Pentaho Report Designer Best Practices

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Overview

This document is intended to provide best practices to help you design and build your Pentaho reporting solution for maximum speed, reuse, portability, maintainability, and knowledge transfer. Some of the topics discussed here include report layout and creation, and data sources.

Topics are arranged in a series of groups with individual best practices for that topic explained. This document is not intended to demonstrate how to implement each best practice, or provide templates based on the best practices defined within the document.

Our intended audience consists of Pentaho administrators, or anyone who wants to create a Pentaho reporting solution for optimal use, and for transforming data into meaningful information.

The intention of this document is to speak about topics generally; however, these are the specific versions covered here:

Software	Version(s)
Pentaho	6.x, 7.x, 8.x

The Components Reference in Pentaho Documentation has a complete list of supported software and hardware.

Before You Begin

Before beginning, use the following information to prepare for the procedures described in the main section of the document.

Other Prerequisites

This document assumes that you are familiar with a Mondrian schema, Pentaho metadata, and Analyzer data sources, and have installed a reporting wizard.

Use Case: Creating a Reporting Solution

> *Wade, a Pentaho administrator, needs a reporting solution that would provide optimal use. He will need to design and build a Pentaho reporting solution which would provide maximum speed, reuse, portability, maintainability, and knowledge transfer. Pentaho's report layout and creation tools will help him with easy customization of his reporting solution. When he creates his report, he will be able to transform his data into meaningful information.*

Best Practices for Report Layout and Creation

Pentaho's report layout and creation tools allow you to easily customize your Pentaho reporting solutions. These tools will help you refine data from various sources to fit your needs. The following section provides best practices for maximizing Pentaho's reporting capabilities.

You can find details on these topics in the following sections:

- Report Creation
- Report Layout

Report Creation

Creating a report will help you transform your data into meaningful information. The following options are recommendations to improve your reporting performance.

Table 1: Report Creation Recommendations

Recommendation	Details
Use the **Reporting Wizard** for standard tabular reports	Using the Reporting Wizard to generate standard tabular reports allows you to create reports with subtotals using style templates. The wizard quickly generates a usable report in a `.prpt` format that you can further modify, including reapplying styles if the template is modified.
Place **user-selected values** in the report **header** or **footer**	Placing user-selected values in the report's header or footer allows you to see what those values were, even after the report is run.
Inform the user with the **No Data band**	Using the No Data band by showing all parameters lets the user know if there was no data available for their selection. In this way, they will see that the report was run, but returned no data based on their selected values.

Report Layout

Creating a layout allows you to manipulate the look and feel of your reports. Below are suggestions for improving your layouts.

Table 2: Report Layout Recommendations

Recommendation	Details
Use **banded reports** instead of inline sub-reports	Banded reports perform better than inline sub-reports during layout, so choose banded reports when you drag a sub-report to the canvas. Choose an inline report only when you need to display a fixed-size object, such as a chart or image.
Align edges of objects	The edges of the report elements determine where columns are added. The more columns you have, the longer the report will take to lay out. Align edges of objects so their edges align with other objects. Then, the text will visually align itself.
Use the **row layout style** for tabular reports	Use the row layout style for creating tabular reports when you are using the details band, details header, and details footer. It will ensure side-to-side alignment of fields and minimize gaps when you apply layouts on tabular banded reports.
Use **snap-to-grid** to place elements on the canvas	Enable snap-to-grid at **View** > **Toggle snap-to-grid**. This will let you place elements on the canvas and align them easily when you are not using row layout.

Best Practices for Data Sources

Pentaho reporting solutions rely on various data sources to build and design reports. The following section provides best practices for maximizing the efficiency of your data for report building.

You can find details on these topics in the following sections:

- Pentaho Data Sources
- General Data Sources

Pentaho Data Sources

Pentaho data sources can be configured to help you run faster reports and queries. The following options are our recommendations for managing Pentaho data sources.

Table 3: Data Sources Recommendations

Recommendation	Details
Use a **Mondrian schema** or **Pentaho metadata** for reports and queries	Use a Mondrian schema for reports or queries that display summary data. Mondrian can cache summary results so that each report can work faster. Use metadata for reports or queries that display row-level details. Both metadata and schema can centrally implement features that are executed in every query. They can implement security and add or remove possible fields and calculations.
Use **Analyzer** to generate MDX	Use Analyzer to easily generate multidimensional expressions (MDX) and build the report you need. Analyzer will help you avoid typing mistakes. To use the generated MDX, on the **Administrator** > **Log** tab, copy the MDX using the `WITH` statement. *Make sure that the parameters are substituted appropriately for the MDX.*

General Data Sources

General data sources can be configured so that you can focus on how your data is displayed. The following options are our recommendations for managing general data sources.

Table 4: Data Source Recommendations

Recommendation	Details
Use the **fixed table input** for design and prototyping	So that the designer can focus on the look and feel of the report instead of on the data, use the fixed table input for design and prototyping. To do this, right-click on a data source, and choose **Select Query** to switch between two sources. Switch to a dynamic data source, such as MDX, MQL, or SQL, once you have selected a layout.
Use Java Naming and Directory Interface (**JNDI**) for each Java Database Connectivity (**JDBC**) data source	Create a JNDI connection in the default.properties file so that you can change data sources at the server level. Without this, you will need to change data sources for each report as the reports are moved from server to server or environment to environment without using a JNDI connection.
Use **data integration transformations for complex data massaging**	Using Pentaho Data Integration (PDI) transformations embedded in the `.prpt` file as complex data sources allows you to access Hive, web services, Mongo, Salesforce, and other sources. This scripted data source approach only massages raw data. PDI offers a visual tool for reading and transforming data. These are the suggested coding mechanisms.

Related Information

Here are some links to information that you may find helpful while using this best practices document:

- [Add a JNDI Data Source](#)
- [Pentaho Components Reference](#)

Finalization Checklist

This checklist is designed to be added to any implemented project that uses this collection of best practices, to verify that all items have been considered and reviews have been performed.

Name of the Project:_____

Date of the Review:_____

Name of the Reviewer:_____

Item	Response	Comments
Did you use banded reports for creating your layout, instead of using inline sub-reports?	YES_____ NO_____	
Did you use the row layout style for tabular reports?	YES_____ NO_____	
Did you use a Mondrian schema for reports and queries?	YES_____ NO_____	
Did you use Pentaho metadata for reports and queries?	YES_____ NO_____	
Did you use Analyzer to generate MDX?	YES_____ NO_____	
Did you use fixed table input for design and prototyping?	YES_____ NO_____	