Sitecore CMS 6.6

Report Designer Cookbook

A Guide to Working with Engagement Analytics Reports

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Chapter 1

Introduction

The instructions in this cookbook are for .NET developers working with Sitecore reports. Anyone working with Sitecore reports should also have a good knowledge of SQL and have access to a local development instance of Sitecore.

Sitecore Engagement Analytics contains a selection of pre-defined reports such as recent visits, sales leads, site health, visitor searches, page goals and events, top external keywords and top traffic sources. You can view these reports in Engagement Analytics or on individual content items and can customize them using Sitecore and the Stimulsoft Report Designer.

The examples used in this cookbook come from the Nicam demo site and Office Core running on Sitecore CMS with the Sitecore Engagement Analytics and a SQL Server database. Both websites use a large amount demo data which makes it easier to test different report scenarios without the need to deploy them to a live environment.

Note - The instructions in this guide include SQL queries based on SQL Server syntax which may not be compatible with other database management systems such as Oracle.

- **Chapter 1 — Introduction**
  This chapter is a description of the content, aims, and the intended audience of this cookbook.
- **Chapter 2 — Report Design Tools**
  This chapter provides an overview of the tools that you need to create and edit reports.
- **Chapter 3 — Editing Reports**
  This chapter covers the basics, from changing font styles to adding charts and images and hyperlinks to reports.
- **Chapter 4 — The Analytics Database**
  This chapter provides an overview of the Analytics database outlining some useful table groupings to use when designing reports.
- **Chapter 5 — Creating and Modifying Reports**
  This chapter explains how to create a report using the Web Reports Designer and how to make some simple modifications.

1.1 Security Roles and Sitecore Engagement Analytics

You must be a member of certain Sitecore security roles to access the functionality in Sitecore Engagement Analytics.

The important Sitecore Engagement Analytics security roles are:

Security Role	Grants
Client Authoring	Access to the Marketing Center.
Analytics Reporting	Access to the Engagement Plan Monitor and to the Executive Dashboard. Requires membership of the *Client Authoring* role.
Analytics Maintaining	Access to the Engagement Plan Designer and Supervisor. Requires membership of the *Client Authoring* role.
Analytics Testing	Access to the Test Lab in the Marketing Center as well as access to the test functionality in the Page Editor and in the Content Editor. Requires membership of the *Client Authoring* role. Members of this role can create and edit test variations. Users who are not members of this role can switch test variations. Members of the *Minimal Page Editor* role cannot switch test variations.
Analytics Personalization	Access to the personalization functionality in the Page Editor and in the Content Editor. Requires membership of the *Client Authoring* role. Members of this role can create and edit personalization rules. Users who are not members of this role can switch personalization variations. Members of the *Minimal Page Editor* role cannot switch personalization variations.
Analytics Content Profiling	Access to the content profiling functionality in the Page Editor and in the Content Editor. Requires membership of the *Client Authoring* role.

All of the analytics roles are members of the *Client Users* security role.

Note
These roles do not allow you to edit report definition items. To edit report definition items you must either be an Administrator or a member of the *Sitecore Client Developing* role. This role gives you permission to rename, move, copy or sort report definition items.

Chapter 2

Report Design Tools

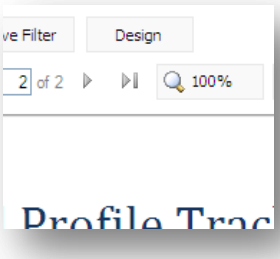
This chapter gives you an overview of the two Stimulsoft client options available for creating and editing reports in Engagement Analytics.

- Stimulsoft Web Reports Designer
- Stimulsoft Windows Reports Designer

2.1 Stimulsoft Web Reports Designer

Official name: *Stimulsoft Reports.Web*

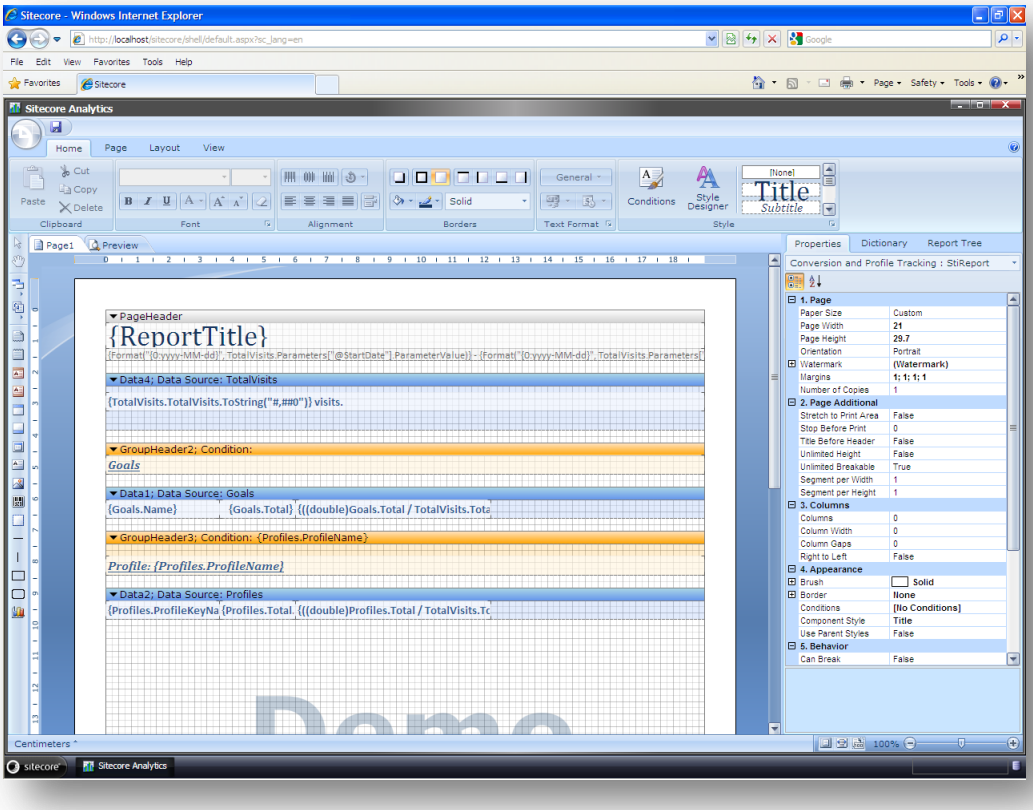
The Web Reports Designer is the standard report designer available in the Sitecore Engagement Analytics. In Engagement Analytics, to access the Web Reports Designer client, click the *Design* button at the top of any report.



In the Web Reports Designer, you can edit the format of existing reports or create new reports by making and editing a duplicate copy. Also, you can use the Web Reports Designer to add images, hyperlinks, and charts to your reports.

The Web Reports Designer has some limitations. For example, you cannot use keyboard shortcuts and you cannot easily create SQL queries using this tool. Use the Windows Reports Designer for more advanced report editing functionality.

The Web Reports Designer user interface displayed in Internet Explorer:



2.2 Stimulsoft Windows Reports Designer

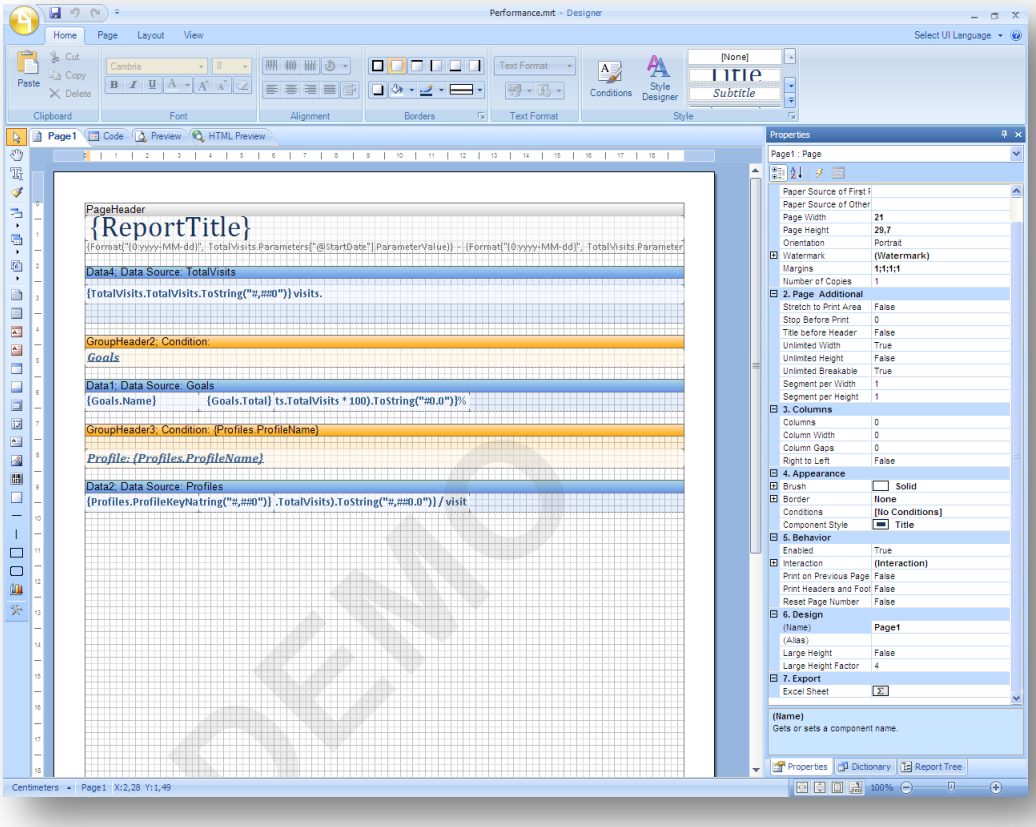
Official name: *Stimulsoft Reports.Net*

The Stimulsoft Windows Reports Designer is available as a free trial download from the Stimulsoft Web site. It is a richer and more powerful reports design tool suitable for developers or report analysts. It gives more precise control over the report design process. Ultimately, you can achieve the same end results using the Web Reports Designer but if you want to develop a significant number of reports for your Web site, we would recommend that you purchase this tool or download the trial version.

Advantages of using the Windows Reports Designer:

- Create new reports from scratch
- Use wizards to quickly create new reports
- Reports load quickly (the client does not run in a browser window)
- Keyboard shortcuts (including Ctrl Z)
- Preview functionality
- Import and export formatting styles

The Windows Reports Designer client user interface:



Note
The free trial version of the Windows designer (*Stimulsoft Reports.Net)* may not include all the same functionality as the version in Sitecore. For example, in more recent versions there may be some additional properties available. However, this should not affect the running of your reports.

Chapter 3

Editing Reports

This chapter introduces basic report designer concepts such as editing text and adding charts and images to existing reports:

- Engagement Analytics Reports
- Formatting Text
- Adding Charts to Reports
- Adding Images to Reports
- Adding Links to Reports

3.1 Engagement Analytics Reports

In the Sitecore Engagement Analytics, a report consists of three components:

- Sitecore report definition item
- Sitecore report query item
- Stimulsoft `.mrt` report file

3.1.1 Sitecore Report Definition Item

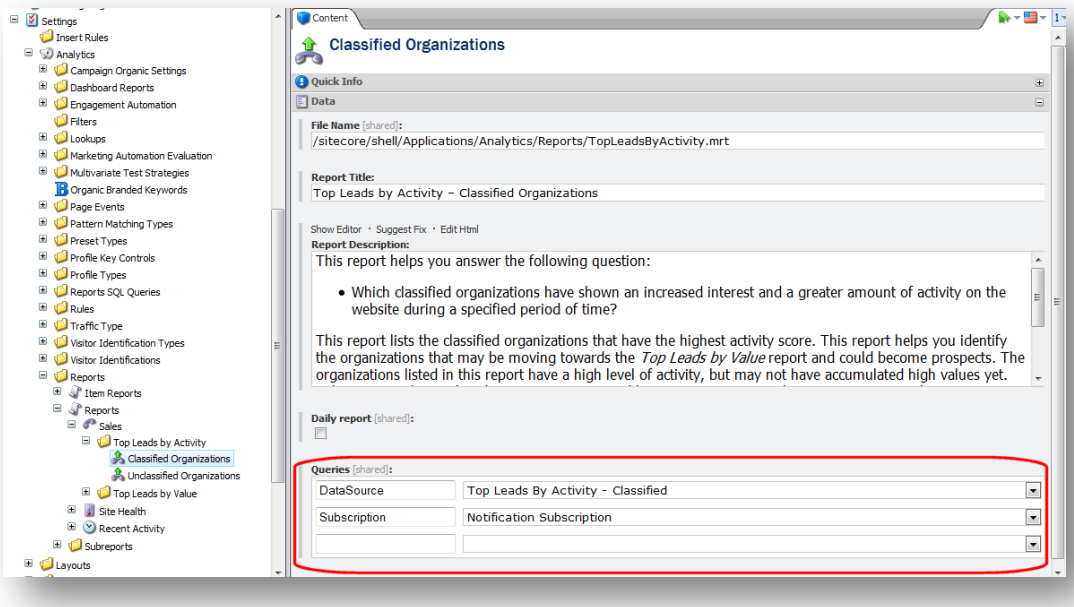
A Sitecore report definition item is like any other content item stored in the Sitecore content tree. To access report definition items, open the Content Editor and navigate to the following location:

`/sitecore/system/Settings/Analytics/Reports/Reports`

Each report item contains the following fields:

Field	Description
`File Name`	Path to the report Stimulsoft .mrt file. This field links the Sitecore definition item to the Stimulsoft mrt file.
`Report Title`	Enter the title that you want to display on the report.
`Report Description`	Enter the description that you want to display on the report.
`Daily Report`	Check box that filters the report to show daily data.
`Queries`	All reports are bound to one or more SQL queries. In the first field enter the word *DataSource*. In the second field, use the drop-down to select a SQL or Oracle query.

Classified Organizations report definition item showing the Queries field:



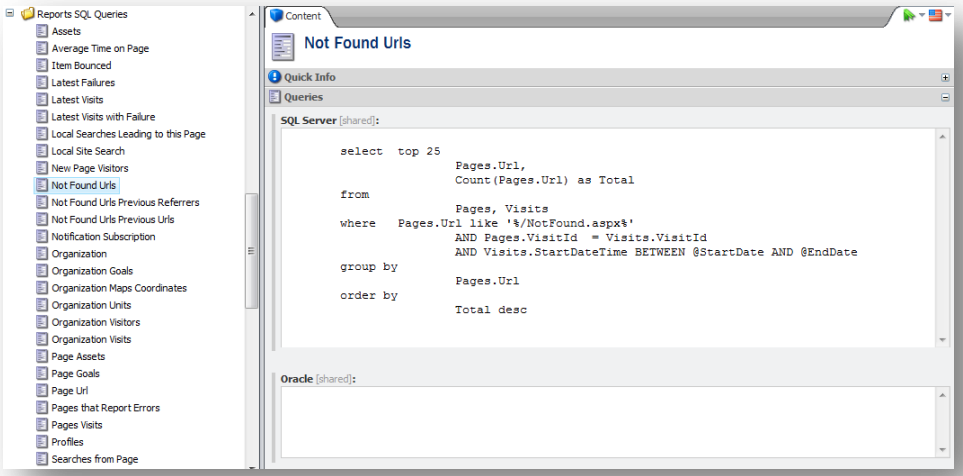
3.1.2 Sitecore Report Query Item

A Sitecore report query item contains a SQL query used by report definition items. All report query items are stored in the Sitecore content tree:

`/sitecore/system/Settings/Analytics/Reports SQL Queries`

Each report query item contains the following fields under the Queries group:

- SQL Server
- Oracle



Create SQL queries in a tool such as *SQL Server Management Studio* and paste the query into the SQL Server field. Use the Stimulsoft Web Reports Designer to create a report and to test queries before adding them to the content tree.

3.1.3 Stimulsoft .mrt File

When you save a report, you save all the configuration data for the report in an XML file with the .mrt extension. This data in this file includes the following:

- Connection string
- Layout and presentation
- Text formatting

The *report.mrt* file is a Stimulsoft file type and is stored in the following location in your Web site file system:

`wwwroot\<sitename>\WebSite\sitecore\shell\Applications\Analytics\Reports\`

When you edit a report in either the Web or Windows report designer you save the changes you make directly to the .mrt file. You can base several reports on the same report .mrt file, so it is easy to overwrite an existing report.

Note
If you create multiple new reports create a new folder for your reports to avoid confusion with the standard Sitecore reports.

3.1.4 Opening a Report in the Stimulsoft Web Designer

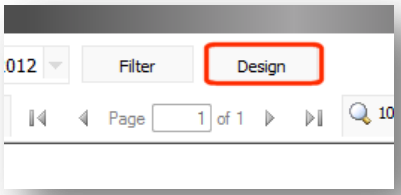
You can open and edit a report in Engagement Analytics using the built-in Stimulsoft Web Reports Designer. Use the Designer to duplicate or create new reports. To edit or create new reports you need the appropriate permissions to gain access to the Sitecore content tree and file system.

Note
Some reports share the same .mrt report file, so changes to one report file can affect several reports. Duplicating a report and saving it with a different name helps to avoid this problem.

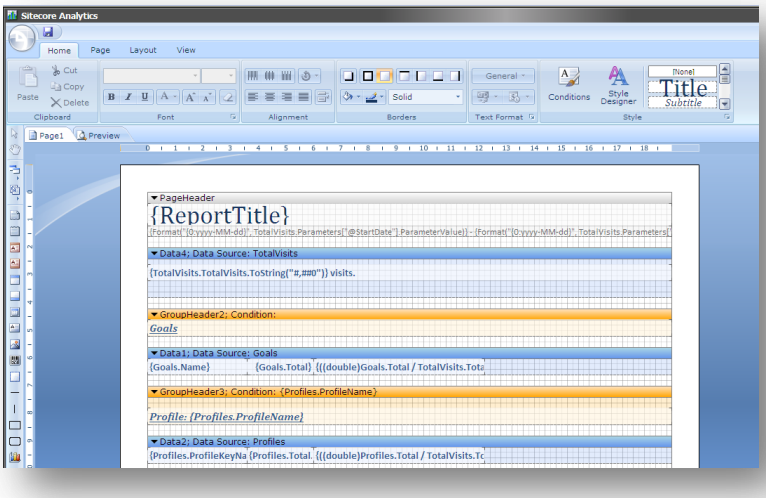
For more detailed steps on how to create or duplicate a report, see Chapter 6, Creating and Modifying Reports.

To open a report in the Stimulsoft Web Reports Designer client:

1. In Engagement Analytics, select the report you want to edit.
2. Click **Design** at the top of the report.



View the report in the Stimulsoft Web Reports Designer.



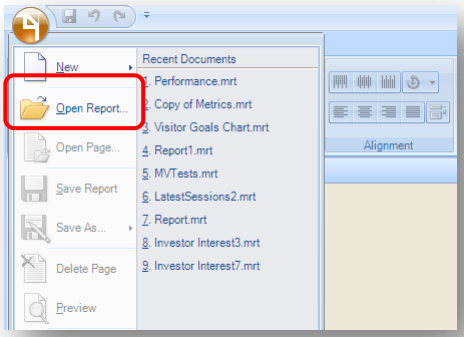
3.1.5 Opening a Report in the Stimulsoft Windows Reports Designer

The Windows reports designer allows you to open and edit a report directly from the `.mrt` report file and allows you to create new reports from scratch.

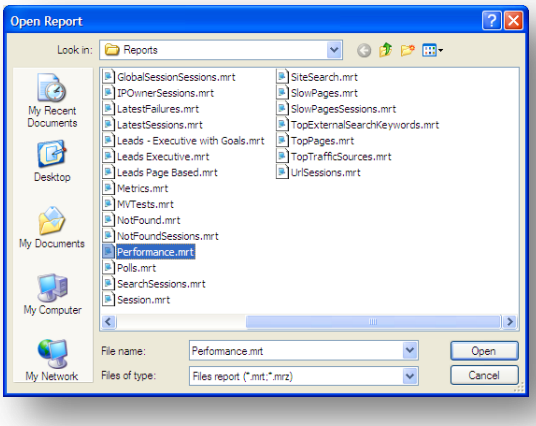
To open a report in the Windows Designer client:

1. Click the Start menu on your computer and then open the Windows reports designer from the Stimulsoft group in All Programs.

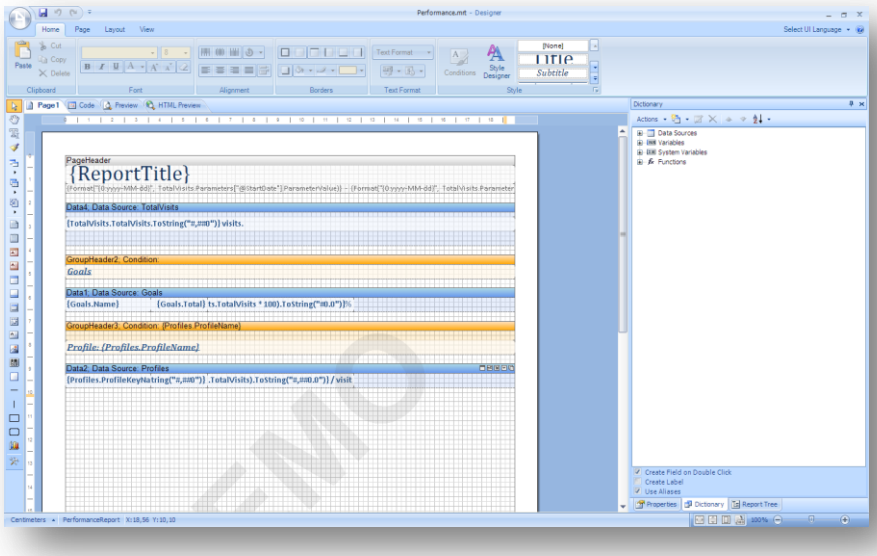
2. Click the Stimulsoft menu, then click **Open Report** and browse to the `.mrt` file you want to edit.



3. Select a report .mrt file to open



4. View the report in the Windows Designer.



All report the `.mrt` files are stored in the following location:

```
wwwroot\<Web site name>\WebSite\sitecore\shell\Applications\Analytics\Reports
```

3.2 Formatting Text

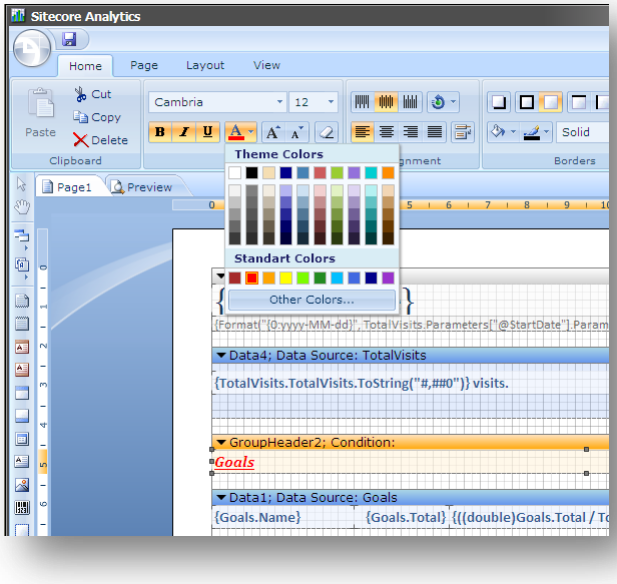
This section explains how to format text in an existing Engagement Analytics report. Using the Web Designer, you can easily change:

- Text colors
- Font style
- Font-size
- Bold
- Underline
- Italic

3.2.1 Formatting Text Using the Ribbon

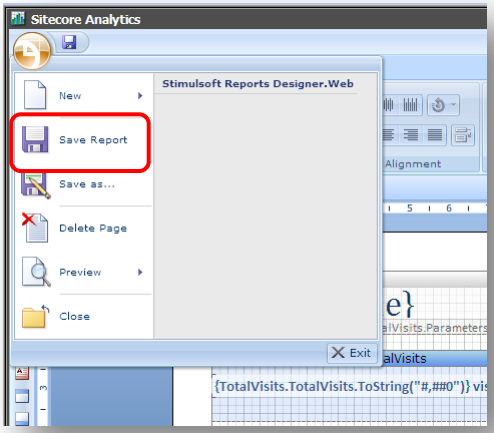
Open an Engagement Analytics report in the Web Reports Designer. Make a duplicate of the report first and then make the following changes:

1. In the report layout, click on a text box and then in the **Font** group, click **Text Color**.



2. Select a different text color, such as red.

3. In the Stimulsoft menu, click **Save Report** to save your changes.



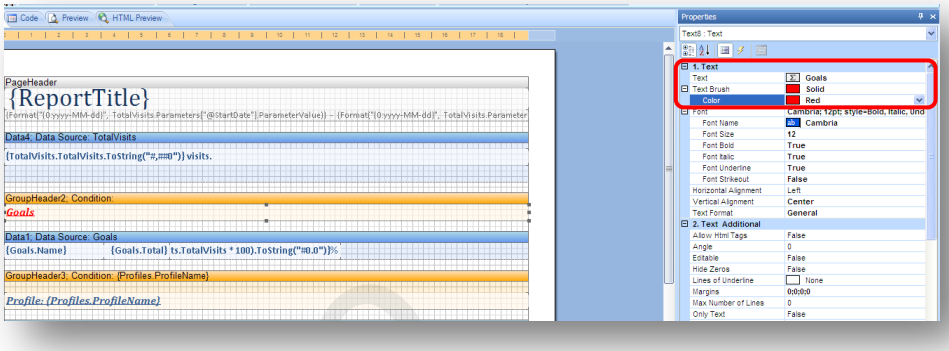
4. Click **Exit** to close the report designer.
5. In **Engagement Analytics** preview your report.

You can use the Stimulsoft ribbon in exactly the same ways as you would use the Microsoft Word ribbon to change text size and to apply other styles such as bold, underline and italic.

3.2.2 Formatting Text Using Properties

To format text using the **Properties** panel:

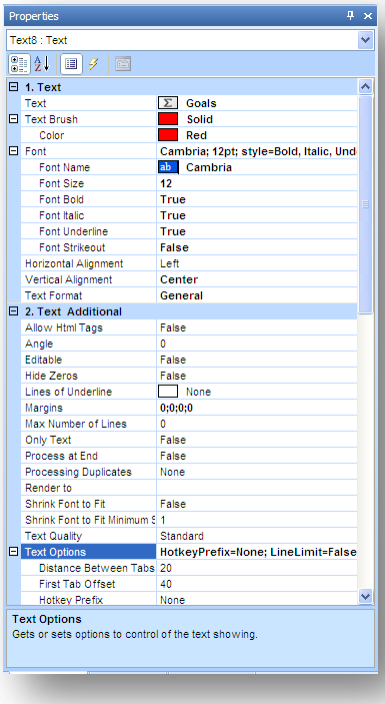
1. In the report layout, click on a text box and then in the **Properties** panel, in the **Text Brush**, **Color** field select *Red*.



2. To save your changes, click **Save Report**.
3. Click **Exit** to close the report designer.
4. In **Engagement Analytics** preview your changes.

The **Properties** panel gives you more control than the ribbon over formatting text. For example, you can enter hexadecimal values directly into the **Text Brush**, **Color** property. You can also set additional properties to make more advanced changes. For example you can allow HTML tags to be

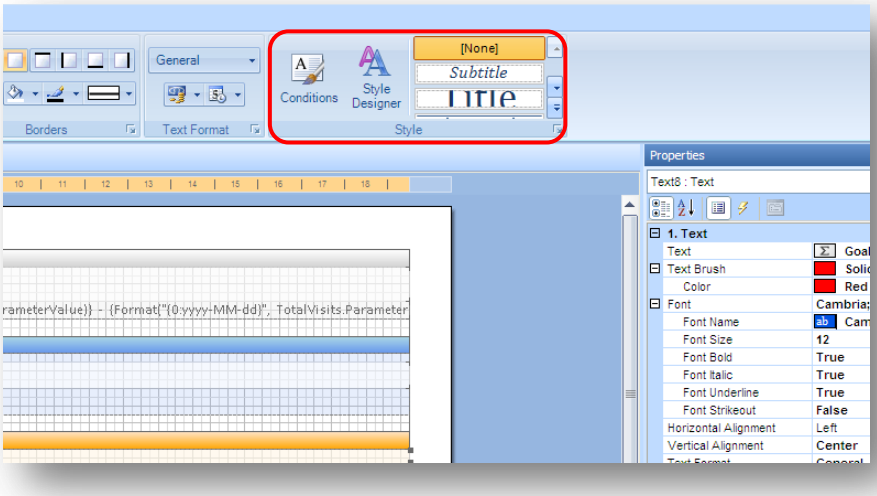
used to format text by setting **Allow Html Tags** property to *True*.



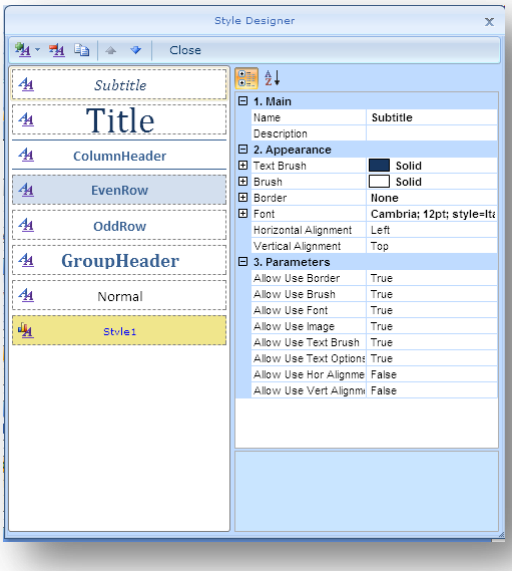
3.2.3 Styles

You can also control the format of your text, headings, and charts using *Styles*.

In the Stimulsoft ribbon, **Style** group you can access all your style options.

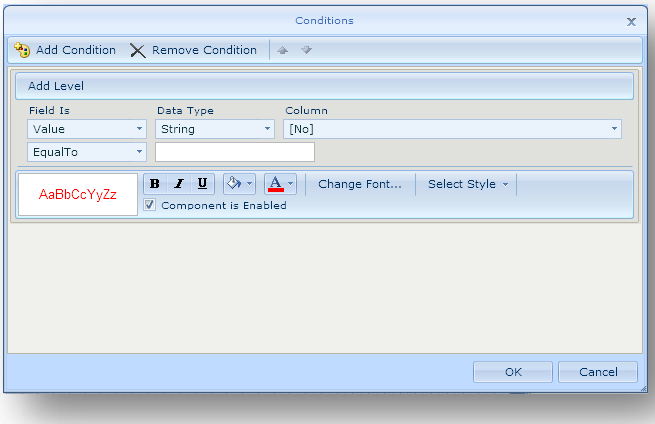


To view all styles or to add a new style, open the **Style Designer** window.



All the styles contained in the Style Designer are stored in a `.sts` file. You can export styles that you want to save or import new styles from a saved `.sts` file.

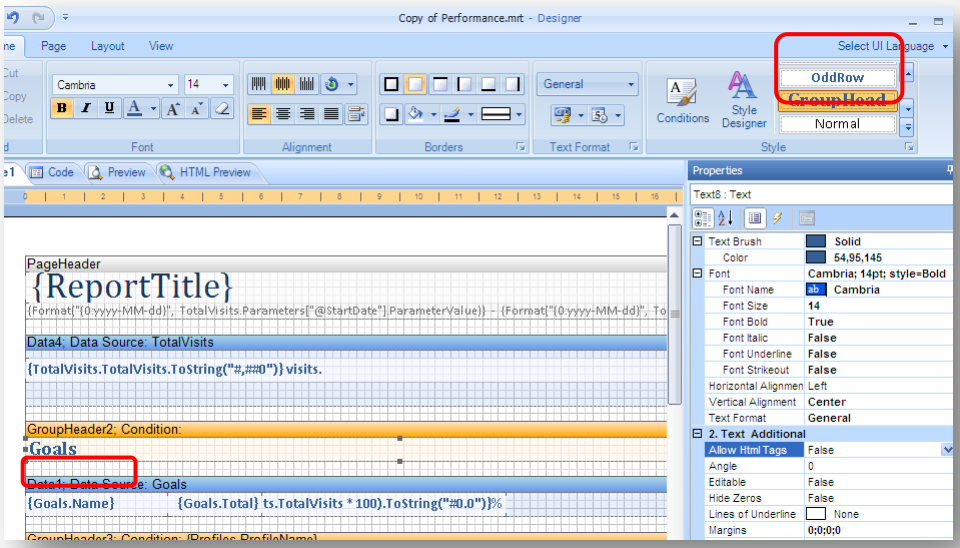
The **Conditions** window allows you to create conditional formatting conditions based on values or expressions.



3.2.4 Applying Styles

To apply a different style to a report:

1. Click on a text box in a report that you want to edit.
2. Select a text box and click on one of the styles visible in the right hand side of the **Styles** panel. For example, *GroupHead*.



3. Save your changes and preview your report in **Engagement Analytics**.

3.3 Adding Charts to Reports

By providing a visual overview of data, charts and graphs can make reports more meaningful at a glance. This can be particularly useful to marketing and sales executives who quickly need to identify trends or potential leads.

You can easily add a chart or graph to a report using the Web Reports Designer.

The following example explains how to add a bar chart to an existing Sitecore report.

Start by opening a report such as *Page - Goals and Events*. To open this report, first select a content item, then in the Sitecore ribbon, select the *Analyze* tab and in the *Behavior* group click *Reports.*

It is easier to use an existing report so you can re-use the data contained in the report. Before making any changes to an existing report, you must first duplicate the Sitecore report definition item, Sitecore SQL query item and report .mrt file first. To do this you need the appropriated permissions to access the Sitecore content tree and file system.

Note
Some report files, such as TopLeadsByValue.mrt are used by multiple reports, so changes to one report file can affect several reports. Duplicating a report and saving it with a different name helps to avoid this problem.

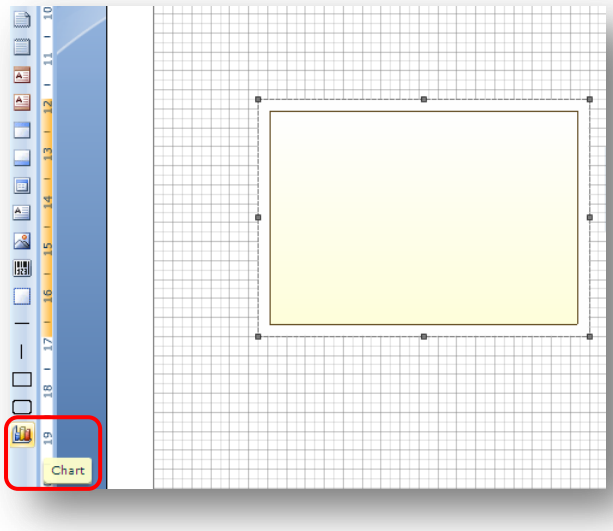
For more detailed steps on how to duplicate a report, see Chapter 5, Creating and Modifying Reports.

You are going to make a simple bar chart that only displays information related to conversions, so first remove any information about profiles that appears on this report. If you wish, you can also change the heading.

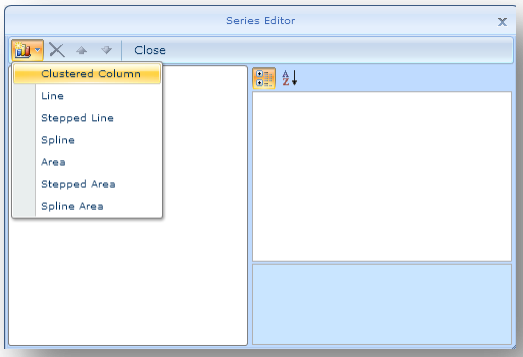
3.3.1 Creating a Bar Chart

To create a new bar chart:

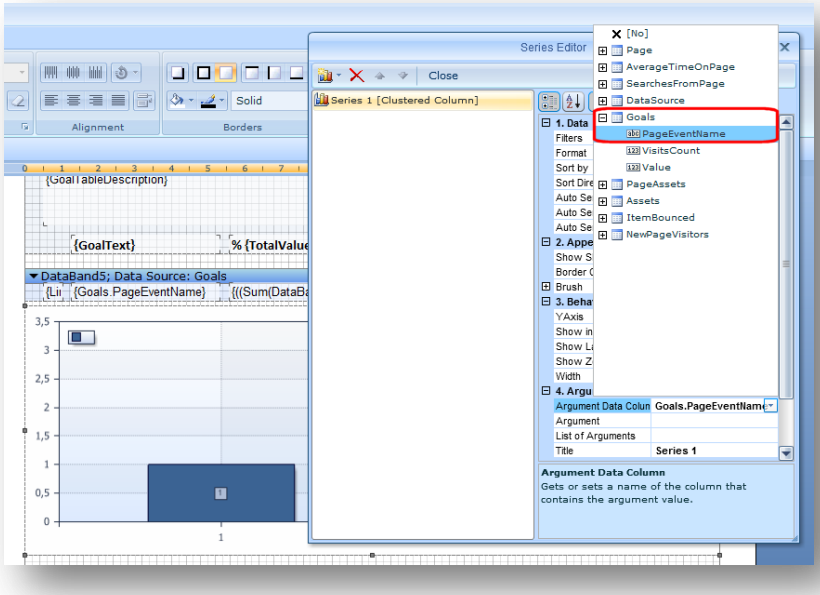
1. In the Content Editor, under **Item Reports**, open the *Page - Goals and Events* report.
2. Click **Design** at the top of the page, to open the report in the Web Reports Designer.
3. In the report designer toolbox, click **Chart** and with the pencil tool draw a container for your bar chart.



4. Double click the box you created to open the **Series Editor** window.

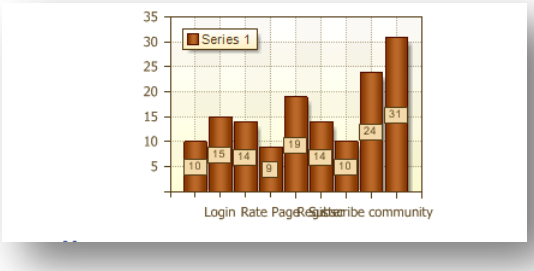


5. Select *Clustered Column* as your chart type.
6. Once you have chosen a chart type, the right hand panel of the **Series Editor** window displays properties that you can set on your chart. Select property **4. Argument**.
7. In the **Argument Data Column** field, enter the name of an Analytics database table followed by a column name. For example, enter *Goals.PageEventName* in the pop-up **Text Editor** window. This is how you set the X axis which appears at the base of your chart.



8. In the **Value Data Column** property, enter the name of the same table but this time a different column name. For example, *Goals.Value.*
9. Select any other field in the **Series Editor** and then click **Close** to save your changes and exit the **Series Editor** window.

10. Save your report, close the designer and preview the report in **Engagement Analytics**. Your chart should now look something like this:



Next you can try to improve the formatting of your chart.

3.3.2 Formatting Charts

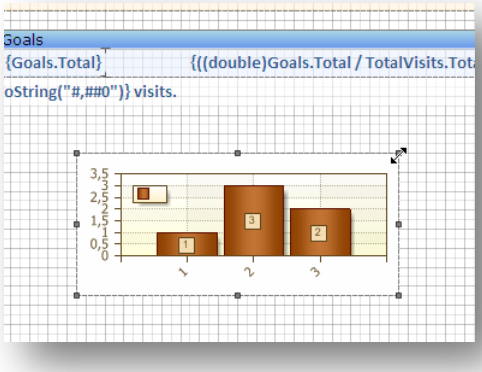
In the Web Reports Designer, using the bar chart that you created, add styles and set properties to add color and other formatting.

You can place a chart on any other component of a report such as a report header, group header, data source or text box but usually charts appear above or below the other components on the report.

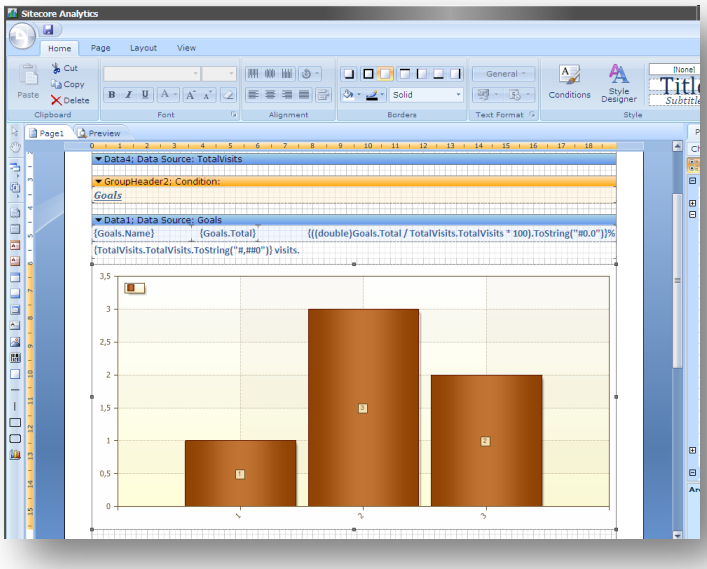
Resizing a Chart

To re-size a chart:

1. Click on the chart you created earlier.
2. Make sure you place your chart directly below the data band. Then move the mouse over the chart to see the re-size arrows.



3. Adjust the chart size to fill the full width of the report work area.

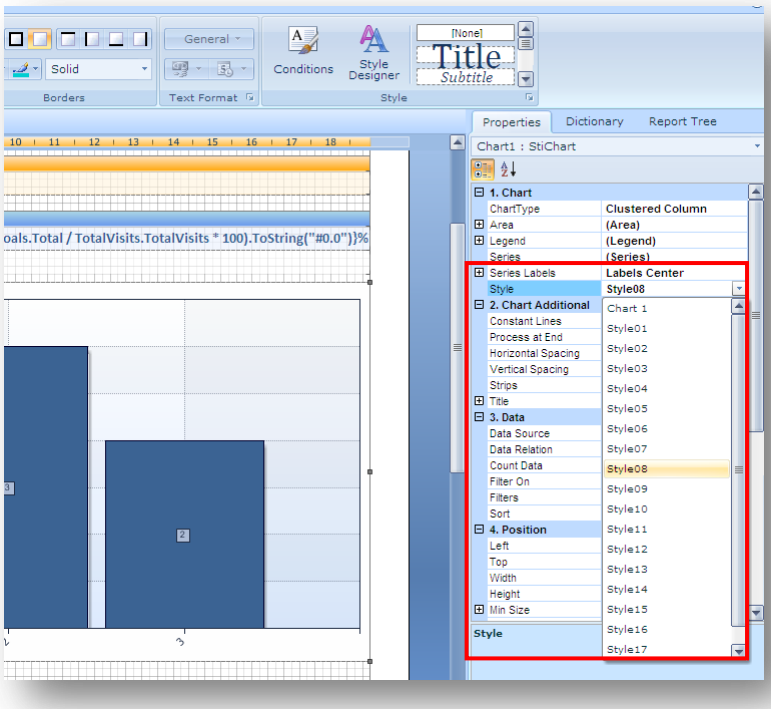


Changing Chart Colors

In the Web Reports Designer, you can change the color scheme of a chart using pre-defined styles. You can also create your own custom color schemes.

To change a chart color scheme:

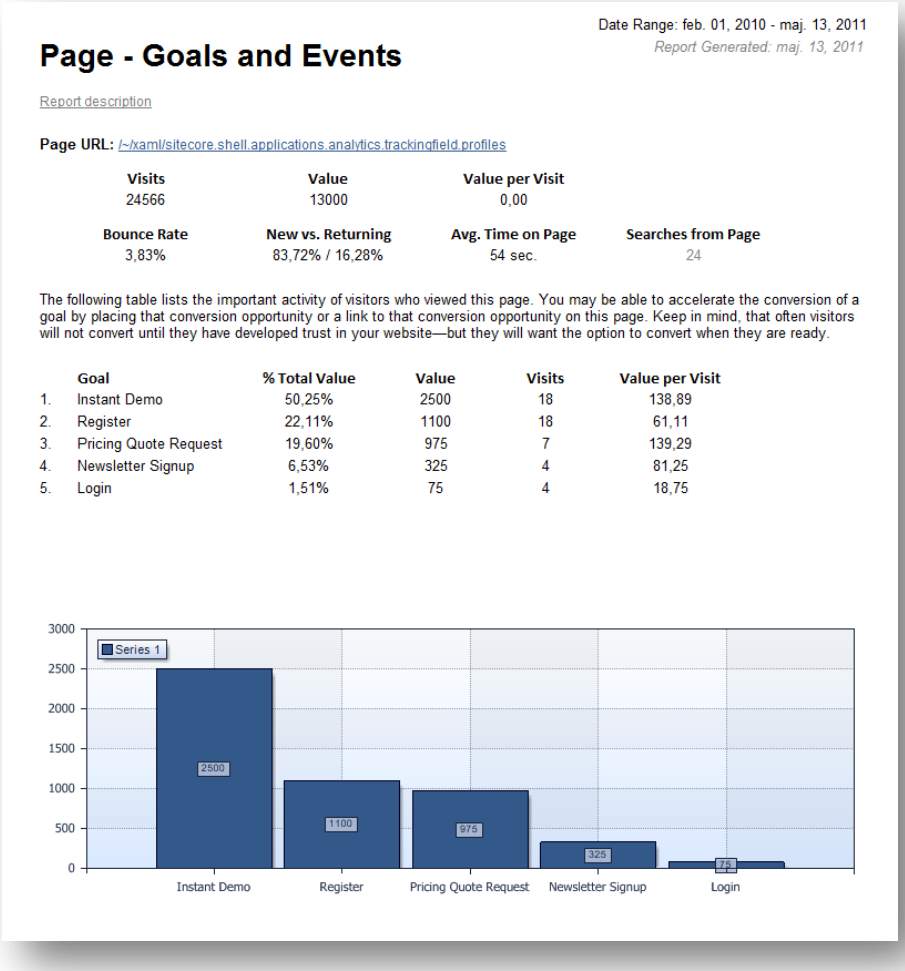
1. In the Web Reports Designer, select your chart.
2. Click the **Properties** tab on the right-hand side of the page to view the chart properties.
3. In property number **1. Chart**, click **Style,** and then click the drop-down menu to see all the available chart styles.



4. Select *Style 08*.

When you select a style, you see a preview of the selected color scheme displayed in the report designer.

5. Save your changes and close the report designer.
6. Preview your report in **Engagement Analytics**. Your report should now look something like this:



Date Range: feb. 01, 2010 - maj. 13, 2011
Report Generated: maj. 13, 2011

Page - Goals and Events

Report description

Page URL: /~/xaml/sitecore.shell.applications.analytics.trackingfield.profiles

Visits	Value	Value per Visit
24566	13000	0,00

Bounce Rate	New vs. Returning	Avg. Time on Page	Searches from Page
3,83%	83,72% / 16,28%	54 sec.	24

The following table lists the important activity of visitors who viewed this page. You may be able to accelerate the conversion of a goal by placing that conversion opportunity or a link to that conversion opportunity on this page. Keep in mind, that often visitors will not convert until they have developed trust in your website—but they will want the option to convert when they are ready.

	Goal	% Total Value	Value	Visits	Value per Visit
1.	Instant Demo	50,25%	2500	18	138,89
2.	Register	22,11%	1100	18	61,11
3.	Pricing Quote Request	19,60%	975	7	139,29
4.	Newsletter Signup	6,53%	325	4	81,25
5.	Login	1,51%	75	4	18,75

Tip
The Web Reports Designer takes a few seconds to load each time you open and close it. Keep a second instance of Engagement Analytics open to make it quicker to preview your changes.

Adding Chart Labels

You can add labels to your charts. For example, add labels to the X and Y axis, a title or add a legend. A legend is like a key that you can refer to if you have multiple columns of different colors

Overview of Chart Labels:

Use the **Properties** panel to add labels to your chart. There are many different properties that you can set on a chart, so start by adding the following:

- Titles to the X and Y axis
- A key or legend
- Labels to appear on each column

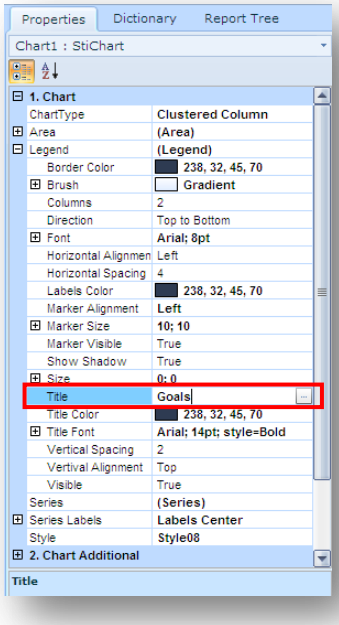
To do this, use property **1. Chart**.

The following table gives you an overview of some of the main properties in **Chart**.

Property (example)	Description	Value
Area • X Axis ○ Title ▪ Text • Y Axis ○ Title ▪ Text • Color Each	*Area* contains several properties that allow you to control the format of the chart area. This could include the border, the background, or labeling the X and Y axis. *Color Each* lets you decide whether you want all columns to be the same color or different.	Enter a title to appear on the X axis (below the horizontal line at the base of the chart) Enter a title to appear on the Y axis (alongside the vertical line at the side of the chart) *True* or *False*
Legend • Title	*Legend* refers to the key. This is particularly useful in Pie Charts when the key provides more information about the different colored segments of the chart.	Enter a title to appear in the key. For example, *Goals*
Series Labels • Visible	Set *Series Labels* properties to add labels or to change the formatting of the columns that appear in your chart. For example, you can add a label to each column and choose whether to make them visible or not.	*True* or *False*

To add a chart legend label:

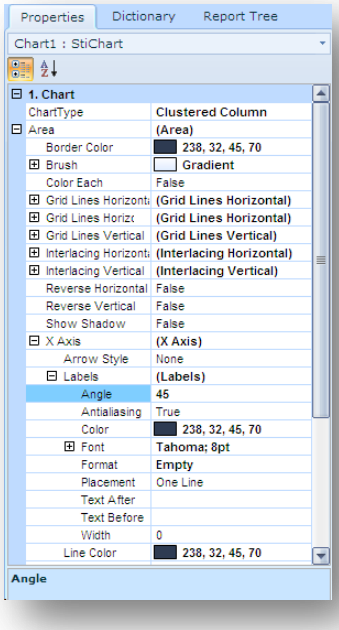
1. In the Web Reports Designer, select your chart.
2. In the **Properties** panel, select **Chart**, and then expand the **Legend** node.
3. In the **Title** field enter *Goals*.



To add labels to the X and Y axis of your chart:

1. In the report designer, select your chart.

2. In the **Properties** panel, select **Chart**, and then expand the following properties:
   - Area
   - X Axis
   - Labels
   - Angle
3. In the **Angle** property, enter *45*.



This means that you can display all labels on the X Axis at an angle of 45 degrees, so that all text is visible in the chart.

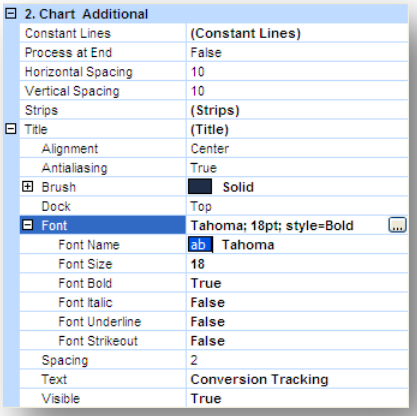
To add a chart title:

1. In the designer, select your chart.
2. Expand the following properties:
   - Chart Additional
   - Title
   - Text
3. In the **Text** property, enter a name, such as *Conversions*
4. Set the **Visible** property to *True*.

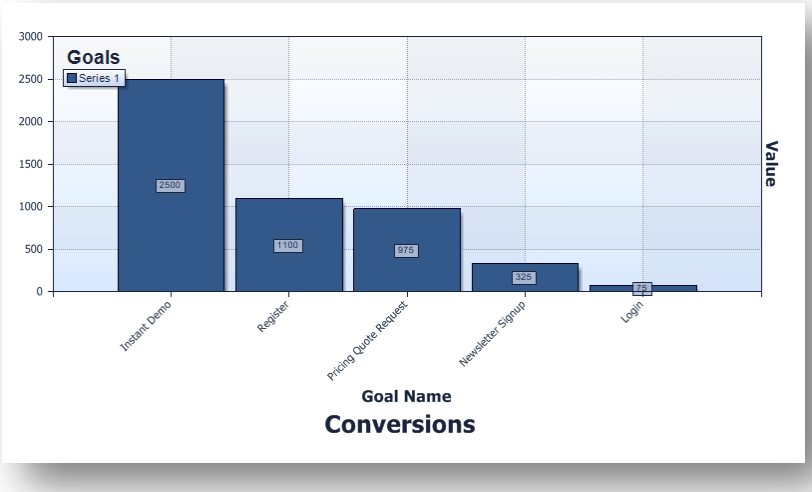
5. Chart Additional allows you to set several other properties.

   Set the following additional properties on your chart:

Property	Value
Alignment	Center
Dock	Bottom
Font Size	18
Font Bold	True



6. Save your chart and preview it in Engagement Analytics.



3.3.3 Creating a Pie Chart

Create a report that displays visitor goals as a pie chart.

Preparation:

1. In **Engagement Analytics**, select a report. For example, *Page - Goals and Events*.

   You will use this report as the basis for your pie chart report. This report already contains a Goals data source that you can re-use.

2. Find the report definition item in the content tree.

   `/sitecore/system/Settings/Analytics/Reports/Item Reports/Page - Goals and Events`

3. Duplicate this report and rename it *Visitor Goals Chart*.

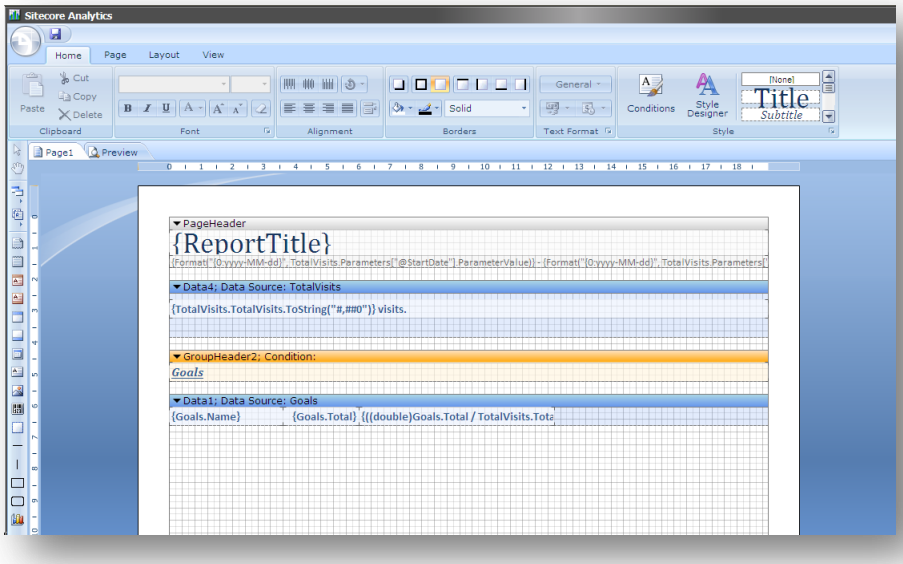
4. Locate the `.mrt` file associated with this report: `PageGoalsEvents.mrt`.

   `wwwroot\<site name>\WebSite\sitecore\shell\Applications\Analytics\Reports\ItemReports`

5. Rename the copy of `PageGoalsEvents.mrt` to `VisitorGoalsChart.mrt`.

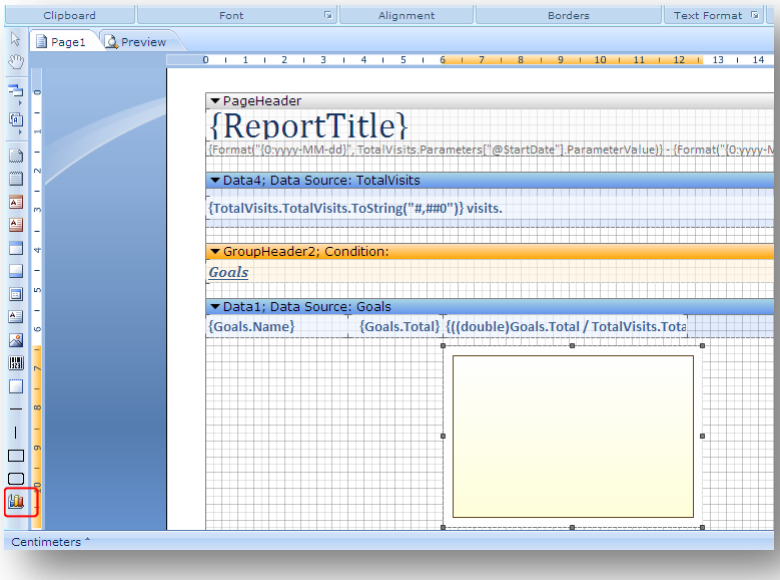
To create a new pie chart:

1. In **Engagement Analytics**, refresh the reports content tree.
2. Select the report *Visitor Goals Chart*.
3. Click **Design**, to open the Web Reports Designer.
4. Remove all data bands and headers that refer to profiles. To do this, click on a data band and then in the ribbon, click **Delete**. Your report layout should now only display goals:

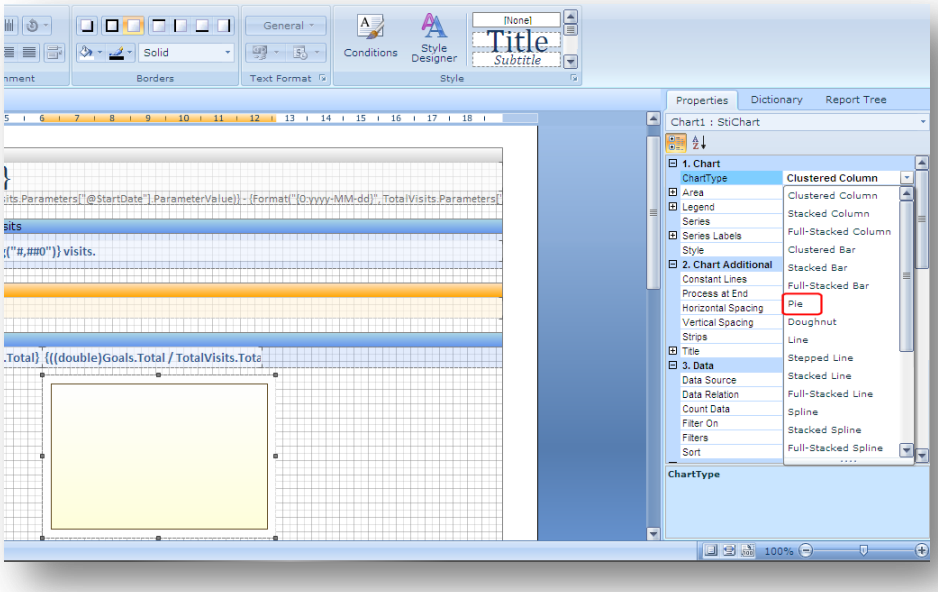


5. In the toolbox, click **Chart**.

6. Using the pencil tool, draw a box for your chart on the report layout.

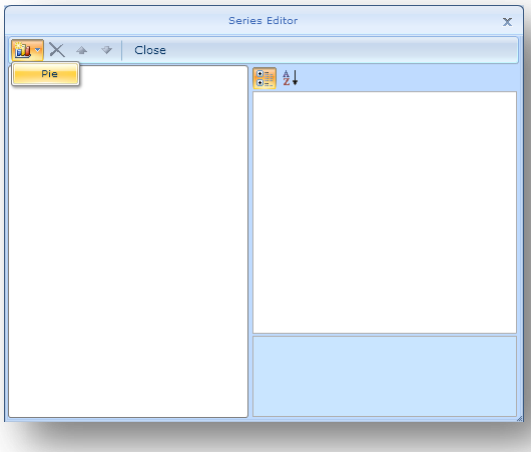


7. Select the empty box and in the **Properties** panel, select *Pie* from the **Chart Type** property.

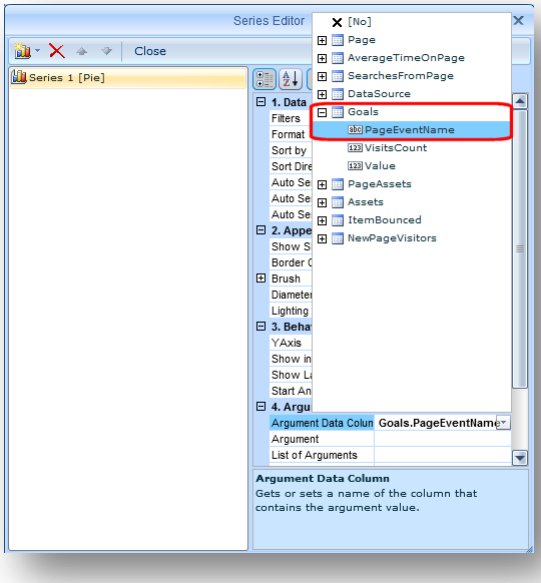


8. Double click the pie chart to open the **Series Editor** window.

9. In the **Series Editor** window, click **Pie** to display the properties of the pie chart.

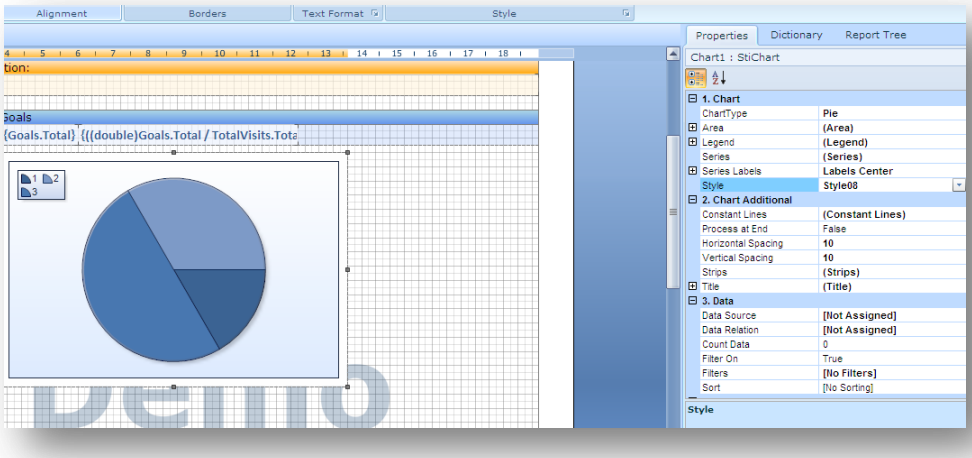


10. In the **Series Editor** window, choose columns to display in your pie chart. Select *Goals.PageEventName* from the *Argument Data Column* property drop-down.



11. In the *Value Data Column* property, enter *Goals.Value.*
12. To save your changes, select any field in the **Series Editor** window and then click **Close**.

13. Select your pie chart. In the **Properties** panel, click **Chart**, **Style** and then select *Style08* from the drop-down list.

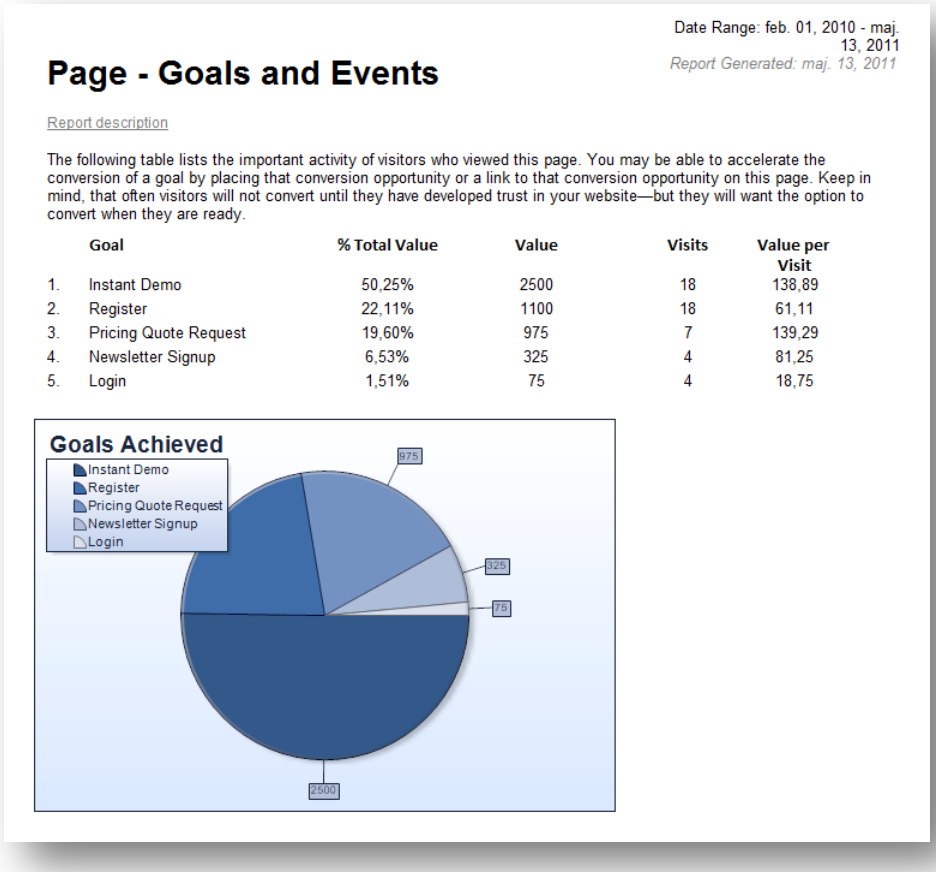


14. To add a legend and to format it, set the following properties in the **Properties** panel:

Property	**Value**
Legend, Title	Goals achieved
Legend, Columns	1
Legend, Direction	Right to Left
Series Labels	Outside
Series Labels, Legend Value Type	Argument

15. In the Stimulsoft menu, click **Save Report**.

In **Engagement Analytics**, preview your Goals pie chart.



Date Range: feb. 01, 2010 - maj. 13, 2011
Report Generated: maj. 13, 2011

Page - Goals and Events

Report description

The following table lists the important activity of visitors who viewed this page. You may be able to accelerate the conversion of a goal by placing that conversion opportunity or a link to that conversion opportunity on this page. Keep in mind, that often visitors will not convert until they have developed trust in your website—but they will want the option to convert when they are ready.

	Goal	% Total Value	Value	Visits	Value per Visit
1.	Instant Demo	50,25%	2500	18	138,89
2.	Register	22,11%	1100	18	61,11
3.	Pricing Quote Request	19,60%	975	7	139,29
4.	Newsletter Signup	6,53%	325	4	81,25
5.	Login	1,51%	75	4	18,75

3.4 Adding Images to Reports

In the Web Reports Designer, if you want to add an image to report, enter a URL link to the image. If you use the Windows Web Reports Designer, you can also browse your computer for images.

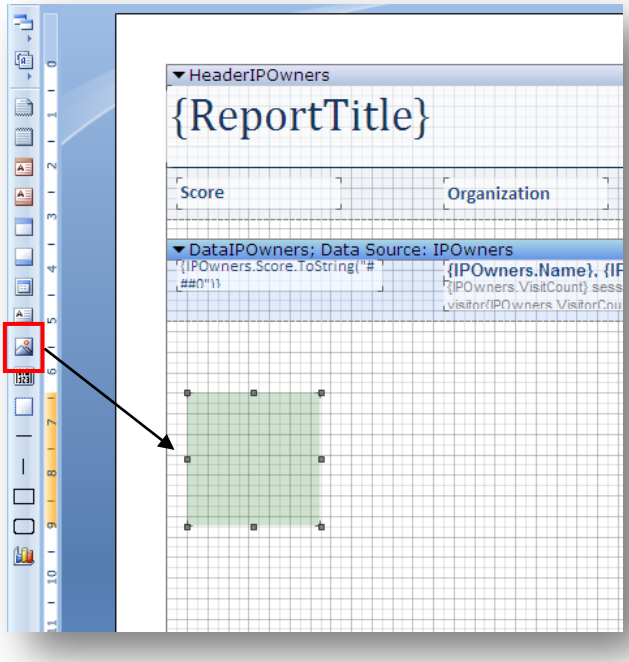
In this section, add an image to the *Visitor Goals Chart* that you created in the previous section. This is a duplicate of the Stimulsoft file `PageGoalsEvents.mrt`.

Alternatively, add an image to any of your existing reports.

3.4.1 Linking to an Image in the Media Library

To add an image to a report:

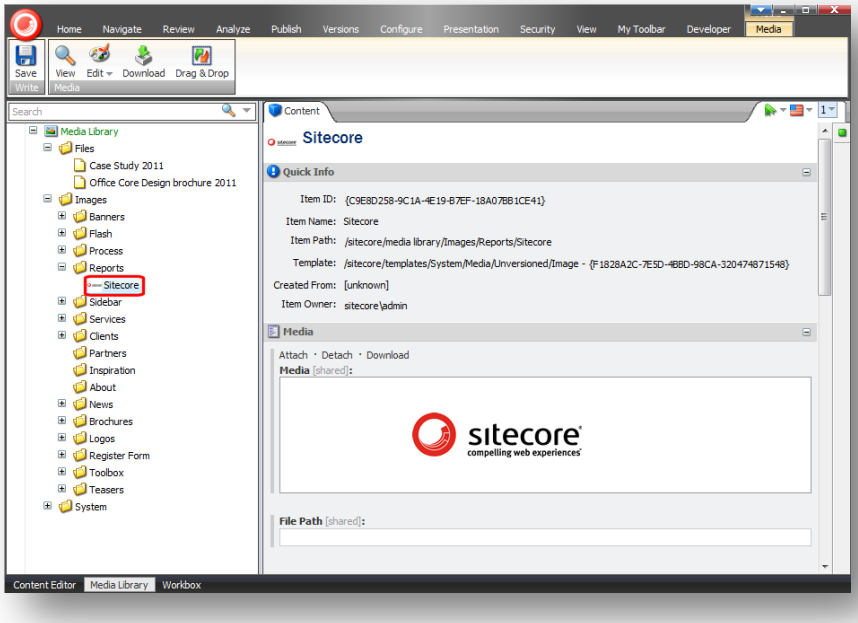
1. Open the *Visitor Goals Chart* in the Web Reports Designer.
2. In the tool box, click **Image** and drag a new image placeholder onto your report.



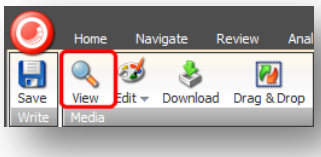
3. Double click the box to open the **Image** dialog box.
4. In the **Image** dialog box, you get the following options:

Option	Description
Data Column	Link to a BLOB image stored in a database
Image Data	Enter an image variable, for example `{MyImageVariable}`
URL	Enter a URL string that links to an image in the Media Library or on an external server.

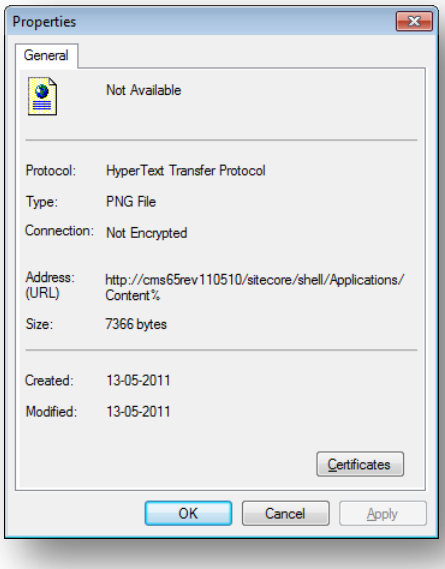
5. Link to an image stored in the Media Library. Open the Media Library and locate the image *Sitecore* in the content tree.



6. Select the image and in the ribbon, **Media** group, click **View**.

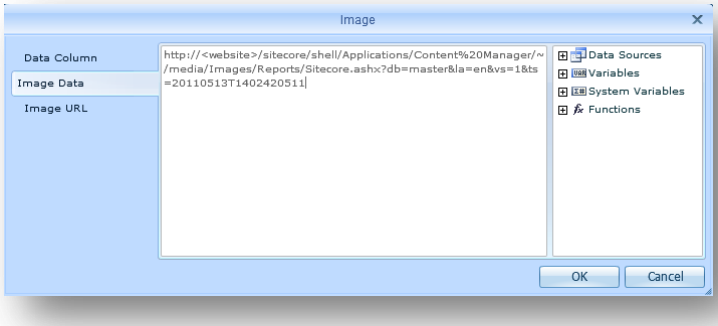


7. Right-click the pop-up window and select properties.



8. In the **Properties** window, in the **Address** field, highlight and copy the image URL.

9. In the report designer **Image** dialog box, paste the URL into the **Image URL** field.



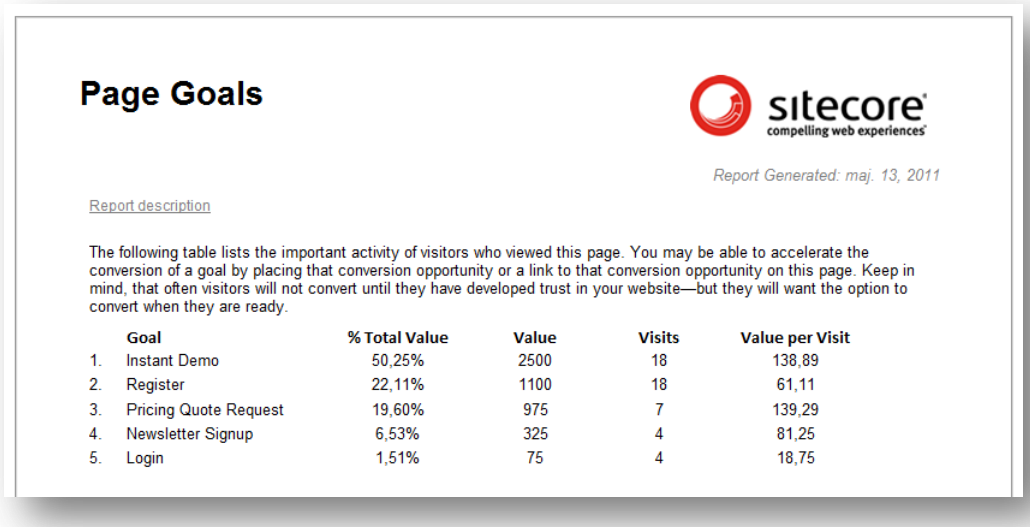
The URL for the *Sitecore* logo in the Media Library is:

```
http://<website>/sitecore/shell/Applications/Content%20Manager/~/media/Images/Reports/Sitecore.ashx?db=master&la=en&vs=1&ts=20110513T1402420511
```

10. Move your image to a better position on your report. For example, in the top right corner, next to the report title.

    You can easily add an image box to a report header or any other component of an Engagement Analytics report.

11. Click **OK** to close the **Image** dialog box.
12. Save your changes and preview your report in **Engagement Analytics**.



Page Goals

sitecore
compelling web experiences

Report Generated: maj. 13, 2011

Report description

The following table lists the important activity of visitors who viewed this page. You may be able to accelerate the conversion of a goal by placing that conversion opportunity or a link to that conversion opportunity on this page. Keep in mind, that often visitors will not convert until they have developed trust in your website—but they will want the option to convert when they are ready.

	Goal	% Total Value	Value	Visits	Value per Visit
1.	Instant Demo	50,25%	2500	18	138,89
2.	Register	22,11%	1100	18	61,11
3.	Pricing Quote Request	19,60%	975	7	139,29
4.	Newsletter Signup	6,53%	325	4	81,25
5.	Login	1,51%	75	4	18,75

3.4.2 Linking to Images on an External Server

If you have images stored on an external server or website, you can link to them using the URL field.

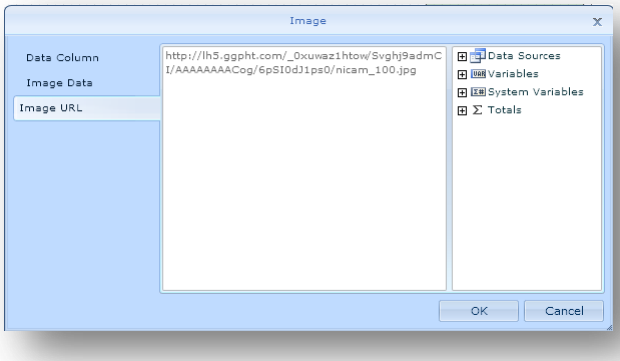
To add a link to an image on an external server:

1. Use the toolbox to add an image box to your report.
2. Double click the image box to open the **Image** dialog box.
3. In the **URL** field, enter a link to the location of your image. In this example, there is another version of the Sitecore logo stored on an external website. Most images stored in this way have a full URL string in their properties. Open the image properties and copy the image URL string.

The URL for the image in this example is:

```
http://lh5.ggpht.com/_0xuwaz1htow/Svghj9admCI/AAAAAAAACog/6pSI0dJ1ps0/sitecore.png
```

4. In the **Image** dialog box, paste the URL into the **Image URL** field.

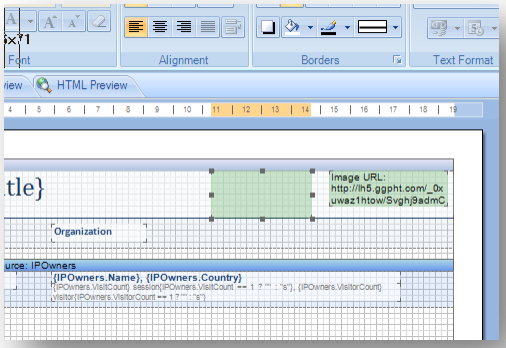


5. Click **OK** and save your report.
6. Preview your report in **Engagement Analytics**.

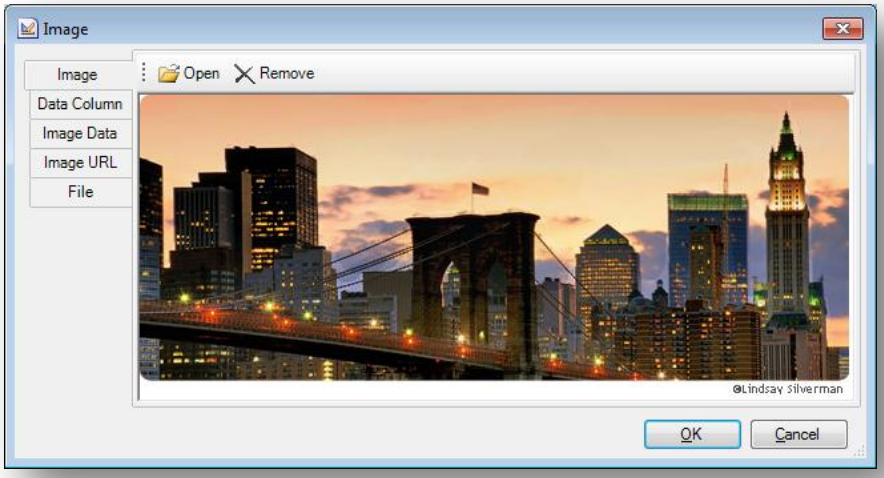
3.4.3 Uploading Images

In this section, upload an image from your local computer. Use the same report and add a second image to the title section. To do this you need to use the Stimulsoft Windows Reports Designer client.

1. Open the Windows Reports Designer client.
2. Add another image box to the title header of your report.



3. Double click on the image box to open the **Image** dialog box.



4. In the **Image** field, click **Open** to browse your computer for suitable images. Find an image and then click **OK**.
5. Preview your report in Engagement Analytics.

Page Goals

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Report Generated: maj. 13, 2011

Report description

The following table lists the important activity of visitors who viewed this page. You may be able to accelerate the conversion of a goal by placing that conversion opportunity or a link to that conversion opportunity on this page. Keep in mind, that often visitors will not convert until they have developed trust in your website—but they will want the option to convert when they are ready.

	Goal	% Total Value	Value	Visits	Value per Visit
1.	Instant Demo	50,25%	2500	18	138,89
2.	Register	22,11%	1100	18	61,11
3.	Pricing Quote Request	19,60%	975	7	139,29
4.	Newsletter Signup	6,53%	325	4	81,25
5.	Login	1,51%	75	4	18,75

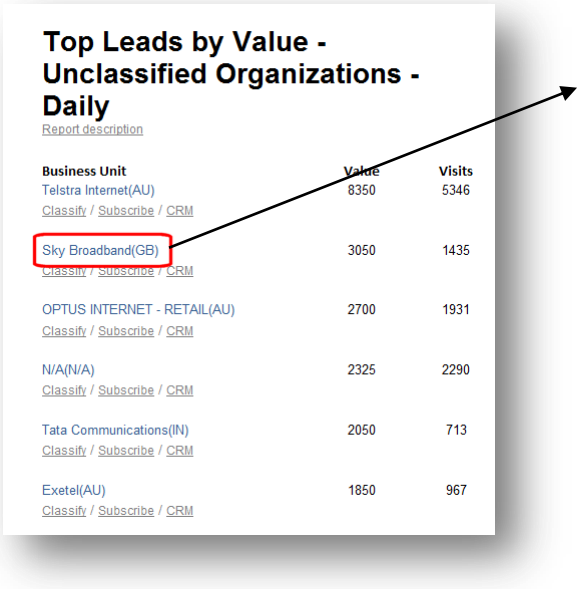
Note
The Image dialog box in the Windows Reports Designer has more options than the Web Reports Designer. For example, you can also use the File tab to link to a locally stored image. You can specify a variable name for your image in the Image Data field. Developers can then use this variable or expression when working with images.

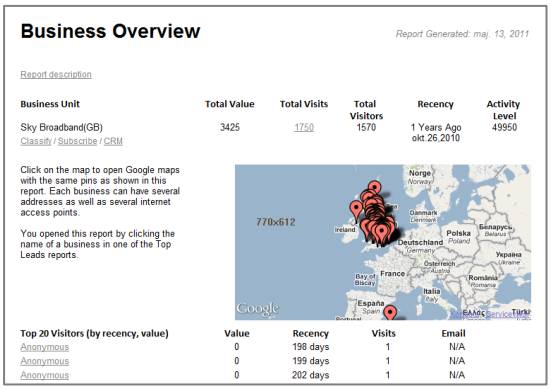
3.5 Adding Links to Reports

In Sitecore Engagement Analytics, there are three types of hyperlinks you can use:

- Link to another page on the same Web site
- Link to an external Web site
- Link to another report in Engagement Analytics

For example, the *Top Leads by Value* report contains a link to the *Business Overview* report from the visitor organization name.





The *Business Overview* report for *Sky Broadband* appears in a new window.

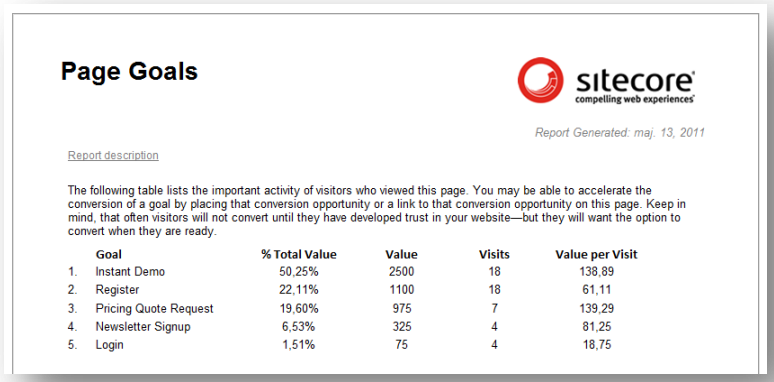
The *Top Leads By Value* report.

3.5.1 How to Link to a Web site

Select a suitable report. For example, the *Visitors Goal Chart* which we created earlier. This report lists goals achieved for visitors that have visited the Office Core Web site, also listing value, visits and total number of visits (relevance).

To create an internal link from the Sitecore logo on this report to the home page of the Office Core website:

1. Open your chosen report in the Web Reports Designer.



Page Goals

sitecore compelling web experiences

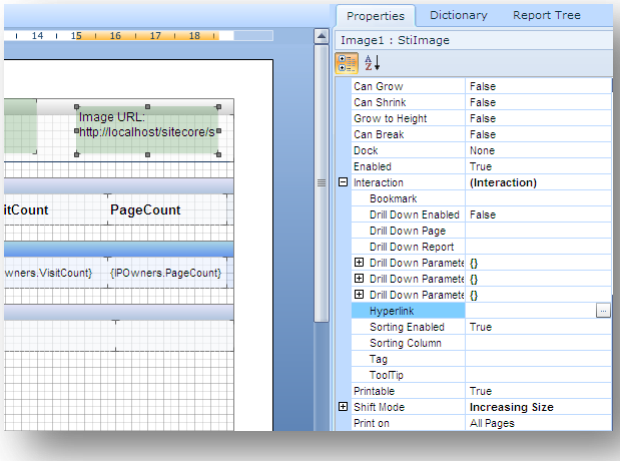
Report Generated: maj. 13, 2011

Report description

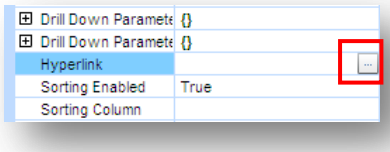
The following table lists the important activity of visitors who viewed this page. You may be able to accelerate the conversion of a goal by placing that conversion opportunity or a link to that conversion opportunity on this page. Keep in mind, that often visitors will not convert until they have developed trust in your website—but they will want the option to convert when they are ready.

	Goal	% Total Value	Value	Visits	Value per Visit
1.	Instant Demo	50,25%	2500	18	138,89
2.	Register	22,11%	1100	18	61,11
3.	Pricing Quote Request	19,60%	975	7	139,29
4.	Newsletter Signup	6,53%	325	4	81,25
5.	Login	1,51%	75	4	18,75

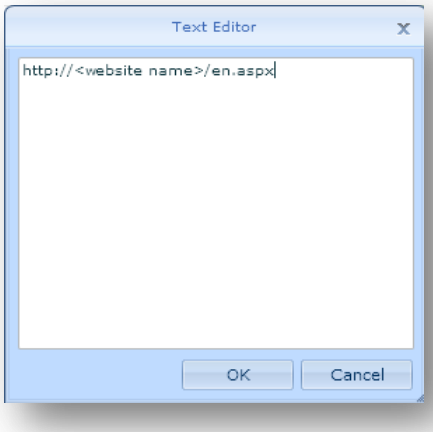
2. Click on the text or image you want to make into a hyperlink. In this example, click on the Sitecore logo.



3. In the **Properties** panel, expand the following properties:
   - Behavior
   - Interaction
   - Hyperlink
4. Click the box next to the **Hyperlink** field and open the **Text Editor**.



5. In the **Text Editor** window, enter a URL string that links to the Office Core home page.




```
http://<website name>/en.aspx
```

6. Click **OK** to close the **Text Editor** window.
7. Save you report and in **Engagement Analytics** preview your report and check your link.

How to Link to an External Web site

Use the same report and create a link to the www.sitecore.net Web site from the Sitecore logo.

Follow the same steps and enter the full address of the Web site that you want to link to. For example, enter the address of www.sitecore.net in the **Text Editor** window:

```
http://www.sitecore.net/
```

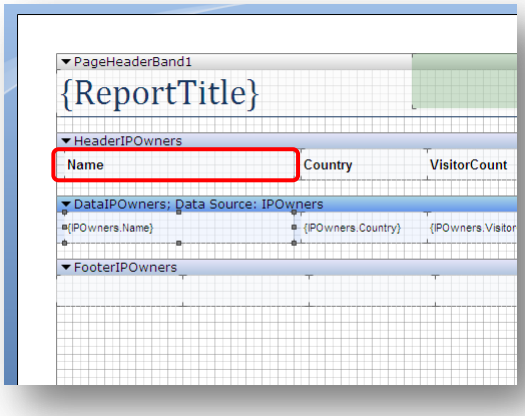
3.5.2 How to Create a Link to another Report

Creating a link to another report in Engagement Analytics requires a little more thought. In this scenario use the *Top Leads by Value* report. This time we will re-create the link from the organization name that appears in the body of the report to the *Business Overview* report.

Linking to the *Business Overview* report is useful because it gives you more information about each organization visiting the website, such as Visits, Value of Visits, Recency, location and a link to the *Visit* (session) report.

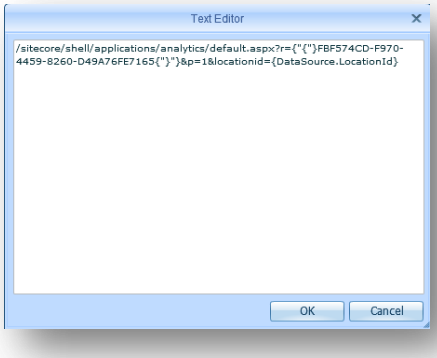
To make a link to the *Business Overview* report:

1. Make a duplicate of the *Top Leads by Value* report or another report of your choice.
2. In the Web Reports Designer, select the text box that contains the organization name.



3. In the **Properties** panel, select the **Hyperlink** property and open the **Text Editor**.
4. In the **Text Editor** window, enter the following URL string to create a link to the *Visit* report.

```
/sitecore/shell/applications/analytics/default.aspx?r={"{"}FBF574CD-F970-4459-8260-D49A76FE7165{"}"}&p=1&locationid={DataSource.LocationId}
```



The format of this URL string is quite different from a normal hyperlink. The following table explains each part of the URL.

String	Description
/sitecore/shell/applications/analytics/default.aspx?	Sitecore page that executes the report runner
r={"{"}FBF574CD-F970-4459-8260-D49A76FE7165	*Business Overview* report Item ID
&p=1&	Opens a pop-up window
locationid ={ DataSource.LocationId }	Links the visitor session to the organization name displayed in the report.

DataSource.LocationId refers to the data sources configured in your report. This part of the URL can be edited depending on what data sources you have configured.

The item ID will be different depending on what report you want to create a link to.

5. Click **OK** to close the **Text Editor** window.
6. Save your report and in **Engagement Analytics** run your report and test your link.

Chapter 4

The Analytics Database

This chapter introduces the Analytics database and provides information that may be useful for SQL developers working with reports. All Engagement Analytics reports use SQL queries or views that access tables in the Analytics database.

- Understanding the Analytics Database
- Analytics Database Tables
- SQL Views

Warning
If you have a good understanding of the Analytics database and are expert at writing SQL queries it is possible create your own Sitecore reports. Writing SQL queries by hand and creating additional views is the best way to ensure optimum performance. Using third party tools to generate SQL statements can produce inefficient queries and have a negative effect on the performance of reports.

4.1 Understanding the Analytics Database

When you create a new report consider the following:

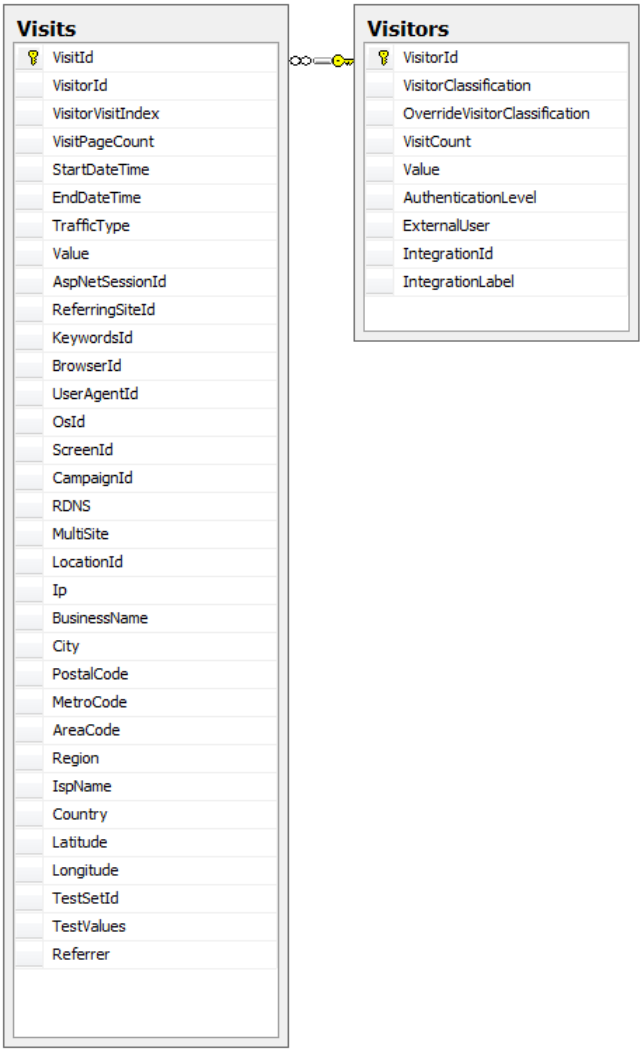
- What information do I want to display in the report?
- What tables do I need to use?
- Is there a report that I can adapt that already uses these tables?
- How do I want to display this information in the report layout?

4.1.1 Main Table Groupings

To understand the Analytics database, start by getting an overview of the important table groupings. The following pages in this chapter provide diagrams of each table grouping with a brief explanation of the purpose of each table.

4.1.2 The Visits and Visitors Tables

The *Visits* and *Visitors* tables are key tables in the Analytics database. You can think of them as the first point of access for all the information you want to retrieve from the database.

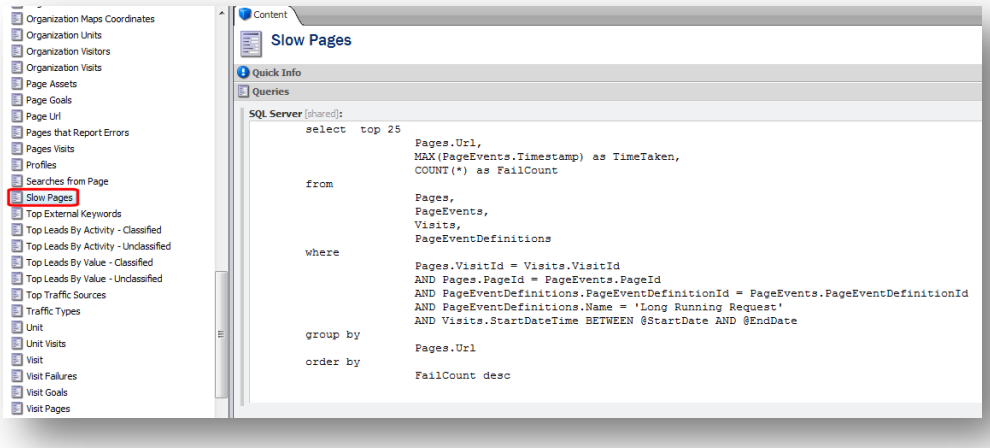


All Web site visitors create a new session every time they visit the Web site. All these visits appear in the *Visits* table. Most reports need to access this table first before accessing information contained in other tables.

The *Visits* and *Visitors* tables both use the *VisitorId* column to store a global cookie value.

Column Name	Description
VisitorId	SC_ANALYTICS_GLOBAL_COOKIE value

If you study any of the existing reports in Engagement Analytics, you can see that many standard SQL queries use the *Visits* or Visitors tables. The following SQL query comes from the *Failures* data source that creates the *Slow Pages* report.



This query accesses *Pages*, *PageEvents*, *PageEventDefinitions* as well as the *Visits* table to retrieve the data it needs.

4.1.3 SQL Queries

If you are using a SQL Server database, all the data that you display in a report you retrieve from the Analytics database using the SQL query language. When you create a report, you also need to create or adapt a SQL query.

You can either write SQL queries by hand or use a tool such as SQL Server Management Studio to help you.

Before you edit or create a new query, we recommend that you study the standard reports in Sitecore Analytics to help you to understand the structure of each query. Each report consists of one or more data sources and each data source contains a SQL query. Examine the existing queries first to decide which tables you want to access and which columns you want to display.

Although you can create reports with a limited knowledge of the SQL query language, particularly if you use a tool like the Stimulsoft Query Builder, an understanding of SQL and the table structure of the Analytics database is a great advantage.

Optimizing SQL Queries

A SQL expert can re-write most queries by hand to make them more efficient. Also, consider creating views and indexes for reports. Views are basically SQL queries that enable you create other queries more quickly and efficiently. For example, views enable you to re-use joins between tables.

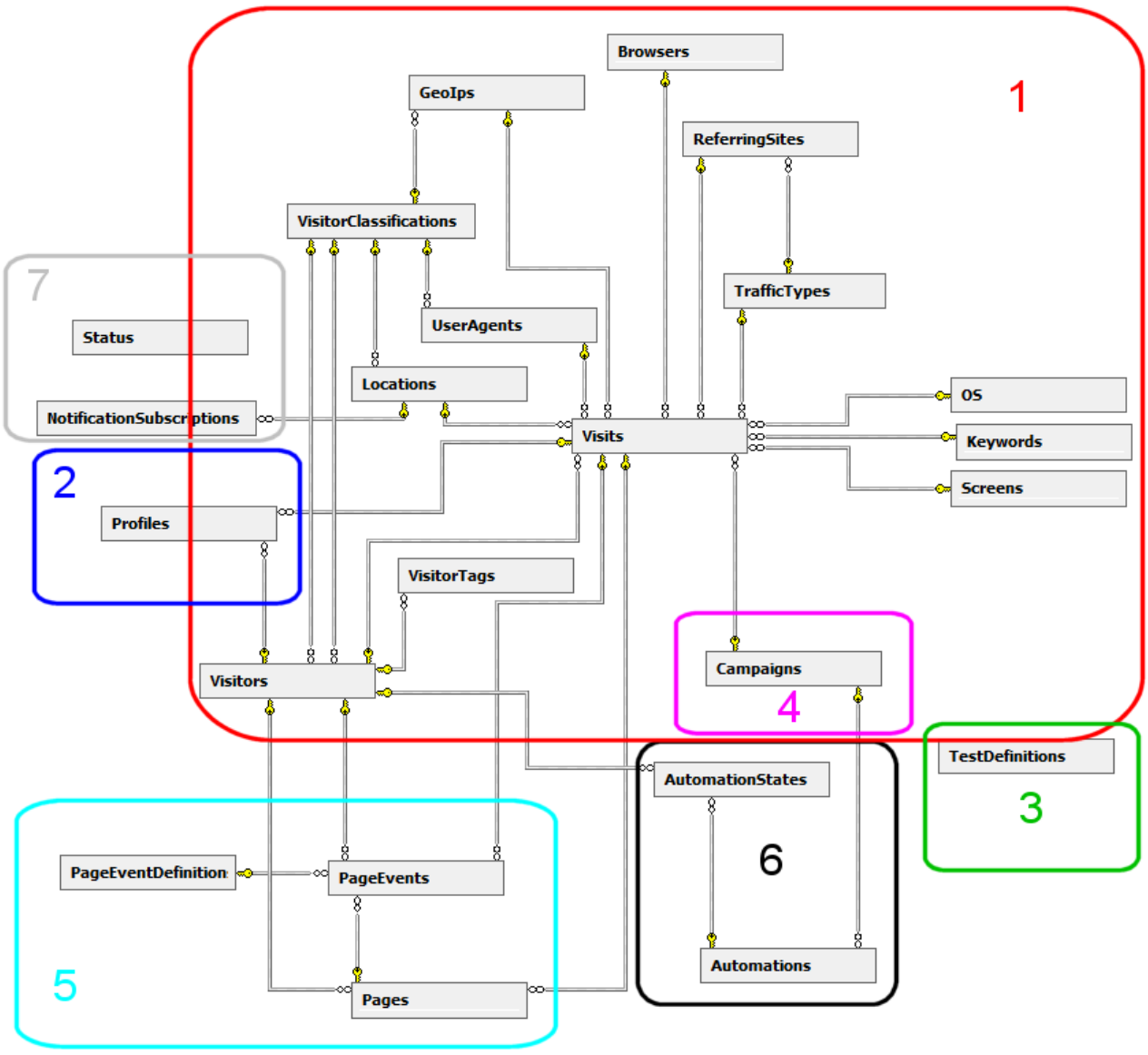
Note
If you intend to upgrade from a SQL Server database to an Oracle database, be aware that the SQL query syntax used in Oracle is slightly different from SQL Server. Also, Transact SQL (TSQL) is not compatible with an Oracle database.

The following section outlines some useful table groupings. When writing your SQL queries this may help you to identify the correct tables and columns that you need in your report.

4.2 Analytics Database Tables

This section divides the Analytics database into key groups and examines each one in turn. The following diagram shows the main tables, relationships and groupings.

1 = Visitor Information
2 = Profile Information
3 = MV Testing
4 = Campaigns
5 = Page Events
6 = Automation
7 = System Information



4.2.1 Visitor Information

This group of tables captures information about site visits and visitors.

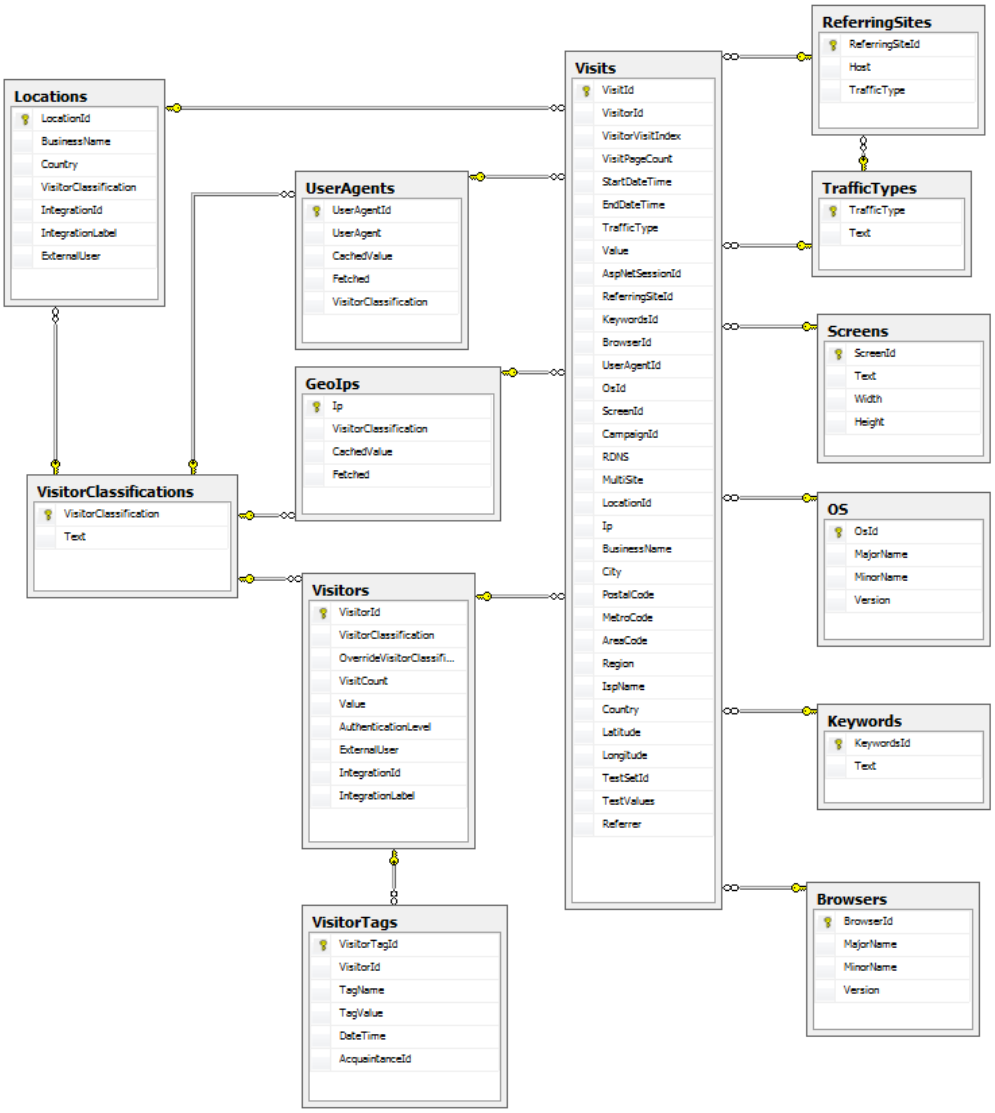


Table	Description
Visitors	The *Visitors* and *Visits* tables relate closely to each other. Each new visitor to the website becomes an entry in the *Visitors* table and adds one or more visits to the *Visits* table. The following columns are extension points for integration with a CRM or similar system: • *ExternalUser* • *IntegrationId* • *IntegrationLabel*
Visits	The *Visits* table records the visits made by each visitor. The *Visits* table is the point of access to several other tables that record specific visitor details such as IP address, screen resolution, browser and operating system. Visitor IP information comes from an IP lookup service which finds information such as city, post code, latitude or longitude. The *Visits* table itself stores the ISP name, business name and city where the visit originated.
Visitor Tags	Tags are additional information that you can add to make an item more memorable – You can also use this field in Web forms.
Visitor Classifications	In Engagement Analytics, unclassified visitors can be classified into one of the following categories: • Unidentified • Business • ISP • Existing Customer • Analyst • Press • Supplier • Business Partner • Competitor • My Company • Bot - Feed Reader • Bot - Search Engine • Bot - Unidentified • Bot - Auto Detected • Bot – Malicious
Locations	Visitor country of origin and business name.
Browsers	Type of browser and model used by the site visitor.
User Agents	Client applications that access the web site, such as browsers and web crawlers.
Geo Ips	Provides the geographical location of the site visitor.
Referring Sites	Web site where the visitor originated.

Table	Description
Traffic Types	In Engagement Analytics all visits are segmented into different traffic types: • Direct • Email • Search Engine - Organic • Search Engine - Branded • Paid • Referred – Analyst • Referred – Blog • Referred – Community • Referred – Conversations • Referred – News • Referred – Other • Referred – Wiki • RSS • Unknown Traffic types help marketers to see which of their marketing channels are most effective
OS	Type of operating system used by the site visitor.
Keywords	Search engine search terms used by the site visitor.
Screens	Screen size of the site visitor.

4.2.2 Profiles

The *Profiles* table contains records related to visitor profiles and is connected to the *Visits* and *Visitors* tables.

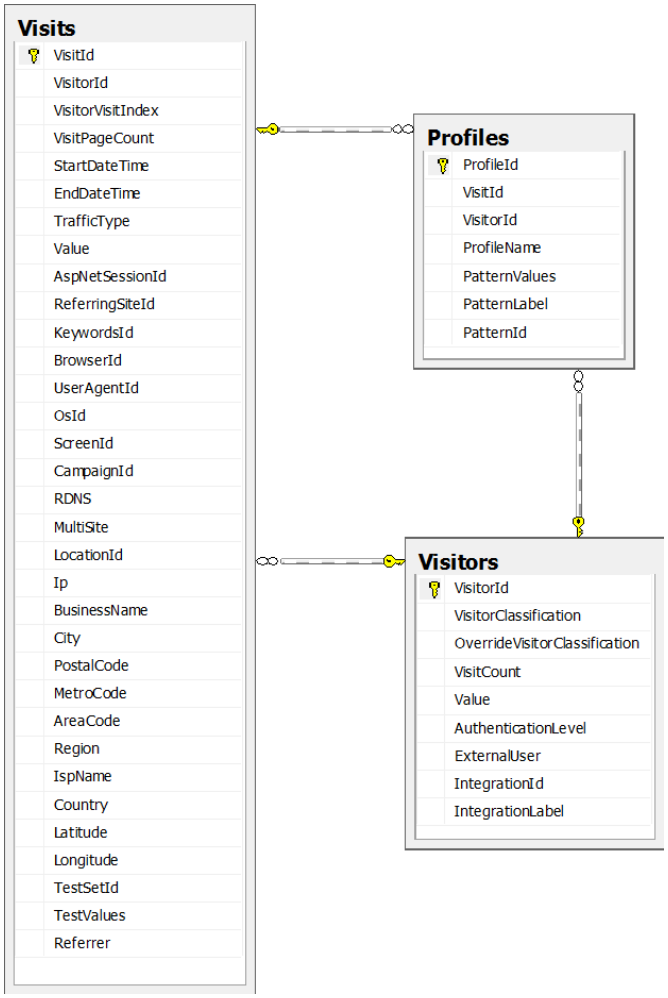


Table relationships:

- The *Visitors* table has a one to many relationship with the *Profiles* table.
- The *Visitors* table has a one to many relationship with the *Visits* table.
- The *Visits* table has a one to many relationship with the *Profiles* table.

The *Profile* table contains the ID of the profile item and the pattern value for each visitor profile:

Column Name	Description
`ProfileDefinitionId`	ID of profile item
`PatternId`	ID of the matched pattern item

When a visitor comes to your website, pattern values for each profile key that you create are stored in this table. The *Profiles* table also contains the ids of the visitor, visit, profile and profile definition item.

4.2.3 Multi-Variate Testing

The *TestDefinitions* table stores multivariate test data. You can trigger multi-variate tests from pages or campaigns.

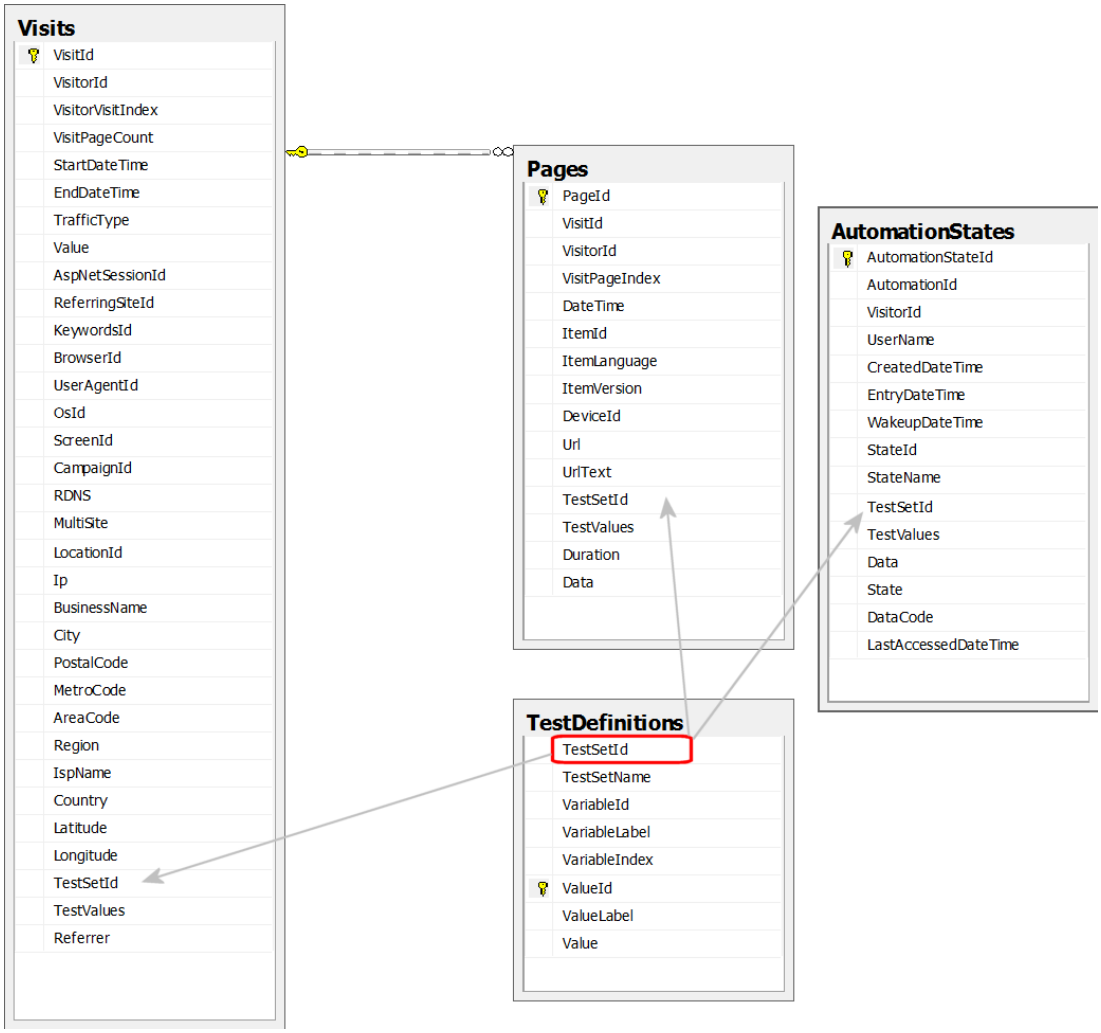
The *TestDefinitions* table contains the IDs of the multivariate test variables for each MV test.

Column Name	Description
`TestSetId`	ID of MV Test Definition Item
`VariableId`	ID of Test Variable item
`ValueId`	ID of Test Variation item

When you run a test, on a control such the *Register Form*, the MV test variables are bound to the page where you execute the test.

When you trigger an MV test in an automation plan, such as for an email newsletter, the MV test variables are bound to the automation state record where you execute the test.

The TestSetId column creates a logical link between *TestDefinitions*, *Visits*, *Pages* and *AutomationStates*. There is no actual link between these tables in the database schema.



The *TestDefinitions* table can have a many to many relationship with each of these tables.

Test combinations are stored as a byte array in the *TestValues* column in the *Visits*, *AutomationStates* and *Pages* tables.

4.2.4 Campaigns

When you create a campaign in the Marketing Center, all your campaigns, campaign categories and configuration data is stored in this table. The *CampaignId* column in this table corresponds to the campaign item in Sitecore database. The *Campaigns* table is also connected to the *Visits* and *Automations* tables.

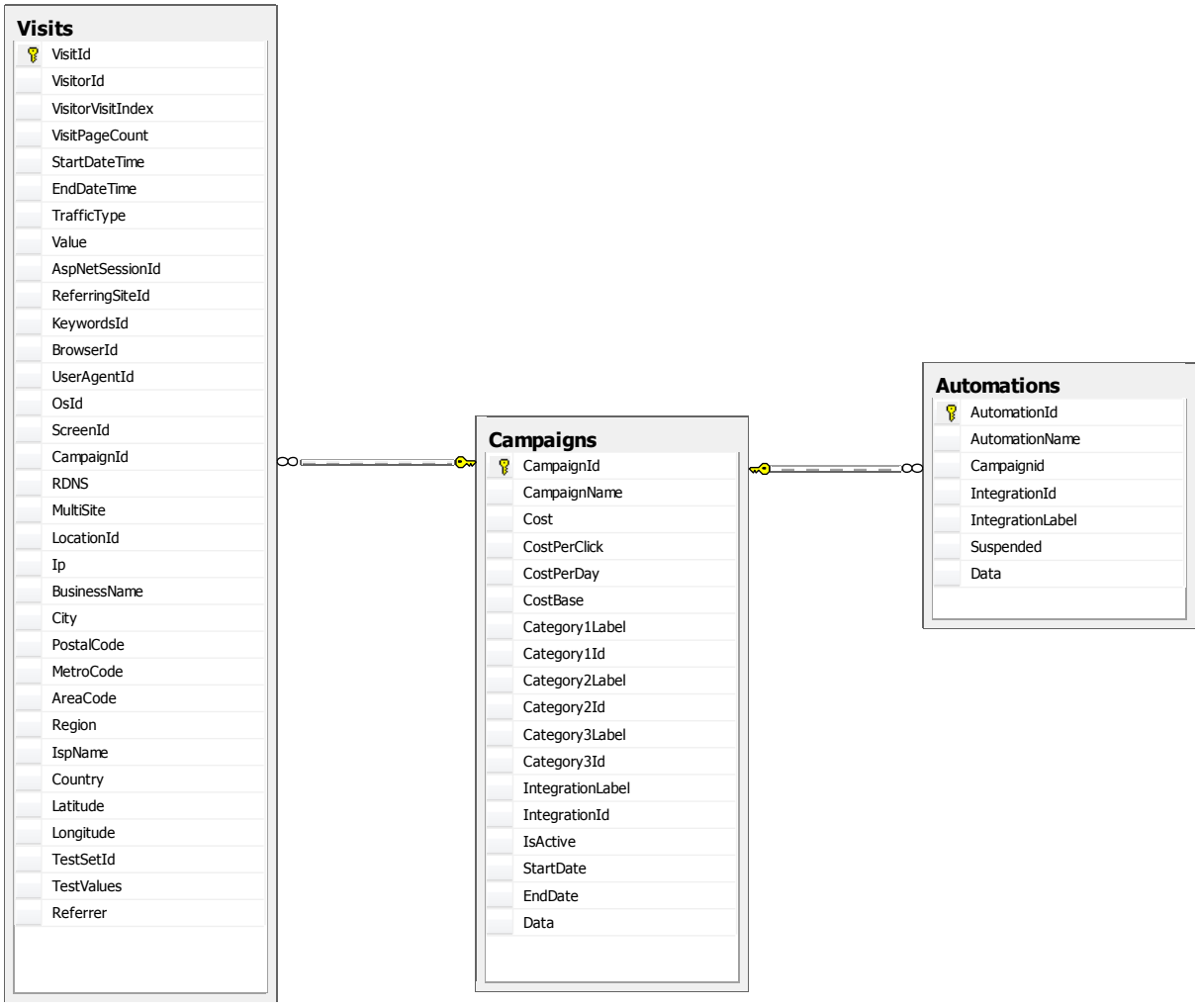


Table relationships:

- The *Campaigns* table has a one to many relationship with the *Visits* table.
- The *Campaigns* table has a one to many relationship with the *Automations* table.

Note
The standard campaign reports are only available to view in the Executive Insight Dashboard.

4.2.5 Page Events

Every visitor session is linked to the *Pages* table. For example, columns and fields from the *Pages* table create a session trail for each site visitor which you can see in the *Visit Detail* report.

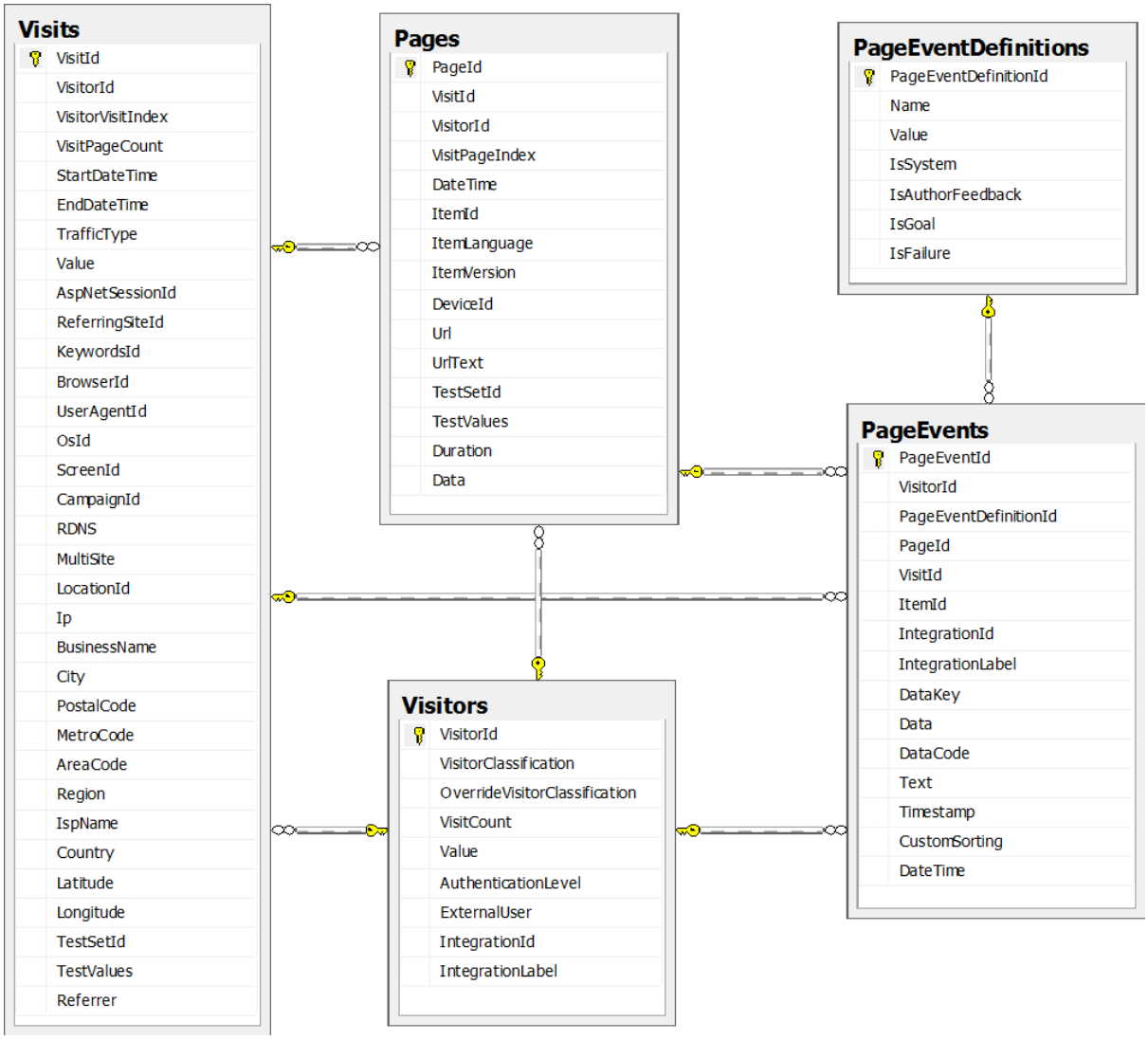


Table	Description
`Pages`	Records information on pages viewed during each visit and links to the *Visits* table. The *Pages* table also links to the *Visits* table.
`PageEvents`	For example, *Page Visited*, *Page Not Found, Campaign.* Each page event links to the *Pages* table by *PageId*.
`PageEventDefinitions`	Contains all the configuration information for page events that you define in the Content Editor.

4.2.6 System Information

System tables are mainly for internal Sitecore use. However, the *NotificationSubscriptions* table is also used in the SQL query used to create the *Top Leads by Activity* reports.

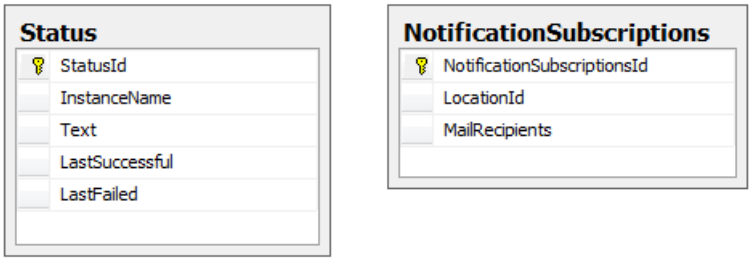


Table	Description
`Status`	Used to log errors.
`NotificationSubscriptions`	Used when visitors subscribe to a report.

4.2.7 Marketing Automation

Tables used for setting up and configuring marketing automation. The *Automation States* table links to *Visits*, *Visitors* and *Profiles* tables and the *Automations* table links to the *Campaigns* table.

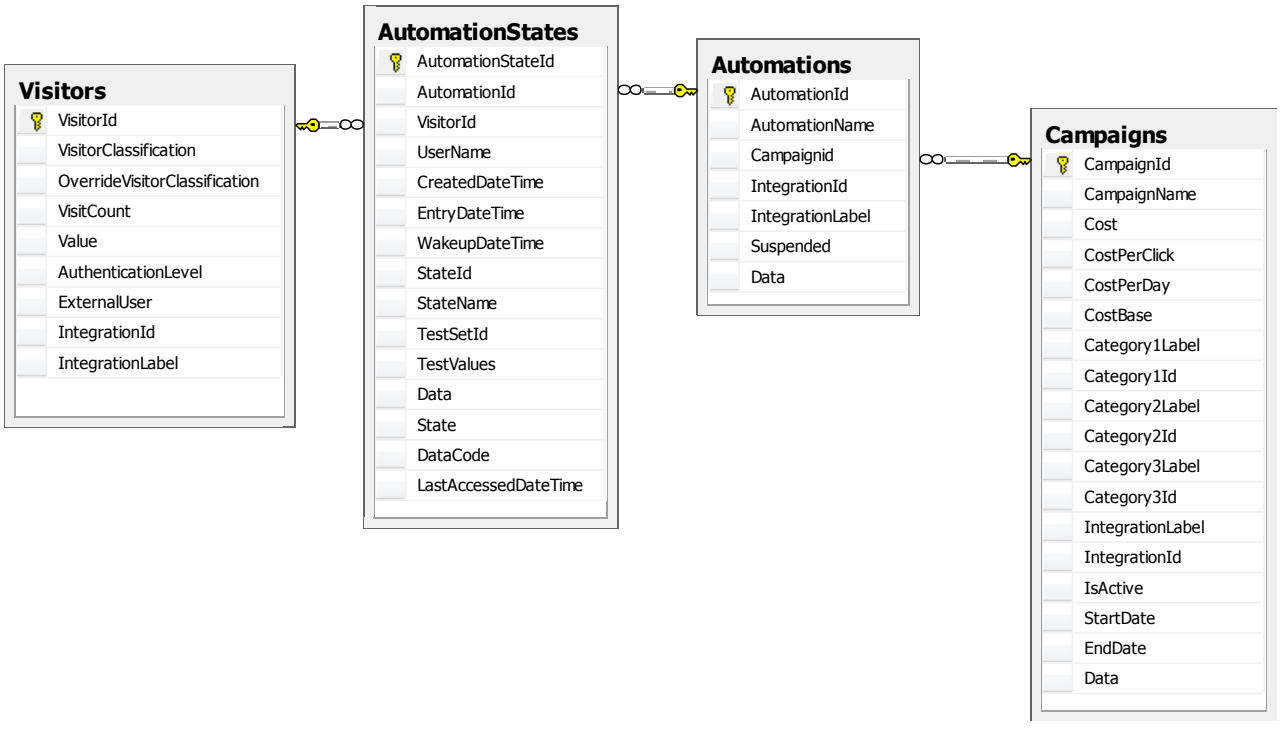


Table	Description
`Automations`	Linked to *Automation States* and *Campaigns* tables.
`AutomationStates`	Linked to *Visitors* and *Automations* tables.

Table relationships:

- Automations may be connected to campaigns: The *Campaigns* table has a one to many relationship with the *Automations* table.
- AutomationStates may be connected to Visitors: The *Visitors* table has one to many relationship with the *AutomationStates* table.

Column	Description
`AutomationId`	ID of the Engagement Plan Item in Sitecore database. This column is in the *Automations* and *AutomationStates* tables.

4.3 SQL Views

Creating some additional views for your SQL queries, can help to improve the performance of your Engagement Analytics reports. The following section lists the standard views used in Engagement Analytics reports:

`CampaignsOverview` - Visit and Value analysis for campaigns and campaigns categories over time.

Columns	Description
`Date`, `Month`	Day and month of the visits.
`CampaignId`	ID of the campaign.
`CampaignName`	Name of the campaign.
`Category1Id, Category2Id, Category3Id`	Campaign category IDs for the first three levels. Each campaign belongs to a campaign category.
`ItemId`, `Url`	ID and Url of the landing page.
`FirstVisit`	New visitors vs. Returning visitors (FirstVisit = 1 for new visitors' visits).
`Keywords`, `KeywordsId`	Search keywords used to find the campaign (if applicable).

`TrafficOverview` - Visit and Value analysis for traffic types (marketing channels).

Columns	Description
`Date, Month`	Day and month of the visits.
`TrafficType`	Traffic type – a classification used to segment site visitors. For example, *Referred Analyst* or *Search Engine - Organic*.
`Keywords, KeywordsId`	Search keywords, if the visitor came to the site from a search engine.
`ReferringSite, ReferringSiteId`	Referring site, if the visitor came to the site from another internet resource.
`FirstVisit`	New visitors vs. Returning visitors (FirstVisit = 1 for new visitors' visits).
`CampaignId`	ID of the related campaign, if applicable.
`ItemId, Url`	ID and Url of the first page of the visit.

`ValueBySource` - Visit and Value analysis by the traffic type of the first visit.

Columns	Description
`Date`	Date of the visitors' first visits.
`TrafficType`	Traffic type – a classification used to segment site visitors. For example, *Referred Analyst* or *Search Engine - Organic*.
`Visitors`	Number of visitors who made their first visit on this date for this TrafficType.
`Visits`	Total number of visits made by these visitors.
`Value`	Total engagement value earned by these visitors.

Columns	Description
FirstVisitValue	Engagement value earned by these visitors during the first visit.

VisitEventsByDefinition Searches - Visit and Value analysis for Goals, Asset Downloads and Local Site.

Columns	Description
Date, Month	Day and month of the visit.
TrafficType	Traffic type of the visit.
CampaignId	Campaign id, if the visit originated from a campaign.
VisitId	ID of the visit.
PageEventDefinitionId	ID of the Page Event.
PageEventDefinitionName	Name of the Page Event (for example, Download).
Value	Value earned during the visit.
IsGoal	Check box to show that a page event is a goal.
NumberOfEvents	Number of page events of this type in this visit.
Date, Month	Day and month of the visit.

VisitEventsByPage - Visit and Value analysis for Goals, Asset Downloads and Local Site Searches, by Page.

Columns	Description
Date, Month	Day and month of the visit.
TrafficType	Traffic type of the visit.
CampaignId	Campaign id, if the visit originated from a campaign.
VisitId	ID if the visit.
PageEventDefinitionId	ID of the Page Event.
PageEventName	Name of the Page Event (for example, Download).
ItemId	ID of the page item where the page event occurred.
Value	Value earned during the visit.
IsGoal	Check box to show that a page event is a goal.
NumberOfEvents	Number of page events of this type in this visit.
Date, Month	Day and month of the visit.

VisitEventsByDataKey - Visit and Value analysis for Page Events by Data Key. Useful for analysis of Asset Downloads and Local Site Searches.

Columns	Description
Date, Month	Day and Month of the visit.
TrafficType	Traffic type of the visit.

Columns	Description
CampaignId	Campaign id, if the visit originated from a campaign.
VisitId	ID if the visit.
PageEventDefinitionId	ID of the Page Event.
PageEventName	Name of the Page Event (for example, Download).
DataKey	Value of DataKey field in the page event. For Download this is the path to the asset, for Local Site Search this is the search string.
Value	Value earned during the visit.
IsGoal	Check box to show that a page event is a goal.
NumberOfEvents	Number of page events of this type during the visit.

VisitorsByLocation - Base view for analysis of business activity (lead and activity reports). Includes the number of unique visitors, visits and earned engagement value over time classified by business unit. You can join this view to the Visits table and related attribute tables to obtain the necessary attributes.

Columns	Description
Date	Day of the visit.
VisitorClassification	Classification code of the business.
LocationId	ID of the business in Engagement Analytics.
Country	Country of the business.
Region	Region of the business unit.
VisitorId	ID of the visitor.
Visits	Number of visits.
Value	Total value earned for this criteria.

TrafficByDay – This is an internal view containing daily aggregated visit information. The TrafficOverview view is based on TrafficByDay.

VisitEvents - Internal view containing page event information for all visits.VisitEventsByDefinition, VisitEventsByPage and VisitEventsByDataKey also use this view. You should not access this view directly.

Note
These views are not available in the collection database.

Note
You can join these views with the Visits table or attribute tables to retrieve attribute values, but we strongly recommend that you analyze queries for performance and define appropriate indexes in the database.

Chapter 5

Creating and Modifying Reports

This chapter demonstrates how to make simple changes to Sitecore reports. It uses scenarios to explain how to use Sitecore and the Stimulsoft Web Reports Designer to create new reports, localize report text and how to modify a SQL query.

This chapter contains the following sections:

- Introduction
- Creating a Report
- Localizing Report Text
- Modifying a Report SQL Query

Warning
If you have a good understanding of the Analytics database and are expert at writing SQL queries it is possible create your own Sitecore reports. Writing SQL queries by hand and creating additional views is the best way to ensure optimum performance. Using third party tools to generate SQL statements can produce inefficient queries and have a negative effect on the performance of reports.

5.1 Introduction

In Engagement Analytics, a report consists of three components:

- Sitecore report definition item
- Sitecore SQL query item
- Stimulsoft `.mrt` report file

You can create reports using Sitecore CMS and the Stimulsoft Web Reports Designer.

Some report files, such as *TopLeadsByValue.mrt* are used by multiple reports. For example, in Engagement Analytics, all the *Top Leads by Value* reports are based on a single file called *TopLeadsByValue.mrt*. Changes you make to one file can affect more than one report.

We therefore recommend that instead of creating a new report from scratch you make a duplicate of an existing report and edit this version.

A benefit of using this approach is that you can re-use the existing report functionality and strip out the functionality you do not need.

5.2 Creating a Report

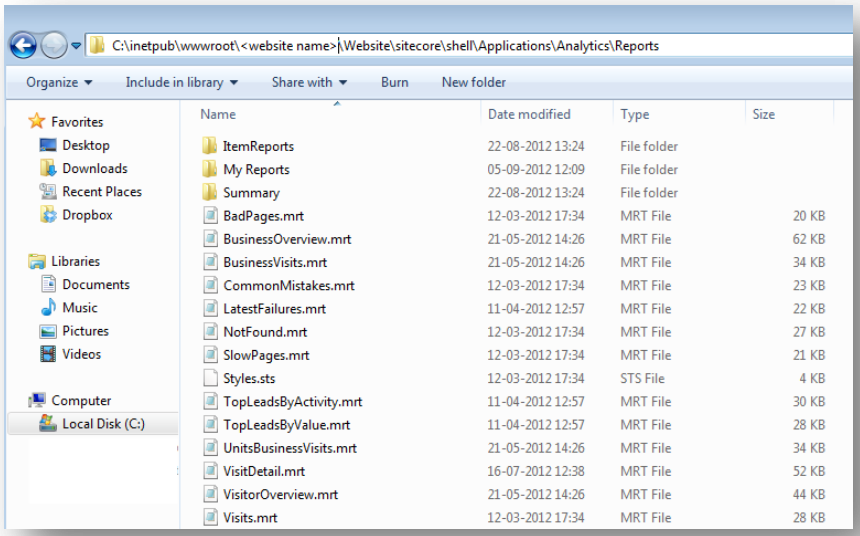
This section outlines the steps you need to follow to create a new report by making a duplicate of an existing report and SQL query.

5.2.1 Duplicating an Existing Stimulsoft Report File

To create a duplicate of an existing Stimulsoft report:

1. In your website folder structure navigate to the folder that contains all your report definition (.mrt) files. Use the following path:

   `Website\sitecore\shell\Applications\Analytics\Reports`



Note
You could create a folder called *My Reports* to save any new reports that you create.

2. Copy an existing report. For example, copy `Visits.mrt`, save it in your *My Reports* folder and rename it `Test report.mrt`.
3. Save your changes.

5.2.2 Duplicating a Report Definition Item

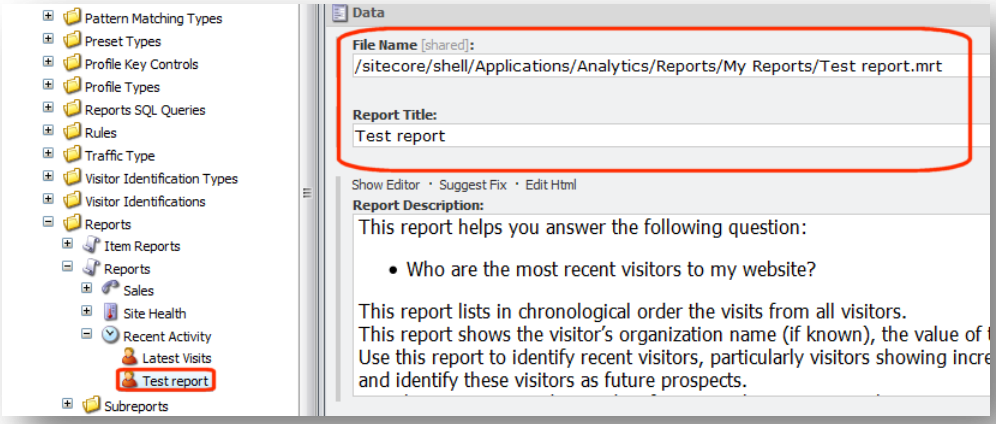
To create a duplicate of an existing report definition item:

1. In the Content Editor, navigate to the Stimulsoft report definition items. Use the following path:

   `/sitecore/system/Settings/Analytics/Reports/Reports/Recent Activity`

2. Make a duplicate of an existing report definition item. For example, *Latest Visits.* To duplicate this report, right click the item and click **Duplicate**.
3. Enter the name *Test report* for your duplicate item.
4. In the **File Name** field, enter the path to the duplicate .mrt file. To do this, copy and edit the path from the original report definition item.
5. Enter a name in the **Report Title** field and add a description if appropriate.

For example:



6. Save your changes.

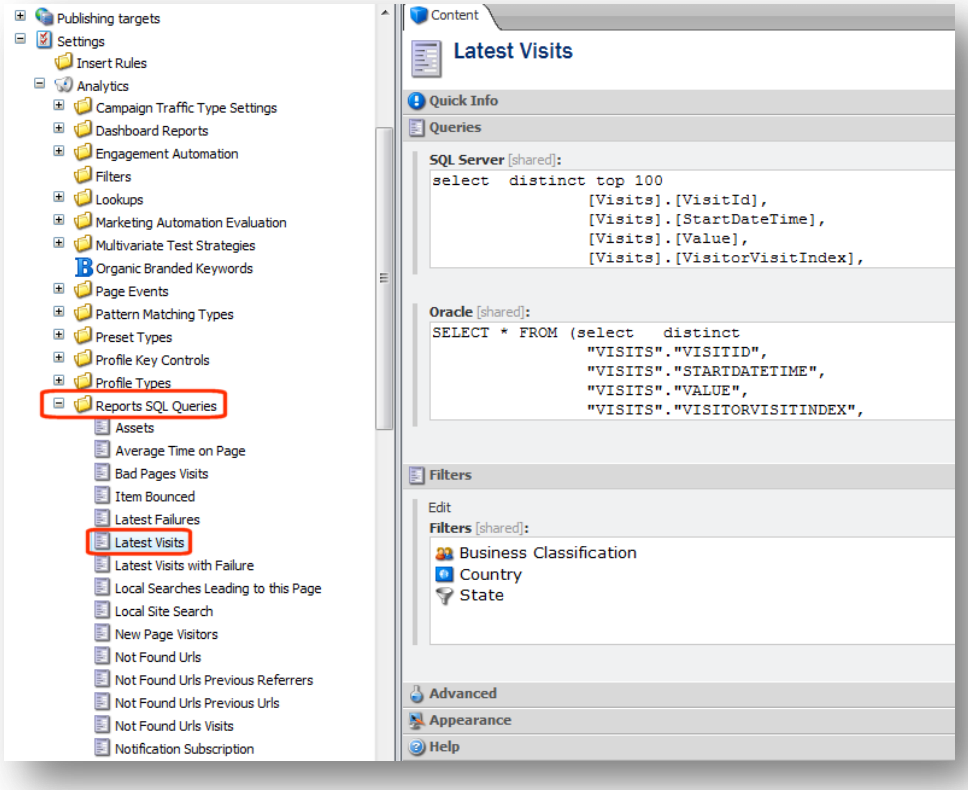
5.2.3 Duplicating a SQL Query Item

If you decide to make changes to the SQL queries associated with your report then you also need to duplicate the report query items. This will ensure that you do not overwrite the originals.

To duplicate a Sitecore SQL query item:

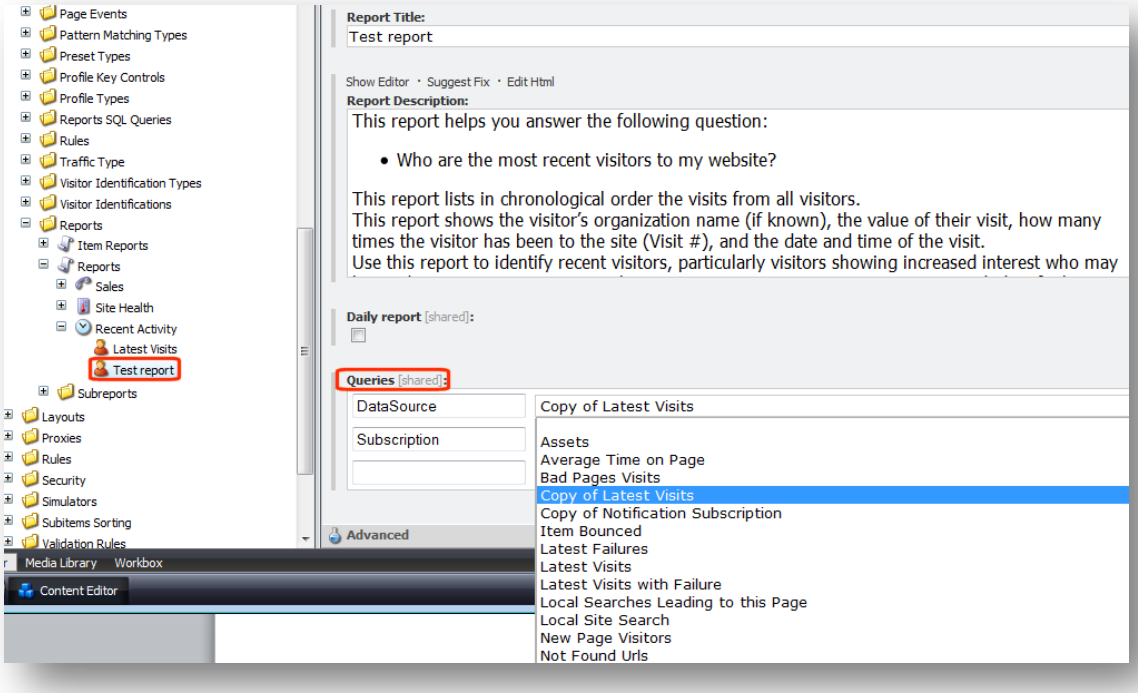
1. In the Content Editor, select your duplicate report *Test report*: `/sitecore/system/Settings/Analytics/Reports/Reports/Recent Activity/Test report`
2. In the **Data** section, **Queries** field you can see which queries are linked to your report:
   - *Latest Visits*
   - *Notification Subscription*
3. Use the following path to navigate to the SQL queries folder: `/sitecore/system/Settings/Analytics/Reports SQL Queries`

4. First, select the query item, *Latest Visits.* Right click the item and then click **Duplicate**.



5. Accept the default name, *Copy of Latest Visits*.
6. Do the same for the second query, *Notification Subscription*.
7. Save your changes.
8. Select your duplicate report item, *Test report*.
9. In the **Data** section, **Queries** field, use the drop down to link to the duplicate queries that you just created:
   - *Copy of Latest Visits*
   - *Copy of Notification Subscription*

Select 'Copy of Latest Visits' in the Queries drop down:



10. Save your changes.

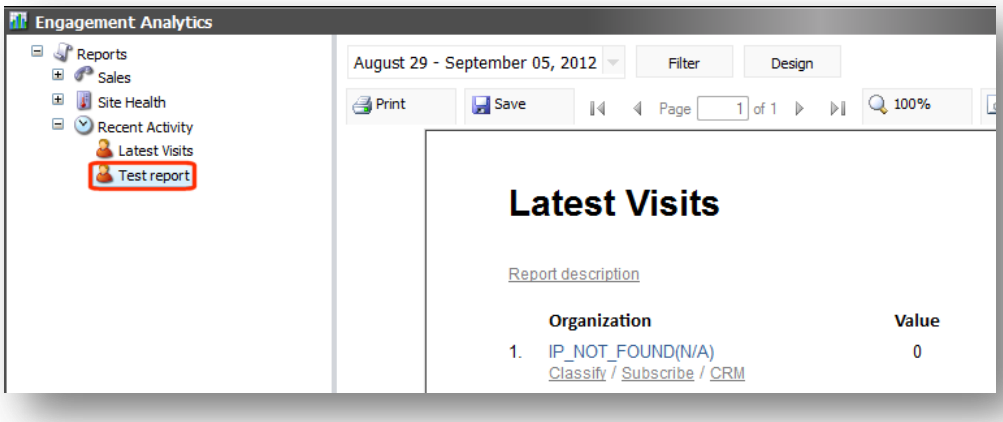
Note
Each Sitecore SQL query contains one or more data sources. The report in this example has two data sources: *DataSource* and *Subscription*. Data sources use SQL queries to retrieve columns from the Analytics database.

For more information on data sources, see Adding Data Sources.

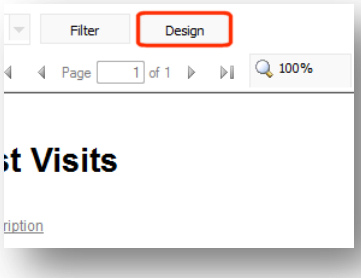
5.2.4 Opening a Duplicate Report

To test your duplicate report, open it in Engagement Analytics and then open the Stimulsoft web designer. To open a duplicate report:

1. Open Engagement Analytics and expand the report tree until you see your duplicate report.
2. Click on the duplicate report.



3. To open the duplicate report in the web designer, click **Design**.



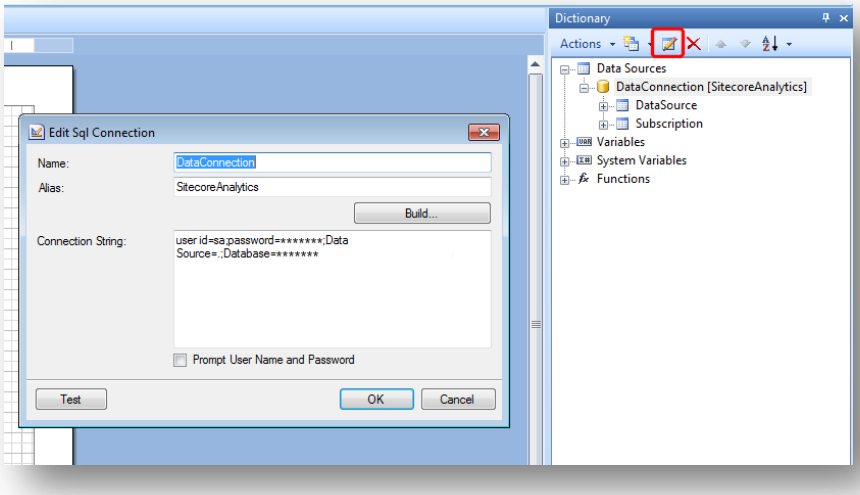
4. In the web designer, you can now change the layout or data that you use with this report without overwriting any of your other reports.

5.2.5 Adding a Connection String

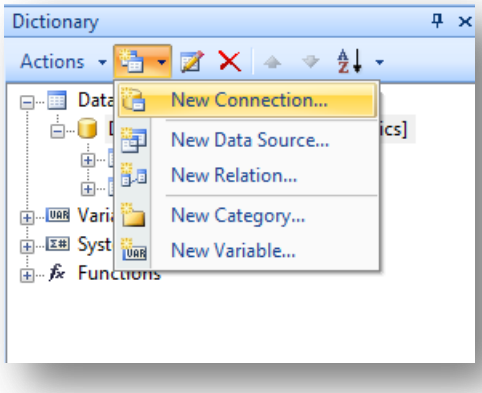
After creating a duplicate report definition item and a duplicate Stimulsoft .mrt file, you can either keep the same connection string or edit it to connect to another Analytics database.

To connect to an Analytics database:

1. Open your new report in the Stimulsoft Web Reports Designer.
2. To view an existing SQL Connection string or to create a new connection, open the **Dictionary** panel to the right of the report. If this panel is not visible, on the Web Designer, report ribbon, click **View**, **Panels** and then click **Dictionary**.
3. In the **Dictionary** panel, click on the **Data Connection** and then click **Edit**.



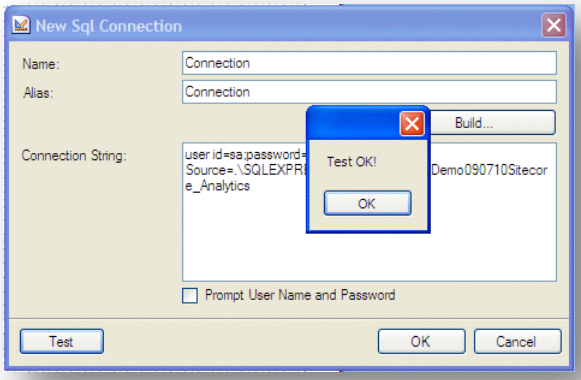
4. To add a new data connection, click **New Item** and then select **New Connection** from the drop-down.



5. Enter a connection string in the following format:

```
user id=<username>;password=<password>
;Data Source=<name of datasource>
;Database=<name of database>
```

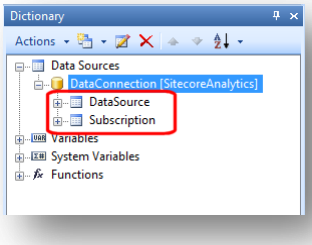
6. Click **Test** to test the connection.



5.2.6 Adding Data Sources

The next step after you have created a report and connected to the analytics database is to configure a data source.

In the Dictionary Panel, each data source appears below the data connection node.



Data sources use SQL queries to retrieve columns from the Analytics database. Use data sources to extract the data that you want to display in your report layout.

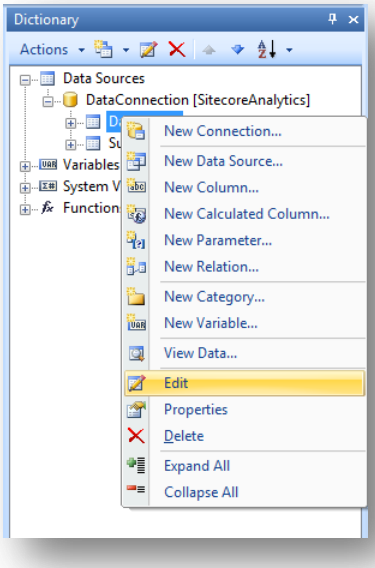
You can create your own names for data sources and can also use aliases in the SQL query to make the names of columns more meaningful.

If you examine any of the standard reports in Engagement Analytics, you can see that each report contains one or more data sources.

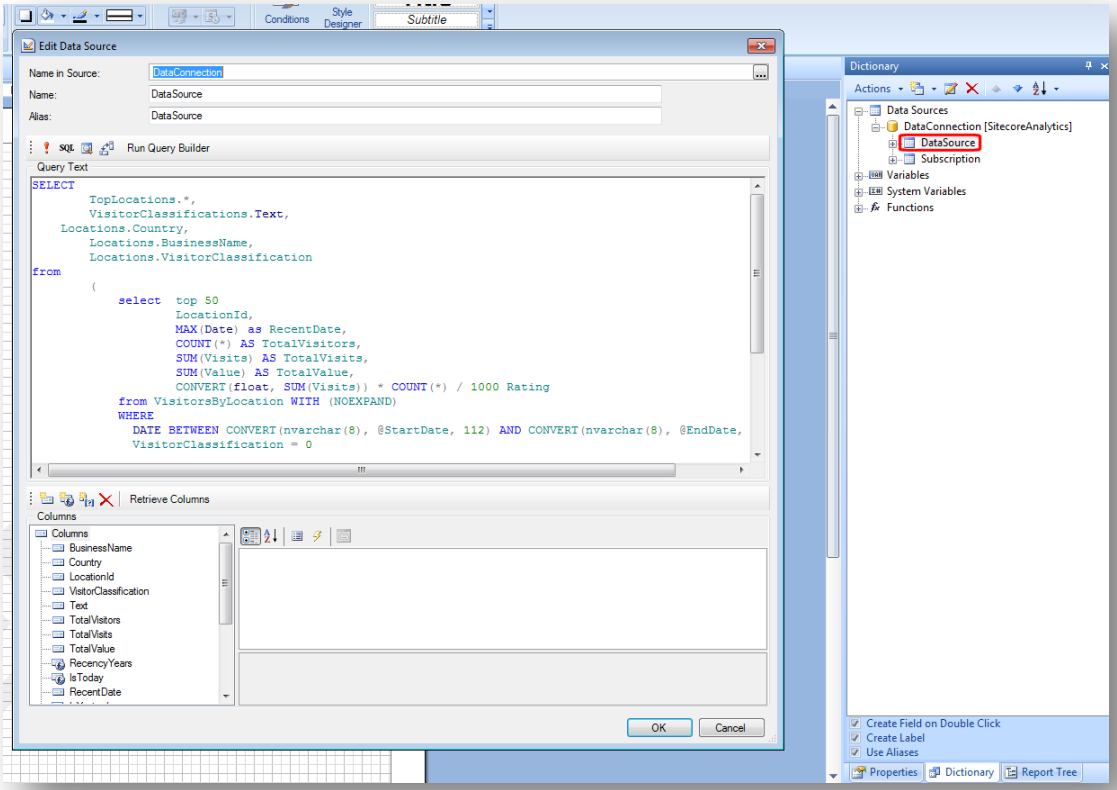
Note
After you have created SQL queries for each data sources in the Web Designer, you must move each query to the Sitecore content tree. This helps to improve the overall performance of your reports.

Viewing a SQL Query in the Windows Designer

In the Windows Designer, you can right click a data source and click **Edit** to see a SQL query.



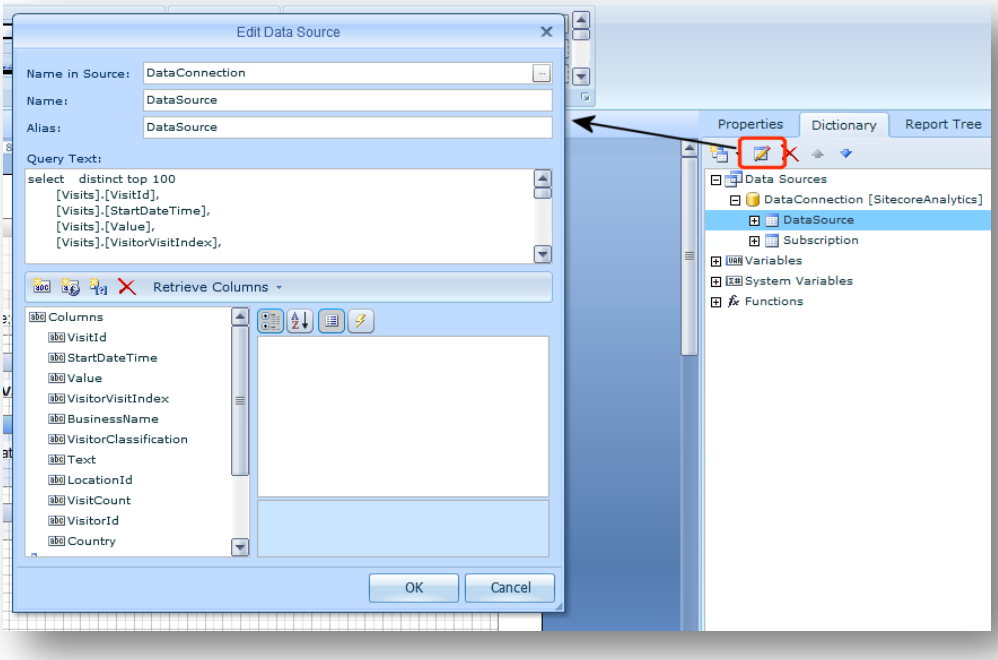
The **Edit Data Source** window displays the SQL query and columns returned from the database.



You can use this window to create your own queries. The Query Builder allows you to drag and drop columns to make SQL queries. It creates the correct SQL syntax. However, you might need to optimize your queries afterwards to improve performance.

Viewing a SQL Query in the Web Designer

In the Web Designer, select a data source and on the toolbar, click **Edit**  to see the SQL query.



The Web Designer uses the light version of the **Edit Data Source** window.

Note
The Query Builder is not available in the Web Designer.

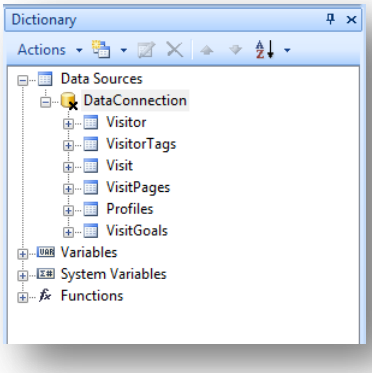
5.2.7 Creating a SQL Query

To retrieve the correct data from the Analytics database to display in your report you must create a SQL query. All the SQL queries in Engagement Analytics reports are contained in separate Sitecore content items. Each query has also been optimized for performance and some queries use additional views and indexes.

Testing SQL Queries in the Web Reports Designer

When you create a new report from scratch, it is good practice to test the SQL query in the Stimulsoft Web Reports Designer. You can hand code a SQL query or use a dedicated tool such as the Query Builder or SQL Server Management Studio. Create a separate query for each data source that you want to add to your report.

For example, the *Visit Detail* report consists of multiple data sources and each data source uses a separate SQL query.

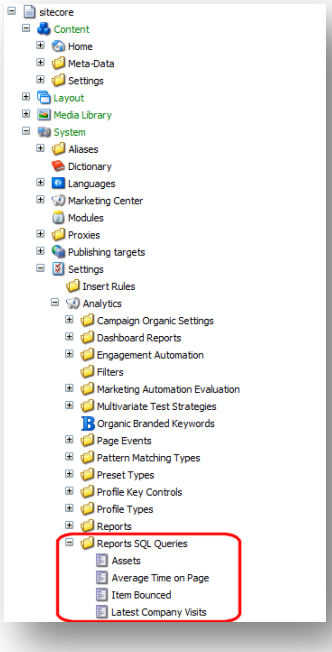


In this example, like all standard Engagement Analytics reports the SQL queries have been moved to the Sitecore content tree.

If you have created a SQL query using another tool, first create a new data source and then copy and paste your SQL query into the data source. In the Edit Data Source window, click *Retrieve Columns*. If there are any errors in your query, you will not see any columns returned and you will also see an error message.

5.2.8 Moving SQL Queries to Sitecore Items

In Engagement Analytics all SQL queries are stored in the Sitecore content tree.

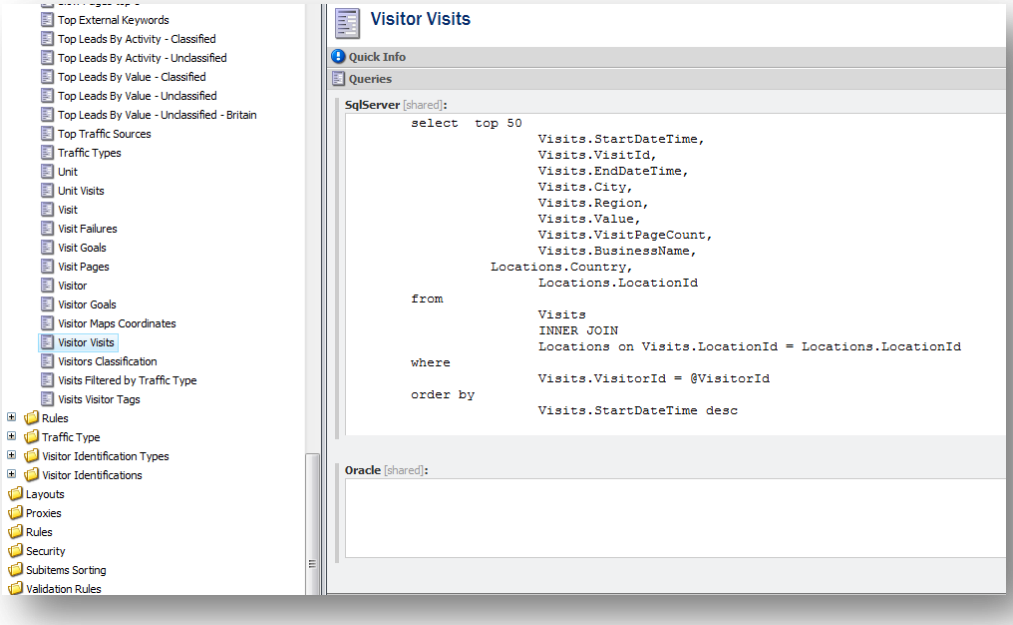


Creating a new content item for each query improves performance, allows queries to be re-used and makes it easy to add new SQL queries. Each *ReportQuery* item contains fields for adding SQL or Oracle queries.

To add a new report query item to the content tree:

1. Select the Reports SQL Queries folder:
   `/sitecore/system/Settings/Analytics/Reports SQL Queries`

2. On the ribbon, add the **Report Query** template to your insert options.
3. Create a new item based on the **Report Query** template.
4. Give the **Report Query** item a name. For example, *Visitor Visits.*
5. Select your new report query item and enter the query into the **SQL Server** field in plain text.



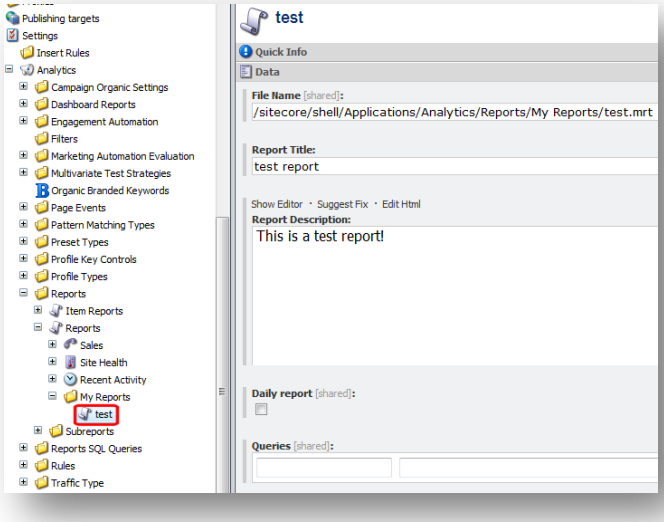
6. On the ribbon, click **Save**.

5.2.9 Configuring a Report Definition Item

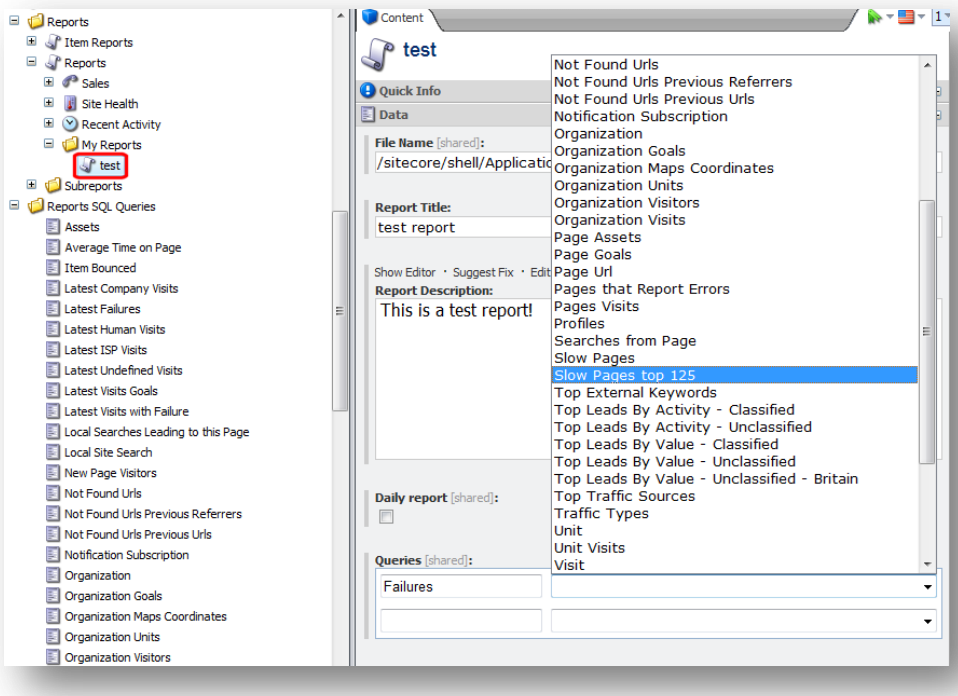
To bind a SQL query to a report you must select a query from the content tree and then bind it to your report definition item.

To bind a query to a report definition item:

1. Select a report definition item.



2. Scroll down and enter the name of a data source in the **Queries** field. For example, *Failures*.
3. Select a SQL query from the drop-down list. For example, *Slow Pages top 125.*



This binds your report definition item with a SQL query. If necessary add more queries to your report.

4. On the ribbon, click **Save**.

5.2.10 Creating a Report Layout

When you have configured all your data sources, you can use the Stimulsoft Web Reports Designer to create a layout for your report.

To create a report layout complete the following steps:

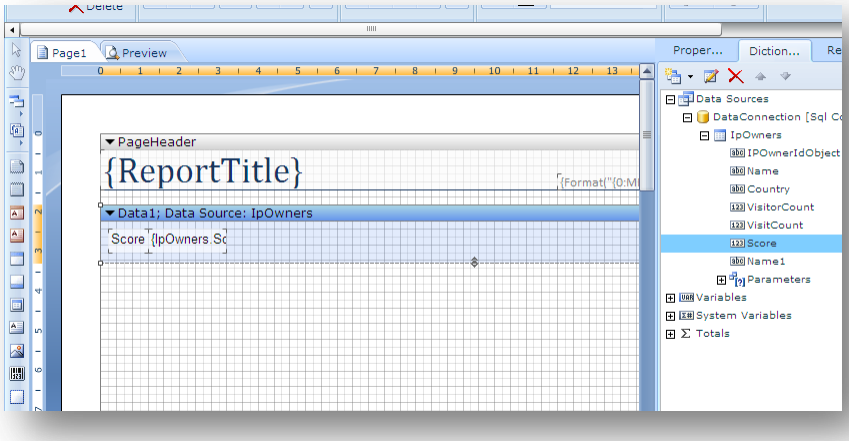
- Create an initial report layout
- Create text variables and format column headings
- Add a report header and format text
- Add images – optional step
- Add hyperlinks - optional step

Adding Data to a Report Layout

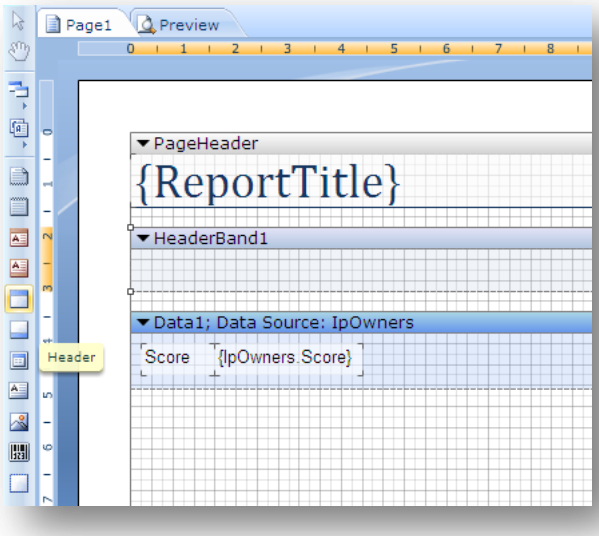
If you are re-using an existing report, first remove any text boxes that appear on the existing data band. To do this, select a text box and in the ribbon and click Delete. You can keep the report title header and add new columns to the data band.

1. To add content to your report, drag and drop the columns you need from the **Dictionary** panel to the data band.

2. Select a column from the Dictionary panel and drag it onto the report data band.

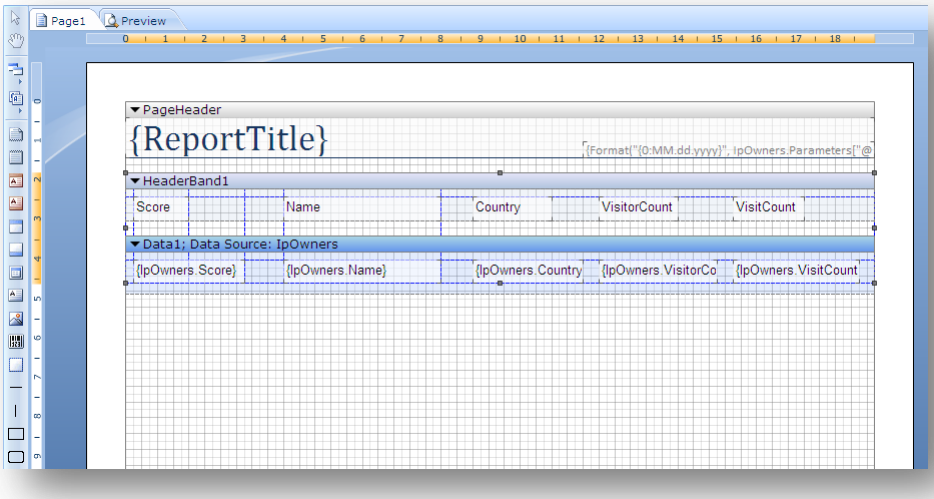


3. Notice that you have added two text boxes. **Score** and **IpOwners**. Re-size using the arrows that appear when you move the mouse over the text boxes.
4. In the report designer toolbox, click **Header** and drag a new header onto the report. Insert it between the Page Header and the Data band.



5. Move the **Score** text box into the header band, this is the column heading. **IpOwners** stays in the Data band and outputs the data for this column.

6. Add **Name**, **Country**, **Visitor Count** and **Visit Count** in the same way until your layout looks something like this:

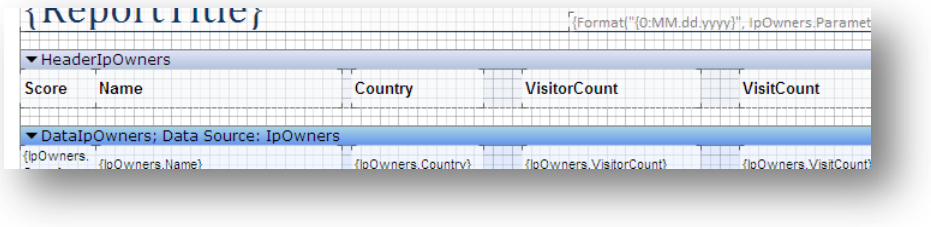


7. In the Stimulsoft **File** menu, Click **Save Report**.
8. Preview your report.

Formatting Column Headings

To format all your column headings as bold:

1. Press the SHIFT key and then click each of the header text boxes.
2. When you have selected all column headings, in the report designer ribbon click **Bold**.
3. Click **Save Report**.



Grouping Report Data

To make visitor organization and country appear together as a hyperlink:

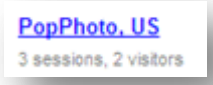
1. Double click a text box, for example *{IpOwners.Name}* and click the **Expression** tab in the Text Editor.

   IPOwners refers to the data source and *Name* refers to the column you want to display.

2. Enter the following expression:

   ```
   {IPOwners.Name}, {IPOwners.Country}
   ```

   This expression will display the organization name and country next to each other as a hyperlink.

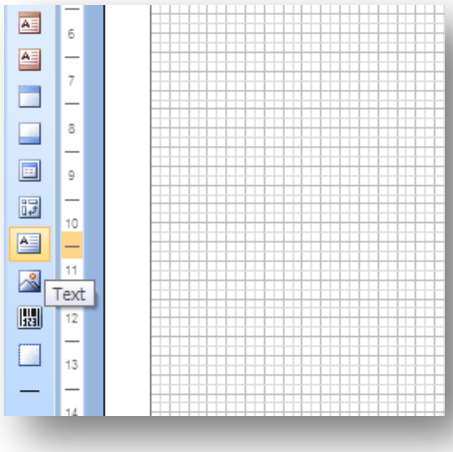


   You can now remove the *Country* text boxes from the Header and the Data band.

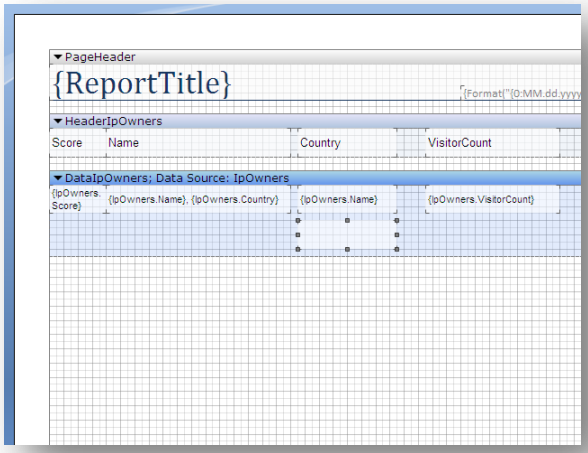
Grouping Sub Headings

To group the number of sessions and visitors below each organization name:

1. Select the data band, and then in the toolbox select text box and then drag and drop the text box from the toolbox.



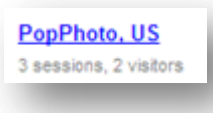
Place the text box directly below the *{IPOwners.Name}* text box.



2. Double click the new text box. Copy and paste the following expression into the **Expression Editor** window.

```
{IPOwners.VisitCount} session{IPOwners.VisitCount == 1 ? "" : "s"},
{IPOwners.VisitorCount} visitor{IPOwners.VisitorCount == 1 ? "" :
"s"}
```

This expression displays **Visitor Count** and **Visit Count** together below the organization name. It also makes the word *session* and the word *visitor* either singular or plural depending on the number of sessions or visitors. This expression is constructed using syntax very similar to C#.

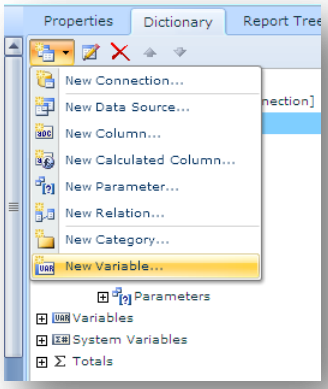


3. You can now remove all the *Visit Count and Visitor Count* text boxes from the Header and the Data band, as they are no longer needed.

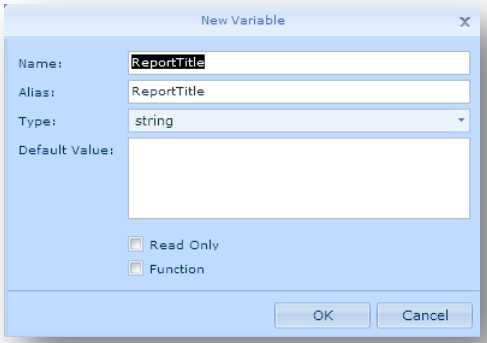
Adding a Report Header

Your report already has a report header, follow these steps if you need to create a new header:

1. In the **Data Dictionary**, click **New Item**, and then click **New Variable**.

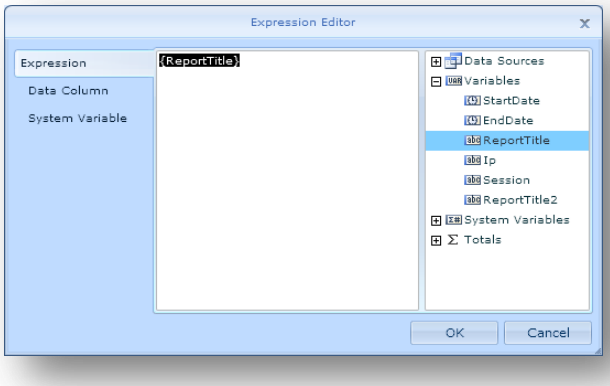


2. In the **New Variable** window, in the **Name** and **Alias** fields enter **ReportTitle**.
3. In the **Type** field, select *String* and click **OK**.

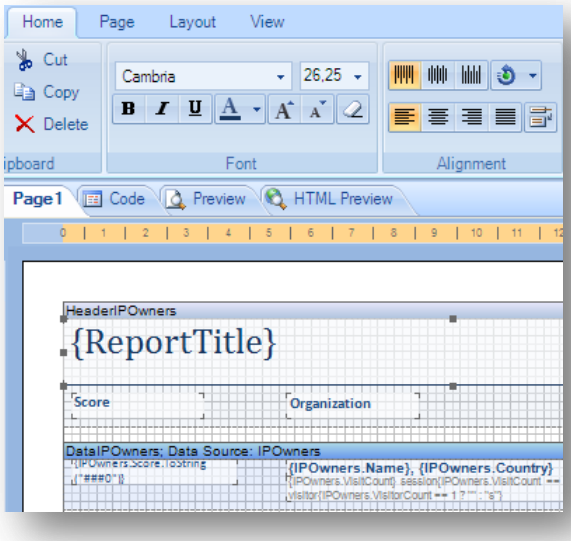


4. Add a text box to the report header band.
5. Double click the text box to open the Expression Editor.
6. In the **Expression Editor** window, drag and drop the *ReportTitle* variable you created into the **Expression** tab.

7. Click **OK**.



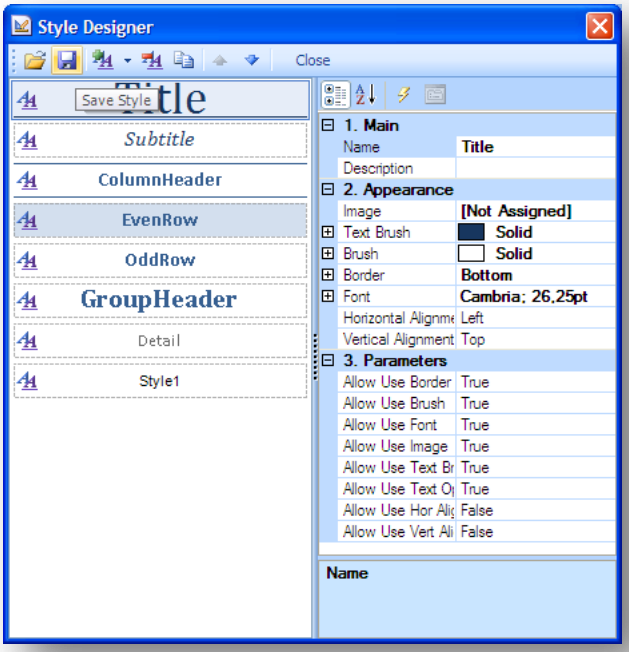
Left align the text box and your report title should look something like this.



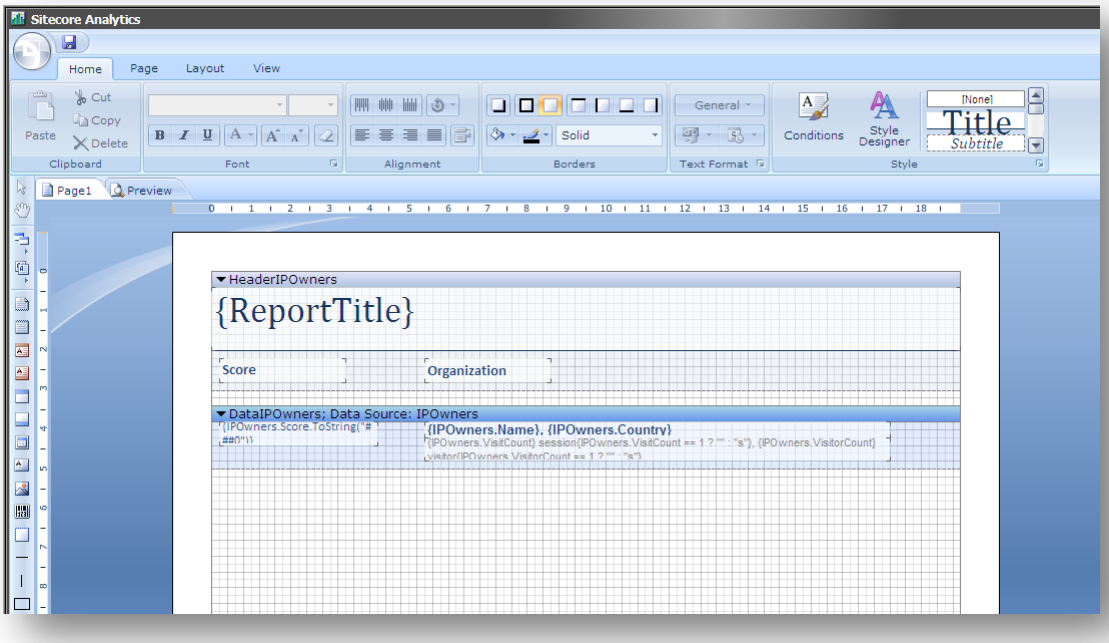
Note

To format text in the same way as other Sitecore reports, you must also import the same Styles from another Sitecore report.

You can use the style designer to save styles locally or use it to import other saved styles.



The completed report layout should look something like this.



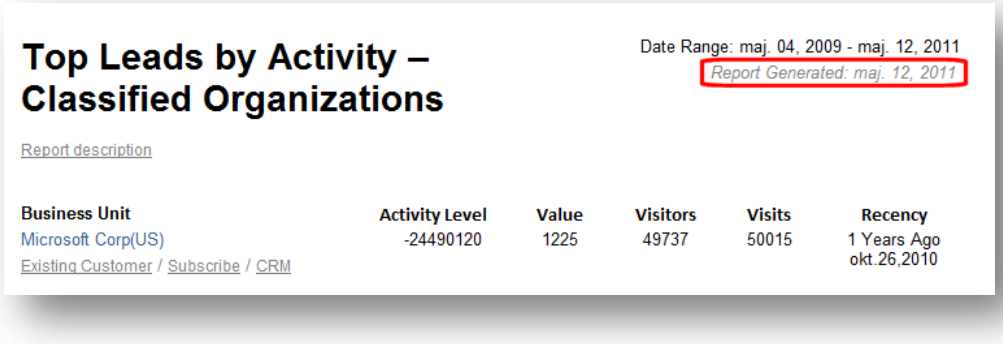
8. Preview the report.

5.3 Localizing Report Text

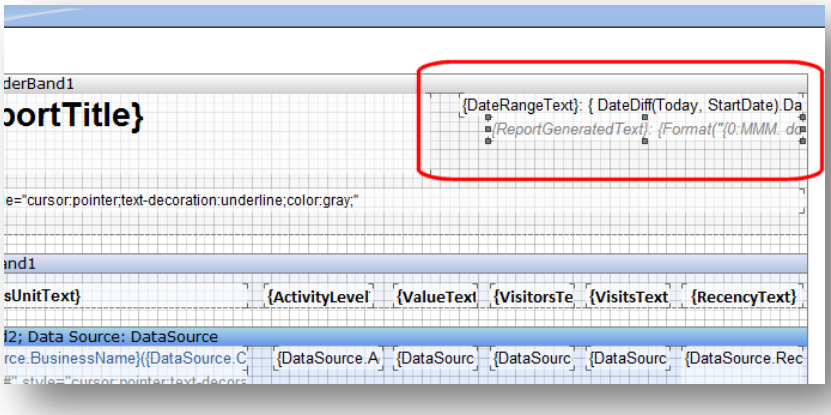
When you add text to a report layout you can also create text variables to translate reports into different languages. In this scenario, create a new text variable to replace the static *Report Generated* text box that appears on all Engagement Analytics reports. This and all other localized text variables in the report will appear in Danish when you select the Danish language version of the report.

To create a localized text variable:

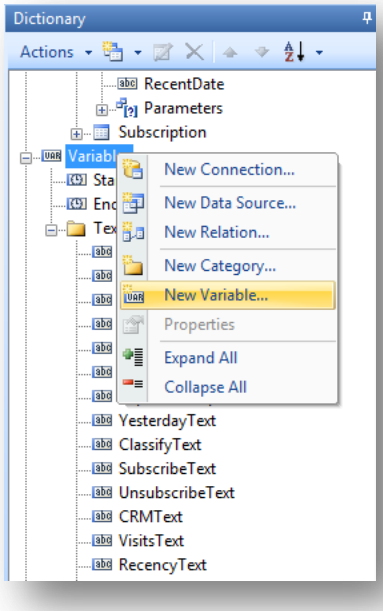
1. Choose an existing text item to localize. For example, *Report Generated*.



In the Stimulsoft Web Reports Designer, select the static text box.



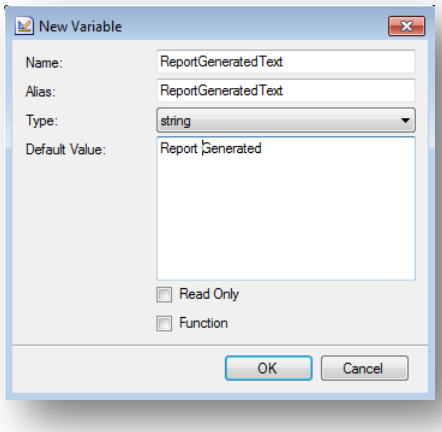
2. In the **Dictionary** panel, create a new variable.



3. Right click the variable and then click **Edit**.
4. In the **New Variable** dialog box, enter the following values:

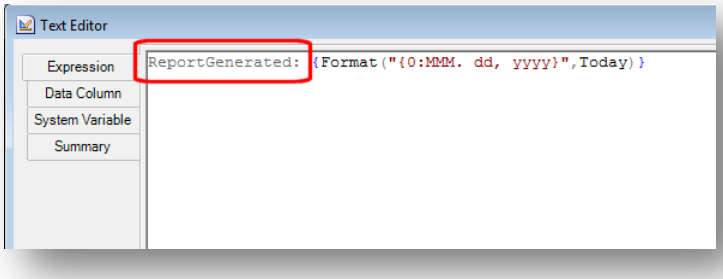
Field	Value
Name	*ReportGeneratedText*
Alias	*ReportGeneratedText*
Type	*string*
Default Value	*Report Generated*

The **New Variable** dialog box:

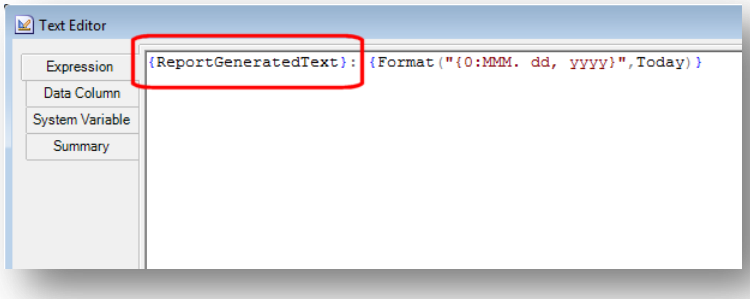


5. Click **OK** to save the new variable.
6. In the report body, select the existing *Report Generated* text box and double click it to open the **Text Editor** window.
7. In the **Text Editor** window, replace the static text *ReportGenerated* with *ReportGeneratedText* so it matches the name of the new localized variable

Static report text:



Localized report text:



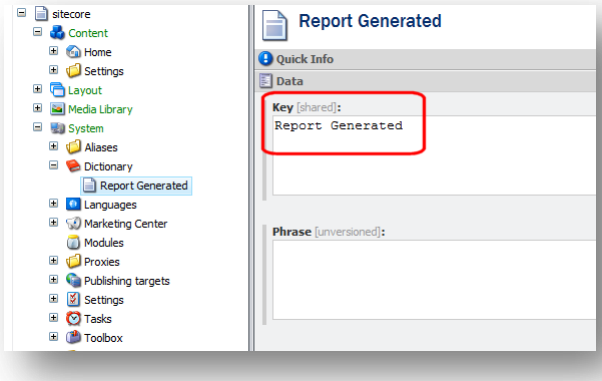
8. Click **OK**.

   When you next run the report in Engagement Analytics, the text *ReportGeneratedText* default value is localized.

To test a localized text variable:

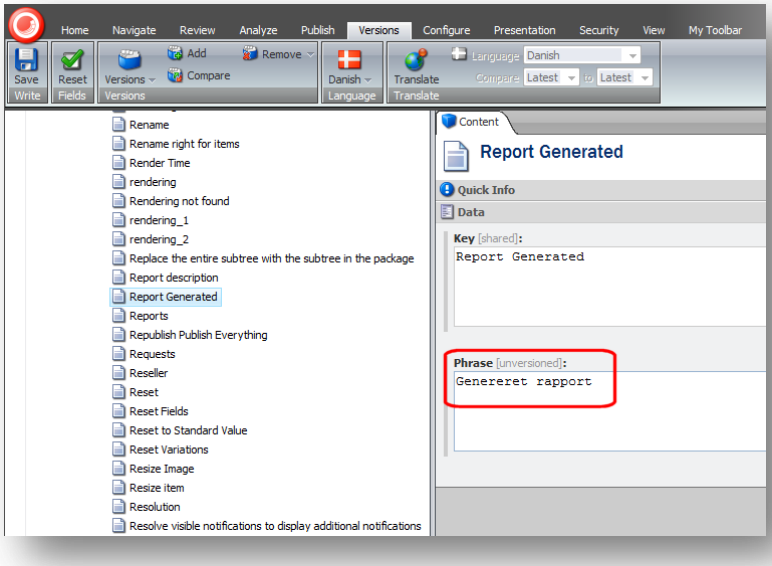
1. In the Sitecore Desktop switch to the Core database.
2. In the Content Editor, create a new Dictionary entry item. In the content tree, navigate to:

   `/sitecore/system/Dictionary/R`
3. Add a new Dictionary entry called *Report Generated*.
4. Select the new entry and in the **Key** field, enter *Report Generated*, the default value for your localized text variable.

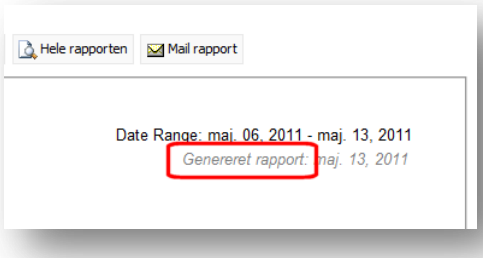


5. Add a new version of the dictionary entry in Danish.

6. In the **Phrase** field, enter your translation of *Report Generated*.



7. Save your changes and log out of the Sitecore Desktop.
8. In Sitecore make Danish the default language.
9. View the report in Engagement Analytics and all localized text now appears in Danish.



To localize all report text follow the same steps for each text box in your report layout.

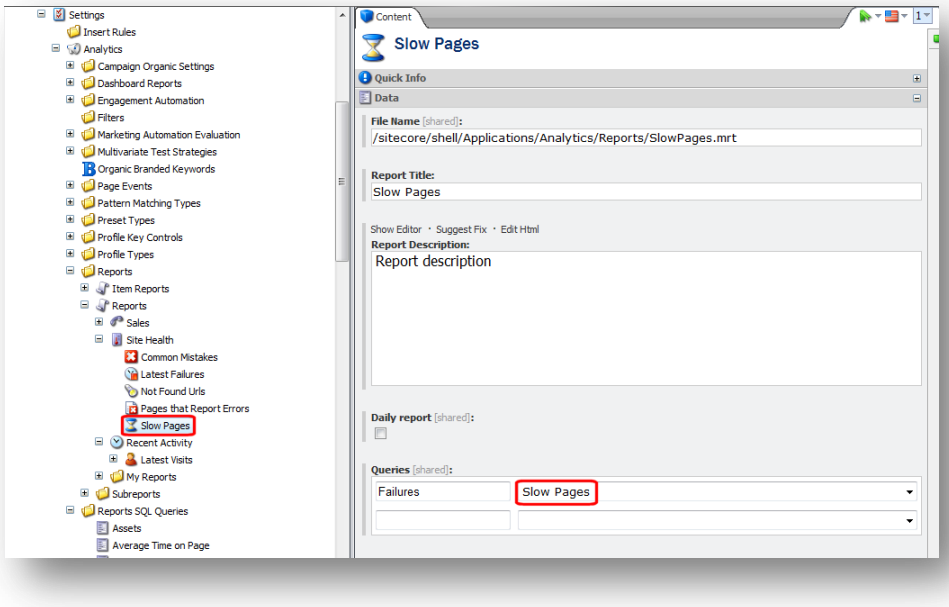
5.4 Modifying a Report SQL Query

In this scenario you will modify the SQL query used in the *Slow Pages* report to return a higher number of items. This demonstrates the steps you need to take to edit a SQL query contained in a Sitecore content item.

Note
If you create your own SQL queries or make any complex changes to existing queries you can affect performance. Always optimize queries for best performance. For example you can optimize by re-writing SQL queries by hand and by creating additional views or indexes.

To modify a Sitecore SQL query:

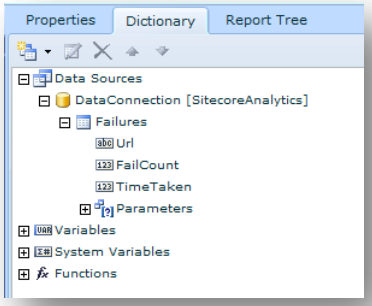
1. Open the Content Editor.
2. Navigate to the *Slow Pages* report definition item in the Sitecore content tree. `/sitecore/system/Settings/Analytics/Reports/Reports/Site Health/Slow Pages`
3. In the report definition item, you can see which SQL query this report uses by looking at the **Queries** field.



The *Slow Pages* **Queries** field contains a data source called *Failures* and a SQL query called *Slow Pages*.

When you create a report in the Stimulsoft Web Reports Designer, you use SQL queries to create data sources. In Engagement Analytics reports, all SQL queries are removed from data sources and converted into SQL report definition items and added to the Sitecore content tree. When you create a new report, you can create the original SQL query in the Stimulsoft data source but once implemented, you must add the SQL query to the Sitecore content tree. Reports continue to run if you leave the query in the Stimulsoft data source but

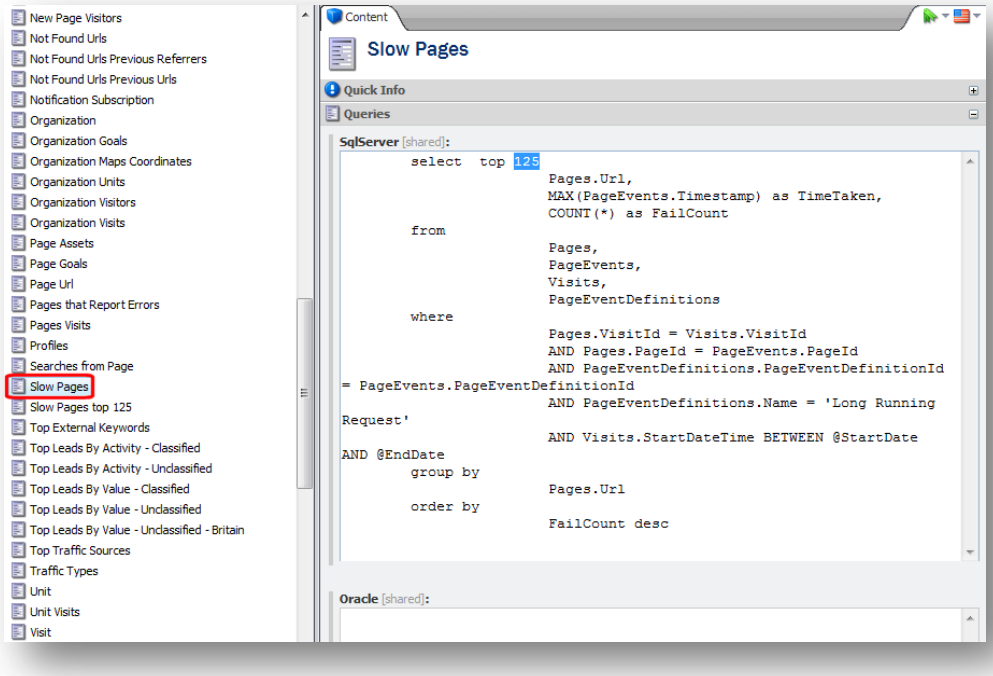
we recommend that you remove it.



4. In the content tree, navigate to the *Slow Pages* report query definition item:

   `/sitecore/system/Settings/Analytics/Reports SQL Queries/Slow Pages`

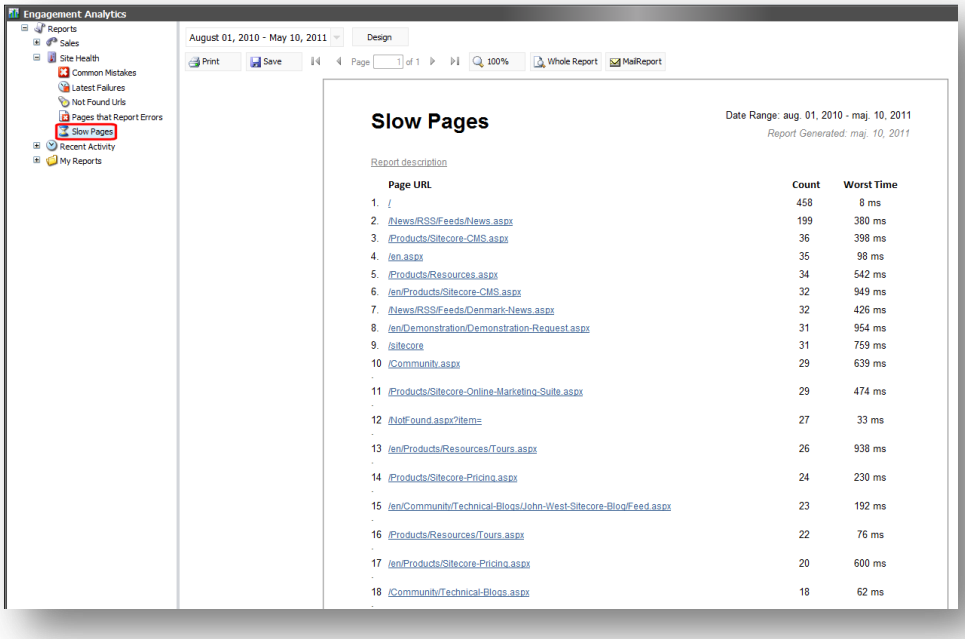
5. In the *Slow Pages* SQL query, change *top 25* to *top 125*. To test this change first, you can make a duplicate of the report so that the original report remains unaffected.



6. On the ribbon, click **Save**.
7. Open Engagement Analytics and navigate to the Slow Pages report.

   `Reports/Site Health/Slow Pages`

8. Scroll down the *Slow Pages* report and you can see that this report now returns the top 125 slow pages.



Note
It is possible to base multiple reports on the same report .mrt file. In this case you can change the SQL query to update all reports based on this file. This can cause problems but you can also use it as a quick way to update multiple reports.