Using Data Exchange and Visualization to Leverage Corporate Data

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Introduction

Technological advances over the last decade have given rise to the most rapidly changing business landscape ever seen. It no longer takes years to enter and build markets, but weeks and months. Customer loyalty isn't guaranteed from one day to the next. Deregulation, aggressive new competitors, and new alliances, partnerships, and mergers have changed the structure of every industry and forced companies to rethink the way they do business.

A key component at the center of new corporate strategy is information. In today's global marketplace, companies need 24-hour access to their information to compete. They must leverage both internal and external data to support a common strategic direction. This involves integrating newer, open platform systems as well as legacy systems, which store both historical and current data. For most companies this is a challenging, even frustrating, process.

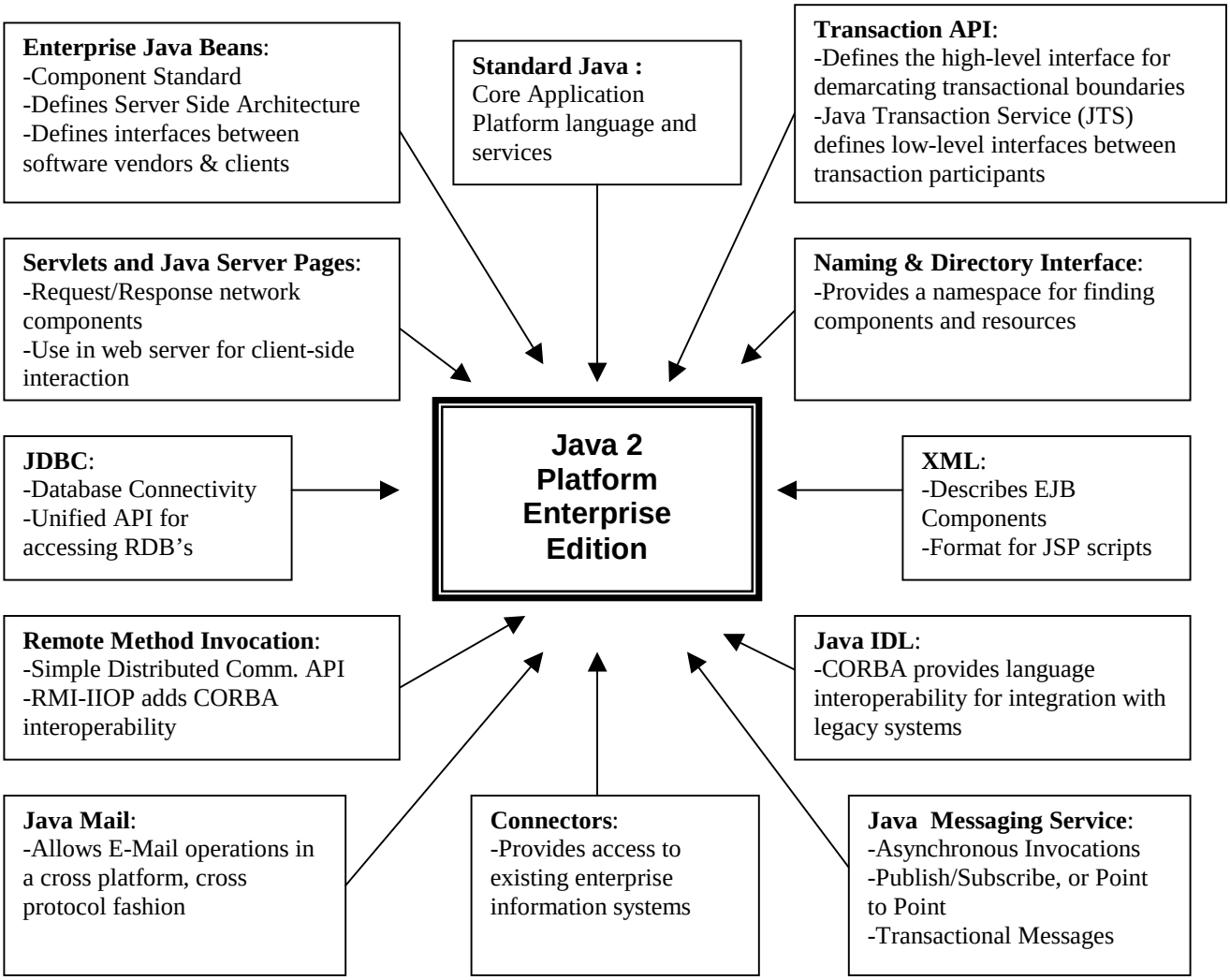
The number of disparate data sources available to a company, both internal and external, can be astonishing. Just as varied are the platforms, storage methods, structures, and formats in which this data is stored. Within an organization it is not uncommon for each business area to use similar data, but represent and store it differently. Many companies find that information stored in one department can be very useful to other departments in the organization. The advent of the Java Enterprise Application Model by Sun Microsystems (J2EE) presents the ideal architecture for leveraging and integrating disparate data sources, legacy applications and business functions.

The J2EE application model defines an architecture for implementing data transformation services as distributed data objects in multi-tier applications.

The J2EE is a standard enterprise platform for hosting J2EE compliant applications specified as a set of required API's and policies. This complete development platform for enterprise-class server-side deployments in Java is a robust suite of middleware services that make developing and deploying data transformation services cost-effective, highly available, secure, reliable and scalable.

In the past, data exchange tools have been limited to replication engines that work only when using identical data schemas and formats, or single path, "stovepipe" solutions

Diagram 1 The Java Enterprise Application Model (*Roman, Mastering EJB and J2EE*)

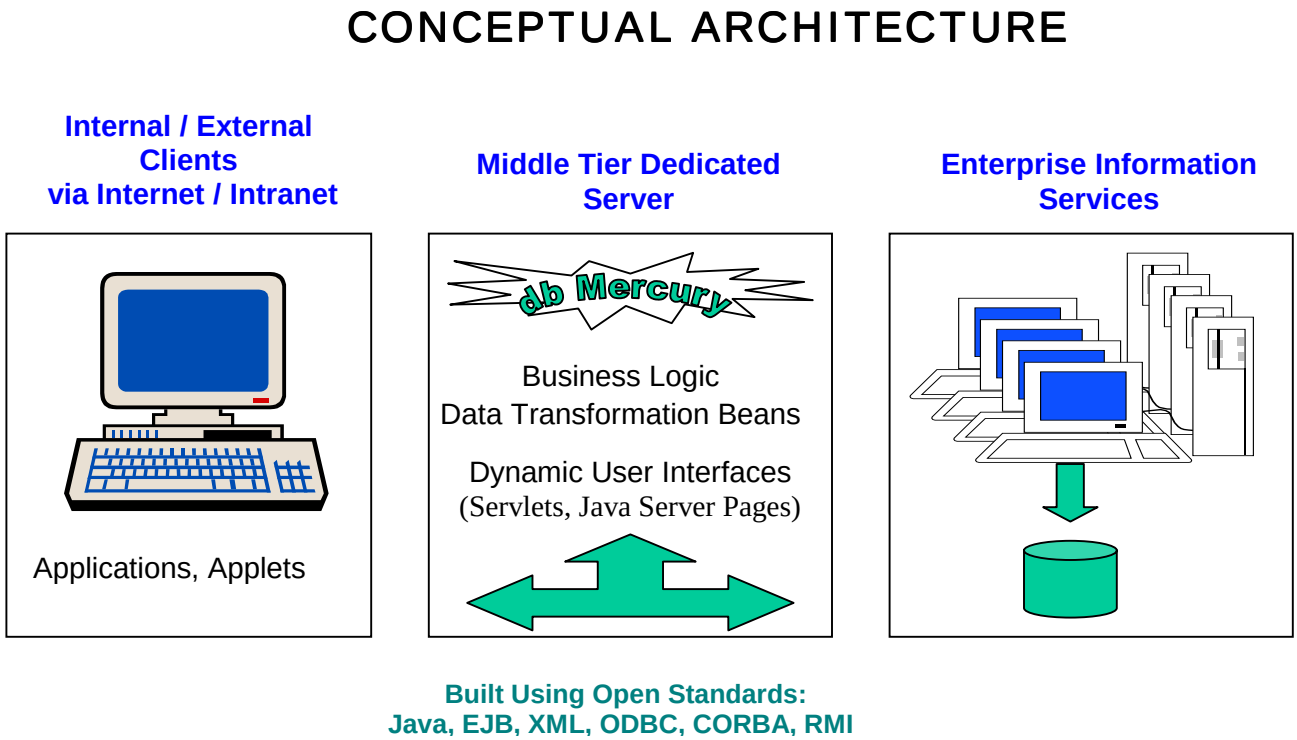


which limit the exchange of data to only two systems. Data visualization tools are often complex and proprietary in nature and neither flexible nor scalable enough to be utilized throughout an organization.

About db Mercury ™

db MERCURY ™ integrates and transfers data between disparate data sources that current replication and data exchange mechanisms cannot handle. As shown in the diagram below, *db MERCURY ™* is designed to integrate with and leverage existing investments in an organization's architecture.

Diagram 2 Conceptual Architecture Layout



The *db MERCURY™* tool set consists of two modules: *db Exchange™* and *db Vision™*. Used singularly or in conjunction these tools can greatly aid an organization in moving and viewing its data. *db MERCURY™* creates a single point of access to a company's heterogeneous data sources, giving users the capability to view information they need, and systems the capability to exchange information as necessary. Each module is briefly described below with an overall description of the architecture, features and benefits of *db MERCURY™* following.

db Exchange™ uses an object designed data engine built as modular Enterprise Java Beans to retrieve, transfer, and store data between systems. A well-defined reference model based on corporate business rules allows *db Exchange™* to translate and transform data so the data retrieved from one database is properly formatted for storage in another.

db Vision™ utilizes seamless, user-transparent connections to corporate data sources via the *db Exchange™* reference model to retrieve and present real time data to users in familiar GUI, or Web-based interfaces. The simplicity and ease of *db Vision™* allows users to view, drill-down, and even update data without developing federated queries or needing IT support. They can simply point and click their way to the information they want.

Technical Description and Architecture

The implementation of *db MERCURY™* is not a physical database. Rather, it is a collection of Enterprise Java Beans and APIs that:

1. Provide access to enterprise data stores via federated searches,
2. Create standardized table objects with query results,
3. Transform the data to the desired format as distributed objects,
4. Present the objects for application utilization and/or storage
5. Leverage the J2EE model and its front-end interfaces (JSP's, Servlets).

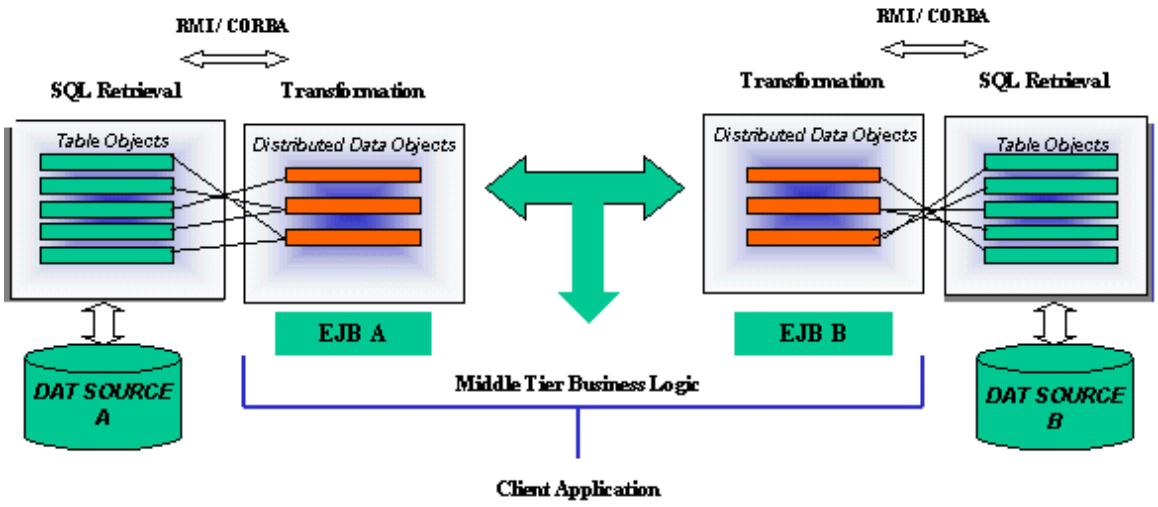


Diagram 3

Basic Data Exchange Architecture

Table objects model the desired data. Enterprise Java Beans perform all the necessary functions to interact with the data source and retrieve stored data, either

through pre-established API's or SQL. Each Table object is built to mirror a specific table or data set within the data source. Once accessed, data is temporarily stored in its corresponding table object.

Enterprise Java Beans interact between the table and distributed data objects. They manage the transformation of the data from the table objects into the reference model format. This takes into account not only data type and data formatting issues, but also business rules specific to that data source.

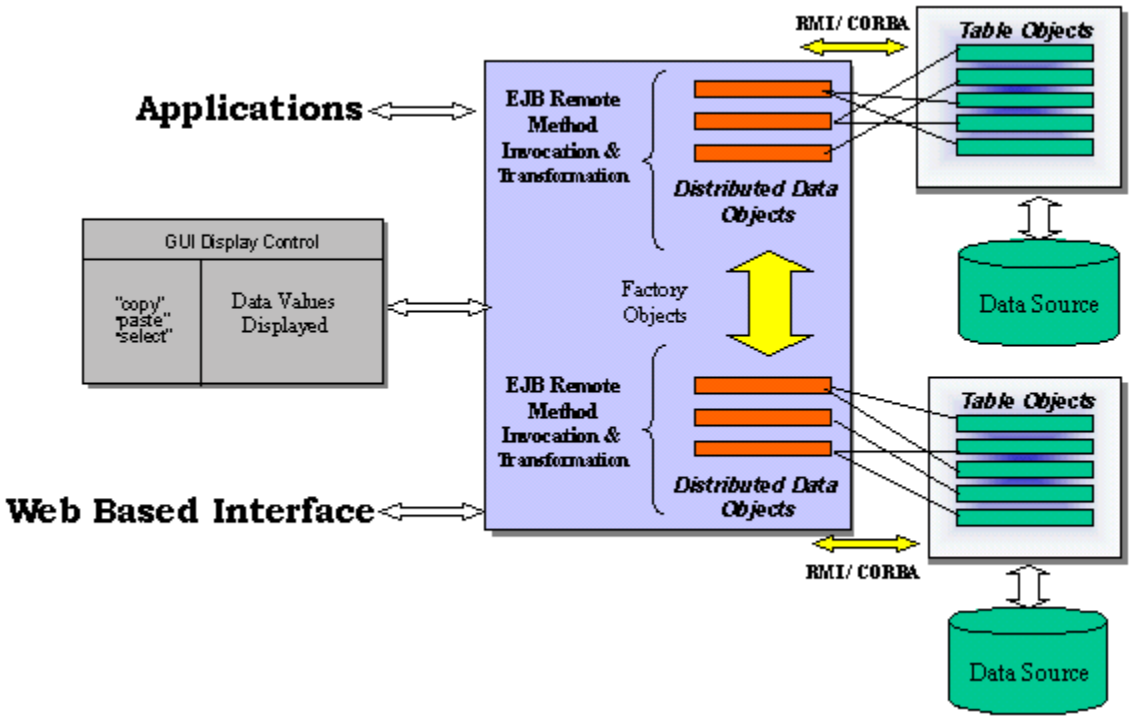


Diagram 4

Basic Data Exchange Architecture

Distributed data objects represent the conceptual reference model. The distributed data objects encapsulate the data taken from the data source by the Table objects and manipulated by the Enterprise Java Beans. These objects are then passed across the network utilizing RMI /IIOP to the data's destination. If this destination is another RDBMS, the distributed object is passed to the data engine for that RDBMS whose Enterprise Java Beans then manipulates the data for storage. This is the basic exchange architecture shown above in Diagram 3.

For real-time access to the data, the distributed data object is passed to a GUI. The GUI then displays the information in a user-specified format. This architecture is used for *db Vision™* and is shown above in Diagram 4.

Key Benefits and Features

db MERCURY ™was designed and built using current, open-systems based techniques and standards, including Sun Java, J2EE, XML, CORBA, ODBC, JDBC, and RMI. As such, it is extremely flexible, robust, and scalable. Some of the key features and benefits of *db MERCURY™* are described below:

- Allows data, regardless of differences in format, type, structure, naming conventions, or even semantic definitions to be exchanged. It is not simply a replication mechanism.
- Is platform independent. *db MERCURY™* can be deployed on Unix, NT, Linux, or Windows systems.

- Is database independent. *db MERCURY™* supports integration with multiple data sources, including any RDBMS, Legacy systems, flat files, text, etc.
- Requires no modifications or changes to current systems. *db MERCURY™* can easily be integrated into existing architectures to support immediate interoperability requirements without costly design and code changes.
- Provides a reusable solution that easily, quickly, and inexpensively allows the integration of new data sources. The model is simply extended to accommodate new requirements.
- Supports selective and multiple data exchange needs. Systems and users can exchange data specific to their requirements. Users can also "filter" data. There is no system-implemented restriction on what data to exchange.
- Supports needs at the business unit level as well as enterprise wide.
- Supports approaches to various data management architectures – migration, warehousing, new design, etc.

About SunTek Systems

SunTek Systems specializes in the analysis, design and development of database, database interoperability, data visualization, and data management services and products. SunTek expertise and products are now being used in some of the world's largest enterprises, including Fortune 500 companies, the US Department of Defense, and the US Department of the Army.

For More Information

For additional details, demonstrations, and answers to questions on *db MERCURY™*, or our other products and services please call us at (732) 450-1186 or visit our web site at www.gosuntek.com.