IBM Software Group

Introduction to Business Intelligence

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ON DEMAND BUSINESS

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Discussion

- What is Business Intelligence
- BI Vision Evolution
- Business Intelligence Environment
- Characteristics of Successful Business Intelligence

What is Business Intelligence?

Business Intelligence (BI) is:

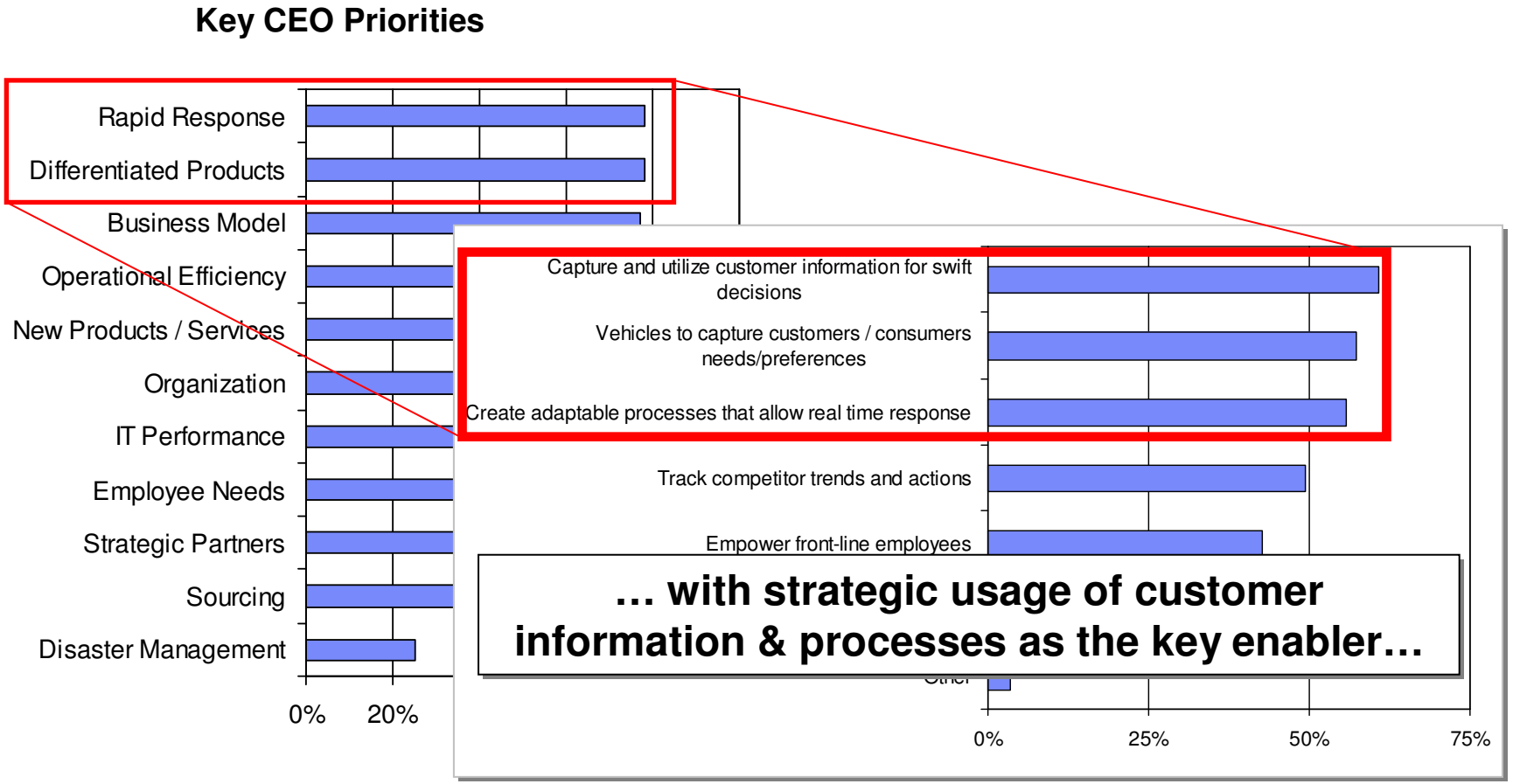
"The processes, technologies and tools needed to turn data into information and information into knowledge and knowledge into plans that drive profitable business action. BI encompasses data warehousing, business analytics and knowledge management."

The Data Warehouse Institute, Q4/2002

Business Intelligence is defined as "knowledge gained about a business through the use of various hardware/software technologies which enable organizations to turn data into information".

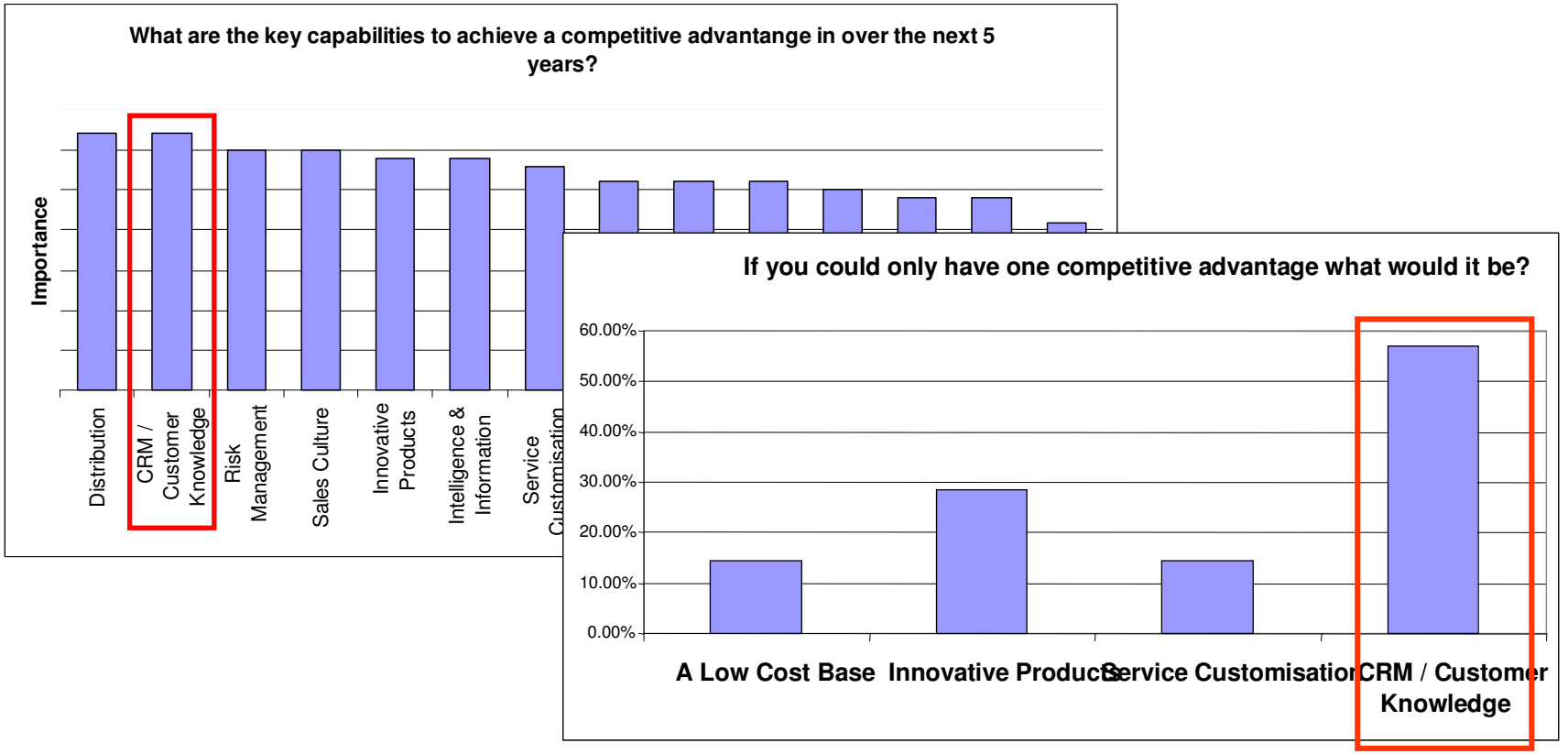
Data Management Review

According to a recent CEO survey, responding efficiently to market conditions & differentiated products are their key priorities.



Source: IBM Business Consulting Services, The Global CEO Study 2004

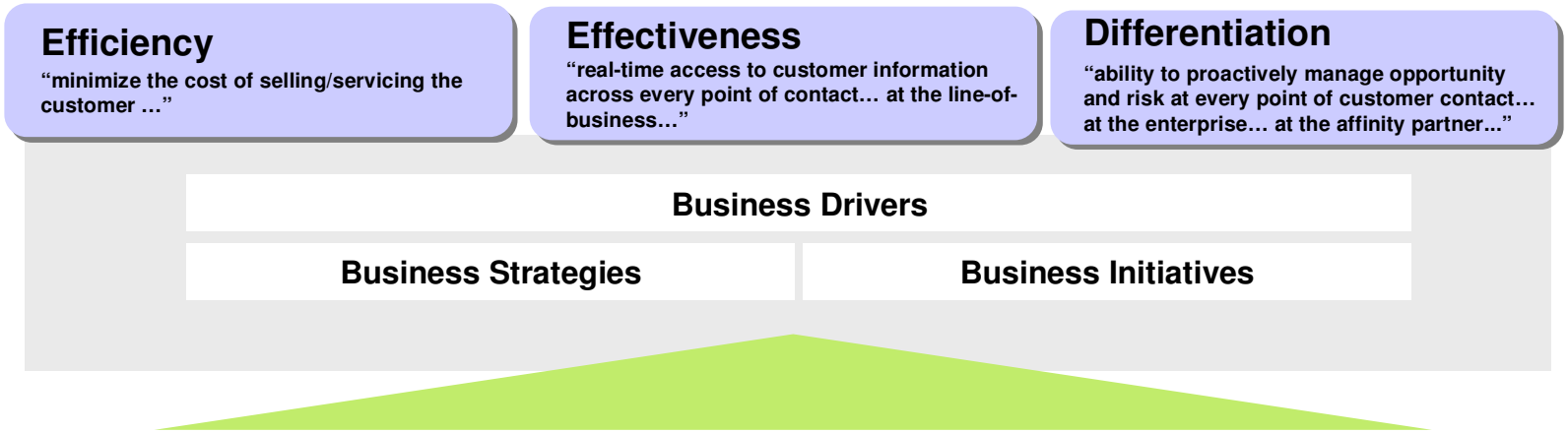
Another recent survey by "The Asian Banker" rates customer knowledge as key capabilities for competitive advantage.



THE ASIAN BANKER

"Survey on strategic information challenges faced by the best retail banks in Asia", May 2005

Business Intelligence (BI) allows us to use data strategically in responses to challenges and drive profitable business actions.



Business Intelligence (BI)

"The processes, technologies and tools needed to turn data into information and information into knowledge and knowledge into plans that drive profitable business action. BI encompasses data warehousing, business analytics and knowledge management."

The Data Warehouse Institute, Q4/2002

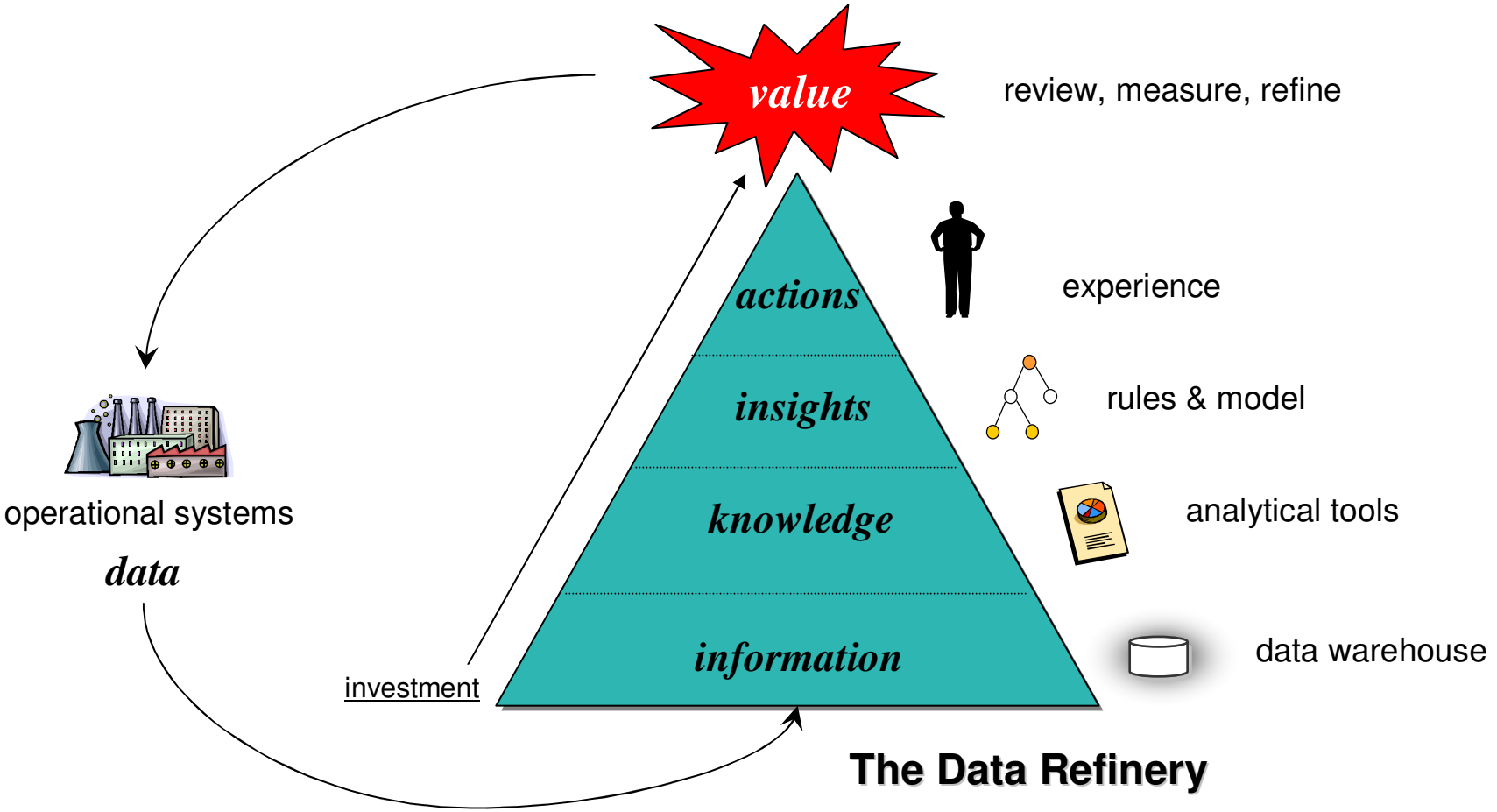
Business Imperatives

- Understand Customer Needs
- Revenue Creation
- Cost Optimization
- Enterprise Transformation
- Technology Transformation

The Business Intelligence : *Revitalizing Value Growth*

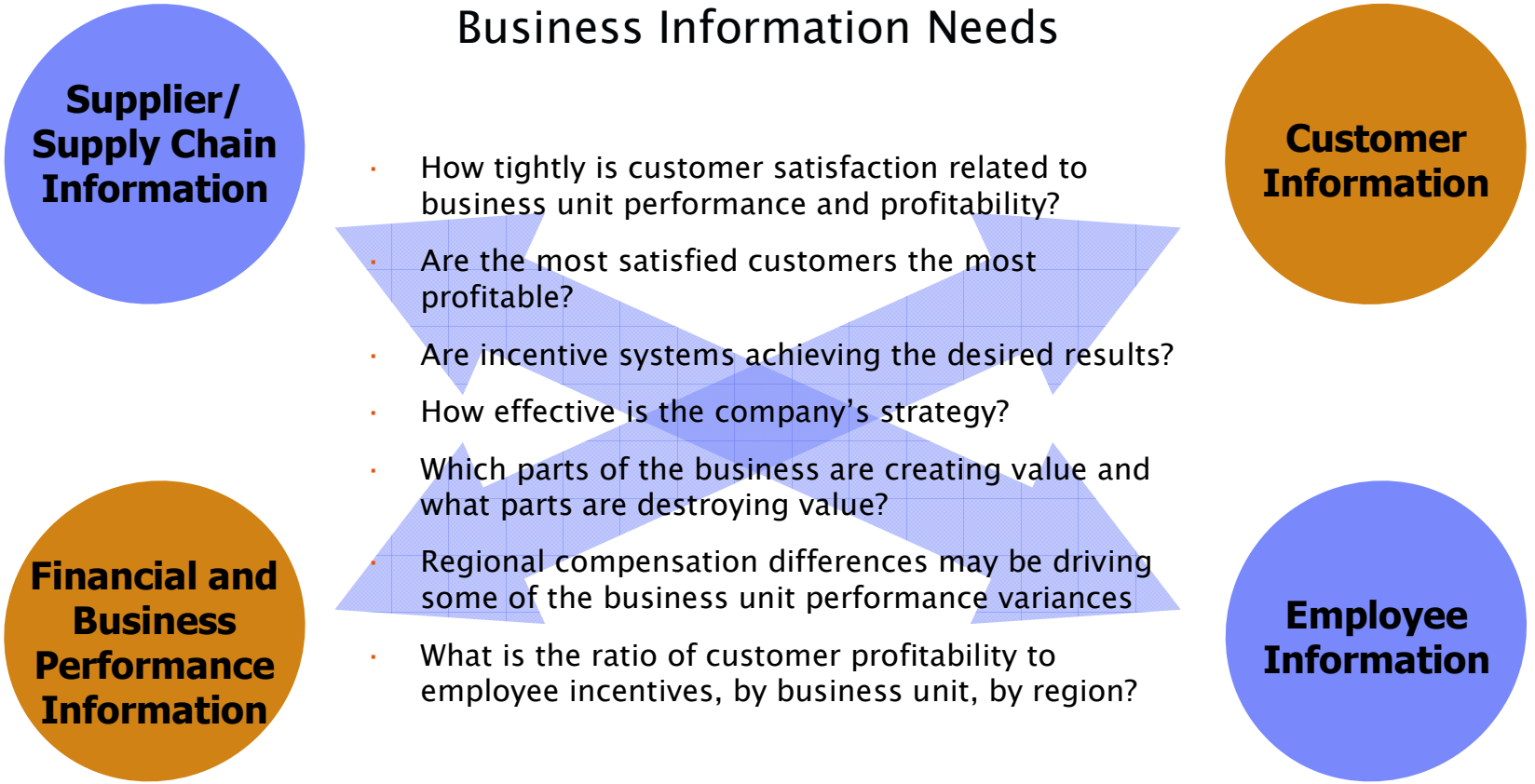
- Creating a **single customer view business intelligence platform** to enable analysis of customer needs
- Develop a series of **customer analytical applications** to **understand and identify customer needs**
- Use the insights derived from the analytical applications to **create new or customized products, services and tactical campaigns** that meets customer needs to drive revenue growth and cost optimization objectives
- **Revitalized value growth** with improved customer experience
- **Operationalize the strategic usage of data** as part of business as usual

BI can be thought of as a data refinery that turns data into actions and business value.

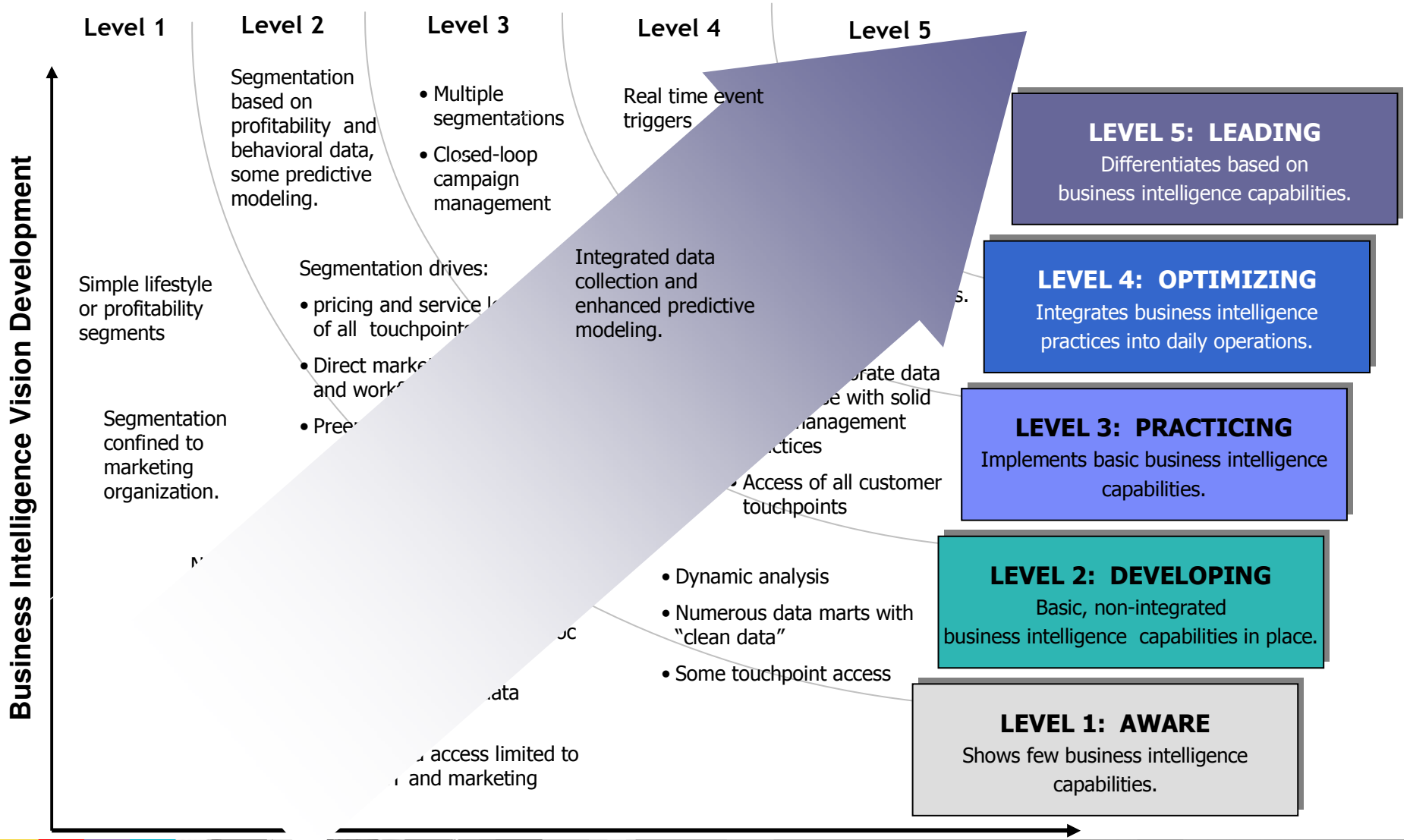


BI requires cross functional data

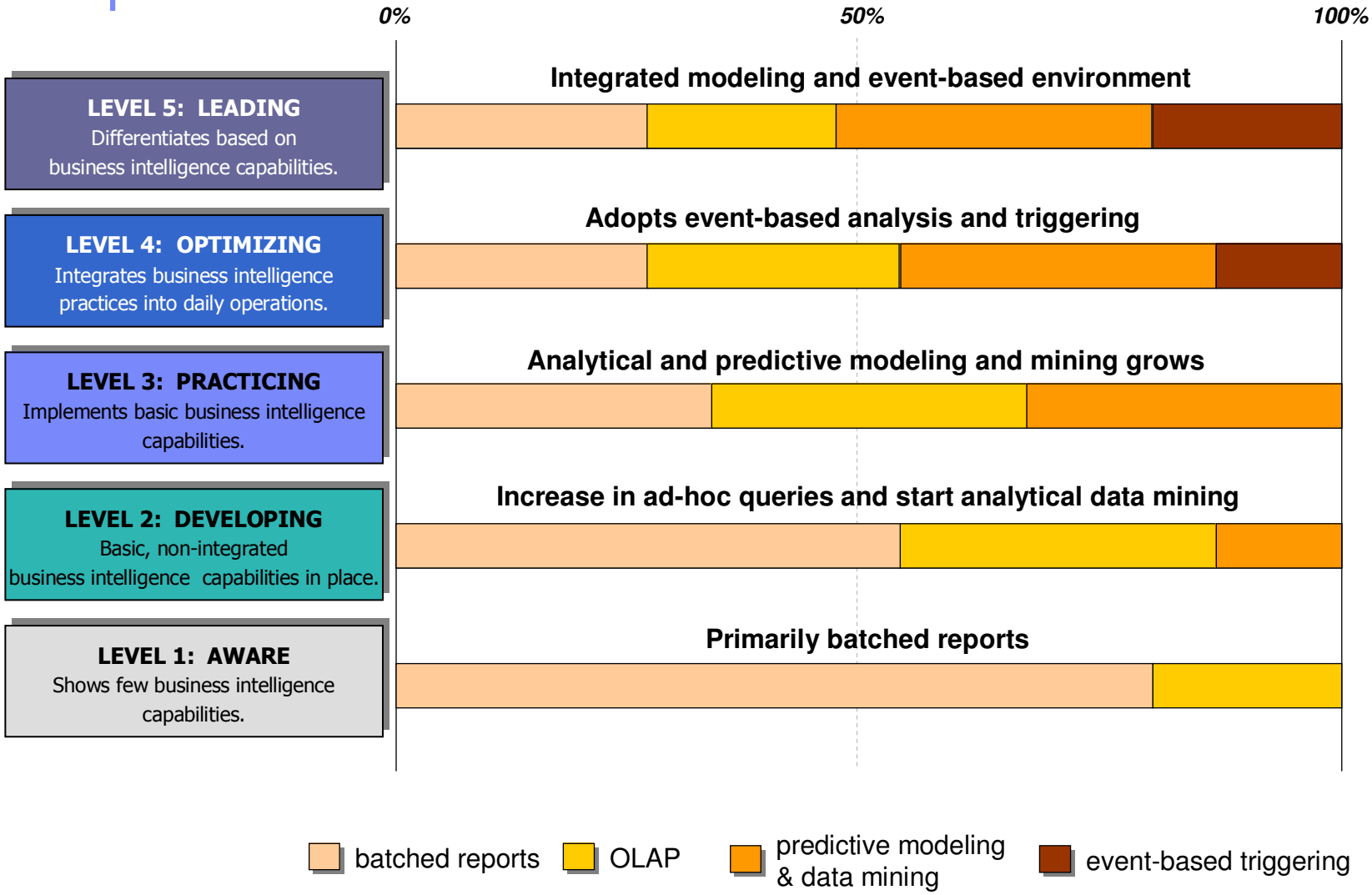
Effective decision making requires information that crosses organizational and functional boundaries.



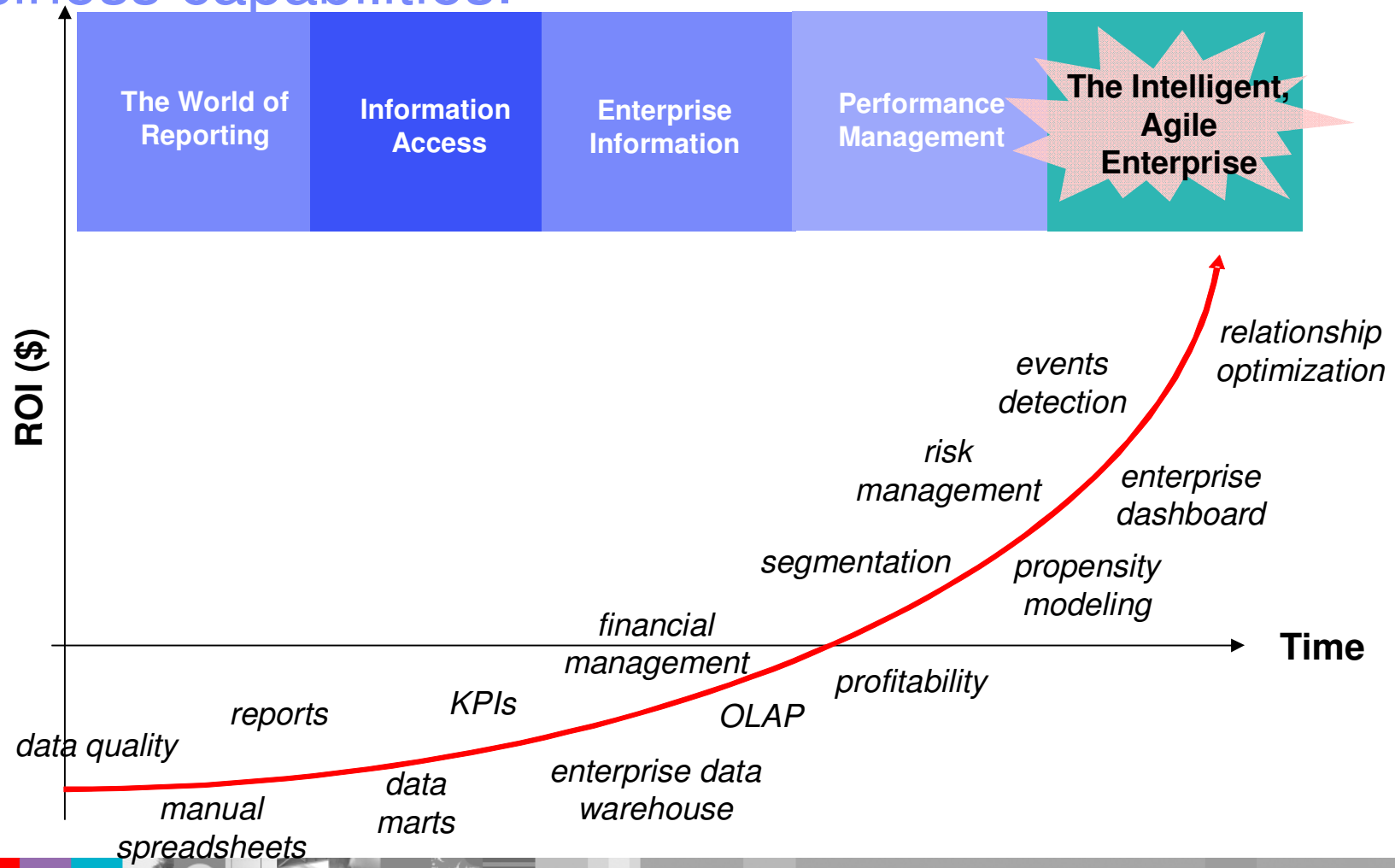
Evolutionary steps to achieving the BI vision.



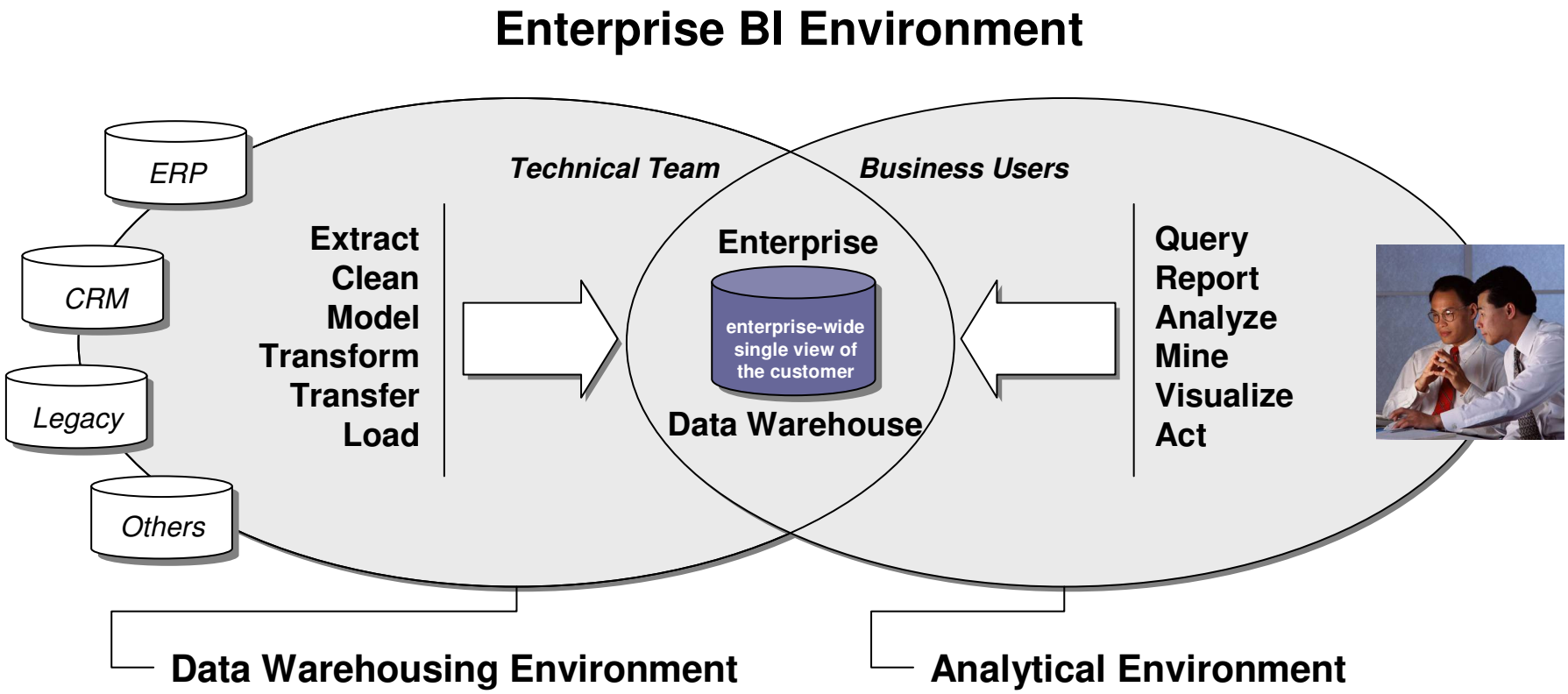
Evolutionary steps in adoption of BI analytical techniques.



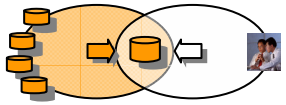
ROI $ returns starts negative but grows exponentially with constant evolution of data and business capabilities.



A typical enterprise BI environment consists of a warehouse and an analytical environment.



There are key differences in transaction vs. BI data warehousing environment.



Data Warehousing Environment

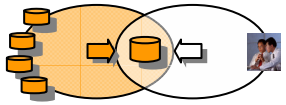
Transaction vs. BI Systems

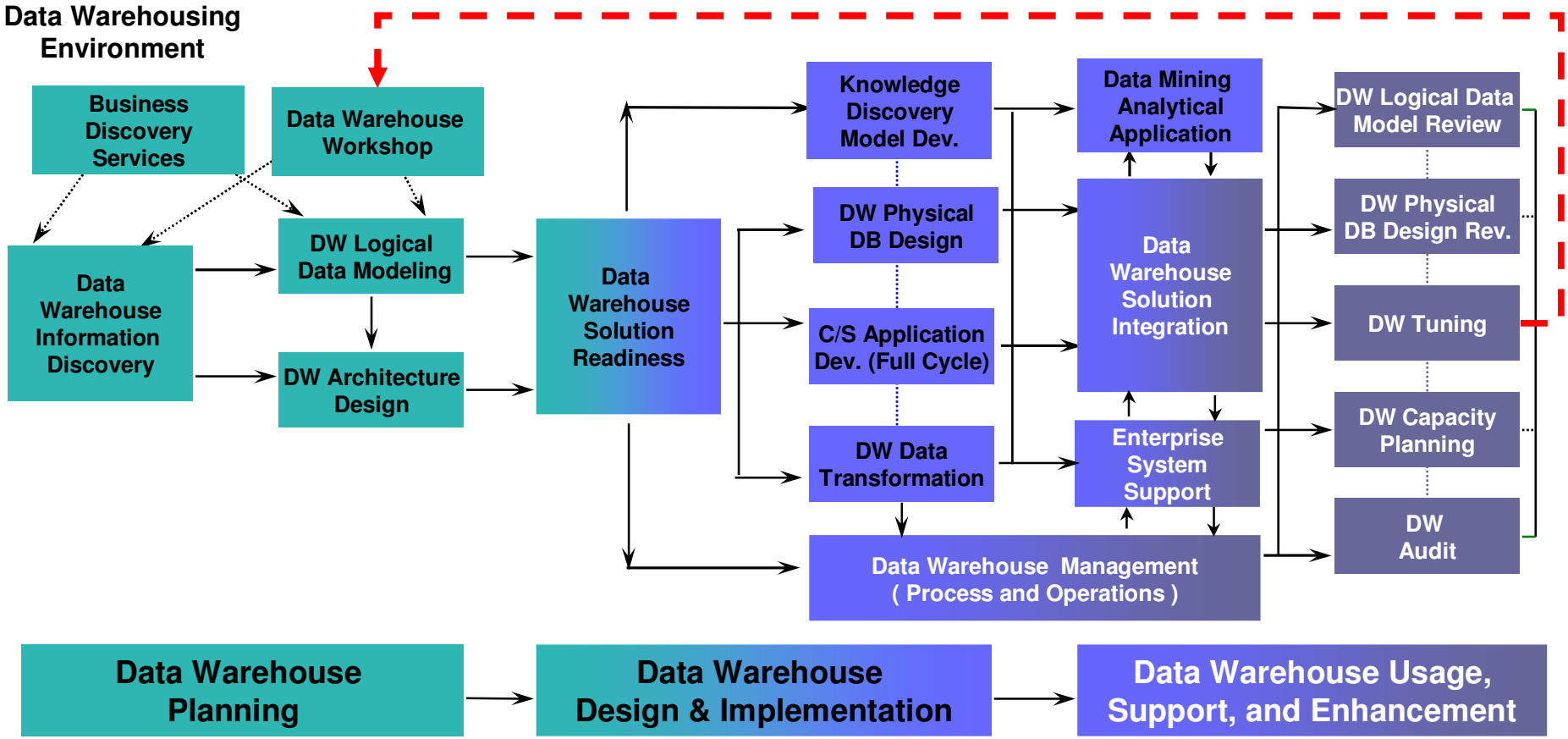
Transaction systems		*Business intelligence systems*
Automate processes	⟷	Support decision making
Designed for efficiency	⟷	Designed for effectiveness
Structure the business	⟷	Adapt to the business
React to events	⟷	Anticipate events
Optimized for transactions	⟷	Optimized for queries

Transaction vs. BI Data

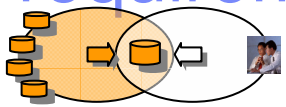
Transaction data		*Business intelligence data*
Current	⟷	Historical
Continuously updated	⟷	Periodic snapshots
Source-specific	⟷	Integrated
Application-oriented	⟷	Subject-oriented
Detailed only	⟷	Detailed, summarized, & derived

Building and managing a data warehouse is a continuous iterative process…

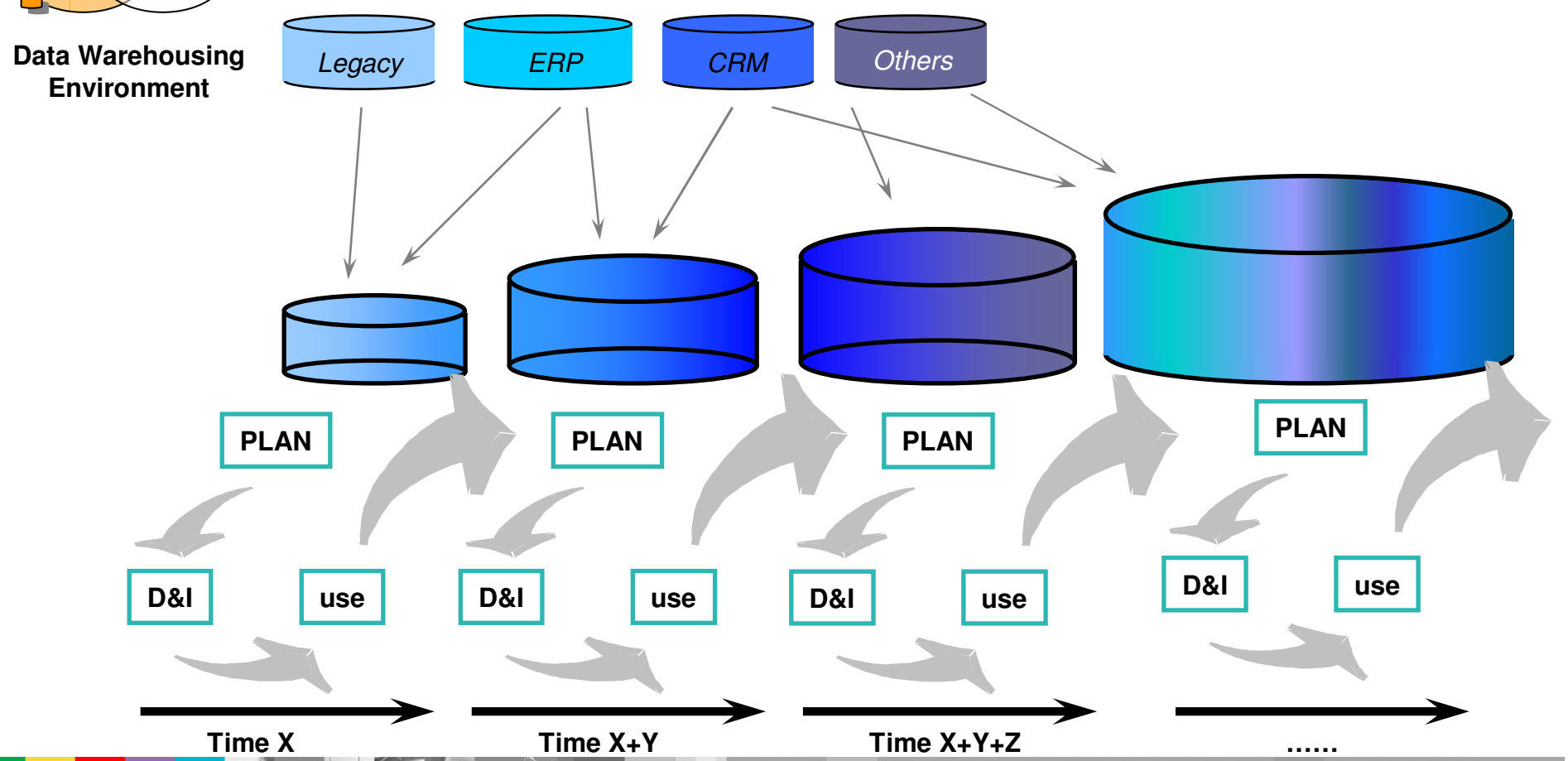




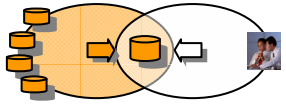
… with new data sources or applications added incrementally with new or changing business requirements.



Data Warehousing Environment



New data or applications for the EDW should be prioritized and approved by a central governance committee.



Data Warehousing Environment

Projects Sent to CIO for Exception

Approved Project on EDW or Other

External Vendor Develops & Implements

If business case is not approved or EDW resources are not available & business unit wants to fund & develop project outside IT

Identify Projects w DSS Rqrmnts

Prioritize Projects by Business Benefit

Complete Business Case

Prioritize Projects w Approved Business Case

Plan & Schedule Approved EDW Projects

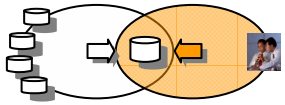
IT Develop & Implement EDW Projects

Business Units

Business case includes strategic objectives for business & IT architectures

EDW Steering Committee

The landscape for analytical tools.



Analytical Environment

Strategic & Tactical Analysis

Operational Analysis

REPORTING
What happened?
Operational Reports
Web Reports
Exception Reports
Scorecards
75% of usage

ANALYZING
Why did it happen?
OLAPs
Planning
Forecasting
20% of usage

PREDICTING
What will happen?
Statistical models
Affinity Analysis
Optimization
Simulation
5% of usage

OPERATIONAL
What is happening?
Dashboards
Alerts
Decision Engines
Events detection
75% of usage

Historical Data (Data Warehouse/Marts)

Real-Time Data (OS/EAI)

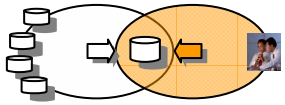
Business Performance Management

Data Mining & Predictive Modeling

Business Process Monitoring

analytical & operational sophistication

The adoption of analytical tools typically also follows an evolution process of increasing complexity.



Analytical Environment

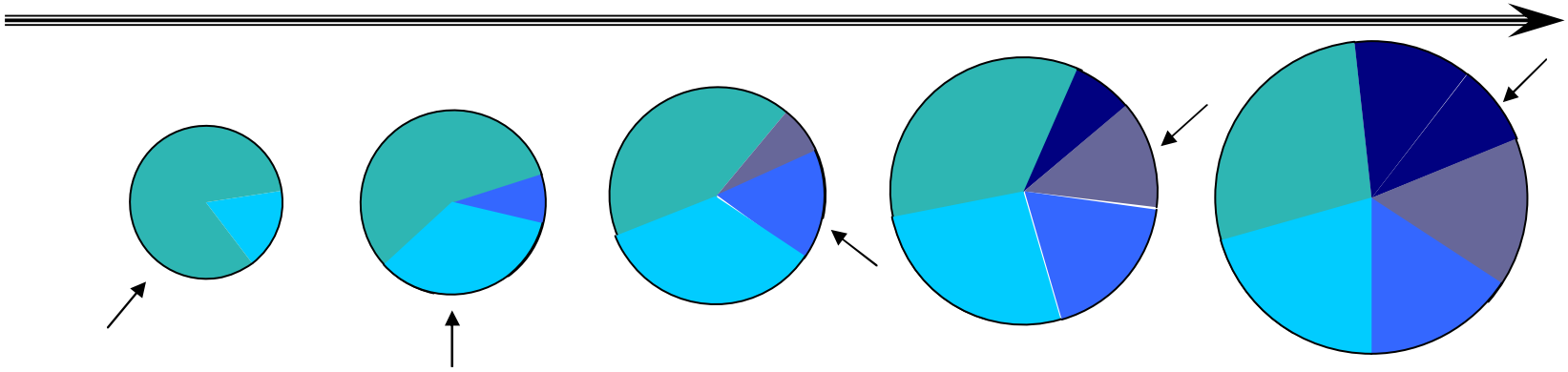
STAGE 1
REPORTING
WHAT happened?

STAGE 2
ANALYZING
WHY did it happen?

STAGE 3
PREDICTING
WHAT will happen?

STAGE 4
OPERATIONALIZING
What IS happening?

STAGE 5
ACTIVE WAREHOUSING
What do I WANT to happen?



Primarily Batch with Pre-defined Queries and reports

Increase in Ad Hoc Queries Early Data Mining

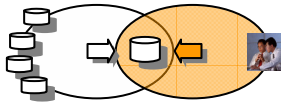
Data Mining & Analytical Modeling Capability Grows

Continuous Update & Time Sensitive Queries Gain Importance

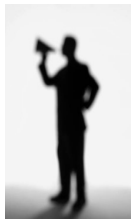
Event Based Triggering takes hold

Batch | Ad Hoc | Analytics | Continuous Update/Short Queries | Event-Based Triggering

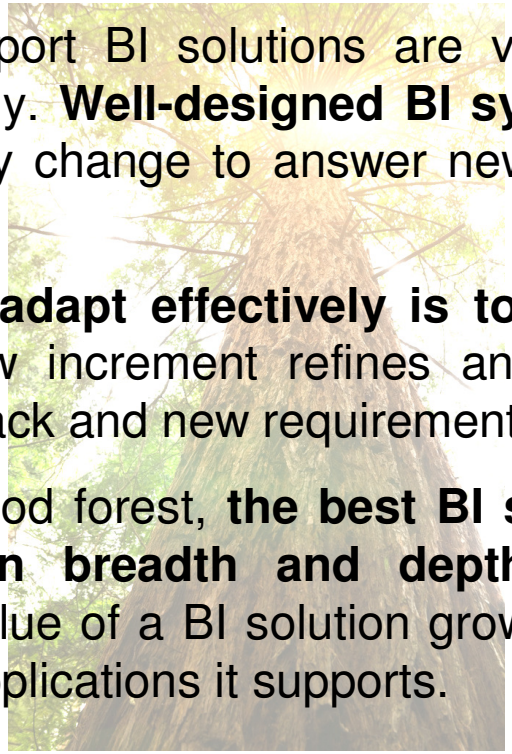
Different user types exist, that require different analytical tools and access.



Analytical Environment

	Needs	Tools
Decision Makers 	▪ BU managers and leaders ▪ Fast access to KPI scores and click and point reports based on their subject area of interest	▪ Predefined scorecards ▪ Reporting Tools ▪ 10s users
Analysts & Specialists	▪ Support decision makers ▪ Detailed data across full spectrum of enterprise – the freedom to ask any question to find the root causes and breakthrough insights	▪ Specialist applications eg. risk ▪ Statistical Modelling ▪ Ad Hoc query tools ▪ 100s users
Operational Users	▪ Frontline and processing staff ▪ Fast access to profiles of customers in order to make the right service, sales, approval decisions	▪ Look up access screens ▪ Web or operational system based ▪ 1000s Users

What do the best BI solution and system looks like?



The systems that support BI solutions are very different from other systems in the company. **Well-designed BI systems are adaptive by nature**; they continually change to answer new and different business questions.

And the **best way to adapt effectively is to start small and grow organically**. Each new increment refines and extends the solution, adjusting to user feedback and new requirements.

Like a sprawling redwood forest, **the best BI solutions take years to mature, expanding in breadth and depth over time**. It is no coincidence that the value of a BI solution grows exponentially with the number of users and applications it supports.

TDWI Report Series: "Smart Companies in the 21st Century: The Secrets of Creating Successful Business Intelligence Solutions"

Characteristics of successful BI

- **Business sponsors are highly committed** and actively involved in the project.
- Business users and the BI technical **team work together closely**.
- The **BI system is viewed as an enterprise resource and given adequate funding and guidance** to ensure long-term growth and viability.
- Organization **provide users both static and interactive online views** of data.
- The **BI team has prior experience with BI** and is assisted by vendor and independent consultants in a partnership arrangement.
- The **company's organizational culture** reinforces the BI solution.

Guidelines for successful BI

Step 1: Establish a BI Vision and Evangelize it

Step 2: Develop a BI Roadmap to Prioritize Initiatives

Step 3: Establish BI Governance & Funding Process

Step 4: Establish BI Competency Centre (BICC)

Step 5: Align Business and IT for the Long Haul

Step 6: Measure and Track ROI/Benefits from BI

Step 7: Build Trust in the System

Guidelines for successful BI

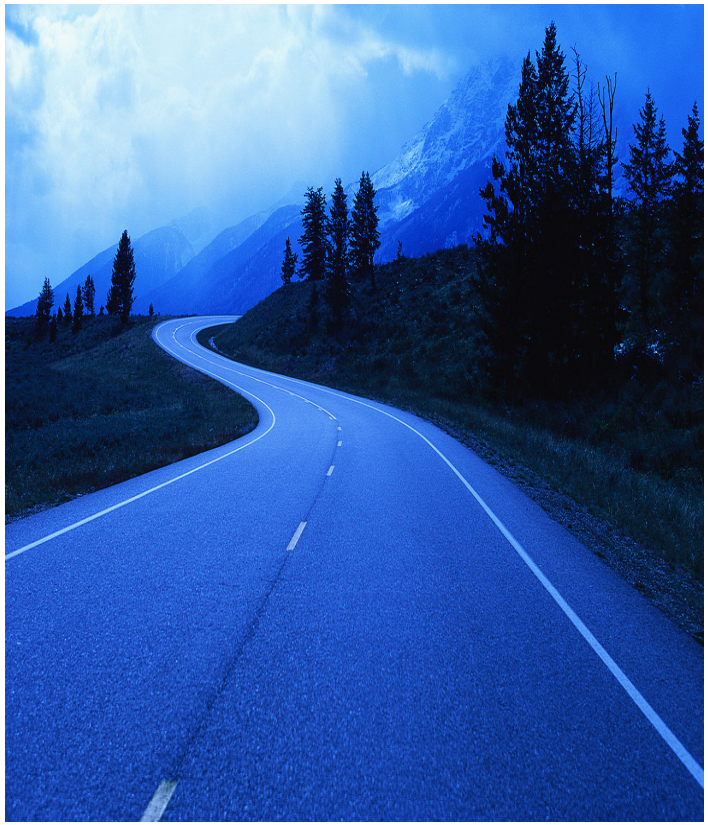
Step 1: Establish a BI Vision and Evangelize it

- Determine the overall role that BI will play in driving business strategy, which drives the base vision technology state and configuration
- Determine the vision and key business drivers, which drives the scope (business units) breadth (data subject areas)
- Determine the business initiatives, which will drive the applications and knowledge assets required

Guidelines for successful BI

Step 2: Develop a BI Roadmap to Prioritize BI Initiatives

- Prioritize business initiatives by ROI, strategic value and ease of execution
- Overlay the cost savings from data mart consolidation and centralization
- Develop a roadmap for integration with minimum costs (funded through centralization benefits) and maximum benefits generation (through enabling business initiatives)



Guidelines for successful BI

Step 3: Establish BI Governance & Funding Process

- Establish governance structures, executives, data governance board and teams
- Establish business intelligence communities and support structures
- Business sponsors need to secure initial funding to launch the project. More important, they need to sustain funding over the life of the BI portfolio and allocate funds to build and maintain an enterprise BI infrastructure.

Guidelines for successful BI

Step 4: Establish BI Competency Centre (BICC)

- The enterprise wide data warehouse creates a need for new skills in data analysis. A BICC is a central pool of skilled resources and specialists which can be shared by all business units.
- The BICC acts as a champion driving the EDW initiatives & awareness
- The BICC is full-time team dedicated to the data warehouse, and develops full knowledge and expertise in the data, analysis techniques and models

Guidelines for successful BI

Step 5: Align Business and IT for the Long Haul

- Extraordinarily successful BI projects all have an enterprise scope that took years to implement. The journey requires by a close-knit team of developers and business people who work hand in hand to deliver actionable information to the users who need it.
- Ensure alignment between the business and technical development teams by use joint application development sessions to bring the two groups together to gain a common understanding.

Guidelines for successful BI

Step 6: Measure and Track ROI/Benefits from BI

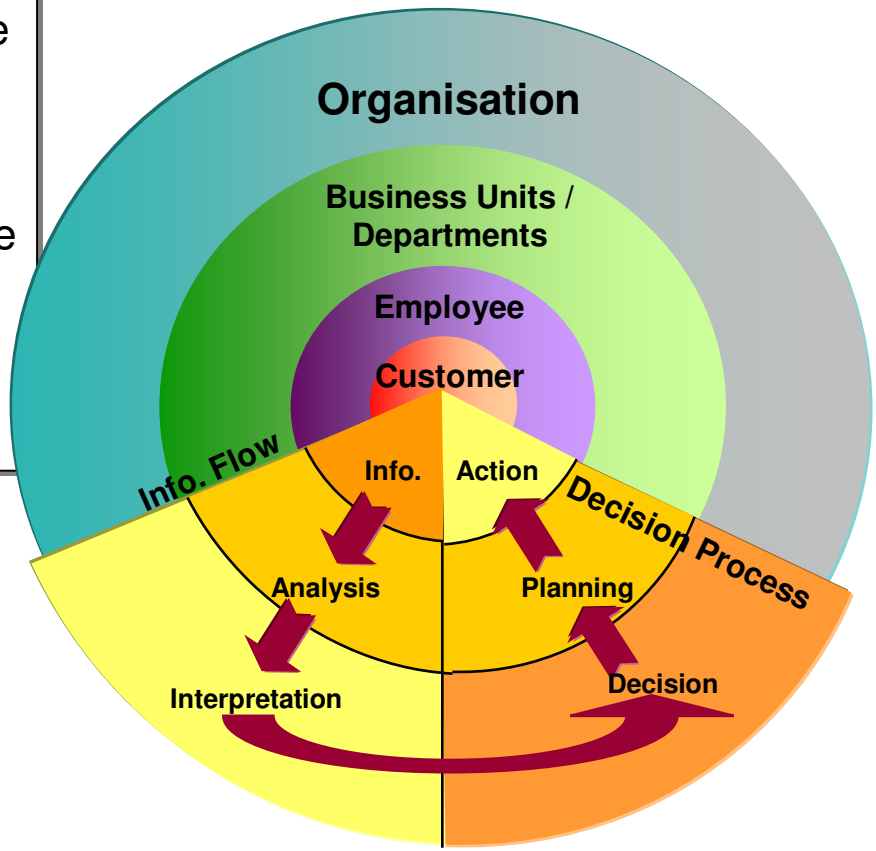
- BI is a journey and not a short term project. Many a times, organizations loose sight and confidence of the original objectives.
- The way to overcome this is to start small and expand with this baseline.
- At the same time, make conscious effort to measure and track any ROI/benefits that is derived from BI (tangible or intangible)
- The clear demonstration of success brings confidence to progress while the loses indicates opportunities for improvements.

Guidelines for successful BI

Step 7: Build Trust in the System

- There are very few ways to directly increase the credibility of a system, but hundreds of ways to undermine it.
- The only way to build trust in a new BI solution is to have the business team own the solution and make all the decisions within predefined technical boundaries (design, data model, sourcing & validation).
- Business sponsors need to make sure that, in their eagerness to build the BI solution, they don't set arbitrary deadlines.
- The technical team needs to provide a bullet-proof technical environment that adapts rapidly to changes in business requirements.

In short, BI can help us become more intelligent about the way we do business.

Smart companies in the 21st century use business intelligence (BI) solutions to gain a clearer picture of their internal operations, customers, supply chain, and financial performance. They also derive significant ROI by using BI to devise better tactics and plans, respond more effectively to emergencies, and capitalize more quickly on new opportunities. In short, they are using BI to become intelligent about the way they do business.

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