

MICROSTRATEGY \_\_\_\_\_  
● ● BUSINESS INTELLIGENCE  
● ● SYMPOSIUM

## Emerging Trends in Business Intelligence

PRESENTED BY: Arif Hajee

# What Is Business Intelligence?

## BUSINESS INTELLIGENCE

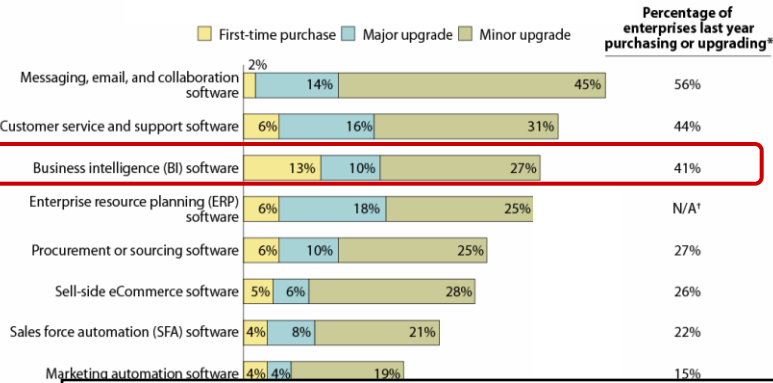
Business Intelligence software allows companies to tap into their many databases and deliver easy-to-comprehend insight to employees, management, and business partners. BI software is already being used by thousands of companies to find new revenue opportunities, reduce costs, reallocate resources, and improve operational efficiency.

# Business Intelligence Continues to Be a Top Business Investment Priority

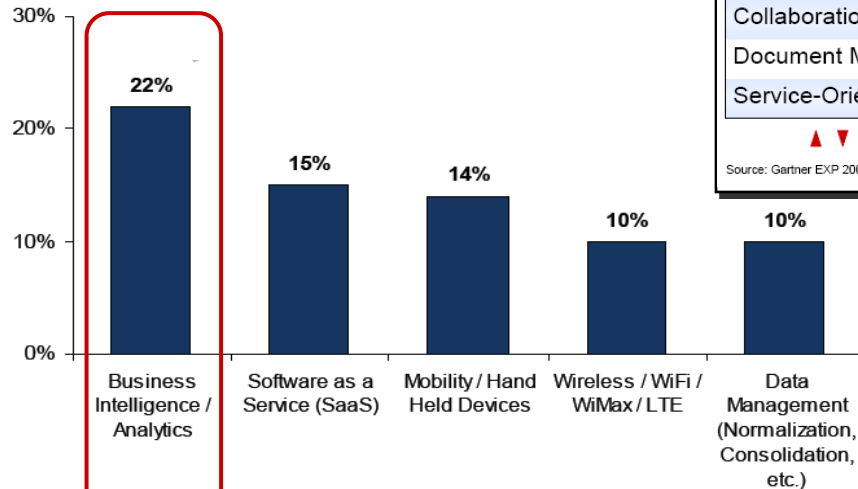
FORRESTER

November 2006, Data Overview "The State Of Enterprise Software Adoption"

## The State Of Software Investments



**Figure I: Technologies That Will Have the Greatest on Business over the Next Two to Five Years**



Source: Aberdeen Group, February 2008

## BI and Analytics — Leading Again

### 2008 CIO Technology Priorities

To what extent will each of the following technologies be a top 5 priority for you in 2008?	Rank 2008	Rank 2007	Rank 2006	Unweighted Budget Change	
<b>BI</b>	<b>1</b>	<b>1</b>	<b>1</b>	11.2%	
Enterprise Applications (ERP, SCM, CRM, etc.)	2	2	**	8.0%	
Server and Storage Technologies	3	▲	5	9	8.5%
Legacy Modernization, Upgrade or Replacement	4	▼	3	10	5.8%
Security Technologies	5	▲	6	2	8.5%
Technical Infrastructure	6	▲	8	12	4.7%
Networking, Voice and Data	7	▼	4	8	6.8%
Collaboration Technologies	8	▲	10	4	7.8%
Document Management	9	←	9	**	7.9%
Service-Oriented Architecture (SOA and SOBA)	10	▼	7	6	6.7%

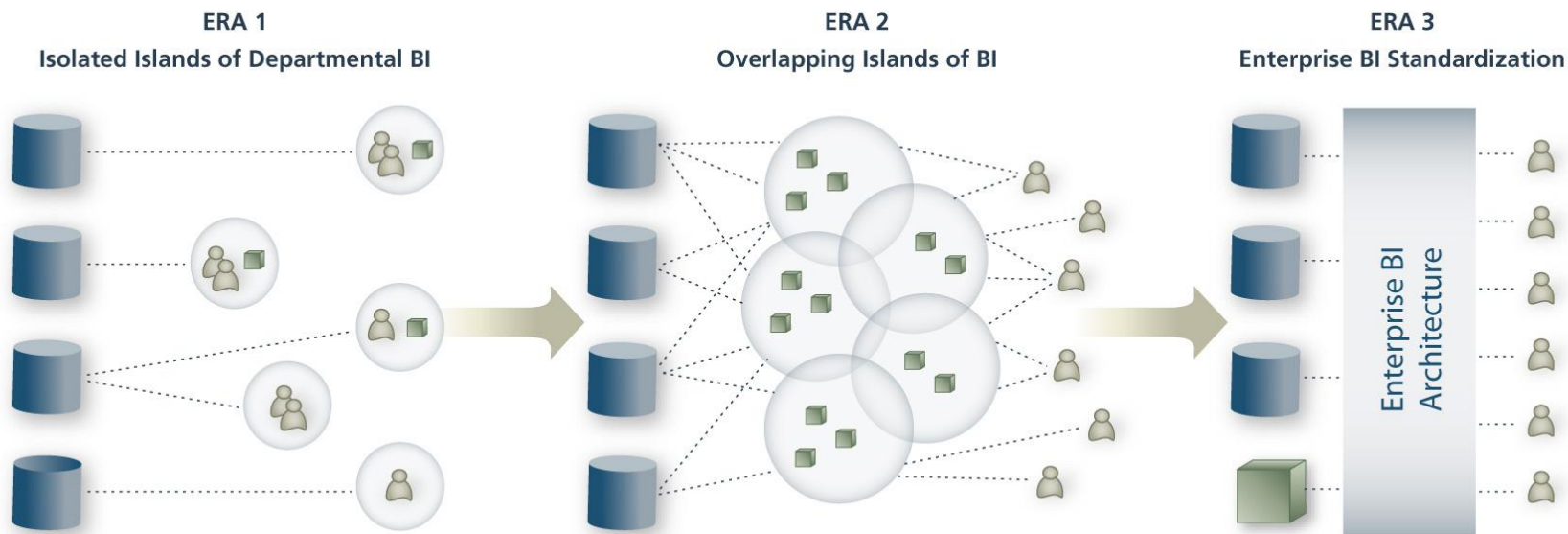
▲ ▼ Selected change in 2008 ranking compared with 2007

\*\*New question for 2007

Source: Gartner EXP 2008 Survey of CIOs

Gartner

# An Enterprise BI Architecture Is The Essential Next Step in the Evolution Towards Enterprise BI



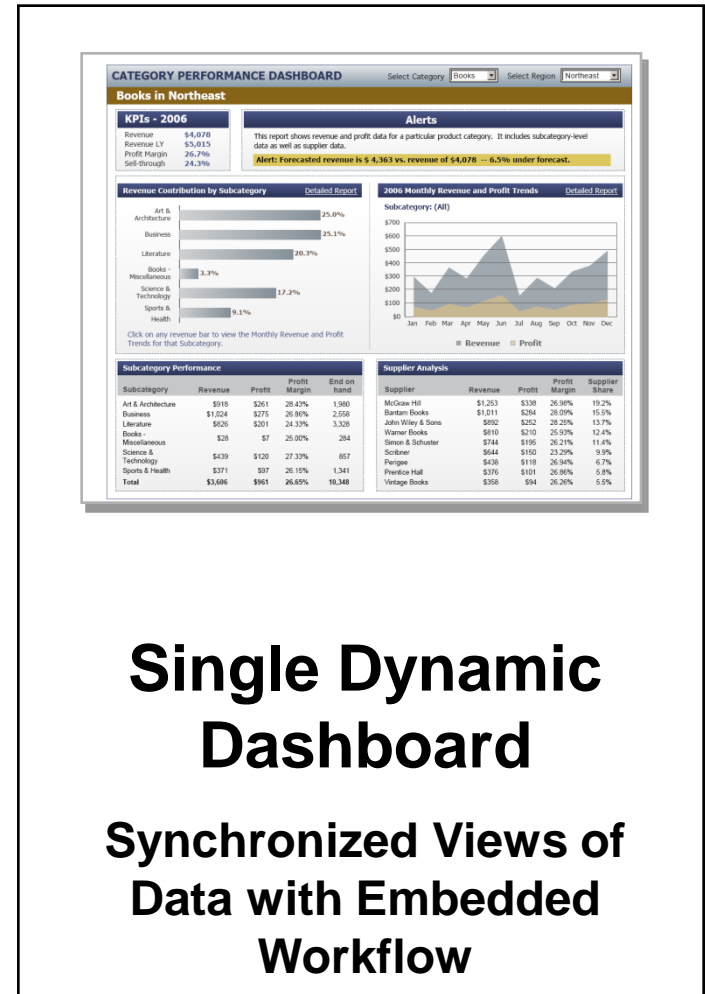
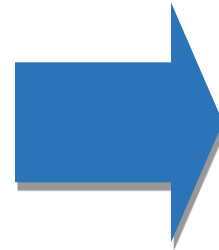
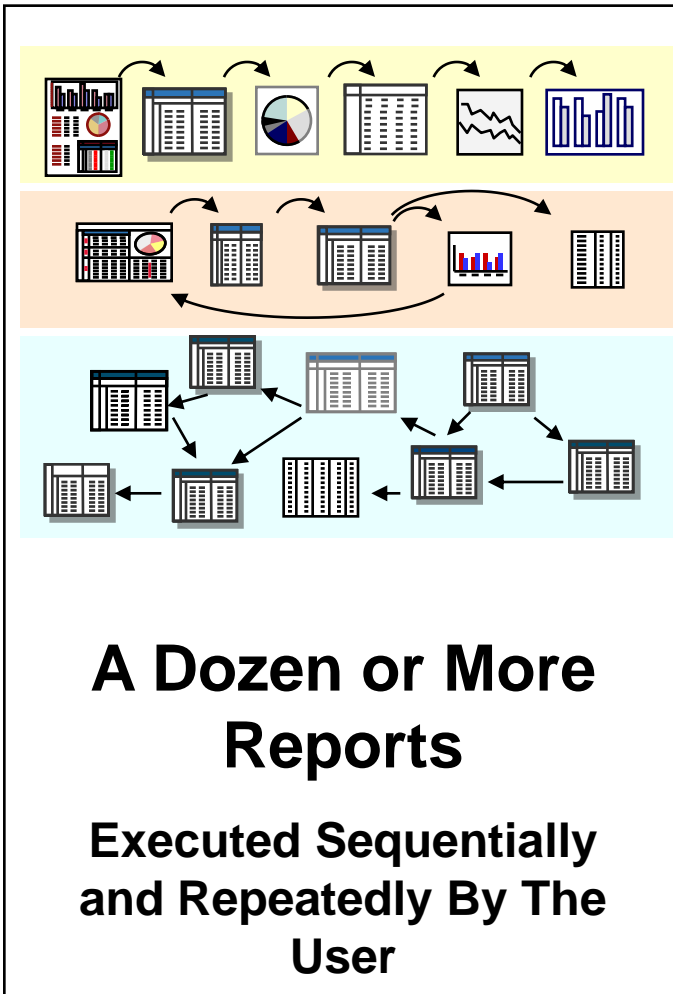
- |                                     |                                     |                                 |
|-------------------------------------|-------------------------------------|---------------------------------|
| ➤ Isolated Applications             | ➤ Conflicting Versions of the Truth | ➤ Single Version of the Truth   |
| ➤ Non-Overlapping Users             | ➤ Multiple User Interfaces          | ➤ Single User Interface         |
| ➤ Isolated Development Teams        | ➤ Conflicting Development Teams     | ➤ Coordinated Development       |
| ➤ Simple Data Access                | ➤ Repetitive Data Access            | ➤ Optimized Data Access         |
| ➤ Departmental-scale Operations     | ➤ Excessive Costs for Operations    | ➤ FTE-efficient 24x7 Operations |
| ➤ Departmental-scale Administration | ➤ Excessive Costs for Admin         | ➤ FTE-efficient Admin at Scale  |

# Agenda

- Dynamic Dashboards and Advanced Visualizations
- Self Service Reporting
- Advanced Analysis
- Mobile BI



# Dynamic Dashboards Can Collapse Many Reports into a Single Dashboard



# Financial Analysis

Income Statement

Balance Sheet

Cash Flow

North America

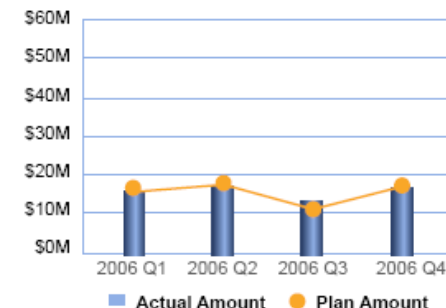
December 31, 2006

Income Statement	Actual	Forecast		Budget	
	\$	\$	% Variance	\$	% Variance
Revenues	\$274,019,456	\$284,605,278	(3.72%)	\$270,365,083	1.35%
<b>Total Revenues</b>	<b>\$274,019,456</b>	<b>\$284,605,278</b>	<b>(3.72%)</b>	<b>\$270,365,083</b>	<b>1.35%</b>
Cost of Revenues	(\$2,638)	(\$41,016)	(93.57%)	(\$2,297)	14.85%
<b>Gross Profit</b>	<b>\$274,022,094</b>	<b>\$284,646,294</b>	<b>(3.73%)</b>	<b>\$270,367,380</b>	<b>1.35%</b>
Sales and Marketing	\$7,275,120	\$7,203,242	1.00%	\$7,317,291	(0.58%)
Research and Development	\$75,693,698	\$75,367,401	0.43%	\$75,491,800	0.27%
General and Administrative	(\$15,959,425)	(\$15,838,407)	0.76%	(\$12,576,955)	26.89%
Depreciation and Amortization	\$222,871	\$220,647	1.01%	\$201,529	10.59%
<b>Total Operating Expenses</b>	<b>\$67,232,264</b>	<b>\$66,952,884</b>	<b>0.42%</b>	<b>\$70,433,655</b>	<b>(4.55%)</b>
<b>Operating Income</b>	<b>\$206,789,831</b>	<b>\$217,693,410</b>	<b>(5.01%)</b>	<b>\$199,933,725</b>	<b>3.43%</b>
Interest Income or Expense	(\$53,274)	(\$54,250)	(1.80%)	(\$52,695)	1.10%
Gain/Loss on Investments	\$64,027,237	\$62,890,740	1.81%	\$61,589,340	3.96%
<b>Financing Income/Expense</b>	<b>\$63,973,963</b>	<b>\$62,836,490</b>	<b>1.81%</b>	<b>\$61,536,645</b>	<b>3.96%</b>
Income Before Taxes	\$270,763,794	\$280,529,900	(3.48%)	\$261,470,370	3.55%
Income Taxes	\$34,652,402	\$37,480,045	(7.54%)	\$33,985,270	1.96%
<b>Net Income</b>	<b>\$236,111,392</b>	<b>\$243,049,855</b>	<b>(2.85%)</b>	<b>\$227,485,100</b>	<b>3.79%</b>

## Detailed Data

### Total Operating Expenses

GAAP Category Code	2006				
	2006 Q1	2006 Q2	2006 Q3	2006 Q4	Total
General and Administration	\$ (2,189,318)	\$ (3,268,757)	\$ (5,588,653)	\$ (4,912,698)	\$ (15,959,425)
Research and Development	\$ 17,493,498	\$ 19,452,330	\$ 18,692,411	\$ 20,055,459	\$ 75,693,698
Sales and Marketing	\$ 1,793,783	\$ 1,440,374	\$ 1,556,394	\$ 2,484,570	\$ 7,275,120
Amortization of Intangible Assets	\$ 55,718	\$ 55,718	\$ 55,718	\$ 55,718	\$ 222,871
<b>Total</b>	<b>\$ 17,153,681</b>	<b>\$ 17,679,665</b>	<b>\$ 14,715,870</b>	<b>\$ 17,683,049</b>	<b>\$ 67,232,264</b>



# PRODUCT PERFORMANCE

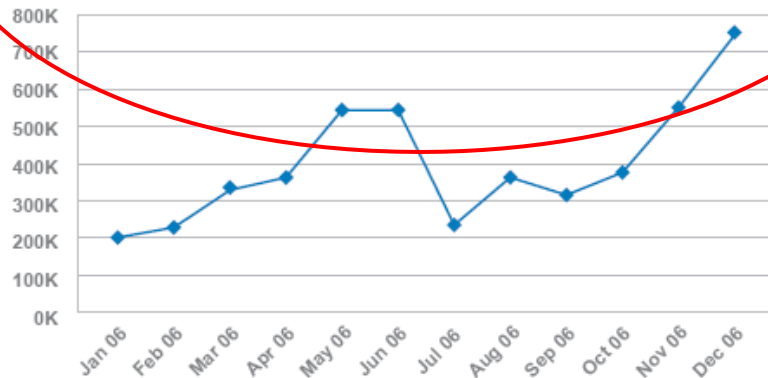
Country

Category

Revenue  Profit  Profit Margin  # Customers  Transactions Per Customer

## Revenue Performance

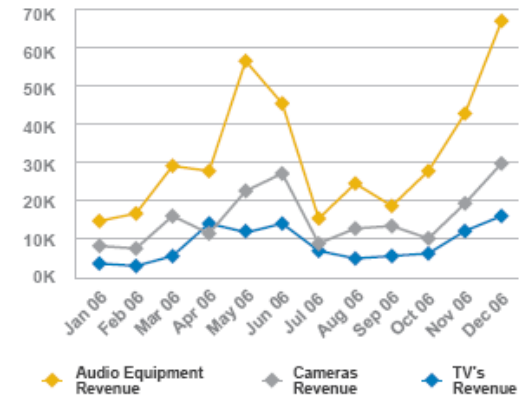
Monthly  Quarterly



## Product Revenue

Monthly  Quarterly

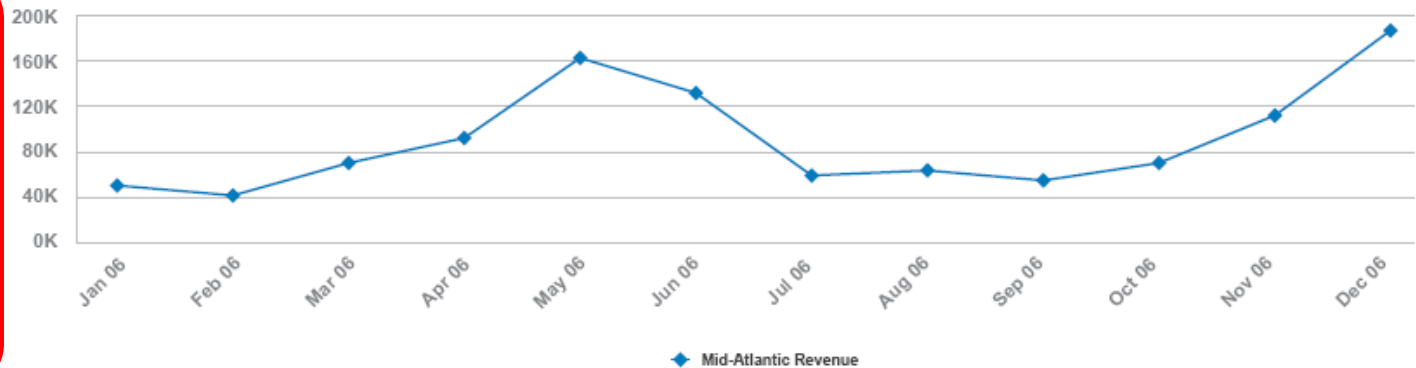
- Audio Equipment
- Cameras
- Video Equipment
- TV's
- Computers
- Electronics - Miscellaneous



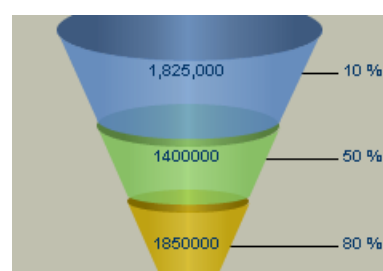
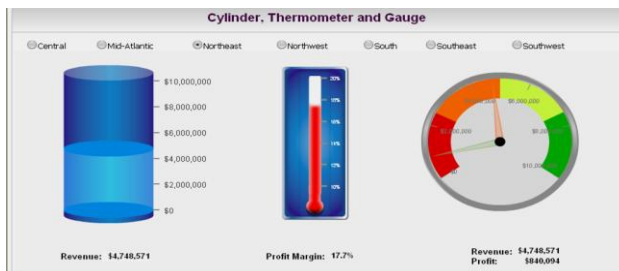
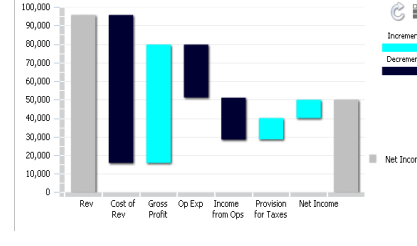
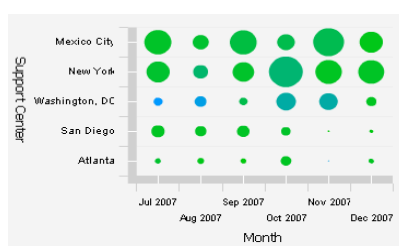
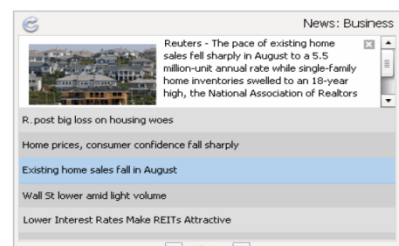
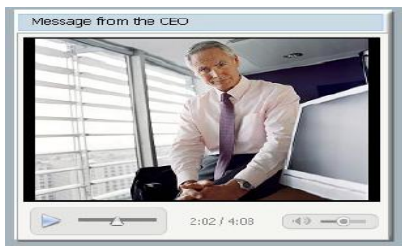
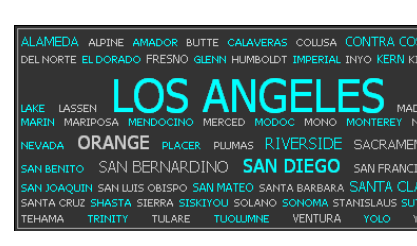
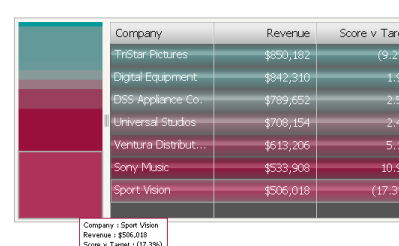
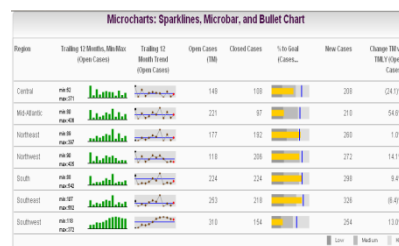
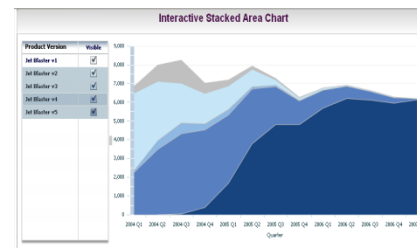
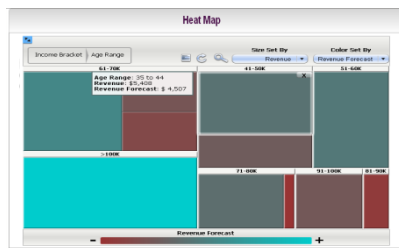
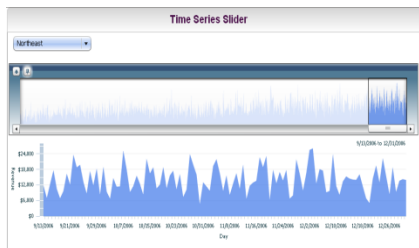
## Regional Revenue Performance

Monthly  Quarterly

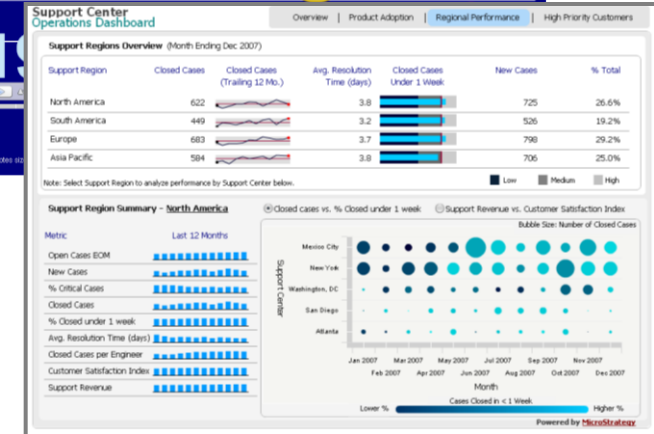
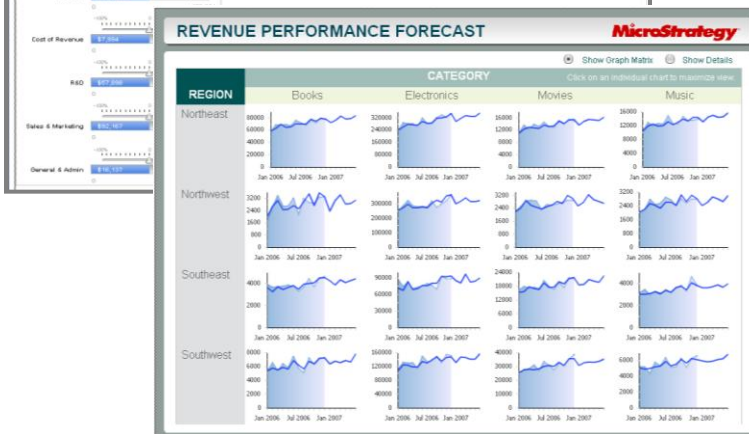
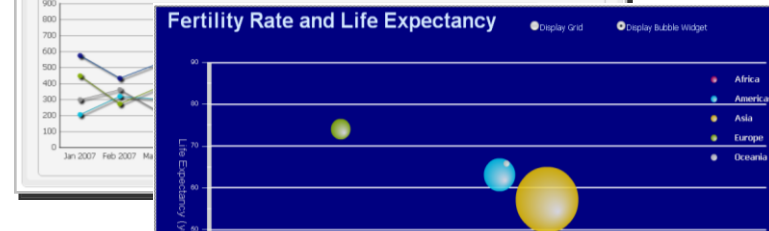
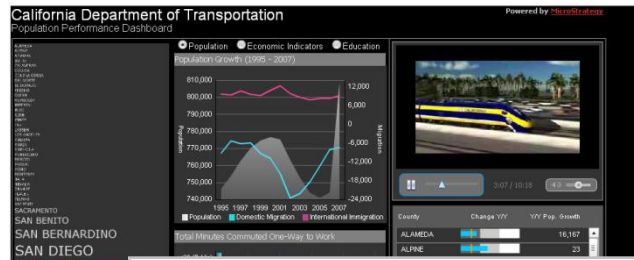
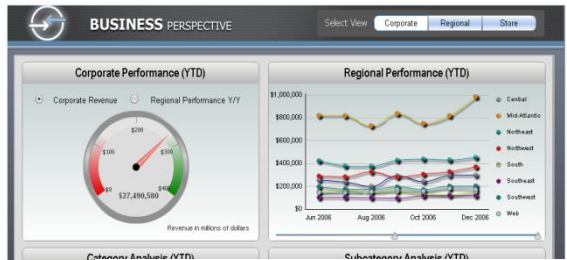
- Northwest
- Northeast
- West
- Central
- Southeast
- Mid-Atlantic
- South
- Southwest

































# MicroStrategy Advanced Flash Visualizations Enhance Data Comprehension and Exploration

































# DEMONSTRATION of MicroStrategy Dynamic Dashboards



# Self Service BI Software Must Deliver All 5 Styles of BI Through Any Interface

	Browsers 	Desktop 	Mobile 	Office 	Email 
<b>Dashboards and Scorecards</b>					
<b>Enterprise Reporting</b>					
<b>Advanced Analysis and Ad hoc Reporting</b>					
<b>OLAP Analysis</b>					
<b>Alerts and Proactive Notification</b>					

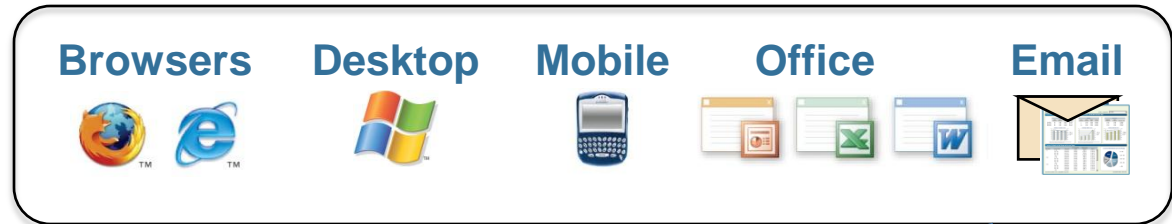
# Self Service BI Software Must Deliver All 5 Styles of BI Through Any Interface

	Browsers 	Desktop 	Mobile 	Office 	Email 
<b>Dashboards and Scorecards</b>					
<b>Enterprise Reporting</b>					
<b>Advanced Analysis and Ad hoc Reporting</b>					
<b>OLAP Analysis</b>					
<b>Alerts and Proactive Notification</b>					

# Report Information Is Expressed In All 5 Styles Across All Interfaces

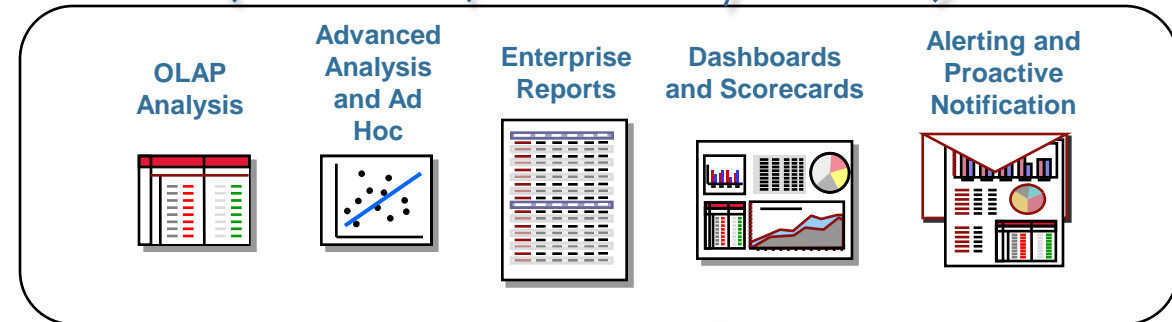
## All Interfaces

All BI styles can be displayed across all interfaces



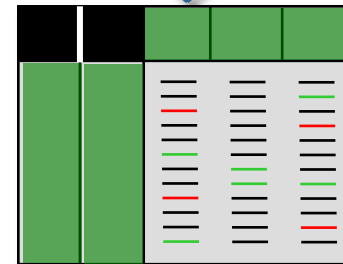
## 5 Styles of BI

Report information can be expressed any of the BI styles



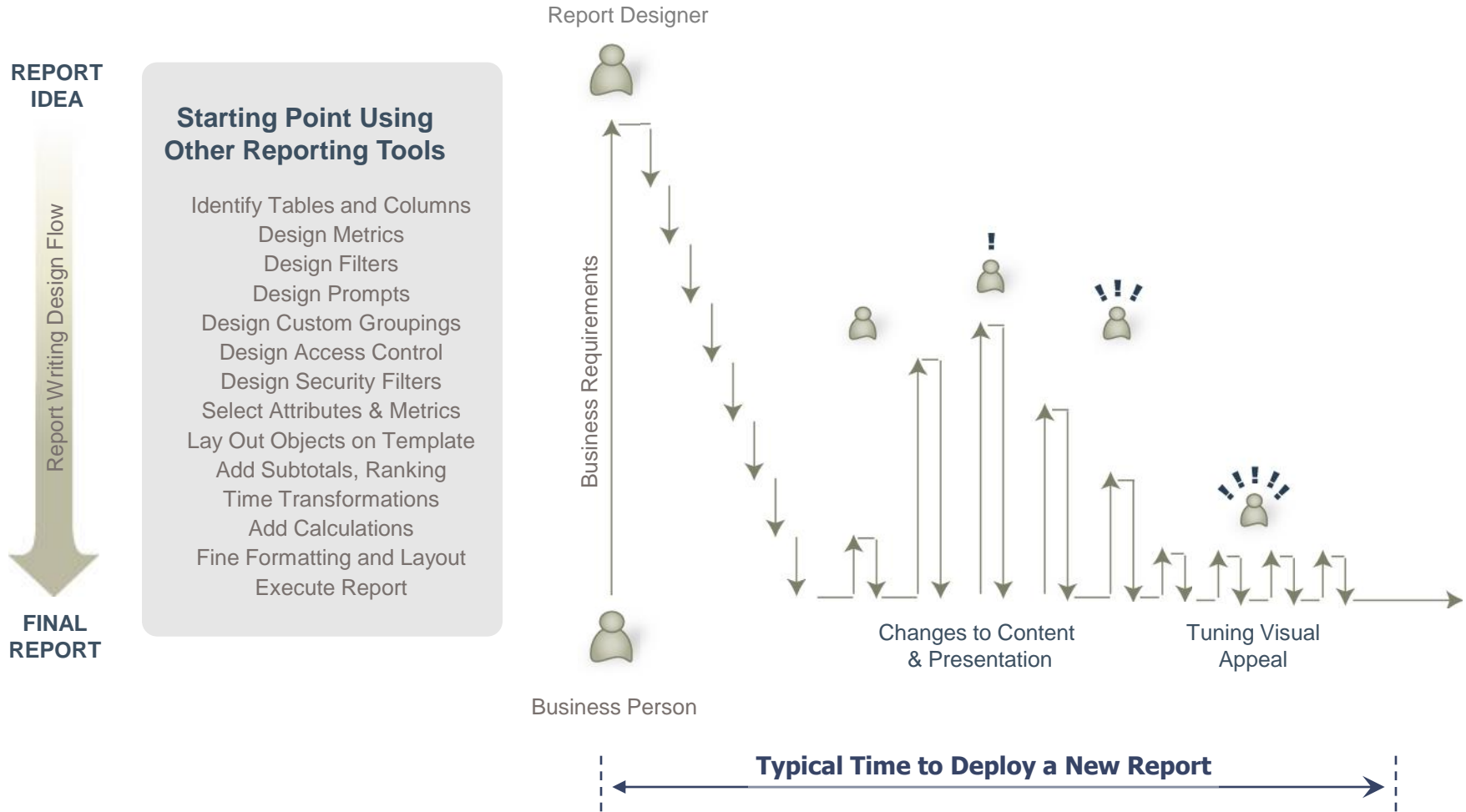
## Report

Report information is the basis for analysis



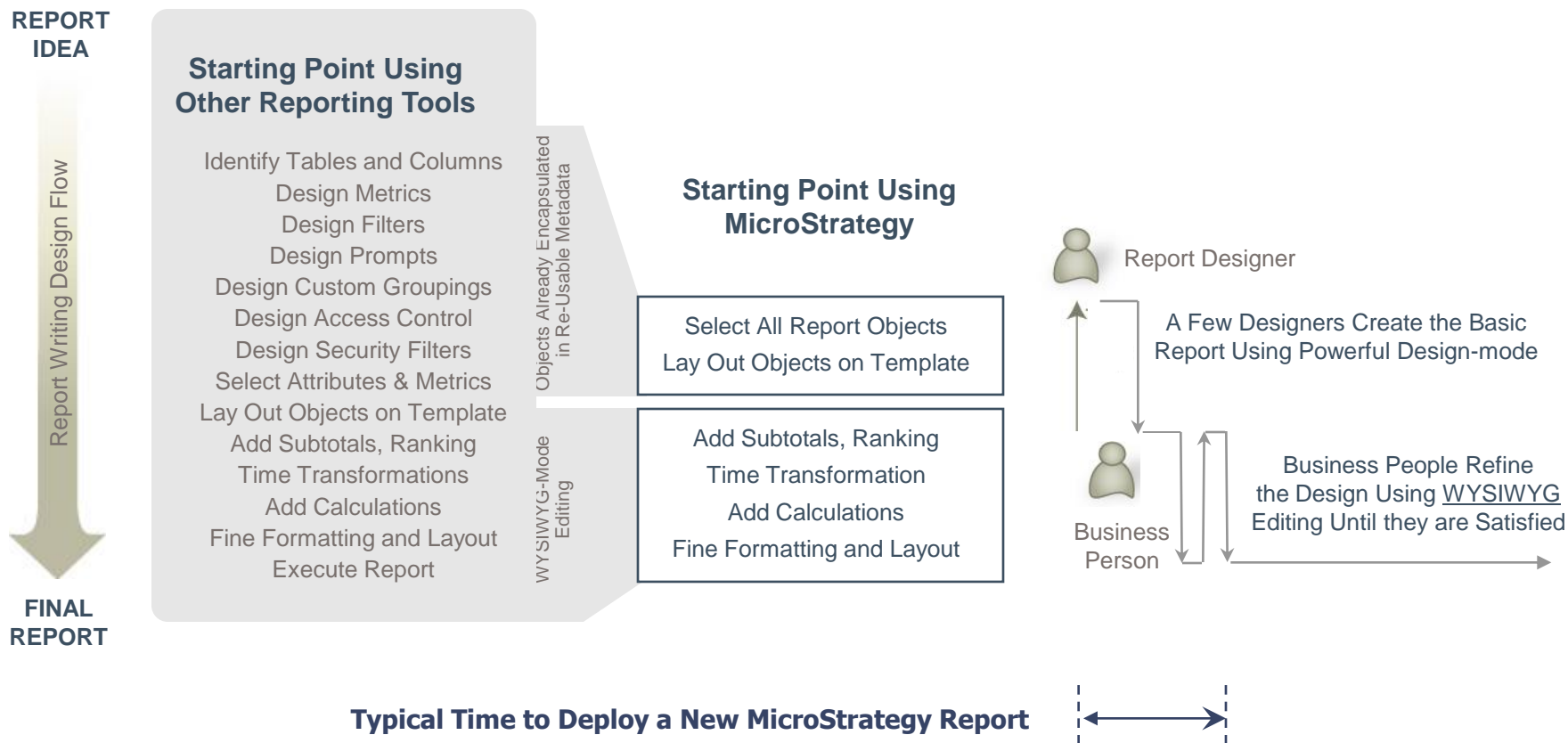
# Without Self Service Reporting....

## Report Creation Process With Older BI Technologies

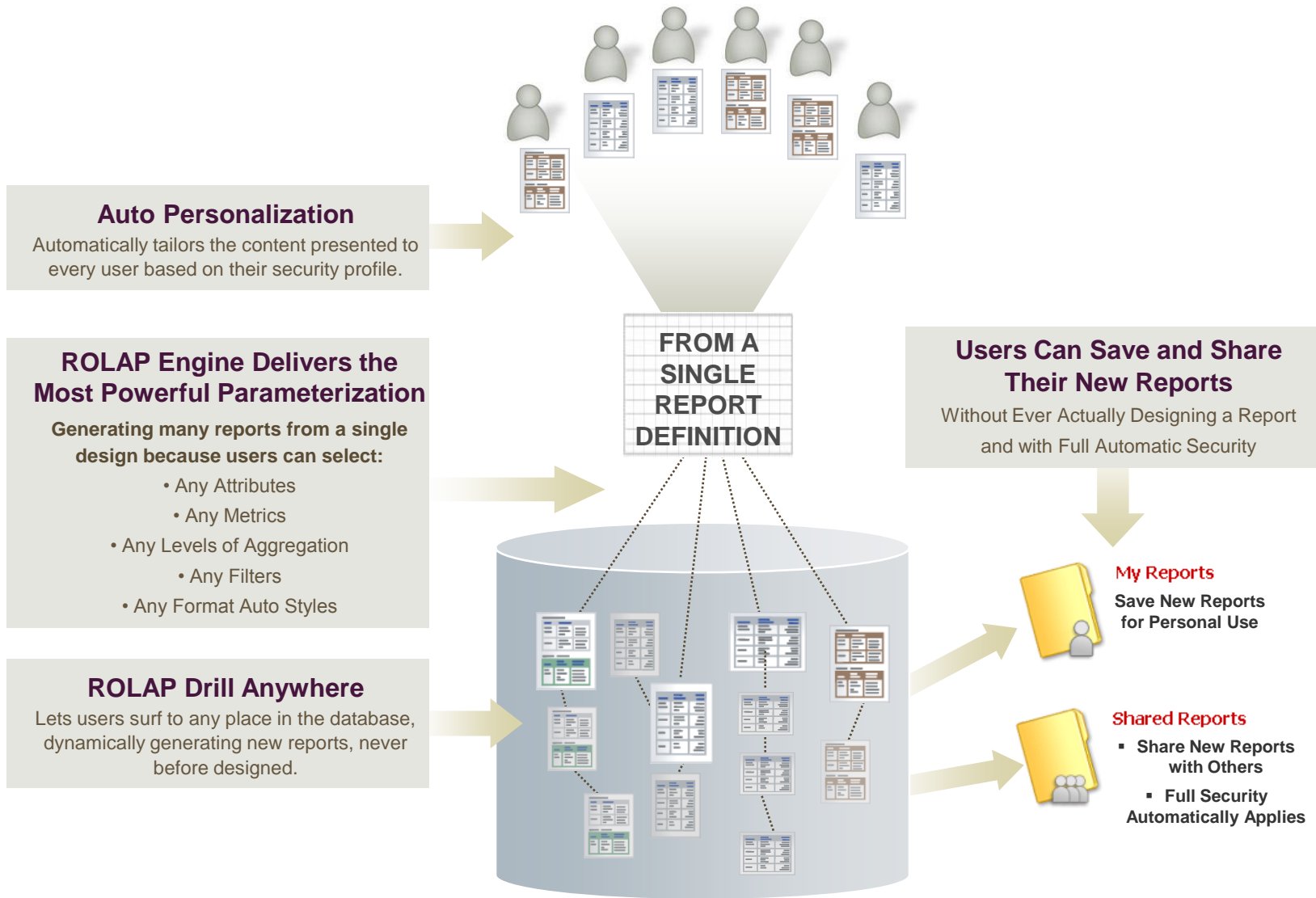


# Radically Faster Report Development Using **WYSIWYG Design** and Greater Range of Reusable Objects

## Report Creation Process With Emerging BI Technologies



# A Few MicroStrategy Reports Can Deliver the Same Analytic Range as Hundreds of Competitive BI Reports – So Fewer Reports Need to Be Developed by IT



# Demo: Self Service Reporting

The screenshot shows the MicroStrategy Self Service Reporting interface in Design Mode. The top navigation bar includes links for Shared Reports, My Reports, History List, My Subscriptions, Create Report, and Create. The breadcrumb trail indicates the current location: MicroStrategy Tutorial > My Reports > Design Mode: Product Analysis. Below the navigation is a toolbar with icons for various report actions and a dropdown menu for Graph Type and Graph Sub-Type.

The main interface is divided into several sections:

- All Objects:** A tree view showing the hierarchy of objects. The current selection is 'MicroStrategy Tutorial'. A search box is available. The tree includes categories like Customers, Geography, Products, Time, and Year, with sub-items like Month, Quarter, and specific years (2005, 2006, 2007, 2008). A context menu is open over the 2007 item, showing an 'Add to Filter' option.
- REPORT FILTER:** A section with a 'Clear All' button and a filter expression: 'Region In List (South, Northwest, Southwest)'.
- PAGE-BY:** A dropdown menu currently set to 'none'.
- Table:** A table with columns for Region, Category, Metrics, and Revenue. The data row shows placeholders: <Region>, <Category>, and <Revenue>.

At the bottom, there are tabs for Report Objects, All Objects (selected), Notes, and Related Reports.

# What does 'Advanced Analytics' Mean?

## Advanced Analytics

- Descriptive Analytics
  - Uses statistics to describe current and past data
    - Financial Services
    - Market basket analysis
- Data Mining
  - Examining large amounts of data in search of patterns that cannot be found through standard reporting
    - Cluster Analysis
- Predictive Analytics
  - Built using data mining models and historical data; use the result to score new data, predicting the likelihood of certain outcomes
    - Forecasting
    - Market basket recommendations

# Advanced Analytics Vision

## *Be Relevant, Proactive & Provide a Competitive Edge*

Organizations gain a competitive advantage when they:

- Increase the sophistication of their applications
- Go beyond basic historical reporting
- Deliver strategic proactive insight by
  - Including predictive and model driven metrics
  - Including predictive analytic alerts

# Analytical Evolution: Key Analytics To Consider When Reviewing Existing BI Reports And Dashboards

How much more valuable would my report be with the following Analytic capabilities?

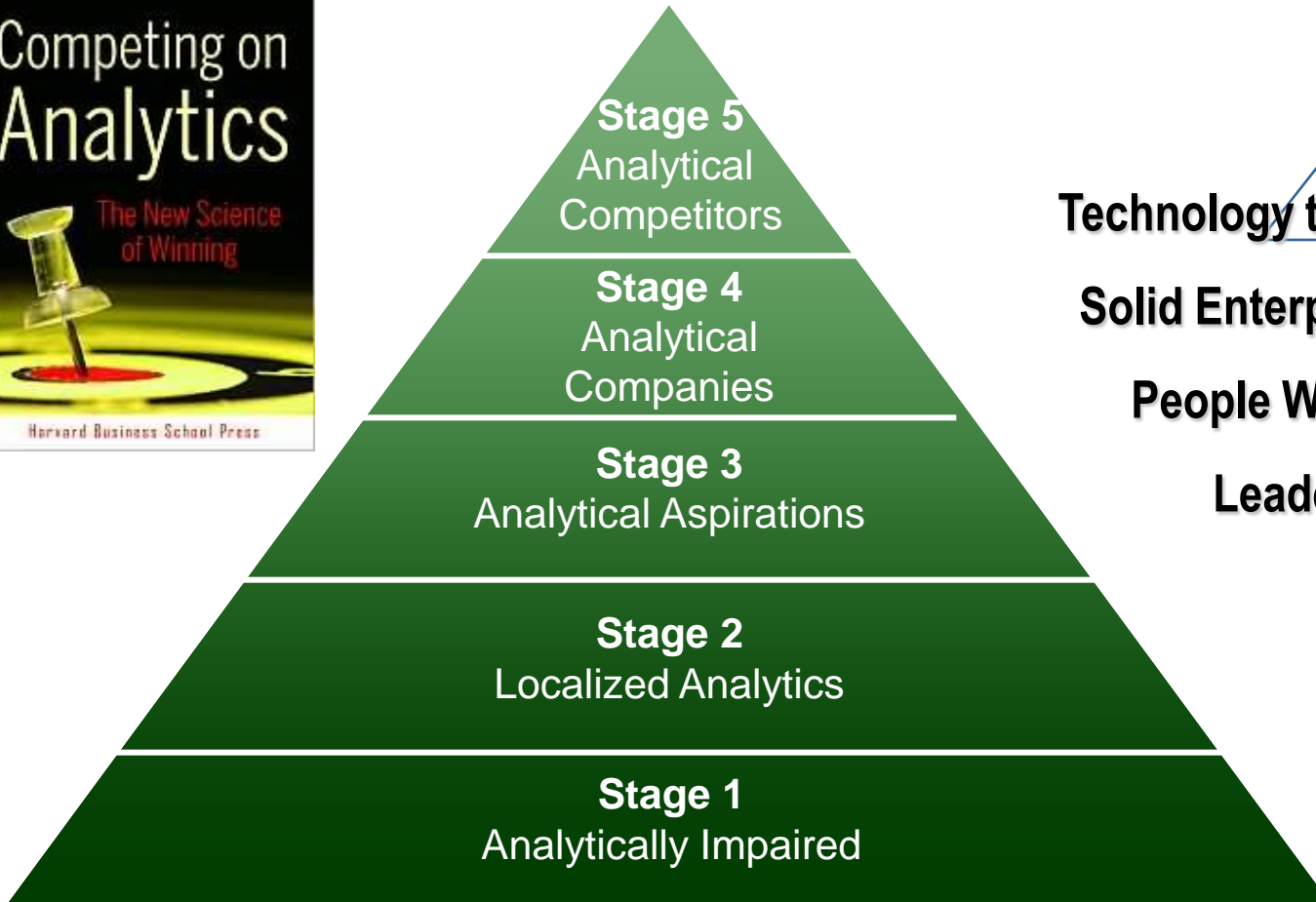
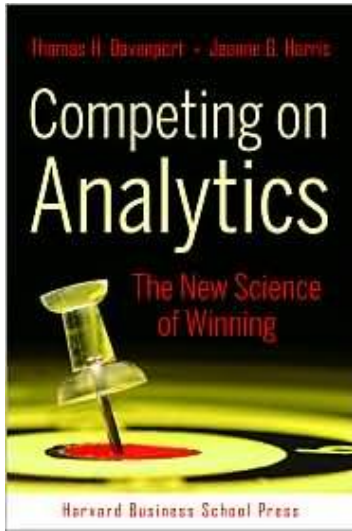
**Analytical Intensity** ↑

<input type="radio"/> Projections	<input type="checkbox"/> Logistic Regression <input type="checkbox"/> Exponential Regression	<input type="checkbox"/> Linear Regression <input type="checkbox"/> Decision Tree <input type="checkbox"/> Cluster	
<input type="radio"/> Relationship Analysis	<input type="checkbox"/> Market Basket Analysis <input type="checkbox"/> Correlations	<input type="checkbox"/> Multi-attribute <input type="checkbox"/> X tabbing <input type="checkbox"/> Pivot	<input type="checkbox"/> Drilling <input type="checkbox"/> Up/down etc <input type="checkbox"/> Anywhere
<input type="radio"/> Benchmarking	<input type="checkbox"/> Normalization <input type="checkbox"/> vs. peers	<input type="checkbox"/> Using Statistics <input type="checkbox"/> Using ratios	<input type="checkbox"/> Analyzing sets <input type="checkbox"/> Static <input type="checkbox"/> Dynamic
<input type="radio"/> Trend Analysis	<input type="checkbox"/> This Period vs. Last <input type="checkbox"/> Cumulative (QTD, YTD)	<input type="checkbox"/> Multiple Calendars <input type="checkbox"/> Non-aggregatable metrics	<input type="checkbox"/> Moving Averages <input type="checkbox"/> Simple <input type="checkbox"/> Weighted <input type="checkbox"/> Exponential
<input type="radio"/> Data Summarization	<input type="checkbox"/> Lists <input type="checkbox"/> Margins <input type="checkbox"/> Sums	<input type="checkbox"/> Count <input type="checkbox"/> Count Distinct	<input type="checkbox"/> Percent to Total <input type="checkbox"/> Subtotals

# How can companies compete using analytics?

CONFIDENTIAL

# Analytical Maturity Model



**Technology to Make Sense of It All**  
**Solid Enterprise Metrics – SVotT**  
**People Who Love Numbers**  
**Leaders Who Get It**

Competing on Analytics: The New Science of Winning, by Thomas H. Davenport and Jeanne G. Harris  
(Harvard Business School Press, March 2007).

Which organizations have used analytics to become successful?

# Comparing Budgets – 2002 Season

Wins: 102



\$40M

Wins: 103



\$126M

# How?

## *Traditional Statistics*

## *A's Statistics*

Batting Average

On Base Percentage

Stolen Bases

Expected Runs Contributed

Runs Batted In (RBI)

Slugging Percentage

Source: [www.Flickr.com](http://www.Flickr.com)

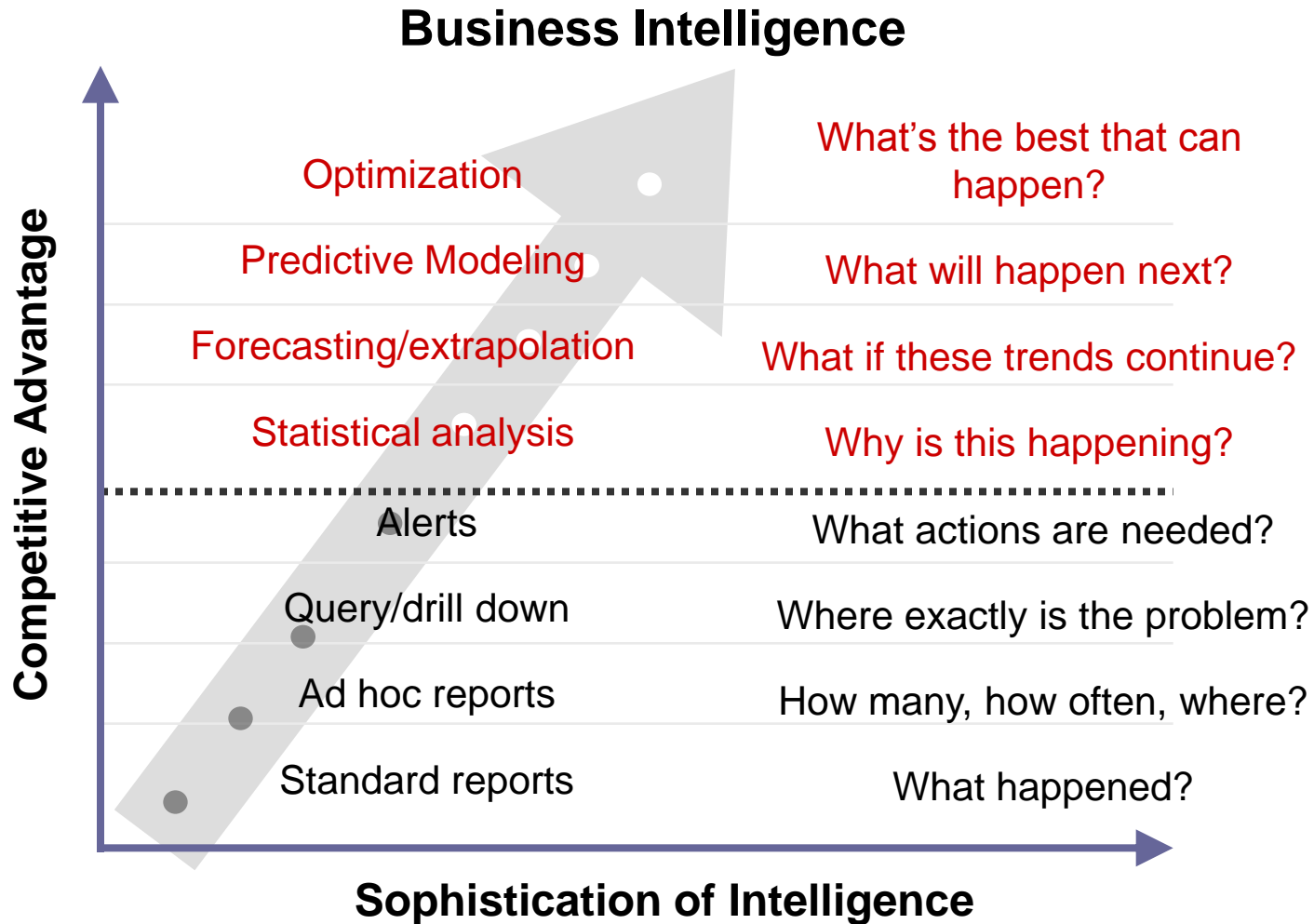
Credit: Sister72

# Organizations Compete Using Analytics In Many Different Ways

- Political Campaign Management
  - Political parties mine “Voter Vault” databases to **target voters, plan home visits, position on issues**, and “get out the vote” for their candidates.
- Pharmaceutical Test Result Analysis
  - Drug companies use Data Mining to **predict who will benefit from new drugs** and who will not, improving the marketing and regulatory approval processes.
- DVD Sales Forecasting
  - Data mining can **help forecast demand** for new movie releases on DVDs, so volume and capacity are managed optimally.

**Key Challenge: Organizations have plenty of data –  
how can they use it to compete?**

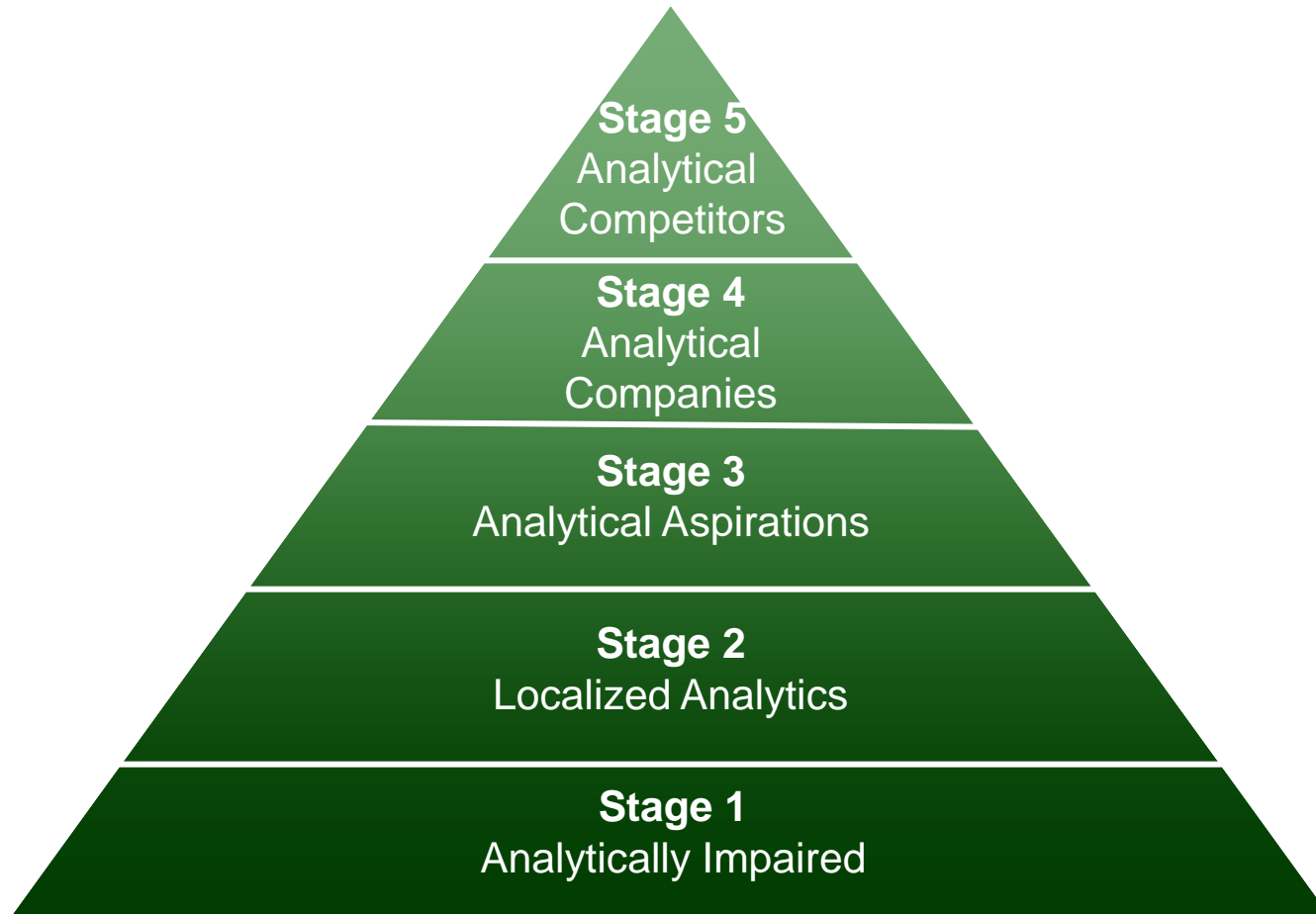
# Out-Think & Out-Execute Competitors Using Analytical-based Strategies



Competing on Analytics: The New Science of Winning, by Thomas H. Davenport and Jeanne G. Harris  
(Harvard Business School Press, March 2007).

# How are descriptive analytics used?

# Remember the Analytical Maturity Model



Competing on Analytics: The New Science of Winning, by Thomas H. Davenport and Jeanne G. Harris  
(Harvard Business School Press, March 2007).

# With MicroStrategy, it is Easy to Add Statistical Analysis To Everyday Reports

## Standard Call Center Report

Help Desk Effectiveness			
Service Representative	Avg Case Resolution Time (min)	# Calls Waiting	Training hours
John Smith	6.6	15	18
Mary Kotter	7.6	12	16
Ruth Sutherland	8.3	10	24
Johnny Wright	15.2	8	9
Pete Stohrer	4.6	12	21
Steven Holl	3.5	14	19

## Stage 2: Localized Analytics

# With MicroStrategy, it is Easy to Add Statistical Analysis To Everyday Reports

## Standard Call Center Report with Minimal Analytics

Help Desk Effectiveness				
Service Representative	Avg Case Resolution Time (min)	# Calls Waiting	# Calls Expected with >20 min wait (P=95%)	Total Training (hours)
John Smith	6.6	15	6	18
Mary Kotter	7.6	12	5	16
Ruth Sutherland	8.3	10	5	24
Johnny Wright	15.2	8	9	9
Pete Stohrer	4.6	12	6	21
Steven Holl	3.5	14	6	19

Average Service Representative Salary/minute: \$0.28

Average Cost/1 Hour Training: \$35

## Stage 3: Analytical Aspirations

# With MicroStrategy, it is Easy to Add Statistical Analysis To Everyday Reports

## Standard Call Center Report with Moderate Analytics

Help Desk Effectiveness				
Service Representative	Avg Case Resolution Time (min)	# Calls Waiting	# Calls Expected with >20 min wait (P=95%)	Total Training (hours)
John Smith	6.6	15	6	18
Mary Kotter	7.6	12	5	16
Ruth Sutherland	8.3	10	5	24
Johnny Wright	15.2	8	9	9
Pete Stohrer	4.6	12	6	21
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Average Service Representative Salary/minute: \$0.28  
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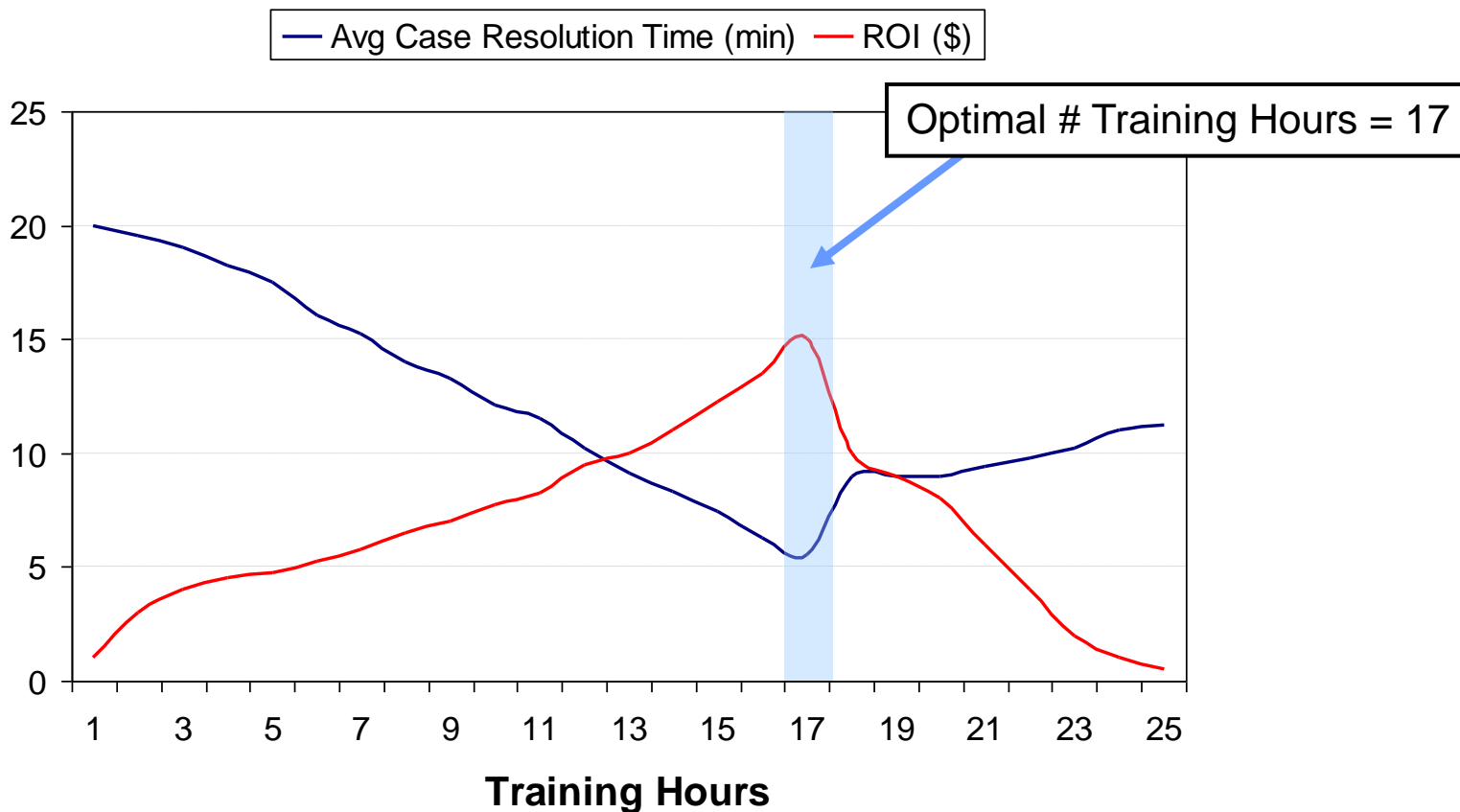
Correlation between training hrs and avg case resolution time: 0.73  
Every 2 hrs of training reduces resolution time by: 1.18 min

On scale of 0-1. The closer to 1, the more highly correlated.

## Stage 4: Analytical Companies

# With MicroStrategy, it is Easy to Add Statistical Analysis To Everyday Reports

## Case Resolution Time vs Profit Per Training Hour



Stage 5: Analytical Competitors

# With MicroStrategy, it is Easy to Add Statistical Analysis To Everyday Reports

## Help Desk Effectiveness

Service Representative	Avg Case Resolution Time (min)	# Calls Waiting	# Calls Expected with >20 min wait (P=95%)	Training hours
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Correlation between training hrs and avg case resolution time	0.73
Every 2 hours of training reduces resolution time by	1.18 min

## Sample of Statistical Functions Available Out-of-the-Box

Poisson Distribution

Correlation Coefficient

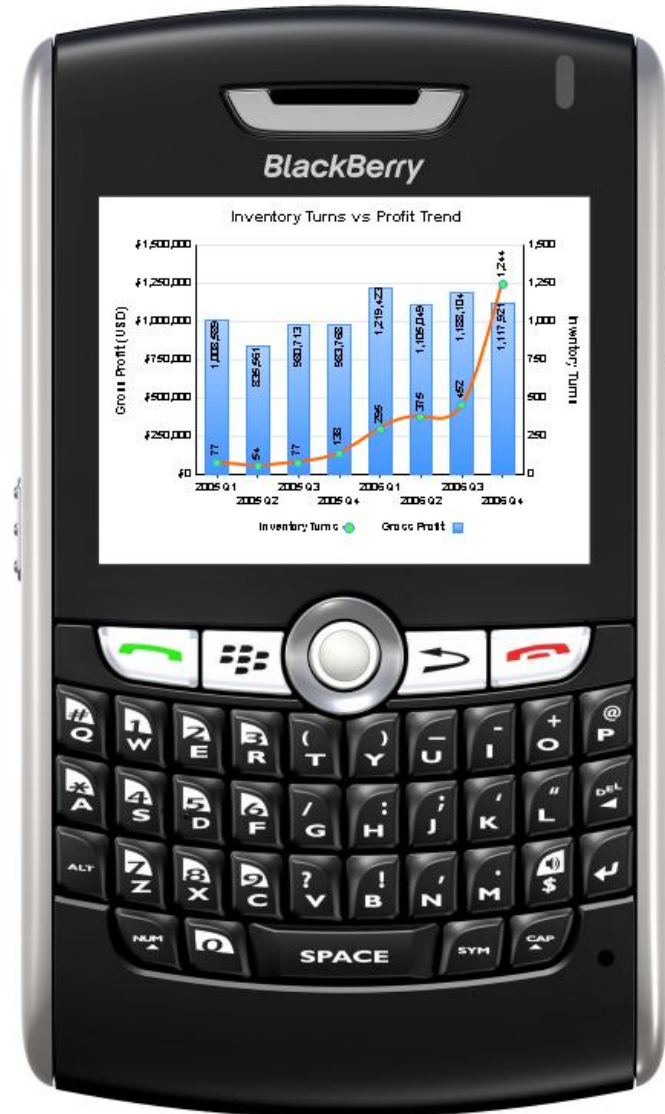
Slope of Linear Regression

Standard business users can use advanced analytics without understanding complex algorithms

# Meeting the BI Needs For a Broad Range of Mobile Workers

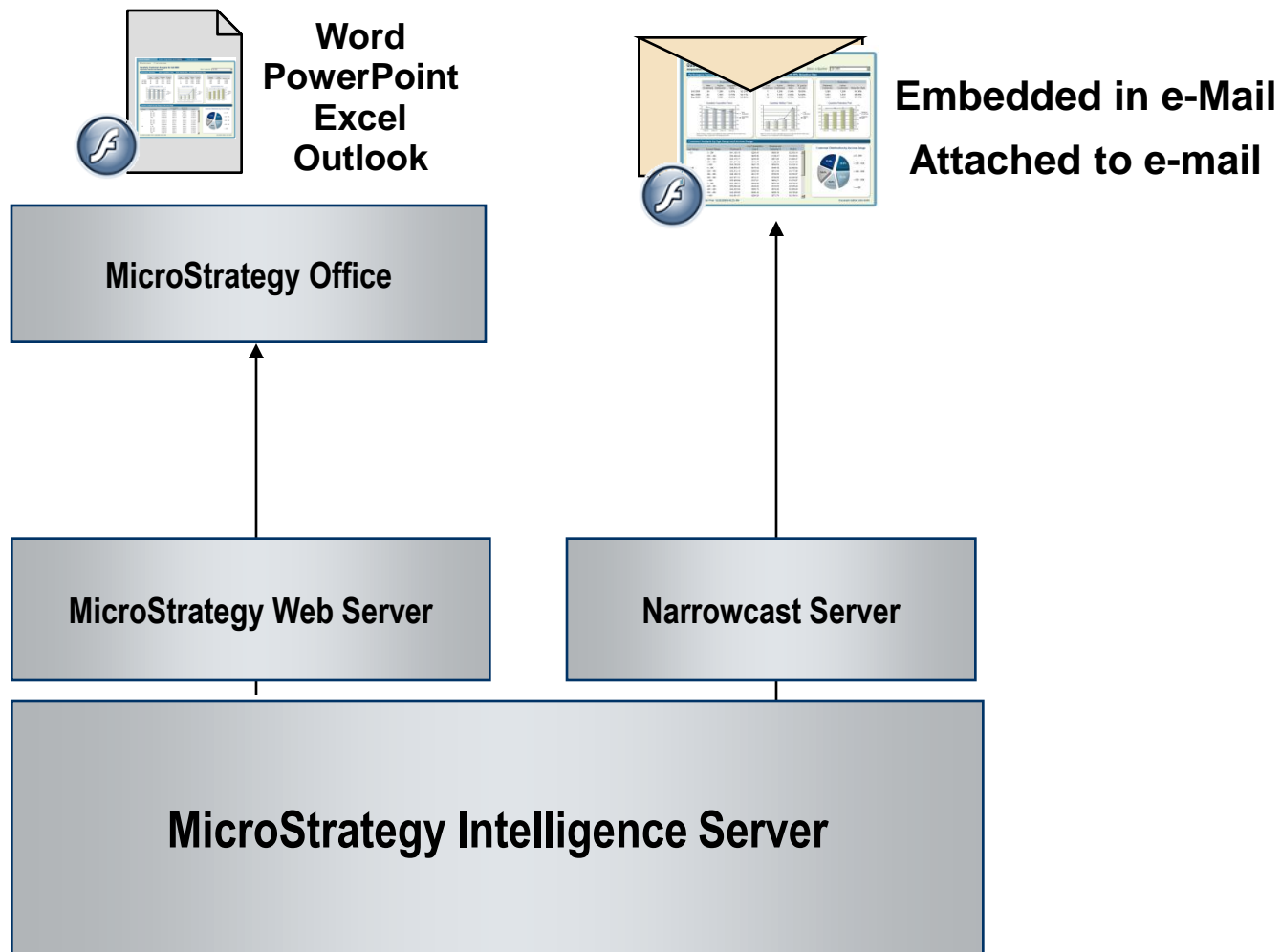
- An **executive** from a large financial services company can monitor the organization's top financial metrics and make time-sensitive decisions that impact the company's bottom line while out of the country.
- A **retail buyer** can access merchandise sales data to determine what is selling and not selling in specific stores to support purchasing and inventory reallocation discussions with store managers.
- A **pharmaceutical salesperson** can review the latest market share reports, prescription sales, and inventory data to prepare for sales calls.
- A **manufacturer's field technician** can provide enhanced customer service on-site by checking the customer's historical service record and product availability before scheduling a follow-up service call.
- A **marketing executive** from a Fortune 500 company can evaluate the latest marketing campaign analytics while meeting with the advertising agency to make key decisions on future expenditures.

# BI At Your Fingertips



# Offline Operation

All Data and Interactivity is Included in Standalone Flash Dashboards



# Offline Analysis

Revenue vs. Forecast, MicroStrategy 8 - Microsoft Internet Explorer

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MicroStrategy Tutorial > Shared Reports > Revenue vs. Forecast

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Row Axis Values Font Size B I U \$ %

PAGE-01: none

1 2 3 Data rows: 18 Data columns:

Region	Category	Subcategory	Quarter Metrics	2004 Q1 Revenue Forecast	2004 Q1 Revenue	2004 Q2 Revenue Forecast	2004 Q2 Revenue	2004 Q3 Revenue Forecast	2004 Q3 Revenue	2004 Q4 Revenue Forecast	2004 Q4 Revenue
<b>Northeast</b>											
Electronics											
	Audio Equipment			\$ 22,032	\$20,400	\$ 26,497	<b>\$33,970</b>	\$ 18,931	\$17,210	\$ 33,315	\$41,130
	Cameras			\$ 30,699	\$34,110	\$ 84,784	<b>\$75,030</b>	\$ 40,897	\$41,310	\$ 101,531	<b>\$99,850</b>
	Computers			\$ 5,793	<b>\$7,523</b>	\$ 9,899	\$10,205	\$ 4,827	<b>\$6,269</b>	\$ 11,571	\$12,715
	Electronics - Miscellaneous			\$ 8,830	\$9,598	\$ 12,573	\$14,792	\$ 11,592	\$12,332	\$ 22,081	\$21,648
	TV's										
	Video Equipment										
<b>Mid-Atlantic</b>											
Electronics											
	Audio Equipment										
	Cameras										
	Computers										
	Electronics - Miscellaneous										
	TV's										
	Video Equipment										
<b>Southeast</b>											
Electronics											
	Audio Equipment										
	Cameras										
	Computers										
	Electronics - Miscellaneous										
	TV's										
	Video Equipment										

Microsoft Excel - New Microsoft Excel Worksheet

File Edit View Insert Format Tools Data Window Help Type a question for help

MicroStrategy... Refresh Reports... Options...

Region	Category	Subcategory	2004 Q1 Revenue Forecast	2004 Q1 Revenue	2004 Q2 Revenue Forecast	2004 Q2 Revenue	2004 Q3 Revenue Forecast	2004 Q3 Revenue
<b>Northeast</b>								
Electronics								
	Audio Equipment		\$ 22,032	\$20,400	\$ 26,497	<b>\$33,970</b>	\$ 18,931	\$17,210
	Cameras		\$ 34,110	\$34,110	\$ 84,784	<b>\$75,030</b>	\$ 37,592	\$ 37,592
	Computers		\$ 8,501	<b>\$7,523</b>	\$ 9,899	\$10,205	\$ 4,827	\$ 4,827
	Electronics - Miscellaneous		\$ 8,830	\$9,598	\$ 12,573	\$14,792	\$ 11,592	\$ 11,592
	TV's		\$ 9,199	<b>\$11,644</b>	\$ 34,669	<b>\$31,233</b>	\$ 21,802	\$ 21,802
	Video Equipment		\$ 31,046	\$32,680	\$ 45,626	\$49,060	\$ 21,310	\$ 21,310
<b>Mid-Atlantic</b>								
Electronics								
	Audio Equipment		\$ 22,935	\$25,770	\$ 54,798	\$62,270	\$ 29,061	\$ 29,061
	Cameras		\$ 66,578	<b>\$59,980</b>	\$ 144,331	\$131,210	\$ 55,360	\$ 55,360
	Computers		\$ 4,782	\$5,904	\$ 13,855	\$15,567	\$ 8,289	\$ 8,289
	Electronics - Miscellaneous		\$ 22,121	\$21,270	\$ 29,349	\$30,894	\$ 12,100	\$ 12,100
	TV's		\$ 12,292	\$12,939	\$ 38,341	\$39,939	\$ 20,367	\$ 20,367
	Video Equipment		\$ 42,090	<b>\$37,580</b>	\$ 90,602	\$98,480	\$ 42,796	\$ 42,796
<b>Southeast</b>								
Electronics								
	Audio Equipment		\$ 16,841	\$15,310	\$ 21,235	<b>\$18,960</b>	\$ 22,275	\$ 22,275
	Cameras		\$ 32,312	<b>\$40,390</b>	\$ 53,676	\$51,120	\$ 45,667	\$ 45,667
	Computers		\$ 5,722	<b>\$5,109</b>	\$ 4,260	\$4,484	\$ 7,212	\$ 7,212
	Electronics - Miscellaneous		\$ 5,685	\$5,574	\$ 10,165	\$13,032	\$ 14,028	\$ 14,028
	TV's		\$ 9,142	\$10,630	\$ 24,217	<b>\$21,431</b>	\$ 15,671	\$ 15,671
	Video Equipment		\$ 23,230	\$21,710	\$ 35,609	\$36,710	\$ 41,066	\$ 41,066



# Questions?

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