234, 63, 77, 0.5)", "rgba(170, 71, 188, 0.5)", "rgba(38, 166, 154, 0.5)", "rgba(255, 152, 0, 0.5)"]

To enable/disable pan and zoom in categories axis, a configuration will be set, always in the appConfig.json file, under "chartConfig" configuration key (***disableCategoriesAxisPanAndZoom***). By default (in the absence of configuration) pan and zoom will be enabled.

In the \databrowser\config\appConfig.json file it is possible to configure graphs with Cartesian axes so that the extremes of the scale:

- always have the lower extreme fixed at the zero value or at the lower extreme in the presence of negative observations
- automatically adjust to the range of the data, for both the lower and upper extremes.

The configuration key that needs to be set in the file is included in the **chartConfig" key:

```
"chartConfig": {
  ...
  "extremitiesCartesianAxesGraphs": "",
}
```

However, this configuration can be changed by the end user, even if anonymous, through the graph settings.

3.5.3 Table Configuration

In the multidimensional table the union/division of grouping cells into side and header is handled. Possible modes include:

- joining grouping cells in header and side (default behavior)
- division grouping cells in header and sidewall
- merge grouping cells in header and sidewall division
- division of grouping cells in header and joining in side.

Default behaviors can be configured via the \databrowser\config\appConfig.json file, under the following configuration key:

```
"tableDefaultSettings": {
  ...
  "layoutAggregateCells": ""
}
```

The end user can customize this configuration through the "Table Settings" button similar to the one for chart settings.

3.5.4 Time Period Configuration

In order to allow the management of the time period configuration, at the node level, which will enable the user to define for each format and each language available for that node, a specific representation, in the appConfig.json file it is possible to set the formats that later will be made available in the interface. The following are the keys related to the configuration:

```
"timePeriod": {
  "formatYear": [],
  "formatMonth": [],
  "formatDay": [],
  "formatQuarter": [],
  "formatSemester": []
}
```

3.5.5 Configuration for referential metadata visualization

It is possible for the user to globally set a specific configuration on how to visualize metadata information associated to dataflows in databrowser. Such configuration can be set via the the \databrowser\config\appConfig.json file under the "metadataViewMode" configuration key. Possible options are:

- ***iframe***. Current default behavior, supported only if remote server policies allow embedding via iframe (e.g., X-Frame-Options header or Content Security Policy directives)
- ***new_tab***. URLs are opened in a new browser tab, not integrated with the application.
- ***popup***. URLs open in a separate popup window, not integrated with the application. It may be necessary to explicitly enable popups in browser settings to avoid blocking; this option does not appear to be supported by some browsers (e.g., Opera, Safari).

Note: These methods depend entirely on the functionality offered by the browser. Therefore, behavior may vary depending on the browser used. If the key is not present, iframe will be the default behavior.

3.6 Progressive web app

To enable downloading the site as a Progressive Web App, the portal must be exposed in HTTPS.

In order to make this configuration possible, the user will need to enable the functionality by indicating in the appConfig.json file, with the key pwaManifestPath, the path to the manifest.json file (e.g., ./config/pwa/manifest.json) that allows you to customize certain aspects of the app.

For example, considering that we have deposited the manifest.json file in the "databrowser/config/pwa/" folder (client installation directory), to enable PWAs it will be sufficient to indicate the relevant path in the "databrowser/config/appConfig.json" file (e.g., "pwaManifestPath": "./config/pwa/manifest.json").

A set of minimal configurations are listed in the software package, as an example, in the \databrowser\config\pwa folder.

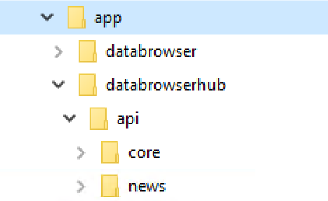
The full list of possible customizations in the manifest.json file can be found at the following link: https://developer.mozilla.org/en-US/docs/Web/Manifest.

Due to the large number of options and features that can be activated through that configuration file, support for all possible configurations and their combinations is not guaranteed.

3.7 Application deployment

FILE SYSTEM ORGANIZATION

First of all, the user needs to copy the two folders from the software package (databrowser and databrowserhub) in the IIS directory which will be the root application directory. This directory will be referred as [ROOT_IISAPP] (i.e. C:\inetpub\wwwroot\app). Application directories will be organized as illustrated below:

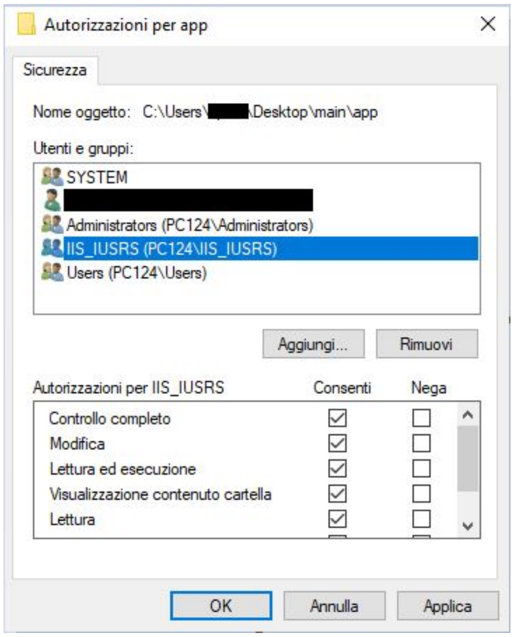


The "app/databrowser" folder contains the client web application. The "app/databrowserhub/api/core" folder contains the main web service. The "app/databrowserhub/api/news" folder contains the news web service.

IIS CONFIGURATIONS

The users IIS_IUSRS e IUSR must have the suitable permissions on the web applications, therefore on the folder:

- right click on [ROOT_IISAPP];
- select *Property/Security*;
- click on *Edit/Add*;
- in the section *"Locations"*, select the local computer;
- in the section *"Enter the object name to select"* write IIS_IUSRS;
- click on *"check names"* and then OK;
- in the section *"Permission for IIS_IUSRS"* include *"full control"*;
- repeat steps from 3 to 6 for user IUSR
- in the section *"Permission for IIS_IUSRS"* include *"write/read"* permissions.



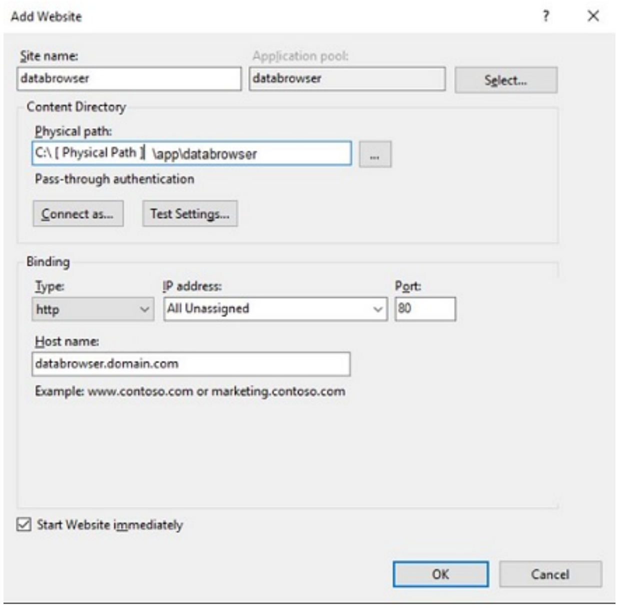
Nome oggetto: C:\Users\[redacted]\Desktop\main\app

Utenti e gruppi:

SYSTEM
[redacted]
Administrators (PC124\Administrators)
IIS_IUSRS (PC124\IIS_IUSRS)
Users (PC124\Users)

Autorizzazioni per IIS_IUSRS	Consenti	Nega
Controllo completo	☑	□
Modifica	☑	□
Lettura ed esecuzione	☑	□
Visualizzazione contenuto cartella	☑	□
Lettura	☑	□

The user can now create a website for the Data Browser



Add Website

Site name: databrowser

Application pool: databrowser

Content Directory

Physical path: C:\ [Physical Path] \app\databrowser

Pass-through authentication

Binding

Type: http

IP address: All Unassigned

Port: 80

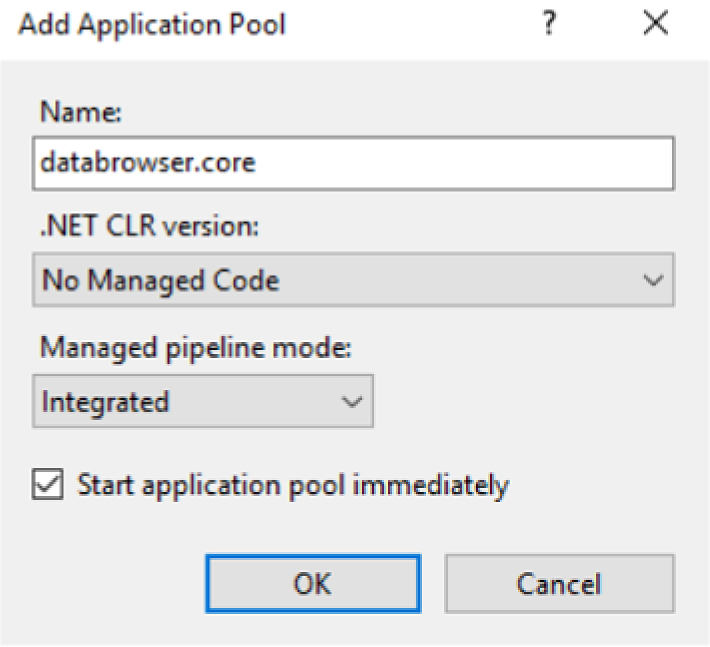
Host name: databrowser.domain.com

Example: www.contoso.com or marketing.contoso.com

☑ Start Website immediately

The user selects the DefaultApplicationPool or creates a new one with type **.NET CLR Version 4** and selects the psysical path of the databrowser's folder (app/databrowser). Finally, he inserts the hostname of his machine (or name created by the network administrator).

At this point the user has to create an application pool for every web service that is in the "app/databrowserhub/api" folder. This operation can be made by right-clicking on "Application Pool" and by selecting "Add Application Pool" item



Add Application Pool

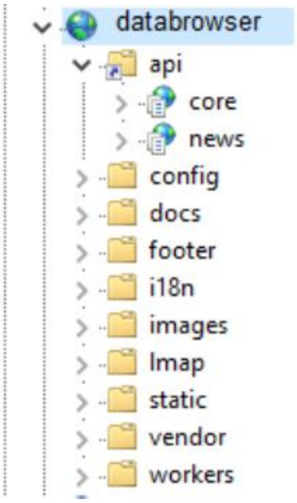
Name: databrowser.core

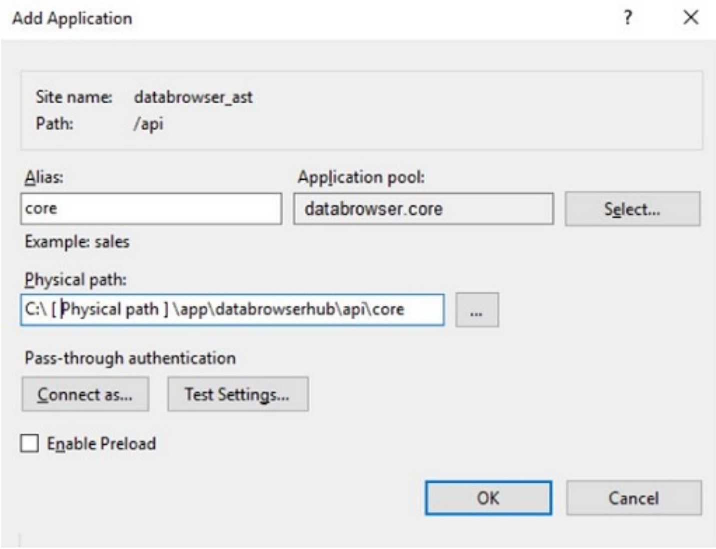
.NET CLR version: No Managed Code

Managed pipeline mode: Integrated

☑ Start application pool immediately

Afterwards, the user has to create a new virtual directory "api", that will point to the "app\databrowserhub\api" physical folder. Under the "api" virtual directory, the user has to create one application for each Web Service (as shown in picture), assigning the respective application pool (No Managed Code application pool).





Site name: databrowser_ast
Path: /api

Alias: core

Example: sales

Application pool: databrowser.core

Physical path: C:\ [Physical path] \app\databrowserhub\api\core

☐ Enable Preload

Most recent browsers use aggressive caching techniques that tend to contact the web server only as necessary. The client application implements a mechanism to minimize requests to the web server while keeping its latest version in the browser cache. In order for this mechanism to work, it is necessary to configure the web server so that caching of the index.html file is denied. Such operation is made possible by adding some custom headers in the web.config file, stored in the IIS root directory, indicating that the location path file (in this case index.html) must include these just mentioned headers in order to avoid caching. The following part of code is the one that was added in the web.config file:

```
<?xml version="1.0" encoding="UTF-8"?>
  <configuration>
   <location path="index.html">
     <system.webServer>
      <httpProtocol>
        <customHeaders>
          <add name="Cache-Control" value="no-store, must-revalidate"/>
          <add name="Pragma" value="no-cache" />
          <add name="Expires" value="0" />
        </customHeaders>
```

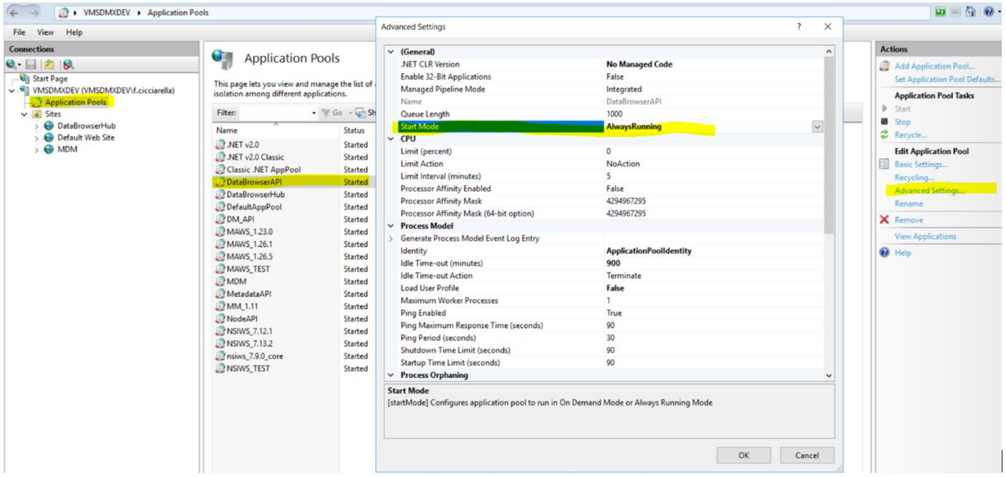
(continues on next page)

(continued from previous page)

```
      </httpProtocol>
    </system.webServer>
  </location>
</configuration>
```

IIS Configuration for Application Initialization

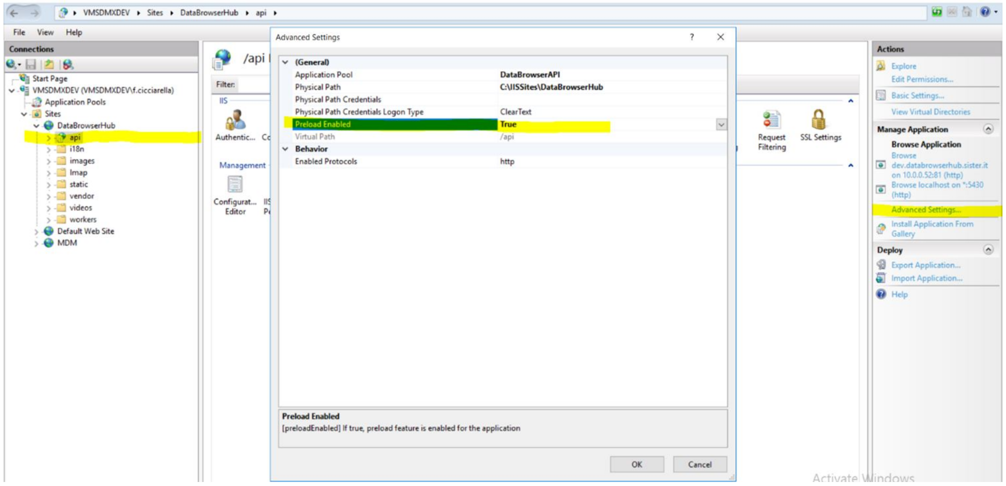
Initialization needs to be applied on the Application Pool as well as the IIS Application level. For all possibile IIS' configurations, please check the official Microsoft documentation on the matter: https://docs.microsoft.com/. Here are some recommended configurations, to leave the IIS pool always active.



Advanced Settings	
(General)	
.NET CLR Version	No Managed Code
Enable 32-Bit Applications	False
Managed Pipeline Mode	Integrated
Name	DataBrowserAPI
Queue Length	1000
Start Mode	AlwaysRunning
CPU	
Limit (percent)	0
Limit Action	NoAction
Limit Interval (minutes)	5
Processor Affinity Enabled	False
Processor Affinity Mask	4294967295
Processor Affinity Mask (64-bit option)	4294967295
Process Model	
Generate Process Model Event Log Entry	
Identity	ApplicationPoolIdentity
Idle Time-out (minutes)	900
Idle Time-out Action	Terminate
Load User Profile	False
Maximum Worker Processes	1
Ping Enabled	True
Ping Maximum Response Time (seconds)	90
Ping Period (seconds)	30
Shutdown Time Limit (seconds)	90
Startup Time Limit (seconds)	90
Process Orphaning	

Start Mode
[startMode] Configures application pool to run in On Demand Mode or Always Running Mode

On the Site/Application level user can specify whether the site should pre load; in this case the Preload Enabled flag needs to be set to true.

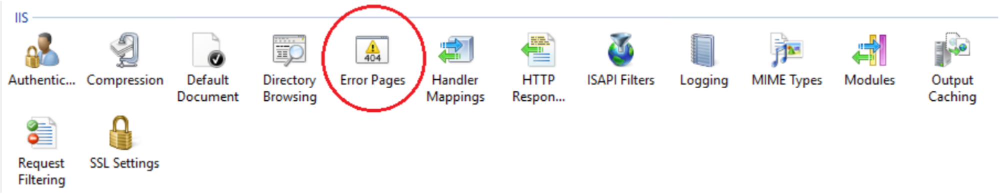


Advanced Settings	
(General)	
Application Pool	DataBrowserAPI
Physical Path	C:\IISSites\DataBrowserHub
Physical Path Credentials	
Physical Path Credentials Logon Type	ClearText
Preload Enabled	True
Virtual Path	/api
Behavior	
Enabled Protocols	http

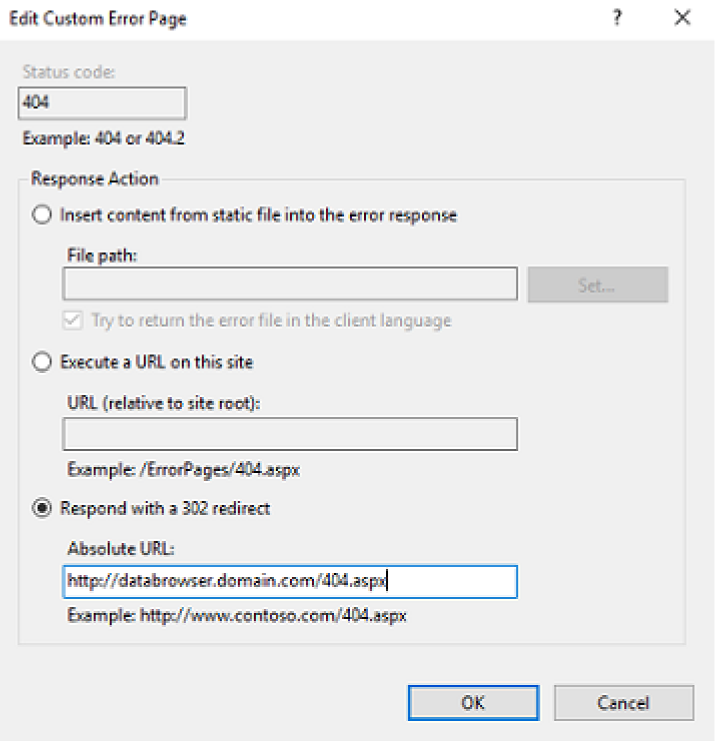
Preload Enabled
[preloadEnabled] If true, preload feature is enabled for the application

ERROR PAGES

To handle HTTP errors, the user can configure the Error Pages section of the Website. This can be done from the IIS Control Panel as shown in the image below.



By clicking on the error pages, the user can handle HTTP errors on the website. Each HTTP error has its own identification code and the user can use this code to redirect website visitors to customized pages. For example, the image below shows how to instruct IIS to redirect visitors to the 404.aspx page, in case of an HTTP 404 error.


Edit Custom Error Page

Status code: 404

Example: 404 or 404.2

Response Action

○ Insert content from static file into the error response

File path:

☑ Try to return the error file in the client language

○ Execute a URL on this site

URL (relative to site root):

Example: /ErrorPages/404.aspx

● Respond with a 302 redirect

Absolute URL: http://databrowser.domain.com/404.aspx

Example: http://www.contoso.com/404.aspx

HTTPS BINDINGS

It is needed to create a binding for https. The task can be performed as follows:

- click on *Default Web Site*;
- click on *Binding* in the *Actions* menu on the top-right;
- click on *Add*;
- select *http sas type*;
- select an available SSL certificate;
- click on *OK*.

OTHER POSSIBLE CONFIGURATIONS

It is also possible to set other parameters (time-outs, lenght content, etc.) that can be useful according to the users' needs. Here are some examples:

- ***Maximum allowed lenght for the content***
  - Click on the IIS Web Site under which the application has to be installed;

  - double click on the *Requests filtering* menu item;
  - click on *Edit feature settings*;
  - modify the *Maximum allowed content length (byte)* to the desired value.

- ***Connection time-out***. The connection time-out parameter has to be set in order to allow delayed responses by the web services. The suggested value for this parameter is 6000 seconds (100 minutes).
  - Click on the IIS Web Site under which the application has to be installed;
  - select the *Advanced Settings* menu;
  - click on *Limits*;
  - modify the *Connection Timeout* parameter to the desired value.
- ***Request time-out***. This parameter allows to increase the time interval after which a timeout error is launched (blocking the execution) during the waiting of a response by a web service. It is suggested to increase this parameter to 120 minutes.
  - Click on the IIS Web Site under which the application has to be installed;
  - select *Configuration Editor*;
  - access the *system.webServer/aspNetCore* section;
  - modify the *requestTimeout* parameter.
- ***Execution time-out***. This parameter, similar to the previous, allows to increase the time after which a timeout is launched (blocking the execution) after the execution of a web service that doesn't modify its execution status. Is suggested to increase this parameter to 120 minutes.
  - Click on the IIS Web Site under which the application has to be installed;
  - select *Configuration Editor*;
  - access the *system.webServer/httpRuntime* section;
  - modify the *executionTimeout* parameter.
- ***Session state***. In order to increase the application session duration, the *Session State* parameter has to be set. It allows the maintenance of the session cookies without constraining users to re-login to the application.
  - In IIS manager, click on the *Default Web Site*;
  - click on the *Session State* menu;
  - set the option *TimeOut* (in minutes) to a suitable value (e.g. 60 minutes)
- ***Idle time-out***. This parameter determines the time after which an idle web service is stopped. It allows to eliminate the waiting time for restarting the web service in case of a very long session. It has to be set for each pool involved in long duration tasks.
  - Click on the pool;
  - select Advanced settings;
  - modify the Idle TimeOut parameter i.e. by setting it to 120 minutes.

3.8 Super Administrator

Superadmin user is generated automatically when the database is created and initialized during installation with username: admin@databrowser.com and empty password. It is strongly recommended, but not mandatory, to change the password at first login by following the instructions in the paragraph "Manage user password".

3.9 Quick steps

This paragraph contains the synthetic summary of the steps needed to install and configure the application, considering that the prerequisites have been already satisfied.

1. Download the software package ***databrowser_x.x.zip***
2. Extract the two folders from the package(*databrowser* and *databrowserhub*) and copy them in the filesystem root directory
3. Assign to the IIS_IUSRS and IUSERS users read/write grants to the filesystem root directory and subdirectories
4. Set the ISS configurations
    - Create an IIS application pool for the web service "databrowser" (client app)
    - Create an IIS application pool for the web service "databrowser.core" (core service)
    - Create an IIS application pool for the web service "databrowser.news" (news service)
5. Deploy the web service in IIS
    - Create the Web Site that points to the "client" application, associated with the just created application pool "databrowser"
    - Create under the Web Site a new "api/core" application associated with the just created application pool "databrowser.core"
    - Create under the IIS Web Site a new "api/news" application associated with the just created application pool "databrowser.news"
6. Configure client, core and news applications
7. Start the navigation
    - Go to http://databrowser.domain.com

3.10 Resolving Chrome downloading issues: integration of proxy to download files from HTTP Origin

In case a dataflow has an annotation containing an attached file URL, the ability to do the download will be added in the Data Browser.

In order to allow maximum flexibility and support for several different usage scenarios, the URL entered into that annotation by the user is never altered, i.e. it arrives to the user's client exactly as it was entered into the annotation. This approach also guarantees the possibility of completely decoupling the file repositories from the Data Browser, with particular reference to the fact that users who want to proceed to download the file will forward their HTTP requests directly to the server where it resides, transparently to the server where the Data Browser is installed. In other words, all the load resulting from these downloads is completely delegated to the server that hosts the files, which may or may not be the same one that hosts the Data Browser.

In case this mechanism is used in a Data Browser installed in HTTPS, but the resources reside on a server that does not use the HTTPS protocol, the Chrome browser detects this download as "not secure" and blocks it. On the contrary, on Microsoft Edge and Firefox this problem does not occur with the current versions and the download is allowed. This security limitation was introduced by the Chrome browser in August 2020 and is documented at this link: https://blog.chromium.org/2020/02/protecting-users-from-insecure.html

In order to overcome this problem, which does not depend on the application, it is possible to act at an infrastructural level by introducing a proxy on the server where the Data Browser is installed, whose only purpose is to link the URLs of these files to those of the same HTTPS domain of the Data Browser. Example: let's assume that a proxy is configured which can be reached at the url "https://www.databrowser_domain.com/proxy" and which, for security reasons, only manages the domain "unsecuredomain.com". At this point it would be possible to modify the current annotations so that they do not point directly to "http://unsecuredomain.com/" but to "https://www.databrowser_domain.com/proxy?http://unsecuredomain.com/". In this way the download would refer to the same HTTPS domain as the application, so it would no longer be blocked by Chrome.

The use of this infrastructural solution would also allow to better manage the case in which the fileserver is not accessible from outside but only from the server of the Data Browser through appropriate permissions.

Obviously, as with any other approach in which the URLs for the download refer to the application server and not to the original one, there are the following limits:

- the download time needed by the user to download the file must be added to the time needed by the proxy to download it from the file server
- the activity of download management weighs entirely on the application server, so in the case this is particularly important, all application performances can suffer, starting from a potential saturation of the band.

However, we highlight how the proposed solution is in our opinion to be considered optimal compared to others because:

- it operates exclusively on an infrastructural level, without impacting/complicating the application logic with potentially very complex functions that are logically not its own responsibility
- it acts exclusively on the proxy configurations, for which various cases/scenarios can be managed with simplicity
- since it doesn't foresee any configuration at the level of the whole application, it allows to manage every single file in a different way, i.e. it's possible to distribute the load deriving from the download operations of the files deciding for every single file if it has to pass from the application server using the proxy or it can point directly to an external URL. In other words, the limits indicated above are manageable for each single file, and you are not obliged to have them for the entire application.
- allows you to set on the proxy any control logic and download limitation.

As software for the proxy can be used any of those found on the network. As an example we indicate this one developed in .NET: https://github.com/Esri/resource-proxy. The same result could be obtained also using a reverse proxy.

CHAPTER

FOUR

ADMINISTRATION

The “Administration” functional component allows super administrator type user to manage the whole application. In particular the following sections will properly explain all types of interventions that can be done.

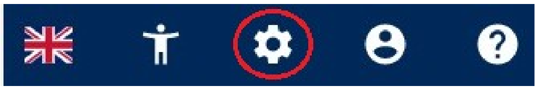
4.1 How to configure the application

4.1.1 General settings

On the main page of the application, for user logged ad Super Administrators, there are the following icons:

- Flag: to modify the language of the Data Browser.
- Man: to choose between “Classic version” and “Accessible version”.
- Settings: to configure Application, Nodes etc.
- User: to change user information, to manage views, dashboards and logoff.
- Question mark: to retrieve information about the application’s version.

The super administrator user has the authority to configure the application settings (consisting in managing nodes, users and so on). It is possible to configure specific settings by clicking the setting icon:



and choosing the option related to the operation the user wants to perform from the list that appears.

In the “Application” configuration window it is possible to configure a set of application parameters (which will be described in the next paragraph).

In the “Hub dashboard management” configuration window the super administration user can choose to insert dashboards that will be publicly available to all users once the home page is visited (see section *Dashboard management* for detailed infomations). Dashboards can be organized under categories which can be created if not present.

In the “Users” configuration window it is possibile to create, edit or delete users.

By clicking the “Node” link, it is possibile to create new nodes, manage node’s cache and templates, delete nodes and, most importantly, set user’s permissions on nodes.

By clicking the “Manage Custom Pages” link, it is possible to create custom pages and set their configuration. Check the *Custom Pages Management* paragraph for more information.

In the “Dashboard filters” configuration window it is possible to create dynamic filters, to be used within dashboards in a versatile way. This will offer the superadmin the freedom to be able to create filters independently, without being tied to the current single territory filter (see section *Dashboard management* for detailed infomations).

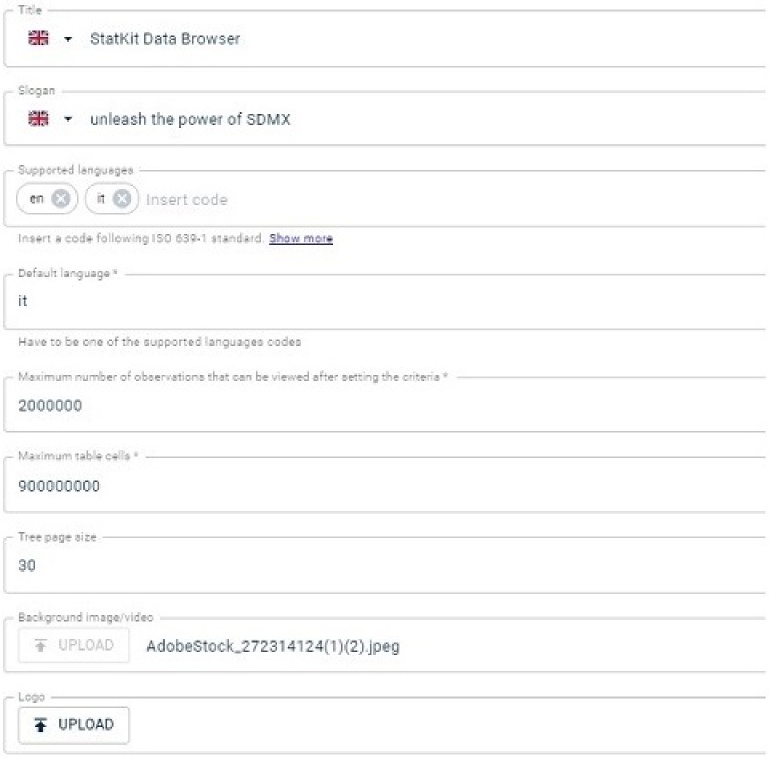
If the news module has been enabled via configuration file, the abovementioned list will contain another element indicated by “Manage news”. Check the *News Management* paragraph for more information.

By clicking “Machine-to-machine interactions password”, a password can be set for all Machine-to-machine interactions (e.g., clearing data cache from the Meta&DataManager environment, communication between microservices). So as to ensure proper functioning, it is mandatory to set password for machine-to-machine interaction (which can be done from this menu item). Once set, the password will be saved and automatically acknowledged from the microservices.

The “Get queries log” link allows the administration user to download the last *n* SDMX-queries requested in the page.

4.1.2 Home page settings

Generally, the home page can have a title, a slogan, a section on information and nodes, and also a possible section dedicated to dashboards. It could have a welcome image or short video for the background and different images for the logo on the main page and header. These settings appear in the “application configuration” window:



Title: StatKit Data Browser

Slogan: unleash the power of SDMX

Supported languages: en, it

Insert a code following ISO 639-1 standard. Show more

Default language *: it

Have to be one of the supported languages codes

Maximum number of observations that can be viewed after setting the criteria *: 2000000

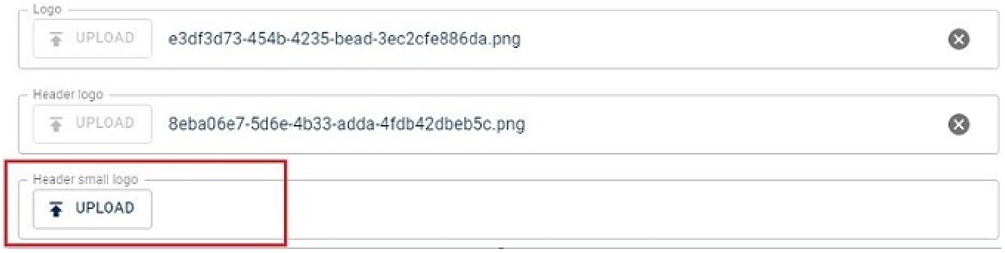
Maximum table cells *: 900000000

Tree page size: 30

Background image/video: AdobeStock_272314124(1)(2).jpeg

Logo

When the screen reaches a dimension of 768 pixels (or less), the user can choose to add a small header logo which will be shown only under these circumstances. This setting is configured by adding an image in the “Small Header Logo” fiels as shown below:

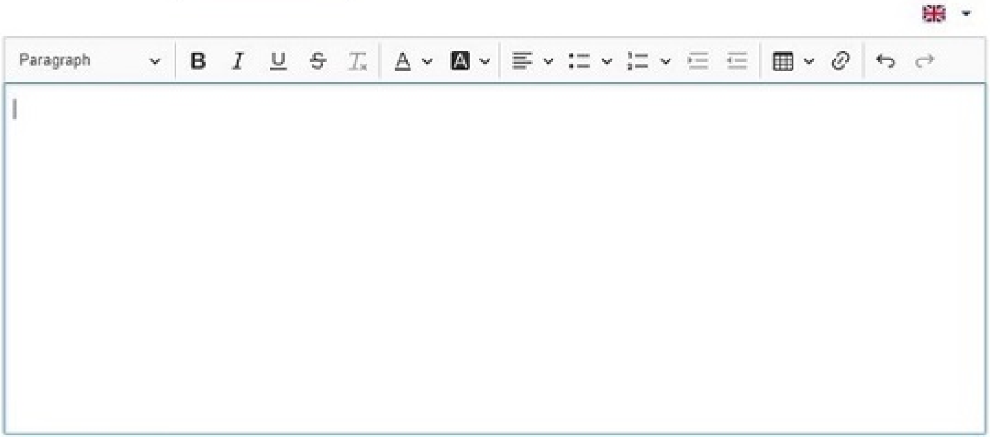


Logo
e3df3d73-454b-4235-bead-3ec2cfe886da.png

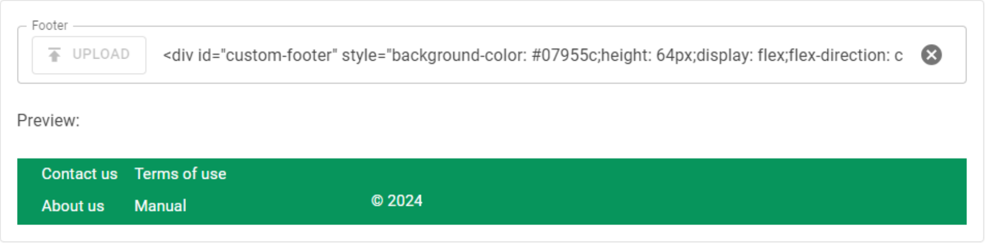
Header logo
8eba06e7-5d6e-4b33-adda-4fdb42dbeb5c.png

Header small logo

It is possibile to set some information text, in the home page, describing the purpose and aim of the network. This text must be inserted in the “INFORMATION” tab.



In the “Footer” tab the user can upload a footer.html file in order to personalize the footer of the page. Once the file is uploaded, a preview is shown. It is also possible to customize the footer for other languages, in this case the user must change the language from the drop down menu and upload the respective footer.html file.

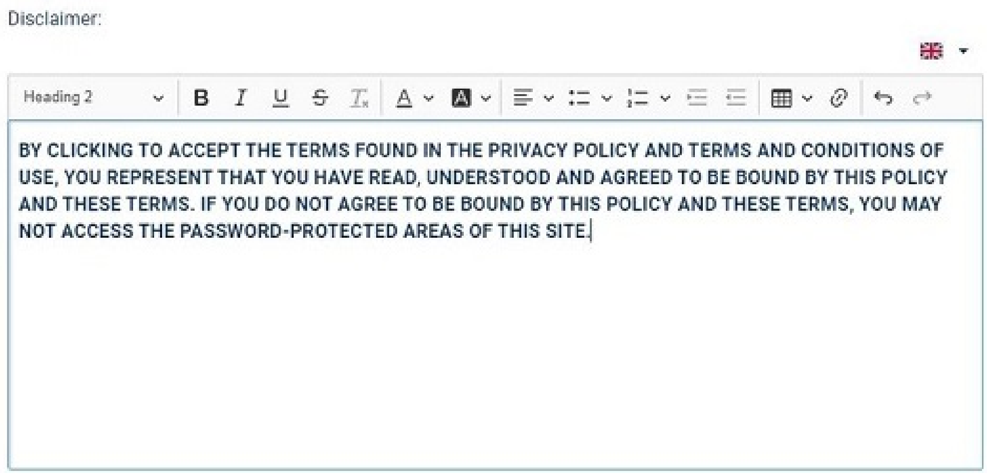


Footer
<div id="custom-footer" style="background-color: #07955c;height: 64px;display: flex;flex-direction: c

Preview:

Contact us Terms of use
About us Manual
© 2024

In this window, the super administrator user, can find the “USERS” tab where he can set the disclaimer text that will appear in the “Sign Up” window when a new user decides to sign up to the application (see section *How to add a registered user* for detailed infomations).



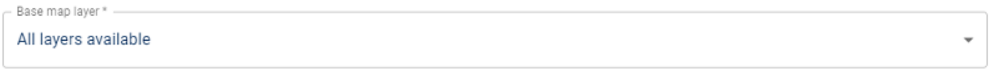
Disclaimer:

BY CLICKING TO ACCEPT THE TERMS FOUND IN THE PRIVACY POLICY AND TERMS AND CONDITIONS OF USE, YOU REPRESENT THAT YOU HAVE READ, UNDERSTOOD AND AGREED TO BE BOUND BY THIS POLICY AND THESE TERMS. IF YOU DO NOT AGREE TO BE BOUND BY THIS POLICY AND THESE TERMS, YOU MAY NOT ACCESS THE PASSWORD-PROTECTED AREAS OF THIS SITE.

In the tab "Map" the user can choose which background map to use in geographical report from a choice of the following options:

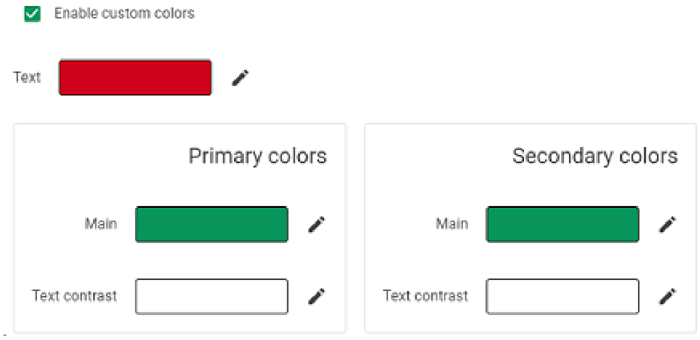
- All available layers
- None
- A single background layer

If "All available layers" is selected, the end user will be able to change the background map to be displayed via appropriate selector when visualizing the map. In case "None" is selected, no background layer will be available (theming on white background). If the single background layer is selected, only that one will be available for the end user (regardless of how many layers are configured in the mapLayersConfig.json file). Copyright management for individual background maps will be manageable directly in the mapLayersConfig.json file. The release package includes a configuration file (mapLayersConfig.json) containing the configuration of some background maps. Please note that, some background maps may require a special license in order to be used.



Base map layer *
All layers available

In the "Colors" tab settings are present which allow customization of the text, primary and secondary colors of the application. This functionality is accessible exclusively by the superadmin. If the "Enable Custom Colors" box is not checked, the system will consider the colors present in the appConfig.json file present in the installation.



☑ Enable custom colors

Text 🟥

Primary colors

Main 🟩

Text contrast □

Secondary colors

Main 🟩

Text contrast □

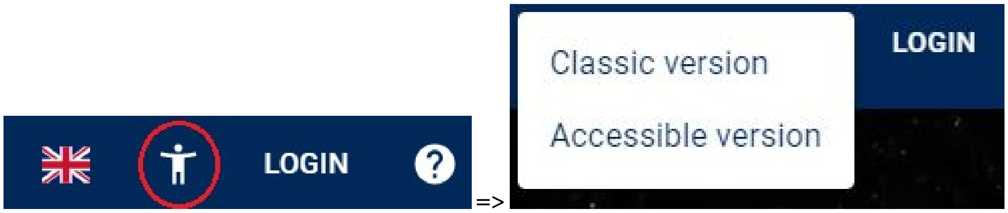
In the tab "Cache" the user can select/deselect cache on artifacts meaning that after each request to the NSI WS for artifact like dataflows, DSDs, codelists and concept schemes, a cache of the artifact and any referenced artifacts, if belonging to the supported types, will be generated asynchronously.

□ Disable artefacts cache

If only a node is configured, then home page and node home page will be the same; otherwise if more than one node is configured (beside the default one), then the home page will show a section, named “Nodes”, containing all nodes contained in the Hub which can be browsed.

4.1.3 Accessible version

The Data Browser application also contemplates web accessibility allowing all kind of people to benefit of the application’s functionalities. Activation of this option is very simple. On the main page of the hub, click on the little man icon and choose “Accessible version” from the list that appears.



Once the functionality is enabled, a green check will appear near the icon meaning that the application now is in accessible mode (this means that the system will apply special styles that can be defined in the “appConfig.json” file using the special class “a11y”, that will allow to treat in a dedicated way any element of the interface in order to increase the contrast or other properties useful for the purpose. At the moment, the most important operation that this functionality provides, is that when clicking on a data the system will not show the viewing/navigation page of the dataset because this functionality requires an advanced and interactive human-machine interaction, but it will guarantee the fruition of the information contained in the data through the CSV download of that dataset itself.

4.2 Hub management

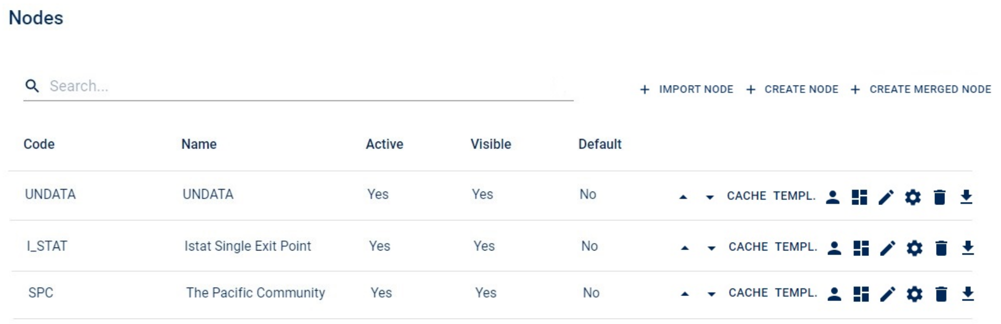
In this section we explore basic operations of managing and configurating nodes.

4.2.1 How to manage data providers (nodes)

From the setting icon, choosing the “Nodes” option, the super administrator user can manage and configure all the present nodes. Moreover in this section he can set the configurations focused on:

1. Ordering the appearance of nodes
2. Setting a default node
3. Checking if the node is active or not, visible or not
4. Adding/Removing/Importing/Exporting nodes

5. Editing nodes
6. Editing/Deleting Dataflows and catalog cache
7. Viewing/Deleting data templates
8. Setting permissions to node administrator users
9. Editing/Deleting dashboards
10. Upload/Download geographic information



Code	Name	Active	Visible	Default	
UNDATA	UNDATA	Yes	Yes	No	▲ ▼ CACHE TEMPL.
I_STAT	Istat Single Exit Point	Yes	Yes	No	▲ ▼ CACHE TEMPL.
SPC	The Pacific Community	Yes	Yes	No	▲ ▼ CACHE TEMPL.

The figure above shows all the possible settings. The “+ IMPORT NODE” buttons allows to import an entire node. The “+ CREATE NODE” button allows the creation of a new node. The “+ CREATE MERGED NODE” button allows to create a new node from the merge of existing ones. The table, containing the list of nodes present in the application, shows the identifier of the node (”Code”), the title (”Name”) and a Yes/No flag describing if the node is active (queritable even if it is not visible in the main page), visible (marks the presence or absence of the node in the main page) or set as default (the node’s home page matches the main page of the application). A non-active node is not present in node list of the main page even if the visible option is checked. The node window also shows:

- the small arrows which allow the user to set the sorting method for the nodes to appear;
- the “CACHE” button needed to edit or delete cache for each dataflow and catalog of the node.
- the “TEMPLATES” button to view or delete a dataset template
- the person icon which allows the super administrator user to set permissions for the other users (such as node administrator users)
- the mosaic icon that manages the dashboards for that specific node
- the pencil symbol to edit the node
- the settings icon for customizing node’s geography
- the trashcan symbol for deleting the selected node
- the download arrow icon which allows to download the entire node

Node administrator users cannot delete or change position of the nodes they are allowed to manage. Most of all, based on what kind of permission they have on the nodes, not all the above mentioned icons will be present in their node configuration window.

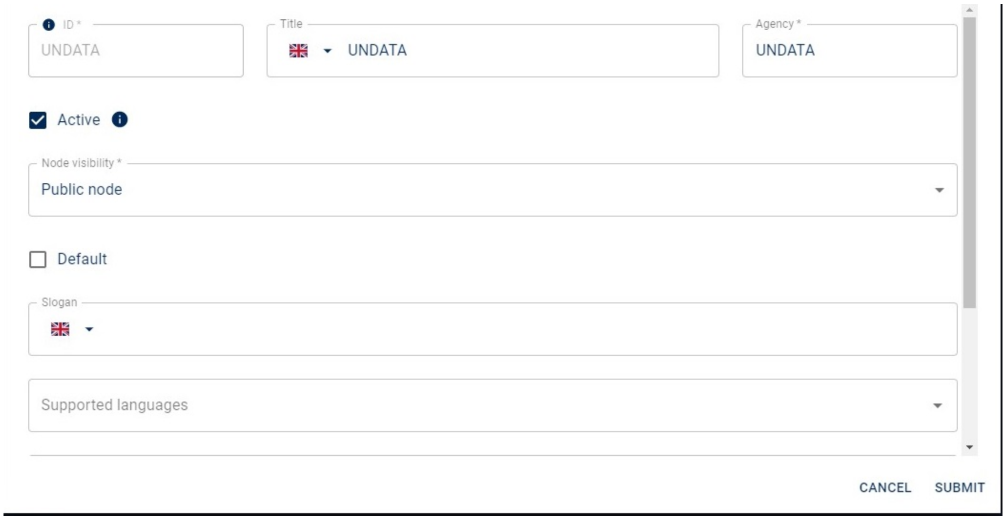
4.2.2 How to configure a data provider

Editing an existing node or adding a new one, will bring to another window where it is possible to configure the fields that will afterwards be the settings for that node. In general these parameters can be customized in the normal node configuration set-up, with a data annotation setting or with the creation of a template. In particular, the parameters relate to:

- Decimal separator: symbol used to separate the integer part from the fractional part of a number written in decimal form. Possible values . or ,
- Number of decimals: number of digits that appear after the decimal point. Usually is set to 1.
- Empty cell character: value set which appears when data has an empty cell
- Default views: default visualization setting (table, chart or map)

All elements will be described in the following paragraphs when talking about the related configuration levels.

In some tabs the multilingual functionality is enabled (indicated by the presence of the flag in certain fields). This allows the user to set a title for each language supported by the application. More specifically, the configuration window appears like this:



ID *: UNDATA

Title: UNDATA

Agency *: UNDATA

☑ Active

Node visibility *: Public node

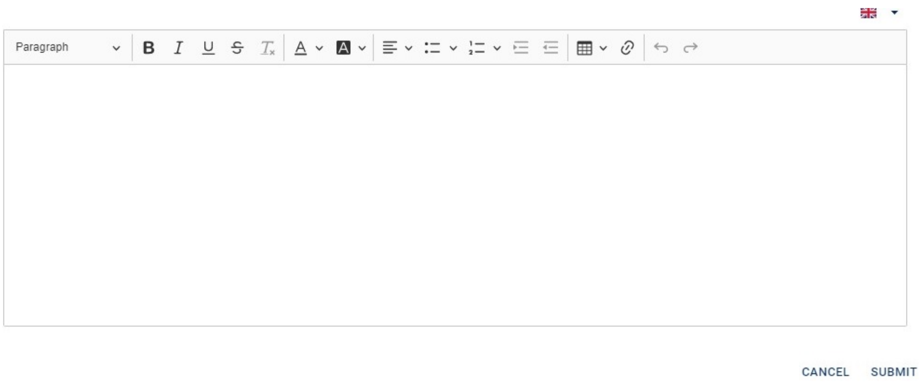
☐ Default

Slogan:

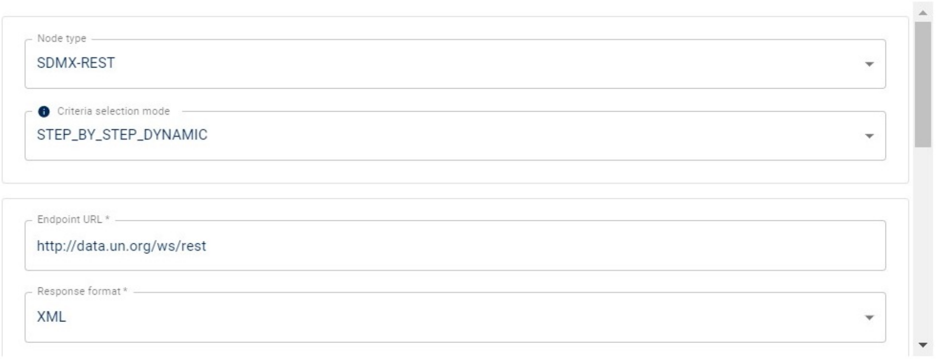
Supported languages

It contains different tabs, each one configuring specific settings related to the node itself. Getting a closer look to each tab, it is possible to notice that:

- in the ***"General"*** tab, the mandatory fields are the ID of the node, the TITLE and the AGENCY. The user can decide to check the ACTIVE box if the node is ready to be browsed otherwise it must be left unchecked (it might happen that a node is part of the hub but still under construction). The user can set the "Node Visibility" by selecting one of the three possibities offered from the dropdown menu: **Public Node** meaning that everyone can see and query the node, **Hidden Node** meaning that the node is not visible thus not querible, **Private Node**, meaning that the node is querible but it is not visible to all users. In this case the super user must give rights to the other users in other to make them able to navigate the private node. Permissions can be set by selecting the person icon from the node management window. The "Default" checkbox allows to set the node as default node of the application. "Slogan", "Background image/video" and "Logo" are all components of the node.
- In the ***"Information"*** tab, the user can give a brief description of the node which will appear once it will be selected.



- The ***"Endpoint"*** tab specifies the configurations needed in order to manage the system's capability to connect and query the SDMX web service.



Node type: SDMX-REST

Criteria selection mode: STEP_BY_STEP_DYNAMIC

Endpoint URL *: http://data.un.org/ws/rest

Response format *: XML

This functionality allows the system to correctly query the data and also to recover any SDMX artefacts useful to the application (for example the category scheme and the categorizations useful for the Node Catalog). When a type of artifact is selected in the *Ping artifact field*, such as Codelist, Concept Scheme, or Category Scheme, the ***PING*** button at the right of the field, will verify the correctness of the entered endpoint URL. The endpoint will be considered correct if the call to the selected artifact receives a proper response. The outcome of the call should be displayed to the user through appropriate feedback. If the endpoint responds correctly, a green checkmark will be displayed next to the "PING" button otherwise a warning icon will be displayed next to the button. It is possible to set a HTTP Authentication and a Proxy, check the specific box to support POST filters and also the possibility to enable a SOAP endpoint. User can also select the method to access the codes of the dataflow dimensions when defining criteria. There are five possibile choices regarding the criteria selection mode:

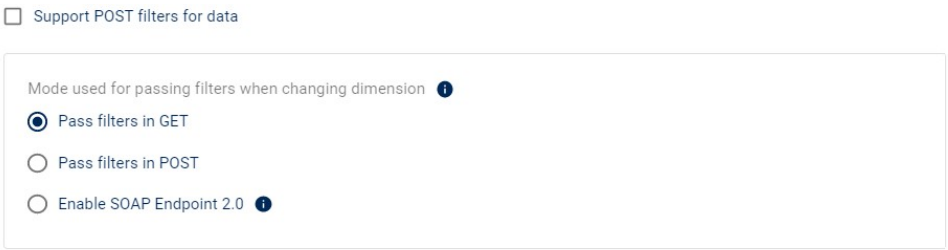
  - *ALL_FULL*: in this case all dimensions' items are simultaneously loaded (even those that are not contained in the data) and for each dimension the number of elements will be present.
  - *ALL_PARTIAL*: in this case only dimensions' items contained in the data are simultaneously loaded and for each dimension the number of elements will be present.
  - *ALL_PARTIAL_OPTIMIZED*: all distinct values for each dimension present is immediately retrieved and this allows optimizing the timing of large data retrieval. The particularity of this method is that, based on the criteria set by the user, a layout for table visualization is defined to meet the configured maximum cell and observation thresholds.
  - *STEP_BY_STEP_FULL*: in this case all dimensions' items are loaded (even those that are not contained in the data) while moving from one tab's dimension to another. For

each dimension the number of elements will not be present at the beginning.

- *STEP_BY_STEP_PARTIAL*: in this case case only dimensions' items contained in the data are loaded while moving from one tab's dimension to another. For each dimension the number of elements will not be present at the beginning.
- *STEP_BY_STEP_DYNAMIC*: in this case case only dimensions' items contained in the data are loaded while moving from one tab's dimension to another. Furthermore, choices made in a tab affect next selections acting as filters. For each dimension the number of elements will not be present at the beginning.

If criteria selection mode is: *STEP_BY_STEP_DYNAMIC*, the user can choose the mode used for passing filters when changing dimension between:

- Pass filters in GET
- Pass filters in POST
- Enable SOAP Endpoint SDMX 2.0



□ Support POST filters for data

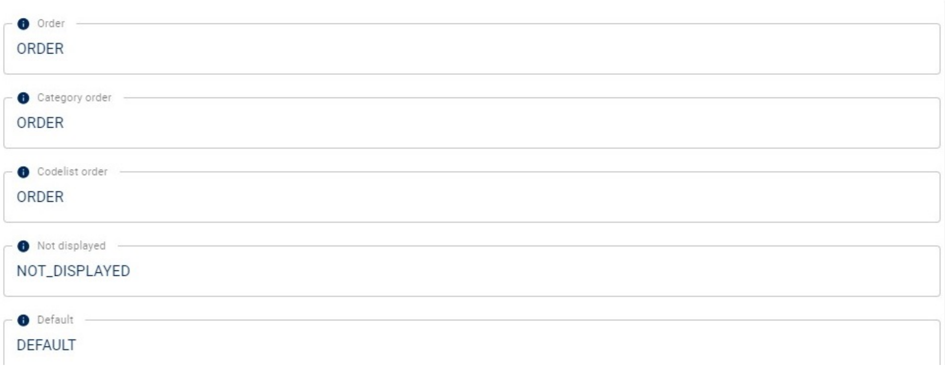
Mode used for passing filters when changing dimension

● Pass filters in GET

○ Pass filters in POST

○ Enable SOAP Endpoint 2.0

- The *"Annotations"* tab specifies the name of the components used to configure some specific visualization aspects of the node defined through the Annotation mechanism.



Order: ORDER

Category order: ORDER

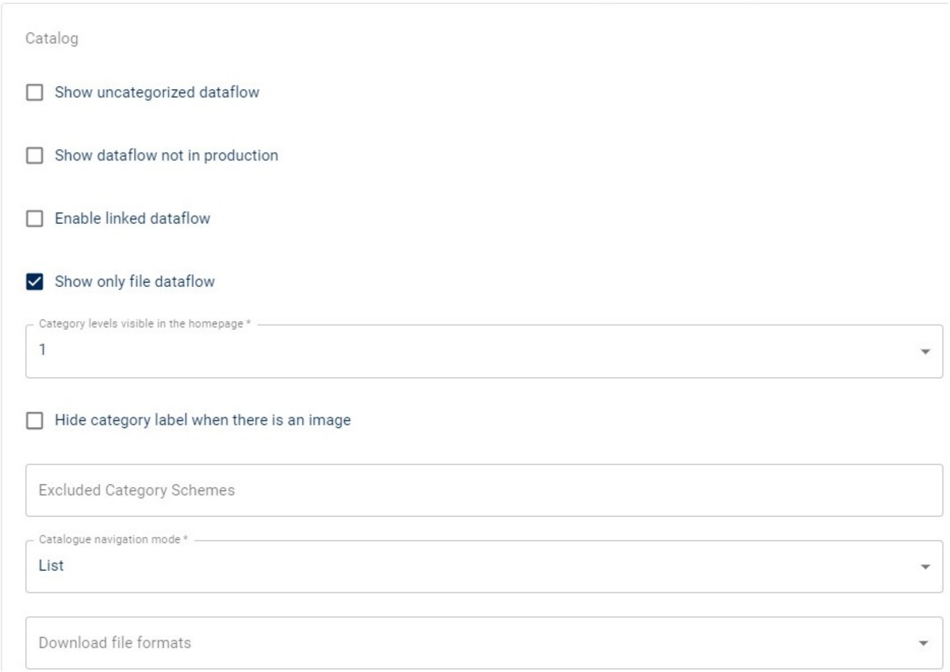
Codelist order: ORDER

Not displayed: NOT_DISPLAYED

Default: DEFAULT

- The ***"View"*** tab specifies some other visualization aspects of the node and of all its components. In particular it is possible to select configurations on how to :
  - show uncategorized dataflows.
  - Show dataflow not yet disseminated.
  - Enable linked dataflows.
  - Show only file dataflow.
  - Show all the category levels or just stop to the first one.
  - Hide category label when there is an image.
  - Exclude particular category schemes from the main page.

- Choose what kind of visualization the catalog navigation mode should have by default (TREE, CARD or LIST for example).
- Set the download file format.
- Set the symbol used to separate the integer part from the fractional part of a number written in decimal form (decimal separator) and the number of digits to show after the decimal separator when visualizing data in table view.
- Set the approximation function when managing decimal. It is possible to choose between ROUND TO NEAREST, ROUND UP or ROUND DOWN.
- Insert territorial dimension IDs (if this param is set, the application understands when to activate maps).
- Insert attributes' ids that will be hidden in the data visualization.
- Specify the temporal dimension order (choose between "Not Specified", "Ascending", "Descending").
- Show SDMX query info option when visualizing data and in the text field it is also possibile to insert the Base url of the SDMX endpoint to be displayed in the SDMX query pop-up.
- Choose last N periods of time (dynamic time-range) in order to set a default time period.
- Configure two fields (not mandatory): start day (dd/mm/yyyy, via datepicker) end day (dd/mm/yyyyy, via datepicker) which will be displayed by default in the absence of the actual time range on the dataflow, i.e. when the SDMX endpoint is unable to retrieve the time coverage of the data.
- Customize time period representation based on the language for year, month, day, quarter and semester.
- Manage the display of hierarchical codelists in a table in order to customize table visualization in case of data gaps in hierarchy - see *Manage the display of hierarchical Codelists* for more information and for practical examples of use. By filling in the "Attribute values at observation level" field the user specifies the attribute's ID and its value's ID in order to hide the attribute in the observation's cell. By also selecting the checkbox below the field, the user specifies that the empty row must be hidden entirely.
- Set which graph types are enabled for the current node. The user is allowed to enable all chart types present (ALL option), to enable just the ones he selects (SHOW ONLY option) or to disable all (NONE option).
- Anticipate the check on exceeding the maximum number of records threshold (the configuration will be ignored in all cases where the criteria selection mode is other than "ALL PARTIAL" and "ALL FULL").
- Force reading of annotations on linked dataflows when user sets different layout annotations on linked dataflows compared to the ones present in the orginal dataflows.
- Choose whether to include, among the node dashboards, those at the hub/application level. If the user enables this option, the hub/application dashboards will be inserted before those for the node. By default, this option will be disabled. When creating a new node, this tab will already have some default values already set, like for example: **Show only file dataflow** checked **category levels visible**: *1* **decimal separator**: *comma* **navigation mode**: *list*



Catalog

☐ Show uncategorized dataflow

☐ Show dataflow not in production

☐ Enable linked dataflow

☑ Show only file dataflow

Category levels visible in the homepage *: 1

☐ Hide category label when there is an image

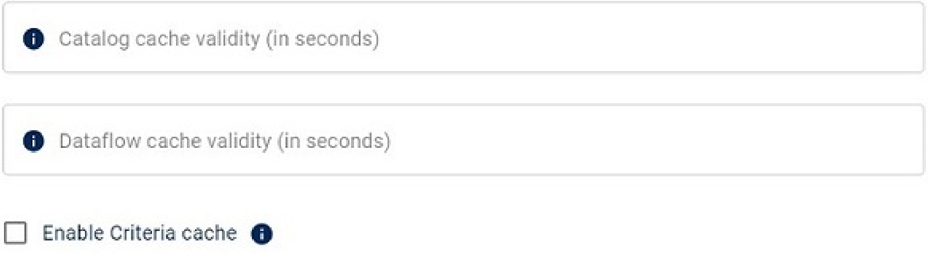
Excluded Category Schemes

Catalogue navigation mode *: List

Download file formats

- In the ***"Colors"*** tab, the user can manages node's colors customization. This functionality will be accessible to the superadmin and all users who have rights on managing the node and it allows customization of text colors, primary and secondary colors of the individual node. If the "Enable Custom Colors" box is not checked, the system will consider the colors present in the appConfig.json file present in the installation.
- In the ***"Cache"*** tab, the user can manages cache. In particular it is possible to set cache validity (TTL - time to live) for:
  - Catalog cache: it concerns the cache of data exposed by a single node, it speeds up the search on catalog, node preview, etc.. The user can decide cache time duration (in seconds) for all Catalog elements.
  - Dataflows cache: it is related to queries on individual dataflows The user can decide cache time duration (in seconds) for all Dataflows.
  - Enable/Disable criteria cache: enabled only if the criteria selection mode is set to ALL_PARTIAL or STEP_BY_STEP_PARTIAL.

  If time duration is not set means that cache never expires.



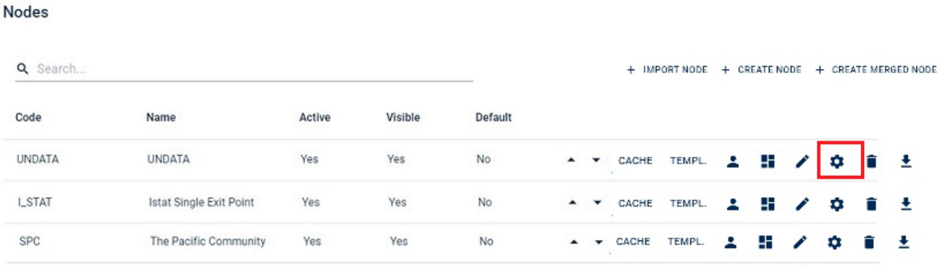
Catalog cache validity (in seconds)

Dataflow cache validity (in seconds)

☐ Enable Criteria cache

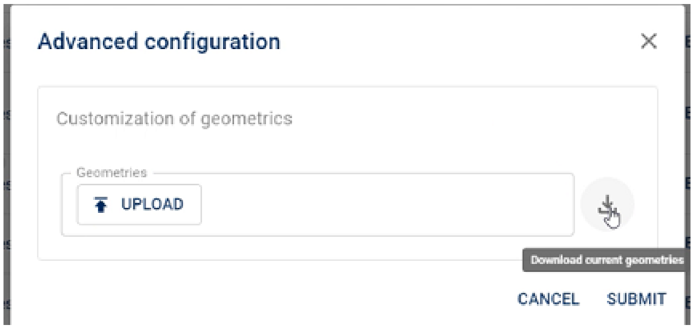
4.2.3 How to customize geography for a data provider

Normally geographic information is added in the system directly through the database but with the functionality present in the databrowser environment, the superadmin or node administrator will be able to customize this information by uploading a CSV file directly from the GUI specifically via a settings button in the node list that will allow access to the graphical interface dedicated to managing advanced configurations.



Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

By clicking the advanced configurations button of the individual node, the enabled user (superadmin or node administrator) will access a new interface in which he will be able to upload a csv file with the geographic information. If the user selects the download arrow, the current geography will be downloaded in a csv file named Geometry_common.csv (if no customization was made). On the other hand, if the user uploads a new geographic information file, renaming the common Geometry_common.csv file with another title (Geometry_NODEID for example), on the next downloads the file will be presented with the new name.



The csv file used for upload must include the following fields:

- ***Id***: unique identifier of the territory necessary for database JOIN with codes in the territory codelist (mandatory field)
- ***Label***: label of the territory; this information is optional and not used by the application
- ***Country***: country code of the geometry; this information is optional and not used by the application
- ***NutsLevel***: NUTS level of the geometry. This level is used by the application. It is a string that can be translated by the client, the key of which must have the format "nutsLevel{NutsLevel}." (required field)
- ***Source***: source of the geometry. This information is optional and not used by the application
- ***WKT***: the geometry in WKT format. For more details on the format see: https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry (required field)

- ***AlternativeIds***: alternative identifiers for the current territory. In case the same territory is present in the codelist with different identifiers, to avoid adding multiple rows with the same geometry, concatenation of identifiers can be entered in this field so that the system can receive them.

In addition to the mentioned fields, also "year_start" and "year_end" columns should be included, even if they are not currently used. Default values for these should be 0 and 9999, respectively, for year_start and year_end.

The csv file must have the header, which will be used to map the fields to the database columns, for this reason, the order of the fields will not be relevant; it must also have UTF-8 encoding, in order to avoid the loss of special characters. The csv must comply with the rfc4180 standard, i.e., use the comma to separate fields and quotation marks to delimit values containing commas; therefore, it is recommended to enclose values using quotation marks, especially those in the WKT field, since the WKT format includes the use of the comma. Empty values will automatically be converted to NULL for database columns that allow such a value. Once uploaded, the file will be used to populate the relevant dedicated tables depending on how the environment is configured, after successfully verifying the validity of the data.

4.2.4 How to import/export a data provider

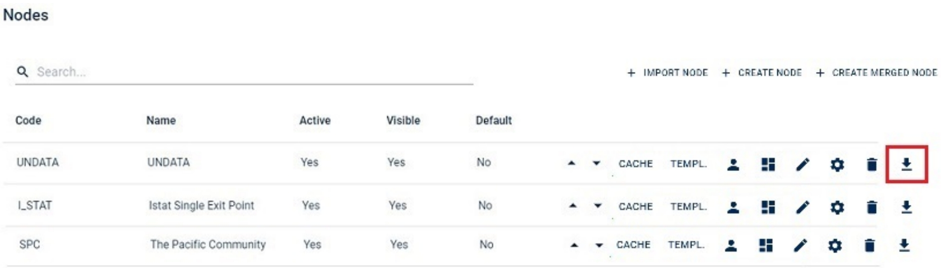
The system allows to export and import the nodes of a Databrowser installation, including the following node-related elements: Templates, Views, and Dashboards. These elements will be exported into a file, which can be imported into another installation of the Databrowser that has the same version. The node owner or a superuser will have the ability to perform node export, in a file that will include the node's configurations. Optionally, the user can include the templates, views, and dashboards associated with the node. The system will only enable the option to export dashboards if exporting views is enabled. To ensure the confidentiality of the exported information, the file can be encrypted using a password provided by the user at the time of export. During the export process, since views, templates, and dashboards are linked to users, this association will be severed, rendering the objects in the file 'anonymous'.

As dashboards can also contain views that are not from the current node, only the views associated with the current node will be retained during export. Other views will be removed from the dashboards, but a placeholder will remain that will show an error message to the end user. During the export, if dashboards are included, only their association with the exported node will be preserved, without considering any associations they had with other nodes. Users are not subject to export/import, as they operate at the application level and are common to different nodes.

When importing the node, it is possible that the titles or names of imported elements may be duplicated. In such cases, the system will prompt the user for further action, allowing them to change the names or titles accordingly.

4.2.4.1 Export Node

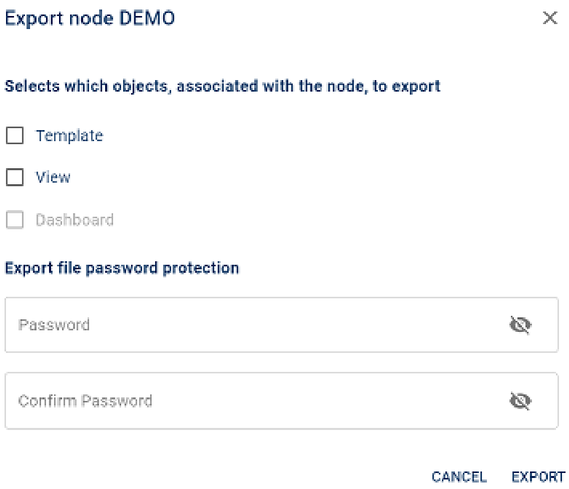
The export button will only be visible to authorised users (superadmin and administrator of the individual node), in the node list



Nodes

Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

Once clicked, a new pop-up window is shown where the user can select to include templates, views and dashboards is present. It is also possible to set a password on the downloaded file to ensure confidentiality of the exported information.



Export node DEMO

Selects which objects, associated with the node, to export

☐ Template

☐ View

☐ Dashboard

Export file password protection

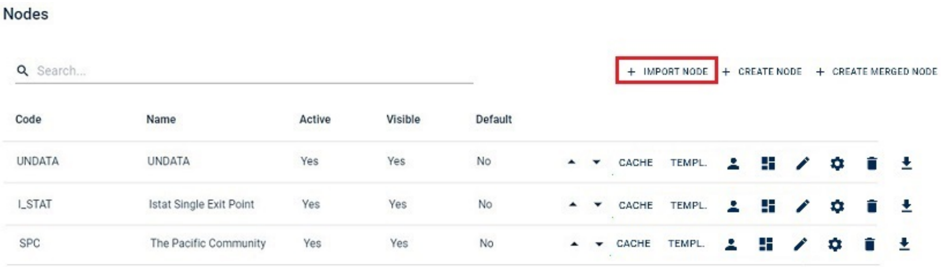
Password

Confirm Password

The exported file will follow the specific format [NodeID]_[Data].dbrowser.bak

4.2.4.2 Import Node

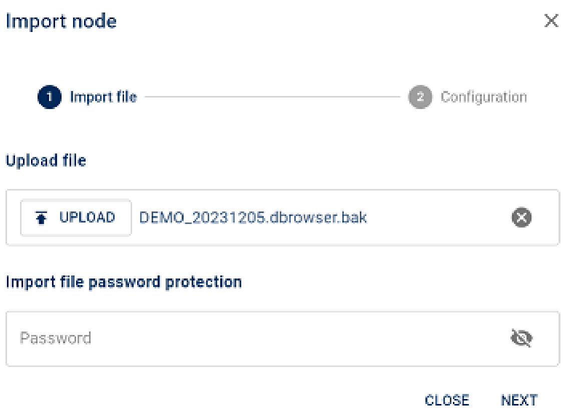
The import process, which will begin when the superadmin user clicks on "+ IMPORT NODE", in the node list, will be carried out through a two-step wizard



Nodes

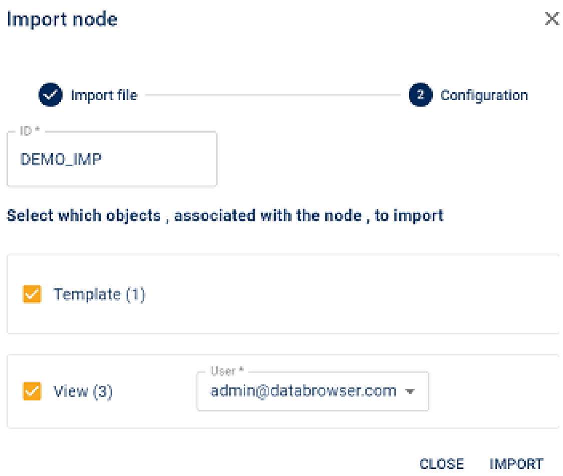
Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

In the first step, users will be prompted to select the file for import along with the password, which was requested during the export. It will only be necessary to enter the password if the file has been generated encrypted.



DEMO_20231205.dbrowser.bak

In the second step, the superadmin will have the opportunity to change the node ID. The ID will be validated to ensure it doesn't already exist within the installation. After selecting the elements, users will have the opportunity to specify the user to be linked with each respective element.

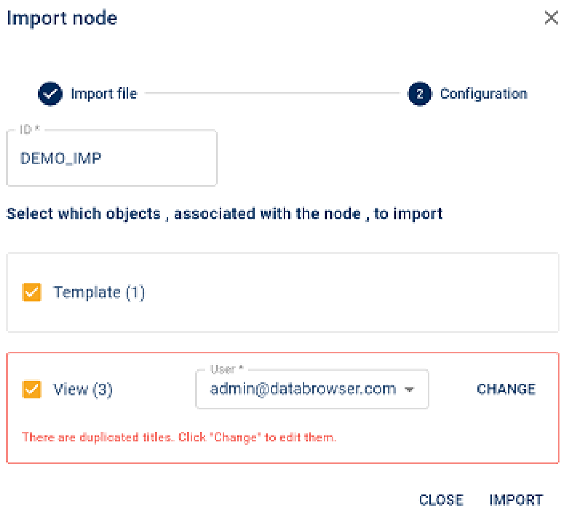


ID *: DEMO_IMP

☑ Template (1)

☑ View (3) User *: admin@databrowser.com

If views and dashboards with the same name already exist, by using the change button, the titles can be reinstated.



ID *: DEMO_IMP

☑ Template (1)

☑ View (3) User *: admin@databrowser.com

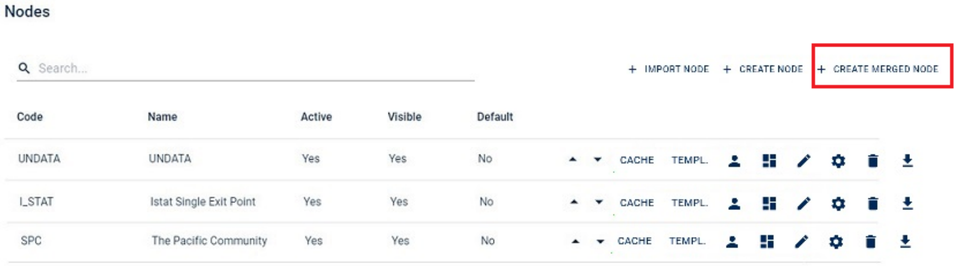
There are duplicated titles. Click "Change" to edit them.

After applying the changed titles, it will be possible to click on 'import' to check the validity of the new titles and complete the import. If not all elements were selected during export (e.g.

views and dashboards were not selected), the wizard will only display the elements available for import (e.g. templates).

4.2.5 How to merge data providers

The databrowser environment contemplates the possibility to create a node by merging existing ones. This functionality is reachable from the node list window by clicking the "+ CREATE MERGED NODE" button.



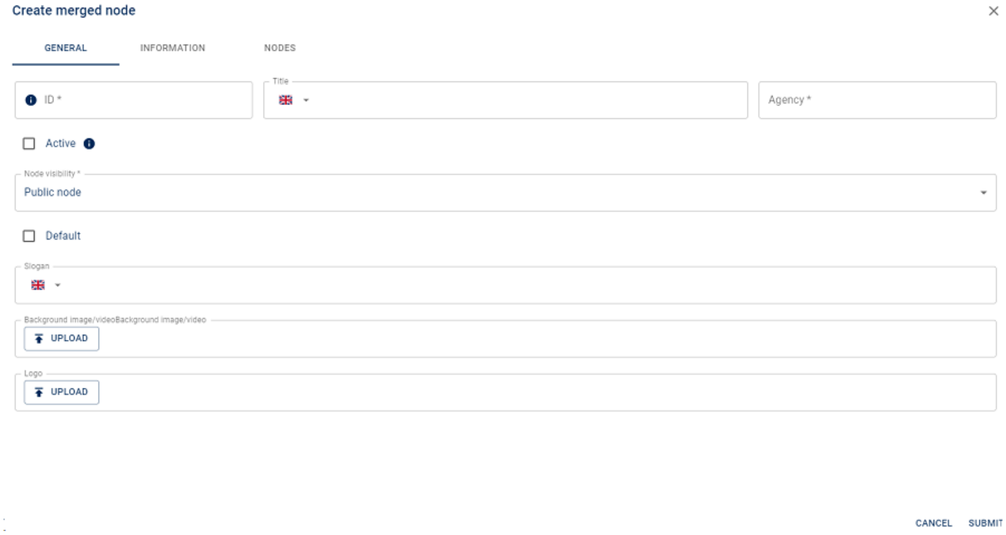
Nodes

Search...

+ IMPORT NODE + CREATE NODE + CREATE MERGED NODE

Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

Once this button is clicked, a new windows is shown with three tabs similar to the classical node creation window. In the "General" tab, the user must insert the mandatory information necessary for node identification, in particular the node identifier, the agency and a title which can be ste in different languages. It is possible to set the new node as public or hidden, and to upload images for its background or logo.



Create merged node

ID *

Title

Agency *

□ Active

Node visibility *
Public node

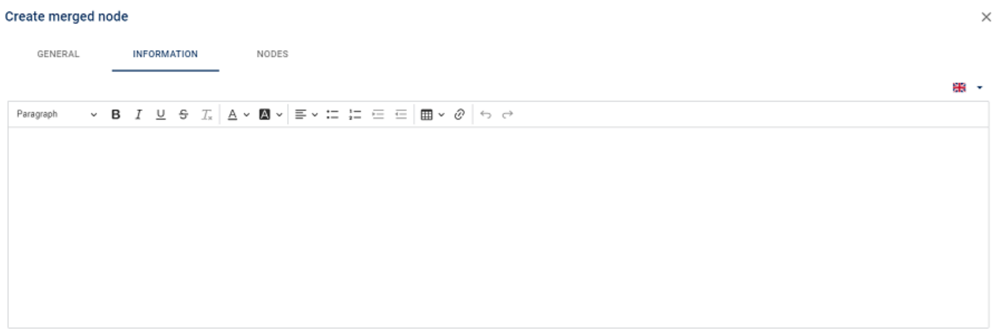
□ Default

Slogan

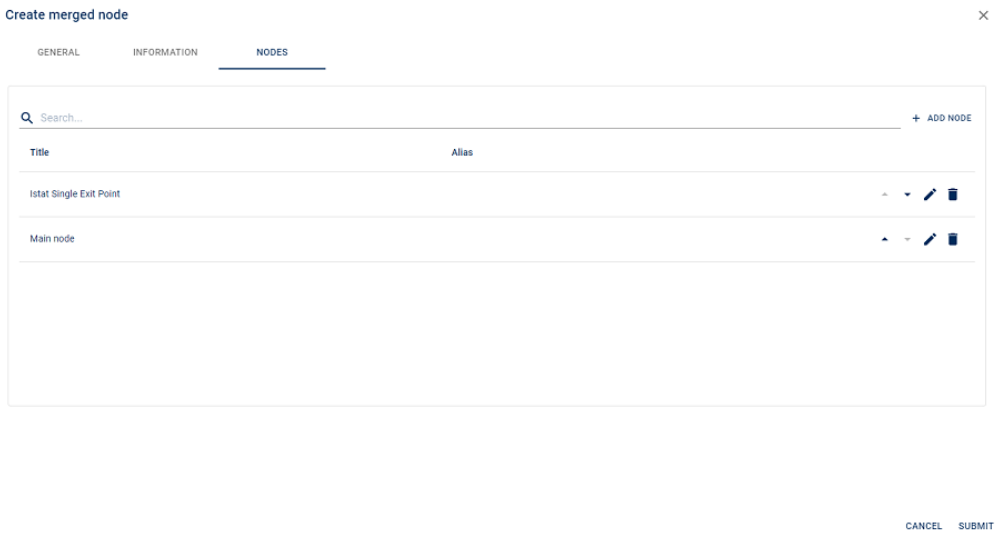
Background image/videoBackground image/video

Logo

In the "Information" tab, the user can give a brief description of the node which will appear once it will be selected.



In the "Nodes" tab, the user must select the nodes to be merged by adding them through the "+ ADD NODE" button which shows the list of available selectable nodes.

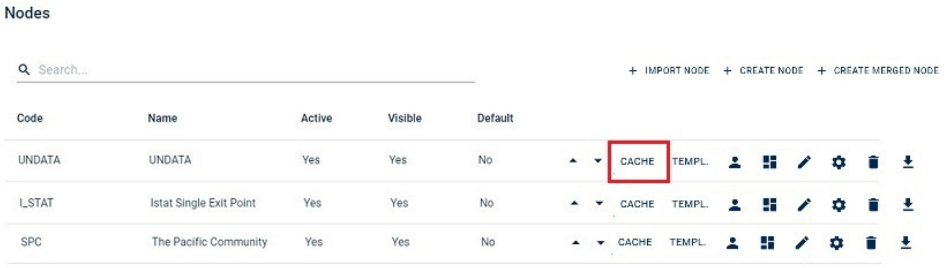


Title	Alias
Istat Single Exit Point	
Main node	

When the creation step is completed, the user can save the changes and the new node will be present in the node list of the environment. Merged nodes cannot be exported and there will not be any cache management. The catalog of the merged node will present, to the user who has selected it for exploration, a merge of the catalogs of its composing nodes. The merging of the catalogs will maintain the order defined in the UI by the administrator, and there is no category/category scheme merge or dataflow merge. To uniquely identify categories and data within the Merged node, it will be necessary to extend the concept of a category or data identifier by adding the original node identifier to the element identifier.

4.2.6 How to configure Dataflows cache

By clicking on "CACHE" on Nodes configuration frame the user opens a new window where it is possible to edit or delete cache for each dataflow.



Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

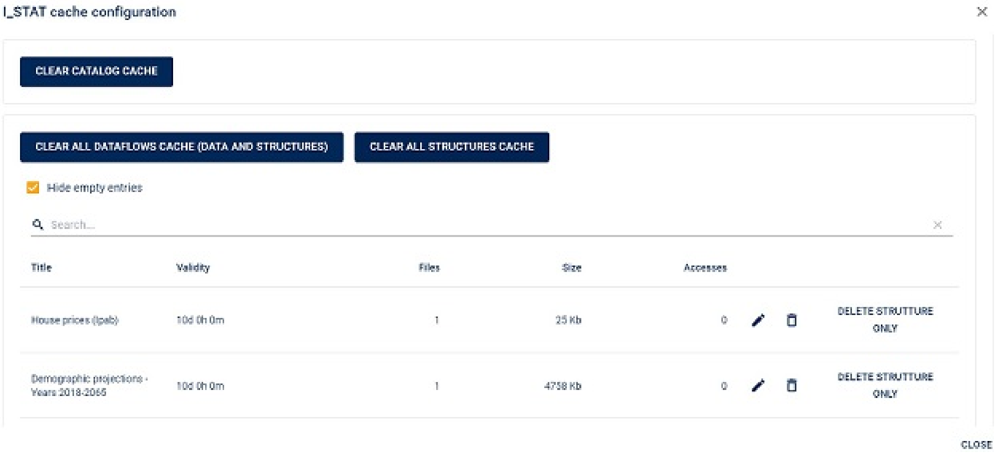
In Dataflows cache configuration window, for each dataflow these attributes are listed:

- cache duration time (in seconds)
- number of cached files
- cache size

The super administrator user, after selecting a dataflow, can change cache duration time (pencil icon), delete cache (trashcan icon) or delete structure cache only by clicking the "DELETE STRUCTURE ONLY" button.

Moreover the user can:

- clear catalog cache
- clear dataflow cache for all the dataflows in the node and related structure
- clear all structures cache that will clear the cache of all DSD and its descendants (Codelist and Concept Scheme)
- show/hide not cached dataflows. By checking the "Hide empty entries" box, if data is not cached, it is not show in the list of cached data.


I_STAT cache configuration
CLEAR CATALOG CACHE
CLEAR ALL DATAFLOWS CACHE (DATA AND STRUCTURES)
CLEAR ALL STRUCTURES CACHE
☑ Hide empty entries
Search...
CLOSE

Title	Validity	Files	Size	Accesses			
House prices (Ipab)	10d 0h 0m	1	25 Kb	0	✎	🗑	DELETE STRUTTURE ONLY
Demographic projections - Years 2018-2065	10d 0h 0m	1	4758 Kb	0	✎	🗑	DELETE STRUTTURE ONLY

Node administrator users are allowed to manage cache only if the super administrator user sets them the right permission otherwise the "CACHE" clickable link won't even be present in the node configuration window.

4.3 User management

In this section we will show and describe all possible users that this application allows. There are different types of scenarios based on the permissions that the superadmin user sets to each other user present.

Let's take a closer look to the user roles and functionalities in the following paragragraphs.

4.3.1 Application roles

There are four types of possible users allowed in this application:

1. **Super administrator**: he is the only one that can access all configuration sections of the application, manage nodes and, most importantly, manage users and roles. He can configure the dashboards that can be shown in the Application's home page. Of course, the super administrator will have the same permissions of the node administrator and the registered user. (See *How to add a super administrator* paragraph for more details)
2. **Node administrator**: he can create templates and dashboards for the nodes he owns and manages, accessing their specific sections. He can configure the node's home page and, in particular, which dashboard show in it. However, it is possible that the node administrator does not have all permissions regarding templates management, cache management and so on. The super administrator sets permissions for the node administrator by checking one or all the options present in the node configuration section. (See *How to add a node administrator* paragraph) Permission options relate to:
   - *Cache management*
   - *Template management*
   - *Configuration management*
3. **Registered user**: he has its own account but does not have management permissions. He can visualize and download files of all nodes. He can create, visualize or remove views on the dataflows he can access. (See *How to add a registered user* paragraph for more information)
4. **Anonymous user**: does not have his own account and he has read-only permissions on nodes.

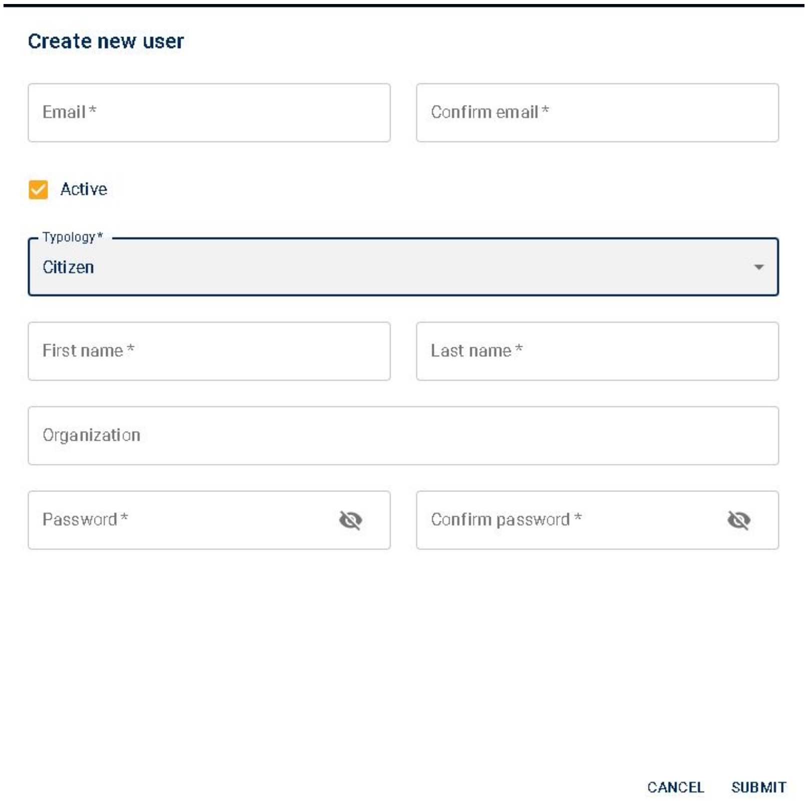
4.3.2 How to add a registered user

A registered user is a common user that has an account which enables him to login the application but does not have permissions regarding management of any kind. He can create views, visualize them and delete them if necessary. In order to create a new registered user, a super adminstrator user must enter the user setting menu by accessing the main menu (settings icon) of the homepage and selecting the "Users" item.

From the window that is shown, he must select the "Create user" button that will bring to a new window which defines the following mandatory and optional fields:

- Email: mandatory. It represents the username necessary for logging in to the application and it cannot be changed.
- Confirm email: mandatory. Field for email confirmation.
- Active checkbox: if checked means that the user is active. The super administrator user can, in any time, deactivate a user.
- Typology: mandatory. It defines if the new user is a citizen or a public authority.
- First name: mandatory. User's first name.

- Last name: mandatory. User’s last name.
- Organization: optional. This field is filled if the user is part of some organization.
- Password: mandatory. In this field the new user sets his password.
- Confirm password: mandatory. Field for password confirmation.

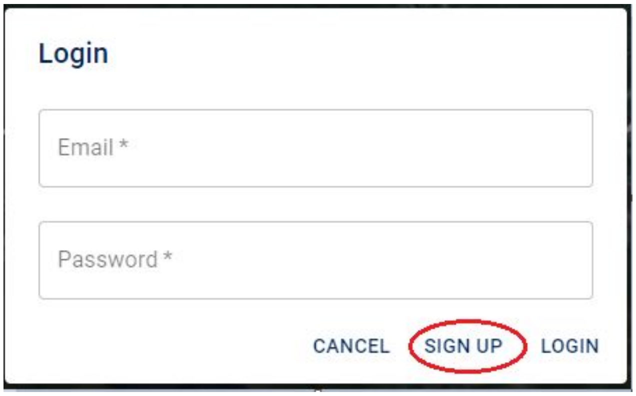


☑ Active

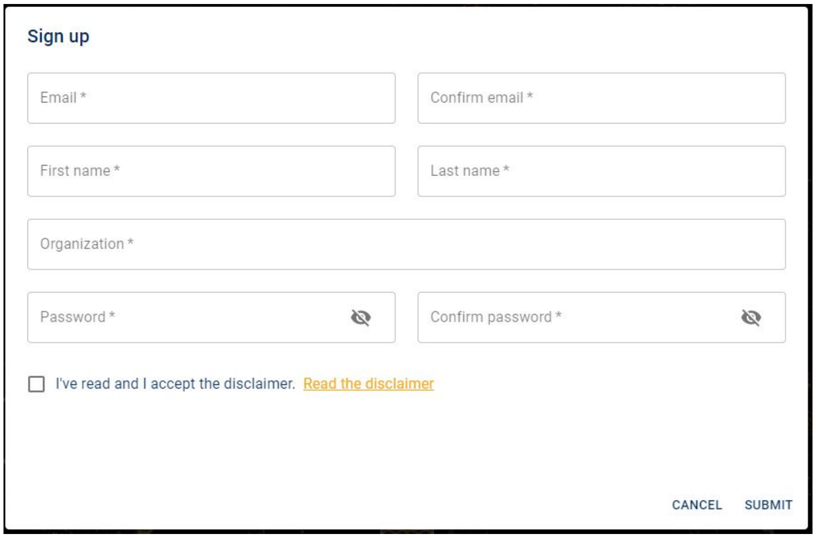
Typology *: Citizen

4.3.3 How to sign up to the website

It is also possibile to create a new user by accessig the login link and by clicking on “SIGN UP”



This opens a new window in which the new user defines his information. It is necessary to check the disclaimer box to continue the operation otherwise an error message will appear.



Sign up

Email *

Confirm email *

First name *

Last name *

Organization *

Password *

Confirm password *

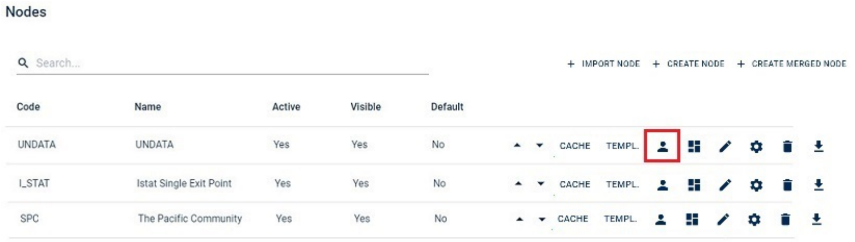
□ I've read and I accept the disclaimer. Read the disclaimer

CANCEL SUBMIT

Before the user is enabled, a verification of the entered email will have to be carried out (if this option is set in the configuration of the databrowser). Therefore, following the submission of the registration form, an email will be sent to the indicated email address and, the user who receives the email, must then click on the appropriate link present (which will have limited validity) to confirm the identity and thus be enabled to use the portal. If the user who registers does not click on the activation link within the prescribed time, the token will expire and he will have to make a new registration. In cases where the user tries to make a registration with the same email during the validity period of the token that has not yet been confirmed, the user will be informed that the same email is already in use and a new email will be resent for account activation.

4.3.4 How to authorize a user as node administrator

In order to add a new node administrator, the super administrator user can create a new user (as described in section *How to add a registered user*) and give him permission or he can use one of the already existing users. From the "Users" configuration panel, the super admininistrator can edit or erase the users. At this point, permission must be given to the new user regarding management of the node (this management relates to node configuration, templates and cache settings). From the main settings menu, the super administrator selects the node configuration option and by clicking on the person icon of a specific node, enables permissions to the new user for that particular node.



Nodes

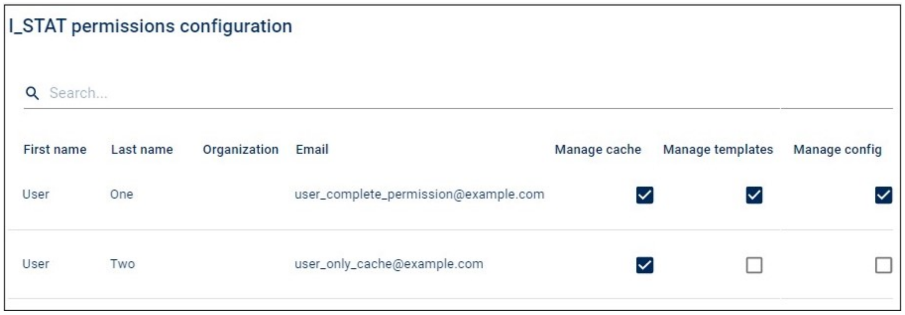
Search...

+ IMPORT NODE + CREATE NODE + CREATE MERGED NODE

Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

The window that allows the setting, contains all users (because more than one user can manage the same node) and three checkbox that enable, respectively, cache management, template management and configuration management. If all checkbox are selected, the user has all permissions on nodes otherwise, some options might not be present in the node configuration window or data visualization.

For example, considering the following permission given to users user_complete_permission@example.com and user_only_cache@example.com



I_STAT permissions configuration

Search...

First name	Last name	Organization	Email	Manage cache	Manage templates	Manage config
User	One		user_complete_permission@example.com	☑	☑	☑
User	Two		user_only_cache@example.com	☑	□	□

user_complete_permission@example.com has access to everything regarding cache, templates, node configuration and dashboard management for the node itself. This user can edit the node settings but cannot delete the node itself. On the other hand, user_only_cache@example.com, can only manage cache and won't even be able to create or view templates.

4.3.5 Manage user's password

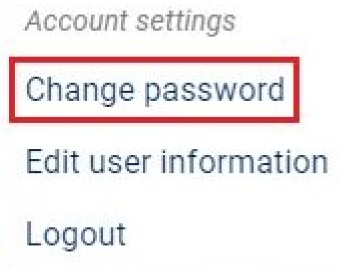
It might happen that the user doesn't remember his password or, in some cases, he would like to change it. In this application, the before mentioned operations are possible and easy to perform.

RECOVER PASSWORD

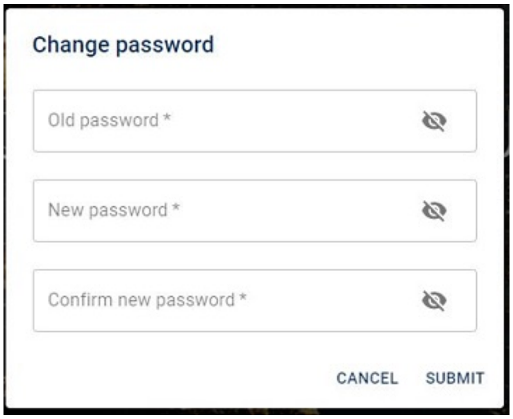
In the login window, right under the User/Password boxes, there is the *"Recover password"* link that allows the user to retrieve his password. Once the user clicks this link, a new window opens in which the email address must be inserted. The user will receive an email containing a restore password link that helps the user to redefine the password once again. So, no password is sent via email, this operation guides the user to create a new one.

CHANGE PASSWORD

The change password operation is also very easy to perform. Once the user is logged in, by clicking on the user icon on the top right of the page, will show him a small window where the *"Change password"* link is available

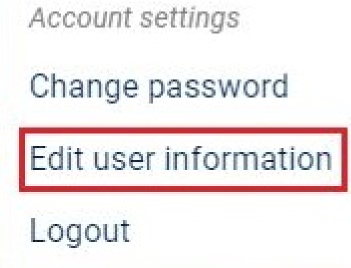


Once the link is clicked, a new window appears in which the user defines his new password

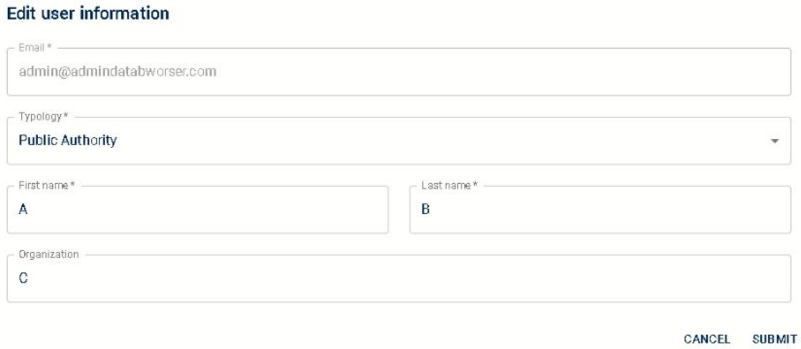


CHANGE INFORMATION

The operation of editing the user's information is also very simple to perform. Once the user is logged in, clicking on the user icon at the top right of the page, it will be shown a small window where the *"Edit user information "* link is available.



Once the link is clicked, a new window appears in which the user defines his new information



Email *: admin@admindatabworser.com

Typology*: Public Authority

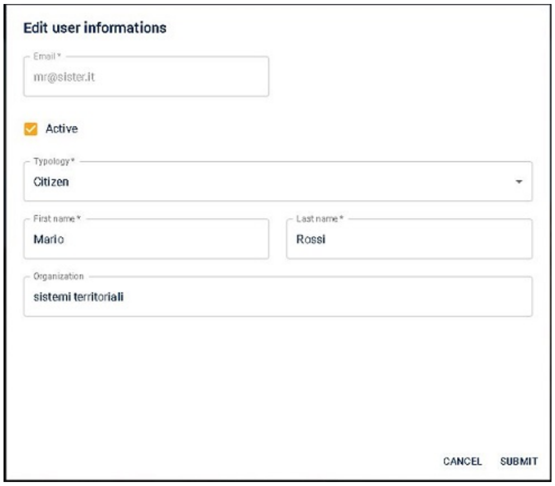
First name *: A

Last name *: B

Organization: C

4.3.6 Enable/Disable user

It might happen that a user needs to be disabled, in this case the super administrator user can perform the disable operation. In the user setting menu (accessible from the main menu of the page), the list of all the registered user appears. Every line of the list refers to an user and his information (name, surname, organization) and one specific column in the lines tells if the user is active or not. If the user's account is active, there will be a YES, otherwise there will be a NO. To change the activeness of the account, the super administrator user needs to click the edit button (pencil icon) and select/deselect the active box.



Edit user informations

Email*: mr@sister.it

☑ Active

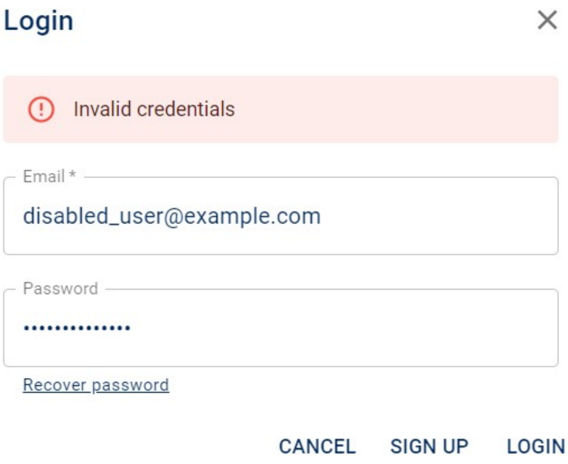
Typology*: Citizen

First name*: Mario

Last name*: Rossi

Organization: sistemi territoriali

If disabled users try to login the application, an error message will describe the inability to connect.



Login

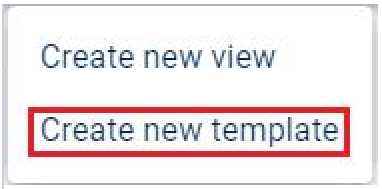
Invalid credentials

Email*: disabled_user@example.com

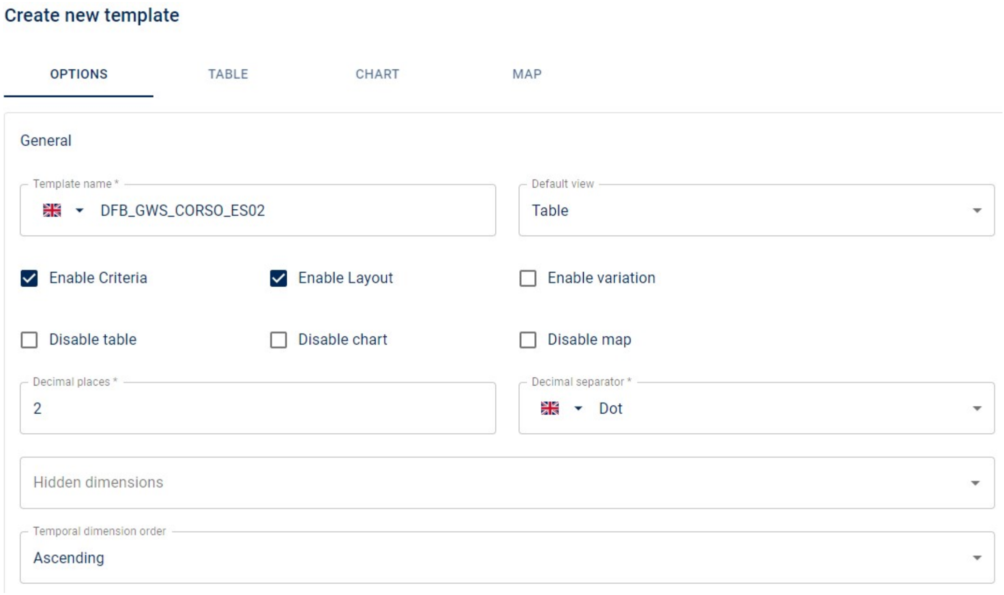
Password: ••••••••••••••

4.4 Template management

The template is a “default visualization” of the data chosen by the super administration user (and node administrator user if allowed by the super administrator). There can be only one template for each dataset contained in a node. The super administrator user sets the configurations for criteria and layout and saves the template by clicking the save button 💾 on the top-right panel above the table. The multilanguage functionality allows users to set different titles depending on the selected language. This is made possible by selecting the flag related to a language and by defining a title for that language.



Once “Create new Template” is selected, this action will open a new window that allows to set other configurations.



Create new template

General

Template name * DFB_GWS_CORSO_ES02

Default view Table

☑ Enable Criteria ☑ Enable Layout □ Enable variation

□ Disable table □ Disable chart □ Disable map

Decimal places * 2

Decimal separator * Dot

Hidden dimensions

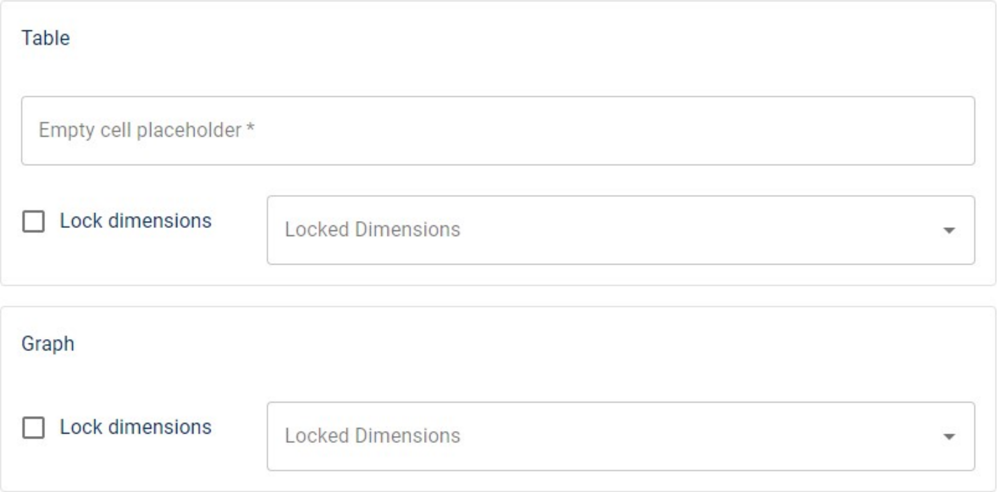
Temporal dimension order Ascending

The super administrator user, in the general tab, can choose to:

- enable/disable the criteria and layout when accessing this data (this means that the buttons and windows regarding the criteria and layout will no longer be shown);
- enable variation: this will enable the possibility to see the trend or the cyclical variation. In the first case (trend) the percentage variation from the same month or period of the previous year is shown while in the second case (cyclical) the percentage variation from the previous month or period is shown;
- disable visualizers so that once the template is opened the selected visualizers won’t be present in the page;
- set the number of digits to show after the decimal separator when visualizing data in table view and symbol used to separate the integer part from the fractional part of a number written in decimal form (decimal separator);
- set the approximation function for decimals;
- set one or more dimensions as hidden, they will be hidden in the visualization phase only if they are composed of only one element but they will be removed from the criteria anyway,
- set the order of visualization for the temporal dimension;

It is also possible, from this window, to:

- set the value of the empty cell in case of empty cells;
- lock dimensions in table so that they cannot be changed from their layout position (pivoting section);
- lock dimensions in chart so that they cannot be moved from their intial configuration.



Table

Empty cell placeholder *

□ Lock dimensions

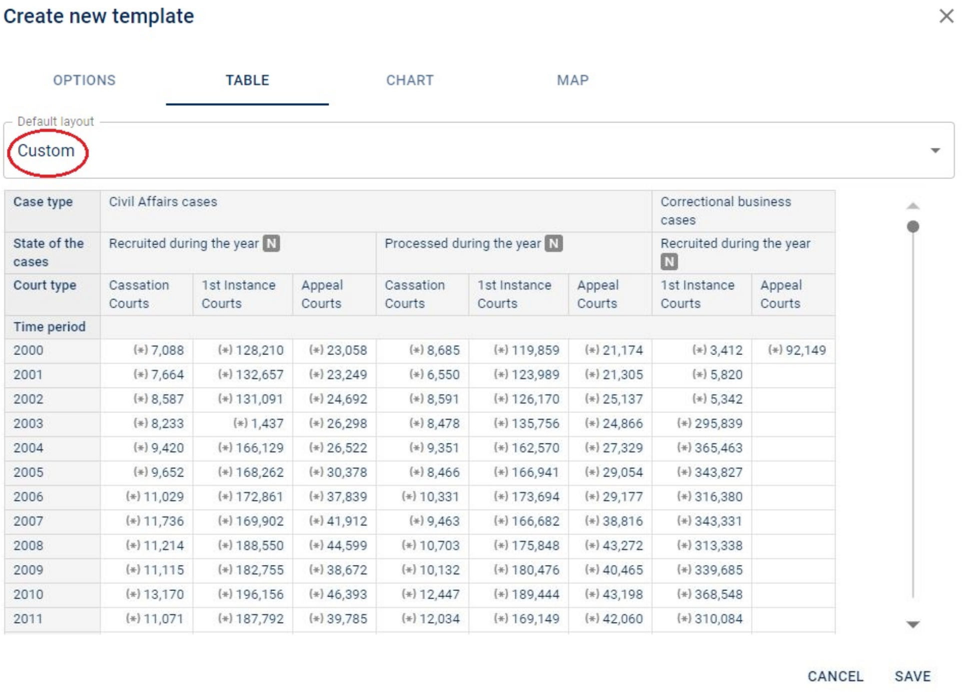
Locked Dimensions

Graph

□ Lock dimensions

Locked Dimensions

In the table tab, the super administrator user can choose to keep a default view of the table (this means that visualization will depend on what it is set at node level configuration or at data annotation level) or show the custom view that the user has set modifying the criteria and/or pivoting, during the visualization itself. In the following image, the dafault layout chosen for the template's table is CUSTOM, this means that the user has changed the default layout configuration while visualizing data and wants to save his configuration's choice.



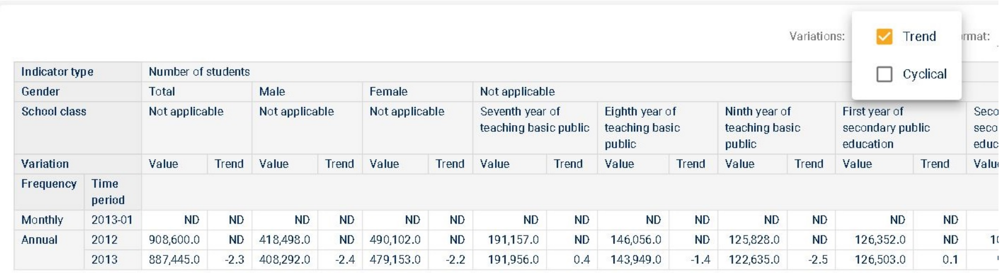
Create new template

Default layout: Custom

Case type	Civil Affairs cases						Correctional business cases	
State of the cases	Recruited during the year N			Processed during the year N			Recruited during the year N	
Court type	Cassation Courts	1st Instance Courts	Appeal Courts	Cassation Courts	1st Instance Courts	Appeal Courts	1st Instance Courts	Appeal Courts
Time period								
2000	(*) 7,088	(*) 128,210	(*) 23,058	(*) 8,685	(*) 119,859	(*) 21,174	(*) 3,412	(*) 92,149
2001	(*) 7,664	(*) 132,657	(*) 23,249	(*) 6,550	(*) 123,989	(*) 21,305	(*) 5,820	
2002	(*) 8,587	(*) 131,091	(*) 24,692	(*) 8,591	(*) 126,170	(*) 25,137	(*) 5,342	
2003	(*) 8,233	(*) 1,437	(*) 26,298	(*) 8,478	(*) 135,756	(*) 24,866	(*) 295,839	
2004	(*) 9,420	(*) 166,129	(*) 26,522	(*) 9,351	(*) 162,570	(*) 27,329	(*) 365,463	
2005	(*) 9,652	(*) 168,262	(*) 30,378	(*) 8,466	(*) 166,941	(*) 29,054	(*) 343,827	
2006	(*) 11,029	(*) 172,861	(*) 37,839	(*) 10,331	(*) 173,694	(*) 29,177	(*) 316,380	
2007	(*) 11,736	(*) 169,902	(*) 41,912	(*) 9,463	(*) 166,682	(*) 38,816	(*) 343,331	
2008	(*) 11,214	(*) 188,550	(*) 44,599	(*) 10,703	(*) 175,848	(*) 43,272	(*) 313,338	
2009	(*) 11,115	(*) 182,755	(*) 38,672	(*) 10,132	(*) 180,476	(*) 40,465	(*) 339,685	
2010	(*) 13,170	(*) 196,156	(*) 46,393	(*) 12,447	(*) 189,444	(*) 43,198	(*) 368,548	
2011	(*) 11,071	(*) 187,792	(*) 39,785	(*) 12,034	(*) 169,149	(*) 42,060	(*) 310,084	

The same will be for the chart and map tabs in the following implementations.

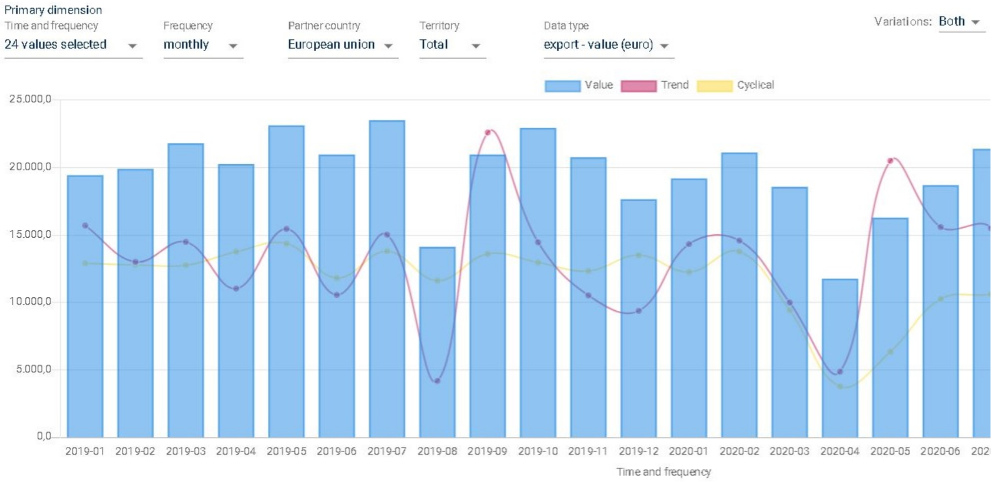
If the user chooses to enable variations, on the top right page, a small panel appears where the use can choose whether to show variations as trend, as cyclical or not show them at all.



Variations: ☑ Trend ☐ Cyclical rmat:

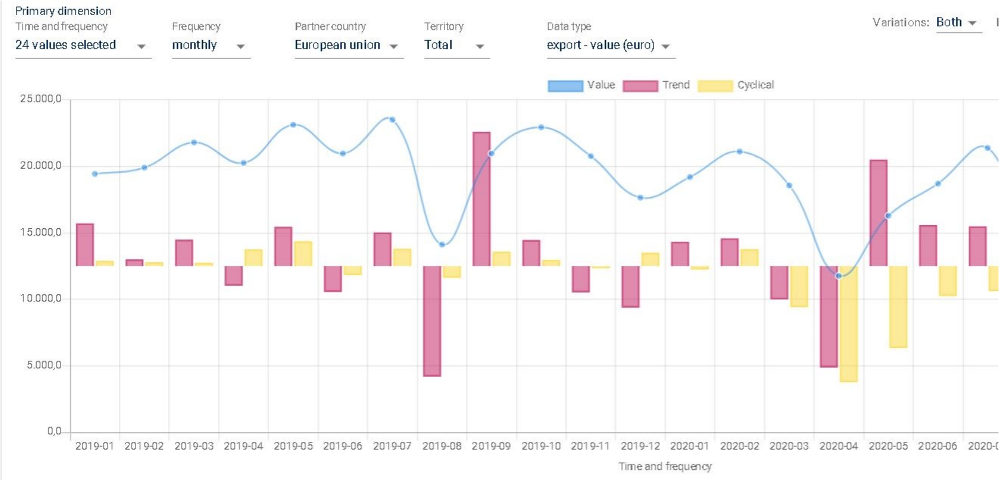
Indicator type		Number of students														
Gender		Total		Male		Female		Not applicable								
School class		Not applicable		Not applicable		Not applicable		Seventh year of teaching basic public		Eighth year of teaching basic public		Ninth year of teaching basic public		First year of secondary public education		Seco seco educ
Variation		Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Value	Trend	Valu
Frequency	Time period															
Monthly	2013-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Annual	2012	908,600.0	ND	418,498.0	ND	490,102.0	ND	191,157.0	ND	146,056.0	ND	125,828.0	ND	126,352.0	ND	1(
	2013	887,445.0	-2.3	408,292.0	-2.4	479,153.0	-2.2	191,956.0	0.4	143,949.0	-1.4	122,635.0	-2.5	126,503.0	0.1	'

If the user chooses to visualize the data with a bar graph, the variations will be shown as lines. Two lines will be drawn if we choose to visualize both variations, or if we have only one variation but there is also a secondary dimension in the graph.



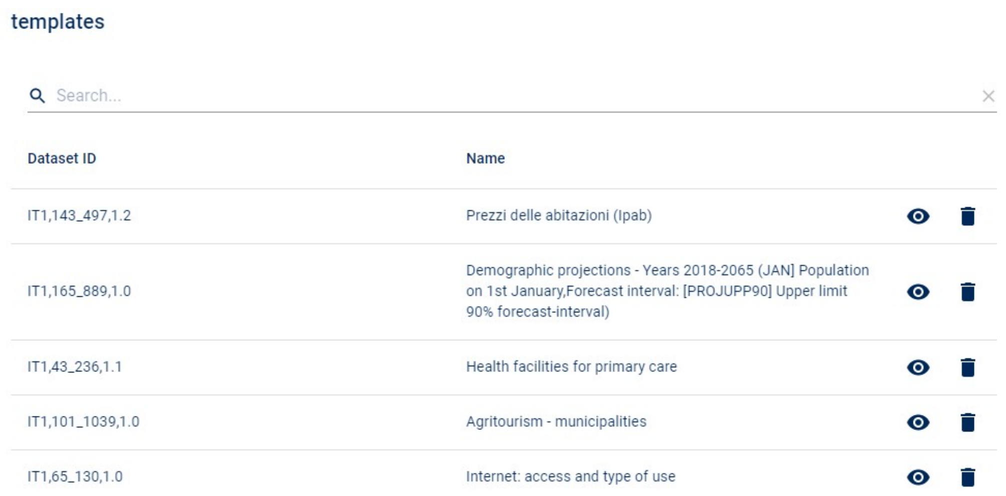
Primary dimension
Time and frequency: 24 values selected
Frequency: monthly
Partner country: European union
Territory: Total
Data type: export - value (euro)
Variations: Both

Otherwise, if the user chooses to visualize the data with a line graph, the variations will be shown as bars with the same logic described above.



Primary dimension
Time and frequency: 24 values selected
Frequency: monthly
Partner country: European union
Territory: Total
Data type: export - value (euro)
Variations: Both

If a specific data already has a template, if the administration user decides to save new configurations, these will overwrite the previously saved ones. There will not be a new template saved for the same data. It is possible to see saved templates by selecting the “Template” item from the configuration node settings.

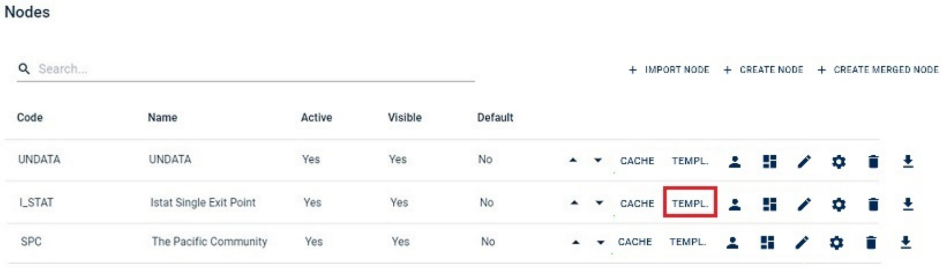


templates

Search...

Dataset ID	Name
IT1,143_497,1.2	Prezzi delle abitazioni (Ipab)
IT1,165_889,1.0	Demographic projections - Years 2018-2065 (JAN) Population on 1st January,Forecast interval: [PROJUPP90] Upper limit 90% forecast-interval)
IT1,43_236,1.1	Health facilities for primary care
IT1,101_1039,1.0	Agritourism - municipalities
IT1,65_130,1.0	Internet: access and type of use

The new window shows the information about the saved template (which node is part of, the data ID, description) and also actions the user can perform (visualize the template, delete it).

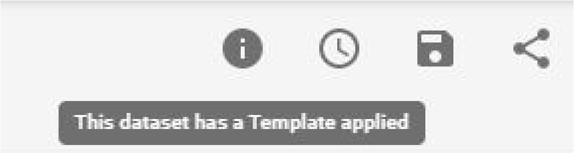


Nodes

Search...

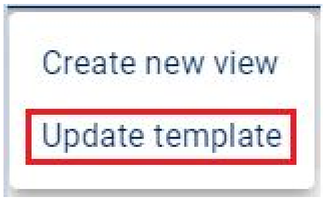
Code	Name	Active	Visible	Default
UNDATA	UNDATA	Yes	Yes	No
I_STAT	Istat Single Exit Point	Yes	Yes	No
SPC	The Pacific Community	Yes	Yes	No

It is important to notice that if a template is set for a specific data, once this data is opened, the user won't see the criteria window and most of all there will be an information icon, on the top right of the table, saying that there is a template applied



This dataset has a Template applied

If the template needs to be changed and modified, this is also possible. The user with template management permissions, can modify the table and then click on the save button and select "Update template".

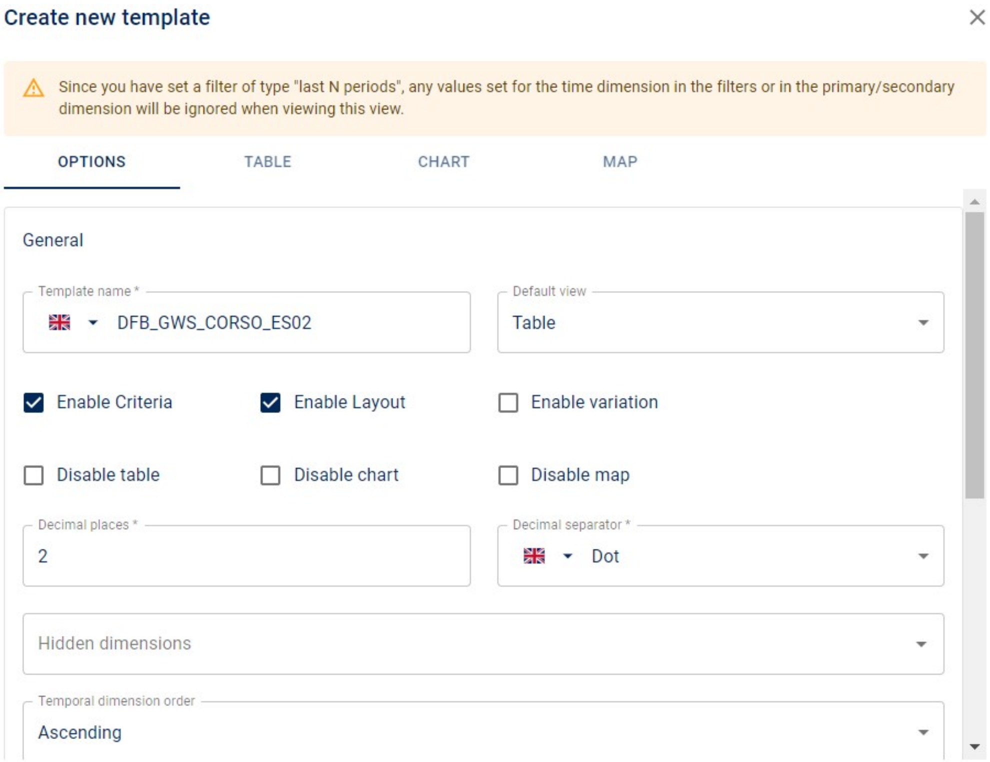


If a filter of type "last periods" is set in the criteria on the temporal dimension, then the templates will always show:

- the last available period in the data, if the temporal dimension is inserted in the filters of the multidimensional table
- all the values present for the data, considering the last N periods, if the time dimension is

set as primary or secondary dimension of the graph

even if the current view that the user is saving is different (e.g. a period other than the last one is filtered). The user who creates this template will be warned at save time that the values of the filter or the primary/secondary dimension he has set will be ignored at display time and will be asked to set a "custom range" policy if he wants to preserve those values.



Create new template

Since you have set a filter of type "last N periods", any values set for the time dimension in the filters or in the primary/secondary dimension will be ignored when viewing this view.

General

Template name *: DFB_GWS_CORSO_ES02

Default view: Table

☑ Enable Criteria ☑ Enable Layout □ Enable variation

□ Disable table □ Disable chart □ Disable map

Decimal places *: 2

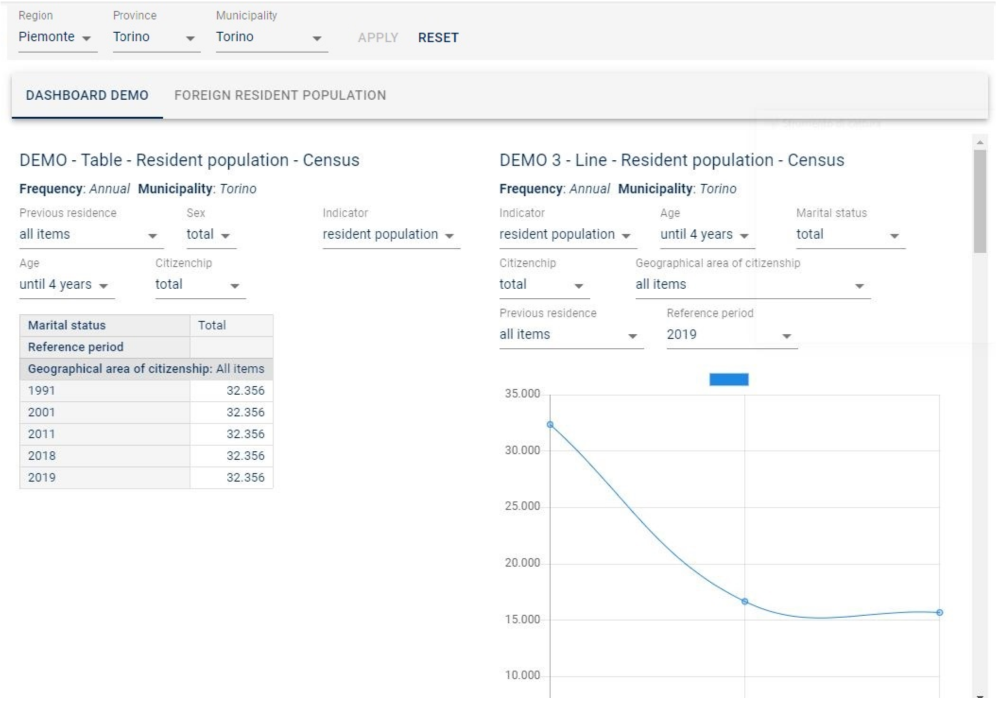
Decimal separator *: Dot

Hidden dimensions

Temporal dimension order: Ascending

4.5 Dashboard management

Dashboards are groups of views and text that the user can put together in the same page. For example:



Region: Piemonte
Province: Torino
Municipality: Torino

DEMO - Table - Resident population - Census

Frequency: *Annual* **Municipality**: *Torino*

Previous residence: all items
Sex: total
Indicator: resident population
Age: until 4 years
Citizenchip: total

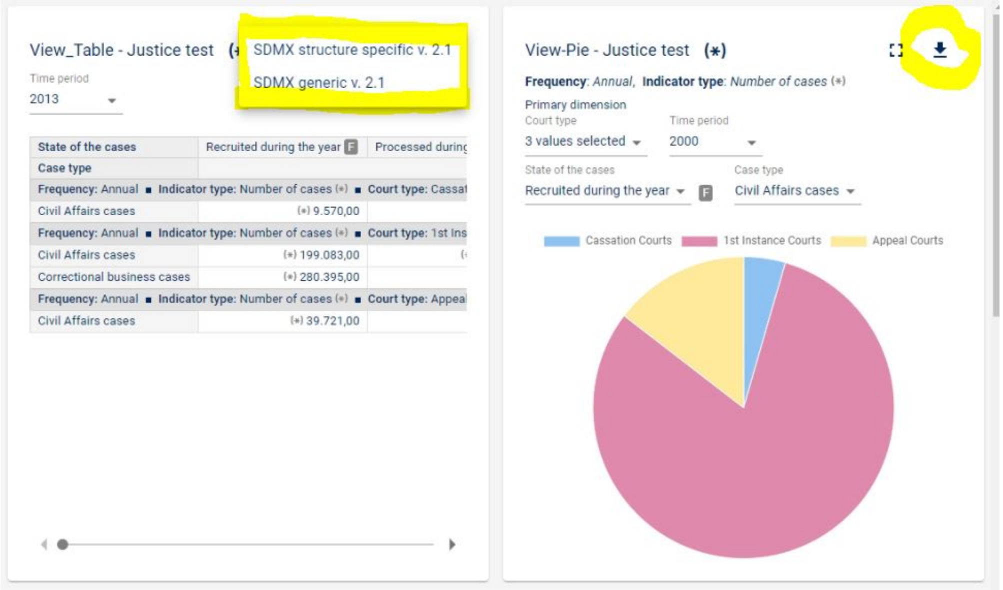
Marital status	Total
Reference period	
Geographical area of citizenship: All items	
1991	32.356
2001	32.356
2011	32.356
2018	32.356
2019	32.356

DEMO 3 - Line - Resident population - Census

Frequency: *Annual* **Municipality**: *Torino*

Indicator: resident population
Age: until 4 years
Marital status: total
Citizenchip: total
Geographical area of citizenship: all items
Previous residence: all items
Reference period: 2019

Most important operations on dashboards are ***creation*** and ***management***. The super administrator user and also a node administrator user with configuration permission, have all powers on creating dashboards on node level. They can change dashboards' order or delete them. However, only the super administrator can set dashboards on the application level. All elements in dashboards can be independently downloaded (by clicking on the export icon) and also viewed in *fullscreen* mode.



View_Table - Justice test

Time period: 2013

State of the cases	Recruited during the year F	Processed during
Case type		
Frequency: Annual ■ Indicator type: Number of cases (*) ■ Court type: Cassat		
Civil Affairs cases	(*) 9.570,00	
Frequency: Annual ■ Indicator type: Number of cases (*) ■ Court type: 1st Ins		
Civil Affairs cases	(*) 199.083,00	(*
Correctional business cases	(*) 280.395,00	
Frequency: Annual ■ Indicator type: Number of cases (*) ■ Court type: Appea		
Civil Affairs cases	(*) 39.721,00	

View-Pie - Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Primary dimension
Court type: 3 values selected
Time period: 2000
State of the cases: Recruited during the year F
Case type: Civil Affairs cases

It is also possible to zoom the graphed area in the dashboards, for all charts that support it:

- vertical/horizontal bars
- lines
- area

- pyramid.

Zooming operations can be performed:

- via mouse wheel, only if the graph is open full screen
- via three new dedicated buttons, visible in the chart area only when hovering the mouse in the drawing air:
  - Zoom in
  - Zoom out
  - Reset zoom (active only if zoom in/out has been done)

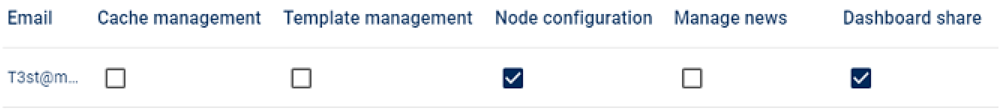
Let's give a more detailed description of what happens when dealing with dashboards.

4.5.1 Dashboard creation

Dashboards can then be created by:

- super administrator
- administrator of at least one node
- holder of the "Dashboard Sharing" right on at least one node

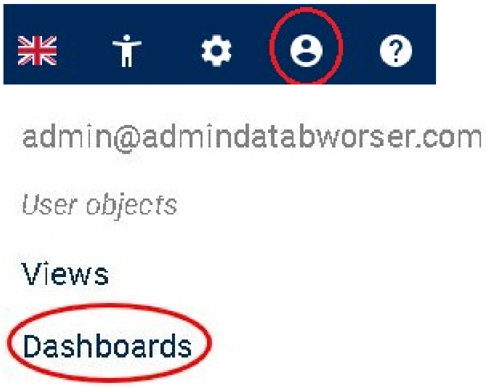
At the individual node level there is a setting that allows users to assign "Dashboard Sharing" permission, which allows users who hold it to share them with other users who hold the same right on shared nodes.



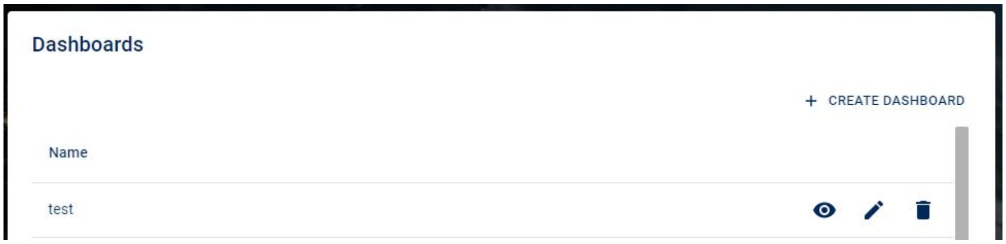
Email	Cache management	Template management	Node configuration	Manage news	Dashboard share
T3st@m...	☐	☐	☑	☐	☑

This right refers exclusively to the ability to collaborate on dashboards and related views (read and write, then delete) together with other users who have the same right on the same node. Automatically this right will also be transmitted to the related node administrator and superadmin. The association of individual dashboards to nodes/hub can be doneby a node administrator and/or super administrator.

To create a dashboard, the user must click the user icon and select "Dashboards"



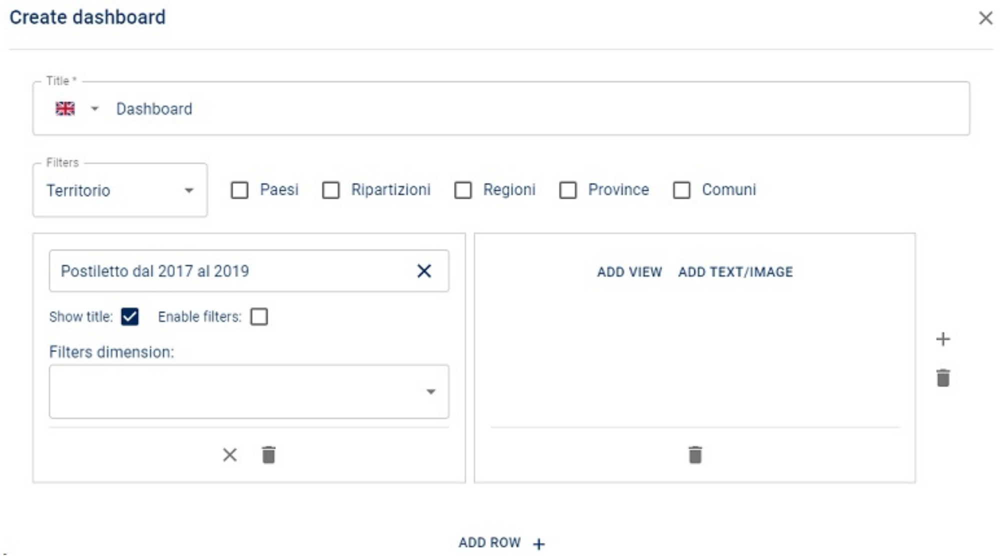
From the window that appears, there will be the list of the existing dashboards which can be visualized, edited or deleted,



Dashboards

Name
test

and on the top right by clicking "+ CREATE DASHBOARD" it will be possible to create the new object.



Create dashboard

Title *: Dashboard

Filters: Territorio

□ Paesi □ Ripartizioni □ Regioni □ Province □ Comuni

Postiletto dal 2017 al 2019

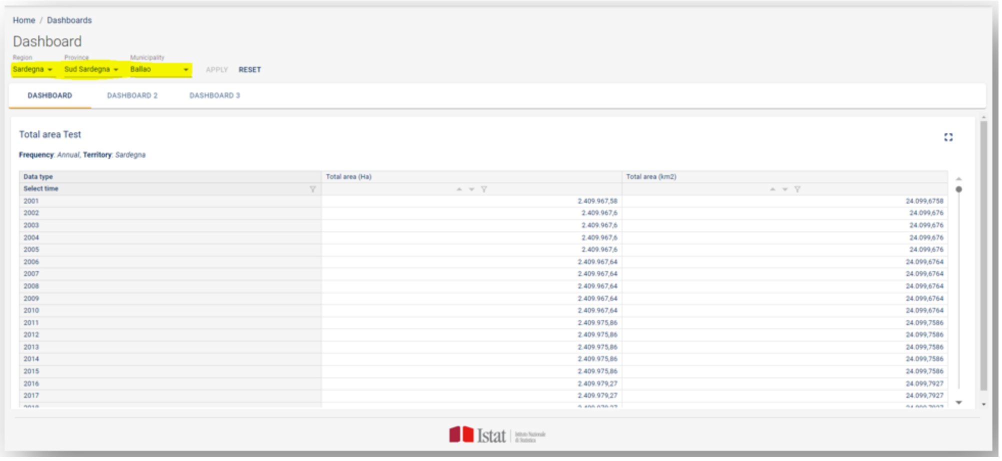
Show title: ☑ Enable filters: □

Filters dimension:

There are two types of dashboards that can be created: ***filterable*** and ***non-filterable***. The difference between these two consists in the possibility to set a territorial filter (by writing in the text box the respective dimension contained in the data table, e.g. ITTER107) which allows the user to change the territorial dimension once visualizing the dashboard. This makes the dashboard dynamic and flexible. Of course specific cache management is necessary in order to retrieve short response time since we are dealing with territorial dimensions which consider a big amount of items and information. For more detailed information on this matter check the section *Configurations* and specifically the **SPECIAL CACHE MANAGEMENT** paragraph. Regarding filterable dashboards, in the settings menu item, accessible for the superadmin user only, there is the "Manage Dashboard Filters" menu item which allows the creation of global filters by loading codelists in SDMX-ML format from which extract filtering levels. These filters become accessible to all users authorized to create dashboards. During the dashboard creation phase, users will then have the ability to select (at most) one filter for that specific dashboard. In addition, they will have to indicate:

- which levels actually can be filtered (e.g., Municipality, Province, etc.).
- which dimension, for each included view, is associated with the global filter.

Each parametric dashboard will only be able to use one filter, but among the node/application level dashboards there could be multiple dashboards with different filters between them. If there is only one filter for the dashboards at a particular node or for the entire application (and exactly matching its selectable levels as well), the filters will be placed outside and above the dashboard set, and any selection made via the filters will be applied to all parametric dashboards.



Home / Dashboards

Dashboard

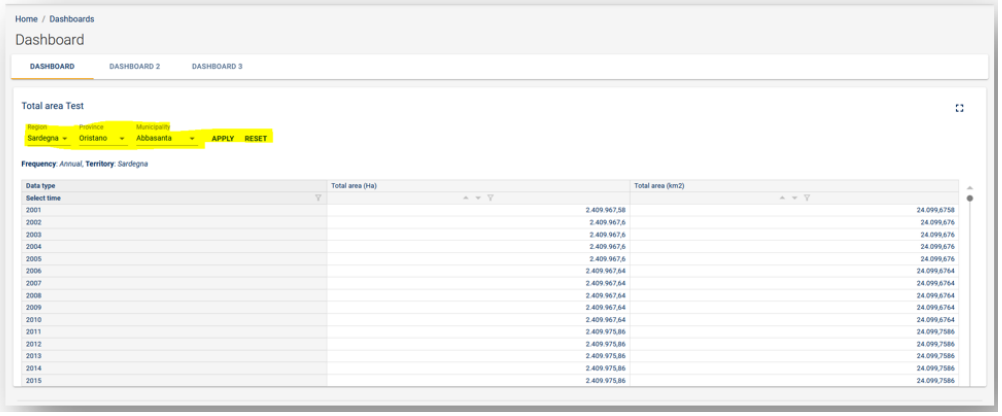
Region: Sardegna | Province: Sud Sardegna | Municipality: Ballao

Total area Test

Frequency: *Annual*, **Territory**: *Sardegna*

Data type	Total area (Ha)	Total area (km2)
Select time		
2001	2.409.967,58	24.099,6758
2002	2.409.967,6	24.099,676
2003	2.409.967,6	24.099,676
2004	2.409.967,6	24.099,676
2005	2.409.967,6	24.099,676
2006	2.409.967,64	24.099,6764
2007	2.409.967,64	24.099,6764
2008	2.409.967,64	24.099,6764
2009	2.409.967,64	24.099,6764
2010	2.409.967,64	24.099,6764
2011	2.409.975,86	24.099,7586
2012	2.409.975,86	24.099,7586
2013	2.409.975,86	24.099,7586
2014	2.409.975,86	24.099,7586
2015	2.409.975,86	24.099,7586
2016	2.409.979,27	24.099,7927
2017	2.409.979,27	24.099,7927

If there are multiple filters (or the same filters but with different "selectable levels") within a node/application, they will be placed within the individual dashboards, visible below the individual dashboard selection bar. Any selection made on a dashboard related to filters of a specific dimension will be applied to all parametric dashboards that use the same filters.



Home / Dashboards

Dashboard

Total area Test

Region: Sardegna | Province: Oristano | Municipality: Abbasanta

Frequency: *Annual*, **Territory**: *Sardegna*

Data type	Total area (Ha)	Total area (km2)
Select time		
2001	2.409.967,58	24.099,6758
2002	2.409.967,6	24.099,676
2003	2.409.967,6	24.099,676
2004	2.409.967,6	24.099,676
2005	2.409.967,6	24.099,676
2006	2.409.967,64	24.099,6764
2007	2.409.967,64	24.099,6764
2008	2.409.967,64	24.099,6764
2009	2.409.967,64	24.099,6764
2010	2.409.967,64	24.099,6764
2011	2.409.975,86	24.099,7586
2012	2.409.975,86	24.099,7586
2013	2.409.975,86	24.099,7586
2014	2.409.975,86	24.099,7586
2015	2.409.975,86	24.099,7586

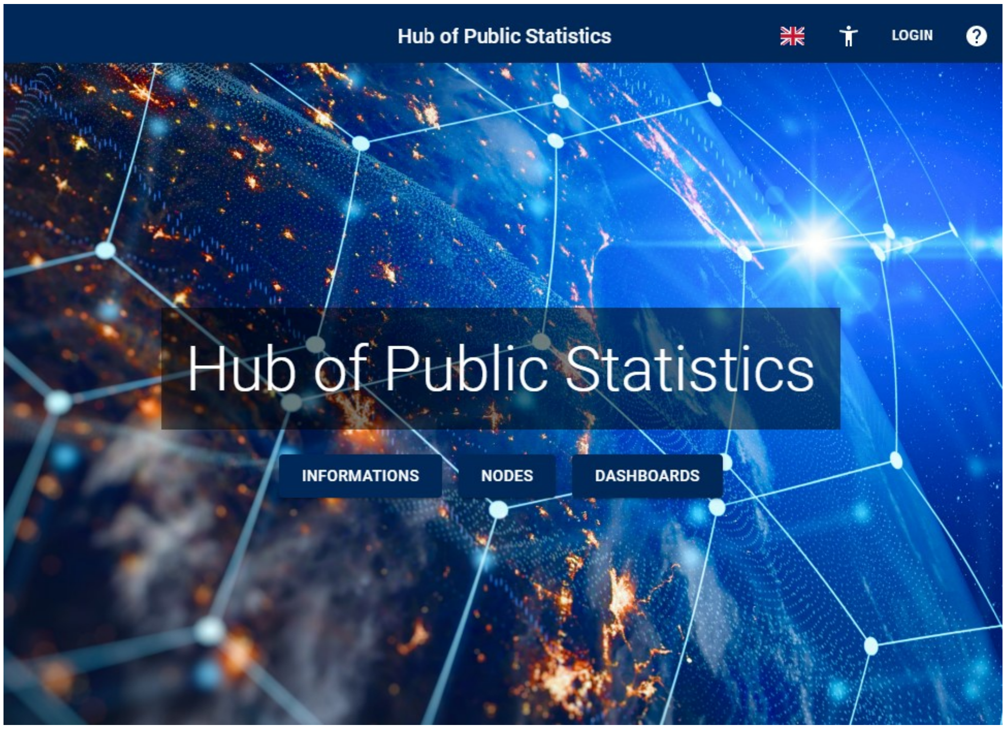
Another important funcionality is the multilingual functionality which allows users to set different titles depending on the selected language. This is made possible by selecting the flag related to a language and by defining a title for that language.

If a view is inserted in a dashboard in which a filter of type "last periods" is set in the criteria on the temporal dimension, then the view within the dashboard will always show

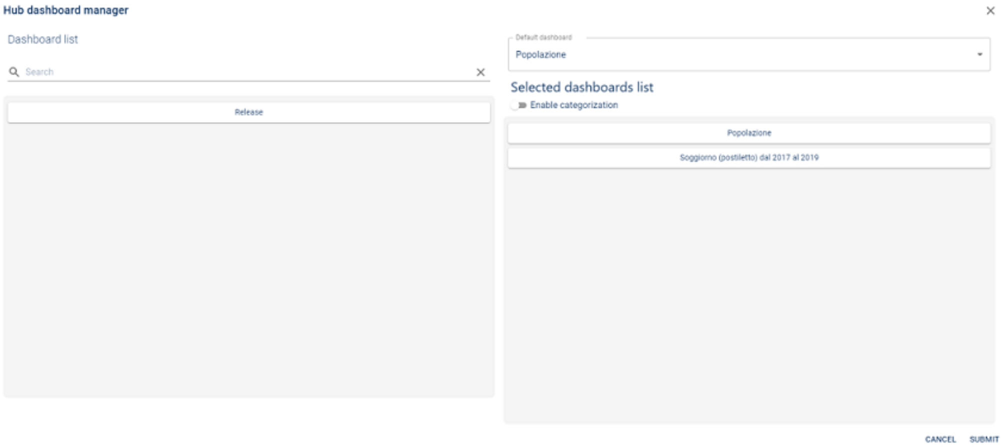
- the last available period in the data, if the temporal dimension is inserted in the filters of the multidimensional table
- all the values present for the data, considering the last N periods, if the time dimension is set as primary or secondary dimension of the graph.

Dashboards on application level

The super administrator user has permissions on adding dashboards on the landing page of the application. These dashboards will also be present at node level. If dashboards already exist, they will be visible to the user by clicking on the "Dashboard" button on the landing page:



To add new dashboards in this section, the super administrator user accesses the "Hub dashboard manager" configuration window from the main menu (settings icon) and adds one or more of the created dashboards. Categories might be present or can be created.


Hub dashboard manager

Dashboard list

Search

Release

Default dashboard: Popolazione

Selected dashboards list

Enable categorization

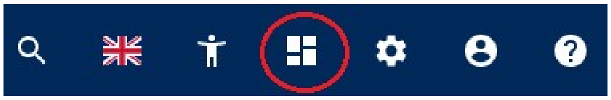
Popolazione

Soggiorno (postiletto) dal 2017 al 2019

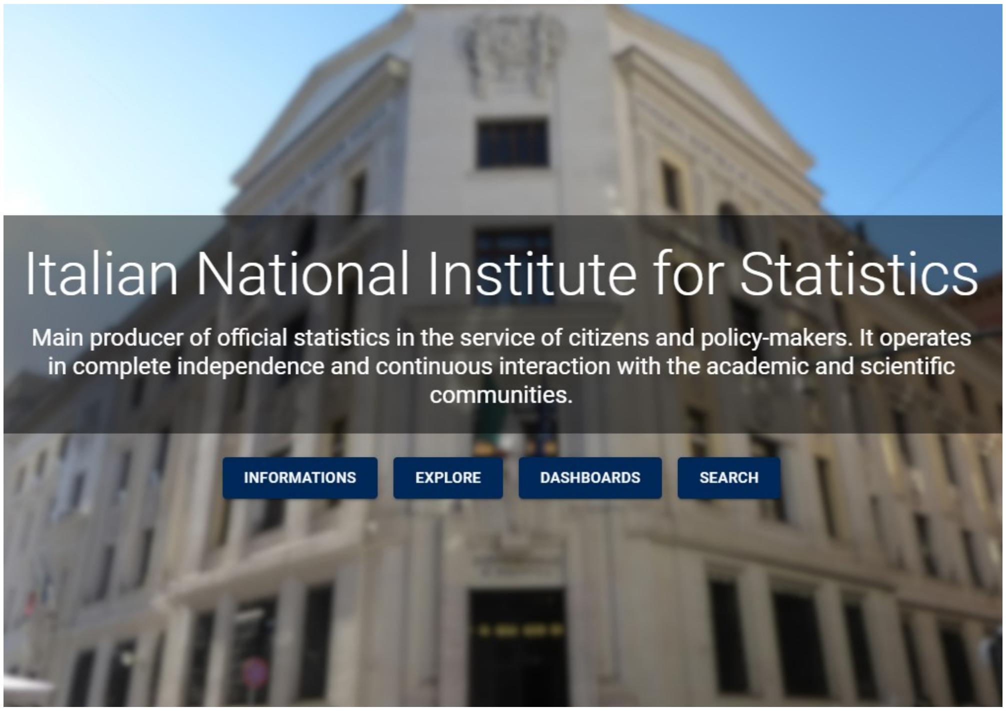
From this window, the user can always remove the dashboard from the landing page or change the order of appereance.

Dashboards on node level

Both the super administrator user and the node administrator user with configuration permissions can manage dashboards at node level. If dashboards are already set for a specific node, the mosaic icon will appear on the main menu of the page,



and also on the node home page (like it happens in the landing page)

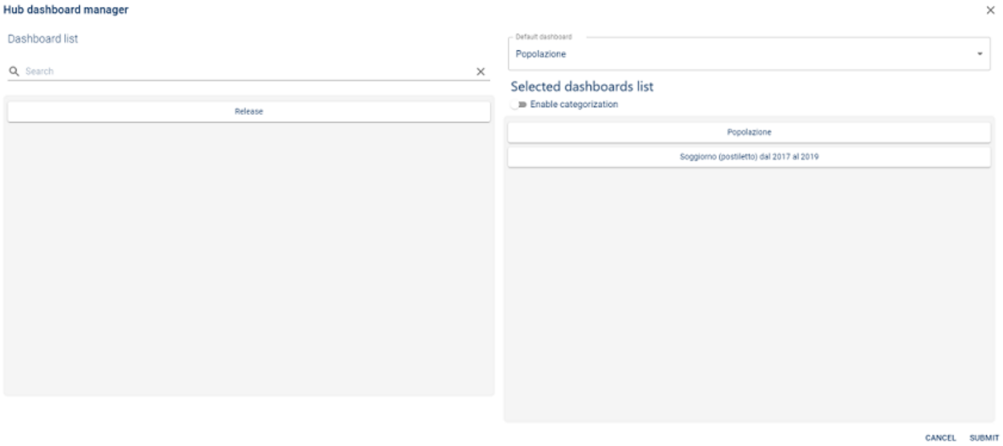

Italian National Institute for Statistics

Main producer of official statistics in the service of citizens and policy-makers. It operates in complete independence and continuous interaction with the academic and scientific communities.

Otherwise in order to add an existing dashboard to the node, the user must open the “Node” configuration window, click on “+ ADD DASHBOARD” on the top right and select the particular dashboard he wants to add.

4.5.2 Dashboard organization

It is possible to organize dashboards into macrocategories. The user authorized to assign dashboards to an individual node (node administrator or super administrator) or to the entire application (superadmin) is be able to define a categorization, with which the dashboards will be presented. Categorization of dashboards, and related management, will be possible at the stage of associating dashboards with a node/application. The user will then be able to create, rename, reorder, and delete categories, then categorize dashboards within them. Categorization of dashboards is done via drag-and-drop. The user is able to define a default dashboard, if any, to be opened as the user navigates to the page dedicated to viewing dashboards (at the node/application level).


Hub dashboard manager

Dashboard list

Search

Release

Default dashboard: Popolazione

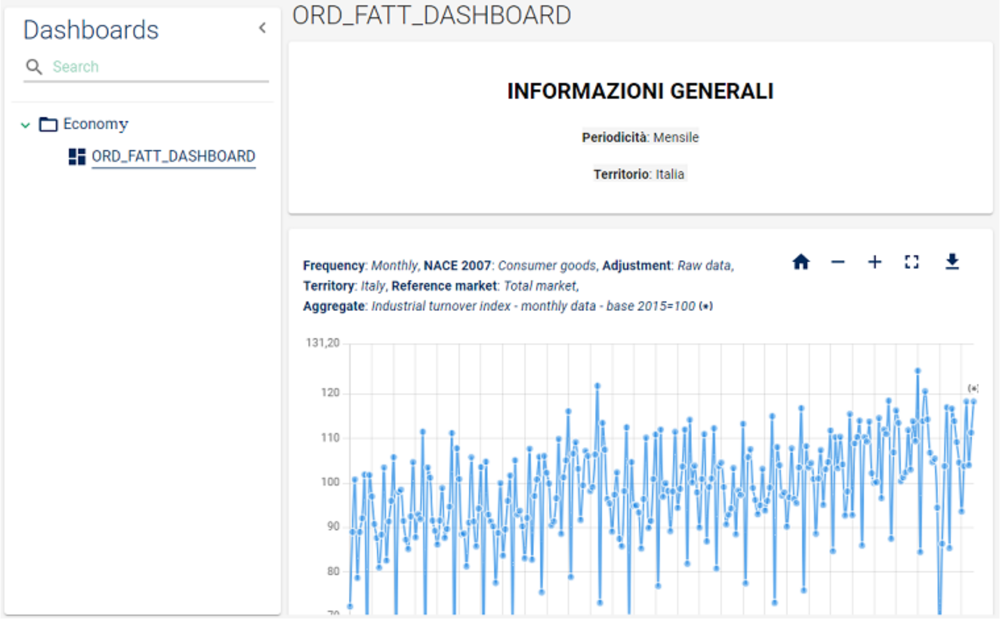
Selected dashboards list

Enable categorization

Popolazione

Soggiorno (postiletto) dal 2017 al 2019

When navigating dashboard at the node/application level categorization is presented as a tree in a collapsible sidebar on the left.



ORD_FATT_DASHBOARD

INFORMAZIONI GENERALI

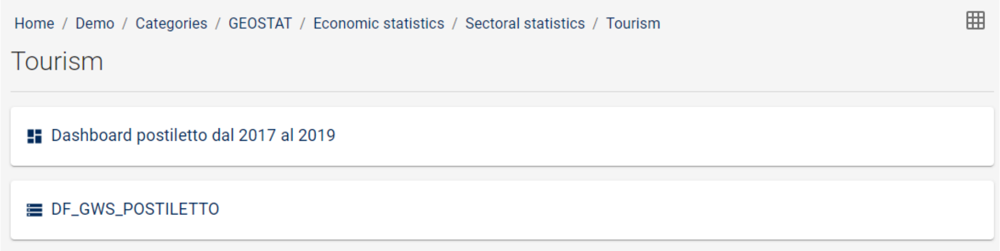
Periodicità: Mensile

Territorio: Italia

Frequency: *Monthly*, **NACE 2007**: *Consumer goods*, **Adjustment**: *Raw data*, **Territory**: *Italy*, **Reference market**: *Total market*, **Aggregate**: *Industrial turnover index - monthly data - base 2015=100* (•)

In case the user decides not to organize the dashboards into categories, the view will present the dashboards selectable horizontally within a tab bar. Through the interface of associating dashboards to the node/application, categorization can be selected. On the left the list of all dashboards available to the current user are shown and on the right the dashboards currently associated to the node/application. A new category can be created by selecting "+ ADD CATEGORY" which allows to add a new category assigning title in multiple languages. Categories can be deleted (if no dashboards are included in them), edited and sorted among them. Within the category, dashboard can be sorted and a default dashboard can be set.

It is possible to define dashboards as virtual dataflows to facilitate their inclusion in the catalog along with other dataflows. In this case the url of the dashboard must be included in the text of the LAYOUT_ATTACHED_DATA_FILES annotation when creating the dataflow in the Meta&Data Manager environment. After categorizing the new dataflow, when visualizing the catalog in the databrowser it will appear as follows:



Home / Demo / Categories / GEOSTAT / Economic statistics / Sectoral statistics / Tourism

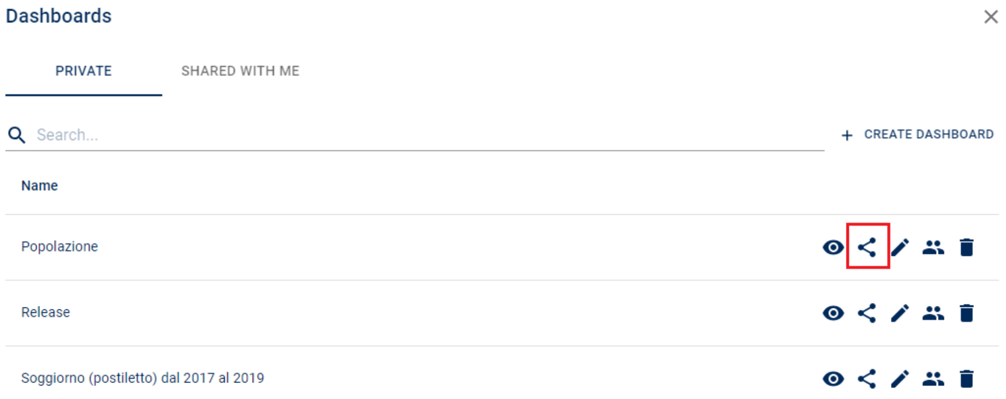
Tourism

Dashboard postiletto dal 2017 al 2019

DF_GWS_POSTILETTO

4.5.3 Sharing dashboards as widgets

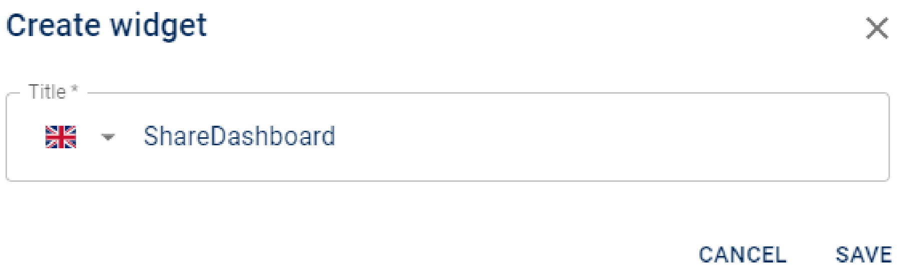
Users with the appropriate profile will be able to share widgets containing the current version of a dashboard, including related views.



Dashboards

Name
Popolazione
Release
Soggiorno (postiletto) dal 2017 al 2019

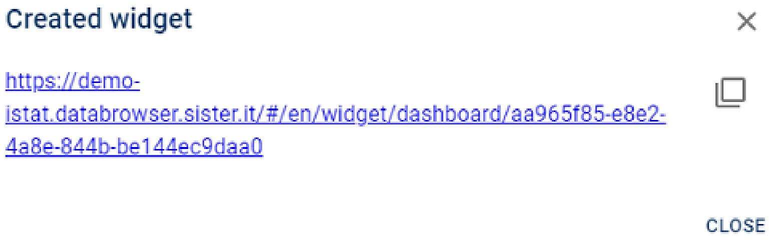
These widgets are web pages that can be accessed through a generated URL, through which the desired dashboard can be viewed in isolation, devoid of elements such as headers or navigation menus. See paragraph *Widgets*. The widget will contain the dashboard and related views as they appeared when it was created.



Create widget

Title *: ShareDashboard

Subsequent changes to the views and/or dashboard will not impact the widget. The widget will be publicly accessible by anyone with the URL, and will include global filters if present.



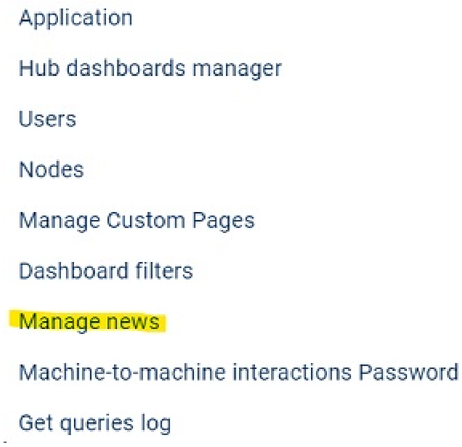
Created widget

https://demo-istat.databrowser.sister.it/#/en/widget/dashboard/aa965f85-e8e2-4a8e-844b-be144ec9daa0

User's personal dashboard widgets will always be available when clicking the user icon and selecting the menu item "Dashboard widgets"

4.6 News management

If the news module has been enabled via configuration file, "Manage news" link will appear when selecting the settings icon.



Application

Hub dashboards manager

Users

Nodes

Manage Custom Pages

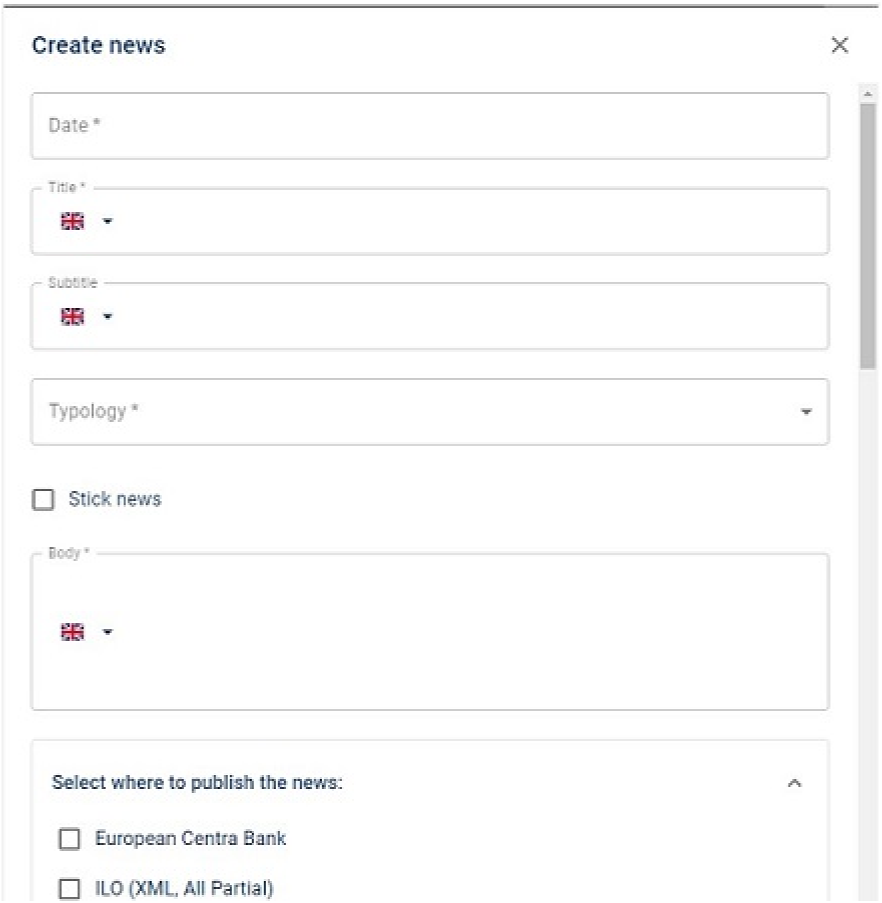
Dashboard filters

Manage news

Machine-to-machine interactions Password

Get queries log

From the news window, news can be created and assigned to nodes



Create news

Date *

Title *

Subtitle

Typology *

□ Stick news

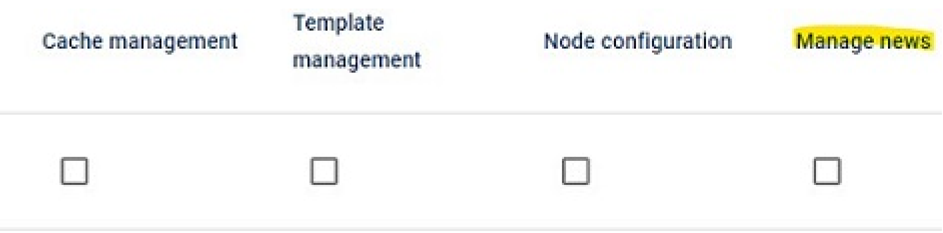
Body *

Select where to publish the news:

□ European Centra Bank

□ ILO (XML, All Partial)

The superadmin or the user who has rights on news management (granted by the superadmin just like all other permissions), will access a dedicated section where he can enter news and decide in which node(s) they will be displayed.

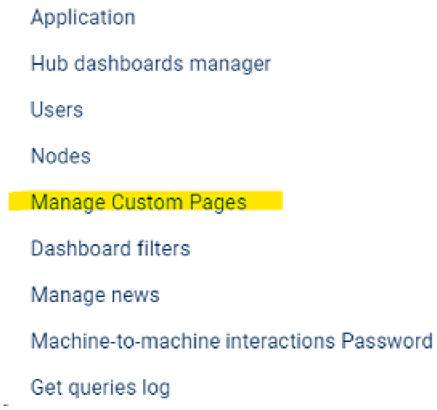


Cache management	Template management	Node configuration	Manage news
☐	☐	☐	☐

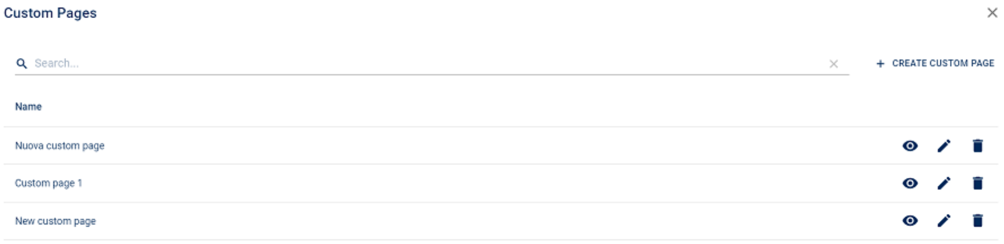
News published on the node's home page will be accessible in the "News" section, sorted by date (most recent first). The information visible on the home page will be: title, subtitle, news summary, date. By clicking on the individual news, a popup with the full detail of the news will open. Clicking on "Read all updates" will display a dedicated popup containing all published news, with the possibility of exporting them into Excel format.

4.7 Custom pages management

It is possible to create custom pages in the databrowser environment. Administrative control of "Custom Pages" is accessible from the configuration menu. This interface allows the user to perform classic CRUD (Create, Read, Update, Delete) operations, making the management of custom pages intuitive and user-friendly. Custom pages can be enabled/disabled by a special configuration set in the modulesConfig.json file. See the *Configuration* section for more information. Each "Custom Page" can serve as homepage of the portal or homepage of an individual portal node. User can insert a shortcut to the individual "Custom Page" directly into one of the main menus, at the level of the entire application and/or node.

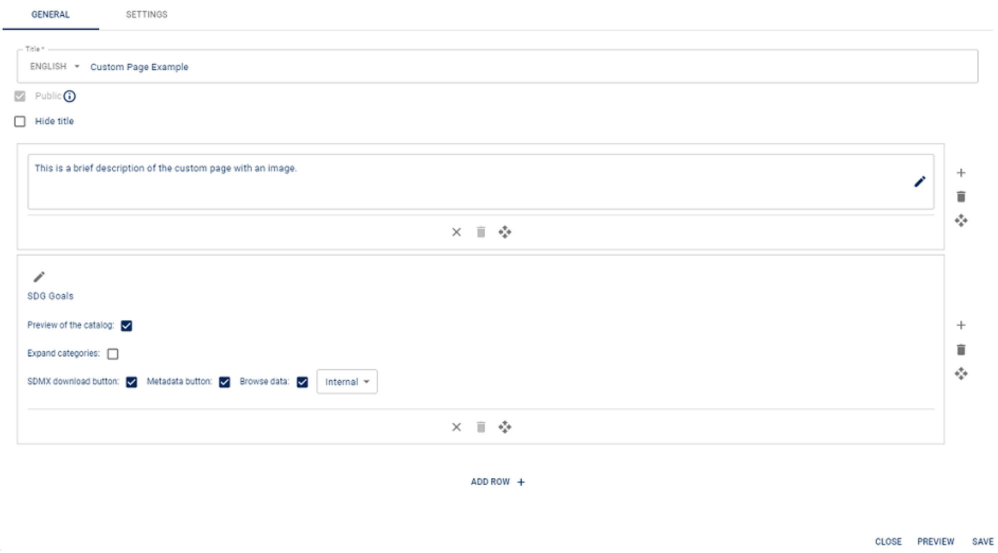


By clicking on 'Manage Custom Pages' the complete list of available custom pages are available for users.



Name
Nuova custom page
Custom page 1
New custom page

Clicking on 'Create Custom Page' allows the superadmin to organize a new page by composing a layout based on rows. User can configure individual rows with objects (maximum of 4 per row), including views, text/images or portions of categories.



Title *
ENGLISH ▾ Custom Page Example

☑ Public

□ Hide title

This is a brief description of the custom page with an image.

SDG Goals

Preview of the catalog: ☑

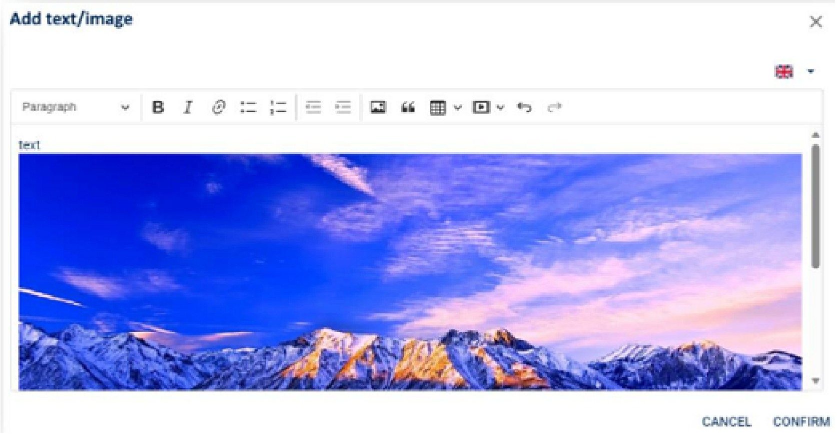
Expand categories: □

SDMX download button: ☑ Metadata button: ☑ Browse data: ☑ Internal ▾

In a new custom page, the user must specify a title which can be subsequently hidden during visualization by checking the “Hide title” option; he can set its visibility to public or private by checking/unchecking the “public” option respectively and, afterwards, the user can add a new row to the page via the ‘Add Row’ button. On individual rows, he can:

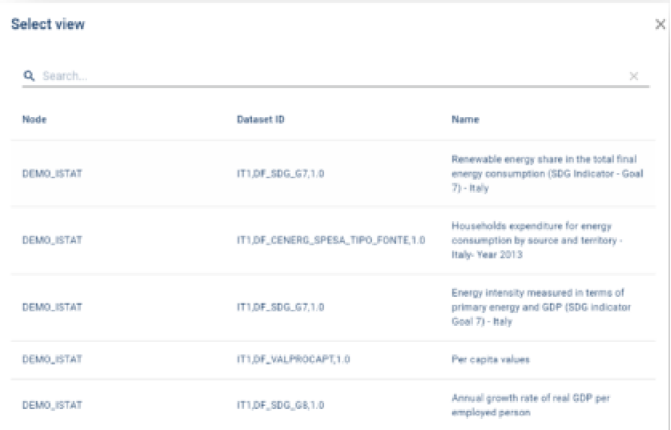
- reorder them using the move button
- add new items to the row by clicking the add (+) button
- delete the entire row by clicking the delete button.

Customised pages can include static and/or dynamic content. In the first case, content is inserted through a simple WYSIWYG (What You See Is What You Get) editor, by which the user can easily add text and images to the pages. This way, he can create narratives that complement data with rich context. Adding text/images is very simple, the user must click on “Add Text/Image” and insert text and images in multiple languages through a WYSIWYG editor.


Add text/image

text

If the user wants to include dynamic content, he can do so by incorporating tables, graphs, maps, and segments of a catalog. The latter can encompass an entire category scheme or just a part of it. This dynamic content simplifies the process, eliminating the need for customized annotations by Meta&Data Manager users. Tables, graphs and maps can be included if these objects were stored in data views previously. Clicking on ‘Add View’ adds a new view, selectable from a list of personal views (table, graph, map).

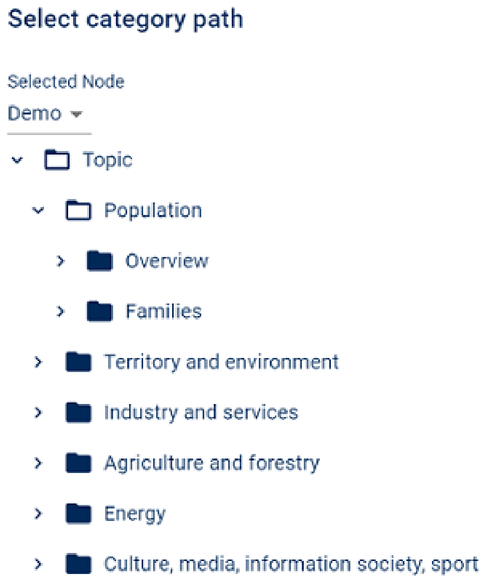


Select view

Search...

Node	Dataset ID	Name
DEMO_ISTAT	IT1,DF_SDG_G7,1.0	Renewable energy share in the total final energy consumption (SDG Indicator - Goal 7) - Italy
DEMO_ISTAT	IT1,DF_CENERG_SPESA_TIPO_FONTE,1.0	Households expenditure for energy consumption by source and territory - Italy- Year 2013
DEMO_ISTAT	IT1,DF_SDG_G7,1.0	Energy intensity measured in terms of primary energy and GDP (SDG indicator Goal 7) - Italy
DEMO_ISTAT	IT1,DF_VALPROCAPT,1.0	Per capita values
DEMO_ISTAT	IT1,DF_SDG_G8,1.0	Annual growth rate of real GDP per employed person

Clicking on 'Add Category' allows the user to add a portion of the catalog from one of the configured nodes. After selecting a node, a category can be selected.

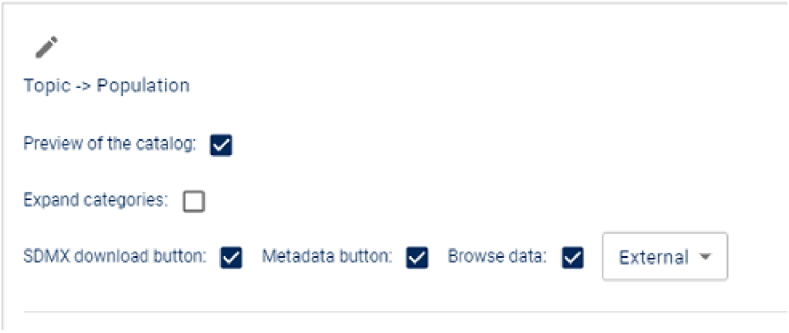


Select category path

Selected Node
Demo

- Topic
  - Population
    - Overview
    - Families
  - Territory and environment
  - Industry and services
  - Agriculture and forestry
  - Energy
  - Culture, media, information society, sport

Finally, user can select options related to the display of the catalog widget:



Topic -> Population

Preview of the catalog: ☑

Expand categories: □

SDMX download button: ☑ Metadata button: ☑ Browse data: ☑ External

Let's focus on the options shown above:

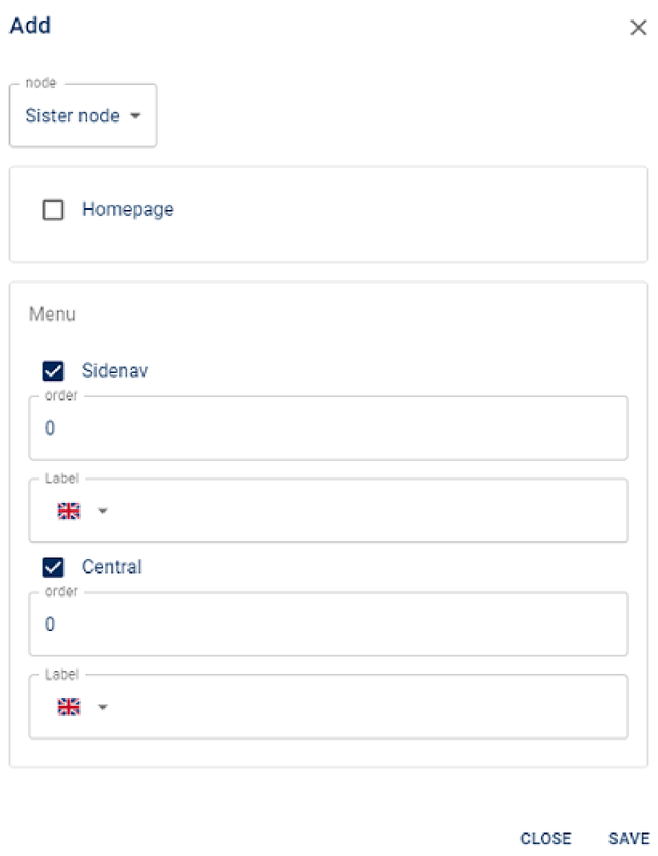
- ***Preview of the catalog***: when enabled, the selected portion of the catalog becomes navigable via the category overview. The first available category will be selected in the overview, displaying category image (if any), category name, flat description of the category (if present in the SDMX Category artifact), subcategories (if present, expandable by default), and list of datasets (if present). This option allows displaying one category at a time on the same page, highlighting the currently selected category. If this option is disabled, the entire categorization tree will be shown on the page, with all categories always visible.

- ***Expand categories***: when selected the categorization tree will be expanded in visualization.
- ***“SDMX Download” button***: enabling this option adds the “SDMX Download” button. Clicking on this button downloads the entire dataflow in SDMX Compact v 2.0 format.
- ***“Metadata” button***: enabling this option adds the “Metadata” button, which, when clicked, navigates to a specified URL from an existing annotation at the dataflow level, in a new browser tab. The button will not be displayed if the annotation is not present.
- ***“Browse data” button***: enabling this option adds the “Browse Data” button next to the dataset title. If “External link” is selected, clicking on this button navigates to a specific URL, external to the databrowser, opening in a new browser tab. The URL arrives from a specific, dedicated annotation (DATA_LINK) at the dataflow level and, in the absence of this URL, no button will be displayed. If “Internal link” is selected, the behavior will be to navigate directly to the dataflow display on the databrowser, in the same browser window.

When visualizing a custom page, if the “SDMX Download”, “Metadata” and “Browse data” buttons are present, these will be shown in a fixed position which will not be occupied if the respective button is missing.

4.7.1 Custom page settings

In the settings tab when creating/editing a custom page, user can configure the custom page to be the homepage of a node/entire application and/or add a shortcut in the node-level menus to directly access the ‘Custom Page’. When associating a custom page with a menu, user has also the the possibility of choosing an optional multilingual reference label. By clicking on ‘Add Configuration’ or clicking on the pencil icon if a custom page already exists, superadmin user can decide whether to position the custom page.



Add

node: Sister node

☐ Homepage

Menu

☑ Sidenav

order: 0

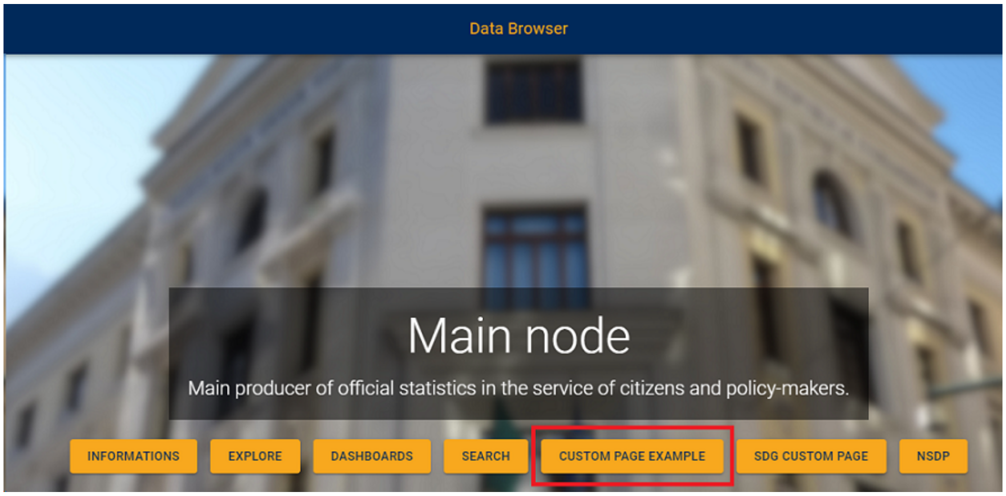
Label: 🇬🇧

☑ Central

order: 0

Label: 🇬🇧

Here is an example of custom pages added on central section

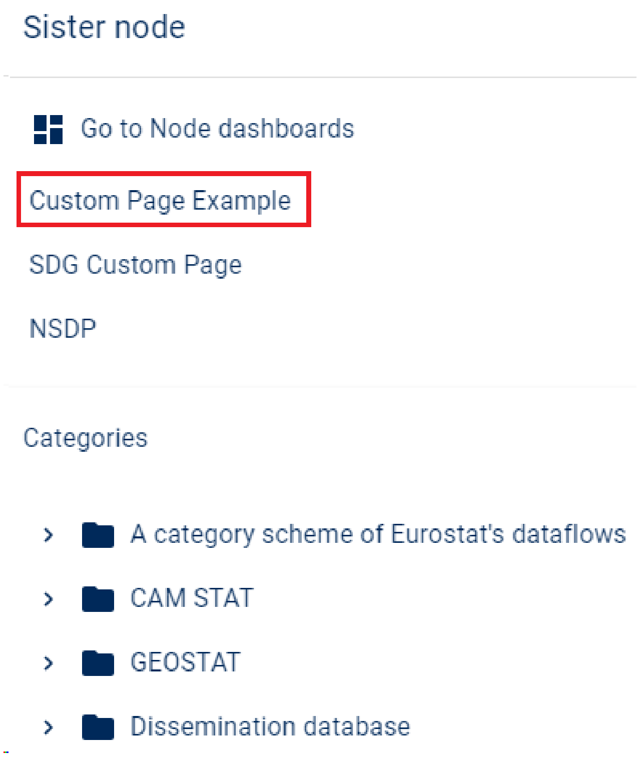


Data Browser

Main node

Main producer of official statistics in the service of citizens and policy-makers.

and the following is an example of custom pages added to the sidebar



Sister node

Go to Node dashboards

Custom Page Example

SDG Custom Page

NSDP

Categories

- A category scheme of Eurostat's dataflows
- CAM STAT
- GEOSTAT
- Dissemination database

Check practical examples of custom pages at the *Custom pages visualization* paragraph.

CHAPTER

FIVE

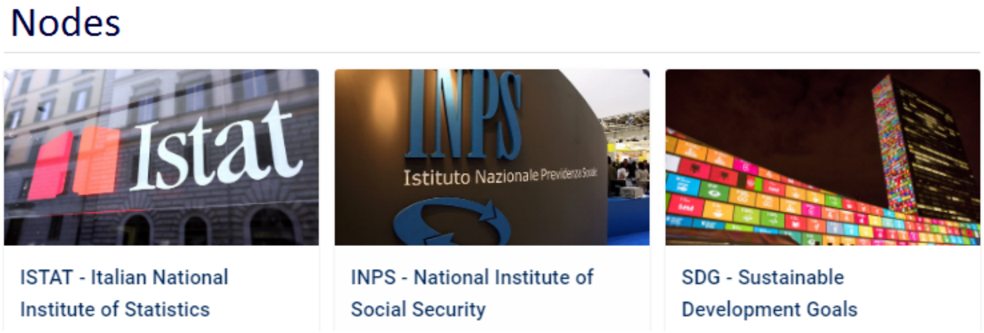
DATA BROWSING

In this chapter we'll see how to:

- select a data provider (node)
- explore node's contents through categories tree
- find specific data
- display data in tabular, graphic and map format
- configure visualization and modify display layout

5.1 How to browse different data providers

The landing page shows general information about the system. From the landing page the user can choose to browse a different node by selecting the data providers in the section **Nodes** both by clicking on the images or the descriptions.



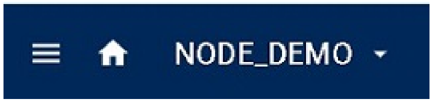
Nodes

ISTAT - Italian National Institute of Statistics

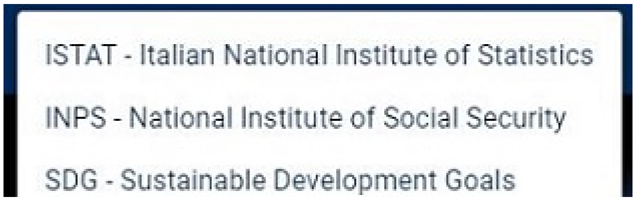
INPS - National Institute of Social Security

SDG - Sustainable Development Goals

Another way of reaching a node default one is set, consists in selecting the node from the top left menu of the page and choosing from the pop-up list.



=>

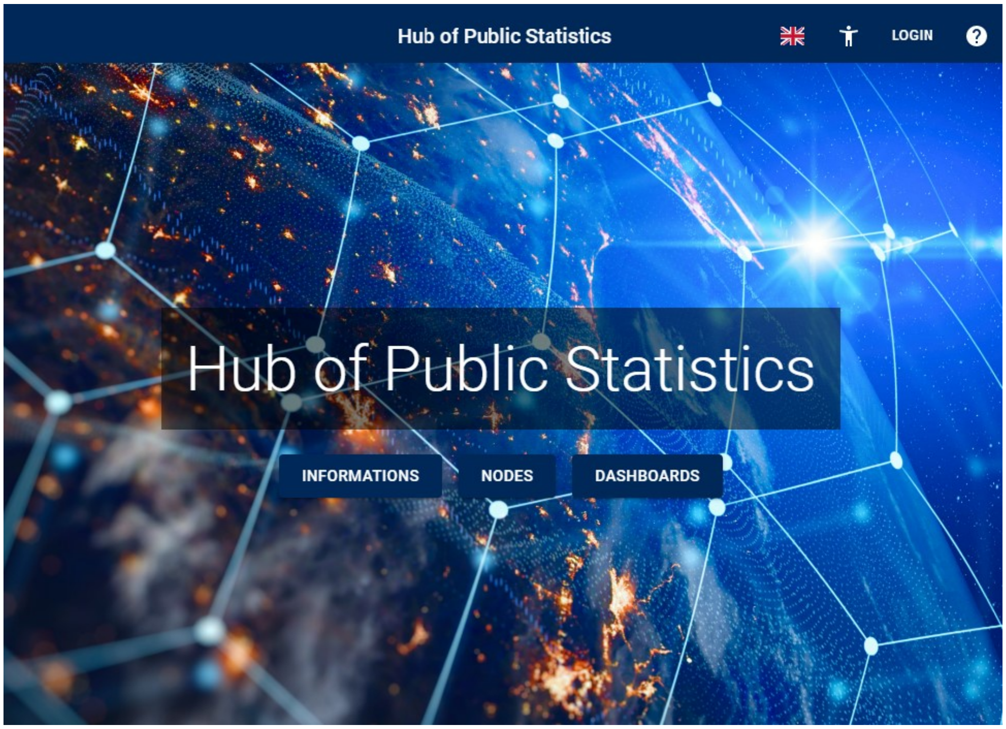


ISTAT - Italian National Institute of Statistics

INPS - National Institute of Social Security

SDG - Sustainable Development Goals

Once the node is clicked, the Public Statistics Hub will show the node's homepage including: information, data grouped by categories and dashboards.



From a node's homepage it is possible to browse a different data provider by clicking again on the top left menu and selecting a different node from the list.

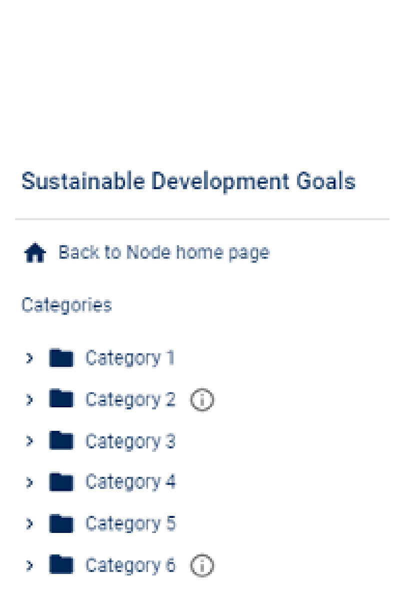
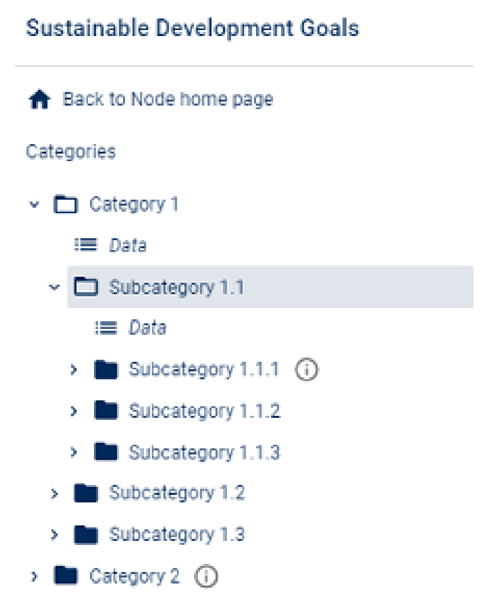
The "Home" icon will always be visible in the header of the application so the user can always easily return to the node's homepage.

5.2 How to browse a data provider

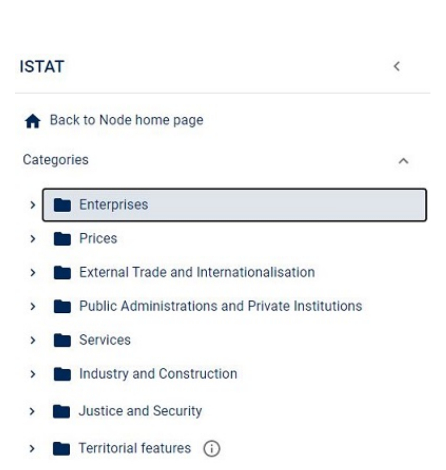
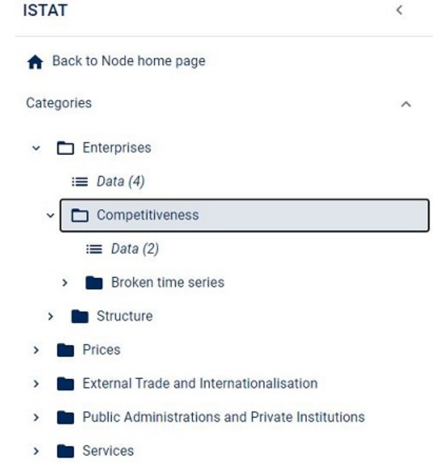
In this section we'll explain data's organization and how to search specific data.

5.2.1 Data catalog

All data contained in a node is grouped by categories organized in a catalog. The catalog of a node can be displayed by clicking on the burger button on the top left ☰. Categories have an hierarchical structure: a category can contain one or more subcategories; a subcategory may in turn contain other subcategories, and so on. It is possible to expand or collapse a category or a subcategory by clicking on it.

Initial view	Expanded view
 Sustainable Development Goals Back to Node home page Categories Category 1 Category 2 ⓘ Category 3 Category 4 Category 5 Category 6 ⓘ	 Sustainable Development Goals Back to Node home page Categories Category 1 Data Subcategory 1.1 Data Subcategory 1.1.1 ⓘ Subcategory 1.1.2 Subcategory 1.1.3 Subcategory 1.2 Subcategory 1.3 Category 2 ⓘ

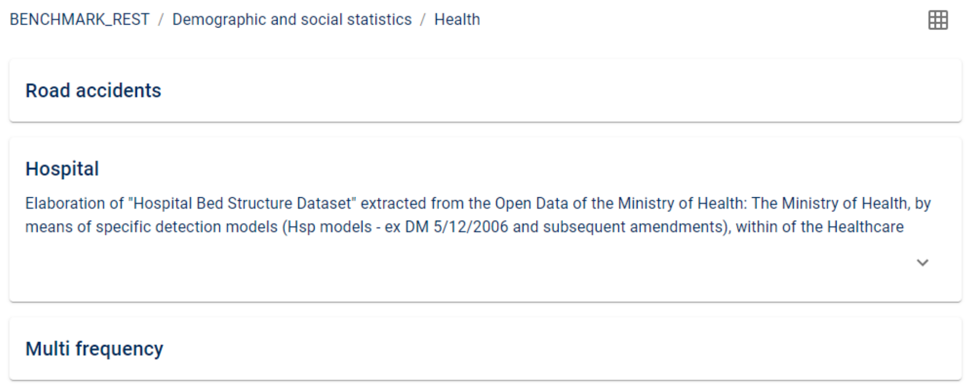
All categories belong to a category scheme and one node can have more than one category scheme; in this case the same data can belong to more than one category in different category schemes. Moreover the same data can belong to different categories in the same category scheme. If a node has just one category scheme, it isn't shown in the tree visualization of the catalog. If there are more than one category scheme in the node, only the root nodes (i.e. category scheme names) will be shown without showing the categories.

Initial view	Expanded view
 ISTAT Back to Node home page Categories Enterprises Prices External Trade and Internationalisation Public Administrations and Private Institutions Services Industry and Construction Justice and Security Territorial features ⓘ	 ISTAT Back to Node home page Categories Enterprises Data (4) Competitiveness Data (2) Broken time series Structure Prices External Trade and Internationalisation Public Administrations and Private Institutions Services

By clicking the information icon ⓘ next to a category, it is possible to see notes associated with the category. By clicking the **m** icon, instead, the user can see metadata as well. The leaves of the catalog are nodes of Data type. By selecting this kind of node on the right side of the panel, all the data belonging to the selected navigation path will be shown. Once data is shown, the user can decide to display the list of data in two different modes: by rows or by cards changing the icon on the top right.

For each data the user can see the title and the description. By clicking on the information icon ⓘ next to the data it is possible to see notes associated with that data and by clicking on the **m** icon the user can see metadata as well. By clicking on the data title, results can be visualized in tabular, graphic and geographic format. Attachments might be present in the data visualization list, this means that data attachaments are available regarding that information. Depending on its native format, not all data can be displayed.

Example of list of data for a specific category:



BENCHMARK_REST / Demographic and social statistics / Health

Road accidents

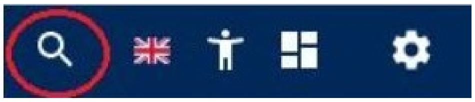
Hospital

Elaboration of "Hospital Bed Structure Dataset" extracted from the Open Data of the Ministry of Health: The Ministry of Health, by means of specific detection models (Hsp models - ex DM 5/12/2006 and subsequent amendments), within of the Healthcare

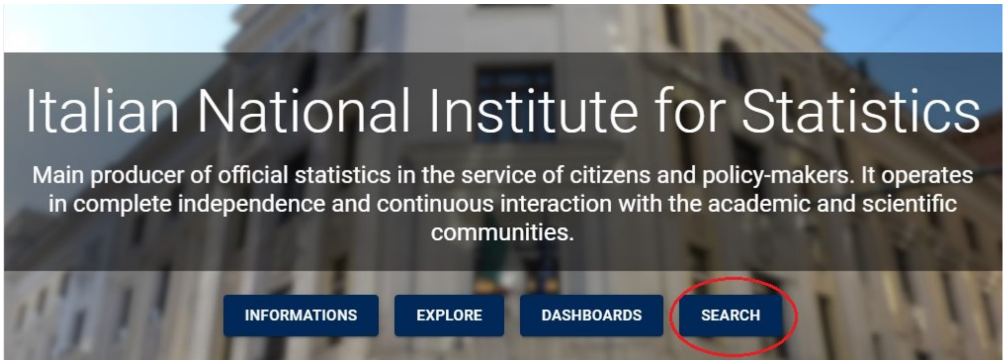
Multi frequency

5.2.2 Textual search

It is possible to find specific data by textual search. Even if the user doesn't know the exact name of the data, he can type some text in an input box and the system will search for all data containing the typed text in titles, descriptions or keywords. The application will complete text for data titles; all data belonging to the search will appear to the result set. Search text can be inserted by clicking the magnifying glass on the top bar menu:



It is also possible to perform a texual search by clicking the "SEARCH" button on the node's main page.



Italian National Institute for Statistics

Main producer of official statistics in the service of citizens and policy-makers. It operates in complete independence and continuous interaction with the academic and scientific communities.

When the searched data appears, the user can click on the title and the default visualization will open.

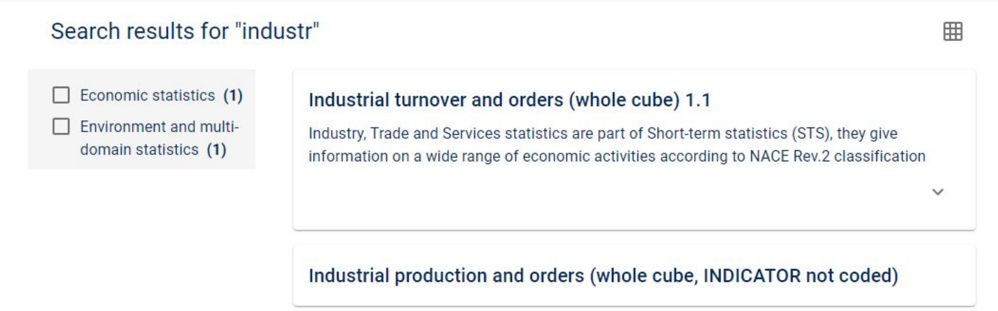
KEYWORDS

Keywords are specific words linked to the content of the data which are included in the uploaded dataset in a node. It is no mandatory to have keywords, so they might not be present in all data contained in a node. You can search data using keywords but they are not listed in the pane that describes the specific data.

User can search for keywords by clicking the magnifying glass on the top-right of the page, and all related datasets containing that specific word will appear in the page.

FILTERING FOR CATEGORY

In case there is more than one category scheme involved in the research results, two levels of category (category scheme at first level and at second level) will be shown. If there is only one category scheme, results will be filtered only for the first level categories of the only category scheme. Shown categories, will be the ones for which there is at least one research result between its children.



Search results for "industr"

□ Economic statistics **(1)**
□ Environment and multi-domain statistics **(1)**

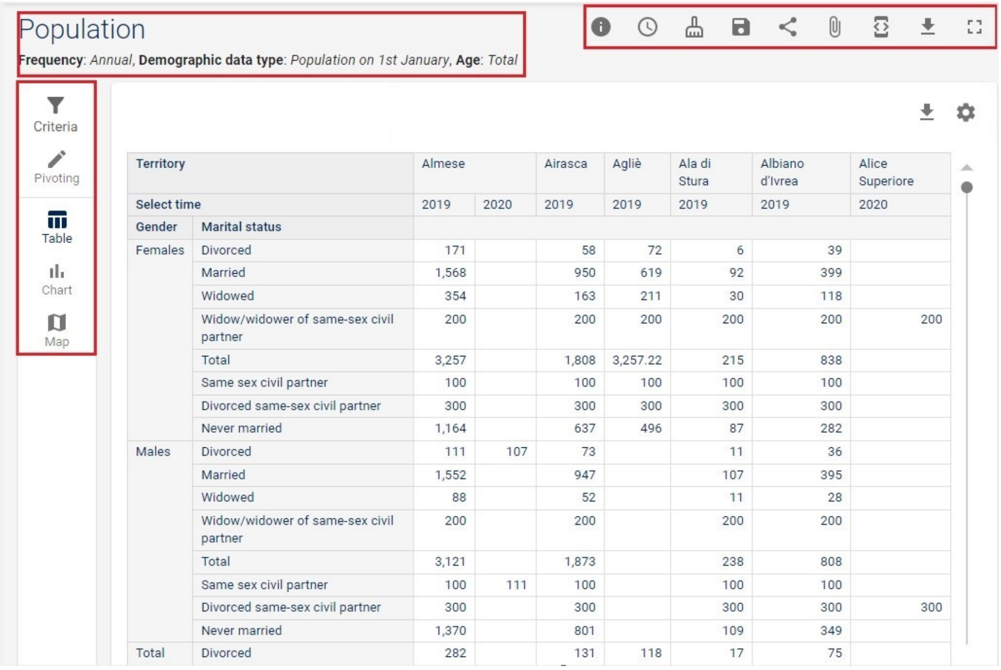
Industrial turnover and orders (whole cube) 1.1

Industry, Trade and Services statistics are part of Short-term statistics (STS), they give information on a wide range of economic activities according to NACE Rev.2 classification

Industrial production and orders (whole cube, INDICATOR not coded)

5.3 How to visualize data

In this section we'll explain how to configure data visualization, how to change layout, how to visualize data in different ways and download information. On top of the table, the name of the dataset is shown and right under it, dimensions containing one single item are displayed. In the central part of the visualization window it is possible to directly access the information contained in the data. On the left side, a side bar containing several buttons allow the user to change configuration and layout, to view metadata and to change the type of data visualization among table, chart and map. On the top right of the page, two small panels make the user able to choose a full-screen view and to save the visualization, to share it, to download attachments and data.

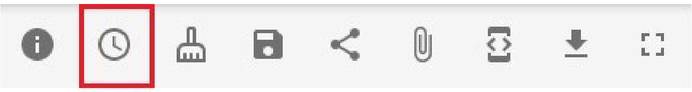


Population

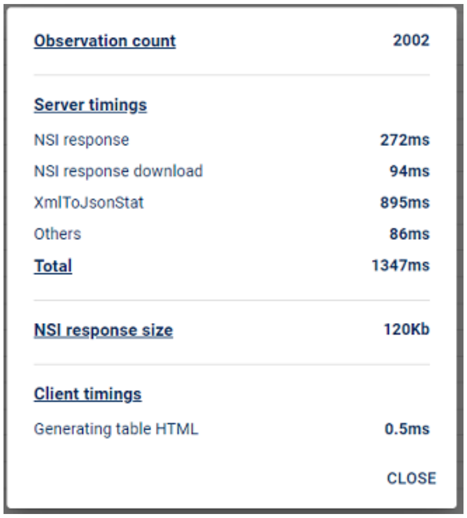
Frequency: *Annual*, **Demographic data type**: *Population on 1st January*, **Age**: *Total*

Territory		Almese		Airasca	Agliè	Ala di Stura	Albiano d'Ivrea	Alice Superiore
Select time		2019	2020	2019	2019	2019	2019	2020
Gender	**Marital status**							
Females	Divorced	171		58	72	6	39	
	Married	1,568		950	619	92	399	
	Widowed	354		163	211	30	118	
	Widow/widower of same-sex civil partner	200		200	200	200	200	200
	Total	3,257		1,808	3,257.22	215	838	
	Same sex civil partner	100		100	100	100	100	
	Divorced same-sex civil partner	300		300	300	300	300	
	Never married	1,164		637	496	87	282	
Males	Divorced	111	107	73		11	36	
	Married	1,552		947		107	395	
	Widowed	88		52		11	28	
	Widow/widower of same-sex civil partner	200		200		200	200	
	Total	3,121		1,873		238	808	
	Same sex civil partner	100	111	100		100	100	
	Divorced same-sex civil partner	300		300		300	300	300
	Never married	1,370		801		109	349	
Total	Divorced	282		131	118	17	75	

Once the data is visualized, it is possible to check interaction and responses timing between node and servers by clicking on the clock button on the top left menu of the page:



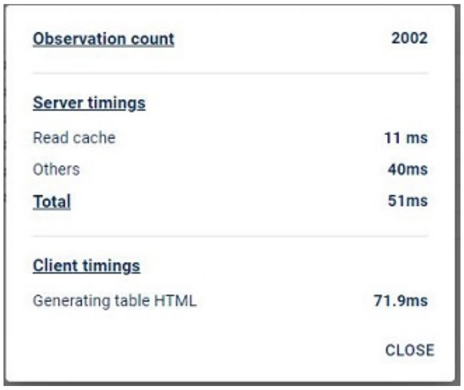
This is a possibile output once the button is clicked:



Observation count	**2002**
Server timings	
NSI response	**272ms**
NSI response download	**94ms**
XmlToJsonStat	**895ms**
Others	**86ms**
Total	**1347ms**
NSI response size	**120Kb**
Client timings	
Generating table HTML	**0.5ms**

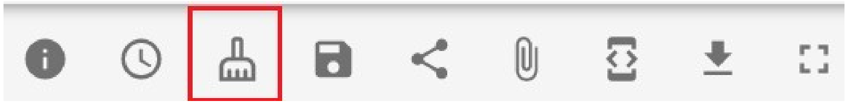
CLOSE

If the file was already available in cache, response calls will be different compared to the first time and also times will show new entries. This is an example of time logs returned when a cached data is requested:

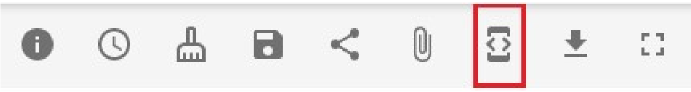


Observation count	2002
Server timings	
Read cache	11 ms
Others	40ms
Total	51ms
Client timings	
Generating table HTML	71.9ms

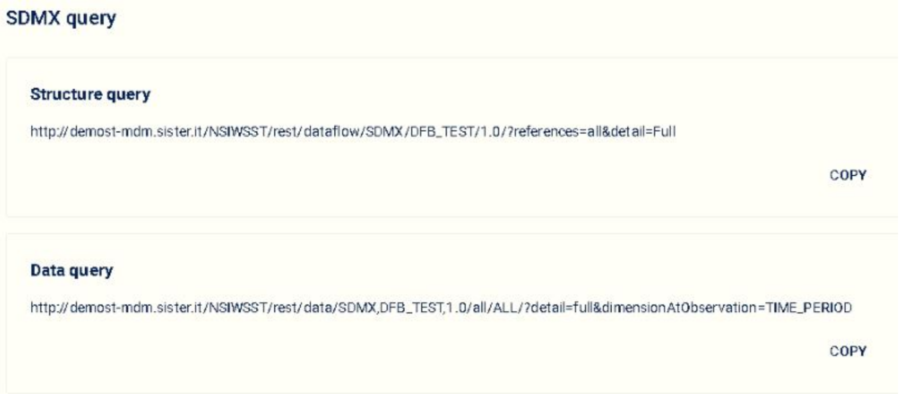
The system allows the user to invalidate cache or delete templates (if present) directly from this page (without accessing the node configuration) by clicking the brush icon:



Once the data is displayed, you can do the query download to get data and artifacts:



This is a possibile output once the button is clicked:



SDMX query

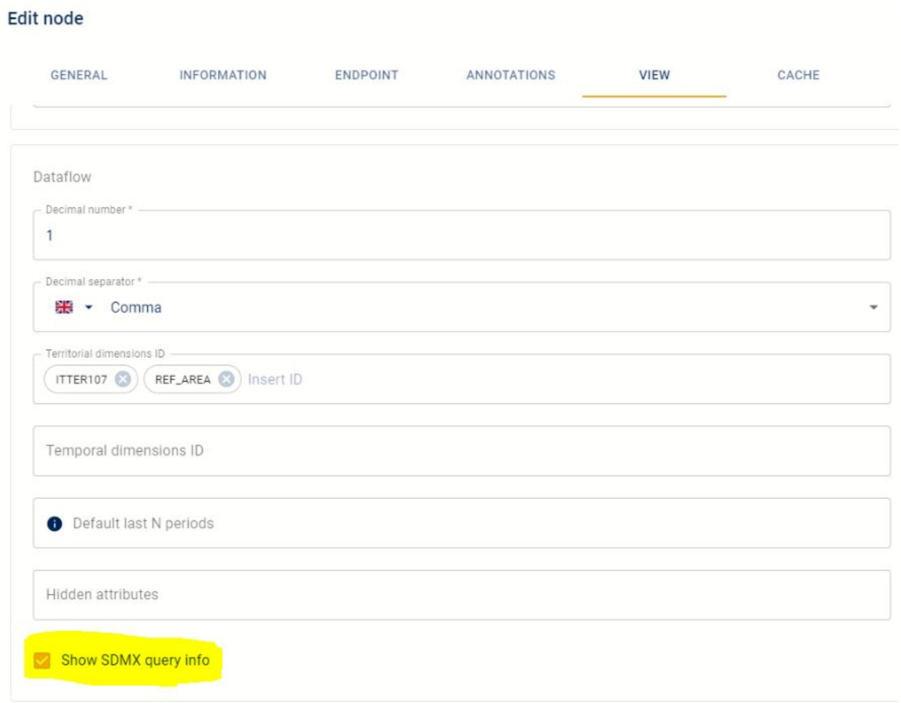
Structure query

http://demost-mdm.sister.it/NSIWSST/rest/dataflow/SDMX/DFB_TEST/1.0/?references=all&detail=Full

Data query

http://demost-mdm.sister.it/NSIWSST/rest/data/SDMX,DFB_TEST,1.0/all/ALL/?detail=full&dimensionAtObservation=TIME_PERIOD

This possibility is configurable in the administrative section of the node by the administrator user.



Edit node

Dataflow

Decimal number *: 1

Decimal separator *: Comma

Territorial dimensions ID: ITTER107, REF_AREA

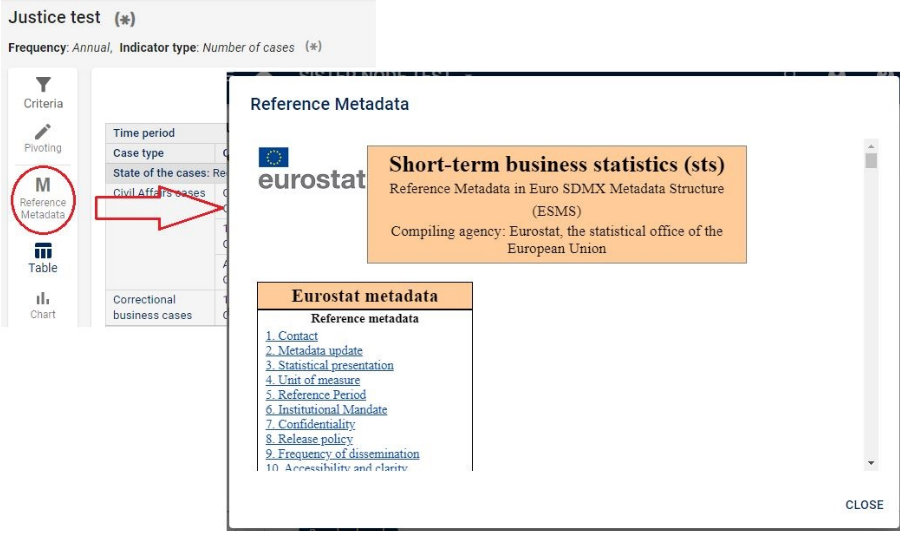
Temporal dimensions ID

Default last N periods

Hidden attributes

☑ Show SDMX query info

If data contains referential metadata, there will be a button on the left side menu that, once clicked, opens a pop-up window showing the information:



Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Reference Metadata

Short-term business statistics (sts)

Reference Metadata in Euro SDMX Metadata Structure (ESMS)

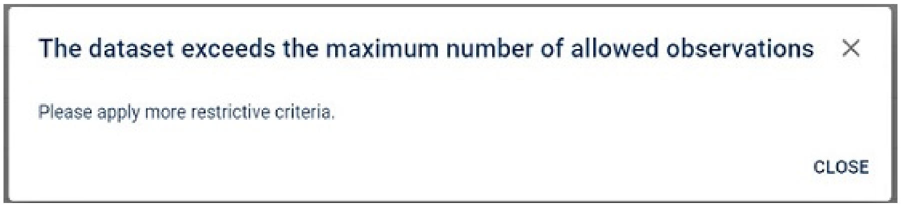
Compiling agency: Eurostat, the statistical office of the European Union

Eurostat metadata

Reference metadata

1. Contact
2. Metadata update
3. Statistical presentation
4. Unit of measure
5. Reference Period
6. Institutional Mandate
7. Confidentiality
8. Release policy
9. Frequency of dissemination
10. Accessibility and clarity

Sometimes, when accessing data, visualization may appear different from the usual default. In particular, by acting on the node configuration and selecting an ALL_FULL or ALL_PARTIAL criteria selection mode with the advance checking functionality enabled (see section *How to configure a data provider*), when opening the data, if it exceeds the allowed size, it will not be possible to proceed with the display. The user will be required to make more restrictive selections.



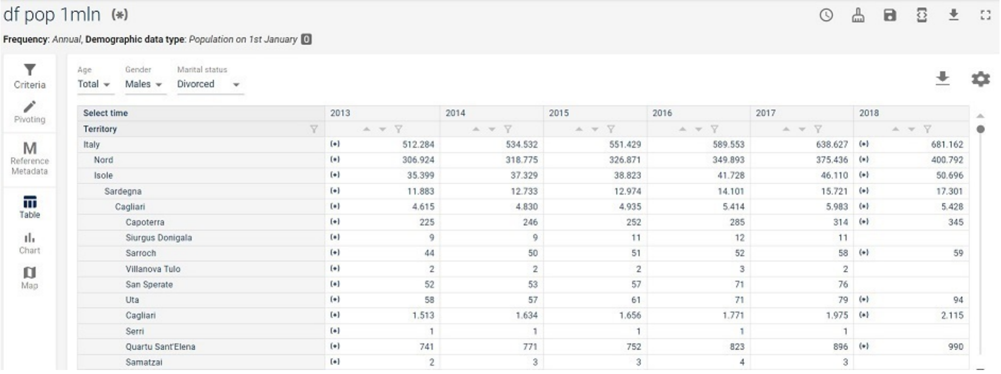
The dataset exceeds the maximum number of allowed observations

Please apply more restrictive criteria.

For all other criteria selection modes, if data exceeds the allowed size, display it's possibile but a layout for tabular display will be defined to meet the configured maximum cell and observation thresholds. The algorithm for generating the layout runs as follows:

- dimensions with only one value are placed as a label under the title
- the frequency dimension (if it has more than one occurrence) is placed in column, otherwise as a label under the title
- the time dimension is placed in column
- the remaining dimensions are scrolled starting with the spatial dimension (if present), then continuing in the order defined in the DSD. The first dimension that would result in a table with an estimated number of cells less than the maximum allowed is placed in the row
- the remaining dimensions are placed in the filters.

In the case of large data and a node configuration set to ALL_PARTIAL_OPTIMIZED as criteria selection mode, in addition to defining a structured layout according to the algorithm just described, only the information necessary for the current display (e.g., chosen in the criteria) is requested from the NSI WS.



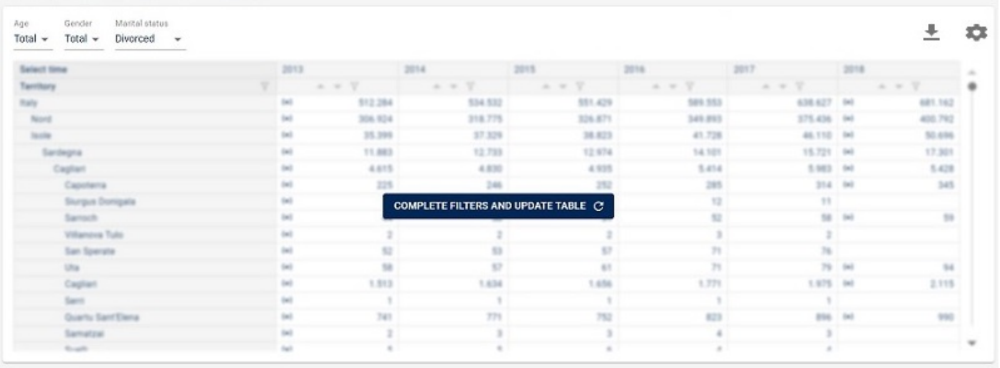
df pop 1mln (✱)

Frequency: *Annual*, **Demographic data type**: *Population on 1st January* 0

Age: Total
Gender: Males
Marital status: Divorced

Select time	2013	2014	2015	2016	2017	2018
Territory						
Italy	(•) 512.284	534.532	551.429	589.553	638.627	(•) 681.162
Nord	(•) 306.924	318.775	326.871	349.893	375.436	(•) 400.792
Isole	(•) 35.399	37.329	38.823	41.728	46.110	(•) 50.696
Sardegna	(•) 11.883	12.733	12.974	14.101	15.721	(•) 17.301
Cagliari	(•) 4.615	4.830	4.935	5.414	5.983	(•) 5.428
Capoterra	(•) 225	246	252	285	314	(•) 345
Siurgus Donigala	(•) 9	9	11	12	11	
Sarroch	(•) 44	50	51	52	58	(•) 59
Villanova Tulo	(•) 2	2	2	3	2	
San Sperate	(•) 52	53	57	71	76	
Uta	(•) 58	57	61	71	79	(•) 94
Cagliari	(•) 1.513	1.634	1.656	1.771	1.975	(•) 2.115
Serri	(•) 1	1	1	1	1	
Quartu Sant'Elena	(•) 741	771	752	823	896	(•) 990
Samatzai	(•) 2	3	3	4	3	

If the user changes the choices in the filters, then data will be shown blurred and the user will be prompted to press the button to reload the table while a new query to the NSI WS occurs.

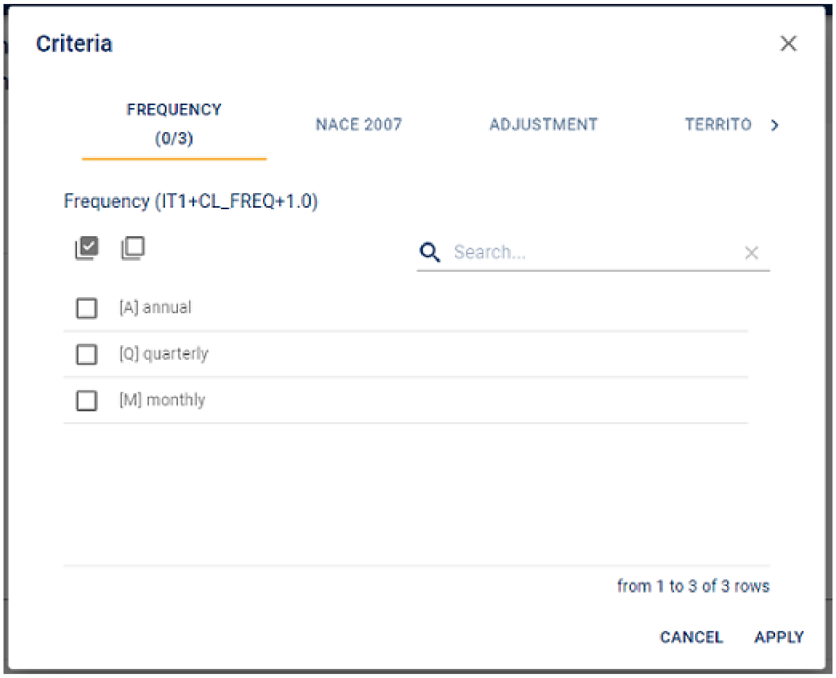


Age: Total
Gender: Total
Marital status: Divorced

5.3.1 How to manage data criteria

By clicking on the **Criteria** button in the visualization window, a page opens where users can manage what information will be shown in data visualization. For each dimension the system will show available values in a hierarchical way (if a hierarchy is defined) and the user can select the values to filter. By clicking on **Apply** the system will retrieve data according to the filters set, and just the result set will be shown to the end users. The set query must return at most the maximum number of observations (configurable at single node level), beyond which the user will be asked to set more restrictive conditions.

Example #1:



Frequency (IT1+CL_FREQ+1.0)

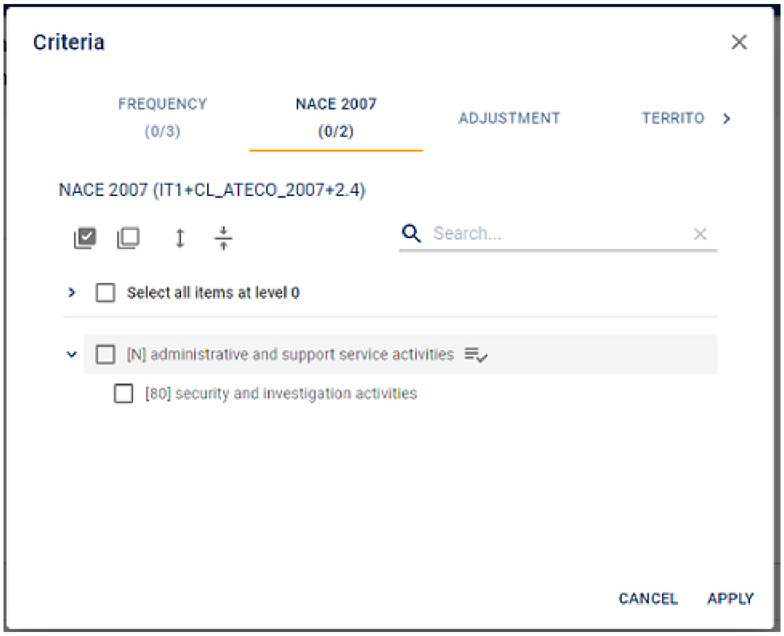
□ [A] annual

□ [Q] quarterly

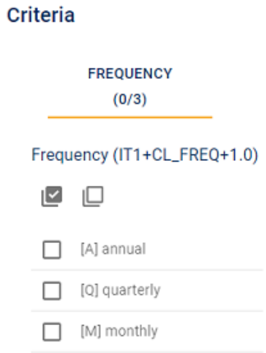
□ [M] monthly

from 1 to 3 of 3 rows

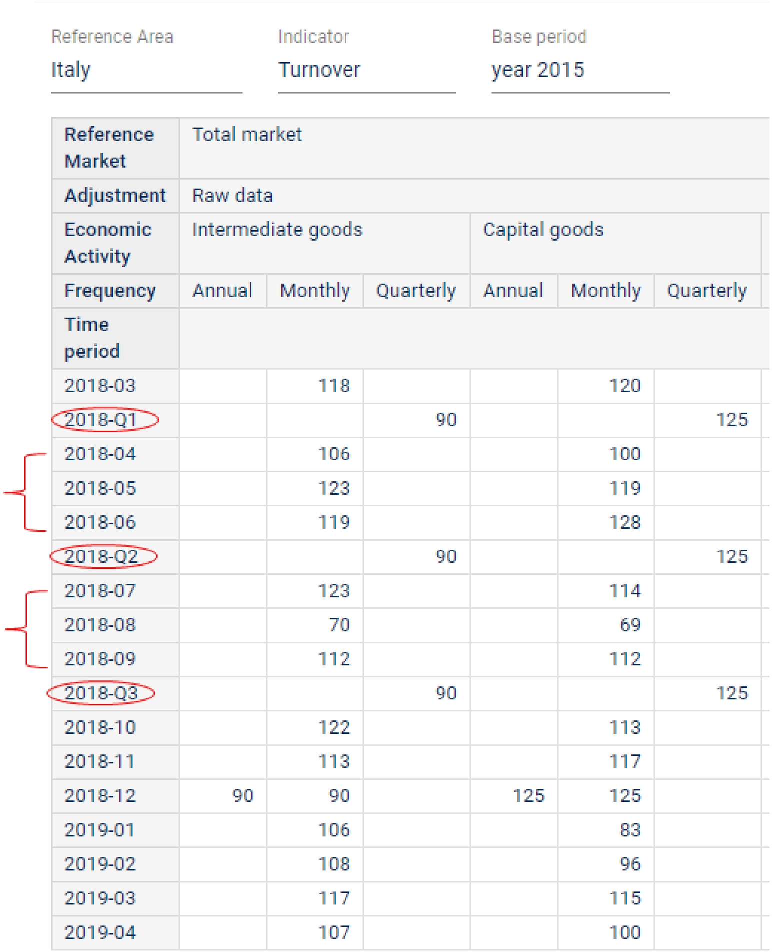
Example #2:


Criteria
FREQUENCY (0/3)
NACE 2007 (0/2)
ADJUSTMENT
TERRITO
NACE 2007 (IT1+CL_ATECO_2007+2.4)
Search...
□ Select all items at level 0
□ [N] administrative and support service activities
□ [80] security and investigation activities
CANCEL
APPLY

A particular focus can be set on the visualization of the **time period** dimension, especially on its ordering and how it is managed. If data has multiple frequencies such as:



the output table as default, will return the time ordered in a "hierarchical" way. Considering the previous example, starting from the the first month available, in order, quarters, semesters and year will follow, as shown in this image:



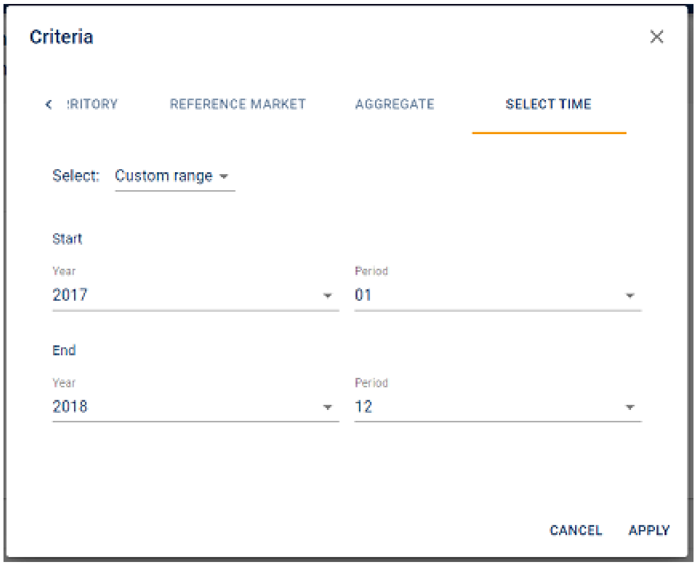
Reference Area: Italy

Indicator: Turnover

Base period: year 2015

Reference Market	Total market					
Adjustment	Raw data					
Economic Activity	Intermediate goods			Capital goods		
Frequency	Annual	Monthly	Quarterly	Annual	Monthly	Quarterly
Time period						
2018-03		118			120	
2018-Q1			90			125
2018-04		106			100	
2018-05		123			119	
2018-06		119			128	
2018-Q2			90			125
2018-07		123			114	
2018-08		70			69	
2018-09		112			112	
2018-Q3			90			125
2018-10		122			113	
2018-11		113			117	
2018-12	90	90		125	125	
2019-01		106			83	
2019-02		108			96	
2019-03		117			115	
2019-04		107			100	

It is also possible to select the range for the time dimension choosing between the minimun and the maximum date present in the data table.



Criteria

Select: Custom range

Start

Year: 2017

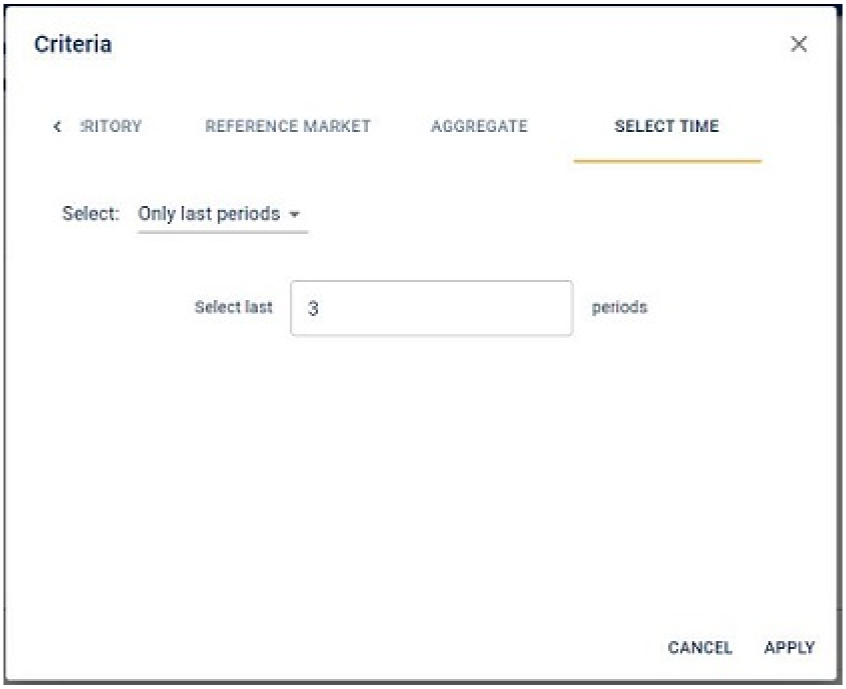
Period: 01

End

Year: 2018

Period: 12

Or in some cases, if time can be separated in periods, user can choose the period to visualize



Select: Only last periods

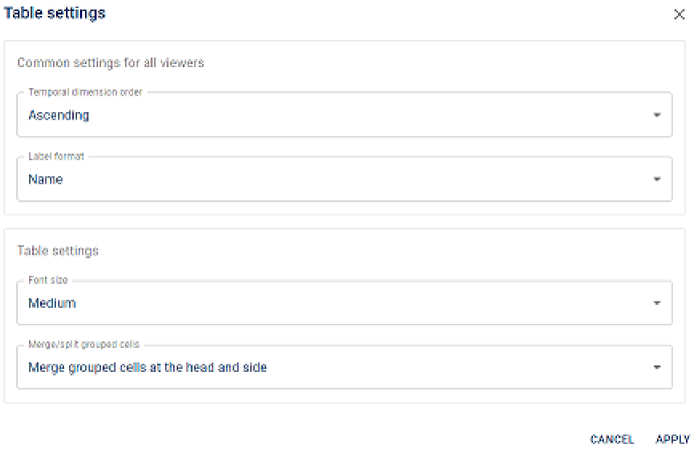
Select last 3 periods

If a default is defined in node configuration or in dataflow annotation the text box will be set with this value.

The authenticated user can select “Full range” to not apply filters on the time dimension. This option is useful if a view is present and data is update with new periods. If “Full range” has been chosen to build the view this will be updated with new periods otherwise the view will have just periods selected as custom range or last periods. The “Full range” option is not available for anonymous users as they cannot build views.

5.3.2 How to customize a table

In the central window where data is displayed, on the very top righ there is the button to automatically download data in csv and the button for viewer configuration (settings icon). Once the settings icon is clicked the following window appears:



Common settings for all viewers

Temporal dimension order: Ascending

Label format: Name

Table settings

Font size: Medium

Merge/split grouped cells: Merge grouped cells at the head and side

The user from this window can set the temporal dimension order (Ascending, Descending) and the label format for all viewers:

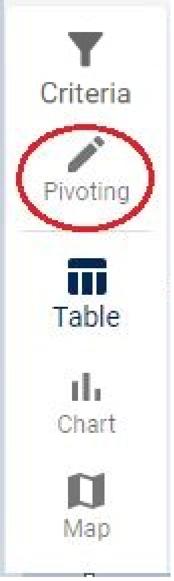
- Name: shows the names of the items' dimensions
- ID: shows the ids of the items' dimensions
- Both: shows ids and names of the items' dimensions.

more specifically, for the table settings, user can set the font size and select cell grouping mode between:

- merge grouped cells at the head and side
- merge grouped cells at the head and split at side
- split grouped cells at the head and merge at the side
- split grouped cells at the head and side

This information can also be set on the dataflow in the Meta&DataManager environment through the annotation LAYOUT_AGGREGATE_CELLS.

By clicking on the **Pivoting** button opens a page where users can change the layout choosing which dimensions will be shown in rows, in columns, in sections or used to filter data.



The layout page interface changes according to the type of active visualization selected among Table, Chart and Map. If the active visualization is Table, information will be shown in a multidimensional table with the dimensions arranged on the axes according to layout settings, in descending order of priority. When the user chooses how to arrange dimensions among axes, sections and filters, a preview of the resulting table will be shown on the right of the layout page. Filters are shown on the top of the multidimensional table: if a dimension has only one value (fixed data) it will be automatically included in filters. The filter popup supports any hierarchies present and allows them to be displayed in a tree view with the possibility of selecting items via "radio button." Dimensions in rows and columns will be shown according to the order set in the layout pane. Choosing to show a dimension as row_section means "breaking" the table into many subtables for all the different values of that dimension. Some layout configuration examples.

Example #1: Given the following layout setting

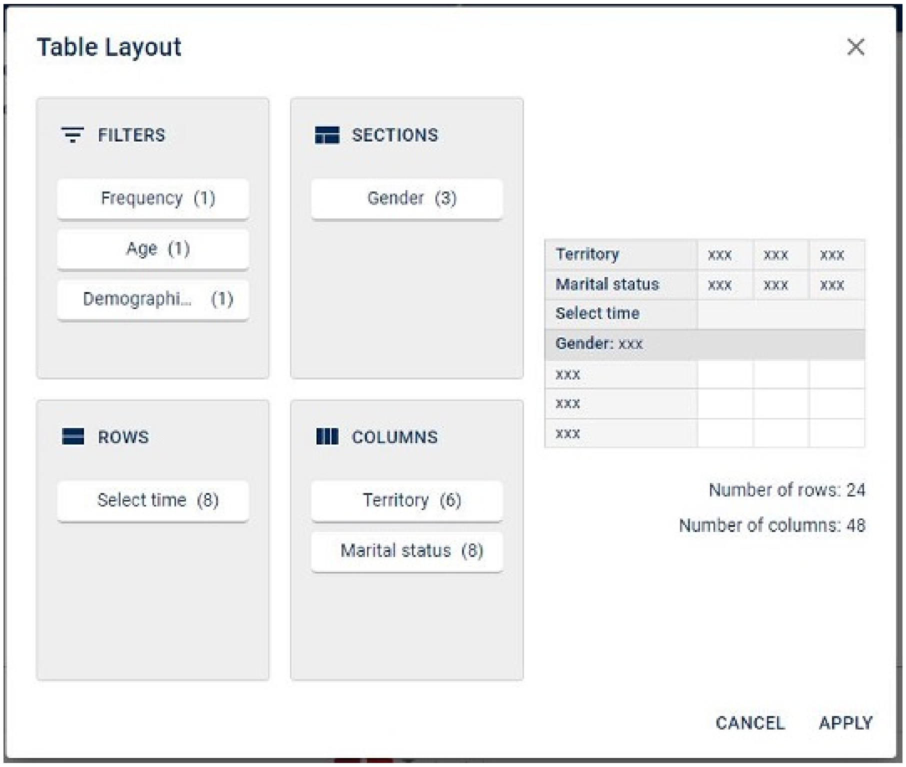


Table Layout

FILTERS

- Frequency (1)
- Age (1)
- Demographi... (1)

SECTIONS

- Gender (3)

ROWS

- Select time (8)

COLUMNS

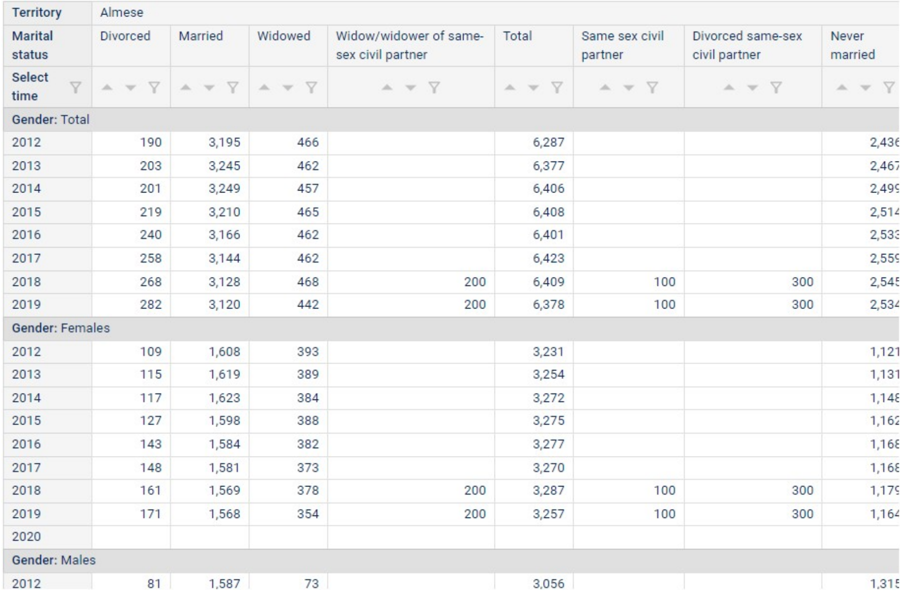
- Territory (6)
- Marital status (8)

Territory	xxx	xxx	xxx
Marital status	xxx	xxx	xxx
Select time			
Gender: xxx			
xxx			
xxx			
xxx			

Number of rows: 24

Number of columns: 48

The output table will be as:



Territory	Almese							
Marital status	Divorced	Married	Widowed	Widow/widower of same-sex civil partner	Total	Same sex civil partner	Divorced same-sex civil partner	Never married
Select time								
Gender: Total								
2012	190	3,195	466		6,287			2,436
2013	203	3,245	462		6,377			2,467
2014	201	3,249	457		6,406			2,499
2015	219	3,210	465		6,408			2,514
2016	240	3,166	462		6,401			2,533
2017	258	3,144	462		6,423			2,559
2018	268	3,128	468	200	6,409	100	300	2,545
2019	282	3,120	442	200	6,378	100	300	2,534
Gender: Females								
2012	109	1,608	393		3,231			1,121
2013	115	1,619	389		3,254			1,131
2014	117	1,623	384		3,272			1,148
2015	127	1,598	388		3,275			1,162
2016	143	1,584	382		3,277			1,168
2017	148	1,581	373		3,270			1,168
2018	161	1,569	378	200	3,287	100	300	1,179
2019	171	1,568	354	200	3,257	100	300	1,164
2020								
Gender: Males								
2012	81	1,587	73		3,056			1,315

Example #2: With the following table layout

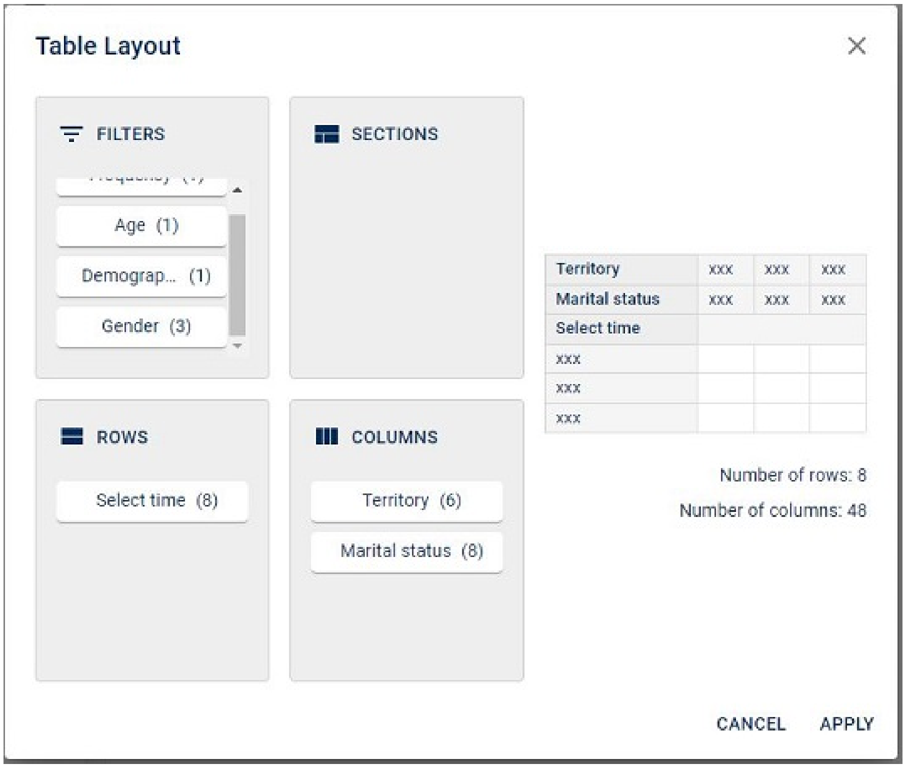


Table Layout

FILTERS

Age (1)

Demograp... (1)

Gender (3)

SECTIONS

ROWS

Select time (8)

COLUMNS

Territory (6)

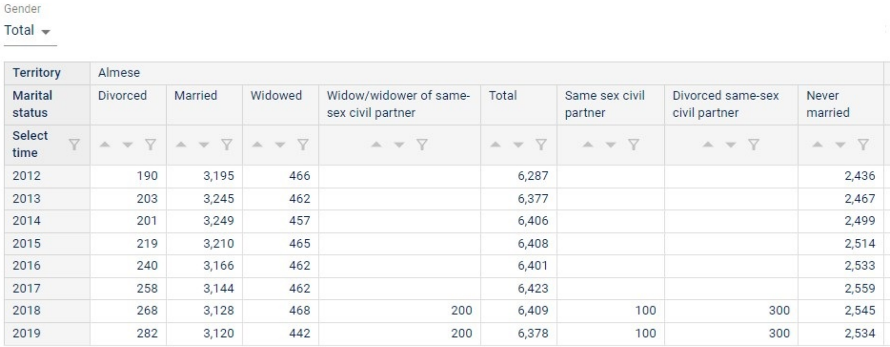
Marital status (8)

Territory	xxx	xxx	xxx
Marital status	xxx	xxx	xxx
Select time			
xxx			
xxx			
xxx			

Number of rows: 8

Number of columns: 48

the user will visualize:



Gender

Total

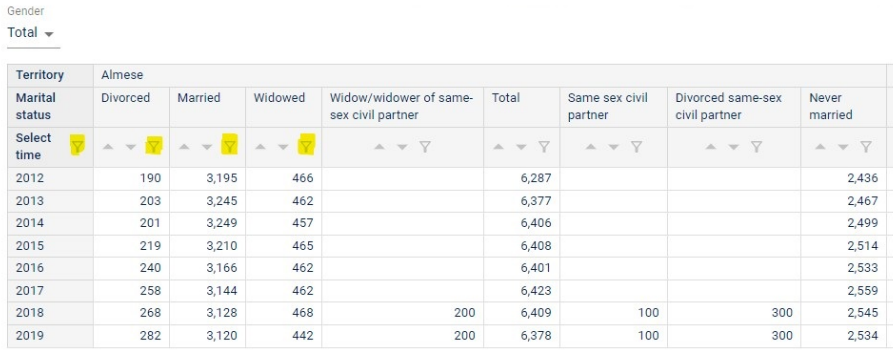
Territory	Almese							
Marital status	Divorced	Married	Widowed	Widow/widower of same-sex civil partner	Total	Same sex civil partner	Divorced same-sex civil partner	Never married
Select time								
2012	190	3,195	466		6,287			2,436
2013	203	3,245	462		6,377			2,467
2014	201	3,249	457		6,406			2,499
2015	219	3,210	465		6,408			2,514
2016	240	3,166	462		6,401			2,533
2017	258	3,144	462		6,423			2,559
2018	268	3,128	468	200	6,409	100	300	2,545
2019	282	3,120	442	200	6,378	100	300	2,534

Data can have an information icon ⓘ next to the title to show any notes associated with data. Notes can be also associated to dimensions and even to a single cell.

For more information see section *Attributes*

It will also be possible to access the reference metadata of the dataflow through a special button located in the bar on the left.

Duting table visualization, it is possible to manage two types of filtering: on the dimensions in the row and on the observation of a single column.

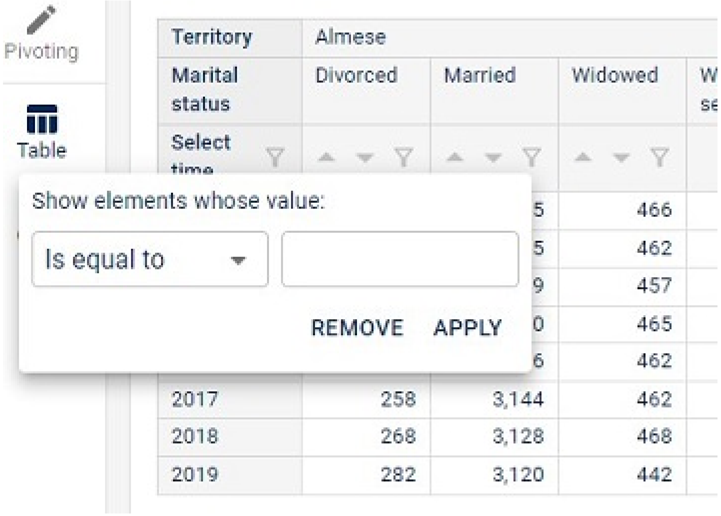


Gender
Total

Territory	Almese							
Marital status	Divorced	Married	Widowed	Widow/widower of same-sex civil partner	Total	Same sex civil partner	Divorced same-sex civil partner	Never married
Select time								
2012	190	3,195	466		6,287			2,436
2013	203	3,245	462		6,377			2,467
2014	201	3,249	457		6,406			2,499
2015	219	3,210	465		6,408			2,514
2016	240	3,166	462		6,401			2,533
2017	258	3,144	462		6,423			2,559
2018	268	3,128	468	200	6,409	100	300	2,545
2019	282	3,120	442	200	6,378	100	300	2,534

For the first filtering type, the following operators are applicable:

- equal to
- not equal to
- starts with
- contains
- does not contain
- ends with



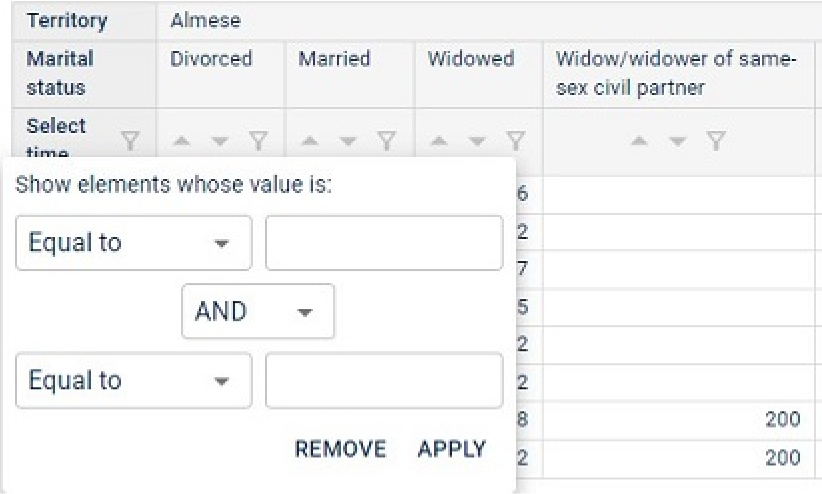
Territory	Almese			W
Marital status	Divorced	Married	Widowed	se
Select time				
		5	466	
		5	462	
		9	457	
		0	465	
		6	462	
2017	258	3,144	462	
2018	268	3,128	468	
2019	282	3,120	442	

Show elements whose value:

Is equal to

For the second filtering type, the following operators are applicable:

- equals
- not equal to
- larger than or equal to
- larger than
- smaller than or equal to
- smaller than.



Territory	Almese			
Marital status	Divorced	Married	Widowed	Widow/widower of same-sex civil partner
Select time				
			6	
			2	
			7	
			5	
			2	
			2	
			8	200
			2	200

Show elements whose value is:

Equal to ▾ |

AND ▾

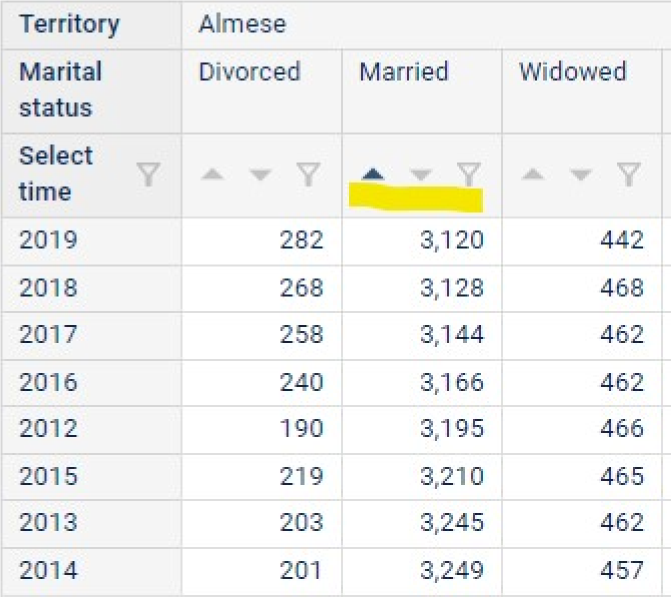
Equal to ▾ |

REMOVE APPLY

Only one filter condition will be possible for each dimension, and up to two conditions (in AND or OR with each other) will be possible for column observations. Conditions on different columns/dimensions can be applied simultaneously, and will be considered in AND with each other. In case a filter is applied on the column, the color of the icon will change and any hierarchy in the row will be flattened.

These filters will be valid only during data consultation; therefore, they will not be made persistent in views and templates. Removal of filters will be done via the appropriate “REMOVE” button. The color of the icon dedicated to filters (funnel) will be customizable via custom.css.

It is possible to sort individual columns, containing observations, in an increasing/decreasing direction. Applying sorting on one column will automatically remove any previously set sorting on other columns. The sorting will be valid only during data consultation, thus not persisted in views and templates. The color of the icon dedicated to sorting (up arrow or down arrow) will be customizable via custom.css.

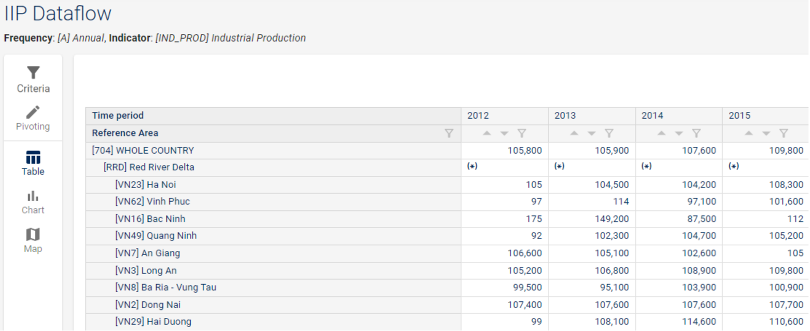


Territory	Almese		
Marital status	Divorced	Married	Widowed
Select time	▲ ▼	▲ ▼	▲ ▼
2019	282	3,120	442
2018	268	3,128	468
2017	258	3,144	462
2016	240	3,166	462
2012	190	3,195	466
2015	219	3,210	465
2013	203	3,245	462
2014	201	3,249	457

If there are sections, sorting will be by section (all sections within it will be sorted). Alphanumeric, null or empty values for observations will always be placed at the bottom. Sorting will be automatically removed in cases where the user acts on: criteria, pivoting, visualizer type, filters, and direction of time dimension sorting. Column sorting will win out over the currently set time dimension sorting, in cases where that dimension is in rows. In the presence of hierarchical dimension in rows (e.g., territory), in case the user sorts a column, the hierarchical display will be flattened.

5.3.2.1 Manage the display of hierarchical Codelists

The hierarchical codelists are also represented in the multidimensional table. This hierarchical representation will only be present if its associated dimensions are put in line. This solution is not only valid for the territorial dimensions, but for all the dimensions put in line that have associated hierarchical Codelists.



IIP Dataflow

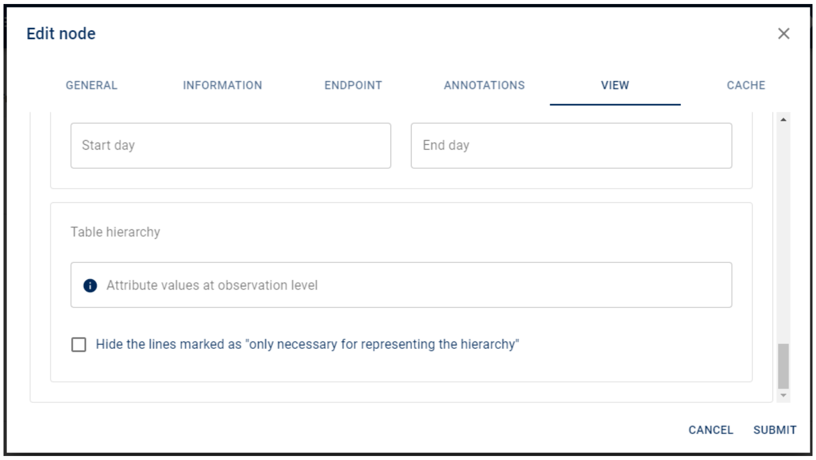
Frequency: *[A] Annual*, **Indicator**: *[IND_PROD] Industrial Production*

Time period	2012	2013	2014	2015
Reference Area				
[704] WHOLE COUNTRY	105,800	105,900	107,600	109,800
[RRD] Red River Delta	(*)	(*)	(*)	(*)
[VN23] Ha Noi	105	104,500	104,200	108,300
[VN62] Vinh Phuc	97	114	97,100	101,600
[VN16] Bac Ninh	175	149,200	87,500	112
[VN49] Quang Ninh	92	102,300	104,700	105,200
[VN7] An Giang	106,600	105,100	102,600	105
[VN3] Long An	105,200	106,800	108,900	109,800
[VN8] Ba Ria - Vung Tau	99,500	95,100	103,900	100,900
[VN2] Dong Nai	107,400	107,600	107,600	107,700
[VN29] Hai Duong	99	108,100	114,600	110,600

It may happen that the displayed data contains “gaps” in the hierarchy, and consequently, the hierarchy cannot be reconstructed (for example, in the image above, the Reference Area “Red River Delta” doesn’t have any observations for the dimensions inspected). In this case the user has several possibilities for managing the table visualization in order to show/not show empty rows in table. It is important to underline that the observations, present in the empty rows of the table, are null values marked by an attribute which indicates the particularity of the case. The value of this attribute is very important as it is necessary for the configuration of the node that will allow it to be displayed or not.

Case 1: visualize table with empty rows and corresponding attributes

If the user decides to visualize the entire table including the empty rows marked with the attribute at observation level, he must leave the corresponding field blank in the node configuration (View Tab) as follows:



Start day

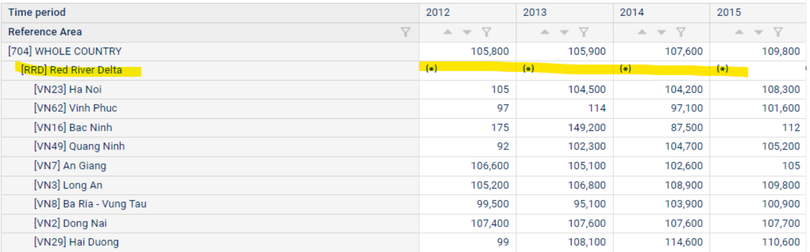
End day

Table hierarchy

Attribute values at observation level

☐ Hide the lines marked as "only necessary for representing the hierarchy"

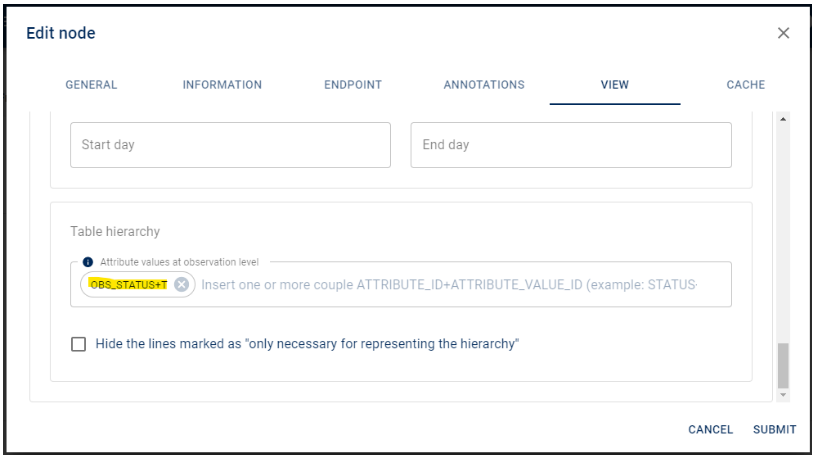
The following image represents the result of the configuration



Time period	2012	2013	2014	2015
Reference Area				
[704] WHOLE COUNTRY	105,800	105,900	107,600	109,800
[RRD] Red River Delta	(*)	(*)	(*)	(*)
[VN23] Ha Noi	105	104,500	104,200	108,300
[VN62] Vinh Phuc	97	114	97,100	101,600
[VN16] Bac Ninh	175	149,200	87,500	112
[VN49] Quang Ninh	92	102,300	104,700	105,200
[VN7] An Giang	106,600	105,100	102,600	105
[VN3] Long An	105,200	106,800	108,900	109,800
[VN8] Ba Ria - Vung Tau	99,500	95,100	103,900	100,900
[VN2] Dong Nai	107,400	107,600	107,600	107,700
[VN29] Hai Duong	99	108,100	114,600	110,600

Case 2: visualize table with empty rows and no corresponding attributes

The user can also decide to show the entire table, including the empty rows, without visualizing the attributes corresponding to the null observations in the empty rows. In this case, in the node configuration, under the View tab, he must specify the annotation's ID and, most importantly, the value of the annotation for that specific case. For example, if the the observations in the empty rows were marked with the annotation **OBSERAVATION_STATUS** and value ID **T**, the form ***ATTRIBUTE_ID+ATTRIBUTE_VALUE_ID*** must be inserted in the *Table Hierarchy* field in the configuration's node just like the image:



Start day

End day

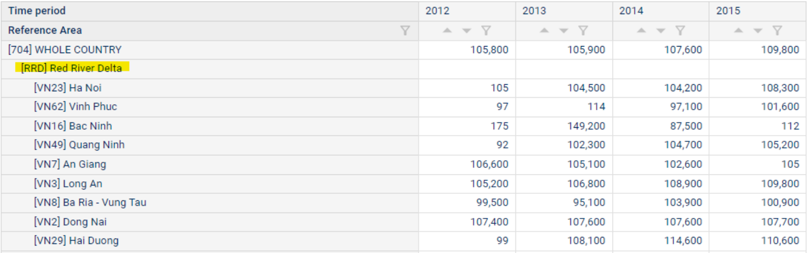
Table hierarchy

Attribute values at observation level

OBS_STATUS+T Insert one or more couple ATTRIBUTE_ID+ATTRIBUTE_VALUE_ID (example: STATUS·

☐ Hide the lines marked as "only necessary for representing the hierarchy"

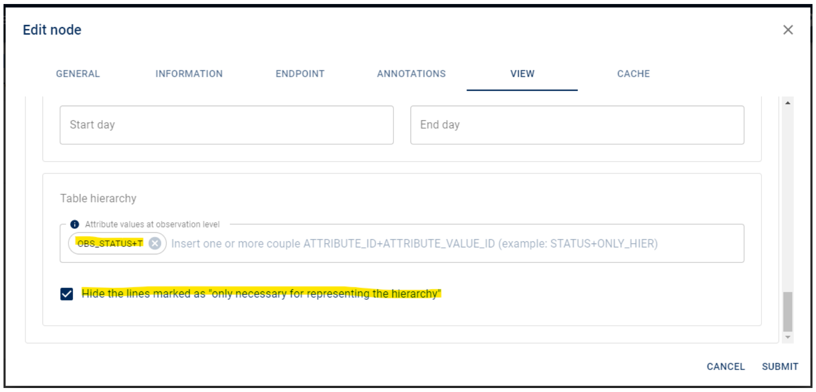
The following image represents the result of the configuration



Time period	2012	2013	2014	2015
Reference Area				
[704] WHOLE COUNTRY	105,800	105,900	107,600	109,800
[RRD] Red River Delta				
[VN23] Ha Noi	105	104,500	104,200	108,300
[VN62] Vinh Phuc	97	114	97,100	101,600
[VN16] Bac Ninh	175	149,200	87,500	112
[VN49] Quang Ninh	92	102,300	104,700	105,200
[VN7] An Giang	106,600	105,100	102,600	105
[VN3] Long An	105,200	106,800	108,900	109,800
[VN8] Ba Ria - Vung Tau	99,500	95,100	103,900	100,900
[VN2] Dong Nai	107,400	107,600	107,600	107,700
[VN29] Hai Duong	99	108,100	114,600	110,600

Case 3: don't show empty rows

It is also possible to hide the empty rows of the hierarchical codelist. In this case, the user must also check the ***Hide the lines marked as "only necessary for representing the hierarchy"*** option in the configuration, after setting also the annotation's ID and value's ID, which identify the interested rows.



Edit node

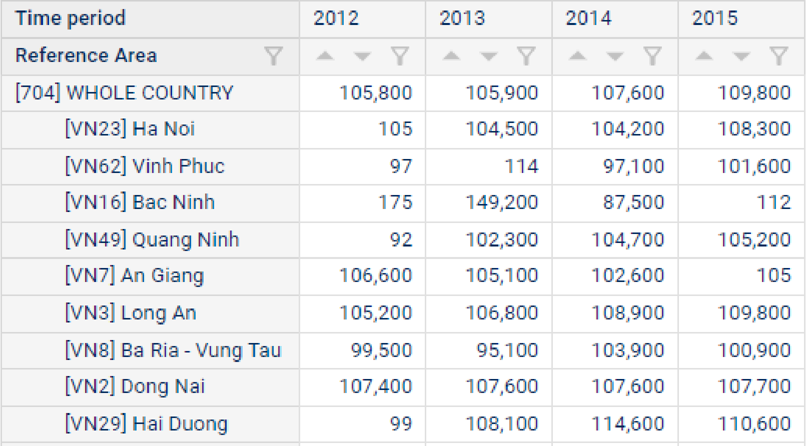
Table hierarchy

Attribute values at observation level: OBS_STATUS+T

Insert one or more couple ATTRIBUTE_ID+ATTRIBUTE_VALUE_ID (example: STATUS+ONLY_HIER)

☑ Hide the lines marked as "only necessary for representing the hierarchy"

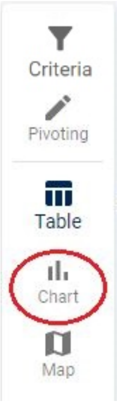
The following image represents the result of the configuration



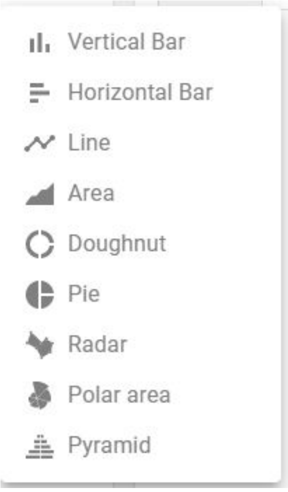
Time period	2012	2013	2014	2015
Reference Area				
[704] WHOLE COUNTRY	105,800	105,900	107,600	109,800
[VN23] Ha Noi	105	104,500	104,200	108,300
[VN62] Vinh Phuc	97	114	97,100	101,600
[VN16] Bac Ninh	175	149,200	87,500	112
[VN49] Quang Ninh	92	102,300	104,700	105,200
[VN7] An Giang	106,600	105,100	102,600	105
[VN3] Long An	105,200	106,800	108,900	109,800
[VN8] Ba Ria - Vung Tau	99,500	95,100	103,900	100,900
[VN2] Dong Nai	107,400	107,600	107,600	107,700
[VN29] Hai Duong	99	108,100	114,600	110,600

5.3.3 How to customize a chart

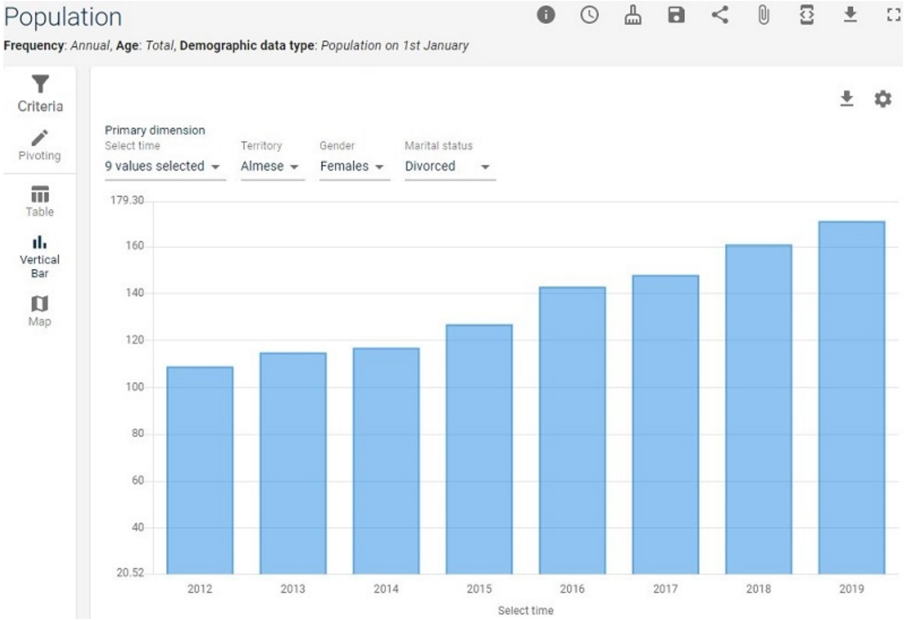
Once data is displayed in tabular format, it is possibile to create customizable charts by clicking on the chart symbol on the left pane of the table.



User can choose the chart type between the ones listed once the chart symbol is clicked



By default one primary dimension is set (usually the time_period) and all other dimension are contained in the filter section



Population

Frequency: *Annual*, **Age**: *Total*, **Demographic data type**: *Population on 1st January*

Primary dimension

Select time: 9 values selected

Territory: Almese

Gender: Females

Marital status: Divorced

Obviously, these settings can be modified by clicking the layout button. This operation allows the user to select a secondary dimension to consider in the chart or move dimensions as filter

Example:

Setting the following layout

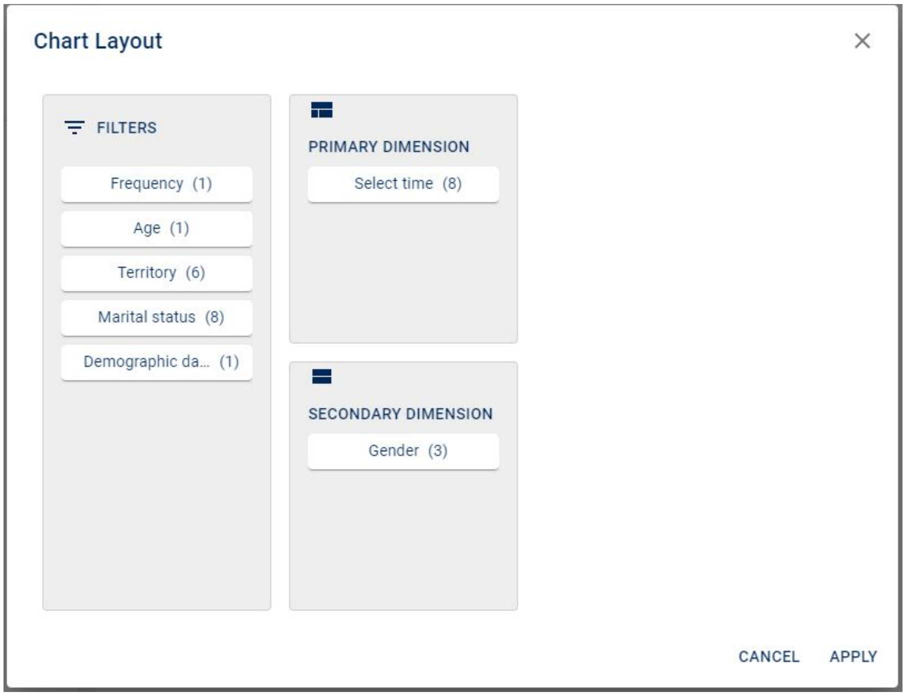


Chart Layout

FILTERS

- Frequency (1)
- Age (1)
- Territory (6)
- Marital status (8)
- Demographic da... (1)

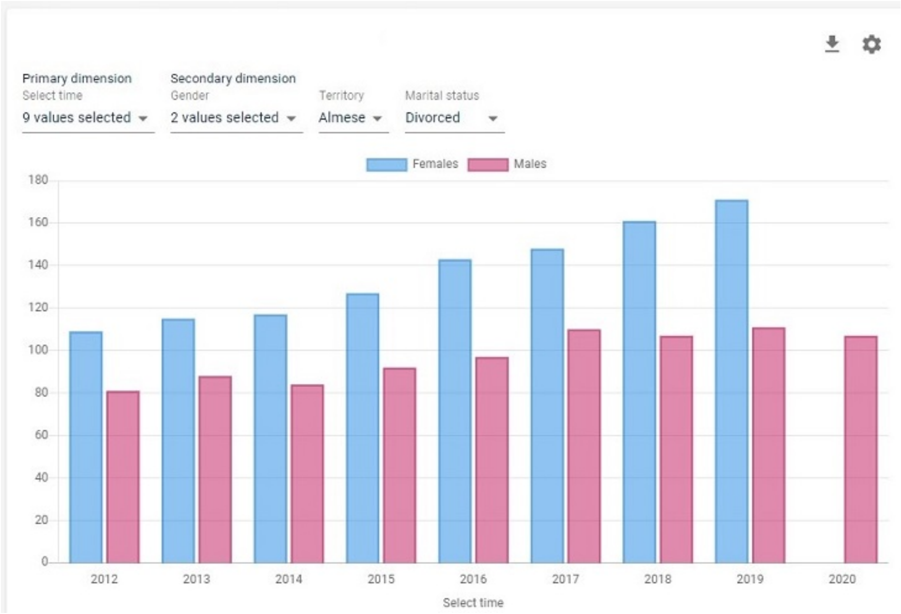
PRIMARY DIMENSION

- Select time (8)

SECONDARY DIMENSION

- Gender (3)

this is the returned chart



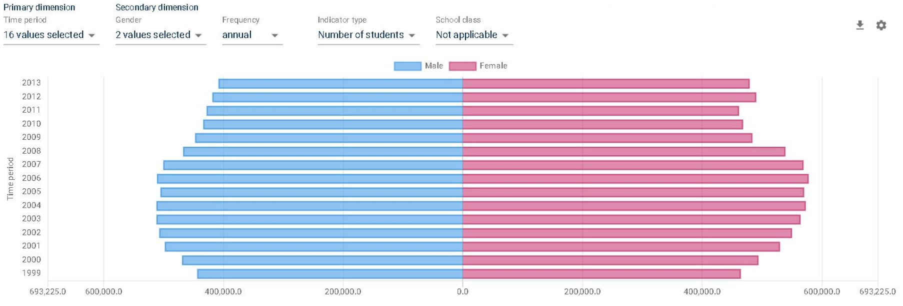
Primary dimension
Select time
9 values selected

Secondary dimension
Gender
2 values selected

Territory
Almese

Marital status
Divorced

Depending on the type of chart some settings on layout are mandatory: e.g. for pyramid chart the user must choose both primary and secondary dimension, moreover secondary dimension must have just two values selected.



Primary dimension
Time period
16 values selected

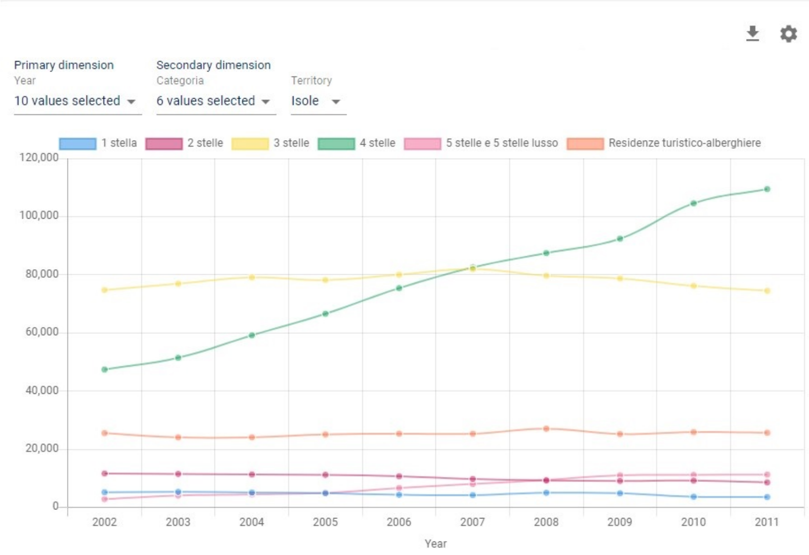
Secondary dimension
Gender
2 values selected

Frequency
annual

Indicator type
Number of students

School class
Not applicable

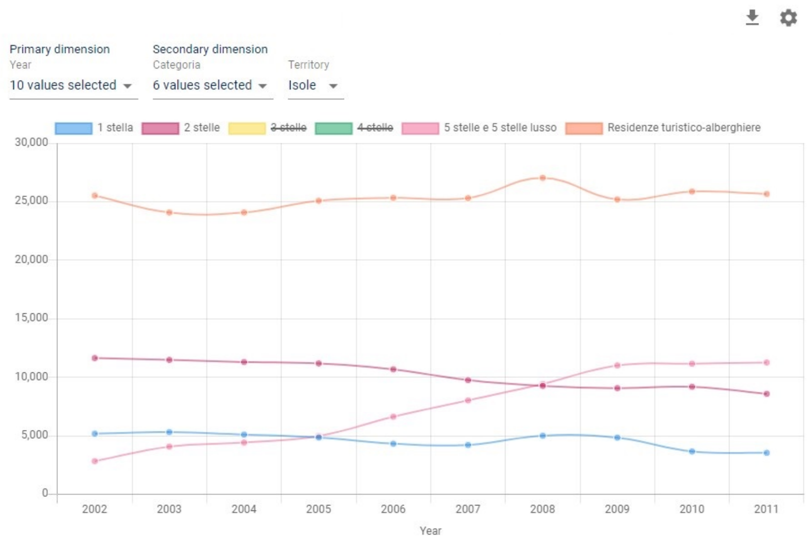
An interesting functionality of the chart section consists in excluding dimension values from the graph by selecting such dimension values in the chart caption. For example:



Primary dimension
Year
10 values selected

Secondary dimension
Categoria
6 values selected

Territory
Isole

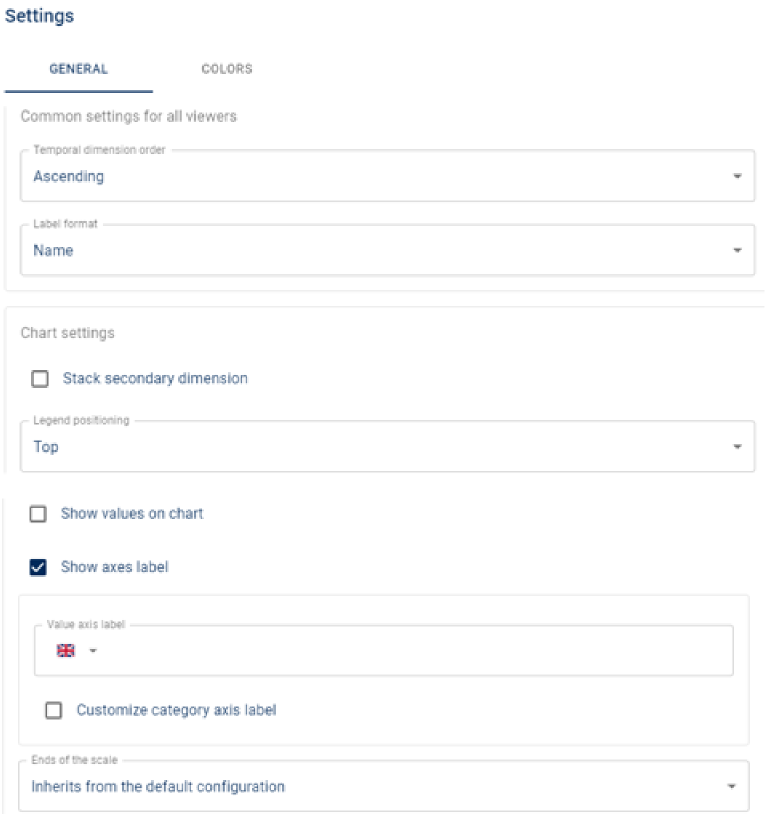


Primary dimension Year: 10 values selected

Secondary dimension Categoria: 6 values selected

Territory: Isole

Another functionality added to the graphical visualization, consists in the possibility to change dimensions' colors, change caption's position and stack secondary dimension, if the graph allows it. This configuration is reachable by clicking on the configuration icon on the top right of the graph. Once the icon is clicked the following window appears:



Settings

GENERAL | COLORS

Common settings for all viewers

Temporal dimension order: Ascending

Label format: Name

Chart settings

☐ Stack secondary dimension

Legend positioning: Top

☐ Show values on chart

☑ Show axes label

Value axis label:

☐ Customize category axis label

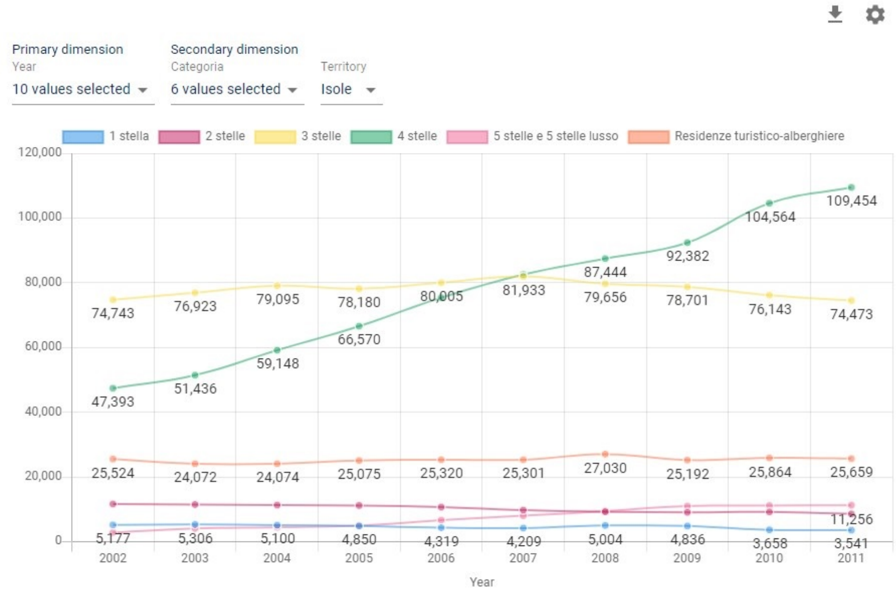
Ends of the scale: Inherits from the default configuration

This window contains two tabs:

in the first tab, "General", it is possible to set the temporal dimension order (Ascending, Descending) and the label format for all viewers:

- Name: shows the names of the items' dimensions
- ID: shows the ids of the items' dimensions
- Both: shows ids and names of the items' dimensions.

It is possible to set caption's position (top, left, right or bottom) and the possibility to stack secondary dimension (if checked and the graph does not allow this configuration, nothing will change in the final visualization).



Primary dimension
Year
10 values selected

Secondary dimension
Categoria
6 values selected

Territory
Isole

Moreover, by selecting "Show axes label" the user can type a label for the value axis in multiple languages, as well as customize category axis label which has category label by default. An additonal option available is the refers to setting the ends of the chart's scale. Possible options include:

- "Inherits from the default configuration" follows the configurations set in the appconfig.json file
- "Fit to data range" automatically adjust to the range of the data, both for the lower and upper extremes
- "Lower bound from zero or negative value" the lower extreme set at the zero value or the lower extreme in the presence of negative observations

In the second tab, "Colors", it is possible to set colors to a dimension's items just as shown in this example

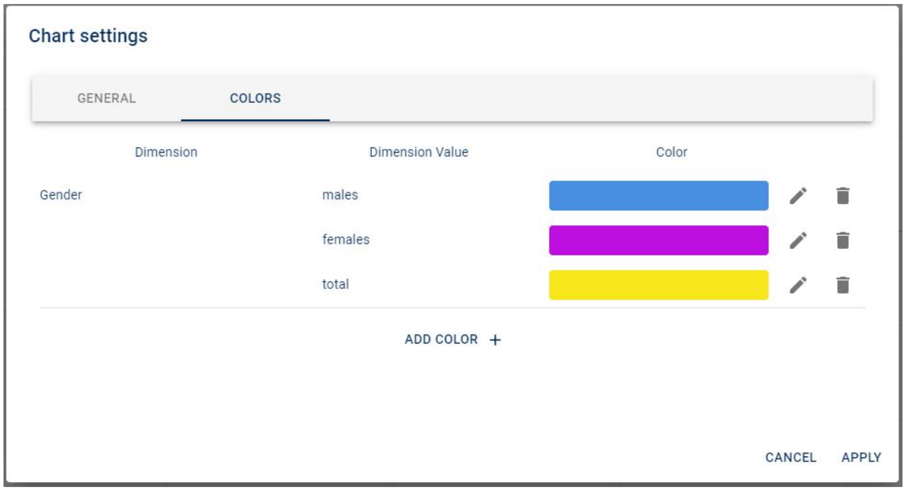
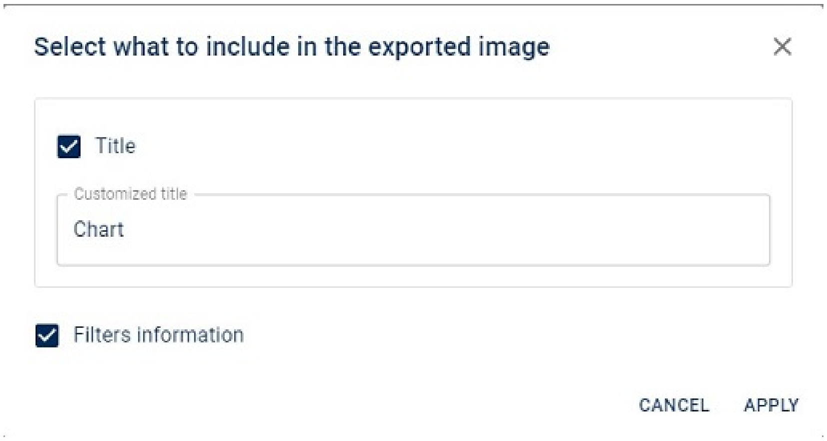


Chart settings

Dimension	Dimension Value	Color
Gender	males	🟦
	females	🟪
	total	🟨

The user can export the graph (as image or pdf as long as such formats are provided in the configuration's node) by clicking the download icon at the top right of the page. He can include title and filters to export, this is useful to have information about the filters applied.



Select what to include in the exported image

☑ Title

Customized title: Chart

☑ Filters information

Through specific annotations it is possible to manage the layout of two main families of graphs separately:

- Graphs with Cartesian axes (Lines, Bars, Areas, Pyramid)
- Graphs with radial axes (Ring, Pie, Radar, Polar)

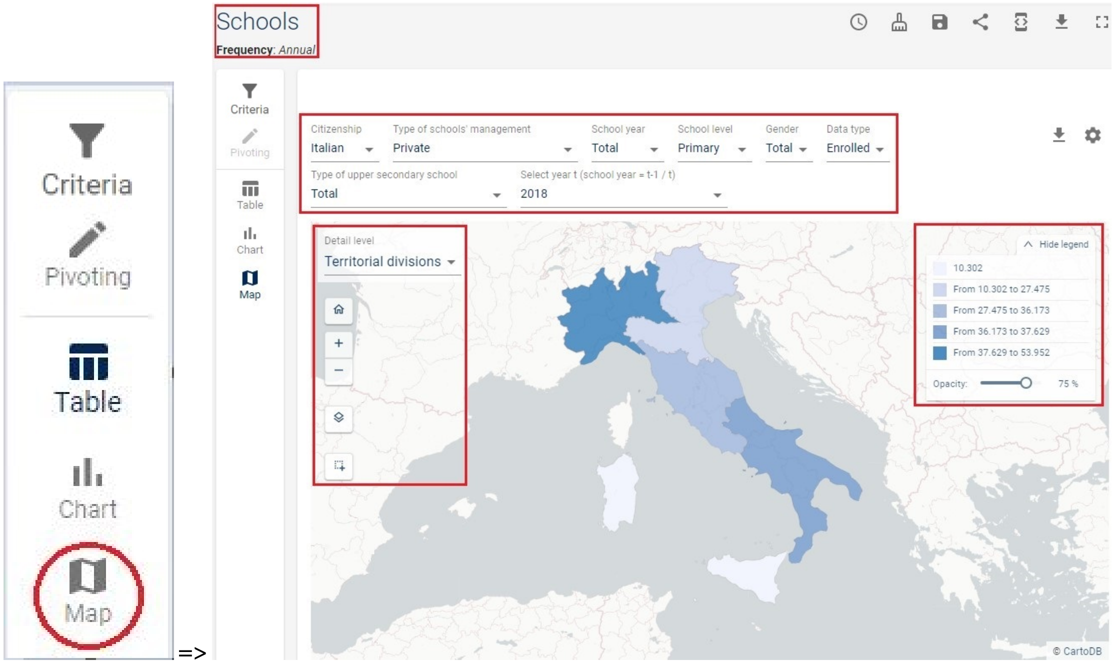
Depending on the chart selected, the pivoting section will adjust to the layout defined for the family to which it belongs. When saving a Template, both layouts currently applied must be persisted, whether they are the default layouts or customized by the user. For more information see section *Annotations*

5.3.4 How to customize a map

From the tabular visualization, it is also possible to move to the map section where a map is shown. Although the map button is not always present, in fact if in the node configuration the user does not specify territorial dimension's IDs, the application doesn't recognize any dimension for the map automatically. So first of all, in the node configuration window, under the "View" tab, the "Territorial dimensions Ids" must be filled with the territorial ids that it is possible to find in the datasets (for example: ITTER107, REF_AREA, COM and so on). If no territorial id is set in the node configuration, another way to visualize the map for a specific data is to set a geographic annotation when data is uploaded.

Once the user detects that the map visualization is available, he can click on the related button. If no criteria is selected initially, the dimensions present in the data are inserted as filters in the map visualization otherwise they are printed, with the chosen value, under the title of the data. At the top right of the map canvas, there are two icon that allow csv download (arrow down icon) and label format change (settings icon). The latter, once clicked enables the user to choose from three options:

- Name: shows the names of the items' dimensions
- ID: shows the ids of the items' dimensions
- Both: shows ids and names of the items' dimensions.



Schools

Frequency: *Annual*

Citizenship: Italian
Type of schools' management: Private
School year: Total
School level: Primary
Gender: Total
Data type: Enrolled
Type of upper secondary school: Total
Select year t (school year = t-1 / t): 2018

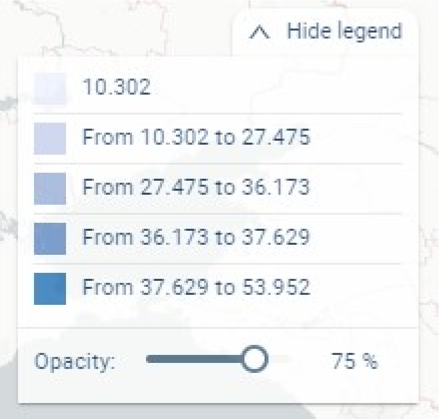
Detail level: Territorial divisions

▢	10.302
▢	From 10.302 to 27.475
▢	From 27.475 to 36.173
▢	From 36.173 to 37.629
■	From 37.629 to 53.952

Opacity: 75 %

The dimension based on the territory, goes in a specific filter, labelled as "Detail level", which is categorized considering the geographic section (area, region, province, municipality) and user can drill down or drill up in the map.

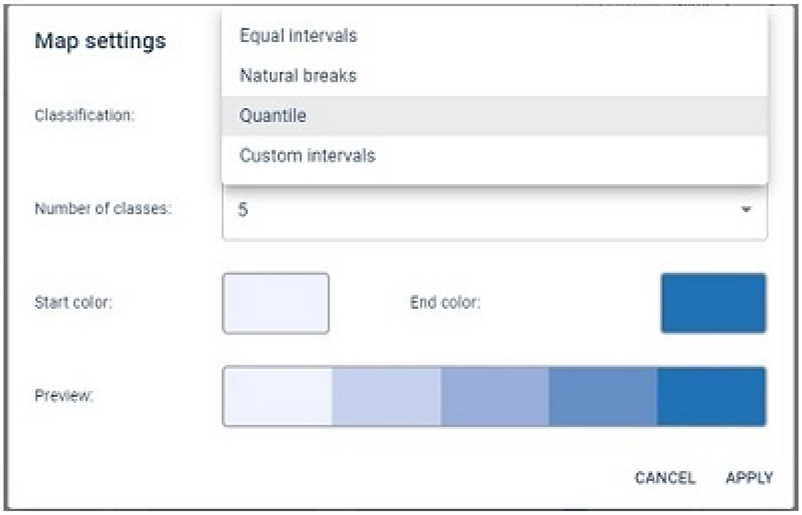
Map configuration can be personalized expanding the "Show legend" indication on the top right of the map which opens the following window



10.302
From 10.302 to 27.475
From 27.475 to 36.173
From 36.173 to 37.629
From 37.629 to 53.952

Opacity: 75 %

Opacity of the map can be selected by moving the scroll bar that shows the percentage of opaqueness. If, instead, the user decides to change the colors in the map, classification or number of classes in order to choose the way intervals are divided, this is made possibile by clicking inside the legend box. Classification defined as customized intervals it is also possible in this configuration.


Map settings

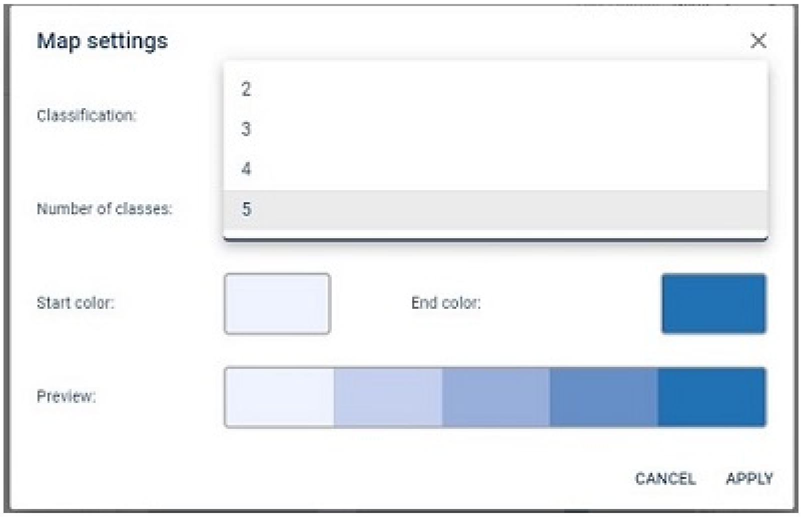
Classification: Quantile

Number of classes: 5

Start color:

End color:

Preview:


Map settings

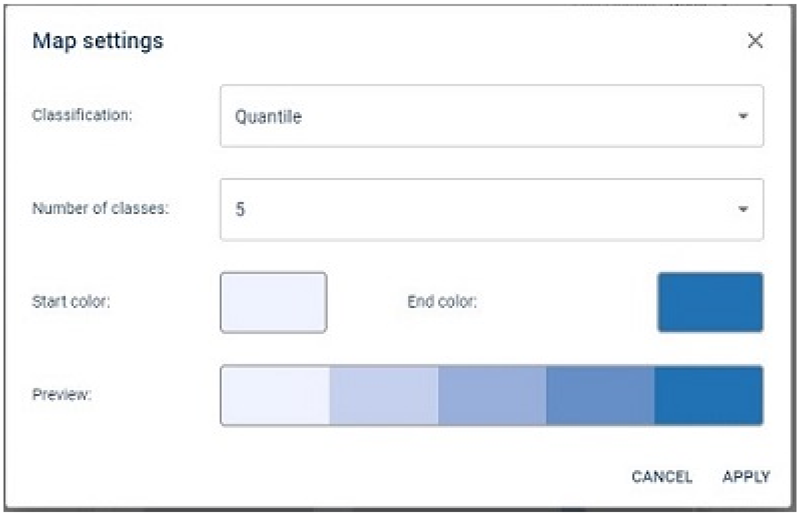
Classification:

Number of classes: 5

Start color:

End color:

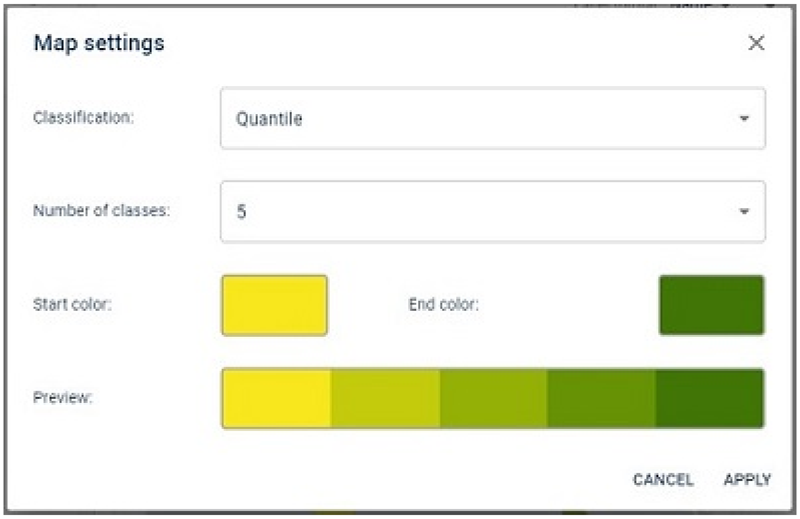
Preview:



Classification: Quantile

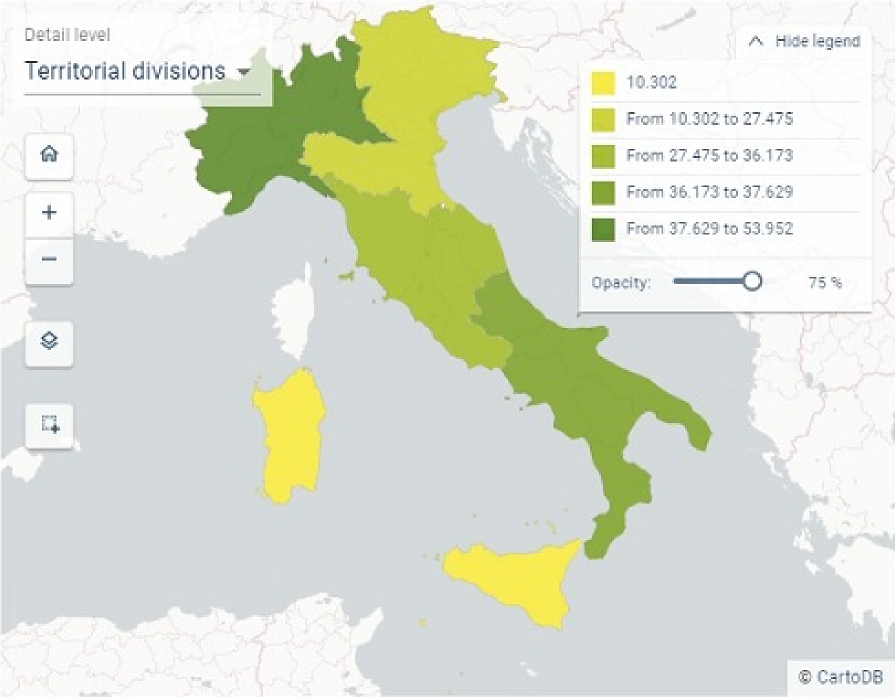
Number of classes: 5

Selecting "Start color" or "End color", enables the user to change colors in the map and, right away, there is a preview of the new colors. Modifications take place right after the user clicks on "Apply". The map will now have the new colors.



Classification: Quantile

Number of classes: 5

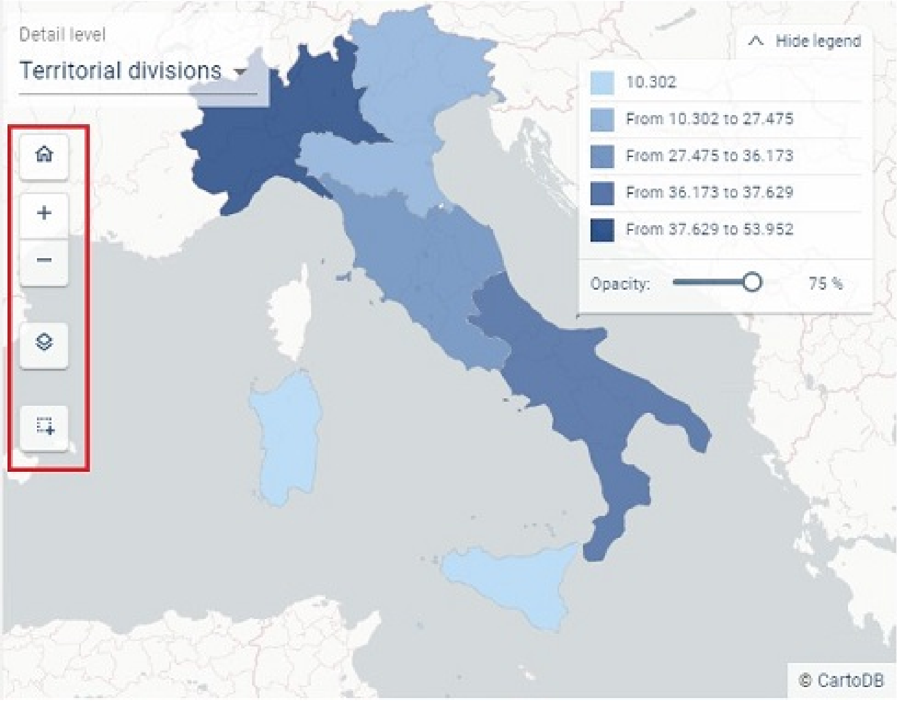


Detail level

Territorial divisions

Opacity: 75 %

On the left of the, there are buttons that allow other personalizations

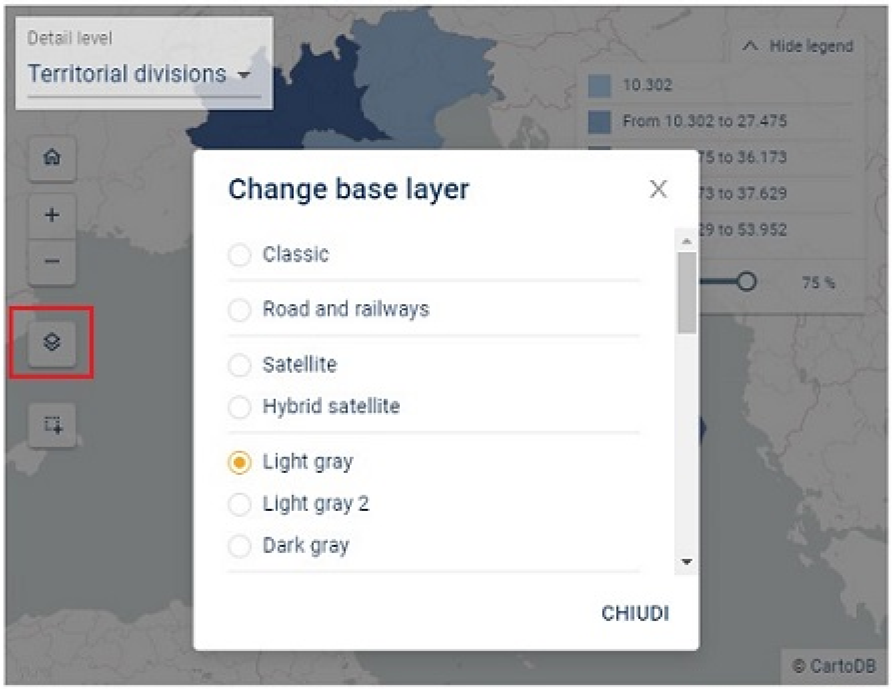


Detail level

Territorial divisions

Opacity: 75 %

in particular, the layer icon allows the user to change the map’s base layer



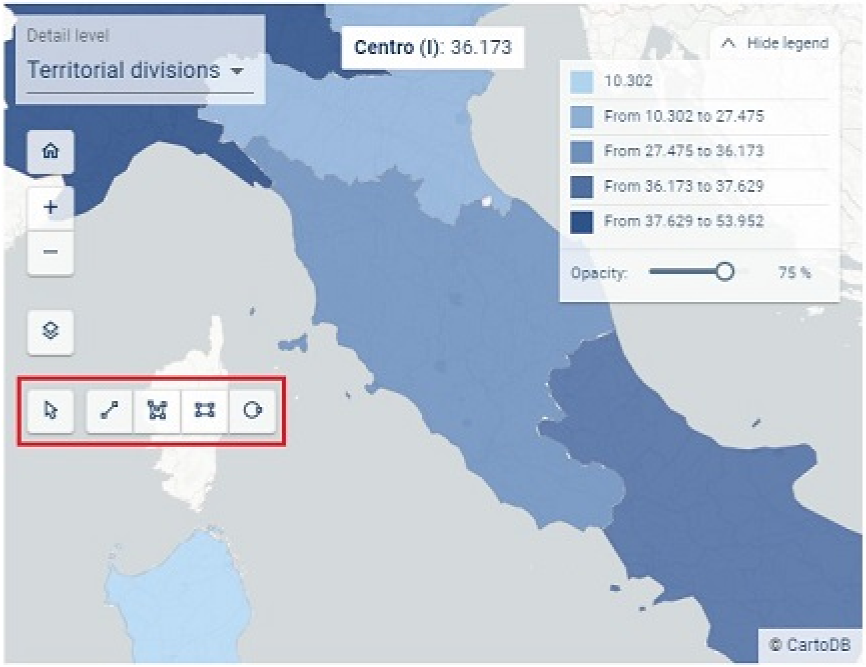
Detail level
Territorial divisions

Change base layer

○ Classic
○ Road and railways
○ Satellite
○ Hybrid satellite
● Light gray
○ Light gray 2
○ Dark gray

CHIUDI

and by clicking the selection tools available, it is possible to make circular, polylinear, polygonal, and rectangular geographic filters



Detail level
Territorial divisions

Centro (I): 36.173

▨	10.302
▨	From 10.302 to 27.475
▨	From 27.475 to 36.173
▨	From 36.173 to 37.629
■	From 37.629 to 53.952

Opacity: 75 %

As for graphs, maps can also be exported (as image or pdf as long as such formats are provided in the configuration's node) by clicking the download icon at the top right of the page. User can include title and filters to export, this is useful to have information about the filters applied. If the legend is shown in the map, export window will contain an additional checkbox selectable if the user wants the legend to be present in the image or pdf file exported.

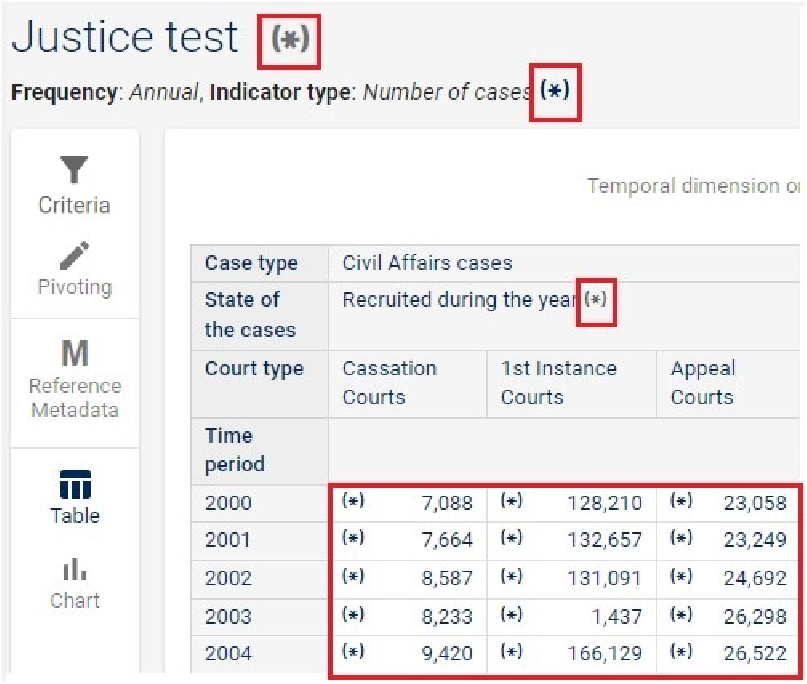
5.3.5 Attributes

Data can have four attribute types:

- Dataset attributes
- Group attributes
- DimensionGroup attributes
- Observation attributes

The user can see attributes in the same window where data is visualized.

When an attribute is present, the application generally shows an asterisk. On mouse over the cell containing the attribute, a tooltip shows the attribute(s) and its value(s) and the user can copy it; a tooltip can contain more than one attribute.

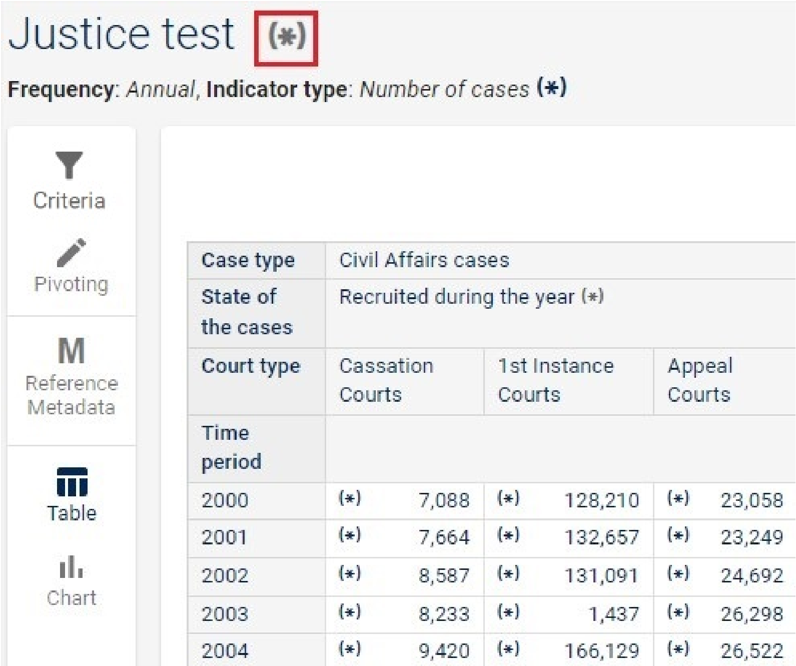


Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Case type	Civil Affairs cases		
State of the cases	Recruited during the year (*)		
Court type	Cassation Courts	1st Instance Courts	Appeal Courts
Time period			
2000	(*) 7,088	(*) 128,210	(*) 23,058
2001	(*) 7,664	(*) 132,657	(*) 23,249
2002	(*) 8,587	(*) 131,091	(*) 24,692
2003	(*) 8,233	(*) 1,437	(*) 26,298
2004	(*) 9,420	(*) 166,129	(*) 26,522

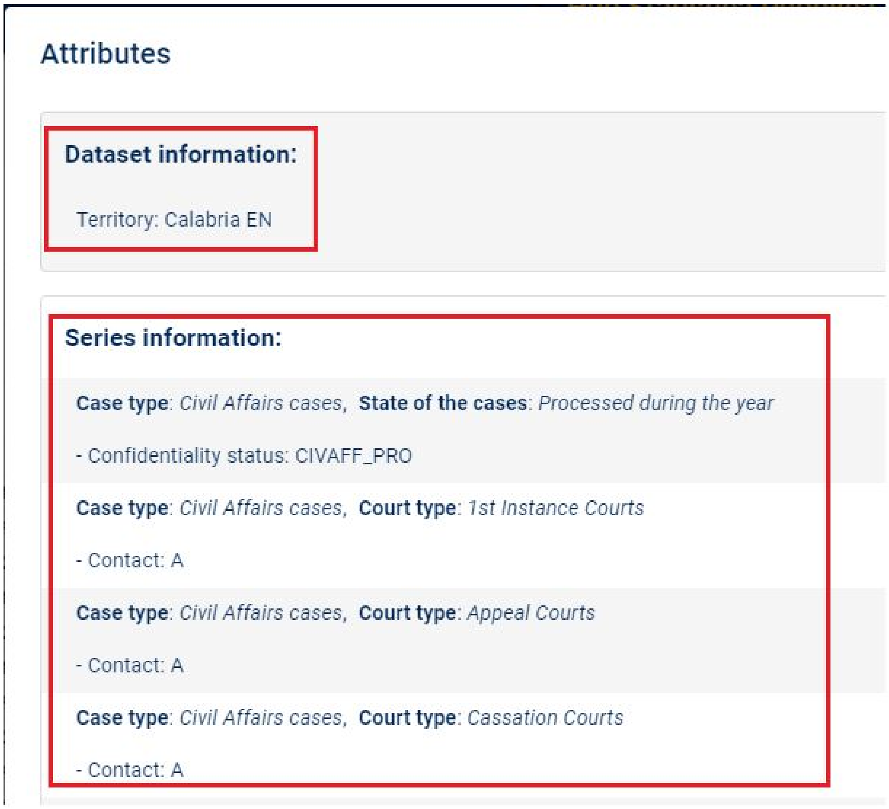
The user can see attributes at dataset level by clicking the asterisk between brackets - (*) - next to the title (Dataset level). If the dataset has attributes for more than one dimension (Group/DimensionGroup attributes) they will also be shown by clicking the same icon (Series level).



Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Case type	Civil Affairs cases					
State of the cases	Recruited during the year (*)					
Court type	Cassation Courts		1st Instance Courts		Appeal Courts	
Time period						
2000	(*)	7,088	(*)	128,210	(*)	23,058
2001	(*)	7,664	(*)	132,657	(*)	23,249
2002	(*)	8,587	(*)	131,091	(*)	24,692
2003	(*)	8,233	(*)	1,437	(*)	26,298
2004	(*)	9,420	(*)	166,129	(*)	26,522



Attributes

Dataset information:

Territory: Calabria EN

Series information:

Case type: *Civil Affairs cases*, **State of the cases**: *Processed during the year*

- Confidentiality status: CIVAFF_PRO

Case type: *Civil Affairs cases*, **Court type**: *1st Instance Courts*

- Contact: A

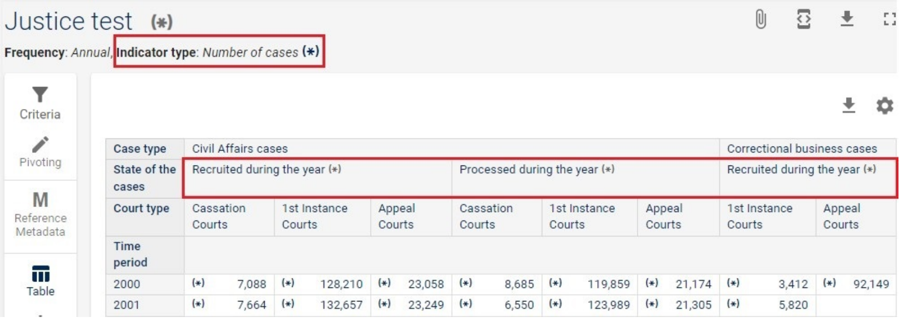
Case type: *Civil Affairs cases*, **Court type**: *Appeal Courts*

- Contact: A

Case type: *Civil Affairs cases*, **Court type**: *Cassation Courts*

- Contact: A

If the dataset has dimension level attributes an asterisk will be present for each value of the dimension. If the the dimension has just one value the attribute is visible in the subtitle.

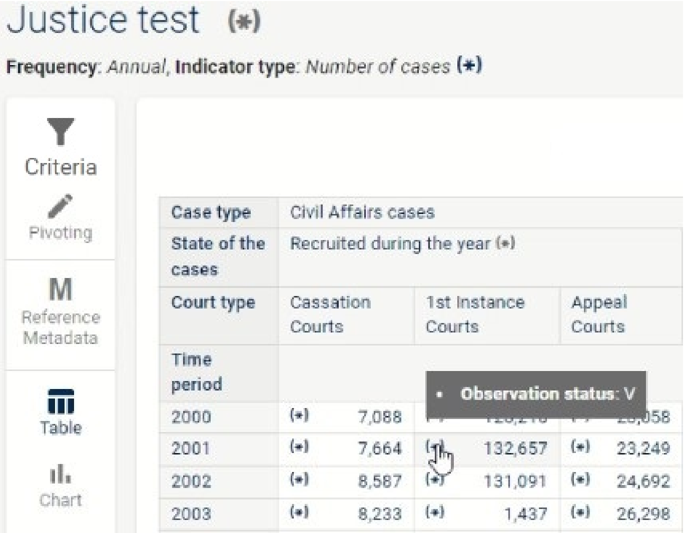


Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Case type	Civil Affairs cases						Correctional business cases	
State of the cases	Recruited during the year (*)			Processed during the year (*)			Recruited during the year (*)	
Court type	Cassation Courts	1st Instance Courts	Appeal Courts	Cassation Courts	1st Instance Courts	Appeal Courts	1st Instance Courts	Appeal Courts
Time period								
2000	(*) 7,088	(*) 128,210	(*) 23,058	(*) 8,685	(*) 119,859	(*) 21,174	(*) 3,412	(*) 92,149
2001	(*) 7,664	(*) 132,657	(*) 23,249	(*) 6,550	(*) 123,989	(*) 21,305	(*) 5,820	

If data has observation level attributes an asterisk will be present in the corresponding cell.



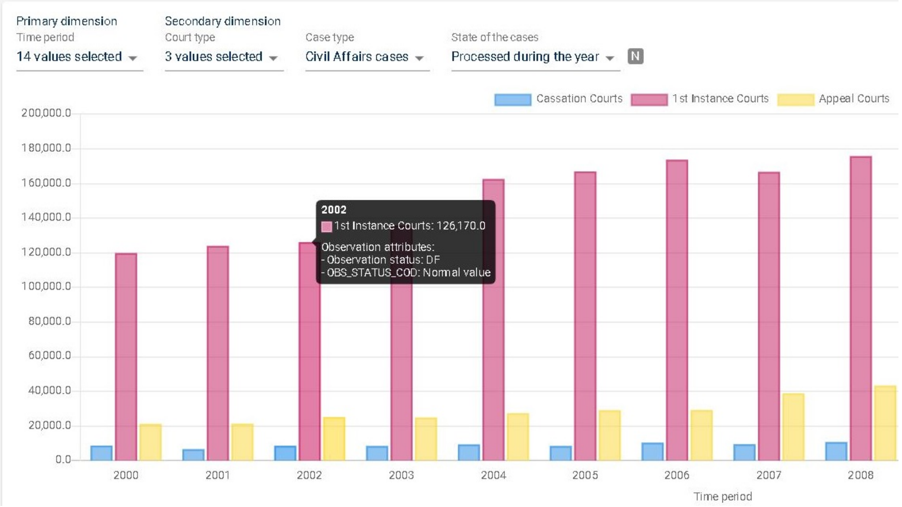
Justice test (*)

Frequency: *Annual*, **Indicator type**: *Number of cases* (*)

Case type	Civil Affairs cases		
State of the cases	Recruited during the year (*)		
Court type	Cassation Courts	1st Instance Courts	Appeal Courts
Time period			
2000	(*) 7,088	128,210	23,058
2001	(*) 7,664	(*) 132,657	(*) 23,249
2002	(*) 8,587	(*) 131,091	(*) 24,692
2003	(*) 8,233	(*) 1,437	(*) 26,298

• Observation status: V

If the user chooses Chart as display mode, the attributes are also displayed. The attributes at observation level are visible as tooltips by clicking on chart elements, the attributes at dimension or table level follow the same logic described for the tabular view.



Primary dimension
Time period: 14 values selected

Secondary dimension
Court type: 3 values selected

Case type: Civil Affairs cases

State of the cases: Processed during the year N

2002
1st Instance Courts: 126,170.0
Observation attributes:
- Observation status: DF
- OBS_STATUS_COD: Normal value

Through the use of the ATTRIBUTE_AS_DIM annotation, which can be set MDM-side at the Dataflow and DSD level, it is possible to indicate which attributes should be represented as dimensions in the multidimensional table. The behavior that will is followed, based on the attachment level of the individual attribute that is to be presented as a dimension in the table, is expressed as follows:

1. attribute at the dimension group level:

   - composed of only one dimension: the attribute will always be made explicit next to the dimension to which it is attached (to the right of the dimension if in a row, below the dimension if in a column)
   - composed of more than one dimension:

     - attributes associated with groups of dimensions, consisting of more than one dimension not placed in the same pivoting area (e.g., one dimension in a row and one in a column), will be displayed by the classic star icon placed in the observation cell
     - attributes in section will be shown as if they were dimensions, but in italics; in general, attribute labels and values will be in italics to make them distinguishable and not confusable with dimensions
     - in the case where all the dimensions of a group are placed in a row, column, or section, the attributes represented as dimensions will be placed next to the last dimension that makes up the group, regardless of whether they are consecutive or not. In the event that two or more attributes are found side by side, the order will be determined by the size of the group with which they are associated, with priority given to attributes associated with larger groups.

2. attribute at observation level: attributes at this level will be displayed as new columns alongside the individual observations.

5.3.6 Annotations

When talking about annotation, we consider the possibility of setting configurations, at meta and data manager level (this means when creating the dataflow), regarding

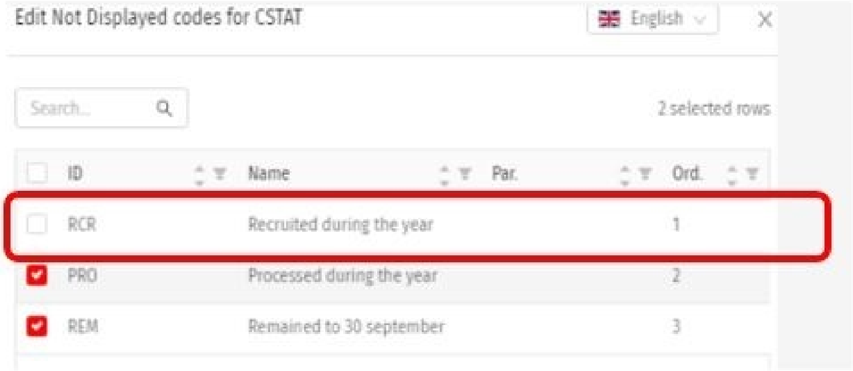
- the visualization of single dimension or dimension's items
- items' order
- inclusion of keywords to the dataflow
- row, column and section layout
- criteria selection mode
- territorial dimension ids
- dataflow update and more.

In general, for the application Data Browser to recognize the annotations, annotations' IDs must be inserted in the node configuration under the ANNOTATION tab. Foreach annotation type, the correspondent ID (which must be exactly the same that appears in the metadata manager application), has to be written in the textbox. Let's get a closer look to the most used annotations.

Annotation Not Displayed

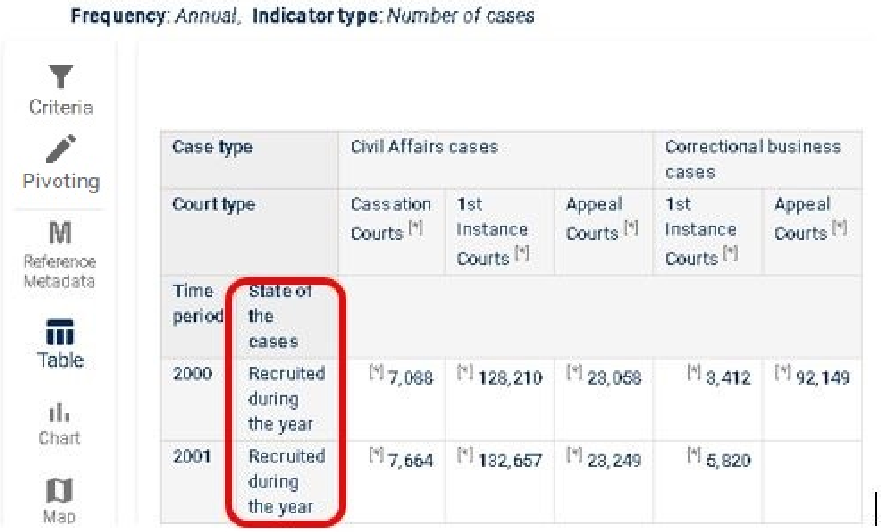
The Administrator user can decide to not show some elements in the dataset by setting annotation "Not Displayed" in Dataflow's metadata. The user can choose to not display the whole dimension or just some items.

During data visualization, if the annotation “Not Displayed” is at dimension level, the dimension is not added in the results, but just if it has only one element otherwise the annotation is ignored. If the annotation “Not Displayed” is at item level all the lines with items having this kind of annotation are not displayed.


Edit Not Displayed codes for CSTAT

2 selected rows

	ID	Name	Par.	Ord.
□	RCR	Recruited during the year		1
☑	PRO	Processed during the year		2
☑	REM	Remained to 30 september		3


Frequency: *Annual*, **Indicator type**: *Number of cases*

Case type		Civil Affairs cases			Correctional business cases	
Court type		Cassation Courts [*]	1st Instance Courts [*]	Appeal Courts [*]	1st Instance Courts [*]	Appeal Courts [*]
Time period	State of the cases					
2000	Recruited during the year	[*] 7,088	[*] 128,210	[*] 23,058	[*] 3,412	[*] 92,149
2001	Recruited during the year	[*] 7,664	[*] 132,657	[*] 23,249	[*] 5,820	

Annotation Order

This annotation specifies the order for codelists, category schemes, data’s categorization and categories present. Such annotation can show its effects when visualizing the table of the dataflow or the category tree. Items’ sorting is defined in the metadata manager.

Other annotations

- **Default items** : used to initialize criteria with the filters set in this field.
- **Default table layout** : sets how dimensions must appear in table for rows, columns, filters and sections’ configurations. Included in this group are the annotations LAYOUT_ROW, LAYOUT_COLUMN, LAYOUT_FILTER and LAYOUT_ROW_SECTION
- **Default chart layout** : sets how dimensions must appear in chart (primary dimension, secondary dimension and filter dimensions). Included in this group are the annotations LAYOUT_CHART_PRIMARY_DIM_CARTESIAN, LAYOUT_CHART_SECONDARY_DIM_CARTESIAN, LAYOUT_CHART_FILTER_CARTESIAN for graphs with carte-

sian axes. LAYOUT_CHART_PRIMARY_DIM_RADIAL, LAYOUT_CHART_SECONDARY_DIM_RADIAL, LAYOUT_CHART_FILTER_RADIAL for graphs with radial axes.

- **Map dimensions in filters** : allows to set dimensions in filters.
- **Criteria selection** : sets the criteria selection mode for a dataflows (independently from the node configuration).
- **Attached Data File** : sets list of files and formats in which the user can download the dataflow.
- **Decimal separator** : sets the decimal separator (dot or comma)
- **Number of decimals** : sets the number of decimal after the separator.
- **Empty cell placeholder** : sets the value to visualize in case of empty cell.
- **Dataflow notes**: sets notes associated to dataflow
- **Dataflow source**: sets source of dataflow (e.g. Eurostat)
- **Metadata URL**: sets url where metadata are defined.
- **Keywords** : used for dataflow reseach.
- **Default views** : sets default display mode of the dataflow (table, chart or map)
- **GEO ID**: allows to indicate the territorial dimension used in the dataflow in order to show the map visualization.
- **Last update** : if set, shows the information regarding last update of the dataflow.
- **Linked dataflow node** : indicates that a dataflow type is linked and specify the node to which the dataflow is linked
- **Dataflow catalog type** : identify dataflow type (e.g. linked, virtual, normal)
- **Hidden dataflow** : used to hide a specific dataflow
- **Time period start**, **Time period end** and **last N periods** : set specific time periods to the data when visualized
- **Disabled viewers** : allows the user to not show the specified visualizers (table, chart or map)
- **Table locked dimensions and Chart locked dimensions** : if set with specific data dimensions, such dimensions won't be moved from their position when visualizing data. In particular for chart dimensions it is possible to set them based on the axes type (cartesian or radial) and specify with the annotations LAYOUT_CHART_LOCKED_DIMS_CARTESIAN and LAYOUT_CHART_LOCKED_DIMS_RADIAL
- **Temporal dimension order** : sets the order of how time period is visualized (ascending or descending).
- **Anticipate verification for maximum number of records** : allows, through a pre-calculation system, to control whether the number of observations, in data, exceeds the maximum limit set at the application level. This annotation is only valid if ALL_FULL or ALL_PARTIAL criteria selection modes are selected at node level.
- **Dataflow has optimized version** : it is used to specify that the dataflow has an optimized version.

- **Partial codelist content constraint**: set to specify when the dataflow includes content constraints created from partial codelist.
- **Representation of header and table side** : used to specify the representation mode of the header and side of the table when visualizing data
- **Hierarchical codelist** : used to indicate the hierarchical codelist associated to dimensions
- **External data url** : used to define and external url in which visualize data.

By clicking on the icon **'i'** the user can have further information about the annotation. At the bottom of the window there is also the possibility to restore annotation values to their default by selecting the "Restore default values" botton.

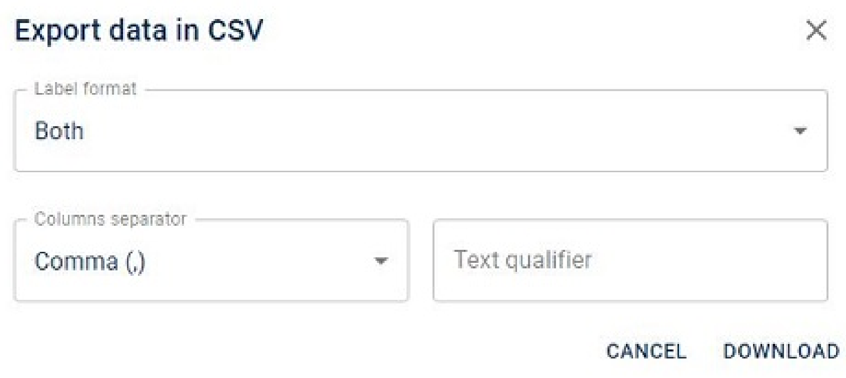
All these annotation can be set at Data Structure Definition or Dataflow level in the Meta&Data Manager platform.

5.3.7 How to download data

The download of a dataflow in the different formats can be activated through a down arrow icon ⤓ on the top right corner of the page.

The formats available for each node are defined in the node configuration and will be a subset of the overall formats supported by the application, which are:

- SDMX Standard
- SDMX - Generic 2.1*
- SDMX - Generic 2.0*
- SDMX - Compact 2.0*
- SDMX - Structure Specific 2.1*
- SDMX - Structure
- JSON
- Custom CSV by selecting this option while visualizing data, a popup will appear asking some options for download. In particular, if the users wants to have the name of the dimension, their IDs or both; the column separator (selectable between comma, semicolon, pipe and tab) and the text qualifier.



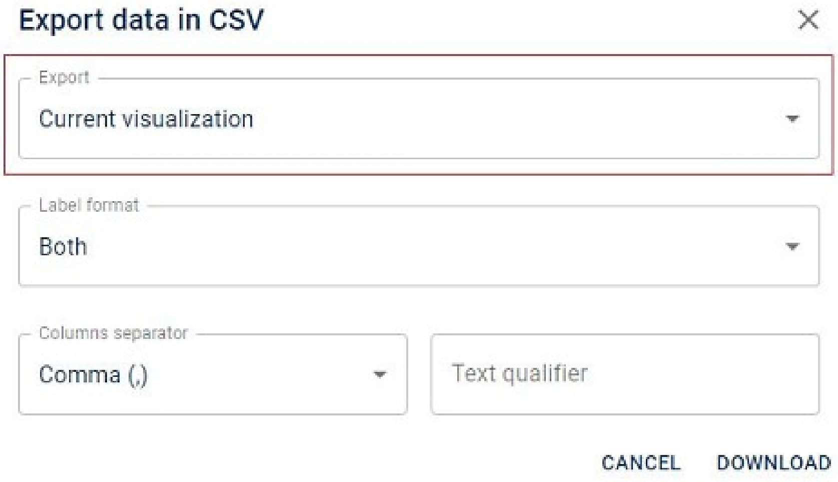
Export data in CSV

Label format: Both

Columns separator: Comma (,)

Text qualifier

If the data the user is visualizing has a specific layout (set in the pivoting window) which differs from the original data, another field will appear in the download popup window: in this case the user can select if he wants to download the entire table or just the "current visualization".



Export data in CSV

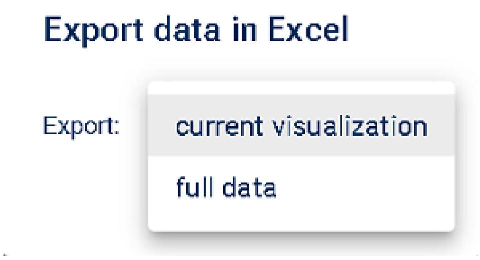
Export: Current visualization

Label format: Both

Columns separator: Comma (,)

Text qualifier

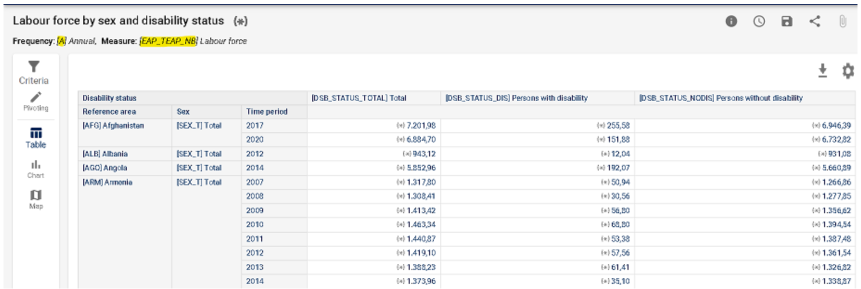
- SDMX-CSV*
- JPEG (only for graph and map)
- PDF (only for graph and map)
- Excel (table only): a popup will allow the user to select the desired export:



Export data in Excel

Export:

if the user chooses "current visualization" he will get in return an excel sheet containing exactly what the table is showing at the moment. On the other hand, by choosing "full data", the system will create a sheet for each combination of filters. For example, if we consider Dataflow:

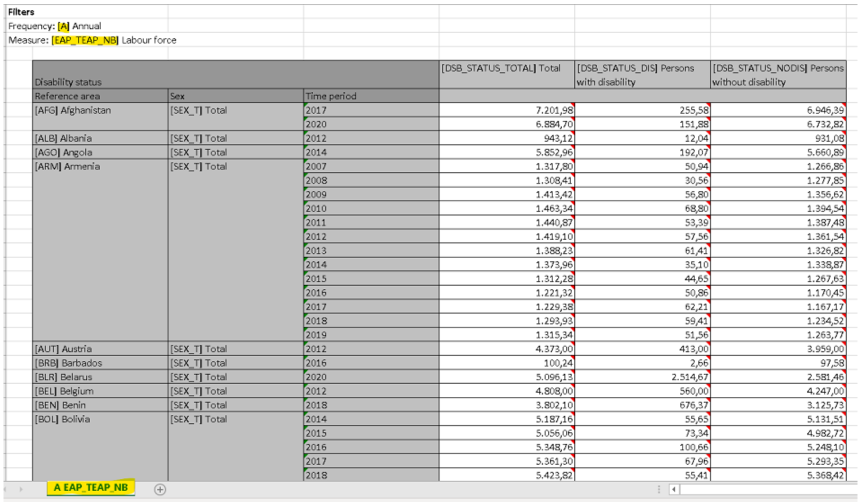


Labour force by sex and disability status (*)

Frequency: *[A] Annual*, **Measure:** *[EAP_TEAP_NB] Labour force*

Disability status			[DSB_STATUS_TOTAL] Total	[DSB_STATUS_DIS] Persons with disability	[DSB_STATUS_NODIS] Persons without disability
Reference area	Sex	Time period			
[AFG] Afghanistan	[SEX_T] Total	2017	(*) 7.201,98	(*) 255,58	(*) 6.946,39
		2020	(*) 6.884,70	(*) 151,88	(*) 6.732,82
[ALB] Albania	[SEX_T] Total	2012	(*) 943,12	(*) 12,04	(*) 931,08
[AGO] Angola	[SEX_T] Total	2014	(*) 5.852,96	(*) 192,07	(*) 5.660,89
[ARM] Armenia	[SEX_T] Total	2007	(*) 1.317,80	(*) 50,94	(*) 1.266,86
		2008	(*) 1.308,41	(*) 30,56	(*) 1.277,85
		2009	(*) 1.413,42	(*) 56,80	(*) 1.356,62
		2010	(*) 1.463,34	(*) 68,80	(*) 1.394,54
		2011	(*) 1.440,87	(*) 53,38	(*) 1.387,48
		2012	(*) 1.419,10	(*) 57,56	(*) 1.361,54
		2013	(*) 1.388,23	(*) 61,41	(*) 1.326,82
		2014	(*) 1.373,96	(*) 35,10	(*) 1.338,87

the user can download the following current visualization:



Filters

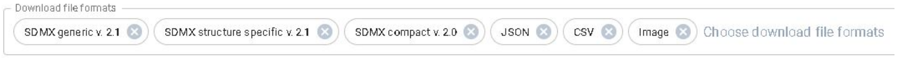
Frequency: [A] Annual

Measure: [EAP_TEAP_NB] Labour force

Disability status			[DSB_STATUS_TOTAL] Total	[DSB_STATUS_DIS] Persons with disability	[DSB_STATUS_NODIS] Persons without disability
Reference area	Sex	Time period			
[AFG] Afghanistan	[SEX_T] Total	2017	7.201,98	255,58	6.946,39
		2020	6.884,70	151,88	6.732,82
[ALB] Albania	[SEX_T] Total	2012	943,12	12,04	931,08
[AGO] Angola	[SEX_T] Total	2014	5.852,96	192,07	5.660,89
[ARM] Armenia	[SEX_T] Total	2007	1.317,80	50,94	1.266,86
		2008	1.308,41	30,56	1.277,85
		2009	1.413,42	56,80	1.356,62
		2010	1.463,34	68,80	1.394,54
		2011	1.440,87	53,39	1.387,48
		2012	1.419,10	57,56	1.361,54
		2013	1.388,23	61,41	1.326,82
		2014	1.373,96	35,10	1.338,87
		2015	1.312,28	44,65	1.267,63
		2016	1.221,32	50,86	1.170,45
		2017	1.229,38	62,21	1.167,17
		2018	1.293,93	59,41	1.234,52
		2019	1.315,34	51,56	1.263,77
[AUT] Austria	[SEX_T] Total	2012	4.373,00	413,00	3.959,00
[BRB] Barbados	[SEX_T] Total	2016	100,24	2,66	97,58
[BLR] Belarus	[SEX_T] Total	2020	5.096,13	2.514,67	2.581,46
[BEL] Belgium	[SEX_T] Total	2012	4.808,00	560,00	4.247,00
[BEN] Benin	[SEX_T] Total	2018	3.802,10	676,37	3.125,73
[BOL] Bolivia	[SEX_T] Total	2014	5.187,16	55,65	5.131,51
		2015	5.056,06	73,34	4.982,72
		2016	5.348,76	100,66	5.248,10
		2017	5.361,30	67,96	5.293,35
		2018	5.423,82	55,41	5.368,42

*only available for REST nodes

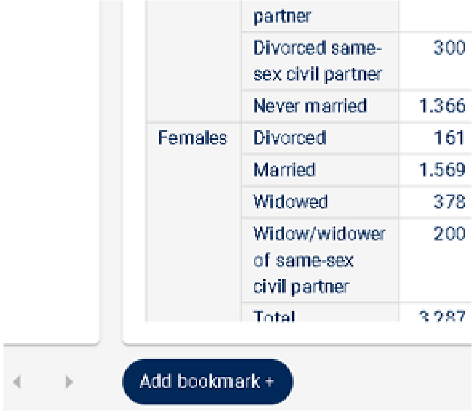
If no file format is defined in the *Download file formats* field in the node configuration's view tab, the download icon won't be present when visualizing data.



Download file formats

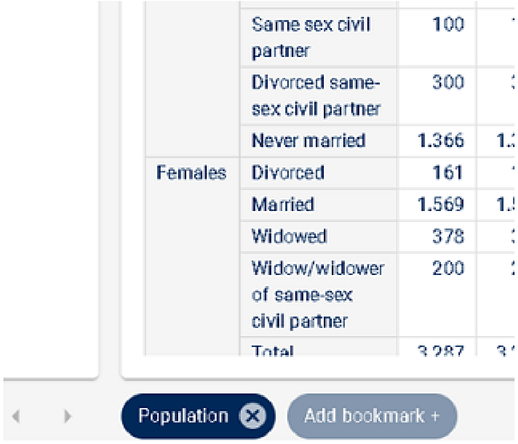
SDMX generic v. 2.1 ⊗ SDMX structure specific v. 2.1 ⊗ SDMX compact v. 2.0 ⊗ JSON ⊗ CSV ⊗ Image ⊗ Choose download file formats

5.3.8 How to add a bookmark



	partner	
	Divorced same-sex civil partner	300
	Never married	1.366
Females	Divorced	161
	Married	1.569
	Widowed	378
	Widow/widower of same-sex civil partner	200
	Total	3.287

When we have finished visualizing the data for a given dataflow, you can keep track of this navigation by adding a bookmark using the button at the bottom of the visualization itself. If, for example, you are viewing data from the "Population" dataflow, adding a bookmark will take that name.



	Same sex civil partner	100
	Divorced same-sex civil partner	300
	Never married	1.366
Females	Divorced	161
	Married	1.569
	Widowed	378
	Widow/widower of same-sex civil partner	200
	Total	3.287

The bookmark will always be present even when other data are opened, so clicking on it will always take you back to the last view you made on “Population”. Once the browser is closed the saved bookmarks are all deleted.

5.4 Views

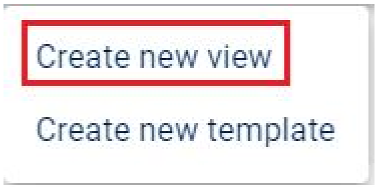
In this section, we will explain how to manage, save and share views once data is visualized.

5.4.1 What is a view

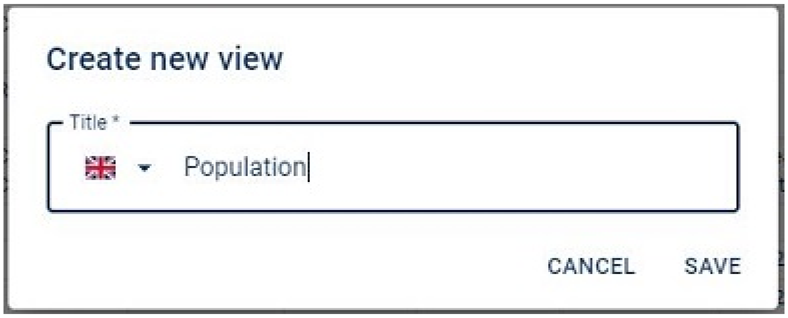
Views can be described as visualization at user level that, once saved, they can be accessed again in other moments as long as the user doesn’t decide to delete them. The user modifies criteria and/or layout and saves his choices, so that when he reopens the saved view, the output will show the settings he previously configured for the table.

5.4.2 How to save a view

Once the user visualizes his data, as shown in previous paragraphs, it is possible to change the criteria (this enables filters on the output) or the table layout (by changing position of the dimensions in the table). The new table presents a different output from the default. This new visualization can be saved as a View. Multiple views can be saved for the same table. To save a view, the user must click on the save button 💾 and select “Save View” from the list that appears:



this will bring to a new window that enables the user to set the name to the view. The multilanguage functionality allows users to set different titles depending on the selected language. This is made possible by selecting the flag related to a language and by defining a title for that language.



Create new view

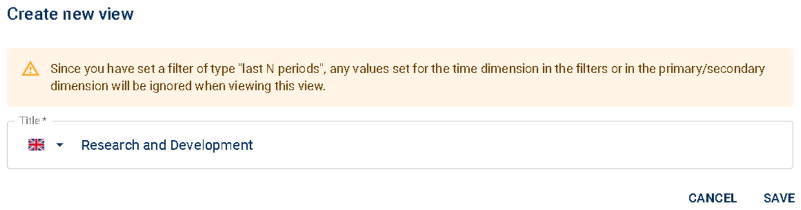
Title *

Population

If a filter of type "last periods" is set in the criteria on the temporal dimension, then the view will always show:

- the last available period in the data, if the temporal dimension is inserted in the filters of the multidimensional table
- all the values present for the data, considering the last N periods, if the time dimension is set as primary or secondary dimension of the graph

even if the current view that the user is saving is different (e.g. a period other than the last one is filtered). The user who creates this view will be warned at save time that the values of the filter or the primary/secondary dimension he has set will be ignored at display time and will be asked to set a "custom range" policy if he wants to preserve those values.



Create new view

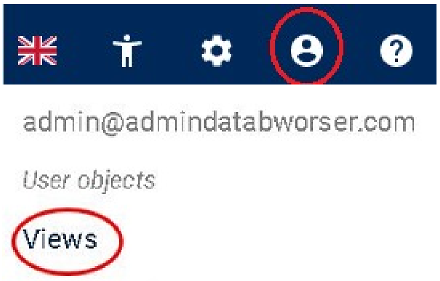
⚠ Since you have set a filter of type "last N periods", any values set for the time dimension in the filters or in the primary/secondary dimension will be ignored when viewing this view.

Title *

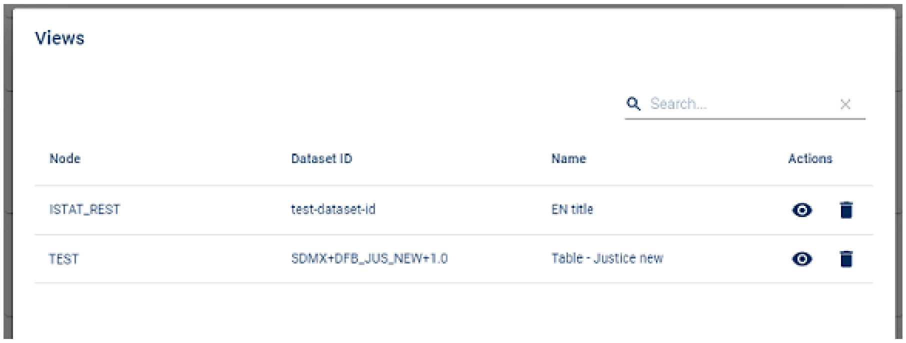
Research and Development

5.4.3 How to manage views

The user can search for the views he saved and delete them, by clicking the user icon, that appears in the main menu bar on the top-right of the pane, and selecting "Views".

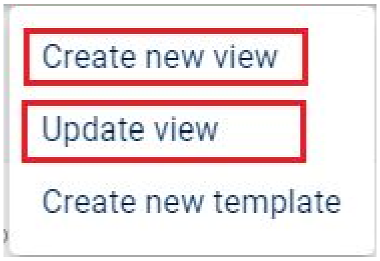


The new window shows the information about the saved view (which node is part of, the data ID, name) and also actions the user can perform (visualize the view, delete it).



Node	Dataset ID	Name	Actions
ISTAT_REST	test-dataset-id	EN title	👁 🗑
TEST	SDMX+DFB_JUS_NEW+1.0	Table - Justice new	👁 🗑

Once the user visualizes a view, it is also possible to modify it. In this case changes can be used to overwrite the existing view or create a new one. This selection can be made by choosing the preferred option from the menu shown by clicking the save button.



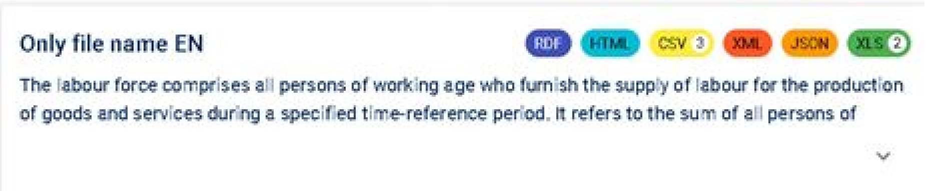
5.5 Linked dataflows and only file dataflows

The application provides the possibility to include within the nodes also linked dataflows. A linked dataflow is a dataflow defined in a node but linked to another dataflow which is contained in a totally different node. The advantage of having a linked dataflow consists in the fact that it is not necessary to have all the base structures mandatory for a dataflow to be published on the node we are using but all we need is the link to the orginal node that contains it. Nevertheless, the most important thing for all the mechanism to work is that the orginal node that contains the dataflow we want to link to, must be included in our hub named with its original ID. Linked dataflows on private/inactive nodes are excluded from the catalog of the databrowser. Linked dataflows can also manage layout annotations even though the original dataflow has layout annotations assigned. In this case the following logic takes place: the system will consider first those set locally on the linked dataflow, and then those on the original dataflow. The following annotations/configurations will be considered as a group, that is, in case at least one of those belonging to the same group is valued, the others belonging to the same dataflow will also be considered:

- Group 1(default): DEFAULT, TIME_PERIOD_START, TIME_PERIOD_END, LAST_N_PERIOD, LAST_N_OBSERVATIONS
- Group 2 (table): LAYOUT_ROW, LAYOUT_COLUMN, LAYOUT_FILTER, LAYOUT_ROW_SECTION, LAYOUT_TABLE_LOCKED_DIMS
- Group 3 (charts): LAYOUT_CHART_PRIMARY_DIM_CARTESIAN, LAYOUT_CHART_SECONDARY_DIM_CARTESIAN, LAYOUT_CHART_FILTER_CARTESIAN, LAYOUT_CHART_PRIMARY_DIM_RADIAL, LAYOUT_CHART_SECONDARY_DIM_RADIAL, LAYOUT_CHART_FILTER_RADIAL, LAYOUT_GRAPH_LOCKED_DIMS_CARTESIAN, LAYOUT_GRAPH_LOCKED_DIMS_RADIAL

In the node configuration, under the Visualization tab, it is also possible to force the reading of annotations on linked dataflows by checking the respective radio button.

Another feature that we can find in our platform, consists in the opportunity of having only file linked dataflows which are dataflows without data but just with attachments. In this case the annotation *DataflowCatalogType* must be set in the configuration node (as well as in the meta and data manager side) and also the checkbox *Show only file dataflow* must be checked in the view tab. This is an example of how an only file data appears in the Data Browser:



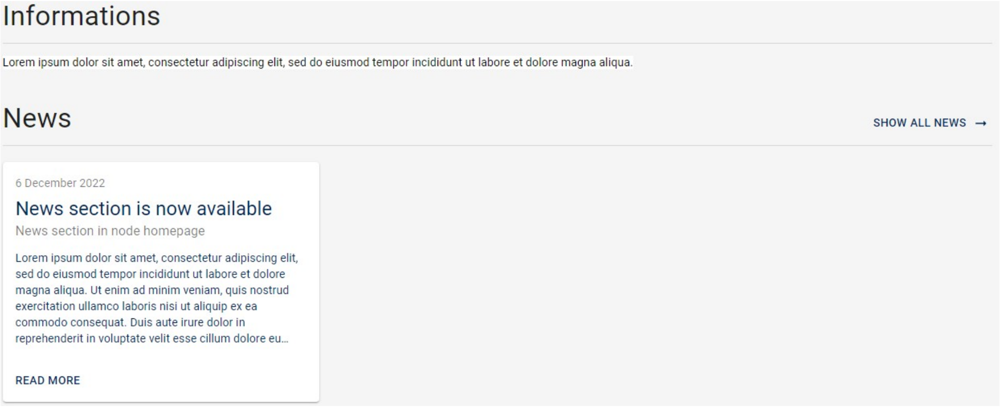
Only file name EN

The labour force comprises all persons of working age who furnish the supply of labour for the production of goods and services during a specified time-reference period. It refers to the sum of all persons of

In this case only attachments are downloadable but not the data itself.

5.6 News visualization

If news are available for a node, it is possible to browse them by accessing the node's homepage and scroll down to the "NEWS" section as shown below



Informations

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

News

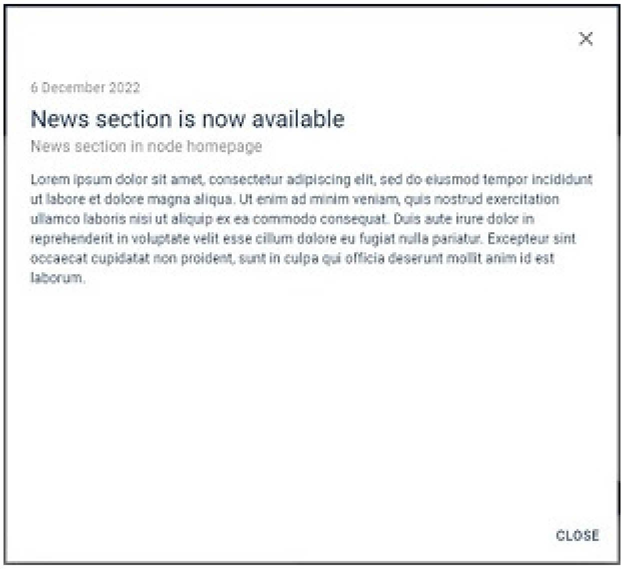
6 December 2022

News section is now available

News section in node homepage

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu...

From this section, it is possible to read a specific news entirely by clicking on the "READ MORE" button



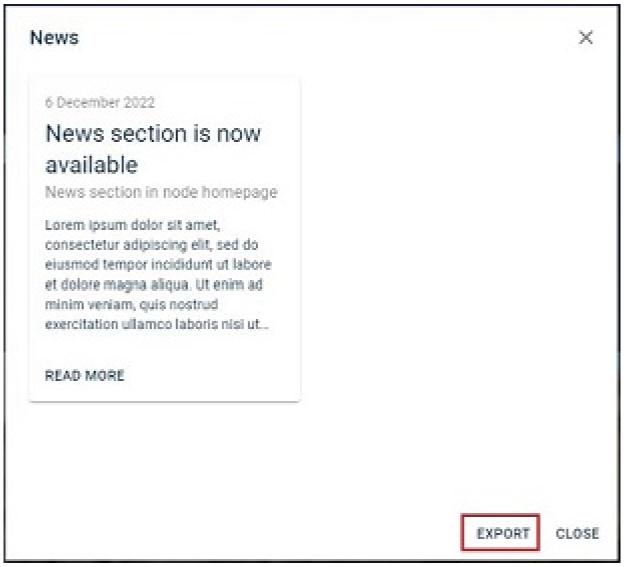
6 December 2022

News section is now available

News section in node homepage

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

To view all the available news "Show all news" must be selected on the top right of the section. In case the user choses to take a look to all news present, it is also given him the possibily to export the news in excel format.



News

6 December 2022

News section is now available

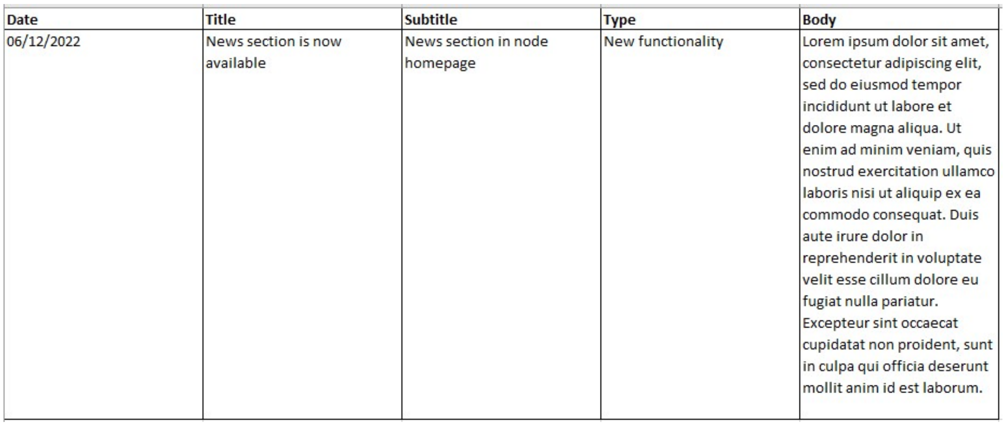
News section in node homepage

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut...

The downloaded excel will include the following information for each news:

- Date
- Title
- Subtitle
- Type
- Body

Here an example of the exel file content:



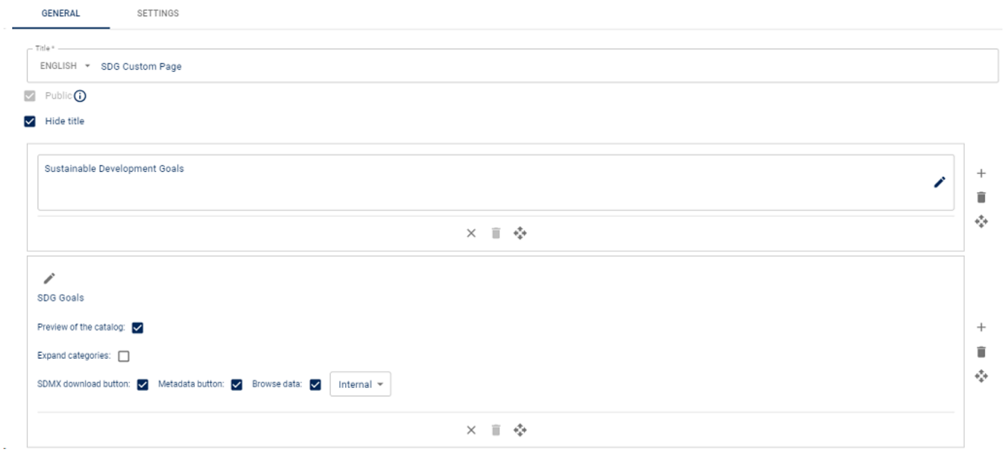
Date	Title	Subtitle	Type	Body
06/12/2022	News section is now available	News section in node homepage	New functionality	Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

5.7 Custom pages visualization

The following subsection describe two examples of custom pages built for "Sustainable Development Goals" and "National Summary Data Page".

5.7.1 A practical example: SDG

Let's create a custom page considering the following configurations:



Title * ENGLISH SDG Custom Page

☑ Public

☑ Hide title

Sustainable Development Goals

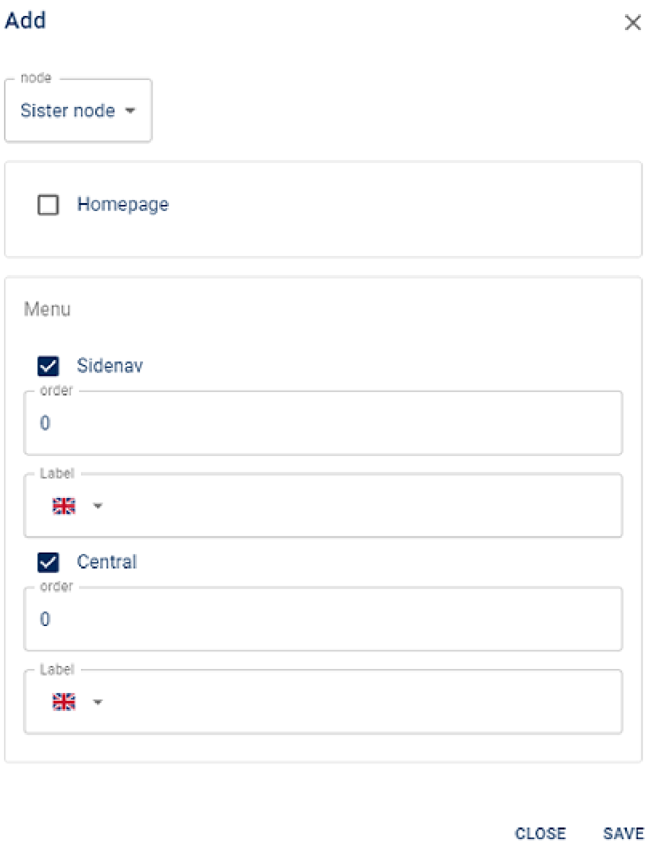
SDG Goals

Preview of the catalog: ☑

Expand categories: □

SDMX download button: ☑ Metadata button: ☑ Browse data: ☑ Internal

a row with text and image and a second row with the list of goals, which can be expanded one by one.This new custom page will be included in the sidebar and the central section of the home page as specified in the setting tab



Add ×

node: Sister node ▾

□ Homepage

Menu

☑ Sidenav

order: 0

Label: 🇬🇧 ▾

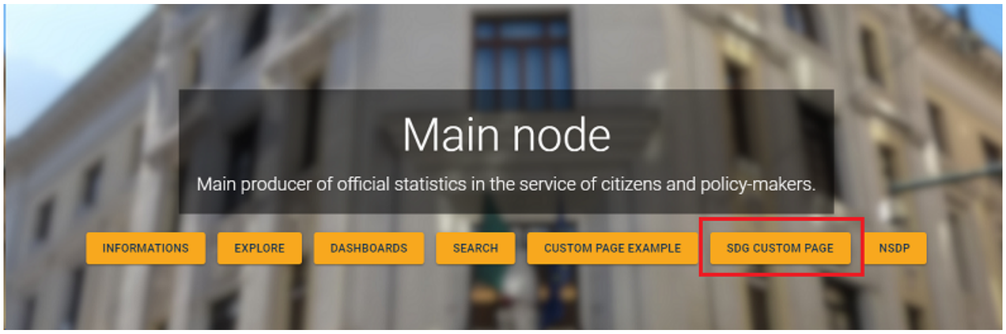
☑ Central

order: 0

Label: 🇬🇧 ▾

CLOSE SAVE

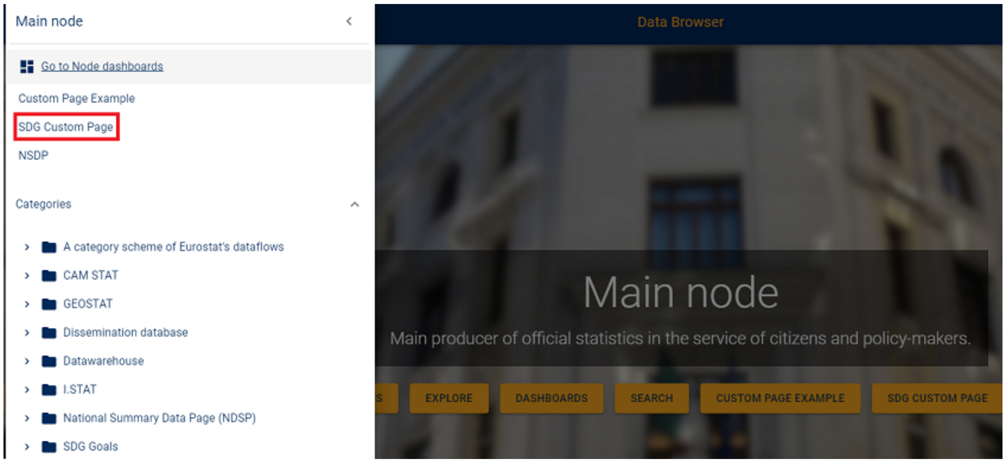
If the user accesses the homepage of the node on which the custom page was inserted, the homepage will now have a new button with the custom page title



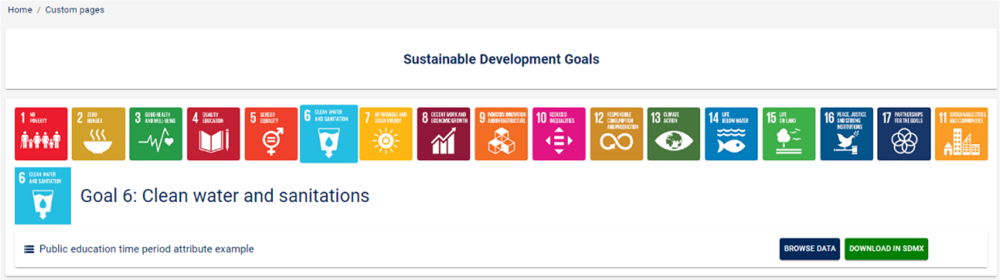
Main node

Main producer of official statistics in the service of citizens and policy-makers.

and if he moves to the sidebar menu the title of the custom page will also be present



By selecting the custom page on the sidebar or the button on the homepage, this is how the page would look like


Home / Custom pages
Sustainable Development Goals
Goal 6: Clean water and sanitations
Public education time period attribute example
BROWSE DATA
DOWNLOAD IN SDMX

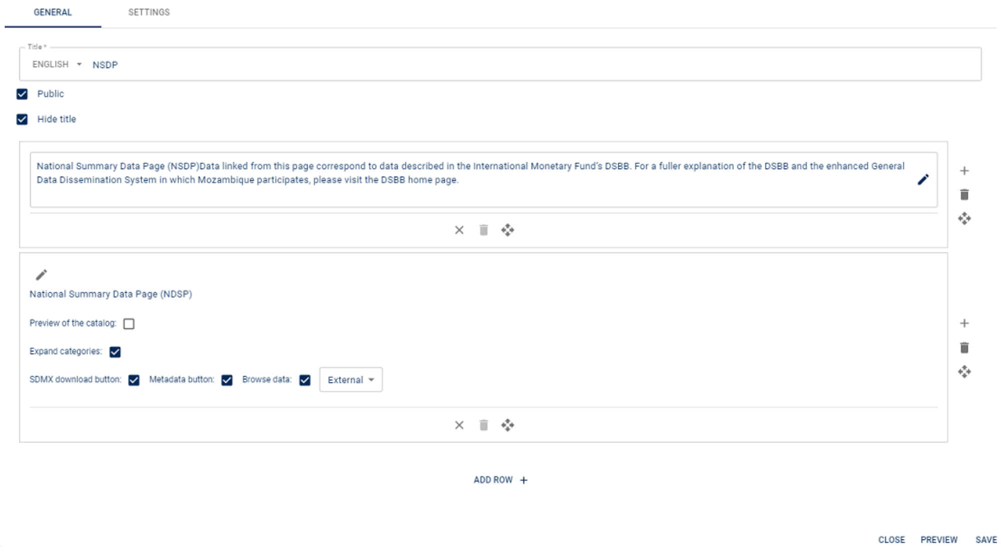
Clicking on the individual macro-categories (goal) will update the part below, containing a textual description of the goal and a list of the datasets within it, with the possibility of directly access the dataset. For example, in the image above, Goal 6 was selected.

If images are available for categories, in order for these images to be displayed correctly, it is necessary to place these images on the installation server under the path “\databrowser-hub\api\core\wwwroot\images\categories[NODE_ALPHANUMERIC_IDENTIFIER]” (where NODE_ALPHANUMERIC_IDENTIFIER corresponds to the node identifier created in the databrowser) or use the CATEGORY_IMAGE_FOLDER annotation on the Meta&Data Manager side in the category scheme and use the folder “\databrowser-hub\api\core\wwwroot\images\default_categories” containing images for use in specific category schemes. If not all categories have an associated image then no images will be included when visualizing this category scheme in the custom page.

It is also possible to define the minimum length of the categories’ images by customizing the the px value in ***minmax*** element as shown in the following css rule which has to be included in the custom.css file: *.item_container_category_preview_image_container{ grid-template-columns: repeat(auto-fit, minmax(200px,1fr)); }*

5.7.2 A practical example: NSDP/eGDDS

Let’s create a custom page based on the example of a National Summary Data Page. Let’s consider the following configuration :



Title *: ENGLISH NSDP

☑ Public

☑ Hide title

National Summary Data Page (NSDP)Data linked from this page correspond to data described in the International Monetary Fund’s DSBB. For a fuller explanation of the DSBB and the enhanced General Data Dissemination System in which Mozambique participates, please visit the DSBB home page.

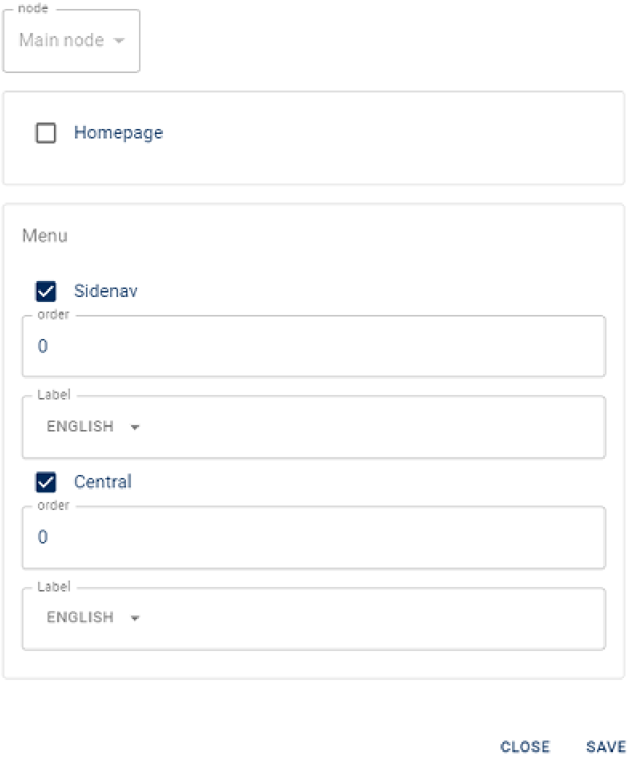
National Summary Data Page (NDSP)

Preview of the catalog: □

Expand categories: ☑

SDMX download button: ☑ Metadata button: ☑ Browse data: ☑ External

a row with text and a second row with the list of categories, which can be expanded one by one.This new custom page will be included in the sidebar and the central section of the home page as specified in the setting tab



node: Main node

□ Homepage

Menu

☑ Sidenav

order: 0

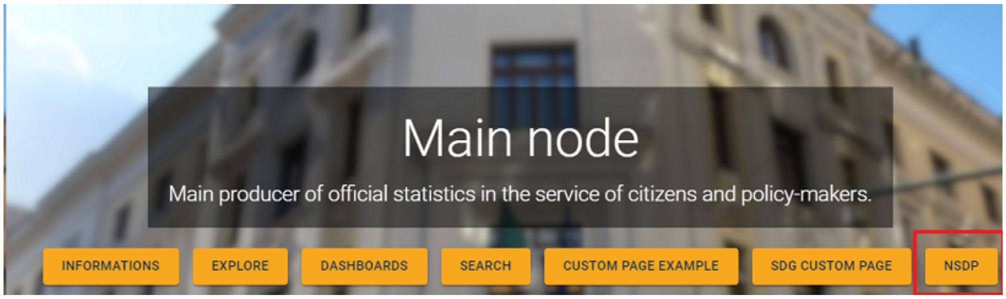
Label: ENGLISH

☑ Central

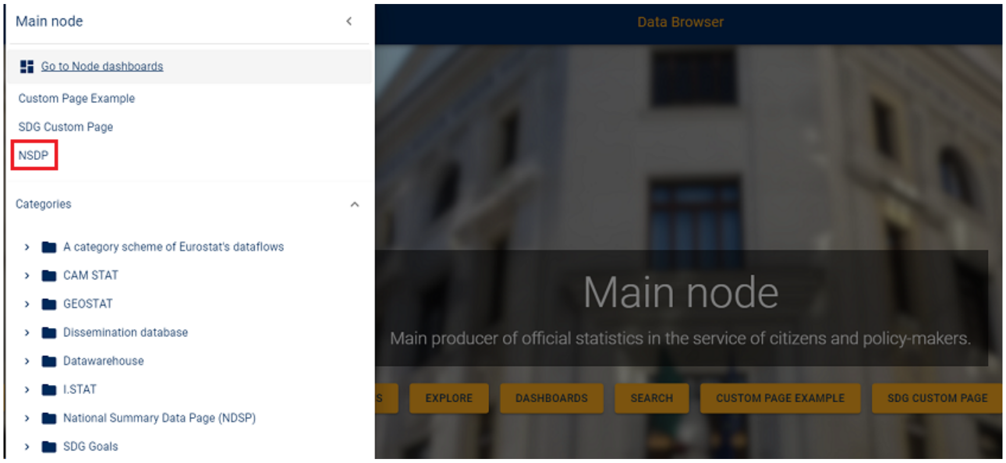
order: 0

Label: ENGLISH

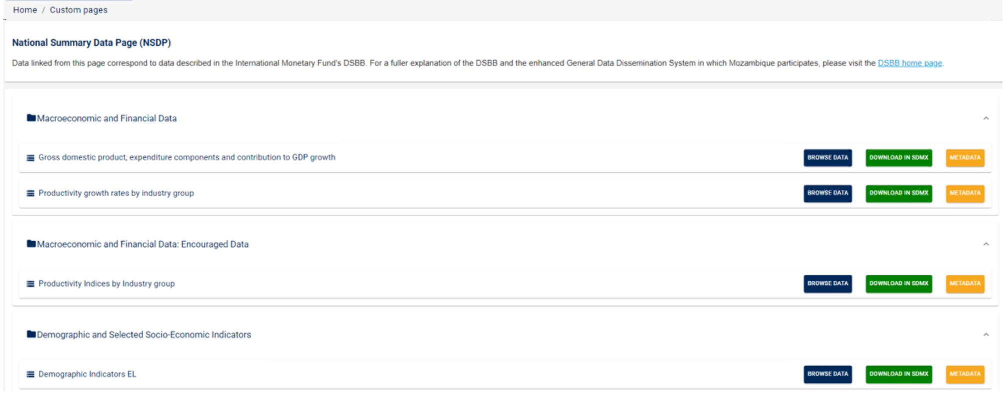
If the user accesses the homepage of the node on which the custom page was inserted, the homepage will now have a new button with the custom page title


Main node
Main producer of official statistics in the service of citizens and policy-makers.
INFORMATIONS
EXPLORE
DASHBOARDS
SEARCH
CUSTOM PAGE EXAMPLE
SDG CUSTOM PAGE
NSDP

and if he moves to the sidebar menu the title of the custom page will also be present



By selecting the custom page on the sidebar or the button on the homepage, this is how the page would look like



Home / Custom pages

National Summary Data Page (NSDP)

Data linked from this page correspond to data described in the International Monetary Fund's DSBB. For a fuller explanation of the DSBB and the enhanced General Data Dissemination System in which Mozambique participates, please visit the DSBB home page.

Macroeconomic and Financial Data

- Gross domestic product, expenditure components and contribution to GDP growth
- Productivity growth rates by industry group

Macroeconomic and Financial Data: Encouraged Data

- Productivity Indices by Industry group

Demographic and Selected Socio-Economic Indicators

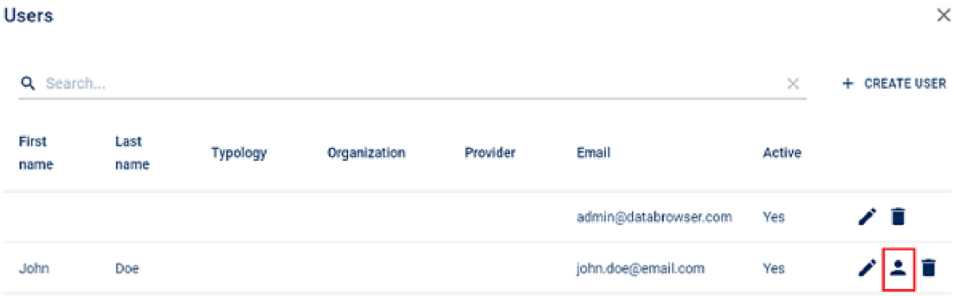
- Demographic Indicators EL

5.8 Widgets

Users with the appropriate profile will be able to share widgets containing specific representations of datasets. Widgets are web pages that can be accessed via a generated URL, through which it will be possible to view the desired representation without the context of the databrowser. In other words, the end user accessing the widget will see the representation in isolation, devoid of elements such as headers or navigation menus. The widget will be publicly reachable by anyone with the URL, and during display, it will not be possible to change the criteria, viewer (table, chart, map) or layout/pivoting. However, setting parameters in the URL will allow the final user to:

- Enable/disable filters
- Enable/disable visualization of the dataset title

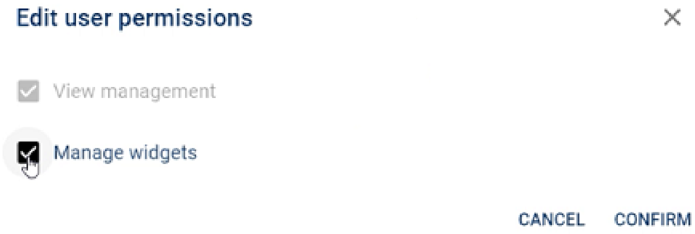
Permissions that allow users to create widgets, must be set at the whole application level, directly in the user list page. Once the user configuration section is reached, the super administrator has to select the user icon



Users

First name	Last name	Typology	Organization	Provider	Email	Active
					admin@databrowser.com	Yes
John	Doe				john.doe@email.com	Yes

and subsequently check the box for widget management. The superadmin automatically holds these permissions.

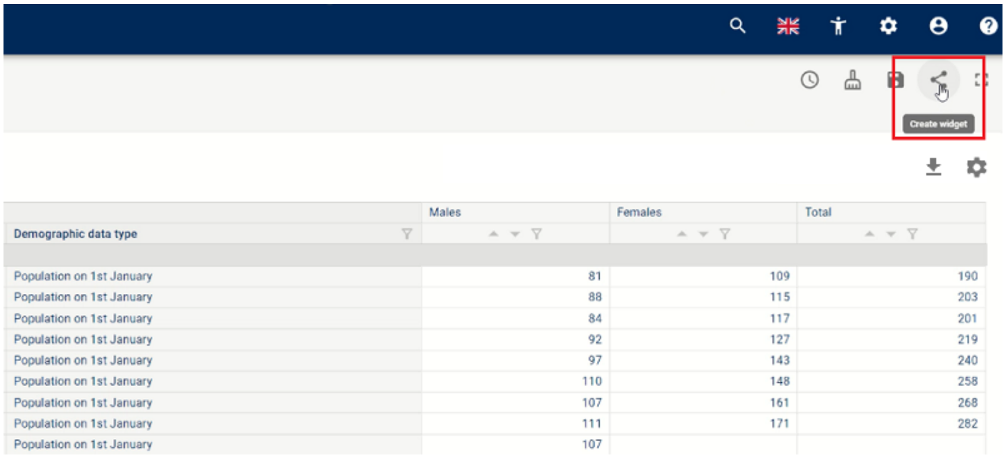


Edit user permissions

☑ View management

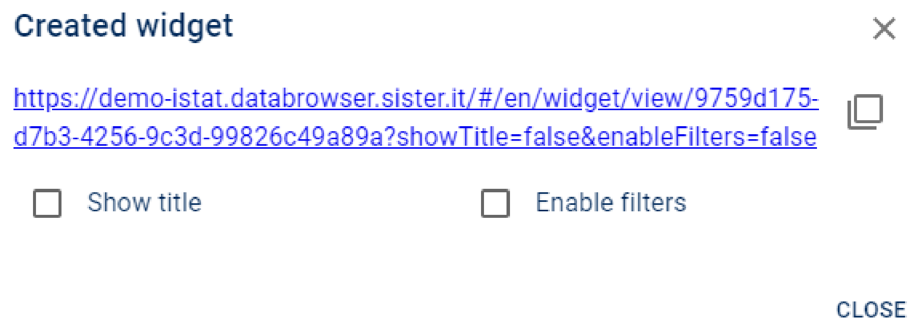
☑ Manage widgets

When displaying data, authorized users will be able to share a specific data representation by clicking on the sharing icon



Demographic data type	Males	Females	Total
Population on 1st January	81	109	190
Population on 1st January	88	115	203
Population on 1st January	84	117	201
Population on 1st January	92	127	219
Population on 1st January	97	143	240
Population on 1st January	110	148	258
Population on 1st January	107	161	268
Population on 1st January	111	171	282
Population on 1st January	107		

which once clicked, it will be possible to set a title to the widget (in multiple languages) and just after saving the changes, the sharable URL will be shown in a pop-up window with the “Show Title” and “Enable Filters” options that will not be persisted in any way, but only impact the proposed URL, thus allowing those using that URL to be able to change it any time. Once saved, the widget will no longer be editable, only deletable.

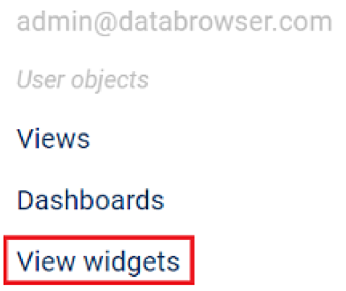


Created widget

https://demo-istat.databrowser.sister.it/#/en/widget/view/9759d175-d7b3-4256-9c3d-99826c49a89a?showTitle=false&enableFilters=false

☐ Show title ☐ Enable filters

User’s personal widgets will always be available when clicking the user icon



admin@databrowser.com

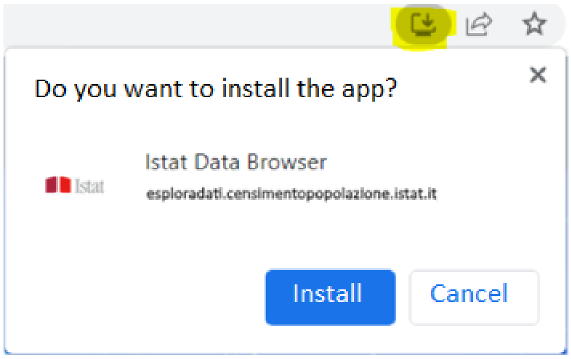
User objects

The superadmin, accessing the same interface, will view everyone’s widgets. Unlike the other personal widgets (views and dashboards), it is important that the superadmin accesses the list of all widgets present and can delete them. Widgets that reference dataflows belonging to private nodes will show an error when rendering, as the private node will not be accessible. However, they will continue working if the node is set to public. Widgets that refer to dataflows belonging to deleted nodes will have to be deleted instead. In case a URL of a widget that does not exist, or no longer exists, is accessed, an error message will be displayed.

5.9 Progressive web app

A Progressive Web App (PWA) is an app that uses modern Web features to provide users with the ability to download an app to their device (mobile and otherwise), offering an experience of use similar to a native app. Progressive Web apps are a hybrid of regular Web pages and traditional apps. The following example shows how to download the site as a Progressive Web App using Chrome browser. It is important to note that the download icon may be represented differently or arranged in a different location based on the browser or device used.

If the functionality of downloading the site as a Progressive Web App is enabled, in the url bar, on the right, the downloading icon will be present, and, once clicked, a pop-up window will ask the user if he wants to download the app.



Do you want to install the app?

Istat Data Browser

esploradati.censimentopopolazione.istat.it

Once the app is downloaded, it will be available in the device’s app list.