



## *Trends in Database Managenent*

is this 1987 or 2007?

NYOUG  
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## *Disclaimer*

*If anything I say pinches a nerve ... please remember that I can take objection to just about anything. Things I say or do for the next 40-50 minutes are deliberately "lightened-up" for the sake of the delivery of this keynote and your enjoyment . . .*



## *Since I Believe the Following*

- The earth is flat
- LBJ "pulled the trigger"
- An email you receive may format your hard drive
- Your offspring will not wet the bed if you cut them off from all liquids after 7PM
- America will never elect an ex-Hollywood actor President

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## *Underpinnings of Our Industry*

13th  
15th  
17th  
19th  
20th

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## *Brief History of Computers*

|        |  |
|--------|--|
| 1640   | Blaise Pascal invents the first commercial calculator, a hand powered adding machine.                        |
| 1801   | Joseph-Marie Jacquard builds a loom that weaves by reading punched holes stored on small sheets of hardwood. |
| 1820's | Charles Babbage begins his lifelong quest for a programmable machine, working on a "difference engine".      |

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## *Brief History of Computers*

|      |  |
|------|--|
| 1842 | Using Babbage's technology, Ada Lovelace mechanically translates a short written work.   |
| 1892 | Shortly after the marketing of the first printing calculator, William Burroughs follows with the release of an electronic model.                         |
| 1925 | Vannevar Bush of MIT builds a machine he calls the differential analyzer ... the machine can handle simple calculus problems, but accuracy is a problem. |

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## *Brief History of Computers*

|      |   |
|------|---|
| 1936 | John Vincent Atanasoff begins work on a digital computer in the basement of the Physics building on the campus of Iowa State. |
| 1944 | The Havard Mark I is introduced, based on a series of proposals from Howard Aiken in the late 1930's.                         |
| 1951 | UNIVAC delivered to the Census Bureau, resulting in a tremendous financial loss to its manufacturer, Remington-Rand.          |

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## *Brief History of Computers*

|      |  |
|------|--|
| 1961 | Fairchild Semiconductor introduces the integrated circuit. Within ten years all computers use these instead of the transistor.                                 |
| 1964 | IBM introduces the System/360. While a technical marvel, the main feature of this machine is business oriented.  |
| 1975 | The first personal computer is marketed in kit form. The Altair features 256 bytes of memory. Bill Gates, with others, writes a BASIC compiler for the machine |

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## Brief History of ORACLE<sup>®</sup>

|      |  |
|------|--|
| 1979 | First commercial SQL RDBMS.                    |
| 1984 | First database with read consistency.          |
| 1985 | First parallel server database.                |
| 1986 | First client-server database.                  |
| 1988 | PL/SQL released.                               |
| 1992 | Full suite of applications.                    |
| 1993 | Character-mode moved to client-server model.   |
| 1994 | First video server supporting media on demand. |

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## Brief History of ORACLE<sup>®</sup>

|      |   |
|------|---|
| 1996 | Open-standards, web-enabled architecture.               |
| 1997 | First web database                                      |
| 1998 | First to release comprehensive CRM Suite,               |
| 1999 | First database with XML support.                        |
| 2000 | First Internet development suite.                       |
| 2001 | TCP-H world record on 3 terabyte repository.            |
| 2002 | First to pass 15 industry standard security evaluations |

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## Brief History of ORACLE<sup>®</sup>

|      |   |
|------|---|
| 2003 | Introduction of Enterprise Grid Computing with Oracle Database 10g  |
| 2004 | First to provide a single customer view from multiple data sources. |
| 2005 | Releases its first "free" database.                                 |
| 2006 | First Unstructured Content Database.                                |



## What Version are you Running

|   |      |   |
|---|------|---|
| 1 | ??   | Written in assembly language for the PDP-11 and never released. |
| 2 | 1980 | First commercial database using SQL.                            |
| 3 | 1982 | Written in "C" and bragged about transaction processing.        |
| 4 | 1984 | Read consistency.   |
| 5 | 1986 | A true client-server solution.                                  |
| 6 | 1988 | Parallel server and a <i>tpo</i> add-on.                        |



## *What Version are you Running*

|    |      |   |
|----|------|---|
| 7  | 1993 | Landmark release with procedural, distributed, and parallel query options.      |
| 8  | 1997 | Scalability and object relational features.                                     |
| 9  | 2001 | Strong (?) Application Server offering, RAC, and suite of analytical functions. |
| 10 | 2004 | Welcome to grid computing and ASM   |
| 11 | 2007 | The benefits of grid computing, automation, and more self-management.           |

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## *Database Management Influencers*

- Automation
- Compliance issues
- Insistence on best practices
- More robust high-availability solutions
- Swelling volumes of data
- Increased complexity of the software



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## *Automation*

- Is it a good thing
  - does the vendor know best
  - how does the vendor know
  - "mickey-mouse" minding of this and that
- How far should it go
  - unattended this and that
  - risk of un-noticed failure

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## *Compliance*

- Ongoing or problème du jour
  - the latest and greatest
  - here today gone tomorrow?
- Password management . . .
  - universally inconvenient
  - who is exempt
  - soxadmin → s0xadm1n

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## Best Practices

- Are they universal
  - so subjective based on one's successes in the past
  - generic industry standard or software-specific
- How does one teach an old dog new tricks?
- Formulation is easy; implementation difficult; enforcement next to impossible

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## High-availability

- Has always been a raison d'être for the DBA
- So what's new?
  - when you really go into the bowels of the offering ... **not much !!!!!!!**
  - new packaging of rock-solid solutions
- What is really new?
  - **pricing**
  - **bundling**

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## *More and More Data*

- Gigabytes → Terabytes → Petabyte → Exabyte

|           |                               |
|-----------|-------------------------------|
| byte      | 1                             |
| Kilobyte  | 1,024                         |
| Megabyte  | 1,048,576                     |
| Gigabyte  | 1,073,741,824                 |
| Terabyte  | 1,099,511,627,776             |
| Petabyte  | 1,125,899,906,842,620         |
| Exabyte   | 1,152,921,504,606,850,000     |
| Zettabyte | 1,180,591,620,717,410,000,000 |

- Advancements in disk and memory speed...
  - influenced the size of repositories
  - not completely negated the effect

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## *Increased Complexity*

- Is that the
  - nature of the problem?
  - or the nature of the solution?
- Driving force behind increased complexity
  - the customer
  - a very small percentage of clients
  - thirst of the vendor

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## *What Has Really Changed*

- Less manual intervention ... negated by the complexity of the software and the size of the repositories
- Automatic space management ... negated by the the sheer number of databases being managed
- Fancy GUI tools ... are they part of the solution or part of the problem ■ ■ ■

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## *GUI Database Management*

- Oracle: Database control / Grid control
- IBM: DB2 Performance Expert ... DB2 Query Patroller
- SQL Server: All encompassing management console
- MySQL: Administrator / Query Browser / Workbench

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## *What Do They Offer*

- Lots of screens
- Timely information
- Advisors
- Drill-down
- Pretty graphs
- Enhanced VFM
- One-stop shopping
- Too many screens
- Too much information
- Confusers
- Confusers
- Too much information
- Enhanced A/R
- One-stop shopping

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## *When They Make Sense*

- New administrators / getting up to speed
- Quick access to powerful management
- Look under the covers not available any other way
- Knowledge is information
- Would you trust them with the password(s)?
- Easier to mess things up (turbo-prop → Airbus)
- Too much information, making change decisions more complicated
- Knowledge can be dangerous

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## *The Human Factor*

- Strategic IT decisions made at the top of organizations influenced by
  - personal preferences
  - past employment history
  - past experiences with vendors
- The public sector controlled by those with a "right" to be promoted

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## *IT Initiatives Derailed By*

- Bickering
- Empire building
- Pursuit of job security
- Immaturity
- Lack of co-operation
- Fixed in my ways
- Personal prejudices
- Self-centred participants
- Poor hardware and software decisions
- Stubborn people

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## *What Has Changed*

- The players
- The strength of the hardware
- The features of the software
- The throughput of the networks
- ***The cost of the hardware***
- ***The cost of the software***

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## *Database Management 80's*

- In-house
- Full-time employees
- Some 3<sup>rd</sup> party consultants in the mix
- Benefits / sick leave / holidays add 20-30% on top of base salary
- Training and keeping up expensive and a human resource management nightmare

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## *Database Management 90's*

- Mix of employees and 3<sup>rd</sup> party vendors
  - pieces of the pie outsourced completely
  - cost savings in the short-term
  - state-of-the-art support moving forward with the software
- Dwindling IT budgets peaking towards end of decade
- Asia and the far east

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## *Database Management 20's*

- Outsourcing on the rise
- Over \$55 billion and rising
- Upwards of 40% cost savings
  - attractive
  - double-edged sword
- Same firm providing support in related areas (database management / system administration)

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## *Outsourcing Can Fail If ...*

- Decision based on price alone
- Offshore selected with little attention to bandwidth and native infrastructure
- Management "legislates" the move
- Provider unwilling to share
- Technicians not 100% fluent in language of the company

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## *According to Gartner*

1. To control cost over time
2. To provide access to highly skilled technical resources as needed
3. To enable the internal IT organisation to refocus on mission-critical, business-differentiating services to provide a higher level of strategic value to the business units

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## *According to Gartner*

4. To increase the quality of service delivery
5. To create access to scalability

... organisations need to take a longer term view of what an outsourcing relationship can accomplish for their operations overall.



*The single characteristic of IT  
that makes one wonder ... is  
this 1987 or 2007???*



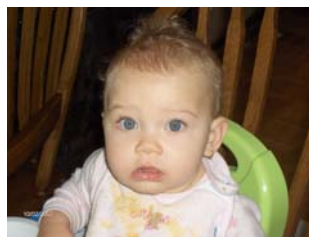


## *Unique Opportunity*

- Within the next 6-9 years
- Something that has never happened before
- Could revolutionize the industry
- May allow companies to explore new ways to
  - manage their databases
  - satisfy their business' thirst for quality
  - undue mistakes of the past

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