

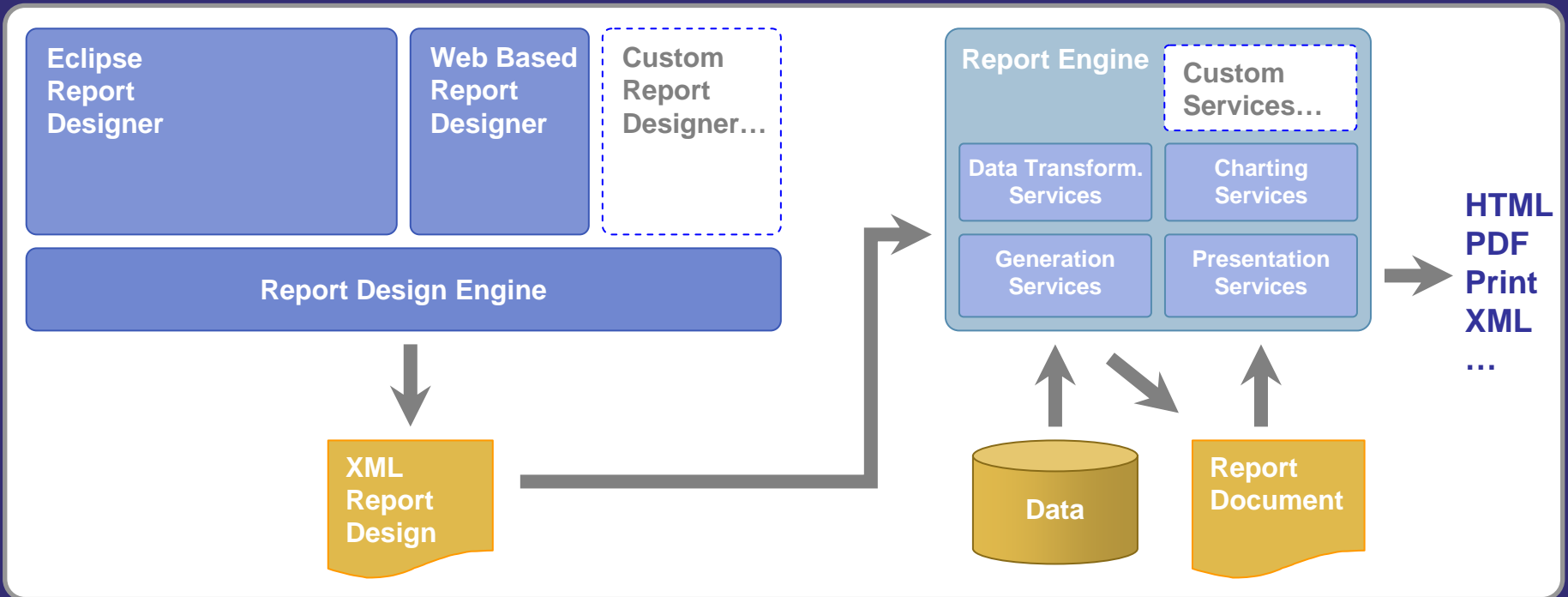
Introduction to the BIRT Report Object Model

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BIRT Overview

- Eclipse top-level project
- Initially focused on embedded reporting for Java developers
- Highly extensible
- Target user is Java developer
 - Will evolve to support report content developers
- Users & contributors wanted!
- Timeline
 - Nov, 2004: BIRT project accepted
 - Early 2005: All BIRT code put under CVS
 - EclipseCon: 1.0M1 build available, looking for QA eyes
 - May, 2005: Release 1

BIRT Architecture



- Report Object Model defines XML design format
- Report Design Engine is API for the ROM
- Engine executes a ROM-defined design

Example BIRT Report



Employee Details

Run on 2/28/05
For internal use only

Employee ID: 2
 Name: Adrian M. Chandler
 Address: 403 West California Avenue
 City, State, Zip: San Francisco, CA 94333-0001
 Home Phone: (415) 231-8282
 Hire Date: 12/10/82

Date	JobTitle
12/10/88	Development Manager
1/15/92	Director of Development
12/10/84	Lead Programmer
12/10/82	Programmer
12/10/86	Senior Programmer

Date	Salary
12/10/82	\$35,000
12/10/83	\$37,000
12/10/84	\$40,000
12/10/85	\$43,000
12/10/86	\$50,000
12/10/88	\$56,000
12/10/90	\$62,000
1/15/92	\$80,000

ROM Overview

- ROM = Report Object Model
- ROM provides a rich report creation model

- Data Definition
 - Data Sources, Data Sets
- Visual Layout: Report Items
 - Grid, Text, Label, Data, Table, List, Image
- Parameters
- Styles
- Scripting
- Extensibility

Data Source Element

- Defines a connection to a data provider
- BIRT supports JDBC in Release 1
- Others added through extensions
- Example JDBC data source properties
 - Driver
 - URL
 - User Name
 - Password
- Just define it; BIRT takes care of opening, closing it
- Any number of data sources per report
 - Customer info from Oracle, Sales info from SQL-Server

Data Set Element

- Represents a specific data set
 - SQL query, stored procedure
 - Flat file, XML, CSV
 - EJB, POJO, SOAP
 - Defined using scripting
 - Whatever you want: just create an extension
- JDBC & scripted data sets appear in Release 1
- Query
- Input parameters, output parameters
- Produces a set of data rows
- Column information
- Any number of data sources & data sets
 - Master/detail, side-by-side, one-after-another

Data Transform

- Report data operations
 - Sort, sum, group, filter, etc.
- Based on:
 - Data set
 - Report structure
- Push to data source if possible
 - Sort, filter, etc.
- Perform in BIRT if necessary
 - Limited feature data source (XML, flat files)
 - References scripting
- Net: say what you want; BIRT gets it done

Table Element

- ROM Table = HTML table + data set iterator
- Parts of a table
 - Header, Footer
 - Detail
 - Groups: Header, Footer
- Data-related properties
 - Data set
 - Parameter bindings
 - Filters
 - Sorting
- Wide variety of aggregates (totals)

Label, Data & Image Elements

- Simple report items: displays single value
- Label
 - One piece of text
 - Complete i18n/l10n support
- Data
 - Data row column, expression or aggregate
- Image
 - URL or embedded image
- Wide variety of CSS-based formatting
- Conditional formatting, conditional visibility

Grid Element

- Grid Element = HTML table
- Provides quick & easy placement of report items
 - Left/center/right titles & headings
 - Side-by-side tables & charts
 - Label: value
- Provides full CSS formatting rules
 - Borders, colors
 - Padding, margins
 - Alignment

Text Element

- Text = text + HTML formatting + data values
 - Modern version of “mail merge”
 - Analogy to PHP, JSP
- Create titles, form letters, other blocks of text
- HTML formatting works for all output formats
- `<value-of>` tag provides
 - Insert any kind of data: expression, script, etc.
 - Provide formatting of value
- Additional formatting features
 - Keep with next, widow & orphan prevention
 - Line spacing, paragraph indent

Example Report Items



Image

Employee Details

Run on 2/28/05
For internal use only

Text

Grid

Employee ID: 2
Name: Adrian M. Chandler
Address: 403 West California Avenue
City, State, Zip: San Francisco, CA 94333-0001
Home Phone: (415) 231-8282
Hire Date: 12/10/82

Data
Items

Date	JobTitle
12/10/88	Development Manager
1/15/92	Director of Development
12/10/84	Lead Programmer
12/10/82	Programmer
12/10/86	Senior Programmer

Table

Date	Salary
12/10/82	\$35,000
12/10/83	\$37,000
12/10/84	\$40,000
12/10/85	\$43,000
12/10/86	\$50,000
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12/10/90	\$62,000
1/15/92	\$80,000

Table

Grid

List Element

- List = anything + data set iterator
- Example: form letter w/text, charts, tables
- List bands
 - Header, footer
 - Detail
 - Groups: header, footer
- List has no visual properties, it is purely an iterator
- Band can contain multiple items
 - Subreports
 - Conditional content

Chart Element

- Powerful charting capabilities
- Bar charts, pie charts, line charts, etc.
- Many customization items
- Multiple Y-axes
- Great color choices

Report Parameters

- Passes data from user into report
- Some uses
 - Custom filters
 - Custom formatting
- Properties
 - Name, type, prompt
 - Static or dynamic choice lists
- Use default BIRT JSP pages for UI, or create your own
- For custom pages
 - Craft pages by hand
 - Generate them using parameter metadata

Styles

- Separates layout from formatting
 - Ensure consistent formatting within a report
 - Ensure consistency across reports (after Release 1)
- Very similar to CSS styles
 - Most CSS properties and settings
 - Adds report-specific properties
- Cascade rules based on CSS
 - Container-to-content
 - Pre-defined selectors for most report items
 - Also, position-based: list & table bands, group levels

Scripting

- Real-world reports often require application-specific code
 - Computed columns
 - Value expressions
 - Conditional formatting
 - Report execution events
 - More!
- ROM uses JavaScript
- Expressions & scripts have same syntax
 - Excellent Java integration
- Add custom business logic to report
- Or, access logic in Java (for separation of logic & presentation)

Extensibility – Report Items

- Define your own report items
 - Examples: stop lights, gauges, web controls
- Define a new extended element
 - Properties, methods
- Custom property sheet, builder (optional)
- Custom run-time behavior (optional)
- Custom rendering
 - To image, or direct to HTML, PDF, etc.
- Full access to report data, styles, etc.
- Extension appears same as built-in item

Extensibility – Data Sources & Data Sets

- Open Data Access framework
- Examples: SOAP, EJB, web logs, CSV
- Define a driver for your custom data provider
- Design-time features
 - Specialized properties
 - Design time UI
- Runtime features
 - Data source (connection) implementation
 - Data set implementation

Call to Action!

- Download BIRT and walk through a tutorial
 - <http://www.eclipse.org/birt>
- Attend *BOF*
 - General discussion
 - Usability testing Thurs. 12-2
- Join us for an informal chat at the Poster Reception
 - Today 5:30 - 7:30, Atrium
- Help us in Usability Testing
 - Wed/Thu conference hours, Oak Room (sign-up sheet on message board)
- See us at the Actuate booth in the Exhibit Hall
- BIRT news group
- Contact Project Management Committee (PMC)

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Q & A

