Presented by **information** management

BANK TECHNOLOGY NEWS
btn

Sponsored by

ACTUATE.
The people behind **BIRT**™

Enhance End User Experience with BIRT

Enhancing the End User Experience with BIRT

Table of Contents

Authored by: William Laurent

Executive Summary

BIRT software from Actuate provides IT departments with a proven path to successfully achieving all business intelligence goals. With its robust scalability, functionality, and interoperability, BIRT provides a clear cut return on investment within months of initial implementation. Based on the world's leading IDE, the BIRT tool suite from Actuate is now the leading choice among technology executives for BI deployments. IT managers that read this Actuate e-book will learn about:

- The tremendous value of an open source BI platform
- The power and possibilities of richly visual BI applications
- A diverse range of business functionality offered by Actuate BIRT tools
- Ideas for implementing a BI architecture that features BIRT components

information management

ACTUATE. The people behind BIRT™

Introduction

The relentless demand for more effective business intelligence (BI) platforms shows no sign of abating. With the advance of Web 2.0, mobile technologies, and data visualization techniques, enterprise performance management systems and corresponding information applications have evolved and matured at a furious pace. Business users now expect data analysis to be a visually rich and highly interactive experience—one where they can mash up snapshots of analytical data from divergent enterprise applications and data stores. Cutting-edge BI architectural practices and highly visual data landscapes [1] have rendered many traditional dashboard paradigms and content delivery platforms obsolete for both developers and end users.

Business intelligence now requires an agile and fluid access to corporate information structures as well as a methodology for graphically representing the corresponding knowledge. Adoption of an open source integrated development environment or integrated design environment (IDE), such as Eclipse BIRT, provides organizations with a primary means for the realization of their business intelligence goals.

The Actuate Corporation has engineered a complete business intelligence and reporting tools (BIRT-based) commercial product line that adds feature-rich value to new or existing BI implementations. These products deliver improvements to the BIRT design and deployment environment, increasing the all around productivity, scalability, and end-user experience.

What Is Open Source Software?

If you are a savvy technology manager, you most likely have been an active participant in the ever-growing stampede toward open source software. Even the most cautiously moving business entities have realized that the advantages of openly sharing source code with the rest of the world far outweigh the perceived risks. With open source, the designers, developers, and distributors of source code can be any person, public/private corporation, government, or professional community worldwide that has a vested interest in more effectively enabling their business through the strategic use of software. The open source model is essentially one big decentralized democracy of software development, with a high value placed on the free exchange and accessibility of source code, ideas and techniques that will result in the creation of better electronic business solutions.

Why Open Source Software?

The last few years have seen a dramatic rise in the number of business intelligence applications that leverage open source components. The promise of a lower total cost of ownership, attributed to the absence of hefty licensing and maintenance/support fees, has been the primary consideration for organizations weighing investments in open source BI programs. Building a corporate knowledge factory around toolsets that are largely free of licensing and usage fees possesses

enormous allure for present day IT departments, which must increasingly deliver more value with fewer resources.

With open source the old barriers of entry to BI are being eliminated, thanks to the standardization and seamless integration of what were once disparate protocols, languages and hardware/infrastructure constraints. As [open source] standardization has emerged and performance gaps have stabilized, the ease of use, creation, and deployment of BI applications has increased in tandem. Dashboard Insight [2]

Assembling a potent and scalable business intelligence infrastructure can be extremely expensive. A distributed enterprise-wide reporting architecture (one that goes across organizational boundaries and lines of business), can require millions of dollars of investment. Open source BI, with its substantially diminished cost of entry, offers an exciting new option for IT managers, who have for years sought a less-expensive delivery model for their business intelligence supply chain. Development teams can operate, cooperate, and collaborate in smaller agile groups, better leveraging each other's technical acumen due to the availability and transparency of source code and its surrounding body of knowledge. In short, increasing your organization's exposure to open source BI frameworks and tools will help you future-proof your BI platform.

Companies have gained a high level of comfort with open source, as they have learned how to mitigate its accompanying risks. This has resulted in pervasive adoption and acceptance of open source for mission-critical BI applications, including applications that must function 24 hours a day in high volume transactional environments. Thanks to BIRT, it is easier than ever to design, build, and deploy governable and scalable BI reporting and performance management applications.

The Eclipse IDE Framework

IBM brought the Eclipse Project to life in 2001, and it immediately garnered the support of a handful of other leading software companies. In 2004, the not–for-profit Eclipse Foundation was forged to be the de-facto overseer of the Eclipse community and to ensure the growth, veracity, and acceptance of the Eclipse ecosystem. In just a few short years, the community has grown into a very large conglomerate of developers and organizations that passionately support vendor-neutral development of open source products. The Eclipse Project has been successful in motivating software vendors to utilize this technology in their commercial software releases and consulting practices; furthermore, they have been a catalyst in the industry's acceptance of the Java IDE, which now boasts a profusion of modeling tools, reporting objects, mobile access frameworks, custom fabricated languages, and server-side architectures. Thanks in large to the efforts of Actuate' developers and engineers, since its time of incorporation, Eclipse has grown into the world's leading IDE. The Eclipse IDE smartly provides the foundation for the

groundbreaking suite of BIRT software, known also as *Business Intelligence and Reporting Tools.*

Actuate's Value Mission -The Emergence of BIRT

As we head into the second decade of the 20th century, the expectation that strategic and tactical threads of business intelligence—as well as complementary performance management techniques—will be a highly interactive and visually sophisticated experience is becoming fully entrenched in the hearts and minds of all information consumers. In the same way that smart organizations have developed a stronger commitment to open source for critical BI systems, major software vendors have scrambled to shore up their product lines to include open source components.

Actuate's steadfast devotion to improving analytical reporting and BI—especially though advances in their data visualization and open source technologies—has been instrumental to the success of BIRT. The primary goal was to create an open source software framework that provided graphically rich visualizations and BI functionality for internet/web-based applications—in particular, those created and deployed using Java/J2EE. The developers and engineers at Actuate have worked in close collaboration with their Eclipse Foundation partners to achieve this vision: Actuate, unquestionably the driving force behind BIRT, authored the source code for the BIRT project and has continued to support and share code.

Initially, the BIRT Project created an open source paradigm that relied on a web design *metaphor* to create content for the most demanding and diverse end users of analytic applications. From the beginning, BIRT lent itself to rich data visualization and data manipulation functionality which far outstripped what was currently available in the marketplace. In its current state, BIRT most notoriously provides a graphical design environment that is encapsulated inside the Eclipse IDE. In addition to its highly touted designer components, BIRT includes a robust set of application program interfaces (APIs) and methods for achieving gapless integration with Java-capable BI applications. Also included at BIRT's core are various methods/functions which enable applications architects to achieve a more complete level of reuse and deployment.

The Essence of BIRT: Unrivaled Business Intelligence

The science of business intelligence has gotten more sophisticated with the emergence of web services, cloud computing, software as a service (SaaS), and other trends such as green computing and strategic outsourcing. What is more, advances in Web 2.0 technologies have made BI content more visually appealing, increasingly mobile, easier to interact with, and more intuitive to develop and deploy. As a result, enterprises have an unprecedented number of options for

report development and deployment. For those IT departments intelligent enough to know how to leverage open source development and deployment paradigms, the chances of success for optimizing and aligning their corporate intelligence platforms with the business in general have been increased by orders of magnitude.

With the BIRT firmament that Actuate co–founded and continues to lead, the promise of "embedded BI" moves closer to becoming reality. Business can now deploy corporate knowledge applications and dashboards that become BI portals, where elaborate data visualization comingles with and disseminates complex business logic. These solutions provide premium bleeding-edge data presentation and manipulation abilities that far exceed traditional online analytical processing, vanilla text or static lists.

With such rich functional palettes and no barriers to entry, BIRT solutions outshine all others for overhauling or enhancing enterprise reporting and corporate information factories. Simply put, there is no competition for a well-executed BIRT report. Some important advantages of choosing BIRT include:

- The ability to create and distribute rich visual content, which will remain secure in all stages of a report lifecycle—from design and development to deployment and maintenance.
- The use of animation, such as Flash technology and Java widgets, to provide users with interactive

and intuitive visualization for multi-layered mashboards, where users can drag/drop gauges, widgets, and other graphical gizmos to create functional dashboards in minutes.
- Ad-hoc and interactive reports which can fully integrate with and reflect complex business processes.
- Lowered application development, maintenance, and support costs due to the ability to harness the brainpower of an already substantial and growing community of Eclipse developers and engineers.
- Standards-based development and deployment conventions that results in the rapid development of BI applications and content.
- BIRT's spirit of iterative and collaborative development, which trickles down to users to ensure that business audiences have heightened usability and transparency into company processes and data. Continuously evolving user requirements are also better handled because developers and consumers can interact and collaborate more closely through common interfaces and standardized semantics.

For BIRT-based architectures, there is wealth of supporting commercial products available. These application-ready tools improve the interactive experience of BIRT, making it easier to deploy and truly capture the most complex of business logic. Organizations that want to present structured data as Rich Information Applications (RIAs) using BIRT as a foundation, can now get complex and deep analytic visualization, which is customizable by business users

who have little to no technical or programming background.

The goal of reporting in the 21st century—and RIAs in general—is to expediently present business information in the most intuitive and digestible format possible. For BI audiences, robust data visualization functionality will be a deciding factor in whether or not a report or report suite is deemed successful and adopted into an organization's cannon of business records. Recent research has demonstrated time and again the overwhelming advantages of graphical reports in clearly conveying critical performance-related concepts when compared with static columnar reports.

For example, reporting that a department has met 83% of its monthly sales target on the 15th of the month is less effective than showing a visual representation of a radial gauge with the arrow pointing at four-fifths of the way to 100% of the monthly target or amount.[3] Because of the proven effectiveness of rich visual reporting, Gartner Group has gone as far as to predict that *by 2012, one-third of analytic applications applied to business processes will be delivered through coarse-grained application mashups. [4]*

Actuate content can be blended with content from other sources into an integrated, seamless web dashboard.

The BIRT Toolset

BIRT's far-reaching Java support culminates in a BI platform with holistic connectivity and data integration. By way of JavaScript, it is possible to embed any order of business logic into BIRT reports and supplement it with complex conditional filtering and formatting. Sophisticated and customized business logic, which for years may have been buried in silos of application functionality, can be wrapped in your enterprise service-oriented architecture (SOA) and delivered to a user's desktop in real time.

A plethora of features are available in BIRT to expand the possibilities of any platform and enhance the user experience in an infinite number of ways:

- Source control and version management is simple to implement in BIRT. Eclipse CVS supports all source management objectives, including the ability to compare, and then itemize detailed difference between two unrelated reports, or track the changes that may occur in subsequent versions. Report meta data can be saved in an XML file for better application governance.
- Debugging is a cinch because developers can use the debugging features of Eclipse Java Development Tools.
- BIRT styles are based on CSS styles, allowing you to set a style in one place in a report and have it affect a section, a single item, or the entire report.
- BIRT can connect to and source data from relational databases (via JDBC), XML files, and web services. BIRT uses the Open Data Access (ODA) framework to accomplish a high degree of data extraction. A single report can include data from any number of sources on a mix and match or personalized basis.
- BIRT can provide users with a number of output formats, including HTML, Microsoft DOC, PPT and XLS, Adobe PDF, Postscript, and many more.
- BIRT can implement complicated performance management metrics, providing a limitless number of dashboard widgets and visual indicators and gauges. Advanced dashboard functional concepts—both proactive and reactive—can be handled elegantly in a plug-and-play fashion.
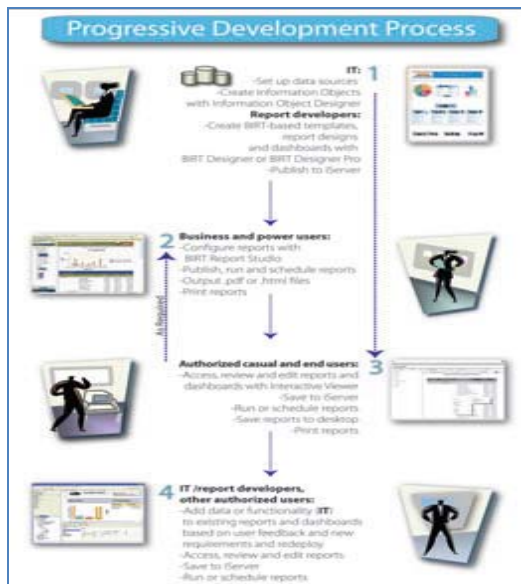
BIRT tools satisfy the functional and technical needs of all operational business and IT personnel with a stake in business intelligence: developers, data analysts, application architects, CIOs, and beyond. Building on the framework of BIRT tools, Actuate greatly extends the scope and functionality BIRT with an all-encompassing line of products which support rich information applications development.

BIRT Products from Actuate – Extending the BIRT Framework and Enhancing the User Experience

Actuate's value-added BIRT products improve and invigorate the Eclipse BIRT framework, guaranteeing ongoing systems' scalability which will negate the need to drastically redesign or overhaul a prevailing architecture, now or in the future. In addition, the Actuate BIRT upgrade path is clear of hidden costs, unnecessary overhead, and vendor lock-in because all products are easily interchangeable and usable with the latest in BIRT technology, as well as SOAs and most legacy applications and data sources. As companies move to integrate the disparate code bases and islands of BI they have implemented through the years, an open Actuate BIRT approach offers the highest degree of independence, and consequently, the most value.

Reliance on one vendor limits the ability to use best-of-breed capabilities and weakens the buyer's negotiating position. Businesses should not trust their megavendor to

solve all their integration problems. *[5]* With an open source BIRT tools, rapid application development (RAD) and Joint Application Development (JAD) can happen in a user friendly environment that is as secure as it is collaborative.

*The Progressive Design Architecture gives users the flexibility they need to evolve the content they have to the content they want in a skills based environment that encourages interactivity and modification, iterative development and re-use across the application. **Click here or on thumbnail to view PDF***

The most visible of Actuate's BIRT portfolio includes designers and viewers, which enhance the end user experience with the latest breakthroughs in data visualization, information sourcing and integration, and SOA interoperability. Nevertheless, there are several other vital and related product offerings rounding out the Actuate BIRT universe which should be of interest to all users of open source BI.

Actuate combines many components to create an environment where robust development and deployment is feasible *out of the box* with a set of modular and extensible tools for visual data analysis and report creation with inherent ease of use. Integral parts of the Actuate BIRT toolset include:

- The **BIRT Designers**, for rapid creation of complex reports, which utilize all of the functionality of Java, JavaScript and J2EE components; they are the flagship products of BIRT. These easy-to-use visual report development tools offer programmatic control while leveraging a component-based library to ensure reuse of objects and code. Everything— from data sourcing to general layout—can be controlled completely through a developer's or designer's code and program logic. Through the use of wizards and templates, abstract business logic and difficult display parameters can be implemented by developers of all skill levels. Users will also gain improved insight and access to unstructured and nontraditional data silos that
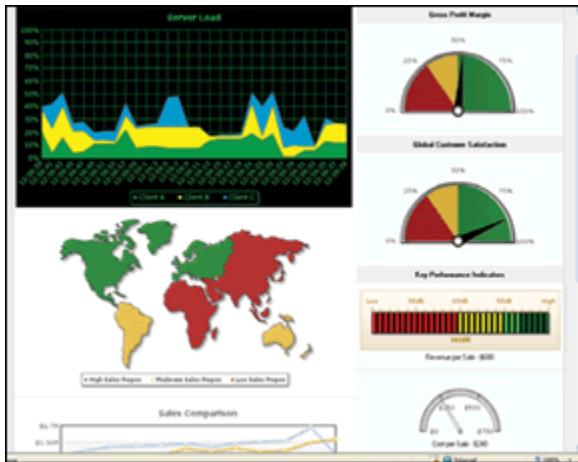
have historically proven difficult to connect with and parse.

- The web-based **BIRT Interactive Viewer,** which can be used by designers, developers, and business users to preview, customize, and modify content during all phases of the BI development cycle. The viewer supports the fact that BI is now about "personalization of analysis" and giving users more control and ownership of data analysis and data shaping.

- The **BIRT Deployment Kit** lets team members collaboratively review and share all varieties of BIRT content in a common environment. A collection of Java connectivity classes and APIs makes it possible to achieve complex deployments and programmatic integration with existing Java-centric applications and services. Supplementing the Deployment Kit's interoperability aspects are a large number of administrative features which facilitate a full range of storage and security functionality. The Deployment Kit also provides a specialized portal interface where end users can create intricate reports using BIRT Studio and then modify them with the BIRT Interactive Viewer.

These BIRT tools let users create the most sophisticated web-enabled reports and quality management dashboards imaginable. BIRT dashboards can process

content that arrives in any format and embed/leverage custom data sources, web services, and interactive data visualization services such as BIRT Flash Objects to create the most complex and highly personalized RIAs. And of course, these dashboards allow for secure, simple, and compelling data analysis that is browser-based for the most casual of operations staff to seasoned data analysts such as actuaries.

Very complex ad-hoc data analysis and tweaking is possible via **BIRT Studio**, where business power users can create their reports from templates and quickly release them into the community of corporate intelligence consumers, after which additional collaboration and customization is possible. Business users are further aided by reusable templates—some available *out-of-the-box* and others created by developers—which help them define the layout, structure, functionality, and look and feel of content.
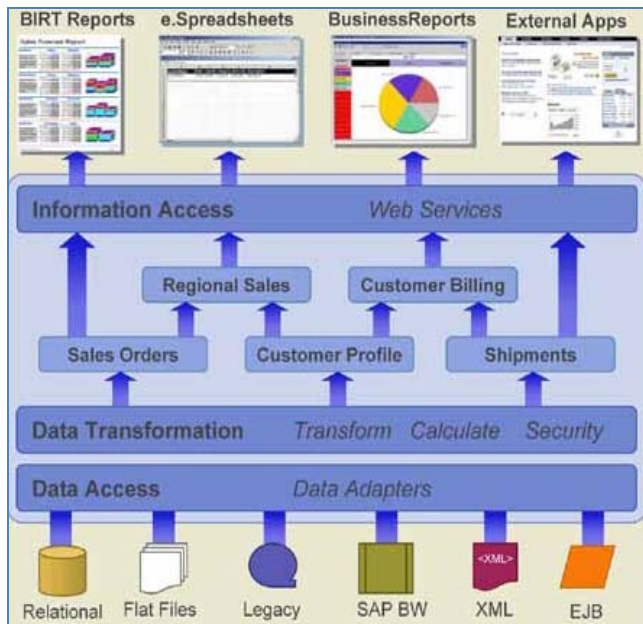
BIRT content is created and viewed in a state-of-the-art environment that is as user friendly as it is functionally robust.

BIRT Spreadsheet empowers users with server-driven reporting that exploits all of Microsoft Excel's native functions. Users can embed spreadsheets in existing reports, dashboards, or workflow applications. When coupled with BIRT iServer, world-class deployments are possible with rich scheduling, server load balancing, and process control features.

BIRT Information Objects provides a locus of control that centralizes the management of data found in (and outside) of BIRT-based content to gain better enterprise-

wide transparency into organizations data heritages and business rules. Highly available metadata—from the lowest transactional levels to higher aggregates—results in governance across organizational boundaries.

BIRT Performance Scorecard helps organizations drive strategy at all levels and ensure better operational accountability and decision making no matter what quality management framework (i.e. Six Sigma, Malcolm Baldrige, COBIT, COSO) is used by the organization's strategic thinkers. Measuring and tracking key performance indicators (KPIs) across business segments and organizational units requires a dashboard solution that can source and display knowledge from a holistic universe of corporate data, and at the same time is adaptable to user's own purview and personalized specifications of organizational performance. Actuate's scorecarding solutions deliver on both accounts.

Data is accessed through BIRT Information Objects, Actuate's metadata and data integration layer, shielding business users from the complexities of data-source schema. **Click here or on thumbnail to view PDF**

Benefits of Actuate BIRT—Success Stories

For developers, the progressive nature of Actuate BIRT provides tremendous extensibility and the fastest time to market, but not at the expense of functionality and interoperability like many other BI frameworks or tool sets

currently on the market. For cost-conscious IT departments, Actuate's BIRT products offer an entry point to the world of richly visual BI reporting, seamlessly complementing the BIRT framework while offering a plenitude of new functionality on a stable and secure platform. And, even the most demanding and dynamic of report users will be satisfied with the breadth and depth of data visualization, customization, and interactivity that Actuate's products deliver.

There are many high-profile case studies that showcase the beneficial deployments of BIRT technology and the value-added complement of Actuate products. For example, Actuate is popular in the financial sector because of its ability to create and distribute dashboards and reports faster than ever before, in a cost-effective manner.

Case Study: Banking on Actuate BIRT

A large international bank based in Asia found implementing BIRT to be a breeze. For years they had faced the daunting tasks of integrating their reporting environment into their global architecture, and at the same time living up to service-level agreements (SLA) for reports that were becoming more and more onerous. Actuate BIRT was able to free the bank from third-party vendor dependency, while satisfying both integration and SLA constraints. BIRT offered these additional benefits:

- Provided more users with the information they needed, in the format they wanted

- Provided multi-deliverables from single entity/tool suite.
- Helped the bank keep up with changing regulatory requirements
- Automated the entire regulatory reporting process
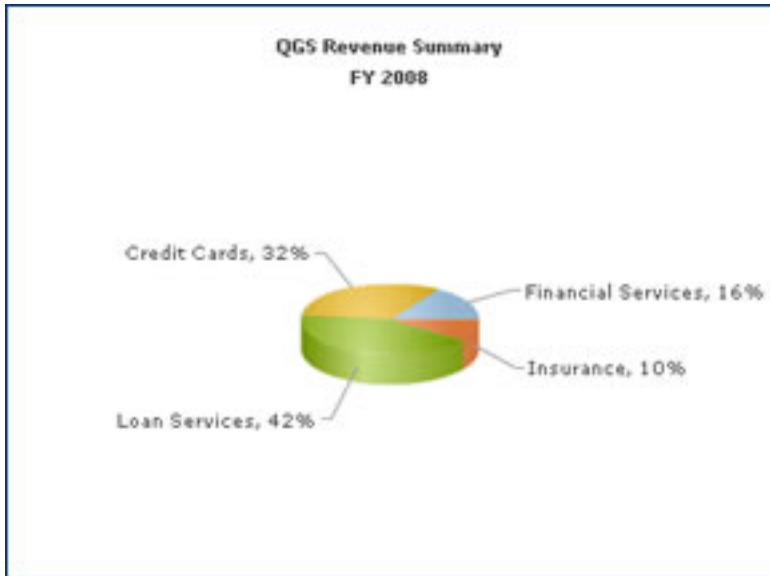- Delivered results that can easily be verified by managers and auditors

As a result, the bank can meet its regulatory reporting mandates within a framework that is faster, more flexible, and more transparent than ever before, providing an unprecedented ease of use and high performance to a large user community. A centralized delivery platform enabled by BIRT, gave the bank the ability to support a wide variety of hardware and network infrastructures, creating a future-proof, flexible architecture that will evolve and mature around an open source paradigm.

Case Study: A BIRT Future

A vendor of fleet management software packages provides the marine and offshore industries with modular, integrated solutions to manage operational expenses. Past investments in various BI tools did not achieve the desired ROI. When its customers began asking for better reporting functionality, the company looked at solutions that would be able to deliver to users a rich information application experience, but not cost the company too much money.

The company chose Actuate BIRT technology because of its proven inherent cost savings, flexible BI architecture, and secure delivery platform. At first it leveraged parts of the functional palate of BIRT to provide an initial round of custom on-demand reporting. Principals were so impressed with how efficiently users could slice, dice and share data in a meaningful fashion that they chose to integrate more open source BIRT units into the mix. They had looked at all the major open source-based commercial products before choosing Actuate (BIRT Designer Professional and BIRT Information Objects.) Deciding factors in choosing Actuate BIRT included its clear BI development roadmap. Both current and future needs could be satisfied via the scalable Actuate BIRT toolset.

The company wanted highly visual content delivered to users so that business trends could be understood more quickly and clearly, resulting in more effective decision making at all levels. An entirely customizable platform is now in place that handles all complex reporting tasks for their clients. Because of the smart adoption of Actuate BIRT tools, a future-proof reporting environment was assured for the CIO, while their end clients enjoyed rich visual portrayals corporate performance.

QGS Revenue Summary
FY 2008

Credit Cards, 32%
Financial Services, 16%
Insurance, 10%
Loan Services, 42%

*A variety of data visualizations—more than 200— are available to designers creating BIRT reports. Charting is no longer limited to simple graphs, bar and pie charts; BIRT products now ship with multiple BIRT Flash Objects, which make dashboard applications come alive. These objects can be easily incorporated into new or existing BIRT content and applications. (**Click on the thumbnail to view the interactive animation**.)*

Case Study: Complex Actuate BIRT Reporting and Analytics

One of the largest health insurance companies in the world had a division in need of a major overhaul, as it was outsourcing more than half of its reports to a company that was charging an exorbitant price for their business intelligence content. In addition, service was slow and regularly produced bottlenecks that delayed claims processing—claims that could top more than 100 million USD per year. The company's distribution system used antiquated processes that were housed on a mainframe computer. The reports provided to end users and owners were not eye catching; they did not lend themselves to serious analytics or compelling analysis.

BIRT reports enabled the company to replace its entire reporting support infrastructure and eliminate its costly outsourcing agreements. BIRT reports are now significantly improving the appearance and usability of the content delivered to its large customer base. This has resulted in increased competitive advantage for the organization, as operational and corresponding technology costs have been slashed.

The three key drivers that resulted in the selection of Actuate BIRT products, including BIRT Designer, BIRT Studio, and BIRT Information Objects were:

- Scalability to a very large user base
- Cost of ongoing report maintenance

- Visually dazzling content that exceeds expectations on reporting Service Level Agreements

Hundreds of existing mainframe reports will be replaced by Actuate BIRT reports when this project is complete, delivering interactive content to both intranet and extranet customers and end users.
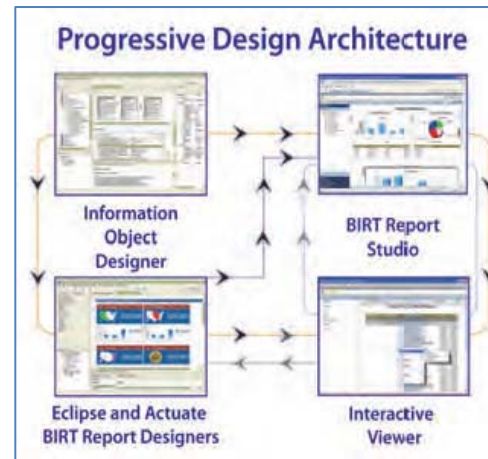
Actuate can better allow BIRT to do what it does best, offering companies the ability to create complex dynamic visualizations from disparate data sources, with better data security and flexible permissions for various user roles, and a visual toolkit to glean real intelligence from that which is often hidden behind numbers. Today's marketplace moves at the speed of light—BIRT's scalable and extensible reporting framework assures that enterprises have the business intelligence to stay ahead of the curve.

Best of Class BIRT—Why Actuate?

Since its inception, Actuate's BIRT value proposition has been to create business intelligence applications which are extraordinarily intuitive and effortlessly lend themselves to the creation of graphically compelling corporate intelligence dashboards and reports—from highly summarized or aggregated data views to narrowly focused cubes of transactional data. With a new generation of interactive web content viewing enabled by BIRT, users can finally realize a unified and integrated

business intelligence reporting platform. Through Actuate's API integration with other Java applications and BIRT interfaces, the ability to leverage highly disparate data sources is simplified, no matter how it is distributed and siloed.

With its full spectrum of BIRT-based products, Actuate breaks down the barriers to best-of-class business intelligence, providing all stripes of users—inside and outside the firewall—with a new generation of BI tools and possibilities. Business organizations everywhere continue to embrace an information application standard that revolves around Actuate and BIRT in growing numbers. Comparatively speaking, no other vendor comes close to offering the same level of commitment to open source

BI. *Actuate's Progressive Design Architecture enables users of any skill level to participate in business reporting.*

To better understand Actuate's involvement with BIRT, look no farther than the *BIRT-Exchange.com*, staffed by Actuate and BIRT experts. The BIRT-Exchange is a vast

and prolific community of BIRT developers and users; chock full of technical discussions, white papers, case studies, and detailed product information. It has quickly materialized into the most expansive location for BIRT knowledge and continues to increase the visibility and future success of BIRT. In fact, growing numbers of large technology providers such as IBM and CISCO are establishing themselves as part of the BIRT Eclipse ecosystem and incorporating BIRT into their product lines.

Just as BIRT-enabled technology has driven a new paradigm of dashboards and complex mashboards, current BIRT tools are now positioned to bring forth a new generation of web-enabled knowledge canvasses. These intelligent canvasses will freely blend functionality and data from numerous applications and services, lending a new round of innovation to business intelligence. More than ever, BI is speeding the demise of one-dimensional corporate reporting frameworks.

Actuate technology powers interactive solutions that improve corporate performance, increase efficiency and enable sustainable enterprises across all industries and business segments. With Actuate BIRT, users gain a progressive, collaborative reporting environment that allows developers, report writers and end users to create and use applications rich in interactivity and depth——the best possible infrastructure in which to build and deploy Rich Information Applications without Limits.™

References

[1]Data Guru Malcolm Chisholm (*B-Eye Network, Information Management, etc.*) describes the *data landscape* as the "visualization of knowledge of the location and characteristics of physical data managed by an enterprise".

[2] Dashboard Insight - *Open Source Business Intelligence* August 10, 2009

[3] Lyndsay Wise – *Data Visualization Market Landscape Report* Dashboard Insight, Sept 2009

[4,5] Gartner Group –*Business Intelligence and Performance Management*, December 18, 2008

About the Author:
William Laurent is a renowned industry expert in technology strategy and governance. He currently resides in New York City and Tokyo, Japan where he consults, lectures, and teaches. Please contact him at wlaurent@williamlaurent.com