

- IT Management Consulting
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White Paper

**Comparison of Business Intelligence Stacks:
Microsoft SQL Server Reporting Services
and SAP Business Objects**
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Executive Summary

This write up investigates the Business Intelligence solution offering from Microsoft (SQL Server Reporting Services or SSRS) and the offering from SAP, the Business Objects base reporting package (BOBJ). While BOBJ does have more options for reporting and presentation, from a basic report feature standpoint both of the tools offer similar functionality and offer the user a great deal of flexibility in the presentation of their data.

The other difference between the two solutions that needs to be considered is the expense associated with the Total Cost of Ownership. While you will have similar costs in the requirements gathering, design, development, testing, and ongoing administration, there is a significant difference in the licensing cost of these products. While BOBJ charges by either named user or CPU, SSRS comes with SQL Server so there are no additional costs with adding a BI tool set.

Abstract

Business Intelligence (BI) encompasses a wide range of enterprise applications and technologies for gathering, storing, analyzing, and accessing information to make better business decisions. BI applications include but are not limited to decision support systems, query and reporting, online analytical processing (OLAP), statistical analysis, forecasting, data mining, dashboarding and key performance indicators (KPIs) and more recently analysis via mobile technologies.

There are many reasons a business will turn to a BI solution. The following are examples of Business Intelligence solutions that CapTech has worked with:

- A national credit card provider implemented a multi-year enterprise-wide effort to bring their financial reporting systems in line with those of peer banks. This included a restructure of the information stored in the General Ledger to feed internal management reporting and regulatory filings through a BI reporting tool. The solution consolidated the management accounting and planning systems onto a single corporate platform designed to deliver a consistent level of detail to the business and to external regulators.
- A national food and solutions providers needed a way to manage and better organize the large amount of electronic documentation that they retain. Through a SharePoint portal, they are able to not only search and locate these files, but also have significantly reduced the duplication of documents in their file storage portal.



- A national wholesale food distributor had a need for near real-time reporting. Data was pulled from 18 instances of their ERP solution using SSIS. The data was then moved to an Operational Data Store for integration and standardization of the data. The final solution was a thick reporting client that combined SSRS with custom .Net development for a reporting solution at each of their operating companies.
- A national credit card company needed reduce the amount of time it took for their Recovery analysis to process, analyze, and make decisions on the data that was available to them. Through a Business Objects (BOBJ) dashboard solution, the client was able to reduce the time their analysts spent from hours per case to minutes while also creating a consistent standard process that did not previously exist.

In surveying the Business Intelligence (BI) landscape, mega-vendors and niche players dominate the market. Within the past few years, two of the leading product vendors, Cognos and Business Objects, were purchased by technology powerhouses, IBM and SAP respectively, and a third BI tool, Hyperion, was bought by Oracle. Microsoft continues to make strides in affordable and easy to integrate products. SAS is a major player, specializing in predictive analysis, statistics, and forecasting. Microstrategy continues to be a leader in Relational Online Analytical Processing (ROLAP) and has some innovative mobile technology, while QlikTech and LogiXML focus on dashboards and interactive reporting. Open source vendors such as Actuate, Jaspersoft, and Pentaho offer unique low cost options but suffer limits in features and breadth of services.

In the past, companies have coupled best of breed modules from multiple vendors. Now, organizations are able to adopt a single vendor offering, but the distinction between vendors has become less clear as all pursue similar strategies with fewer apparent product differences. Currently, organizations average 3.2 different BI vendors and 13 overall BI deployments.¹ The current trend from BI vendors is to bundle modules together into a single platform that provides extensive features. The BI tool selection decision should be based more on strategic considerations than general product capabilities.

In selecting a BI platform, companies must understand the role of BI within the enterprise and how it will deliver measurable business value. Companies must not overlook the role of IT in BI deployments and daily maintenance. BI systems are complex entities that require technical resources to manage reports, data movements, warehouse models and information delivery.

¹ TDWI BI for All! Executive Summary: <http://www.tdwi.org/display.aspx?ID=7613>



Likewise, business stakeholders must be involved in the actual product selection to ensure an understanding of usability and technical complexity. The installation and management of BI Suites requires maturity in data analytics and reporting knowledge for both real time transactional systems and data warehousing.

While information delivery is the primary short-term return on investment of most BI deployments, the other two areas provide more long-term strategic value. Interest in process and strategy-driven BI has increased in recent years, and with it, interest in forecasting outcome of business events. When applied correctly, such forecasting can promote improved planning and help optimize business processes.

With the maturation and leveling of the BI market in terms of capabilities, many products now show commonality in report access, security, production, distribution, and support for multiple formats (XML, PDF and HTML). However, tools can be differentiated on critical features such as ease of use for end users and report developers, scalability of user population and data volume, complexity of report interaction, support for sophisticated SQL, and enterprise system integration.

Definitions

CapTech has created a process in order to consistently evaluate and rank different Business Intelligence tools by defining the aspects and features by which we will compare the products. A scoring system was established in order to ensure the products are being compared fairly using a common scale. For this analysis, six aspects were included as bases of comparison between products. With each of the aspects is a list of features upon which the aspect was evaluated.

While cost is an important input to all BI solution discussions, it is covered later in the analysis.

Included Aspects

Reporting

- Usage environment (scheduled delivery, real time desktop, and real-time web)
- Data layout options (tabular, matrixed, financial)
- Parameterization, filtering, drill through (interactivity)
- Support for complex functions and calculations



Visualization

- Inclusion of color coded score carding, dashboards, and key performance indicators (KPIs)
- Workflow and collaboration
- Report format exportability (HTML, PDF, Excel, etc)

Data Analysis

- Online Analytical Processing (OLAP) capability (also known as “slice and dice”)
- “What If?” scenario generation
- Predictive modeling and data mining

Functional Capabilities

- Ad-Hoc Query
- Meta data management
- Mobile platform support

Usability (Technician Focus)

- Vendor support
- Developer community
- Development environment
- Deployment and lifecycle management
- Supports complex SQL

Infrastructure, Architecture & Integration

- Scalability of the BI stack
- Security administration
- Product Software Development Kits (SDKs) offered for integration
- Portal Integration
- Microsoft Office Integration
- Extract Transform Load (ETL) toolset

Scoring

In order to make a fair comparison of the aspects across the products, we created a system of five possible scores with 1 being the worst and 5 being the best. The five scores are defined as follows:

1. The feature is not supported at all.
2. The feature is supported, but integration and/or building is required.
3. Some light customization is required to use the feature.



4. The feature is supported out of the box.
5. The product is best of class and provides additional, unexpected functionality for the feature.

Vendor Product Analysis

Microsoft SQL Server Reporting Services

Microsoft's SQL Server platform is a leading data management and infrastructure product. By coupling this package with Sharepoint and Office, Microsoft touts a complete BI experience. SQL server components compare well with similar products from other vendors. Integrating these components provides holistic views of the business and its key drivers by integrating data from a variety of sources, providing interactive views of enterprise-wide data, and consolidating business dimensions for relational and predictive analysis.

Reporting: SSRS offers filtering, graphing, drill down, and easy report delivery options. Reports tend to follow a tabular or matrix style layout with parameter driven filtering and drill through capability. SSRS development allows for linking parameter and data sets to data queries, either from embedded SQL or stored procedures, thus enabling users to build complex business logic into reporting outputs. SSRS can export reports to various formats including Excel, PDF, HTML, XML, and TIFF, and deliver on demand or scheduled via email or file share. Reports can utilize functions and expressions, rich text formatting, interactive sorting, dynamic filtering, and aggregations. The vast capabilities for SSRS as a report tool may not be best of breed in specific areas, but its usability and the ease in which reports can be generated and delivered is truly best of class.

Score: 4.5.

Visualization: With SQL Server 2008, SSRS adds advanced charting and graphing with Microsoft's integration with Dundas. The most notable limitation of SSRS is the lack of built in features for creating dashboards and score-cards, which requires SharePoint integration. Microsoft acquired Pro Clarity in 2006, and has since integrated PerformancePoint with Sharepoint. Using these two tools coupled with SSRS, users can achieve real time visualizations and rich data analysis from SSRS. While SharePoint is useful in itself, other BI suites offer such capabilities within the main reporting tool. Many visualizations are out of the box but others will require customization to have them run within theSharepoint environment. In addition, SSRS lacks advanced features such as dynamic formatting and user-customized layout. Basic graphing and gauges are out of the box in SSRS, but more advanced visual analytics will require additional integration.

Score: 2.5.



Data Analysis: Reporting is clearly the focus of the platform but the prediction and forecasting nature of such reports are limited within the SQL Server BI stack compared to others. Furthermore, the Analysis Services portion of SQL Server is an excellent OLAP and data mining tool, allowing for simplified cube creation. It offers all the features of a warehouse query tool; SQL Server's database infrastructure is among the top tier in the warehousing space². As with Visualization, SQL Server provides the tools to perform these business functions, but programming is necessary to extend the information to accomplish "what if" scenarios or deliver color-coded KPI that users can slice and dice.

Score: 3.5.

Functional Capabilities: While SSRS has Ad-Hoc reporting capabilities with ReportBuilder, the component is limited. In enterprise deployments, users must define the requirements up front to allow DBA's to create the data views that feed the users' reports. Users' reporting expectations may be beyond the capabilities of ReportBuilder and the report is ultimately generated by IT in SSRS. The importance and intentions of Ad-Hoc reporting should be clearly defined and considered. In most cases (across all BI solutions) an IT developer or technical business analyst will be required to develop and deploy reports. Nevertheless, SSRS supplies an ad-hoc tool that business users can use to create their own reports, which have many of the main features (custom layout, functions, sorting etc). SQL Server's BI deployment is limited in the Meta Data Management arena.

Score: 3.

Usability (Technician Focus): SQL Server reporting components utilize the Business Intelligence Development Studio (BIDS) plug-in for Visual Studio (VS), allowing developers to build reports in a GUI familiar to those in .NET environments. By coupling with VS and Visual Source Safe (VSS), developers can manage a report's full life cycle (develop, maintain, deploy) in a single interface. Reports are easily deployed to a web server and accessible to users over internal networks.

Score: 5.

Infrastructure, Architecture, Integration: Its security model follows Active Directory and is role-based, but data security must be built directly into the database and queries. Evaluating SSRS from an enterprise platform perspective, it is scalable to high volumes via web server farms and extensible via APIs for other software products. SSRS also benefits from SQL Server's high availability model with failover clustering and mirroring. The inclusion of Integration

² Gartner: "Magic Quadrant for Data Warehouse Database Management Systems" December 2008, G00163473



Services for ETL is a nice bonus, allowing customers to create ETL packages to populate data marts for reports at no additional cost. The scalability of SQL Server has greatly improved recently with Microsoft's partnership with DatAllegro. The most notable limitation of SQL Server from an infrastructure perspective is that the engine must run in a Windows environment. Customers requiring a Unix/Linux/other server instance should look elsewhere. Also important to note is that an SSRS solution is not a single installation. This requires installation of multiple packages, and then integration of those packages (SQL Server, SSAS, SSRS, Sharepoint, Performance Point, PowerPivot, etc).

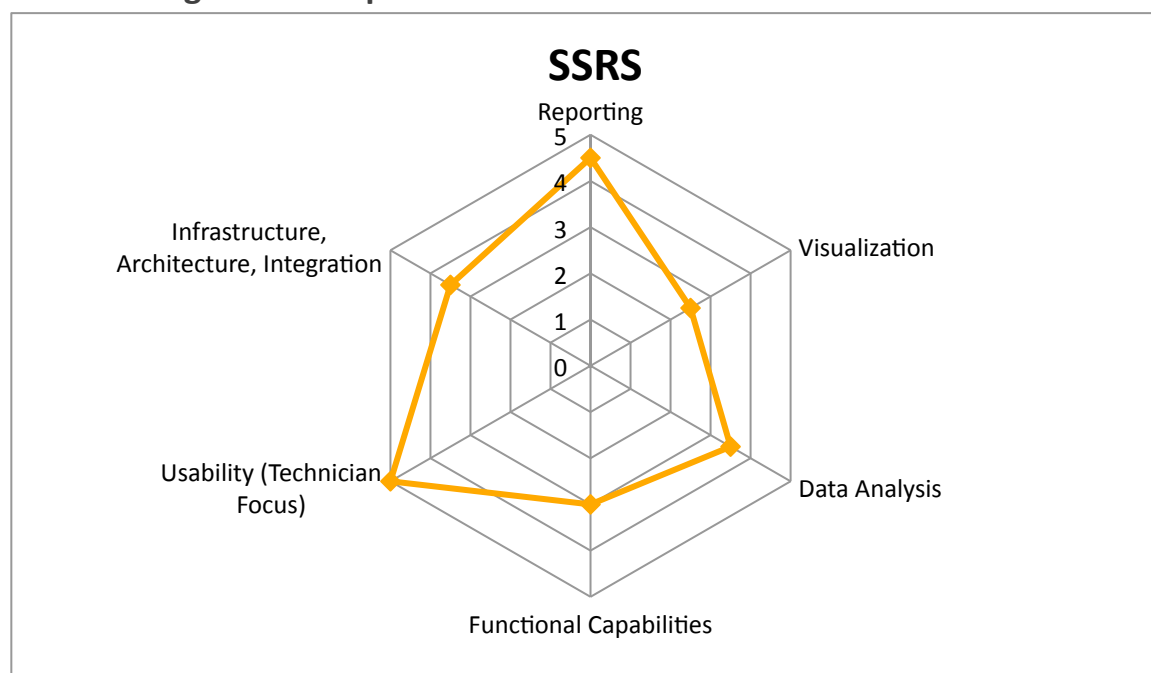
Score: 3.5.

SSRS Scoring Summary

Aspect	Score	Reasoning
Reporting	4.5	<ul style="list-style-type: none">• Parameterization and drill through• Tabular, Financial, Matrix reports• Built in functions, sorting, filtering• Grouping capabilities will meet most requirements
Visualization	2.5	<ul style="list-style-type: none">• Quality graphing capabilities, but lacks interactivity and AJAX support• Supports most exportable formats• Requires Sharepoint/PerformancePoint for some features (real time dashboards)•
Data Analysis	3.5	<ul style="list-style-type: none">• OLAP built in• May require advanced developers to build all predictive modeling capabilities• Provides data mining toolsets but not end user ready use out of box
Functional Capabilities	3	<ul style="list-style-type: none">• Weak Ad-Hoc capability, but exists and is usable with technical understanding• Insufficient MDM• No mobile support out of the box
Usability (Technician Focus)	5	<ul style="list-style-type: none">• Flexible Platform• .NET like extensibility• Supports complex SQL via stored procedures• Easy deployment process• VSS provides lifecycle control

Infrastructure, Architecture, Integration	3.5	<ul style="list-style-type: none"> • Online training materials, extensive forums • 24x7 global support • Well coupled vendor stack • Limited security model • High quality MS Office integration
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SSRS Scoring Radar Graph



Vendor Product Analysis

SAP Business Objects

SAP Business Objects XI Platform provides a full spectrum of BI capabilities ranging from reporting, query and analysis, and dashboards and visualization to intuitive discovery and advanced predictive analytics. Its platform combines data integration and data quality in a single offering. With solutions providing integration with Microsoft Technologies/Microsoft Office and Oracle Enterprise applications, along with portal integration and SDK kits for customized solutions, BOBJ provides significant flexibility in terms of BI deployments, especially in heterogeneous environments.



Reporting: BOBJ utilizes Web Intelligence, Xcelsius, and Crystal Reports, a long-standing reporting product, for its information display. Earlier versions of Crystal reports had weaknesses, such as a large installation footprint, user flexibility restrictions and limited parameterization options. Things have significantly improved with Crystal 2008. The current version not only addresses these issues, but also has many enhancements, including a higher level of interactivity with new parameter panels and controls. The current version provides many advanced reporting features: interactive report viewing , on-report sorting and formatting, powerful cross tab functions, flexible pagination, parameter panel for filtering, Adobe/Flash integration for creating stunning visualization with charts, graphics and video files to your reports, built- in bar code support , hyperlinking wizard, XML reporting, advanced report publishing. While Crystal 2008 is rich in features, some in-report analysis is still limited compared to other products. Web Intelligence, a powerful and easy to use ad hoc query and reporting tool (available on and off-line), is best suited for this type of analysis. It provides query, reporting, and data analysis features comparable to leading BI tools. Xcelsius is a dashboard development tool that allows for automation in the presentation. It is intended for smaller data sets but has a powerful visual interface.

Score: 5.

Visualization: Delivering information in high quality visuals is BOBJ's strong suite. BOBJ allows users to make use of customized dashboards, which can have KPIs update in real time allowing instant access to business metrics in a color-coded and presentation friendly format. The Xcelsius product, also an addition to the BOBJ stack, allows user to create "what if" scenarios. The workflow and collaboration aspect of BOBJ is less refined. While the core visualization features of BOBJ are well developed and user friendly, they require additional components, which limits the scope of its "out of the box" capability.

Score: 4.

Data Analysis: Over and beyond the basic Business Objects reporting package, BOBJ offers two advanced data analysis products, Voyager OLAP and Predictive Workbench, which can be integrated into the BOBJ Enterprise suite. Voyager provides a full range of functions for the analysis of multidimensional data sets. Predictive Workbench provides capabilities for trend analysis, predictive analysis, and forecasting. The results of Predictive Workbench are easily accessible from Web Intelligence reports or Xcelsius dashboards. Evidence and commentary of customers integrating BOBJ's reporting and OLAP components is limited due to the changing landscape. Past SAP components have showed strong capabilities in this area. The score in this aspect reflects the need to integrate, as they are not "out of the box" ready, but meet the



criteria of quality components.

Score: 3.5.

Functional Capabilities: BOBJ is a robust, complete and scalable BI platform with data focused components including data integrator, data federator, text analysis, data quality-management (with insight and cleansing features), and metadata management. The BOBJ toolset provides leading edge BI capabilities in collaboration and decision support, in-memory analytics, on demand BI (software as a service), search coupled with BI, data lineage, impact analysis, and metadata management. Companies are fast adapting these technologies in their BI solutions. Organizations can avoid heterogeneous BI platforms finding a solution within the BOBJ product family. The ad-hoc capabilities of BOBJ will be more capable, intuitive and business user focused than other BI suites.

Score: 5.

Usability: The easy-to-use interface makes it an end-user BI tool for business analysts. Developers with experience creating reports in Crystal Reports will be able to adapt to BOBJ more quickly. Using BOBJ's semantic layer via a drag-and-drop interface, the user does not need any knowledge of SQL to create a report. Crystal's support of advanced T-SQL is not as robust as other BI tools and general development/maintenance of reports requires more work from than in SSRS.

Score: 4.

Infrastructure, Architecture, Integration: The pre-built portal integration kit incorporates BI contents into industry-leading enterprise portals, such as BEA Weblogic Portal, IBM WebSphere Portal Server, MS SharePoint Server, SAP Enterprise Server and Oracle Portal Server. Integration with MS Office provides the ability to store and manage Word, PowerPoint, and Excel Documents in the system repository. With Business Objects Live Office, end users can embed updatable data in the documents, spreadsheets, and presentations while allowing IT to maintain control of underlying Information. Customer support is a key shortcoming of SAP BOBJ offering. Customer support ratings for SAP in the areas of customer support, sales experience, and software quality have declined considerably after the SAP acquisition of Business Objects.³ SAP has put programs in place to address these issues and hope customers will have much better experience in future. Also needing improvement are the integration between SAP and BOBJ product offerings and the publication of a clear road map to the

³ Gartner "Magic Quadrant for Business Intelligence Platforms" Publication Date: January 2009/ID Number: G00163529



customers for product selection and offerings. Customers have thus had uncertainty as to how existing BOBJ and SAP stacks will work together in future releases while new customers consider this lack of clarity a barrier to entry. BOBJ can be deployed into any enterprise server environment including Windows, Linux, and UNIX.

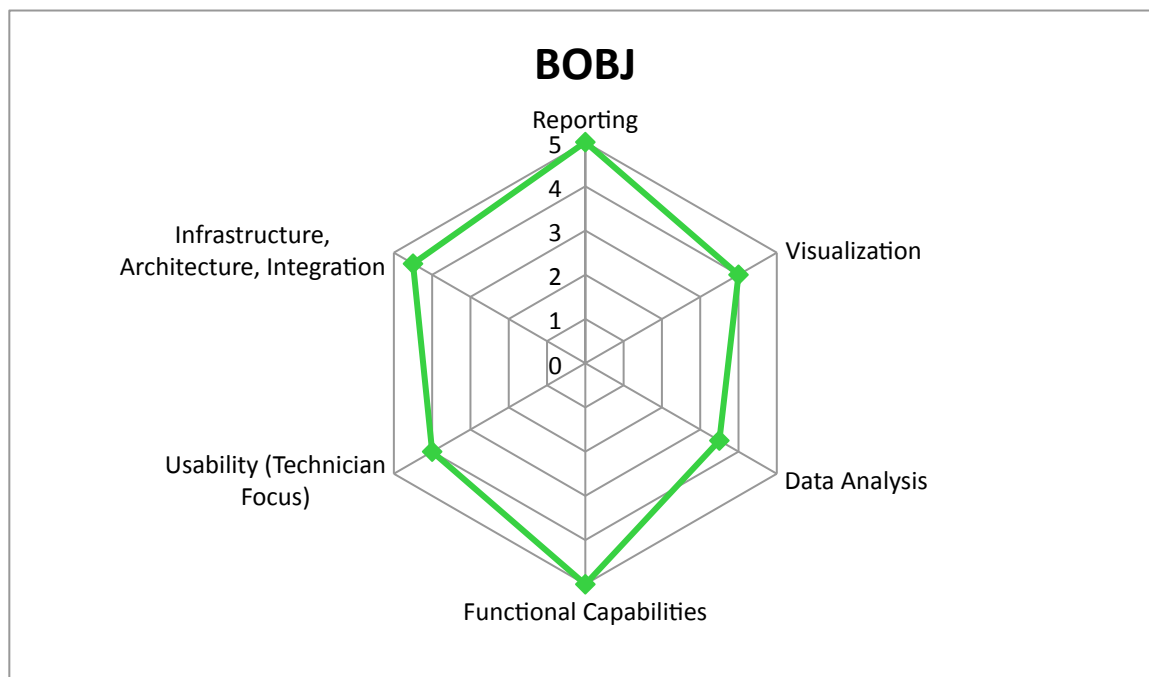
Score: 4.5.

BOBJ Scoring Summary

Aspect	Score	Reasoning
Reporting	5	<ul style="list-style-type: none">• Capable of handling multiple formats• Exportability and scheduling available• Web and desktop environments• Crystal environment is more specific to program in than other BI tools
Visualization	4	<ul style="list-style-type: none">• Dashboards and score cards capabilities are best of breed• Focus is on delivering information to end user• Mobile support is available• Commonly used KPI gauges/colored indicators are out of the box ready
Data Analysis	3.5	<ul style="list-style-type: none">• Slicing and dicing OLAP requires additional component• OLAP adoption rate currently lower• What-if scenario generation possible• Data mining and predictive analytic features considered promising
Functional Capabilities	5	<ul style="list-style-type: none">• High quality Ad-Hoc feature• Many products available for any needs• Reports feature multi-level caching and high performance• Content search feature• Workflow and collaboration area could be improved
Usability (Technician Focus)	4	<ul style="list-style-type: none">• Crystal has a steeper learning curve than other tools

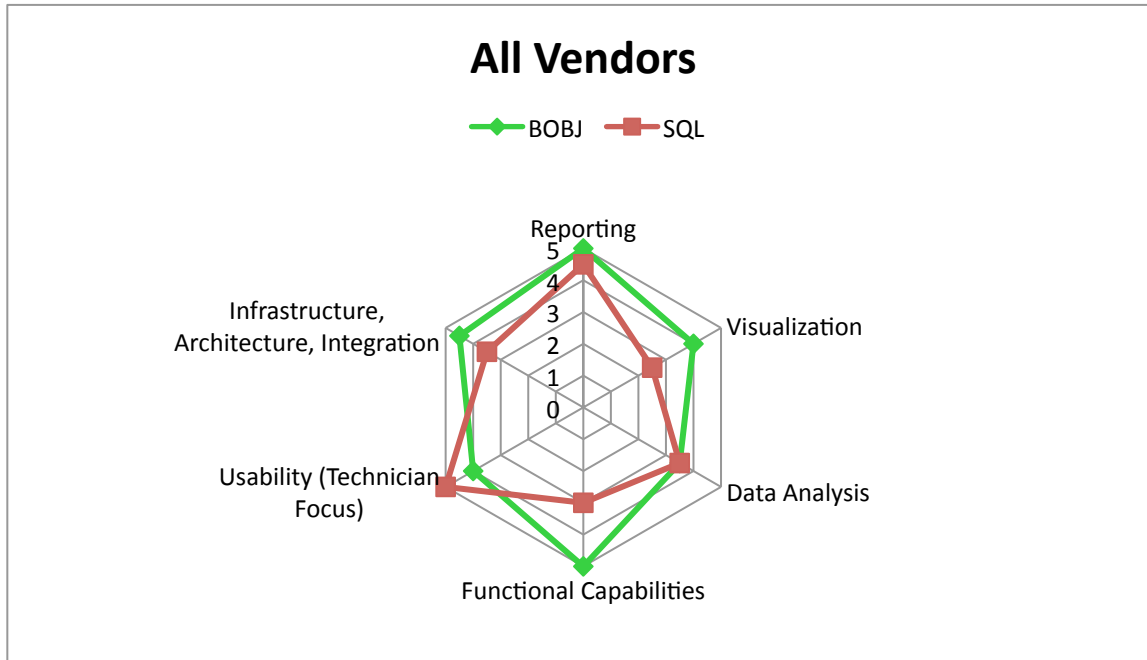
		<ul style="list-style-type: none"> • Quality interface built for managing data access and interface layers • Built in support of many functions • Integrating between reporting component layers may be difficult • Online training materials and useful online forums
Infrastructure, Architecture, Integration	4.5	<ul style="list-style-type: none"> • Scalable, Reliable in farmed environment • Ease of Integration w/ many platforms • Extensive SDKs available • Some unknowns about SAP integration roadmap and product catalog offerings • Robust security model

BOBJ Scoring Radar Graph

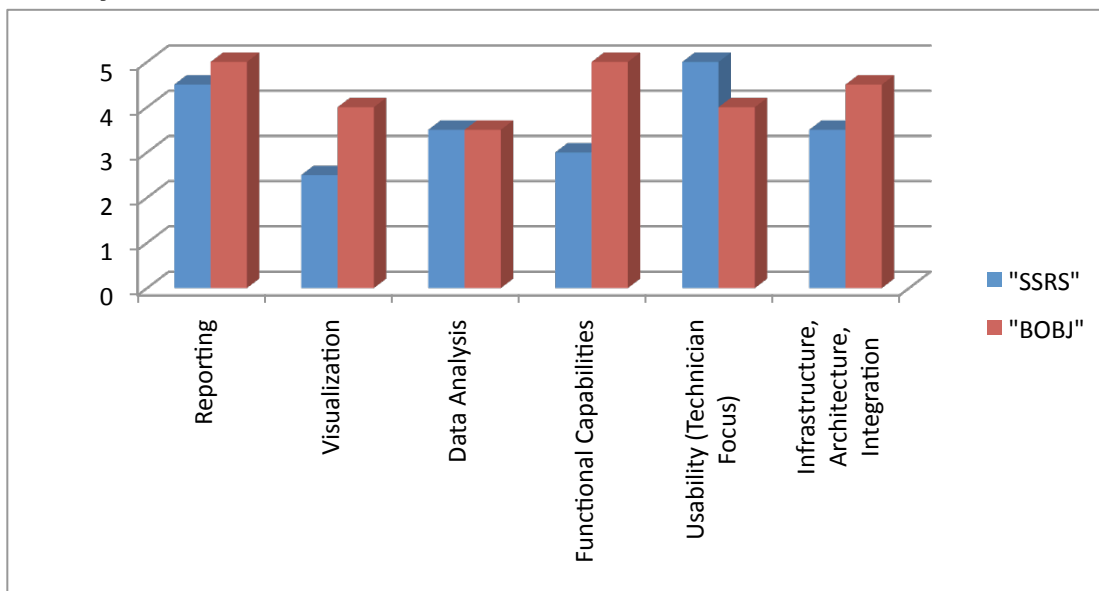


Comparison

Overlapping Scoring Radar Graph



Side by Side Bar Chart





Conclusions

This paper is focused on a feature discussion to help exhibit the main differences between the Microsoft and SAP/Business Objects BI stacks. Cost is certainly a consideration in any enterprise deployment. Generally speaking, licensing from Microsoft is determined on a server instance model. SAP/BOBJ licensing can be either a named user model or licensed by number of CPUs. Specific costs and return on investments are highly dependent on company's specific situations and deployment choices. From our specific client exposure, mid-market companies do not opt for BOBJ, and we find that SQL Server is more prevalent. An SSRS solution will often be lower cost as all components are included with a license. However, BOBJ has a wide product catalog so many more capabilities can be had ala carte.

When considering the total cost of ownership, a company must consider the individual components that make up this expense. Total Cost of Ownership (TCO) comes from the High Level Business Requirements, Software Selection Process, Software Installation, Detailed Requirements, Design, Development, System and User Acceptance Testing, Production Software Licenses, the ongoing Maintenance of the solution. While many of these costs would be similar across the different platforms, a company needs to assess the differences in development time, and ongoing maintenance and understand which tool their personnel and IT infrastructure can support.

SQL Server and Sharepoint offer a quality BI solution, which meets basic architectural principles and business requirements. Because of Microsoft's desire to establish itself in the BI space, it offers the BI components with a license to SQL Server. The lack of flashy, AJAX style reporting features (which are often shown in demos of BOBJ) may limit the business's interest in SQL Server. Additionally, BOBJ's reporting, ad hoc queries, dashboard, data visualization capabilities are key strengths of the SAP BOBJ product suite and are among top rated BI tools.

Because many companies already own SQL Server licenses within their infrastructure, the ease and low cost benefits of implementation may be too good to pass up. However, companies either without SQL Server in house or requiring heavily visual reports accessible to business users or self-service access to information with minimal IT support may want to implement BOBJ as their BI stack.