

On the HORIZON

Advances in 4 areas will drive data warehousing to new heights. *by Stephen Brobst*

Teradata has been in the data warehouse game for more than 25 years. One might think that after all this time the industry would have reached a status quo. This is certainly not the case—more and more companies are jumping into the data warehousing fray, and innovation is accelerating rather than slowing down. Four areas will be particularly interesting over the next several years and are likely to drive huge increases in data volumes, data usage and the need for scalability in data warehouse solutions.

Sensor technology. The use of sensor technology has already become a part of our daily lives—tracking vehicles through toll plazas, merchandise in retail outlets, supplies in manufacturing plants, energy consumption and even individuals. Sensors, which will soon cost less than jelly beans, will be deployed by the millions. These “smart dust” sensors will be the size of a grain of sand—containing sensors, computational capability, bi-directional communications and a power supply. Massively distributed sensor networks will generate huge quantities of data with opportunities for advanced analytics that are unfathomable by today’s standards.

Pervasive business intelligence (BI). The value of content in a data warehouse is amplified when access is provided throughout an organization. Decisioning services provided to front-line knowledge workers help transform the strategic vision of an organization to operational reality. The next step will be to deliver such capabilities to suppliers, distributors, customers and government agencies. More aggressive service levels will be required



for performance, availability and data freshness. Business rules engines, business activity monitoring and advanced visualization will be necessary for effective deployment.

In-database processing. In yesterday’s world, sophisticated analytics were often performed in separate data marts using specialized file systems. Advances in the Teradata relational database management system (RDBMS) and third-party application technologies allow in-database processing to deliver significantly better performance for high-end analytics. For example, the old style of multi-dimensional online analytical processing (MOLAP) is rapidly being replaced by relational OLAP (ROLAP) for much greater scalability and lower total cost of ownership. MicroStrategy was an early partner with Teradata in this area. More recent Teradata partners in the ROLAP and hybrid OLAP space include Microsoft, Hyperion (Oracle) and Cognos, an IBM company. Another

example of this trend is the evolution of traditional extract, transform and load (ETL) tools to the extract, load and transform (ELT) approach, wherein transformations take place inside the scalable relational database rather than on an external server. This approach significantly reduces data movement for complex transformations and makes very effective use of the inherent scalability of the Teradata platform. Data mining, traditionally performed inside proprietary file systems, has also moved into the data warehouse. Implementations by KXEN and SAS demonstrate the power of in-database processing—even for the most sophisticated analytics.

Non-traditional data types. In tomorrow’s world, structured content will constitute less than 20% of the volume in a data warehouse. New data types such as biometrics, images/video, sound/voice, geospatial, text and XML documents will dominate the storage and analytic resources in advanced data warehouses. This will require new tools for analysis and extensions to traditional relational structures for storing and processing complex data types.

These innovations, and many others, will provide huge opportunities for extracting more value from scalable data warehouses. Moreover, the ongoing evolution in processor and storage technologies ensures that hardware resources will not prevent the Teradata RDBMS from handling these new analytic opportunities. **T**

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