Technology Roadmaps and Plotting Research Routes:

Database Technology Roadmapping

Hector Garcia-Molina

CRA Conference at Snowbird 2002

Session Description

◆ Setting research directions in a subdiscipline of CSE must be done in light of the technology roadmap affecting that subdiscipline. This session will provide an overview of the roadmapping efforts in two subdisciplines of CSE-- the silicon roadmapping effort done by the International Technology Roadmap for Semiconductors and the database technology roadmapping effort done by ACM/SIGMOD -- to identify technological challenges and opportunities for new research directions (and monies) to overcome the roadblocks. The goals of these presentations will be to lay out roadmapping strategies that can be adopted by other subdisciplines in CSE in plotting their own research routes. A report of the discussions at the CRA Conference on "Grand Research Challenges" in Computer Science and Engineering, to be held in June 2002, will conclude the session.

◆ *Chair*: Mary Jane Irwin (The Pennsylvania State University)

◆ *Speakers*:
Hector Garcia-Molina (Stanford University): Database Technology Roadmapping
Ed Lazowska (University of Washington): Report from the recent CRA Grand Research Challenges in Computer Science and Engineering Conference
Jan Rabaey (University of California at Berkeley): Silicon Technology Roadmapping/MARCO

Background: Database Systems Community

◆ Before 1980's: Little respect

◆ 1990's and beyond: Big, multi-billion industry

◆ Fundamental technologies:

➔ Relational databases

➔ Transactions

➔ Query optimization

➔ Query languages

➔ ...

Setting the Research Agenda

◆ Hard to fund "new kid in town"

◆ "Industry should fund this!!"

◆ Industry very competitive (little funding; can't work with others)

◆ Research expectations are high

◆ What to do in a mature field?

◆ What is "database systems" research?

Setting the Agenda

◆Lagunita Reports

◆NSF

Lagunita Reports

◆ Laguna Beach (February 1988)

◆ Lagunita I (February 1990)

◆ Lagunita II (May 1995)

◆ Asilomar (September 1998)

◆ Zurich (2003) ??

Some Common Themes

◆New types of data (multimedia, text, workflow, multidimensional, ...)

◆Managing large systems

◆Information Integration

◆Making DBMS easier to use

NSF IDM Workshops

◆ Yearly PI Meetings

◆ Semantic Web

◆ Mobile Database Management

◆ Geospatial information

◆ Bio-diversity and eco-system informatics

◆ Large scientific databases

◆ Data visualization

◆ Data archiving and information preservation

NSF IDM Workshops (Continued)

◆Query processing for seminstructured data

◆Tetherless communication

◆Distributed geolibraries

◆Information retrieval tools

◆Constraint databases

◆Workflow

◆Mining massive data sets

◆Digital libraries

Success in Setting Agenda?

◆ DB Community continues to do good work! (IMHO)

◆ But funding is very limited
(relative to importance of area) (IMHO)

➔ NSF IDM funding is minimal

➔ Other agencies intersted in using DBs,
not in DB Research