# Effective Reporting with IBM Rational ClearQuest Using BIRT

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RU READY TO SAVE THE DAY

IBM Rational Software Development Conference 2008

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Rational. software

# About Me

- Rational Support Team in Hursley

- IBM SWG but not part of Rational organisation

- Using ClearQuest and BIRT for ~7 months

- Previously worked in IT support

# What is BIRT?

- **B**usiness **I**ntelligence **R**eporting **T**ools

   *"BIRT is an open source Eclipse-based reporting system that integrates with your Java/J2EE application to produce compelling reports."*

- Enterprise level reporting system based on the Eclipse framework
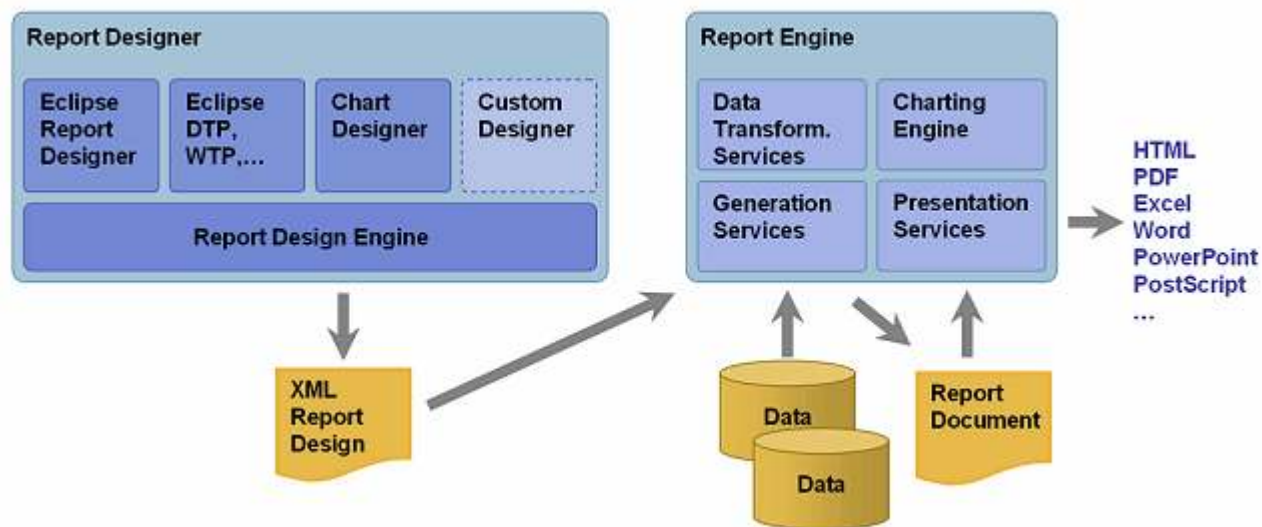
# ClearQuest 7.1 Reporting Model

- Support for different reporting solutions

- BIRT provides OOTB reporting solution

- Change from Push to Pull Data Model

  – What does this mean in practice?

  – How can we take advantage of this?

# ClearQuest 7.1 Reporting Model (Pull vs Push)

- Report across multiple record types

- Report across multiple data sources

- Allows for the use of sub-reports

# Using BIRT with ClearQuest
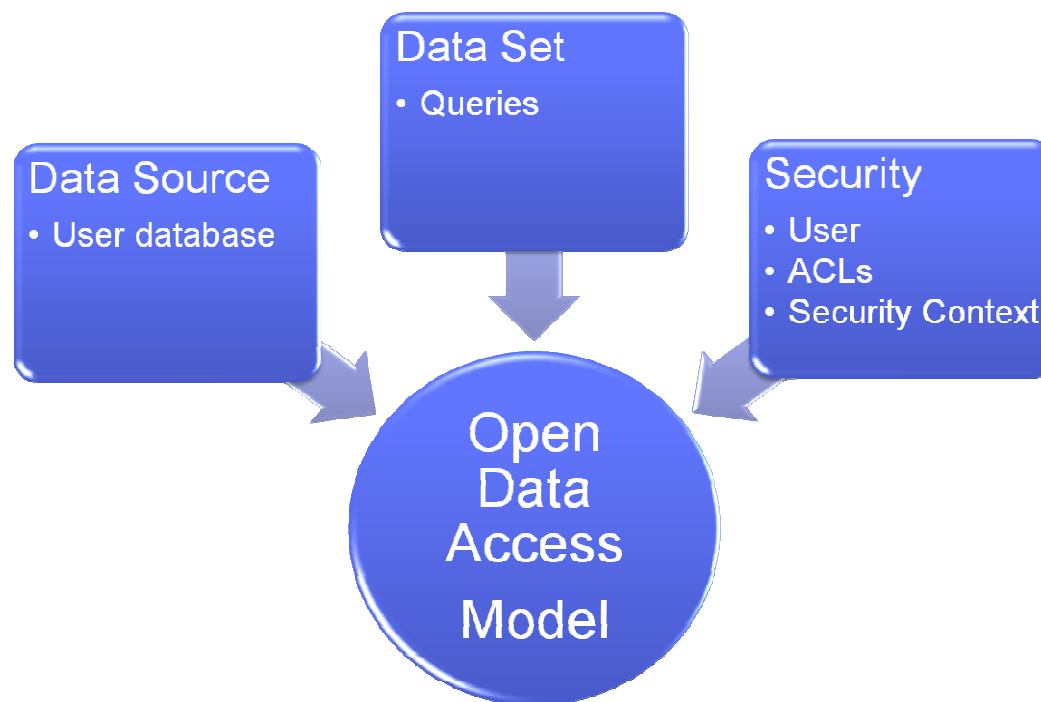
- Leverage Eclipse architecture
  - Platform Independent

- Advanced charting capabilities

- Support for shared libraries to promote sharing, reuse, and standardisation of report formats

- Deployment and Integration Options
  - Local Reporting
  - Report Server
  - Using the BIRT API

# Open Data Access (ODA) framework

- BIRT uses the Open Data Access (ODA) framework

- ODA framework intended to provide abstraction for scalable data retrieval from heterogeneous data sources

**Data Set**
- Queries

**Data Source**
- User database

**Security**
- User
- ACLs
- Security Context

Open Data Access Model

# BIRT and ClearQuest in Hursley

- Beta Eclipse ClearQuest ODA drivers from RSDC 2007
  - Used the ODA drivers with ClearQuest 7.0.1

- Teams develop their own reports

- Reports can be published to report server
  - Live Reporting
  - Historical Reporting
  - Reports can be viewed without running the ClearQuest Client

# Building a Report

- Planning

  - Document requirements

  - Get approval from target audience

  - Ensures report contains all info and is presented correctly

- Configure Data Sources and Data Sets

- Implement report layout

# BIRT Report Designer

- Hursley deployed BIRT Report Designer in seperate Eclipse environment

- In ClearQuest 7.1 BIRT Report Designer is integrated into the standard Eclipse Rich Client Platform

  - Simplifies Report Design

  - Utilise Eclipse perspectives
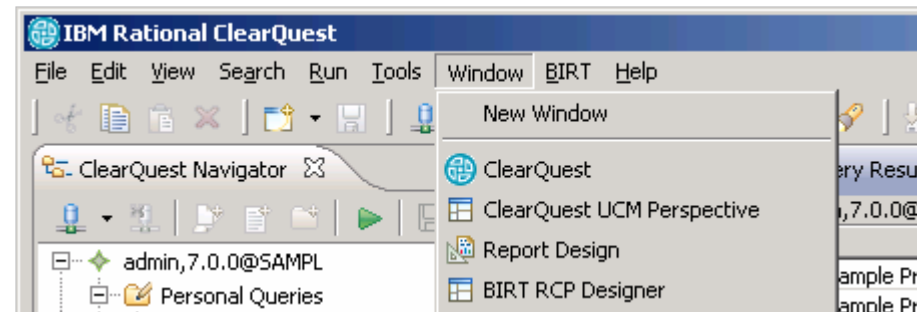
# Working with the Report Designer

- Configure Report Data Sources
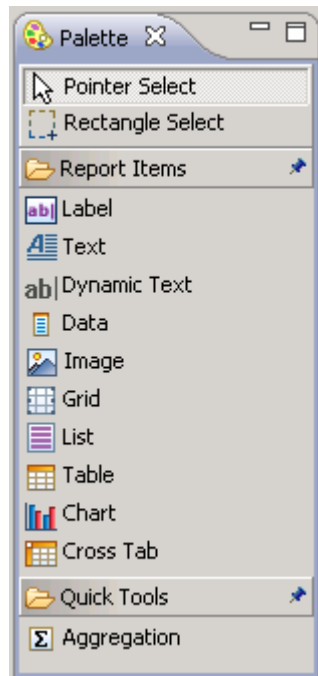


- Choose items to add to report from Palette
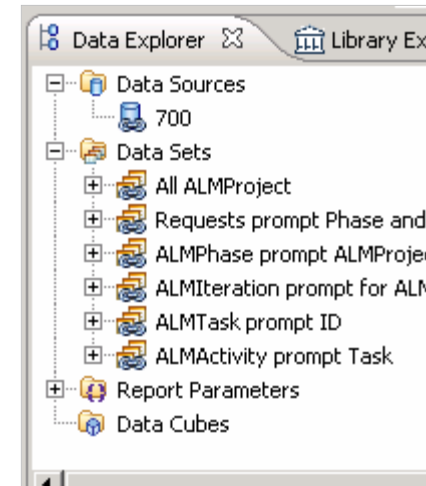


- Edit all aspects of report and preview results using the design tray
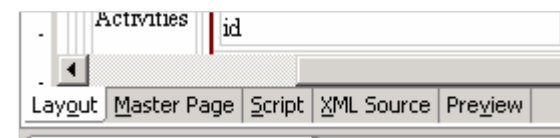
# Configuring Data Source

- Select the ClearQuest Data Source and enter the user database details
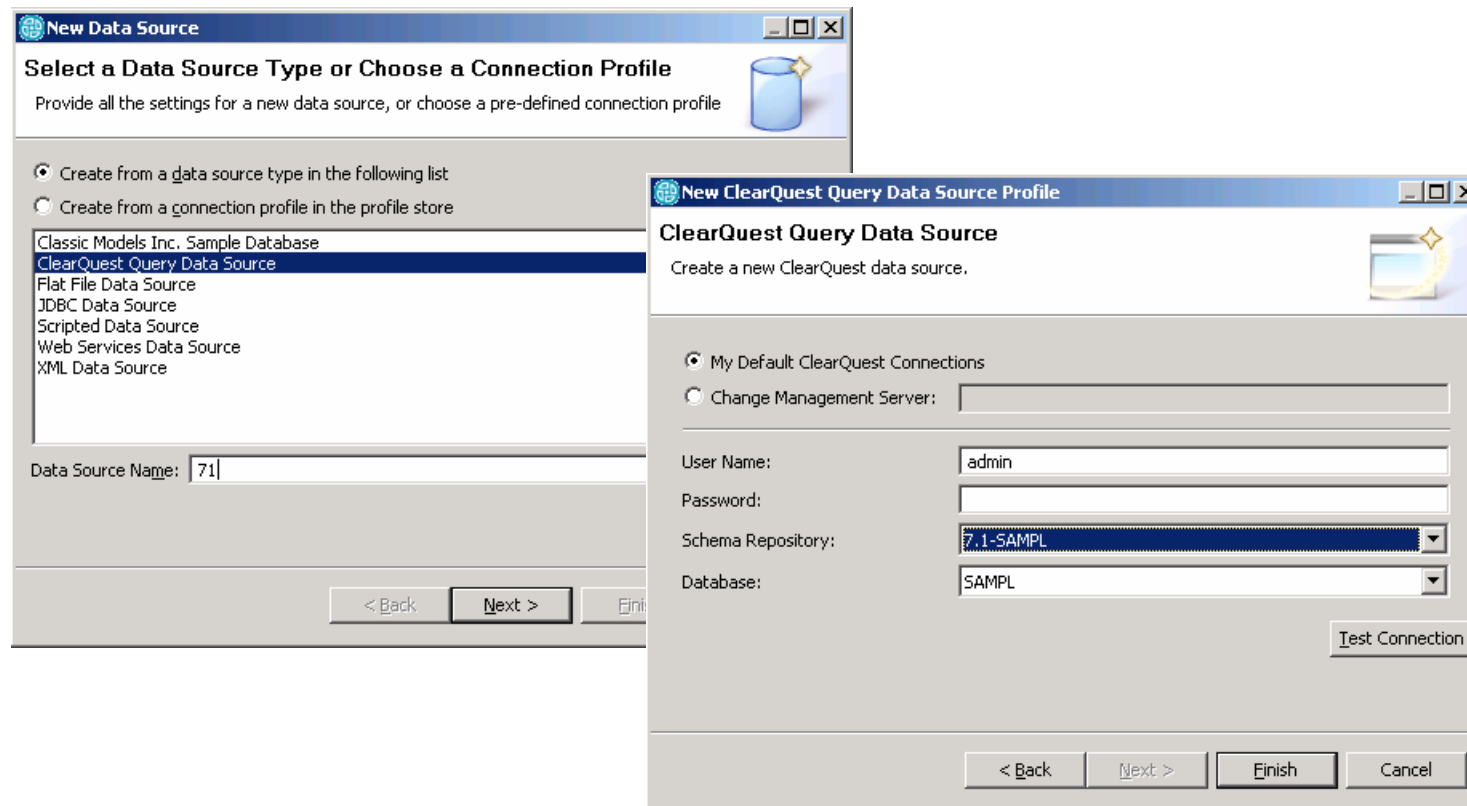
# Adding Data Sets

- Data sets are defined by existing ClearQuest queries
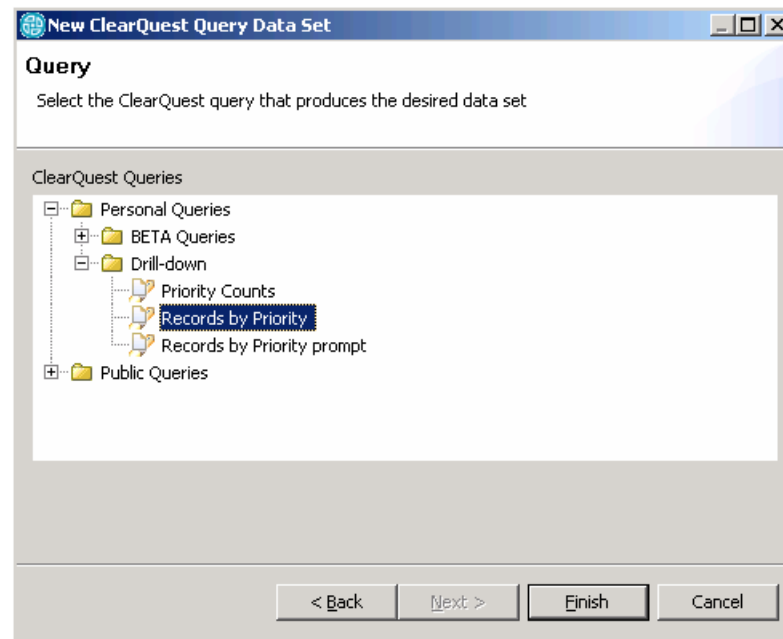
# BIRT Features - Charting
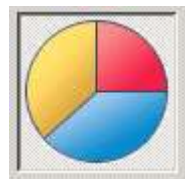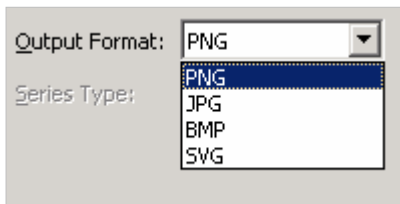
- Many charting options and formatting styles
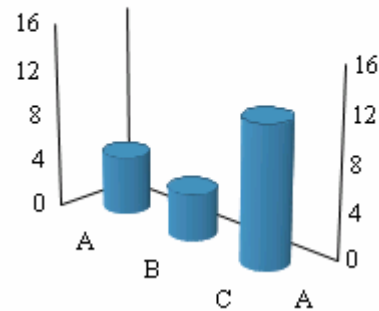
# BIRT Features – Charting (cont'd)

- **Dynamic Data Markers**

  – Populating tables or adding dynamic text

| Name   | Category   | Release   |
|--------|------------|-----------|
| [Name] | [Category] | [Release] |
| Footer Row | | |

- **Many interactivity options**

**Series Interactivity**

Event: Mouse Click

Action: <None>

Action De
- <None>
- Hyperlink
- Invoke Script
- Show Tooltip
- Highlight
- Toggle Visibility
- Toggle DataPoint Visibility

- **Numerous output formats**

Output Format: PNG

Series Type:
- PNG
- JPG
- BMP
- SVG
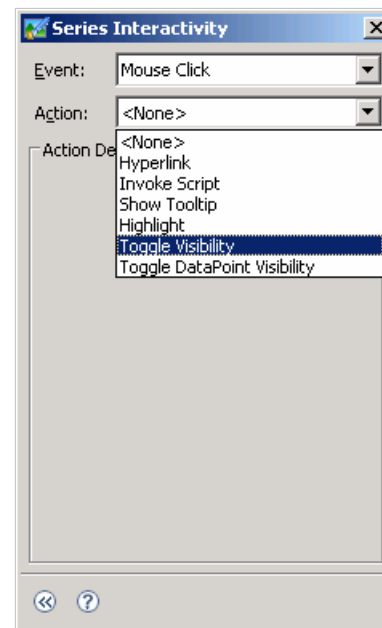
# BIRT Features - Parameters

- Facility to pass parameters to report
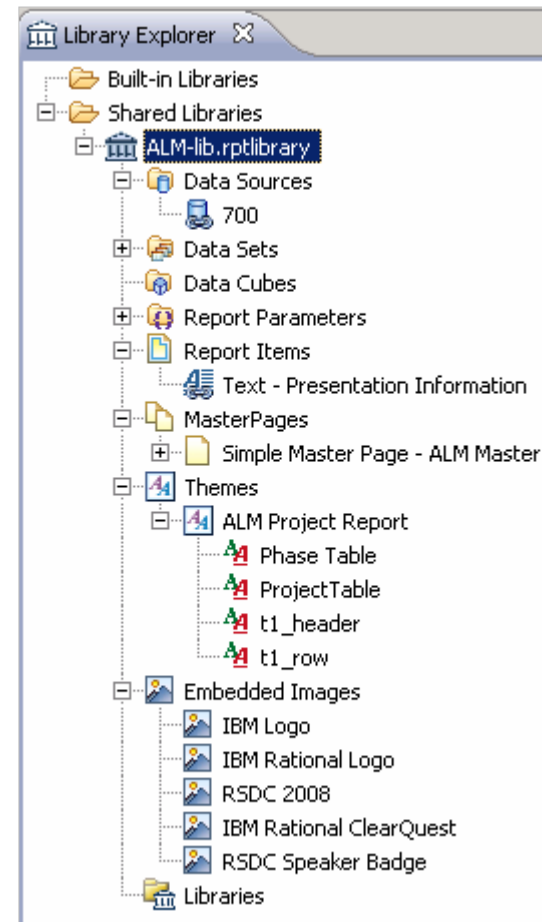  - Such as ClearQuest user authentication

# BIRT Features – Parameters (cont'd)

– Use Parameters to filter report results

- For example using a dynamic choice list
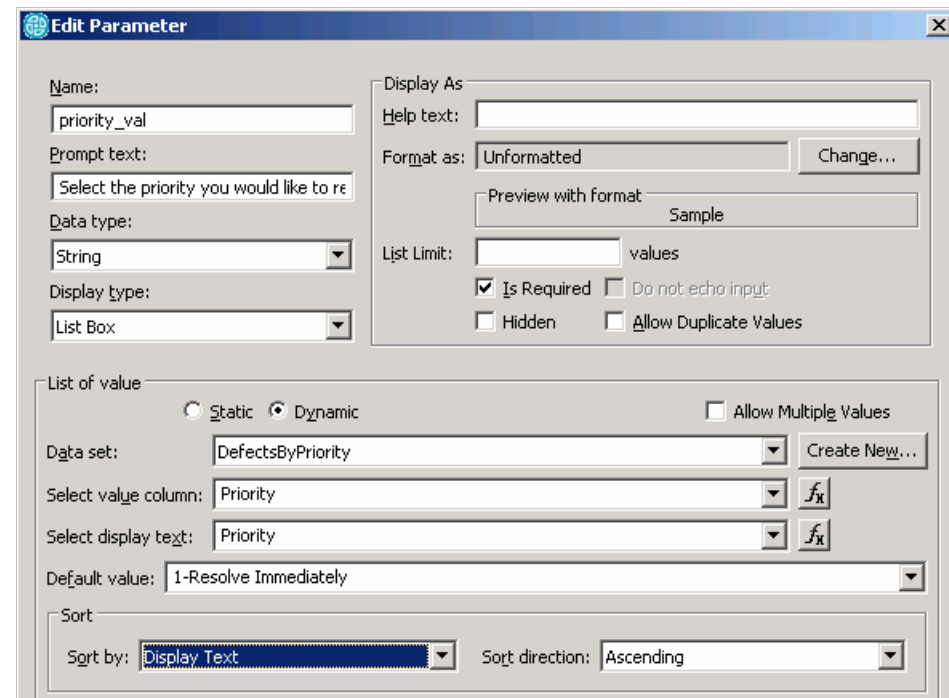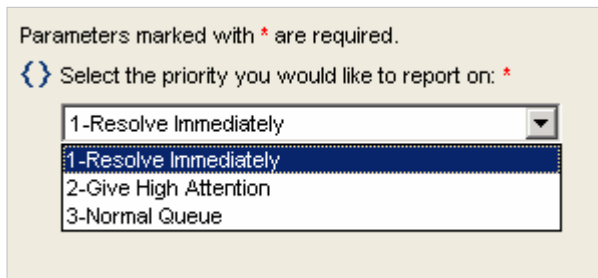
# BIRT Features - Libraries

- Centralised high level administration
  - Sharing
  - Reuse
  - Consistency

- Styles

- Logos

- Master Pages

- Data Sources and Data Sets
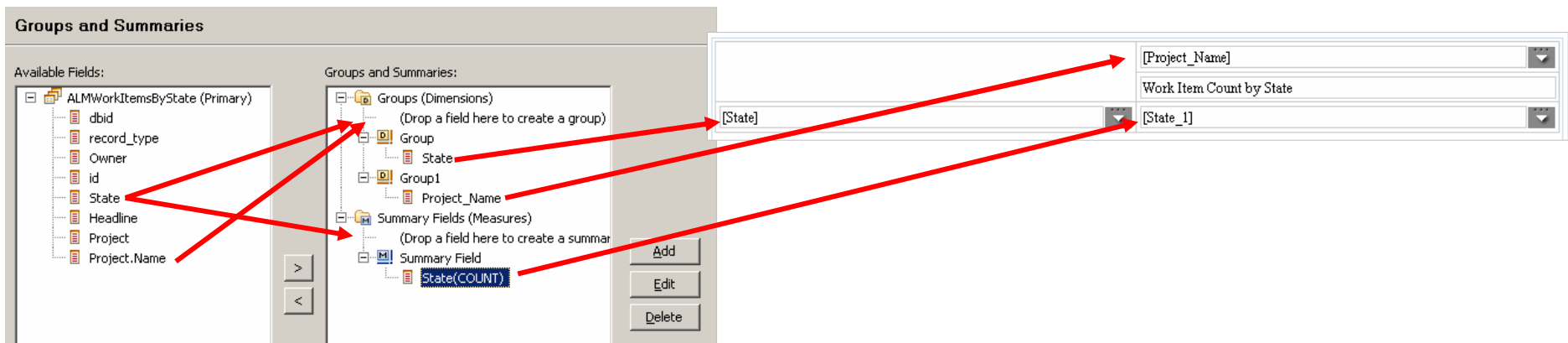
- Include other libraries

# BIRT Features – Cross Tab

- Tricky to understand but worth the effort



- Groups and aggregates data
  - Data Cubes

- Helps minimise query complexity

- Best illustrated using an example
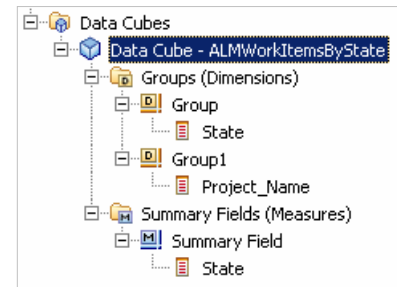
# BIRT Features - CrossTab

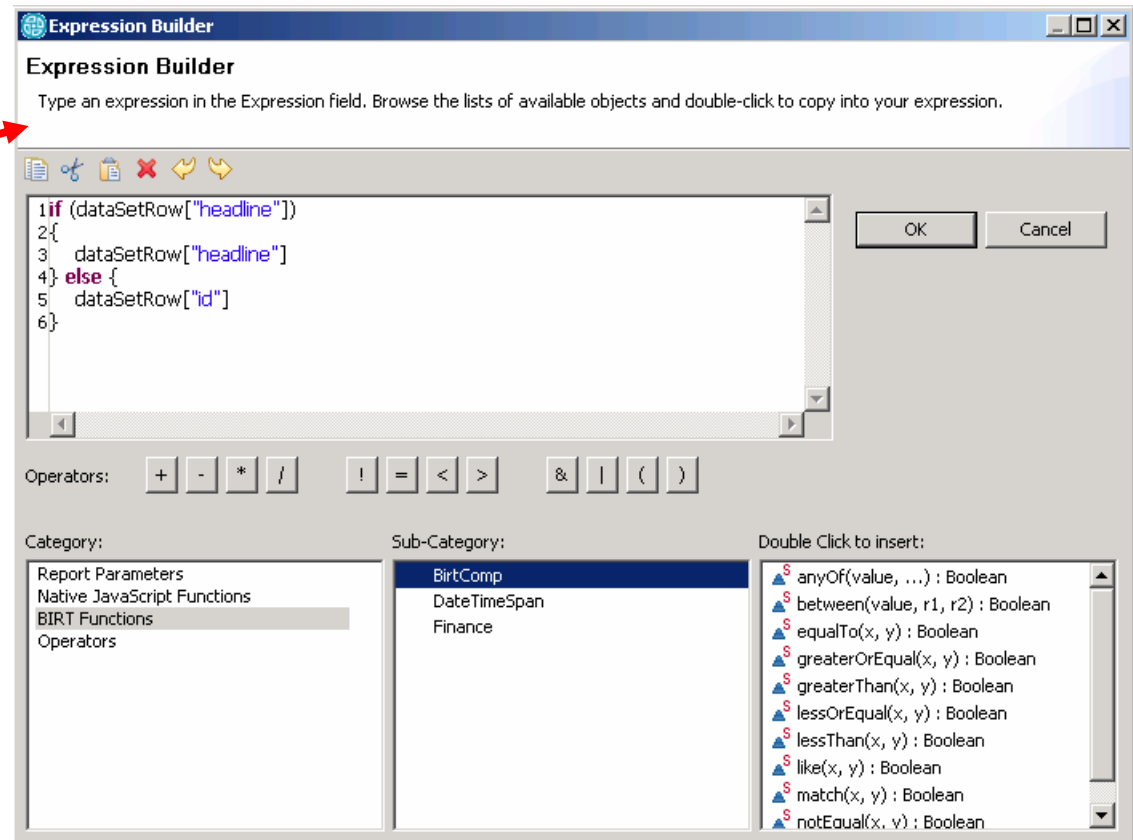- Simple Example: Display number of work items by state per ALM project



## Work Item States by Project

| | BIRT Reporting | OpenUP Sample Project |
|---|---|---|
| | Work Item Count by State | Work Item Count by State |
| Activated | | 4 |
| Completed | 1 | |
| Opened | 4 | 1 |
| Submitted | 3 | 11 |

# BIRT Features – Expression Builder

- Expressions written in JavaScript

- Manipulate data at runtime

# BIRT Features – Sub Reports

- Independent or Linked

- Several sub report formats
  - One after the other
  - Next to one another
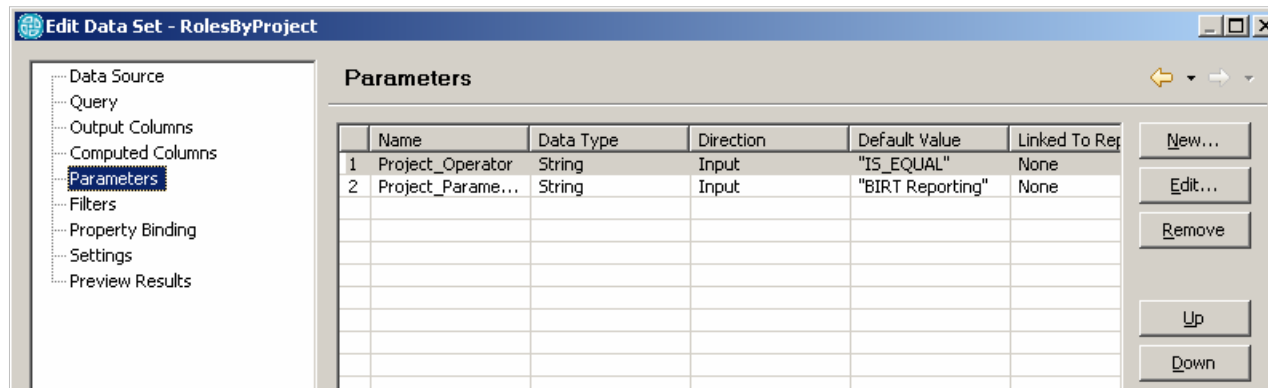  - One report within another

- Useful when trying to reduce the amount of duplicate data from multiple data sources when grouping more than one reference field

# BIRT Features – Sub Reports

- Example of a simple linked report

- Design layout in stages

| Project Name | | |
|---|---|---|
| [Name] | Role | Members |
| | [RoleLabel] | [Members] |

- Use a data set that prompts for at least one parameter and enter default values for the parameter



Edit Data Set - RolesByProject

Parameters

| | Name | Data Type | Direction | Default Value | Linked To Re |
|---|---|---|---|---|---|
| 1 | Project_Operator | String | Input | "IS_EQUAL" | None |
| 2 | Project_Parame... | String | Input | "BIRT Reporting" | None |

Data Source
Query
Output Columns
Computed Columns
Parameters
Filters
Property Binding
Settings
Preview Results

New...
Edit...
Remove
Up
Down

# BIRT Features – Sub Reports



- Bind the dataset and parameters to the sub report

# BIRT Features – Drill-Through

- Create a link from one report to another or link within the same report

- Pass context information via parameters

- Use report interactivity options to define the drill-through transition

# BIRT Features – Drill-Through (cont'd)

# BIRT Features – Drill-Through (cont'd)

# BIRT Features - Web Viewer

- Birt Web Viewer applet provides tools to manipulate the report

    – Modify parameters on the fly

    – Print

    
    BIRT Report Viewer

- Web Viewer can be deployed to a J2EE container/server

    – IBM WebSphere

    – Apache Tomcat

    – JBOSS

# BIRT Report Server in Hursley

- Simple custom front end
  - Implemented in PHP
  - Provides simple navigation to reports

- Reports initially displayed in HTML via the BIRT web viewer
  - Can be exported from the viewer to other formats
    - PDF
    - XLS
    - CSV
    - PostScript

# BIRT Features – Advanced

- Public Java API
  - Report Engine
  - Chart Engine
  - Design Engine

# QUESTIONS

# THANK YOU

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# Abstract

**Effective Reporting with IBM Rational ClearQuest Using BIRT**

With the release of IBM Rational ClearQuest 7.1, the reporting data model has been completely overhauled and now exposes a data pull model. This presents new opportunities in terms of disparate data aggregation, manipulation, and deployment that were very difficult to accomplish before. This presentation covers a few of the high-level tips to make reports do the work and leverage these new features.

# Headline

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