

COGNOS DATA INTEGRATION

THE DATA FOUNDATION
FOR ACCURATE
DECISION-MAKING

A COGNOS TECHNOLOGY
WHITE PAPER



THE NEXT LEVEL OF PERFORMANCE™

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EXECUTIVE SUMMARY

Businesses today have a growing number of systems to collect data. These include legacy systems, ERP and non-ERP transactional systems, e-commerce applications, as well as external systems from suppliers, customers, and partners. And the data in these systems keeps growing. For companies to gain a maximum return on their data investment, they must remove the barriers to an integrated architecture. They must implement a framework that supports interoperability among heterogeneous data environments.

As part of this mandate, IT departments must also reduce overhead on operational systems from reporting and analysis needs, consolidate data from disparate data sources, provide access to consistent information across the enterprise, preserve data history, and present data in an understandable way to business users.

Business intelligence (BI) and corporate performance management (CPM) capabilities such as reporting and analysis, scorecarding, event lifecycle management, planning, and budgeting require an integrated architecture to insure that all data assets are being brought to users in a consistent manner. Data integration creates this data foundation for effective, fact-based business decisions.

Cognos data integration provides a seamless data integration environment for business intelligence. By working with technology partners and through the development of the Cognos open data strategy, Cognos enables access to any data source including:

- All relational databases, including dimensionally aware sources like SAP BW, Oracle, SQL, IBM, Teradata, Sybase, and ODBC.
- 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 SSAS, DB2 OLAP Server, and Essbase.
- Modern data sources, such as XML, JDBC, LDAP, and WSDL.
- Satellite 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, and OpenSoft.

Cognos data integration is part of Cognos 8 Business Intelligence. With its ability to extract, transform, and load data into dimensional warehouses and create Cognos 8 BI metadata, Cognos data integration makes BI projects quick to deploy. It builds dimensional data warehouses ready for Cognos 8 BI and Cognos Enterprise Planning.

In this paper we will discuss the challenges associated with integrating data, the benefits of the Cognos approach, and the process and key factors associated with developing a coordinated, dimensional data warehouse solution.

BI: ENABLING TIMELY RESPONSE TO CHANGING BUSINESS REQUIREMENTS

IT departments are discovering that OLTP (online transaction processing) does not provide reporting consumers with all of the reporting functionality they require. Many organizations have multiple operational applications and face the challenge of integrating data from these applications for a consistent view across the organization.

Organizations are looking for solutions that will enable them to:

- Integrate data from multiple sources, including operational systems, legacy systems, ERPs, e-business applications, and third-party sources to deliver a consistent enterprise wide view of data.
- Structure the data so that it makes business sense, using dimensions that have a common meaning throughout the organization.
- Perform ad hoc queries against the data without affecting the performance of the core application.

- Scale the solution from a single department to the entire enterprise without compromising data quality, integrity, and consistency.
- Deploy the solution to thousands of users, in the way that best suits each user's needs (Web-based, remote dial-up, etc.).
- Deliver time series analysis over historical data for trend analysis.

OLTP reporting simply can't provide this range of capabilities. Instead, organizations must integrate their systems with the ability to report and analyze data. A data warehouse of conformed and consolidated data provides businesses with ready information sources for business intelligence.

COGNOS DATA INTEGRATION

Cognos data integration builds dimensional data warehouses ready for Cognos 8 BI and Cognos Enterprise Planning. Through data extraction, transformation, and loading and dimensional management, it delivers dimensional data warehouses that are ready for business reporting and analysis. With the advanced data merging, aggregation, and transformation capabilities of Cognos 8 BI, IT can merge data from traditional legacy files, purchased data (such as mailing lists), and ERP data sources. It performs transformation, aggregation, and filtering operations on this data. It then loads the data to a target—either staging tables, normalized tables, ODS, or a star schema—in a relational database or even text-based files.

Cognos data integration is comprised of two main components: a Windows-based dimensional design environment and a multi-platform, server-based engine with native support for all major relational databases. The intuitive graphical interface of the design environment makes defining and implementing transformation processes easy. The high-performance transformation engine handles large volumes of data quickly.

With data integration capabilities from Cognos 8 BI, companies support the design of the dimensional model and automate the majority of tasks associated with maintaining an enterprise data warehouse. At the core of Cognos data integration is a dimensional framework that builds and manages conformed dimensional data warehouses that are the foundation for Cognos business intelligence.

Cognos data integration builds the data warehouse for analysis, reporting, planning, dashboarding, scorecarding, and event lifecycle management to take place.

INTEGRATING BI INTO CUSTOMER ENVIRONMENTS

The success of a business intelligence implementation is measured by how well business users understand and access the data. Information has to be presented in a consistent, intuitive way and it has to be simple to understand.

To meet these requirements IT needs a data warehouse that:

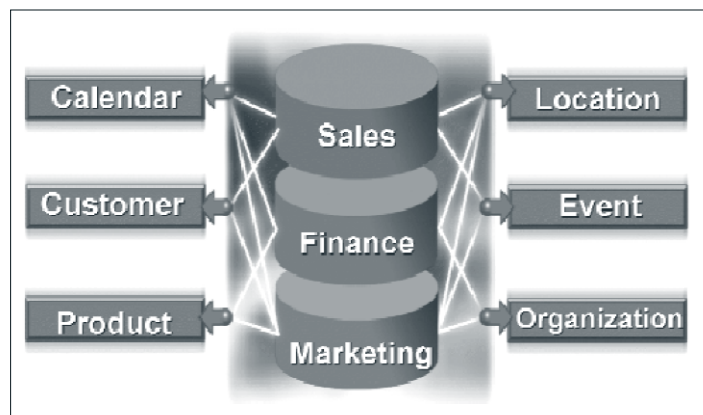
- Makes enterprise information easily accessible and understandable.
- Presents data in a consistent format.
- Is adaptive and resilient to business change.
- Is the foundation for improved decision-making.
- Will be adopted by the business community.

There are several components of a data warehouse, including the operational source systems, data staging area, data presentation area, and data access tools. Each of these components and how each is used needs to be understood to be successful in implementing the data warehouse.

The data warehouse market is changing. The market has reacted strongly to the difficulty of planning and implementing a single, undifferentiated data warehouse for the whole enterprise. This job is overwhelming for most companies to deliver. The future of data warehousing is data marts that are modular, cost-effective, and incrementally designed.

These data marts must be organized in a bus architecture around conformed dimensions and facts to avoid becoming information silos. This approach has been endorsed by such industry experts as Ralph Kimball, principal of Ralph Kimball Associates, North America's leading provider of dimensional data warehouse design consulting.¹

Dimensional modeling should be used for the presentation phase of the data warehouse and is the only viable technique for delivering data to end users in a data warehouse. The dimensional model is a predictable, standard framework. It packages data in a symmetric format that companies can use, assimilate, and query with high performance. Ease in understanding and performance are the twin, non-negotiable requirements of a data warehouse.



Conformed dimensions are key to delivering a consistent view of data across an organization. For example, the dimension 'customer' should mean exactly the same to a sales manager as it does to an inventory manager or director in finance. Without conforming dimensions, departments, and functional areas will develop different definitions.

¹ Ralph Kimball, *The Data Warehouse Toolkit: A Complete Guide to Dimensional Modeling*, John Wiley & Sons, 2002.

For IT the benefits of a data warehouse that has conformed dimensions and facts include:

- Conformed dimensions are developed once and shared among multiple data marts. This saves development resources and reduces the processing required to update data. Each mart doesn't have to run separately against the source system.
- Each step becomes the building block for the next step—so as the solution grows, the effort required for design, modeling, and implementation decreases.
- Solutions built for one department can be reused by other departments, with only a few configuration changes to accommodate a specific computing infrastructure.

The benefits to business users include:

- Users can easily understand the data because it is intuitive and presented in a business context.
- The use of conformed dimensions ensures that everyone throughout the company uses the same definitions and shares a single version of the business issues. Decisions across the enterprise are based on consistent information that reflects the entire business—not just individual functions.
- As an organization's business and user needs change over time, this approach provides the flexibility without affecting business users.

DEVELOPING A DATA WAREHOUSE SOLUTION FOR A TRANSACTIONAL APPLICATION

The following sections outline the process and key factors in developing a data warehouse solution with coordinated data marts for any transactional application.

Data Staging Area

Extracting source data is the first step. This requires reading and understanding source systems and moving the data to the staging area for manipulation. It may also involve some merging of data. The data staging area of the data warehouse is where data is merged, cleaned, and transformed. It is everything in between the source system and the presentation server. The data staging area is known as an ODS (operational data store). Cognos data integration performs the necessary extraction, merging, cleaning, and transformation of data for this phase in developing the data warehouse.

Data Presentation

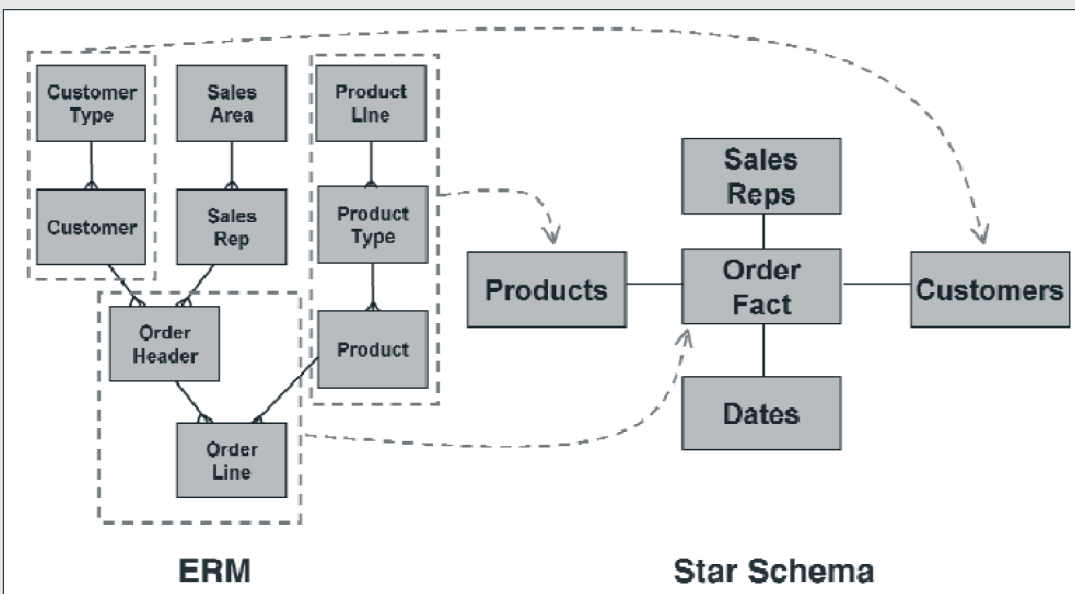
The data presentation area is where the data is organized, stored, and made available for direct querying by report writers and other business users. As far as the business user is concerned, the presentation area is the data warehouse. It is built as a series of integrated data

marts. The data must be presented, stored, and accessed in dimensional schemas. According to industry best practices this is the only viable technique for delivering data to data warehouse users.

A dimensional model contains two types of tables—fact tables and dimension tables. A fact table is the primary table in each dimensional model. It contains numerical measurements of the business and is normally additive. Fact tables also include a foreign key for each dimension they represent. A dimension table is one member of a set of companion tables to a fact table.

Dimension tables contain textual descriptors of the business and provide context to the fact table measures. Each dimension table has a primary key that joins to the fact table.

The numerical measurements of a fact table are joined to a set of dimension tables filled with descriptive elements, often referred to as a star schema architecture. The fact tables surrounded by satellite dimension tables allow users to drill down quickly into the data to discover correlations between dimensions and measures in the fact



Star schemas facilitate delivery of reporting requirements by making it easier for business users to understand and navigate data.

table. Forming queries involves a set of joins from the fact table to each dimension—rather than complex multi-step joins through multiple levels of tables, as would be required with an operational application.

Four key components interact in the Cognos data integration services processing model: the dimensional framework, data acquisition (extract), data transformation (transform), and informational model delivery to downstream targets (load).

The Dimensional Framework

Cognos data integration operates with a unique and integral dimensional framework, allowing IT to design a series of conformed data marts. The general rules for dimensions can be established once and then shared between data marts within the warehouse and downstream BI tools. The dimensional framework typically defines a number of objects that are organized in the way that business users think (for example, by time, location, product, customer, or sales). These objects describe meta-data—the structure of the business data. This structure points to navigation and/or aggregation paths that relate to the various dimensions of the detailed business data. The framework is easily extendible, letting IT add new dimensions as additional data marts are implemented.

Referential Integrity and Validation

Within the dimensional framework there is a reference explorer that lets IT view and validate hierarchies within dimensions. The reference explorer has a graphical interface so they can quickly see the structure of the hierarchy for a given dimension.

It will also report any discrepancies found in parent-child data relationships, and detect issues around multiple parents, and foster children. IT can then resolve these issues before loading data into the warehouse. This capability is unique to Cognos data integration

and ensures the integrity and accuracy of the dimensional data delivered to the warehouse.

As it pertains to a warehouse, referential integrity means that for each foreign key in the fact table an entry exists in the corresponding dimension table. Cognos data integration automatically checks for this during the processing of the fact table and lets the system capture any transactional records coming through that do not have an associated dimension row. In this way, Cognos data integration ensures that companies build accurate and consistent dimensional information and maintain fact table integrity. This is absolutely critical for BI.

Conformed Dimensions

Stovepipe data marts are the bane of any data warehouse project as they fail to offer all-important enterprise-wide views. By using a dimensional framework, companies can implement the data warehouse bus architecture by building conformed dimensions. Based on consistent terms and shared data, conformed dimensions ensure that users in all departments or functional areas approach business issues with the same context.

In a coordinated organization, the “customer” dimension means exactly the same thing to a sales manager as it does to an inventory warehouse manager or the vice president of finance. In the absence of conformed dimensions, departments and functional areas tend to develop different definitions, hierarchies, terms, and dimensions for many of the same business measures. This frustrates productivity, hampers decision-making, and produces inconsistency in reports.

Conformed data marts share dimensions so that decision-making is based on coordinated information. Building conformed dimensions means:

- Less development time for IT as dimensions are built once.

- Decreased redundancy because data is stored once.
- Shorter time to update because data is loaded once.
- Consistency and accuracy of data.

Multiple star schemas leverage the conformed dimensions to reduce update time and resources. Updates occur once, not multiple times, which accelerates the update process. In addition, conformed dimensions save disk space, reduce redundancy, and ensure that data is consistent from one mart to the next.

A conformed dimensional framework is one of the cornerstones of the Cognos BI solution. It enables BI capabilities to be added in an iterative fashion. As each new data mart is added, report developers simply incorporate any dimensions that the new mart shares with existing ones, saving development time and resources.

Dimensionality and Surrogates

An operational database usually contains information about the current state of business for an organization and maintains little or no history. By contrast, information warehouses are expected to hold perhaps five to 10 years of data. This allows decision-makers to evaluate the performance of the organization from year to year. Evaluating this data is made more difficult with the variations over time (for example, sales representatives who change divisions).

Business keys are common to operational systems (for example, invoice number, order number, employee number). They assign uniqueness to data and ensure that related data can be tied together within an operational system. All data warehouse keys must have surrogate keys; companies must not use original production keys. Surrogate keys are artificial, numeric keys that replace the business keys, and they are assigned sequentially as needed to populate a dimension table.

For example, the first customer record is assigned a customer surrogate key with a value of 1; the next customer record is assigned 2 and so on. They are then used to join fact tables to the dimension tables. The surrogate keys—smaller in size than business keys and typically an integer—insulate the warehouse from operational production system changes, accommodate the merging of data from disparate systems, and assist in the tracking of changes to dimensional information over time. In addition, surrogates enable the technique of slowly changing dimensions (SCDs) that is used to reflect changes in dimensions over time and manage historical data.

Cognos data integration shifts the complex process of managing surrogates and SCDs from the data warehouse developer to the ETL tool. Templates automate the maintenance of surrogates and slowly changing dimensions. The members of each dimension have attributes that identify each member and provide other information (for example, product dimension has product, name, color, weight, and size).

A simple dimension table typically has attributes such as a key, a surrogate, and a caption. Cognos data integration automatically manages the surrogates in the dimension tables and will also automatically replace the operational source key with the correct surrogate key while processing the fact table. If a company is tracking changes over time, attributes for the dimension and fact table can be set to determine automatically the next surrogate value to be used and places the surrogate key in the fact table.

Surrogate keys are an essential part of a warehouse. Cognos data integration automates the creation and management of surrogates for the dimension tables and fact tables.

An Example of Slowly Changing Dimensions

A salesperson in a particular company transfers to a different region mid-year. A data mart allows the company to record the move, and reflects the change in the database. Without record of this slowly changing dimension, a year-end revenue summary by region would allocate their entire year's sales to the new regional manager, overstating the new manager's accomplishments and understating the previous manager's performance. Companies that make decisions based on this type of misleading information can end up making incorrect assumptions that can result in costly mistakes.

Cognos data integration allows the salesperson to record this move and reflect the change in the database. With slowly changing dimensions, the revenue that the salesperson generated before departure will properly accrue to the previous regional sales manager, and the revenue that is generated after the move will be credited to the new manager.

Over time, certain dimensions—employees, products, and customers—will change, and Cognos data integration software is flexible enough to accommodate these changes and produce an accurate view of business performance by creating another dimension record.

Slowly Changing Dimensions and History

Preservation

Dimension table attributes change over time and part of the design phase is to identify the appropriate change handling strategy with the business user. Will it be important to track the change and analyze from the warehouse the impact of that change? Using surrogate keys, tracking such changes in the warehouse is made possible. Cognos data integration automates the tracking of these changes through slowly changing dimensions.

If a company needs to track an attribute, they can set a check box on the dimension table properties and then each attribute that needs to be tracked is also checked. Once this is done, whenever a record from the source system comes through with an update and the attribute has changed and tracking has been set, a new dimension record will be created with a new surrogate key. In addition, the previous dimension record will have its current indicator set to 'N' and an end date added. With this type of change the fact table is untouched. This processing is completely automated with Cognos data integration.

In the following example a sales rep has changed regions. To effectively track the change, a second dimension row is created in the warehouse and additional columns are updated to record which dimension row is the latest or current one.

Surrogate key	Sales Rep Number	Name	Region	Start Date	End Date	Curr Indicator
1	AXY12	John Harris	Chicago	050131	050626	N
2	AXY12	John Harris	Boston	050627		Y

This feature is an example of industry data warehousing best practices. It offers two primary benefits. First, it allows users to go back and precisely capture what was happening at a point in the organization's past. Although employees may have moved or sales territories been redrawn, the data warehouse will accurately present information about these slowly changing dimensions as they existed at the specified time. This allows users to derive consistent, repeatable results, solidifying the value of their BI system by preserving history.

Second, users can see all values or changes over time. This capability lets users uncover longer-term trends that may affect the business. Incomplete historical information can lead to improper assumptions and compromise the quality of users' decisions.

Transactional systems typically archive everything except the most recent year or two years of data and do not provide access to supporting details. A data warehouse allows users to explore history over several years. This gives users unique perspectives on an issue's current state. This trend-analysis capability allows companies to track the impact of decisions over time.

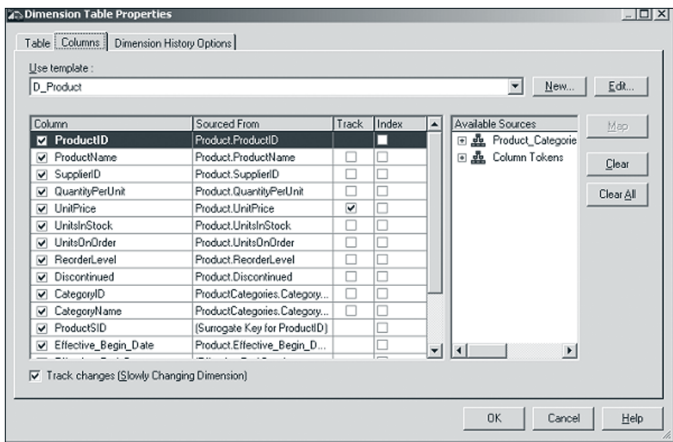
Loading Dimensional History and Late-Arriving Facts

Some transactional systems store a form of history about a dimension. For example, most HR systems must track all changes to an employee over time. This history needs to be loaded into the data warehouse on initial load and maintained as if it had been trickle-fed from the beginning of its history. Cognos data integration software enables this by allowing the assignment of an effective date to the source attributes of the template. It creates all appropriate surrogates and effective date ranges while the records are being loaded into the dimension table.

Once the data warehouse stores dimensional history, another issue arises quickly. If there are a number of records in the dimension table for a given business key value, then the logical step is to take the current value, the record that is effective today. What happens if that record comes in late?

Normally this would require complex coding to check for the correct dimension record based on the transaction date from the fact record. Cognos data integration

automates this process by using the dimensional framework to load the appropriate amount of history into memory and then assign the correct surrogate, based on the effective date ranges of the dimension records and the transaction date of the fact record.



Data integration services support SCDs by a point-and-click approach that completely automates the management of SCDs, significantly reducing development and maintenance time. In addition, it allows for future requests from business users that were not identified in the design phase to be implemented in a matter of minutes.

Data Aggregation

When reviewing the performance of their business, decision-makers first look at totals, averages, counts, and maximum values to get a big picture view. With data marts, this is often done more efficiently through summary or aggregate tables. In the dimensional framework, aggregation attributes can be set for a metric or derivation at any level within a dimension table. The time to create summary tables and maintain them is significantly reduced.

Through the dimensional framework IT can:

- Aggregate data to any level with the hierarchy of any dimension.
- Aggregate data simultaneously over a number of levels (multi-level aggregation), a number of dimensions (multi-dimensional aggregation), or both.
- Exclude detail data from the output to provide compact summary data collections.
- Include or exclude individual levels.

For example, companies can include every conceivable combination of summary data of in-depth business analysis, or just a high-level summary for management reporting.

Granularity of the Data Warehouse

Decision-makers will need to see transaction details, not just high-level summaries, to solve a business problem. It is a myth that dimensional models and data marts contain only summary data. The fact is that IT can't possibly predict all questions asked by a business user—data is needed at the most detailed level so that it can be rolled up based on the business questions at hand. For this reason, Cognos data integration extracts highly granular data from source systems and uses it to populate the dimensional model in the data warehouse. Decision-makers can easily access transaction-level detail and gain a micro-view of the business issues at hand. Summary or aggregate data complement the granular level detail data and provide improved performance for common queries.

Offering detailed data in the data warehouse takes pressure off the transaction system. Rather than querying the production system every time they need to perform detailed analysis, decision-makers can simply query the data warehouse for the information.

Merging Data

Merging data from different data sources may lead to duplicate dimension values from the different databases. Cognos data integration software lets IT specify how they want to merge the metrics for these dimension values. They can choose the sum of the values, the maximum or minimum value, counting the values, averaging the values, or the first value that occurs. This shortens the creation and maintenance time for the data warehouse.

Data Transformation

Missing, incomplete, or inaccurate data impairs the quality of downstream BI, and the resulting business decisions.

For consistent, high-quality data, Cognos data integration transforms functions that format and integrate source data before it is stored in the data warehouse. This process might involve any number of functions including:

- Restructuring data files, records, and fields.
- Removing superfluous data.
- Decoding and translating field values to enhance data.
- Improving data readability.
- Validating data.
- Calculating new values from one or more source columns.
- Simplifying data.
- Changing data types.

The transformation process can also include complex error correction and warning systems to ensure data integrity and usefulness. Once established, the ETL process can run automatically according to the desired schedule.

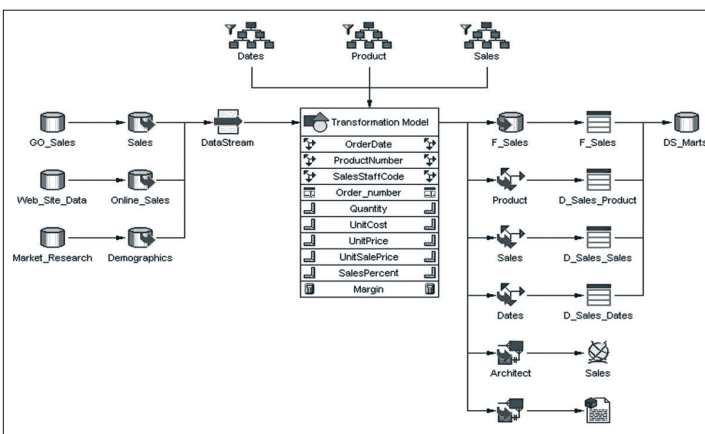
The transformation component of Cognos data integration is integrated with an aggregation engine. The dimensional framework allows the software to aggregate all data in a single pass, rather than using multi-pass aggregation.

The sophisticated star join engine merges transactional data from multiple sources and relates it to the multiple hierarchies set up in the dimensional framework.

Information Model Delivery: Load

Once the source data has been transformed, Cognos data integration software loads it into the destination target database. This makes the data available to users for business intelligence functions.

Cognos data integration supports delivery of dimensional information to any appropriate storage/access



The graphical design environment in Cognos data integration displays the data flows of a build and allows for direct access to build object properties, enabling rapid prototyping and deployment.

platform. It allows organizations to mix and match relational and OLAP databases to choose the best technology for the situation. Organizations can partition information between databases and access tools according to specific requirements. Flexible partitioning also lets the organization send data to multiple targets at the same time, for example, when they need to provide different groups with different data summaries. Texas data could be sent to the North America data mart, while—simultaneously—England’s data could be sent to the UK data mart.

With data integration from Cognos, IT can apply different updating rules to different tables, depending on the nature of the component data. By tailoring the data-loading process to the data, it updates information more quickly, and with less demand on the source system. Tables defined as “static” contain data that changes infrequently. Therefore, they require refreshing on an ad hoc basis only. Tables that require more frequent refreshing can be treated differently, according to the characteristics of their data. With this flexibility, data updates can mean a complete refresh, incremental updates, or maintenance of a slowly changing dimension.

Incremental Updates

Cognos data integration enables incremental updates, recognized as a data warehousing industry best practice. Incremental updates are the capacity to update the data warehouse periodically with current information, without rebuilding them from scratch. The incremental update function is split into two distinct steps to improve updating speed. The first step is to insert new data in bulk. This reduces the demand on processing resources. The next step updates changes to existing data, a process that involves going into the database, finding the row to modify, updating it, and then saving the change.

Managing the Environment: Deployment

Once dimension and fact tables have been designed and created, IT can automate basic data warehouse processes for efficient functioning. Automating the extracting, transforming, and loading of data means IT can execute these activities in a timely manner to maximize the resources of the computing environment. Users develop JobStreams with Cognos 8 BI through a graphical interface that coordinates these processes. The

JobStream coordinates groups of builds, processing instructions, conditions, and SQL into an operational process. JobStreams are scheduled like any other program, which supports a remote and unsupervised approach to the process.

Managing a data warehouse requires coordinated tasks. A JobStream has nodes to automate data extraction, data transformation, data loading, exception/error handling, and logging/notification. These tasks include coordinating fact and dimension builds, data staging, cleaning data prior to data mart creation, pre- and post-processing SQL, different arrival rates of source data, and partitioning tasks to use multiple CPUs. These tasks, or job nodes, can be performed in sequence or parallel. Conditional nodes can dictate the next step in the process; notifications can be sent out via email; or notes can be written to the log about the status of each job node.

Collaborative Projects

Most data warehouses are designed and developed by a team of developers. Tasks are assigned and a tremendous amount of work is done individually by IT professionals. However, they must also share work-in-progress and common components of the project. Furthermore, there may be many projects that all adhere to a set of components, testing groups, and production teams.

Cognos data integration lets development teams manage their projects with an external source code control system. Using the source code control application, they can allow check-out/ins, locking/unlocking, versioning, and allow each developer to work individually while being part of a larger network of developers.

Cognos data integration also provides the ability to package components for sharing among projects—all in a graphical environment. This process allows the developer to select a component to package. With Cognos data integration the component, along with all of its underlying components, are automatically included in the package. The package can then be shared with another project and imported into the environment.

Some projects can grow very large with hundreds of data loads and supporting components. Finding something in large projects and seeing the impact of changes becomes an arduous task. Cognos data integration provides a utility to navigate the project. The Navigator allows developers to select one component and see all other components that use it, allowing component impact analysis. The Navigator will also allow the developer to search by name for matching components.

Usually the last task most development teams complete is documentation. Documentation of a data warehouse can be difficult because it requires documenting all the data flows, transformation, and targets. Cognos data integration software automates this process by creating an HTML document of the project, complete with hyperlinks and comments from every developer.

Cognos BI Metadata Integration

From the dimensional framework, data integration publishes metadata to the Cognos metadata environment. This includes all metadata for the warehouse along with all joins and cardinality (or elements in the data set). The dimensional metadata, meaning the hierarchical structures, are also passed to the metadata environment. In addition, data integration can leverage the Cognos 8 BI metadata model that spans all data and applications, including Cognos Enterprise Planning sources. This lets companies extend their Cognos 8 BI platform by integrating Cognos enterprise planning and budgeting data with their reporting and analysis.

THE BENEFITS OF USING COGNOS DATA INTEGRATION SERVICES

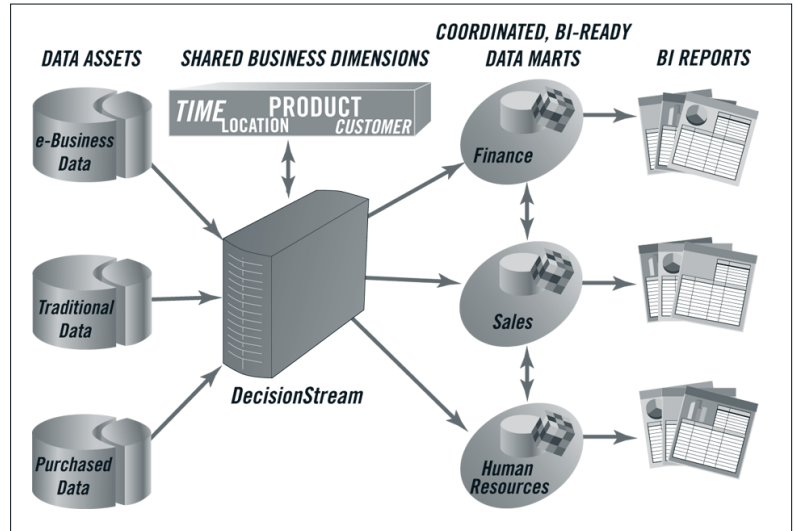
Using Cognos data integration capabilities for data warehouse creation as part of an overall business intelligence solution offers application developers several key benefits including:

- **A dimensional framework**—Building conformed dimensions and having the ability to manage the tasks associated with dimensionality provides consistency and reusability of dimensions. It delivers a consistent view of the business.
- **Automatic dimensional management**—Cognos data integration automates surrogate key generation and management and automatically maintains links between dimension and fact tables.
- **Automatic SCD**—Point and click functionality automatically creates and maintains slowly changing dimensions.
- **Flexibility**—The transformation model is built around logical fact tables that map source extractions and target deliveries. Sources are not tied directly to targets, therefore, sources or delivery targets may be changed with minimal impact on other aspects of a job.
- **Powerful Transformation**—Overcome all the challenges of transforming data for the warehouse.
- **Declarative approach**—The intuitive graphical interface eliminates code-writing and maintenance. This delivers results quickly and reduces development and maintenance time.
- **Reusability**—Conformity of dimensions within the dimensional framework lets IT reuse these dimensions throughout their data warehouse project.
- **One product with Cognos 8 BI**—Metadata is exchanged between Cognos data integration to the Cognos 8 BI metadata environment. In addition, any metadata modelled first in the Cognos 8 BI metadata environment can be leveraged within Cognos data integration and treated as a data source.
- **Runtime environment**—Cognos data integration enables extensive parameterization capabilities. IT can develop the application and simply deploy a runtime version using environment and SQL variables.
- **Integration with application/scheduling architecture**—The cross-platform, script-driven engine in Cognos data integration software lets IT embed Cognos integration technology into different applications and scheduling architectures across UNIX and NT environments.
- **Programmability**—Full command line access delivers flexible transformation package integration. Scripts can take advantage of runtime variables.

COGNOS DATA INTEGRATION GOES BEYOND ETL

There are many ETL tools on the market that provide basic table-to-table data movement. Like the best of those tools, Cognos data integration software extracts data from transaction-style data sources including applications, traditional legacy files, and purchased data (mailing lists), as well as new data sources resulting from e-business (e.g. e-commerce transactions). It then performs transformation, aggregation, and filtering operations on this data before loading the data to a target—staging tables or a star schema—in a relational database.

The primary differentiator of Cognos data integration is that it has a multidimensional model at its core. It was designed specifically to build dimensional data marts. The designer and core engine work in terms of fact and dimension deliveries, not in terms of arbitrary table movement. Since it starts from a premise of dimensionality, Cognos data integration software creates data marts that most closely resemble how a business and its employees operate.



The shared dimensional framework of Cognos data integration allows IT to design a series of coordinated data marts.

SUMMARY

A data warehouse with a coordinated data mart approach for BI capabilities gives users the ability to make coordinated, high-quality business decisions. The Cognos approach to data warehousing provides a framework that delivers BI capabilities such as reporting, analysis, scorecarding, dashboarding, and event lifecycle management—all in a single product, on a single, proven architecture.

The end result is a comprehensive solution for enterprise-ready business intelligence with the shortest possible time to success. That means better, faster results for IT and report developers, increased satisfaction for decision-makers, and improved corporate performance.

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 solutions and services are available from more than 3,000 worldwide partners and resellers.



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