



# The Data Integration Architecture

"Build the Foundation for Success"



## Introduction

You can't build a house without a blueprint. The same holds true for your data integration initiative. Starting with the foundation and working your way up to the roof, all aspects of the house need to be thought through before construction can begin. Likewise, you can't start developing your data integration solution until you've identified your sources, mapped out your data movement and consolidation process, determined your data storage approach, and determined how best to present the integrated information.

Defining the architecture is one of the most overlooked and undervalued steps in a data integration initiative. And it's arguably the most important. The cost and time associated with defining the architecture is minimal when compared to the cost and delays associated with rework during the development and test phases. A more important factor is the hit to the project team's credibility, when deadlines are missed and costs escalate. Once trust with the business community is broken, it can be very difficult, if not impossible, to restore.

For the implementation team, the architecture provides a communication tool to keep all parties on the same page. It also facilitates the divide and conquer approach that allows expert teams to focus on their individual components of the system. The carpenters frame the house, the plumbers install the pipes, all the while working off the same set of plans.

This white paper outlines the key components of a sound data integration architecture, and the benefits derived from taking this important step.

# Data Integration Architecture

The following diagram (Figure 1) depicts a holistic view of a data integration architecture. For most organizations, only a fraction of these components would actually be implemented. The intent is to show how all of these commonly found pieces fit together.

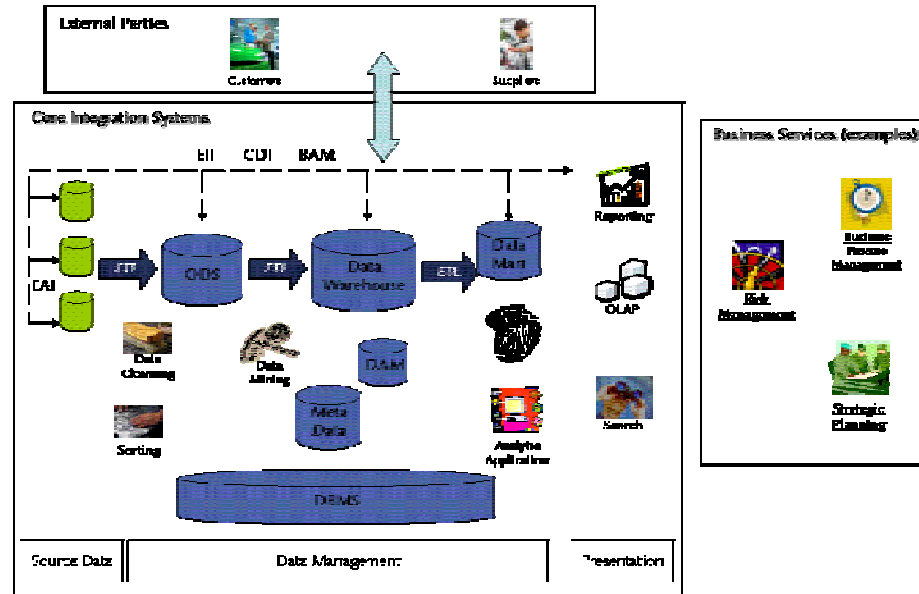


Figure 1 – Data Integration Architecture

A data integration architecture is typically defined as that in the middle box, in the context of core integration systems. This is where the bulk of the heavy lifting is done and where significant value is derived. However, the investment is not maximized without bringing external parties and internal system services and processes into play. We'll look at all three of these areas below.

The **core integration systems** can be divided into three groups:

- Source Data
- Data Management
- Presentation

**Source data** would include any system, database, file or other originator of data to be integrated. Common examples include Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), billing and inventory systems. It can also include external data such as credit scores, address validation, and other data enrichment and augmentation module.

**Data Management** includes the storage, movement and distribution of integrated data. Common storage types would be an Operational Data Store (ODS), enterprise-wide data warehouse, data marts, meta data, and report specific cubes.

Movement of data is typically via one of two methods:

- Bulk oriented, such as extract, transform, and load (ETL)
- Transaction based, such as enterprise application integration (EAI)

Distribution of data can be accomplished a number of ways, but typically is done through an application programming interface (API). An example would be a web services module.

**Presentation** includes any means of formatting the data for end user consumption. Commonly referred to as the *business intelligence* layer, examples include reporting tools, analytical packages, search engines, and any other end user application.

Outside of the core integration services, there are two additional consumers:

- Business services, which includes strategic planning, risk management, and business process management among other functions
- External parties, including suppliers, partners, and customers

**Business services** include those business functions that either directly or indirectly benefit from the data integration platform. Functions such as risk management can draw upon integrated and cleansed data to highlight historical trends. Coupled with specific algorithms, they can more accurately project future problem areas.

**External parties** include suppliers, partners, and customers. All of whom benefit from having access to defined windows into the data integration platform. Security and privacy are issues anytime you allow an external entity to access your organization's data. But the benefits can be dramatic. For instance, providing your customers with a self-service portal to view and modify their accounts can both drive down support costs and increase customer satisfaction. Setting up a business-to-business (B2B) interface with suppliers can dramatically reduce costs by eliminating ordering and delivery errors, and by accelerating the process, thus reducing inventory.

## Benefits

Benefits of the data integration architecture can be broadly defined along the following:

### Risk Mitigation

- **Streamlined implementation due to clearly defined solution** - clearly defined technical vision aligns project team and eliminates rework and redundancy
- **Boosts implementation team credibility** – a well thought out architecture leads to more accurate cost and delivery estimation

### Increased ROI

- **Reduced cost to implement** – clearly defined technical vision accelerates the implementation process, and reduces the likelihood of rework and wasted effort
- **Reduced cost to operate** – a well defined architecture leads to a more elegant solution, reducing maintenance and manual workarounds
- **Increased effectiveness of vendor products** – 3<sup>rd</sup> party products such as ETL and BI tools can be fully leveraged by matching their capabilities against the technical vision

### Improved Communications

- **Increased communication throughout the project team** – promotes a smooth implementation effort
- **Increased communication with executive leadership** – allows for increased visibility on the data integration initiative

## Conclusion

In summary, the business case for the data integration architecture is strong:

1. The architecture communicates the end-to-end technical vision to all stakeholders
2. Ensures investments made in development, tools, and processes are not wasted
3. Allows the data integration solution to be fully leveraged by the business and external entities

The data integration architecture effort is a critical step in realizing the highest return on your technology investment. You wouldn't build a house without a blueprint, don't embark on a data integration initiative without a well-defined architecture.

## About The Author

Rick Abbott is President of 360DegreeView, LLC.

He has over 19 years of information management and technology experience, including private and public sector work. On the commercial side, he has significant experience in both the Telecommunications and Financial Services industries. He has over 8 years of "Big 5" experience, including an associate partnership position with Deloitte Consulting.

His primary focus over the past 11 years has been on large-scale business intelligence initiatives. He has direct experience in all aspects of business intelligence and data warehouse projects, including business case development, strategic planning and business alignment, business requirements, and technical architecture and design. He possesses over 10 years of large IT related project management experience.

He also has significant experience in assisting clients in negotiating large technology product, service, and outsourcing contracts.

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