



2008 AICPA Information Technology Conference

Business Intelligence

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June 10, 2008



An Agenda for Business Intelligence

- > Putting BI in the Enterprise Perspective
 - . Overview of Enterprise-BI
 - . Key Factors for a Successful BI Initiative
 - . BI Technology and Trends
 - . The CPA's Role in BI
- > Enterprise-BI Case Study: AOL, Inc.
 - . From analyzing financials to analyzing customers
- > Question & Answer



Overview of Enterprise-BI

Organization-wide program focused on the gathering, analysis, distribution and contextual use of information for informed decision making and organization-wide performance optimization.

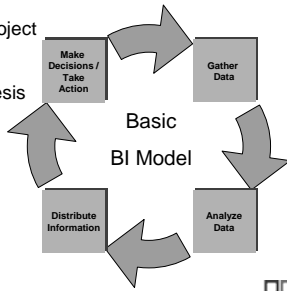
Information is pervasive in business processes throughout the organization and supports activities from the operational level all the way up to the strategic level.

AICPA Top Technology Initiative #8



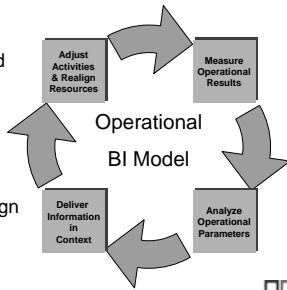
Capture Opportunities with a BI Project

- Characteristics of a BI project
 - Opportunistic
 - Isolated issue/hypothesis
 - Historical-focused
 - Reactive action
 - Driven by a specialist
- After project completed
 - Passive activity
 - Non-adaptive



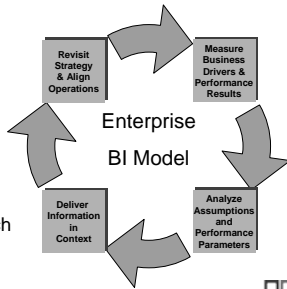
Maximize Efficiency with Operational-BI

- Gather operational data
- Analyze it against defined operational parameters
- Deliver information to operational managers in "actionable" context
- Adjust activities and realign resources to maximize operational results



Optimize Performance with Enterprise-BI

- Fundamentally changes the way an organization looks at itself and makes decisions
- Drives the transformation of business processes from mundane and isolated to information-rich and integrated



Overview of Enterprise-BI

BI Project

- Opportunistic
- Isolated issue/hypothesis
- Historical-focused
- Reactive action
- Driven by a specialist

Enterprise-BI

- Pervasive
- Integrated into processes
- Assumption-driven
- Proactive action
- Used by people throughout the organization



Enterprise-BI is a Risky Initiative

- Proper management of your initiative is essential
 - 50% of data warehouse will fail due to improper use of information and poor data quality¹
 - Up to 70% of BI initiatives can be squandered addressing people, process or governance issues²

¹ Source: Business Intelligence Network
http://www.b-eye-network.com/blogs/mhoff/archives/2005/03/failure_of_data_1.php, 3/21/2005
² Source: The Data Warehousing Institute
<http://www.dwi.org/News/display.aspx?ID=8363>, 3/28/2007



Key Factors for A Successful BI Initiative

<p><u>Technical Capability</u> Competent People Subject Matter Expertise Right Technology</p>	<p><u>Project Structure</u> Organized Team Disciplined Methodology Iterative Development</p>
<p><u>Information Architecture</u> Subject Oriented Time Variance Cross-Functional Application</p>	<p><u>Organizational Adaptation</u> Strategic Alignment Process Integrated Managed Change</p>



Key Factors for A Successful BI Initiative

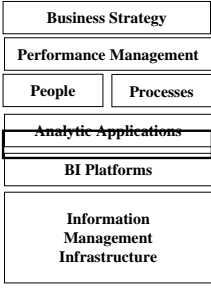
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Strategic Alignment & Process Integrated

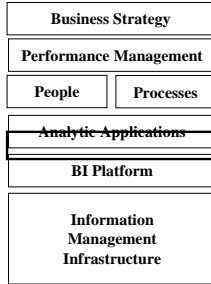
The foundation layer for BI is the **Information Management Infrastructure** all of an organization's databases, servers, transactional applications, network and workstations.



Strategic Alignment & Process Integrated

The next two layers are each related to Business Intelligence

- 1) **BI Platform**, representing the "back-end" technical platform for storing BI data
- 2) **Analytic Applications**, "front-end" applications allowing users to access, analyze and report on the BI data.

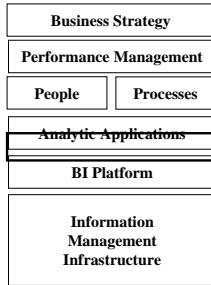


Source: Gartner
ENTRAPRENEURTECHKNOWLEDGES LLC



Strategic Alignment & Process Integrated

Performance Management layer identifies the activities and metrics that should be monitored. It also defines the acceptable range of performance, used to identify performance exceptions (e.g., significant variances or deviations from the norm).

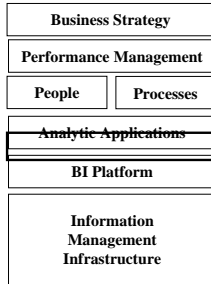


Source: Gartner
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Strategic Alignment & Process Integrated

These exceptions are brought to the attention of a **Person** who then makes decisions and takes action within the context of a **Process**. Without competent people and adaptable processes, the value of BI and PM cannot be realized.

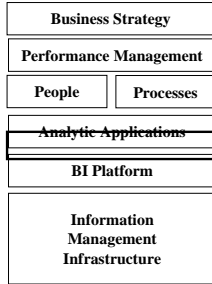


Source: Gartner
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Strategic Alignment & Process Integrated

As always, all of a business' activities should be driven by the **Business Strategy** – ensuring that all technologies, activities and analyses support the business strategy. This is key to successfully deploying and maintaining a healthy BI and PM initiative.



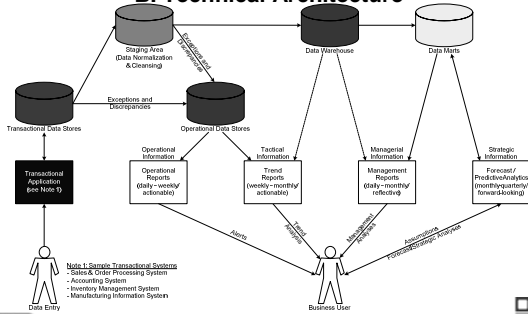
Source: Gartner
 Increase Your Knowledge Ltd

Key Factors for A Successful BI Initiative

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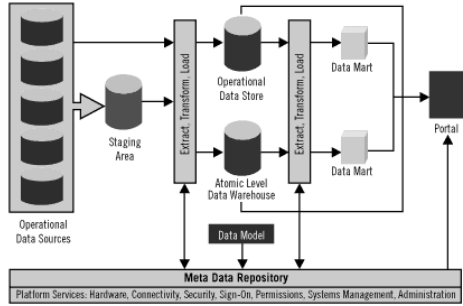
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BI Technical Architecture



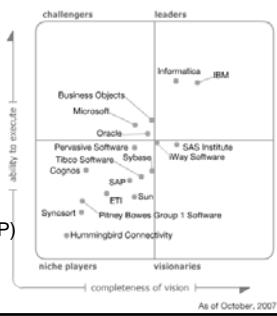
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BI Technical Architecture



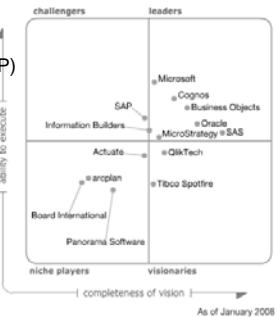
Data Integration Tools

- > Gartner Magic Quadrant
- > Leading Vendors
 - IBM
 - Informatica
- > Secondary Vendors
 - Microsoft
 - Oracle
 - Business Objects (SAP)
 - SAS Institute
 - iWay Software



BI Platform & Analytic Applications

- > Gartner Magic Quadrant
- > Leading Vendors
 - Business Objects (SAP)
 - OutlookSoft
 - Crystal
 - Cognos (IBM)
 - Microsoft
 - Micro Strategy
 - Oracle
 - Hyperion
 - SAS



Key Factors for A Successful BI Initiative

Technical Capability Competent People Subject Matter Expertise Right Technology	Project Structure Organized Team Disciplined Methodology Iterative Development
Information Architecture Subject Oriented Time Variance Cross-Functional Application	Organizational Adaptation Strategic Alignment Process Integrated Managed Change

The CPA's Role in BI

- The key activities of BI require CPA core competencies
 - Performance measurement
 - Quantitative analysis
 - Cross-departmental business processes understanding and modeling
- CPAs should take the lead in enabling BI within our firms, companies, or our client organizations
 - CPAs can provide the business & analysis expertise
 - Partner with IT to provide technology expertise

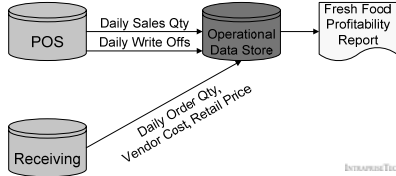
The CPA's Role in BI

- Start by working with business units to identify the information needed to support decision making and monitor business performance
 - Decision Support
 - Business Activity Monitoring
 - Internal Audit



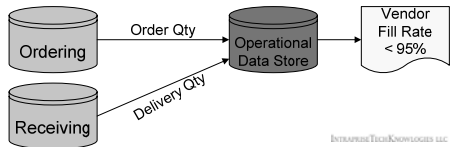
The CPA's Role in BI

- What information is needed to support decision making?
 - Where does the data come from?
 - How is it used?
- 7-Eleven Hawaii Mini-Case: Fresh Food Profitability



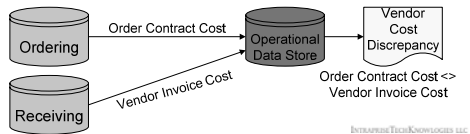
The CPA's Role in BI

- What business activities should be monitored?
 - What are the key metrics that tell us that the activity is operating as expected?
 - What is the acceptable range for each metric?
- 7-Eleven Hawaii Mini-Case: Vendor Fill Rates



The CPA's Role in BI

- We also can approach this from the internal audit perspective, eventually leading to continuous auditing
 - What are the control points in a process?
 - What data conditions identify that an exception has occurred?
- 7-Eleven Hawaii Mini-Case: Vendor Cost Discrepancies



The CPA's Role in BI

- Once all of the requirements are identified
 - Work with IT to develop a strategy for getting the data needed into the **BI Platform**
 - Review the processes and algorithms used to gather, compile and move data from transactional data sources (transactional systems) into the **BI Platform**
 - Check that data quality (accuracy, completeness, and integrity) is maintained



The CPA's Role in BI

- Enable business units to use the data by configuring **Analytic Applications** to provide reports or alerts
- Most modern *Analytic Applications* make it easy for a non-techie to develop reports
 - Microsoft Excel-like functionality for developing reports and configuring computations
 - Wizard-type step-by-step configuration screens supporting the setup of alerts



The CPA's Role in BI

- Operational staff may not have the background or knowledge to understand what a report is telling them or why an alert is triggered
 - Help them understand what the numbers mean
 - Help them understand why alerts are triggered
- Work with the business units to identify the actions necessary to correct any issues



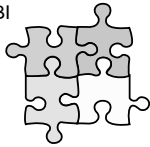
The CPA's Role in BI

- Helping operational staff to understand how their actions or decisions has a direct effect on numbers in the reports is a key to BI success
 - This is what really empowers them to take action to improve performance
- Remember that the endpoint goal is to enable people to make informed, proactive decisions, quickly, at all levels of the organization.



BI Competence for the CPA

- AICPA IT Competency Model
 - <http://www.cpa2biz.com/cat> (Free for AICPA members)
 - Identifies the skills and knowledge necessary to be "competent" in various specializations areas for CPAs
- Four specialization areas relevant to BI
 - Business Intelligence
 - Business Process Management
 - Information Management
 - Solution Delivery



BI Competence for the CPA

Technical Capability IT Competency Model: Business Intelligence	Project Structure IT Competency Model: Solution Delivery
Information Architecture IT Competency Model: Information Management	Organizational Adaptation IT Competency Model: Business Process Management



BI Competence for the CPA

- IT Competency: Business Intelligence
 - Data Mapping
 - Data Collection
 - ETL Tools & Techniques
 - Data Query
 - BI Technology
 - Metrics
 - Business Activity Monitoring
 - Benchmarking



BI Competence for the CPA

- IT Competency: Business Process Management
 - Business Processes within the Organization
 - Business Process Application
 - Business Process Improvement
 - Business Process Monitoring



BI Competence for the CPA

- IT Competency: Information Management
 - Data Architecture Management
 - Data Modeling
 - Data Life Cycle Management
 - Data Availability and Timeliness
 - Data Accuracy and Completeness
 - Data Integrity and Reliability



BI Competence for the CPA

- IT Competency: Solution Delivery
 - Systems Development Life Cycle
 - Requirements Analysis
 - Solution Selection
 - Business Case Management
 - System Design
 - System Deployment/Development
 - Quality Control
 - Solution Implementation
 - Training and Transition





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Business Intelligence Case Study – AOL
Usage Data
Ken Rona
June 10th, 2008



AOL had good financial systems and operational systems...

- Financial Operations System (FOS) use to set financial targets
- Revenue and Expense performance for each product line was available
- Company always met its financial obligations to TWX



...But business intelligence is not just Finance

- Mature BI includes many types of data
 - Identify Key Performance Indicators of Business
 - Financial – Cash Flow, ROI, P&L
 - Customer – Satisfaction, Retention
 - Internal Process – Call Center, IT, Supply Chain
 - HR – Internal Promotions, Diversity ratios
 - **Tip 1: Use a Balanced Score Card approach**
 - Provides a nice framework for thinking about developing useful metrics



AOL had no granular visibility into the web pages that our customers were visiting

- Data at granular level was not available
 - Site address, Channel, Time spent, Entry site, Exit Site, Time, Day, User ID, etc.
- Without this data, we could not effectively:
 - Know where to allocate resource
 - Identify market segments – Web is a B2P business
 - Assess profitability of products by market segment
 - Set reasonable goals for sales publishing staff



Needed to put BI solution in place

- Some Challenges
 1. Data flow was giga-normous (Many gigabyte a day)
 2. Data quality was, well, challenged
 3. Key metrics were not defined
 - Business pivoted in less than 3 months
 4. Senior leadership did not know how to consume the "intelligence"



Data flow was giga-normous and peta-riffic

- High number of transactions. Needed a hardware architecture that could handle building the datasets that powered the BI application, efficiently
 - **Tip 2 : Know your hardware requirements.**
 - **We needed a "Data Appliance". Feel free to overbuy. Your future self will thank you**
 - I love this thing. Changed the way we worked. Speedy! Expensive, but could not have built the table used to feed the BI mill without it.
- Fun fact: What is after Peta (1000 Terabytes)
 - Exa – 10,000 Terabytes
 - Zetta – 100,000 Terabytes
 - Yotta – 1,000,000 Terabytes



Even summarized, dataset was big and had to serve multiple constituencies

- Needed to hold thirteen months of data
 - Good requirements are key
 - Spent 2 months talking to key stakeholders to determine their requirements
 - Created summary tables for day, week, month, and yearly data for multiple stakeholders
 - Usage data mapped to other customer data (Address, income, age, etc)
 - **Tip 3: take your time and figure out who is going to use the data and for what. What are needs going to be a year from now? Three years from now?**



Data quality was low

- The intelligence from BI comes from high quality data
- We had been living with bad data and did not hold data warehouse accountable
- **Tip 4: Conduct a data quality audit**
 - Check for missing data
 - Check for unusual variability
 - Check for unusual stability
- **Tip 5: Make your data warehouse responsible for fixing data quality problems**
 - Otherwise you will try to workaround the problem and have a maintenance nightmare



Key metrics were not defined

- Old, subscription business metrics were:
 - Number of subscribers
 - Time Spent on site
 - Average length of subscription
- New, ad supported business metrics were not mature
 - Everyone was asking about total page views, for about a week
 - Leadership realized that page views were not enough
 - We got ahead of the problem
 - **Tip 6: Develop suggested set of metrics in advance of need**



Senior Leadership did not know how to “consume” the Intelligence

- Leadership was very familiar of existing data and BI tools, but did not know how to interpret new metrics
- Needed to create simple interface so leadership could quickly evaluate business performance
 - **Tip 7: Provide context for each metric**
 - Show trends, goals, and/or min-max for each metric. This will allow the exec to decide if some metric is worth further attention.



Senior Leadership did not know how to “consume” the Intelligence, Cont.

- **Tip 7: Enable drill down on your charts (but don't overdo it)**
 - When an exec sees something “anomalous” they are going to want to see if they can figure out what is going on. Computer users are trained to clicking on things they are curious about. Leverage this behavior.
- **Tip 8: Avoid being “flashy” and cool**
 - Keep your charts simple and redundant. Allow your audience to learn how to consume your BI quickly
 - I know, the tachometer is cool. Resist!



Results

- Basically, good:
 - Leadership came to rely on new metrics and interfaces
 - New group, Publishing Metrics, was created
 - Team survived major layoffs
 - Identified major gaps in reporting of page views and visitors
 - Data warehouse has become key partner
- **But we could have done better:**
 - It took a long time to train staff.
 - **Tip 9: Should have hired experienced staff.**



Final Thoughts

- Technology is necessary but not sufficient:
- All of the major BI vendors have very similar functionality and differences are not likely to have any impact on business decision making
 - **Tip 10: Choose for ease of integration. Time spent integrating is not worth the loss of strategic use of the data**
 - I like one vendor vs. best of breed approach. Even if the tool is ugly (are you listening big statistics vendor?)
- Critical piece is driving usage and adoption
 - **Tip 11: Conduct 1 on 1 sessions with senior execs to ensure that they found the BI tools useful and informative**