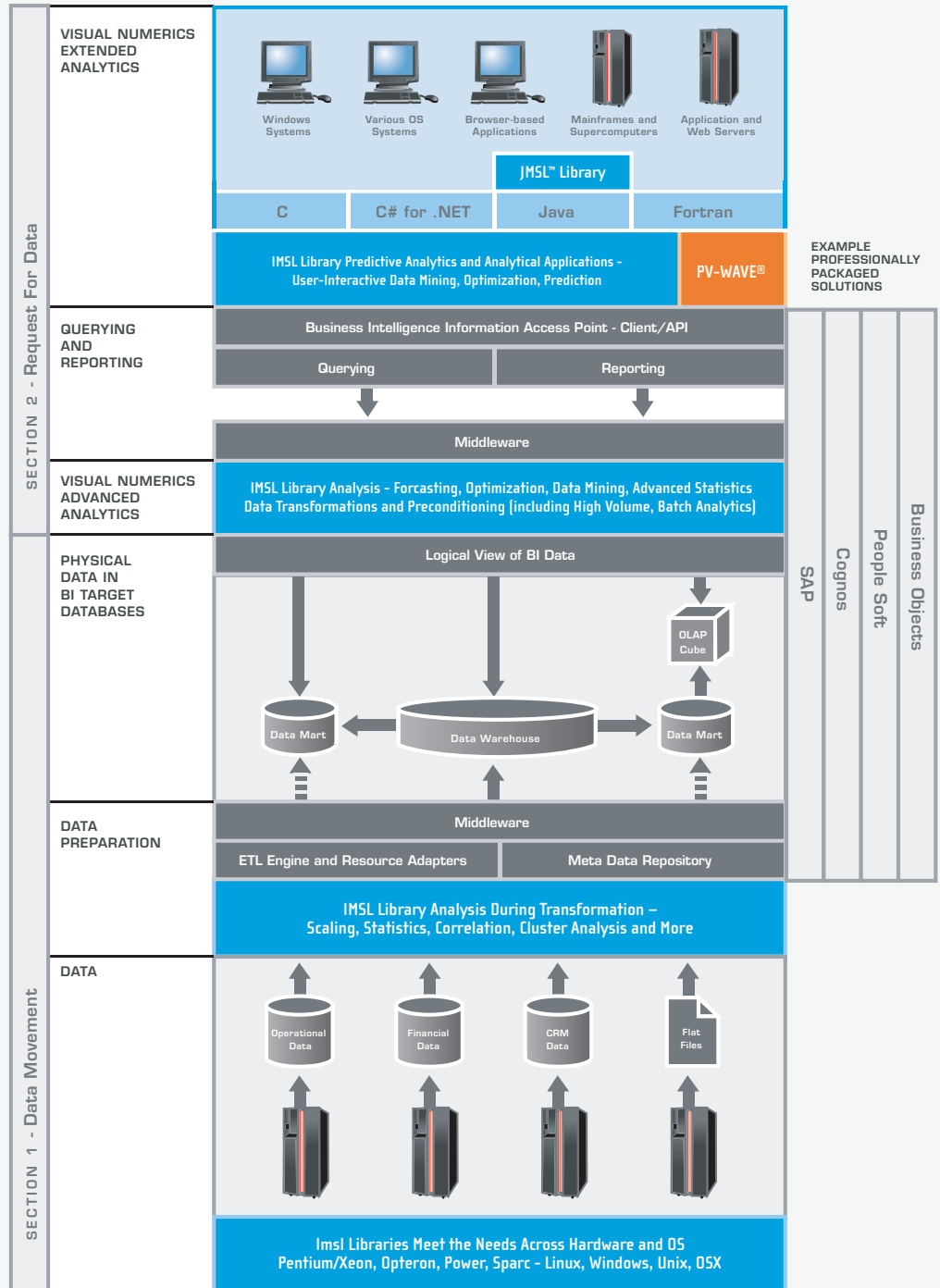


Using Visual Numerics' Advanced Analytics Within a Business Intelligence Framework

WITH INCREASED INVESTMENT IN BUSINESS INTELLIGENCE, COMPANIES ARE ASKING HOW VISUAL NUMERICS' CAPABILITIES FIT WITHIN THEIR EXISTING BUSINESS INTELLIGENCE FRAMEWORK. THE SHORT ANSWER IS TWO FOLD:

- VISUAL NUMERICS SOLUTIONS PROVIDE VALUE FOR EXTENDED ANALYTICS AT SEVERAL POINTS IN THE BUSINESS INTELLIGENCE FRAMEWORK
- VISUAL NUMERICS SOLUTIONS ARE EASY TO INTEGRATE WITH EXISTING SYSTEMS



Framework Overview

The diagram titled “Using Visual Numerics’ Advanced Analytics within a Business Intelligence Framework” offers a high level view of a typical customer’s BI stack. The traditional BI framework is best understood when discussed in 2 sections – Data Movement and Requests for Data.

The separation of data versus analytics is an important distinction in the BI framework. “Logical View of BI Data” in the diagram represents this separation point and is the transition point of data movement versus requests for data. The arrows in Section 1, Data Movement, represent the aggregation and consolidation of the enterprise data moving up to the data storage - the data flow is one way through the data preparation layers of the stack and subsequently into the target BI databases. The areas in Section 2 represent the requests and subsequent retrievals being made from the data stores.

Section 1 – Data Movement

The lower half of the diagram shows the physical locations of data. Key points here are:

- Customer data can consist of operational data, financial data, Customer/CRM data, flat files or any type of data that is targeted for BI
- Data can reside on a variety of hardware and O/S platforms
- Visual Numerics’ IMSL Numerical libraries are platform agnostic and work with any combination of hardware and O/S, thereby simplifying integration and architectural requirements
- Prior to the data being loaded into the data stores, IMSL libraries can pre-process the data depending on a customer’s needs
- Enterprise data is consolidated as it moves into data storage (data warehouse, data marts, etc.)

Section 2 – Requests For Data

The upper half of the diagram shows the data retrieval process. Key points here are:

- Most BI solutions only provide querying and reporting capabilities and do not include advanced predictive analysis capabilities
- Visual Numerics solutions not only provide data analysis at the querying and reporting layer of the BI stack, but also extend the traditional BI framework to include Advanced Predictive Analytics
- IMSL Numerical Libraries can integrate easily with existing querying and reporting functions to provide forecasting, optimization and other analytics
- Moving up the framework, Visual Numerics Extended Analytics allow for user-interactive data mining, optimization and prediction
- IMSL Library Predictive Analytics are easily embedded into existing applications, regardless of programming language
- The Visual Numerics JMSL™ Library and PV-WAVE® products provide enhanced charting and analysis in Java or Web-based client server environments
- PV-WAVE offers front end analytics through extensive visual data analysis and interactive web-based or application client server solutions



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