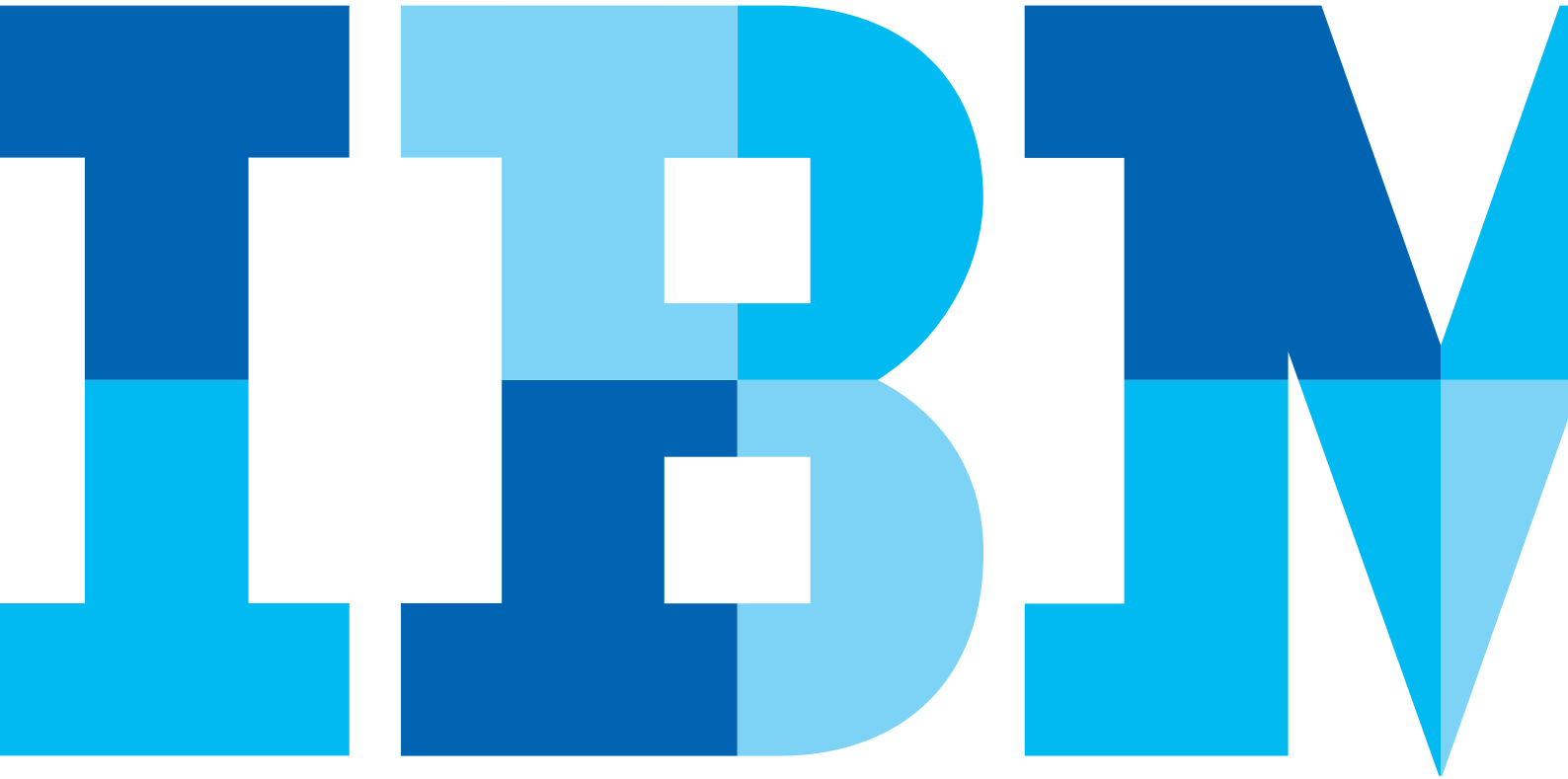


The right architecture for business intelligence

The foundation for effective enterprise BI



Abstract

Analytics are changing how organizations today operate. Being able to quickly and effortlessly interact with business information is now considered essential to making the best business decisions. But to deliver insight intuitively, an analytics system must be backed by the right architectural platform. The platform must provide analysis and collaboration capabilities to a wide range of users wherever they are, while leveraging existing infrastructure and keeping costs down. It must be scalable and deliver high performance to meet the growth needs of any organization. The IBM Cognos® Platform provides the ideal foundation for a successful business analytics implementation.

Overview

In a fast, interconnecting and complex world, it is no longer enough to decide and act on the basis of limited information or traditional strategic planning cycles. New challenges and opportunities require agility: the ability to quickly assess, reinvent and adjust.

Business analytics is helping many organizations achieve this kind of agility. Analytics software brings together business intelligence (BI) capabilities such as reporting, analysis and scorecarding with planning, scenario modeling, real-time monitoring and predictive analytics. It lets you tap into information within your organization and beyond, to connect with key stakeholders and to share insight, align and decide.

Analytics-driven organizations not only seize opportunities: they outperform. IBM's annual CFO study (involving more than 1,900 CFOs and senior finance leaders worldwide) this year showed that analytics-driven organizations had 33 percent more revenue growth and 32 percent more return on capital invested.

Investing in analytics is top-of-mind for many organizations, but a big question can be the technology platform. Which platforms provide the best foundation for positive business outcomes? What kind of architecture best lends itself to accessible analysis, intuitive collaboration and actionable insight?

This white paper outlines the customer requirements that industry experts feel must be part of an effective and flexible enterprise BI architecture. And it describes the open, enterprise-class platform that underpins IBM Cognos Business Intelligence, a system that can change how organizations make decisions, allocate resources, predict and plan for the future, and ultimately gain competitive advantage.

Why architecture is important

A software system's architecture determines its ability to meet business needs now and in the future. The right architecture paves the way for the success of the system and, ultimately, of the organization.

An open platform based on architecture that is purpose-built for analytics and designed for evolving and growing business demands meets the needs of both IT and business users.

For IT, BI software delivers more value when it

- integrates easily with an organization's infrastructure
- supports today's technology and standards
- adjusts readily to evolving needs
- consolidates all data in an organization
- scales as user demand grows
- performs reliably
- can be administered without overtaxing budgets and human resources.

For business, BI software must

- match the many roles, skill sets and needs of users
- provide users with information in many different formats, including regular reports, ad hoc queries, scorecards, dashboards and more
- be easy to use, so that business users adopt it willingly and have confidence in the information it provides.

An open platform simplifies IT environments, accelerates business decisions and provides competitive advantage by ensuring that an organization's investment can be leveraged today and ready for tomorrow. Systems built on a modern, purpose-built architecture last longer than customizations of legacy systems and do not require maintenance and adaptation.

Attributes of an effective enterprise-scale BI architecture

Analyst findings and Cognos experience with Fortune 1000 organizations point to several common characteristics and values of enterprise-scale BI architecture. These requirements are fundamental to business intelligence systems that will be deployed broadly across the organization. All of these qualities are delivered largely through the underlying architecture.

Usability	To reach the broadest possible audience, a BI solution must recognize and accommodate different types of users through a common user experience, across all BI capabilities and on the full range of technology, including mobile devices. It must be highly searchable so that users can leverage BI information that the organization has already created.
Seamless interoperability	There must be a single interface for all BI capabilities with the ability to navigate through scorecards, dashboards or reports. IT must be able to enable more or less functionality to fit the needs of different users.

Common business view	For organizations with many data assets, applications and users, it's critical that a BI solution deliver a common view of the business—so managers and knowledge workers never have to worry about the validity of their numbers against other people's numbers. The single view must be based on all the data, and the quality of the data must be maintained to ensure user confidence. Data modelers must be able to create an effective business model quickly and readily modify it as the needs of business change over time.
Agility	If something within the organization changes—like a new business strategy or a new enterprise application—the BI solution must adapt accordingly.
Scalability	Enterprise BI deployments must scale in a linear fashion to thousands and tens of thousands of users across a global organization.
Reliability	For most organizations, business intelligence is core to the business. A BI system must operate on a 24x7 basis with redundancy for all capabilities and services.
Openness	Businesses intelligence must be open—in terms of the data you can access and for integration with existing and new applications, portals, security systems and more.
Deployability	Deploying the BI system—actually getting information to users in whatever format needed—must be a simple activity, as does making changes to the way information is deployed.
Manageability	IT must be able to administer efficiently and proactively ensuring that potential problems are identified early and avoided, thus keeping the system operating effectively.
Leverage existing infrastructure	A BI solution must work within existing environments and leverage everything those environments have to offer: Web infrastructure, databases and OLAP data sources, security providers, application servers and more.
Security	A BI solution must work with existing security providers—often more than one—to ensure that access to both the BI system and the information in that system is always secured as required.

Architecture of IBM Cognos Business Intelligence

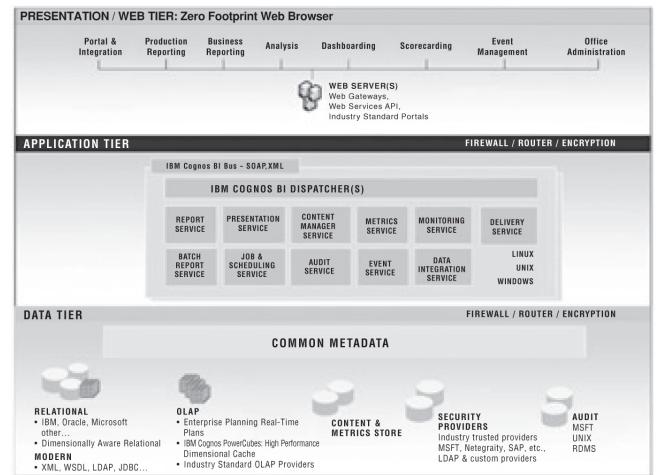
Based on feedback from Cognos enterprise customers and partners, the Cognos Platform is designed and built on an open, services-oriented architecture, unlike many BI solutions that simply wrap legacy client-server components from multiple architectures in web services. It was built from the ground up to meet the needs of large-scale enterprise business intelligence deployments.

The Cognos Platform underpins Cognos Business Intelligence, delivering all BI capabilities on three distinct tiers:

- A presentation tier that handles all user interaction in the web environment
- An application tier with purpose-built services used to handle all BI processing
- A data tier that provides access to the widest range of data sources.

The separation of the architectural components into tiers supports the secure deployment strategies demanded by large organizations whose data and infrastructure are secured and closely guarded by firewalls. This multi-tier approach also ensures that when a request is submitted to a Cognos BI installation, the right processing happens at the right level and in an optimal way to serve the broad range of business users. Processing on the presentation tier, for example, can mesh with existing load balancing routers, ensuring that as requests come in they are distributed appropriately.

The Cognos Platform is built with web services to deliver BI from a single extensible and flexible platform. Everything is 100 percent web-based.



IBM Cognos Business Intelligence: all BI capabilities on a common modern architecture

The presentation tier

100 percent Web-based for broad adoption and deployment

The Cognos Platform delivers all business intelligence capabilities in a pure web browser-based user interface. BI users, BI authors and BI administrators need nothing more than a web browser to perform tasks ranging from reading reports to creating ad hoc queries or authoring more complex BI capabilities like dashboards.

Every capability is delivered via the browser and, unlike many other BI tools, there are no applets to download and no plug-ins to install or maintain. The Cognos Platform delivers BI through a common user interface that uses simple web gestures to build and access a broad range of BI content. The result is high productivity across the organization—from report authors through to business managers and information

consumers. BI is available across a range of technologies—in the traditional desktop environment, within applications such as Microsoft Office and on handheld mobile devices—and includes advanced search capabilities.

The administration of Cognos Business Intelligence is also browser-based. Administrators can manage and tune servers. They can manage security—adding groups and users and granting privileges to secured business intelligence content—again using only a browser. For large organizations, which are often geographically dispersed, this means administration can be distributed, allowing local or regional administrators to handle updates for users and roles while managing overall security centrally.

To ensure efficient system administration, Cognos Business Intelligence has a single, intuitive Cognos Administration interface that provides IT with visibility into all BI system activity and gives them the flexibility and control needed to manage the system proactively. Intuitive, at-a-glance metrics, role-based capabilities, queue prioritization and resubmission features help ensure that IT can keep their BI system functioning optimally.

Cognos Business Intelligence supports:

Infrastructure components	Cognos Business Intelligence benefit
Web Server	Use any popular Web Server, including Microsoft IIS, IBM WebSphere® or Apache. The Cognos Platform fits into these environments with lightweight web gateways that forward incoming requests from the web browser through to the application tier.
Application Server	Leverage the power of in-place application servers including BEA WebLogic, IBM WebSphere, SAP NetWeaver Application Server, Oracle Application Server 10G.
Routers	Mesh cleanly with in-place load balancing mechanisms, ensuring optimal use of hardware resources.

Portals	Integrate with widely used portal environments like IBM WebSphere, Microsoft SharePoint®, SAP NetWeaver and BEA Plumtree. In fact, the Cognos Platform was built to integrate with portal environments that comply with the Web Services for Remote Portlets (WSRP) standard. As a result, organizations will be able to integrate the Cognos Platform into their enterprise portals—today and in the future.
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Lower costs by leveraging existing web infrastructure

Every organization has an in-place web infrastructure, and BI must fit with that infrastructure. By working in whatever web environment is currently in place—and thereby leveraging existing skills and assets—the Cognos Platform can reduce the effort and costs associated with getting an enterprise solution up and running.

Integrate business intelligence with existing applications

While analytics has become truly strategic in many organizations, it must fit within a framework of existing business applications. Through a fully open and documented application programming interface (API), the Cognos Platform provides an unmatched level of openness. You can integrate the full range of business intelligence capabilities into any existing system and choose from widely used programming languages such as Java®, C+, C++, Microsoft Visual Basic® and others.

The Cognos Software Development Kit (SDK) exposes the same web services API used to build Cognos BI. The API is also accessible via Web Services Definition Language (WSDL) and can be consumed by any programming language that understands SOAP. All of the BI content in a Cognos Platform configuration can be integrated with Java-based JSP applications or within the Microsoft .Net® framework.

Leverage Microsoft Office expertise

Increasingly, BI must be delivered to users in different ways—wherever and whenever they need it. Cognos consumer modes leverage the Cognos Platform to provide business users access to mission-critical business intelligence using mobile devices, search engines and familiar software applications such as Microsoft Office.

Business professionals in many organizations use Microsoft Office and other tools for viewing and manipulating data—most notably Microsoft Excel® and Microsoft PowerPoint®. Cognos consumer modes allow users to leverage existing skills while interacting with a corporate business intelligence system. They gain all the benefits of Microsoft Office tools in terms of interaction, formatting and productivity, while remaining connected to the “common version of the truth” in the BI system. Perhaps most significantly, all of the critical aspects of the BI system such as the security applied to published reports and analysis, as well as the organization of content for easy access by end users, is fully utilized in the Excel environment.

Web-based deployment and administration

Reporting on the Cognos Platform leverages a 100 percent Web-based deployment model. This reduces the administrative burden on IT while improving user adoption. With pure web-based deployment and administration, IT does not have to install and manage client desktop software, minimizing deployment and maintenance costs. Designed for enterprise-level deployment, the Cognos Platform offers proven scalability to hundreds of thousands of users through a multi-tiered, multi-server, multithreaded architecture. This design provides full failover recovery and dynamic load balancing. The single Cognos Administration interface ensures that administering the BI solution is straightforward, efficient and keeps the solution running optimally.

The application tier

The application tier is the mission control center of the Cognos Platform—managing all incoming requests, both interactive and batch. The application tier automatically distributes requests in an optimal way and provides a single set of standard-based services—such as a common query engine, scheduling, monitoring, auditing and presentation.

Self-registering, self-starting servers

When configuring an enterprise scale system, it's important that the solution maintain the best possible level of service. For this to happen, incoming requests should automatically find their way to the appropriate server for best throughput.

In the Cognos Platform, the optimal routing of requests in the application tier is the job of the dispatcher. This approach—dispatchers routing requests to purpose-built, distributed servers—is based on long-standing and fully-proven Cognos experience with IBM Cognos PowerPlay.

The dispatcher is a multithreaded application that runs on whatever web application server or servlet container is in use in an organization. These include Apache, BEA WebLogic, IBM WebSphere, SAP NetWeaver Application Server and Oracle Application Server 10G—so you can integrate it into whatever current application server environment is in place at your organization.

The dispatcher's primary function is to manage the services on a Cognos server and to route requests received from the gateways, forwarding them to the appropriate service to handle the request. In the Cognos Platform, each dispatcher in a distributed system is self-registering. When you install the Cognos Platform on a server, the dispatcher simply registers itself within that configuration, starts the services on that server and lets the configuration know what services are available. This vastly simplifies the installation and configuration of a BI system and it allows the system to scale easily across multiple servers.

Intelligent, configurable load balancing

Enterprise scale BI systems must be able to handle the high volumes of incoming user requests typical in large organizations. Whenever a request comes in—to run a report, to display a dashboard, to burst a scheduled report across a wide number of users, it's critical that the system handle it in a way that ensures optimal performance.

In the Cognos Platform, requests are dispatched with load balancing built into the system. As requests come in, they are automatically routed to servers within the system in a weighted round robin fashion, based on defined server capacity. Requests are also routed based on the request's "affinity" level, which the dispatcher uses to decide whether the request should go to a specific server or to any server in the configuration. This affinity can be derived from the actual nature of the request, or from the group or user role of the individual submitting the request—enabling servers to be dedicated to specific groups or users.

The capacity definition for any given server is completely flexible—if one server has twice the "power" of another in terms of memory and CPU speed, then it will automatically have twice as many requests dispatched to it. Additionally, every server in a Cognos configuration can be tuned to adjust specific performance parameters—like the number of active request threads for any given service, timeout parameters and the level of auditing applied to any given business intelligence activity.

Purpose-built, peer-to-peer services for reliability and scalability

The services offered by the Cognos Platform are the backbone of the system. Regardless of what kind of request is made—a simple report run, an analytical comparison across business dimensions or the scheduled running of a business intelligence agent that detects key data events—the system must provide services smoothly.

Every service in the Cognos Platform application tier operates on a peer-to-peer basis. This means that no service needs to know any of the details about what any other service does or is doing at any given point in time. Any service, on any machine, can service any incoming request. It also means linear performance characteristics, unlike other SOAs using a services 'hub.'

The nature of these services is such that there is complete separation of elements that should not be tightly bound—like presentation and data. The former are handled by a presentation service, while the latter are handled by the query service, based on the built-in business rules in metadata and in defined security.

The result is complete fault tolerance and service redundancy—any request can be routed to and handled by any server in the system. If any server in a configuration fails, incoming requests are automatically routed to redundant servers, thereby avoiding service interruptions. The services are also scalable, with the ability to add servers and enable or disable services based on demand. For example, it's a simple matter to dedicate a specific server in a Cognos BI configuration to report execution by disabling the other services on that particular server.

Cognos Bus

The open API for integrating the Cognos Platform into other systems is used by all of the components and services. All the communication between the services in the Cognos Platform configuration takes place on the Cognos Bus—which means that all services plug into a 'network.'

As a result, services are completely transparent in terms of location. Services communicate with one another using common messaging that leverages open web standards: HTTP, SOAP, XML and WSDL. The intra-service communication is coarse-grained in nature. This means each request typically handles a significant block of work. As a result, intra-service communications is optional. Additionally, intra-service calls can be encrypted, ensuring security in the application tier.

Single query service and common metadata for consistent results

The importance of having a single query engine that delivers results based on common metadata—regardless of where or how that data is stored—is fundamental to a successful enterprise BI solution. If a solution has no common understanding of the data and employs multiple query engines—for example, one access mechanism for production reporting, a second query engine for multidimensional reporting and possibly a third for ad hoc query capabilities—then the very real possibility exists for inconsistencies across these various BI activities.

The Cognos Platform employs a single query engine across all data sources, regardless of whether they are relational sources or dimensional sources. In conjunction with common metadata (discussed later in this paper), this means users can have confidence that the numbers in their reports will match those from other departments. Regardless of whether a user is accessing a relational data warehouse or a multidimensional data cube, the query engine will leverage defined metadata and generate underlying queries that return consistent results. Additionally, the single Cognos query engine leverages modern data access standards, with queries that leverage the SQL 99 standard, MDX and BAPI. The query engine leverages all of the strengths of the underlying data sources—including dimensionality.

High performance, in-memory caching and Dynamic Query Mode

Organizations are challenged with meeting performance expectations because of complex business requirements. The Cognos Platform provides new in-memory processing capabilities with 64-bit system support to address these

challenges. This new capability brings optimized query generation with pattern intelligence and security-aware caching. It enables report authors and advanced business users to perform ad-hoc business analysis, leading to better, more timely business decisions.

Dynamic query uses an enhanced Java-based interface that addresses query complexity, data volumes, and performance with new capabilities:

- In-memory calculations and aggregate operations
- Smart query processing capable of combining multi-dimensional and relational concepts to improve performance
- 64-bit security-aware smart caching uses in-memory optimizations to increase query performance and data cache reuse. The system is self-managed: it monitors the most commonly used data and responds accordingly.

Cache management facilities are available by leveraging existing event scheduling infrastructure to enable the automatic management of the cache, ensuring the content remains relevant.

Platform independence for flexibility

Another key element of the Cognos Platform is environment independence. In terms of operating systems, you can leverage your existing infrastructure and install the Cognos Platform on Microsoft Windows®, UNIX® or Linux®.

If you have multiple operating systems—for example Windows and Linux—you can configure your BI system across these heterogeneous environments.

The data tier

Large organizations typically have multiple data sources. At a departmental level, there may be a huge proliferation of data sources that makes the delivery of business intelligence on an enterprise scale difficult. Most organizations have both relational data and multidimensional data. They may already have significant investments made in metadata. Even organizations that have managed to standardize their data strategy are potentially subject to multiple data sources as soon as they merge with another organization or choose to grow through acquisition.

The Cognos open data strategy

Many BI systems provide access to some of these sources. But only IBM offers access to all of them, along with the ability to deliver a full range of business intelligence capabilities built on an open, enterprise-class platform.

IBM delivers a truly open data strategy, with the ability to access any data source or combination of data sources, develop common metadata across them for a common business view and then leverage that common business view to deliver any business intelligence capability to any user.

The Cognos open data strategy is founded on the fact that companies typically have the following approaches to data:

- Most organizations access data directly, using native access to derive information from their systems. While the widespread application of BI against operational systems is not a recommended approach due to the likelihood of performance issues, there are times when direct access is required and can be used effectively.

- Most large-scale organizations likewise have significant resources invested in Extract, Transform and Load (ETL) technologies to build data warehouses and data marts based on data from heterogeneous systems.
- For organizations where it does not make sense to replicate or transform data, or where such transformation is not possible, an Enterprise Information Integration (EII) approach can provide virtual, federated views across heterogeneous systems without moving the data in those systems. The Cognos Platform includes EII capabilities out of the box, via Virtual View Manager. Additionally, the Cognos Platform can leverage EII capabilities of IBM InfoSphere Federation Server.

By delivering data access capabilities within the framework of any approach—Direct, ETL or EII—IBM makes it possible to deliver information using:

- All of the data sources at your disposal
- Federated views of your multiple data sources
- Existing enterprise data warehouses or data marts, with the ability to create new ones.

Centralized, maintainable, secured BI content

The assets managed by a business intelligence application are critical to the organization's business infrastructure—just as important as the underlying data assets in ERP systems, in relational databases and in other data sources like XML streams or web services. As with other critical assets that are used to manage the business, there can never be a loss of BI content under any circumstances.

In the Cognos Platform, all business intelligence content is stored and maintained in one location—the Content Store. As with virtually all critical information assets, the best place to store business intelligence—including reports, metadata packages, configuration information, user and group preferences and key metrics—is in a relational database management system. All of the value of a relational system—including performance tuning, security, backup and recovery and global accessibility—can then be brought to bear on business intelligence applications.

Cognos BI includes a Content Manager cache service that enhances the overall system performance and Content Manager scalability by caching frequent query results in each dispatcher. This service can be customized.

The Cognos Platform employs widely used relational databases as the storage mechanism for all BI content. Depending on your needs, BI content can be stored in IBM DB2® UDB, in Oracle, in Microsoft SQL Server®, in Derby or in Sybase. And, as with all BI services in a Cognos Platform configuration, redundancy is built into the system, with multiple instances of the Content Store for failover and reliability.

Common metadata for a common view of the business

With so many data assets to manage, organizations are often plagued by inconsistencies. Many tools today can access a broad range of data and deliver it to users as business intelligence in one form or another. It's of questionable value, however, if that business intelligence is not based on a common understanding of the business. If the marketing manager's pipeline report contains numbers that conflict with the numbers that the sales manager uses, there's an automatic loss of credibility across the board.

The Cognos Platform provides a common metadata view across the organization. With powerful metadata modeling capabilities delivered as part of the system, IT groups can build enterprise-scale metadata models that span the broadest BI requirements. IT can use Framework Manager to build comprehensive data models that span a huge range of data assets and deliver information from them in a consistent, enterprise-wide version of the truth that crosses relational and dimensional data sources. A single metadata model can be built on metadata derived from diverse data sources such as Oracle, Microsoft SQL Server and other sources such as XML or JDBC® via the Composite Information Server. Teams of modelers can work independently, on different parts of a model and combine their work. They can also use a single model to deliver different packages of information to different types of users.

It's important to note that when importing metadata from various sources, Framework Manager leverages everything it can from the data source in terms of metadata, including joins, cardinality, dimensions, hierarchies, attributes and measures. For example, when importing from IBM DB2 Cube Views, virtually all of the dimensional information inherent in that system is brought into Framework Manager—making the journey to metadata-driven business intelligence a fast process.

The Cognos Platform can also leverage existing metadata assets from a wide variety of sources, such as ErWin. In fact, you can import metadata as XML from sources that are Common Warehouse Model (CWM) compliant.

Powerful multilingual capabilities and UNICODE for global deployments

A core design principle of the Cognos Platform is global deployability.

Support for global deployments is built into the metadata layer. With no coding whatsoever, metadata models can drive multilingual deployments. Business intelligence deliverables—reports, in-depth analyses, dashboards and scorecards—can be delivered in any language or locale from one UNICODE server. At runtime, the local settings in a user’s browser direct Cognos BI to render results in the appropriate language, using appropriate locale settings for variables like currency and the formatting of monetary values.

Leverage in-place security assets

Every business intelligence application of any scale must be secured. Regardless of how data is being delivered—as managed or production reports, as ad hoc queries, as analyses, as dashboards or scorecards, or as agents that drive information to users—that information must be seen only by those authorized to see it. Moreover, where the security of information over the web is a concern, information must be encrypted to a level that assures the organization that its data assets won’t fall into the wrong hands.

The Cognos Platform leverages the widest range of in-place security assets, in three critical areas:

- **Authentication:** The Cognos Platform uses whatever authentication mechanism or provider is in place, regardless of how users in your organization log on to the system. It supports Microsoft Active Directory®, Windows NTLM, Netegrity SiteMinder, LDAP, existing Cognos namespaces or combinations of these where multiple security providers are in play.
- **Authorization.** Within the Cognos Platform, security can be applied at virtually any level—starting with secured access in the metadata model to query subjects, to rows, to columns or to entire published business intelligence packages.

Additionally, within the common portal environment, security can be applied to specific objects and capabilities—like reports, analysis, dashboards and scorecards and agents. It can also be applied to folders that contain any combination of these objects.

- **Encryption.** In many business intelligence environments, encryption is a basic requirement. The Cognos Platform provides cryptographic services that apply to all information, including transient communications between services and static or temporary data artefacts generated by the system. The standard cryptographic provider employs SSL and includes trusted communications with digital signing of SOAP-based messages on the Cognos Bus. Strong encryption of up to 1610 bits is available via enhanced cryptographic providers.

An important distinction with the Cognos Platform cryptographic services is the “across-the-board” encryption capability. If required, all inter-service communication between services in the application tier can be fully encrypted.

When a company is sharing information, legal and regulatory compliance may include a requirement to secure information; for example, to ensure the accuracy of financial reporting in the case of SOX compliance or for protecting the privacy of health information in the case of HIPAA.

Comprehensive auditing

Logging is fundamental to many BI applications, for example, to meet SOX reporting requirements and for audits. Charge-back requirements often mean you need to know who is hitting what system, when and for how long.

In the Cognos Platform, comprehensive auditing is provided across services, and audit results can be centralized. All logging from all servers can be directed to one location if desired. Auditing levels are adjustable and can be set or directed to a location of your choice—3rd party databases, UNIX System Log or Windows Event Viewer. The auditing model and sample associated reports are based on published schema and provided out of the box.

Conclusion

Analytics are providing a limitless BI workspace to support how people think and work, giving them the ability to find the right information, gain insight, share it with others and see the business from any perspective. To be an effective foundation for analytics, the right business intelligence architecture must support this intuitive and effortless interaction with information.

Built on a proven technology platform, IBM Cognos Business Intelligence meets these needs. It is designed to upgrade seamlessly and to cost-effectively scale for the broadest of deployments. It answers the diverse information needs of all users. It provides long-term value. It keeps maintenance costs down and improves productivity. And it leverages existing assets without duplicating existing infrastructure.

Guided by an open data strategy and backed by an industry leader, the open, enterprise-class IBM Cognos Platform provides the best foundation to easily deploy, use and integrate a successful BI solution. Your organization gains the freedom to see more, do more—and make the smart decisions that drive better business results.

IBM Cognos 10: Intelligence Unleashed Smarter Decisions. Better Results.

Cognos 10 delivers a revolutionary new user experience and expands traditional business intelligence (BI) with planning, scenario modeling, real-time monitoring and predictive analytics. With the ability to interact, search and assemble all perspectives of your business, Cognos 10 provides a limitless BI workspace to support how people think and work.

Cognos 10 enables organizations to outperform by providing:

- **Analytics** that everyone can use in a BI workspace that sharpens individual skills to answer key business questions
- **Collective intelligence** with built-in collaboration and social networking to connect people and insights to gain alignment
- **Actionable insight** everywhere in mobile, real-time and business processes to instantly respond at the point of impact

Built on a proven technology platform, Cognos 10 is designed to upgrade seamlessly and to cost-effectively scale for the broadest of deployments. Cognos 10 provides you and your organization the freedom to see more, do more—and make the smart decisions that drive better business results.



About IBM Business Analytics

IBM Business Analytics software delivers complete, consistent and accurate information that decision-makers trust to improve business performance. A comprehensive portfolio of business intelligence, advanced analytics, financial performance and strategy management and analytic applications gives you clear, immediate and actionable insights into current performance and the ability to predict future outcomes.

Combined with rich industry solutions, proven practices and professional services, organizations of every size can drive the highest IT productivity and deliver better results.

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Ottawa ON K1G 4K9
Canada

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October 2010
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