

THE ASILOMAR REPORT  
ON  
DATABASE RESEARCH

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# Asilomar Report in 2,000 words

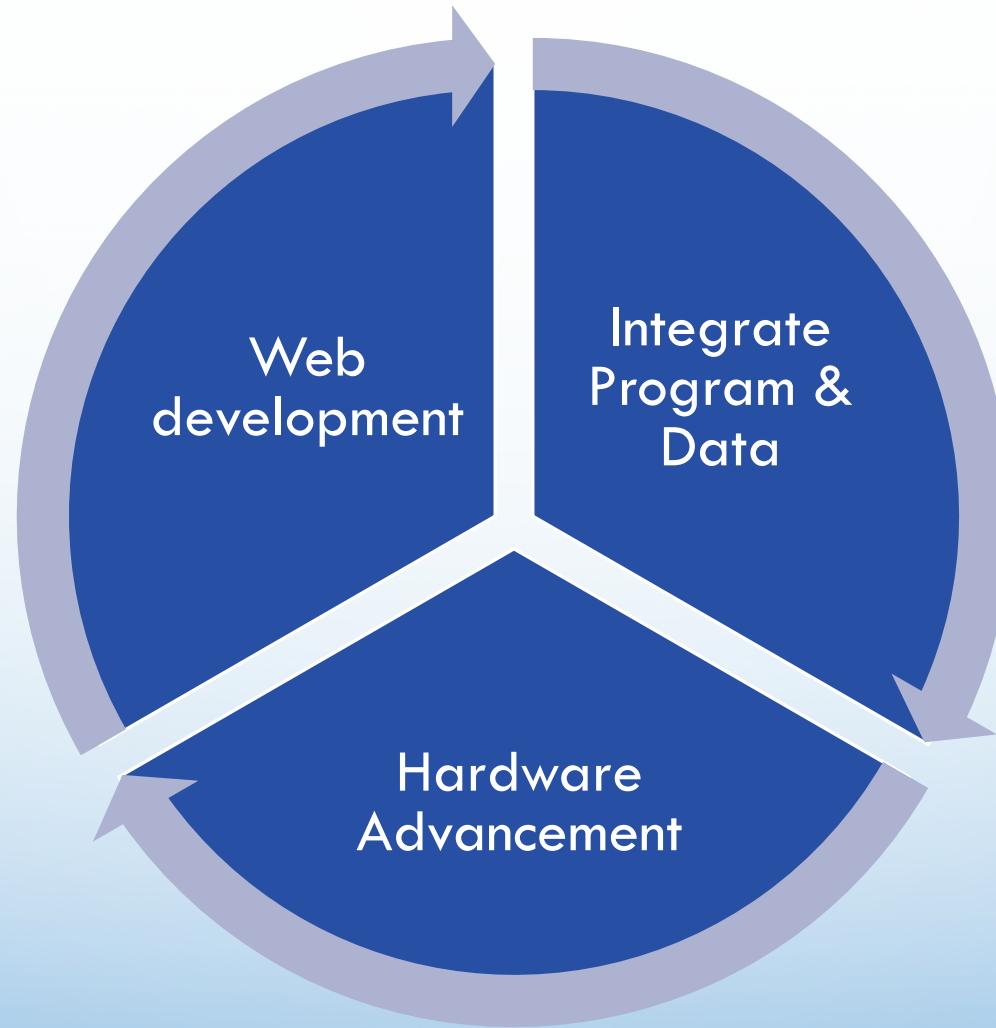


# Why meet in Asilomar?

- 16 database researchers met on August 19-21 1998
- To rethink the next stages of database research- discourage delta-X research
- Asilomar meeting is similar to the ACM 1996 meeting "Strategic directions in Database Systems- breaking out of the box"



# Driving Forces for future Database Research



# Web Development

- Vast amount of online data from websites managed by database technology
- Possible adoption of database technology by content portal and search engine companies
- The need to manage dynamic web pages
- The need to enable customers to extract, store and analyze online data

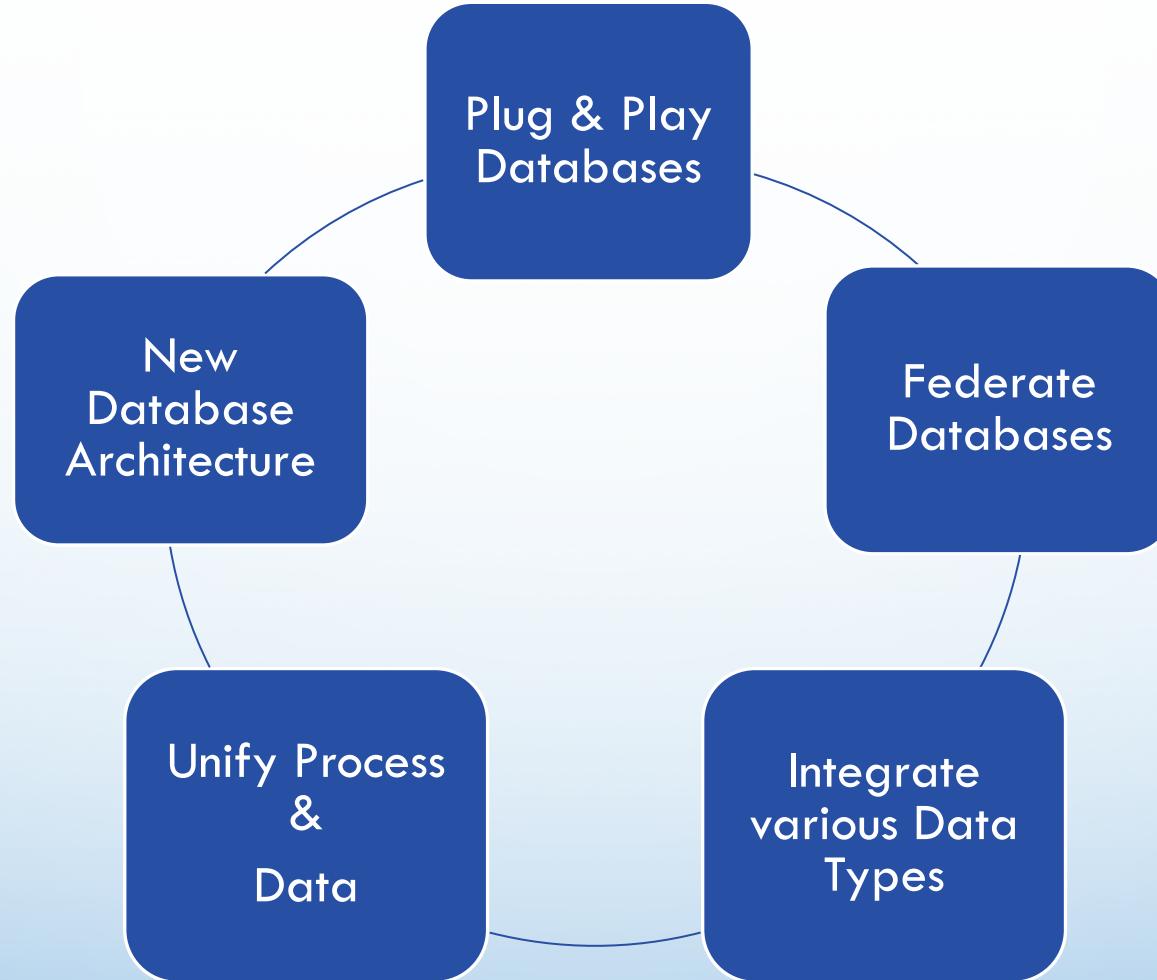
## Integrate Logic & Data

- Need for database systems to manipulate both logic and data
- The growing need for applications to integrate logic; version control and browsing; not stable in current systems
- The need for Database system to be application-aware and involved in system integration of large scale applications

## Hardware Advancement

- Gordon Moore's law will operate for another decade
- Powerful computing engines plus auto-everything advancement in applications such as ERP (SAP) require corresponding database improvements
- The rise of Gizmos in 10 years:
  - Number, mobility, intermittent connectivity
  - Self managing (no user interface, no DB admin)

# Proposed Database Research Agenda



## Plug and Play Database

- No knobs operation (self tuning): a system that remembers all traffic it processes and auto-tunes
  - Embedded wizard with tuning knowledge
- Information discovery: discovering neighbor databases
- More metadata, rich collection of functions

## Federate millions of Databases

- Efficient integration of information
- Traditional static-cost based query optimizers:
  - Future optimizers must be dynamic- load aware
  - Process queries as “evidence accumulation process”
- Easy to add individual system to large federated system

## Smart data unify process

- Efficient scalable & distributed triggers based on millions of logic in a federate system
- Visual programming methodologies to model and automatically generate applications
- Applications and application components should be specified in a persistent programming language

## Integrate data types

- Advent of XML and web technologies
- Need to integrate structured and semi structured data
- Need for unifying web and database technologies
- Handling set of disparate, self describing, nested objects

## Grand Challenge

- "Make it easy for everyone to store, organize, access, and analyze the majority of human information online" [1]
- Bridge the gap between the users and the web, easy to access web data online. This should take into consideration the following; various data formats, search queries, anticipate search queries, etc.

## Proposed Research Infrastructure

- Online submission of papers and public editorial comments
- Embrace poster session format presentation due to specialized topics and audience
- The need to accept large number of articles to provide more opportunities for submission of long term ideas
- The need to facilitate public reviewing process

## Reference

1. The Asilomar report on Database Research" by Phil Bernstein, Michael Brodie, Stefano Ceri, David De Witt, Mike Franklin, Hector Garcia-Molina, Jim Garry, Jerry Held, Joe Hellerstein, H.V. Jagadish, Michael Lesk, Dave Maier, Jeff Naughton, Hamid Pirahesh, Mike Stonebraker, and Jeff Ullman, 1998

## Discussion questions

- Is delta-X research really short term focused?
- Security in Database (authentication, authorization, access control)
- What other forces are changing the need for more research in DB?
- Is the challenge of increasing data volumes completely resolved?
- Do we still need future hardware advancement to meet the database needs?



A green rectangular road sign with a white border and two metal bolts, mounted on a wooden post. The sign features the words "Thank You" in large, bold, white sans-serif capital letters. The background is a vast, dramatic sky filled with large, billowing clouds bathed in warm orange and yellow light from the setting sun.

Thank You