THE DATABASE MACHINES STRIKE BACK!

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DATABASE MACHINES

- Build specialized hardware for turbocharging databases

Jim Gray: And so there was that thread. And spun off from the INGRES project was Britton Lee group. And the Britton Lee group included Paula Hawthorn and Bob Epstein and Mike Ubell and probably a lot of other people. And they built a database machine[81]. In that era, there was this whole notion that you could really do much better by building a special-purpose piece of hardware and a special-purpose operating system and then a database system. Build up from the bare metal and it's going to run a lot faster. I think Roger mentioned that that was part of the Exel concept as well. Logic Machine was another...

- Hugely popular in the early 80's
  - 288 papers , 230 PhDs

- Britton Lee Database Machine

Database Engineering

Database Machines

Edited by:
H.-O. Leilich and M. Missikoff

Berlin New York Tokyo

Britton Lee DM200

WHAT HAPPENED?

- Killed by a single paper!

	1983
c9	Haran Boral, David J. DeWitt: Database Machines: An Idea Whose Time Passed? A Critique of the Future of Database Machines. IWDM 1983: 166-187

- Key Argument: You must be an idiot to work in this area.

- Technical Reasons: Limited Storage Bandwidth, Fabricating an ASIC vs. riding Moore's Law

DO WE NEED A DATABASE MACHINES SEQUEL?

- Sequels are sometimes better
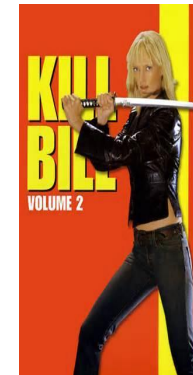
- DeWitt is occasionally wrong

	1981
j4	Haran Boral, David J. DeWitt: Database Machine Activities at The University of Wisconsin. IEEE Database Eng. Bull. 4(2): 20-27 (1981)

TECHNICAL REASONS

- DISK STRIPING
- FPGAs
- CONSERVING POWER
- **SECURITY**

**What Next?
A Few Remaining Problems in
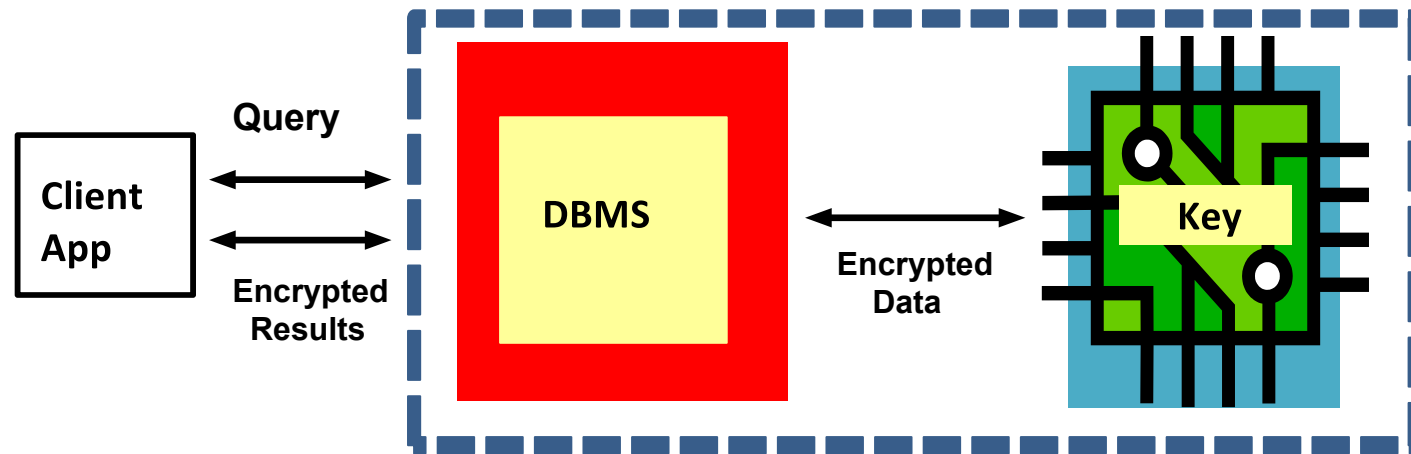Information Technology**

Jim Gray,
1998 Turing Lecture

SIMPLER VARIANT OF THE PROBLEM

Build a generic encrypted DBMS that can run all of SQL efficiently such that the only information that can be stolen is ciphertext.

NOTE: Homomorphic encryption or its variants will not solve this problem.

CLAIM: Cannot be done without specialized hardware support to store the encryption keys and perform database operations in it a.k.a *secure database machine*

http://research.microsoft.com/cipherbase/