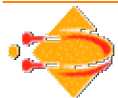


Lecture 7:

Trends in the evolution of database systems

Rasmus Pagh



Goals of lecture

- Present some recent views and ideas about where DBMSs are going.
 - Opinions can be more interesting than facts!
 - Do not expect to hear the last word today.
- Complement textbook which talks mainly about developments that are well-established.
- Hope to stimulate questions and discussion.



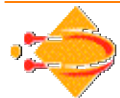
Contents

- First I talk about a recent paper by Michael Stonebraker: *The End of an Architectural Era*.
- Then we watch a video presentation by Jeff Dean, Google, who talks about Google's internally developed DBMS, BigTable.
 - We will pause for questions and discussion.
- Along the way, some point from the paper *Beyond Relational Databases* by Margo Seltzer will be made.



Stonebraker talk

- See separate slide set.



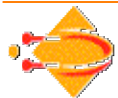
Stonebraker summary

- Many data management scenarios have special needs, and special features that can be exploited to gain performance.
- For OLTP it is:
 - feasible to switch to main memory DBs
 - worth considering single-threaded execution
 - often possible to simplify logging
- Some H-store design goals
 - Use grid computing (cheap, extensible)
 - Achieve high availability
 - “No knobs”



Bigtable talk

- See separate slide set (handed out) + video.



Bigtable summary

- Subset of usual DBMS functionality ("meet 7 out of 8 demands").
- Primitive interface (not SQL!)
 - User makes some crucial choices, e.g. memory versus disk.
- Built on top of other components:
 - GFS file system
 - Chubby distributed locking system
 - MapReduce (queries + data manipulation)
- Highly scalable on clusters of cheap machines - add machines to scale up.
- Highly fault tolerant.



Guest lecture, Tuesday 1PM

- Mogens Nørgaard, Miracle A/S, talks:
"You Probably Don't Tune Right (and you probably never have)"
- The presentation will explain the four Worst Practices to date:
 - Best Practices (vs Best Evidence)
 - Counters (don't) count,
 - Guess & Grimacing,
 - Ground-hog Day Tuning.
- Then the Grand Unifying Solution (GUS) will be presented. Finally the problems with GUS will be discussed briefly.

