



商業智慧實務

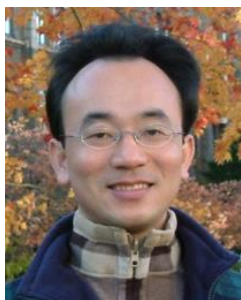
Practices of Business Intelligence

企業績效管理 (Business Performance Management)

1032BI03

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Wed, 9,10 (16:10-18:00) (B130)



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課程大綱 (Syllabus)

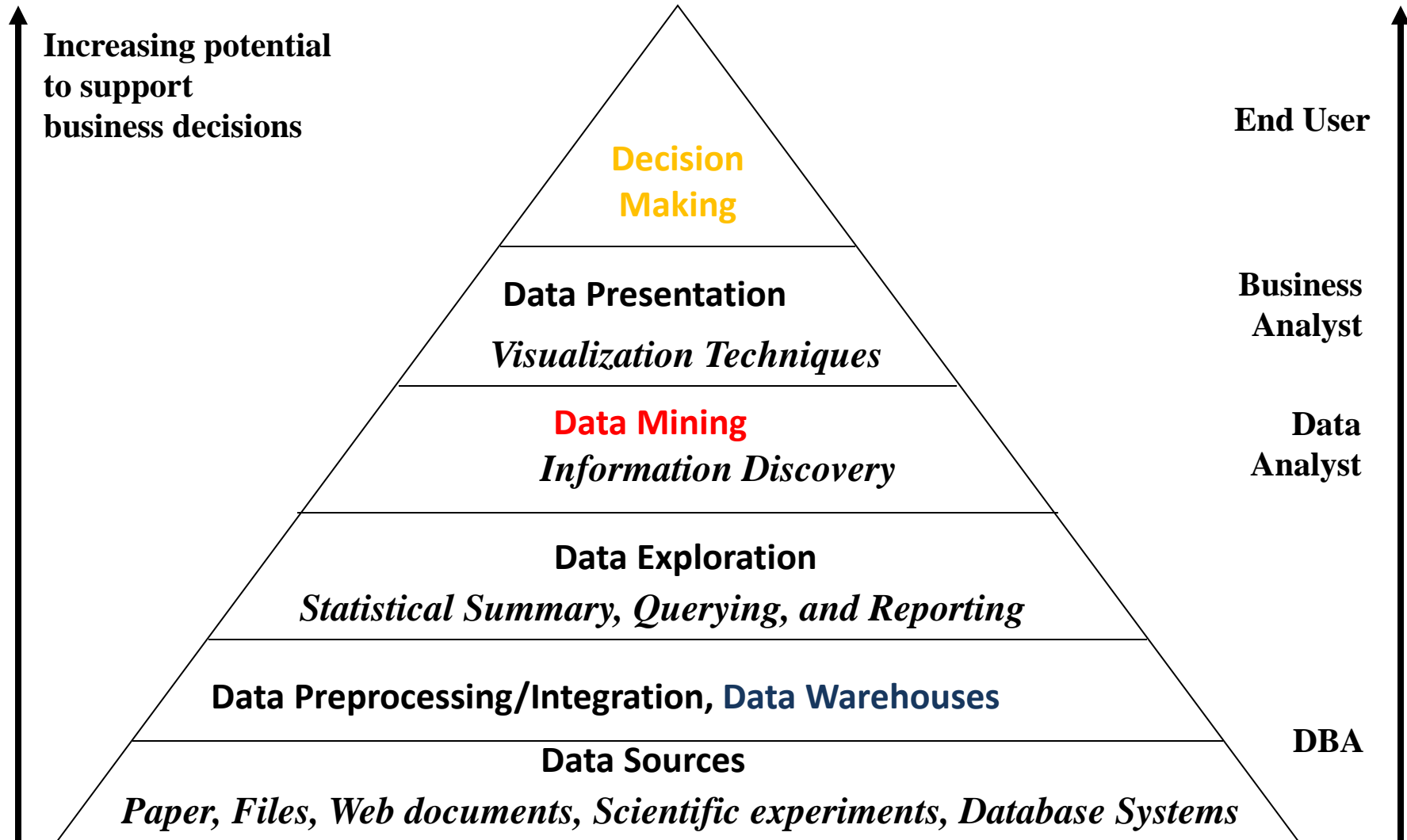
週次 (Week)	日期 (Date)	內容 (Subject/Topics)
1	2015/02/25	商業智慧導論 (Introduction to Business Intelligence)
2	2015/03/04	管理決策支援系統與商業智慧 (Management Decision Support System and Business Intelligence)
3	2015/03/11	企業績效管理 (Business Performance Management)
4	2015/03/18	資料倉儲 (Data Warehousing)
5	2015/03/25	商業智慧的資料探勘 (Data Mining for Business Intelligence)
6	2015/04/01	教學行政觀摩日 (Off-campus study)
7	2015/04/08	商業智慧的資料探勘 (Data Mining for Business Intelligence)
8	2015/04/15	資料科學與巨量資料分析 (Data Science and Big Data Analytics)

課程大綱 (Syllabus)

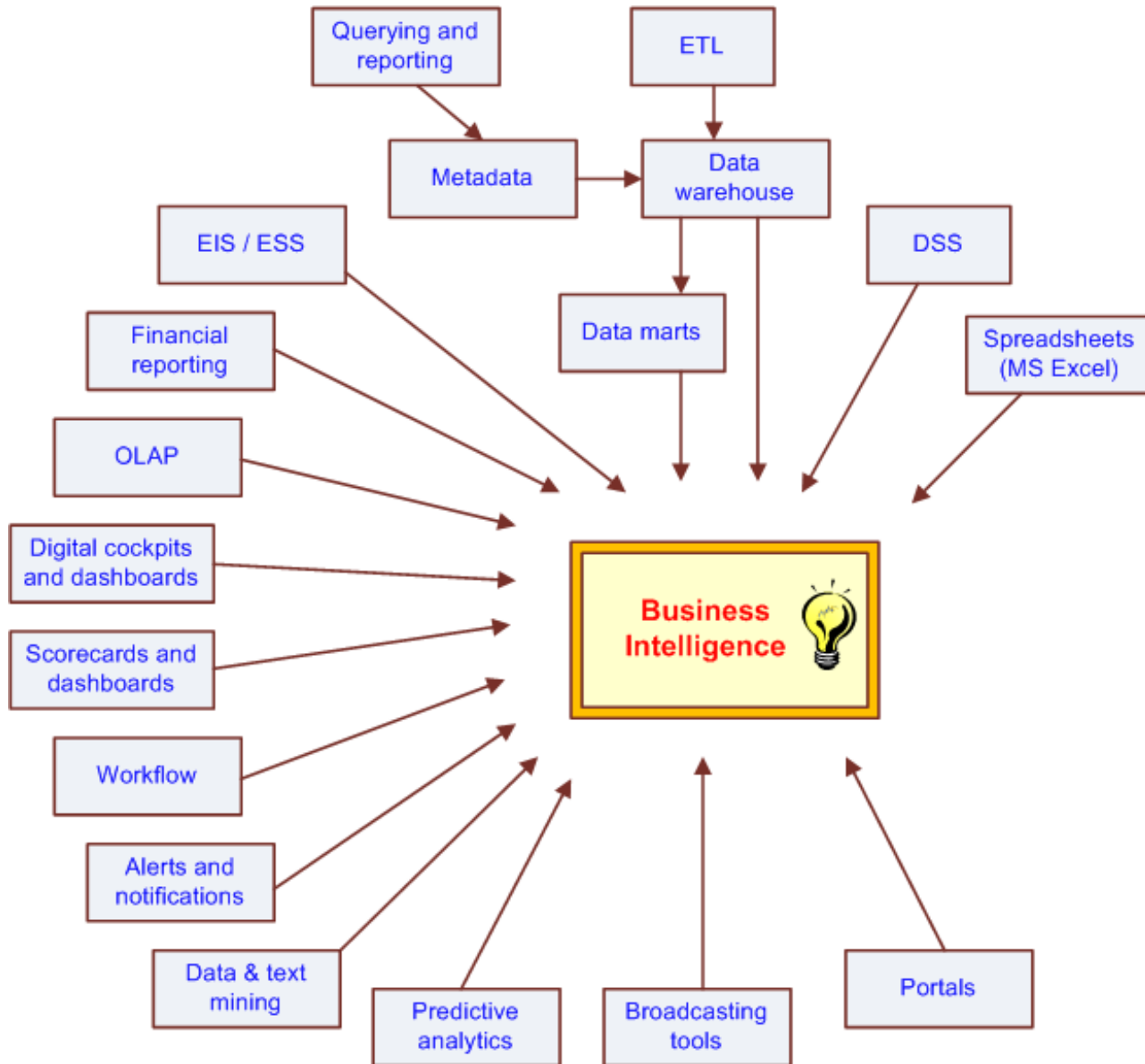
週次	日期	內容 (Subject/Topics)
9	2015/04/22	期中報告 (Midterm Project Presentation)
10	2015/04/29	期中考試週 (Midterm Exam)
11	2015/05/06	文字探勘與網路探勘 (Text and Web Mining)
12	2015/05/13	意見探勘與情感分析 (Opinion Mining and Sentiment Analysis)
13	2015/05/20	社會網路分析 (Social Network Analysis)
14	2015/05/27	期末報告 (Final Project Presentation)
15	2015/06/03	畢業考試週 (Final Exam)

Business Intelligence

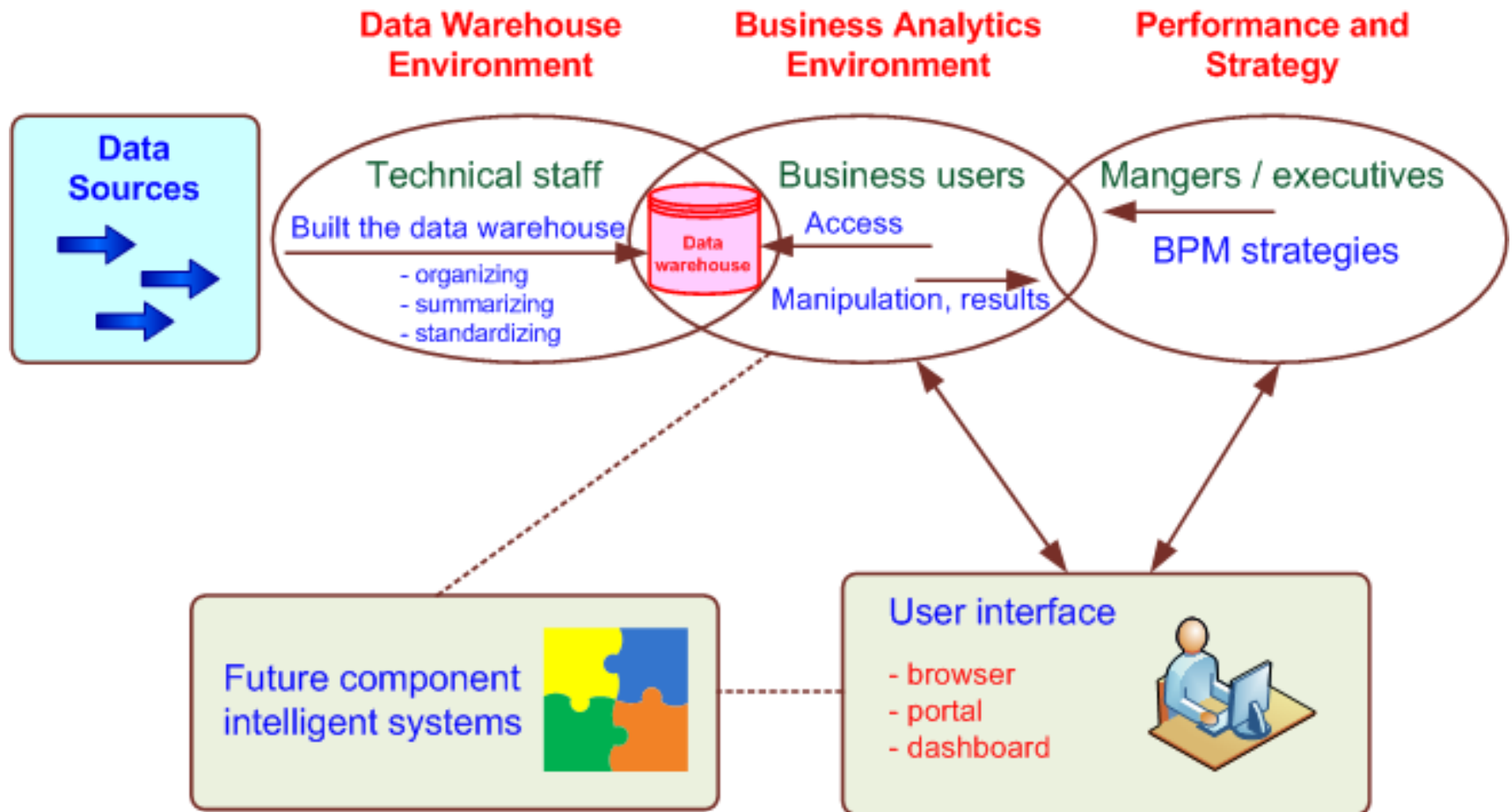
Data Mining, Data Warehouses



The Evolution of BI Capabilities



A High-Level Architecture of BI



Decision Support and Business Intelligence Systems

Chapter 9:

Business Performance Management

Learning Objectives

- Business Performance Management (BPM)
 - $BPM = BI + Planning$
- Closed-Loop Process to Optimize Business Performance
 - Strategize, Plan, Monitor, Act /Adjust
- Performance Measurement
- BPM Methodologies
 - Balanced scorecard (BSC)
 - Six Sigma
- BPM Architecture and Applications
- Performance Dashboards

Business Performance Management (BPM) Overview

- Business Performance Management (BPM) is...
A real-time system that alert managers to potential opportunities, impending problems, and threats, and then empowers them to react through models and collaboration
- Also called, corporate performance management (CPM by Gartner Group), enterprise performance management (EPM by Oracle), strategic enterprise management (SEM by SAP)

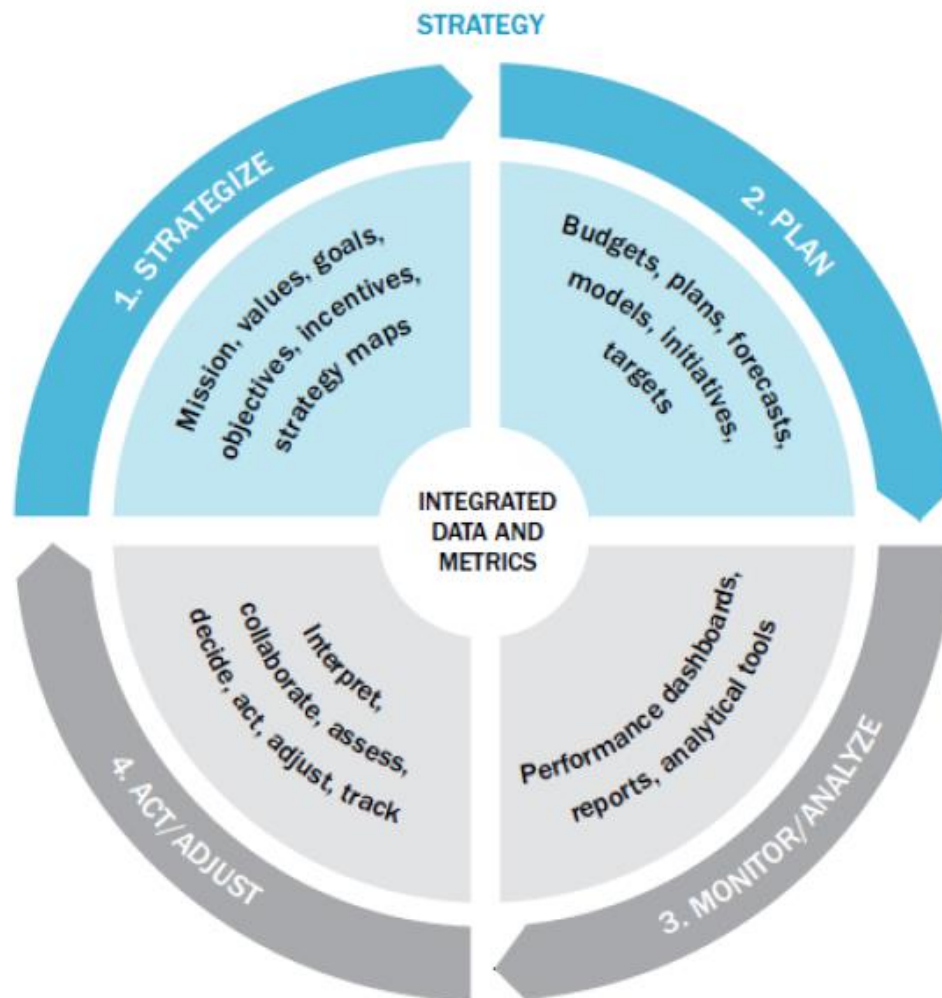
Business Performance Management (BPM) Overview

- BPM refers to the business processes, methodologies, metrics, and technologies used by enterprises to measure, monitor, and manage business performance
- BPM encompasses three key components
 - A set of integrated, closed-loop management and analytic processes, supported by technology ...
 - Tools for businesses to define strategic goals and then measure/manage performance against them
 - Methods and tools for monitoring key performance indicators (KPIs), linked to organizational strategy

BPM versus BI

- BPM is an outgrowth of BI and incorporates many of its technologies, applications, and techniques
 - Same companies market and sell them
 - BI has evolved so that many of the original differences between the two no longer exist (e.g., BI used to be focused on departmental rather than enterprise-wide projects)
 - BI is a crucial element of BPM
- **BPM = BI + Planning** (a unified solution)

A Closed-Loop Process to Optimize Business Performance



- Process Steps
 1. Strategize
 2. Plan
 3. Monitor/analyze
 4. Act/adjust

Each with its own process steps...



A Closed-Loop Process to Optimize Business Performance

1. Strategize: Where Do We Want to Go?
2. Plan: How Do We Get There?
3. Monitor: How Are We Doing?
4. Act /Adjust: What Do We Need to Do Differently?



Strategize:

Where Do We Want to Go?

- Strategic planning
 - **Common tasks for the strategic planning process:**
 1. Conduct a current situation analysis
 2. Determine the planning horizon
 3. Conduct an environment scan
 4. Identify critical success factors
 5. Complete a gap analysis
 6. Create a strategic vision
 7. Develop a business strategy
 8. Identify strategic objectives and goals



Strategize:

Where Do We Want to Go?

- **Strategic objective**

A broad statement or general course of action prescribing targeted directions for an organization

- **Strategic goal**

A quantified objective with a designated time period

- **Strategic vision**

A picture or mental image of what the organization should look like in the future

- **Critical success factors (CSF)**

Key factors that delineate the things that an organization must excel at to be successful



Strategize:

Where Do We Want to Go?

“90 percent of organizations fail to execute their strategies”

- The strategy gap
 - Four sources for the gap between strategy and execution:
 1. Communication (enterprise-wide)
 2. Alignment of rewards and incentives
 3. Focus (concentrating on the core elements)
 4. Resources



Plan:

How Do We Get There?

- Operational planning
 - **Operational plan:** plan that translates an organization's strategic objectives and goals into a set of well-defined tactics and initiatives, resources requirements, and expected results for some future time period (usually a year)
- Operational planning can be
 - Tactic-centric (operationally focused)
 - Budget-centric plan (financially focused)



Plan:

How Do We Get There?

- Financial planning and budgeting
 - An organization’s strategic objectives and key metrics should serve as top-down drivers for the allocation of an organization’s tangible and intangible assets
 - Resource allocations should be carefully aligned with the organization’s strategic objectives and tactics in order to achieve strategic success



Monitor: How Are We Doing?

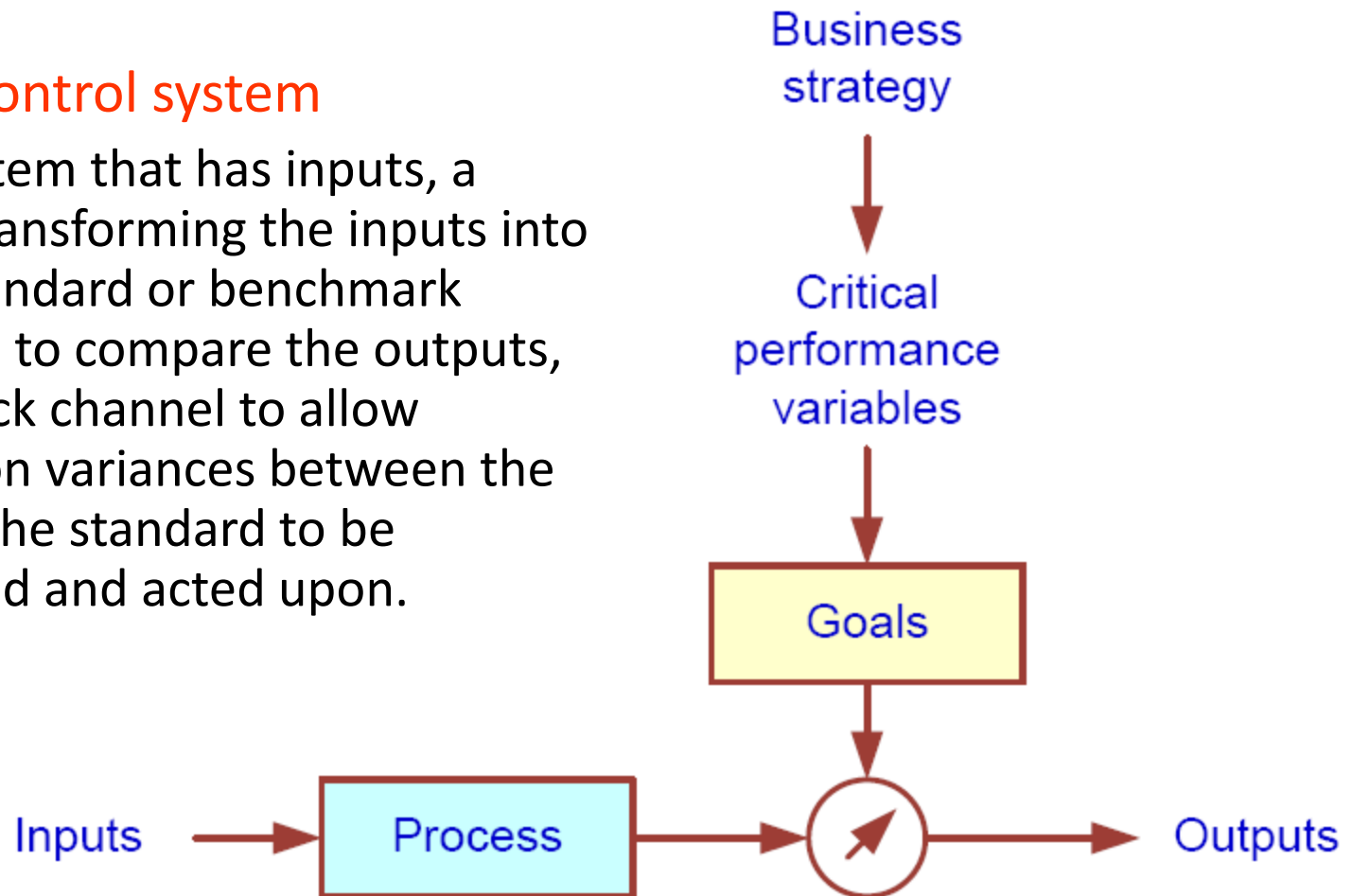
- A comprehensive framework for monitoring performance should address two key issues:
 - What to monitor
 - Critical success factors
 - Strategic goals and targets
 - How to monitor



Monitor: How Are We Doing?

- **Diagnostic control system**

A cybernetic system that has inputs, a process for transforming the inputs into outputs, a standard or benchmark against which to compare the outputs, and a feedback channel to allow information on variances between the outputs and the standard to be communicated and acted upon.





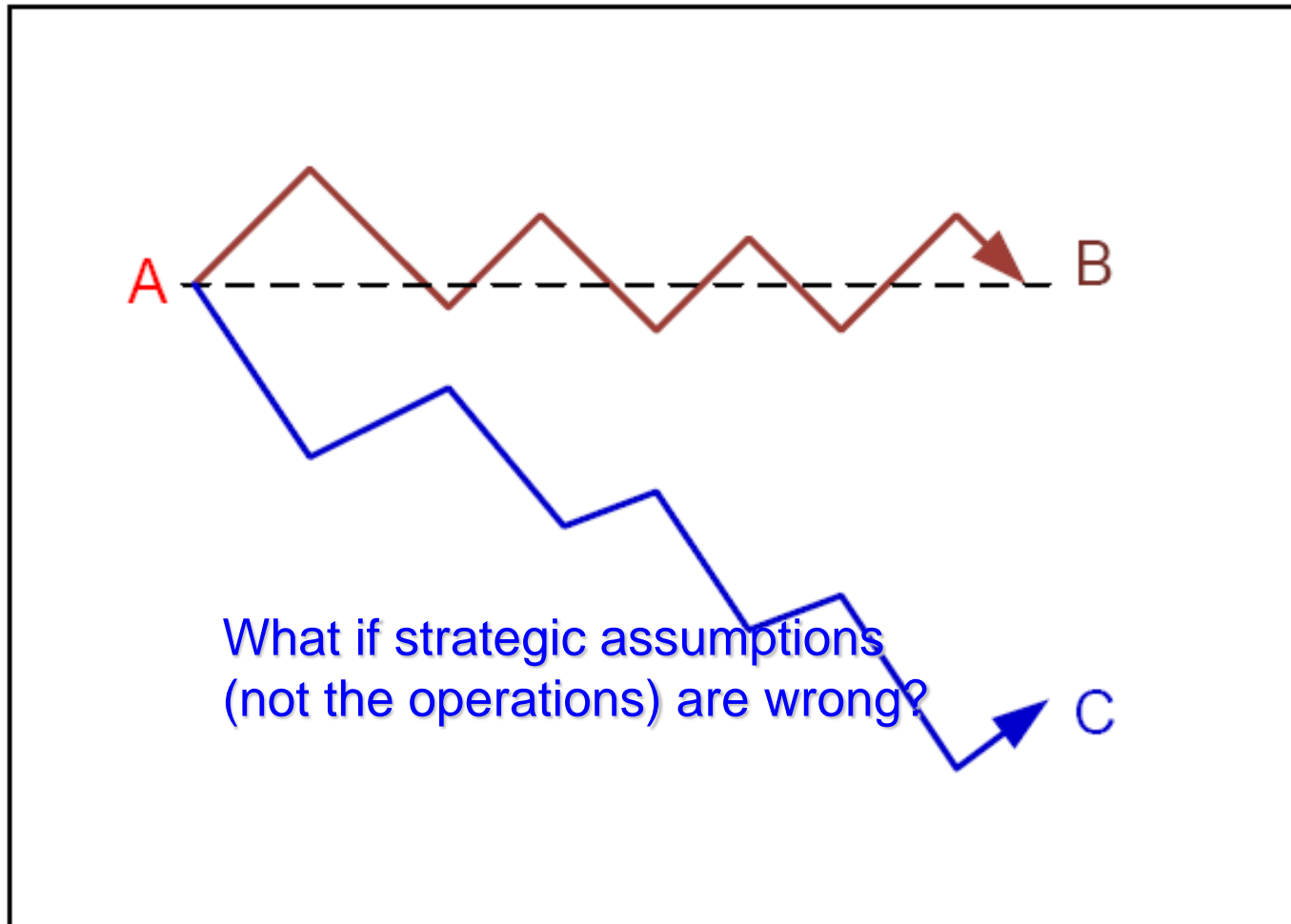
Monitor:

How Are We Doing?

- Pitfalls of variance analysis
 - The vast majority of the exception analysis focuses on negative variances when functional groups or departments fail to meet their targets
 - Rarely are positive variances reviewed for potential opportunities, and rarely does the analysis focus on assumptions underlying the variance patterns



Monitor: How Are We Doing?





Act and Adjust:

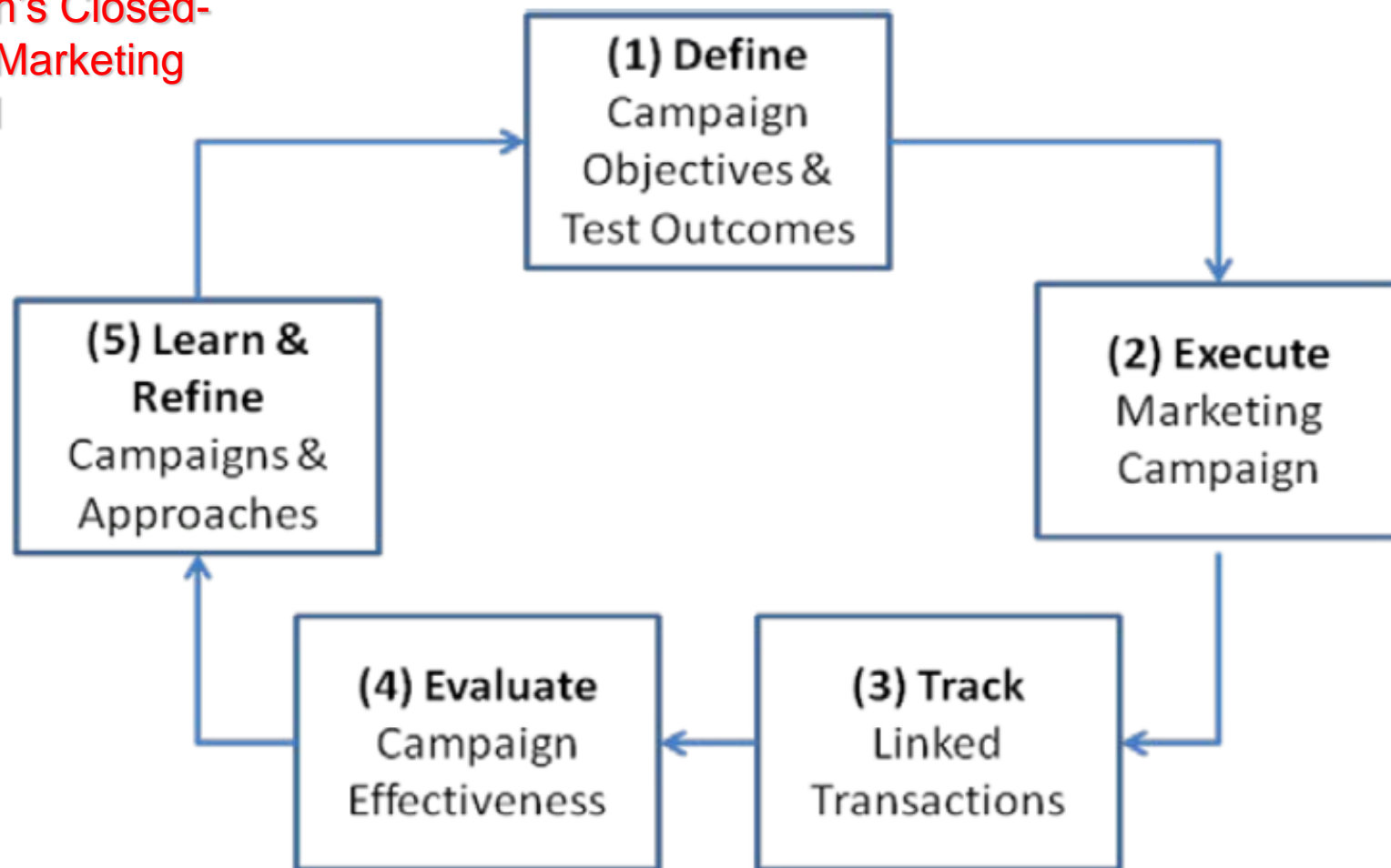
What Do We Need to Do Differently?

- Success (or mere survival) depends on new projects: creating new products, entering new markets, acquiring new customers (or businesses), or streamlining some process.
- Most new projects and ventures fail!
 - Hollywood movies: 60% chance of failure
 - Mergers and acquisitions: 60%
 - IT projects (large-scale): 70%
 - New food products: 80%
 - New pharmaceutical products: 90% ...



Act and Adjust: What Do We Need to Do Differently?

Harrah's Closed-
Loop Marketing
Model





Act and Adjust:

What Do We Need to Do Differently?

- The Hackett Group's benchmarking results indicate that world class companies:
 - Are significantly more efficient than their peers at managing costs
 - Focus on operational excellence and experience significantly reduced rates of employee turnover
 - Provide management with the tools and training to leverage corporate information and to guide strategic planning, budgeting, and forecasting
 - Closely align strategic and tactical plans, enabling functional areas to contribute more effectively...

Performance Measurement

- **Performance measurement system**

A system that assists managers in tracking the implementations of business strategy by comparing actual results against strategic goals and objectives

- Comprises systematic comparative methods that indicate progress (or lack thereof) against goals

Performance Measurement

- **Key performance indicator (KPI)**

A KPI represents a strategic objective and metrics that measures performance against a goal

- **Distinguishing features of KPIs**

- Strategy

- Targets

- Ranges

- Encodings

- Time frames

- Benchmarks

Performance Measurement

- **Key performance indicator (KPI)**

Outcome KPIs vs. **Driver KPIs**
(lagging indicators (leading indicators
e.g., revenues) e.g., sales leads)

- Operational areas covered by driver KPIs
 - Customer performance
 - Service performance
 - Sales operations
 - Sales plan/forecast

Performance Measurement

- Problems with existing performance measurement systems
 - The most popular system in use is some variant of the balanced scorecard (BSC)
 - 50-90% of all companies implemented BSC
 - BSC methodology is a holistic vision of a measurement system tied to the strategic direction of the organization and based on a four-perspective view of the world:
 - Financial measures supported by customer, internal, and learning and growth metrics

Performance Measurement

- The drawbacks of using financial data as the core of a performance measurement:
 - Financial measures are usually reported by organizational structures and not by the processes that produced them
 - Financial measures are lagging indicators, telling us what happened, not why it happened or what is likely to happen in the future
 - Financial measures are often the product of allocations that are not related to the underlying processes that generated them
 - Financial measures are focused on the short-term returns...

“Financial
myopia”

Performance Measurement

- Good performance measures should:
 - Be focused on key factors
 - Be a mix of past, present, and future
 - Balance the needs of all stakeholders (shareholders, employees, partners, suppliers, ...)
 - Start at the top and trickle down to the bottom
 - Have targets that are based on research and reality rather than be arbitrary

BPM Methodologies

- An effective performance measurement system should help:
 - Align top-level strategic objectives and bottom-level initiatives
 - Identify opportunities and problems in a timely fashion
 - Determine priorities and allocate resources accordingly
 - Change measurements when the underlying processes and strategies change
 - Delineate responsibilities, understand actual performance relative to responsibilities, and reward and recognize accomplishments
 - Take action to improve processes and procedures when the data warrant it
 - Plan and forecast in a more reliable and timely fashion

BPM Methodologies

- **Balanced scorecard (BSC)**

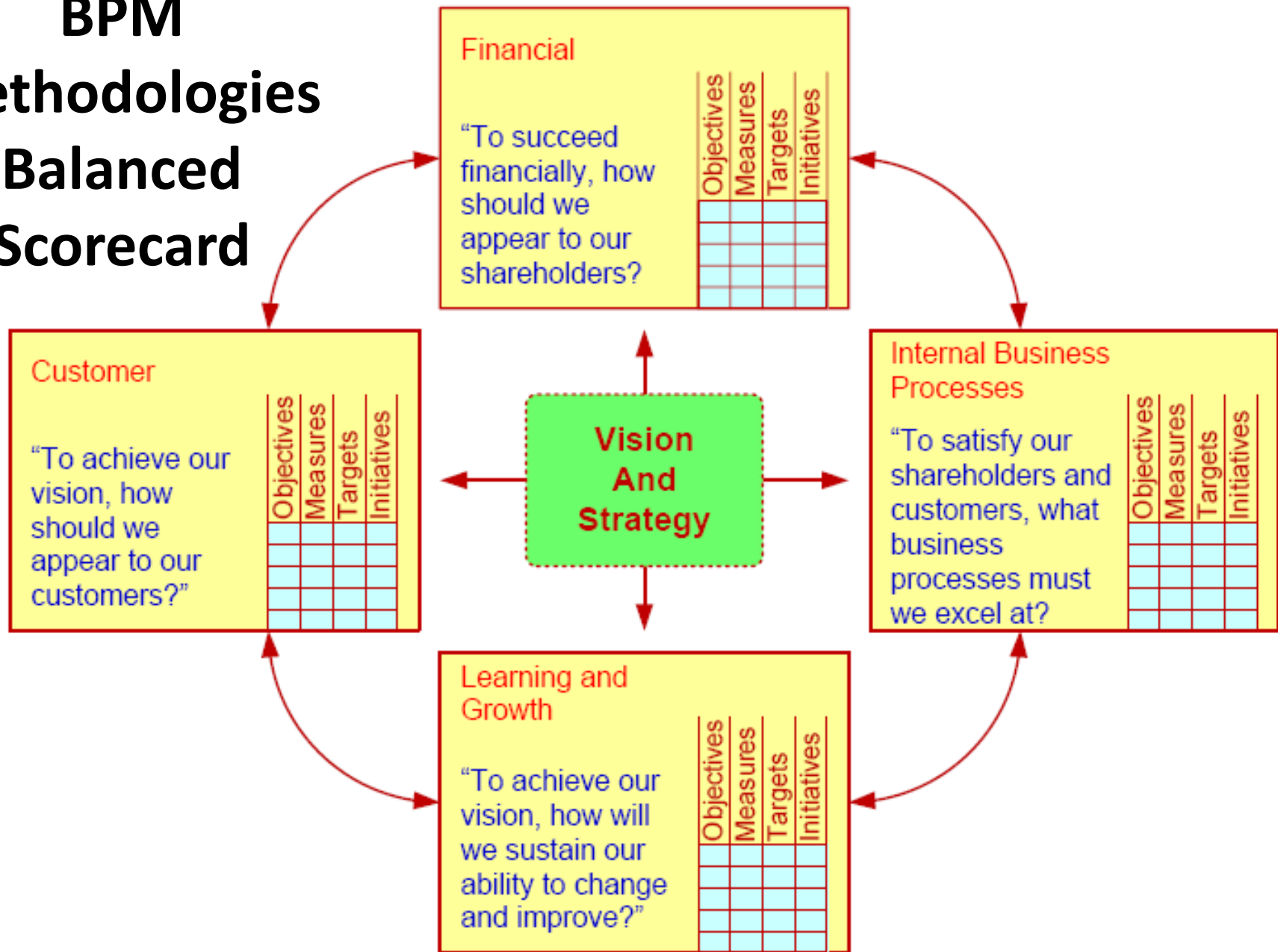
A performance measurement and management methodology that helps translate an organization's financial, customer, internal process, and learning and growth objectives and targets into a set of actionable initiatives

- "The Balanced Scorecard: Measures That Drive Performance" *(HBR, 1992)*

BPM

Methodologies

Balanced Scorecard



BPM Methodologies

- The meaning of “balance”
 - BSC is designed to overcome the limitations of systems that are financially focused
 - Nonfinancial objectives fall into one of three perspectives:
 1. Customer
 2. Internal business process
 3. Learning and growth

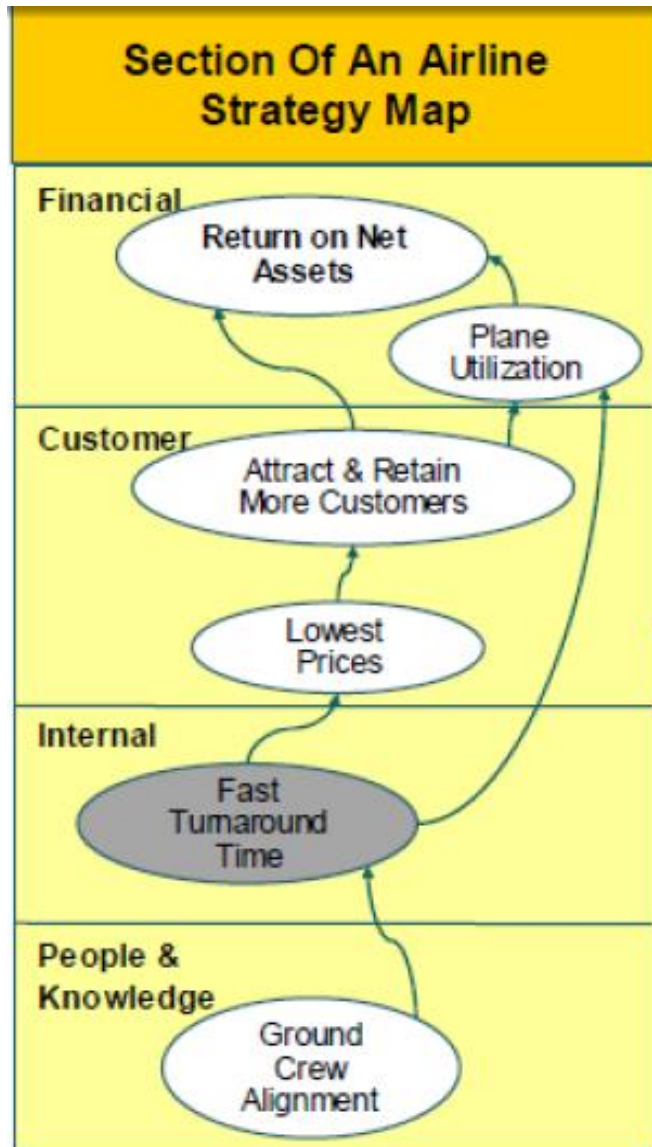
BPM Methodologies

- In BSC, the term “balance” arises because the combined set of measures are supposed to encompass indicators that are:
 - Financial and nonfinancial
 - Leading and lagging
 - Internal and external
 - Quantitative and qualitative
 - Short term and long term

BPM Methodologies

- Aligning **strategies** and **actions**
- A six-step process
 1. Developing and formulating a strategy
 2. Planning the strategy
 3. Aligning the organization
 4. Planning the operations
 5. Monitoring and learning
 6. Testing and adapting the strategy

BPM Methodologies



- **Strategy map**
A visual display that delineates the relationships among the key organizational objectives for all four BSC perspectives

Strategy Map and Balanced Scorecard

	Strategy Map: Linked Objectives	Balanced Scorecard: Measures and Targets		Strategic Initiatives: Action Plans
Financial	Increase Net Income	Net Income Growth	Increase 25%	
Customer	Increase Customer Retention	Maintenance retention rate	Increase 15%	Change licensing and maintenance contracts
Internal Business Process	Improve Call Center Performance	Issue turnaround time	Improve 30%	Standardized call center processes
Learning and Growth	Reduce Employee Turnover	Voluntary turnover rate	Reduce 25%	Salary and bonus upgrade

BPM Methodologies

- **Six Sigma**

A performance management methodology aimed at reducing the number of defects in a business process to as close to zero defects per million opportunities (DPMO) as possible

BPM Methodologies

- **Six Sigma**

- **The DMAIC performance model**

A closed-loop business improvement model that encompasses the steps of defining, measuring, analyzing, improving, and controlling a process

- **Lean Six Sigma**

- Lean manufacturing / lean production
 - Lean production versus six sigma

BPM Methodologies

- **How to Succeed in Six Sigma**
 - Six Sigma is integrated with business strategy
 - Six Sigma supports business objectives
 - Key executives are engaged in the process
 - Project selection is based on value potential
 - There is a critical mass of projects and resources
 - Projects-in-process are actively managed
 - Team leadership skills are emphasized
 - Results are rigorously tracked
- **BSC + Six Sigma = Success**

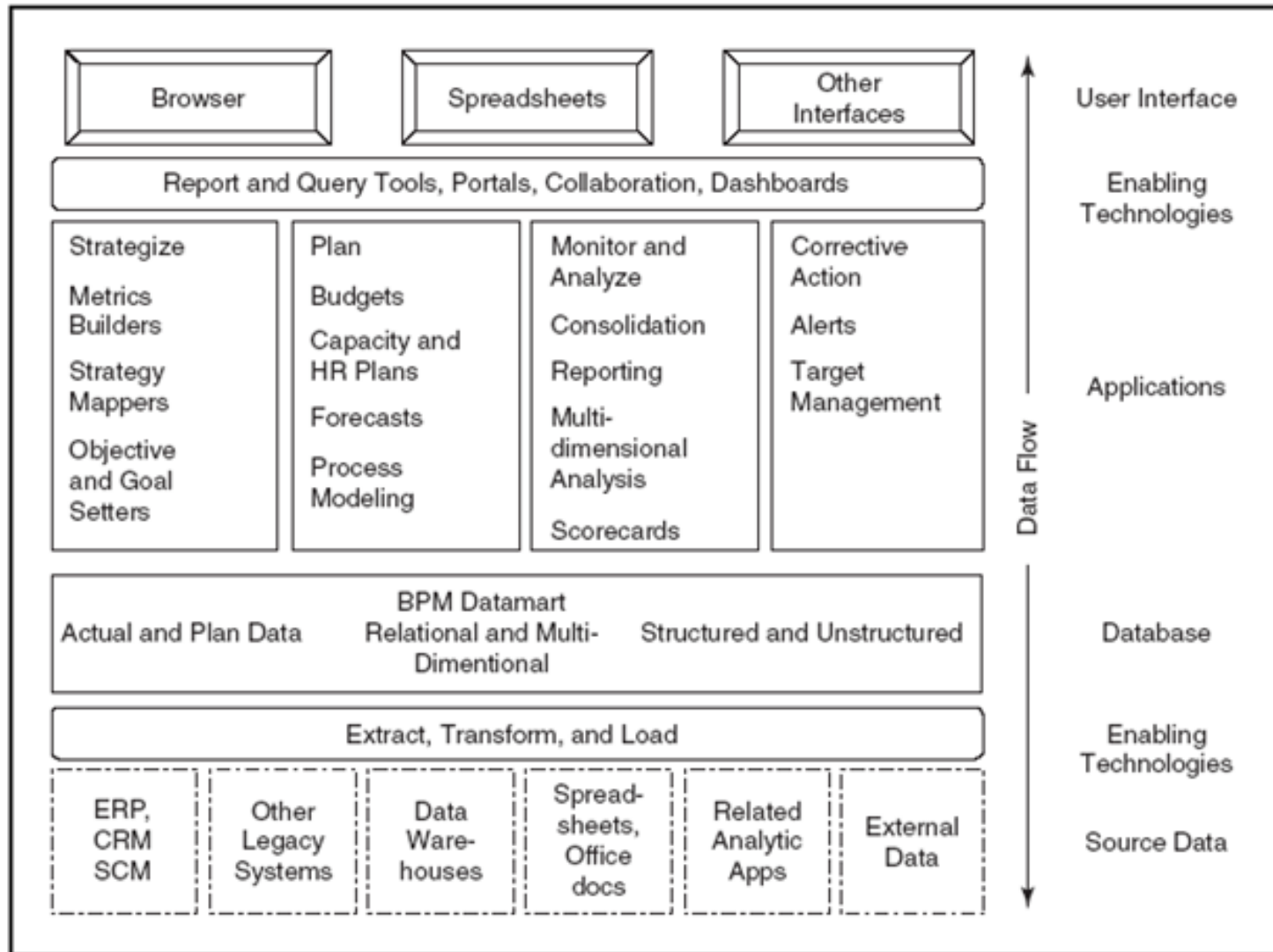
BPM Methodologies

- Integrating six sigma with BSC by
 - Translating their strategy into quantifiable objectives
 - Cascading objectives through the organization
 - Setting targets based on the voice of the customer
 - Implementing strategic projects using Six Sigma
 - Executing processes in a consistent fashion to deliver business results

BPM Architecture and Applications

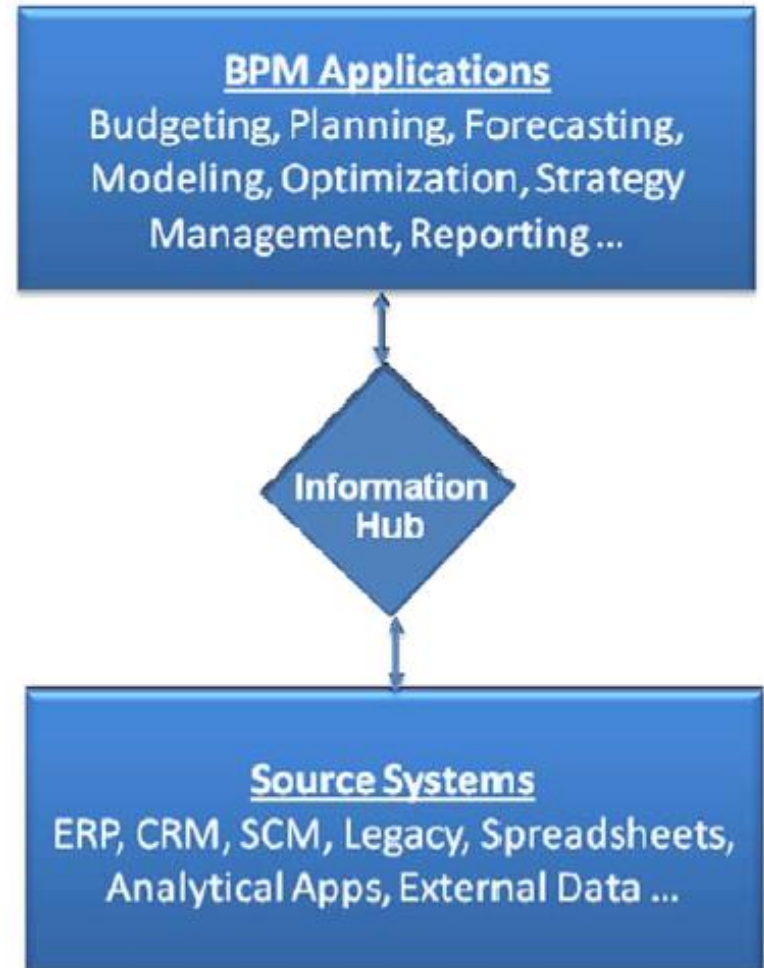
- BPM architecture
 - The logical and physical design of a system
 - BPM system consists of three logical parts:
 1. BPM Applications
 2. Information Hub
 3. Source Systems
 - BPM system consists of three physical parts:
 1. Database tier
 2. Application tier
 3. Client or user interface

BPM Architecture and Applications



BPM Architecture and Applications

- **BPM applications**
 1. Strategy management
 2. Budgeting, planning, and forecasting
 3. Financial consolidation
 4. Profitability modeling and optimization
 5. Financial, statutory, and management reporting



BPM Architecture and Applications

- Leading BPM Application Suits/Vendors
 - SAP Business Objects Enterprise Performance Management
 - Oracle Hyperion Performance Management
 - IBM Cognos BI and Financial Performance Management
 - Microstrategy
 - Microsoft
 - SAS Business Intelligence

Performance Dashboards



Performance Dashboards

- Dashboards and scorecards both provide visual displays of important information that is consolidated and arranged on a single screen so that information can be digested at a single glance and easily explored

Performance Dashboards

- Dashboards versus scorecards
 - **Performance dashboards**

Visual display used to monitor operational performance (free form...)
 - **Performance scorecards**

Visual display used to chart progress against strategic and tactical goals and targets (predetermined measures...)

Performance Dashboards

- Dashboards versus scorecards
 - Performance dashboard is a multilayered application built on a business intelligence and data integration infrastructure that enables organizations to measure, monitor, and manage business performance more effectively

- *Eckerson*

Performance Dashboards

- Three types of performance dashboards:
 1. Operational dashboards
 2. Tactical dashboards
 3. Strategic dashboards

Performance Dashboards

- Dashboard design
 - “The fundamental challenge of dashboard design is to display all the required information on a single screen, clearly and without distraction, in a manner that can be assimilated quickly”
(Few, 2005)

Performance Dashboards

- What to look for in a dashboard
 - Use of visual components (e.g., charts, performance bars, spark lines, gauges, meters, stoplights) to highlight, at a glance, the data and exceptions that require action
 - Transparent to the user, meaning that they require minimal training and are extremely easy to use
 - Combine data from a variety of systems into a single, summarized, unified view of the business
 - Enable drill-down or drill-through to underlying data sources or reports
 - Present a dynamic, real-world view with timely data updates
 - Require little, if any, customized coding to implement, deploy, and maintain

Summary

- Business Performance Management (BPM)
 - BPM = BI + Planning
- Closed-Loop Process to Optimize Business Performance
 - Strategize, Plan, Monitor, Act /Adjust
- Performance Measurement
- BPM Methodologies
 - Balanced scorecard (BSC)
 - Six Sigma
- BPM Architecture and Applications
- Performance Dashboards

References

- Efraim Turban, Ramesh Sharda, Dursun Delen, Decision Support and Business Intelligence Systems, Ninth Edition, 2011, Pearson.