

The people behind **BIRT™**

Product  
Datasheet

A photograph of four people (three men and one woman) sitting in a modern office setting, engaged in a discussion. They are seated in a circle, with a large glass wall in the background. The lighting is warm and orange-toned.

## Actuate Business Intelligence and Reporting Tools (BIRT)

Eclipse's BIRT project is a flexible, open source, and 100% pure Java reporting tool for building and publishing reports against data sources ranging from typical business relational databases, to XML data sources, to in-memory Java objects. BIRT is developed as a top-level project within the Eclipse Foundation and leverages the rich capabilities of the Eclipse platform and a very active open source community of users. Using BIRT, developers of all levels can incorporate powerful reporting into their Java, J2EE and Eclipse-based applications.

## Introduction

Actuate BIRT is a commercial offering based on open source BIRT and benefits from the rich capabilities of the Eclipse platform and a very active community of users. Actuate BIRT provides the convenience of a one-button install, and support for production deployments via the purchase of Actuate-backed indemnification, maintenance, professional services and support.

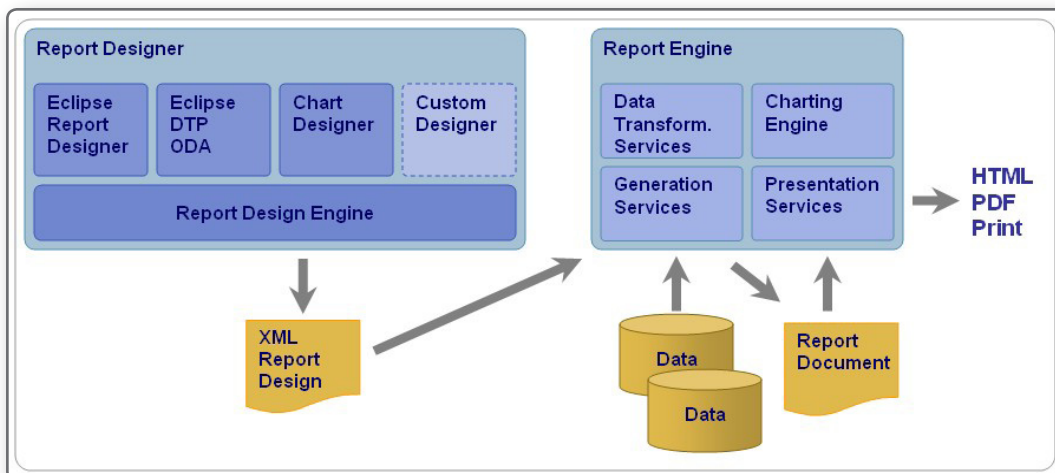
BIRT has two main components: a report designer based on Eclipse, and a runtime component that you can use to integrate BIRT reports into your application. BIRT also has a charting engine that lets you include charts in your BIRT reports or add standalone charting capabilities to Java applications. All BIRT components are entirely open source and available for download from <http://www.eclipse.com/birt>.

## Report Designer

Application development with BIRT starts with the Actuate BIRT Report Designers. These Eclipse-based interface offers an HTML page-oriented design metaphor (similar to Adobe Dreamweaver and other HTML editors) to build reports that are intuitive to create and integrate easily into web applications. Actuate BIRT provides two flavors of designers: Actuate BIRT Report Designer Professional which is a plug-in for the Eclipse IDE, and Actuate BIRT Report Designer which is a Rich Client Platform (RCP) version that offers a simplified interface without a need for the additional perspectives available in the standard Eclipse platform.

### Key components of the designers include:

- **Data Explorer** – Manages your data sources (connections) and data sets (queries).
- **Layout View** – WYSIWYG editor that provides drag and drop creation of the presentation portion of your report.
- **Report Item Palette** – A palette with a rich set of visual elements such as containers (tables, grids, and lists), labels and others.
- **Expression Builder** – Provides an interface to create calculated fields, format existing ones or perform other data-oriented calculations.
- **Styles** – Imports CSS style sheets, creates and manages styles for consistent formatting.
- **Property Editor** – Presents the most commonly used properties in a convenient format that makes editing quick and easy.



- **Report Preview** – Allows you to test your report at any time with real data.
- **Code Editor** – Edits custom business logic in Java or JavaScript to be executed during data access, report generation, or viewing.
- **Chart Editor** – Defines and formats charts and their accompanying legends and axes.
- **Outline** – Provides a compact overview of your entire report structure.
- **Cheat Sheets** – Offer step-by-step instruction on commonly performed tasks to shorten the learning curve.
- **Report Libraries** – Archives of commonly used report items are shared amongst report developers to speed report design.
- **Report Templates** – Common report types and layouts ease report design.
- **Paging and TOC** – Interactive viewer enables paging and table of contents to ease viewing of large reports.
- **Report Parameters** – Dynamic and cascading parameters tailor a report's output based on end user input.
- **XML Editor** – Advanced developers can directly edit the XML report design file.
- **Servers** – Defines connection profiles for one or more Actuate iServer instances. Deploying reports is easy from the designers.

### Designing Actuate BIRT Reports for the Enterprise

Designing Actuate BIRT reports for the enterprise requires:

- A deployment architecture that is scalable enough to serve 100% of the user population throughout the enterprise and beyond
- An enterprise wide common data model and access to disparate sources of information from multiple, disparate data sources with different data structures and terminology

Actuate iServer provides an unsurpassed reporting platform in terms of scalability for the enterprise. Actuate Information Objects address the ultimate challenge in the Business Intelligence market today for integrating data for access in real-time and simplifying access to this data.

Using the Servers view, the developer can easily deploy reports to an Actuate iServer instance. Actuate Information Objects can be treated as data sources in Actuate BIRT reports. Additionally, the designer products include JDBC drivers that connect to commercial RDBMS's such as Oracle and DB2 amongst others.

### Report Design File

The report design file, as expressed by the BIRT Report Object Model (ROM), is the key design "artifact" associated with a report. It contains the elements that make up a report, including visual design components such as a table or an image and other non-visual items such as report parameters, formatting styles and data sources.

The designer allows the user to define these elements, the design file stores the elements in an XML format adhering to the ROM, and the report engine interprets the elements to produce a report document as output.

### Report Engine and the BIRT Viewer

The BIRT report engine API allows you to integrate the run-time part of BIRT into your application as a set of POJOs (Plain Old Java Objects). The engine enables you to discover the parameters defined for a report and get their default values, incorporate included images or charts, retrieve needed data and transform it as necessary and, finally, render the report in HTML or PDF. Report execution also encompasses execution of any custom business logic associated with the report that is written in JavaScript or Java.

The report engine is typically deployed in existing Java applications. Application context can be passed in to the engine data access layer to support connection pooling and checking security credentials. The report engine is optimized to handle any size of data sets, from very small to very large, via a combination of in memory and disk caching. This ensures that report generation does not consume all available memory, even for large data sets.

Included with the BIRT distribution is a sample report viewer. It is used within the report designer for the preview operation and serves as sample code demonstrating the use of the Report Engine API (REAPI). The viewer presents a simple user interface in a Java application to prompt for report parameters prior to report execution via the BIRT report engine API.

### Integrating Actuate BIRT Reports in Java Applications

Forward thinking projects recognize that including a built-in report delivery portal requires more than simply designing a BIRT report and calling the appropriate reporting engine API function calls to generate it as demonstrated by the BIRT Viewer sample application. At the most basic level, the proper application infrastructure must exist from which to host and run BIRT. Once established, the do-it-yourself developer can indeed, feed a pre-built BIRT report design to the BIRT engine using API calls to generate a report. But from here, the work is not finished. The report design, and its resulting report files must be stored, and the virtual representation of the report must be integrated and presented to the application user. These are easy steps, which require simple knowledge of the file system structure, an understanding of the portal presentation layer and a little planning in order to successfully provide a report from the application.

Actuate iPortal is an out-of-the-box, J2EE, standards-based report delivery portal. iPortal provides an easy to use web interface from which to generate and manage report content created with Actuate BIRT Designer. iPortal is an integral member of the Collaborative Reporting Architecture which brings both open source technology and principles to reporting applications including participation, iterative development and modularity. Access to all Actuate content is offered with AJAX interactivity and is available through standard JSR-168 portlets. iPortal can embed directly into existing Java applications to provide reporting and printing capabilities, it can be deployed by itself as a workgroup reporting server, and it can be configured in conjunction with the Actuate iServer to support enterprise deployments.

Actuate iServer is an enterprise class reporting application platform that supports the needs of sharing information with all users in an enterprise. Actuate iPortal is built so that it can easily scale up to thousands of users or easily upgrade to Actuate iServer if future requirements dictate the need for an enterprise class reporting application platform. iPortal seamlessly handles access by multiple users, together with the inherent complexity of managing resource utilization and transient storage. Scalability enables more economical infrastructure.

### Chart Engine

The chart engine provides a rich business chart generation capability to be used standalone or invoked from the report engine. The chart engine supports creation of pie, bar, line, scatter, stock and meter charts, all of which can be rendered in the following graphic formats: 8-bit images, 24-bit images, SWT graphics (GC), SWING graphics (Graphics2D) and SVG. For reports, chart design is fully integrated into the report design experience.

### Design Engine API

The BIRT Design Engine API (DEAPI) enables the programmatic creation or modification of report designs and also provides for interrogation of report elements and semantic checking.

### Extensibility

BIRT is more than a reporting tool; it is an extensible reporting framework. As such, it provides a number of extension points to support application-specific and general-purpose modifications. These include:

- *The Open Data Access (ODA) framework, which enables the addition of new data sources to BIRT. It provides for both a runtime driver and a design time user interface.*
- *Custom scripting to incorporate complex and/or application specific business logic into report designs.*
- *APIs that permit the introduction of new visual components into reports and new attributes for existing components.*
- *Pluggable architecture for incorporating custom charts and new graphic formats into the charting engine.*

- *A flexible engine which provides the capability to create completely new report output formats such as SVG, RTF and many more.*

### Internationalization

BIRT is Unicode enabled, and supports creation of reports in any locale. The list of languages supported include German, Spanish, French, Italian, Japanese, Korean, Brazilian Portuguese, Traditional Chinese and Simplified Chinese, Czech, Hungarian, Polish and Russian, Danish, Dutch, Finnish, Greek, Norwegian, Portuguese, Swedish and Turkish, Arabic and Hebrew.

### Support and Services

Actuate BIRT provides an enterprise reporting platform that enables 100% adoption by employees of an organization. This improves operational effectiveness and efficiency at an affordable price. Technology by itself is not enough for deployment within mission-critical applications. Comprehensive support and services are crucial. Actuate BIRT is backed by world-class support and services from Actuate Corporation, the steward of the Eclipse BIRT project. Plan levels include Basic, Bronze, Silver, Gold, and Platinum.

In order to ensure that its customers are successful, the Actuate e.Services organization offers valuable consulting services. These are based on:

- *An in-depth knowledge and expertise of Actuate BIRT*
- *Best practices derived from the collective experience of over one thousand implementations and engagements*
- *Domain expertise with Business Intelligence and Reporting solutions that cut across functions and industries*
- *Reusable knowledge capital*

The Actuate BIRT Fast Start package enables customers who wish to utilize Actuate BIRT to quickly and effectively develop a pilot reporting application with targeted assistance from Actuate's e.Services organization.