Britton Lee: Improving CIM Systems

Backend Database Machines Work For The Semiconductor Industry

David McGoveran

Specialized computers housing relational database software, otherwise known as backend database machines, have recently received increased attention as solutions to database management problems in a wide variety of applications and environments.

In 1982, Alternative Technologies, a consortium of consultants based in Santa Cruz, California, became interested in the database machine concept and its potential application in Computer Integrated Manufacturing (CIM) systems for high technology companies, and more specifically, the semiconductor industry. The database machine of interest to us was the Intelligent Database Machine (IDM), manufactured by Britton Lee Inc., Los Gatos, California.

After a careful investigation of industry requirements, Alternative Technologies opted to include the IDM in its design of a factory-wide, multi-user, multi-tasking, real- time CIM system that could help achieve singularly high levels of integration and productivity in semiconductor manufacturing. The company was able to implement the design with a 50:1 reduction in programming resources as opposed to previous developments it used.

Through an overview of the CIM system design, which later served as a prototype for the BTU Engineering Corporation/Bruce Systems Fasttrack Automation System, the potential advantages of the database machine concept to the semiconductor industry, as well as other high technology industries, becomes apparent, as well as more general advantages of database machines over conventional systems.

Task Requirements

The computerized integration of semiconductor manufacturing involves the management of vast amounts of constantly changing data. Alternative Technologies' semiconductor automation system prototype was designed to integrate business functions such as cost accounting, inventory control and tracking, scheduling and material requirement planning (MRP) with computer-aided design (CAD) functions and the management of gigabytes of test and measurement data being generated by various instruments on the wafer fabrication process line.

Those instruments measure and generate data on laser identification readings , wafer flatness and critical dimension monitoring, to name a few. This data must be collected from the process line, condensed, analyzed and stored. In addition, massive amounts of data are also generated in final product testing prior to shipment.

This factory-wide integration is achieved by linking business computers with minicomputers dedicated to the collection and analysis of data from the process line. In turn, the minicomputers must be linked to various manufacturing machines and measuring instruments used in real-time process control.

IN addition, all of these networked computers must be able to share a centralized DBMS. The tremendous amount of shifting data must be made available to users of different host computers in real-time.

Wafer fabrication is essentially a non-linear process involving feed forward and feed backward control loops. Wafer fabrication requires constant monitoring and refinement, and is best controlled adaptively through a series of ad hoc queries, simulation and predictive analysis. These queries

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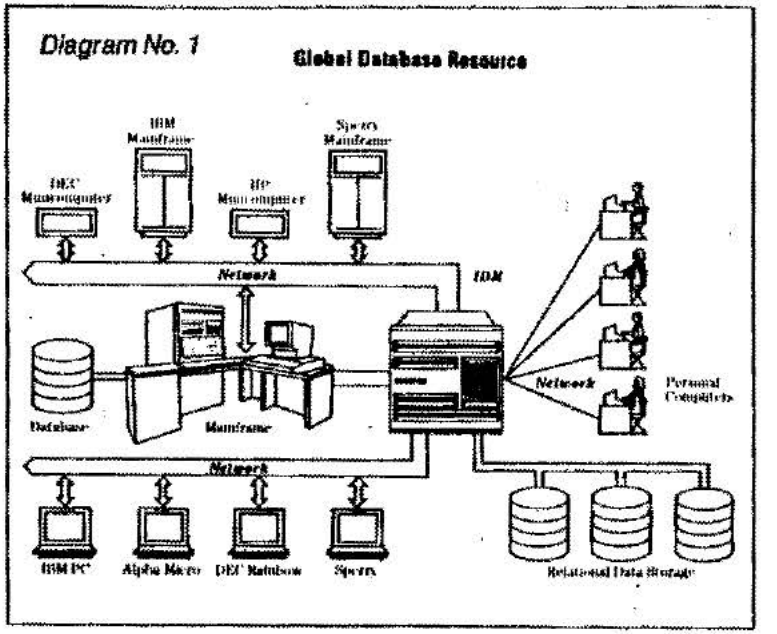

MYM Cute But Not Effective For The Serious Businessman

by Steve Epner

Andrew Tobias's "Managing Your Money"(MYM) program (MECA, 285 Riverside Ave., Westport, CN 06880 (203) 222-1000) has been lauded as a good example of how personal computers

From a business standpoint, I would have liked to have seen more extensive work with budgets. If the system would record information for two years, then budgets could be established by