Spotfire Information Designer

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What is the Information Designer?

Source: [http://stn.spotfire.com/spotfire_cli...stt103.htm#115](http://stn.spotfire.com/spotfire_cli...stt103.htm#115)

The Information Designer is a tool for setting up data sources and creating and opening *information links*. An information link is a database query specifying the columns to be loaded and any filters needed to narrow down the data table prior to creating visualizations in TIBCO Spotfire. In Information Designer, information links are created from building blocks such as columns and filters using joins, calculations and aggregations.

The Elements tree in Information Designer is a representation of the folder structure in the library. The permissions for each folder specify which databases and elements should be available for different users or groups when creating information links. Folder permissions can be specified in the Information Designer, but the main permission handling is done with the Library Administration tool.

Once information links have been created in Information Designer, they can be opened by any user who has the appropriate licenses, allowing users who may not have knowledge of SQL or the underlying database structures to be able to execute advanced database queries.

Information links are opened by selecting **File > Open From > Library**....

Note that neither the Information Designer, nor the resulting information links are available when you are working offline.

General Workflow

This is the general workflow for using Information Designer:

1. Set up the data sources

Enter the information required to connect to the databases which will be accessed through Information Designer.
2. Create folders for storing elements and set permissions

The library is a hierarchical structure where data sources, elements and information links can be organized into folders. Given that the library is also used for storing analysis files, it could be worthwhile to spend some time thinking over a suitable structure. More

Different groups of users are given different levels of access to data. More

3. Combine tables by creating joins

If you want to work with data from different tables, you first need to create joins. More

4. Define column elements from available data sources

Define the column elements to be shown when creating information links. These columns can be taken directly from tables in one or more databases. They can also be calculated, filtered or otherwise modified. More

5. Create filter elements to limit the data retrieved

Create filter elements with descriptive names to be applied when creating information links. More

6. Create information links

Create information links that retrieve data from one or more databases and share them with your colleagues. More

**General Guidelines for Setting Up an Information Model**

The Information Model (IM) concept aims to supply each end user with the data they need, with a minimum of effort and confusion. Consequently, when building an IM, it is important to understand who the end users are and what data they require for their work.

Who are the end users?

Permissions are set on the folder level. Finding groups of users who work on related data will give you a good clue about the folder structure you should implement. Do not give all users access to everything - this will only cause confusion.

What data do they need?
What information is needed? How much data can users handle in a single request? Are there any commonly used threshold values? Answering these questions will guide you in setting up the correct joins, columns and filters.

Will users build their own information links?

Some end users will want to use the column and filter elements that you design, and assemble their own information links using Information Designer. Others will be less experienced, or may perform repetitive tasks. For these you should consider preparing complete information links in advance.

Tip: If your data source contains well-ordered data you can right-click on the data source and select Create Default Information Model... in order to quickly set up a simple information model.

### Icon Explanations

In the Elements tree, the following icons may appear. Click on a link in the table below to find out more about each element type. In the Data sources tree only the items belonging to a database are visible.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Element type</th>
</tr>
</thead>
<tbody>
<tr>
<td>🗂️</td>
<td>Folder</td>
</tr>
<tr>
<td>🔎</td>
<td>Information link</td>
</tr>
<tr>
<td>🔩</td>
<td>Filter</td>
</tr>
<tr>
<td>🚚</td>
<td>Boolean column</td>
</tr>
<tr>
<td>📜</td>
<td>String column</td>
</tr>
<tr>
<td>🧮</td>
<td>Integer column or LongInteger column</td>
</tr>
<tr>
<td>🧮</td>
<td>Real, ShortReal or Currency column</td>
</tr>
<tr>
<td>🕒</td>
<td>Date column</td>
</tr>
<tr>
<td>🕒</td>
<td>DateTime column</td>
</tr>
<tr>
<td>Time column</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td></td>
</tr>
<tr>
<td>Binary Large Object</td>
<td></td>
</tr>
<tr>
<td>Character Large Object</td>
<td></td>
</tr>
<tr>
<td>Join</td>
<td></td>
</tr>
</tbody>
</table>

| Database instance. |
| Database link/catalog - a link to another database. |
| Schema - a collection of tables and/or procedures. |
| Table - a set of columns. |
| Table alias. You can create a duplicate reference to a database table from Information Designer. This duplicate is called a Table Alias. |
| Unknown column. Must be set manually to one of the accepted column types (above) before it can be saved as a column element. |

**Fundamental Concepts**

The Information Designer in TIBCO Spotfire requires no prior knowledge of query languages such as SQL. However, it is important to understand a few terms and concepts as they are used in this product:

- Information links
- Column elements
Information Links

An information link is a structured request for data which can be sent to the database. These specifications include one or more columns, and may include one or more filters.

Stated in plain English, an information link could be: "Fetch the Name, Address and Phone_number for employees that pass the filter High_Income."

Information links can also be used to limit what data to open in an analysis in a number of different ways. See Loading Data Overview for a summary of the various methods.

Creating an Information Link

Information Designer allows you to create information links. The building blocks are column-, filter- and procedure elements that have been set up by you or the database administrator.

- To create an information link:

Response: An Information Link tab is opened.

Comment: If the Elements tree is not visible in the left-hand pane, click on the Elements tab to display it. Click the + symbol to expand a folder. You can select multiple elements simultaneously by pressing Ctrl and clicking on the elements of interest, or by pressing Shift and clicking on the first and last element in a list.

Response: The selected element is added to the Elements list on the Information Link tab.

Comment: To remove an item from the information link, select the item and click < Remove.

Response: The Save As dialog appears.

Response: The new information link is added to the library. It can now be accessed by other users.

1. Click New and select Information Link.

2. In the Elements tree, select the column or filter element that you want to include. You can also include procedures.

3. Click Add >.

4. If the selected elements come from more than one data source table, you need to specify a Join path. This means that you must create all joins needed to link all data tables together and you must also specify these in the Join path section on the Information Link tab.
5. In the Description field, type some text describing the purpose of the information link. This is optional.

6. If you want to filter the data, open the Filters section and follow the instructions under Adding Hard Filters.

7. If you want to add prompts (run-time filtering), open the Prompts section and follow the instructions under Adding Prompts.

8. Optionally, you can also choose to specify any Conditioning, Parameters or Properties that are needed for your information link. See Information Link Tab for more information and links.

9. Click Save.

10. In the folder tree, select where you want the information link to be saved.

11. In the Name field, type a name for the information link.

12. Click Save.

Tip: You can test the information link directly by clicking on Open Data.

Tip: You can view and edit the SQL behind the information link by clicking SQL....

Modifying an Information Link

If you have Browse + Access + Modify permission to a folder, you can edit existing information links in that folder.

• To modify an information link:

Response: The content of the information link is opened in a new Information Link tab.

Comment: Replace the old information link by choosing the same name and folder location as the old link. Type a new name (or put the link in another folder) to keep both the old and the modified information links.

1. In the Elements tree, double-click on the information link you wish to edit.

2. Edit the link in the Information Link tab by adding or removing elements or by changing the filtering or prompting for a column.

3. Open the modified link by clicking Open Data or save it by clicking Save.

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\*?:<>|.

Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

Deleting an Information Link
• To delete an information link from the Information Model:

Response: A dialog appears, prompting you to confirm that you want to delete the link.

1. In the Elements tree, right-click on the information link you wish to delete.
2. Select Delete from the pop-up menu.
3. Click OK.

Adding Hard Filters

Hard filters are set up as you define the information link and are saved with the link. This means that they cannot be reused in other links. Also, hard filters can only specify a range or a list of values, and are therefore less complex than filter elements.

• To add hard filters for a column:

Response: The Add Column dialog is displayed.

Response: The column is added to the Filters list.

Comment: Filtering by range means entering the upper and lower limits of the desired range. Filtering by values means entering the exact values that you want to include in the returned data, separated by semicolon.

Comment 1: Limits are inclusive. In other words, if the lower limit is set to 1000, the value 1000 will be included in the data table.

Comment 2: When setting upper and lower limits on columns of type String, 'A' is considered to come before 'AA', and 'S' comes before 'Smith'. This means that the name 'Smith' will not be present when choosing names from 'D' to 'S'. The order of characters is standard ASCII.

1. Create an information link.
2. Go to the Filters section on the Information Link tab for that information link.
3. Click Add.
4. Select the column for which you wish to add a hard filter from the drop-down list.
5. Click OK.
6. Repeat steps 3 to 5 add filters for more columns.
7. For each column, use the Filter Type drop-down list to select whether to filter by range or by values.
8. Set the upper and lower limits (range) in the Min Value and Max Value fields, or type the desired values, separated with semicolons in the Values field. You can also type `?param_name` in the Values field to use a parameter as the filter for the chosen column, where `param_name` is the name to identify the parameter by.

**Tip:** When entering values for filtering you are allowed to use wildcard characters. These are:

- Matches any characters (example: `*mber` would return the following months: September, November and December).
- Matches any single character (example: `???ember` would only return the months November and December).

**Adding Prompts**

An alternative to setting filter conditions in the Filters section (see [Adding Hard Filters](#)) is to configure your information link to prompt for filter values as the columns are retrieved. This way you do not have to specify filter conditions in advance. The data table will be pared down before the next column in sequence is processed (unless you have specified [prompt groups](#) to treat the columns as independent). See [Prompted Information Link Example](#) for further information.

- To enable prompts:

  Response: The Add Column dialog is displayed.

  Response: The column is added to the Prompts list.

Comment: Selecting Values will let you enter a list of values to include. Range will let you specify a range of values. **Multiple selection** will present a list of available values from which you can select multiple values. **Single selection** will present a list of available values from which you can select a single value.

1. Create a new information link or modify an existing link.

2. On the Information Link tab, go to the Prompts section.

3. Click Add.

4. Select the column for which you wish to add a prompt from the drop-down list.

5. Click OK.

6. Repeat steps 3 to 5 add prompts for more columns.

7. For each column, use the Prompt **Type** drop-down list to select how you want to be prompted for filter conditions during data retrieval.
8. **Save** the information link, or **open** it.

Note: When opening a prompted information link, the prompts will appear in the order that the columns appear in the Information Link tab. You can use the Move Up and Move Down buttons to move columns up or down. (*Filter elements* are always applied before any prompts, regardless of order.)

Tip: When entering values for filtering you are allowed to use wildcard characters. These are:

- Matches any characters (example: ‘*ember’ would return the following months: September, November and December).

- Matches any single character (example: ‘???ember’ would only return the months November and December).

**Using Prompt Groups**

The default behavior of prompted information links is that each subsequent step lists values based on earlier selections (See **Prompted Information Link Example**). However, if you are working against a STAR schema database the procedure may require multiple joins since the elements queried for the prompts can only be joined by also joining over the large fact table in the STAR schema. This may result in very long times passing between each prompt. To avoid the long prompt times, it may be useful to treat the various elements as independent and avoid filtering upon each prompt step. This can be accomplished by using prompt groups.

- To use prompt groups to make elements independent:

Response: The **Prompt Groups dialog** is displayed.

Comment: All column elements belonging to the same prompt group will depend on each other and, hence, filtering will be performed between each prompt step for these elements. Elements belonging to a different prompt group will be independent of all filtering made within a different prompt group. Note that setting columns or filters as independent may result in no data returned from the information link.

1. **Create a new information link** or **modify an existing link**.

2. In the Information Link tab, go to the Prompts section.

3. Click on **Groups**....

4. For each element, specify a prompt group by clicking on the number to the right of the column name.

5. Save the information link, or **open** it.

Note: By specifying a separate prompt group for an element no previous selections in the prompt steps will be reflected in the listing for this (independent) element. Neither will any of the selections made in the prompt step for the
independent element be reflected in later prompt steps (regardless of whether the later prompt steps are independent or not).

**Adding Procedures**

Procedures are added to an information link in the same way as any other elements such as a column or a filter. You select them from the Elements tree and click Add >. The procedure icon looks like this:

![Procedure Icon](image)

**Priority of Execution:**

You can include column elements, filter elements and procedure elements in the same information link. These will be executed in a certain priority order when the information link is executed:

- All pre-update procedures will execute in top-down order. The procedure is executed before any data is retrieved. No data is expected from the pre-update procedure, and no join is performed. Any prompting will occur in the top-down order.

- All query procedures and column elements will execute in top-down order. The procedures run as a part of the data retrieval. Data from the procedures are joined with the rest of the columns. Any prompting will occur in the top-down order.

- All post-update procedures will execute in top-down order. The procedure is executed after the data has been retrieved. No data are expected from the post-update procedure, and no join is performed. Any prompting will occur in the top-down order.

Note that the order of the elements in the user interface only has significance for the elements of the same "priority class". A pre-update procedure will always execute before a query procedure regardless if that pre-update procedure is placed at the bottom of the list.

**Parameterized Information Links**

Using parameterized information links you can set up a data source to return only information applicable for a certain user or group. Depending on which user is logged in and accesses the information link, or, for example from where the user accesses the information link, different subsets of the data will be available.

The concept is similar to the [personalized information links](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise.Information.Web_for.Semantic.Interoperability_at_DoD/Spotfire.Information.Designer), but more general, and in need of API configurations to work properly. While the parameters are created in Information Designer, their properties and definitions are defined in the API.

A parameterized information link is an information link that contains a number of parameters. In Information Designer, you define these parameters with a name and a type, and can use the parameters when creating various elements in the information link. To be able to open a parameterized information link in Spotfire, the values for these parameters must be provided. How is determined in the API.
Why use parameters?

Parameters can be used if you, for example, wanted to set up the Web Player from an external source. If the Web Player is integrated into a portal or similar, the contents of the analysis can be defined by parameters. The values of these parameters can then be defined by another application in the portal, or by settings the users have applied in other parts of the portal.

Another example is if you wanted to create an analysis file but then be able to easily create different versions of it for different users. You can then set up a template file using parameterized information links, and from that file, and using the API, create different files with different parameter values.

Where can parameters be included?

<table>
<thead>
<tr>
<th>Element Type</th>
<th>Parameterized Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>Column calculation.</td>
</tr>
<tr>
<td></td>
<td>Aggregate column key expression.</td>
</tr>
<tr>
<td></td>
<td>Filter condition.</td>
</tr>
<tr>
<td>Filter</td>
<td>Filter condition.</td>
</tr>
<tr>
<td>Procedure</td>
<td>Input parameter default value.</td>
</tr>
<tr>
<td>Information Link</td>
<td>Static filter.</td>
</tr>
<tr>
<td></td>
<td>Edited SQL (Pre-updates, Query, Post-updates).</td>
</tr>
<tr>
<td>Data Source</td>
<td>Open session commands.</td>
</tr>
<tr>
<td></td>
<td>Close session commands.</td>
</tr>
</tbody>
</table>

Examples:

For filter condition expressions, parameters can be used as the condition for the selected columns.
In the SQL editor, you can set parameters directly.

```
FROM
"Sales"."dbo"."SalesandCost" S1
WHERE
(S1."Sales" > ?MinSales)
```

**Note:** If you alter parameters in the SQL code, the changes will override the parameter settings made elsewhere, such as the filter part of the information link tab.

**Syntax**

The syntax of the naming of the parameterized information links is:

```
?param_name
```

Where "?" indicates that it is a parameter and param_name is the name the parameter is identified by.

**Note:** The parameter name should start with a letter from A-Z or a-z and can contain the following characters: a-z, A-Z, 0-9, _, and ".".

### Editing a Parameter

- To edit a parameter:

  Comment: You may need to click Refresh to be able to see the parameter. Note that if you have edited the SQL of the information link, the altered SQL code overrides the parameters settings in the user interface and a parameter that was added in, for example, the filters section of the information link tab will not be visible.

  1. Make sure the information link of interest is opened on an Information Link tab.

  2. Click Parameters.
3. Select the parameter you want to edit.

4. Click Edit...
   Response: The Edit Parameter dialog is displayed.

5. Change Data type and/or Value type.

6. Click OK.

**Personalized Information Links**

Using personalized information links you can set up a data source to return only information applicable for a certain user or group. Depending on which user is logged in and accesses the information link, different subsets of the data will be available. For example, you could set up an information link that detects whether the user retrieving data is a member of the sales force for Europe, Asia or the US and only return data for that continent.

Below are two examples of personalized information links. The first will retrieve data depending on which user is logged in, the second depending on which groups that user is a member of.

**User Name via Lookup Table**

Scenario: You want to set up an information link to a data table showing sales made by all the sales people in the company. However, depending on which person from the sales department accesses an analysis using this information link, only the sales figures pertaining to that single user should be retrieved.

First, take a look at the Sales table containing the total sales of every person in the sales force.

<table>
<thead>
<tr>
<th>Order ID</th>
<th>Employee ID</th>
<th>Product</th>
<th>Sale ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>101</td>
<td>Cornflakes</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>150</td>
<td>Soda</td>
<td>550</td>
</tr>
<tr>
<td>3</td>
<td>244</td>
<td>Cornflakes</td>
<td>160</td>
</tr>
<tr>
<td>4</td>
<td>101</td>
<td>Mineral water</td>
<td>400</td>
</tr>
<tr>
<td>5</td>
<td>101</td>
<td>Soda</td>
<td>120</td>
</tr>
<tr>
<td>6</td>
<td>339</td>
<td>Mineral water</td>
<td>200</td>
</tr>
</tbody>
</table>
Then you must create a "Lookup Table" on the data source, that matches the **Employee ID** to the **actual Spotfire Username** for each person logging into the TIBCO Spotfire Server.

<table>
<thead>
<tr>
<th>Spotfire Username</th>
<th>Employee ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>mikesmith</td>
<td>101</td>
</tr>
<tr>
<td>lauraclarke</td>
<td>150</td>
</tr>
<tr>
<td>sarahdonovan</td>
<td>244</td>
</tr>
<tr>
<td>malcolmreynolds</td>
<td>339</td>
</tr>
</tbody>
</table>

Next, you create a **Filter** or **Column** element that constrains the "Spotfire Username" column to only return values for the currently logged in user. (In the example below, a new, restricted column element is created by adding the personalized condition as a hard filter on the column element. This is the column element that will be used in the information link.)

An example of the resulting SQL for the user malcolmreynolds would be: "LookupTable"."Spotfire Username" = 'malcolmreynolds'.

Finally, you create a **Join** between the Sales table and the Lookup table—joining the **Employee ID** columns.
Add the restricted column element (or the filter element) to an information link, together with any other columns of interest and save it. The information link is now ready to be used and will only retrieve data for the currently logged in user.

Group Membership

Scenario: You want to set up an information link to a data table showing sales made by all the sales people in the company. However, depending on which person from the sales department accesses an analysis using this information link, only the sales figures pertaining to the region that sales person is assigned to should be retrieved. For example, if a sales person is working in the East region, she should only be allowed to see sales figures made in that region (by any person).

The Spotfire Administrator has created groups on the Spotfire Server named **SalesForce-East**, **SalesForce-West**, **SalesForce-South**, and **SalesForce-North**. Each sales person is a member of one or more of these.

Note: You can also create a Lookup table, just as in the first example, in which you assign various users or groups to categories that match your Sales table. That way you do not need to create superfluous groups on the Spotfire Server if groups with matching names are not already available.

You then take a look at the Sales table containing the total sales of every person in the sales force.

<table>
<thead>
<tr>
<th>Order ID</th>
<th>Employee ID</th>
<th>Region</th>
<th>Product</th>
<th>Sale ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>101</td>
<td>SalesForce-East</td>
<td>Cornflakes</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>150</td>
<td>SalesForce-West</td>
<td>Soda</td>
<td>550</td>
</tr>
<tr>
<td>3</td>
<td>244</td>
<td>SalesForce-North</td>
<td>Cornflakes</td>
<td>160</td>
</tr>
<tr>
<td>4</td>
<td>101</td>
<td>SalesForce-East</td>
<td>Mineral water</td>
<td>400</td>
</tr>
<tr>
<td>5</td>
<td>101</td>
<td>SalesForce-East</td>
<td>Soda</td>
<td>120</td>
</tr>
<tr>
<td>6</td>
<td>339</td>
<td>SalesForce-East</td>
<td>Mineral water</td>
<td>200</td>
</tr>
</tbody>
</table>
Next, you add a Filter or Column element that constrains the "Region" column so that it only returns values if the currently logged in user is a member of a group with that exact name. (In the example below, a new, restricted column element is created by adding the personalized condition as a hard filter on the column element. This is the column element that will be used in the information link.)

An example of the resulting SQL for a user belonging to the SalesForce-East and the SalesForce-North groups would be: "SalesTable"."Region" = ('SalesForce-East','SalesForce-North').

Add the restricted column element (or the filter element) to an information link, together with any other columns of interest and save it. The information link is now ready to be used and will only retrieve data for groups that the currently logged in user is a member of.

Syntax

The syntax for the personalized information link parameters is:

%CURRENT_USER%

and

%CURRENT_GROUPS%

Editing the SQL of an Information Link

Information links are created using the Information Designer. However, sometimes there may be situations where complex SQL queries are needed that cannot be generated by Information Designer and the elements in the information model. An example might be to retrieve information from relational databases or databases with complex schemas, where queries generated by Information Designer are not fast enough and need tuning to reach an acceptable performance. For those purposes the possibility to manipulate the generated SQL of an information link has been introduced.

- To modify the SQL of an information link:

Response: The Edit SQL dialog is displayed.

Comment: Complex information links may contain elements from several different data sources. You can only edit the SQL part of the query that belongs to a single data source at a time. After you have saved your first changes you can switch to another data source to edit the rest of the SQL.
Comment: Use Query to modify the SELECT statement of the information link. Use Pre-Updates or Post-Updates to add new statements or scripts to be run before or after the data retrieval.

Comment: You can compare the changes that you have made in the Modified SQL to the Original SQL at all times. Multiple SQL statements are allowed as long as they are separated with a semicolon and new line (except the last statement in sequence).

Comment: You can use parameters in your SQL statements (and in your Pre- and Post-updates).

**Note:** If you alter parameters in the SQL code, the changes will override the parameter settings made in, for example, the filter part of the information link tab.

Comment: If you change your mind and want to start over with the original SQL, click *Reset to Original*.

1. Make sure the information link of interest is opened on an Information Link tab.
2. Click *SQL*...
3. Select the Data source that you want to work with from the drop-down list.
4. To edit Pre-Updates, Query or Post-Updates, click the corresponding radio button.
5. Edit the SQL statement (or add Pre- or Post-Updates) in the Modified SQL text box.
6. Click OK when you are finished.

**Note:** The modified SQL is not validated before execution. For this reason, you should not:

- alter the name of a column (the AS-part of SELECT xxx AS yyy)
- alter the number of columns returned
- alter the datatype of columns returned
- alter the order of columns returned
- remove `<temporary_result_#>` from the FROM-clause in information links that go against multiple data sources
- remove the trailing WHERE `<conditions>`, as it will be replaced by any conditions applied at runtime

### Selecting Join Path

When you are using columns from more than one table in the same information link you have to specify a join path between all used tables. If multiple joins are created, you can specify which joins will be the default ones. The default joins will be presented in the join path field when the Suggest Joins button is clicked (if they are suitable for the current information link).

However, sometimes you may want to specify a different join path for an information link.
Let’s say the default join path between Table 1 and Table 4 is via Table 3 and the joins TABLE1.ID=TABLE3.ID and TABLE3.NAME=TABLE4.NAME.

![Diagram of tables](image)

For a certain information link this is not what you want, instead you wish to configure the link to join via Table 2 using the joins TABLE1.ID=TABLE2.ID and TABLE2.COST=TABLE4.COST.

This can be done in the Join Path section for the information link by simply selecting the desired joins instead of the suggested ones.

- To Select a Join Path:

Response: The new join is added to the Selected Joins list.

Comment: The Selected Joins will be saved with the information link, and will always be used when retrieving data via the information link.

1. Go to the Join Path section on the information link tab.
2. Select a join from the Joins tree that you wish to use and click Add.
3. Repeat step 2 for any additional joins.
4. Click Save to save the information link.

Note: When executing an information link against several data sources, all subqueries are run first and then the main query, joining all subresults. This means that the joins in the main query are performed after all joins in the subqueries.

### Opening Information Links from Information Designer

Once defined, information links are normally opened by selecting File > Open From > Library.... However, you can also open information links from within Information Designer. This can be useful while creating the information link, or if you need to make some minor adjustments to the original information link.

- To execute an information link from Information Designer:
Comment: You can also right-click in the Elements tree and select Open Data... from the pop-up menu.

Response: The query is executed, and the data is shown in TIBCO Spotfire. If the information link includes prompted filters, one or more dialogs will appear before the data is loaded. See Using Prompts for details.

1. Create a new information link or edit an existing link (see Modifying an Information Link).
2. Click Open Data.

Using Prompts

- To specify filter parameters during retrieval:

Response: The system will begin to retrieve data. For each column with a prompt (see Adding Prompts) a dialog will appear, asking you to specify the filter conditions for this column.

Comment: If you are using the Multiple selection or Single selection prompt methods, then you will find that only values that have not been eliminated by previous filter conditions (in the same prompt group) are shown.

Response: The data is retrieved and displayed in TIBCO Spotfire.

1. Open an information link that contains prompts.
2. Enter the filter conditions that you want to apply.
3. Click Next >, or Finish when you have come to the last column.

Note: Dialogs are displayed in the order the columns appear in the Information Link tab. In other words, the first column for which a prompt has been added will be the first to display a dialog.

Prompted Information Link Example

Information links may include more than one column with prompts. In this case each filter will reduce the data table, so that subsequent prompts may present fewer values. (This can be overridden by using prompt groups.) Consider the following example:

This is the data as it would look if no filters were being applied:

<table>
<thead>
<tr>
<th>Name</th>
<th>Salary</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller</td>
<td>1300</td>
<td>New York</td>
</tr>
</tbody>
</table>

Prompt: None

Range

Multiple selection

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<table>
<thead>
<tr>
<th>Name</th>
<th>Salary</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>King</td>
<td>1400</td>
<td>New York</td>
</tr>
<tr>
<td>Clark</td>
<td>700</td>
<td>New York</td>
</tr>
<tr>
<td>Ford</td>
<td>1100</td>
<td>Dallas</td>
</tr>
<tr>
<td>Adams</td>
<td>900</td>
<td>Dallas</td>
</tr>
<tr>
<td>Scott</td>
<td>1300</td>
<td>Dallas</td>
</tr>
<tr>
<td>Jones</td>
<td>1200</td>
<td>Dallas</td>
</tr>
<tr>
<td>James</td>
<td>800</td>
<td>Chicago</td>
</tr>
<tr>
<td>Turner</td>
<td>1000</td>
<td>Chicago</td>
</tr>
</tbody>
</table>

As the information link is opened, Salary will be filtered first (the order is set in the Information Link tab).

The user enters the limits 1100 to 1300. After the first filter, the following remains:

<table>
<thead>
<tr>
<th>Name</th>
<th>Salary</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller</td>
<td>1300</td>
<td>New York</td>
</tr>
<tr>
<td>Ford</td>
<td>1100</td>
<td>Dallas</td>
</tr>
<tr>
<td>Scott</td>
<td>1300</td>
<td>Dallas</td>
</tr>
</tbody>
</table>
Several rows, including all Chicago employees, have been filtered out. This means that when the Location filter is shown, Chicago will not be presented as an option:

Using Current Filter Settings as a Filter

When opening information links with columns prompted for values (see Adding Prompts) it is possible to use the visual capabilities of TIBCO Spotfire to set these values.

• To use the current visualization for filter definition:

Response: The Column Values dialog is displayed.

Response: The data is loaded and displayed in a visualization.

1. Open a suitable data table in TIBCO Spotfire.
2. Choose a subset either by filtering or by marking rows.
3. Open an information link that contains prompts.
4. When the Open Information Link dialog for the desired column appears, click Get Values....
5. From the Column drop-down list, select the column (in the visualized data table) from which you want to get the values.
6. Click All rows, Filtered rows or Marked rows, depending on which values you want to use.
7. Click OK.
8. In the Open Information Link dialog, click Next > (or Finish if this is the last prompted column).
9. Repeat steps 4 to 8 for each prompted column.

Eliminating Duplicates

Eliminating duplicates means removing all duplicate rows from the returned data table. By duplicates we mean rows where all fields are identical to all fields of another row. Consider the following example:
Before removing duplicates

<table>
<thead>
<tr>
<th>Name</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td>1200</td>
</tr>
<tr>
<td>Jones</td>
<td>700</td>
</tr>
<tr>
<td>Banks</td>
<td>700</td>
</tr>
<tr>
<td>Smith</td>
<td>1200</td>
</tr>
<tr>
<td>Smith</td>
<td>900</td>
</tr>
</tbody>
</table>

After removing duplicates

<table>
<thead>
<tr>
<th>Name</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td>1200</td>
</tr>
<tr>
<td>Jones</td>
<td>700</td>
</tr>
<tr>
<td>Banks</td>
<td>700</td>
</tr>
<tr>
<td>Smith</td>
<td>900</td>
</tr>
</tbody>
</table>

• To eliminate duplicates:

Response: Duplicate rows will be removed from the data table returned by this information link when it is opened.

1. Create a new information link or edit an existing link (see Modifying an Information Link).
2. In the Information Link tab, go to the Conditioning section.
3. Click Distinct.
4. Open or save the information link.

**Pivoting Data in Information Designer**

Pivoting is a method of rearranging rows into columns. This flexibility allows you to rotate row and column headings around the core data. In general, pivoting is used to be able to carry out visual analyses on data that originally reside in a tall/skinny format. Pivoting may also be used to create more filters in the filters panel by splitting a column into several other columns.

• To pivot data:

Response: The Pivot Conditioning dialog opens.

Comment: Each unique value in the chosen identity column produces a row in the generated table.
Comment: Each unique value in the chosen category column produces a new column in the generated table.

Comment: The column from which the data is pulled. The values in the generated table are computed according to the method selected under Aggregation method in the Add Column dialog.

Response: The Pivot dialog is closed.

Response: The data will be pivoted when the information link is opened.

1. Create a new information link or edit an existing link (see Modifying an Information Link).

2. In the Information Link tab, go to the Conditioning section.

3. Select Pivot as conditioning type.

4. Click Edit....

5. In the Identity section, click Add... to select the columns that you want to use to identify rows.

6. In the Category section, click Add... to select the columns that you want to use for generating new columns in the new table.

7. In the Values section, click Add... to select the column that you want to aggregate.

8. Type a Column name expression to use for naming the pivoted columns.

9. In the Other columns section, click Add... to select any other columns that you want to include in the new table.

10. Click OK.

11. Open or save the information link.

**Example of Pivoting in Information Designer**

Pivoting a data table means changing it from a tall/skinny format to a short/wide format. Consider the following tall/skinny table, based on a series of temperature measurements:

<table>
<thead>
<tr>
<th>City</th>
<th>Month</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>February</td>
<td>4</td>
</tr>
<tr>
<td>New York</td>
<td>February</td>
<td>6</td>
</tr>
</tbody>
</table>
As we add more observations, the table grows taller, but remains three columns wide. While useful during data collection, this format may not be appropriate for certain types of calculations or visualizations. For example, the entities that interest us are the different cities, so we may want a representation with a single row for each city.

Pivoting this table produces the following (note that avg(Temp) is the average of a single cell):

<table>
<thead>
<tr>
<th>City</th>
<th>avg(Temp) for February</th>
<th>avg(Temp) for May</th>
<th>avg(Temp) for August</th>
<th>avg(Temp) for November</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>4</td>
<td>16</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>New York</td>
<td>6</td>
<td>19</td>
<td>26</td>
<td>11</td>
</tr>
</tbody>
</table>

Each city is now represented by a single row. The following steps have been performed during the pivoting:

- A row has been created for each unique value in City.
- A column has been created for each unique value in Month.
- A value from Temp has been entered for each cell in the resulting grid.

The following settings were made in the Pivot Conditioning dialog to produce this result:
Example of Pivoting with Aggregation in Information Designer

Note: To understand this example, it is recommended to read Example of Pivoting first.

Apart from changing format from tall/skinny to short/wide, pivoting can be used to create a more compact table. Consider the following table, based on a series of temperature measurements:

<table>
<thead>
<tr>
<th>City</th>
<th>Month</th>
<th>Day</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>February</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>London</td>
<td>February</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>London</td>
<td>May</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>London</td>
<td>May</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>New York</td>
<td>February</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>New York</td>
<td>February</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>New York</td>
<td>May</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>New York</td>
<td>May</td>
<td>15</td>
<td>24</td>
</tr>
</tbody>
</table>

Tall/Skinny=>Short/Wide conversion lets us pivot and aggregate this table, producing the following:

<table>
<thead>
<tr>
<th>City</th>
<th>avg(Temp) for February</th>
<th>avg(Temp) for May</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>City</th>
<th>Temp</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>6.5</td>
<td>18.5</td>
</tr>
<tr>
<td>New York</td>
<td>8</td>
<td>21</td>
</tr>
</tbody>
</table>

A smaller table has been created, summarizing the original table. The following settings were made in the Pivot Conditioning dialog to produce this result:

- Identity: City
- Category: Month
- Values: Temp

Data Sources Overview

Data sources are the physical units from which data can be retrieved, usually databases. Connecting to a database requires technical know-how not always found among end users. Therefore, Information Designer lets the administrator make all the required settings in advance, including database name, username, password, etc. This information becomes part of elements and items in the library so that when an end user executes an information link, the connection to any required databases can be established automatically and invisibly.

User authentication to the data source can be made in two ways. The first way is to set up the authentication while creating the data source connection. In this case, all users connect with the same credentials. This is a simple way to authenticate users when everyone has the same permissions to the data source. Further limitation of the access to a data source can be applied by placing the data source within a folder with limited permissions for some users or groups. For more information, see Setting Folder Permissions.

The other way is to require authentication each time a connection is used. This is useful when a more detailed security model is required. Using user authentication, row level security can be obtained. The credentials can either be supplied by the user or by a plug-in when running an information link against this data source. A plug-in minimizes the number of times one has to log into the TIBCO Spotfire environment, leaving it up to the plug-in to deliver the data source credentials. Without a plug-in, users will have to supply their data source credentials in a prompt. Credentials can be cached in the data source so that users are prompted only once for each session.

The layout and handling of the data sources affect most other actions involving the creation of information links. Therefore, it is most valuable to do a proper planning before starting to work on the layout. Modifications to the data sources after the structure has been set up in the library and information links have been defined will probably mean that some manual work is needed to make sure all information links are still functional.
Creating a Data Source

• To create a new data source:

Response: A Data Source tab is displayed.

Response: If this option is selected, authentication is required when accessing this connection, either by the user or by a plug-in. If not selected, the credentials supplied above will be used for all users. Even if user authentication is selected, Username and Password must be supplied since they are used by Information Designer.

1. On the Start tab, click Setup Data Source.
2. In the Name field, type the name of the new data source.
3. Specify the Type of the data source.
4. Modify the Connection URL.
5. Type a Username and Password that gives access to the data source.
6. Select whether a user must be authenticated when accessing the data source.
7. Enter any additional configuration settings.
8. Click Save.

Note: If you are connecting to a non-writable data source (for example, SAS/SHARE or ODBC) you must clear the Allow writing in temporary tables check box.

Note: For SAS/SHARE and ODBC data sources, both Min and Max No of connections should be set to 0 in order to disable connection pooling. The same holds for other data sources that do not support pooled connection since there is no valid ping command.

Modifying a Data Source

• To modify an existing data source:

Response: The data source settings are shown in a new Data Source tab.

Response: The data source is updated.

1. In the Data Sources tree or in the Elements tree, double-click on the data source you wish to edit.
2. Change any fields.
3. Click Save.
Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\*?:<>|

Old information models with data source names containing these characters can be imported. However, you cannot edit and resave data sources using their old names if they contain forbidden characters.

**Removing a Data Source**

- To remove a reference to a database:

  Response: A dialog appears, prompting you to confirm that you want to delete the data source.

  1. In the Data Sources tree, right-click on the data source you wish to delete.
  2. Select Delete from the pop-up menu.

**Creating a Table Alias in Information Designer**

You can create a duplicate reference to a database table from Information Designer. This duplicate is called a Table Alias, and references the very same data, only using an alias. This can be useful in certain cases, most often when in need of a self join within a table (below).

- To create a table alias:

  Response: A table alias of the table is created.

  1. Select a table on the Data Sources tab.
  2. Right-click the table and select **Create Table Alias**.
  3. Type a name for the table alias and click **OK**.

**Self Joins**

A self join is a join from a table to itself. In Information Designer this is implemented by using a table alias.

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Manager</th>
</tr>
</thead>
</table>

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The above database table lists a number of employees at a company, and specifies who the manager of each employee is. Carla is the head of the department. Mike and Adrian report directly to Carla, whereas Sarah and Vincent report to Mike.

In order to produce a list where the ID stated in the Manager column is replaced by a name (see below), we would need a **self join** in the table. The table needs to look up the ID column in itself.

<table>
<thead>
<tr>
<th>Name</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarah</td>
<td>Mike</td>
</tr>
<tr>
<td>Mike</td>
<td>Carla</td>
</tr>
<tr>
<td>Carla</td>
<td></td>
</tr>
<tr>
<td>Vincent</td>
<td>Mike</td>
</tr>
<tr>
<td>Adrian</td>
<td>Carla</td>
</tr>
</tbody>
</table>

This is done by first creating a Table Alias of the table, and then creating a **join** between the table and its alias:

WHERE TABLE.ID=TABLE_ALIAS1.MANAGER
Folders are used to organize information links and other elements such as filters, columns and joins in the library. The hierarchical structure of the folders can be seen in the Elements tab of Information Designer, and they have the same collapsible and expandable behavior as folders in any tree structure. The folder structure in the library is independent of the physical location of data, so it is possible to combine elements from several different data sources in one folder.

A folder may contain other folders. For example, a department may have a folder, within which each research group has its own subfolder. If you have administrative rights, you can control which users have access to specific folders.

Folder permissions can be changed directly in the Information Designer by editing each folder, or by using the Library Administration tool. With TIBCO Spotfire 3.0 and forward it is also possible to place data sources within folders and, hence, control which users should have access to a certain data source through its folder permissions.

The export and import of folders and their content is handled by the Library Administration tool.

Creating a New Folder in Information Designer

To be able to save column and filter elements, you must first create a folder in the library. This can be done either in Information Designer or by using the Library Administration tool.

- To create a new folder in Information Designer:

Response: The New Folder dialog is displayed.

Response: The folder is added to the library.

Comment: If you want to change the permissions for the new folder, follow the instructions under Setting Folder Permissions.

1. Click New and select Folder.
2. In the Name field, type the name of the new folder.
3. In the Description field, type your own description of this folder (optional).
4. If desired, you can add Keywords to help locate the folder when searching in the library.
5. Click OK.

Setting Folder Permissions
Access rights to different data sources, elements and information links in the library are specified on a folder level. If you have administrator rights, you can give users or groups which have been set up using the Administration Manager tool different levels of access to your folders. The available levels of permission are described here. The folder permissions can also be changed in the Library Administration tool.

- To set permissions for a folder in Information Designer:

Response: The Library Folder Permissions dialog is displayed.

Response: When the check box is cleared, the fields displaying the available groups and the different levels of permission become available. The previously inherited permissions are shown to give you a template to start working from.

Comment: To remove a user or group from a permission level, select it and click the < button for that permission level.

Response: The folder will be updated with the new permissions.

1. Create a new folder or edit an existing one.

2. In the Elements tree, right-click on the folder of interest.

3. Select Folder Permissions... from the pop-up menu.

4. Select whether or not you want the folder to Inherit permissions from parent folder by selecting or clearing the check box.
   If you choose to inherit permissions then you cannot specify any more details. Click OK and you are done.
   If you choose to set explicit permissions then proceed to the next step.

5. Use the drop-down list below the search field to select whether to Search users, Search groups or Search users/groups.

6. In the search field, type a search expression to display users or groups of interest and click Search.
   Tip: You can use wild cards, or asterisks (*), to simplify the search. For example, use * to display all users and groups, or append it to a word to display all users and groups beginning with that word. Example: Group4* will find Group41, Group421 and so on.

7. Click to select the appropriate users or groups in the list and then click the > button of the permission level they should receive.

8. Repeat steps 5 through 7 until you have added all the users and groups to the permission levels you want.

9. Once you have selected the users or groups of interest, click OK.

Note: What licenses are enabled for a certain user or group can also limit the functionality available for that user or group. See Description of the Licenses for more information.
Editing a Folder

• To change the name and description of a folder:

Response: A pop-up menu is displayed.

Response: The Edit Properties dialog is opened with the information for the selected folder.

1. In the Elements tree, right-click on the folder that you want to edit.

2. Select Edit Properties... from the pop-up menu.

3. Modify the desired fields.

4. Click OK.

Note: You can only edit the properties of folders where you have sufficient permissions.

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\"?:<>|

Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

Deleting a Folder

• To delete a folder and all its contents:

Response: A pop-up menu is displayed.

Response: The folder and all its content are deleted from the library.

1. In the Elements tree, right-click on the folder that you want to delete.

2. Select Delete from the pop-up menu.

Note: You can only delete folders to which you have sufficient permissions.

Moving a Folder

• To move a folder and all its contents:

Response: The folder and all its contents are moved to the new location.

1. In the Elements tree, drag the folder you wish to move and drop it on a different folder.
Joins Overview

Joins are used to define how rows in different tables relate to one another. Normally an identifier column in one table maps to a similar column in another table. This allows information links to draw values from two or more different tables. When column elements from two or more data tables are to be retrieved within the same information link you must always include a join path at the creation of the information link. Joins can also be set up between tables in different data sources.

In the Elements tree, joins are represented by this icon:

From a technical point of view, join elements can be placed anywhere in the tree structure. The Suggest Joins button on the Information Link tab helps you to find suitable joins for the currently used elements. However, you might want to place joins where they can easily be found. Just like filter and column elements, join elements are under permission control. This means that you must make sure that the folder where the joins are located is accessible to all users and groups that need to create their own information links.

Creating a Join in Information Designer

If you want to combine columns from two disparate data sources, for example if one field is in a different table than the rest of the information, you need to create a join between two tables.

- To create a join:
  
  Response: A Join Element tab is opened.

  Response: The selected column is added to the Source columns list on the Join Element tab.

Comment: There are two basic types of joins that can be done between tables: inner joins and outer joins. An inner join will return rows for which only the matching fields in both tables are equal. An outer join will return all the rows (including NULL values) from one table, and only the matching rows from the other table. If none of the default join options is suitable for your purposes, use the Freehand Join option to specify the join conditions manually.

Comment: This is necessary when more than two tables are involved in defining the join. See also Freehand joins.

Response: The join is added to the library and can be seen in the selected folder in the Elements tree.

1. Click New and select Join.

2. In the Data Sources tree, select the first column to include in the join operation.

3. Click Add >.

4. Select the second column to include in the join operation.
5. Click Add >.

6. Optionally, repeat steps 4 and 5 for any additional columns to be included in the join.

7. Select a join operator from the Condition drop-down list, to specify how the two tables should be joined.

8. Select the Target tables using the two drop-down lists.

9. In the Description field, type your own description of the join.

10. Sometimes you may want to create more than one join between the same two tables. In such a situation, you may want to make one of the joins a default join that most information links should use. The default join is displayed when clicking on the Suggested Joins button in the Information Link Join Path field. If you want the join you are currently creating to be the default one, select the check box Default join.

11. Click Save or Save As... to specify the name and the folder to save the join in.

**Freehand Joins in Information Designer**

In many situations, a join can be defined using one of the operators in the Condition drop-down list. However, it may sometimes be desirable to use more complex conditions, such as:

- \( %1 = 2 \times %2 \) (mathematical calculation prior to comparison)
- \( %1 = %3 \text{ AND } %4 = %2 \) (an intermediate table used to set up the join)

In the latter case, it is important to select which tables to join - the tables in which \( %1 \) and \( %2 \) occur. The other columns included in the join condition, \( %3 \) and \( %4 \), are found in an intermediate table. No join is created between this table and the other two.

**Example:**

In the following tables, we want to create a join that links T1 and T3. In this way, we will be able to query the database for, say, the address of the person who earns 1400. To achieve this, T2 is used as intermediate table. The tables T1 and T3 should be selected from the Target tables’ drop-down lists (see *Creating a Join*). The join, again, is defined as:

\( %1 = %3 \text{ AND } %4 = %2 \)

<table>
<thead>
<tr>
<th>T1</th>
<th></th>
<th>T2</th>
<th></th>
<th>T3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name (%1)</td>
<td></td>
<td>Name (%3)</td>
<td></td>
<td>Number (%2)</td>
</tr>
<tr>
<td></td>
<td>Salary</td>
<td></td>
<td>Number (%4)</td>
<td></td>
<td>Address</td>
</tr>
<tr>
<td>John</td>
<td>1000</td>
<td>John</td>
<td>1</td>
<td>1</td>
<td>Boston</td>
</tr>
</tbody>
</table>
Editing a Join in Information Designer

- To edit a join:

Response: The join is displayed in a Join Element Tab.

1. In the Elements tree, double-click on the join that you want to edit.

2. Modify the desired fields.

3. Click Save or Save As....

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\"?:<>|

Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

Deleting a Join in Information Designer

- To delete a join:

Response: A pop-up menu is displayed.

Response: The join is deleted from the information model and its icon is removed from the Elements tree.

1. In the Elements tree, right-click on the join that you want to delete.

2. Select Delete from the pop-up menu.

Creating a Table Alias in Information Designer

You can create a duplicate reference to a database table from Information Designer. This duplicate is called a Table Alias, and references the very same data, only using an alias. This can be useful in certain cases, most often when in need of a self join within a table (below).
• To create a table alias:

Response: A table alias of the table is created.

1. Select a table on the Data Sources tab.

2. Right-click the table and select Create Table Alias.

3. Type a name for the table alias and click OK.

Self Joins

A self join is a join from a table to itself. In Information Designer this is implemented by using a table alias.

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sarah</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Mike</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Carla</td>
<td>Null</td>
</tr>
<tr>
<td>4</td>
<td>Vincent</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Adrian</td>
<td>3</td>
</tr>
</tbody>
</table>

The above database table lists a number of employees at a company, and specifies who the manager of each employee is. Carla is the head of the department. Mike and Adrian report directly to Carla, whereas Sarah and Vincent report to Mike.

In order to produce a list where the ID stated in the Manager column is replaced by a name (see below), we would need a self join in the table. The table needs to look up the ID column in itself.

<table>
<thead>
<tr>
<th>Name</th>
<th>Manager</th>
</tr>
</thead>
</table>
This is done by first creating a Table Alias of the table, and then creating a join between the table and its alias:

WHERE TABLE.ID=TABLE_ALIAS1.MANAGER

Column Elements Overview

Column elements in an information link may refer to multiple tables in different databases. However, with Information Designer, columns are represented as if they were located in the same spreadsheet, regardless of the physical location of the data.

In a TIBCO Spotfire context, columns are entities that can be assigned to the axes of a visualization. For example, data from a fruit company may include fruit type, sales and cost:

```
Type     Sales  Cost
Bananas  12     10
Apples   21     13
Pears    28
```

All information in a relational database is represented explicitly as values in tables, composed of rows (records) and columns (fields).

Column elements created in Information Designer can be based on several database columns. For example, a column element can be calculated as the sum of the values in two different columns. The underlying columns can reside in the same database table, in different tables, or even on different databases.

Columns can be defined with built-in column filters that are automatically applied when the column is retrieved. You can also add a personalized or a parameterized column filter condition that limits data depending on the currently logged in user, see Personalized Information Links and Parameterized Information Links. Columns can also be set up to include aggregated data.
In the Information Designer, columns are represented by these icons:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="https://example.com/image1.png" alt="Image" /></td>
<td>Real, SingleReal or Currency column</td>
</tr>
<tr>
<td><img src="https://example.com/image2.png" alt="Image" /></td>
<td>Integer or LongInteger column</td>
</tr>
<tr>
<td><img src="https://example.com/image3.png" alt="Image" /></td>
<td>String column</td>
</tr>
<tr>
<td><img src="https://example.com/image4.png" alt="Image" /></td>
<td>Boolean column</td>
</tr>
<tr>
<td><img src="https://example.com/image5.png" alt="Image" /></td>
<td>Date column</td>
</tr>
<tr>
<td><img src="https://example.com/image6.png" alt="Image" /></td>
<td>DateTime column</td>
</tr>
<tr>
<td><img src="https://example.com/image7.png" alt="Image" /></td>
<td>Time column</td>
</tr>
<tr>
<td><img src="https://example.com/image8.png" alt="Image" /></td>
<td>BLOB (binary large object) column</td>
</tr>
<tr>
<td><img src="https://example.com/image9.png" alt="Image" /></td>
<td>CLOB (character large object) column</td>
</tr>
<tr>
<td><img src="https://example.com/image10.png" alt="Image" /></td>
<td>Unknown column (in the Data Sources tree only). Must be set manually to one of the accepted column types (above) before it can be saved as a column element.</td>
</tr>
</tbody>
</table>

**Creating a Column Element in Information Designer**

- To add a column:

  Response: A Column Element tab is opened.

  Response: The selected element is added to the Source columns list on the Column Element tab.

  Comment: Repeat this step if you need to include more data to calculate your column element.

  Comment: For instance, if you have added two numerical columns you could calculate the sum by entering "%1+%2". [More](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)
Comment: It is recommended that you use conversion functions for mapping columns. See notes below.

Response: The column is saved in the library and is shown with an icon denoting its type in the Elements tree.

1. Click New and select Column.

2. In the Data Sources tree, select the column (leaf node) that you want to include.

3. Click Add >.

4. If you want the column to be calculated, type the expression in the Expression field.

5. Select the Data type of the column element.

6. In the Description field, type your own description of the column.

7. In the Filter section, click

   to show the filtering controls. More

8. In the Aggregation section, click

   to show the aggregation controls. More

9. In the Properties section, click

   to show the column properties controls. More

10. Click Save.

Note: If the column in the database is of the type Real, and you want to create a column element of the type Integer, then set the Data type (step 5 above) to Integer. Similarly, if the column in the database is of the type Unknown, you must manually choose an appropriate type before the column can be saved. It is also strongly recommended that you use a conversion function (for example ROUND) in the Expression field (step 4 above). Look for descriptions of available conversion functions in the manual for your database.

Creating Multiple Column Elements in Information Designer

The Multiple Columns tab can be used if you want to create many column elements in one operation.

Note: Whole databases and schemas cannot be added, only columns and tables are available.

- To add multiple columns to the information model:

Response: A Multiple Column Elements tab is opened.
Response: The selected column is added to the Source columns list. If a table was selected, all columns in the table will be added to the list on the Multiple Column Element tab.

Comment: Repeat this step if you want to include more data columns.

Comment: This step is not necessary unless you want to change the name or description of the element.

Comment: The description is metadata on the column which can be used in search expressions inside TIBCO Spotfire.

Response: The Create Multiple Columns dialog is displayed.

Response: The columns are stored in the specified folder in the library. Columns of type Unknown will be mapped to the data type String when they are added through the Multiple Columns tab. The data type can be changed later by editing each column element.

1. Click New and select **Multiple Columns**.
2. In the Data Sources tree, select the column (leaf node) or table that you want to include.
3. Click Add >.
4. Click on an element in the Source columns list and change its name by typing in the **Column element name** field (or go to step 8 to add the columns using the default settings).
5. If desired, change the description of each column element.
6. Click Create Columns....
7. Click to select the folder where you wish to store the column elements.
8. Click Create Columns.

**Editing a Column in Information Designer**

- To edit a column:

Response: A Column Element tab is displayed.

Comment: Use Save As... if you want to keep the old column definition unchanged.

1. In the Elements tree, double-click on the column element you wish to edit.
2. Modify the desired fields.
3. Click Save to save/update the column, or click Save As... to create a copy.

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\"?:<>|
Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

Deleting a Column in Information Designer

- To delete a column:
  
  Response: A pop-up menu is displayed.

  Response: The column is deleted from the information model.

  1. In the Elements tree, right-click on the column element you wish to delete.

  2. Select Delete from the pop-up menu.

Calculating a Column in Information Designer

- To calculate a column:

  1. Start by adding at least one column from the Data Sources tree.

  2. If you want a column to be calculated, type an expression in the Expression field, for example %1+%2, or AVG(%1).

  3. Click on

     next to the respective section to access functions for aggregating data, or for creating a built-in filter.

  4. If desired, type a Description.

  5. Click Save or Save As....

Defining a Column Filter in Information Designer

Column filters are automatically applied when the column is retrieved. Such filters, unlike filters that are defined and saved as separate elements (filter elements), cannot be disabled by the user.

Column filters are defined while the column element is being created. The following steps should be taken in addition to what is described in Creating a Column Element.

- To define a column filter:

  Comment: Repeat this step if you need to include more columns in your filter expression.

  Comment: To combine conditions, use the AND or OR operators, for example %1>2000 AND %2<1000.
Comment: You can also add a personalized filter expression that limits data depending on the currently logged in user. See Personalized Information Links for more information.

Comment: You can also add a parameterized filter expression. See Parameterized Information Links for more information.

1. In the Filter section, click
   ![Filter button](image)
to show the filtering controls.

2. In the Data Sources tree, select a column and then click the Add > button to add the column to use in the filter expression.

3. In the Expression field, define a filter condition based on the chosen column or columns. For example, %1<2000, or if you are using two columns, %1<%2.

4. Write a clear description of how the column is filtered. This is important, since the user will not be able to disable the filter when using this column element.

Note: When an information link is executed, aggregation is always applied before the filter.

**Date and Time Columns in Information Designer**

A data source may provide date and time information as DATE columns. This format can be mapped to a DATE, a TIME or a DATETIME data type when a column element is created in Information Designer (see Creating a Column Element).

- To find the number of days between two DATE columns:

Comment: By selecting only one column, you can also find the elapsed number of days from today, using the expression `sysdate - %1` if you are running against an Oracle data source.

1. From the Data Sources tree, select two columns of type DATE.

2. In the Expression field, type the expression `%1 - %2`.

3. Set the Data type to Integer.

4. To generate a Spotfire Date column from a DATE column:

1. From the Data Sources tree, select a column of type DATE.

2. Set the Data type to Date.

Note: Any SQL arithmetic expression may be entered into the Expression field. However, you need to make sure to use the correct syntax since no validation will be performed. Also note that different databases may have different syntaxes.
Using Aggregation in Information Designer

- To calculate average values:

Comment: AVG is the average function. You can find more aggregate functions [here](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo).

Response: The resulting column will consist of the average of the value column, for each value in the group by column. Using the example columns above it would be a column containing the average sales for each type of product.

1. Click New and select Column.

2. Click to select a value column in the Data Sources tree, for example a Sales column.

3. Click the topmost Add > button.

4. In the Expression field, type:

   \[
   \text{AVG}(%1)
   \]

5. Click

   ![Check box](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)

   next to Group By to show the controls determining over which column the aggregation will be made.

6. Click New to add an empty group by expression.

7. Click to select the column to group by in the Data Sources tree, for example a Type column.

8. Click Add > in the Group By Settings section.

9. Click Save.

Tip: Rather than hard coding the columns to aggregate over, you may consider marking the column as Drillable. The column will then be aggregated over any other columns retrieved in the same information link. [More...](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)

Note: When an information link is executed, aggregation is always applied before a column filter.

### Aggregating Over Many Columns in Information Designer

There may be situations where it is necessary to use more than one column to group by when an aggregated column is calculated. In the following table, for example, we can compare the salary of each employee with the average salary of employees at the same department and job.
To produce this table, we must define the Average Salary column with two group by expressions: Job and Department.

- To use multiple group by expressions:

Comment: AVG is the average function. You can find more aggregate functions here.

Response: The resulting column will consist of the average of the value column, for each value in the group by columns.

1. Select a value column from the Data Sources tree, for example Salary.
2. Click the topmost Add > button.
3. In the Expression field, type:

   \[
   \text{AVG}(\%1)\n   \]
4. In the Group By section, click
   
   to show the group by controls.
5. Click New to add a new Group by expression.
6. From Data Sources, select the first column to group by (for example Job).
7. Click Add > in the Settings field.
8. Click New to add a second Group by expression.
9. Select the second column to group by (for example Department).
10. Click Add >.
11. Click Save.
Note: It would not have been possible to produce the table above using the Drillable option. If the Average Salary column element had been drillable, it would have appeared identical to the Salary column, since the Employee Name and Salary columns would also have been used to group by.

**Using Drillable**

When creating an aggregated column, it is possible to specify group by expressions determining over which categories the aggregation should be made. This is done from the Column Element tab, in the Group By section.

It is also possible to ignore the Group By settings, by selecting the Drillable check box. This way the column will always be aggregated over all other columns being retrieved in the same information link. The following table illustrates this. *Average Salary Drillable* is calculated using the AVG function. No group by expressions have been specified, and instead the Drillable check box has been selected.

<table>
<thead>
<tr>
<th>Job</th>
<th>Average Salary Drillable</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANALYST</td>
<td>3000.00</td>
</tr>
<tr>
<td>CLERK</td>
<td>1037.50</td>
</tr>
<tr>
<td>MANAGER</td>
<td>2758.33</td>
</tr>
<tr>
<td>PRESIDENT</td>
<td>5000.00</td>
</tr>
<tr>
<td>SALESMAN</td>
<td>1400.00</td>
</tr>
</tbody>
</table>

As we see above, the average salary is computed for each value in Job. We could just as well have defined a salary column *explicitly* aggregated over Job. However, by using the Drillable option, we can now retrieve a different set of columns and still get a useful answer:

<table>
<thead>
<tr>
<th>Job</th>
<th>Department</th>
<th>Average Salary Drillable</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANALYST</td>
<td>RESEARCH</td>
<td>3000.00</td>
</tr>
<tr>
<td>CLERK</td>
<td>ACCOUNTING</td>
<td>1300.00</td>
</tr>
<tr>
<td>CLERK</td>
<td>RESEARCH</td>
<td>950.00</td>
</tr>
<tr>
<td>CLERK</td>
<td>SALES</td>
<td>950.00</td>
</tr>
<tr>
<td>MANAGER</td>
<td>ACCOUNTING</td>
<td>2450.00</td>
</tr>
<tr>
<td>MANAGER</td>
<td>RESEARCH</td>
<td>2975.00</td>
</tr>
<tr>
<td>MANAGER</td>
<td>SALES</td>
<td>2850.00</td>
</tr>
<tr>
<td>PRESIDENT</td>
<td>ACCOUNTING</td>
<td>5000.00</td>
</tr>
<tr>
<td>SALESMAN</td>
<td>SALES</td>
<td>1400.00</td>
</tr>
</tbody>
</table>

In this table, the Average Salary Drillable column displays the average salary for the clerks from each department instead of a combined value for all clerks.

**Filter Elements Overview**

Filters are conditions that limit the amount of data returned by an information link. For example, a filter could set the conditions "X > 10 AND Y < 100". There are three ways of filtering data when working with information links:
Filter elements appear in the Elements tree of Information Designer. They can be added to any information link, just like column elements. See [Creating an information link](#) to find out how to include a filter element.

Hard filters are set up as you define the information link, and are saved with the link. This means that they cannot be reused in other links. Also, hard filters can only specify a range or a list of values, and so are less versatile than filter elements. See [Adding Hard Filters](#) for more details.

Prompts are also set up when you create an information link. However, the actual conditions are entered by the person running the information link only when the link is opened (executed). For each column that has been set up like this, a dialog will appear allowing the user to enter threshold values or select individual values. See [Adding Prompts](#) for more details.

Filters correspond to the WHERE clauses in SQL, and are used to specify that only certain rows of a table shall be retrieved from the data source, based on the criteria described in the filtering condition.

Filter elements can be applied as required by the person creating information links. In the Elements tree, they are represented by this icon:

![Filter Icon](#)

### Creating a Filter Element

This topic describes how to create filters as separate elements. These can be applied as required by the person creating information links. See [Defining a Column Filter](#) for information on how to add a filter as part of a column definition.

- To create a filter:

  Response: A [Filter Element tab](#) is opened.

  Response: The selected column is added to the Source columns list on the Filter Element tab.

  Comment: Repeat this step if you need to include more columns in your filter expression.

  Comment: You can also add a personalized filter expression that limits data depending on the currently logged in user. See [Personalized Information Links](#) for more information.

  Comment: You can also add a parameterized filter expression. See [Parameterized Information Links](#) for more information.

  Response: The Save As dialog is displayed.
Response: The filter element is saved in the library.

1. Click New and select Filter.

2. In the Data Sources tree, select the column to use in the filter condition.

3. Click Add >.

4. Define a filter expression with the chosen columns, for example %1>=2000, or if you are using two columns, %1<%2. See Relational Operators for more information on defining expressions.

5. In the Description field, type your own description of the filter.

6. Click Save.

7. Click to select the folder where you wish to save the filter element.

8. Click Save.

Editing a Filter in Information Designer

• To edit a filter element:

Response: The name of the filter and filter conditions are shown on a Filter Element tab and enabled for editing.

1. In the Elements tree, double-click on the filter that you want to edit.

2. Modify the desired fields.

3. Click Save or Save As....

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\*?:<>|.

Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

Deleting a Filter in Information Designer

• To delete a filter:

Response: A pop-up menu is displayed.

Response: The filter is deleted from the library.

1. In the Elements tree, right-click on the filter that you want to delete.

2. Select Delete from the pop-up menu.
Relational Operators

The following operators can be used in filters:

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td>Equal</td>
</tr>
<tr>
<td>&lt;&gt; or !=</td>
<td>Not Equal</td>
</tr>
<tr>
<td>&lt;</td>
<td>Less Than</td>
</tr>
<tr>
<td>&gt;</td>
<td>Greater Than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
</tr>
</tbody>
</table>

- Generally, with text columns, it is best to use = or !=.
- Make sure that any text that appears in the statement is surrounded by single quotes (').
- To combine multiple conditions, use the AND or OR operators, for example %1>2000 AND %2<1000.

Procedures Overview

Database Procedures

A database procedure is a set of SQL statements that can be stored in the database. Once this has been done, clients do not need to keep reissuing the individual statements but can refer to the database procedure instead.

Database procedures can be useful in many situations:

- When multiple client applications are written in different languages or work on different platforms, but need to perform the same database operations.
- Some institutes, like banks, where security is important, use database procedures for all common operations. This provides a consistent and secure environment, and procedures can ensure that each operation is properly logged. In such a setup, applications and users would not get any access to the database tables directly, but can only execute specific database procedures.
Database procedures can provide improved performance because less information needs to be sent between the server and the client. However, this increases the load on the database server system because more of the work is done on the server side and less is done on the client (application) side. Take this into consideration if many client machines (such as Web servers) are serviced by only one or a few database servers.

Database procedures also allow you to have libraries of functions in the database server. This is a feature shared by modern application languages that allow such design internally, for example, by using classes.

Database Procedures in Information Designer

Using Information Designer you select pre-made database procedures and configure these to be accessible in information links. These information links are available to the TIBCO Spotfire users to retrieve or manipulate data.

In Information Designer you select a database procedure from your available data sources, and define which input parameters that the procedure should prompt for, and any potential resulting columns and joins.

Then you configure a complete information link with one or more combinations of procedures and columns from other tables.

The Three Kinds of Procedures

Information Designer defines three kinds of procedures:

- Pre-update procedure - this procedure does not return any data, it only performs an operation on one or more databases. All pre-update procedures in an information link will always be executed before any query procedure.

- Query procedure - just like a database table, this procedure returns data.

- Post-update procedure - this procedure does not return any data, it only performs an operation on one or more databases. All post-update procedures in an information link will always be executed after any query procedure.

Note: If using Oracle stored procedures that return data, Information Designer only support procedures that return data of the type REF CURSOR (also known as Table Function).

Creating a Pre- or Post-procedure

- To Create a Pre-update or Post-update procedure:

Response: A Procedure Element tab is opened.

Response: The database procedure is added to the tab. Information Designer analyzes the database procedure and makes a guess as to whether it is a pre-update procedure or a query procedure (it never sets post-procedure by default).
Comment: Pre-update procedures are always executed first in an information link. Post-update procedures are always executed last in an information link.

Comment: Type ?param_name to use a parameter as the default value, where param_name is the name to identify the parameter by. Note: If you use a parameter for the default value, you must choose Prompt: None. See Parameterized Information Links for more information.

Comment: If you select multiple values, the end user will be allowed to enter several values. The procedure will run once for each of these values in an iterative loop. For more information, see Multiple Value Procedure Prompts.

Example 1: Type a Default value and set prompt to None. This means that the specified default value will always be used as input parameter.
Example 2: Leave Default value empty, select Permit Null and Single value prompt. This will cause the end user to be prompted for a value. If the end user does not enter a value in the prompt, Null will be used.
Example 3: Leave Default value empty, leave Permit Null empty and Single value prompt. This will cause the end user to be prompted for a value. If the end user does not enter a value in the prompt, an error message will appear since Null is not allowed.
Comment: You cannot select the combination: No Default value, Not allow Permit Null and No Prompt, since this is a paradox.

Response: The Save As dialog is displayed.

Response: The procedure is saved in the selected folder, and will be denoted with the icon. Note that the procedure object will be visible to the end user in the list of information links. You can also make larger, more complex information links using the procedure when creating an information link in Information Designer.

1. Click New and select Procedure.
2. In the Data Sources tree, click on the database procedure you wish to use.
3. Click Select.
4. Select the Procedure type: Pre-update procedure or Post-update procedure.
5. If the database procedure requires any Input Parameters, their name and type are displayed.
6. Select whether the input parameter should receive a Default Value by typing a value (of the appropriate type) in the input field. If not, leave the field blank.

7. Select whether you want the end user to be prompted for a single value, multiple values, or not at all, from the Prompt drop-down list.

8. If you want to allow the input parameter to be Null, select the Permit Null check box.

9. In the Description field, type your own description of the procedure.

10. Click Save.

11. Click to select the folder where you wish to save the procedure element.

12. Click Save.

**Creating a Query Procedure**

• To Create a Query procedure:

Response: A Procedure Element tab is opened.

Response: The database procedure is added to the tab. Information Designer analyzes the database procedure and makes a guess as to whether it is a pre-update procedure or a query procedure (it never sets post-procedure by default).

Comment: Type ?param_name to use a parameter as the default value, where param_name is the name to identify the parameter by. Note: If you use a parameter for the default value, you must choose Prompt: None. See Parameterized Information Links for more information.

Example 1: Type a Default value and set prompt to None. This means that the specified default value will always be used as input parameter.

Example 2: Leave Default value empty, select Permit Null and Single value prompt. This will cause the end user to be prompted for a value. If the end user does not enter a value in the prompt, Null will be used.
Example 3: Leave Default value empty, leave Permit Null empty and Single value prompt. This will cause the end user to be prompted for a value. If the end user does not enter a value in the prompt, an error message will appear since Null is not allowed.

Comment: You cannot select the combination: No Default value, Not allow Permit Null and No Prompt, since this is a paradox.

Response: The Save As dialog is displayed.

Response: The procedure is saved in the selected folder, and will be denoted with the icon. Note that the procedure object will be visible to the end user in the list of information links. You can also make larger, more complex information links using the procedure when creating an information link in Information Designer.

1. Click New and select Procedure.
2. In the Data Sources tree, click on the database procedure you wish to use.
3. Click Select.
4. Select the Procedure type: Query.
5. In the Description field, type your own description of the procedure.
6. If the database procedure requires any Input Parameters, their name and type are displayed.
7. Select whether the input parameter should receive a Default Value by typing a value (of the appropriate type) in the input field. If not, leave the field blank.
8. Select whether you want the end user to be prompted for a single value or not at all, from the Prompt drop-down list.
9. If you want to allow the input parameter to be Null, select the Permit Null check box.
10. Expand the Result Columns section.
11. Either keep the Include all result columns check box selected, or clear the check box and click Add... to specify your own result columns. If the check box is selected, go to step 15, otherwise continue with step 12.
12. In the Original name field, enter the exact name of a column the database procedure returns. This name is specified in the actual database procedure, so you have to know this beforehand.
13. Type a Display name to use when the result column is opened in TIBCO Spotfire.

14. Select the Data type the resulting column should have.

15. If you want to specify a join between the database procedure and another table, use the Join section.
   Comment: Joining is necessary if you intend to use the result columns from this procedure together with column elements from another data table in an information link. You can only specify one join.

16. Join columns can be added from three different sources:
   * From the Data Sources tree. This option is similar to selecting join columns at the creation of join elements.
     Click on a column in the Data Sources tree (or click on the column under its data source in the Elements tree) and then select the From Data Sources Tree option in the Add drop-down list.
   * From a previously specified Result Column. Any result columns that have been defined will be listed directly in the Add drop-down list.
   * From a New Result Column. The third option is used if you want to join over a result column from the procedure but you do not want to use it as output when retrieving data.
     Click Add and select an option from the drop-down list.

17. Repeat step 16 for another join column. Normally, you will have one column from the data sources tree and one result column in the join.

18. Select a Condition from the drop-down list.
   Comment: There are two basic types of joins that can be done between tables: inner joins and outer joins. An inner join will return rows for which only the matching fields in both tables are equal. An outer join will return all the rows (including NULL values) from one table, and only the matching rows from the other table. See also Freehand Joins.

19. Click Save.

20. Click to select the folder where you wish to save the procedure element.

21. Click Save.

**Editing a Procedure**

- To edit a procedure:

Response: The procedure is loaded on a Procedure Elements tab and enabled for editing.

1. In the Elements tree, double-click on the procedure that you want to edit.

2. Modify the desired fields.

3. Click Save or Save As....

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\"?:<>|
Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

**Deleting a Procedure**

- To delete a procedure:
  
  Response: A pop-up menu is displayed.
  
  Response: The procedure is deleted from the library.

  1. In the Elements tree, right-click on the procedure that you want to delete.
  
  2. Select Delete from the pop-up menu.

**Multiple Value Procedure Prompts**

If a list is used as input for a pre- or post-update procedure, the procedure is run as many times as the number of values in the list. If lists of different lengths are used at the same time, one of two things will happen depending on the length of the lists.

**Example 1:**

If one of the lists contains only one value, that value will be distributed to the values of the other list.

List X: [1,2,3]

List Y: [A]

Result: First call procedure with parameters: 1,A
Then: 2,A
Then: 3,A

**Example 2:**

If both lists contain more than one value, the values of the shorter list will be distributed to the values of the longer list, and null will be added to the remaining values.

List X: [1,2,3]

List Y: [A, B]

Result: 1,A
2,B
A query procedure does not accept a list as input, only a single value.

User Interface Details Elements Tree

The Elements tree displays the data access layer (the information model) in the library as a folder structure including all available information links, column elements, filter elements and joins. All elements can be sorted into different folders. Click the plus (+) and minus (-) next to a folder icon to expand the folder and browse the tree. Click on the desired element to select it. It is possible to drag an element from one place to another. Right-clicking on an element opens a pop-up menu where you can edit the selected element, validate information links, etc.

Use the Search field to locate folders or elements in the tree. The search field automatically searches for the name and keywords of the elements, but you can also search for other properties using the following syntax: <property name>:<value>. See Searching in TIBCO Spotfire and Searching the Library for more information regarding search. Click on Clear Search to return to the full Elements tree.

Note: Searching for data sources does not include searching for database entities like catalogs, schemas or tables. It is only the database instance itself that can be located via search.
Tip: You can also press the * key on the numeric keypad to expand all nodes at the highest unexpanded level below the selected folder.

**Icon Explanations**

In the Elements tree, the following icons may appear. Click on a link in the table below to find out more about each element type. In the Data sources tree only the items belonging to a database are visible.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Element type</th>
</tr>
</thead>
<tbody>
<tr>
<td>🗂</td>
<td>Folder</td>
</tr>
<tr>
<td>🔗</td>
<td>Information link</td>
</tr>
<tr>
<td>🔧</td>
<td>Filter</td>
</tr>
<tr>
<td>✔️</td>
<td>Boolean column</td>
</tr>
<tr>
<td>📚</td>
<td>String column</td>
</tr>
<tr>
<td>🎯</td>
<td>Integer column or LongInteger column</td>
</tr>
<tr>
<td>🔍</td>
<td>Real, ShortReal or Currency column</td>
</tr>
<tr>
<td>📅</td>
<td>Date column</td>
</tr>
<tr>
<td>🕒</td>
<td>DateTime column</td>
</tr>
<tr>
<td>🕒</td>
<td>Time column</td>
</tr>
<tr>
<td>🔄</td>
<td>Procedure</td>
</tr>
<tr>
<td>🗄</td>
<td>Binary Large Object</td>
</tr>
</tbody>
</table>

[http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)
<table>
<thead>
<tr>
<th>Database instance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database link/catalog - a link to another database.</td>
</tr>
<tr>
<td>Schema - a collection of tables and/or procedures.</td>
</tr>
<tr>
<td>Table - a set of columns.</td>
</tr>
<tr>
<td>Table alias. You can create a duplicate reference to a database table from Information Designer. This duplicate is called a Table Alias.</td>
</tr>
<tr>
<td>Unknown column. Must be set manually to one of the accepted column types (above) before it can be saved as a column element.</td>
</tr>
</tbody>
</table>

**Data Sources Tree**

The data sources tree lists all currently defined data sources and their content. Click the plus (+) and minus (-) next to a data source icon to expand/collapse the data source. Click on the desired element to select it. Right-clicking on an item opens a *pop-up menu* where you can edit the selected data source, create multiple column elements etc.

Tip: You can also press the * key on the numeric keypad to expand all nodes at the highest unexpanded level below the selected node.

Use the Search field to search for the name, description and keywords of a database. Click on Clear Search to return to the full Data Sources tree.

Note: Searching for data sources does not include searching for database entities like catalogs, schemas or tables. It is only the database instance itself that can be located via search.
<table>
<thead>
<tr>
<th>Icon</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📄</td>
<td>Database instance</td>
<td>The name of the database instance.</td>
</tr>
<tr>
<td>🖥️</td>
<td>Database link / Catalog</td>
<td>A link to another database.</td>
</tr>
<tr>
<td>🕵️‍♂️</td>
<td>Schema</td>
<td>The owner or database administrator that has set up the different tables.</td>
</tr>
<tr>
<td>📊</td>
<td>Table</td>
<td>A set of columns.</td>
</tr>
<tr>
<td>📊</td>
<td>Column</td>
<td>The column has an icon that denotes the column type. See Column Elements</td>
</tr>
</tbody>
</table>
Overview for a description of the different column icons.

| Table Alias | You can create a duplicate reference to a database table from Information Designer. This duplicate is called a table alias.

---

**Start Tab Overview**

When Information Designer is started, the Start tab is visible. From here, you can reach all functions of the Information Designer. Each link in the start tab opens a separate tab where you can perform the various tasks.

Tip: Close a tab by clicking on the x symbol on the top right hand side of the tab page. You can also click on the tab with the middle mouse button or mouse wheel in order to close it.

Tip: You can right-click on any tab in Information Designer to display a pop-up menu which allows you to navigate to any of your current tabs or to close all tabs simultaneously. You can also locate the currently edited element in the Elements tree.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Information Link</td>
<td>Opens an Information Link tab. You can have multiple information link tabs open at the same time.</td>
</tr>
<tr>
<td>Create Elements</td>
<td><strong>Column</strong> - Opens a Column Element tab where you can define a column element which shall be a part of the information model and, hence, available when creating information links.</td>
</tr>
<tr>
<td></td>
<td><strong>Multiple Columns</strong> - Opens a Multiple Column Elements tab where many column elements can be defined simultaneously.</td>
</tr>
<tr>
<td></td>
<td><strong>Filter</strong> - Opens a Filter Element tab where a column filter can be defined.</td>
</tr>
<tr>
<td></td>
<td><strong>Procedure</strong> - Opens a Procedure Element tab where a stored procedure can be defined.</td>
</tr>
<tr>
<td>Create Join</td>
<td>Opens a Join Element tab where you can define a join between columns from different tables.</td>
</tr>
<tr>
<td>Setup Data Source</td>
<td>Opens a Data Source tab where you can specify a data source that should be available for creating elements.</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

**Create Information Link**

Create Elements
- Column
- Multiple Columns
- Filter
- Procedure

- Create Join
- Setup Data Source

**Information Link Tab**

- Information Link

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL</td>
<td></td>
</tr>
<tr>
<td>Save As</td>
<td></td>
</tr>
<tr>
<td>Save</td>
<td></td>
</tr>
<tr>
<td>Open Data</td>
<td></td>
</tr>
<tr>
<td>Add &gt;</td>
<td>Adds the element selected in the Elements tree to the information link.</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Remove &lt;</td>
<td>Removes the selected element from the link.</td>
</tr>
<tr>
<td>Elements</td>
<td>Lists all elements currently included in the information link. Clear the Retrieve check box to prevent a column from being loaded. (Filter conditions will still affect the amount of data loaded.)</td>
</tr>
<tr>
<td>Move Up</td>
<td>Moves the selected element up in the list.</td>
</tr>
<tr>
<td>Move Down</td>
<td>Moves the selected element down in the list.</td>
</tr>
<tr>
<td>Edit</td>
<td>Opens the Column Element tab for the selected element so that it can be edited.</td>
</tr>
<tr>
<td>SQL...</td>
<td>Opens the Edit SQL dialog where you can view and edit the SQL that the current information link is generating.</td>
</tr>
<tr>
<td>Save As...</td>
<td>Displays the Save As dialog which saves the configuration currently shown in the information link tab into a new information link.</td>
</tr>
<tr>
<td>Save</td>
<td>Saves the information link.</td>
</tr>
<tr>
<td>Open Data</td>
<td>Executes the currently selected data as an information link and retrieves the data into Spotfire.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Add &gt;</td>
<td>Adds the selected join from the Elements tree to the Selected joins list.</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Removes the selected join from the Selected joins list.</td>
</tr>
<tr>
<td>Selected joins</td>
<td>Lists the joins that will be used in the join path between the tables in the information link.</td>
</tr>
<tr>
<td>Suggest Joins</td>
<td>If any joins have been specified between the tables currently used in the information link, clicking this button will automatically add one or more suitable joins to the Selected joins list. If a default join has been specified, then this join will be used if possible.</td>
</tr>
<tr>
<td>Join data source</td>
<td>If more than one join database have been defined during the setup of the server, then you can select where the joining should take place here.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Description</td>
<td>An optional description of the contents of the information link. This can be helpful for end users of the information link when searching for information links in the library.</td>
</tr>
</tbody>
</table>

### Filters Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Filter Type</th>
<th>Values</th>
<th>Min Value</th>
<th>Max Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Range</td>
<td></td>
<td>2000</td>
<td>10000</td>
</tr>
<tr>
<td>Region</td>
<td>Values</td>
<td>West, Midwest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Add**: Opens the Add Column dialog where you can select a column to filter on.
- **Remove**: Removes the selected column from the Filters section.

Type **?param_name** to use a parameter as the filter for the chosen column, where param_name is the name to identify the parameter by.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>The names of added columns to prompt.</td>
</tr>
</tbody>
</table>
| Prompt Type     | Select what kind of selections should be available in the prompt when the link is opened.  
|                 | Values lets you enter your own list of values to include. This prompt type should only be used if all end users of the information link know which values are valid for the column.  
|                 | Range lets you specify a range of values. This prompt type is suitable for numerical or Date/DateTime/Time columns when a sustained range of numbers or time periods are to be retrieved.  
|                 | Multiple selection presents a list of available values from which you can select multiple values. This type of prompt can be used even if the end users of the information link have no previous knowledge of the data.  
|                 | Single selection presents a list of available values from which you can select a single value only. This type of prompt can be used even if the end users of the information link have no previous knowledge of the data.  
|                 | See also [Details on Open Information Link](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)                                           |
| Mandatory       | Select this check box to make it mandatory to select values in the prompt. It is not possible to clear the check box if Single selection has been chosen.  
<p>|                 | For non-mandatory prompts the end user can leave the prompt step dialog untouched in order to retrieve all data for that step.                                                                                |
| Max Selections  | Type the maximum number of selections allowed. It is not possible to specify a maximum number of selections if Single selection or Range has been chosen.                                                       |</p>
<table>
<thead>
<tr>
<th>Add</th>
<th>Opens the Add Column dialog where you can select a column on which to add a prompt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove</td>
<td>Removes the selected column from the Prompts section.</td>
</tr>
<tr>
<td>Move Up</td>
<td>Click to move an element up. This is used to control the order of the columns with prompts. Filter elements are always applied before prompts regardless of order.</td>
</tr>
<tr>
<td>Move Down</td>
<td>Click to move an element down.</td>
</tr>
<tr>
<td>Groups...</td>
<td>Opens the Prompt Groups dialog where you can specify different prompt groups for different prompts, making elements independent from each other. This is used to improve the performance of information links when retrieving data from STAR schema databases. See Using Prompt Groups for more information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No conditioning.</td>
</tr>
<tr>
<td>Distinct</td>
<td>Removes all duplicate rows (rows where all fields are identical) from the returned data table.</td>
</tr>
<tr>
<td>Pivot</td>
<td>Allows you to transform your data from a tall/skinny format to a short/wide format by rotating row and column headings around the core data. Select which columns to work on by clicking Edit....</td>
</tr>
<tr>
<td>Edit...</td>
<td>Opens the Pivot Conditioning dialog.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Parameter Name</td>
<td>Lists the names of all added parameters. Note: You have to click Refresh for parameters to appear in the list the first time you display the list after creating a parameter. If a parameter is not listed even after clicking Refresh, you may have created a parameter containing unsupported characters. See Parameterized Information Links for more information. It is also possible that you have edited the SQL of the information link. In that case, the altered SQL code overrides the parameters settings in the user interface.</td>
</tr>
<tr>
<td>Data Type</td>
<td>Lists the data type of all added parameters.</td>
</tr>
<tr>
<td>Value Type</td>
<td>Lists the value type of all added parameters.</td>
</tr>
<tr>
<td>Edit...</td>
<td>Opens the Edit Parameter dialog which lets you edit the selected parameter in the list.</td>
</tr>
<tr>
<td>Refresh</td>
<td>Refreshes the list of parameters. Note: You have to click Refresh for parameters to appear in the list the first time you display the list after creating a parameter.</td>
</tr>
</tbody>
</table>

**Properties**

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MyCompany.Property</td>
<td>Property1</td>
</tr>
</tbody>
</table>

**Option**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
Property name | Shows the names of custom properties defined for this information link. Custom properties are metadata that can be used when searching in the Library by using the following syntax: <Property name>:<Value>. For example, MyCompany.Property:Property1.

Value | Shows the value of each custom property.

Add... | Opens the Add Information Link Property dialog where custom properties can be defined.

Edit... | Opens the Edit Information Link Property dialog.

Delete | Deletes the selected property.

### Column Element Tab

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add &gt;</td>
<td>Select a column from the Data Sources tree and click on this button to include it in the new column.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Deletes the selected column from the composition.</td>
</tr>
<tr>
<td>Source columns</td>
<td>Lists all source columns that will be included in the calculation of the new column element.</td>
</tr>
<tr>
<td>Expression</td>
<td>To perform any calculation on the column, enter the expression in this text field.</td>
</tr>
<tr>
<td>Data type</td>
<td>Specifies the data type of the column.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>An optional description of the column element.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source columns</td>
<td>Lists all source columns that will be included in the calculation of the new column element.</td>
</tr>
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<td>Expression</td>
<td>To perform any calculation on the column, enter the expression in this text field.</td>
</tr>
<tr>
<td>Data type</td>
<td>Specifies the data type of the column.</td>
</tr>
</tbody>
</table>
Add > Select a column from the Data Sources tree and click on this button to include it in the filter.

< Remove Removes the selected column from the composition.

Expression In this field, enter an expression containing the selected column or columns.

The Group by section is only important if you have specified some type of aggregation in the Expression field at the top of the page. When an aggregation has been defined, you can select the categories to group by here. See [Using Aggregation in Information Designer](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo) for more information.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group by expressions</td>
<td>Lists the group by expressions specified using the source columns selected under Settings and any calculations done in the Expression field.</td>
</tr>
<tr>
<td>New</td>
<td>Adds a new, empty expression to the Group by expressions list.</td>
</tr>
<tr>
<td>Delete</td>
<td>Deletes the selected expression from the Group by expressions list.</td>
</tr>
<tr>
<td>Add &gt;</td>
<td>Adds the columns selected in the Data Sources tree to the Source columns list, where it can be used in a group by expression.</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Deletes the selected column from the Source columns list.</td>
</tr>
<tr>
<td>Source columns</td>
<td>Lists the columns that are to be used in the expression determining what to group by.</td>
</tr>
<tr>
<td>Expression</td>
<td>Enter an expression here to define what to group by.</td>
</tr>
<tr>
<td>Drillable</td>
<td>Select the check box if you want the column to group by all other columns that are included together with this column element in an information link. See [Using Drillable](<a href="http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information(Web">http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information(Web</a> for Semantic Interoperability at DoD/Spo) for more information.</td>
</tr>
</tbody>
</table>
### Property name
Shows the names of custom properties defined for this column. Custom properties are metadata that can be used when searching for columns using the following syntax: `<Property name>:<Value>`. For example, MyCompany.Property:Property1.

Custom column properties can also be used for drawing lines in some of the visualizations.

### Value
Shows the value of each custom property.

### Add...
Opens the [Add Column Property dialog](#) where custom properties can be defined.

### Edit...
Opens the [Edit Column Property dialog](#).

### Delete
Deletes the selected property.

---

**Multiple Column Elements Tab**

<table>
<thead>
<tr>
<th>Multiple Column Elements</th>
<th><img src="http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo" alt="Multiple Column Elements" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>Add &gt;</td>
<td>Select one or more tables or columns from the Data Sources tree, and then click this button to include the columns as new column elements in the library.</td>
</tr>
<tr>
<td>Column</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Deletes the selected columns from the Source columns list.</td>
</tr>
<tr>
<td>&lt; Remove All</td>
<td>Removes all columns from the Source columns list.</td>
</tr>
<tr>
<td>Column element name</td>
<td>The name of the column to be saved as it will be displayed in the Elements tree once imported to the library. Click on a column element name to edit the text.</td>
</tr>
<tr>
<td>Source column name</td>
<td>Displays the source name of the selected column element.</td>
</tr>
<tr>
<td>Type</td>
<td>Displays the data type of the selected column element.</td>
</tr>
<tr>
<td>Path</td>
<td>Displays the path to the column in the data sources tree.</td>
</tr>
<tr>
<td>Selected column</td>
<td>A short (optional) description of the purpose of the column. (Click on a column element in the Source columns list to edit the description of that column.)</td>
</tr>
<tr>
<td>description</td>
<td></td>
</tr>
<tr>
<td>Create Columns...</td>
<td>Creates the columns and adds them to the library, after you specify their location in the Create Multiple Columns dialog.</td>
</tr>
</tbody>
</table>
### Filter Element

**Option**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add &gt;</td>
<td>Select a column from the Data Sources tree, and then click this button to include it in the filter.</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Deletes the selected column from the composition.</td>
</tr>
<tr>
<td>Condition</td>
<td>In this field, enter a condition containing the selected column or columns.</td>
</tr>
<tr>
<td>Description</td>
<td>A short (optional) description of the purpose of the filter.</td>
</tr>
<tr>
<td>Save As</td>
<td>Click Save As to create a copy of the filter element.</td>
</tr>
<tr>
<td>Save</td>
<td>Click Save to save or update the filter.</td>
</tr>
</tbody>
</table>

### Procedure Element Tab

http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo

Updated: Wed, 23 Sep 2015 06:07:24 GMT

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### Procedure Element

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select</td>
<td>Select a database procedure from the Data Sources tree, and then click this button to include it.</td>
</tr>
<tr>
<td><strong>Procedure type</strong></td>
<td>Information Designer defines three kinds of procedures:</td>
</tr>
<tr>
<td>Pre-update procedure</td>
<td>this procedure does not return any data, it only performs an operation on one or more databases. All pre-update procedures in an information link will always be executed before any query procedure.</td>
</tr>
<tr>
<td>Query procedure</td>
<td>just like a database table this procedure returns data.</td>
</tr>
<tr>
<td>Post-update procedure</td>
<td>this procedure does not return any data, it only performs an operation on one or more databases. All post-update procedures in an information link will always be executed after any query procedure.</td>
</tr>
<tr>
<td>Save As...</td>
<td>Click Save As to create a copy of a procedure.</td>
</tr>
<tr>
<td>Save</td>
<td>Click Save to save or update the procedure.</td>
</tr>
<tr>
<td>Run</td>
<td>Runs the procedure.</td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A short description of the purpose of the procedure.</td>
</tr>
</tbody>
</table>

### Input Parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Default Value</th>
<th>Permit Null</th>
<th>Prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>@c</td>
<td>Integer</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>@property</td>
<td>String</td>
<td></td>
<td></td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>States the name of the input parameters detected in the database procedure.</td>
</tr>
<tr>
<td>Type</td>
<td>States the type of the input parameters detected in the database procedure.</td>
</tr>
<tr>
<td>Default Value</td>
<td>If the input parameter should receive a default value, type a value (of the appropriate type) in the input field. If not, leave the field blank.</td>
</tr>
<tr>
<td></td>
<td>Type <code>?param_name</code> to use a parameter as the default value, where <code>param_name</code> is the name to identify the parameter by.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If you use a parameter for the default value, you must choose Prompt: None.</td>
</tr>
<tr>
<td>Permit Null</td>
<td>Select this check box if you want to allow the input parameter to be Null.</td>
</tr>
</tbody>
</table>
**Prompt**

Select whether you want the end user to be prompts for a single value, multiple values or not at all, from the Prompt drop-down list box.

Comment: If you select multiple values, the end user will be allowed to enter several values. The procedure will run once for each of these values in an iterative loop. For more information, see [Multiple Value Procedure Prompts](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo).

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include all result columns</td>
<td>Select this check box to include all columns from the procedure. Clear the check box if you like to specify the result columns yourself.</td>
</tr>
<tr>
<td>Add</td>
<td>This button becomes available when the Include all result columns check box is cleared. Click on the button to add a new row in the result columns list on the right. A dialog is opened where you can enter the Original name and Display name of the result column, as well as specify its data type.</td>
</tr>
<tr>
<td>Delete</td>
<td>Deletes the selected result column.</td>
</tr>
</tbody>
</table>

| Original Name | In the Original Name field, the exact name of a column the database procedure returns should be entered. This name is specified in the actual database procedure, so you have to know this before adding the result column. |
| Display Name  | Enter a descriptive Display Name for the resulting column. This is the name the end user will see when columns have been imported to TIBCO Spotfire. |
Type

Select the Type the resulting column should have.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Displays a drop-down list containing columns from three different sources:</td>
</tr>
<tr>
<td></td>
<td>* From Data Sources Tree. This option is similar to selecting join columns at the creation of join elements. Click on a column in the Data Sources tree (or click on the column under its data source in the Elements tree) and then select the From Data Sources Tree option in the Add drop-down list.</td>
</tr>
<tr>
<td></td>
<td>* Previously specified Result Columns. Any result columns that have been defined above will be listed directly in the Add drop-down list.</td>
</tr>
<tr>
<td></td>
<td>* New Result Column.... The third option is used if you want to join over a result column from the procedure but you do not want to use it as output when retrieving data. Select a column from either source to include it in the join.</td>
</tr>
<tr>
<td>Remove</td>
<td>Removes a column from the Join columns list.</td>
</tr>
<tr>
<td>Join columns</td>
<td>Lists the name of the columns you wish to join.</td>
</tr>
<tr>
<td></td>
<td>This may be one of the columns specified in the Result Columns section, but can also be another procedure column as long as it is available from the database procedure result (for example an ID column). It also lists the columns you have added from the Data Sources tree.</td>
</tr>
<tr>
<td>Condition</td>
<td>Select one of the alternatives to specify which type of join to use.</td>
</tr>
</tbody>
</table>
An inner join will return rows for which only the matching fields in both tables are equal. An outer join will return all the rows (including NULL values) from one table, and only the matching rows from the other table.

Freehand

You can also specify your own join definition by typing directly in the freehand field. See Freehand Joins for more information.

Join Element Tab

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add &gt;</td>
<td>Select a column from the Data Sources tree, and then click this button to include it in the join.</td>
</tr>
<tr>
<td>&lt; Remove</td>
<td>Removes a column from the list of columns included in the join.</td>
</tr>
<tr>
<td>Join columns</td>
<td>Lists the columns that should be included in the join.</td>
</tr>
<tr>
<td>Condition</td>
<td>Select one of the alternatives to specify which type of join to use.</td>
</tr>
</tbody>
</table>
An inner join will return rows for which only the matching fields in both tables are equal. An outer join will return all the rows (including NULL values) from one table, and only the matching rows from the other table.

<table>
<thead>
<tr>
<th>Freehand</th>
<th>Select this option to specify your own join definition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target tables</td>
<td>Select one table from each drop-down list. If you are only using two columns in the join, then you cannot alter the default choices. If more than two columns are included in the join condition (for example, an intermediate table), then it is important to select the two tables that are to be joined.</td>
</tr>
<tr>
<td>Default join</td>
<td>Select this check box if you want this join to be the default one if two different joins between the same tables exist. The default join is the one that is suggested in the Join path field when defining an information link, if the Suggest Joins button is clicked.</td>
</tr>
<tr>
<td>Description</td>
<td>A free-text description of the join.</td>
</tr>
<tr>
<td>Save As</td>
<td>Click Save As to create a copy of the join element.</td>
</tr>
<tr>
<td>Save</td>
<td>Click Save to save or update the join.</td>
</tr>
</tbody>
</table>

**Data Source Tab**

All data sources that have been defined and you have access to are listed in the Data Sources tree and also in the Elements tree. By placing a data source in a folder, you can specify which users will have permission to access the data therein. Right-click on a data source and select Edit from the pop-up menu to modify a previously added data source.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the data source, as you want it to appear in the Data Sources tree and in the Elements tree.</td>
</tr>
<tr>
<td>Type</td>
<td>Type of database. For example, choose from Oracle and SQL Server through JTDS or DataDirect. If more databases have been set up, they will appear in this list. See TIBCO Spotfire Server – Installation and Configuration Manual for details on setting up connections to other databases.</td>
</tr>
<tr>
<td>Connection URL</td>
<td>URL of the database. The format of this URL depends on the type of database. Change the placeholders in the default URL so that it links to your selected database.</td>
</tr>
<tr>
<td>No of connections</td>
<td><strong>Min</strong> is the minimum number of database connections created for a given data source. <strong>Max</strong> is the maximum number of database connections created for a given data source. There can never be more connections open at a given moment than the specified max number.</td>
</tr>
<tr>
<td><strong>Note:</strong> If you use SAS/SHARE, ODBC or other data sources that do not support pooled connections (i.e., there is no valid ping command), set both min and max to 0.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Username</strong></td>
<td>Username for the data source.</td>
</tr>
<tr>
<td><strong>Password</strong></td>
<td>Password for the data source.</td>
</tr>
</tbody>
</table>
| **User authentication** | Use individual usernames to authenticate users when running information links. By default, this will prompt the user for credentials when running the information link against this data source for the first time. Optionally, you can develop a custom plug-in and use it to retrieve the credentials.  

**Note:** If you are using Kerberos Delegation for database connections be sure to select this check box. |
| **Credentials timeout (hours)** | The number of hours to save credentials so that an end user does not have to login again when making multiple connections to the same data source. If no number is specified, the credentials will need to be specified again after 24 hours.  

Data source credentials caching is done on both the TIBCO Spotfire client as well as on the TIBCO Spotfire Server.  

On the client, data source credentials are cached for the duration of the TIBCO Spotfire session. This means that once a user has authenticated against a data source those credentials will be cached on the client side until the client is closed. Once the user has authenticated against a particular data source he/she will not be prompted for credentials for that data source for the remainder of the client session.  

In addition, data source credentials are also cached on the TIBCO Spotfire server. On the server, data source credentials are stored on a per user, per data source basis. Credentials can be stored from a minimum of 15 minutes (0.25 hours) up to a full week.  

Once authenticated a user will not be prompted for data source credentials during this time even if the client is restarted.  

The server side credentials caching uses what is called a moving window for the timeout of the cached credentials. Hence, if a credential is used the caching period will be reset to the maximum timeout period. |
<table>
<thead>
<tr>
<th>Allow writing in temporary tables</th>
<th>Allows the Information Services to create temporary tables in this data source. This is needed when running information links that join data from several data sources or have a large number of filter values. To guarantee full compatibility between Information Services and Oracle databases, it is recommended that the compatible setting in init.ora (for the databases) is set to: compatible=8.1.0.0.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open session commands</td>
<td>Commands executed when acquiring a database connection from the connection pool or creating a new connection if pooled connections are not supported. Can be used, for example, to authorize a user in an Oracle VPD context. Example: exec set_vpd_user(%CURRENT_USER%)</td>
</tr>
<tr>
<td>Close session commands</td>
<td>Commands executed when returning a database connection to the connection pool or closing a connection if pooled connections are not supported. Can be used, for example, to clear an authorized user in an Oracle VPD context. Example: exec set_vpd_user(&quot;”)</td>
</tr>
<tr>
<td>Connection initialization</td>
<td>Command executed when initializing a database connection.</td>
</tr>
<tr>
<td>Fetch size</td>
<td>The maximum number of values in each block of data retrieved from the database. Used for performance tuning. In general, use higher values for physically distant databases. Use lower values when the number of users is high. Entering the value zero will make the JDBC driver use its default value.</td>
</tr>
</tbody>
</table>
Batch size
The maximum number of values in each block of data sent to the database. Used for performance tuning. In general, use higher values for geographically distant databases. Use lower values when the number of users is high. Entering the value zero will make the JDBC driver use its default value.

Save As
Click **Save As** to save a copy of the data source.

Save
Click **Save** to save or update the data source.

---

## Pop-up Menus Overview

### Elements:

This pop-up menu is reached by right-clicking on an element in the Elements tree:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Data</td>
<td>[Only available when right-clicking on an information link.]</td>
</tr>
<tr>
<td></td>
<td>Imports data into TIBCO Spotfire.</td>
</tr>
<tr>
<td>Edit...</td>
<td>Opens the tab used to edit the selected element (Information Link, Join, Column, Filter, Procedure or Data source).</td>
</tr>
<tr>
<td>Edit Properties...</td>
<td>Opens the Edit Properties dialog where you can change the name and description of the selected item. You can also add keywords for improving the chances of finding the correct elements when searching the library.</td>
</tr>
<tr>
<td>New &gt;</td>
<td>[Only available when right-clicking on a folder.]</td>
</tr>
<tr>
<td></td>
<td>Provides a shortcut entry to the Create Element options, opening a new tab were the new element can be specified.</td>
</tr>
<tr>
<td>Delete</td>
<td>Removes the selected element from the library.</td>
</tr>
</tbody>
</table>

---

http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spotfire_Information_Designer

Updated: Wed, 23 Sep 2015 06:07:24 GMT
Powered by mindtouch 86
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh</td>
<td>Refreshes the content of the currently selected folder.</td>
</tr>
<tr>
<td>Refresh All</td>
<td>Refreshes the entire tree.</td>
</tr>
<tr>
<td>Find All References</td>
<td>[Only available when right-clicking on a column, filter, procedure or join element.] Opens a Find Results tab where all references to the selected element are listed. (For example, all information links where a certain column element is included.)</td>
</tr>
<tr>
<td>Validate</td>
<td>Validates the content of the selected element and opens a Validation Result dialog or a tab with information about errors and/or warnings.</td>
</tr>
<tr>
<td>Copy ID</td>
<td>Copies the GUID of the selected element to the clipboard.</td>
</tr>
<tr>
<td>Folder Permissions...</td>
<td>[Only available when right-clicking on a folder.] Opens the Library Folder Permissions dialog where you can change the permissions for all users or groups to the selected folder.</td>
</tr>
</tbody>
</table>

**Data Sources:**

This pop-up menu is reached by right-clicking in the Data sources tree or on a data source in the Elements tree:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit...</td>
<td>Opens the tab used to edit the selected data source.</td>
</tr>
<tr>
<td>Edit Properties...</td>
<td>[Only available when right-clicking on a data source.] Opens the Edit Properties dialog where you can change the name and description of the selected data source. You can also add keywords describing the data source.</td>
</tr>
<tr>
<td>Create Default Information Model...</td>
<td>Allows you to specify a location and automatically create a default set of elements and information links based on the selected data source, catalogue, schema or table. See also <a href="http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo#CreateDefaultInformationModelSettings">Details on Create Default Information Model Settings</a>.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Create Column Elements</td>
<td>[Only available when right-clicking on a table.]</td>
</tr>
<tr>
<td></td>
<td>Opens a Multiple Column Elements tab with the content of the table already added to the Source columns list.</td>
</tr>
<tr>
<td>Create Table Alias</td>
<td>[Only available when right-clicking on a table.]</td>
</tr>
<tr>
<td></td>
<td>Opens a dialog where you can specify a name for the table alias and appends a copy of the selected table to the data source. See Creating a Table Alias for more information.</td>
</tr>
<tr>
<td>Delete</td>
<td>[Only available when right-clicking on a data source or a table alias.]</td>
</tr>
<tr>
<td></td>
<td>Removes the selected data source or table alias from the library.</td>
</tr>
<tr>
<td>Refresh</td>
<td>Refreshes the content of the currently selected instance.</td>
</tr>
<tr>
<td>Refresh All</td>
<td>Refreshes the entire Data sources tree.</td>
</tr>
<tr>
<td>Find All References</td>
<td>Opens a Find Results tab where all references to the selected instance are listed. (For example, all elements referring to a column from a certain database table.)</td>
</tr>
<tr>
<td>Validate</td>
<td>[Only available when right-clicking on a data source.]</td>
</tr>
<tr>
<td></td>
<td>Validates the content of the selected data source and opens a Validation Result dialog or a tab with information about errors and/or warnings.</td>
</tr>
<tr>
<td>Copy ID</td>
<td>[Only available when right-clicking on a data source.]</td>
</tr>
<tr>
<td></td>
<td>Copies the GUID of the selected data source to the clipboard.</td>
</tr>
</tbody>
</table>

Tab titles:

This pop-up menu is reached by right-clicking on the tab title of the Start tab or any other open tabs on the right-hand side of Information Designer.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close</td>
<td>Closes the currently active tab.</td>
</tr>
<tr>
<td>Close All but This</td>
<td>Closes all tabs except the currently active tab and the Start tab.</td>
</tr>
<tr>
<td>Locate in Tree</td>
<td>Locates the currently active tab in the Elements tree.</td>
</tr>
<tr>
<td>[Titles of open tabs]</td>
<td>Allows you to quickly navigate to any of the currently open tabs.</td>
</tr>
</tbody>
</table>

**Details on Edit SQL**

![Edit SQL interface](image)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data source</td>
<td>Displays the data sources used by the current information link in a drop-down list. You can only edit the SQL of one data source at a time.</td>
</tr>
<tr>
<td>Pre-Updates</td>
<td>Click this radio button to enter statements to be executed before the data retrieval. For example, this could be a call to a stored procedure or statements such as 'CREATE TABLE' or 'INSERT'.</td>
</tr>
<tr>
<td>Query</td>
<td>Click this radio button to display and modify the SQL of the information link.</td>
</tr>
<tr>
<td>Post-Updates</td>
<td>Click this radio button to enter statements to be executed after the data retrieval. For example, 'DROP TABLE'.</td>
</tr>
</tbody>
</table>
| Modified SQL | Modify the SQL of the information link in this text box. Multiple SQL statements are allowed in pre-updates and post-updates as long as they are separated with double new lines.  
Note: If you alter parameters in the SQL code, the changes will override any parameter settings made elsewhere, such as in the filter part of the information link tab. |
| Original SQL | Displays the original SQL of the information link so that you can immediately see the differences that you have made upon your modification. |
| Reset to Original | Resets the Modified SQL to the SQL originally created in the information link. |

**Pivot Conditioning in Information Designer**

![Pivot Conditioning in Information Designer](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo)
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity</td>
<td>Each unique value in the chosen identity column produces a row in the generated table. If you choose more than one column, then the new table will have a separate row for each unique combination of values in the chosen columns.</td>
</tr>
<tr>
<td>Category</td>
<td>Each unique value in the chosen category column produces a new column in the generated table. Selecting more than one column means that the new table will have a separate column for each unique combination of values in the chosen columns.</td>
</tr>
<tr>
<td>Values</td>
<td>The column from which the data is pulled. The values in the generated table are computed according to the method selected under Aggregation (for example, Average). <strong>Note:</strong> If you are certain that each combination of Identity and Category has a unique value, then you can select the Aggregation: None which will not apply any aggregation of the data. However, the pivot will fail if you select None, and each combination of Identify and Category is not unique.</td>
</tr>
<tr>
<td>Column name expression</td>
<td>You can select how the pivoted columns should be named. By default the predefined option is: Method(Value) for Column You can also create a custom naming scheme for your pivoted columns.</td>
</tr>
<tr>
<td>Other columns</td>
<td>This option allows you to include an overall average of a particular measurement, for each row in the generated table.</td>
</tr>
</tbody>
</table>

**Details on Prompt Groups**
Prompt groups are used to specify which prompts should be dependent of each other, and which should not.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element</strong></td>
<td>Lists all elements currently available in the information link.</td>
</tr>
<tr>
<td><strong>Group</strong></td>
<td>By entering the same group number for two columns you specify that these columns should be dependent of each other, but not by columns from a different prompt group.</td>
</tr>
</tbody>
</table>

**Details on Add Column**

This dialog is shown when you have selected to add a filter or a prompt to an information link. It is also used to select columns when you want to apply a Pivot conditioning. Columns that have been added to the information link are available in the drop-down list.
### Add Column

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select column</td>
<td>Specifies which of the column elements should be used in this particular place.</td>
</tr>
<tr>
<td>Aggregation method</td>
<td>Specifies the aggregation method to use for the column.</td>
</tr>
</tbody>
</table>

### Details on the Save As Dialog

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Information Link</td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td><strong>Search</strong></td>
<td>Type a search expression to limit the tree view below the search field so that it shows folders and elements matching the search expression only.</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Clear Search...</strong></td>
<td>[Link available only after a search has been performed.] Click on the link to clear the search and return to view the full Elements tree.</td>
</tr>
<tr>
<td><strong>[Elements tree or search results]</strong></td>
<td>Click to select the folder where you want to save the element.</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>The name of the element to be saved/edited.</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>A short description of the purpose of the element.</td>
</tr>
<tr>
<td><strong>Save</strong></td>
<td>Click Save to save or update the element.</td>
</tr>
</tbody>
</table>

Note: Some characters are forbidden in the element names and file system of TIBCO Spotfire 3.0 and forward: /\'*?:<>|

Old information models with element names containing these characters can be imported. However, you cannot edit and resave elements using their old names if they contain forbidden characters.

**Details on Create Multiple Columns**
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place columns in</td>
<td>Click on the folder in the tree where you want the new column elements to be created.</td>
</tr>
<tr>
<td>Search</td>
<td>Type a search expression to limit the tree view below the search field so that it shows folders and elements matching the search expression only.</td>
</tr>
<tr>
<td>Clear Search...</td>
<td>[Link available only after a search has been performed.]</td>
</tr>
<tr>
<td></td>
<td>Click on the link to clear the search and return to view the full Elements tree.</td>
</tr>
<tr>
<td>Create Columns</td>
<td>Creates the column elements in the specified folder.</td>
</tr>
</tbody>
</table>
Details on Add/Edit Column Property

Custom properties are metadata that can be used when searching for columns using the following syntax: `<Property name>:<Value>`. For example, IncludedColumn:True.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property name</td>
<td>Specifies the name of the custom property.</td>
</tr>
<tr>
<td>Value</td>
<td>Allows you to specify a value for the selected property.</td>
</tr>
</tbody>
</table>

Details on Add/Edit Information Link Property

Custom properties are metadata that can be used when searching in the library by using the following syntax: `<Property name>:<Value>`. For example, DataTableType:On-Demand or DataTableType:"Additional Data Table". Information link properties are transformed to data table properties when the information link is opened in an analysis.
**Details on Open Information Link**

The Open Information Link dialog appears when an information link is being opened, and a column is encountered that has been set up with a prompt (a run-time filter). The dialog may take various forms depending on the type of prompt selected.

Note: If the prompt step not is marked as mandatory by the person setting up the information link, then clicking Finish or Next > will automatically retrieve all available values for that step. However, if you make any changes to the dialog, such as selecting the Include empty values for this step check box, then the step is seen as modified and you will only retrieve the values actually selected in the dialog. This applies to all prompt types except Single selection.

**Values**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property name</td>
<td>Specifies the name of the custom property.</td>
</tr>
<tr>
<td>Value</td>
<td>Allows you to specify a value for the selected property.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Enter values</td>
<td>Type column values that you want to use as a constraint and separate them by pressing ENTER. Type * to retrieve all possible values.</td>
</tr>
<tr>
<td>Get Values...</td>
<td>Use this button to set the column filter by fetching values from loaded data tables in TIBCO Spotfire. Opens the Column Values dialog.</td>
</tr>
<tr>
<td>Include empty values for</td>
<td>Select this check box to also include rows that do not contain any data for this column.</td>
</tr>
<tr>
<td>this step</td>
<td></td>
</tr>
</tbody>
</table>

Range
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower limit</td>
<td>Type the lower limit for the values of the column.</td>
</tr>
<tr>
<td>Upper limit</td>
<td>Type the upper limit for the values of the column.</td>
</tr>
<tr>
<td>Include empty values for this step</td>
<td>Select this check box to also include rows that do not contain any data for this column.</td>
</tr>
</tbody>
</table>

### Multiple selection

#### Open Information Link: Step 3 of 4

<table>
<thead>
<tr>
<th>State</th>
<th>Select values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arizona</td>
</tr>
<tr>
<td></td>
<td>California</td>
</tr>
<tr>
<td></td>
<td>Colorado</td>
</tr>
<tr>
<td></td>
<td>Florida</td>
</tr>
<tr>
<td></td>
<td>Georgia</td>
</tr>
<tr>
<td></td>
<td>Hawaii</td>
</tr>
<tr>
<td></td>
<td>Idaho</td>
</tr>
<tr>
<td></td>
<td>Illinois</td>
</tr>
<tr>
<td></td>
<td>Indiana</td>
</tr>
<tr>
<td></td>
<td>Iowa</td>
</tr>
<tr>
<td></td>
<td>Kansas</td>
</tr>
<tr>
<td></td>
<td>Kentucky</td>
</tr>
<tr>
<td></td>
<td>Louisiana</td>
</tr>
<tr>
<td></td>
<td>Maine</td>
</tr>
<tr>
<td></td>
<td>Maryland</td>
</tr>
<tr>
<td></td>
<td>Massachusetts</td>
</tr>
<tr>
<td></td>
<td>Michigan</td>
</tr>
<tr>
<td></td>
<td>Missouri</td>
</tr>
<tr>
<td></td>
<td>Montana</td>
</tr>
<tr>
<td></td>
<td>Nebraska</td>
</tr>
<tr>
<td></td>
<td>Nevada</td>
</tr>
<tr>
<td></td>
<td>New Hampshire</td>
</tr>
<tr>
<td></td>
<td>New Jersey</td>
</tr>
<tr>
<td></td>
<td>New Mexico</td>
</tr>
<tr>
<td></td>
<td>New York</td>
</tr>
<tr>
<td></td>
<td>North Carolina</td>
</tr>
<tr>
<td></td>
<td>Ohio</td>
</tr>
<tr>
<td></td>
<td>Oklahoma</td>
</tr>
<tr>
<td></td>
<td>Oregon</td>
</tr>
<tr>
<td></td>
<td>Pennsylvania</td>
</tr>
<tr>
<td></td>
<td>Rhode Island</td>
</tr>
<tr>
<td></td>
<td>South Carolina</td>
</tr>
<tr>
<td></td>
<td>South Dakota</td>
</tr>
<tr>
<td></td>
<td>Tennessee</td>
</tr>
<tr>
<td></td>
<td>Texas</td>
</tr>
<tr>
<td></td>
<td>Utah</td>
</tr>
<tr>
<td></td>
<td>Vermont</td>
</tr>
<tr>
<td></td>
<td>Virginia</td>
</tr>
</tbody>
</table>

<p>| Include empty values for this step | Select this check box to also include rows that do not contain any data for this column. |</p>
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select values</td>
<td>Select individual values for the column by clicking the entries in the list. To select consecutive values, click the first item, press and hold down SHIFT, and then click the last item. To select multiple entries that are not consecutive, press and hold down CTRL, and then click each item.</td>
</tr>
<tr>
<td>Include empty values for this step</td>
<td>Select this check box to also include rows that do not contain any data for this column (and consequently are unavailable in the list).</td>
</tr>
</tbody>
</table>

**Single selection**

![Screenshot of single selection window](image)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one value</td>
<td>Select a single value for the column by clicking on it in the list.</td>
</tr>
<tr>
<td>Include empty values for this step</td>
<td>Select this check box to also include rows that do not contain any data for this column (and consequently are unavailable in the list).</td>
</tr>
</tbody>
</table>

**Details on Column Values**

http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo

Updated: Wed, 23 Sep 2015 06:07:24 GMT

Powered by mindtouch™
To reach the Column Values dialog:

1. Open an Information Link with prompts.

2. When the Open Information Link dialog for the desired column appears, click Get Values....

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table</strong></td>
<td>Select a data table from the drop-down list.</td>
</tr>
<tr>
<td><strong>Column</strong></td>
<td>Shows the available columns in the selected data table. Select a column by</td>
</tr>
<tr>
<td></td>
<td>clicking on it in the list. You can narrow down the list of available</td>
</tr>
<tr>
<td></td>
<td>columns by typing a part of a name in the &quot;Type to search&quot; field.</td>
</tr>
<tr>
<td><strong>All rows</strong></td>
<td>Gets values from all rows available in the entire data table, regardless</td>
</tr>
<tr>
<td></td>
<td>of filtering.</td>
</tr>
<tr>
<td><strong>Filtered rows</strong></td>
<td>Gets values from the rows remaining after the current filtering (using the</td>
</tr>
<tr>
<td></td>
<td>filtering scheme on the active page) only.</td>
</tr>
</tbody>
</table>
Marked rows, defined by:

- Gets values from the rows marked in the visualizations (using the specified marking) only, regardless of filtering.

Details on Edit Parameter

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Shows the name of the parameter you want to edit.</td>
</tr>
<tr>
<td>Data type</td>
<td>Lists the different data types available for your parameter. Select one from the list to change the data type your parameter expects the values it receive to be in.</td>
</tr>
<tr>
<td>Value type</td>
<td></td>
</tr>
<tr>
<td>Single value</td>
<td>Choose single value if the parameter is supposed to receive just one value.</td>
</tr>
<tr>
<td>Array</td>
<td>Choose array if the parameter is supposed to receive several values.</td>
</tr>
</tbody>
</table>

Details on Missing Parameter Value
If you have the correct license, this dialog is shown when you open a parameterized information link or file and for some reason the value of a parameter has not been supplied. You can use this dialog to type a value for that parameter.

Note: If the parameter expects an array as input (multiple values) and the values come from a string column that has commas within the values (e.g., last name and first name in a name column) the syntax to use is "Smith, John", "Williams, Peter", and so on. Any comma that is not within quote signs will be interpreted as the end of a value.

Details on Missing Information Link

This dialog is shown if an analysis with data linked to an information link is opened and the information link is missing.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy GUID</td>
<td>Copies the GUID of the information link to the clipboard. The GUID is a unique identifier for the information link that remain the same if the name of the information link is changed. This can be useful for support or an administrator if the information link cannot be found.</td>
</tr>
</tbody>
</table>
### Details on Create Default Information Model Settings

This dialog allows you to specify a description and keywords for all elements created by the Create Default Information Model menu option. This type of information can be used to identify all elements created by this operation at a later stage. It also lets you specify how to handle any name conflicts with existing elements.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>An optional description of the data. The description could contain detailed information about the data enabling quick overviews.</td>
</tr>
<tr>
<td><strong>Keywords</strong></td>
<td>Keywords specific to the data. Keywords are separated by semicolons. This means that if you write &quot;sales representatives; cost&quot; it will be interpreted as two keywords, &quot;sales representatives&quot; and &quot;cost&quot;. Keywords are used to enhance organization and search capabilities.</td>
</tr>
</tbody>
</table>
If a created item has the same name as an existing item

| Automatically assign a new name to the created item | Appends a number, e.g., (2), to the name of the new item. |
| Replace existing item | Replaces all existing items. |
| Keep existing item | Keeps all existing items and adds only those items that previously did not exist. |

Details on Select Destination Folder

This dialog is used to specify where to place the new default information model.

Navigate through the folders, and select the folder where you want the new elements and information links to be created. Information about the selected folder is displayed to the right of the list of folders. Which library folders you have access to is controlled by group privileges. Contact your Spotfire administrator if you cannot reach all the necessary folders.

You can search for a folder in the library by entering a name, or part of a name in the search field in the upper right corner in the dialog, and then pressing Enter. All folders matching your search string will then be listed. See Searching the Library for more information about search expressions.
There are two ways to control filtering in Information Designer. One is to create separate filter elements. These will appear as icons, and allow the end user to apply them in an information link at will. The other method is to associate a filter directly to the column. This means that when the column element is used in an information link, the column filter is automatically applied.

Use column filters (hard filters) only when there is no reason to believe the user will ever want to use the column without a filter. Make sure the column description makes it clear to the user that a filter is being applied.

Use filter elements when you want to give users the option to use or not use the filter. Again, remember to write a good description of the filter.

**When to Use Prompt Groups**

Prompt groups can be used to treat elements (columns or filters) as independent from elements in other prompt groups during the opening of prompted information links. The default behavior of prompted information links is that each subsequent step lists values based on earlier selections. However, if you are working against, for example, a STAR schema database the procedure may require multiple joins since the elements queried for the prompts are linked only by the large fact table in the STAR schema.

By assigning an element to a different prompt group no previous selections in the prompt steps will be reflected in the listing for the independent element. Neither will any of the selections made in the prompt step for the independent element be reflected in later prompt steps (regardless of whether the later prompt steps are independent or not). It may also be of interest to specify a different prompt group for an element that is not prompted, for example, a column with a hard filter.

**Example:**

Say that you have information about your employees and their salaries stored in a STAR schema database with a layout similar to the one below:

![Diagram of STAR schema database layout](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spotfire_Information_Designer)
Now, you want to retrieve information about the salary of your employees in the Chicago office, with the possibility to filter using DeptNo and Gender upon running the information link.

- These are the steps you would perform to retrieve this type of information:

1. Create an information link by adding all the interesting columns to the Information Link tab.

2. In the Filters section, add the Location column.

3. Select Values as Filter Type.

4. Type Chicago in the Values text field.

5. In the Prompts section, add the DeptNo and Gender columns.

6. Select suitable Prompt type options (for example, Multiple selection)) for the DeptNo and Gender columns.

7. Click Groups... and enter a different prompt group for the Location column.

By making Location independent you avoid having to join to the large fact table for each prompt. When the information link is opened you will first be prompted to choose a DeptNo. Instead of going through the large fact table to
the Location table and filter out all values except the ones for Chicago, you will see all values in the DeptNo column. For the next prompt step the much quicker connection between DeptNo and Gender is used directly, thus improving the performance of the information link.

Note: When Location is made independent you will see all possible values in the prompt step for DeptNo even though some of them perhaps are inapplicable due to the hard filter setting Chicago on the Location column.

This means that if all employees in the Chicago office belong to department number 30, you might accidentally select number 20 in the prompt step for DeptNo with the result that no data is retrieved from the server.

If no prompt group changes had been made, the hard filter on Chicago would have been applied prior to the first prompting step and DeptNo 30 would have been the only one displayed in the prompt list:

In this case, the risk of selecting wrong data in a prompt step is minimized.

**Replacing Null**

Sometimes a column returns null values. By using the Oracle SQL function NVL, null values can be replaced with another value.

Note: The following example only applies to data retrieved from an Oracle database.

- To modify a column to replace null values with 0 (zero):
  1. Right-click on the column in the Elements tree.
  2. Select Edit from the pop-up menu.
3. In the Expression field, type:

\[
\text{NVL(%1,0)}
\]

4. Click Save.

Note: Sometimes a null value has a meaning different from zero, such as "value unknown". Make sure you understand how the data is meant to be interpreted before replacing values!

**Limiting the Number of Records Returned**

The Oracle pseudo column `ROWNUM` makes it possible to use a filter to control the number of rows returned by an information link. In the example below, only the first ten rows are to be retrieved.

Note: The following example only applies to data retrieved from an Oracle database.

- To create a filter that limits the number of rows returned by an information link:

  Response: A **Filter Element tab** is opened.

  1. Click New and select **Filter**.

  2. In the Expression field, type:

\[
\text{ROWNUM < 11}
\]

  3. Type a suitable Description.

  4. Click Save.

**Concatenating Strings**

The Oracle SQL function `CONCAT` lets you create a column by concatenating strings from different tables.
Note: The following example only applies to data retrieved from an Oracle database.

- To combine strings from two different tables into a single column element:

  ![Source columns: Region | Alias | Path](image)

  ![Expression: concat (concat (%1, ' '), %2)](image)

  ![Datatype: String](image)

Response: A Column Element tab is opened.

Response: The selected element is added to the Source columns list on the Column Element tab.

1. Click New and select Column.

2. In the Data Sources tree, select the first column (Region in the example above).

3. Click Add >.

4. Select the second column (State in the example above).

5. Click Add >.

6. In the Expression field, enter:

   `concat (concat (%1, ' '), %2)`

7. Select String from the Data type drop-down list.

8. Type a suitable Description.

9. Click Save.

### Aggregate Functions

Aggregate functions summarize the values in a column. Below are some examples of aggregate functions that can be used when retrieving data from an Oracle database. Please see the documentation for your own database for more information.

Note: The following functions only apply to data retrieved from an Oracle database:
<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUM (%1)</td>
<td>total of all the rows in column %1, given that the column is numeric</td>
</tr>
<tr>
<td>AVG (%1)</td>
<td>average of column %1</td>
</tr>
<tr>
<td>MAX (%1)</td>
<td>largest figure in column %1</td>
</tr>
<tr>
<td>MIN (%1)</td>
<td>smallest figure in column %1</td>
</tr>
<tr>
<td>COUNT(%1)</td>
<td>number of rows in column %1</td>
</tr>
<tr>
<td>CORR(%1,%2)</td>
<td>coefficient of correlation of columns %1 and %2</td>
</tr>
<tr>
<td>COVAR_POP(%1,%2)</td>
<td>population covariance of columns %1 and %2</td>
</tr>
<tr>
<td>COVAR_SAMP(%1,%2)</td>
<td>sample covariance of columns %1 and %2</td>
</tr>
<tr>
<td>REGR_SLOPE(%1,%2)</td>
<td>slope of the line described by columns %1 and %2</td>
</tr>
<tr>
<td>REGR_INTERCEPT(%1,%2)</td>
<td>y-intercept of the regression line described by columns %1 and %2</td>
</tr>
<tr>
<td>REGR_COUNT(%1,%2)</td>
<td>integer that is the number of non-null number pairs used to fit the regression line</td>
</tr>
<tr>
<td>REGR_R2(%1,%2)</td>
<td>coefficient of determination (also called &quot;R-squared&quot; or &quot;goodness of fit&quot;) for the regression</td>
</tr>
<tr>
<td>REGR_AVGX(%1,%2)</td>
<td>average of the independent variable (%2) of the regression line</td>
</tr>
<tr>
<td>REGR_AVGY(%1,%2)</td>
<td>average of the dependent variable (%1) of the regression line</td>
</tr>
</tbody>
</table>
### REGR SXX(%1,%2)
- **computed as:**
  - `REGR_COUNT(%1, %2) * VAR_POP(%2)`

### REGR SYY(%1,%2)
- **computed as:**
  - `REGR_COUNT(%1, %2) * VAR_POP(%1)`

### REGR SXY(%1,%2)
- **computed as:**
  - `REGR_COUNT(%1, %2) * COVAR_POP(%1, %2)`

### STDDEV(%1)
- sample standard deviation of column %1

### STDDEV_POP(%1)
- computes the population standard deviation of column %1 and returns the square root of the population variance

### STDDEV_SAMP(%1)
- computes the cumulative sample standard deviation of column %1 and returns the square root of the sample variance

### VAR_POP(%1)
- population variance of column %1

### VAR_SAMP(%1)
- sample variance of column %1

### VARIANCE(%1)
- variance of column %1

---

**Examples of Generated SQL SQL - Filters**

In this example we will define a column element with a filter. The column should only return sales transactions above 10000.
Save the column element with the name High Sales.

The column element defined above will result in the following SQL when executed as part of an information link:

```
SELECT
  S1."Sales" AS "HIGHSALES"
FROM
  "Sales"."dbo"."SalesandCost" S1
WHERE
  (S1."Sales" > 10000)
AND <conditions>
```

**SQL - GROUP BY**

In the following example, we will use aggregation to calculate the average profit that our company made for a number of products, in order to locate our best product. We are assuming that the database provides the columns containing the price we got from the buyers at each transaction (Sales) and the price our company paid for the raw material (Cost) at that time. We also have a column containing the type of the product sold at each transaction (Type).
Define a column element called "Average Profit" as follows:

We must also define a column element "Type" from Type which returns the product type.

If we define an information link using these three columns, the following SQL will be generated (notice the GROUP BY clause):

```
SELECT tmp1."AVERAGEPROFIT",
   E1."TYPE" AS "TYPE"
FROM
   "Sales"."dbo"."SalesandCost" S1
```
AVG(E1."Sales" - E1."Cost") AS "AVERAGEPROFIT",
E1."TYPE" AS col1
FROM
"Sales"."dbo"."SalesandCost" S1
GROUP BY
E1."TYPE"
) tmp1
WHERE
(E1."TYPE" = tmp1.col1)
AND <conditions>

SQL - Subqueries

Information Designer supports subqueries (inner SQL). In this example we will demonstrate how to retrieve all sales transactions greater than the average.

**Column Element**

![Column Element](image)
We create a new column "High Sales Transactions" with the following filter expression:

\[
\%1 > (\text{Select } \text{avg}(\text{Sales}) \text{ from Sales.dbo.SalesandCost})
\]

Note: Be careful to include all brackets or it will not work!

The column element defined above will result in the following SQL when executed as part of an information link (notice that the WHERE clause includes the sub query from the filter condition):

```sql
SELECT
    S1."Sales" AS "HIGHSALESTRANSACTIONS"
FROM
    "Sales"."dbo"."SalesandCost" S1
WHERE
    (S1."Sales" > (SELECT
                   \text{avg}(\text{Sales})
                   \text{from}
                   \text{Sales.dbo.SalesandCost}
               ))
AND <conditions>
```

**PL/SQL Functions**

In the following example, we will retrieve sales information for employees in both USD and EUR. One way of doing this is to write a function in SQLplus that performs the calculation:

```sql
CREATE FUNCTION money_converter
( amount IN NUMBER)
RETURN NUMBER IS
```

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return_val NUMBER (10,2) := 0;
BEGIN
   return_val := amount * 0.75;
   Return (return_val);
END;
/

The sales in USD is used as input, and the output is a value that is 0.75 times smaller. Store the function in the
SDP_ADMIN schema (or elsewhere if a different administrator username is used) to make it accessible by Information
Designer.

Now create a column element with the name "Sales (EUR)" as follows:

Also create a column element "Type" with product types, and "Sales (USD)" with the original sales values.

When an information link with these three columns is executed from Information Designer, the generated SQL looks
something like this:

```
SELECT
   S1."Type" AS "Type",
   S1."Sales" AS "SALESUSD",
```
Library Administration Introduction

The TIBCO Spotfire system features a library. Using the Spotfire library, people can publish and share all their analysis material, information links, data sources, etc. The Spotfire library contains a folder structure where you can set permissions on folder level.

While most Spotfire users can open and save files to the library from the normal Open and Save dialogs in TIBCO Spotfire, the Library Administration tool lets certain users access the library in a more administrative role. The Library Administration tool lets you structure the library and its contents. You can copy and move files and folders, create new folders and build folder structures. You can set permissions for folders so that only certain users are allowed access to certain parts of the library. If you want, you can also import content into the library, or export parts of the library to file.

To access the Library Administration tool you must have enabled the license feature Library Administration included in the TIBCO Spotfire Administrator license. Note that this license does not affect the actual permissions set for the various folders in the library, it only enables a user to open the Library Administration tool.

To have full control over the library you must be a member of the Library Administrator group that is always present in the Spotfire system. Members of this group will override any permission levels in the library and have full control of the entire library. Members of this group are also the only ones allowed to create, delete and change permissions for top level folders in the library.

Permissions

Permissions

Permissions are always set on folders, never on items.

There are four levels of permissions that can be set for a folder in the library:

- **Access** - The user or group is allowed to execute information links that are placed in the folder, but is not allowed to browse the contents or open analysis files.

- **Browse + Access** - The user or group is allowed to access and browse the folder contents. The user can open and use items found in such folders, but not save or modify them.
• **Browse + Access + Modify** - The user or group is allowed to browse and access the contents of the folder and also modify items or save new items. The user can also create new subfolders.

• **Full Control** - The user or group is allowed to access and browse the folder, modify and save items, and also change permissions for the folder and its contents.

The Library Administrator Group

There is a group called **Library Administrator** that is always present in the Spotfire system. Members of this group will override any permission levels in the library, and have full control of the entire library. By default, members of this group are also the only ones allowed to create, delete and change permissions for **top level folders**.

Inheritance

By default, a subfolder inherits the permissions of its parent folder. This holds true for entire chains of subfolders in the library. However, if you have Full Control of a folder, you can edit the permissions for it and specify the exact permissions that you want it to have. When explicit permissions are set for a folder, the inheritance from the parent folder (or any folder higher up in the hierarchy) is completely severed.

It is important to note that for a user to be able to browse the contents of a folder, he must also have Browse + Access permission for the parent folder, and its parent folder, and so on all the way to the top level of the library. If the Browse + Access permission is removed for a folder in the hierarchy, the user cannot browse to any folders further down that folder structure regardless of the permissions set for such folders.

**Creating a New Folder**

To create a new folder you must have Browse + Access + Modify permissions in the folder where you want the new folder to appear.

• To create a new folder:

Response: The New Folder dialog appears.

Comment: The following characters are not accepted in folder titles: `\ / : * ? " < > | $ & + = @ % ; , { [ ] } ^ ` ~`

1. Navigate to the folder in which you want to create a new folder.

2. Click on the **New Folder** button.

3. Enter a **Name** for the folder.

4. Optionally, enter a **Description** for the folder.

5. Optionally, enter **Keywords** for the folder. These should be separated with semicolons.

6. Click **OK**.
Note: The new folder will by default inherit the permissions from its parent folder.

**Deleting an Item**

To delete items you must have Browse + Access + Modify permissions for the folder they are placed in. If you want to delete a folder, you must have Browse + Access + Modify permissions for all subfolders in the underlying folder structure.

- To delete an item using the Library Administration tool:
  1. Select the items and folders to delete by clicking on them. You can use Ctrl or Shift to multi-select.
  2. Click on the **Delete** button.
  3. When prompted, confirm that you want to delete the selected items by clicking **OK**.

Tip: You can also right-click an item in the library tree and select Delete from the pop-up menu. The pop-up menu is also available in the Open from Library and Save as Library Item dialogs.

It is possible to have access to the Library Administration tool without being a member of the Library Administrator group. To get access to the Library Administration tool, the license called TIBCO Spotfire Administrator, as well as the license feature called Library Administration below it, must be enabled.

**Moving an Item**

To move items you must have Browse + Access + Modify permissions for both the source folder and the destination folder. If you want to move a folder, you must also have Browse + Access + Modify permissions for the entire underlying folder structure of the source folder.

- To move an item:

Comment: You can multi-select using Ctrl or Shift.

Response: The Select Destination Folder dialog appears.

Comment: Read more about how to handle conflicts in [How Are Conflicts Resolved?](#).  

1. Select the items or folders to move.
2. Click the **Move** icon.
3. Select a destination folder.
4. Click **OK**.
5. Select how you want to handle any potential name conflicts, and click **OK**.
The moved folders will keep any permissions explicitly set for them. If a folder is set to inherit its permissions, then it will inherit its permissions from the new parent folder after it has been moved.

**Copying an Item**

To copy items you must have Browse + Access + Modify permissions for both the source folder and the destination folder. If you want to copy a folder, you must also have Browse + Access + Modify permissions for the entire underlying folder structure of the source folder.

- To copy an item:

Comment: You can multi-select using Ctrl or Shift.

Response: The Select Destination Folder dialog appears.

Comment: Read more about how to handle conflicts in [How Are Conflicts Resolved?](#)

1. Select the items or folders to move.
2. Click the **Copy** icon.
3. Select a destination folder.
4. Click **OK**.
5. Select how you want to handle any potential name and conflicts, and click **OK**.

The copied folders will keep any permissions explicitly set for them. If a folder is set to inherit its permissions, then the new copy will inherit its permissions from the new parent folder after it has been copied.

Folders or items that replace other folders or items will take on the identity of the destination folder or item, which means that references to the destination item or folder will continue to work but references to the moved folder will be broken.

**Importing to Library**

To import any content into the library from file, you must be a member of the **Library Administrator** group.

**Note:** Before importing content into the library, you should always make a backup of your existing library by using the Export function. Read more about this in [Exporting from Library](#).

Note: When information model elements are being imported, the elements should not be accessed from the library or from Information Designer until after the import has been completed. If the import takes place on a server used by others, it is recommended either that no external access is allowed during the import, or that the information model is temporarily imported into a folder with no access permissions for other users. After the import has been performed, the permissions for the import folder can be changed, or the resulting elements can be moved to another place in the library.
To import content into the library from file:

Response: The Import dialog appears.

Response: The Select File to Import dialog opens.

Comment: You can only import zip archives containing appropriate library content. It is not possible to import a single analysis. Also, such zip archives must be placed in a specific folder (or in its sub-folders) on a specific machine. This folder is called the "Shared Disk Location" and is set from the TIBCO Spotfire Configuration Console. In an environment with only one TIBCO Spotfire Server, this folder is by default located on the TIBCO Spotfire Server machine in the folder <server installation directory>/tomcat/application-data/library. In an environment with more than one Spotfire Server, one of them is dedicated to hold Library exports. See the TIBCO Spotfire Server - Installation and Configuration Manual for more information about how to set this up.

Comment: Read more about how to handle conflicts in How Are Conflicts Resolved?

Response: The Select Destination Folder dialog appears.

Response: The Library Import status dialog appears.

1. Click on the Import button.

2. Click Browse.

3. Select the file you want to import, and click OK.

4. In the Import items of type drop-down list, select whether or not you want to limit the export to only include certain types of items.

5. Select if you want to Include permissions if such are stored in the file. If you do not include any permissions, the imported items will inherit the permissions of the destination folder.

6. Select Ignore empty directories if you do not want to import any empty library folders.

7. Select how you want to handle any potential name and/or GUID conflicts.

8. Click OK.

9. Select a folder to import to, and click OK.

10. Click Refresh to update the status messages in the dialog.

11. Click Close when the Log states Import done.

Exporting from Library

To export a folder and its contents to file you must be a member of the Library Administrator group.
The folder and its contents will be saved as a zip archive. This zip archive will be placed in a specific folder (or in its subfolders) on a specific machine. This folder is called the "Shared Disk Location" and is set from the TIBCO Spotfire Configuration Console. In an environment with only one TIBCO Spotfire Server, this folder is by default located on the TIBCO Spotfire Server machine in the folder <server installation directory>/tomcat/application-data/library/. In an environment with more than one Spotfire Server, one of them is dedicated to hold Library exports. See the TIBCO Spotfire Server - Installation and Configuration Manual for more information about how to set this up.

- To export a folder:

Response: The Export dialog appears.

Response: The Library Export status dialog appears.

1. Select the folder to export.
2. Click the Export icon.
3. Enter a name for the file that will be created.
4. In the Export items of type drop-down list, select if you want to limit the export to only include certain types of items.
5. Select whether to Include permissions or not.
6. Click OK.
7. Click Refresh to update the status messages in the dialog.
8. Click Close when the Log states Export done.

Note: Make sure that all dependencies (columns, filters, etc.) needed by the exported elements are included in the exported folder.

Searching the Library

You can search for library items in the Open from Library dialog, in the Library Administration tool and in Information Designer.

Searching for a text string will by default look for matching text in the title and keywords of the items in the library. You can use wildcards and boolean operators to search for parts and combinations of words. For a listing of the basic search syntax, see Searching in TIBCO Spotfire.

Library specific search:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Example</th>
<th>Function</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th>Role</th>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>title:</td>
<td>title: <code>word</code> in title</td>
<td>Locates library items with the specified word (or part of word) somewhere in the title.</td>
</tr>
<tr>
<td>created_by:</td>
<td>created_by: <code>username</code></td>
<td>Locates library items created by a certain user.</td>
</tr>
<tr>
<td>modified_by:</td>
<td>modified_by: <code>username</code></td>
<td>Locates library items modified by a certain user.</td>
</tr>
<tr>
<td>item_type:</td>
<td>item_type: <code>type</code></td>
<td>Locates items of a specific type. The available types are: column, filter, join, procedure, query (=information link) folder, dxp (= TIBCO Spotfire analysis file), datasource, datafunction and colorscheme.</td>
</tr>
<tr>
<td>item_id:</td>
<td>item_id: <code>GUID</code></td>
<td>Locates a specific library item based on its unique identifier.</td>
</tr>
<tr>
<td>depends_on</td>
<td><code>expression</code></td>
<td>Locates all items that depend on a specific element.</td>
</tr>
</tbody>
</table>

Note: `<word>`, `<username>`, `<type>`, `<GUID>` represent placeholders for actual values.

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<table>
<thead>
<tr>
<th>Requirement</th>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>depends_on(Sales)</td>
<td></td>
<td>ategori. If the GUID in the example to the left belongs to an information link, the search will find all columns, filters, etc. that are included in that information link.</td>
</tr>
<tr>
<td>required_by(&lt;expression&gt;)</td>
<td>required_by(item_id::6f6dc7e0-57bd-11d7-5ac0-0010ac110132)</td>
<td>Locates all items that are required by another item. If the GUID in the example to the left belongs to an information link, the search will find all columns, filters, etc. that are included in that information link.</td>
</tr>
<tr>
<td>modified</td>
<td>modified:&quot;2 days ago&quot;</td>
<td>It is possible to search for items that have been modified during a specified time span, relative to today. There are two different ways of describing relative dates and times:</td>
</tr>
<tr>
<td></td>
<td>modified:&quot;a week ago&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>modified:&quot;an hour ago&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>modified:today</td>
<td></td>
</tr>
<tr>
<td></td>
<td>modified:&lt;&quot;this month&quot;</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>modified::&gt;created</th>
</tr>
</thead>
</table>
|    | modified:
|    | "2009-02-01T18:27:55CEST"                                                         |
|    | search, the last part of the date or time is "reset" (the time gets set to zero, the day of the month gets set to 1 etc.). The start day of a week is dependent on your server locale. For a en-US locale the first day of the week would be Sunday. |
|    | Modified, created and accessed can also be used in comparisons with each other. The example to the left locates all items that have been modified after their creation. |
|    | Modified can also be used together with a timestamp of ISO 8601 format ("yyyy-MM-dd'T'HH:mm:ssz") to find items modified at a specific time. |
|    | created                                                                             |
|    | created:
|    | "this week"                                                                         |
|    | created:<"2 weeks ago"                                                               |
|    | created:
|    | "2009-02-01T18:27:55CEST"                                                          |
|    | It is possible to search for items that have been created during a specified time span, relative to today. See details regarding the allowed time spans under "modified" above. |
|    | Modified, created and accessed can be used in comparisons with each other.          |
|    | Created can also be used together with a timestamp of ISO 8601 format ("yyyy-MM-
<p>| accessed | accessed:=&quot;this month&quot;&lt;&quot;2 weeks ago&quot; | It is possible to search for items that have been accessed during a specified time span, relative to today. See details regarding the allowed time spans under &quot;modified&quot; above. Modified, created and accessed can be used in comparisons with each other. Accessed can also be used together with a timestamp of ISO 8601 format (&quot;yyyy-MM-dd'T'HH:mm:ssz&quot;) to find items accessed at a certain time. The example accessed:nullable finds all items that have never been accessed. The last example finds all items that have been accessed after the first of February 2009. |
| accessed:null | | |
| accessed:&quot;2009-02-01T18:27:55CEST&quot; | |
| ::= | modified::&gt;created | Used to finds items strictly greater than the expression following the operator. For example, finds all items that have been modified after their creation. |</p>
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Example</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>description</td>
<td>description:sales</td>
<td>Locates all items containing the specified word in their description.</td>
</tr>
</tbody>
</table>

**Analysis files:**

When searching for analysis files, there are a number of search parameters that may help you locating a specific group of analyses. If you want to locate analysis files only, add type:dxp to the search expression.

- Accessed::<modified>
  - Used to finds items strictly less than the expression following the operator.
  - For example, finds all items that have been modified after they were last accessed.

- Parent_id::<folder GUID>
  - parent_id::538bcde4-7212-475f-a348-5bb41ba39c41
  - Locates all items located in the specified folder.

- Format_version::<string or null>
  - format_version:null
  - Locates all items of a specified format version. For example, all items which have no format version specified can be found.

- Content_size::<byte>
  - content_size:>10000
  - content_size:>500KB
  - content_size:<2MB
  - Locates all items of a specific byte size. In the first example, all items larger than 10000 bytes are found.
  - If nothing else is specified, the number is interpreted as bytes, but you can specify content sizes in KB, MB or GB as well.
<table>
<thead>
<tr>
<th><strong>type:</strong> dxp description: sales</th>
<th>Locates all analysis files containing the specified word in their description.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>keywords</strong></td>
<td><strong>keywords:</strong> sales</td>
</tr>
<tr>
<td></td>
<td><strong>type:</strong> dxp keywords: sales</td>
</tr>
<tr>
<td><strong>AllowWebPlayerResume:</strong> &lt;true or false&gt;</td>
<td><strong>AllowWebPlayerResume:</strong> true</td>
</tr>
<tr>
<td><strong>EmbedAllSourceData:</strong> &lt;true or false&gt;</td>
<td><strong>EmbedAllSourceData:</strong> true</td>
</tr>
<tr>
<td><strong>OnDemandInformationLinks:</strong> &lt;GUID&gt;</td>
<td><strong>OnDemandInformationLinks:</strong> *</td>
</tr>
<tr>
<td></td>
<td><strong>OnDemandInformationLinks:</strong> c45618c3-b7ac-43aa-bafe-e14f39fd4bb7</td>
</tr>
<tr>
<td><strong>AllTablesEmbedded:</strong> &lt;true or false&gt;</td>
<td><strong>AllTablesEmbedded:</strong> true</td>
</tr>
</tbody>
</table>

Information Model elements:

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If you want to locate information model elements of a specific type only, add type:column (or filter, join, procedure, query, folder or datasource) to the search expression.

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Example</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>description</td>
<td>description:sales</td>
<td>Locates all items containing the specified word in their description.</td>
</tr>
<tr>
<td></td>
<td>type:query description:sales</td>
<td>Locates all information links containing the specified word in their description.</td>
</tr>
<tr>
<td>column</td>
<td>column:Sales</td>
<td>Locates all items referring to a source column with the specified name.</td>
</tr>
<tr>
<td></td>
<td>column::Sales</td>
<td>The source column could be referred to in the conditions or groupings of a column element, a filter condition, a join condition or the join condition of a procedure.</td>
</tr>
<tr>
<td>table</td>
<td>table:SalesandCost</td>
<td>Locates all items referring to a source table or stored procedure with the specified name.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This could be referred to in the conditions or groupings of a column element, a filter condition, the condition or target tables of a join or in the source procedure or join condition of a procedure.</td>
</tr>
<tr>
<td><strong>schema</strong></td>
<td><strong>schema:dbo</strong></td>
<td>Locates all items referring to a source schema with the specified name. This could be referred to in the conditions or groupings of a column element, a filter condition, the condition or target tables of a join or in the source procedure or join condition of a procedure.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>catalog</strong></td>
<td><strong>catalog:Sales</strong></td>
<td>Locates all elements referring to a source catalog with the specified name. This could be referred to in the conditions or groupings of a column element, a filter condition, the condition or target tables of a join or in the source procedure or join condition of a procedure.</td>
</tr>
<tr>
<td><strong>datatype</strong></td>
<td><strong>datatype:integer</strong></td>
<td>Locates all columns of the specified data type (integer, real, string, date, time, datetime, clob or blob).</td>
</tr>
<tr>
<td><strong>parameter</strong></td>
<td><strong>parameter:MinSales</strong>&lt;br&gt;<strong>parameter:</strong>*</td>
<td>Locates information links using the specified parameter.</td>
</tr>
<tr>
<td><strong>property_name</strong>:&lt;br&gt;<strong>property_value</strong></td>
<td><strong>&quot;my.prop&quot;:</strong>*</td>
<td>Custom properties in any information model element</td>
</tr>
</tbody>
</table>
are searchable using the same syntax.

However, note that the property name must be quoted if it contains a '.' delimiter.

Combinations of keywords:

You can combine many of the keywords described above to create more advanced search expressions. For example:

type:query depends_on(type:column salary) - searches for information links that contains a column named salary

type:query depends_on(column:salary) - searches for information links that contains an element that refers to a data source column named salary

required_by(type::query InformationLinkName) - shows the elements used by the information link with the name InformationLinkName.

(not (required_by(type:dxp))) and type:query - searches for information links that are not used by any analysis file in the library.

- To search for items in the Open from Library dialog:

Depending on where you are searching, you may get different search results. Analyses and information links are shown when searching in the Open from Library dialog, not any information model elements or data sources, etc.

Response: The dialog will switch to a Search Results view.

1. Navigate to the top folder of the structure you want to perform the search in. If you want to search the entire library, navigate to the library root.

2. Type the text you want to search for in the search field at the top right corner of the dialog.

3. Click on the search button with a magnifying glass.

4. The items matching your search criteria will be displayed in the list. To return to the normal folder view, click the Back to folder link.

- To search for items in the Library Administration tool:

Response: The Library Administration tool will switch to a Search Result view. Note: Searching for data sources does not include searching for database entities like catalogs, schemas or tables. It is only the database instance itself that can be located via search.
1. Navigate to the top folder of the structure you want to perform the search in. If you want to search the entire library, navigate to the library root.

2. Type the text you want to search for in the search field at the top right corner of the Library Administration tool.

3. Click on the **Search** button.

4. The items matching your search criteria will be displayed in the list. To return to the normal folder view, click the **Back to folder** link.

5. To search for items in Information Designer:

   Depending on where you are searching, you may get different search results. Information model elements, information links and data sources are shown when searching in Information Designer, not any analyses, etc.

   Response: The search results are displayed. Note: Searching for data sources does not include searching for database entities like catalogs, schemas or tables. It is only the database instance itself that can be located via search.

   1. Type the text you want to search for in the search field at the top of the Elements tree.

   2. Click on the search button with at magnifying glass,

   ![Magnifying Glass](image)

   3. The items matching the search result are shown in the list. To return to the normal folder view, click the **Clear Search...** link.

   4. To use search expressions in custom RSS feeds:

   You can create a customized RSS feed showing the latest changes to the library items you are interested in by appending a library search expression to a URL.

   Use the following syntax to create your own feed:

   http://<server>/spotfire/library[/path/to/something/interesting]?rss[&search=<search_expression>]

   The **path** and **search** parameters are optional. If you only specify http://myspotfireserver/spotfire/library?rss, the feed will return the 20 most recently modified files in the library. You can also add a **max-results** section if you want to limit the number of results shown, see example below.

   Examples:

   http://myspotfireserver/spotfire/lib...h=content_size:>&500KB

   http://myspotfireserver/spotfire/lib...ated_by::admin

   http://myspotfireserver/spotfire/lib...ch=title:sales
To use search expressions in tibcospotfire links:

You can incorporate a search expression in a tibcospotfire link in order to directly populate the Open from Library dialog with some suitable analyses or information links. See Links to Analyses in the Library for more information about links. The links are a list of keys and value pairs. The key and value are separated using colon, :, and each key and value pair are also separated with colons:

tibcospotfire:<key1>:<value1>:<key2>:<value2>...<keyN>:<valueN>

The following keys and values are allowed:

Search: <search expression> with optional parameters.

OrderBy : Title | Modified | Created | Accessed | ContentSize | Description

MaxResult: <positive integer>

SortDirection: Ascending | Descending

The values should be encoded using the following pattern:

Value Encoded to:

: \:
=

\ \

Examples:
tibcospotfire:search:*:OrderBy:Modified:SortDirection:Descending:MaxResult:20
tibcospotfire:search:modified:<'3 days ago':OrderBy:Modified:SortDirection:Descending

Editing Properties

To edit the properties of an item you must have Browse + Access + Modify permissions for the folder it is placed in. Properties consist of:
• Name
• Description
• Keywords
• To edit properties:

Comment: The following characters are not accepted in titles: `\ / : * ? " < > | $ & = @ # % ; , { [ ] } ^ ’ ~´

1. Select the item you want to edit properties for.
2. Click on the **Edit...** link for the **Selected Item**.
3. Enter a **Name** for the folder.
4. Optionally, enter a **Description** for the folder.
5. Optionally, enter **Keywords** for the folder. These should be separated with semicolon.
6. Click **OK**.

**Editing Folder Permissions**

To edit the permissions that are set for a folder, you must have Full Control permission for the folder. Read more about how permissions work in [Permissions](http://semanticommunity.info/Build_DoD_in_the_Cloud/Enterprise_Information_Web_for_Semantic_Interoperability_at_DoD/Spo).

• To edit folder permissions:

Response: The Folder Permissions dialog appears.

Response: The users and/or groups matching the search criteria are displayed in the list to the left.

Response: The folder will be updated with the new permissions.

1. Select the folder you want to edit permissions for.
2. Click on the **Edit...** link to the right of the **Permissions for Current Folder** title.
3. Select whether you want the folder to inherit permissions from its parent folder, or if you want to specify explicit permissions for it. Do this by selecting/deselecting the **Inherit permissions from parent folder** check box. If you choose to inherit permissions then you cannot specify any more details. Click **OK** and you are done. If you choose to set explicit permissions then proceed to the next step.
4. When you clear the **Inherit permissions from parent folder** check box, the permissions the folder used to inherit are set explicitly. This gives you a template to work from if you want to remove certain permissions or perhaps add some.
In the search field, type in the name of the user or group you want to add permissions for.
Tip: You can use wild cards (that is, asterisks "*"), to simplify the search. For example, use a wild card to display all users and groups, or append it to a word to display all users and groups beginning with that word. Example: Group4* will find Group41, Group421 and so on.

5. Using the drop-down selector below the search field, select if you want to search only for Groups, only for Users or both Users and Groups.

6. Click Search.

7. Select the appropriate users/groups in the list and click the > button of the permission level they should receive.

8. Repeat steps 4 through 7 until you have added all the users and groups to the permissions level you want.

9. To remove a user or group from a permission level, select it and click the < button for that permission level.

10. Click OK.

Copying URLs

Items in the library such as analysis files have a unique URL. By copying this URL and pasting it into a web browser, you can open that file in TIBCO Spotfire or perhaps save the file to disk.

Also, if you have a TIBCO Spotfire Web Player server connected to your library, a second URL is available for each analysis file. By copying this to a web browser, the analysis will be opened in the TIBCO Spotfire Web Player running in your web browser.

- To copy a URL and open in TIBCO Spotfire:

Response: Under the Link to Selected Item heading, a URL is displayed.

Response: The analysis is opened in a new instance of TIBCO Spotfire.

1. Click on an analysis file to select it in the Library Administration window.

2. Right-click on the URL and select Copy.

3. Open a web browser and paste the URL into the address field.

- To copy a Web Player URL and open in TIBCO Spotfire Web Player:

Response: Under the Link to Selected Item heading, a Web Player URL is displayed.

Response: The analysis is opened in TIBCO Spotfire Web Player.

1. Click on an analysis file to select it in the Library Administration window.
2. Right-click on the Web Player URL and select **Copy**.

3. Open a web browser and paste the URL into the address field.

4. To copy a URL for unknown clients:

If you want to send a link to a larger audience where you do not know whether they have access to TIBCO Spotfire or just the Web Player, you can use a link to a redirect page instead.

Response: A URL leading to a redirect page is copied to your clipboard. Here, each user can select whether to open the analysis in TIBCO Spotfire, TIBCO Spotfire Web Player or to Download the analysis file.

1. Right-click on an analysis file or information link in the Library Administration window.

2. Select **Copy TIBCO Spotfire URL > Server Redirect Page for Unknown Clients** from the pop-up menu.

**How Are Conflicts Resolved?**

Items and folders in the library are identified by two things: their name and a unique identifier (GUID). Several items can have the same name provided that they are not located in the same folder, but every item will always have a unique identifier. This identifier is used in external references to the item, such as a link to an analysis file that you can send to a colleague. If your colleague clicks the link, she can open the analysis file in TIBCO Spotfire. Here is an example of such a link:

http://spotfireserver:8080/spotfire/...1-96d3dfb41742

**Copy and Move**

When you copy or move an item to a folder where an identically named item is already present, you must decide how to handle this conflict.

- **Automatically rename copied item** - this will append a "(2)" to the name of the file you copied.

- **Replace existing item** - this will replace the existing item with the one you copied.

- **Keep existing item** - this will keep the existing item.

**Import**

If an imported item has the same name or GUID as an existing item there will be a conflict. There are three options for how to handle this. These options are explained in detail below.

- Automatically assign new name or GUID to imported item

- Replace existing item

- Keep existing item
The following images explain in detail how various conflicts are handled. This is primarily important for library administrators about to import content into the library, since one should be aware of the result if there are conflicts on GUIDs or names. Each section starts with an image showing the task performed, and then the result is shown for each of the three options.

Name Conflict Resolution

Import Folder A from Library 1 to Library 2

Automatically rename copied item

Replace existing item
Keep existing item

GUID Conflict Resolution

Import Folder A from Library 1 to Library 2
Automatically assign new name or GUID to imported item

Replace existing item

Keep existing item
Name and GUID Conflict Resolution

Import Folder A from Library 1 to Library 2

Automatically assign new name or GUID to imported item
Replace existing item

```
Library 2
  Folder A
    GUID:100
    Folder X
      GUID:200
      Item 1
        GUID:300
      Item 2
        GUID:301
    Item 3
      GUID:303
    Folder Z
      GUID:201
      Item 4
        GUID:304
```

Keep existing item

```
Library 2
  Folder A
    GUID:100
    Folder X
      GUID:200
      Item 1
        GUID:300
      Item 2
        GUID:301
      Item 3
        GUID:302
      Item 4
        GUID:303
    Folder Z
      GUID:201
```