

Critical Capabilities for Business Intelligence Platform Integration

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This document was revised on 5 January 2010. For more information, please see the [Corrections page](#) on [gartner.com](#).

This research evaluates the integration capabilities of 13 business intelligence (BI) platforms, outlining four common use cases and eight critical capabilities that evaluators should consider when making vendor selection or rationalization decisions. This report is one of three Critical Capabilities reports to be published during the next 12 months, which will cover topics such as information delivery and reporting, and information discovery and analysis.

Key Findings

- Vendors with lower integration scores tend to have higher IT and administration costs (see Figure 3 in "BI Platforms User Survey: How Customers Rate Their BI Platform Vendors").
- Overall, independent and internally developed BI platforms are more integrated than those offered by acquisition-led megavendors.
- Although less-integrated overall than independent platforms, megavendors' platforms generally provide better out-of-the box connections with complementary BI capabilities, such as those for search, planning, budgeting, predictive analytics, master data management (MDM) and data integration.
- Independent and self-contained platforms tend to have more integrated administration and infrastructure capabilities and provide a more integrated semantic layer than those of megavendors, but they typically have less-integrated and less-capable data lineage and impact analysis.
- Of the megavendors, Oracle and IBM (Cognos) lead in semantic layer assessment, while Microsoft continues to lag behind in providing a common semantic layer.
- With the exception of Actuate (BIRT), open-source BI platform vendors lag behind their commercial counterparts in terms of platform integration.

Recommendations to BI and IT Architects

- When selecting a BI platform vendor with a low platform integration score, prepare for more challenging BI platform implementation, migration and maintenance efforts.

- Recognize that, although we identify eight critical capabilities for integrated infrastructure, your organization may not be in equal need of all of them. Focus on those that best map to your overall BI strategy and requirements. For a customizable tool and details of each vendor's score, see "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."
- Consider more integrated platforms when a seamless user experience across BI platform capabilities is a key requirement. These include reuse of queries and report objects, common rules and definitions, and a common user interface (UI) for production reporting, ad hoc reporting and analysis, and dashboarding.
- Platform integration is an important consideration when selecting a vendor, but you should also evaluate BI platforms against your full requirements for product functionality. (see Recommended Reading).

Introduction

This report identifies eight critical capabilities for BI platform integration, and rates 13 BI platform products against a predefined set of criteria for each critical capability. The eight critical capabilities measure three different aspects of integration:

- **Interoperability of platform components:** How well integrated the front-end architecture of the platform is, and how well the platform integrates with other aspects of the software stack — portal, data integration, collaboration, business activity monitoring (BAM), business process management (BPM) and so on. Data lineage and impact analysis are part of this assessment.
- **Security, administration and infrastructure:** The extent to which there are common security definitions, administration tools and other infrastructure services used by all BI platform tools.
- **Metadata:** How well the BI platform integrates information and allows for common data, report and report object definitions to be used by BI platform tools.

BI platform integration is a driver of labor and administration costs related to BI deployments. A BI platform with strong integration reduces the amount of custom integration and duplication required to build BI applications; streamlines BI content authoring, administration and security; and incorporates related technologies into the broader information infrastructure. Generally speaking, BI platforms that are tightly integrated deliver quicker results.

Product Class Definition

Integration is one of the three major capability categories that form Gartner's definition of a BI platform. The other two categories are information delivery and analysis. An enterprise BI platform needs to deliver capabilities across all three categories to comprehensively address BI platform integration requirements.

The integration category refers to capabilities that determine how well and easily a BI platform's components are integrated with each other and with an organization's broader information infrastructure.

Independent BI platforms are offered by best-of-breed BI platform vendors that have not been acquired by one of the megavendors. The megavendors are IBM, Microsoft, Oracle and SAP; with the exception of Microsoft, they have grown their BI platform capabilities largely through acquisitions.

Critical Capabilities Definitions

The BI platform market has evolved from departmental best-of-breed products delivering specific BI functionality — such as production reporting, ad hoc analysis and online analytical processing (OLAP) — into enterprise product suites with broad BI platform capabilities corresponding to most of the 12 capabilities that Gartner defines as making up a BI platform. BI vendors either built integrated platforms from the ground up or extended existing best-of-breed capabilities through acquisitions. As a result of these different development paths, each BI platform has varying degrees of integration between its components and with external complementary capabilities.

In Gartner's view, critical capabilities for BI platform integration — the most important differentiators between the competing products covered in this research — are as follows.

Interoperability of Platform Components:

- **Common authoring tools:** A common development and authoring environment across BI platform components (those for reporting, OLAP and ad hoc analysis, for example). Seamless navigation across tools, with the ability to modify and extend content between tools across the BI platform.
- **Consistent UI across tools:** Common commands, menu items and toolbars for all BI functions (for reporting, OLAP, ad hoc analysis and dashboarding, for example). A consistent Ajax client or comparable rich client for all BI functions.
- **Common delivery:** Across the BI platform tools, BI content is delivered to end users through a range of information delivery mechanisms. These include Microsoft Office integration, mobile devices, mashups, a common BI portal with full interactivity, and multiple output formats with consistent interactivity across tools.
- **Data lineage and impact analysis:** Data lineage is supported to determine which source systems contributed to the report, regardless of the extraction, transformation and loading (ETL) tool. A developer and end-user UI and impact analysis is supported to highlight changes — down to which fields are impacted in a report — in the source data that affects downstream reports.
- **Extended BI capabilities integration:** Out-of-the-box integration with related and complementary BI platform capabilities, including predictive analytics, corporate performance management (CPM) applications (planning and budgeting, consolidation, profitability and scorecarding), search, ETL, enterprise information integration (EII), data quality, data profiling, data enhancement, MDM, BAM/complex event processing (CEP), BPM and collaboration.

Security, Administration and Infrastructure:

- **Common security:** All tools use a common security definition, and there is single sign-on at the individual level for all capabilities (reports, dashboards, OLAP, and so on). Ability to manage sign-on at the group level for all BI capabilities (reports, dashboards and OLAP, for example), with a common location to add or delete users and to modify roles and settings. **It is important to note that this criterion rates the level of unification of the security mechanism, not the robustness of the security capability.**
- **Common administration and infrastructure:** All BI tools share a common query definition, query optimization and query execution engine, and are deployed by a single installation of the BI platform components. All tools share a common administration application and common scalability mechanisms (caching, clustering, workload balancing and so on) across BI platform components.

Metadata:

- **Common metadata:** A single metric definition, and a single repository for all metadata objects — key performance indicators (KPIs), metrics, queries, reports, report configurations such as filters and prompts, data transformations, dimensions, hierarchies, calculations with automatic change propagation of changes to metadata across report objects and third-party metadata integration.

For each of the eight critical capabilities (see also Table 1), we requested extracts from published software documentation to describe the associated functionality. We then compared the features and functions against a predefined scoring framework, giving credit for the level of support. The scoring framework, along with the capability to customize weights for each criterion, is provided in the accompanying "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Table 1. List of Functional Capabilities Evaluated

Critical Capability	Details of Functions
Common authoring tools	Common development and authoring environment
	Seamless navigation across tools, with the ability to modify and extend content between tools
Consistent UI across tools	Common commands, menu items and toolbars
	Consistent Ajax client or comparable rich client for all BI functions
Common delivery	Microsoft Office integration
	Mobile support
	Mashups
	Portal support
Data lineage and impact analysis	Output formats with consistent interactivity across tools
	Support for data lineage to determine which source systems contributed to the report (regardless of ETL tool), with both a developer and an end-user UI
	Support for impact analysis to highlight changes (down to which fields are impacted within a report) in the source data that affects downstream reports
Extended BI capabilities integration	Predictive analytics
	Performance management — planning, budgeting, consolidation, profitability analysis, scorecards
	Search
	ETL
	EII
	Data quality
	MDM (analytical and operational)
	BAM/CEP
	BI BPM/BRE
Collaboration/ECM	
Security, administration and infrastructure	
Common security	All tools use a common security definition
	Universal single sign-on at the individual level for all capabilities (such as reports, dashboards and OLAP)
	Ability to manage sign-ons at the group level for all BI capabilities (such as reports, dashboards and OLAP)

Critical Capability	Details of Functions
	A common location to add/delete users and modify settings
Common administration and infrastructure	All BI tools share the same query optimization and construction engine
	Single installation of BI platform components
	All tools share a common administration application
	Common scalability mechanisms (for caching, clustering, workload balancing and so on) across BI platform components
Metadata	
Common metadata	Single definition of metrics across tools
	Single repository for metadata, such as mappings of business concepts to underlying data structures (dimensions, hierarchies and measures)
	Single repository for metadata about report configurations
	Single repository for all metadata objects — KPIs, metrics, queries, reports, report configurations such as filters and prompts, data transformations, dimensions, hierarchies and calculations — with automatic change propagation of changes to metadata across report objects.

Source: Gartner (December 2009)

Use Cases

This research focuses on the four most common use cases for BI platforms, judging from our research and inquiries from clients (see Table 2):

- Analyst-driven BI.** In this use case, interoperability of platform components and common metadata is important because users rely on multiple traditional BI platform tools for production reporting, ad hoc reporting and analysis, depending upon their role. Extended BI integration is also important to help a broader range of users move beyond classic reporting into more advanced and interactive analysis and data exploration through the use of ancillary tools, such as those for data discovery and analysis and predictive analytics.
- Strategy-driven BI.** In this use case, interoperability among platform components is important — because scorecards and dashboards are the primary information delivery mechanisms — but less so than in the analyst-driven use case. Integration with extended BI capabilities, such as CPM applications, is more important in this use case (see "Magic Quadrant for Corporate Performance Management Suites"). Common metadata is weighted heavily in this use case to ensure that common metric definitions (such as an enterprise metrics framework) represent the "single source of truth" for the organization.
- Process-driven BI.** This is usually delivered via the integration of a BI platform's operational dashboards and reports into a business process application. Dashboards and reports, along with real-time analysis of the process, are typically triggered by events or time frames defined by the process. Extended BI capabilities integration, including out-of-the-box integration and application programming interfaces (APIs), is more heavily weighted in this use case in order to support dynamic real-time collection,

processing and presentation of event information and analysis to operational decision makers.

- **Workgroup-driven BI.** In this use case, more weight is given to BI platform component integration than to other capabilities relating to extended integration. While front-end architecture and administration integration is key to ease of use, less importance is placed on common security and common metadata, mainly because the associated applications are more bounded and have much less scope.

Table 2. Weightings for Critical Product Capabilities in Use Cases

Critical Product Capability	Overall	Analyst-Driven	Strategy-Driven	Process-Driven	Workgroup-Driven
Common authoring tools	15.0%	15.0%	12.5%	10.0%	25.0%
Consistent user interface across tools	15.0%	15.0%	12.5%	10.0%	25.0%
Common delivery	10.0%	12.5%	12.5%	10.0%	15.0%
Data lineage and impact analysis	10.0%	12.5%	10.0%	10.0%	0.0%
Extended BI capabilities integration	10.0%	10.0%	15.0%	20.0%	0.0%
Common security	12.5%	10.0%	10.0%	12.5%	10.0%
Common administration and infrastructure	12.5%	10.0%	10.0%	12.5%	15.0%
Common metadata	15.0%	15.0%	17.5%	15.0%	10.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Gartner (December 2009)

Inclusion Criteria

To appear in this report, software vendors had to feature in 2009's "Magic Quadrant for Business Intelligence Platforms."

We expect to see open-source products on more client shortlists in the future, so we have included three "open source" reporting tools: those of Actuate (BIRT), Jaspersoft and Pentaho.

SAS and Panorama were invited to submit their platforms for evaluation, but declined to participate. Therefore, although their BI platform offerings meet the inclusion criteria, they are not covered in this report. Clients should allocate extra time and resources to evaluate these vendors' platform capabilities.

Critical Capabilities Rating

Each of the products that meets our inclusion criteria has been evaluated for the eight critical capabilities on scale from 1 to 5, as follows:

- 1 = poor: most or all defined requirements not achieved.
- 2 = fair: some requirements not achieved.
- 3 = good: meets requirements.
- 4 = excellent: meets or exceeds some requirements.
- 5 = outstanding: significantly exceeds requirements.

A detailed framework for the scoring of each critical capability can be found in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Table 3 rates vendors on the critical capabilities of their BI platform products. Vendors are listed in the order of their overall scores, which are shown in Table 4.

Table 3. Vendors' BI Platform Product Scores by Critical Capability

Critical Capability	Tibco Spotfire	IBM Cognos	Micro-Strategy	arcplan	Board International	Actuate BIRT	Qlik-VIEW	Information Builders	Oracle	SAP	Actuate e.Reports	Jasper-soft	Actuate Combined	Pentaho	Micro-soft
Common authoring tools	5.0	3.8	4.0	5.0	5.0	5.0	5.0	2.3	3.5	2.0	3.5	3.5	3.0	3.0	3.0
Consistent UI across tools	4.8	4.0	4.0	5.0	5.0	4.0	5.0	3.5	3.3	3.3	3.0	4.0	3.0	3.5	5.0
Common delivery	2.8	4.6	4.3	3.5	2.8	3.6	4.1	4.7	3.9	4.3	3.8	2.8	3.9	3.3	2.6
Data lineage and impact analysis	3.3	4.8	2.5	1.5	2.0	1.5	1.5	3.5	3.3	4.0	1.5	1.5	1.5	1.0	2.0
Extended BI capabilities integration	2.7	4.1	2.8	2.2	1.8	1.5	2.2	3.8	3.4	3.6	1.6	1.8	1.7	2.3	3.2
Common security	5.0	5.0	5.0	4.8	5.0	5.0	4.5	5.0	4.5	4.5	5.0	5.0	5.0	4.5	3.0
Common administration and infrastructure	5.0	4.3	5.0	4.8	5.0	5.0	5.0	4.6	3.8	3.9	4.5	4.5	4.6	4.4	2.5
Common metadata	5.0	4.1	5.0	5.0	5.0	5.0	3.0	4.4	4.3	3.5	4.5	4.0	4.3	3.0	3.0

Source: Gartner (December 2009)

To determine an overall score for each product in the four use cases, the scores in Table 3 are multiplied by the weightings shown in Table 2. These overall scores are shown in Table 4.

Table 4 also gives our assessment of the viability of each product. To determine BI platform integration viability, the vendor's BI platform strategy, support, execution and investment are scored as follows:

1 = poor

2 = fair

3 = good

4 = excellent

5 = outstanding

The ratings for product viability are distinct from the critical capability scores for each product. They reflect our assessment of a vendor's strategy and its ability to enhance and support a product over its expected life cycle.

Table 4. Vendors' Overall BI Platform Product Scores by Use Case, With Assessment of Product Viability

Use Case	Tibco Spotfire	IBM Cognos	Micro-Strategy	arcplan	Board International	Actuate BIRT	Qlik-View	Information Builders	Oracle	SAP	Actuate e.Reports	Jasper-soft	Actuate Combined	Pentaho	Micro-soft
Overall	4.3	4.3	4.2	4.2	4.2	4.0	3.9	3.9	3.7	3.5	3.5	3.5	3.4	3.2	3.1
Analyst-driven	4.2	4.3	4.1	4.0	4.0	3.9	3.8	3.9	3.7	3.5	3.4	3.4	3.3	3.1	3.1
Strategy-driven	4.2	4.3	4.1	4.0	3.9	3.8	3.7	3.9	3.7	3.6	3.4	3.4	3.3	3.1	3.1
Process-driven	4.1	4.3	4.0	3.9	3.8	3.7	3.6	4.0	3.7	3.6	3.4	3.3	3.3	3.1	3.0
Work-group-driven	4.6	4.2	4.4	4.7	4.7	4.5	4.6	3.8	3.7	3.3	3.8	3.9	3.7	3.5	3.4
Product viability	Out-standing	Out-standing	Out-standing	Excellent	Out-standing	Good	Out-standing	Out-standing	Out-standing	Out-standing	Good	Good	Good	Good	Excellent

Source: Gartner (December 2009)

Analysis by Vendor

In this section, vendors are listed in alphabetical order.

Actuate

Table 5 gives Actuate's scores for BI platform integration, both overall and by use case.

Table 5. Actuate: BI Platform Integration Scores

	Actuate BIRT Score	Actuate e.Reports Score	Actuate Combined Score
Overall	4.01	3.53	3.45
Use case 1: analyst-driven	3.89	3.42	3.34
Use case 2: strategy-driven	3.83	3.42	3.34
Use case 3: process-driven	3.71	3.36	3.31
Use case 4: workgroup-driven	4.54	3.82	3.70

Source: Gartner (December 2009)

Actuate is an independent BI platform vendor with a strong focus on large-scale enterprise reporting. Since the market's consolidation, it has been pursuing two parallel product strategies in an attempt to defend its market share and reinvigorate its growth: one for its legacy e.Reports product (for scalable, brochure quality reports), and one for its offerings for the Eclipse Foundation's open-source Business Intelligence and Reporting Tools (BIRT) project (for interactive reporting and ad hoc analysis).

BIRT-based business, which generates approximately 20% of Actuate's revenue, is the company's "go forward" platform focus and its primary driver of growth.

Both tools — and their Excel-spreadsheet generator, BIRT Spreadsheet — use the Actuate iServer for their critical infrastructure capabilities (service management, security, administration and most metadata). However, having two diverging product lines with different degrees of integration, both within individual products and with each other, damages Actuate's overall integrated platform score.

While BIRT-based products scored above average overall, e.Reports did not. And although the two product lines share a common hosting, security and administration infrastructure (iServer), their front-end architectures and development environments are very different.

Because Actuate still positions these two product lines as complementary tools, often deployed together to meet broad BI platform needs, the products were also evaluated as a unified platform. This resulted in an overall lower score than for the individual products.

Interoperability of Platform Components

- Actuate BIRT receives strong scores for a consistent UI and common authoring capabilities, largely driven by the seamless extensibility of BI content authored in different user environments of BIRT's Collaborative Reporting Architecture. Although e.Report Designer Pro and the free e.Spreadsheet Designer are authoring environments and UIs independent from BIRT (which lowered the overall score), BIRT's Collaborative Reporting Architecture unifies report development across the BIRT-based products, thick-client BIRT Designers, the Interactive Viewer and ad hoc BIRT Studio. Reports

designed in one interface can be shared and enhanced across BIRT's different interfaces for highly skilled report developers, power users, business users and consumers. Moreover, BIRT offers a wide array of interactive and mobility features that are not offered with e.Reports, such as Flash animation and Apple iPhone support.

- Actuate BIRT development tools offer extensibility and integration points using industry standard Java and JavaScript languages, while e.Reports continues to support the proprietary Actuate Basic environment.
- Similar to other independent vendors, Actuate's data lineage, impact analysis, broad portal support, including certified integrations (although the JavaScript API to iServer enables the delivery of BIRT content, in part or whole, in any HTML page), and extended BI capabilities are not as well supported by the Actuate platform as they are by the megavendors' platforms. In fact, EII is the only extended BI capability in which Actuate's excels.

Security, Administration and Infrastructure

- Actuate iServer provides common security definitions and administration across metadata definitions (Information Objects, e.Reports, e.Spreadsheet and BIRT), which resulted in above average overall scores for these criteria. Even page-level security, a traditional strength of e.Reports and e.Spreadsheet, is now supported in BIRT tools, where creation and administration is simplified, compared with what is offered in e.Reports.

Metadata

- Although report definitions differ between e.Reports, e.Spreadsheet and BIRT, common data modeling, metrics, dimensions, measures and hierarchies are defined as Information Objects (Actuate's metadata and caching layer) in the Actuate iServer and used by each of these Actuate tools. Actuate has also integrated all its reporting tools with the Performance Management Scorecard application through the Information Object metadata layer.

Product Viability: Good

- BIRT is a well-integrated toolset that alone scored more highly than half the BI platforms in the survey, but as long as Actuate continues to market its legacy product as a complement, rather than a transitional offering, to BIRT, Actuate's overall integration score will suffer. Since Actuate still derives more than 80% of its revenue from legacy product lines, a bifurcated platform strategy is likely to remain in place in the short to medium term, and this will continue to adversely affect Actuate's overall BI platform integration capabilities and its users/developers.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Arcplan

Table 6 gives arcplan's scores for BI platform integration, both overall and by use case.

Table 6. Arcplan: BI Platform Integration Scores

	Score
Overall	4.15

	Score
Use case 1: analyst-driven	4.04
Use case 2: strategy-driven	3.99
Use case 3: process-driven	3.87
Use case 4: workgroup-driven	4.71

Source: Gartner (December 2009)

Arcplan receives an above-average overall score. Its impressive results are largely because it has a self-contained BI platform for building reports and dashboards with particularly strong data federation capabilities that include an extensive set of out-of-the-box data source connectors. Arcplan has particularly strong data federation capabilities for integrating SAP and SAP Business Warehouse (BW) data with non-SAP data sources.

Being self-contained and organically grown, this platform has a unified front-end architecture. It features a single authoring and development environment, and a common look and feel for building and consuming reports, dashboards and other BI applications.

Arcplan also provides a common set of tools for building a range of BI content (such as production reports, interactive reports and dashboards), an integrated security model, and a common set of metadata objects.

However, arcplan provides limited data lineage and impact analysis back to source data. In addition, beyond data federation (a core strength) and performance management (a recently acquired capability), much like most of the other independent vendors, arcplan rates below average for overall extended BI capability integration.

Interoperability of Platform Components

- Arcplan Application Designer is the authoring and development environment for all arcplan BI content applications. It is the primary tool for establishing data connections and building common "objects" that are leveraged into queries, reports, dashboards and so on.
- Arcplan Excel Analytics allows users to leverage arcplan content and objects stored in applications and reports within Microsoft Excel. Users can read and query existing arcplan objects and retain the functionalities of menus, hierarchies, queries and buttons. However, integration with Microsoft PowerPoint and Word is export-only.
- Arcplan's mashup capabilities are notable, as arcplan data can be merged with any content available in the user's browser, third-party information and graphical content, to extend arcplan applications.

Security, Administration and Infrastructure

- All security definitions from source systems are leveraged by arcplan Enterprise. Security definitions, users and groups are then managed by the arcplan framework, including single sign-on capabilities with SAP BW and other data sources (such as IBM Cognos TM1, Microsoft Analysis Services and Oracle Essbase) utilizing Integrated Windows Authentication, Kerberos and Secure Network Communications.
- Arcplan's administration console manages and administrates the arcplan Application Server(s) and the applications. This includes the management of client components and of accounts, tasks and applications.

Metadata

- Although arcplan does not employ the concept of an end-user semantic layer for self-service reporting, developers can make use of common metadata objects in development. Arcplan uses the concept of application "documents" in which application designers can create report objects and configurations, common calculations, dimensions and hierarchies, and measure "objects" and make them available for reuse in building reports, analysis and dashboards.

Product Viability: Excellent

- Arcplan has outstanding integration between its authoring tools and with back-end infrastructure. However, given its limited size and resources, when compared with larger independent vendors and megavendors, it is unlikely to make significant progress in integrating a broad range of complementary BI capabilities that would extend its platform and the styles of BI it supports.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Board International

Table 7 gives Board International's scores for BI platform integration, both overall and by use case.

Table 7. Board International: BI Platform Integration Scores

	Score
Overall	4.16
Use case 1: analyst-driven	4.03
Use case 2: strategy-driven	3.95
Use case 3: process-driven	3.84
Use case 4: workgroup-driven	4.67

Source: Gartner (December 2009)

Board is a relatively small, European-headquartered software vendor that specializes in integrated BI and CPM. It has concentrated on developing what is essentially a single product built around its core OLAP engine for analytic application development and deployment.

Board's BI platform, although narrower in functional scope than those of some competitors — firms do not select Board to deliver large-scale production reporting or complex predictive analytics, for example — is well engineered, showing strong metadata integration and consistency of approach in areas like a common user experience. As such, it scores highly for "internal" integration capabilities. However, its ability to extend BI and integrate with other technologies and disciplines is limited in comparison to the larger platform vendors. But this is unsurprising and, perhaps, an irrelevance to most of the company's customers, who mainly use Board to build analytic applications based on multidimensional data and use cases (especially for planning requirements).

Interoperability of Platform Components

- Like other BI specialists, Board gets a perfect score for common authoring tools and a consistent UI. Multiple output formats, mobile usage and certified support for portals are lacking, however.
- Data lineage and impact analysis are managed via a third-party tool and are not available from within the Board environment.
- The big BI stack players offer stronger capabilities when it comes to integrating BI platform capabilities with other complementary capabilities. By contrast, like many of the independent vendors, Board offers development-based workarounds but little in the way of partnerships for prebuilt integration. The exception is its seamless integration of BI with its CPM applications.

Security, Administration and Infrastructure

- Board's is one of only four platforms in this report — the others being those of MicroStrategy, Tibco and QlikView (QlikTech) — to score 5 out of 5 for all security and administration criteria. But competitors will point to its relative overall simplicity as the reason for this.

Metadata

- Fully shared metadata across the Board platform mean it rates very highly.

Product Viability: Outstanding

- For the subset of BI platform use cases that Board concentrates on, its platform integration is very strong — indeed it is the only vendor rated that offers a common architecture for BI and CPM. From a platform integration and metadata perspective, its product viability is outstanding.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

IBM Cognos

Table 8 gives scores for IBM's Cognos BI platform integration, both overall and by use case.

Table 8. IBM Cognos: BI Platform Integration Scores

	Score
Overall	4.28
Use case 1: analyst-driven	4.28
Use case 2: strategy-driven	4.27
Use case 3: process-driven	4.30
Use case 4: workgroup-driven	4.18

Source: Gartner (December 2009)

IBM delivers most of its BI platform capabilities through Cognos 8 — a completely re-written BI platform built on a service-oriented architecture (SOA)-based architecture and a common metadata model. The Cognos 8 BI platform supports various authoring Studios, including Report,

Query, Metric, Analysis and Event. These core components are well integrated, providing a common, Web-based UI and authoring environment, common security and administration capabilities, and a single unified enterprise semantic layer. If the assessment of IBM were based solely on Cognos 8, IBM would have received very high scores across the board for the interoperability of its platform components.

However, IBM has also acquired Applix (with its TM1 application) and Celequest (its offering is now sold as Cognos Now). These form part of IBM's BI platform in the case of TM1, and of its broader BI offering in the case of Cognos Now. The distinct nature of these products has reduced IBM's score for "common authoring tools" and "consistent UI across tools." Customers not using TM1 or Cognos Now will find IBM Cognos to be better integrated than the reported scores indicate. However, it should be noted that PowerPlay 8 is not included in this rating, as it is not sold to new customers; firms migrating from Series 7 and continuing to use PowerPlay will have to cope with legacy integration issues as PowerPlay 8 has its own authoring environment and metadata.

IBM Cognos scored very well in other areas, including common delivery, data lineage and impact analysis, common security, common administration. Like the other megavendors, IBM earned strong integration scores with complementary BI capabilities such as ETL, search, predictive analytics, analytical MDM and collaboration. IBM Cognos earned the second-highest overall integration score in the survey.

Interoperability of Platform Components

- All Cognos 8 platform components use a common development and authoring environment. IBM Cognos 8 BI components are all launched from an integrated platform UI, Cognos Connection. TM1 has its own authoring environment, and Cognos Now also has a separate development/authoring environment for dashboards.
- The Cognos UI (toolbars and menus) is similar across most functions (reporting, query and analysis). Metric Studio has a slightly different look and feel. By design, some toolbar and menu items are different because Metric Studio supports unique tasks beyond reporting, query and analysis. TM1 and Cognos Now UIs also differ.
- Workflow between the Cognos 8 BI components (not TM1 and Cognos Now) is very strong for most tools. For example, queries created in Analysis Studio may be formatted in Report Studio, and Query Studio queries can be opened in Report Studio, but the user must be licensed for each Studio. However, Metric Studio is a self-enclosed application, with its UI, metrics repository, ETL and schema.
- Integration with IBM InfoSphere Business Glossary provides a strong data lineage capability. Moreover, report consumers and report authors can define terms and taxonomies for selected items in reports or metadata, to provide understanding to users.

Security, Administration and Infrastructure

- As with most of the participants in this report, IBM's common security and administration capabilities are strong. All BI platform components — including Cognos TM1 and Cognos Now — can use a common security model because they are all supported as data sources for Framework Manager. However, TM1 and Cognos Now have their own administration applications.

Metadata

- Among the megavendors, IBM and Oracle lead in the semantic layer assessment, as both placed emphasis earlier than SAP on metadata integration in their respective product integration road maps.
- Cognos 8 provides a single metric definition for all BI capabilities through the generation of a common model in Framework Manager — although Metric Studio, while leveraging Framework Manager packages, has its own metrics engine and repository, which are loaded and refreshed separately. Metric Studio, like the other Cognos 8 applications, is accessed by end users through the Cognos Connection portal. However, it still is very much a self-enclosed application, which requires its own schema, and where data has to be populated with Metric Studio loading tools before it can be used for metrics. Once metrics are defined, they are stored in a separate relational data store. Impact diagrams are set up manually, and there is very limited drill-through support for root-cause analysis.
- IBM Cognos does not have automatic change propagation — customers usually use IBM Cognos partners for this functionality — but Framework Manager provides impact analysis that allows information to be relayed to users when a change to a model has occurred and that tracks change details.

Product Viability: Outstanding

- IBM completely rewrote its BI platform between 2003 and 2005. Other than some changes to the OLAP architecture, the Cognos 8 BI platform is unlikely to change much in the near future. The major changes to the product architecture will be on the CPM suite side as IBM Cognos re-architects its planning solution on the TM1 technology.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Information Builders

Table 9 gives Information Builders' scores for BI platform integration, both overall and by use case.

Table 9. Information Builders: BI Platform Integration Scores

	Score
Overall	3.92
Use case 1: analyst-driven	3.89
Use case 2: strategy-driven	3.95
Use case 3: process-driven	4.01
Use case 4: workgroup-driven	3.77

Source: Gartner (December 2009)

Information Builders' strategy has been to build its own BI platform technology, rather than acquire it piecemeal. The result is the mature and generally well-integrated set of capabilities found in WebFOCUS, Information Builders' core product, which has common security and administration capabilities, and a single unified enterprise semantic layer.

There is a "but," though, as regards WebFOCUS's integration when it comes to having a single authoring environment and a common UI. Even allowing for these issues, if this assessment were based on WebFOCUS alone, Information Builders would have received higher scores. However, Information Builders' platform also "OEMs" the interactive visualization capabilities of Advizor Solutions as WebFOCUS Visual Discovery, which, while it consumes WebFOCUS attributes like security, administration and metadata, remains a distinct technology.

Beyond internal platform integration, Information Builders' very strong ability to integrate extended BI capabilities is noteworthy, particularly when it comes to predictive analytics, search, data integration/EII (via its iWay offering) and business activity monitoring/continuous event processing. Information Builders is the only independent BI platform vendor other than MicroStrategy to receive an above-average score for extended BI capabilities integration.

Interoperability of Platform Components

- Information Builders' BI platform rates above average for the interoperability of platform components underpinned by WebFOCUS's common capabilities.
- Its common delivery capabilities — that is, provision of a broad range of output formats with consistent interactivity across them — scores more highly than any other vendor evaluated.
- Information Builders developed WebFOCUS from the ground up, so acquisition is not a legitimate excuse for its inconsistent user experience across modules and apparent inability to modify and extend content between tools across the BI platform.

Security, Administration and Infrastructure

- Common security across the BI platform was the most mature capability among the vendors evaluated, and Information Builders' offering was no exception.
- The Visual Discovery module consumes WebFOCUS security definitions and shares a single installation.

Metadata

- WebFOCUS has a single repository for all metadata objects — KPIs, metrics, queries, reports, report configurations and so on.

Product Viability: Outstanding

- Information Builders gets a significant advantage from its sister company iWay Software's extended integration capabilities in ETL, EII and data quality. WebFOCUS itself is a well-integrated BI platform, but with some important "wrinkles" when it comes to the things that end users see most — common authoring tools and consistent UIs. In addition, its use of "OEMed" technology, while offering very sophisticated interactive data visualization, stops it from getting a perfect score for platform integration, but its results are nonetheless strong and merit a product viability rating of "outstanding."

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Jaspersoft

Table 10 gives Jaspersoft's scores for BI platform integration, both overall and by use case.

Table 10. Jaspersoft: BI Platform Integration Scores

	Score
Overall	3.52
Use case 1: analyst-driven	3.39
Use case 2: strategy-driven	3.36
Use case 3: process-driven	3.33
Use case 4: workgroup-driven	3.87

Source: Gartner (December 2009)

Although open-source BI platforms have yet to gain widespread adoption, Jaspersoft is one of three open-source BI vendors — beside Pentaho and Actuate (BIRT) — that have achieved some market traction and that are growing strongly. While parts of its integration are strong — an integrated front-end architecture and common administration and security, for example — and its road map promises future progress, it does not yet have a mature and fully integrated BI platform. As with Pentaho, limitations in the semantic layer, below-average common delivery mechanisms, a lack of data lineage, and immature integration with complementary BI capabilities put Jaspersoft in the bottom three in terms of overall score.

Interoperability of Platform Components

- The Jaspersoft Business Intelligence Suite comprises an interactive reporting server, graphical and ad hoc report design interfaces, and an OLAP analysis server. Jaspersoft offers two interfaces for report development: iReport (an IT-developer-oriented tool) and JasperServer (aimed at business users). These tools, and JasperAnalysis, represent different development and authoring environments.
- Although authoring environments differ for each tool, the architectures are well integrated, supporting an above-average seamless experience across most Jaspersoft tools. Users can modify and extend content between most tools. Some examples: reports defined using JasperServer may be further refined using the iReport report designer tool; MDX queries built in iReport may be used as a data source for reports in iReport, or used as a starting point for analysis in the JasperAnalysis UI; a parameter input control (prompt) may be implemented using the iReport advanced report designer, and then reused within a stand-alone report or a dashboard.
- Jaspersoft BI platform components use the same UI, which is another strength. The repository manager is a Web application that uses Ajax and dynamic HTML to provide a rich-client type of user experience, but running as a thin-client Web UI and without requiring installation of any rich-client applications or plug-ins.

Security, Administration and Infrastructure

- Common security model, security administration (addition and deletion of users), and BI server administration across all Jaspersoft BI components is a strength, with above-average scores for all but one subcriterion (common query optimization and construction engine). All Jaspersoft BI platform components for reporting, analysis, and dashboarding use a common security model. This is based on two components: (1) the Spring Security (formerly Acegi Security) solution, which is integrated into the JasperServer to handle authentication and authorization; (2) the Jaspersoft repository, a secure database schema that stores objects securely.

- JasperServer Professional accesses the same query optimization and construction engine whether a user creates an ad hoc report, chart, crosstab, dashboard, or in-memory analysis view. JasperAnalysis (for OLAP) uses a different query and construction engine.

Metadata

- Although Jaspersoft has made progress in providing most of the elements of what Gartner defines as a BI platform, it still lags behind most other vendors in providing a fully featured end-user semantic layer. Jaspersoft's direction is to move toward a single, domains-based semantic layer for all BI capabilities including reporting, dashboarding and OLAP. The first phase of this move came in April 2009 with in-memory analysis capabilities running off the Jaspersoft semantic layer, without requiring a separate OLAP infrastructure. The second phase will be delivered in January 2010, with enhanced in-memory analytical capabilities.
- While metrics are currently defined in multiple places in the platform, reporting, semantic layer and OLAP schema definitions are stored and managed using the single repository. This will provide a strong foundation for future semantic layer enhancement.

Product Viability: Good

- The chances of Jaspersoft ultimately providing an integrated BI platform are good, but this company does lag behind most other vendors in delivering on many of the core elements of an integrated infrastructure.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Microsoft

Table 11 gives Microsoft's scores for BI platform integration, both overall and by use case.

Table 11. Microsoft: BI Platform Integration Scores

	Score
Overall	3.11
Use case 1: analyst-driven	3.09
Use case 2: strategy-driven	3.07
Use case 3: process-driven	3.03
Use case 4: workgroup-driven	3.37

Source: Gartner (December 2009)

Even though Microsoft has built its BI platform offerings over time, largely through internal development and small acquisitions, it receives the lowest overall score. This is largely because Microsoft's BI platform offerings reside in three different products: Microsoft SQL Server, Microsoft Office and Microsoft SharePoint Server (which, since January 2009, has included Microsoft PerformancePoint Services "monitor" components for dashboards and scorecards, and the stand-alone Microsoft ProClarity). The BI components for each of these products are developed and marketed under the leadership of a single executive team, which was formed three years ago and has significantly improved the coordination of the product teams.

There is interoperability and there are strong points of integration between the BI components in each product — for example, all tools are optimized for SQL Server Analysis Services data sources, and SharePoint Server can use SQL Server Reporting Services security for report distribution. However, Microsoft has purposefully not built a single, common BI platform whereby a common security, administration and semantic layer are used by all BI platform tools. Since Microsoft uses its BI functionality to drive revenue in the three distinct products — Office, SQL Server and SharePoint Server — it has somewhat different goals for its BI platform capability than other BI platform vendors, and little incentive to provide a single unified BI platform.

Microsoft does, of course, have all the core pieces of functionality that make up a BI platform. It also plans, in Office 2010 and SharePoint 2010, to improve security and administration integration between SharePoint Server and SQL Server. The company's low overall score simply reflects the fact that it has chosen not to take the path of the other megavendors, which have re-architected their BI offerings into cohesive platforms with common infrastructures (though often at considerable expense and with significant migration pain for their customers).

Please note that although PerformancePoint Analytics (ProClarity) is a stand-alone product, it has been excluded from the scoring because it is not part of Microsoft's future road map — this functionality being incorporated into SharePoint 2010

Interoperability of Platform Components

- A clear strength for Microsoft is its consistent UI across tools based on an Office paradigm. All Microsoft BI platform tools have consistent commands, menu items and toolbars.
- Microsoft has a common Visual Studio-based BI development and authoring environment across SQL Server tools. This is a core strength. However, end-user authoring and development in PerformancePoint Services and SharePoint Server require separate environments. End users can leverage Office via Excel and Excel Services in SharePoint Server, the SharePoint Server dashboarding capabilities, the PerformancePoint Monitor dashboarding and scorecarding, and SQL Server Report Builder in SQL Server — each has its own authoring environment.
- Like the other megavendors, Microsoft provides strong integration with extended BI platform capabilities, including predictive analytics, search, ETL, data quality, BAM/BPM (BizTalk) and collaboration. Integration with collaboration capabilities in SharePoint Server is the strongest of any vendor included in this analysis. Whereas Oracle and SAP are application-driven and IBM is information-management-driven in their BI go-to-market and product strategies, Microsoft's collaboration-driven approach is enabled by integrating its BI offerings with SharePoint Server for collaboration and enterprise content management (ECM). SharePoint 2010 will also feature social software and enterprise search functions.

Security, Administration and Infrastructure

- Strong SQL Server Reporting Services and SharePoint Server integration allows users to configure a report server to run within a deployment of SharePoint Server, and to use the collaboration and centralized document management features of Windows SharePoint Services 3.0 or Office SharePoint Server 2007 with Reporting Services. For the other components, such as SQL Server Analysis Services and PerformancePoint Services, security definition and administration are defined in each component..
- SQL Server Analysis Services is the de facto analytic engine for most Microsoft BI applications. There is no query engine per se in SQL Server Reporting Services,

SharePoint Server and PerformancePoint Services, query optimization and execution is either SQL (SQLSrvr.exe) or Multidimensional Expressions (MDX) via SQL Server Analysis Services, and there is only one processor for and optimizer of each in the Microsoft model. Excel Services uses the same query optimization as Excel, namely SQL Server Analysis Services.

Metadata

- In the absence of an enterprise semantic layer, the Unified Dimensional Model (UDM) expressed by SQL Server Analysis Services cubes acts as the unifying data structure and common security mechanism for dimensions, hierarchies, measures and KPIs built from diverse data sources for most Microsoft BI deployments. We believe that supporting a unified end-user semantic layer is not a key development priority for Microsoft, as it does not think it necessary to drive adoption and sales across the three core elements of its BI platform (SQL Server, SharePoint Server with PerformancePoint Services, and Office).

Product Viability: Excellent

- It is important to note that although we rate Microsoft's overall BI platform product viability as "outstanding," particularly given the success of its low-license-cost bundling strategy with SQL Server and SharePoint Server, we consider its viability for an integrated infrastructure as "excellent." The reason for the difference lies in Microsoft's trifurcated BI strategy. While tighter integration between SQL Server, PerformancePoint Services, Office and SharePoint Server will be a part of the next release of Office, Office 2010 and SharePoint 2010, a completely integrated BI platform (with common security, administration and metadata layer, in particular) is not on Microsoft's road map and is therefore unlikely to materialize in the short or medium term.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

MicroStrategy

Table 12 gives MicroStrategy's scores for BI platform integration, both overall and by use case.

Table 12. MicroStrategy: BI Platform Integration Scores

	Score
Overall	4.16
Use case 1: analyst-driven	4.08
Use case 2: strategy-driven	4.08
Use case 3: process-driven	4.04
Use case 4: workgroup-driven	4.40

Source: Gartner (December 2009)

MicroStrategy has built its BI platform from the ground up solely through organic development. The high level of integration of individual platform components and the reusability of MicroStrategy's well-architected and object-oriented semantic layer are the result of this strategy.

MicroStrategy provides common services for metadata, prompt generation, scheduling, shared caching, security, user management, query generation, query governing, and administration with

an integrated relational OLAP and analytics engine. Its "service modules" — which deliver the full range of BI platform functionality, including pixel-perfect reporting, dashboards, OLAP analysis and alerting — plug into this backplane.

MicroStrategy's above-average scores in all critical-capability areas except data lineage and impact analysis are a reflection of its integrated architecture. Its average overall integration score is exceeded only — and only slightly — by IBM of the BI platform vendors in the Leaders quadrant of 2009's "Magic Quadrant for Business Intelligence Platforms."

Interoperability of Platform Components

- MicroStrategy has both a Web-based and a desktop authoring environment for report objects. Their interfaces vary in functionality. Report objects created in either interface may be used to create documents — reports with multiple report objects — and dashboards using the add-on Report Services module for relatively seamless workflow between authoring environments.
- Although its integration of platform components is strong, as one of the remaining independent BI platform vendors MicroStrategy lags behind the megavendors in integrating complementary BI capabilities such as search, ETL, BAM and BPM.

Security, Administration and Infrastructure

- MicroStrategy's well-integrated Intelligent Server provides a single query optimization engine with robust and common security administration, and common scalability mechanisms for all BI platform components.
- MicroStrategy's is one of only four platforms — beside those of Board International, Tibco Software (Spotfire) and QlikView — in this report to rate 5 out of 5 for all security and administration criteria. While it could be argued that Board, Tibco, and QlikView sacrifice integration for simplicity, this is not the case with MicroStrategy. Security and administration are both well integrated and support enterprise requirements.

Metadata

- MicroStrategy has arguably the broadest range of reusable metadata objects from the data abstraction layer to report elements such as prompts, filters, metrics and "autostyles." The objects themselves can be used to create new objects such as report definitions. Because of the object-oriented nature of MicroStrategy metadata objects, a change to one object is automatically reflected in other objects that are dependent on it.

Product Viability: Outstanding

- MicroStrategy's strategy for internal product development will propagate its well-integrated BI platform infrastructure. Expanding its partner base for complementary BI platform capabilities — as it has done for MDM and CPM — or building these capabilities internally — as it has done for EII — will enhance its already-strong BI platform component integration.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Oracle

Table 13 gives Oracle's scores for BI platform integration, both overall and by use case.

Table 13. Oracle: BI Platform Integration Scores

	Score
Overall	3.74
Use case 1: analyst-driven	3.71
Use case 2: strategy-driven	3.74
Use case 3: process-driven	3.74
Use case 4: workgroup-driven	3.71

Source: Gartner (December 2009)

Oracle has built its BI platform capabilities largely through the acquisitions of Siebel and Hyperion. Ad hoc analysis, dashboarding and BI server components based on the former Siebel Analytics platform are the cornerstone of the Oracle Business Intelligence Enterprise Edition (OBIEE) platform (Oracle calls this the Business Intelligence Foundation). These core components are well integrated, providing a common, Web-based UI and authoring environment for ad hoc analysis, dashboards, common security and administration capabilities, and a single unified enterprise semantic layer.

If our assessment of Oracle were based solely on the ad hoc analysis, dashboarding and BI server components of OBIEE, Oracle would have received very high scores across the board. However, Oracle has also acquired and leveraged internally developed products to round out its BI platform capabilities. Since its acquisition of Siebel and Hyperion, Oracle has added the internally-developed Business Intelligence Publisher for production reporting, Hyperion Financial Reports for financial reporting, and Oracle Essbase for OLAP-intensive reports to its go-forward BI portfolio. Although integration is a key focus of the Oracle road map and is progressing rapidly, levels of integration between the well-integrated core OBIEE platform (formerly Siebel Analytics) components and the rest of Oracle's BI platform portfolio remain varied. Oracle's out-of-the-box integration with its own and other vendors' ancillary BI platform capabilities also varies, but is strong for CPM applications and middleware — core Oracle strengths — particularly when compared with independent BI platform vendors.

Interoperability of Platform Components

- The strong integration of the core OBIEE platform is offset by the addition and ongoing integration of the internally developed Business Intelligence Publisher and Hyperion Essbase.
- Like most of the megavendors' platforms, OBIEE has strong integration with extended BI capabilities, particularly Oracle's own middleware stack and CPM applications (and beyond that, with its suite of enterprise applications).

Security, Administration and Infrastructure

- Whereas most BI platform vendors scored well in having a common security model, Oracle is still building this level of integration between the OBIEE platform and Hyperion Shared Services, although single sign-on is supported across all OBIEE, Business Intelligence Publisher and Essbase components.
- OBIEE's core components share a common administration application, and Business Intelligence Publisher can be administered using the same application (for example, user roles and security permissions and Business Intelligence Publisher can reuse OBIEE metadata). Business Intelligence Publisher does have additional mechanisms for

query definition, metadata administration and user management for when it is deployed as a stand-alone product or embedded in other Oracle E-Business Suite, PeopleSoft or Siebel applications, but these can be ignored when Business Intelligence Publisher is used with core OBIEE components. However, Oracle Essbase is administered with different applications.

Metadata

- Of the megavendors, Oracle and IBM Cognos lead in the semantic layer assessment as both placed emphasis earlier than SAP (Business Objects) on metadata integration in their respective product integration road maps.
- The enterprise semantic layer is a strength of OBIEE as it is dimensionally aware and fragment-aware, and is open to any Open Database Connectivity (ODBC) client. Essbase can be used as a data source for the OBIEE semantic layer with some restrictions, and enhancements to this integration are on the road map.

Product Viability: Outstanding

- Oracle is a megavendor that has built its BI platform primarily through acquisition. Continued integration of its BI and EPM components, along with the Oracle enterprise applications and Fusion Middleware, is a priority for Oracle.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Pentaho

Table 14 gives Pentaho's scores for BI platform integration, both overall and by use case.

Table 14. Pentaho: BI Platform Integration Scores

	Score
Overall	3.19
Use case 1: analyst-driven	3.08
Use case 2: strategy-driven	3.08
Use case 3: process-driven	3.10
Use case 4: workgroup-driven	3.53

Source: Gartner (December 2009)

In just a few years, Pentaho has put together a comprehensive open-source BI platform that includes data integration and data-mining capabilities. It was the first open-source BI vendor to pull together diverse BI platform component open projects into a comprehensive BI platform with common administration, security and, more recently, a common semantic layer. Although an overall score in the bottom three — beside JasperSoft and Microsoft — reflects our view that Pentaho's BI platform integration lags behind most of its major commercial BI vendor competitors, and remains a work in process, Pentaho does have a number of platform integration strengths. In particular, it has built a common administration application and created security definitions across its BI platform components. Mashups, as well as integrated data integration and data mining, are also well supported.

Interoperability of Platform Components

- Although the client tools require different authoring environments, Pentaho has made progress in providing a common BI workflow across some of its tools. For example, ad hoc reports created in the Pentaho User Console can be opened and modified using Pentaho's pixel-perfect Report Designer.
- Moreover, Pentaho has made significant progress in providing a common UI with common menu items and toolbars for content accessed through the Pentaho User Console (reports, dashboards and analytical views).

Security, Administration and Infrastructure

- Pentaho provides a common enterprise administration console for most of its BI platform components.
- All tools in the platform can use a common Pentaho security model with a common application for user administration, and, in the commercial version, single sign-on. However, although Pentaho's BI platform integrates with Lightweight Directory Access Protocol (LDAP) and Microsoft Active Directory, it does not support the administering of users from a common location when using these third-party security providers.
- Pentaho provides capabilities for a single server installation for all its BI components (report engine, OLAP engine, ETL engine and so on), but for limited platform options. Pentaho's default deployment uses Apache Tomcat and a MySQL application repository; manual deployment packages are provided for other application servers and relational databases.

Metadata

- The semantic layer feature of Pentaho's platform was introduced in 2007. While this was an important step for an open-source vendor, the capabilities are fairly immature, compared with most of the other BI vendors.
- Metrics can be defined differently in most of the tools as part of the OLAP schema, inside the reporting metadata layer, or inside reports directly. Pentaho Dashboards and Pentaho Reporting can access dimensions, hierarchies and measures defined in Pentaho Analysis OLAP schemas as a data source.
- Report configurations are consistent across Pentaho Reporting, Pentaho Dashboards and Pentaho Analysis (when used as a data source for Pentaho Reporting), but interactive analysis views share a different report configuration from that of reports.

Product Viability: Good

- To expand its market adoption, Pentaho needs to progress on a number of fronts simultaneously by adding functionality, enhancing scalability and improving integration. While a community-based open-source model may bring significant resources in aggregate, it is harder to direct these resources to address any single goal (nor is that the point of open-source software). As a result, progress on Pentaho's BI platform integration will likely occur more slowly than if integration were the sole challenge to its market acceptance and competitiveness against commercial vendors.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

QlikView

Table 15 gives BI platform integration scores for QlikView, both overall and by use case.

Table 15. QlikView: BI Platform Integration Scores

	Score
Overall	3.91
Use case 1: analyst-driven	3.82
Use case 2: strategy-driven	3.71
Use case 3: process-driven	3.63
Use case 4: workgroup-driven	4.62

Source: Gartner (December 2009)

QlikView is a self-contained BI platform that is particularly well suited to workgroup and departmental use cases. The platform's purpose-built ETL application, in-memory data store, and set of well-integrated BI tools with unified delivery mechanisms that leverage common security and administration merit an above-average overall score. However, much like other independent vendors, QlikView lags behind most of the megavendors in its support for data lineage, impact analysis and complementary BI capabilities beyond ETL. Moreover, as QlikView is targeting larger BI deployments that span the enterprise, the lack of an enterprise semantic layer — while expedient for personal, workgroup and departmental deployments — requires common definitions, calculations and conformed dimensions for cross-functional analysis across QlikView applications to be managed outside QlikView or the use of implementation best practices to simulate these within QlikView. Security, though unified and well suited for departments, requires definition in the QlikView load script.

Interoperability of Platform Components

- All development and authoring is done in the QlikView tool and there are common menus, toolbars, commands and functions across QlikView capabilities.
- Mashups are well supported through the QVPX mashup API. All data, APIs and interactivity are available through this API, which is available directly in the QlikView Ajax client.
- While QlikView has built-in ETL with some data quality capabilities, support for other extended BI capabilities, such as predictive analytics and CPM applications, is limited. For example, QlikView offers set analysis but cannot import data-mining models (using Predictive Model Markup Language [PMML] or otherwise) built into other tools. Moreover, while QlikView has strong modeling features and can support "what if?" types of analysis and limited forecasting, it lacks the advanced data allocation, workflow and write-back features of dedicated planning tools. Nor does it offer out-of-the-box support for scorecarding methodologies.

Security, Administration and Infrastructure

- All components of QlikView use a common security model and administration application, resulting in strong overall scores in this category. In fact, QlikView is one of only four platforms — beside those of MicroStrategy, Tibco and Board — in this report to score 5 out of 5 for all security and administration criteria.

- However, although QlikView's security receives a high score for integration and common definitions, QlikView provides only basic capabilities to add users and groups (there is, for example, no central location when multiple directory service plug-ins are deployed), and to assign rights to those users and groups; also, access levels are assigned to users in one or several tables loaded in the application section access capability of the QlikView load script.

Metadata

- QlikView's flexibility to combine and manipulate data and to rapidly deploy applications is a huge part of its allure to business users. However, this flexibility and lower upfront deployment effort is in part derived from the lack of a true end-user semantic layer. QlikView's below-average scores in this category reflect this. All KPIs, metrics, queries, report configuration, filters, prompts, transformations, dimensions, hierarchies and calculations are contained in the same place (the QlikView application) and are shared across all BI functionality within a QlikView application. A best practice to mitigate silos that can arise without a semantic layer is to build multiple layers of QVD and QVW files to share metrics and create "conformed dimensions" across QlikView applications; an alternative approach would be to manage these outside QlikView applications. Even with this approach, users may still define their own metrics within self-contained QlikView applications that are not shareable.

Product Viability: Outstanding

- QlikView has "outstanding" prospects for continued improvement of its BI platform integrated infrastructure. It can build on its already well-integrated BI platform base to extend integration with ancillary capabilities, and can expand its already-common security, administration and scalability capabilities to include more enterprise features.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

SAP

Table 16 gives SAP's scores for BI platform integration, both overall and by use case.

Table 16. SAP (Business Objects): BI Platform Integration Scores

	Score
Overall	3.54
Use case 1: analyst-driven	3.54
Use case 2: strategy-driven	3.58
Use case 3: process-driven	3.64
Use case 4: workgroup-driven	3.34

Source: Gartner (December 2009)

Before its acquisition by SAP, Business Objects had been an acquisitive company in its own right, broadening its BI functionality from its historic core in ad hoc query and reporting by buying a number of firms, including Acta Technology (for data integration), Crystal Decisions (for enterprise reporting) and InfommerSSION (Xcelsius, for dynamic dashboarding and data visualization). This approach enabled the company to grow its revenues quickly and to deliver new and valuable functionality quickly, but had the inevitable effect of introducing varied

architectures and approaches into the Business Objects stable, with different authoring tools, UIs, delivery mechanisms, security, administration tools and metadata models.

Over the years, Business Objects worked hard to promote the practical interoperation of platform components, through methods such as using report links to pass parameters via URLs. However, for commercial reasons SAP has chosen to keep tools like Crystal Reports and Xcelsius as stand-alone products that can be purchased without SAP BusinessObjects XI and that have their own administration tools, metadata and so on in order to function separately. Add this to the complexity of SAP's own BI tooling (BeX) and its BI/data warehouse infrastructure (particularly re Business Warehouse [BW]) and SAP still has some way to go to provide a fully integrated BI platform.

Interoperability of Platform Components

- SAP BusinessObjects does not offer a common authoring or consistent user experience, but takes markedly different approaches across its components.
- Data lineage and extended BI integration capabilities are evident strengths for SAP, as they are for the other megavendors. Of the megavendors, SAP in particular provides a strong end-user data lineage interface from within the Web Intelligence environment. A similar interface is not available within Crystal Reports or Xcelsius.

Security, Administration and Infrastructure

- Whereas most BI platform vendors scored well in having a common security model, SAP BW and Strategy Management (formerly Pilot) have their own security and administration environments distinct from SAP BusinessObjects Enterprise. Interoperation across these distinct environments is supported, however: BusinessObjects Enterprise can use the security model in SAP BW without requiring administrators to recreate or modify the BW security. Subsequent changes made to the security rights of a BW user automatically carry forward to BusinessObjects Enterprise synchronously. Similarly, release 7.5 of Strategy Management offers single sign-on with BusinessObjects Enterprise via shared tokens, and can consume users/groups and authentication settings as defined in the BusinessObjects Enterprise administration console.

Metadata

- For many, the defining feature of SAP BusinessObjects is that its "universe" semantic layer is available to most platform modules natively (Xcelsius being the exception). However, other factors, such as limited support for dimensional concepts in the universe, mean that other metadata repositories are needed to support use cases that go beyond relational reporting.
- SAP BW/InfoCubes have their own distinct metadata that must be exported to the SAP BusinessObjects universe, which has limitations due to the lack of multidimensional support in the BusinessObjects universe. Re-architecting the SAP BusinessObjects semantic layer is a key road map item for the SAP BusinessObjects BI suite in its next major release. However, at present, organizations that run SAP BusinessObjects as a front-end tool to SAP BW typically access SAP BW Queries as the data source. While the SAP BW Integration Kit does enable automatic generation of an OLAP Universe in SAP BusinessObjects, SAP BusinessObjects Xcelsius, Crystal Reports and Web Intelligence products do not use OLAP universes — they use relational queries, rather than MDX queries.

Product Viability: Outstanding

- Given the extended acquisition activity that resulted in today's SAP BusinessObjects, it is no surprise that integration is the firm's top priority. The next significant release is planned to improve interoperability across suite components, further harmonize UIs, and add dimensional awareness to the universe semantic layer. Given that, a product viability rating of "outstanding" is merited.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

Tibco Spotfire

Table 17 gives Tibco Software's scores for Spotfire BI platform integration, both overall and by use case.

Table 17. Tibco Spotfire: BI Platform Integration Scores

	Score
Overall	4.33
Use case 1: analyst-driven	4.23
Use case 2: strategy-driven	4.17
Use case 3: process-driven	4.11
Use case 4: workgroup-driven	4.61

Source: Gartner (December 2009)

Tibco Spotfire is a self-contained BI platform specializing in interactive visualization. With a single unified front-end architecture leveraging common security, administration and metadata, and strong data lineage capabilities, Tibco Spotfire earned the highest overall scores in this analysis. Moreover, unlike most other self-contained BI platforms — such as QlikView — leveraging its recent acquisition of Insightful for data mining and post-acquisition integration with Tibco middleware, Tibco Spotfire offers above-average integration with extended BI platform capabilities, particularly in the areas of data mining, predictive analytics, data quality, MDM, BAM and BPM. Although strong in most integration areas, Tibco lags behind other vendors in providing Office integration, and mobile and portal support.

Interoperability of Platform Components

- Tibco Spotfire's front-end tools are well integrated. Spotfire Professional is the environment for authoring analytical applications used and modified by Spotfire's end-user environments, Spotfire Enterprise Player (thick client) and Spotfire Web Player (Web-based). All BI analysis functions are performed in these two nearly identical interfaces. The Spotfire thick client supports both the creation of BI analysis files and the performance of BI analysis. Spotfire Web Player is for analysis over the Web, but the analysis controls are exactly the same as in the thick client, although menu options related to authoring are removed. The same visuals, filters and interactions exist across the Professional, Enterprise Player and Web Player interfaces.
- Tibco Spotfire provides data lineage tools for both users and developers — which is rare except for the megavendors. The end-user UI displays information about the origin of the data table, together with any transformations or other modifications that have been made to the original source data.

- Although Tibco Spotfire's mashup API for the Web Player provides an interactive widget that can be — and has been — integrated into the portlets of major portal vendors, Tibco Spotfire does not provide out-of-the-box portlets, and does not have certified integrations with any of the major portal vendors.

Security, Administration and Infrastructure

- The Spotfire Analytics Server's User Services module centrally controls all access rights and preferences for the entire platform, while all administration tasks are handled through the Administration Manager UI (or Information Designer for defining the metadata model). Tibco Spotfire is one of only four platforms — beside those of MicroStrategy, Board and QlikView — in this report to score 5 out of 5 for all security and administration criteria. Like Board and QlikView, Tibco has been oriented toward smaller departmental deployments.
- There is a common query and construction engine within the Spotfire Server. It leverages an in-memory repository for data scalability. The Information Services layer within the Spotfire Server gives end users the ability to access and analyze data from multiple databases simultaneously.

Metadata

- The Spotfire server-based Information Services is a metadata layer used to define data sources, columns, calculations (such as KPIs and conversions), parameters, procedures, prompts and filters that can be used for ad hoc querying or to build reusable Information Links (queries).
- Along with Information Services, which stores building blocks of "report" definitions, the Spotfire Library stores the final "report" configurations.
- Information Elements are made up of Data Sources. Information Links are made up of Information Elements. Spotfire Documents are linked to Information Links. When any of the building block components or their properties — such as access control lists — are altered, the changes are automatically propagated through the linking the next time the report is accessed.

Product Viability: Outstanding

- Tibco Spotfire is a well-integrated platform with above-average scores for most of the criteria evaluated in this survey and outstanding prospects for future integration improvements. Tibco's below-average support for Microsoft Office integration, mobile integration, mashups and portal integration, and integration with the Tibco middleware stack and its newly acquired data-mining tool, are expected to improve over time.

A detailed explanation of scores is provided in "Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor."

BOTTOM LINE

This research compares the BI platform integration of 15 BI platforms, outlining four common use cases and eight critical capabilities that evaluators should consider when making BI purchasing or rationalization decisions. The critical capabilities differentiate the BI platforms' infrastructure integration. BI and IT architects should focus on how well a BI platform's infrastructure is integrated in order to reduce manual integration and lower ongoing costs.

RECOMMENDED READING

"Toolkit: Weighted Scorecard for Selecting an Integrated BI Platform Vendor"

"Magic Quadrant for Business Intelligence Platforms"

"Critical Capabilities for Business Intelligence Reporting"

"SWOT: SAP's Business Intelligence Platform, Worldwide"

"SWOT: IBM Cognos, Business Intelligence Platforms, Worldwide"

"SWOT: QlikTech, Business Intelligence Platforms, Worldwide"

"SWOT: Microsoft, Business Intelligence Platforms, Worldwide"

"SWOT: Oracle Business Intelligence Platform, Worldwide"

"SWOT: MicroStrategy, Business Intelligence Platforms, Worldwide"

Note 1

Critical Capabilities Methodology

"Critical capabilities" are attributes that differentiate products in a class in terms of their quality and performance. Gartner recommends that users consider these among the most important factors for acquisition decisions.

Our methodology requires analysts to identify the critical capabilities for a class of products. Each capability is then weighted in terms of its relative importance overall, as well as for specific product use cases. The sum of weights across capabilities equals 100%.

Next, they rate the products in terms of how well they achieve each of the critical capabilities. Scores that summarize how well they meet the critical capabilities overall, and for each use case, are then calculated for each product.

Ratings and summary scores range from 1 to 5:

1 = poor: most or all defined requirements not achieved.

2 = fair: some requirements not achieved.

3 = good: meets requirements.

4 = excellent: meets or exceeds some requirements.

5 = outstanding: significantly exceeds requirements.

Product viability is our assessment of the vendor's strategy and its ability to enhance and support a product over its expected life cycle; it is not an evaluation of the vendor as a whole. Each product is rated on the above five-point scale from poor to outstanding. Four major areas are considered: strategy, support, execution and investment:

- Strategy includes how a vendor's strategy for a particular product fits in relation to its other product lines, market direction and overall business.
- Support includes the quality of technical and account support and customer experiences for the product.

- Execution considers a vendor's structure and processes for sales, marketing, pricing and deal management.
- Investment considers the vendor's financial health and the likelihood of the individual business unit responsible for a product continuing to invest in it.

The critical capabilities Gartner has selected may not represent those most important for a specific use situation or business objective. Clients should use analysis of critical capabilities as just one of several sources of information about a product before making acquisition decisions.

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