Business Intelligence
商業智慧

Introduction to Business Intelligence
商業智慧導論

1002BI01
IM EMBA
Fri 12,13,14 (19:20-22:10) D502

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淡江大學100學年度第2學期
課程教學計畫表

- 課程名稱：商業智慧 (Business Intelligence)
- 授課教師：戴敏育 (Min-Yuh Day)
- 開課系級：資管一碩專班Ａ(TMIXJ1A)
- 開課資料：選修 單學期 3 學分 (3 Credits, Elective)
- 上課時間：週五 12,13,14 (Fri 19:20-22:10)
- 上課教室：D502

課程簡介

- 本課程介紹商業智慧的基礎概念及技術，
  主要從管理導向來認識決策支援系統與商業智慧系統。
- 課程內容包括
  - 商業智慧導論、
  - 管理決策支援系統與商業智慧、
  - 企業績效管理、
  - 資料倉儲、
  - 商業智慧的資料探勘、
  - 個案分析、
  - 文字探勘與網頁探勘、
  - 智慧系統、
  - 社會網路分析、
  - 與意見分析。

Course Introduction

- This course introduces the fundamental concepts and technology of business intelligence.
  It introduces a managerial approach to understanding business intelligence systems.
- Topics include
  - Introduction to Business Intelligence,
  - Management Decision Support System and Business Intelligence,
  - Business Performance Management,
  - Data Warehousing,
  - Data Mining for Business Intelligence,
  - Case Study of Data Mining,
  - Text and Web Mining,
  - Intelligent Systems,
  - Social Network Analysis
  - Opinion Mining.

課程目標

- 學生將能夠瞭解及應用
  商業智慧基本概念與技術。

- 進行商業智慧相關之資訊管理研究。

Objective

- Students will be able to understand and apply the fundamental concepts and technology of business intelligence.
- Students will be able to conduct information systems research in the context of business intelligence.

課程大綱 (Syllabus)

週次	日期	內容（Subject/Topics）	備註
1	101/02/17	商業智慧導論 (Introduction to Business Intelligence)	
2	101/02/24	管理決策支援系統與商業智慧 (Management Decision Support System and Business Intelligence)	
3	101/03/02	企業績效管理 (Business Performance Management)	
4	101/03/09	資料倉儲 (Data Warehousing)	
5	101/03/16	商業智慧的資料探勘 (Data Mining for Business Intelligence)	
6	101/03/24	商業智慧的資料探勘 (Data Mining for Business Intelligence)	
7	101/03/30	個案分析一 (分群分析)： Banking Segmentation (Cluster Analysis – KMeans)	
8	101/04/06	個案分析二 (關連分析)： Web Site Usage Associations (Association Analysis)	
9	101/04/13	個案分析三 (決策樹、模型評估)： Enrollment Management Case Study (Decision Tree, Model Evaluation)	

課程大綱 (Syllabus)

週次	日期	內容（Subject/Topics）	備註
10	101/04/20	期中報告 (Midterm Presentation)	
11	101/04/27	個案分析四 (迴歸分析、類神經網路)：Credit Risk Case Study (Regression Analysis, Artificial Neural Network)	
12	101/05/04	文字探勘與網頁探勘 (Text and Web Mining)	
13	101/05/11	文字探勘與網頁探勘 (Text and Web Mining)	
14	101/05/18	智慧系統 (Intelligent Systems)	
15	101/05/25	社會網路分析 (Social Network Analysis)	
16	101/06/01	意見分析 (Opinion Mining)	
17	101/06/08	期末報告1 (Project Presentation 2)	
18	101/06/15	期末報告2 (Project Presentation 2)	

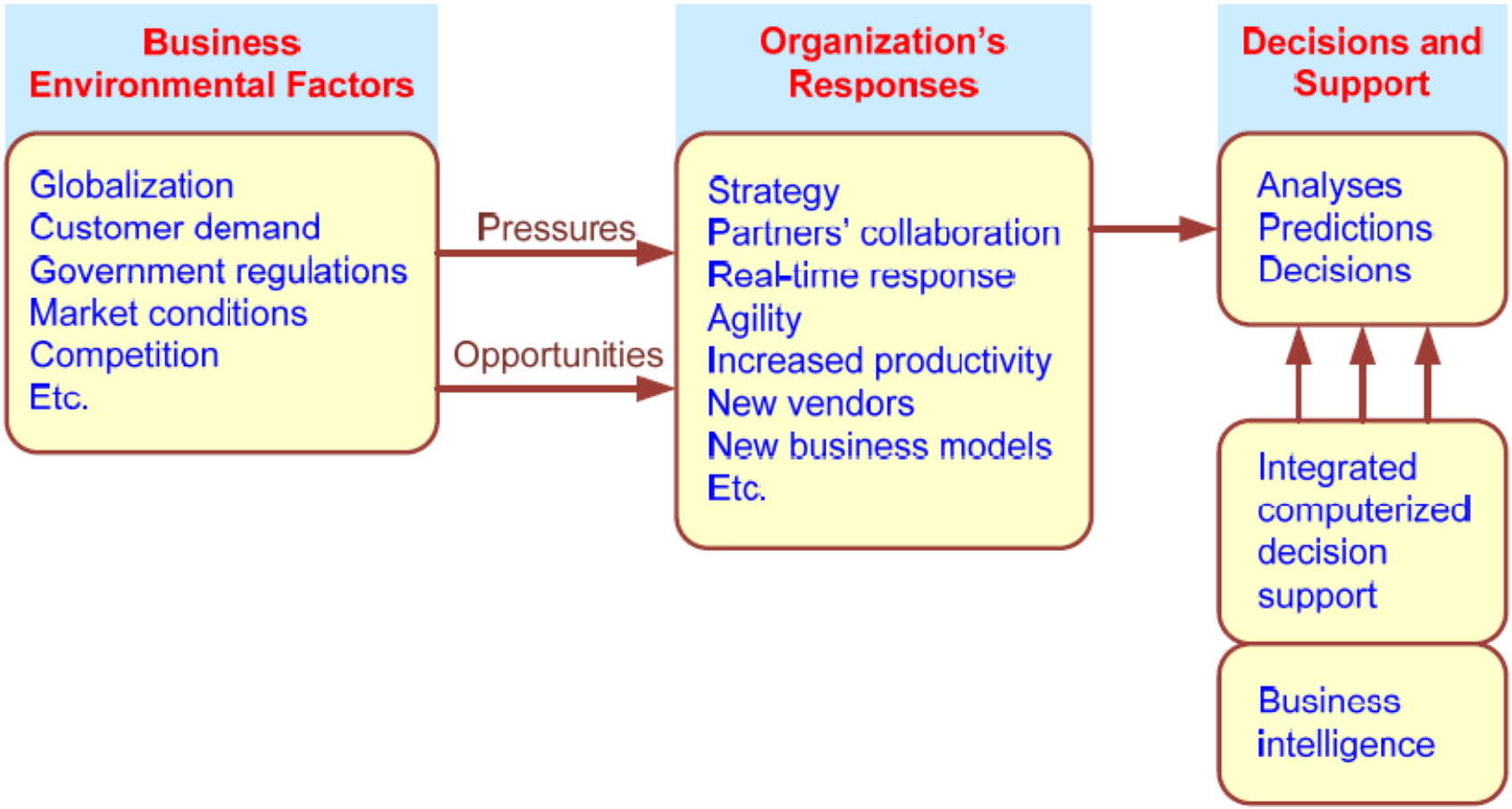
教材課本與參考書籍

- 教材課本 (Textbook)：講義 (Slides)
- 參考書籍 (References)：
  - Decision Support and Business Intelligence Systems, Ninth Edition, Efraim Turban, Ramesh Sharda, Dursun Delen, 2011, Pearson
  - Business Intelligence: A Managerial Approach, Second Edition, Efraim Turban, Ramesh Sharda, Dursun Delen, David King, 2011, Pearson
  - Applied Analytics Using SAS Enterprise Mining, Jim Georges, Jeff Thompson and Chip Wells, 2010, SAS
  - Data Mining: Concepts and Techniques, Second Edition, Jiawei Han and Micheline Kamber, 2006, Elsevier
  - 決策支援與企業智慧系統，九版，Efraim Turban 等著，李昇暾審定，2011，華泰
  - 商業智慧，國立中央大學管理學院ERP 中心，2011，滄海
  - SQL Server 2008 R2 資料採礦與商業智慧，謝邦昌、鄭宇庭、蘇志雄，2011，碁峯
  - 資料探勘：概念與方法，王派洲 譯，2008，滄海
  - Web 資料採掘技術經典，孫惠民，2008，松崗

學期成績計算方式

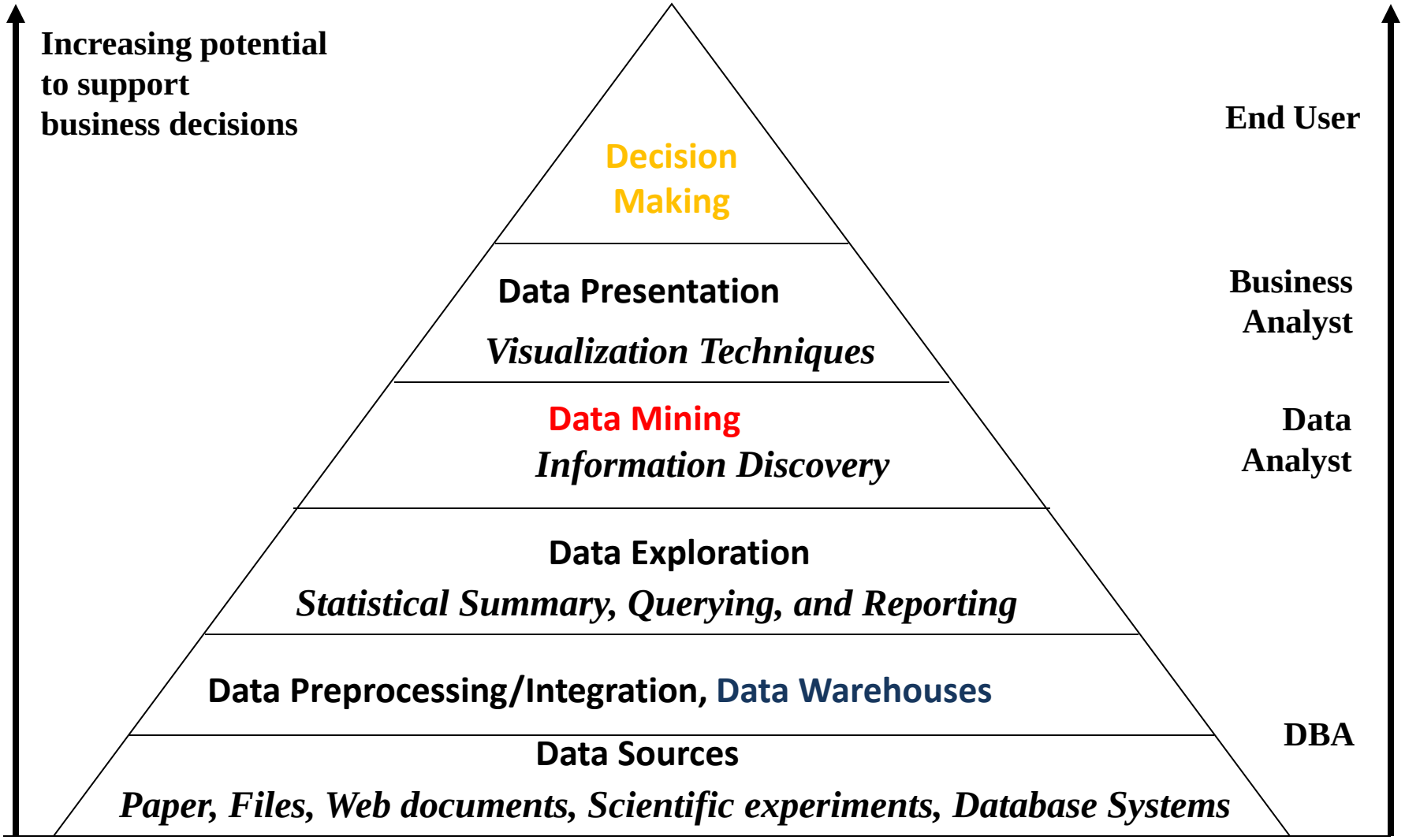
- 平時評量： 50.0％ (3 篇作業)
- 其他 (課堂參與及報告討論表現)：50.0％

Business Pressures–Responses–Support Model



Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

Business Intelligence and Data Mining



Source: Han & Kamber (2006)

Business Intelligence (BI)

- BI is an umbrella term that combines architectures, tools, databases, analytical tools, applications, and methodologies
- Like DSS, BI a content-free expression, so it means different things to different people
- BI's major objective is to enable easy access to data (and models) to provide business managers with the ability to conduct analysis
- BI helps *transform* data, to information (and knowledge), to decisions and finally to action

A Brief History of BI

- The term BI was coined by the Gartner Group in the mid-1990s
- However, the concept is much older
  - 1970s - MIS reporting - static/periodic reports
  - 1980s - Executive Information Systems (EIS)
  - 1990s - OLAP, dynamic, multidimensional, ad-hoc reporting -> coining of the term “BI”
  - 2005+ Inclusion of AI and Data/Text Mining capabilities; Web-based Portals/Dashboards
  - 2010s - yet to be seen

Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

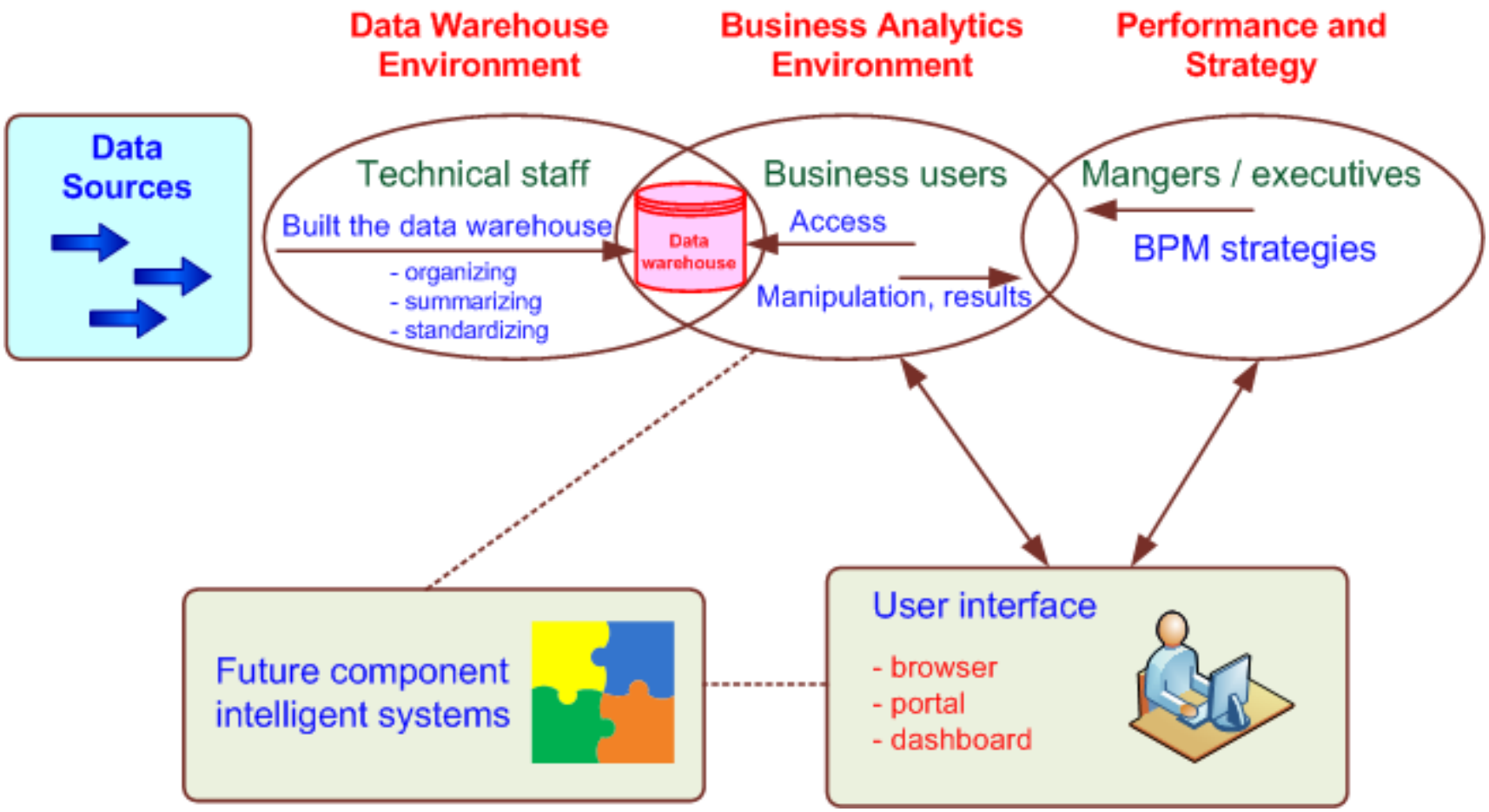
The Evolution of BI Capabilities

Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

The Architecture of BI

- A BI system has four major components
  - a data warehouse, with its source data
  - business analytics, a collection of tools for manipulating, mining, and analyzing the data in the data warehouse;
  - business performance management (BPM) for monitoring and analyzing performance
  - a user interface (e.g., dashboard)

A High-Level Architecture of BI



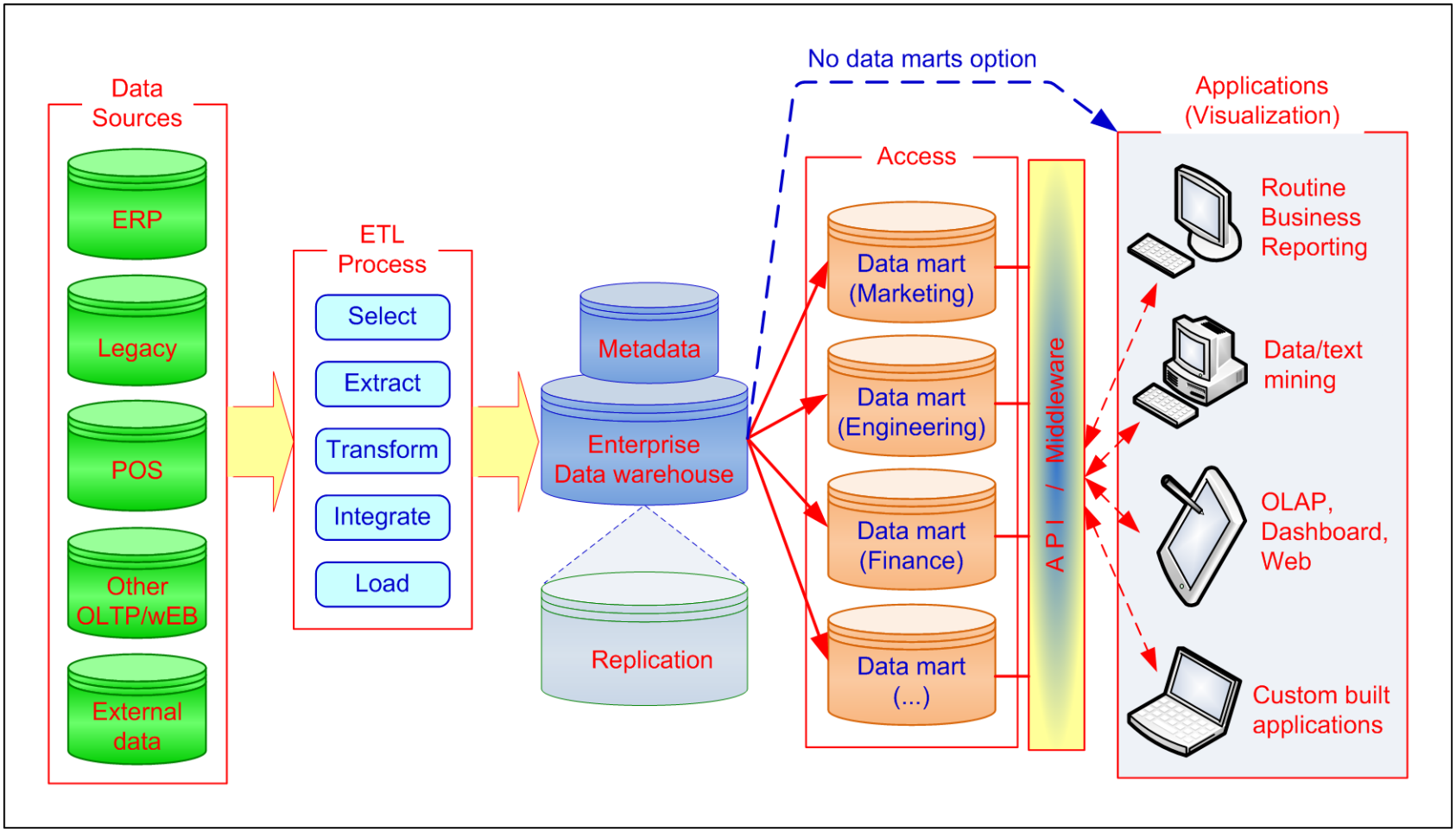
Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

Components in a BI Architecture

- The data warehouse is a large repository of well-organized historical data
- Business analytics are the tools that allow transformation of data into information and knowledge
- Business performance management (BPM) allows monitoring, measuring, and comparing key performance indicators
- User interface (e.g., dashboards) allows access and easy manipulation of other BI components

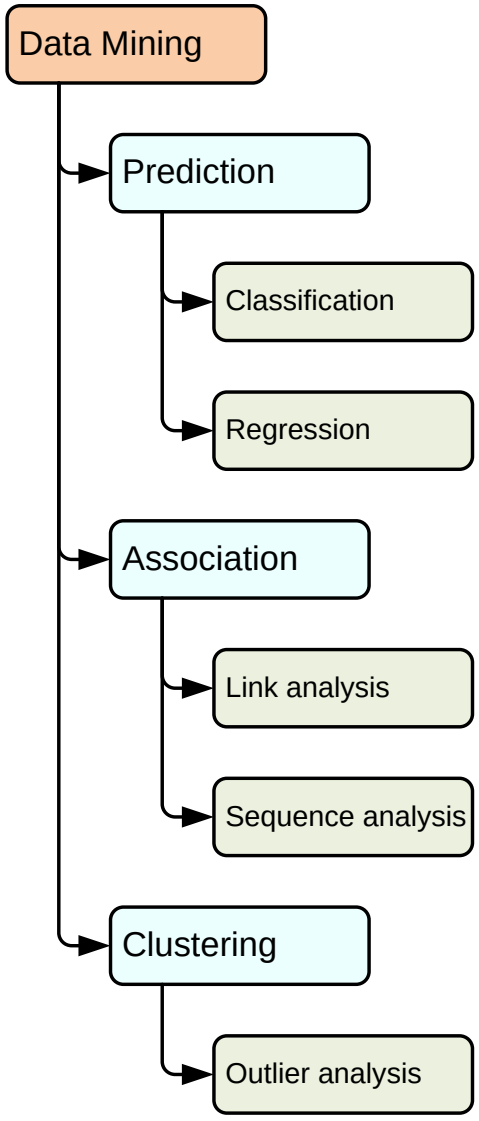
Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

A Conceptual Framework for DW



Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

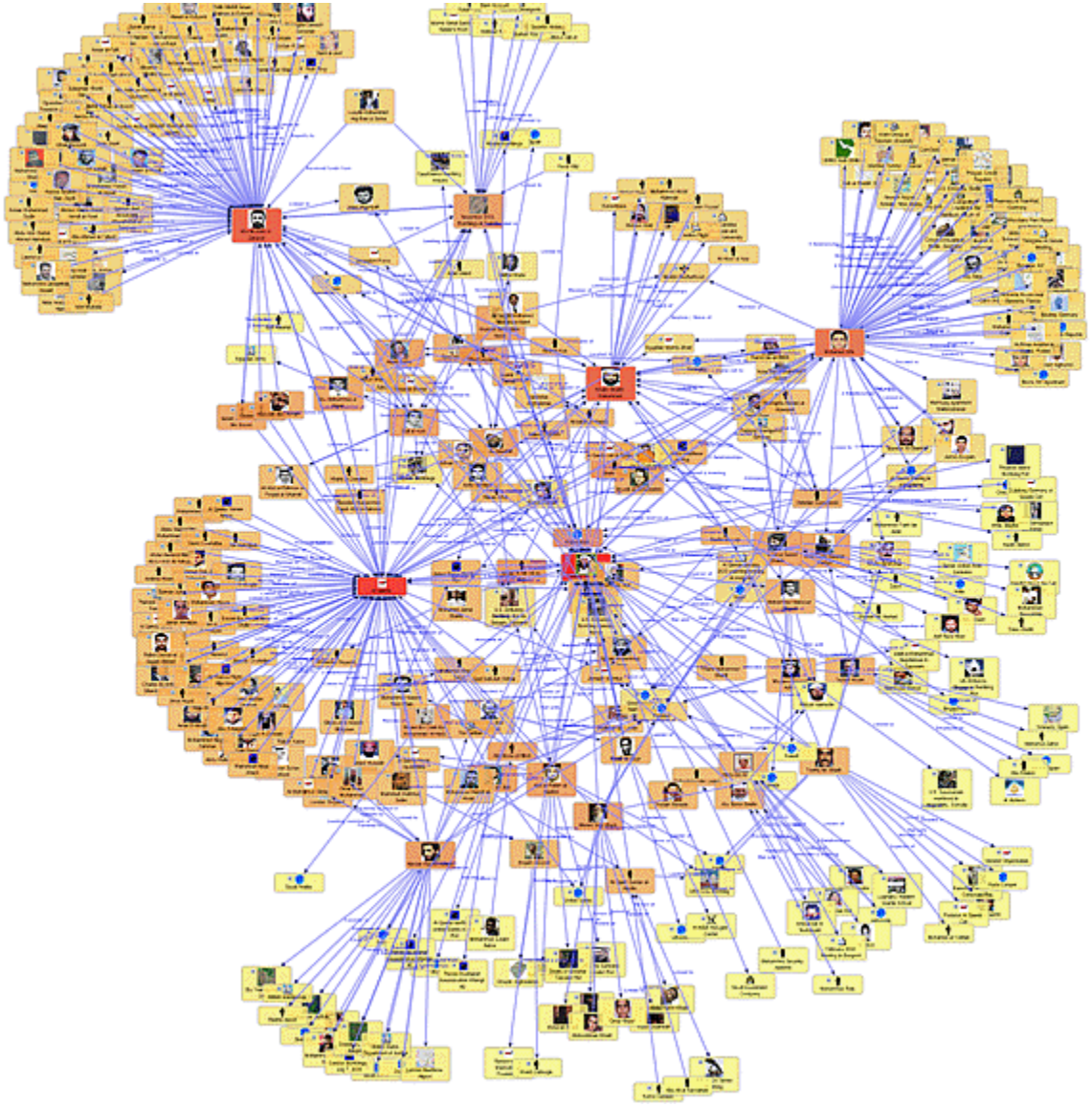
A Taxonomy for Data Mining Tasks



Learning Method	Popular Algorithms
Supervised	Classification and Regression Trees, ANN, SVM, Genetic Algorithms
Supervised	Decision trees, ANN/MLP, SVM, Rough sets, Genetic Algorithms
Supervised	Linear/Nonlinear Regression, Regression trees, ANN/MLP, SVM
Unsupervised	Apriory, OneR, ZeroR, Eclat
Unsupervised	Expectation Maximization, Apriory Algorithm, Graph-based Matching
Unsupervised	Apriory Algorithm, FP-Growth technique
Unsupervised	K-means, ANN/SOM
Unsupervised	K-means, Expectation Maximization (EM)

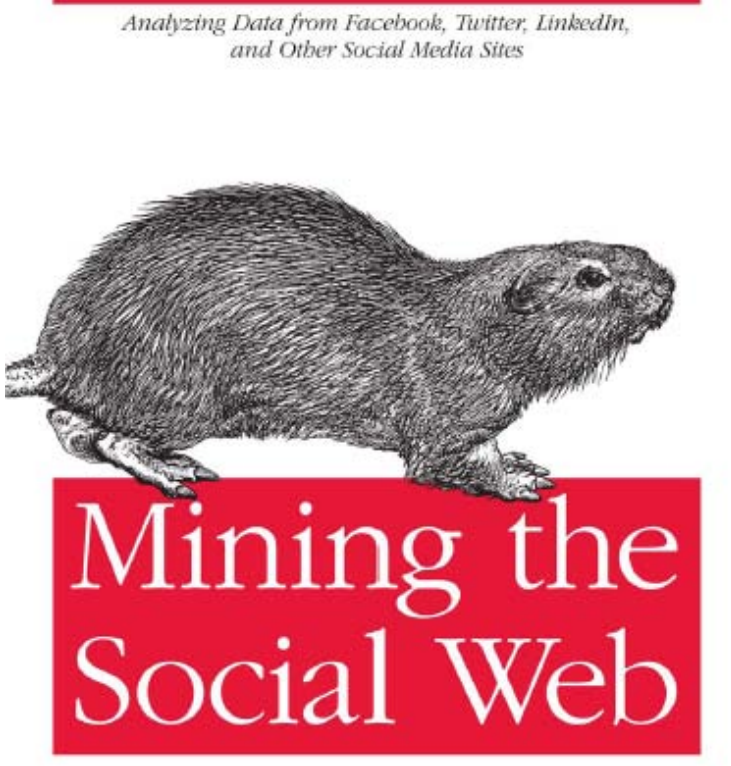
Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

Social Network Analysis



Source: http://www.fmsasg.com/SocialNetworkAnalysis/

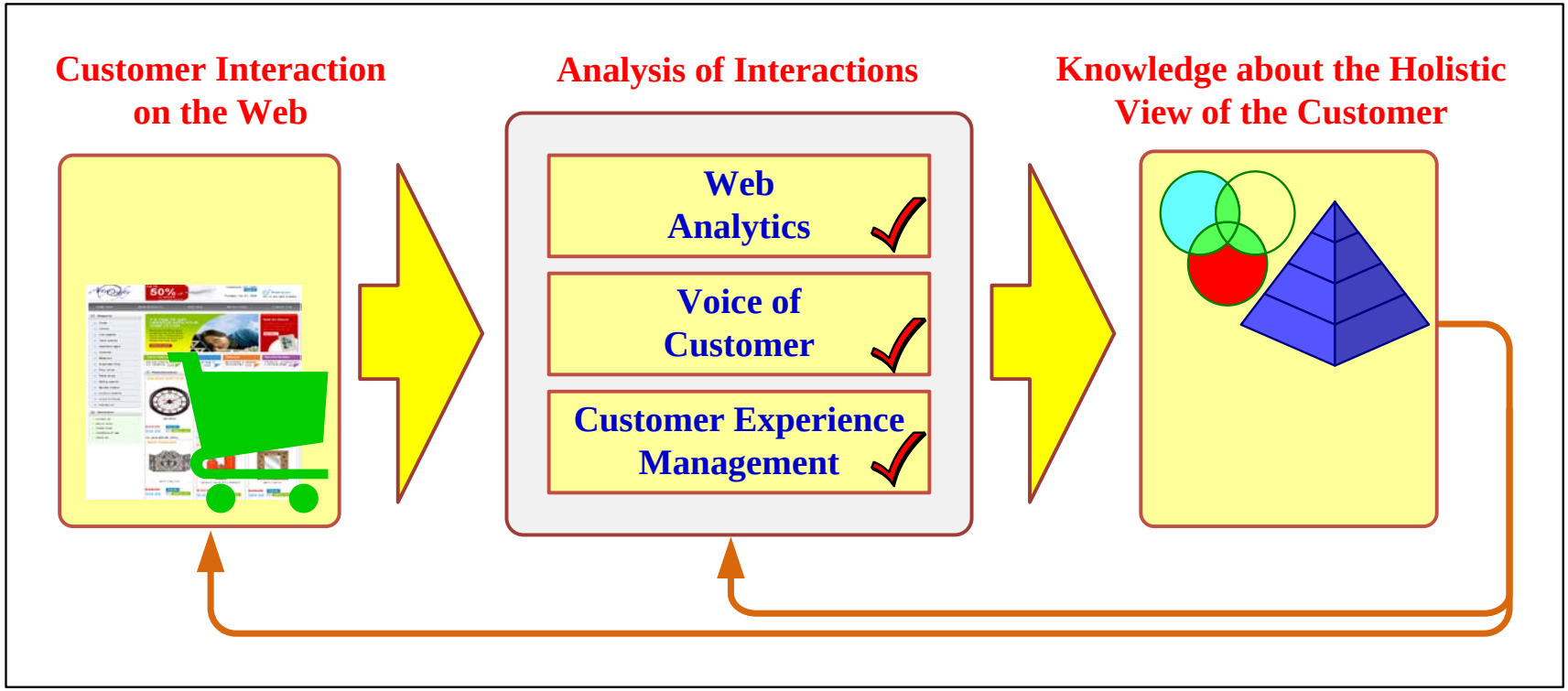
Mining the Social Web: Analyzing Data from Facebook, Twitter, LinkedIn, and Other Social Media Sites



Source: http://www.amazon.com/Mining-Social-Web-Analyzing-Facebook/dp/1449388345

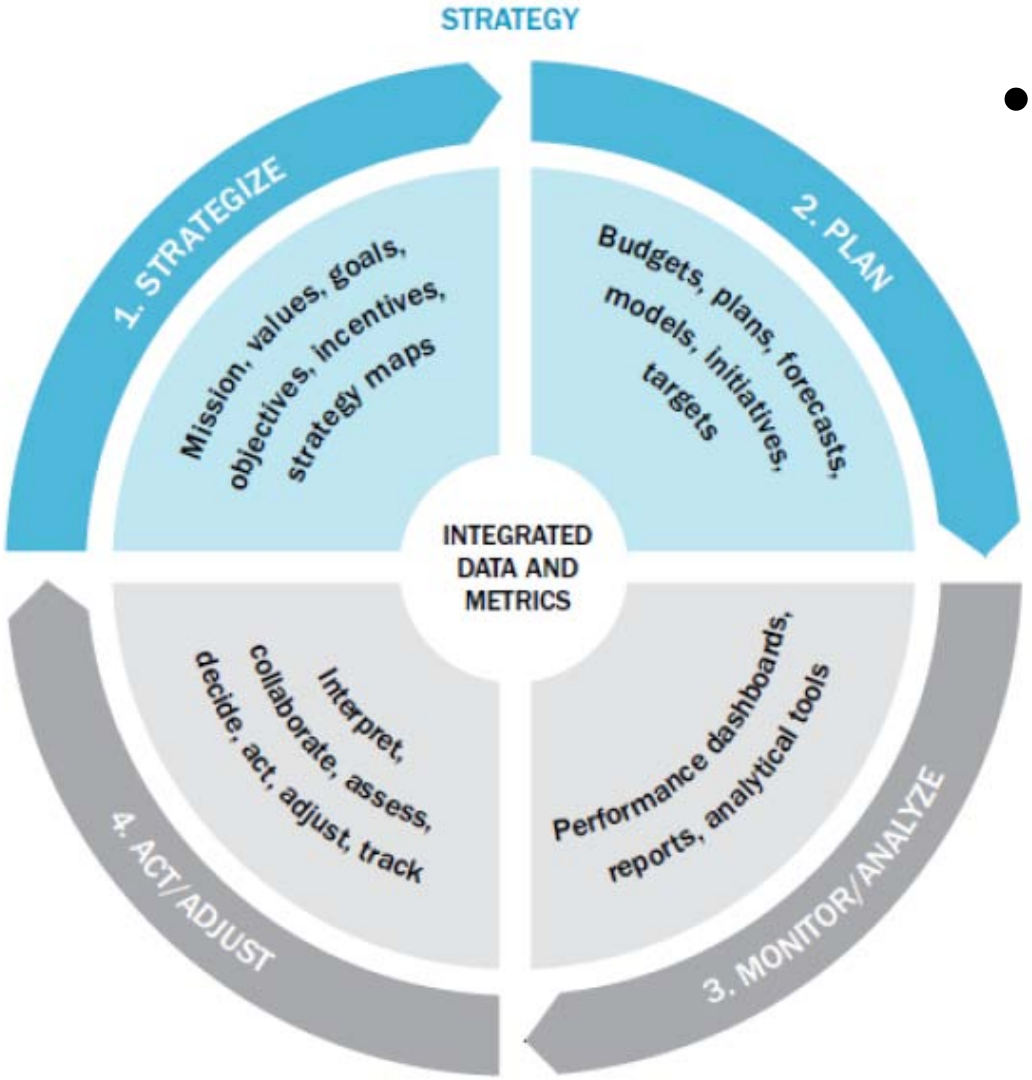
Web Mining Success Stories

- Amazon.com, Ask.com, Scholastic.com, …
- Website Optimization Ecosystem



Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

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…

Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

The Benefits of BI

- The ability to provide accurate information when needed, including a real-time view of the corporate performance and its parts
- A survey by Thompson (2004)
  - Faster, more accurate reporting (81%)
  - Improved decision making (78%)
  - Improved customer service (56%)
  - Increased revenue (49%)

Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

Summary

- This course introduces the fundamental concepts and technology of business intelligence.
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Contact Information

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