

# Techniques and Strategies for Lightning fast Reporting using BIRT



## PUG Challenge America

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# Agenda

- BIRT Overview
- Report Designer
- Data Binding Alternatives
- BIRT Integration Alternatives



# What is BIRT?

- J2EE Based Reporting System
- Open Source
  - <http://www.eclipse.org/birt/phoenix/>
- Actuate
  - <http://www.actuate.com/>



# What is BIRT?

- Types of Reporting:
  - Lists
  - Grouping and Sorting
  - Aggregates
  - Calculated Columns
  - Charting
  - Multi Column Reports
  - Letters
  - Graphics



# Components

- Report Designer
- Report Engine
- Charting Engine
- Report Viewer



# Components

- Report Designer
  - The BIRT Report Designer is a drag and drop development environment used to create BIRT reports.
  - Report Design Documents are stored in an open XML format.
  - Configured as:
    - Plug into current Eclipse environment
    - Download as a stand alone Eclipse environment
    - RPC Windows Desktop Application



# Report Designer

The screenshot displays the Report Designer interface in Eclipse. The main workspace shows a report design for 'Sports2K Invoice'. The report is structured as follows:

Line	Item Num	Item Name	Qty	Price	Ext Price
[dsOline::Linenum]	[dsOline::Itemnum]	[dsOline::Itemf]	[dsOline::Q]	[dsOline::Price]	[dsOline::Extende...]
<b>Total:</b>				Σ[InvoiceTotal]	

Additional report elements include:

- Header: [CurrentDate]
- Order Details: Order Num: [dsOrder::Ordernum], Customer Name: [dsOrder::CustName], [dsOrder::Address1], [dsOrder::Address2], [CityStateZip]
- Remit To: Sports2K Payment Center, P.O. Box 12556, Atlas, GA 20022

The interface also features a Navigator on the left showing the project structure, a Property Editor at the bottom for the selected cell, and a menu bar with options like File, Edit, Insert, Element, Data, Page, Navigate, Search, Project, Run, Window, and Help.



# Components

- Report Engine
  - Uses report design files and a specified data-source to generate and render reports.
  - Access the Report Engine via command line.
  - Access the Report Engine using the BIRT Viewer
    - The BIRT Report Viewer uses this API to execute and render reports.





# Components

- Charting Engine
  - The Charting Engine is used to design and generate Charts.
  - The Charting Engine API allows Java/Java EE developers to add charting capabilities to their applications.
  - The Report Design and Report Engines make use of the API to deliver Charts.



# Components

- BIRT Viewer
  - Servlet based tool for executing, rendering and interacting with a report.
  - Part of the Report Designer
  - Requires a servlet engine like Tomcat.
  - Can be deployed by itself as a Tomcat Application.



# Components

- BIRT Viewer
  - Provides web output as a single HTML document, paginated HTML, PDF, XLS, DOC, PPT, and Postscript.
  - Additionally the viewer allows exporting the data to CSV
  - Supports local and remote printing.

# Viewer



BIRT Report Viewer				
Showing page 3 of 23				
	<u>Sales Rep</u>	<u>Customer Name</u>	<u>CreditLimit</u>	<u>Balance</u>
BBB	Brawn , Bubba B.	Cardinal Sports	21100.0	0.0
	Brawn , Bubba B.	Famous Footwear	17900.0	0.0
	Brawn , Bubba B.	Sports Shak	33400.0	0.0
	Brawn , Bubba B.	Slugger's Den	24100.0	0.0
	Brawn , Bubba B.	National Diving Ctr	47200.0	29766.05
	Brawn , Bubba B.	Irving's Sport Shops	29500.0	0.0
	Brawn , Bubba B.	Jay's Sport & Trophy	17900.0	11393.9
	Brawn , Bubba B.	Rei-recreational Equipment Inc	17000.0	0.0
	Brawn , Bubba B.	Three Rivers Resort & Outfit	15600.0	0.0
	Brawn , Bubba B.	Bud's Sporting Goods & Fntn	17900.0	0.0
	Brawn , Bubba B.	Nomad Cyclery	38600.0	11717.89
	Brawn , Bubba B.	S & S Gear	48600.0	0.0
	Brawn , Bubba B.	Copeland Sports	28300.0	0.0
	Brawn , Bubba B.	Golden Bear Skate Shop	16600.0	0.0
	Brawn , Bubba B.	Southwest Dart & Billiard	13700.0	0.0
	Brawn , Bubba B.	Edington's Fine Golfwear	33400.0	19268.49
	Brawn , Bubba B.	All Sports	40300.0	0.0
	Brawn , Bubba B.	Main Event	34600.0	6144.51
	Brawn , Bubba B.	Golf Augusta Pro Shop	45300.0	16669.64
	Brawn , Bubba B.	Tink's Sport Stop	21300.0	12645.81
	Brawn , Bubba B.	Rocky's Sporting Goods	23500.0	11037.53
	Brawn , Bubba B.	Just For Kicks Soccer Ctr	8700.0	0.0
	Brawn , Bubba B.	Ready's Home Recreation	6300.0	1251.45
	Brawn , Bubba B.	Skagway Sports Emporium	44000.0	19075.0
	Brawn , Bubba B.	Arctic Gunworks	31900.0	0.0
	Brawn , Bubba B.	Western Auto	10000.0	0.0
		<b>SubTotal:</b>		<b>\$ 767,558.66</b>
DKP	Pitt , Dirk K.	Urpon Frisbee	27600.0	437.63
	Pitt , Dirk K.	Aerobics valine Ky	13500.0	1112.44
	Pitt , Dirk K.	Pihtiputaan Pyora	29900.0	1242.14
	Pitt , Dirk K.	Keilailu ja Biljardi	10900.0	1186.8
	Pitt , Dirk K.	Surf Lautaveikkoset	6500.0	0.0
	Pitt , Dirk K.	Biljardi ja tennis	18200.0	1227.58



# Data Source Options

- JDBC
- XML
- Web Services
- Flat File
- Scripted

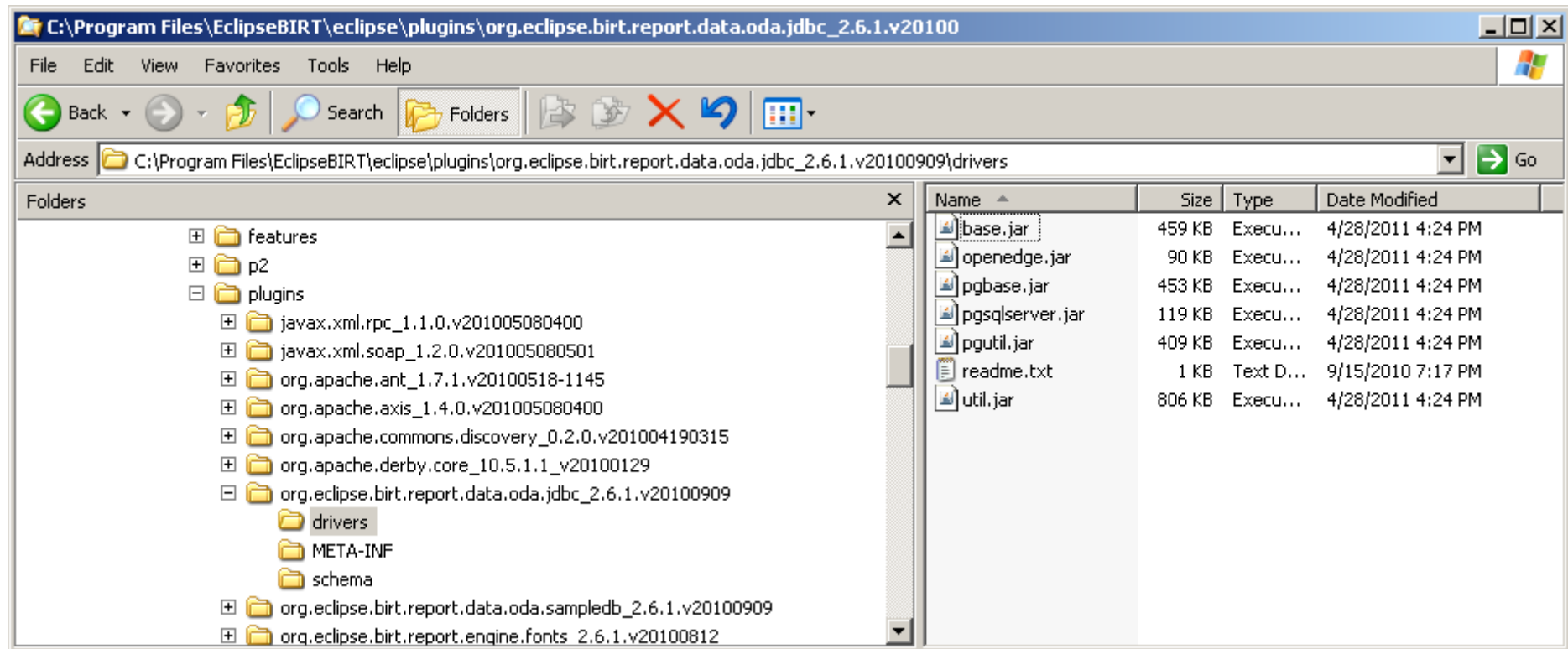


# Data Binding JDBC

- JDBC
  - Pros
    - Data Access is fast
    - Simple
  - Cons
    - Not able to utilize OE for business logic



# JDBC Driver Configuration





# JDBC Driver Configuration

**Edit Data Source - Sports2K**

**BIRT JDBC Data Source**

- Connection Profile
- Property Binding

**Edit the selected data source.**

Driver Class:

Database URL:

User Name:

Password:

JNDI URL:





# Demo I JDBC Report





# Data Binding XML

- XML
  - Pros
    - Leverage the power of the ABL for complex business logic and data transformations.
  - Cons
    - Performance is very slow when large amounts of data are involved.
    - Relying on BIRT to perform table joins is detrimental to performance.



# Demo II XML Data Source



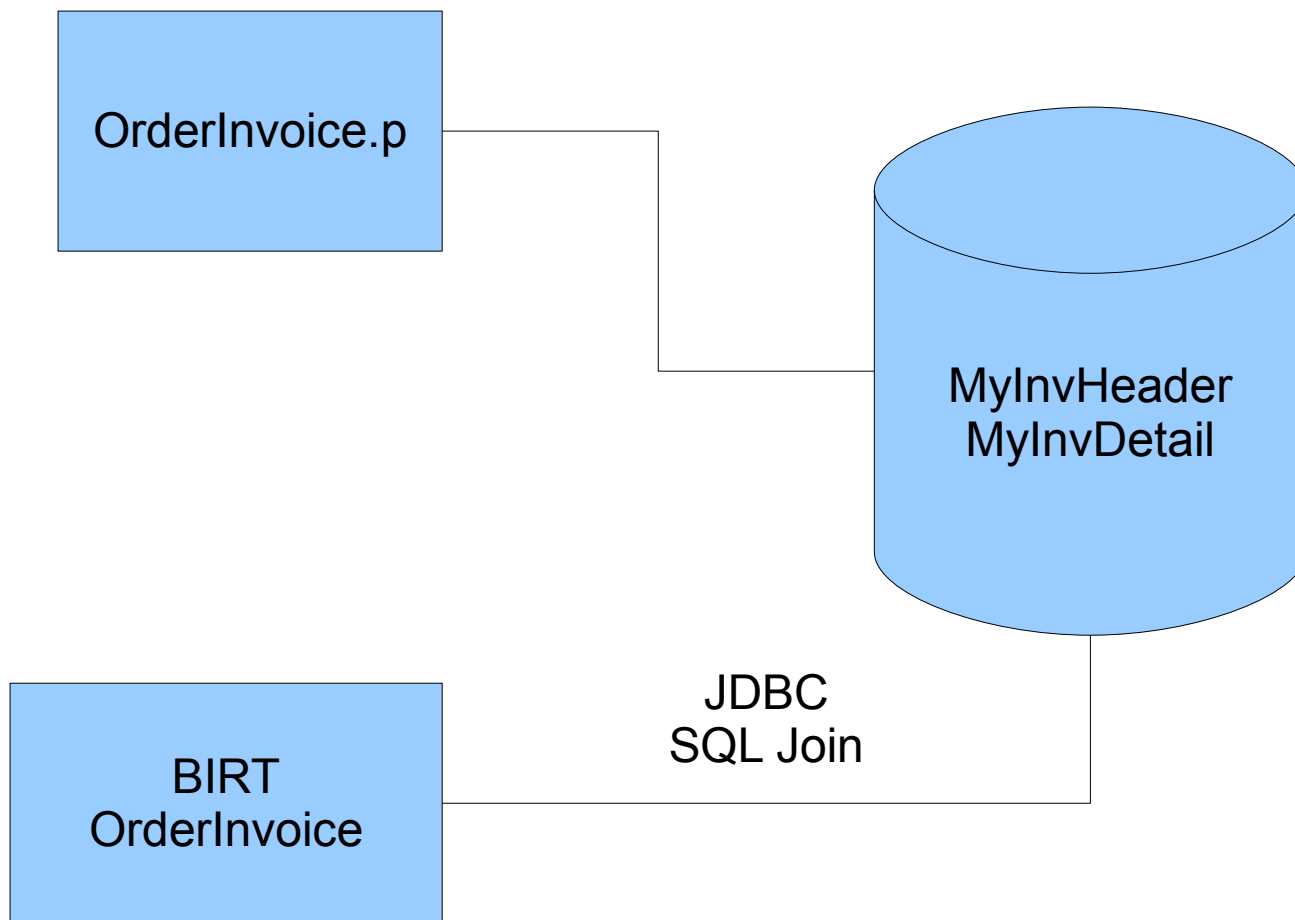


# Data Binding JDBC Hybrid

- JDBC using DB Scratch Tables
- Alternative to writing report data as XML.
- Open Edge Reports write output put to database scratch tables.
- Use JDBC to query and BIRT to render the result.



# Data Binding JDBC Hybrid





# Data Binding JDBC Hybrid

- JDBC Using Scratch Tables
  - Pros
    - Very fast performance when dealing with large amounts of data.
  - Cons
    - Managing the scratch tables.



# Demo III JDBC Hybrid



# Data Binding DataDirect SDK

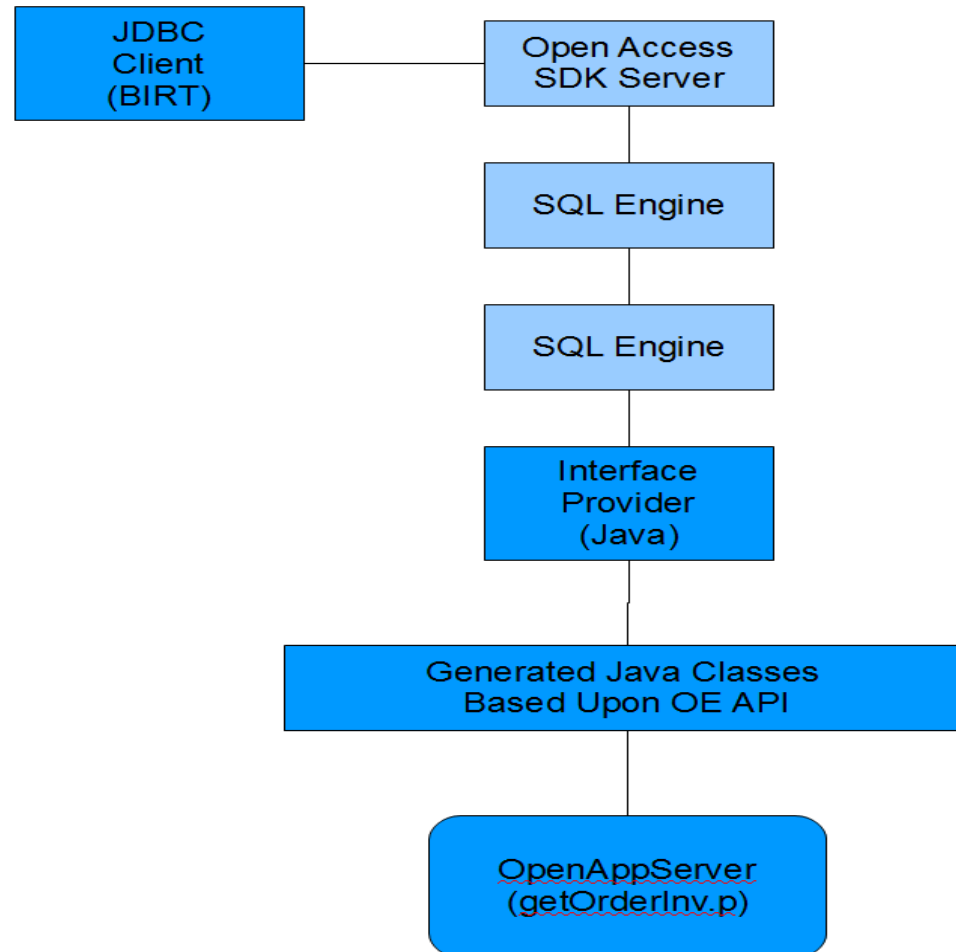


- JDBC using DataDirect Custom Driver
- Uses the Open AppServer
- Allows you to connect to OpenEdge procedure as a JDBC Data Source





# Data Binding DataDirect SDK



# OE Integration Command Line



- Report Engine Command Line
  - Renders the Report as PDF or HTML output file
  - JVM instantiation is slow

# OE Integration BIRT Viewer



- Viewer via a URL
  - URL References the Report and DataSource as parameters
  - BIRT Report Viewer
    - Executes Report
    - Renders Report
  - Requires Tomcat
  - Runs faster than the command line



# Command Line

```
"C:\Program Files\birt-runtime-2_6_2\ReportEngine\genReport"  
-f PDF  
-p "DataFileLocation=C:\Data\Customer.xml"  
-o "C:\Data\Customer.pdf"  
"C:\Reports\customer.rptdesign"
```



# Command Line

- Command Line Options
  - -f Format (HTML or PDF)
  - -o Target File
  - -p Parameter
  - -t HTML Type
  - -F Parameter File
  - -e Encoding



# BIRT Viewer URL Options

- The BIRT Viewer Servlet handles three mappings:
  - The **/frameset** mapping renders the report in the full AJAX viewer complete with toolbar, navigation bar and table of contents features.
  - The **/run** mapping runs and renders the report but does not support AJAX Features.
  - The **/preview** mapping runs and renders the report but does not support AJAX feature. The output from the run and render operation is sent directly to the browser.



# Demo IV Integration

