BI – Key Performance Indicator

Percentage of Active Users of BI Tools

- 2005: 18%
- 2009: 24%
Closer Look

Percentage of Active Users of BI Tools - 2009

- Power users/analysts: 61%
- Managers: 33%
- Executives: 25%
- Operations staff: 24%
- Customers/suppliers: 5%
Business Perspective of BI

• Too slow
• Too slow to deliver
• Too expensive
• Too hard to use
• Not flexible enough
• Too many tools
• IT is a bottleneck
The Future of BI

- Fast queries
- Quick to deploy
- Affordable
- Easy to use
- Interactive and visual
- Integrated
- Business-IT are partners
In the future, BI will be:

- Faster
- Better
- Cheaper

Hence, more pervasive!
The game is changing… Fast!

- BI Users
- BI Teams
- Future
- Technology
- Customers/Markets
Technology – Computer infrastructure

- Disk storage
- Memory (RAM)
- CPU

### Evolution of Disk Capacity & Pricing

<table>
<thead>
<tr>
<th>Year</th>
<th>Size</th>
<th>Price</th>
<th>$ / MB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>26MB</td>
<td>$5000</td>
<td>$193</td>
</tr>
<tr>
<td>1989</td>
<td>40MB</td>
<td>$1199</td>
<td>$36</td>
</tr>
<tr>
<td>1999</td>
<td>10.2GB</td>
<td>$299</td>
<td>3.37¢</td>
</tr>
<tr>
<td>2004</td>
<td>250GB</td>
<td>$250</td>
<td>.001¢</td>
</tr>
</tbody>
</table>
Impact on DW

1993 – Mark’s DW for a Pharmacy Chain

10 Pentium CPUs
2 GB RAM
1 TB disk
$1.6 million

2009 – Mark’s Desktop

4 core CPU
6 GB RAM
750 GB disk
$600

2015 – DW on a phone?

1TB Flash drive?
$60/month

Mark Madsen
President, Third Nature
Projected DW data volumes

- 21% under 3TB in 2009
- 21% over 3TB in 2009

62% under 3TB in 2009
36% over 3TB in 2009

Based on 417 respondents, TDWI Research, 2009.
2012+ - Petabyte Data Warehouses

“Build it and they will come.”

- Transaction details
  - Call detail records
  - Point of sale
  - Web clicks
  - Claims
- Instrumentation
  - Sensors
  - Smart Meters
  - Devices calling home
  - GPS signals
- Unstructured data
  - Video, audio, images, documents, etc.
  - Social media content and linkages
Deep Analytics – Patterns and Relationships

Analytical techniques

**Business Analysts**
- Data profiling
- Sequential pattern analysis
- Time-series
- Bayesian analytics
- Regression
- Segmentation

**Statisticians**
- Classification
- Clustering
- Decision trees
- Association analysis
- Neural nets
- Simulation
- Optimization

- Optimize the present:
  - “How design store layouts to maximize profits?” $$$
  - “What price maximizes profits without losing customers?” $$$

- Predict the future:
  - “When will this device suffer a catastrophic failure?” $$$
  - “Which products will this Web visitor buy based on past?” $$$
Advanced Visualization - Spot outliers

Courtesy Advizor Solutions, BIS2, and Green Phosphor
Bottleneck: Disk Performance

Source: Intel; Slide courtesy of Teradata
Memory (RAM)

• Price-Performance
  – 1985: $350 for 512KB of RAM
  – 2003: $59 for 512MB of RAM
  – 1,000x more memory for 1/6th the cost

• 64-bit operating systems
  – 32-bit: Hold 4GB of data in memory
  – 64-bit: Hold 16 exabytes in memory

• Database compression: 10% to 60%

64-bit OS w/ 16GB RAM & compression → 50 million rows
STORE A DATA MART OR DW IN MEMORY!
In-memory analytics

• Visual Discovery tools
  – QlikTech, Spotfire, Advizor, Tableau, etc.
  – “Speed of thought” visual analysis
  – Less than $50k for 25 concurrent users
Database Bottlenecks

1. Load

2. Query

3. Move

4. Result

BI Application

Database

Server

Storage

Analytic Database

OLTP System

Database

Server

Storage

TDWI RESEARCH
Optimizing database performance

1. Commodity MPP
2. Storage-level filtering
3. Columnar storage
4. SQL on a chip
5. Plug-in apps
6. Intelligent storage
7. Hybrid systems
Hybrid OLTP/DW System – Full circle!

IBM Z Mainframe

IBM Smart Analytics Optimizer

Stores dimensionalized database in 1TB of memory

Query optimizer directs queries to OLTP or analytical database

Ships Q4, 2009
HW and SW Convergence

Operational Systems
- Optimized for transactions
- Automate processes
- Structure the business
- Designed for efficiency
- Rarely change

Analytical Systems
- Optimized for queries
- Answer questions
- Adapt to the business
- Designed for effectiveness
- Always change

Operational systems become more analytical
Analytical systems become more operational
The Perfect Storm

BIG DATA
+
DEEP ANALYTICS
+
REAL-TIME DATA

High Performance Analytic Databases

Incumbents
Teradata
Oracle Exadata
IBM InfoSphere
Kognitio

MPP Challengers
Greenplum
Aster Data
HP NeoView
ParAccel

Columnar
Sybase
Vertica
InfoBright
Kickfire

Event-Driven
Streambase
IBM Streams
Aleri/Coral8
Altosoft - Tibco
Game Changing Technology

“Queries that used to take a half an hour are now taking less than a minute….”

- Grant Salmon, CEO, LGR Telecommunications
Impact on the bottom line

- **Sales**: Calculate the profitability of millions of individual customers DAILY.
- **Web**: Track navigation path of every Web visitor to your site DAILY.
- **Security**: Identify fraudulent activity for thousands of transactions in REAL TIME.
- **Marketing**: Provide service reps a 360-degree of customer activity in NEAR REAL-TIME.
- **Marketing**: Drive personalized offers for hundreds of customers via call centers & Web in REAL TIME.
- **Banking**: Calculate global risk exposure HOURLY.
Market Evolution

“BI as foundation technology”

“Drive the business”

Decision Governance

CEO, CFO, CMO, etc.

“Improve the business”

Performance Management

“Get the data”

Business Intelligence

“Use the data”

Data Warehousing

Web

Client/Server

1990s

2000s

2010

“BI for the mid-market”

“Use the data”

“Get the data”

“Drive the business”

“BI as foundation technology”

2007 Mega M&A:
Oracle → Hyperion
SAP → Business Objects
IBM → Cognos

Low cost BI vendors
Microsoft, QlikTech, Open Source, Cloud BI (SaaS)

Enterprise BI vendors
Oracle, SAP, IBM, SAS

SOA/Web Services
Market Dynamics

Data Management

Departmental BI Vendors

Enterprise BI Vendors

Evolution of Functionality
Low-cost BI

What you get:

- Low cost
- Fast
- Quick to deploy
- Easy to use

What it lacks:

- Reporting
- Metadata layer
- Dimensionality
- ETL/DQ

Vendors - QlikTech, Microsoft, Tableau, Spotfire, Advisor, PivotLink, Birst, Corda, Visual Mining, I.netSoft, eThority, Lyzasoft, MyDials, Autometrics, XLCubed, etc.
Open Source Adoption

Based on 1,000+ respondents, from Mark Madsen, “Open Source Solutions: Managing, Analyzing, and Delivering Business Information” (BeyeNetwork and Third Nature), 2009
Open Source Customers

Based on 1,000+ respondents, from Mark Madsen, “Open Source Solutions: Managing, Analyzing, and Delivering Business Information” (BeyeNetwork and Third Nature), 2009
Based on 1,000+ respondents, from Mark Madsen, “Open Source Solutions: Managing, Analyzing, and Delivering Business Information” (BeyeNetwork and Third Nature), 2009
Benefits of Cloud Computing

• Pay as you go
• No IT resources required
• Expand capacity on demand
• Automatic upgrades
• Web-based access
Cloud Concerns

Average ratings based on a five-point scale where 1 = “not at all concerned” and 5 = “very concerned”. Based on 172 respondents currently receiving or considering services from a cloud vendor. Source: Information Week, 2009
BI programs

TDWI’s BI Maturity Model

1. Prenatal  —  Infant
2. Child
3. Teenager
4. Adult
5. Sage

Business Value

% of companies by stage
Partnership and Alignment

“We sit side by side with business people and report into the same leadership. The only difference is that we specialize in the data and they specialize in the business processes.”

Wes Flores, senior technology manager, Verizon
Hybrid Team

**Departmental**
- Understand business
- Develop ad hoc reports
- Support colleagues
- Extensions of BI team
- Serve on BICC

**Enterprise**
- Build the DW and DMs
- Build semantic layer
- Create standard reports
- Define best practices
- Recruit Super Users

**Agile Development**
- Requirements
- Design
- Implement
- Test
- Release

**5-7 people**

**2-4 weeks**

**Departmental Super User**

**Corporate BI Team**
BI Review Board reviews requests for new “standard” reports and to extend the boundaries of existing “standard” reports.
The last mile of BI – Users

Power Users
- Business analysts
- Analytical modelers
- Super users

Casual Users
- Executives
- Managers
- Front-line staff
- Customers & suppliers

61%
More flexible
More open
More analytical

24%
More visual
More interactive
More tailored
What do casual users need?

- A layered information delivery system that parcels out information as needed...
- That is tailored to their role ...
- That meets 60-80% of their information needs ...
- And contains about 12 metrics and 20 dimensions
- And replaces dozens or hundreds of reports
This is Insane!! Not MAD

- Transactional Data
  - Reports
  - Everyone
- Dimensional Data
  - OLAP
  - Analysts
- Graphical Data
  - Spreadsheets
  - Managers
Collaboration

• Today’s capabilities
  – Annotation, email, print,
• Future
  – Social media techniques
    • Chat, rate, comment, follow
  – Link to social media
    • WebEx, Facebook, LinkedIn, Twitter, MySpace
  – Integrate with collaboration platforms
    • Google Wave, Sharepoint, 12Sprints, Google Docs
  – iPhone BI “apps”

“Today’s BI tools look like they were designed for people working in cubicles.”  Mark Madsen
Swivel

Base Depth at Lower Elevation

Notes

Geeb Suyehmoud | Dec 7, 2009 3:30pm
Hmm... the data in this report doesn't seem to be updating correctly

angsta | Dec 10, 2009 4:40pm
read tricky graph. how a knobk in hbo t finta it outs?

Visaru | Dec 10, 2009 5:08pm
this is totally awesome.
12Sprints (SAP)

![Image of 12Sprints interface]

### RASIC Matrix

<table>
<thead>
<tr>
<th>TASK</th>
<th>WAYNE</th>
<th>MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sneeze</td>
<td>Responsible</td>
<td>Consulted</td>
</tr>
<tr>
<td>Sneeze</td>
<td>Supports</td>
<td>Consulted</td>
</tr>
<tr>
<td>Cough</td>
<td>Accountable</td>
<td>Responsible</td>
</tr>
</tbody>
</table>

Click to add a description...

**Action Items:**

- **You - Get Well**
  - **Status:**
  - **Due:** Jan 19

2 Action Items (2 for you) 1 Participants (New: 0 Active: 1)
Google Wave

Brainstorm: Inventing the Ideal Pet (Example Wave)

- legs (definitely)
- good qualities:
  - fish
  - snakes!
  - worms
  - cute with big eyes

Greg Dalesandre: I agree, though I did have a goldfish that lived for 8 years...
Heather McWave: Are you sure your parents didn’t just keep buying you new identical ones?
Sydney Waver: Don’t ruin it!

Sydney Waver: There are no good pets that don’t have legs:

Greg Dalesandre: Good point. I think fur helps with that

Let’s play Sudoku!

Board Level: Easy

2 6 9 5 3
1 4 5 9 8
6 8 2 3
4 2 5 6 1
9 3 7 4 1
1 5 6 1 2

Current board status:
- Sydney Waver
- Pamela Fox
- Dan Peterson
- Anna-Christina Dc

TDWI RESEARCH
Decision Governance

• Today: Monitor usage
• Tomorrow: Monitor decisions

– Are people interpreting data correctly?
– Do they know what actions to take?
– How are decisions made?
– What decisions are made?
– How effective were the decisions?

“Premature Cognitive Disclosure”
Wayne Eckerson

Contact me:
(781) 740-9504
weckerson@tdwi.org
Twitter: weckerson
Blog: http://portals.tdwi.org/waynesworld
a whopping $126,349. However, a closer look reveals that all of McCain’s contributions came from PACs. Six thousand of Obama’s contributions came from PACs, but the majority ($120,342) came from individual contributions. Read more.

Wall Street Meltdowns

This graph shows the top ten greatest single-day drops in the Dow Jones. September 29, 2008 marked the largest single-day drop in history as the Dow plunged 778 points (7%). The recent drops have stoked fears that the U.S. economy is on the verge of a recession, if not already deeply sunk in one. But if we take a look back into history, in terms of market percentage loss we haven’t even come close to the catastrophic stock market crashes of 1987, 1929, and 1914. Read more.

The most important issues in Canada

With the Canadian election called for October 14, 2008, the CBC has results of a new poll on what the issues are. These results are for the question “What do you think is the most important issue facing the country that the federal government should deal with?” The CBC has more results and analysis. —selenized

The VP Debate: Biden v. Palin

The highly anticipated Vice Presidential debate took place last night in St. Louis, Missouri. Voters across the country tuned in to see if VP candidates, Joe Biden and Sarah Palin, would stumble and exhibit their public speaking flaws. This graph shows the words Biden and Palin used most frequently in the debate. Both speakers referred to the Presidential candidates, John McCain and Barack Obama. They frequently used the words: going (38, 42), tax (27, 19), voted (27, 13), policy (22, 4), and Afghanistan (16, 12). Read more.