

THE IMPORTANCE OF OPEN DATA

SOLUTIONS FOR
ORGANIZATIONS WITH TOO
MUCH INFORMATION, IN
TOO MANY PLACES, USED
BY TOO MANY PEOPLE



COGNOS®

THE NEXT LEVEL OF PERFORMANCE™

While every attempt has been made to ensure that the information in this document is accurate and complete, some typographical errors or technical inaccuracies may exist. Cognos does not accept responsibility for any kind of loss resulting from the use of information contained in this document.

This page shows the publication date. The information contained in this document is subject to change without notice.

This text contains proprietary information, which is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced, stored in a retrieval system, transmitted in any form or by any means, or translated into another language without the prior written consent of Cognos Incorporated.

The incorporation of the product attributes discussed in these materials into any release or upgrade of any Cognos software product – as well as the timing of any such release or upgrade – is at the sole discretion of Cognos.

U.S. Government Restricted Rights. The accompanying materials are provided with Restricted Rights. Use, duplication for disclosure by the Government is subject to the restrictions in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013, or subparagraphs (c) (1) and (2) of the Commercial Computer Software – Restricted Rights at 48CFR52.227-19, as applicable. The Contractor is Cognos Corporation, 67 South Bedford Street, Burlington, MA 01803-5164.

This edition published September 2005
Copyright © 1989-2005 Cognos Incorporated.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
DATA, DATA EVERYWHERE	4
The Role of Business Intelligence	6
THE COGNOS OPEN DATA STRATEGY	7
Data with Any Latency	8
Common Metadata for a Common Business View	10
Data for Any BI Need or Capability	11
CONCLUSION	13
ABOUT COGNOS	13



EXECUTIVE SUMMARY

Data can be your organization's greatest asset. Whether it comes from day-to-day operations, Enterprise Resource Planning (ERP) systems, data warehouses, operational data stores or other sources, it is the key to understanding and managing your performance. Used effectively, it tells you what you must do to succeed, how you are doing relative to plan, and why. It enables the better business decisions that drive performance, and builds the competitive advantage that ensures your success.

But reaping the benefits of data is not easy. Data is typically fragmented. It is often incomplete. And it is not readily available in a form that can be used effectively by the people who need it. To realize its benefits, you must turn data from a variety of sources into information that can be used consistently across departments and divisions. Only then can you answer business questions, solve business issues, and make better business decisions.

The key to realizing the potential of your data lies in implementing an open data strategy. This paper explains how the Cognos open data strategy for business intelligence (BI) lets you consolidate data from any source, with any latency, to create a single business view of your enterprise that you can use to drive better performance.

DATA, DATA EVERYWHERE...

Effective performance management is only possible when people throughout the enterprise have the information they need to make the better business decisions that enable them to meet operational goals. To be effective, this information must not only be timely and accurate, it must present a single, consistent, enterprise-wide view of reality across departments, divisions, and corporate functions.

To provide this information, organizations must convert vast amounts of data from day-to-day operations, enterprise resource planning (ERP) systems, data warehouses, operational data stores, and other sources into a usable form. Faced with an increasing number of data sources, exponential growth in data volume, data integration issues following mergers and acquisitions, and the need to combine historical and real-time data for operational intelligence, the task of converting data to usable information can be daunting.

Data Proliferation Means Tool Proliferation

Perhaps the most immediate impact of data proliferation in the enterprise is the resulting proliferation of the tools and systems needed to access different data sources. With typical business intelligence solutions, simple reports against relational databases require a different tool than reports against a multidimensional or OLAP data source. Financial reports may be driven from a different tool than other production reports. Each tool may require a unique infrastructure, separate training, and different skills to use effectively. In all likelihood, none of these tools integrate well, resulting in high costs to deliver complete systems.

This proliferation of tools – and the associated costs of training, maintenance, and integration work – is one of the key drivers of business intelligence standardization. As more and more companies recognize the need for BI, they are realizing the cost-effectiveness of standardizing their BI infrastructures.

Data Proliferation Means Data Duplication

To overcome issues concerning the integration of data for use with disjointed tools, it's often required to stage data in multiple places to meet all the needs of all users. This results in time lags, as more and more data must be migrated, duplicated, and kept synchronized.

One aspect of this is the proliferation of data marts. As companies have adopted business intelligence, data marts have abounded, and grown in terms of size and complexity. Once again, this requires dedicated resources to manage on an ongoing basis, resulting in higher costs.

The New Face of Data

Increasingly, organizations are required to access data from more and more sources. Modern sources like Web services and XML are increasingly being adopted as systems move to the Web. Other sources, like WSDL, LDAP, and JDBC mean that more than ever before organizations need a way to bring disparate, heterogeneous data sources together for effective BI.

The Common View

With multiple silos of data, multiple tools to access the information in those information silos, and more kinds of data than ever before, the problems associated with making sense of it all are more prevalent than ever. The solution to these problems lies with common metadata – a single business view into all data required to manage the business, regardless of where it lies within the organizational infrastructure.

Data from Any Source

Data comes from everywhere. It is generated when an order is placed or a delivery made. It is created when an employee is hired or trained, when a prospective customer views a Web site, and when any of a wide range of other business activities occurs.

Typically, the sources of data span multiple systems, platforms, and underlying technologies. Many of these have evolved over time, often without rigorous central management. Business constraints have made it difficult or impossible to rationalize these into a single, cohesive data source. And the time and money invested in these systems means it is seldom practical or cost effective to migrate the accumulated data into a single environment.

An enterprise strategy for accessing data must allow you to access data no matter what its source. Typical enterprise data sources include various combinations of:

- All relational databases including Oracle, SQL, IBM, Teradata, Sybase, and ODBC as well as dimensionally aware sources like SAP BW.
- Widely deployed ERP systems, including SAP, PeopleSoft, and Siebel.
- Enterprise data warehouses and marts, with both 3NF and star schemas.
- All widely used OLAP sources, including Cognos PowerCubes, Microsoft SQL Server Analysis Services, IBM DB2 OLAP Server, and Essbase.
- Modern data sources, such as XML, JDBC, LDAP and WSDL.
- Planning and budgeting data.
- “Satellite” data sources, including Excel files, Access files, flat files, and more.
- Mainframe sources, including VSAM, IMS, IDMS, Cobol copybooks, and others.
- Content management data, including FileNet, documentum, OpenSoft, and others.

The Role of Business Intelligence

To improve their performance management capabilities, many organizations have implemented business intelligence (BI). They know that BI is no longer an option, but a necessity. Organizations with BI perform consistently better than those without it – they are more competitive, more responsive, and more profitable.

Often, BI has been implemented piecemeal, at the departmental or functional level, in response to short-term tactical goals rather than as an enterprise-wide strategy. It has also been implemented in organizations at varying stages of data infrastructure development – from those with full-blown data warehouses and operational data stores, to those with no data warehouse who are engaged in an ongoing struggle to consolidate data from disparate systems.

The solution to too many data sources and too many BI systems is BI standardization built on an open data strategy.

Standardizing your information delivery on a single BI platform means less work, lower costs, and faster implementations for IT departments. It means less training time and an easier, broader adoption of the fewer tools associated with a standardized BI platform. It generates greater business agility, as the integrated system allows access to all relevant data in ways not possible with fragmented BI implementations. The

result is more and better business insights that drive improved performance.

The Importance of Data in BI Standardization

The foundation for BI standardization is data integration. If a BI system cannot bring together all of the data assets that are available, and make the data readily accessible in whatever form is required, then achieving standardization is next to impossible. While the drivers and sources of data have changed rapidly, one thing remains constant: getting the data right, and making sure that the right data assets are in place, is key to delivering information.

The costs associated with getting the right data in place are typically high – up to 80 percent of the total cost of a BI project. And these costs are not discretionary: laying a solid data foundation for BI trumps all other standardization activities. If an enterprise BI application is built on the wrong data, or on out-of-date or incomplete data, the value of the system is compromised long before data reaches the business user.

This need for open data access in support of standardized BI has led organizations to pay more attention to open data strategies. Increasingly, enterprises with many data sources are creating coordinated centers of data excellence² to manage their data initiatives and costs. They recognize that an open data strategy is an essential driver of their success.

According to Gartner, 80 percent or more of the cost for a data warehouse implementation is tied up in data acquisition, integration, and cleansing operations.¹

¹ *Organizing and Managing Data for Strategic BI*, Donald Feinberg, Gartner BI Summit 2005

² *Making A Case For The Center Of Excellence For Data Integration*. Jan 2005. Philip Russom, Forrester Research.

THE COGNOS OPEN DATA STRATEGY

Cognos realizes that overcoming the barriers to data access is the top priority for many organizations.

Through our experience with thousands of enterprise customers, we know that access to data is more than the simple ability to connect a reporting or analysis tool to a given data source. The magic lies in delivering access to data in the context of value, both from an information and business intelligence point of view, and from the perspective of cost of duplication or data migration.

To address the issues associated with integrating data for BI, Cognos delivers an open data strategy that enables you to leverage your existing and new investments in capturing data assets and in adopting data integration strategies. These include direct data access, extract, transform and load (ETL), and enterprise information integration (EII).

On top of this, Cognos provides a consistent user interface that promotes rapid adoption by users across the enterprise, not just within IT. The result is an effective enterprise BI platform that:

- Makes it easier for day-to-day users to do their jobs, by delivering information they can use in the context that they need it.
- Delivers trusted information, based on all of the underlying data needed to make clear decisions.
- Delivers information in a way that does not require in-depth training or high maintenance costs and is independent of the underlying data source.

To address the issues driving an open data strategy, and based on decades of experience helping customers deliver information from a broad range of data assets, the Cognos open data strategy focuses squarely on providing easy and dependable access to data from any source, with any latency, with common metadata for a common business view, and for any BI need or capability.

Many BI systems provide access to some of these sources. But only Cognos offers access to all of them along with the ability to deliver a full range of business intelligence capabilities built on a single, proven, Web services architecture.

By delivering data access capabilities within the framework of any approach – Direct, ETL, or EII – Cognos 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.

The Cognos open data strategy allows you to leverage data that already exists with minimal impact on your existing systems. If you are in the process of re-architecting your approach to data access as part of an overall performance management initiative, you can access both existing and new systems, so that you can take a phased-in approach to integrating your data. What's more, you gain fast access to data sources, and can easily move, transform, or replicate data when it makes sense.

Data with Any Latency

The ultimate goal of a business intelligence initiative is linked with the issue of data latency – the time required to make needed data available. Some applications require up-to-the-minute data from operational systems, while others are designed to compare long term performance based on months, quarters, and years.

For example, OLAP or multidimensional BI applications tend to deal with large volumes of highly aggregated historical data, with built-in time-series analysis. Often these applications are intended to facilitate the analysis of data for specific departments within an organization, or for longer-term analysis of overall corporate performance against strategy. These applications tend to leverage highly latent data. It does not make sense to analyze corporate policy, or to measure the success of a departmental initiative based solely on today's or this week's data. Performance at a broad enterprise level, or even at the department level, is best measured against historical data, where longer term performance indicates the relative success of corporate strategy or tactical initiatives.

Increasingly, BI also has to support the delivery of low-latency information. In a recent Gartner multi-client study, more than 50 percent of respondents indicated that latency for their BI applications had to be less than one day. Moreover, nearly 15 percent indicated latencies of less than one hour, while 5 percent indicated they need access to real time or near real time data of less than one minute in age³. A good example is information about the status of a current customer order, which is of little value when it's a week old, especially when a customer is on the phone or accessing a Web site for an update. In this case, the information simply must be current.

Cognos recognizes that enterprise BI solutions must meet the latency horizons of any business user, whether it's the customer service representative who needs real-time access to customer account details, or the business analyst who evaluates the performance of key corporate initiatives against set targets. Organizations have data that spans all of these latencies; therefore, Cognos 8 BI covers them all.

Direct Access

Some organizations already have all of the data assets they need. To deliver high-value BI to end users, they must simply access the data.

If you already have a data integration strategy, tools, and metadata in place, and you have online analytical processing (OLAP), relational OLAP (ROLAP), or other multi-dimensional data sources, you can leverage the information in those existing data sources using Cognos 8 Business Intelligence. Cognos delivers BI that leverages all of these sources directly, and provides common metadata to bring together any or all of them. The result is a fully integrated set of BI capabilities.

Extract, Transform and Load (ETL)

ETL has been around for a long time and is a well understood technology. It's difficult to find a large enterprise that does not have a data warehouse in place. Getting data from many operational systems is something that happens every day. Data from multiple systems is integrated, cleansed, transformed, and aggregated to deliver a unified historical view that drives analysis.

Cognos has strong partnerships with data integration leaders, such as IBM WebSphere® Data Integration Suite (formerly Ascential) and Informatica. This means that organizations with heavy investments in these tools can continue to use them. For example, IBM WebSphere

³ Gartner Business Intelligence Multi Client Study, February 2005, Question 10, North American respondent results.

Data Integration Suite offers a comprehensive approach to metadata management. It provides a set of metabrokers that consistently share and reuse business, technical, and operational metadata across every moving part of an analysis solution, from start to finish. The metabroker for Cognos 8 Business Intelligence is a two-way metadata exchange.

Additionally, Cognos provides a full-featured BI data integration solution with benefits that include:

- The fastest, easiest, and most cost-effective way to integrate data.
- A powerful transformation engine that facilitates high performance transformations.
- A unique dimensional framework that automates the handling of common data warehousing issues, including slowly changing dimensions, late arriving facts, and surrogate key management, with no coding required.
- Complete Unicode support for global deployments.
- The ability to deliver dimensional warehouses and data marts with conformed dimensions.
- Full metadata integration with Cognos 8 BI for fastest time to deliver any business intelligence capability.
- A complete and easy-to-use BI solution from one business intelligence vendor.

Enterprise Information Integration (EII)

Enterprise information integration lets you leverage in-place data assets, even in complex data environments, to drive BI standardization. With EII, you can collect and integrate diverse and distributed data across the enterprise without data latency or migration. The data can include real-time, operational data that may not be

available in a data warehouse, as well as data from a range of additional sources, such as JDBC, WSDL, LDAP, XML, CSV, and other files. The result is a federated, 360-degree view of data that includes historic data from warehouses and real-time data from relational databases.

As part of the open data strategy, Cognos has built EII capabilities into Cognos 8 BI. This means you can connect to multiple disparate data sources in batch and in real time, supporting the wide range of data strategies deployed in organizations today. Cognos EII ensures fast performance, sophisticated session caching, and a single view of all data sources. Advanced caching options include event driven, scheduled, and manual refresh, as well as hybrid memory/disk usage.

In addition, Cognos has partnered with EII providers to ensure a full range of data access capabilities. For example, the Cognos relationship with IBM provides enhanced support for WebSphere Information Integrator. WebSphere II integrates information from DB2 UDB, Informix, Oracle, SQL Server, XML, e-mail, CRM, and Portal applications. It enables users to extend their data integration to mainframes, and to access content repositories, including those from

“Another key benefit of using ... Cognos ... is the ability to integrate data sources using the ETL tool... . This is incredibly useful as it extracts data from a variety of sources, including eMpower and any ERP system, for presentation in a unified, tactical view.”

UTi WorldWide

FileNet, documentum, and DB2 Content Manager.

The EII component of the Cognos open data strategy ensures that your existing IT resources can be leveraged, and that data from any source can be used to supply the information needed for the reporting and analytics that lead to better business decisions.

Common Metadata for a Common Business View

Perhaps the most important aspect of any information delivery project is having a sound understanding of exactly what information it is you are delivering – the often talked about, but rarely delivered, “common business view” or “single version of the truth.”

The mechanism for delivering a common business view is enterprise metadata. Much has been written about metadata and its importance in delivering enterprise business intelligence. The fact is that in any organization, if there is no common definition of what comprises an “Active Customer” or a “Tier 1 Product” or a “Dormant Account,” then no report nor deployment of flashy corporate dashboards will deliver information

that can be trusted by all. The very first time two or more managers show up at a meeting with numbers that should be the same but are not, an entire BI deployment can become suspect. Users who cannot trust the numbers will not adopt the system that those numbers come from. Any potential benefits from person-years of effort in developing and deploying BI can quickly evaporate.

Cognos has long recognized the importance of enterprise metadata in delivering enterprise business intelligence. Cognos delivers an unparalleled ability to develop highly tuned, comprehensive metadata models that turn the underlying complexities of disparate business systems into easy-to-understand business models. A Cognos metadata model provides business-driven views into heterogeneous data sources, with the ability to build in common business rules, calculations, and filters at the metadata level. Using published information packages based on these models, users can explore any aspect of their data, with complete confidence that the numbers all come from the same place and will match when they are supposed to match.

At Cognos, we know that many organizations already have metadata in place, and want to leverage it in their BI applications. We are aware that metadata, once defined, is a valuable asset that should not be restricted to any individual application. For these reasons, Cognos supports importing metadata from a wide range of sources, and exporting metadata in formats that can be leveraged in other applications.

Similarly, we know that the delivery of enterprise scale metadata is a key IT activity requiring highly specialized resources that span multiple teams and skills. As a

“Currently a popular topic of discussion, virtual data federation technologies, also called “enterprise information integration” (EII) by some vendors, enable users to integrate data from multiple sources into a single virtual view. The data remains at the source, and the virtual integrated view resides in memory, to be consumed by applications and tools as needed. Virtual data federation technology is increasingly being deployed in operational and decision-support applications.”

Ted Friedman, Gartner
Data Integration Technologies
Support Architecture Delivery
November 11, 2004

result, Cognos fully supports a multi-developer approach on linked metadata models, through a range of productivity-enhancing features that facilitate the delivery of enterprise-scale metadata.

The Cognos approach to metadata ensures that:

- End-users are insulated from the complexities of the underlying data sources, and work with easy-to-understand, business-driven data with built in business rules.
- User productivity is ensured, as time is focused on what data means rather than whether it is accurate.
- Costs are lower, through leveraging existing infrastructure assets, including existing databases, security, and metadata.
- IT productivity is maximized, with a visual metadata development environment that requires no coding for advanced features, such as runtime parameter substitution.
- Users can create self-serve reports while administrators can opt to refine the queries upon which they are based and enforce organizational standards.

Data for Any BI Need or Capability

The final piece of the open data strategy lies in the fact that typical organizations with large-scale BI requirements have an incredible range of user requirements to satisfy. A truly open BI solution allows any user, with any information requirement, to access any data using the BI capability that makes the most sense.

It's not uncommon for a high-level manager or analyst in one group to want information in the form of explorable multi-dimensional analyses, while another manager wants to receive scheduled production reports that allow custom filtering. A third manager might require a dashboard. All approaches are valid. They reflect the fact that different groups, managers, and knowledge workers have vastly different styles when it comes to business intelligence, and that IT must manage and service them all. It's also true that data sources in a typical organization are completely independent of an organization's hierarchy. As a result, there's no clear way to map a specific source of data onto specific business demands.

The final pillar of the Cognos open data strategy lies in the complete separation of BI capabilities – reporting, analysis, dashboards, scorecards, and event management – from the underlying data. Using Cognos 8 BI, IT can deliver on the widest range of requirements, independent of the underlying data sources, but based on a common business view.

In typical business intelligence deployments, the way that a data source is stored often dictates the way that users can interact with the data. For example, a multi-dimensional data source or cube must be delivered in the analysis component of BI. If someone wants that same multidimensional data in a highly formatted, professional report, or if they want to do some light exploration of it themselves, or if they need to drive an email alert based on some value in that data source, IT must often say “sorry – that would require us to completely duplicate the underlying data in another place, which we're not willing or able to do.” Even if data can be

delivered in multiple formats, it often entails users employing widely dissimilar user interfaces, which impedes their productivity.

With Cognos, any data source is fair game for any user, employing any traditional business intelligence capability. Multidimensional data sources can be leveraged not only in facilitating OLAP-style exploration, but also in delivering highly formatted, scheduled production reports. Relational data sources can be explored dimensionally, with built-in drill down, pivoting, and powerful slice and dice capabilities. Both relational and multidimensional sources can drive metrics and actionable scorecards. And all data sources can be leveraged in defining data-driven events that automatically trigger a wide range of actions, from simple notifications to any dependant IT process.

With Cognos, all of these capabilities are completely interwoven and built on the same architecture. This means that BI developers and business users can graduate from one form of business intelligence to another with the click of a button – no need to enhance or change the underlying source data in any way. As a result, users experience one product, on a common Web services architecture, that meets current and future needs.

The difference between “one product” and “an integrated product” is the key here. Many BI tools profess to be integrated, and many are to some degree. Some may have a Web interface that delivers access into the product. But under the covers, that interface can be simply a wrapper for multiple, outdated legacy services. Other solutions may provide multiple BI capabilities, like analysis, reporting, and scorecarding. But they provide no way to graduate from one of these capabilities to another where warranted. Only Cognos delivers one complete BI product, on a proven, Web services architecture, with a truly open data strategy.

CONCLUSION

Business systems generate huge volumes of data driven by factors ranging from compliance, to mergers and acquisitions, to the widespread adoption of high-performance ERP systems. The proliferation of data, and of users who need access to that data, has placed a strain on many organizations to deliver enterprise scale BI solutions that serve the broadest range of user needs.

For businesses implementing enterprise-scale BI applications, an open data strategy is not just a nice-to-have. The volume of data has made it extremely difficult to deliver the relevant, trustworthy information that users

need. Delivering the right information, to the right users, at the right time, and in a format that is usable and fosters high productivity, demands broad access to the right data.

Cognos 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 securely deliver any business intelligence capability to any user. The result is a platform for managing performance and driving corporate success.

ABOUT COGNOS

Cognos is the world leader in business intelligence and enterprise planning software. Our solutions for corporate performance management let organizations drive performance with planning, budgeting and consolidation, monitor it with alerts and scorecarding, and understand it with business intelligence reporting and analysis. Cognos is the only vendor to support all of these key management activities in a complete, integrated solution. Founded in 1969, Cognos now serves more than 23,000 customers in over 135 countries.

COGNOS®

WWW.COGNOS.COM



PRINTED IN CANADA
(09/05)