White Paper
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Integrating, modeling, and managing data to drive performance

Information Management

Cognos software

Contents

Abstract

Performance management is driven by information. And the quality of that information, who can access it and how, is critical to the success of any performance management solution. The powerful IBM Cognos® 8 platform—with flexible data sourcing and multi-participant, multi-tier modeling—enables data managers to give business users consistent access to trusted, understandable information they can use to drive business improvements.

Overview

The IBM Cognos 8 platform provides the complete data access, efficient data modeling, and ensured data quality needed to provide users across the enterprise with information they can use to confidently manage performance. Its broad information reach and flexible sourcing strategies ensure that all relevant data is integrated, and that IT can start delivering BI capabilities immediately.

The IBM Cognos 8 platform gives IT the freedom to implement and evolve their information management strategy with minimal user impact as the organization grows. And it enables IT to optimize system and query performance to meet end user needs.

Business problems

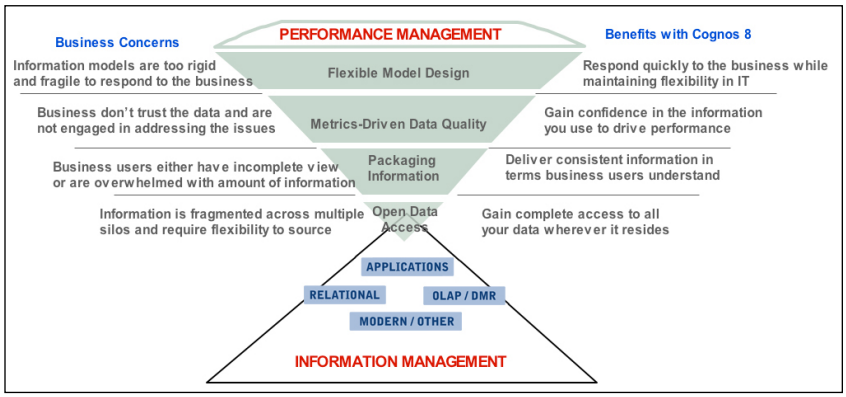
To turn raw data into information that benefits users at all levels of an organization, data specialists and IT must ask four critical, top-of-mind questions about how they manage their data:

- How does IT access data from any source and keep up with changes?
- How do modelers provide consistent packages of information that business users understand?
- How do business and data specialists collaborate to ensure ongoing, metrics-driven data quality?
- How do modelers ensure a flexible model design environment that can accommodate change?

Business drivers

Organizations are accumulating ever greater amounts of data. It comes from ERP systems, data warehouses, operational data stores, customer-facing systems, and a wide array of other sources; residing in numerous locations, often in different formats and isolated silos.

Managed effectively, this data can become information that enables users throughout the company to gain a clear understanding of how they are performing, why they are performing a certain way, and what to do to perform better. The result can be an organization in which processes and personnel are aligned to drive higher performance and build competitive advantage.



The benefits of IBM Cognos 8 BI for performance management

The solution

Accessing data and keeping up with changes

Information based on only part of the picture can lead to ineffective performance. Add the need to meet stringent government regulations that stipulate how you must deal with certain types of data, and the first step in generating reliable information is to access all of the available data no matter where it resides.

Using point solutions or home grown programs to access data for different user needs is not reliable or sustainable. For example, point solutions to access ERP data, one-off dashboards, or Microsoft® Excel® -based products add their own layers of query and reporting products that introduce significant reconciliation and usability challenges. They also add complexity for IT and prevent them from realizing the benefits of standardization.

Several capabilities are essential to ensure that performance management initiatives are founded on all of the right data. These include a broad information reach that lets users access any combination of data sources, flexible data sourcing options, and performance and query optimization capabilities.

Access all data, for a broad information reach

Data is typically fragmented across any number of systems, many with complicated APIs. Having a broad information reach ensures that you can connect to any and all of these sources, including transactional systems, warehouses (relational and OLAP), flat files, legacy systems, and modern systems such as XML, JDBC™, LDAP and WSDL.

Having a broad information reach helps the organization connect to data sources, break down data silos, and allow IT to deliver a timely enterprise view of the data to the business. It also ensures that when new data sources are made accessible, all capabilities can access that data immediately.

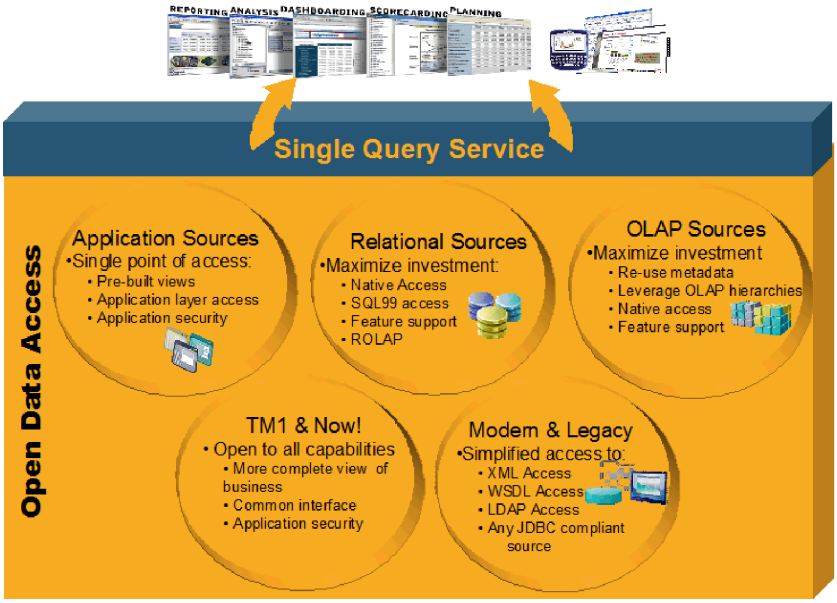
To ensure you accomplish this important first step on the road to information management, and based on decades of experience providing customers with open data access, use the IBM Cognos 8 platform for complete access to all data from all capabilities.

Flexible data sourcing

Even if an organization has selected a standard vendor for data integration, IT must be free to leverage the mix of sourcing methods that best addresses user needs. Whether data must be aggregated, calculated, or captured historically via an ETL tool, it can be sourced in real-time directly via the source systems or pulled together across multiple systems in real-time. In either case, IT must be able to source the data in ways that enable them to deliver information to users how they want and need it. IT must also be free to change sourcing strategies or vendors over time without impacting the business

The IBM Cognos 8 platform provides flexible data sourcing with features that include:

- **Direct Access.** Query data directly from transactional, OLAP, modern, and ERP sources to enable business to interact with and view that data just like relational sources.
- **Enterprise Information Integration (EII).** High performance federated access that combines data from multiple sources on the fly.



Open data access with IBM Cognos 8 BI

- **Extract, Transform, Load (ETL).** A patented dimensional framework conforms data and manages hierarchies into a format optimized for business intelligence and designed to manage the flow of information across the performance management layer.
- **IBM Cognos 8 Business Viewpoint.** A common view that drives data warehouse into conformed dimensions by enhancing and changing data structures.
- **Third party integration tools.** Integration with ETL and data integration technologies like IBM Information Server® (DataStage) or IBM InfoSphere® CDC (Change Data Capture) and other vendors to leverage existing integrate technologies at the organization

> *"By 2012, 70% of Global 1000 organizations will load detailed data into memory as the primary method to optimize BI application performance (0.7 probability)."*
>
> *– Gartner "BI Applications Benefit from In-Memory Technology Improvements."* [1]

The IBM Cognos 8 platform has built in data sourcing capabilities. These capabilities means organizations can connect to multiple disparate data sources in batch and real time, supporting the wide range of data strategies deployed today and delivering the broad reach needed to access all the data.

Caching for optimized data delivery performance

Another capability to consider when gaining access to and delivering all of your data is performance optimization. BI applications demand flexibility to optimize data retrieval performance within an IT environment without having to change backend systems to ensure fast reporting and analysis response times for end users. Caching, a basic method for improving data access performance, is implemented whenever appropriate across the IBM Cognos 8 server and client components to minimize the performance impact on source systems and optimize performance for users. Caching can be implemented for IBM Cognos 8 BI users through IBM Cognos 8 Transformer, EII virtual caching, and OLAP caching by using IBM Cognos PowerCube technology, and with memory result caching. The IBM Cognos 8 platform also has advanced cache management options that include caching to disk or local database, event driven, scheduled, and manual refresh, as well as hybrid memory/disk utilization management.

A single query engine for consistent results

Finally, to ensure a broad information reach, it is important for both business and IT to have query optimization for predictable and consistent query results based on the data. Business users demand predictable results from each query issued, so they can drive the business forward knowing that all departments are working from the same view of the data. With the IBM Cognos 8 platform, IT can use the standard API of their source systems. This means there are fewer to manage, and it allows them to leverage the unique features of the individual RDBMS systems without being bogged down with maintenance and management issues.

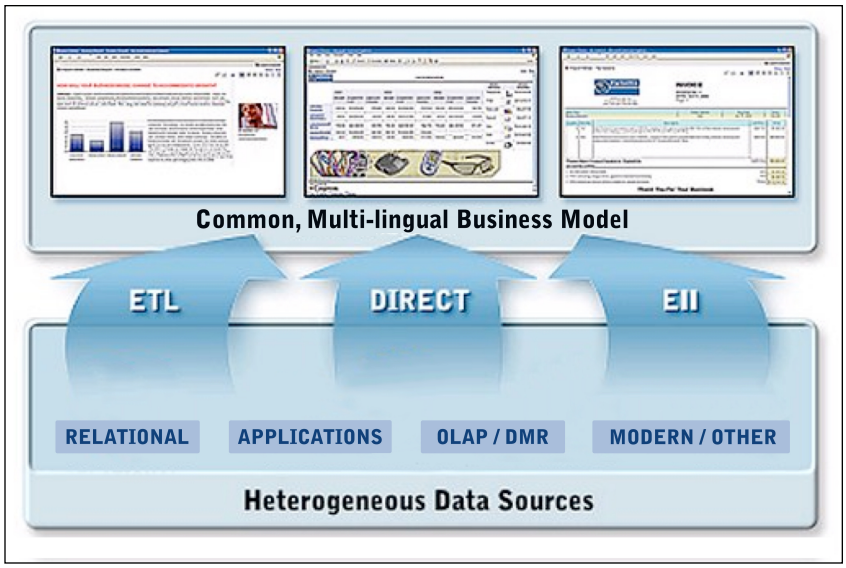
IT is also looking to generate optimized queries using a consistent approach. The IBM Cognos 8 BI single query engine can access all data sources. This results in consistency and eases maintenance. It also ensures that, as more capabilities are added, users can still leverage the same query service.

With the IBM Cognos 8 platform, there is a single metadata model that provides the point of interface for the business to access data in all systems. This provides consistency of source access for the business, and query predictability for IT. A common business model, discussed later in detail, generates the ability to query across a multitude of different source systems, from operational table structures to more typical dimensionally modeled data marts and warehouses. The breadth of systems might include direct access to transactional systems like ERPs from SAP or Oracle, querying third party caching and federation technologies, or accessing OLAP cube sources like Hyperion Essbase, IBM Cubing Services, IBM Cognos PowerCube, Microsoft Analysis Services®, and SAP BW. With the IBM Cognos 8 platform, this and other data in physical silos is pulled together into a single, coherent source, ensuring agreement in the information that is delivered to all users in all reports.

Providing consistent information that the business understands

Once IT has accessed and integrated the data needed to provide a complete view of the organization, modelers must convert it to information that is meaningful to business users. And they must ensure that the right information is delivered at the right time to the right users in the ways they need it. Optimizing information delivery in this way provides the most value to the most number of users across the organization.

To ensure consistent information that meets business needs, organizations must be able to build an effective, multilingual business model they can use to deliver information packaged appropriately for different audiences. They must also enable multidimensional IBM Cognos PowerCube creation, and they must ensure that the information they distribute is properly secured.



A common business model

A common, multilingual business model

A key component for delivering consistent information in terms that business users understand is a common metadata business model that applies consistent business rules, dimensions, and calculations to data regardless of its source. Only with a common business model will users have the single view of the organization they need for consistent reporting across the enterprise for all roles, in all locations, and in all languages.

With the IBM Cognos 8 platform, one consistent business model turns all of the data into information for all users across the organization in any language. This approach not only ensures the information consistency that leads to confident decisions, but decreases the cost of maintaining the modeling environment and reduces report proliferation by allowing a single report to be produced for all geographies. When everyone works from the same numbers, business users can focus on the task of decision-making, instead of worrying about whether all of the data has been included and is valid.

> *"Key differentiators for Cognos at this level of the architecture are … the common metadata model that acts as a solid buffer between the business and IT sides of BI."*
>
> *– Ovum Cognos 8 Business Intelligence Evaluation, January, 2007.*

Multidimensional IBM Cognos PowerCube

IT constantly gets one-off requests that typically involve accessing multiple data sources and performing specific calculations and aggregations. To respond quickly to these, IT must be able to model complex dimensional structures and business rules and apply the security needed to publish the results as part of the enterprise model. This allows them to respond to the varied demands that the business puts on them to provide specific views of the data via an enterprise model.

Using IBM Cognos Transformer, IT can build highly compact, high-performance, easy to explore, multidimensional IBM Cognos PowerCube data sets that are easily maintained and that scale to very large data volumes – over a billion input records with two million or more categories, or members. At these volumes, IBM Cognos PowerCube data sets deliver query performance that is virtually impossible to achieve using an RDBMS or Relational OLAP solution.

With IBM Cognos Transformer creation capabilities, there is faster time to adoption and ease with which complexity can be managed and a decreased learning curve, because users don't have to become SQL experts and don't need database query skills. At the same time, IT can ensure that only a sanctioned view of the data is exposed to the business, keeping corporate standards in check.

Model once, package for many; ensure data security

Large warehouses can overwhelm report authors and business people trying to produce the reports and analyses they need. There are simply too many data objects to work with, and they suffer from information overload. To prevent this, IBM Cognos solutions ensure that modelers can build one model and then publish sections of it to address the needs of different business users or communities. By using sections of a common business model to publish packages of information in digestible-sized subsets, the organization avoids the common pitfalls of duplication

and divergence. It provides different scopes to different users and delivers only the relevant information to each user community and allows the business to find information more easily and develop reports more quickly. This decreases model proliferation, ensures consistency across the enterprise, reduces the time to deliver different models for different user groups, and ensures that only the required information is published to any particular user community.

IT also needs to restrict user access, without having to generate separate models or reports, so that only authorized personnel can see and use data. With the IBM Cognos 8 platform, this is accomplished by assigning security on the basis of role. This helps create efficiencies, because there is a single model that enables all users access to just their view of the data, securing access to all business intelligence and making information both accessible to those who should have it, and protected from those who should not. It also helps the organization comply with data governance regulations.

With IBM Cognos 8 BI, IT has full control over user access, can ensure compliance, and can decrease report proliferation. Because the common business model fuels all intelligence and reports, analyses and reports can be built more generically to contain all the necessary data required, with the certainty that each user's view is restricted to only the data they are permitted to see when they access a report. This balances ready access with ironclad security, leveraging existing security infrastructures where it makes sense and applying simple, straightforward application security and encryption that reduces overall IT complexity and cost of ownership with a single security system to administer.

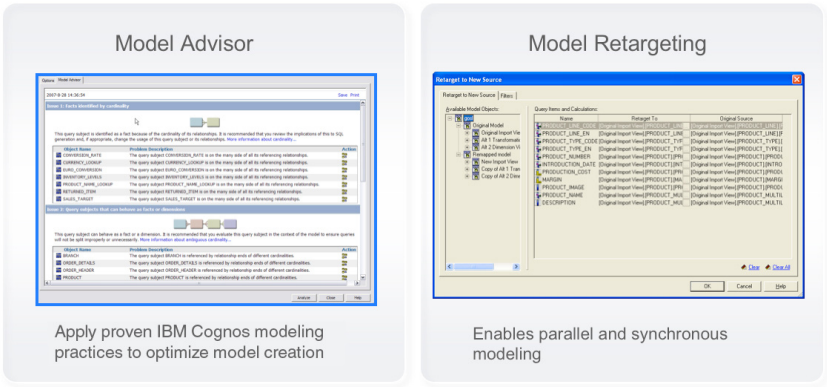
The result of IBM Cognos 8 platform data security is the single, simplified central administration of users' data rights against the common business model that applies to all BI capabilities across all data.

Creating a flexible model design environment

So far, we have discussed the need to access data no matter where it resides, ensure the quality of that data, and use it to present consistent information that the business can trust. The final piece of the information management puzzle is the ability to build the model that drives all of this, and to maintain it over its life cycle.

Building, deploying, and maintaining an effective model is a challenging task that must be done quickly and effectively, using acknowledged best practices and ensuring that all those with a vested interest in the quality of the model can contribute to its creation. Metadata modelers must be able to collaborate in a team environment to ensure that the best possible business model is developed in a timely fashion and can be easily maintained as business needs evolve.

IBM Cognos solutions address these needs by providing modeling best practices through Model Advisor, multi-participant modeling capabilities, multi-tier modeling with reusable objects, model retargeting, model versioning, impact analysis, and bi-directional third-party metadata integration.



The IBM Cognos Model Advisor

Follow proven practices with Model Advisor

The IBM Cognos Model Advisor is designed to help ensure that best practices are followed when constructing a model, and that modelers can better understand and maintain a model as it grows in complexity. In an intuitive, easy-to-use interface, the IBM Cognos Model Advisor steps modelers through the process of using proven-practice guidance to deliver a high quality model from the start. The Model Advisor applies current modeling guidelines to the model design, audits the model for best practices and identifies inconsistencies and areas for modelers to review. Links to documentation provide the information needed to understand highlighted issues and take action to address them.

Enable multi-participant, multi-tier modeling

Modelers must be able to work on different parts of the business model at the same time, without jeopardizing each other's changes. Multi-participant capabilities in IBM Cognos Framework Manager enable teams of modelers to work on different model segments, and then bring the segments together for a single view.

Modelers must also be able to make changes knowing that the model will remain robust, and that there will be no ripple effect from one part of a model to others. IBM Cognos Framework Manager provides reusable objects to enable multi-tier modeling that separates physical models from business models to decrease the downstream effect of changes. IT can evolve models more easily, and add and change data sources and sourcing strategies without impacting business. Multi-tier modeling provides levels of abstraction between the physical data access and the business model.

Metadata traceability, impact analysis, and remapping

Using IBM Cognos software, modelers manage change in a model by capturing change details and understanding their impact with improved report dependencies and impact analysis for unpublished models. They can initiate action by saving impact assessments for use in automated update scripts. Modelers can easily make physical changes in a model, too, remapping existing objects to new or modified physical objects without having to synchronize the database. They can modify or replace the physical layer of a model without disrupting end users. This capability allows IT to push new requirements in a timely fashion.

Conclusion

The IBM Cognos 8 platform ensures that modelers can create well-designed models from the start, shortening time to ROI and providing IT with the confidence that best practices are followed. It ensures faster development, easier maintenance, and consistency.

Business users, in collaboration with IT, play an important role in ensuring that the business trusts the information to make decisions that drive better performance. The IBM Cognos 8 platform can give these users increased confidence that the information they receive is complete, consistent, and high quality.

About IBM Cognos BI and Performance Management

IBM Cognos business intelligence (BI) and performance management solutions deliver world-leading enterprise planning, consolidation and BI software, support and services to help companies plan, understand and manage financial and operational performance. IBM Cognos solutions bring together technology, analytical applications, best practices, and a broad network of partners to give customers an open, adaptive and complete performance solution. Over 23,000 customers in more than 135 countries around the world choose IBM Cognos solutions.

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Endnotes

1 Gartner "BI Applications Benefit from In-Memory Technology Improvements." 2 October 2006, Kurt Schlegel, Mark Beyer, Andreas Bitterer, Bill Hostmann.

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