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# 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



## *Underpinnings of Our Industry*

# 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". |



# 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. |

## *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. |



## *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 |

## *Brief History of* ORACLE

| | |
|---|---|
| *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. |



## *Brief History of* ORACLE

| | |
|---|---|
| *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 |

## *Brief History of* ORACLE

| | |
|---|---|
| *2003* | Introduction of Enterprise Grid Computing with Oracle Database 10*g* |
| *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 *tpo* add-on. |

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## 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


## *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



## *Compliance*

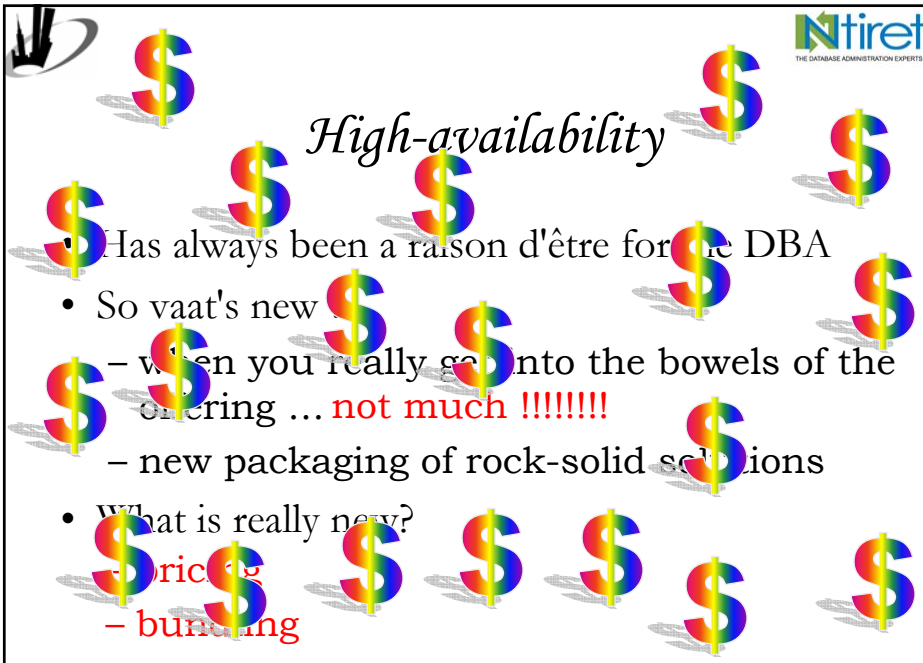
- Ongoing or problême du jour
  - the latest and greatest
  - here today gone tomorrow?
- Password management . . .
  - universally inconvenient
  - who is exempt
  - soxadmin → s0xadm1n

## *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



## *High-availability*



- Has always been a raison d'être for the DBA
- So vaat'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

## *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



## *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

## 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



## 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

## 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



## 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

## *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



## *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

## 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***



## Database Management 80's

- In-house
- Full-time employees
- Some 3rd 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

## Database Management 90's

- Mix of employees and 3rd 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



## 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)

## *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



## *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

## *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.

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


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## *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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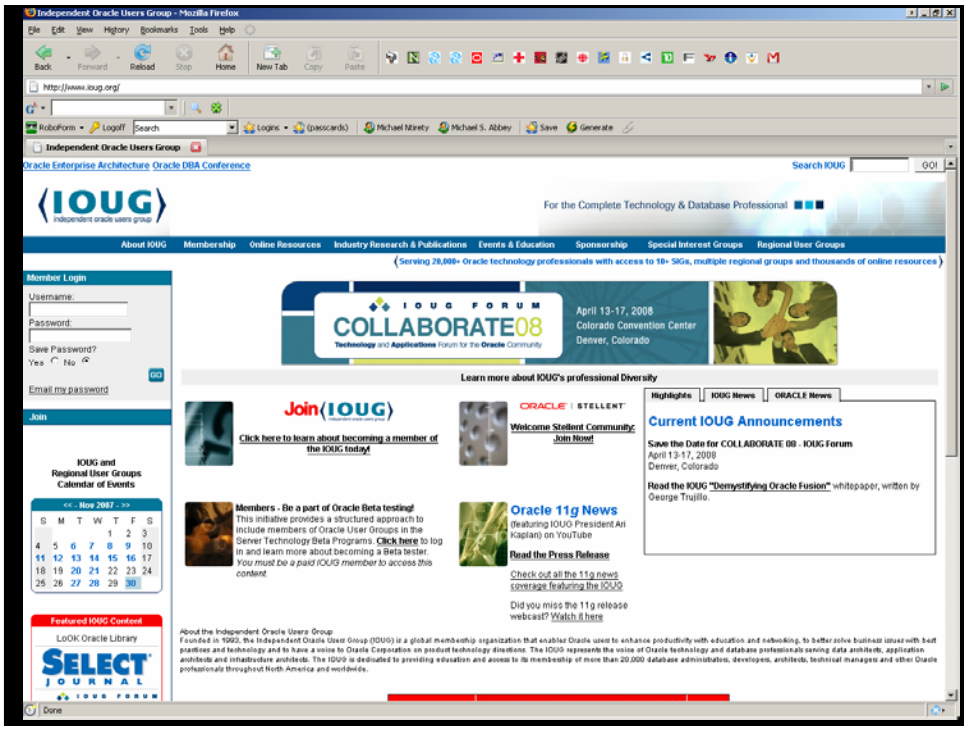

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