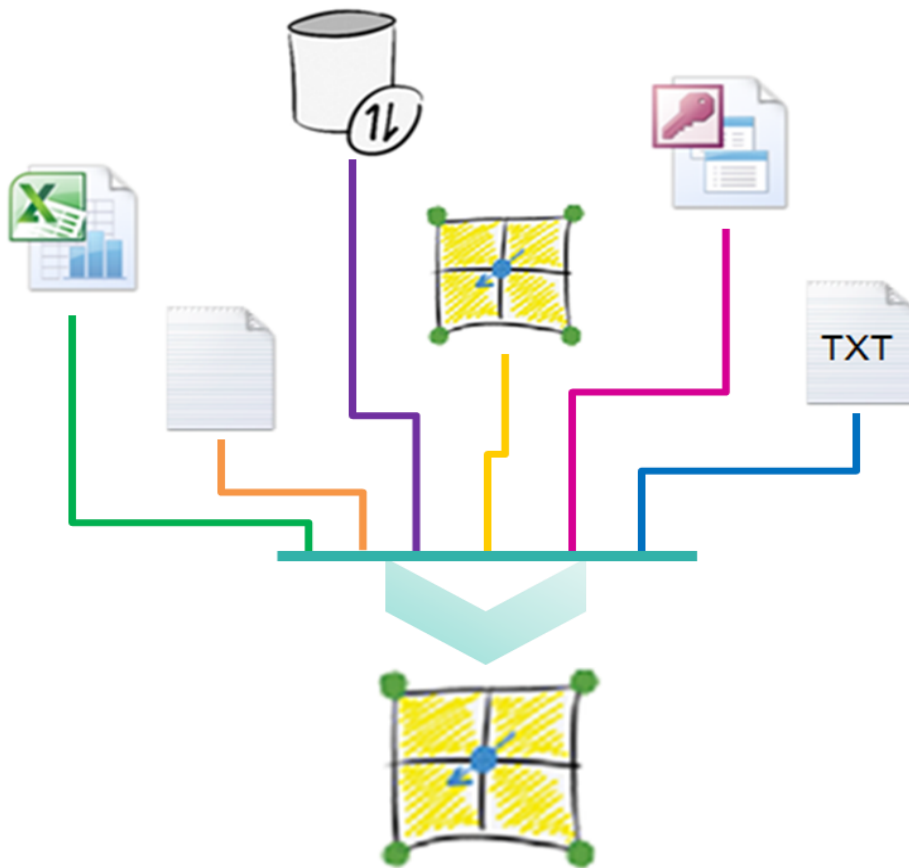


CONECTIVITY

When creating a project, information generally comes from different sources. Considering this, Sahara allows importing and updating information to a project using different methods. The most common method is to query corporate databases, where information is usually stored. It is also possible to import data from independent files in several formats, according to the type of information. Updating data from another Sahara project is also available.

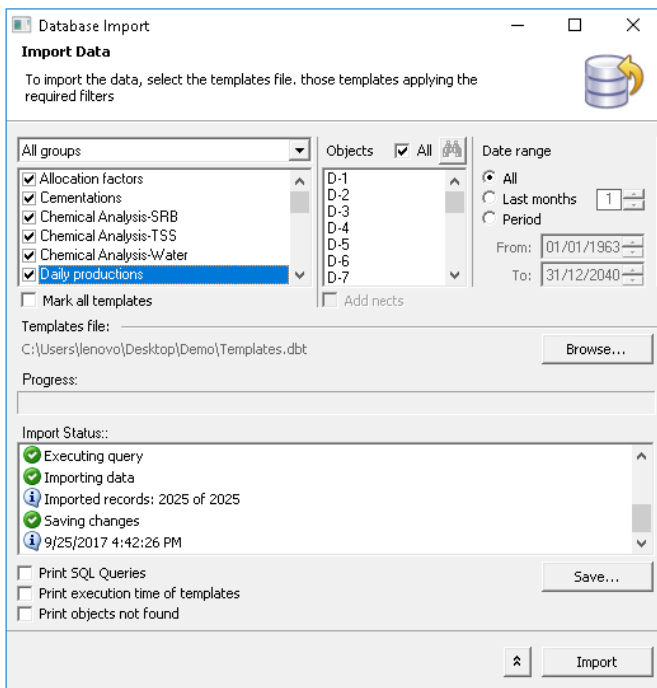
In the same way, Sahara allows exporting information in multiple formats, enabling the exchange of data in common formats in the oil and gas industry.



In order to keep a project updated, Sahara gives the possibility to query different databases using templates and to import information from individual files in multiple formats.

Sahara presents different methods to import and update information into a project. The most commonly used option is importing information stored in corporate databases. A template configuration tool allows mapping project variables to the corresponding tables or fields in the database. SQL Server and Oracle native clients, or other database systems via ODBC, can be used.

Creating templates to connect to a database is quick and simple. A step by step creation wizard will guide the user requesting the information needed to create each template. To do this, it is necessary to specify the name, select the data group and, eventually, a data subgroup. Additionally, database connection provider and source database must be selected, including user and password if needed. It is possible to choose whether to select the fields from a table or view in the database or to use a SQL query. Also, a data preview is available in order to help the user to make sure the units selected when mapping the variables from the database to the variables in Sahara are correct. Lastly, some filters may be applied, so as to diminish the unnecessary data loading, using logical conditions. Once the template has been created, it will be added to a template file with .DBT extension. This file will contain all the configuration for the template, making it available for later use to import or update information in the project. Optionally, templates can be password-protected to prevent unauthorized modifications.



Database Multiple Template Import. The Database Import window shows a list of the templates to be imported, next to the list of objects desired to be updated and the import date range. At the bottom of the window, the import status is shown allowing confirming if there were errors during the process.

Working with database templates has some particular benefits compared to importing data from independent files. One of them is related with mapping variables. When importing data using templates, the variable mapping needs to be done only once, at the time the template is created. After that, every import process is simple and dynamic. Templates can be run by group or individually. In either case, the user can choose the group of wells and the range of dates in which to do the import. Additionally, while the data is being imported, the progress and status of the import process can be checked: execution time, objects not found and SQL queries for each of the templates that are being imported. This status information can be saved in order to help giving a diagnosis if needed.

Template	Status	Schedule	Frequency	Data range	Months	Last run	Destination
Allocation factors	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Cementations	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Chemical Analysis-SRB	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Chemical Analysis-TSS	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Chemical Analysis-Water	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Daily productions	Enabled	Daily		Last run			C:\Sahara\Templat
ESP	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Layers	Enabled	Monthly	Day 1	All			C:\Sahara\Templat
Meeting	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Pressure	Enabled	Monthly	Day 1	Last run			C:\Sahara\Templat
Production controls	Enabled	Daily		Last run			C:\Sahara\Templat
Productions	Enabled	Monthly	Day 1	Last run			C:\Sahara\Templat
ProduSQL	Enabled	Monthly	Day 1	Last run			C:\Sahara\Templat
Scattered data	Enabled	Monthly	Day 1	Last run			C:\Sahara\Templat
SRP	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
TestLayerData	Enabled	Monthly	Day 1	All			C:\Sahara\Templat
Tests	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Well Dynamic Attributes	Enabled	Monthly	Day 1	All			C:\Sahara\Templat
Well-Layer Data	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat
Wells	Enabled	At project startup		All			C:\Sahara\Templat
Wellworks-All	Enabled	Weekly	Monday	Last run			C:\Sahara\Templat

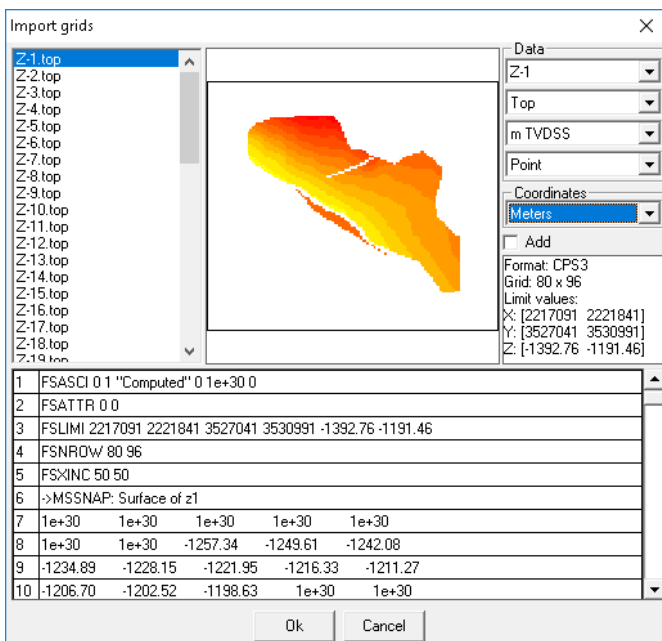
Database Template Scheduled Tasks. A group of templates scheduled to be executed automatically using different frequency is listed.

On the other hand, an additional advantage of importing data using database connection templates is the possibility of scheduling their execution. Using the “Scheduled Tasks” tool the user can configure frequency and range of data for each update process. This configuration enables the user not to worry about this task. For example, for monthly production data the tool may be set up to run the template automatically on the tenth day of each month. Another example would be the automatic updating of wellworks information, daily or each time the project is opened. Using this tool, the user is sure to be working with the latest information available without having to execute the process manually.

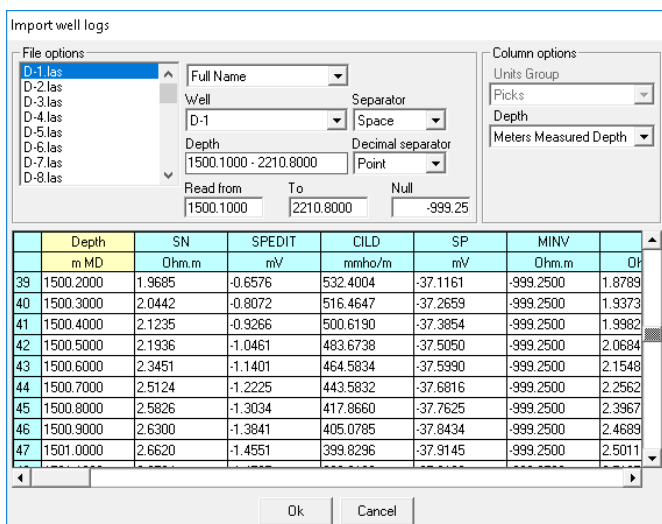
The Scheduled Tasks tool allows maintaining a project updated with the official data, without having to execute the process manually.

The tools related to database connection templates include one that allows changing simultaneously the data source of the templates associated with the same project, without having to make individual changes for each template. This helps, in case of a database migration, to transfer the templates to connect to the new database without having to recreate them. This tool is also useful to quickly know the databases queried for each type of data and the way the variable mapping has been done.

However, information is not always stored in corporate databases. Therefore, Sahara also offers a more versatile process, which is the import of data from files with different formats. This import process uses Excel spreadsheets, Access files, text files and files with the most common export formats of E&P tools, allowing integrating information from different sources to achieve a unified view of the data of the field.



Map import. A typical import window is displayed, showing the list of selected files, a preview of the selected file, and data associated with it, such as format, grid dimension and limits and data that needs to be configured in order to import the file, such as layer, variable and unit.

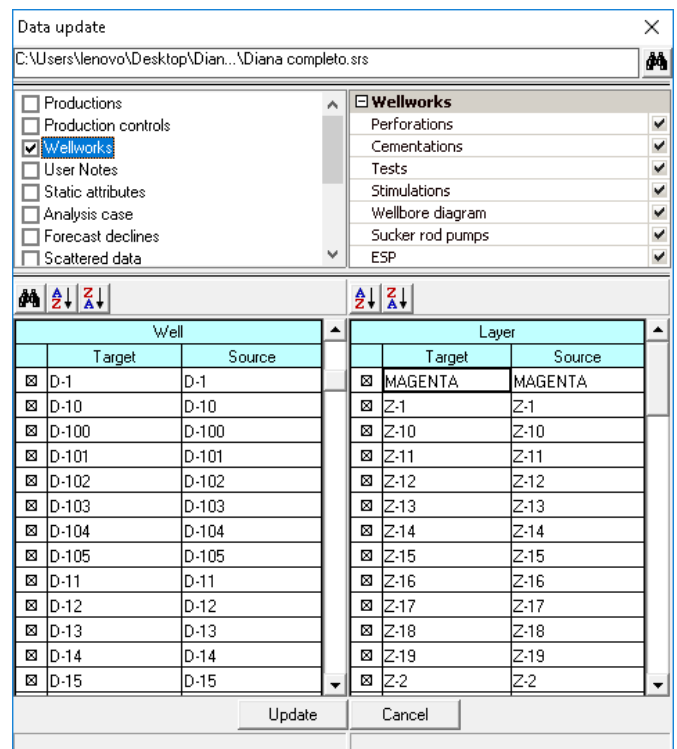


Log import. A typical log import window is displayed.

When it comes to information that is neither in databases nor in tabular formats, Sahara provides a solution. This is the case when importing grids, lines or logs. For the particular case of logs, Sahara recognizes the format of the .LAS files automatically. Additionally, if the name of the file contains the name of the well, it will also be recognized.

In the case of maps or lines, Sahara recognizes the formats most used in the oil and gas industry, including Zmap, CPS3 and Shapefiles. An interesting feature is the capacity to choose multiple files simultaneously to import. Using the layer names as filenames and the names of the corresponding variables as file extensions, Sahara will automatically associate each of the files with the appropriate layer and variable. In this way, it is possible to import all the maps and lines of the project layers in a single step.

Another possibility is to update data from a Sahara project using another Sahara project as a data source. This option allows the independent work of different users to later be able to have access all of them to the same information by performing the corresponding updates. It is very common for each professional to work on a particular reservoir project, for example performing declines of their wells while there is a global project of several reservoirs, which is used to consolidate all the information. The update tool allows each user to work on their individual project and then the global project manager can integrate all the analyses.



Updating Data. The update window across projects allows defining the connection between objects and layers of both projects. Additionally for each of the data groups, the user can choose whether or not to update. In case of updating, each data group has different options available.

Different options have been identified for incorporating data into a Sahara project, using different files and formats as sources of information. Just as it is possible to import data in multiple ways, there are also options for exporting data from a project in different formats, depending on the type of information.

The main point here is that all exports enable selection options to obtain data according to what is needed. Wells, layers, scenarios, variables, dates, depths, among others can be selected depending on the information to be exported.

TXT format is the default export format. However, for some of the data included in a project there are special formats that will help to share information across different applications in the oil and gas industry.

- Monthly production data can be exported alternatively in MDB format, thus allowing easy query from any other application.
- Log data can be exported in TXT format with a column for depth values and as many columns as curves are to be exported. Additionally, there is the option to export them in LAS format.
- For exporting maps, there are three options: XYZ format in a TXT file, CPS3 format or Surfer format.
- For forecast declines, data can be exported in Sahara format or in a conventional format reporting the different parameters.

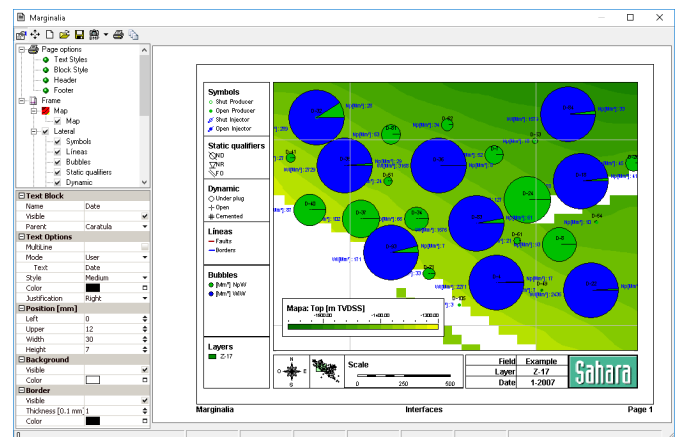
These are just examples of formats available for export. There are many other data that can be exported in different formats from a Sahara project.

Another tabular export option for a large amount of data is found in the Reports window, where user-designed reports can be created and special user-requested reports can be exported.

Exporting information also includes images. A special feature of Sahara is its attractive graphical interface, and it is expected that its images will be exported for reporting or presentation purposes.

In all Sahara windows where an information export may be required, the toolbar will provide a button to copy the image being displayed in the window. Format options are often provided, for example in the Productions window, charts can be exported in EMF (Enhanced Metafile) format or BMP (Bitmap) format.

Being that the Map window turns out to be one of the main windows in Sahara to be used in presentations, a special tool has been created called Marginalia that is used to design a print page. Using this tool references, map scales and variables, covers, text blocks, and many other options can be added to obtain an excellent presentation of the maps in a project. The Marginalia window works interconnected with the Map window and allows the generation of configurable templates to be used in different projects or for different purposes.

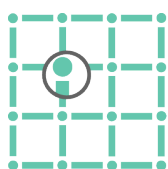


Marginalia Window. This example displays a note with references to well symbols, well qualifiers, lines, data displayed as bubbles, and the map range of colors. It also shows the north, a zoom inside the total area of the project and data specific to the project.

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