**Business Objects and Microsoft Interoperability**

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Applies To: Microsoft® SQL Server™ 2005, Microsoft SharePoint, Microsoft Office and BusinessObjects XI Release 2, Crystal Reports XI and Crystal Vision.

**Summary:** This document discusses how customers using Microsoft and Business Objects technologies can maximize the interoperability from their existing investments.
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Introduction

Companies are constantly seeking ways to differentiate themselves from their competitors. Business intelligence (BI) applications give companies an edge by allowing them to take advantage of two of their strategic assets, their data and their employees. Unlike other competitive advantages that can be recreated by competitors, a company’s data and its employees are resources that are truly unique to the company. Employees armed with actionable data, provided by BI applications, make better decisions for the business. Improving organizations by providing business insight to all employees leads to better, faster, more relevant decisions.

Delivering data to employees has never been more critical. Global competition makes execution critical to the livelihood of a business. Managers need actionable data, from trusted sources, in order to quickly make tactical decisions. Executives need analytical reports and key performance metrics delivered to them at a glance, via dashboards and scorecards. Workers need dynamic and interactive reporting in order to execute their daily operational duties. The need for enterprise business intelligence solutions and getting the right information into the hands of the right people at the right time has never been more apparent.

A key challenge for an enterprise is the widespread use of information technology generating tremendous amounts of data. This data contains information that is invaluable to the organization’s decision makers.

The issue for most organizations is that the data is inaccessible to all but the IT department. While IT can run queries and produce reports at the request of business users, a self-service approach to information provides the greatest benefits. With direct, easy access to information, users can find answers to all the questions that are raised by their activities. Armed with precise, up-to-the-minute information, users can develop effective responses that help their organization attain its goals. BI is the key to leveraging this wealth of data that accumulates in an enterprise.

With BI, non-technical users can pinpoint what drives their business activity. They can help reduce costs, increase revenues, and improve customer satisfaction. While many of these benefits are clearly quantifiable, some of the more intangible ones, such as improved communication throughout the enterprise, improved job satisfaction of empowered users, or sharing of intellectual capital, can give your business the greatest edge over its competitors.

Choosing the Right BI Technology
Choosing the right technologies to deliver enterprise business intelligence solutions is a complicated task. There are many variables that will affect the implementation of such a solution. The decision will involve identifying business challenges, defining user groups and analysis of existing investments and technology. Initially we must answer the following questions:

What type of data needs to be analyzed and where does it come from?
Who will be doing the analysis and how do they need to receive the results?

Identifying who will be using the data and what type of decisions they will be making with that data is critical to implementing a successful reporting and analytic solution.
Defining the User Communities
It is critical to identify your audience in order to ensure the best return-on-investment (ROI), productivity gains, and overall user adoption. A good business intelligence solution will meet the reporting and analytical needs of a wide variety of users. Users generally fall into one of three groups (or a combination of groups): Strategic decision makers, Tactical decision makers, and Operational decision makers.

**Strategic Users**
These users are typically upper management and executives who are making long-term decision about the business. They often have complex reports and analysis prepared for them by technical analysts. The analysis and reporting that strategic decision makers require often leads to additional requests for information. Their decisions affect multiple departments and disciplines. The questions that these users might try to answer are: Should we introduce a new product into the market? Where should we invest in our business? Should we focus on Profit Margin or Market Share over the next 3 years?

**Tactical Users**
These users are typically management and supervisors who are making daily decisions on how the business should be run. Tactical users often require real-time or near real-time reporting that allows them to quickly react and steer the business’s day-to-day operations. These users are often more technically advanced and will require ad hoc reporting capabilities. Their decisions typically affect a department or a group of employees. The questions that these users might try to answer are: What inventory needs to be restocked to meet monthly operational requirements? Do I need to ask employees to work overtime and why? What type of departmental resource allocation is necessary?

**Operational Users**
Operational users require information to execute daily tasks. These users are often not in decision making roles and they will typically require static reporting. The questions that these users might try to answer are: What is my schedule for the week? How many calls did I take last month? Do I have adequate supplies to execute my tasks today?

By identifying user communities one gets a better idea of the reporting and analytics that will be required of the system.
Leveraging Existing Technologies
Most companies undertaking business intelligence initiatives will already have significant investments in technology and infrastructure. Company data is housed in multiple locations, employees are using existing applications, and business processes are already in place. Once the users of a BI solution and their metric requirements are identified, the technologies necessary to build that solution can be acquired and integrated. A careful analysis of technology needs, and the implementation of an integrated architecture, will ensure that a cost-effective, extensible and scalable solution is developed. A well architected solution will leverage existing technologies and use a number of tools to create an end-to-end BI infrastructure.

Best of Breed BI Technology
Microsoft and Business Objects both provide best of breed technology to deliver end-to-end business intelligence solutions for their customers. Standing alone, either of these technologies can provide a complete BI solution. Together, the mature capabilities of Business Object’s BI platform and Microsoft’s broad BI platform technologies complement each other in many business intelligence architectures. Business Objects’ technology can leverage Windows Client and Server, Microsoft SQL Server, Microsoft Office, Microsoft Office SharePoint Server, Microsoft Dynamics and Visual Studio .NET.

This paper will explore how Microsoft’s and Business Objects’ technologies can be integrated to deliver a best of breed solution. This document is not designed to be a comprehensive overview of Microsoft’s or Business Object’s Business Intelligence technologies. For more information on this topic, please go to:

http://www.microsoft.com/bi
http://www.businessobjects.com

Business Objects and Microsoft Partners or Competitors?
“Co-opetition” is part of the culture of both companies and while there are some areas where Microsoft and Business Objects compete there are also many areas where they partner. In fact Microsoft and Business Objects have been partnering for over 14 years:

- Business Objects technology ships in Microsoft Dynamics Software and Visual Studio .NET,
- Business Objects technology has shipped over 50 Microsoft releases
- Business Objects ships >75% of applications on Microsoft Windows
- >40% of Business Objects applications leverage Microsoft SQL Server
- Almost all of Business Objects customers use Microsoft Office
- Business Objects is a managed Global ISV partner
- Business Objects is a Gold Certified Partner and a member of the Microsoft Partner Advisory Council
- Business Objects was a Launch Sponsor for VS/SQL 2005
- Business Objects has been involved in numerous collaboration programs, including Office 2007, Windows Vista, Windows “Longhorn”, etc.
**Microsoft and Business Objects Interoperability:**

There are several technologies that are designed to enable Microsoft and Business Objects to work well together – these include:

- SharePoint and BusinessObjects XI Portal Integration Kit
- Office and Crystal Xcelsius
- Microsoft SQL Server Reporting Services and Crystal Xcelsius
- Microsoft Sharepoint and Crystal Xcelsius
- Office and Live Office
- Excel and BusinessObjects Planning and Budgeting
- Business Objects Enterprise and SQL Server Analysis Server
- Visual Studio and Crystal Reports
- Microsoft Dynamics and Crystal Reports Server

**SharePoint and Business Objects Portal Integration Kit**

Users can deliver BusinessObjects and Crystal reports, interactive charts, and metrics into Office SharePoint Services from Microsoft SQL Server databases and applications such as SAP, PeopleSoft, and Siebel.

BusinessObjects Enterprise XI SharePoint Portal Integration Kit is a powerful solution for Microsoft® Office SharePoint Services or Microsoft Windows SharePoint Services and BusinessObjects Enterprise XI. It provides tight integration between these technologies so that the people in your organization can connect to the information they need—regardless of where it may reside.

*View and Manage Information within a Single Interface.*

Using the SharePoint portal server with the BusinessObjects Enterprise XI SharePoint Portal Integration Kit, structured reports from virtually any data source and unstructured information can be managed and integrated into a single portal interface. With the ability to access all business intelligence resources such as Crystal Reports, Web Intelligence, OLAP Intelligence, Performance Management analytics and any Microsoft Office documents that are stored in the Central Management Server (CMS). Users can navigate BusinessObjects XI by: personal/favorites folder,
public folders, Business Objects inbox, personal categories and corporate categories. Other Microsoft BI technologies, such as PerformancePoint Server, can also be surfaced via SharePoint.

*Leverage SharePoint with BusinessObjects Enterprise XI Web Parts.* Business users can easily leverage existing Crystal Reports and then export reports to Microsoft Word, Microsoft Excel or Adobe PDF format with a single click, using the BusinessObjects Enterprise XI Web Parts. Web Parts integration also allows users to easily create customized BI dashboards to efficiently organize their data, publish and update content, and share information with employees, customers, and partners.

**Office and Crystal Xcelsius**

Crystal Xcelsius provides everything users need to create interactive business dashboards that connect to Microsoft Excel spreadsheets or any external data source using web services, XML and other connectors. Their team can then share these business dashboards “live” within PowerPoint, Word, PDF, Outlook, corporate portals and the Web.

Crystal Xcelsius uses a simple point-and-click interface to import data from any external data source, and output interactive dashboards, animated charts and graphs, financial presentations, and business calculators directly to PowerPoint, Word, PDF documents and the Web.

Crystal Xcelsius converts corporate and Excel data into data presentations in 3 steps:
Crystal Xcelsius has visual modeling, which enables you to develop “forward-looking” business dashboards and scorecards that let executives plan ahead. They can identify critical data relationships, probe elaborate what-if scenarios, and peer into their company’s possible future performance. Using visual sliders and dials on the screen, decision-makers can alter underlying assumptions, and immediately see the impact on projected performance indicators directly on the dashboard – dramatically shortening their time-to-decision.

Crystal Xcelsius is designed with the end user in mind. Rapid development and deployment is achieved with a template-driven architecture and Excel-based foundation so business users can serve their own needs for delivering interactive dashboards and scorecards, quickly.

**Microsoft SQL Server Reporting Services and Crystal Xcelsius**

With point-and-click connectivity to Microsoft SQL Server Reporting Services, Crystal Xcelsius provides a new and powerful solution for Microsoft SQL Server 2000 and SQL Server 2005 Reporting Services customers. Crystal Xcelsius gives users a competitive advantage by delivering vital business data in secure, insightful, and interactive business dashboards.
With Crystal Xcelsius, users can create live business dashboards that connect to multiple Reporting Services reports – allowing them to monitor their business performance from one integrated dashboard with role-based security and server-side caching capabilities. The secure dashboards can be distributed in PowerPoint, PDF, and still maintain the strengths and capabilities mentioned above.

Installing the Crystal Xcelsius server component on Reporting Services server allows access to reports from inside the Crystal Xcelsius interface and connects report data directly to the dashboard. This easy and flexible connectivity ensures your business dashboards are always live with up-to-the-minute information.

**Microsoft SharePoint and Crystal Xcelsius**

Crystal Xcelsius™, with its SharePoint integration capabilities, is a powerful solution for Microsoft’s SharePoint portal technology. Crystal Xcelsius provides SharePoint end-users with interactive charts, graphs, and dashboards. Crystal Xcelsius increases the value of a corporate portal, allowing access to business data—visually.
Crystal Xcelsius with SharePoint integration provides:

**Visually Stunning and Interactive Web Parts:** Represent new and existing information as graphical web parts, through custom graphics and interactivity.

**Real-Time Web Part Customization:** Simply point-and-click to customize the appearance of Crystal Xcelsius web parts. For example, change titles, select data, or modify a chart.

"Web Part to Web Part Connectivity": Connect one Crystal Xcelsius web part to another Crystal Xcelsius web part. Changing the data in one web part immediately displays results in the other web part—all with the click of a mouse and without waiting for the webpage to refresh.

"Live" Data Connectivity: Connect Crystal Xcelsius web parts to your company’s existing business intelligence system, XML-compliant database, or SOAP-based web service, and ensure up-to-the-minute information—whenever and wherever it’s viewed.

**Rapid Development and Deployment:** Quickly develop and deploy SharePoint Web Parts using the Crystal Xcelsius intuitive interface and one-click export.

**Visualize BI content inside Microsoft Office with Crystal Xcelsius**

Crystal Xcelsius is a visualization tool that can connect to multiple types of data sources to display complex business information simply. In addition to the connectivity options discussed above, the application can connect to the data within BusinessObjects Enterprise.

Decision makers gain real-time insight to critical enterprise data—enabling business analysis on key metrics users can trust and refresh instantly. The solution reduces IT cost and time dedicated to maintenance as Crystal Xcelsius delivers vital enterprise data from a trusted environment in secure, insightful, and interactive dashboards—a zero-training interface that anyone can use to make better decisions. It is the power of secure BI visualized inside Microsoft Office.

The live connection can be easily created through one of two options—Query as a Web Service (QaaWS), and BusinessObjects Live Office. QaaWS is a point-and-click utility which removes the time and cost burden of coding your own web services. The utility creates a web service URL which can be consumed by Crystal Xcelsius and easily mapped to the visual components.

Query as a Web Service workflows.
Live Office brings live enterprise data into Excel. This Excel logic can then be used with Crystal Xcelsius to create secure and connected visual models. (See the section below for more Live Office information)

Aside from the value in the combination of security with flexible distribution methods, the output of Crystal Xcelsius is a stand-alone Adobe Flash (SWF) file. The person viewing this SWF does NOT need Crystal Xcelsius or Excel installed on their machine. They only need the Adobe Flash Player – which is free and installed on most computers.

The Crystal Xcelsius output can be exported into the Microsoft Office products with just one-click. The result is secure, connected visual models inside the applications business users use everyday – Word, PowerPoint, PDF, or the Web. Additionally, the connectivity can leverage role-level security so the Crystal Xcelsius model will only display the data relevant to the user’s log-in credentials.

Within Microsoft Office, the BusinessObjects Enterprise security pop-up will require the viewer to enter their login credentials before the information is displayed.
Office and Business Objects Live Office
Live Office allows easy access to corporate data within Microsoft Office without depending on IT for support. Crystal Reports and Web Intelligence data can be easily embedded into Word, Excel, PowerPoint and Outlook. Data can be refreshed on-demand so users are always working with the most current data in the Office application. Live Office is interoperable with Microsoft SharePoint Server and BusinessObjects Enterprise for ensuring corporate data is managed in a secure and centralized repository.

New to Live Office is the BusinessObjects query panel integration, which allows users to build ad-hoc queries from a Business Objects Universe. Plus, Live Office has a new web services architecture which makes it easier for organizations to collaborate across extranets. Live Office helps users become more confident decision makers because they can always trust that the data is up-to-date and secure.

Excel and Business Objects Budgeting and Planning
BusinessObjects Planning and budgeting tools wrap a virtual shell around Excel and industry-standard databases including Microsoft SQL Server and others, preserving strengths and extending functionality.

Business Objects’ unique approach to Enterprise Performance Management (EPM) leverages the full functionality of Excel as part of its core solution—not just as an add-on or optional interface. Business Objects’ approach is to enhance, optimize, and extend the capabilities of Excel without sacrificing its benefits. Because it was built from the ground up to leverage Excel’s strengths, Business Objects supports 100 percent of Excel’s capabilities and allows users to extend their existing Excel models into an enterprise-wide EPM solution. Users can embed models into the application as appropriate—no longer needing to maintain “models on the side.” This eliminates the inefficiencies related to re-keying data or rebuilding complex planning models. By preserving end-user formulas and free form models, Business Objects also provides visibility into how performance results were generated, creating a basis for collaborative commentary throughout the enterprise.

Business Objects’ primary user interface is Microsoft Excel—either across the network or over the web—and purposely leverages Excel’s ease of creating complex formulas and functions; superior and intuitive formatting options; easy to understand charting capabilities; and ability to host other Microsoft programs and objects.

Business Objects was specifically designed to work with Excel to:
- Use powerful, industry-standard databases to manage and consolidate large amounts of data along unlimited hierarchical structures.
- Allow for hundreds or thousands of users to simultaneously access the solution and collaborate regardless of geographical location.
- Centralize process control, workflow management, and robust data and user security for more secure and efficient planning and budgeting.
- Enhance Excel’s already powerful reporting abilities with drill down and ad-hoc analysis capabilities.
- Adding a methodology library for standardized business rules that is both reusable and dynamic without being directly tied to the spreadsheet.

This approach supports a real-time view into a centralized database, ensures information is up-to-date, recognizes rights and authorizations of end users, and allows for flexible yet controlled insertion of new accounts as appropriate.
Business Objects dynamically reads and writes to a multidimensional relational data store, allows users to import data from any source, and populates workbooks automatically—streamlining the process and increasing accuracy. Rather than a fixed-length template, Business Objects populates Excel with only the line items that are relevant, based on an intelligent query of the database. It creates and stores enterprise-wide planning methodologies without requiring users to learn calculation scripts—allowing for standardization and ease of use. In fact, Business Objects’ solution is so easy to use that it is maintained by finance personnel with limited IT involvement.

**Business Objects Enterprise and SQL Server Analysis Services 2005**

Support for Analysis Services 2005 will be done via a new product in Business Objects Enterprise called Voyager.

Voyager is a powerful, web-based OLAP analysis tool that enables insight into business data for intelligent decisions that impact corporate performance.

OLAP data is displayed in the Voyager analysis window with crosstabs and charts. A user can create a workspace, add crosstabs and chart objects to the analysis window, connect those objects to OLAP data sources, and then interactively define queries to explore the data.

Voyager is intuitive and easy to use, while providing unique analysis capabilities, including the ability to simultaneously view data from different cubes and providers. For example, you can view sales data from a Microsoft Analysis Services cube on the same page as finance data from a Hyperion Essbase cube.

Voyager is accessed from BusinessObjects InfoView in a web browser. All one needs is a connection to a BusinessObjects Enterprise system that has Voyager installed, and does not need to be installed on a local machine.
Microsoft Visual Studio and Crystal Reports

From Crystal Reports for Visual Studio .NET to Visual Components for BusinessObjects XI, Business Objects provides leading support for the Visual Studio Developer at every stage of the development cycle.

Crystal Reports has been part of Visual Studio since 1993, and is integrated directly into the development environment. A special edition of Crystal Reports, designed for Visual Studio 2005, continues to be included as part of the Visual Studio default install. Built to provide an integrated reporting experience within the Visual Studio development environment Crystal Reports for Visual Studio 2005 leverages Visual Studio advancements in data, usability, and ease-of-use.

To get the most out of Visual Studio 2005 with Crystal Reports, Crystal Reports XI Release 2 - Developer Edition is recommended. Crystal Reports XI Release 2 is an updated software build designed specifically for developers upgrading from the bundled Crystal Reports software in Visual Studio 2005. It includes an updated .NET engine that is compatible with Visual Studio 2005 and a variety of new features for Visual Studio 2005 users.
**Microsoft Dynamics and Crystal Reports Server**  
Crystal Reports from Business Objects is included with Microsoft Dynamics GP and Microsoft Dynamics SL software.

Many Microsoft Dynamics customers are familiar with Crystal Reports today but when it comes to report distribution they are converting the reports to .pdf and emailing them out. Crystal Reports Server offers an alternative, secure, self-service, web-based solution to manage and distribute reports.

Crystal Reports Server is a complete reporting solution that helps small to mid-sized businesses create, manage, and deliver reports – via the web or embedded in enterprise applications. It addresses all steps in the reporting process, from data access and report design, to report management and delivery, to report integration with SharePoint portal. Plus, it includes Crystal Reports XI, for report creation.

Also, Crystal Xcelsius allows for the creation of interactive business dashboards that connect to Microsoft Dynamics GP and SL data from Crystal Reports Server.

Sliders, gauges, filters, numerical input tools and other visual components let decision-makers quickly evaluate multiple “what-if” scenarios – real-time, with the click of a mouse. Custom graphics and interactivity allow development and presentation of compelling yet easy-to-understand financial dashboards and business summaries for the Web, intranets, and portals.

The out-of-the box integration with SharePoint enables companies to provide their end-users with interactive animated charts, graphs and dashboards that work with SharePoint Portal Server.

**Conclusion**

Three user groups were identified in this paper: Strategic, Tactical and Operational. Each group has different requirements and a different perspective on the business. Matching the appropriate technologies to the correct audience is essential in optimizing the potential productivity gains, and ensuring the best return-on-investment.

The Strategic User: upper management and executives who are making long-term decision about the business. They often have complex reports and analysis prepared for them by technical analysts. The analysis and reporting that strategic decision makers require often leads to additional requests for information. Their decisions affect multiple departments and disciplines.

This user may benefit from a combination of Microsoft SQL Server and SharePoint portal with the BusinessObjects Live Office and Crystal Xcelsius. This would allow them to enjoy the analytical power of Crystal Xcelsius while integrating their results into Office products such as PowerPoint for a Board presentation, assured of the data security and quality.

The Tactical User: management and supervisors making daily decisions on how the business should be run. Tactical users often require real-time or near real-time reporting that allows them to quickly react and steer the business’s day-to-day operations. These users are often more technically advanced and will require ad hoc
reporting capabilities. Their decisions typically affect a department or a group of employees.

This user may benefit from a combination of Microsoft Excel with BusinessObjects Budgeting and Planning while using the ad-hoc planning of Crystal Xcelsius connected to SQL Server, to keep their departments running smoothly.

The Operational User: Operational users require information to execute daily tasks. These users are often not in decision making roles and they will typically require static reporting.

This user would enjoy the integration into the Microsoft Office platform of Business Objects Live Office and Crystal Xcelsius. The embedded reports via Reporting Services and Crystal Reports would allow for the delivery of the right information to the right user at the right time, which is critical for operational efficiency.

Most companies undertaking business intelligence initiatives will already have significant investments in technology and infrastructure. Company data is housed in multiple locations, employees are using existing applications, and business processes are already in place. A well architected solution will leverage existing technologies and use a number of tools to create an end-to-end BI infrastructure.

Microsoft and Business Objects both provide best of breed technology to deliver end-to-end business intelligence solutions for their customers. Together, the mature capabilities of Business Object’s BI platform and Microsoft’s broad BI platform technologies complement each other in many business intelligence architectures. Providing these technologies together to the right audience will deliver great results and help to optimize business performance.