

# 6<sup>th</sup> Annual EclipseCon

## Introduction to BIRT

### Report Development

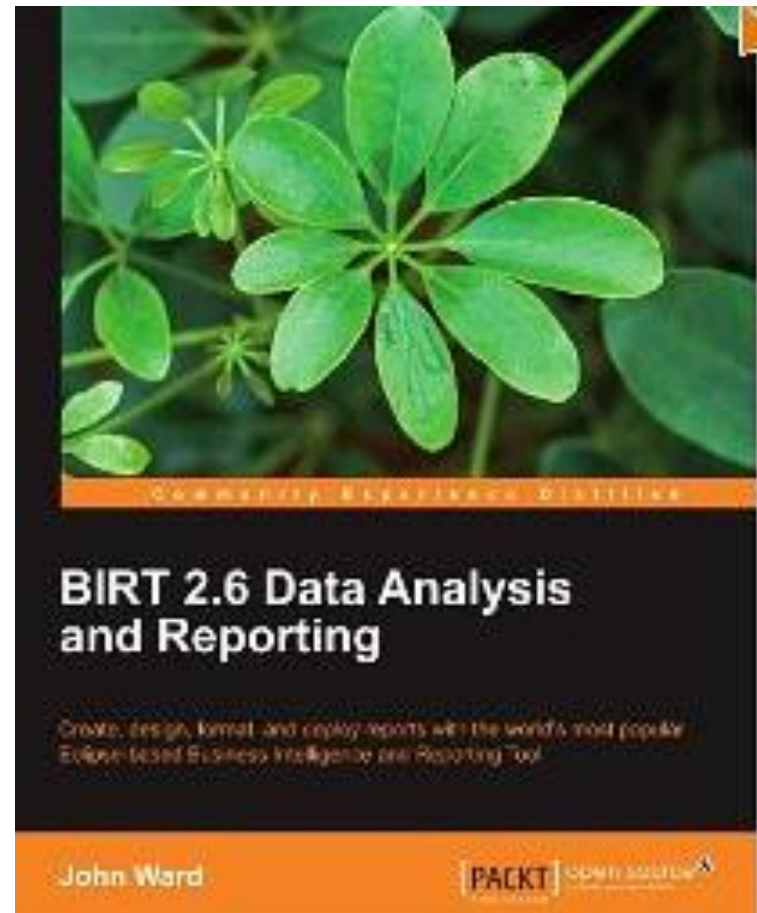


John Ward

# BIRT and Us – Who am I? Who are you?

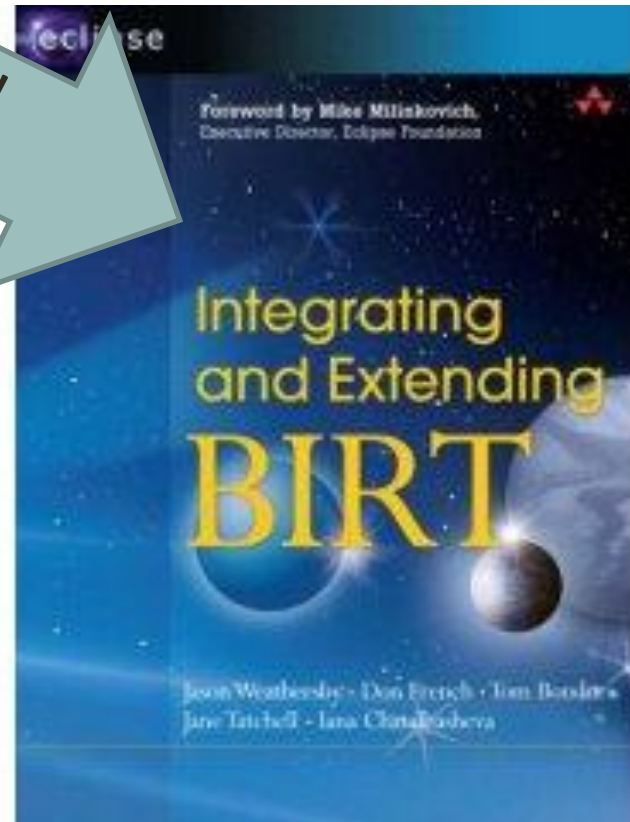
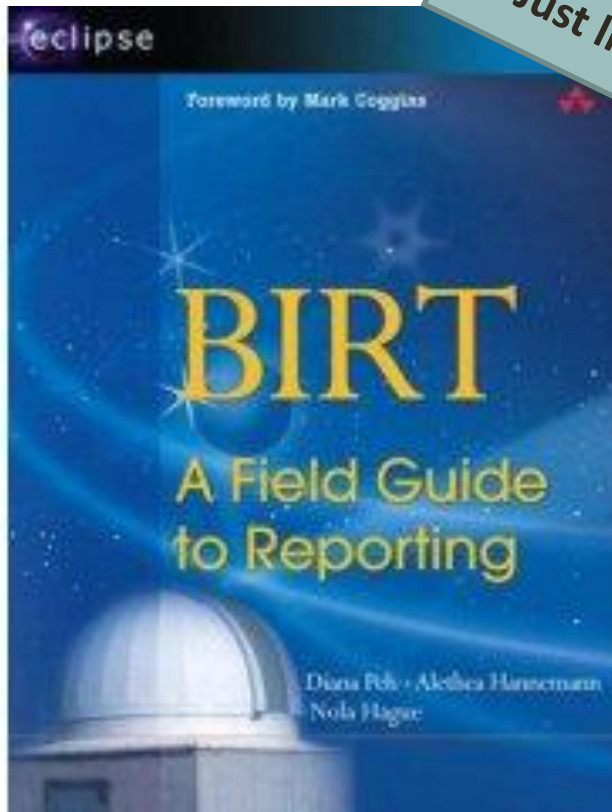
- Who am I?
  - John Ward, BIRT user
  - Independent BIRT Enthusiast
  - Author: Practical Data Analysis and Reporting with BIRT
  - <http://digiassn.blogspot.com>
  - john@wardmail.com
- Who are you?
  - Name, Company, technical background (C, SQL, Java, reporting...)
  - Experience with BIRT
  - What are you hoping to get out of today's presentation?

# Shameless Plug



... and those other guys  
books...

*This Book Rocks!!  
Just like BIRT!!!*



# Agenda

## Outline of class

- BIRT
  - History
  - Guided Tour
  - The Report Perspective
  - Building Reports
    - Components
  - Exercise
- Data
  - Exercise
- Charts and Layouts
  - Exercise
- Q&A

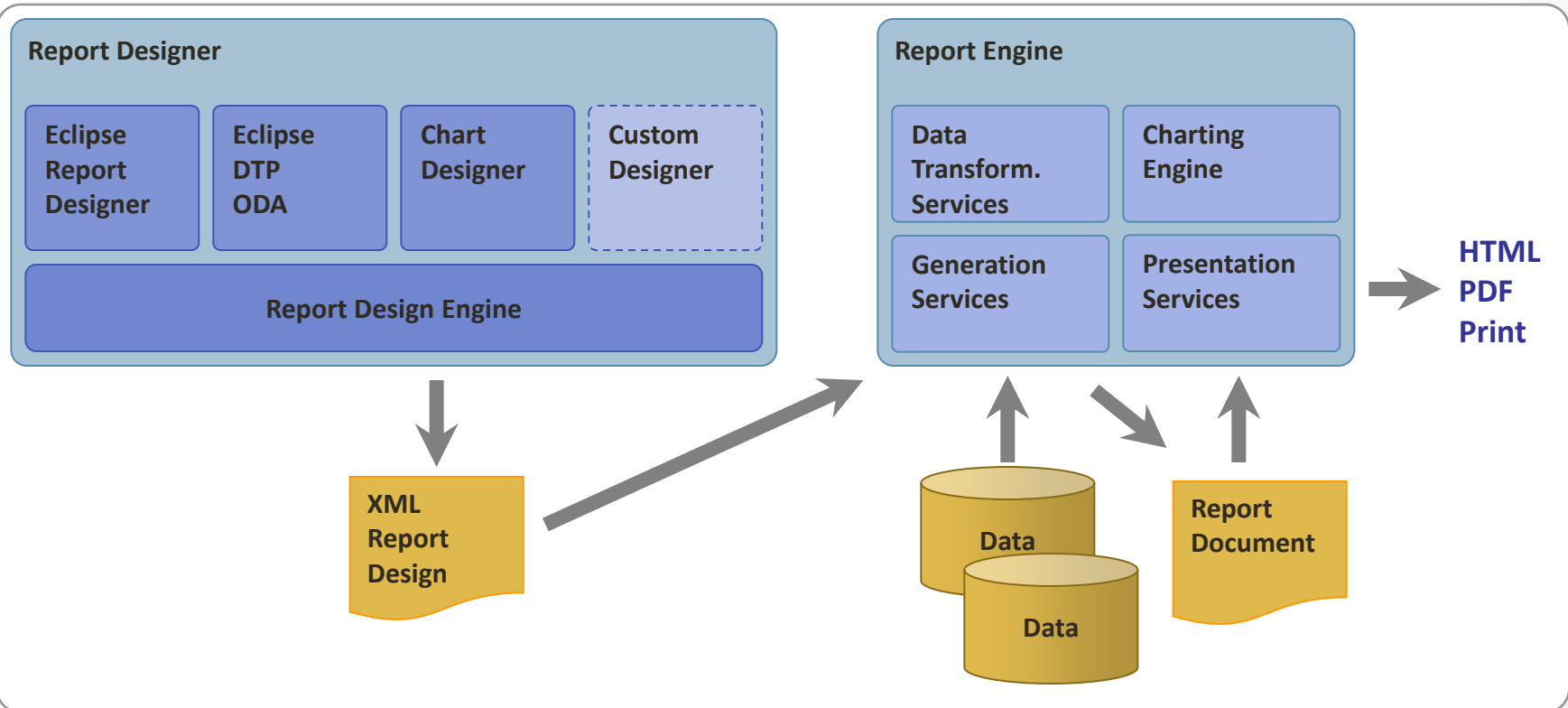
# What is BIRT

- Brief history and background
- Whos Behind It
- Who uses it

# The BIRT Community at a Glance

- Project Committers
  - Actuate (<http://www.actuate.com>)
  - IBM (<http://www.ibm.com>)
  - Inetsoft (<http://www.inetsoft.com>)
- BIRT pages on Eclipse web site
  - <http://www.eclipse.org/birt>
  - Download BIRT and walk through a tutorial
- BIRT Help
  - <http://www.birt-exchange.com>

# High Level BIRT Architecture





# Report Lifecycle (Simplified)

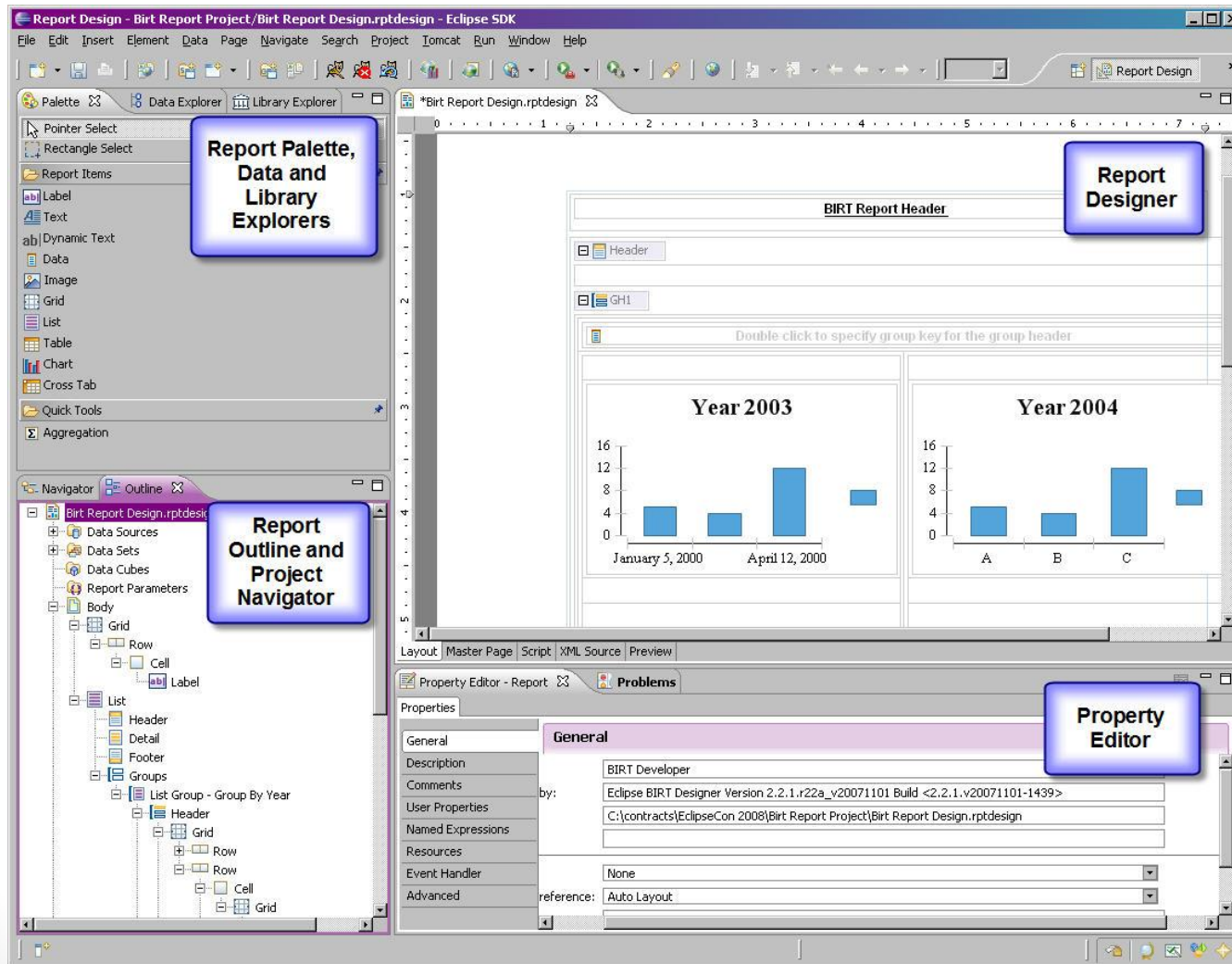
Initialize

Preparation

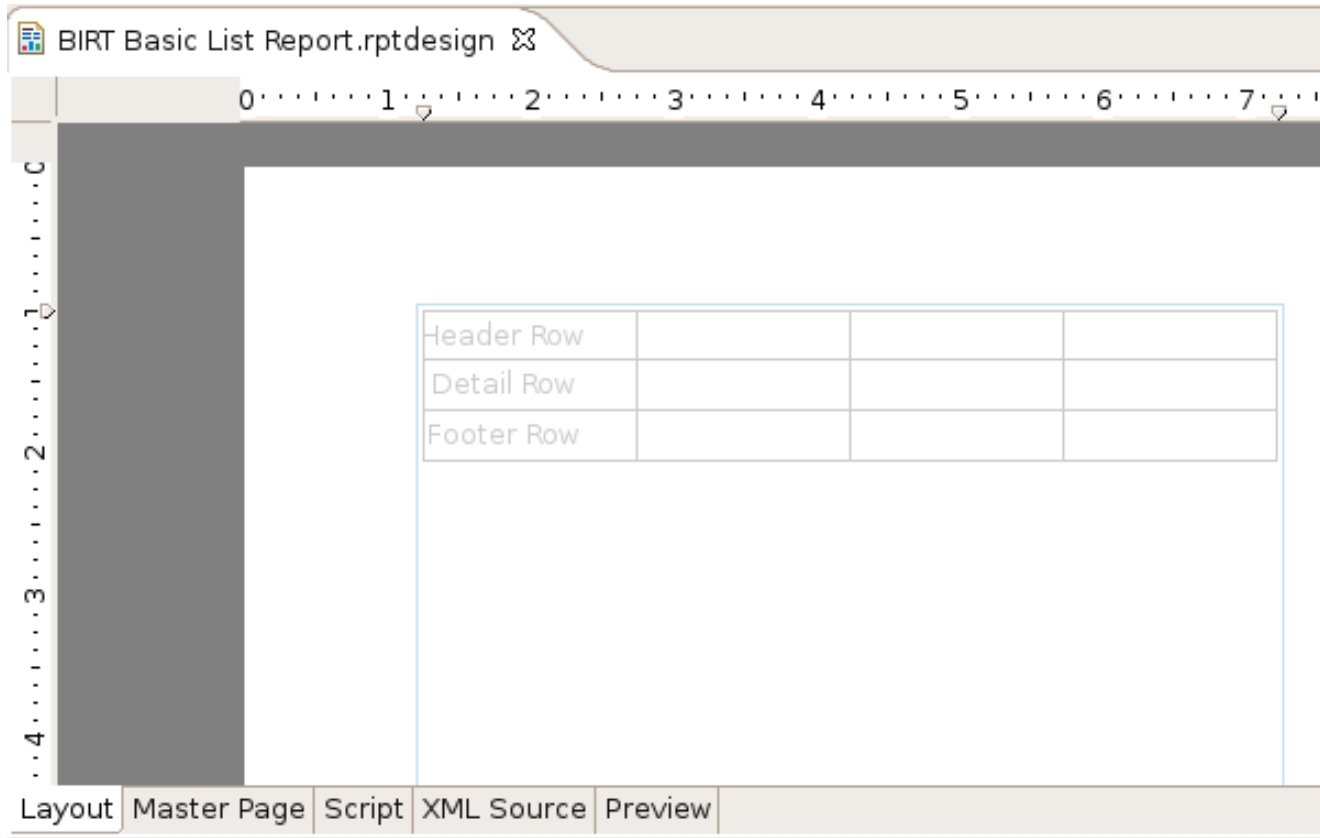
Generation

# Report Perspective

- Areas of Reporting perspective

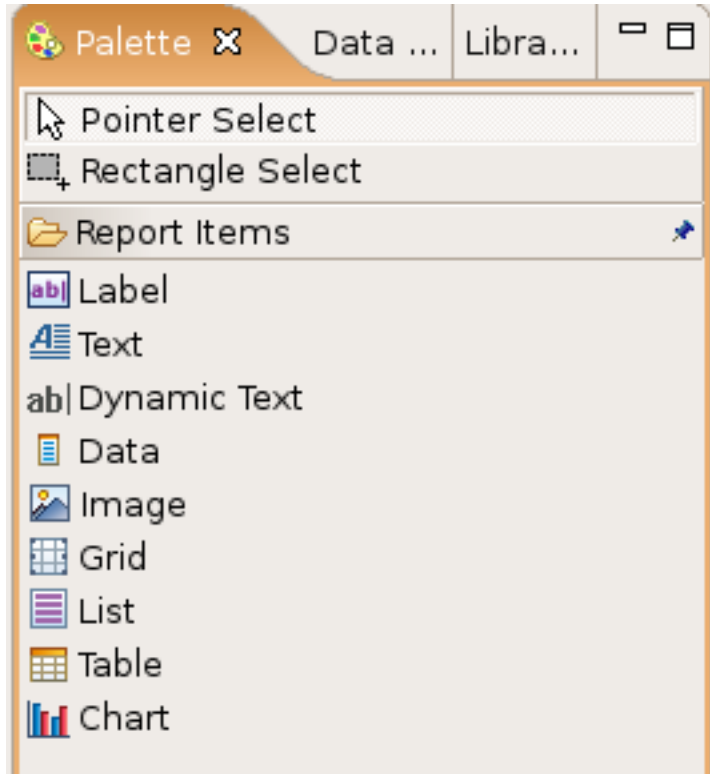


# Report Designer



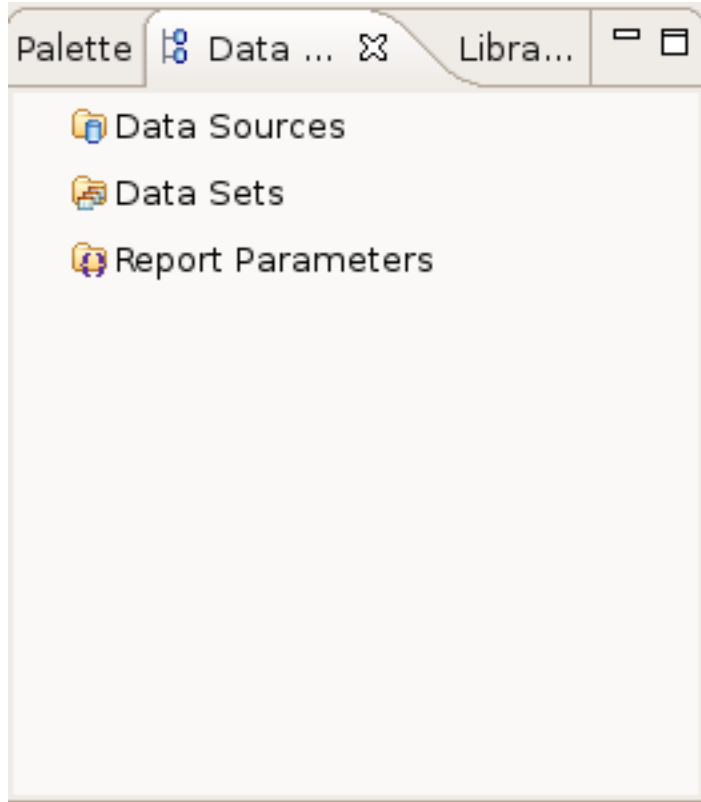
- Area where report layout is designed, previews of the report are seen, scripts and events are coded, and XML source for report can be viewed.

# Palette



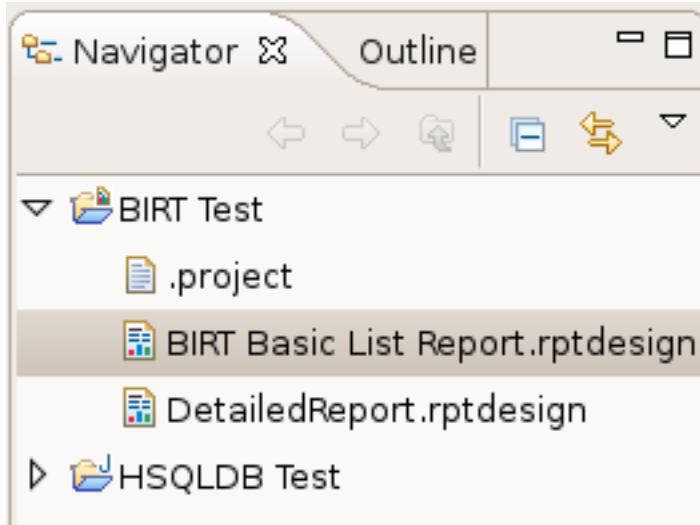
- Contains a number of visual elements used in BIRT report designs
- Similar to Toolboxes in MS Visual Studio and other visual IDE

# Data Explorer



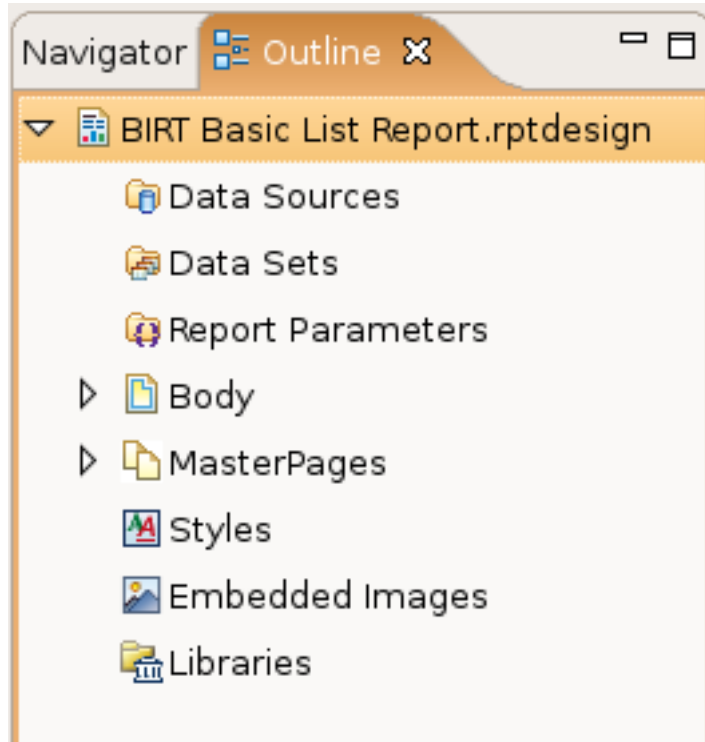
- Contains.
  - Data Sources: Connections to database.
  - Data Sets: Same as a Record set. Allows users to navigate through Query Results.
  - Report Parameters: Used as the interface for report parameters that will be passed to a Data Set.

# Navigator



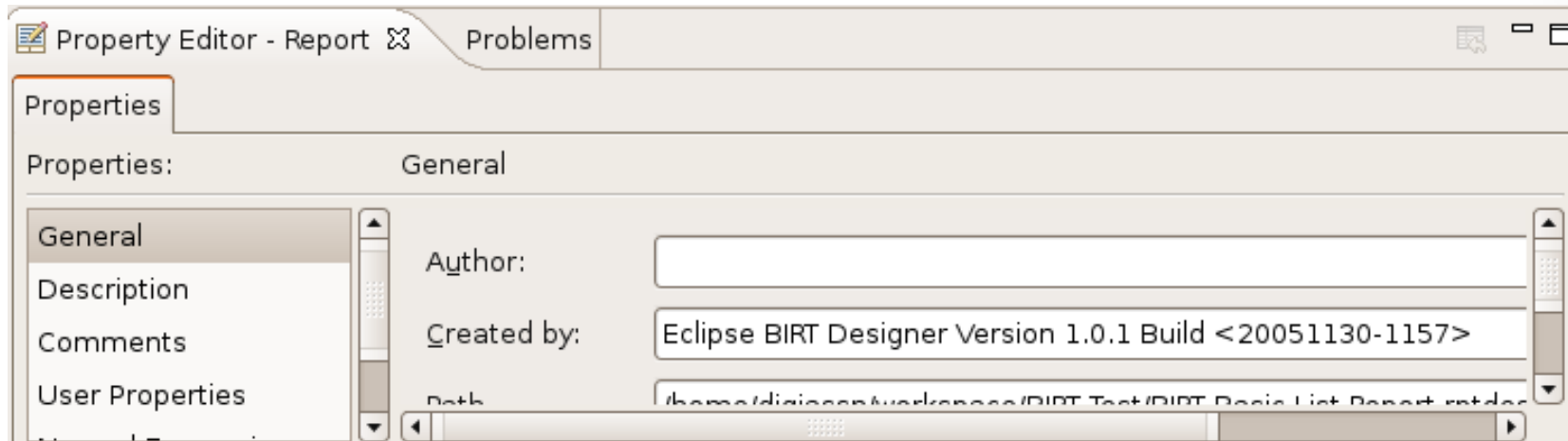
- Navigates through Eclipse projects and files under those projects
- Allows user to run report inside of BIRT

# Outline



- Provides hierarchy of current report
- Allows for easy navigation of report elements to change properties in the property pane
- When selecting libraries, use the outline to copy non-visual components such as data sources and sets

# Property Editor

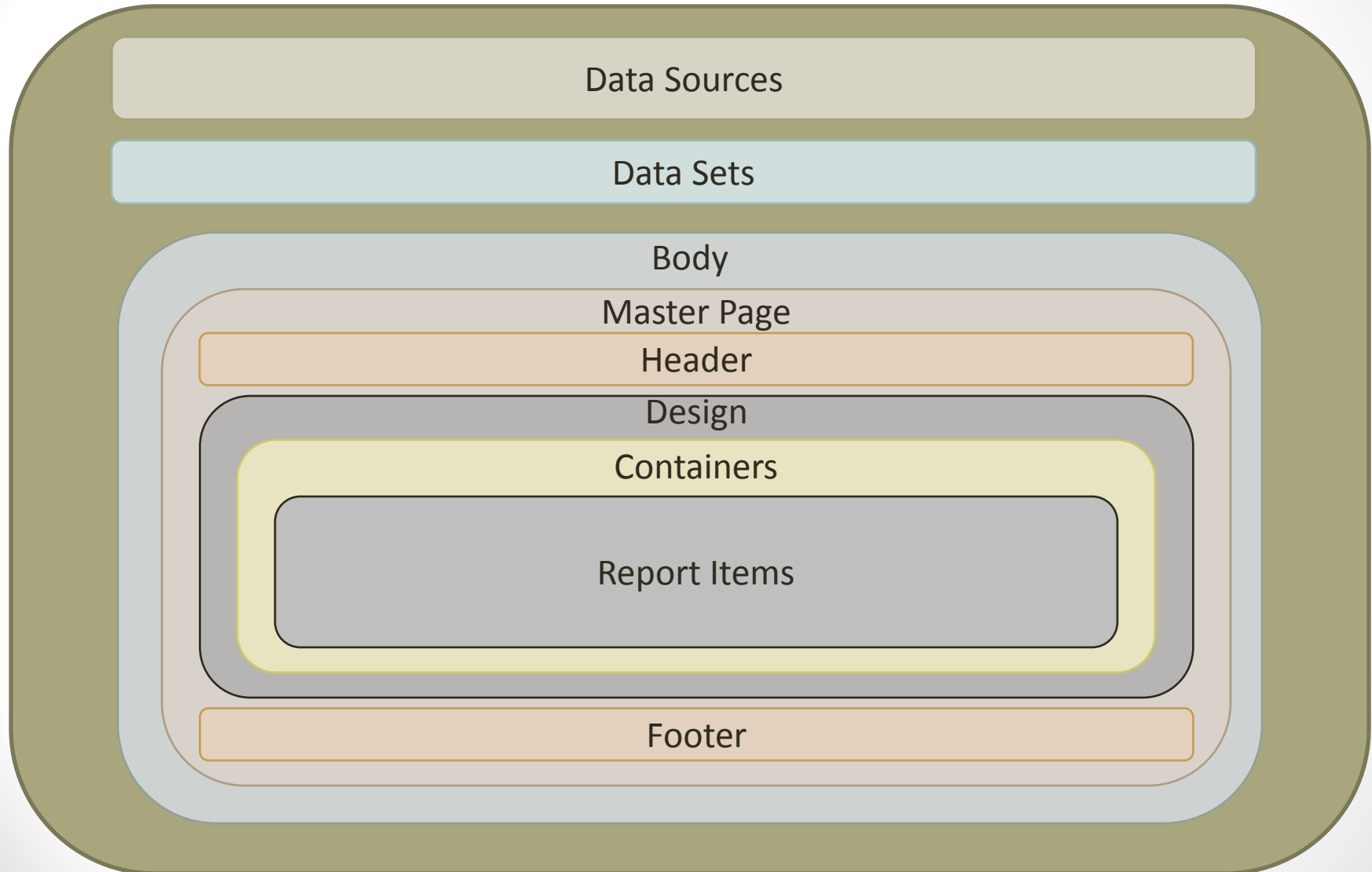


- Properties Pane.
  - Properties for BIRT objects can be modified, such as Data Set Binding, Font information, formatting for Data Set returns such as Row Highlighting and Color Alternation.

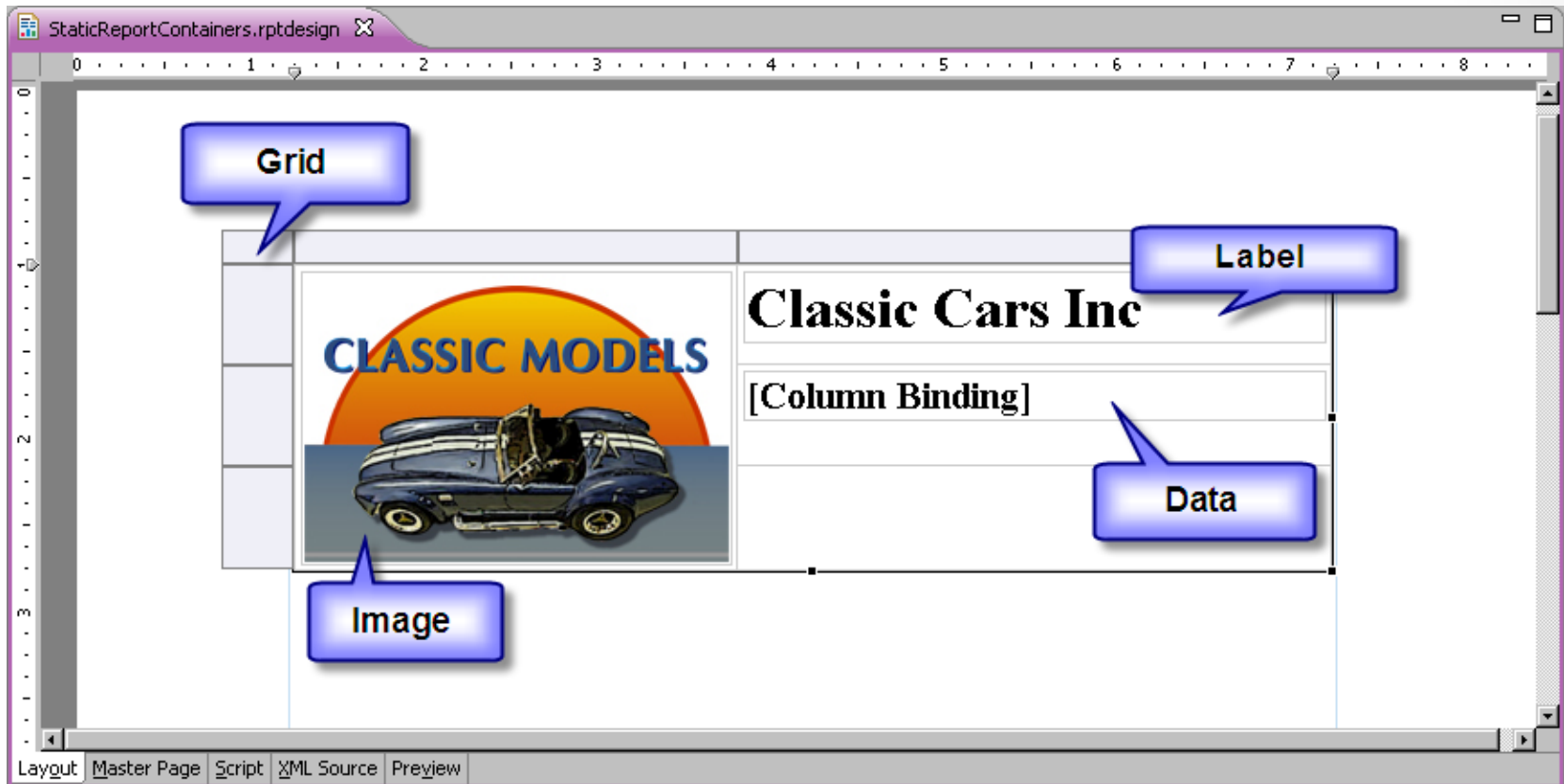


# **The Guided Tour**

# Elements of a Report Design

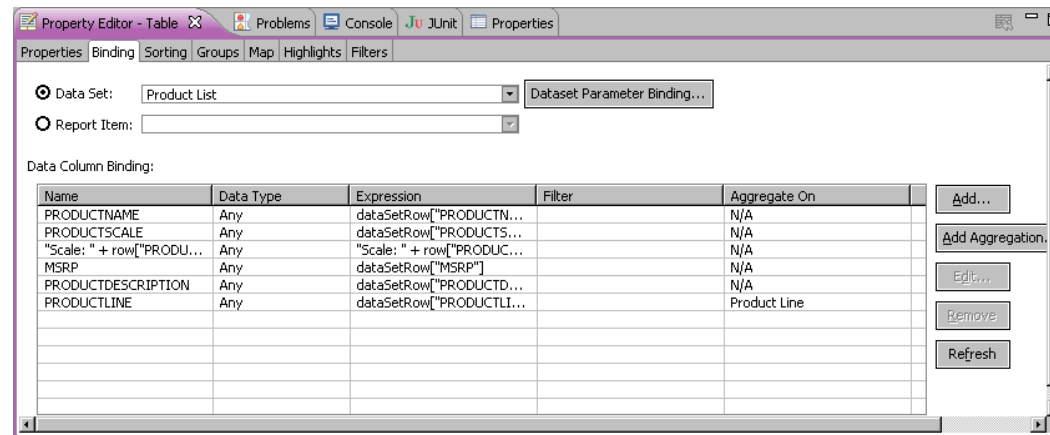


# Containers



# Tables/Lists

- Slots
  - Header
  - Detail
  - Footer
- Data Binding
  - Makes table/list aware of values in Data Set
- Grouping
  - Group on value in Data Set
- Sorting
  - Sort on value in Data Set
- Rows
- Columns
- Cells



# Report Items

- Label
  - Dumb, static
- Text
  - HTML, RTF
- Data
  - Smart, can be Dynamic, Expression Driven
- Chart
  - Graphics for the small words and pictures crowd (management)
- Aggregation
  - Total, Sum, Avg

# Expressions

- A lot of things in BIRT are based on them
  - Report Items
  - Properties
    - Outputs
    - Formatting
  - Small snippets of Javascript that return single values
  - You will see these everywhere
  - Anytime you start off with row["ColumnName"], you are starting with an expression.
  - Anywhere there is an expression editor.

# Exercise 1 – Introduction to BIRT Environment (30 minutes)



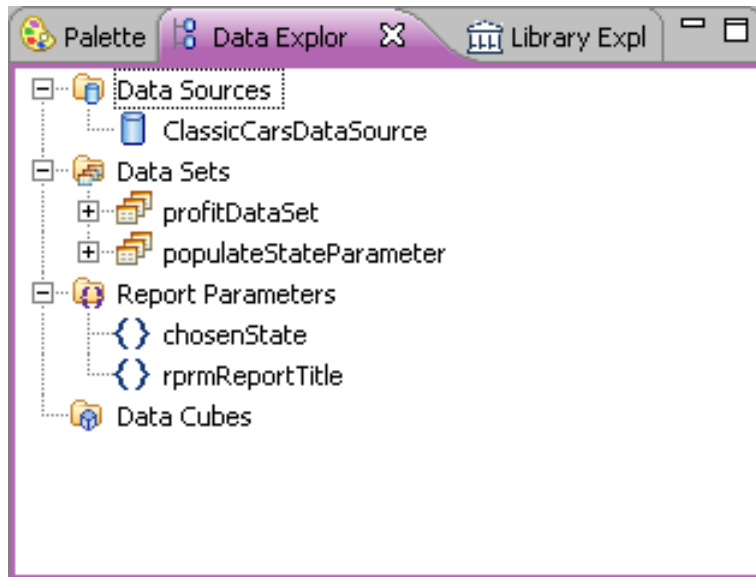
- What you will learn
  - Get familiar with the environment.
  - Learn basic report layout
  - Build basic report

# Introduction to Data Elements

- What are the data elements?
- Where do you access them?
- How do they work?



# Data Access



- Data Sources
  - Handled data connections
- Data Sets
  - Defined Data to be used in Report
- Parameters
  - Used for User Interaction to Filter Data
  - Cascading Parameters
- Parameter Binding

# Data Source Types

- Out of the Box
  - JDBC
  - Web Service
  - Flat File
  - Scripted Data Source
- Extensions
  - Anything BIRT doesn't do out of the box
- Data Cube
  - Analytics based on data sets
  - Lets you cut and slice data

# Exercise 2 – Working with Data (30 minutes)



Work with Data In a report

Work with Flat File and Database driven reports

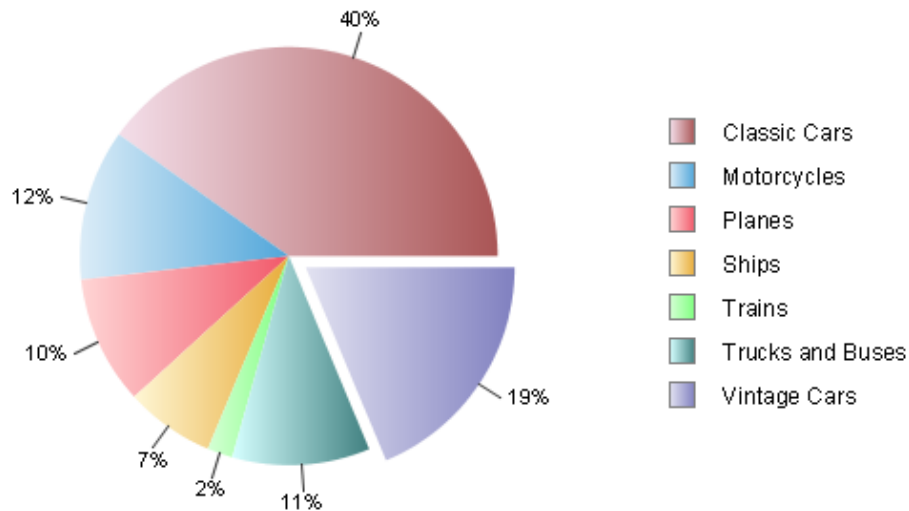
Formatting Reports on a basic level

# Charting in Reports

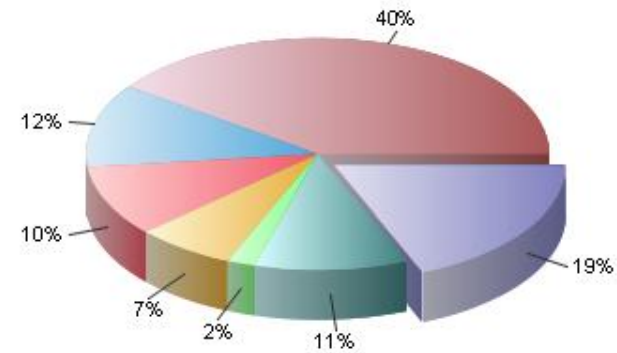
- Charts integrated with BIRT Report Designer
- Charts can be used standalone as a library
- Wide variety of chart types
- Many formatting options
- Charts are extensible to include more types

# Pie Charts

Total Sales By Product Line

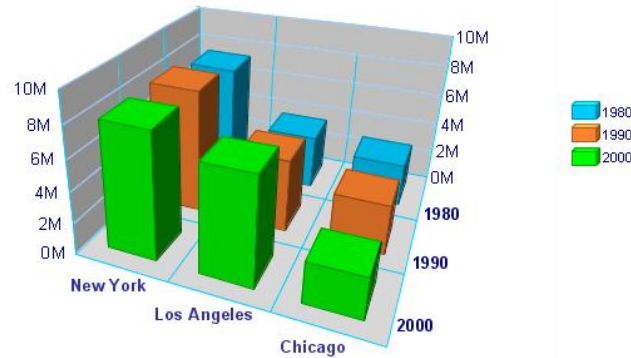


Total Sales By Product Line

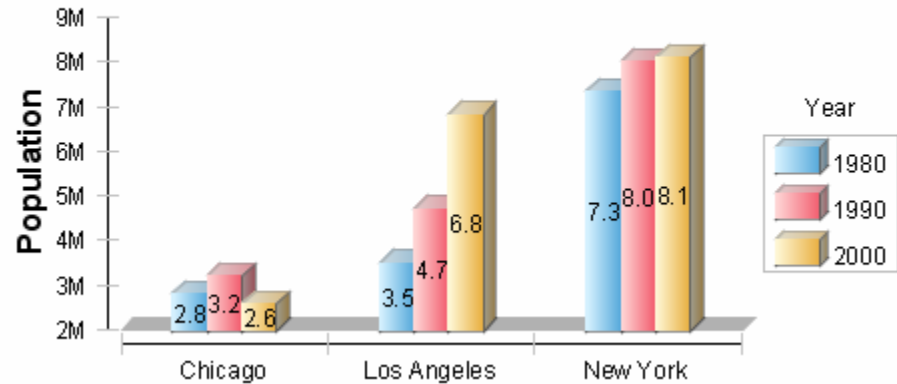


- 2D, 2D with depth
- Ratio, Explode slices, Min Slice

# Bar Charts

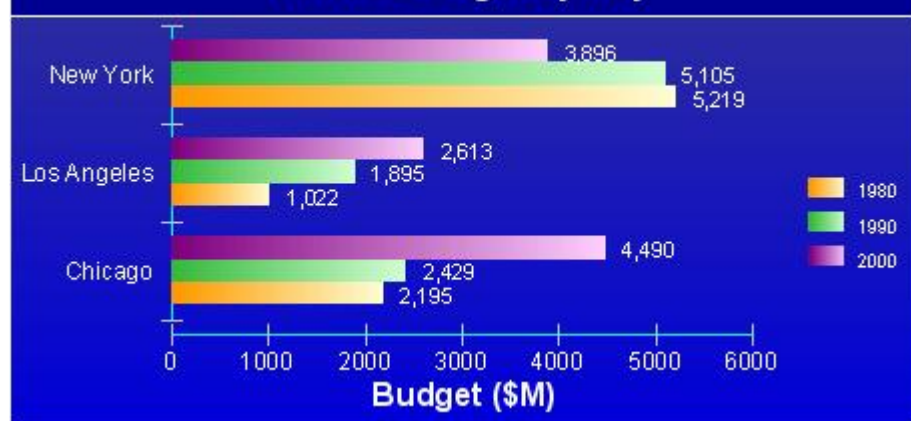


**Demographics Trend by City**

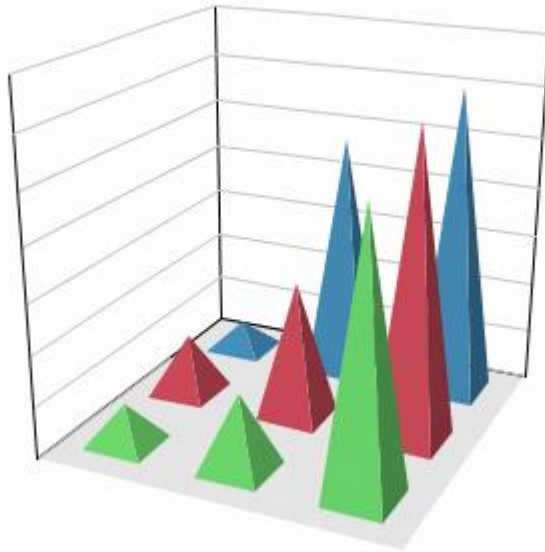


- Horizontal, Vertical
- 2D, 2D w/depth, 3D
- Stacked, Side-by-side
- Percent, Logarithmic

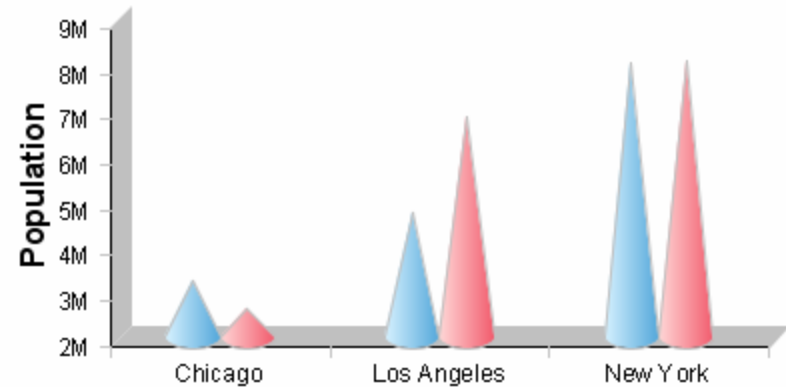
**Annual Budget By City**



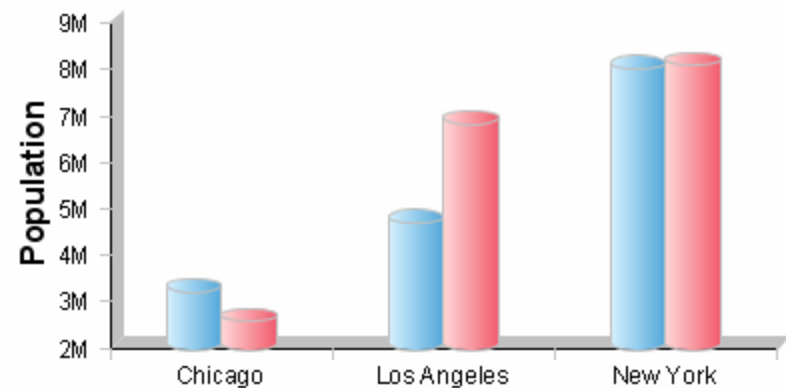
# Cones – Tubes – Pyramids



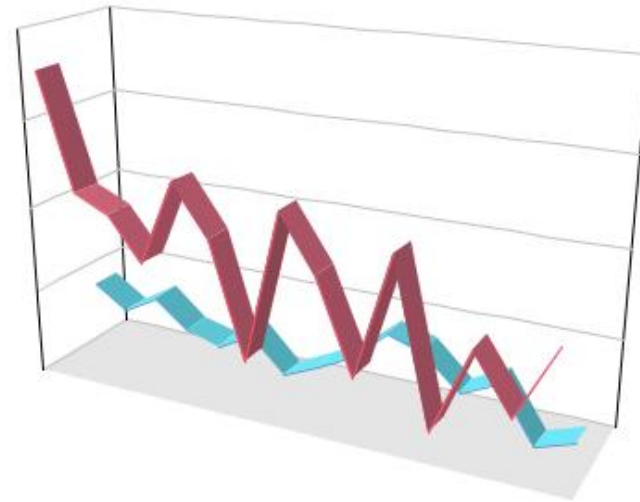
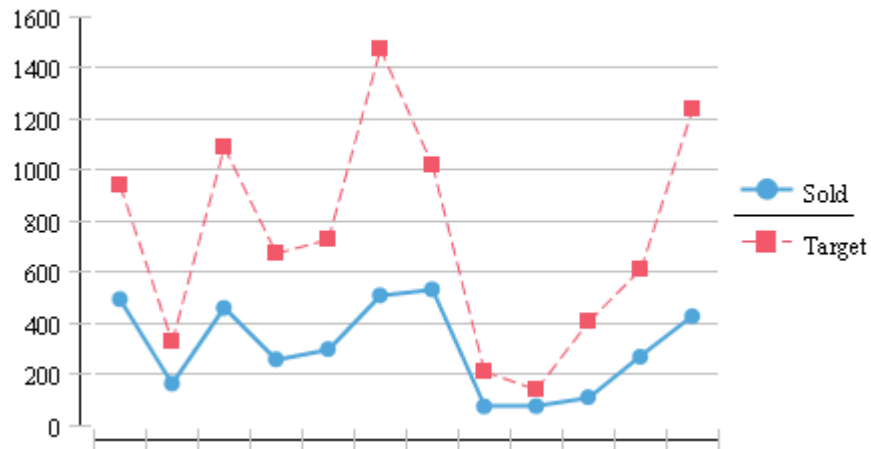
**Demographics Trend by City**



**Demographics Trend by City**



# Line Charts

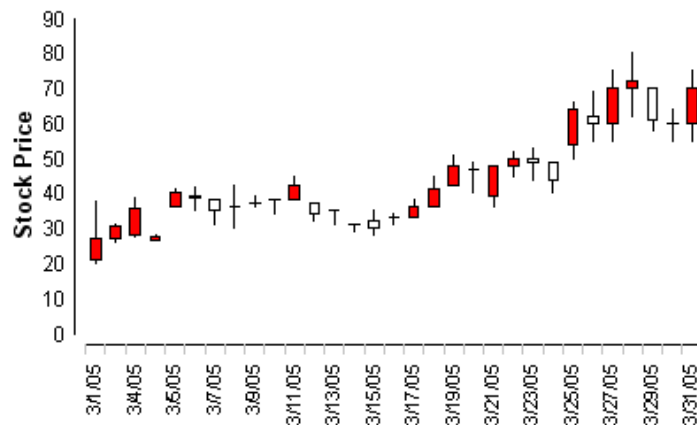


- Horizontal, Vertical
- 2D, 3D
- Various types of markers
- Line styles, thicknesses
- Drawn as Line, Curve

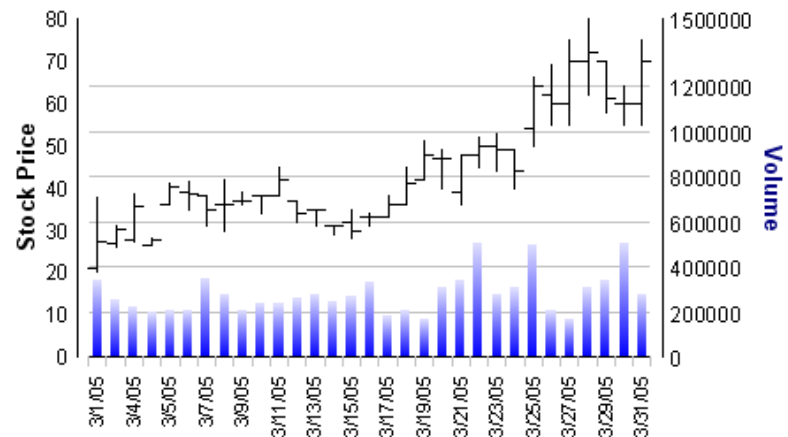


# Stock Charts

Stock Price Variations - March 2005



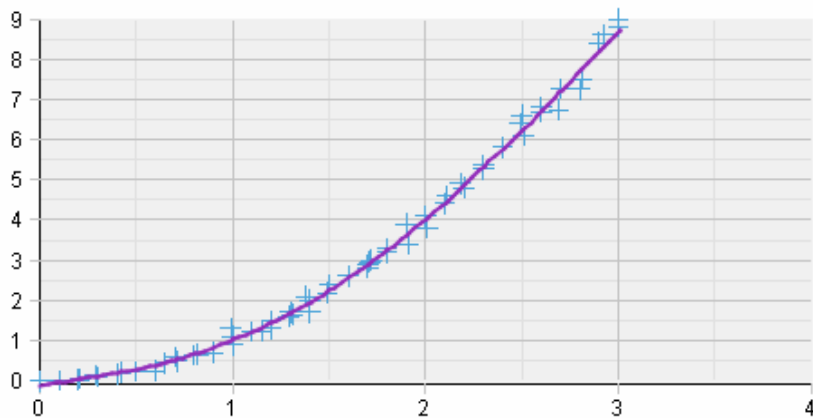
Stock Price Variations - March 2005



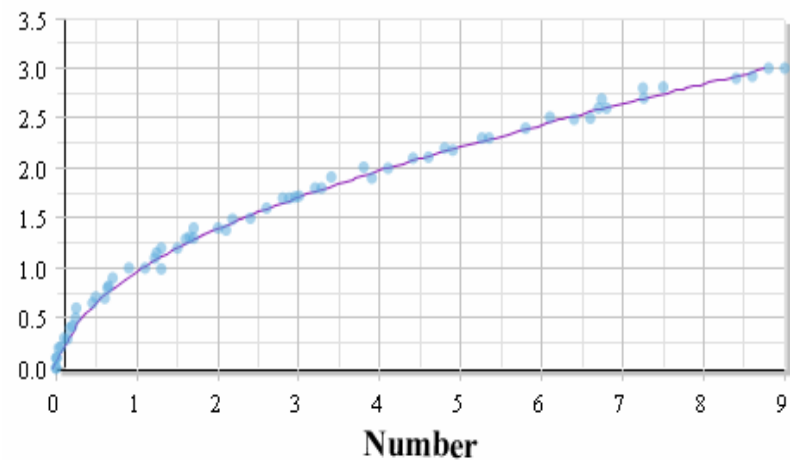
- CandleStick / Bar Stick
- Horizontal, Vertical
- 2D
- Formatting control

# Scatter Charts

**Scatter Chart**



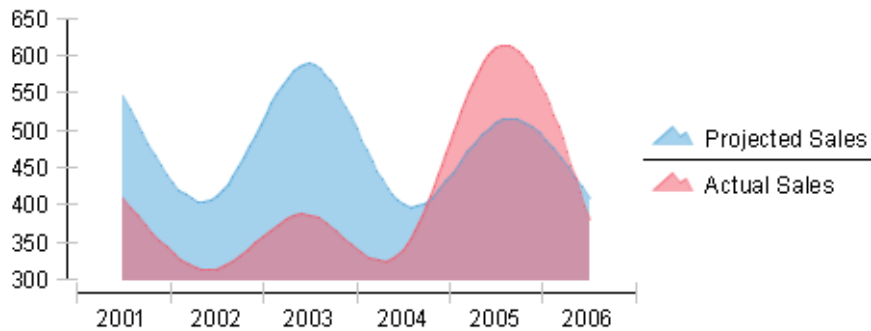
**Hayfever Occurences**



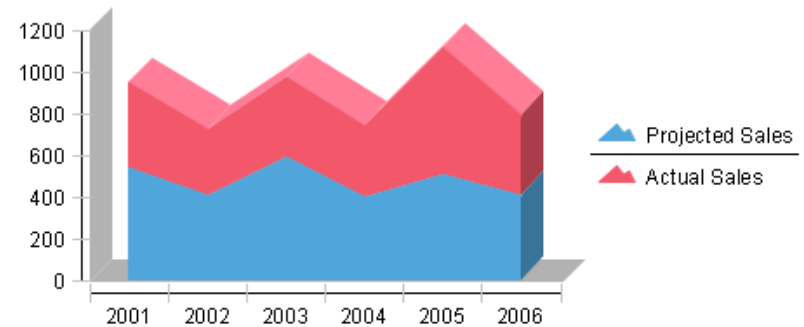
- Horizontal, Vertical
- 2D
- Various types of markers
- Line styles, thicknesses
- Drawn as Line, Curve

# Area Charts

**Sales Objectives**

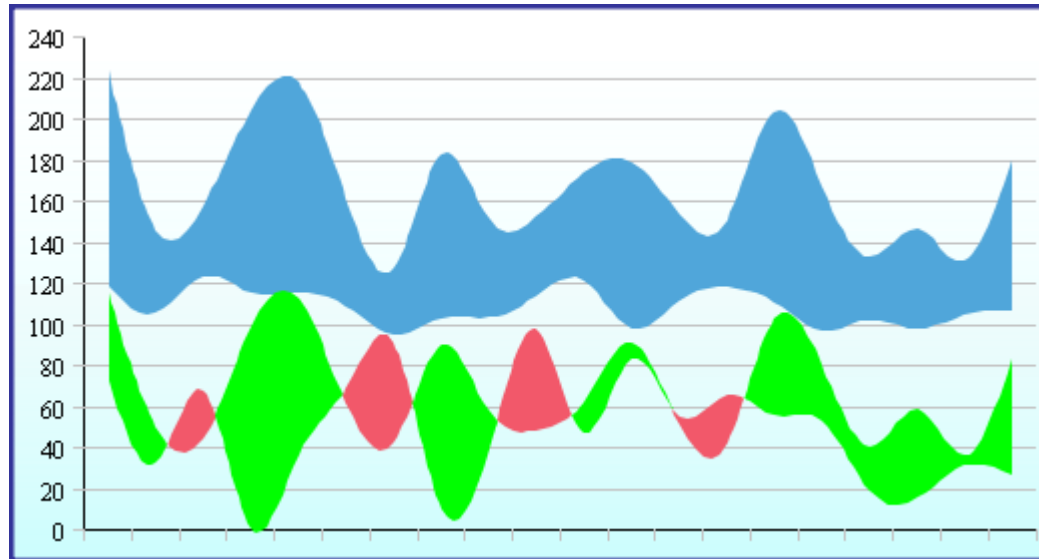


**Sales Objectives**



- Horizontal, Vertical
- 2D, 2D w/depth, 3D
- Stacked, Side-by-side
- Percent, Logarithmic
- Drawn as Line, Curve

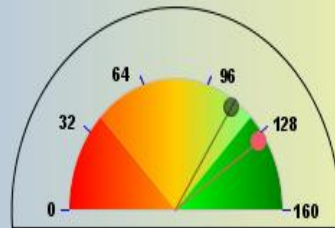
# Difference/Range Charts



- 2D. Curve or Straight lines.
- New Negative/Positive Fill also works for other types.

# Meter Charts

Actual Sales Versus Projections



Sales  
● Actual  
110.0  
● Projected  
130.0

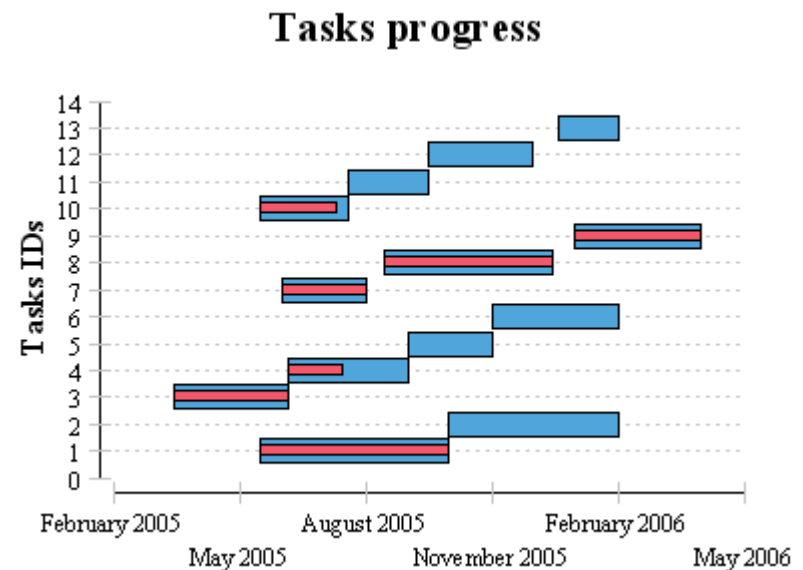
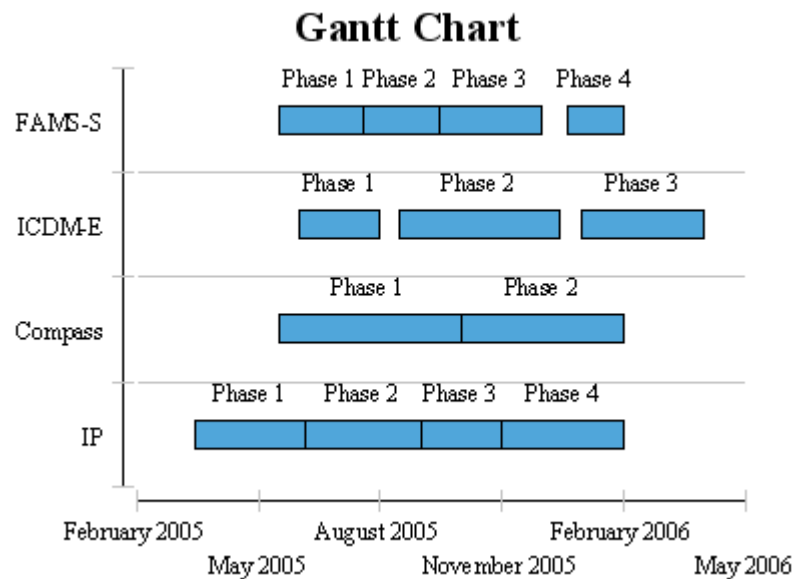
Actual Sales Versus Projections



Sales  
● Actual  
110.0  
● Projected  
130.0

- 2D, formatting control
- Regions, Needle styles, thicknesses

# Gantt Charts



- 2D. Custom Bar width
- Custom Start/End Markers
- Data : Task ID / Start Date, End Date, Task Name

# Bubble Charts



- 2D
- Custom Bubble shape – Square, triangle, diamond, star, icon...

# Formatting

- Intrinsic Properties
  - At the level of the element itself
  - Overrides CSS
- CSS
  - Used for applying a global style to reports
  - Cascades down.
  - Lowest element wins
  - Similar to HTML CSS, but not exactly the same



# Using styles

- Defined in
  - Report design
  - Library
  - Separate CSS text file
- Can use pre-defined element names or custom names
  - Ex.
    - `.table { background : #FFFFFF }`
    - Will apply to all tables in report
- Use to keep look and feel of multiple reports consistent

# Using Intrinsic Properties

- Very tempting to use since it is the first way you learn to set styles
- Only do it in small reporting projects
- Tend to be more cumbersome to maintain

The screenshot shows the 'Property Editor - Dynamic Text' window. The 'General' tab is selected in the left sidebar. The main panel displays various configuration options for a dynamic text element. The 'Name' field is empty, and the 'Element ID' is set to '7'. The 'Content Type' is set to 'HTML'. The 'Font' is 'Sans Serif' and the 'Size' is '10 points'. The 'Color' is 'Black' and the 'Background color' is 'Auto'. The 'Whitespace' options are 'Auto' (selected), 'No Wrapping', 'Normal', and 'Preformatted'. The 'Style' is 'None' and the 'Display' is 'Block'. The left sidebar contains a list of tabs: General, Expression, Padding, Border, Margin, Page Break, Visibility, Table of Contents, Bookmark, Comments, User Properties, Named Expressions, Event Handler, and Advanced.

Property Editor - Dynamic Text

Properties Binding Highlights

**General**

Expression

Padding

Border

Margin

Page Break

Visibility

Table of Contents

Bookmark

Comments

User Properties

Named Expressions

Event Handler

Advanced

**General**

Name: Element ID: 7

Content Type: HTML

Font: Sans Serif Size: 10 points

Color: Black Background color: Auto

Whitespace: ☒ Auto ☐ No Wrapping ☐ Normal ☐ Preformatted

Style: None Display: Block

# Order of Application

Table (Font-Size = 8pt, defined in style)

Row

Cell

Data (Style Defined Font Size: 7pt)

Data (Style Defined Font Size: 7pt, Intrinsic 10pt)

# Exercise 3 – Charting and Advanced Formatting



- Build some real reports
- Work with charts
- Work with styles and layouts

# Event handling

- Working with the Report Lifecycle
- Alters the flow of events
- Used to do things like dynamically add elements to a report, scripts data sources, and work with the chart engine
- Very advanced topic!!

# Reuse and Teams

- How do you re-use components?
- What do you do when you work in a team so each member isn't duplicating the same data sources, data sets, and report headers?
- How do you set up common starting points?

## Templates

- A common starting point for report development.
- Is basically a report design that is registered with the New Report Wizard.
- Can contains as little or as much as needed in order to start a report
  - Data sources
  - Data sets
  - Report items and containers
  - Master page elements

## Libraries

- Contains shared components
- When a library item is updated, all dependent reports are updated as well.
- Requires deployment with reports.



# Deployment

- Complex topic
- Can deploy to J2EE containers, applications, or the BIRT Web Viewer
- Commercial Actuate has tools built in for handling this.
- Can integrate BIRT engine into your application. See “Integrating and Extending BIRT” for more information
- Later sessions at EclipseCon will discuss this more in depth as well.

# Extensions

- Extremely complex topic
- See “Integrating and Extending BIRT” for information on this topic.

Q & A (10 minutes)