

# What's new in TIBCO Spotfire® 6.5

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## Introduction

Spotfire 6.5 introduces important advances in data access, location analytics, closer integration of TERR and Spotfire and improved capabilities for performance monitoring of your Spotfire system. The following chapters describe more details about the different areas of improvements.

## TIBCO Spotfire® Analyst

### Location Analytics

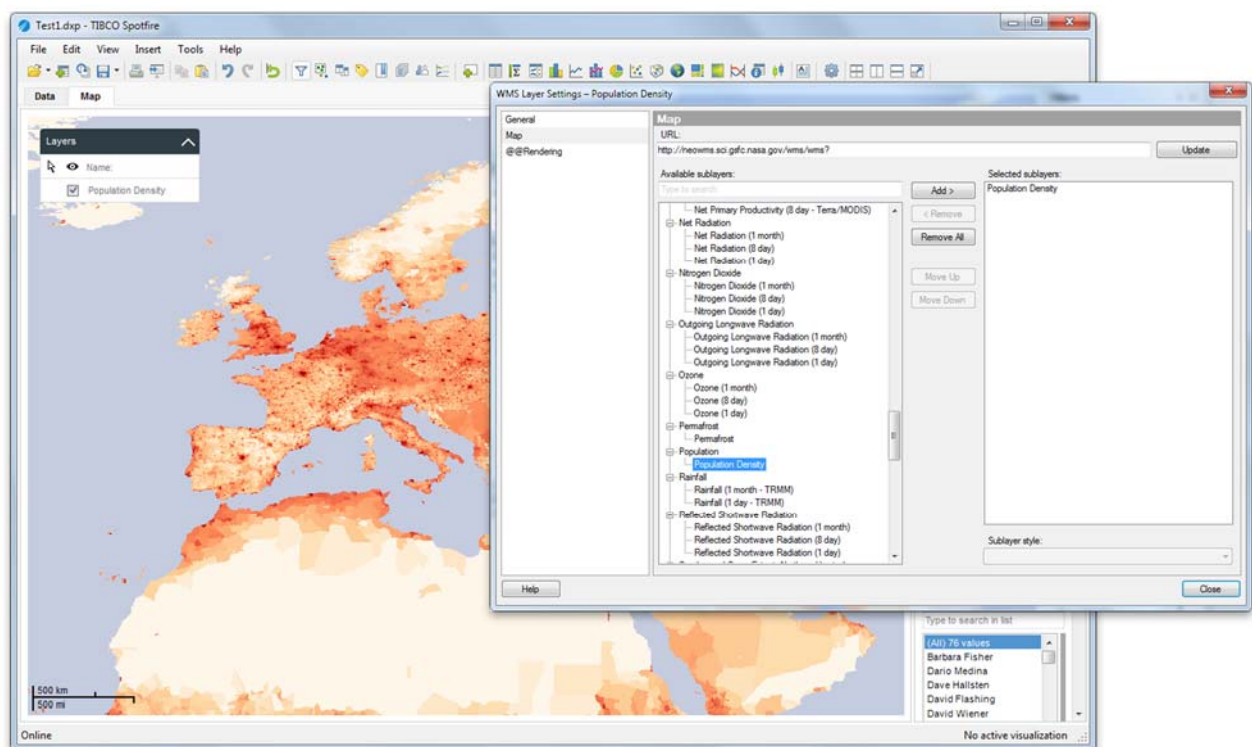
#### Support for adding new map layer from WMS Server

Spotfire 6.5 supports the rendering of data delivered from a WMS Server. A Web Map Service (WMS) is a standard protocol defined by the Open GIS Consortium (OGC) for serving geo-referenced map images from one or more distributed GIS databases that includes ESRI ArcGIS Server.

It is now possible to connect Spotfire to any WMS Server and use its maps for your visualization. It could be from your own internal WMS Server or ESRI ArcGIS Server (with WMS Service enabled) or from the multiple public WMS Servers accessible around the web to enrich your analysis with external data.

Example of use:

You can now add map layers from the NASA Earth Observations WMS Server by adding a WMS Layer using the following address: <http://neowms.sci.gsfc.nasa.gov/wms/wms?>



## Map projections systems support

Along with WMS Layer support, Spotfire 6.5 introduces the ability to display data with different map projections systems (more than 3000) defined by the EPSG norm (European Petroleum Survey Group) including: WGS84, SAD69, OSGB1936, NAD83, NAD27, ED50

To consult the full list of projections references, visit this webpages: <http://spatialreference.org/ref/>

## Application building

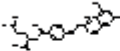






### Drag and drop visualizations and pages between open DXP files

In order make it easy to merge content between two or more DXP files, it is now possible to drag and drop visualizations and pages between two open DXP files. Essentially the visualizations configuration is copied from the source to the destination. The DXP files should have the same data tables for this to work smoothly. Notice also that while text areas will be copied, underlying resources such as scripts will not.

### Images on cross table headers

Just as in barcharts, scatterplots, line charts and combination charts it is now possible to configure headers in cross table headers to display images, for example to display chemical structures or national flags. This provides a means to visually communicate categorical information in a plot or cross table.

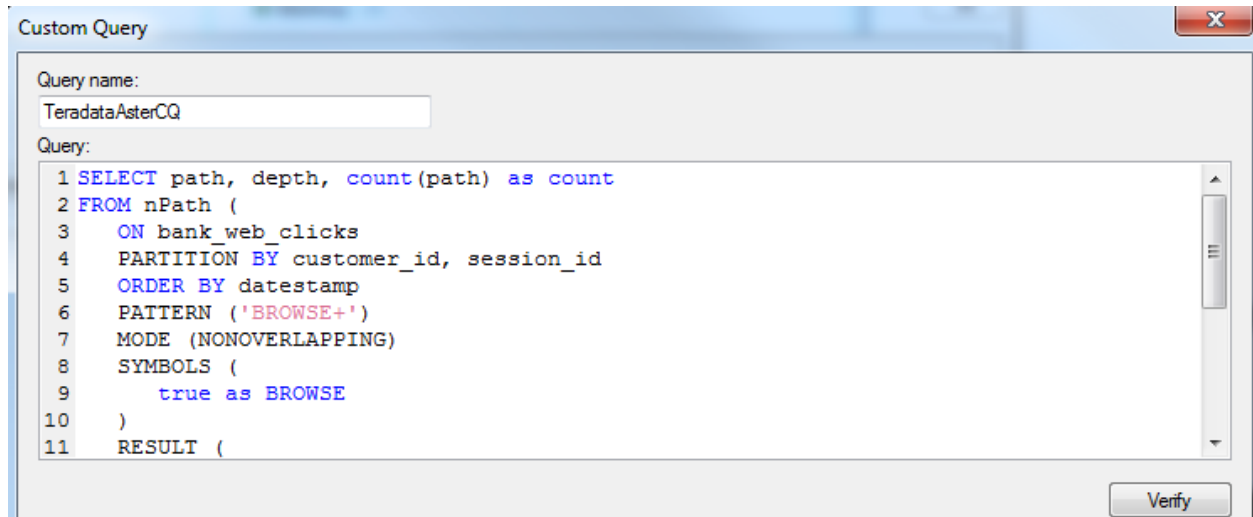
Country	Flag	Points
AFGHANISTAN		11.00
ALBANIA		7.00
ALGERIA		7.00
ANDORRA		7.00

Structure image					
	---	1	---	---	---
	---	---	1	---	---

Images on axis of cross tables

## Custom Queries

The data connections now feature the ability for super users to provide custom defined queries. The Custom SQL is passed to the underlying database and can include native functionality not supported by general SQL, in fact not necessarily being SQL at all. This enables taking advantage of data base specific language constructs which may optimize performance or enable operations not possible from standard SQL. The custom query needs to fit inside a SQL FROM clause as shown below.



### Example of Teradata Aster specific query constructs as a Custom query

It is in addition possible to use parameters that represent for instance the CURRENT\_USER in the custom queries, or even define custom parameters that are driven by Spotfire document properties, in order to implement specific patterns. A parameter is used in a query by using a preceding ?-sign, such as

```
SELECT * FROM table WHERE Region = ?MyRegion
```

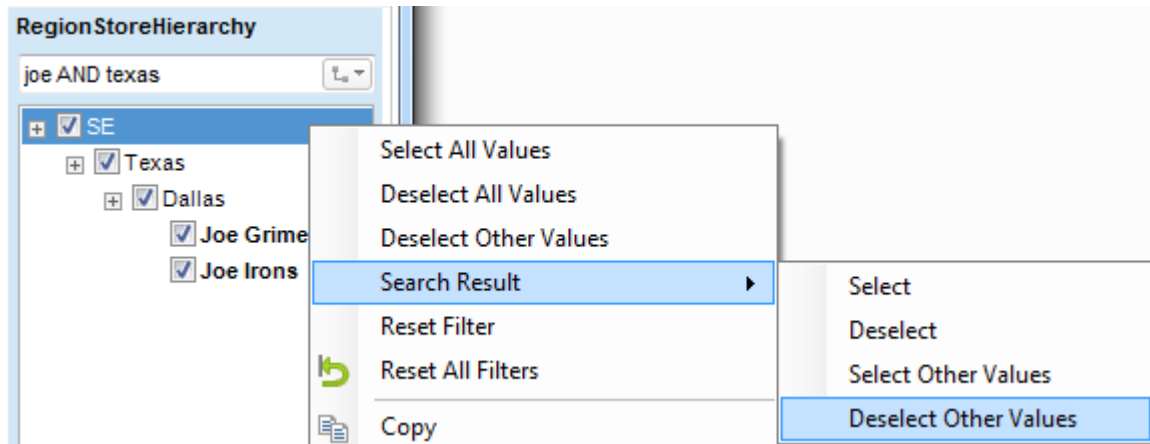
## New and Improved Hierarchy filter

The Hierarchy filter has been greatly improved and now features search, check all/uncheck all functionality as well as greatly improved performance in large hierarchies.



Example of searching for a store in Texas containing "joe" in the store name.

Right clicking in the filter field gives access to important operations such as select all/deselect all, deselect others, but also a way of selecting/deselecting based on the search results.

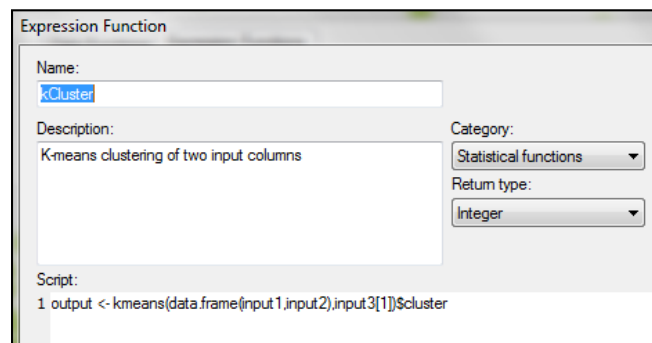


Example of deselecting all values that are not matched by the search results.

## Improved integration with TERR and Predictive Modelling tools

### Calling TERR Scripts from the Spotfire Expression Language

It is now possible to use TERR functions in the Spotfire custom expressions dialogue, and also to register TERR scripts as custom methods that can be called from the expression language.



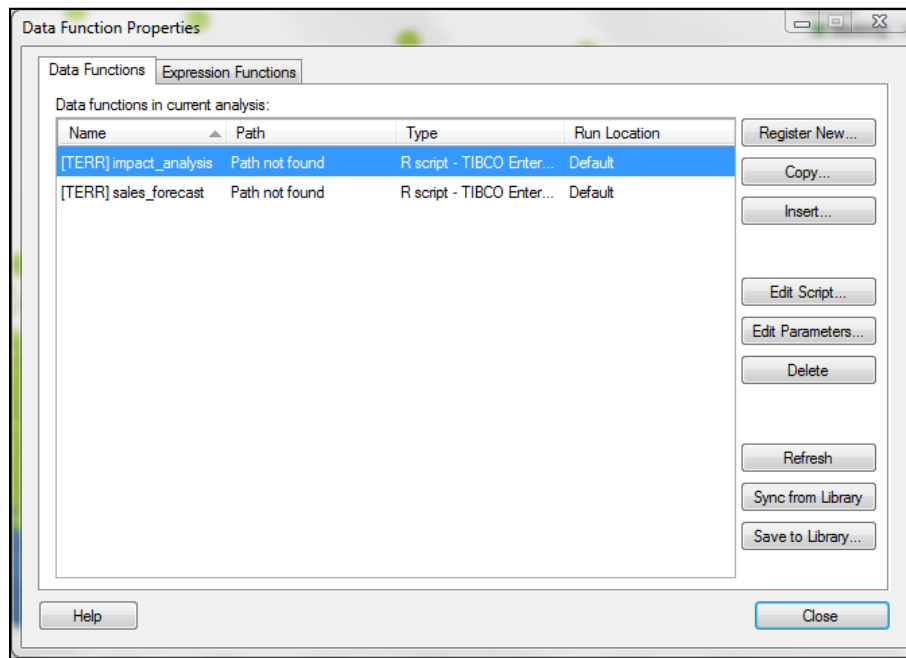
```
Expression:  
1 kCluster ([SALES], [LY.SALES], ${nClusters}) as [Clusters]
```

Example of defining a TERR Expression Function, and then using it in a Custom Expression

## Enhancements to Data Function Development

There are a number of improvements for data functions:

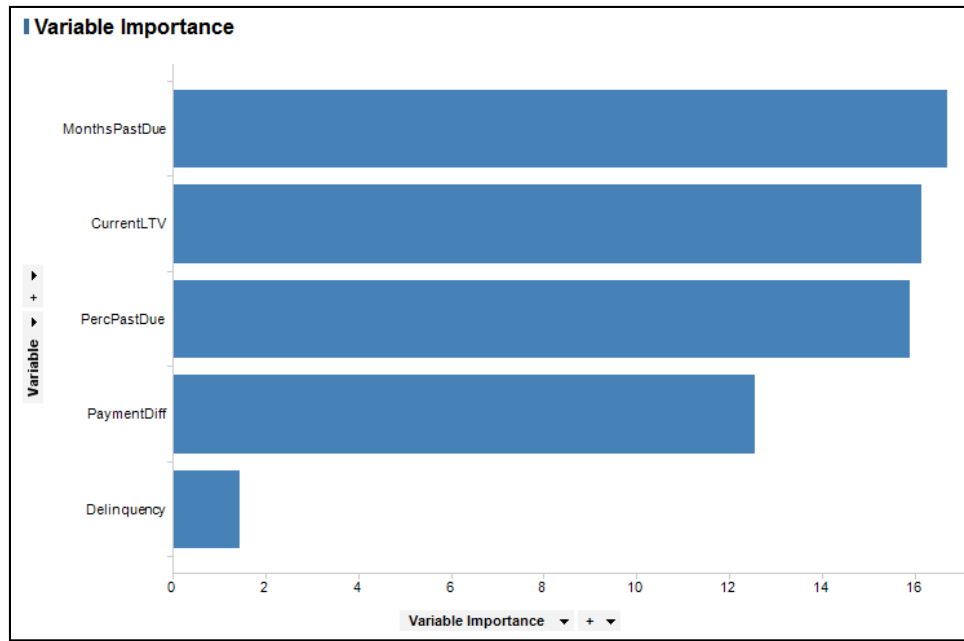
- TERR Data Functions can be created and edited offline
- Enable the user to edit Data Functions embedded in a DXP, without requiring Library access
- Save Data Functions created or edited offline back to the library
- Currency data can now sent from Spotfire into TERR Data Functions.



**New Data Function Properties Dialog, which provides central access to various attributes of Data Function**

### Variable Importance Plots and Model Import/Export

The diagnostic plots for the Predictive Modeling tools now include Variable Importance plots, to make it easier for the user to quickly identify which variables are most important when building a predictive model.



**Example of new Variable Importance Plots**

Users can also now Import and Export Predictive Models for reuse and sharing between analyses, and with other instances of TERR (for example, TERR running under TIBCO Streambase for real-time scoring).

### New Data Function APIs

For easier development of custom applications using Data Functions, we also added a number of new API methods for Data Functions, available from Python scripts. These include:

- Specify via API whether Data Function must run on TSSS or local TERR: providing more flexibility in creating predictive analytic applications, ensuring they are run in the proper location
- API added for whether a Data Function should appear in the Data Function Properties dialog (useful to hide Data Functions from casual users if desired)
- API to force a Data Function to run synchronously, enabling more control over the interaction between Data Functions and Python scripts, and chaining a series of Data Functions more easily.

We have also added new APIs to support Expression Functions:

- Register a new Expression Function programmatically for a specific analysis
- Enable the creation of .NET extensions to register new functions for multiple analyses across an organization

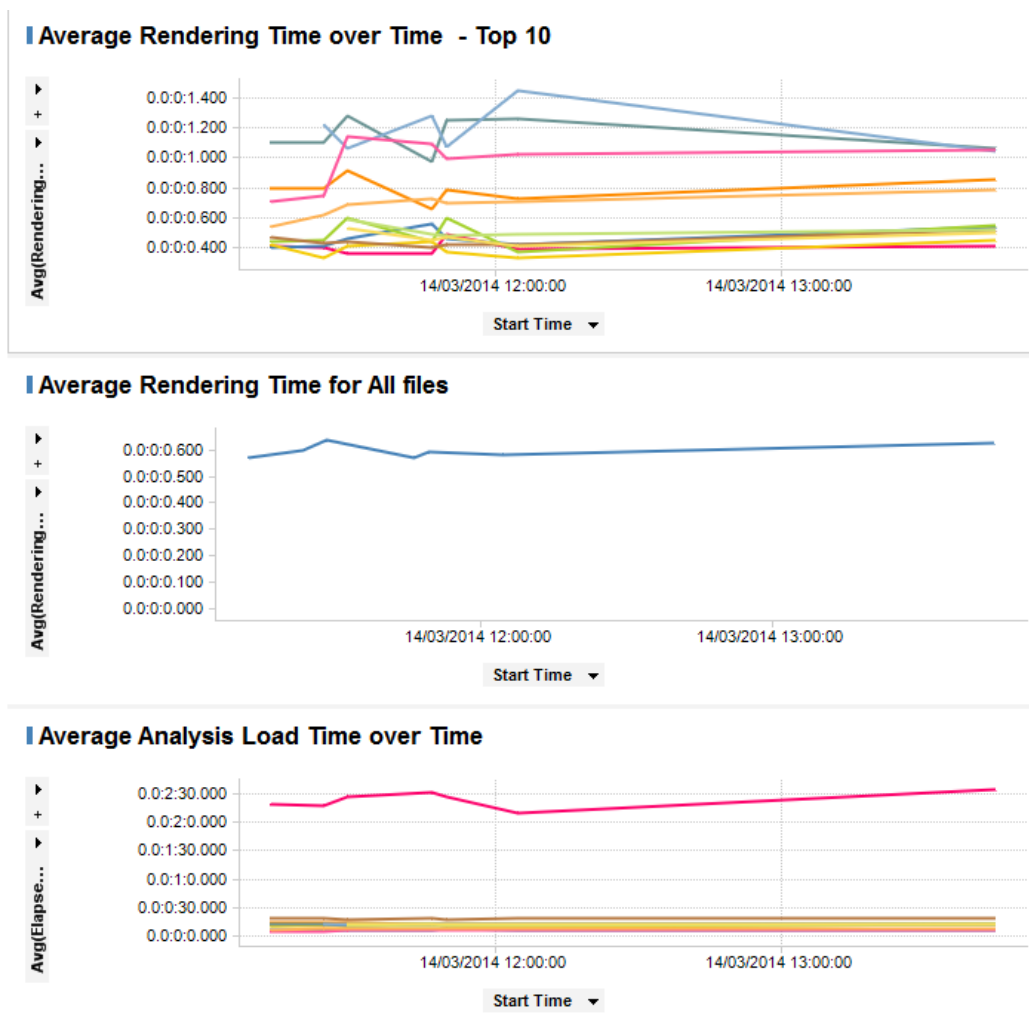
### Application Profiler

The Application Profiler is a utility that allows a Spotfire administrator or superuser to scan the Spotfire library and acquire an overview of its applications, automatically run tests on a large set of DXP files, or merely answering specific questions about the DXP files.



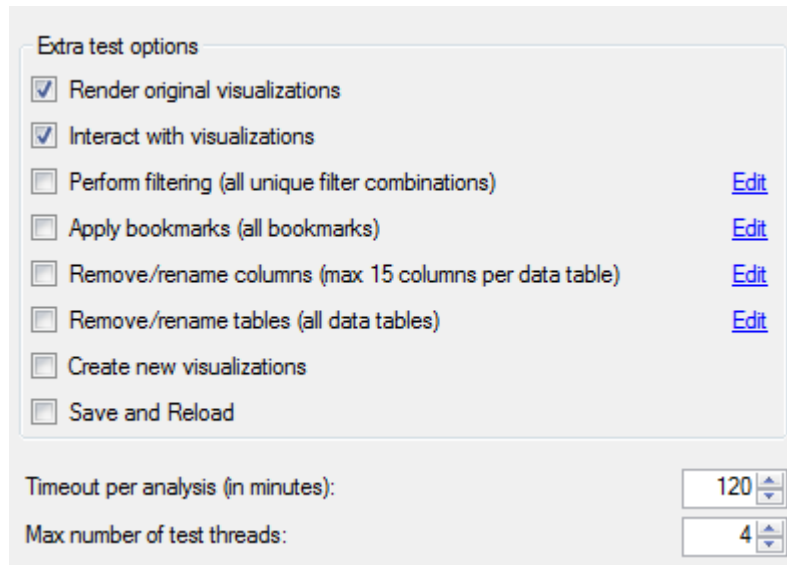
The application profiler takes a set of DXP files in the library or on disk as input and runs a specified set of tests on these files, and during these tests records information about each DXP file such as the time it takes to load, the time it takes to test, render visualizations and it captures any errors or issues it encounters.

The use cases of application profiler are diverse, you can use it for monitoring of selected parameters for the library over time, for comparing results of running it for different Spotfire versions or for collecting general information about the DXP files in the library.



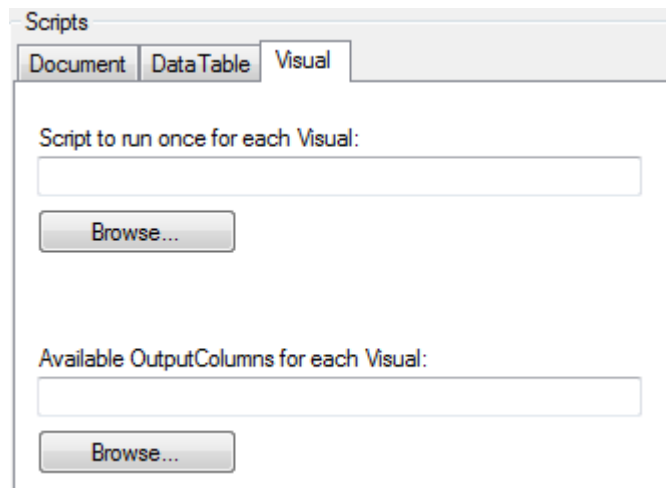
**Part of a dashboard for continuous monitoring of load time and rendering time of analyses in the Spotfire library**

Give the paths of a set of input files , the Application Profiler will load each of them and also navigate to each page of each DXP file. In addition to this a set of additional test options are available.



### Test options in application profiler

If the out of the box tests of the application profiler are not sufficient, it is possible to write custom scripts that collect information about the DXP files.



These scripts can execute in the context of the entire Document, for each data table or for each Visual. In the screenshot above, the Visual context is selected, and there needs to be two scripts.

```
import Spotfire.Dxp.Application.Visuals.BarChartOrientation as  
barChartOrientation
```

```

from Spotfire.Dxp.Application.Visuals import BarChart
from Spotfire.Dxp.Application.Visuals import VisualTypeIdentifiers

if (Visual.TypeId == VisualTypeIdentifiers.BarChart):

    if (Visual.As[BarChart]().Orientation ==
barChartOrientation.Horizontal):

        OutputColumns["BarChartOrientation"] = "HORIZONTAL"

    else:

        if (Visual.As[BarChart]().Orientation ==
barChartOrientation.Vertical):

            OutputColumns["BarChartOrientation"] = "VERTICAL"

```

**Above: script for the Visual context to be called from “Script to run once from each Visual”**

```

from System import Tuple, String
from Spotfire.Dxp.Data import DataType

OutputColumnDataTypes.Add(Tuple.Create[String,DataType] ("BarChartOrientation",
DataType.String))

```

**Above: script for declaring output columns “Available OutputColumns for each visual”**

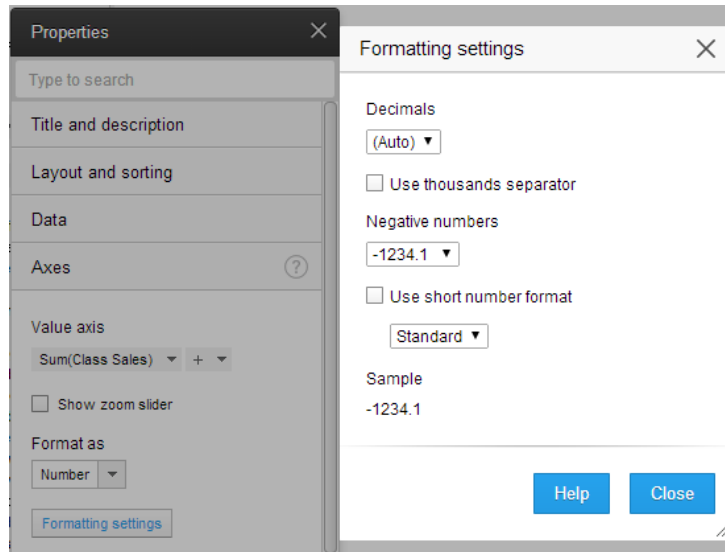
## **Data access integration between Spotfire Library and Metrics Author and TERR**

TERR and Mobile Metrics can reuse data connections created in Spotfire and stored in the Spotfire library.

## **TIBCO Spotfire® Business Author**

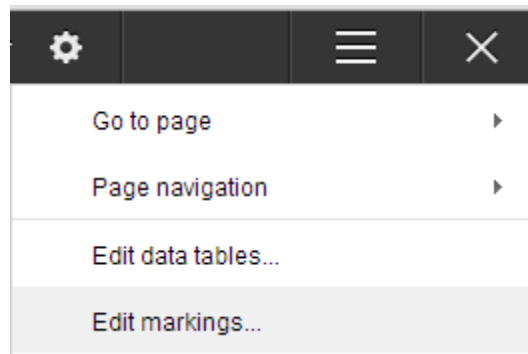
In Spotfire 6.5 there are some new convenient features in TIBCO Spotfire Business Author.

- BA now supports changing the description of visualizations, formatting axes labels and controlling the width of the legend of the plot.

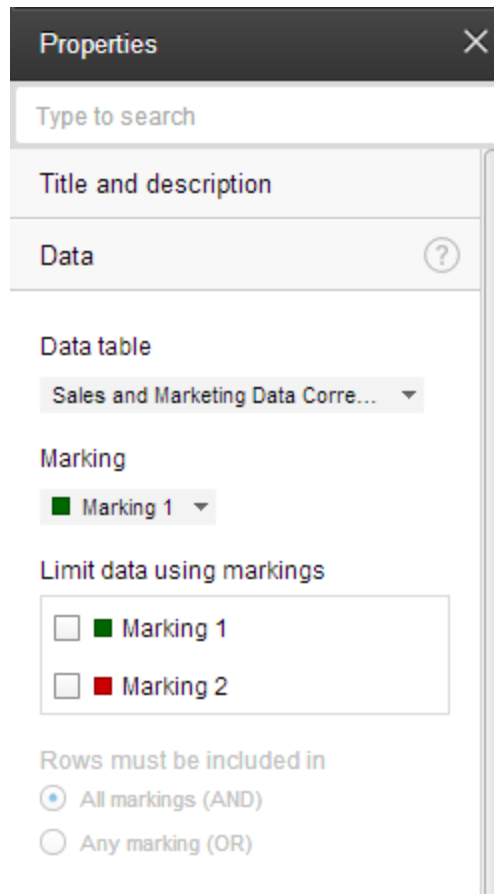


**Settings for axis formatting in Spotfire Business Author**

- It is now possible to switch the filter type in Business Author through a right-click on the relevant filter in the filter panel and it is possible to reset the specific filter by a right click.
- Business author now supports configuration of multiple marking schemes in order to configure which marking(s) to use for visualization under the Data category in the Properties Popover. This enables for instance very easy creation of drilldowns based on multiple master visualizations.



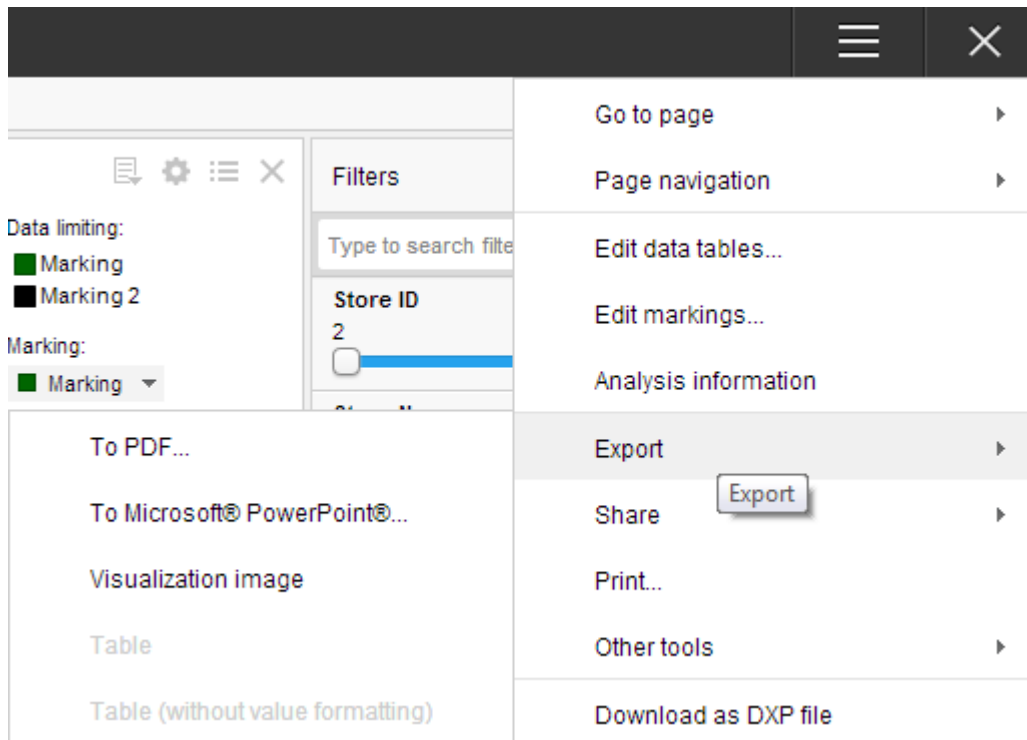
**Edit/create marking schemes from the menu**



**Configure what marking(s) is used for the visualization from the properties popover**

## **TIBCO Spotfire® Consumer**

It is now possible to Export to Powerpoint from the Spotfire Consumer (former Web Player). The functionality is accessed from the menu in the top right corner.



## TIBCO Spotfire® Data Connectors

- A new connector for IBM DB2 is now available with support for in-database and in-memory analytics
- All connectors have been updated to support Custom Queries
- Pivotal HAWQ was introduced in 6.0 via the Greenplum connector but is now available as a discrete connector

## TIBCO Spotfire® Server

### Web performance monitoring

Spotfire 6.5 introduces two important enhancements related to performance monitoring for the web player server. The first enhancement is the web player monitoring tab which is accessed from the library browser->tools->diagnostics, and gives an overview at a glance of all open analyses on the web player server and information about memory and CPU time used by the analyses as well as an overview of all connected users.

Open Analyses Logging (On)

Show Overview Refresh Close Analysis Open Analysis
 Show Document Nodes and View Sizes

Title	User Name	Execution Time (s)	Shared Data Table Size	Private Data Table Size	Shared Data View Size	Private Data View Size	Shared Document Node Count	Private Document Node Count	Idle Time (s)	Scheduled
Plois for Linux	quintaf	5.1	-	902 KB	-	748 KB	18 917	200	400	false
Sales and Cost	root	3.2	433 KB	244 KB	1.0 KB	17 KB	-	8 279	4 623	false
Legend exploration (L)	otbug	2.0	-	783 KB	1.0 KB	709 KB	-	16 645	615	false
Sales and Marketing Data Analysis 2	nambert	1.3	180 KB	-	355 KB	-	8 267	-	04	false
Sales and Cost	root	1.0	433 KB	244 KB	1.0 KB	-	-	2 199	2 071	false
Sales and Cost	root	0.8	433 KB	244 KB	1.0 KB	12 KB	-	4 944	4 340	false
Sales and Cost	root	0.6	433 KB	244 KB	1.0 KB	242 KB	-	4 944	5 110	false
Sales and Marketing Data Analysis 2	nambert	0.1	180 KB	-	399 KB	-	8 267	-	32	false
Sales and Marketing Data Analysis 2	nambert	0.1	180 KB	-	399 KB	-	8 267	-	32	false
Totals		14	814 KB	2.6 MB	400 KB	1.7 MB	26 574	34 411	32	

Show performance counters

From the web player status page there is also quick access to enabling monitor logging, opening or closing analyses.

From this page there is also quick access to exporting all performance monitoring logs and an performance logging analysis, which leads into the second enhancement which is a smooth way of opening the logged performance information in Spotfire.



There is a preconfigured analysis file that helps the user analyse the performance logs. The logged information can be analysed from various angles. The screenshot above shows the overview page, but there are also more details pages for analysing for example which operations in which file used most CPU time in a given time interval.

## Improved configuration of scheduled updates

In the scheduled updates configuration dialogue there is now the capability to move analyses up or down, which corresponds to the priority of loading them in case they have overlapping timeslots. This is useful since you can move analyses with a short loading time higher in the list so they will not be blocked

by analyses taking a long time to analyse. At the same time, in spotfire 6.5 the maximum number of concurrent scheduled update jobs has been increased to 50. The actual number of concurrent scheduled updates jobs is set by a configuration parameter, see the web player server documentation.

Scheduled Updates			About		Log out	
Path	Update Method	Schedule	Reload	Remove	Move Up	Move Down
asunden/Sales Data	Automatic	Updated every 0 minutes between 7:00 AM and 8:00 AM on Mon. Updated every 0 minutes between 8:00 AM and 9:00 AM on Tue.	⚙	✗	↑	↓
nambernt/Sales and Marketing Data Analysis 2	Automatic	Updated every 0 minutes between 7:00 AM and 7:00 PM on Mon Tue Wed Thu Fri.	⚙	✗	↑	↓
nambernt/Sales and Marketing Data	Automatic	Updated every 0 minutes between 7:00 AM and 7:00 PM on Mon Tue Wed Thu Fri.	⚙	✗	↑	↓

## Library import with bookmark merge

It is now the default behaviour that bookmarks are merged during library import if conflict resolution "Replace Existing" has been chosen. If there are bookmarks in the destination library that are not present in the source and vice versa, both will be kept.

## License web services API

There is now a public web services API for managing Spotfire licenses. This enables implementing tools for automation of license management.

## TIBCO® Enterprise Runtime for R (TERR)

### Reuse Spotfire Data Connections in TERR

TERR script authors can now leverage and reuse Spotfire Data Connections within TERR, making management of data connections easier, opening access to a wide variety of data sources directly from TERR, and enabling the creation of faster and more scalable applications. These TERR functions are available in the SpotfireData core package, and include:

- Connect to a Spotfire Library via a Web Player server: `sdConnect()`
- Query the properties of a Data Connection: `sdGetInfo()`
- Get data from a Data Connection: `sdGetData()`

### Expanded R coverage and R package compatibility

TERR 2.5 includes expanded support for R packages and core R functionality:

- Splines
- Hierarchical and k-means clustering
- Improved compatibility with many important packages, including MASS, randomForest, boot, rpart, e1071, mgcv, earth and bioconductor



### **Debugging in RStudio and via command line**

TERR introduced support for integration with the open source IDE RStudio in the 2.0 release. In this release, we add support for debugging via RStudio, as well as via the standard R functions `trace()` and `browser()` from the command line.

### **TIBCO Spotfire® System Requirements highlighted changes**

Please note that Internet Explorer 7 is no longer supported for any of the products in the Spotfire® 6.5 product family.