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http://www.openforis.org

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1. INTRODUCTION
Saiku was founded in 2008 by Tom Barber and Paul Stoellberger. Originally called the Pentaho After a complete rewrite in 2010, the software was renamed as Saiku. Saiku is open-source software and it comes within Open Foris Calc installation package\(^1\).

Saiku offers a user friendly, web based analytics solution that lets users quickly and easily analyze data and create and share reports.

2. OLAP ANALYSIS
On-Line Analytical Processing (OLAP) is a category of software technology that enables software use to gain insight into data through fast, consistent, interactive access to a wide variety of possible views of information.

Saiku offers scalable in-memory analysis. Large amounts of data can be stored in memory in a distributed manner across the local network, offering greatly improved performance over large data warehouses as the aggregated data is retrieved from the network instead of reading from disk.

3. USING SAIKU
3.1. Start Saiku
If you start Saiku via Internet or LAN connection, just log into the system. If you start Saiku in Open Foris Calc, first run calculation chain and then (if no errors) click Saiku icon.

And log in (username and password: calc).

\(^1\) Link to Saiku site: [http://www.meteorite.bi/](http://www.meteorite.bi/)
3.2. Toolbars

The toolbars include:
- New query
- Open query
- Logout
- About Saiku
- Issue Tracker

- Open query
- Run query
- Toggle fields
- Swap axis
- Export drill-through on cell to CSV

- New query
- Save query
- Toggle sidebar
- Non-empty
- Show MDX query
- Drill through on cell
- Export PDF

3.3. Refresh cubes

It is recommended to refresh cubes every time after recalculating results in Open Foris Calc. This ensures that the latest changes made in Calc are taken into account in Saiku.
3.4. Creating a query

At the core of Saiku are the queries you will create to analyze data. You drag and drop dimensions and measures to build up the query you want. Under the hood Saiku uses the MDX query language to write the query but as an end user you don't need to see any MDX or understand what it means as we do all this for you.

Open a new query window by clicking on the New Query icon. This will open a new query window and a blank canvas to create your query in. From the cubes list on the left hand panel select the cube you want to analyze from the drop down box.

![Diagram showing cubes list and new query window](image)
Once a cube has been selected the available dimensions (with hierarchies) and measures are listed.

Saiku shows dimensions’ titles as they are defined in the Inventory Data Metamodel (IDM) in Open Foris, with the following attributes: Label [Name]. As seen in the figure above, *Labels* were written in Vietnamese, but *Name* in English.

A Saiku query has 3 drop zones to help you define your query: Columns, Rows and Filter.
To start analyzing data you need to do now is include at least one dimension in the rows drop area and either one measure in the measures drop area or another dimension in the columns drop area. Once you have fulfilled these criteria then the query will execute and the results displayed on screen.

You can swap axis easily by clicking “Swap axis” button.

Then, we can “drag and drop” more dimensions and measures as we want into columns, rows, and filters. However, we are restricted only to not put measures on both columns and rows. After each change the query is updated and executed automatically.
Showing of empty / non-empty records, click ‘Non-empty’ button.
3.5. Filtering

There are a number of ways of refining the data you see from your query. These include filtering the dimension members that appear in the result window or using the Filter axis.

The filter axis allows you to filter what is visible in the result but using dimensions that aren't displayed on the table.

Using the Filter axis.

1) **Filter, Filter,..**

2) **Filter, Limit,..**

3) **Filter, Sort,..**
3.6. Ordering

Each dimension and/or measure can be used to order data, but not all possible combinations are allowed (since we can't order both by a measure on columns and a dimension on row, or vice versa).

3.7. Popup menus

Some options for fast filtering and adding/removing dimension levels are available by clicking on columns and rows header.
3.8. Statistics

Saiku allows also showing some statistics about columns values.

Click the summary button.

Warning! Do not use summary tools to calculate averages of averages (as mean volume)! It is very easy to show totally meaningless result figures with statistics tool in Saiku.
3.9. Charts and Graphs

Once you have designed your query charts are very straightforward in Saiku.

Press the chart button in the top right hand corner of the workspace. This will show a bar chart.

If you want to show a different chart type you can select one from the list on the right hand side.

Don’t forget though, if you pivot the result set the chart data can be completely different. So play around with your query if you don’t see the layout you desire.

If you want to export your chart into a file for example and JPG, there is the command ‘Export’ in the right side of the window.

3.10. Saving and opening queries

It recommended that you save a useful query into Query Repository that it can be reused. Saving of queries is done with button ‘Save query’.

NOTE: Saiku does not always show columns in the preferred (or right) order at the same time you create your query. The query works correctly when you first save it, close the query tab sheet, and open it again.

All query files are saved with file extension .SAIKU into the default repository folder, usually into 
..\calc-server\tomcat\webapps\saiku\WEB-INF\classes\saiku-repository\Files will be plain XML and editable in case you need to update them (connection name change etc.) or organize into folders.
This button also enables to create new folders:

Existing queries are viewed with clicking button ‘Open query’.

The next figure shows queries made for the NAFORMA Project in Tanzania. The queries are organized into the folders.

When executing the query the result window shows like this below.
3.11. Transfer of queries to another computer

Sometimes there is need to copy Saiku queries to another computer. The process is to copy the queries from the Saiku default repository folder, usually from 
..\calc-server\tomcat\webapps\saiku\WEB-INF\classes\saiku-repository|

And then paste these subfolders and files into the target machine. In cases where Calc workspaces have different names, these .saiku files need to be edited so that the names match with the target workspace. If there are several query files to edit, this free utility can be very useful: fnr.exe at https://findandreplace.codeplex.com/

**An example.** We need to change workspace name in Saiku queries from ‘vietnam_bac_giang’ into ‘nfa_360’.

In Saiku query file there is now

```
<?xml version="1.0" encoding="UTF-8"?>
<Query name="DDC21DC9-A8DC-2A76-AE29-E06C1C63B16A" type="QM" connection="vietnam_bac_giang" cube="[bamboo]" catalog="vietnam_bac_giang" schema="vietnam_bac_giang">
<QueryModel>
<Axes> ....
```

First take a copy of Saiku query repository. The run fnr.exe, as follows:

![Find and Replace](image)

In the target file there is now:

```
<?xml version="1.0" encoding="UTF-8"?>
<Query name="DDC21DC9-A8DC-2A76-AE29-E06C1C63B16A" type="QM" connection="nfa_360" cube="[bamboo]" catalog="nfa_360" schema="nfa_360">
<QueryModel>
<Axes>
```
4. MDX MODE

If you want greater control over your query you can use Saiku's MDX mode. This allows users to edit the query itself rather than use the drag and drop tools available to you.

You can either create a blank query or create something close to what you want and then edit the query itself.

MDX is a multi dimensional query language and there are plenty of tutorials on the internet that explain how to write and understand MDX queries. Read more at http://wiki.meteorite.bi/display/Saiku/MDX+Mode

5. ERROR CASES

A typical error while running Saiku is that it keeps on “running query”. In this case try first another web browser. So if you are using Google Chrome, try running Saiku with Edge or Firefox.

In some cases Saiku refuses to work if there are conflicts with installed Chrome extensions, or computer has malware.

With very complex queries Saiku can result in a timeout error because 300 seconds is the default property value in the file mondrian.properties (see the next image).

You may try to change this setting in property mondrian.rolap.queryTimeout, as follows

---

2 MDX: Multi-Dimensional eXpressions
– A language designed for querying OLAP databases
– A standard developed by Microsoft (http://msdn.microsoft.com/en-us/library/ms145506.aspx)

3 In windows the default path is C:\opt\OpenForisCalc\calc-server\tomcat\webapps\saiku\WEB-INF\classes
After this change, you need to stop Calc/Saiku server, restart it and try to rerun the query in Saiku.