

BUSINESS INTELLIGENCE FOR RETAIL

Overview

The primary goals for applying business intelligence (BI) technology in a retail business environment are making operational data simple and concise, providing management with clear data summarizations for forecasting purposes, and displaying exceptions in the supply chain so general managers can address them quickly and effectively.

Useful business analytics relies upon an enterprise data warehouse in order to bring together information from each retail location, thus providing a consistent view of sales for each individual store and reporting consolidation at regional, divisional, and corporate levels. Having this consistency ensures that the direction set by senior management is clearly communicated to store-level management, which in turn leads to a common understanding of the actions to be taken and enables the desired results to be achieved. BI enables day-to-day decision making to address strategic initiatives, and empowers store managers and corporate executives to gain the insight they need to better manage productivity and profits.

This technology brief outlines the *AMULET Business Intelligence Solution Process* using advanced tools found in the Microsoft suite of server products including: SQL Server 2005, Windows Server, Sharepoint Portal, and Visual Studio 2005.

Microsoft® **SQL Server™ 2005**

An effective BI solution should deliver information tailored to the user's role in the organization for a secure intelligent data delivery strategy:

- ♦ General managers in every store would receive a defined set of reports describing that store's performance by line of business.
- ♦ Regional managers would see the same GM reports, but also would receive a more summarized view of the multiple stores they manage.
- ♦ Senior Director of Operations, and Divisional VPs would need similar reports with a view of the entire country.

Retail Issues Addressed and Problems Solved With BI

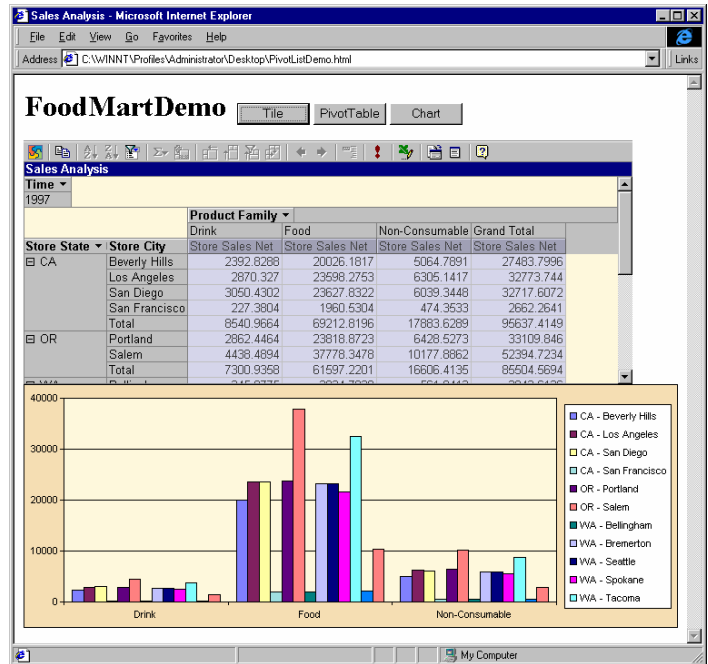
Retail businesses have specific pain-points that BI data warehouse solutions uniquely address. The following is a sample list of thought provoking business issues and problems a BI solution can solve:

- Provide up to the minute strategic key performance indicators (KPIs) such as *Sales Performance*, and *Profit Contribution by Product*.
- For the direct sales channel (catalog and e-commerce), BI can increase efficiency in a warehouse environment to optimize order picking.
- Maintain order history for analysis of demand and productivity trends.
- Improve accuracy of sales forecasts which are the primary input to long-term planning.
- Lowering daily order-processing costs through better product slotting and order filing.
- Support stock planning reporting, and measurement of operational metrics.
- Real-time dashboard display to track selected KPIs.
- Monitor and provide a means to optimize the amount of open space in the warehouse to allow slotting of fast-selling items.
- Determine optimal inventory layout for picking customer orders within a warehouse; optimizing "SKU affinity" – the likelihood that if one SKU is ordered, so will a related one.
- Monitor open orders and stock movement in near real time to discover trends and order-filling patterns.
- Optimizing inventory turn over, and unsold inventory.
- Analyze optimal store locations: traffic counts, demographics, retail purchasing trends.
- Consolidation of data from all stores within a region in the data warehouse.

The AMULET BI Process

The AMULET BI team works with your management team and store managers to define the business reporting requirements, and select critical KPIs. With a BI solution, retail companies may look at all stores for metrics such as sales, gross margin, margin percent, and sales to plan. Subsequently, specific stores can be isolated, compared with other stores within a specific region, or across the enterprise. With top performers identified, an executive can call the manager and ask what is happening to drive the business. Conversely, bottom performers can get the attention they need to get back on track.

The adjacent figure shows an online analytical processing (OLAP) tool used to *slice-and-dice* operational data in order to better understand financial results.



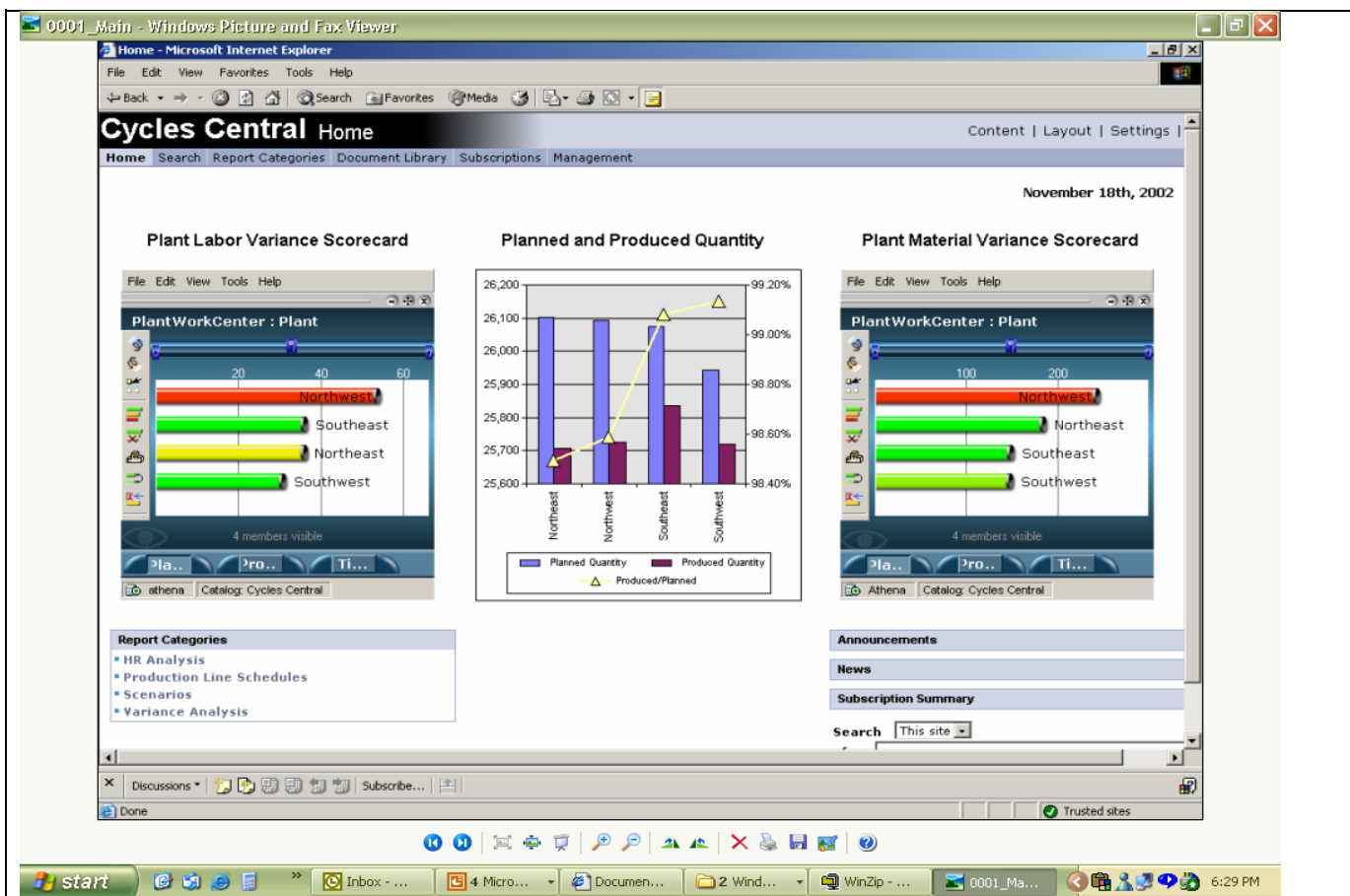
The AMULET BI team provides a step-by-step process in implementing your new BI solution:

- BI Consulting: data modeling across the enterprise, data flows, and high-level requirements definition
- Iterative approach for designing and building the data warehouse
- Develop interfaces to existing OLTP systems (including e-commerce website), and ERP systems.
- Data cleansing to maximize the quality of your data assets
- Extract, Transform, and Load (ETL) design and implementation to populate the data warehouse
- Design and architecture for OLAP databases and cubes
- Deploy end-user business analytics solution
- Enterprise reporting design and implementation
- Enterprise portal requirements, design, and implementation: dashboards, scorecards, etc.
- Predictive analytics/data mining requirements

In preparation for full deployment, we commence by populating the data warehouse by pulling data from a single store. Then, after all the components of the BI architecture are successfully tested with this set of data, we proceed by pulling data from all stores within a region and combining it in the data warehouse. Step by step, additional regions are added to the data warehouse, resulting in the successful consolidation of sales data for the entire company.

Once in production, data gathering and consolidation is performed on a daily basis when an individual store is closed. Data is captured from the point of sales (POS) devices in the store early each morning, and collected in the data warehouse. Accounting data from legacy systems is integrated so that correct gross margins can be calculated, and OLAP cubes aggregate the data.

The BI solution also performs both *descriptive* and *predictive* data mining. Descriptive data mining (segmentation and clustering) finds patterns in data to explain customer behavior, such as finding non-intuitive combinations of products commonly purchased together. Conversely, predictive data mining finds patterns that are used to identify trends, such as finding characteristics of customers who are likely to buy a particular product.



BI Benefits to Retail

Many significant benefits for retail organizations are realized with a BI system implementation. The above figure exemplifies an enterprise portal exposing strategic KPIs for management action. Here are some benefits the retail company can expect:

- Improved sales performance
- Inventory visibility
- Improved data quality
- Fraud and loss protection
- Improved productivity
- Quality analytics with key metrics: sales, margins, cost, stock levels.
- More effective promotional campaigns: direct mail, telesales, e-mail.

Who is AMULET Development Corp?

AMULET Development Corp. is a Web database and e-commerce integration firm founded in 1995 to provide quality technology solutions for businesses in a broad range of industries. Specializing in Microsoft server, Web, and database technologies, we've built many high profile e-business websites. Our current focus is business intelligence, analytics, and data mining using contemporary technology to help enterprises better utilize valuable data assets.

For information about AMULET's Business Intelligence services please contact us:

Sonya Franklin 1-877-722-7393
 info@amuletc.com
 www.amuletc.com

AMULET maintains a Microsoft Competency in *Data Management Solutions* with a *Business Intelligence* (BI) specialization.

