Template Design Basics

This tutorial provides a quick introduction to ReportMill's basic features. Specifically, it shows how to design a template, bind to an XML datasource, format data, group, sort and generate a professional report in a matter of minutes.

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Page Headers/Footers

Overview

ReportMill's core is a page layout application, providing instant familiarity with template design basics. Users can simply draw page headers/footers, cover/summary pages, etc., using the common tools:

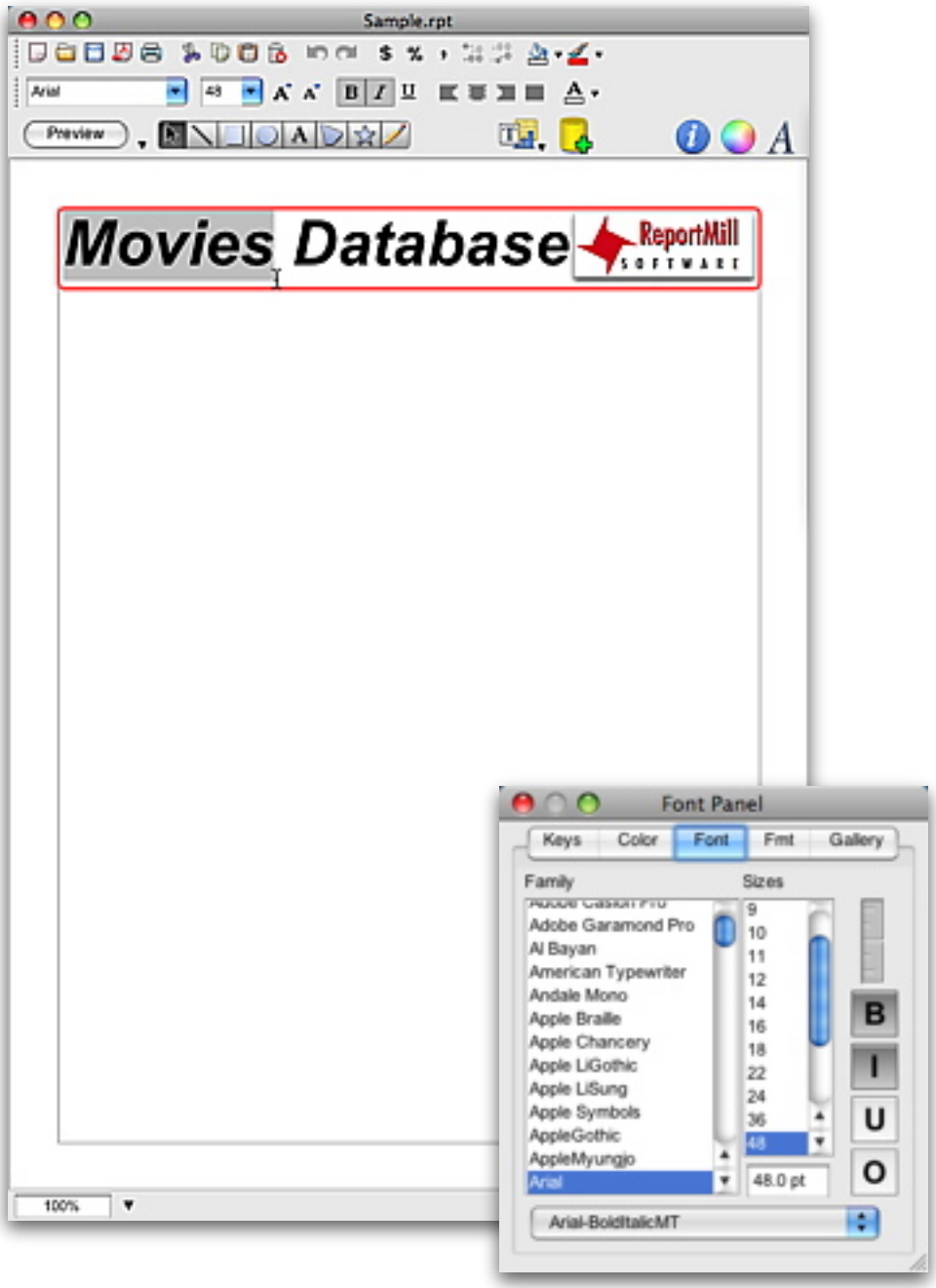
- **Selection**
- **Line segment**
- **Rectangle (with rounding)**
- **Oval (with sweep, start angle)**
- **Text (with powerful rich text editing)**
- **Polygon (click to add points)**
- **Star (really any n-sided symmetric polygon)**
- **Pencil (with curve fitting)**

Additionally, images, such as company logos can be added to a template via drag and drop. ReportMill accepts images in many formats: GIF, JPEG, PNG, TIFF, BMP and PDF.

Step 1: Select the text tool, click in the upper left corner of the page and type "Movies Database".

Step 2: Use the mouse to select the text you've just typed in (or the menu Edit->Select All), then bring up the font panel using the menu Tools->Font Panel (or use the menu accelerator, control-t). Select a font, font size, font style that appeals to you.

Step 3: Drag and drop an image from your desktop into an empty region of the template (dropping it on the existing text would give you the option of creating a texture, which is not what we want here). You can probably find an image quickly using your web browser.



Substitution Keys

Overview

ReportMill performs key substitution using the familiar mail-merge paradigm of surrounding keys by the "@" character, making it easy to mix static text and substituted data. Predefined keys such as "@Date@" and "@Page@" are readily available from the Keys Browser - or they can simply be typed in. An example of mixed text and keys is "Today's Date: @Date@".

Additionally, keys can be in the form of mathematical expressions, to perform calculations (eg, @budget/revenue*100@). We'll see how to bind to XML and Java object data on the next page.

Step 1: Bring up the keys panel using the menu item Tools->Keys Panel.

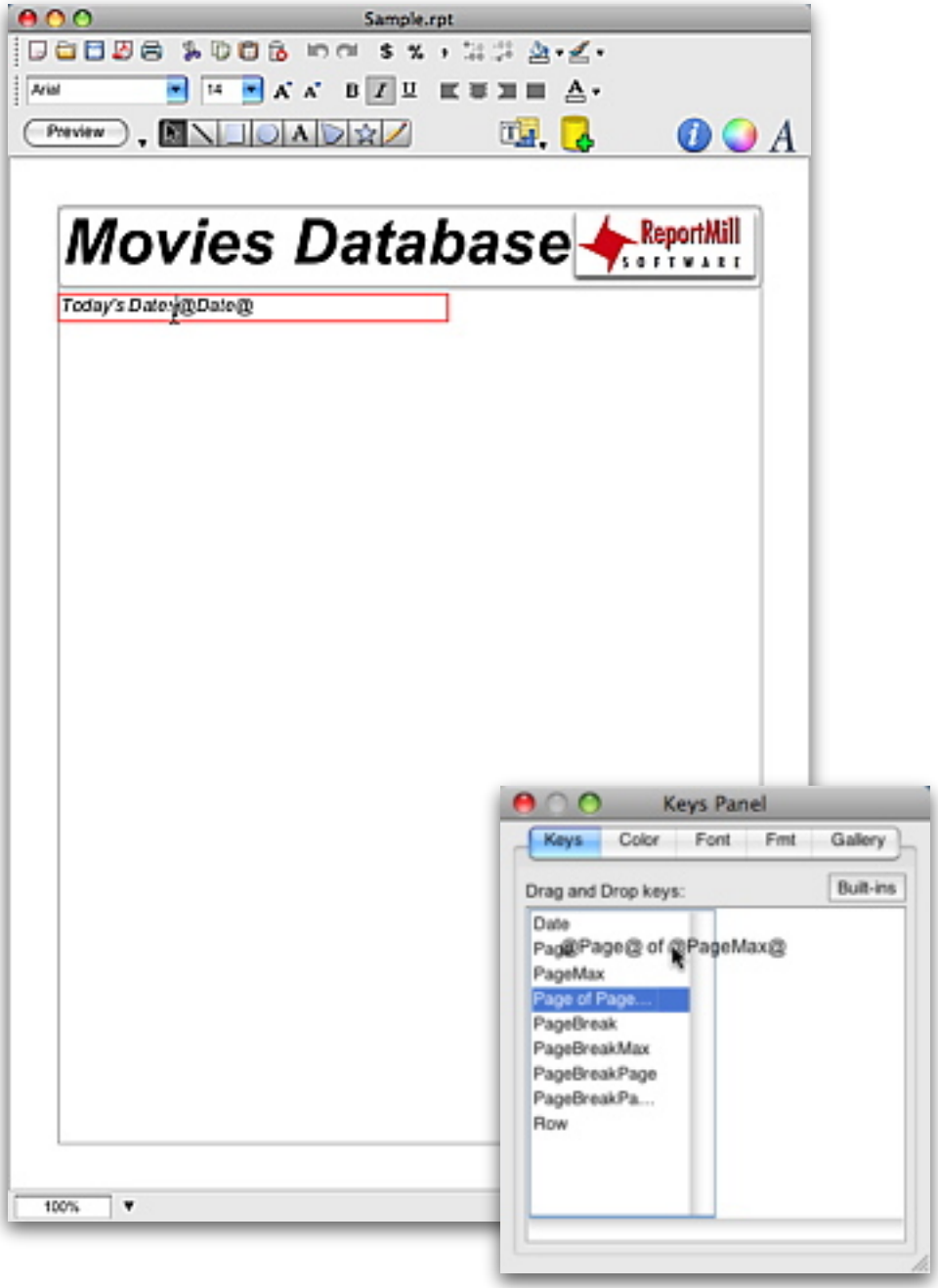
Step 2: Drag and drop the key "Date" from the keys panel to the document.

Step 3: Position and size the Date text field, so it will be big enough to hold some static text and the substituted date value (you can change the font, too, using the font panel).

Step 4: Double-click on the field and add the text "Today's Date: " before the existing "@Date@".

Step 5: Bring the Keys Panel up again (you can also use the menu accelerator, Control-k), then drag the key "@Page@ of @PageMax@" to the bottom margin of the page.

Step 6: Hit the "Preview" button at the upper left corner of the document to see a preview of the Date and Page keys. Don't forget to hit that button again (it now says "Edit") before you continue.



XML Based Template Design

Overview

In order to facilitate template design, ReportMill needs a description of your object model and a sample dataset. This is provided via an XML file. When you drag an XML file into an empty ReportMill document, ReportMill populates the Keys Browser with all of the key paths available in your model. As with the built-in keys, your new XML keys are now available to drag and drop into the template.

If you don't currently have an XML description of your object model, you can create one with ReportMill API's and one of your objects (or list of objects):

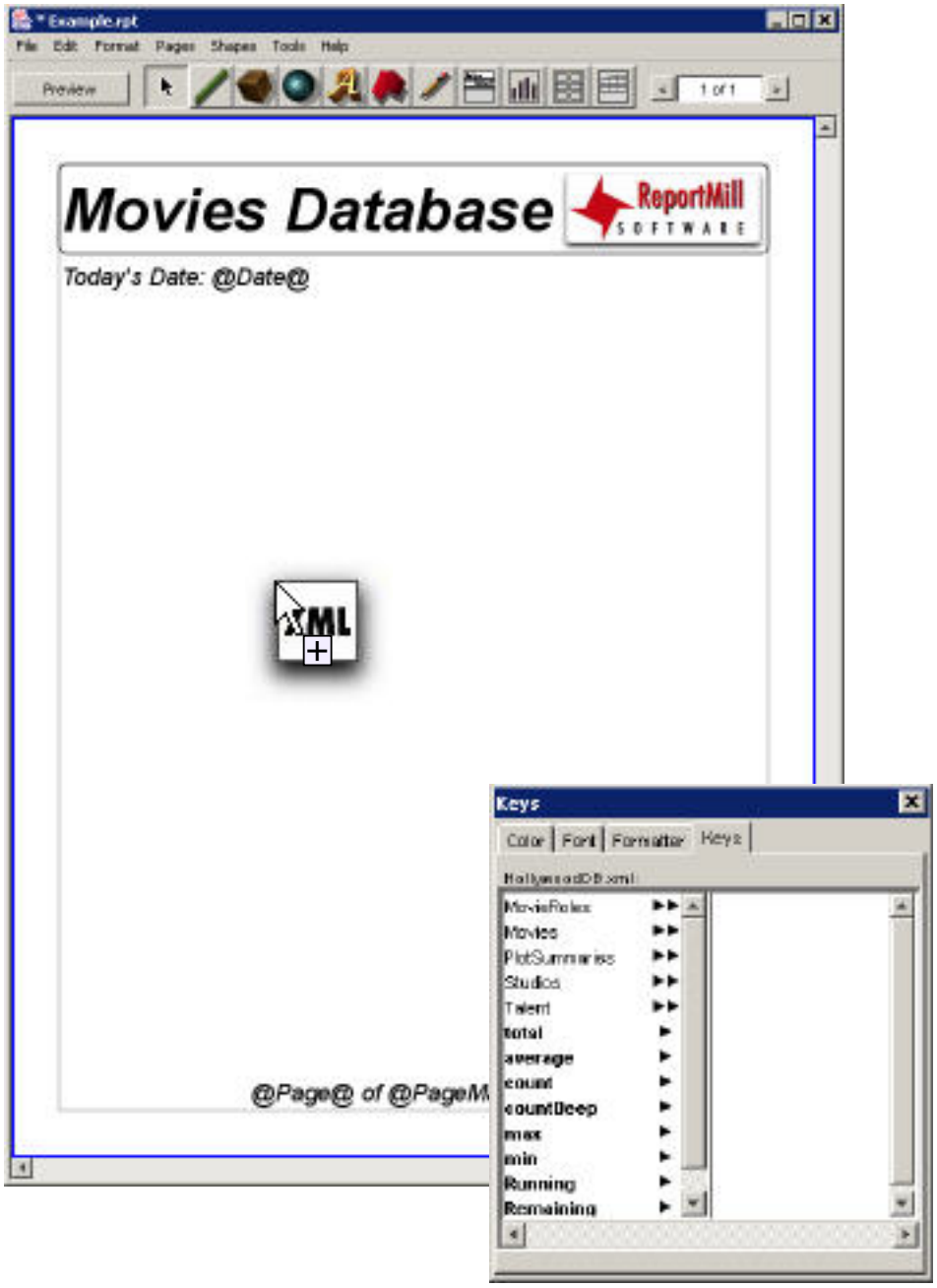
```
new RMXMLWriter().writeObject(myObject, "C:\Temp\MyData.xml");
```

It's important to note that providing this description is just a convenience (albeit, a particularly nice one). You can construct a template by typing the keys that you know are present in your object model. Missing or misspelled keys are not a failure condition (they simply result in "<N/A>").

Step 1: Let's start with a common XML file. Use the menu item File->Samples->HollywoodDB.xml to bring up the sample Hollywood dataset.

Step 2: This file should have opened in Internet Explorer. Use IE's File->Save As menu to save it to your desktop.

Step 3: Drag HollywoodDB.xml from your desktop into the open ReportMill document. ReportMill will now present you with the Keys Browser, containing keys found in the XML file.



Dataset Keys and Tables

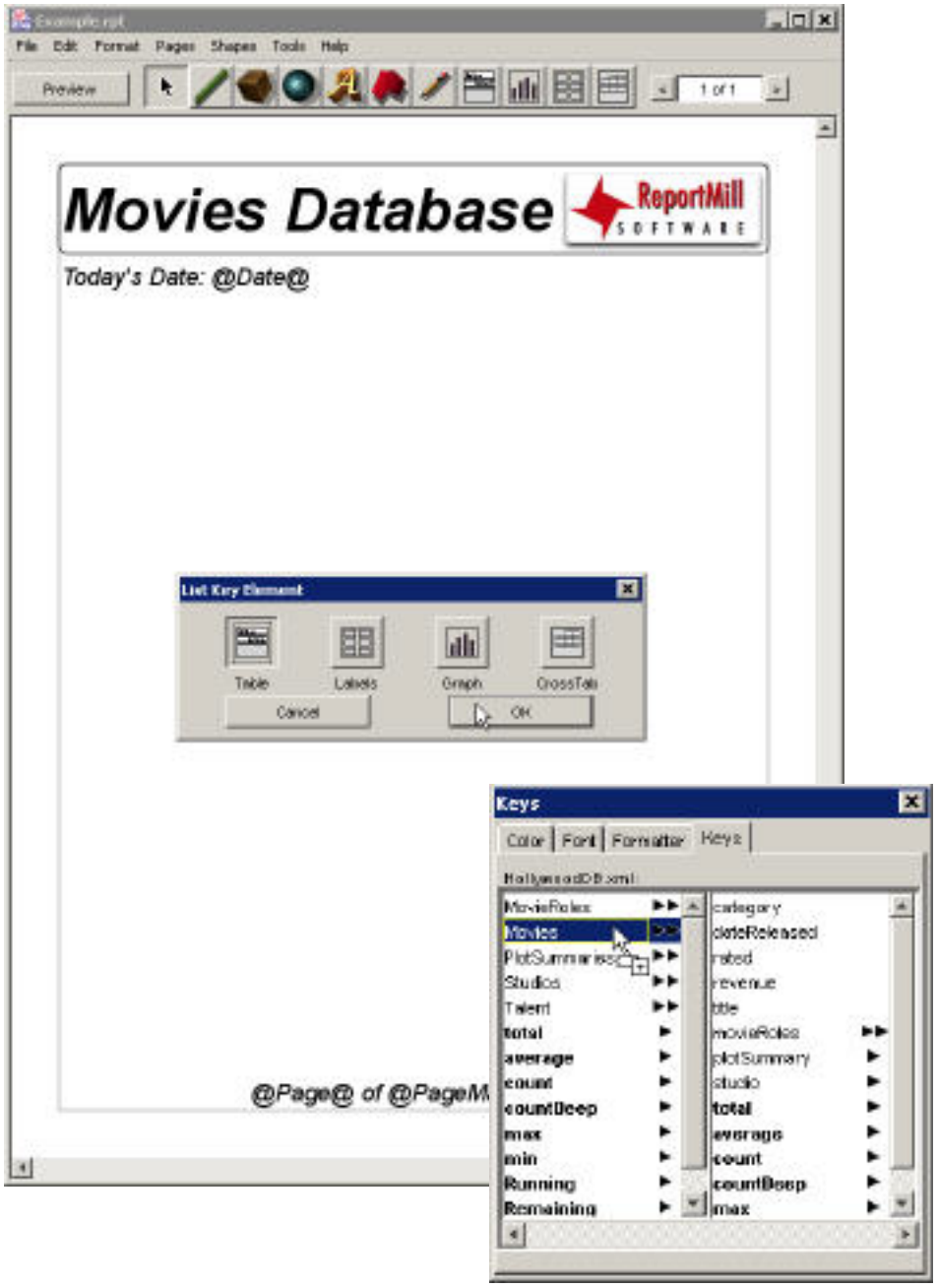
Overview

The most common type of report is a tabular report that iterates over a list of objects. In fact, most datasets may be made up of a single list of objects ("movies", "customers" or even just "objects"). If your XML dataset has a list of objects, they will show up in the keys browser with a double-arrow icon, indicating the list (also known as a "to-many" relationship).

When you drag a "List key" into an open ReportMill document from the keys browser, something special happens. ReportMill gives you a choice of "List Key elements". The default (and the most common) is table. When you choose this, you will be given a table template to configure for the List Key.

Step 1: The HollywoodDB.xml dataset has a number of list keys at the top level. Let's choose "Movies". Simply click and drag and drop the Movies key from the Keys Panel to the open document.

Step 2: Dragging the "Movies" list key into the open document brings up the "List Key Element" selection panel. The default, "Table" is already selected - just click OK.



Tables

Overview

The table template is a grey box with a single "Movies Details" row at the top (pre-configured with four columns). Position and size the table template to cover the region of the page that you want the objects to cover (this generally means making the table almost the size of the whole page).

The Keys Browser now shows all of the keys relevant to an individual Movie (it will do this as long as the table or one of it's children is selected, otherwise it will show the root of the XML file again).

Drag and drop keys for the movie into the columns of the table. Make sure the border of the column lights up, otherwise your key might end up just above the table, instead of inside it (in which case it won't get repeated).

Step 1: Position and size the table template to cover most of the page.

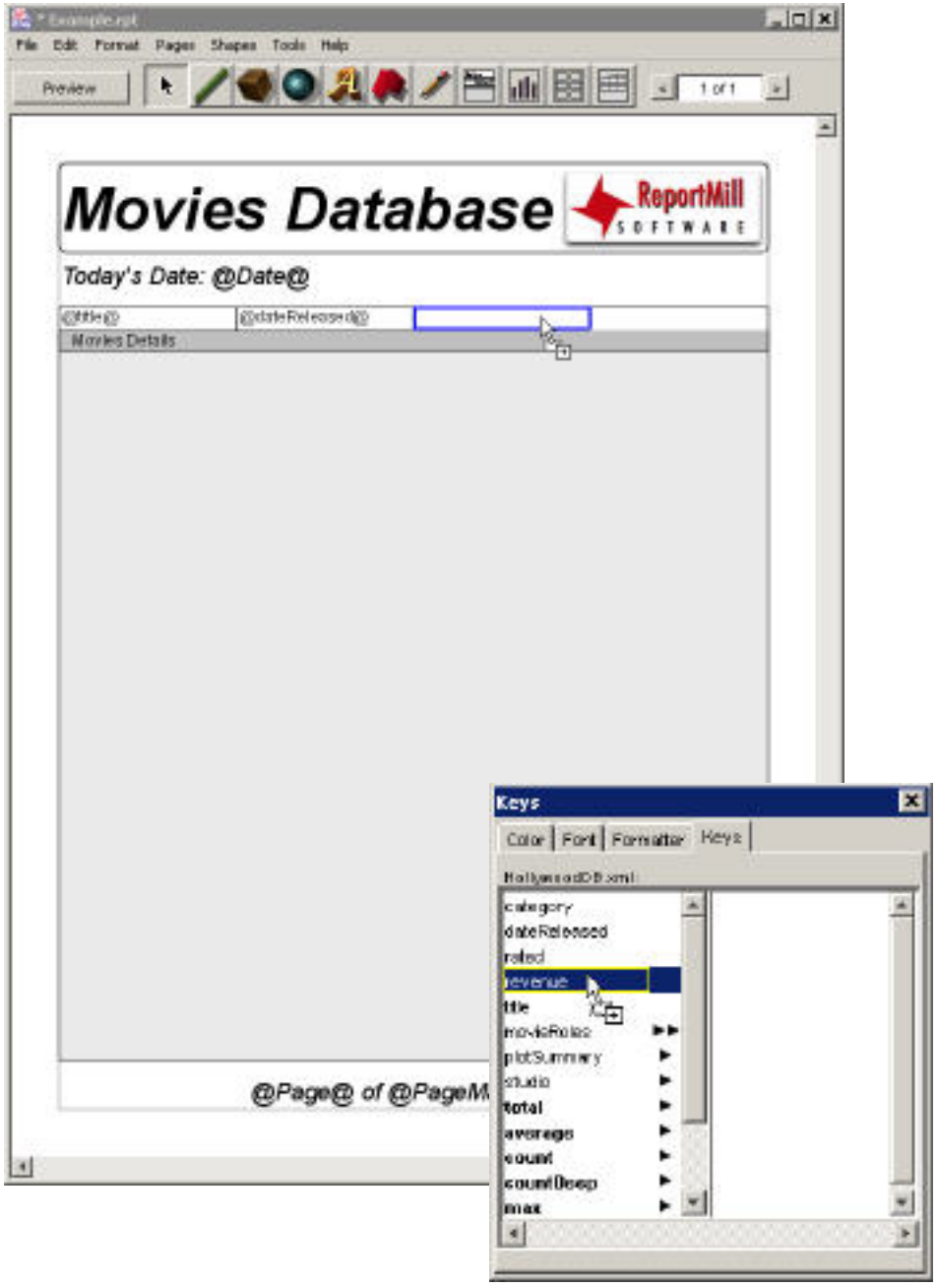
Step 2: Drag the "title" key into the first column.

Step 3: Drag the "dateReleased" key into the second column.

Step 4: Drag the "revenue" key into the third column.

Step 5: (optional) Click in the final column and drag it outside the bounds of the table to get rid of it. You can add additional columns in the table row inspector (covered later).

Step 6: Hit the "Preview" button to see a real, paginated "Movies" report!



Formatting

Overview

ReportMill offers many formatting options, including sizing, font selection, color selection, text alignment, money/date formatting, etc.

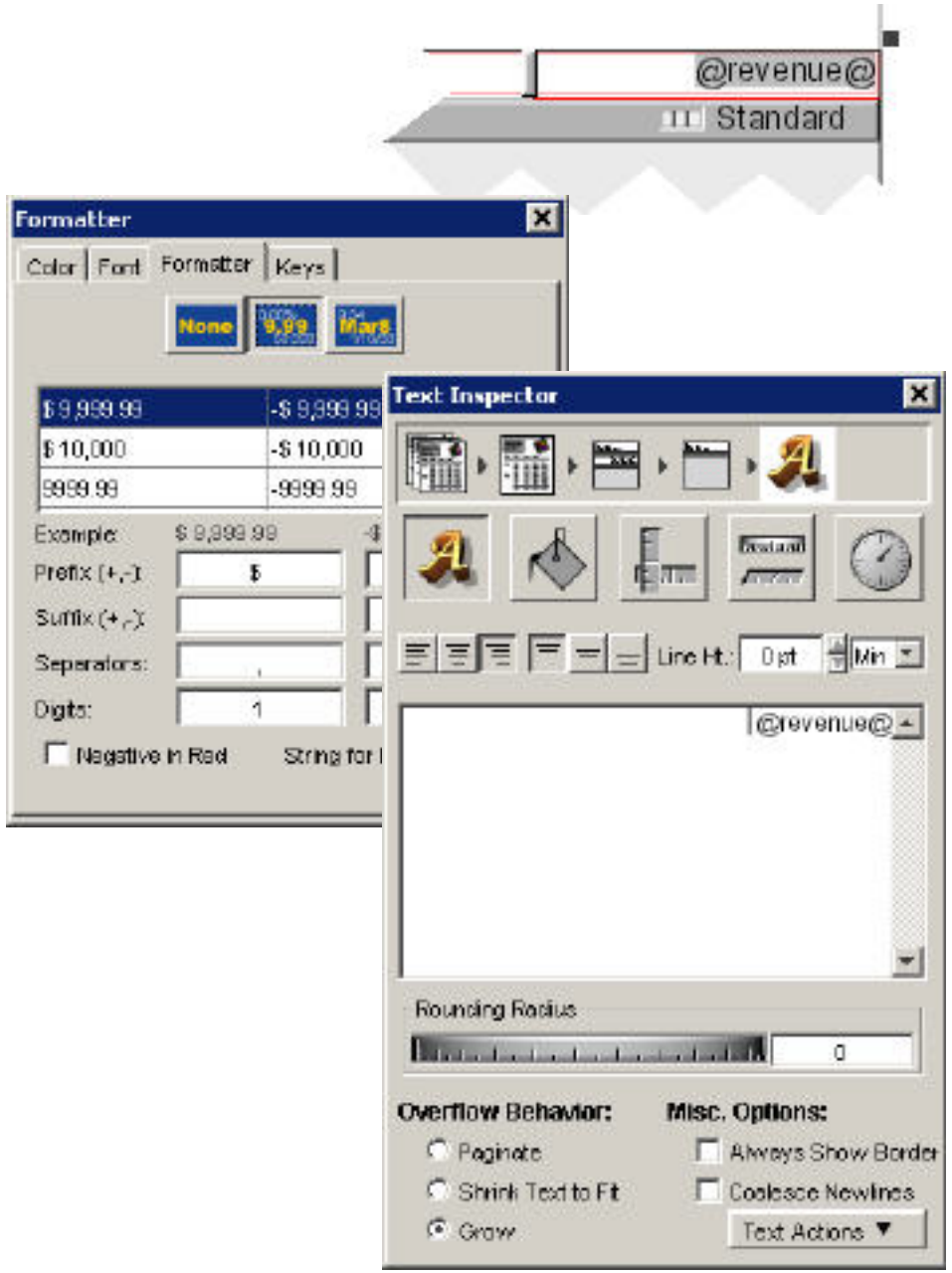
Step 1: Click in the column with the "@revenue@" key and select all text.

Step 2: Bring up the Formatter panel using the menu Tools->Formatter Panel (or the menu accelerator control-f). Choose the second button in this panel (the money formatter). Choose the second format: Money, rounded to the nearest dollar.

Step 3: Bring up the shape-specific inspector by using the menu Tools->Inspector. This should be the text inspector. Align text to the right by clicking the third button (it has the stacked bars icon, with the bars all aligned to the right).

Step 4: Back in the document window, select the resize bar just to the left of the "@revenue@" key and move it to the right so the column is thinner.

Step 5: (Optional) Select the resize bar under the whole table row and move it up or down to make each row taller or shorter.



Tables: Grouping

Overview

It's often a requirement of tabular reports that the data be broken down and separated by specific attributes. ReportMill makes this trivial, by continuing with the drag and drop theme.

By simply dragging any attribute from the Keys Browser into the Table Inspectors "Grouping" list, you effectively group all of the List key objects by that attribute - and the table template gets a new row to configure for each added grouping.

Note: You can insert an explicit page break after any grouping (say after each studio) by clicking the grey box to the right of that grouping.

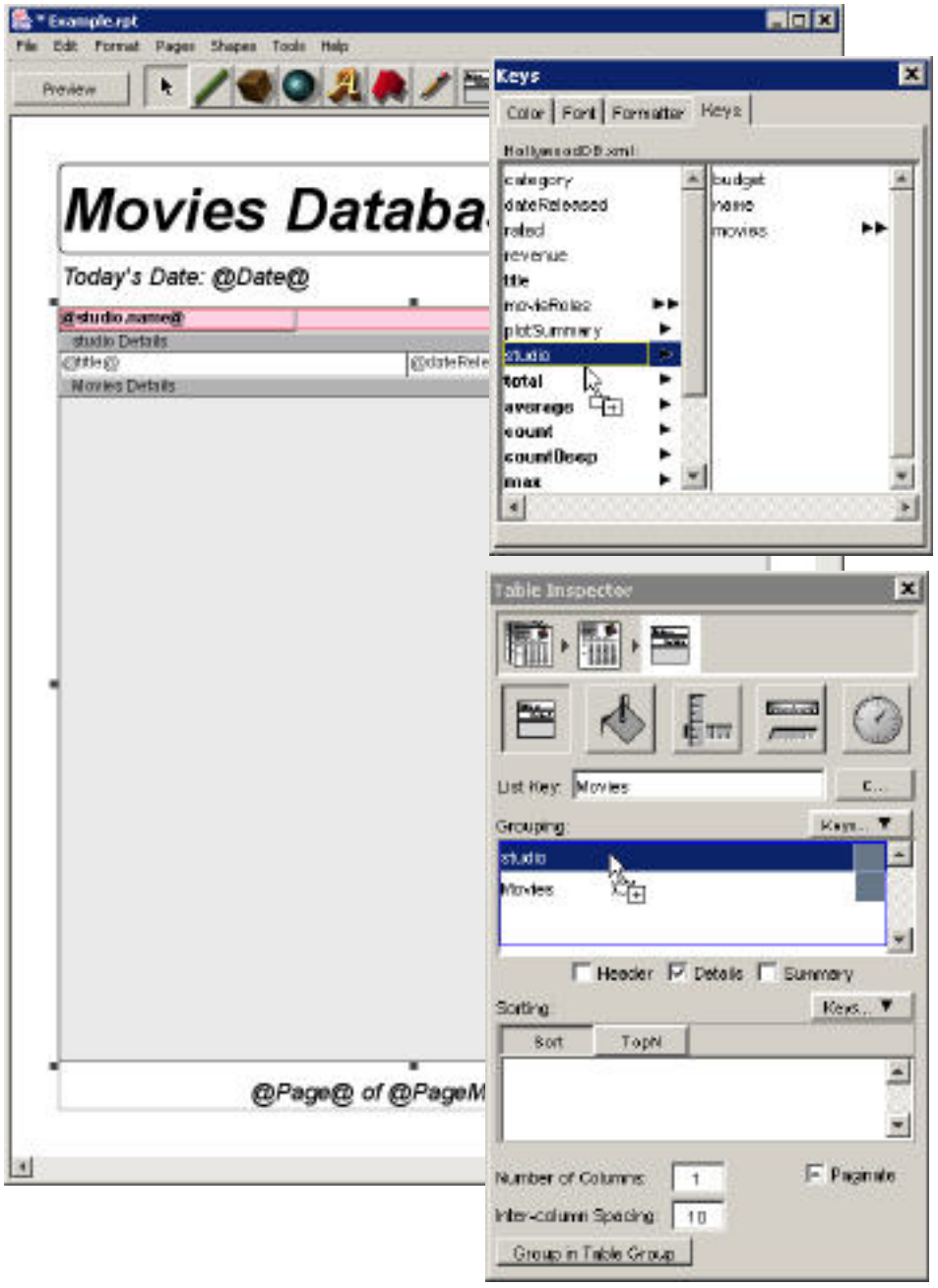
Step 1: Make sure the table is selected and drag the "studio" key from the Keys Browser to the "Grouping" list in the Table Inspector.

Step 2: Navigate to the key "studio.name" and drag it into the first column of the new "Studio Details" row.

Step 3: Navigate to the key "total.revenue" and drag it into the last column of the Studio Details row.

Step 4: Format the keys in the new "Studio Details" row by selecting the text and making it bold (also align the "total.revenue" key to the right and add the money formatter like we did in the previous page).

Step 5: (Optional) Select the table row by clicking (or double-clicking) on it's resize bar, then choose a background color (bring up the Color Panel with the menu Tools->Color Panel).



Tables: Sorting

Overview

Another common requirement of tabular reports is sorting. Once again this is made trivial by dragging keys from the Keys Browser to the Table Inspector's "Sortings" list.

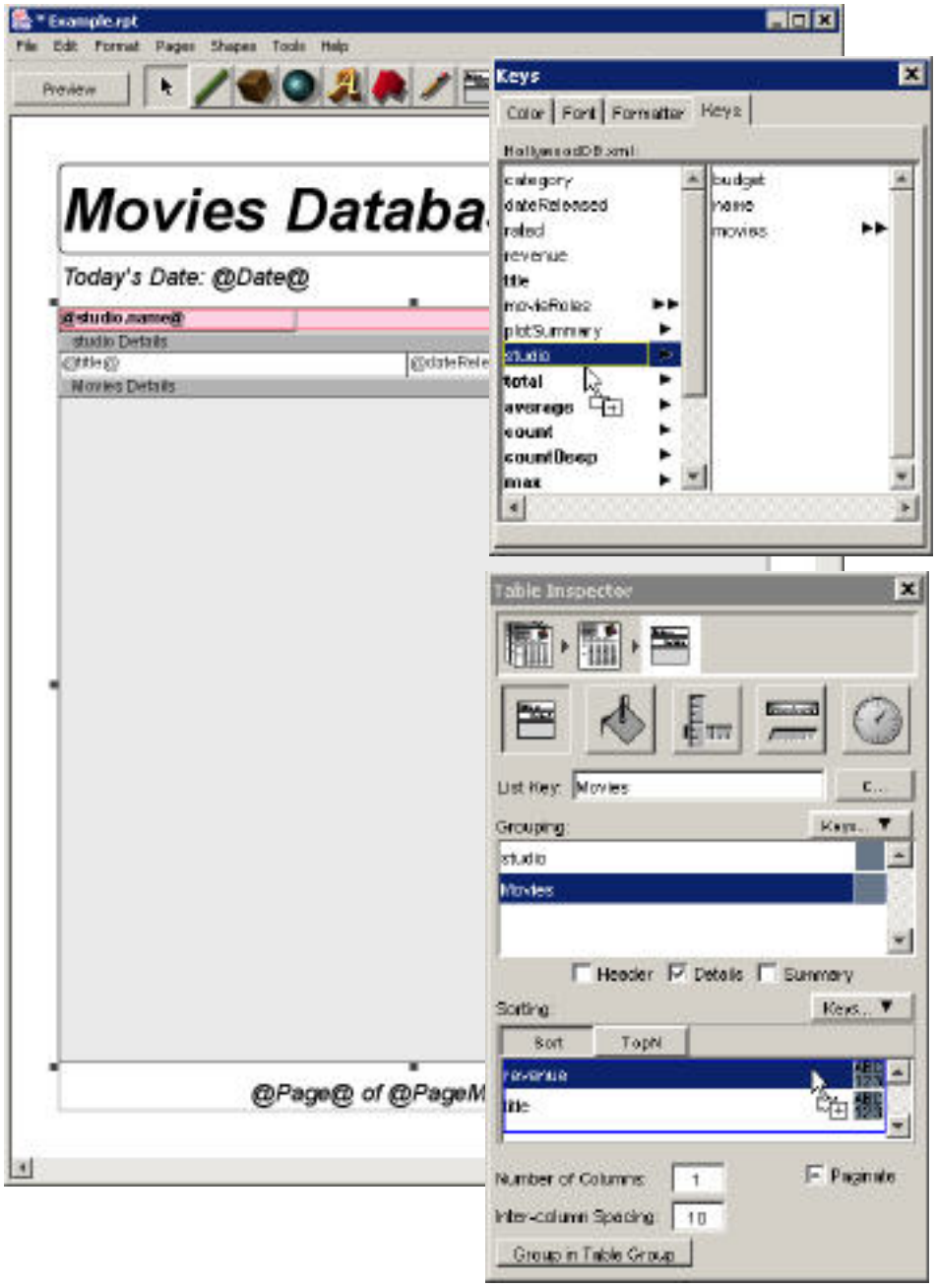
In this case, however, you can provide a list of keys for each level of grouping. The "studio" grouping, for instance might have the sort "total.revenue" so that the most successful studios are listed first. And the Movie level might have the sort "revenue" and "title" so that the most successful movies for each studio are listed first (alphabetically, by title, when there is a tie for revenue).

Note: the sorts each have a "ABC/123" button to the right of them, indicating Ascending vs Descending sorts. Click this when you want to change the order (which would be the case for the revenue keys).

Step 1: Make sure the table is selected and the "studio" grouping is selected, then navigate to the "total.revenue" key and drag it into the Table Inspector's "Sortings" list. Click the "Ascending/Descending" button to get the "321" setting.

Step 2: Make sure the "Movies" grouping is selected, then drag the "revenue" and "title" keys into the "Sorting" list. Make sure revenue is "Descending".

Step 3: Click Preview to see a report of the most successful studios and movies in Hollywood!

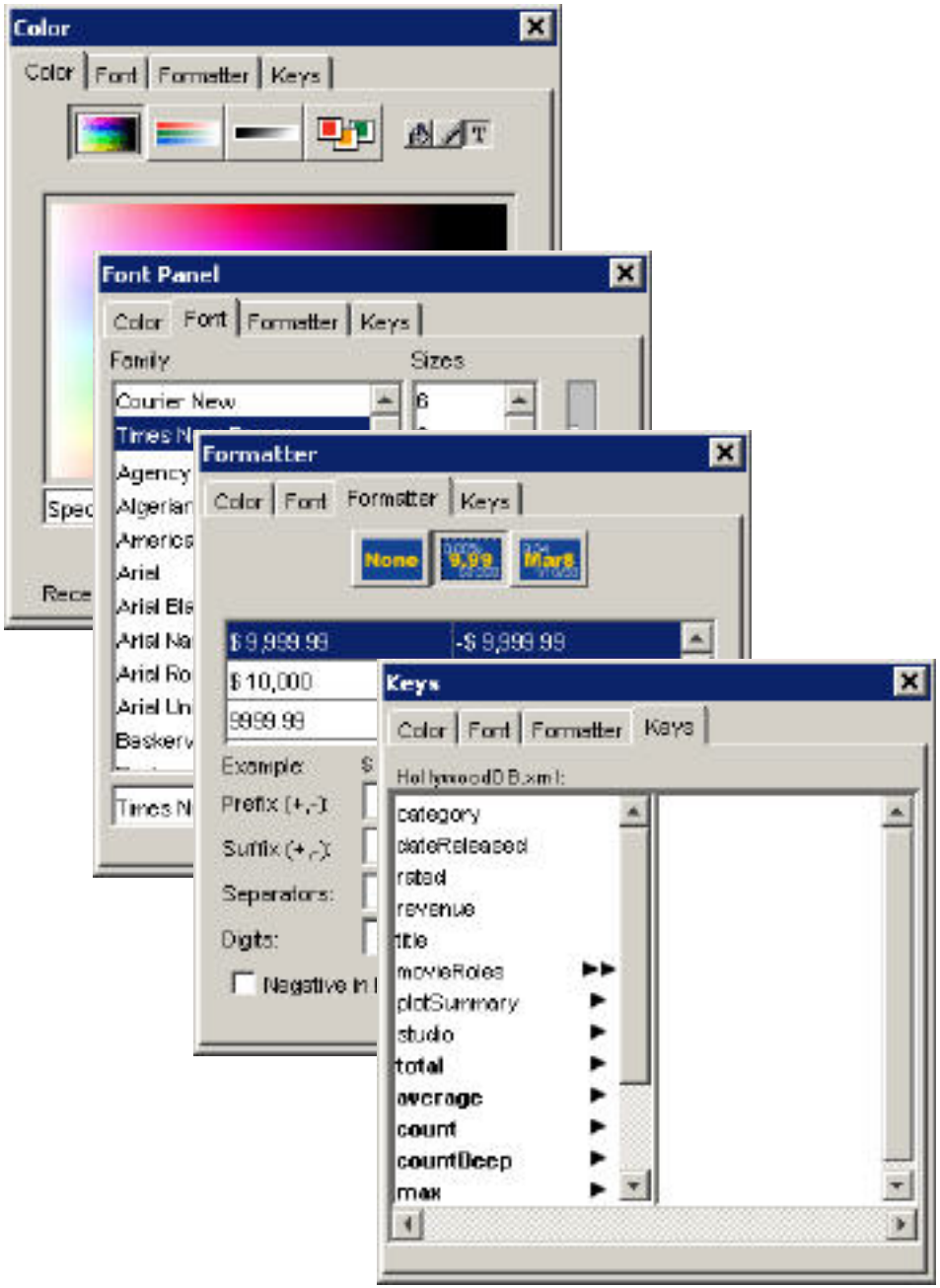


The Attributes Panel

Overview

You may have noticed by now that there is a common "Attributes" panel for Colors, Fonts, Formatters and Keys. This panel provides one-stop shopping for all of these common attributes and avoids "window-itis" found in many other applications. The tabs make each of these panels very accessible, however, they can also be called up by using their menus in the "Tools" menu or their menu accelerator keys.

This is one of only two support panels you want to keep track of while using ReportMill.



The Inspector Panel

Overview

ReportMill tries to do as much as possible through "direct manipulation" in the document window. However, many of ReportMill's more sophisticated settings can be found in the inspector panel - the only other panel you will want to keep track of while editing templates. Here is a break down of the parts.

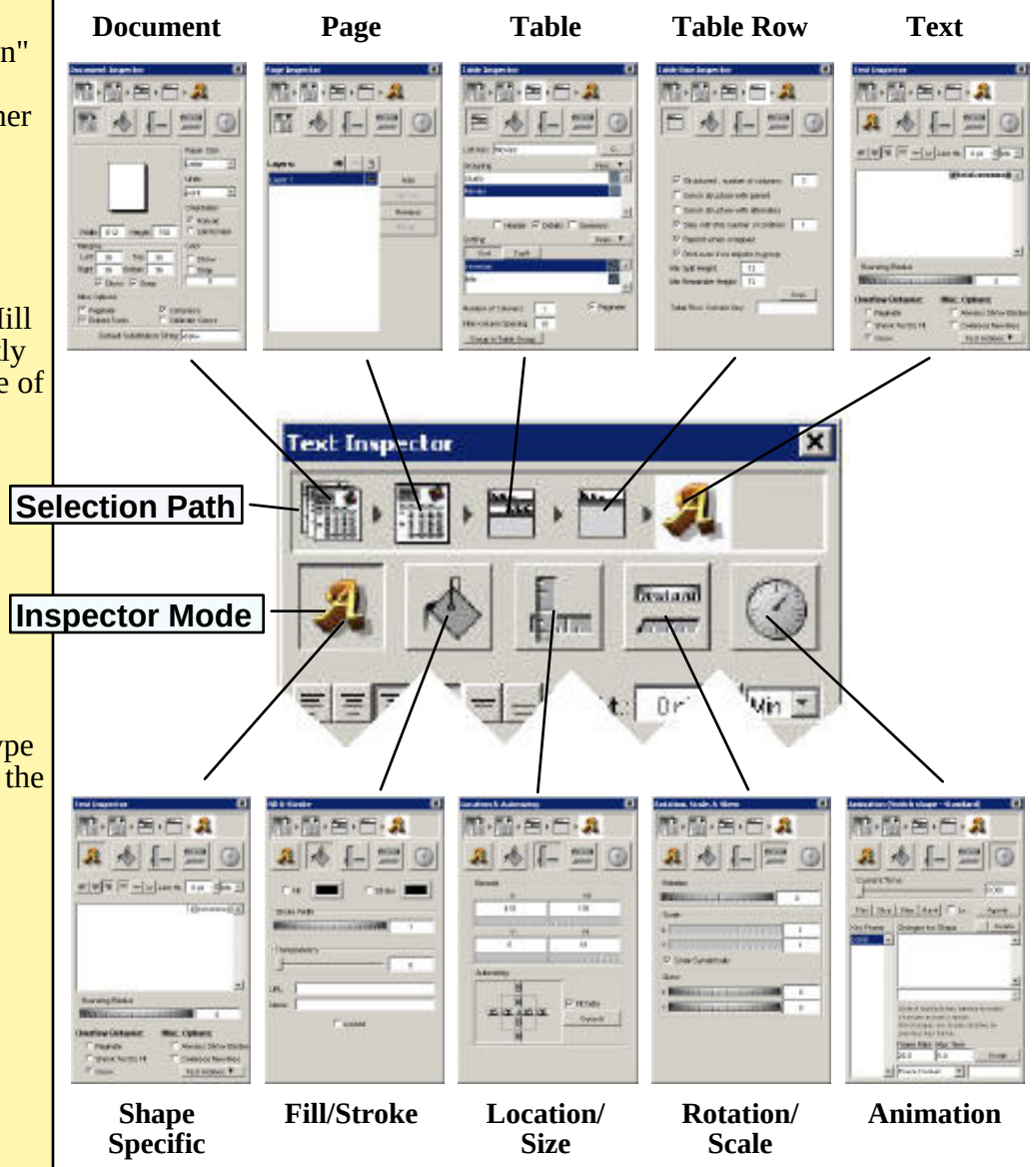
The Selection Path

The first row of icons in the inspector is the "Selection path". ReportMill provides for deep editing of the document hierarchy: you will frequently be editing a Text Field, inside of a Table Row, inside of a Table, inside of a Page inside of the Document. Each of these elements offers its own inspector, which you can easily access by clicking on its icon in the Selection Path.

Notice, there are fewer icons when the hierarchy is more shallow, such as when a text field is a direct child of the page (then you have Document > Page > Text Field).

The Inspector Mode

The second row of icons in the inspector is for choosing the specific type of attributes you want to edit. The first one is the "Shape specific" and the most commonly used mode. The remaining modes are: **Fill/Stroke, Location/Size, Rotation/Scale and Animation.**



App Server Integration

Overview

ReportMill focuses the same ease-of-use philosophy found in the layout application in its developer framework. Generating reports from your Java application is remarkably easy.

ReportMill.jar

The first thing to note is that ReportMill is a simple jar file - simply add ReportMill.jar to the classpath on your developer and deployment machines and any Java servlet, batch process or command line tool can turn objects into PDF and Flash. This is far superior to reporting tools that run on a separate machine or a separate process, because it removes a point of failure and saves the wasted time and memory of refetching the current Java dataset.

The API

To turn Java objects into PDF, you simply call the following lines of code - from absolutely any part of any Java application:

```
// Load template from any Source (File, String path, InputStream, byte array, etc.)
RMDocument template = new RMDocument(aSource);

// Generate report with EJBs, POJOs, Java Collections, JDBC ResultSet, etc.
RMDocument report = template.generateReport(myJavaDataset);

// Get PDF (or HTML, Flash, Excel, XML, etc.)
byte pdf[] = report.getBytesPDF();
```

Where to go from here

For more information on using the features of ReportMill, take a look at our basic topics on the support page.