



BIRT iHub 3.1

Technical Summary of New Features

Today's enterprises are tasked with creating smarter applications to deliver better business results. With traditional business intelligence tools, creating an analytic application can take weeks or months. BIRT iHub 3.1 changes that. The new REST API and template-based embedding of custom visualizations in BIRT iHub 3.1 allow for easier, faster integration of analytics in web and mobile applications. This meets enterprises' growing demand for embedded analytics – identified by analysts as a growing, \$3+ billion market.

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Introduction

The new features in BIRT iHub 3.1 allow development teams to:

- Simplify the process of creating and deploying data driven apps by easily embedding BIRT content in mobile and web applications using a new REST API. This enables businesses to deliver rich charts, dashboards and infographics to their mobile and desktop users.
- Incorporate data visualizations from third-party libraries of charts and graphs within BIRT outputs, boosting productivity by reducing manual coding from days to hours.

This document describes these and other new 3.1 capabilities in more detail:

BIRT iHub REST API

API implementations and usage have grown tremendously over the last decade, partly because of enhancements to integration standards such as REST which make it very easy to embed functionality into mobile and web applications. REST (which stands for Representational State Transfer) APIs are lightweight APIs that allow simple Create, Read, Update, and Delete (CRUD) operations using JSON responses over HTTP. With REST API, there is almost no barrier to entry and very little infrastructure costs. The REST API standard separates the data from the visualization, resulting in better code modularization and agility.

BIRT iHub 3.1 includes a new REST API for accessing BIRT iHub content.

Working with the REST API

The REST API provides access to iHub encyclopedia data, data in BIRT reports and data models, and report generation and management services. You can use the REST API to deliver BIRT content and data from BIRT iHub to any mobile or web application. Using the REST API, you can:

- Retrieve data from a BIRT document or BIRT Data Object for integration into your application
- Integrate rich BIRT visualizations into applications by using iHub's REST API with the existing iHub JavaScript API (JSAPI)
- Generate new visualization documents based on user interaction with your application
- Convert visualizations into Adobe PDF or Microsoft Excel for distribution
- Schedule the generation of new visualizations for later retrieval
- Upload files to and download files from an iHub
- Retrieve BIRT iHub Encyclopedia contents

Additionally, an administrator using REST API can:

- Create and modify users and user groups
- Control access to files and data by assigning user and group privileges

High Level Architecture

The REST API is a resource extension that gets installed with BIRT iHub. It uses universal resource identifiers to convey user requests to the iHub system. The REST API service is built into and deployed as part of BIRT iHub and can also be deployed as a dedicated service for highscale applications.

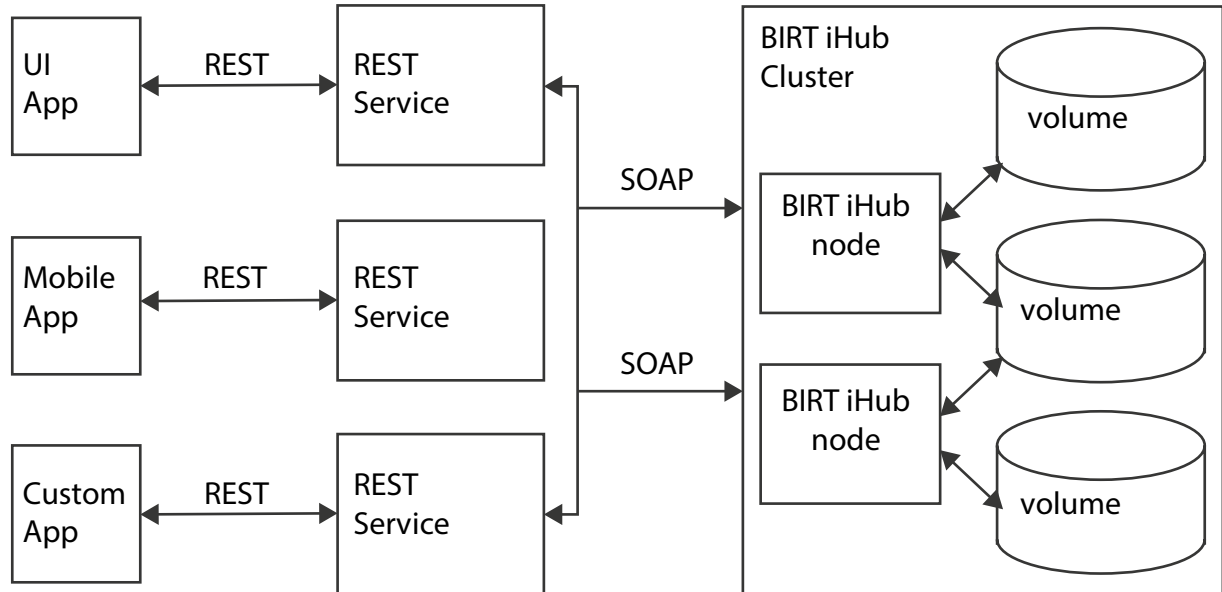


Figure 1: REST API Tiered Architecture

New API Sandbox and Documentation

The BIRT iHub 3.1 REST API documentation is delivered in an interactive format with a test sandbox and documentation technology from Swagger, which is a complete framework for describing, producing, consuming, and visualizing REST web services. Using the documentation, developers can understand and experiment with the new API without having to set up and install a BIRT iHub server.

Using the sandbox UI, users can enter the parameters and options for the API call of interest, and the sandbox returns the syntax of the REST API call (in the form of a URL), as well as the response body in the form of a JSON object. The following example shows this for a REST call to authenticate a user. As shown, the username (demo) and password (demo1234) can be entered as parameters and the response type can be chosen, then the sandbox returns a response to the authentication request.

login Show/Hide List Operations Expand Operations Raw

POST /login Returns an authid for an authenticated user

Implementation Notes
Authenticates a user name and password for a target volume with BIRT iHub. On success, returns an authentication identifier, AuthId. AuthId remains valid for 24 hours by default. An HTTP request does not encrypt the password field so always use an HTTPS request for /login. POST /login uses the standard header fields Locale and TargetVolume.
[curl example](#)
[Response details](#)

Response Class
Model: **Model Schema**

Response Content Type

Parameters

Parameter	Value	Description	Parameter Type	Data Type
username	<input type="text" value="demo"/>	Required. A valid iHub user name for the target volume.	form	string
password	<input type="text" value="Demo1234"/>	The password corresponding to the user name. Provide this parameter if the user has a password.	form	string

Response Messages

HTTP Status Code	Reason	Response Model
400		
400		

Figure 2: Example of a REST API Sandbox **Request** for Authenticating a User

Response Body

```
{
  "AuthId": "UP6itdQVikw8nd513Ck7jgo8A+ogNevm0g7QjCYRh4UShqk97ECDnzbNwZYK77bucKtThHpworWqsuMQTPZXR5Zam27DckdXTLxdDKfdJxxh6cYr75qMKUqgu+xCJ0m5BJCFkz51gJN6yIoLpEBtITcadqLn6IFfhr0+LRJNs8L3N0cyLCuGWfC+g64RaL00r fLDawu/6FBfsh87w0D30s+raaJrTribuJkrdXYq/FuY38CDn8YrgKX0rJOL25LKGLrkXSIwJLL/8FRxmrvU2wHcPrUAA9Z7vwZZ360bz9HP0eLiyrfPMbanHhSyAJbv1UHjnsxuxLP435j0INwKchgsb88510+dwu93VCMFKqKPPMJrIw==",
  "User": {
    "Id": "100100000100",
    "Name": "demo",
    "EmailAddress": "demo@example.com",
    "HomeFolder": "/Home/demo"
  }
}
```

Response Code

200

Response Headers

```
{
  "Date": "Thu, 22 Jan 2015 01:48:54 GMT",
  "Content-Encoding": "gzip",
  "X-Powered-By": "Express",
  "Vary": "Accept-Encoding",
  "Access-Control-Allow-Methods": "GET, POST, OPTIONS, DELETE, PUT",
  "Content-Type": "application/json; charset=utf-8",
  "Access-Control-Allow-Origin": "*",
  "Transfer-Encoding": "Identity",
  "Connection": "keep-alive",
  "Access-Control-Allow-Headers": "Content-Type, api_key"
}
```

Figure 3: Example of a REST API Sandbox **Response** for Authenticating a User. The sandbox authenticates the user and returns an authentication token for use within the session.

Sample Applications

In addition to the new REST API, BIRT iHub 3.1 includes two sample applications built using the REST and JavaScript APIs. The source code for these applications is on GitHub and helps developers understand how to integrate BIRT iHub into their applications. The applications are:

Gazetteer – An iOS hybrid application that explores population census data.

Aviatio – A web application designed for tablets and browsers that explores flight statistics.

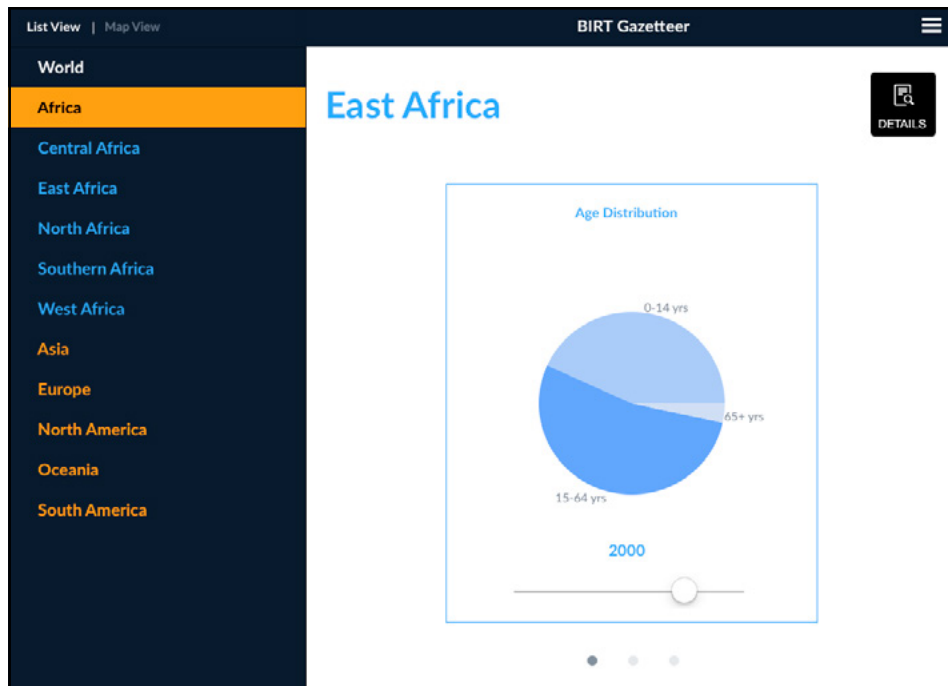


Figure 4: The Gazetteer Sample Application



Figure 5: The Aviatio Sample Application

BIRT: Custom Visualizations

Effective data visualizations for conveying information are the key to deriving valuable insights from data. BIRT iHub has many visualizations available, including charts, maps and gadgets. The new Custom Visualization functionality in BIRT iHub 3.1 takes this one step further by allowing developers to easily integrate additional third-party visualizations into BIRT content using external JavaScript libraries. With minimal coding, this allows the developer to easily add visualizations like charts, tables or gadgets into a BIRT application. This is accomplished by marshalling BIRT Data Objects for consumption by these visualizations and by providing BIRT iHub capabilities like Print and Export to various file formats like PDF or Microsoft PowerPoint for these visualizations. Two examples of visualizations from external libraries, used within BIRT, are shown below.

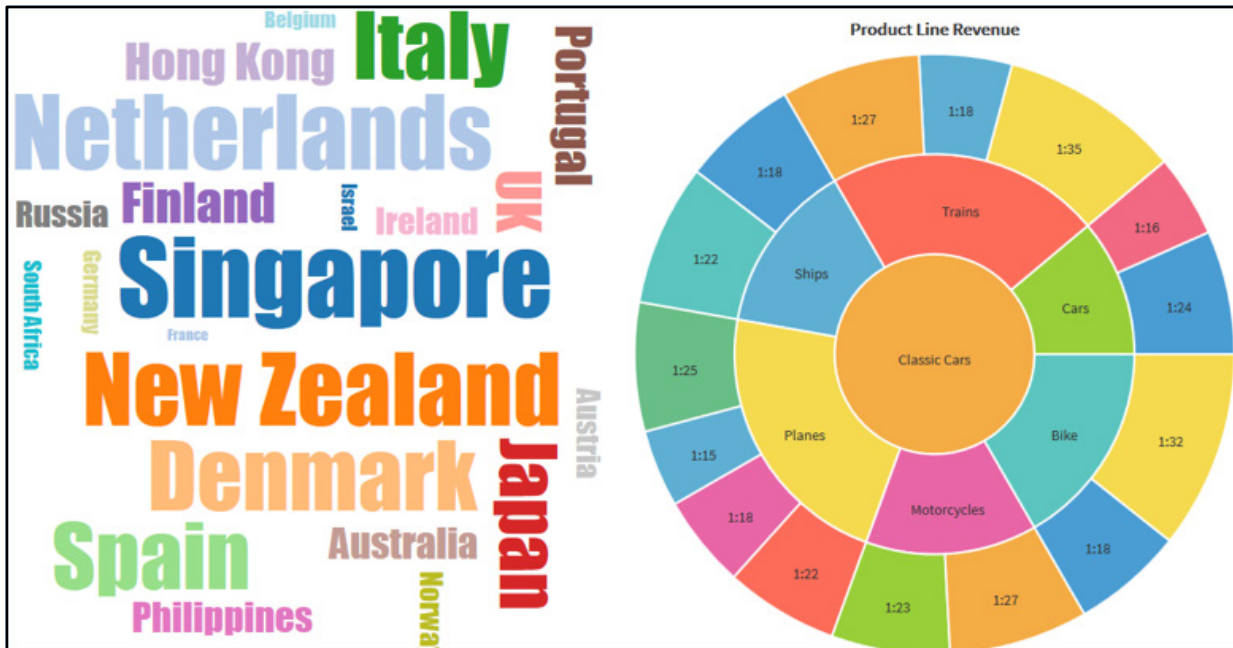


Figure 6: BIRT Report incorporating Jason Davies' Word Cloud using D3.js and Multi-Level Pie Chart using Fusion Charts library

With the 3.1 release, BIRT Designer Professional provides a new Report Item on the Palette called "Custom Visualization". The graphical builder for Custom Visualization provides the same interface used by other BIRT Report Items to select, group, sort and filter the data before binding it to the custom visualization properties. The user can build and test the external JavaScript visualization using the built-in IDE or by using JSFiddle, a popular online JavaScript IDE.

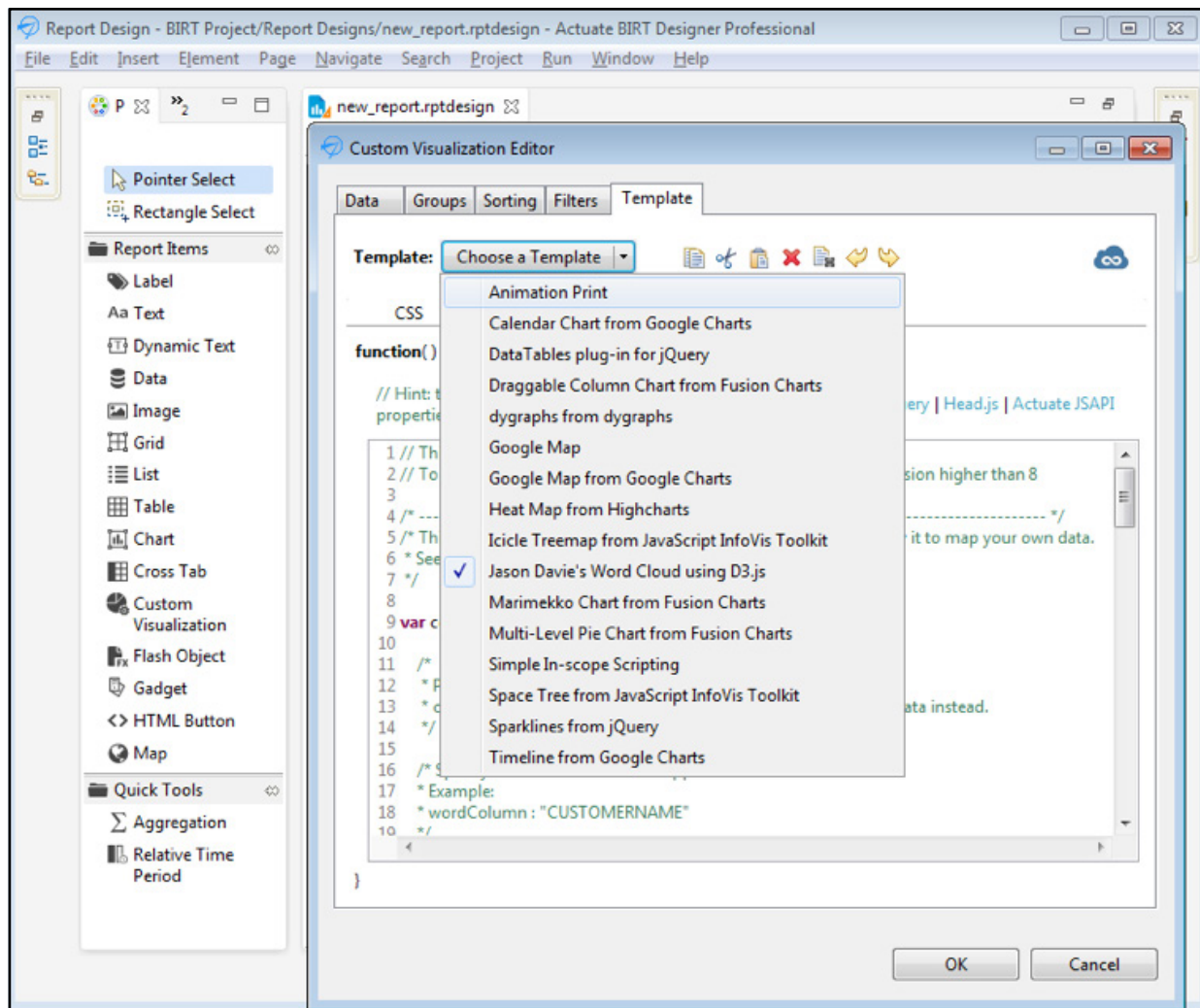


Figure 7: BIRT Designer Professional Palette Item Custom Visualization and the list of included sample templates

The Custom Visualization feature also provides an extensive list of sample templates for adding popular visualizations such as Google Map, Heatmap, and Word Cloud from various JavaScript libraries into a BIRT application. Rich and visually appealing visualizations can be easily added to a BIRT application from various JavaScript visualization libraries like D3.js, Google Maps, Google Charts, Fusion Charts, Highcharts, jQuery, JavaScript InfoVis Toolkit, Raphaël, and dygraphs using these sample templates.

BIRT: Enhanced PowerPoint Emitter

Business presentations can become more intuitive and easy to understand if they include visualizations that show data analysis. BIRT iHub's powerful emitters allow the user to export BIRT Reports to Microsoft PowerPoint, the most popular document format for presentations. With BIRT iHub 3.1, the new emitter allows the user to export a BIRT Report as an editable Microsoft PowerPoint presentation. This functionality improves the user's productivity and empowers the user to create intuitive and effective presentations. It allows users to jumpstart presentations with the content and layout from BIRT Reports, add new slides with the same look and feel as the rest of the presentation, or make changes to the existing slides by adding additional information. In the exported presentation, various report items like tables, text and paragraphs, and page layouts are converted to native PowerPoint components for ease of editing.

BIRT Dashboards: Tree View Selector

In BIRT iHub 3.1, a Tree View Data Selector gadget was added in BIRT Dashboards. This gadget allows hierarchical presentation of information like geographical data (e.g. Country, State, and City), time measurements (e.g. Year, Month, and Date) or other types of hierarchical information. This selector makes optimum use of screen space on a dashboard, leaving most of the screen space for the content. The Tree View selector allows the user to expand or collapse items to reveal or hide sub-items. The user is able to make multiple selections at various levels, clear them with one click, or search entries for their selection. Once the user is done selecting, the selections can filter the data and refresh all the linked visualizations on the dashboard.

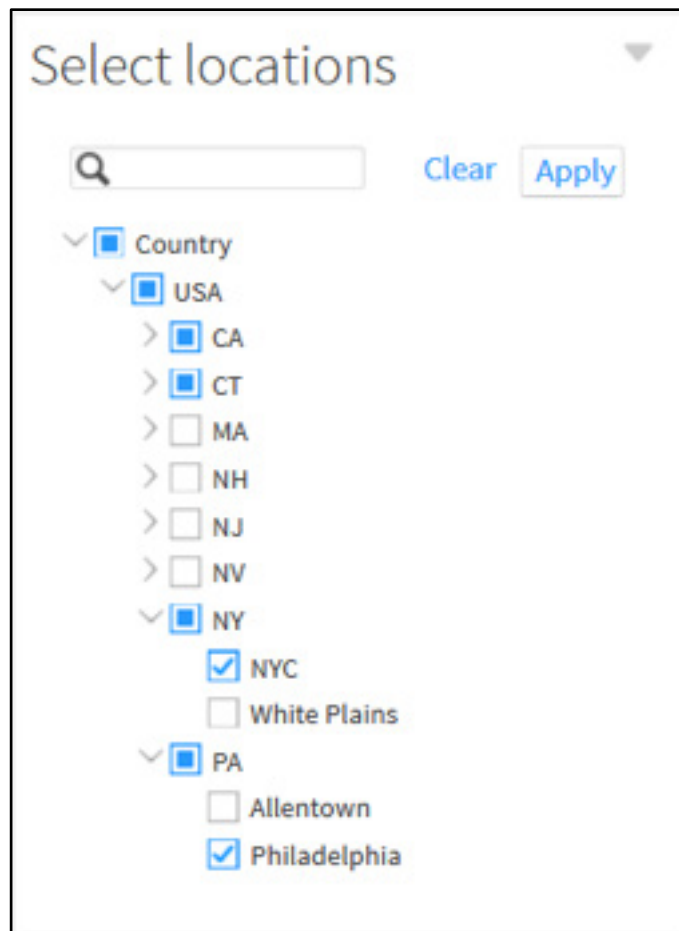


Figure 8: BIRT Dashboards Tree View Data Selector gadget for selecting locations

Supported Products

BIRT iHub 3.1 includes support for the latest browsers, operating systems and databases. See the Supported Products document for more information.

<http://developer.actuate.com/resources/supported-products>

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