BIRT: The Eclipse Reporting Framework

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Agenda

- What is BIRT?
- BIRT Features and Report Gallery
- Scripting BIRT
- Deploying BIRT Reports
- BIRT APIs
- Extension Points

What Is BIRT?

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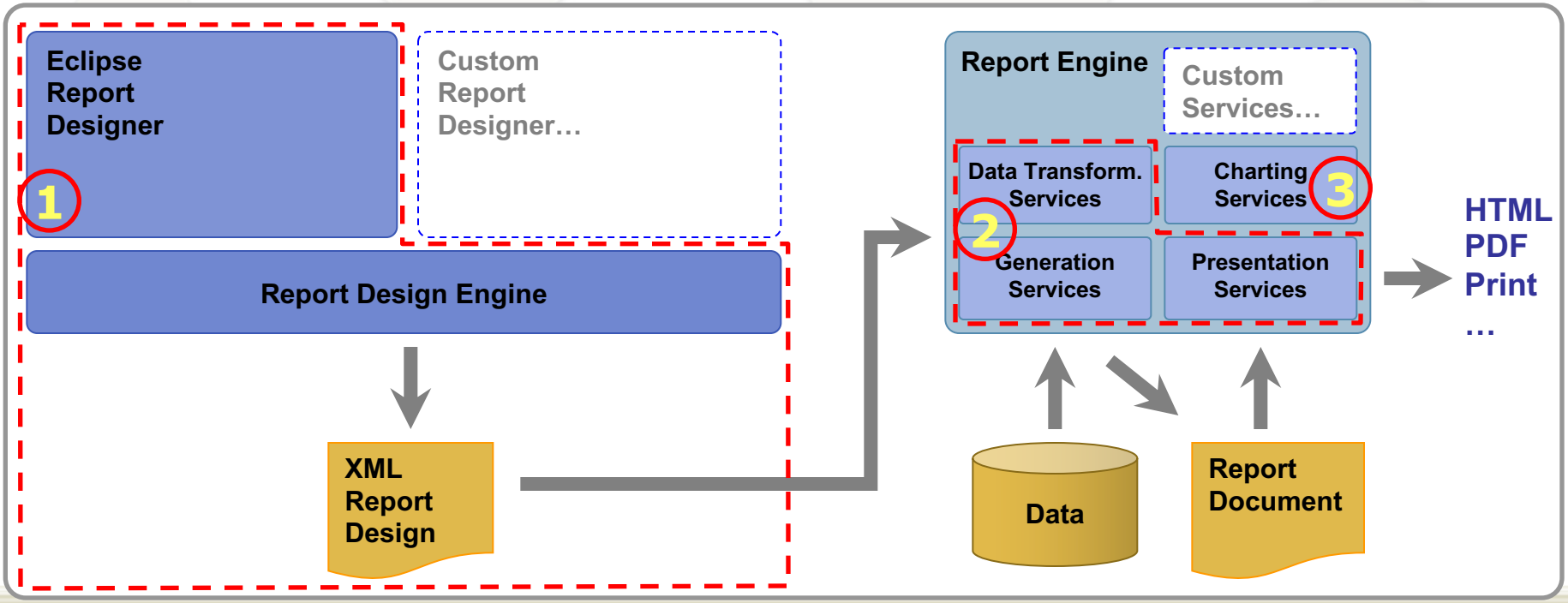
What is the BIRT Project?

- Business Intelligence and Reporting Tools based on Eclipse
- Initially focused on embedded reporting for Java developers
- Three initial components as part of BIRT project

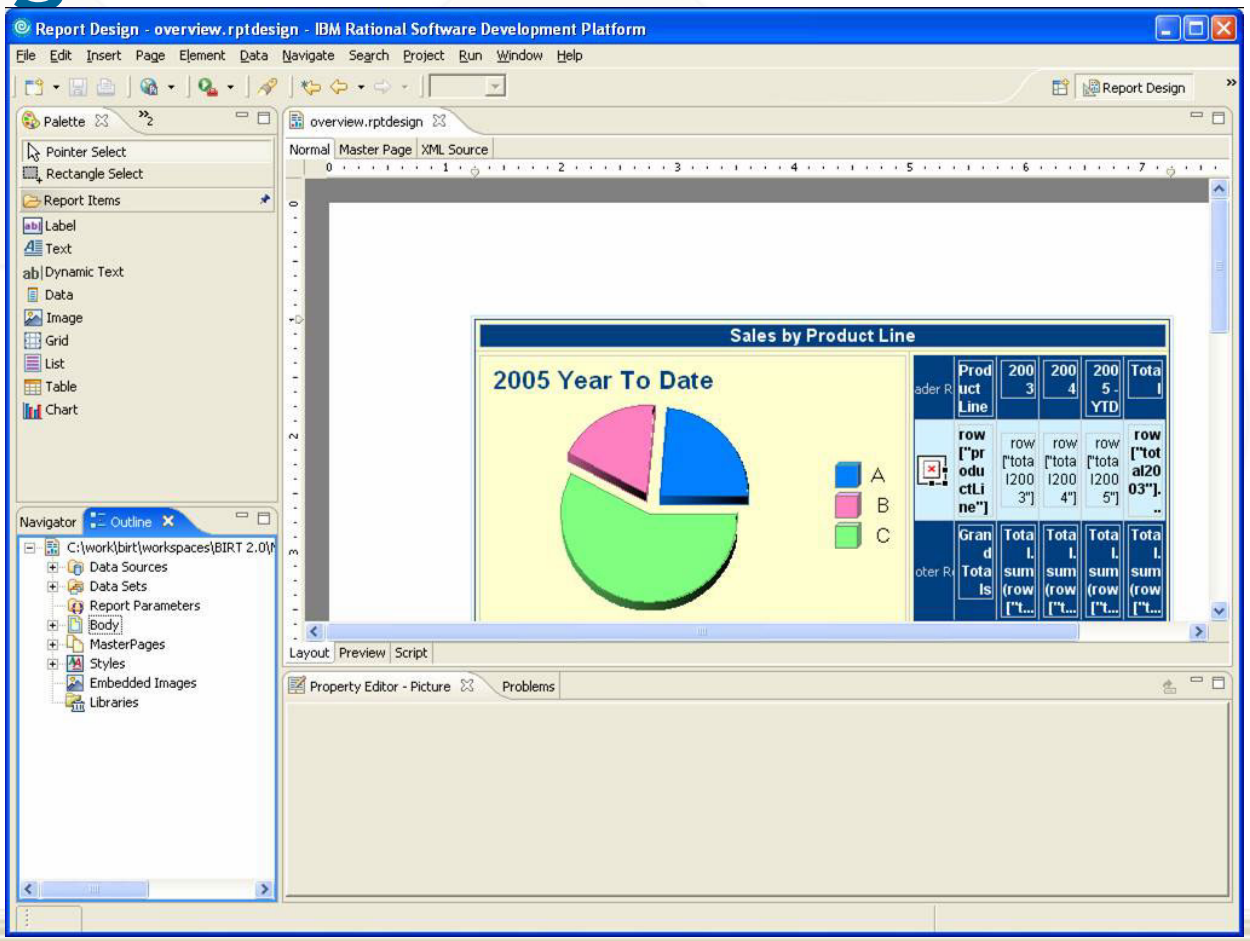


BIRT What is available

- birt-report-designer-all-in-one-2_0_1
  - BIRT Designer and most required plug-ins
- birt-report-framework- 2_0_1
  - BIRT Designer Eclipse plug-in
- birt-rcp-report-designer- 2_0_1
  - RCP Version of the BIRT Designer
- birt-runtime- 2_0_1
  - BIRT web application
  - report engine runtime and examples
  - chart engine runtime.
- birt-charts- 2_0_1
  - Stand alone chart engine plug-ins.
- Samples

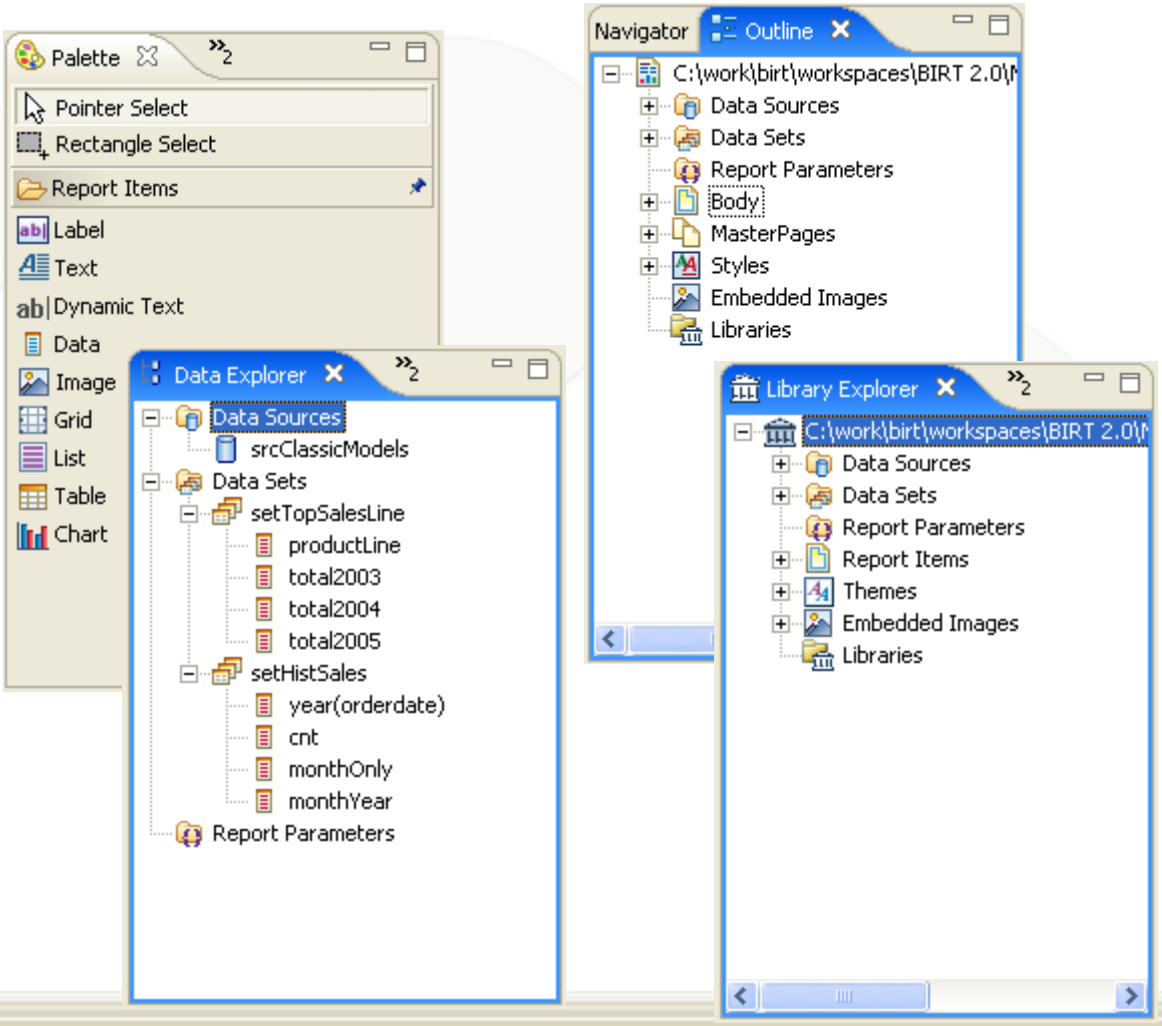
BIRT Designer

- WYSIWYG
- Drag and Drop



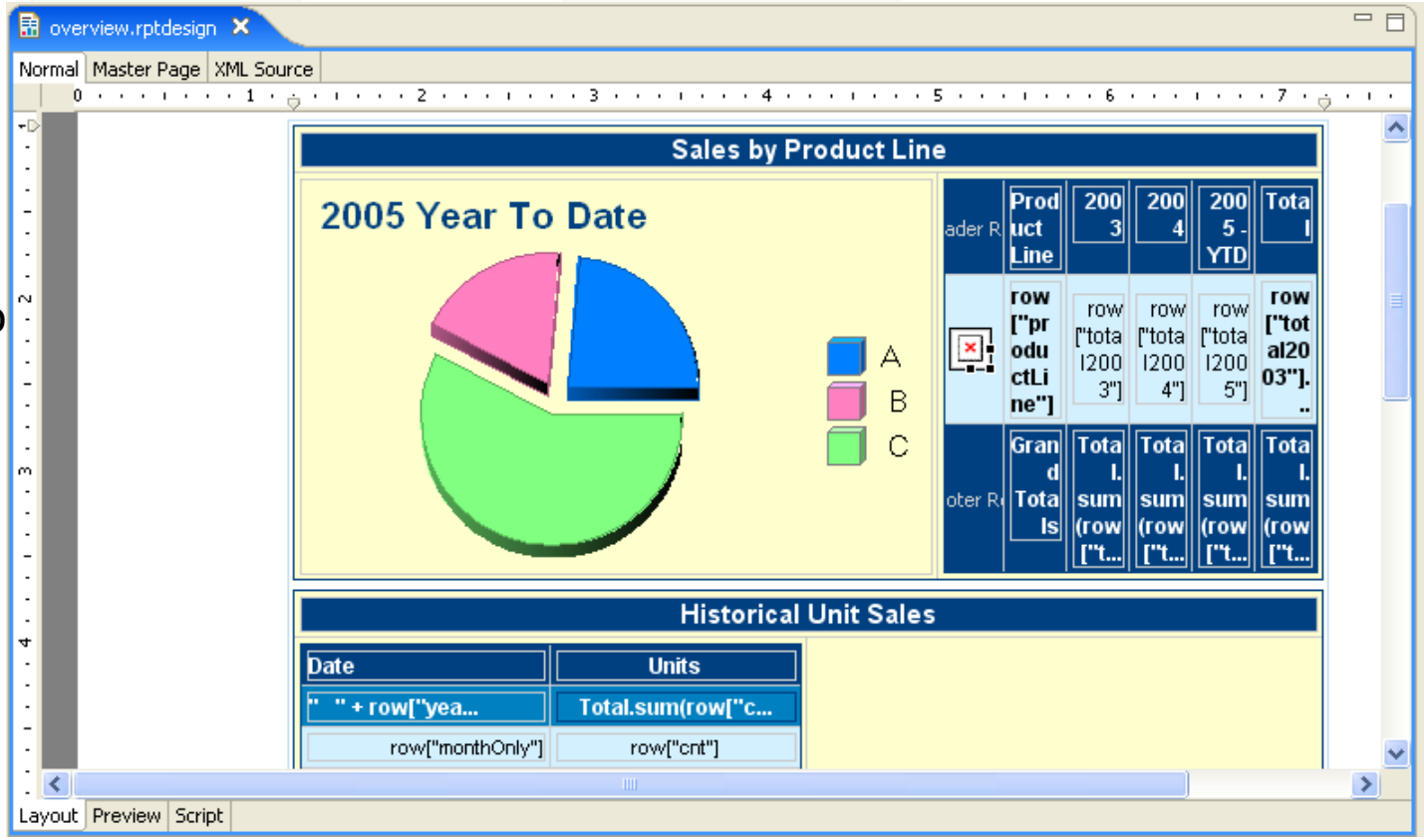
BIRT Views

- Extendable Palette
- Graphical outline of Report
- Multiple Data Sources
- Static and Dynamic parameters including cascaded
- Reuse work with Libraries and Templates
- Import Style sheets

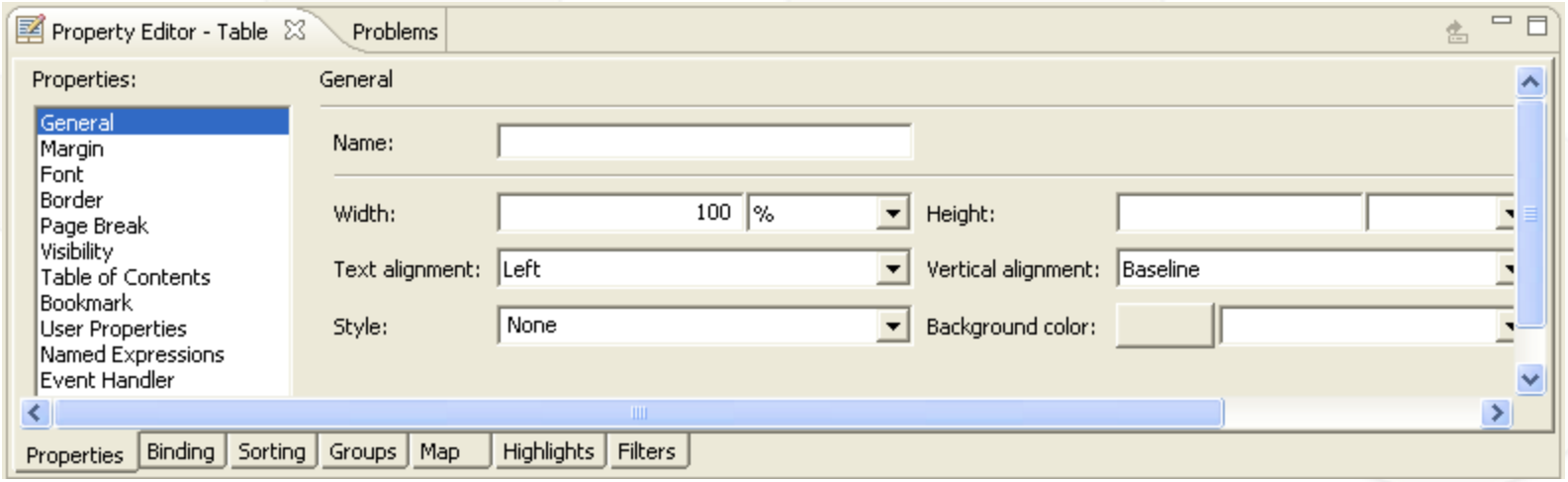


BIRT Editor

- Layout and Scripting Views
- Quick access to graphical components or edit XML Directly



Property Editor View



- Simple Property Editor
- Mapping and Highlighting
- Sorting and Filters

Previewing BIRT Reports

- Preview Reports while building
- View Data in HTML or PDF
- Cached Data

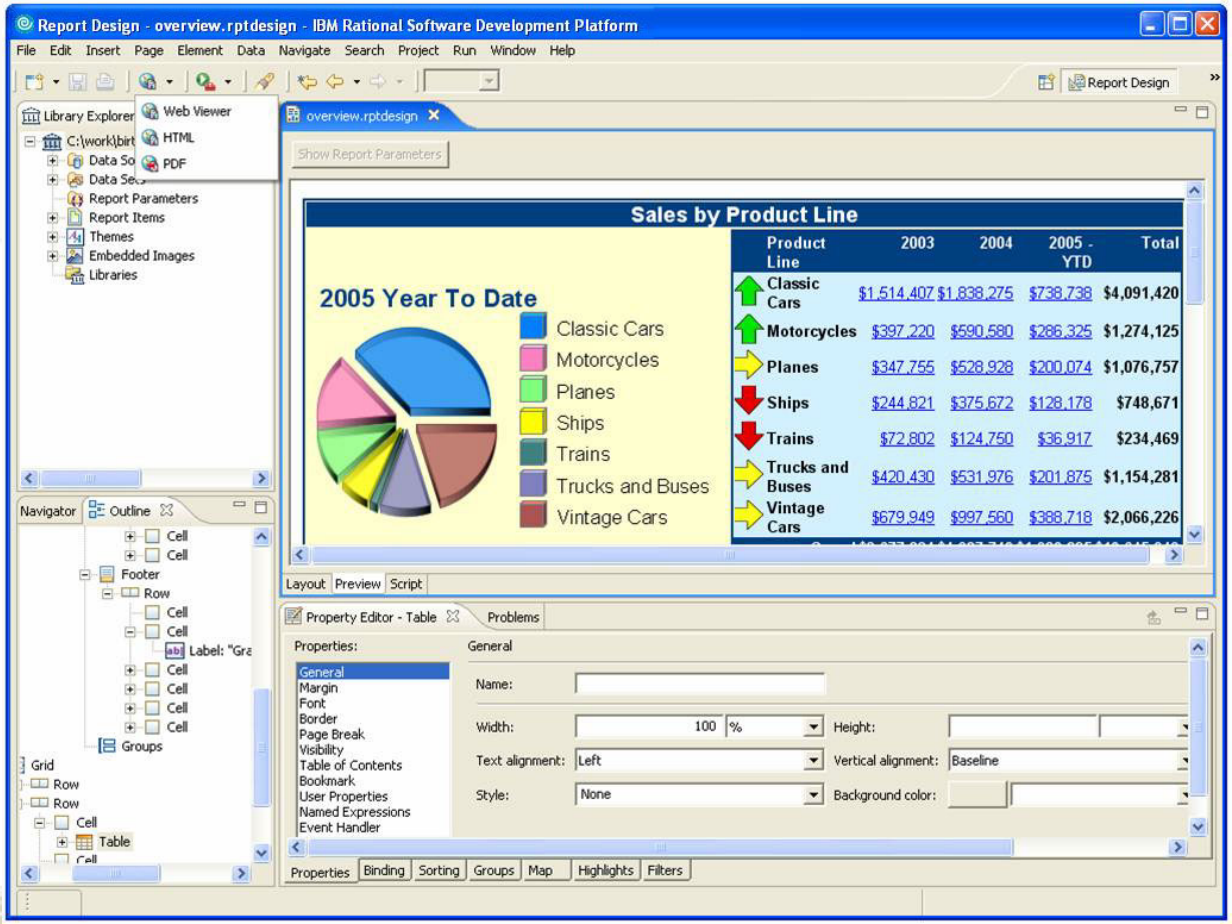
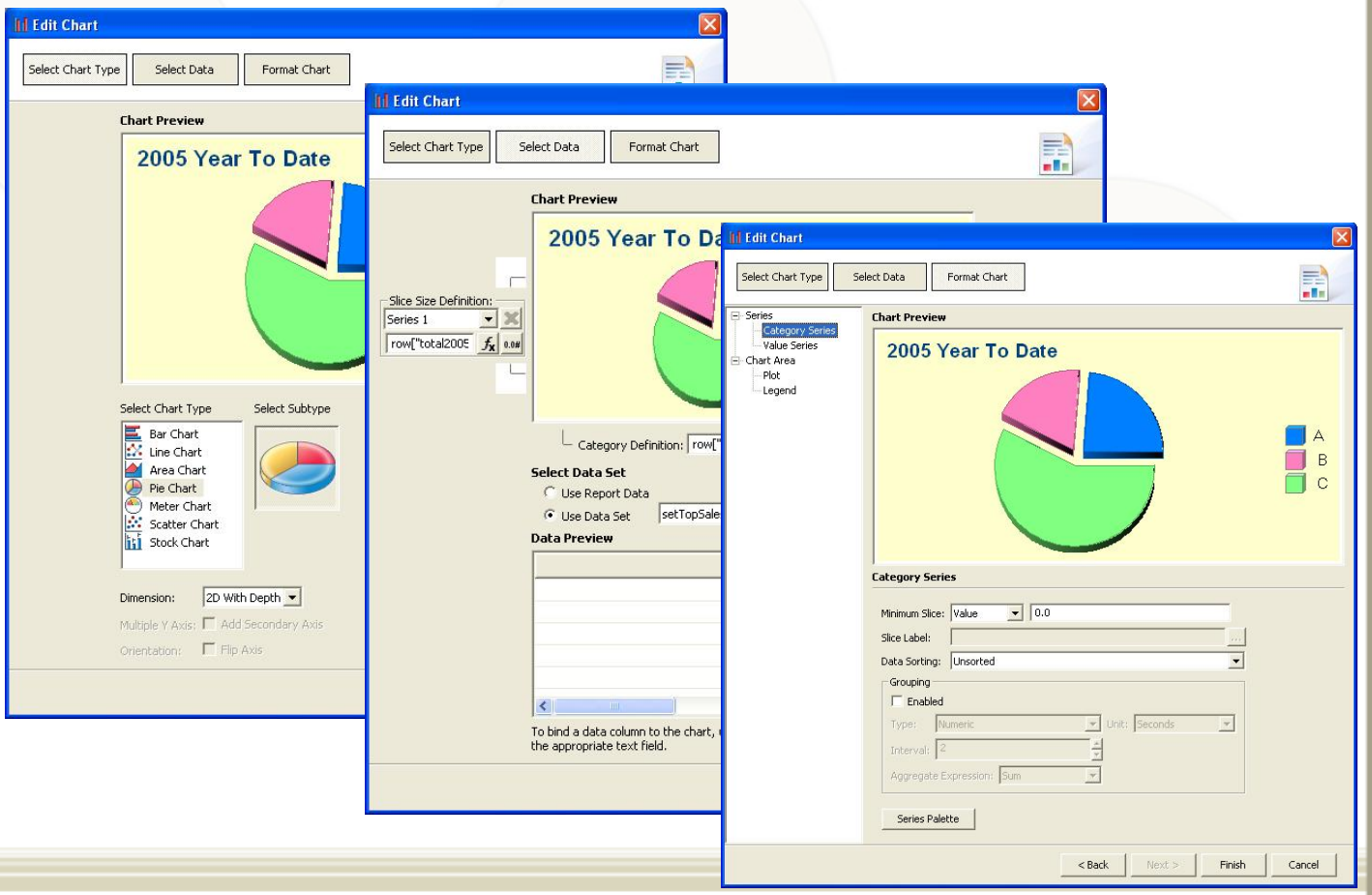


Chart Builder

- Simple Wizard
- Seven Chart types
- Many Sub types
- SVG
- PNG
- GIF
- JPG
- BMP
- Filtering



BIRT Features and Report Gallery

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BIRT Features

- Palette of report components - Text (CLOB's, HTML), data, images (BLOBs), tables, grids, lists, labels
- Sorting, grouping, filtering, conditional highlighting, mapping
- Scripting in JavaScript/Java
- Cascading & dynamic report parameters
- Hyperlinking, bookmarks
- TOC, Paging
- Direct XML source editor for report design
- Multi-pass processing (top N/bottom N)
- Data sources: POJO's, JDBC, CSV, XML
- WYSIWYG Editor
- Integrated Chart Wizard
- Report Component Libraries
- Report Templates
- Styles, import CSS, themes
- Wizards for guided development
- Report outline
- Preview within report designer for iterative development
- Context pass through to data source
- Call stored procedure

BIRT Designer Demo

Sales Invoice Report

Embedded images (including BLOBS)

Classic Models, Inc.

701 Gateway Boulevard,
San Francisco, CA 94107

Sales Invoice

Customer Details
Online Diecast Creations Co.
Dorothy Young
2304 Long Airport Avenue
Boston, NH 62005
USA

Invoice Details	
Customer Number:	363
Order Number:	10100
Order Date:	Jan 6, 2003
Ship Date:	Jan 10, 2003
Office:	Boston
Sales Representative:	Steve Patterson

Layout flexibility

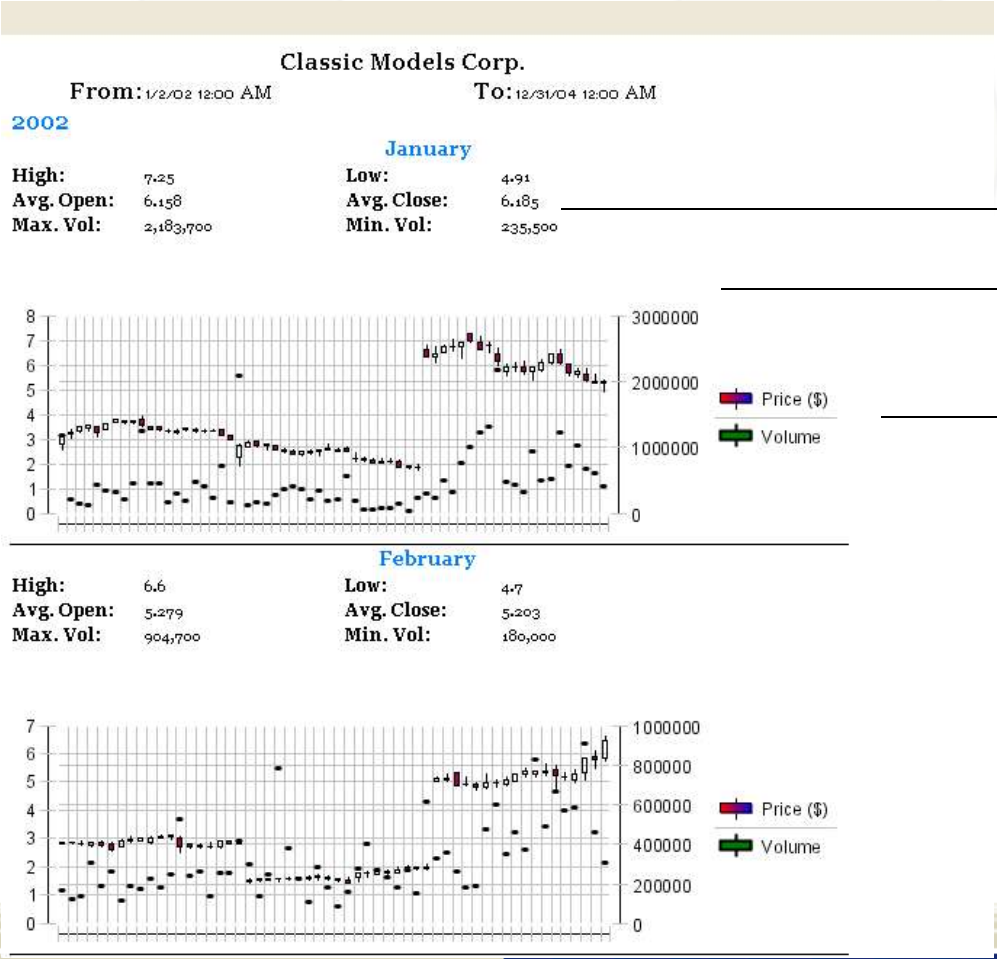
Rich formatting control (Including conditional formatting)

Code	Description	Quantity	MSRP ($)	Discount	Unit Price ($)	Total ($)
S18_1749	1917 Grand Touring Sedan	30	170.00	20.00%	136.00	4,080.00
S18_2248	1911 Ford Town Car	50	60.54	9.00%	55.09	2,754.50
S18_4409	1932 Alfa Romeo 8C2300 Spider Sport	22	92.03	18.00%	75.46	1,660.12
S24_3969	1936 Mercedes Benz 500k Roadster	49	41.03	13.99%	35.29	1,729.21
					TOTAL $	10,223.83

Computed column

Comprehensive aggregation functions

Stock Price & Volume Report



Grouping & sorting

Parent table

Integrated Charting

as a child of parent table

Organization Report

Classic Models, Inc.

701 Gateway Boulevard,
San Francisco, CA 94107

Employee Report

Office Code: 1	
Diane Murphy	**President**
Mary Patterson	VP Sales
Jeff Firrelli	VP Marketing
Mary Patterson	**VP Sales**
Anthony Bow	Sales Manager (NA)
Anthony Bow	**Sales Manager (NA)**
Leslie Jennings	Sales Rep
Leslie Thompson	Sales Rep

Office Code: 4	
Mary Patterson	**VP Sales**
Gerard Bondur	Sale Manager (EMEA)
Gerard Bondur	**Sale Manager (EMEA)**
Loui Bondur	Sales Rep
Gerard Hernandez	Sales Rep
Pamela Castillo	Sales Rep
Martin Gerard	Sales Rep

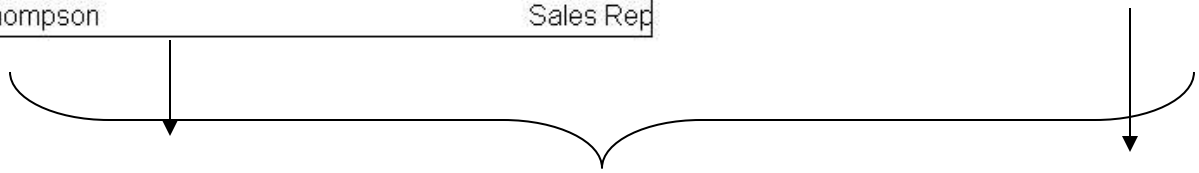


Table level filter for Office Code 1

Parallel layout

Table level filter for Office Code 4

Orders Summary

Drill through from Orders Summary

Order details report for specific Order Number

Scripting BIRT

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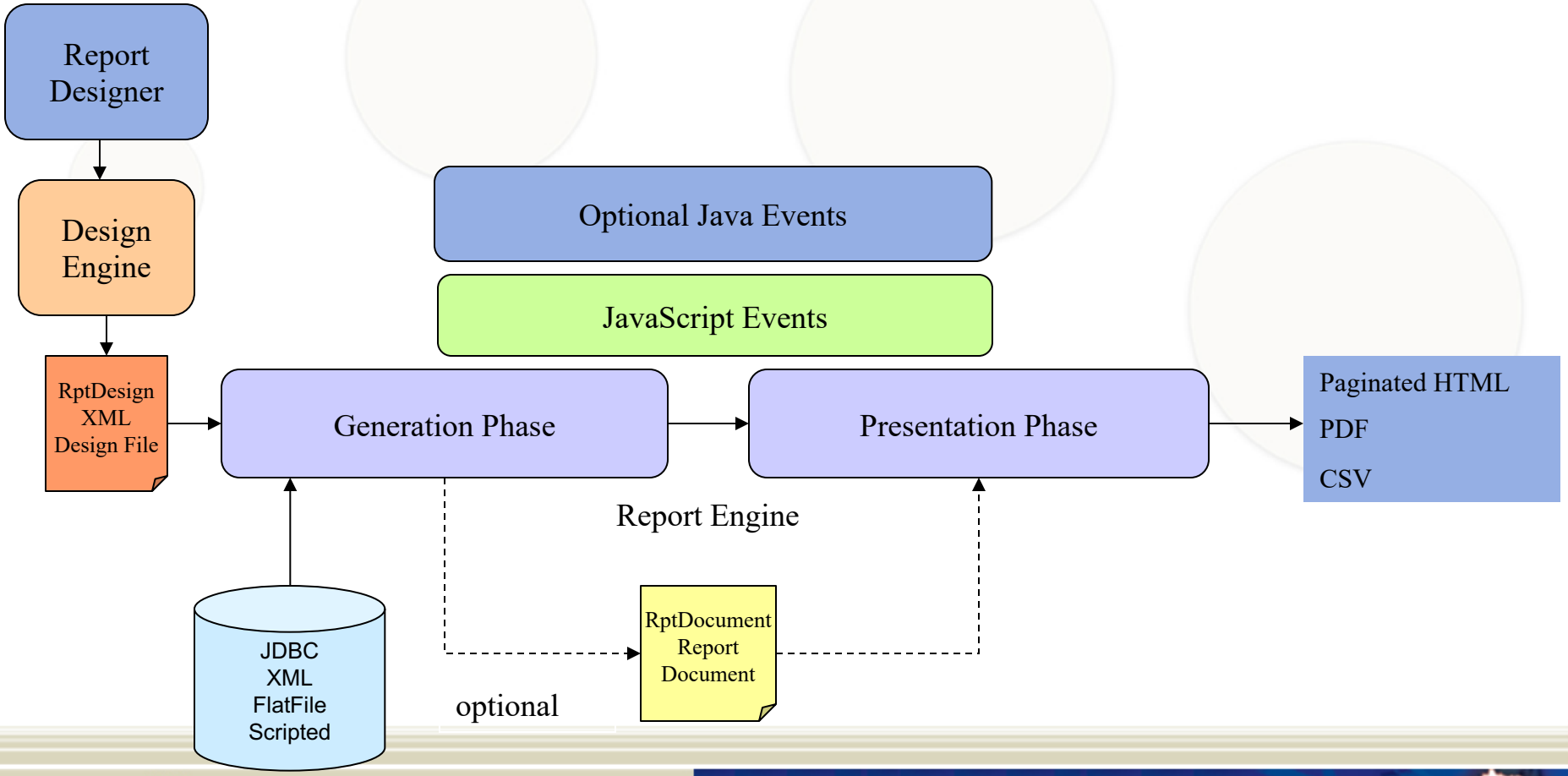
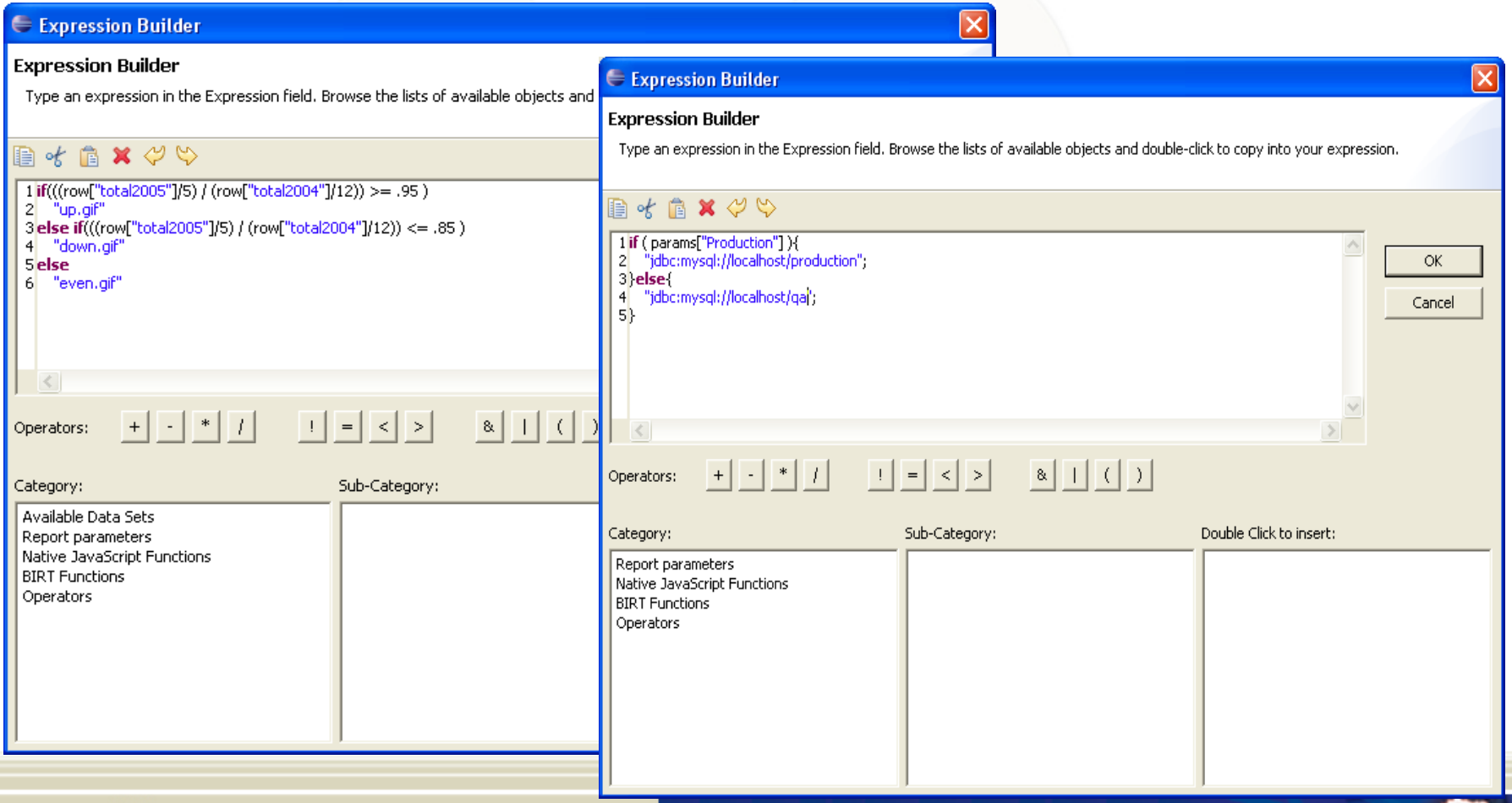
BIRT Pipeline



Scripting

- BIRT JavaScript
  - Based on Mozilla Rhino
    - This is Server Side Scripting not Browser Based Scripting
  - Two types of Scripting
    - Expression Scripts - Scripts that return a data value. Available in the Expression Builder.
    - Element Scripts – JavaScript methods that are called on events. Customize the behavior of the Report. Available in the Script view. Context of when the event occurs is important.

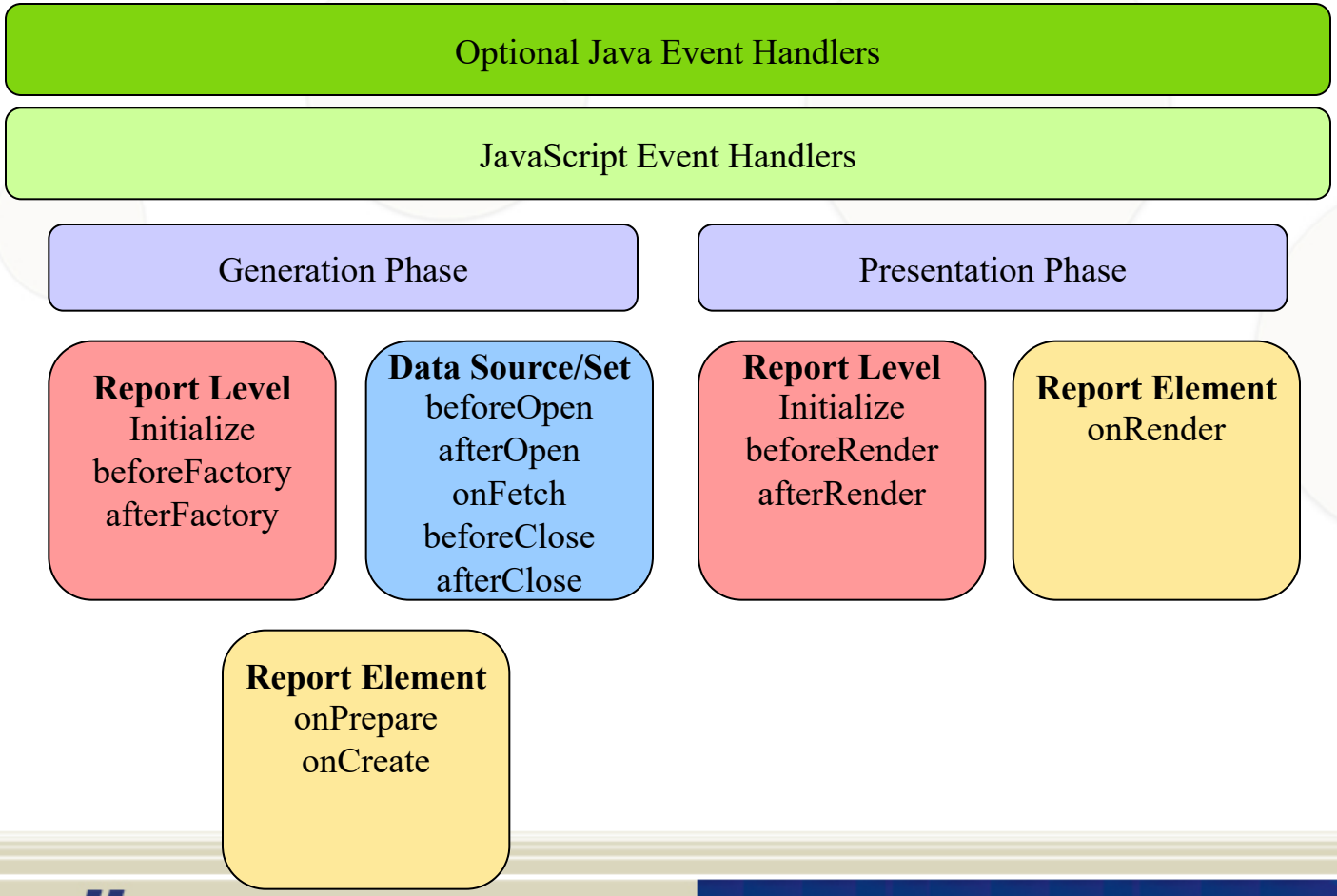
Expression Scripting



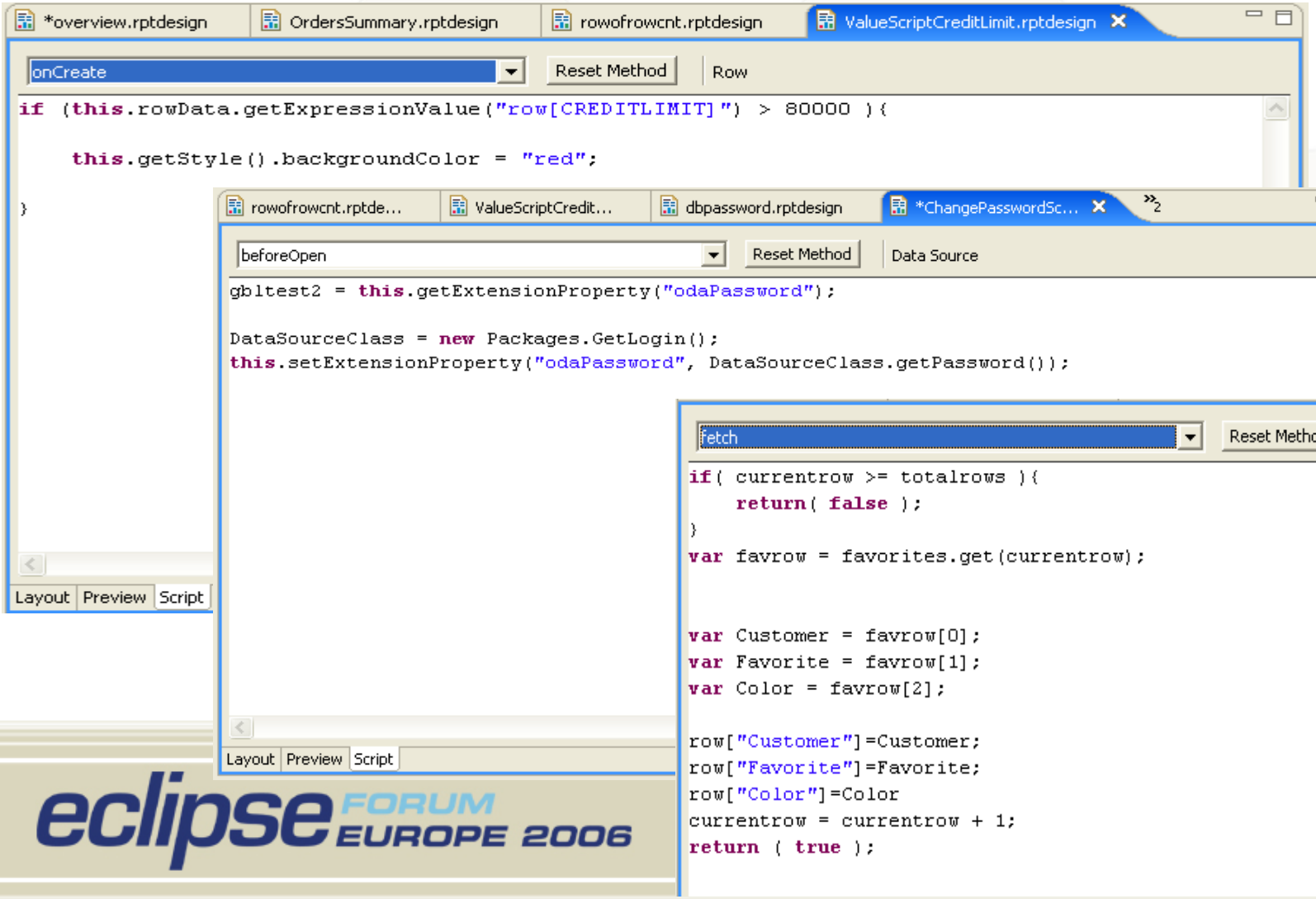
Expression Scripting - Locations

- Creating the display value for a report item
- Creating a computed field in Data Explorer
- Specifying a filter condition
- Specifying a data series for a chart
- Specifying a map condition
- Specifying a highlight condition
- Specifying a group key
- Specifying a hyperlink
- Specifying the URI for an image
- Specifying dynamic data in a text control

BIRT Event Model

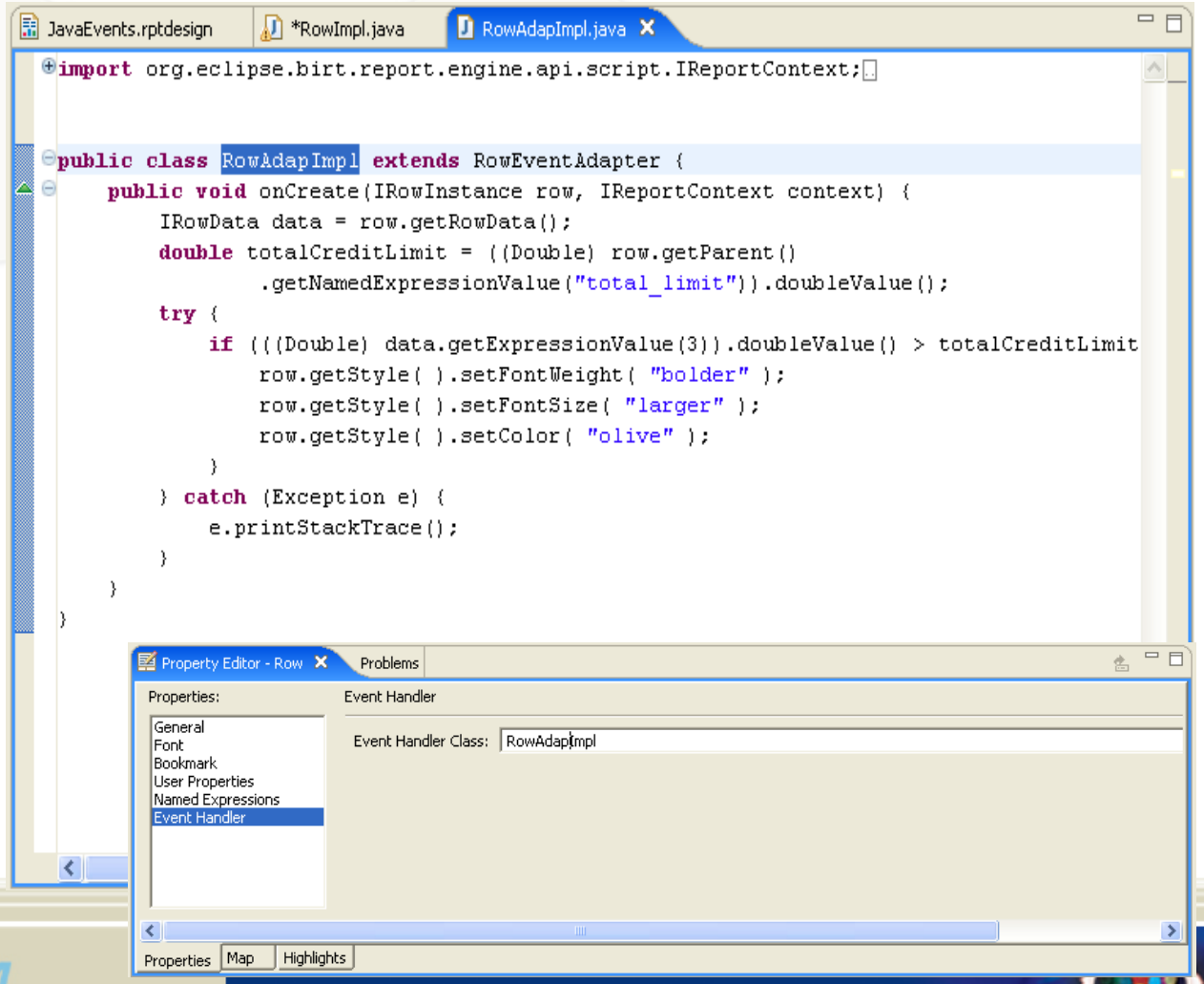


Element Scripting



Element Event Handlers using Java

- A set of Adapters are supplied that allow all event handlers to be built in Java.
- The class is a property of the element.
- Can be debugged with JDT using the BIRT Report Configuration.



BIRT Scripting Demo

Deploying BIRT Reports

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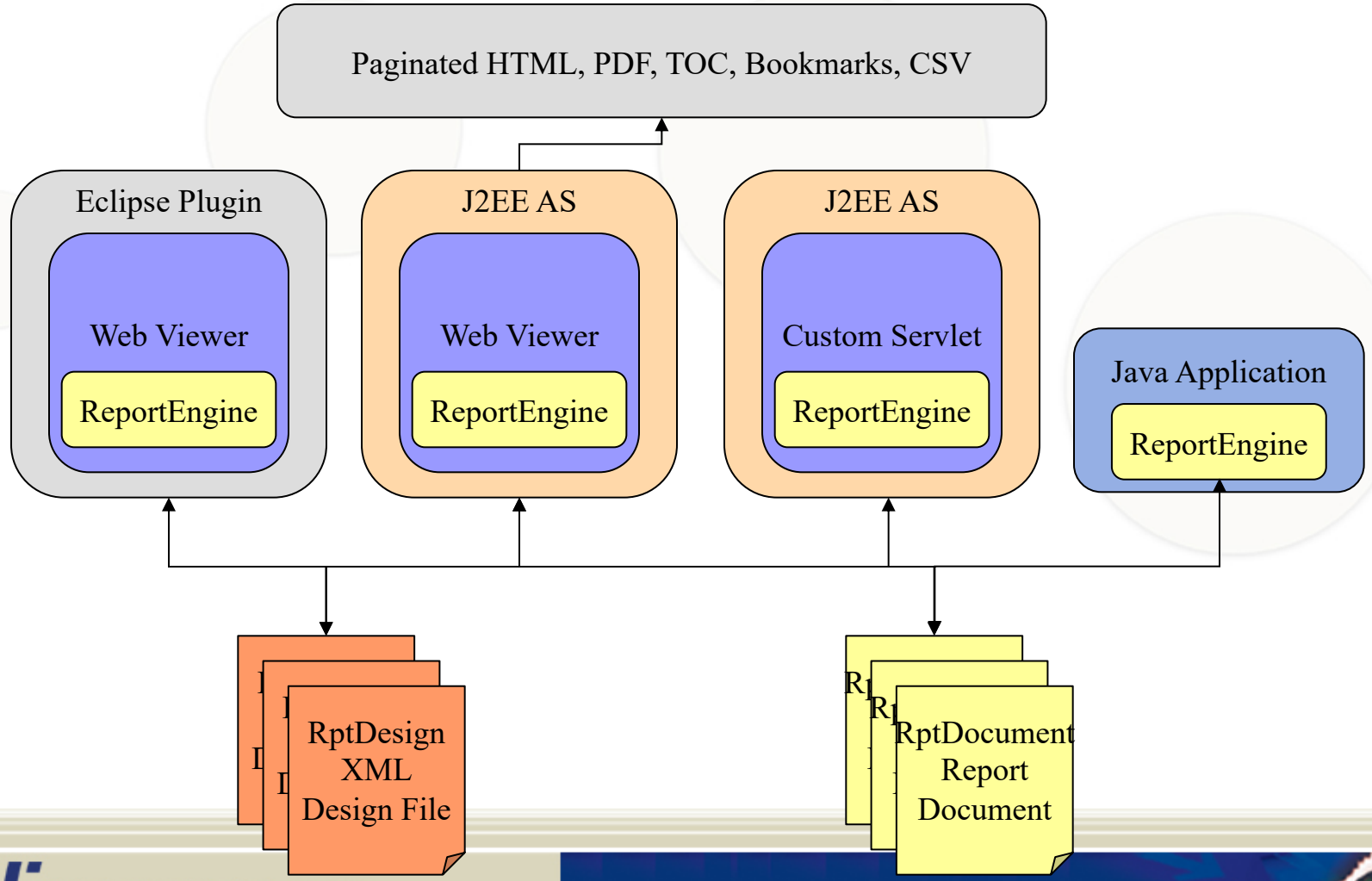
Deploying Options

- Deploy the Web Viewer Example
- Deploy BIRT Under an RCP application
- Build your own Servlet using the BIRT Engine
- Use the BIRT Engine in your own Java Application (Discussed in APIs)

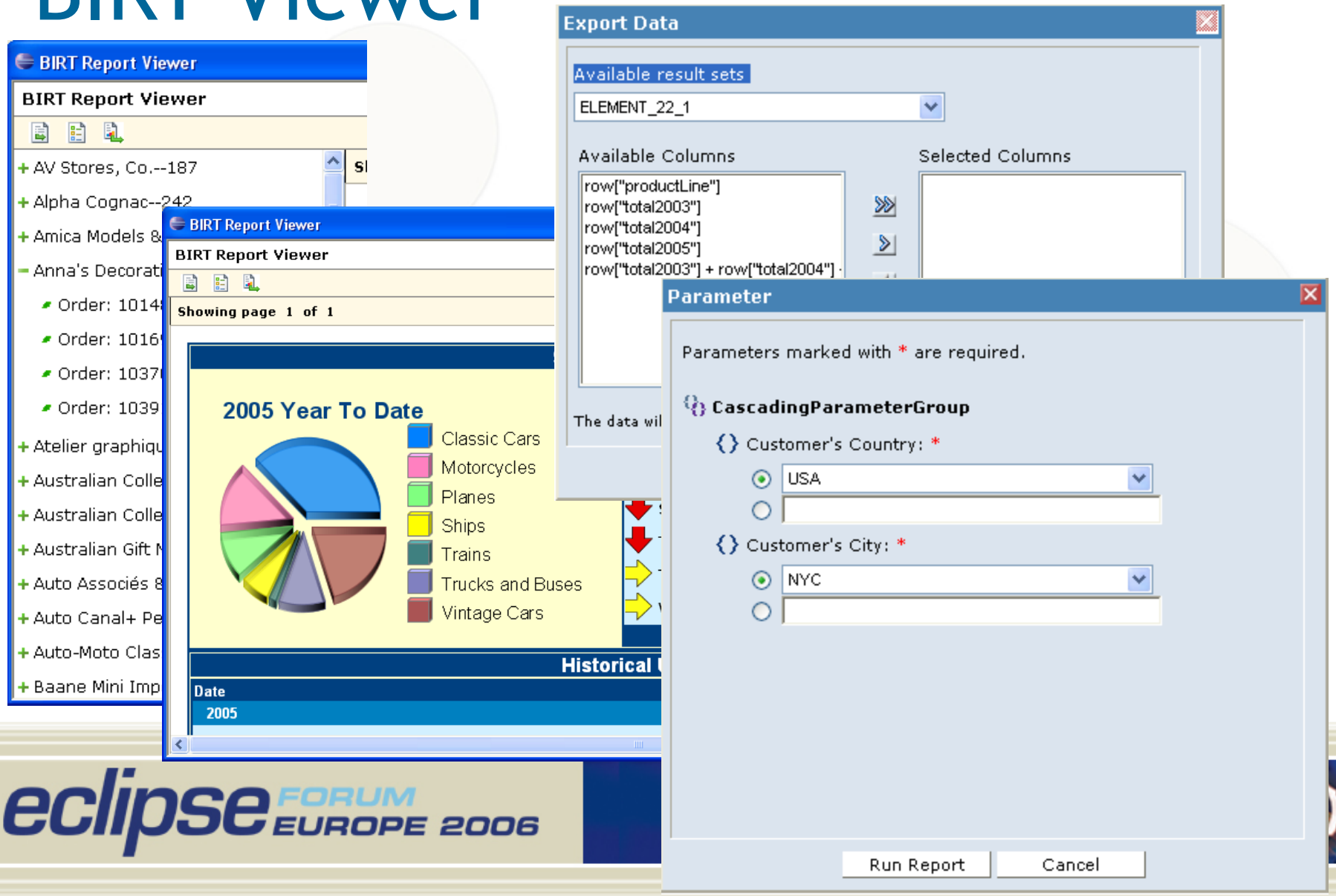
Deploying BIRT Reports



BIRT Web Application

- Generate report and return as PDF or HTML.
- Supports Paginated HTML.
- Export to CSV.
- Retrieves Images and Chart Output.
- Supports TOC and Bookmark Functionality.
- Parameter Entry.

BIRT Viewer


BIRT Report Viewer
BIRT Report Viewer
AV Stores, Co.--187
Alpha Cognac--242
Amica Models &
Anna's Decorati
Order: 1014
Order: 1016
Order: 1037
Order: 1039
Atelier graphiqu
Australian Colle
Australian Colle
Australian Gift
Auto Associés &
Auto Canal+ Pe
Auto-Moto Clas
Baane Mini Imp
BIRT Report Viewer
BIRT Report Viewer
Showing page 1 of 1
2005 Year To Date
Classic Cars
Motorcycles
Planes
Ships
Trains
Trucks and Buses
Vintage Cars
Historical
Date
2005
Export Data
Available result sets
ELEMENT_22_1
Available Columns
Selected Columns
row["productLine"]
row["total2003"]
row["total2004"]
row["total2005"]
row["total2003"] + row["total2004"]
The data wil
Parameter
Parameters marked with * are required.
CascadingParameterGroup
Customer's Country: *
USA
Customer's City: *
NYC
Run Report
Cancel

BIRT Deployment Examples Demo

BIRT APIs

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BIRT APIs

- Report Engine API – Loads and executes design files.
- Design Engine API – Creates and modifies report designs.
- Charting API – Builds and renders charts.

Report Engine API

- Used to integrate run-time portion of BIRT into your application.
- Used to discover and set parameters.
- Run a report and output PDF/HTML.
- Combine or Split Run and Render Task
- Save to Intermediate format.
- Extract data.
- Fetch an image or chart for a report.
- 2.0 Engine supports additional features for paging, cascaded and dynamic parameters, etc.
- Example in the runtime download.

Design Engine API

- Create and modify report designs.
- Create and delete report elements..
- Put report elements into slots.
- Retrieve metadata from report elements, properties and slots
- Undo/Redo.
- Semantic Checks on report designs.

BIRT Chart Engine API

- Stand Alone Chart Generator
- Does not require the use of the Chart User Interface
- Does not require the use of the Report Engine API
- Data is provided in a static data structure
  - When Charts render in Reports, Report Engine builds static structure from the specified ODA data and creates the static structure
  - Charts running stand-alone require a data feed
    - org.eclipse.birt.chart.datafeed-Custom User Data Set Interface
    - org.eclipse.birt.chart.model.data-Interfaces defines data structure
- JavaScript events support addition of custom business logic

Extension Points

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BIRT Extensions Points

- BIRT is not just a tool but a framework.
- Predominant Extension Points.
  - Emitter – Used to create additional output formats.
  - ODA – DTP – Used to add customized Data Source Drivers
  - Report Item – Used to extend the Palette with additional items.
  - Chart Types – Used to add or extend chart types

BIRT API Demo

More on BIRT

- www.eclipse.org/birt
- www.eclipse.org/newsportal/thread.php?group=eclipse.birt
- Source code for examples will be posted to the Eclipse site after the conference

Questions?