PANEL

Database Technologies for the 90's and Beyond

Panel chairman:

Magdi N. Kamel
Naval Postgraduate School

Panel Members:

Umesh Dayal, Digital Equipment Corporation
Rakesh Agrawal, IBM Corporation
Douglas Tolbert, Unisys Corporation
Gilbert Vidal, Sybase Inc.

Since its inception, database technology has concentrated on the management of data for business applications such as record keeping, inventory control, and reservations systems. Next-generation database applications, however, will have drastically different requirements than current database processing applications. Some of these requirements include:

1. Management of Massive Amount of Data. It will not be uncommon for some applications to require the storage of terabytes of data. This requirement mandates far more efficient data storage and manipulation, backup, and recovery techniques than what the current technology offers.

2. Management of Complex Objects. Next-generation applications will require the storage and manipulation of variable and complex objects. These applications include Scientific, CAD/CAM, CASE, and Geographic Information Systems. To accomplish that, future DBMS are required to support rich, extensible data types efficiently.

3. Multimedia Support. In addition to text-based information, many next-generation applications will require the storage and manipulation of photographs, digitized images, maps, and audio and video information.

4. Rule Processing. Many next-generation applications will be required to incorporate a rule base either as a mechanism for triggers, alerters, integrity assertions, access control, etc., or for making complex deductions.

5. Integration of Heterogeneous Distributed Databases. Many applications will require access to and integration of information from several heterogenous distributed databases. This requirement represents many challenges for devising techniques for resolving semantic heterogeneity, handling incomplete information and inconsistencies, as well as resolving data model and language heterogeneity.

Other requirements for future applications include support of time and uncertainty.

This panel addresses the challenges that these requirements present in designing and building next-generation DBMS.