Case Study for Information Management
資訊管理個案

Foundations of Business Intelligence - Database and Information Management: Lego (Chap. 6)

1021CSIM4B06
TLMXB4B (M1824)
Tue 2, 3, 4 (9:10-12:00) B502

Min-Yuh Day
戴敏育
Assistant Professor
專任助理教授
Dept. of Information Management, Tamkang University
淡江大學 資訊管理學系

http://mail.tku.edu.tw/myday/

2013-10-22

課程大綱 (Syllabus)

週次　日期　內容（Subject/Topics）

1 102/09/17 Introduction to Case Study for Information Management

2 102/09/24 Information Systems in Global Business: UPS (Chap. 1)

3 102/10/01 Global E-Business and Collaboration: NTUC Income (Chap. 2)

4 102/10/08 Information Systems, Organization, and Strategy: iPad and Apple (Chap. 3)

5 102/10/15 IT Infrastructure and Emerging Technologies: Salesforce.com (Chap. 5)

6 102/10/22 Foundations of Business Intelligence: Lego (Chap. 6)

課程大綱 (Syllabus)

週次	日期	內容（Subject/Topics）
7	102/10/29	Telecommunications, the Internet, and Wireless Technology: Google, Apple, and Microsoft (Chap. 7)
8	102/11/05	Securing Information System: Facebook (Chap. 8)
9	102/11/12	Midterm Report (期中報告)
10	102/11/19	期中考試週
11	102/11/26	Enterprise Application: Border States Industries Inc. (BSE) (Chap. 9)
12	102/12/03	E-commerce: Amazon vs. Walmart (Chap. 10)

課程大綱 (Syllabus)

週次	日期	內容（Subject/Topics）
13	102/12/10	Knowledge Management: Tata Consulting Services (Chap. 11)
14	102/12/17	Enhancing Decision Making: CompStat (Chap. 12)
15	102/12/24	Building Information Systems: Electronic Medical Records (Chap. 13)
16	102/12/31	Managing Projects: JetBlue and WestJet (Chap. 14)
17	103/01/07	Final Report (期末報告)
18	103/01/14	期末考試週

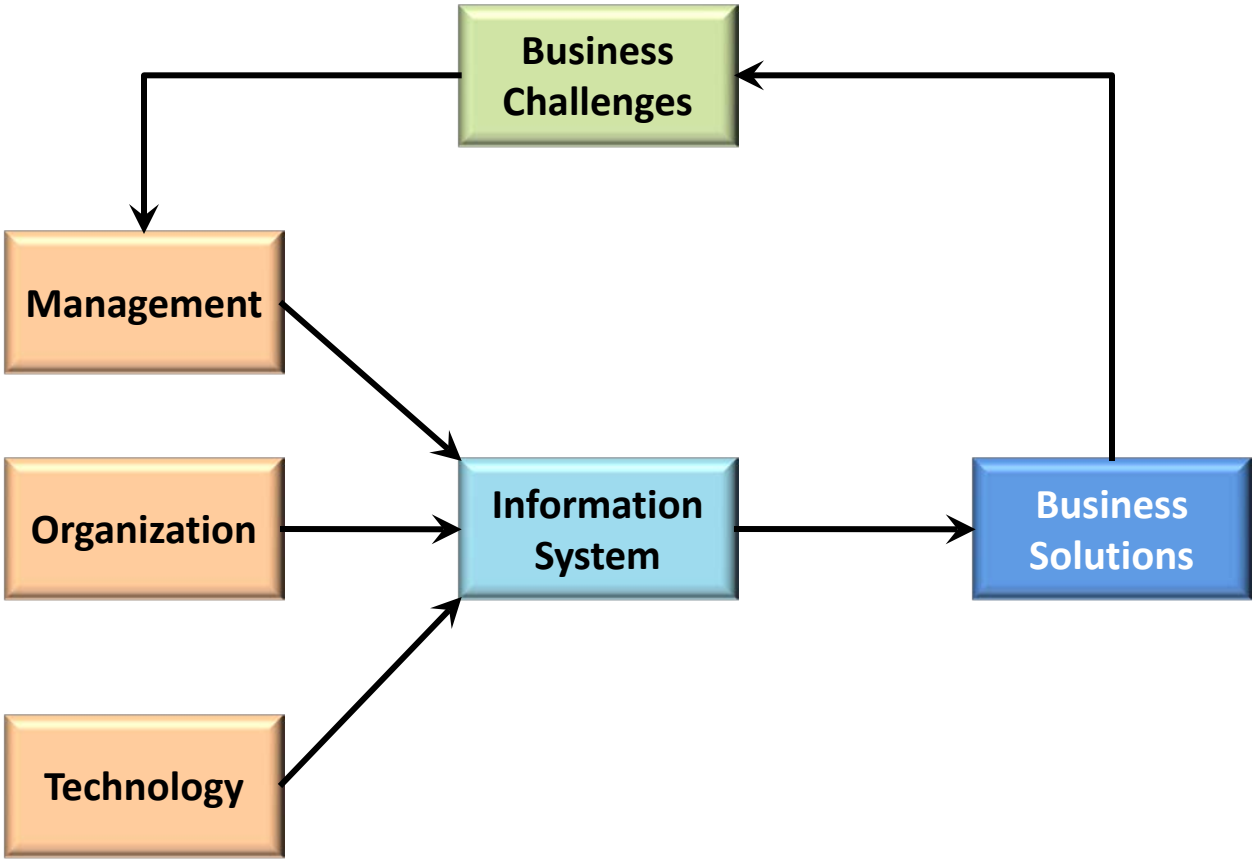
Chap. 6
Foundations of Business Intelligence – Database and Information Management : Lego

Case Study: Lego (Chap. 6) (pp.270-271)

Lego: Embracing Change by Combining BI with a Flexible Information System

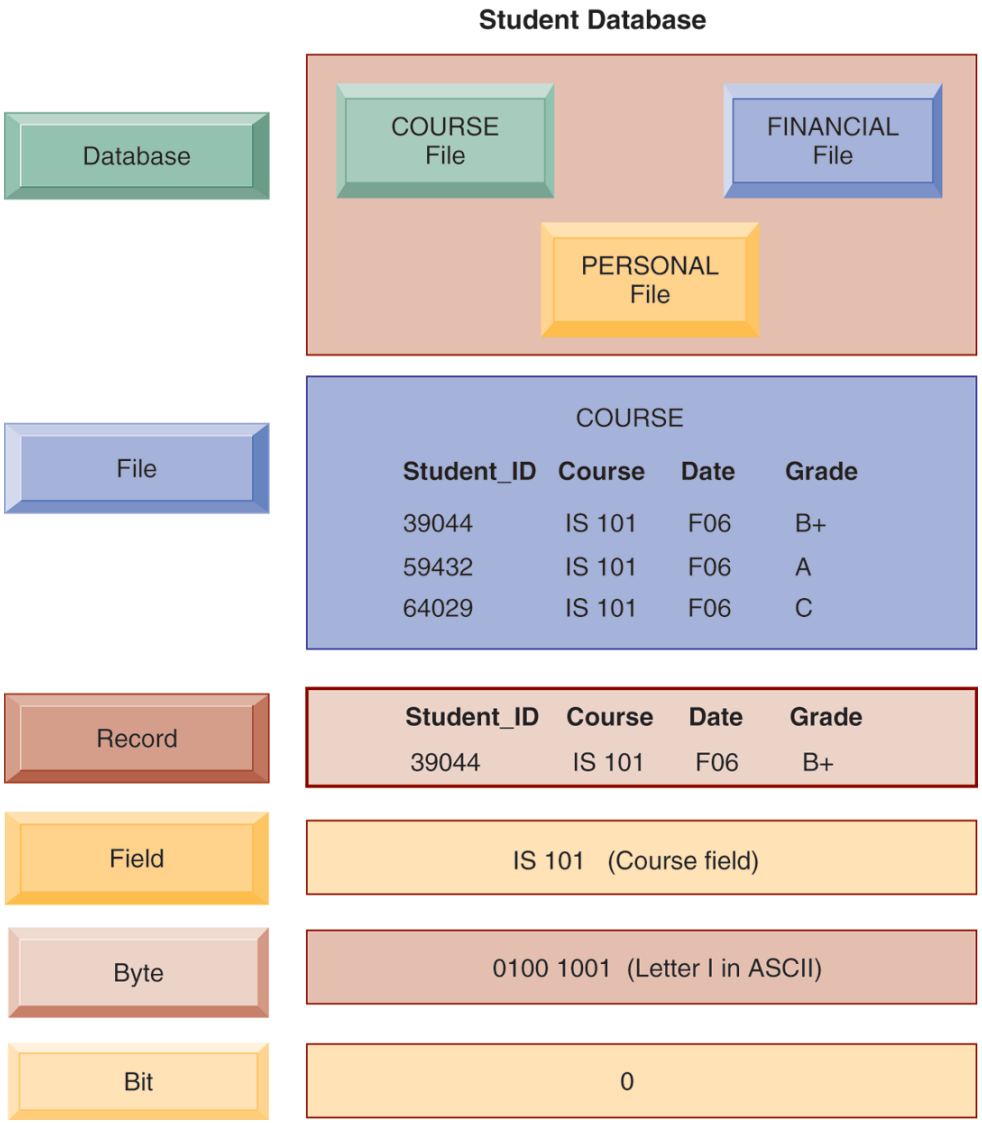
1. Explain the role of the database in SAP's three-tier system.
2. Explain why distributed architectures are flexible.
3. Identify some of the business intelligence features included in SAP's business software suite.
4. What are the main advantages and disadvantages of having multiple databases in a distributed architecture? Explain.

Overview of Fundamental MIS Concepts



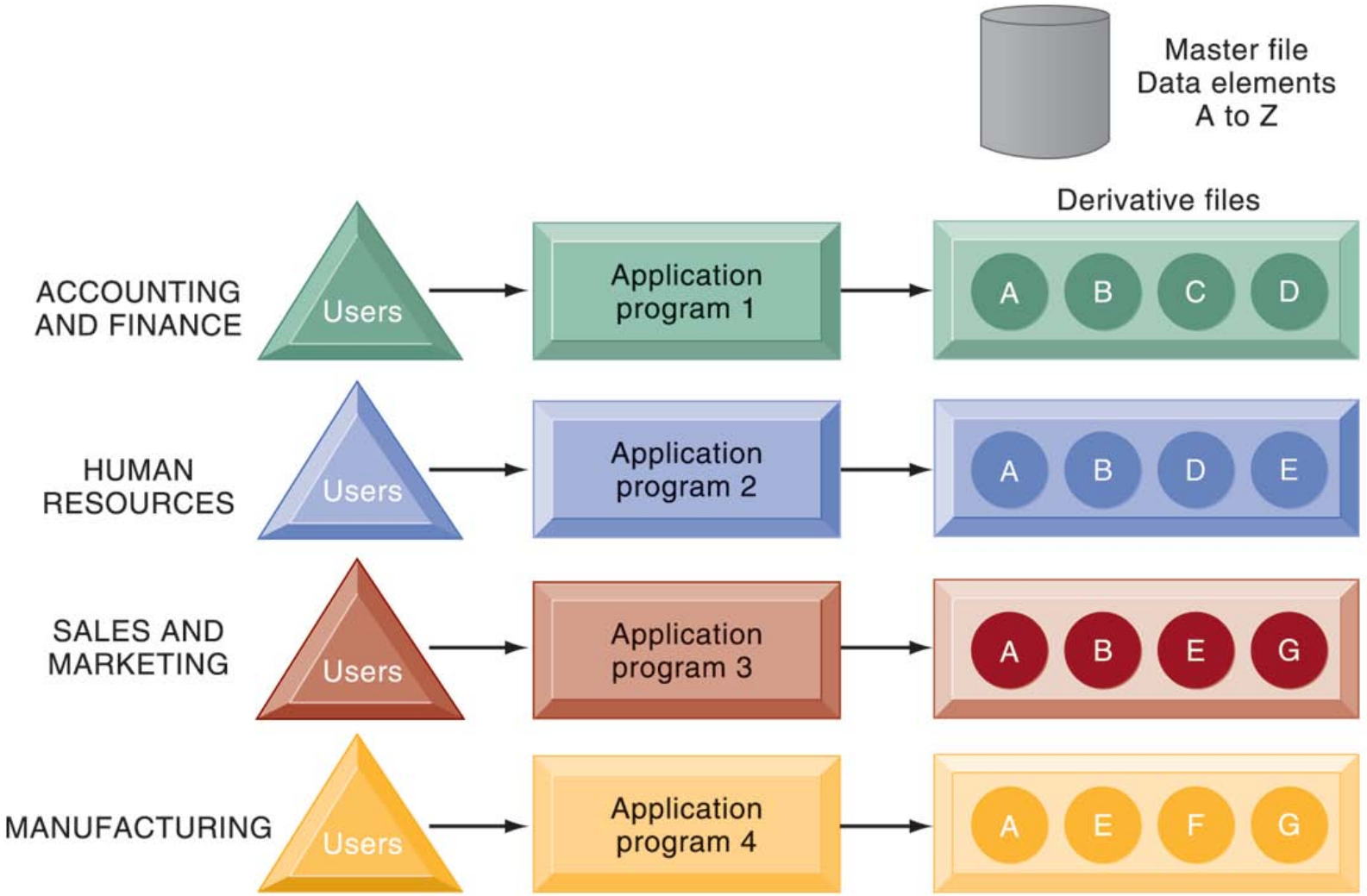
Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

THE DATA HIERARCHY



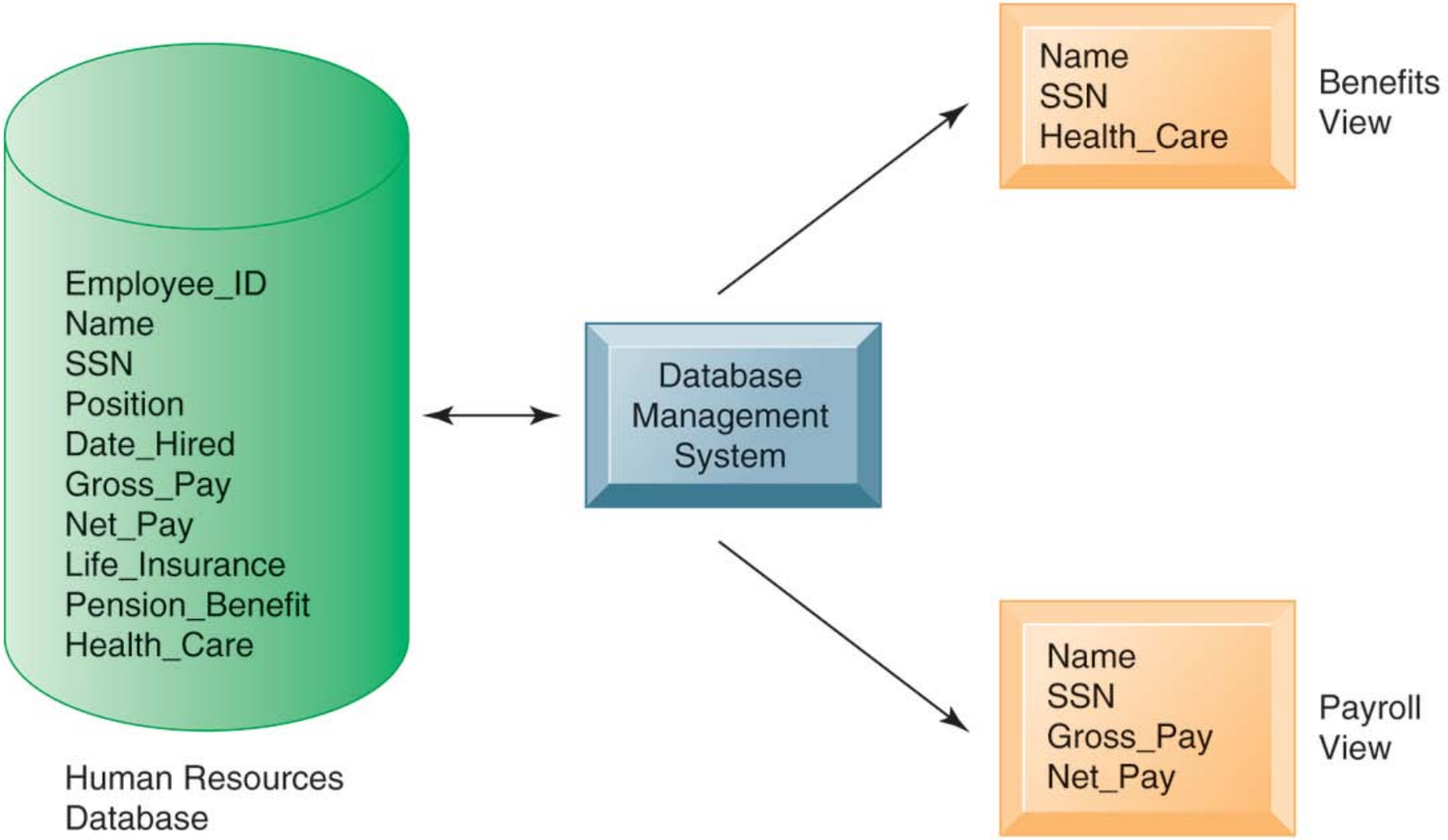
Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

TRADITIONAL FILE PROCESSING



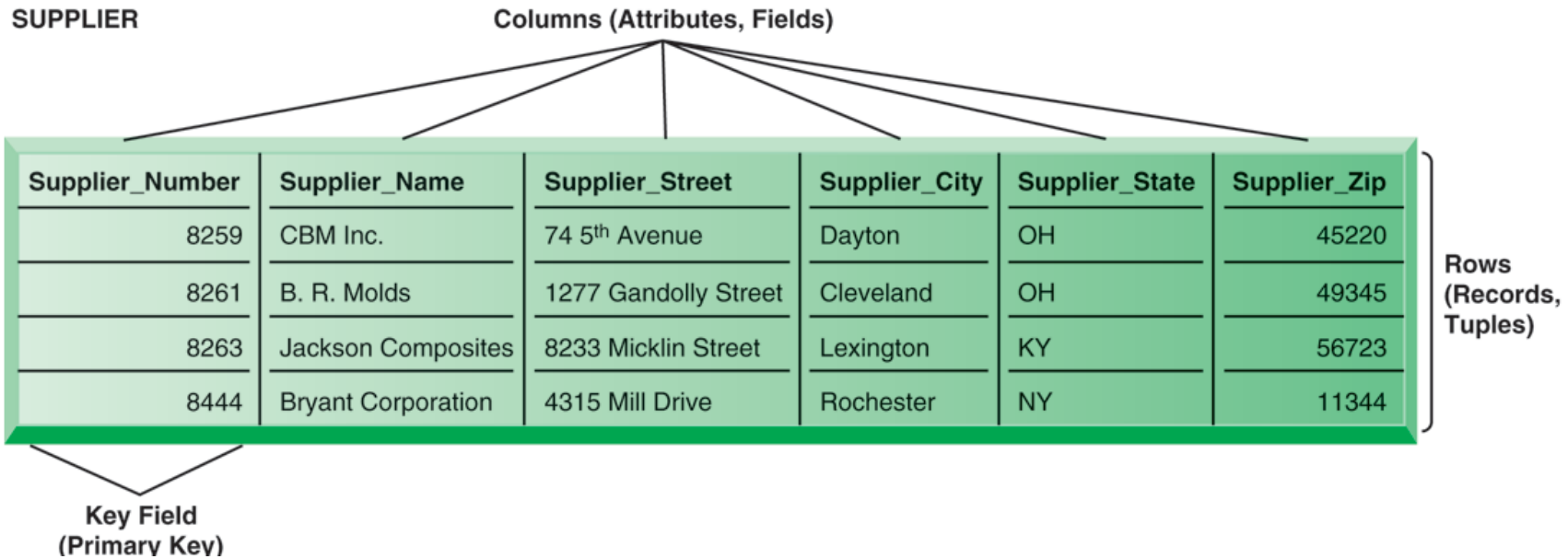
Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

HUMAN RESOURCES DATABASE WITH MULTIPLE VIEWS



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

RELATIONAL DATABASE TABLES



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

RELATIONAL DATABASE TABLES (cont.)

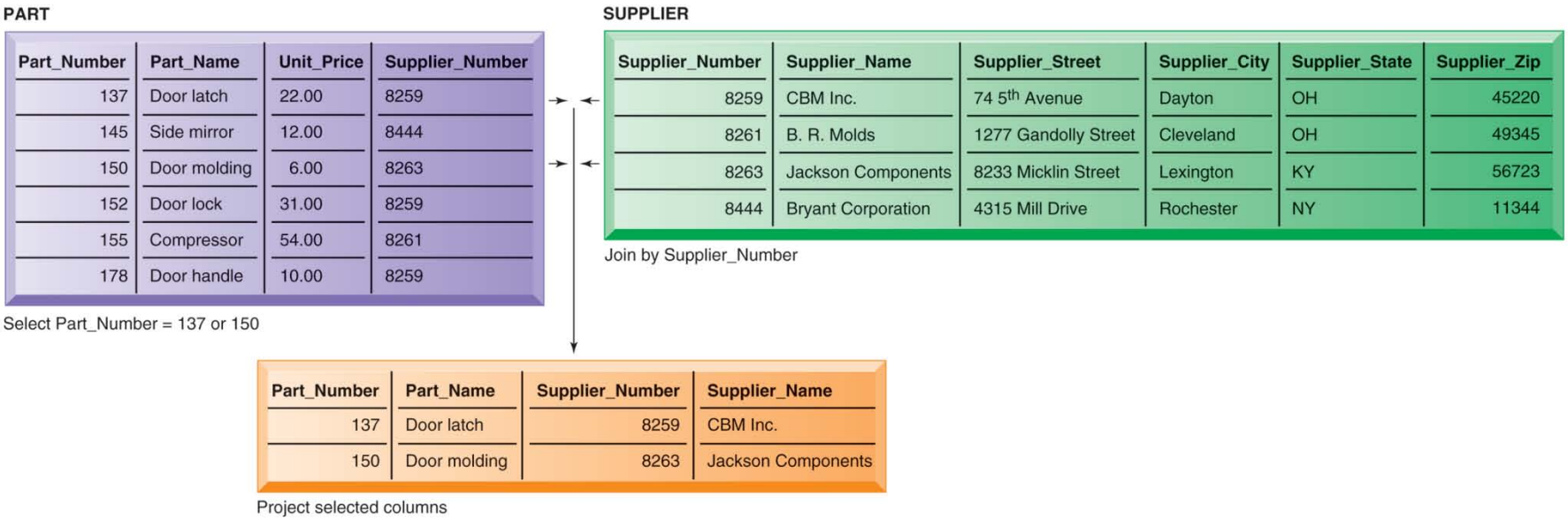
PART

Part_Number	Part_Name	Unit_Price	Supplier_Number
137	Door latch	22.00	8259
145	Side mirror	12.00	8444
150	Door molding	6.00	8263
152	Door lock	31.00	8259
155	Compressor	54.00	8261
178	Door handle	10.00	8259

Primary Key **Foreign Key**

Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

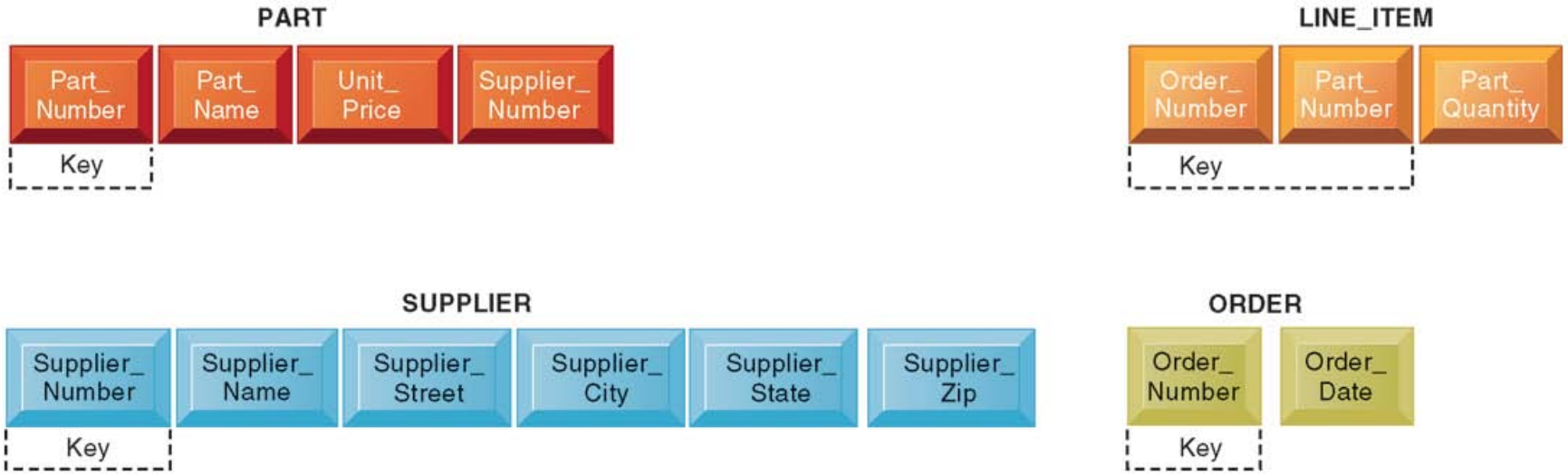
THE THREE BASIC OPERATIONS OF A RELATIONAL DBMS



AN UNNORMALIZED RELATION FOR ORDER

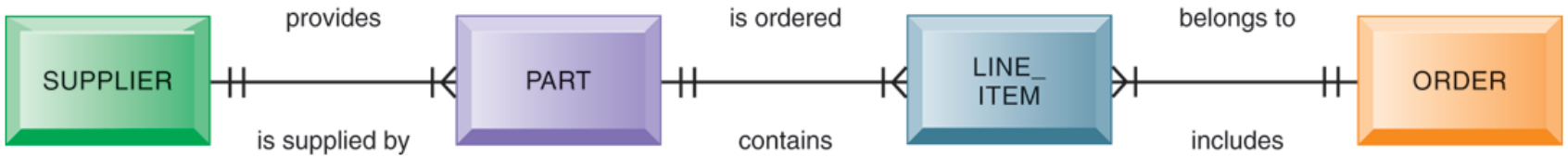
Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

NORMALIZED TABLES CREATED FROM ORDER



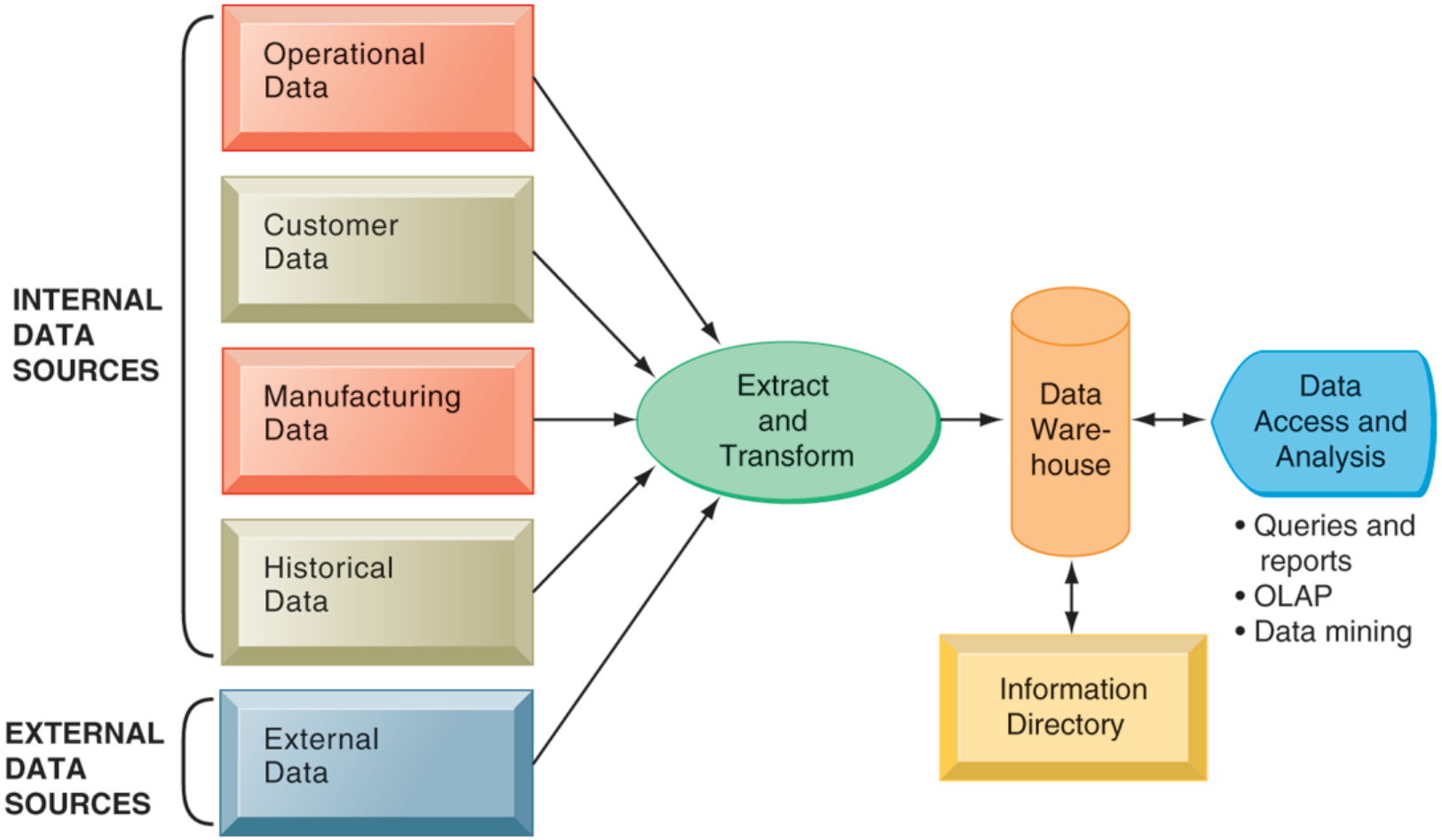
Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

AN ENTITY-RELATIONSHIP DIAGRAM



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

COMPONENTS OF A DATA WAREHOUSE



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

Data Warehouse vs. Data Marts

- Data warehouse:
  - Stores current and historical data from many core operational transaction systems
  - Consolidates and standardizes information for use across enterprise, but data cannot be altered
  - Data warehouse system will provide query, analysis, and reporting tools
- Data marts:
  - Subset of data warehouse
  - Summarized or highly focused portion of firm's data for use by specific population of users
  - Typically focuses on single subject or line of business

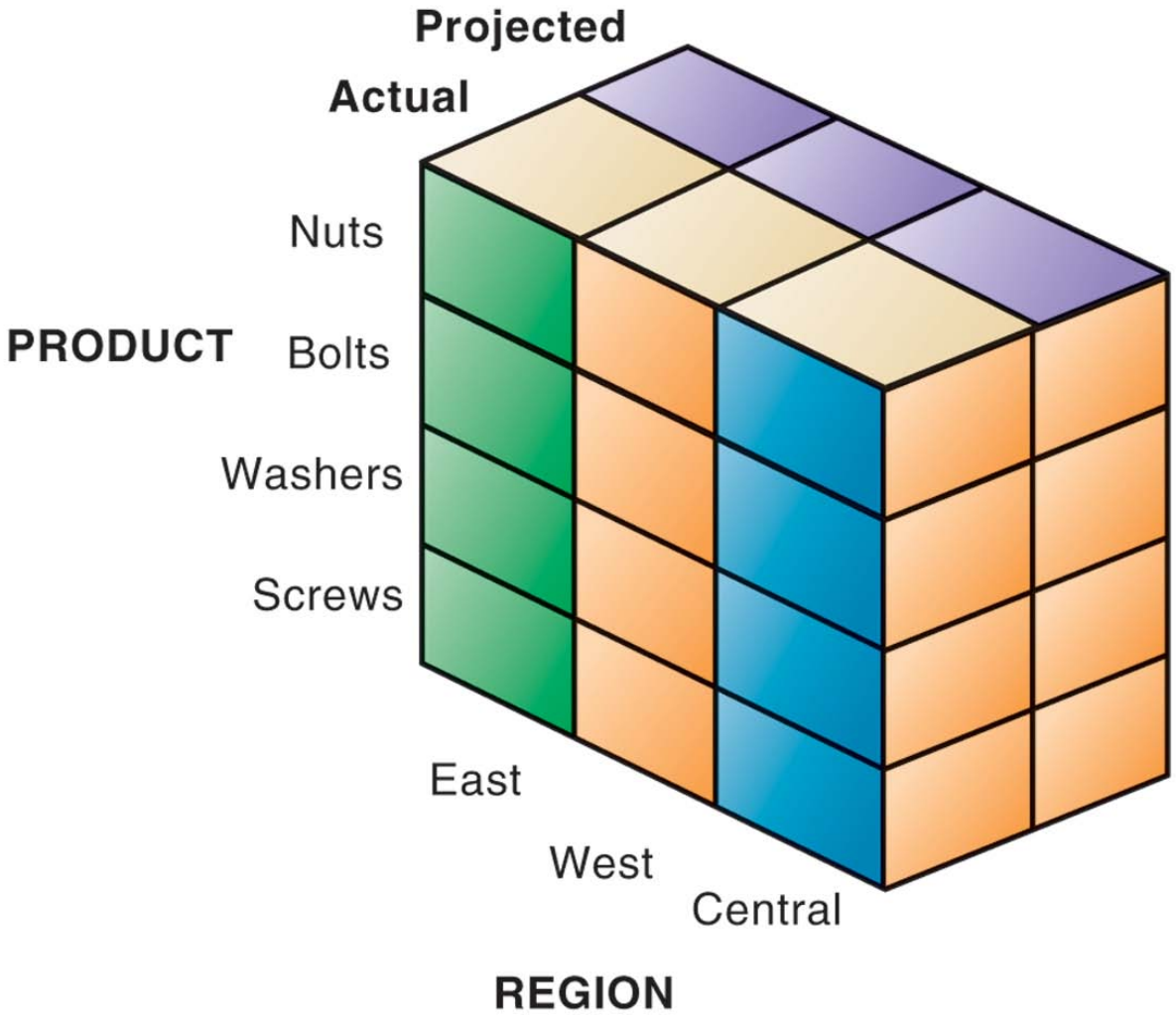
Business Intelligence (BI)

- Tools for consolidating, analyzing, and providing access to vast amounts of data to help users make better business decisions
  - E.g., Harrah's Entertainment analyzes customers to develop gambling profiles and identify most profitable customers
- Principle tools include:
  - Software for database query and reporting
  - Online analytical processing (OLAP)
  - Data mining

Online analytical processing (OLAP)

- Supports multidimensional data analysis
  - Viewing data using multiple dimensions
  - Each aspect of information (product, pricing, cost, region, time period) is different dimension
  - E.g., how many washers sold in the East in June compared with other regions?
- OLAP enables rapid, online answers to ad hoc queries

MULTIDIMENSIONAL DATA MODEL



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

Data Mining

- More discovery driven than OLAP
- Finds hidden patterns, relationships in large databases and infers rules to predict future behavior
  - E.g., Finding patterns in customer data for one-to-one marketing campaigns or to identify profitable customers.
- Types of information obtainable from data mining
  - Associations
  - Sequences
  - Classification
  - Clustering
  - Forecasting

Predictive analysis

- Uses data mining techniques, historical data, and assumptions about future conditions to predict outcomes of events
- E.g., Probability a customer will respond to an offer

Text Mining

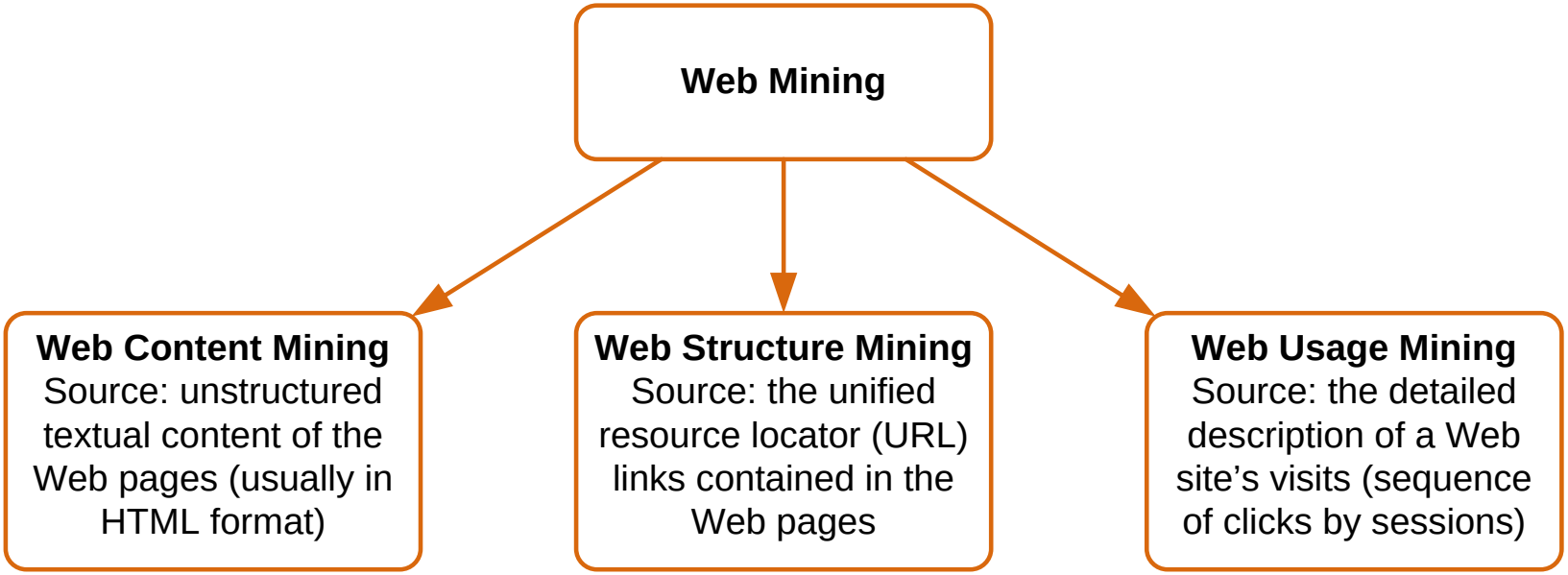
- Text mining (text data mining)
  - the process of deriving high-quality information from text
  - Extracts key elements from large unstructured data sets (e.g., stored e-mails)
- Typical text mining tasks
  - text categorization
  - text clustering
  - concept/entity extraction
  - production of granular taxonomies
  - sentiment analysis
  - document summarization
  - entity relation modeling

Web Mining

- Discovery and analysis of useful patterns and information from WWW
  - E.g., to understand customer behavior, evaluate effectiveness of Web site, etc.
- 3 Tasks of Web Mining
  - Web content mining
    - Knowledge extracted from content of Web pages
  - Web structure mining
    - E.g., links to and from Web page
  - Web usage mining
    - User interaction data recorded by Web server

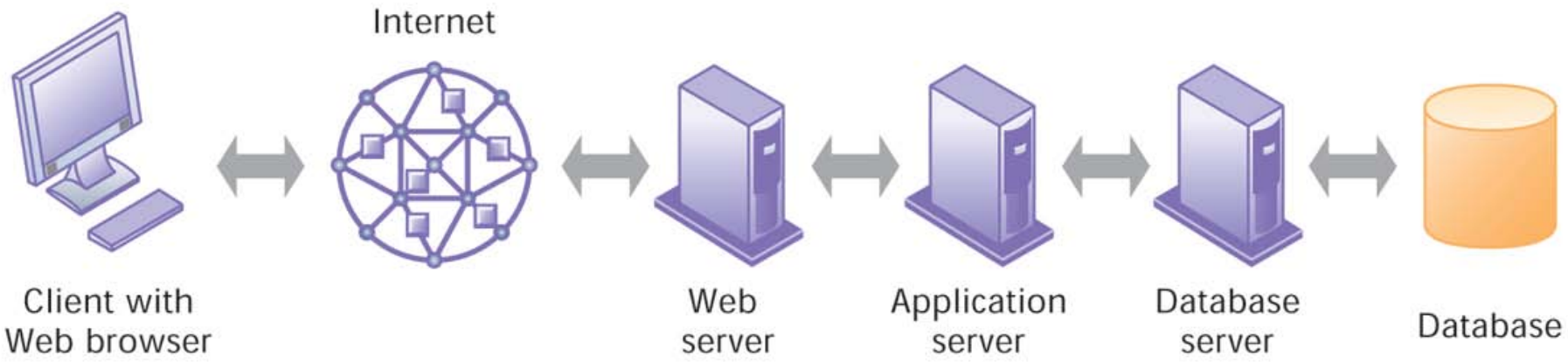
Web Mining

- Web mining (or Web data mining) is the process of discovering intrinsic relationships from Web data (textual, linkage, or usage)



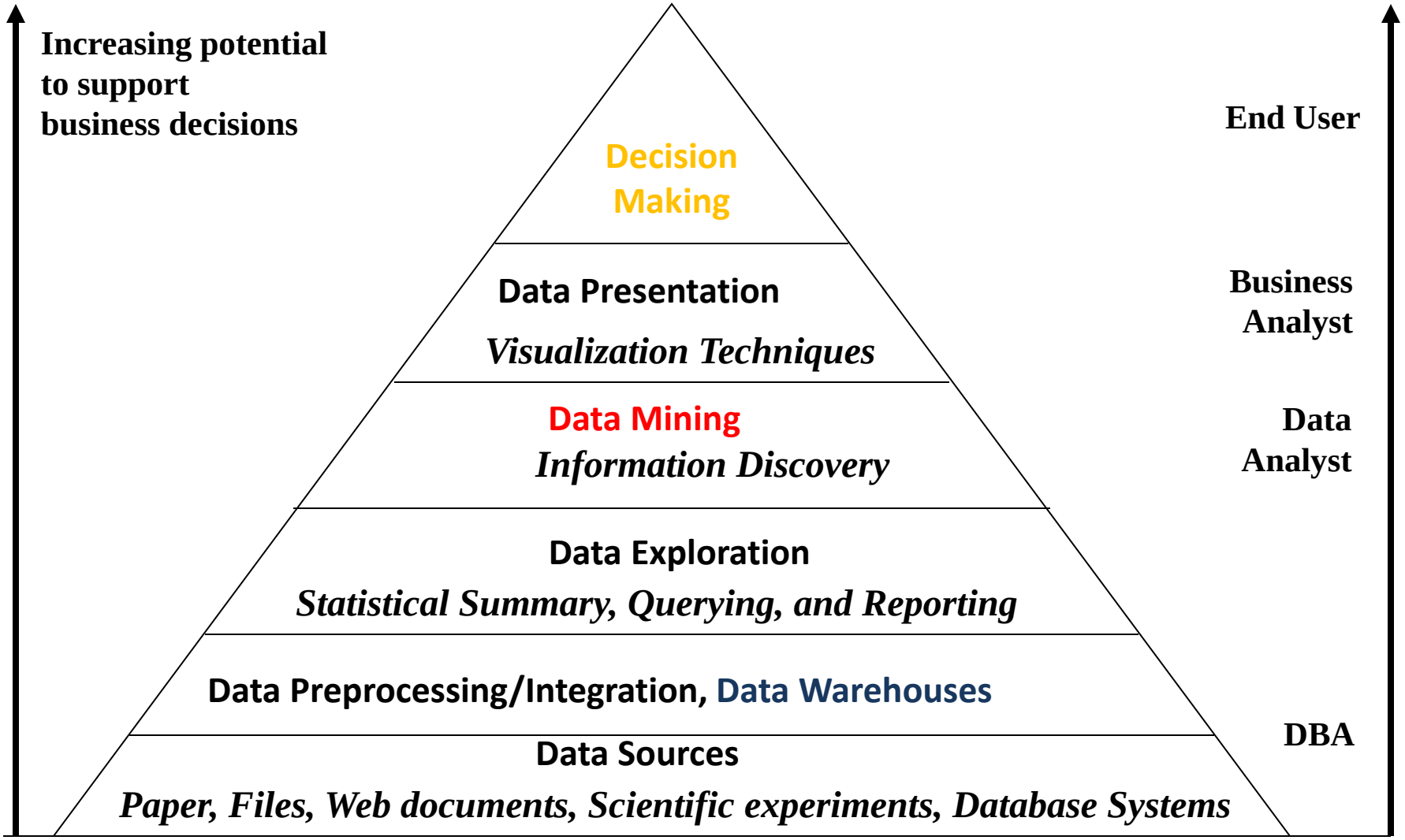
Source: Turban et al. (2011), Decision Support and Business Intelligence Systems

LINKING INTERNAL DATABASES TO THE WEB



Source: Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.

Business Intelligence and Data Mining

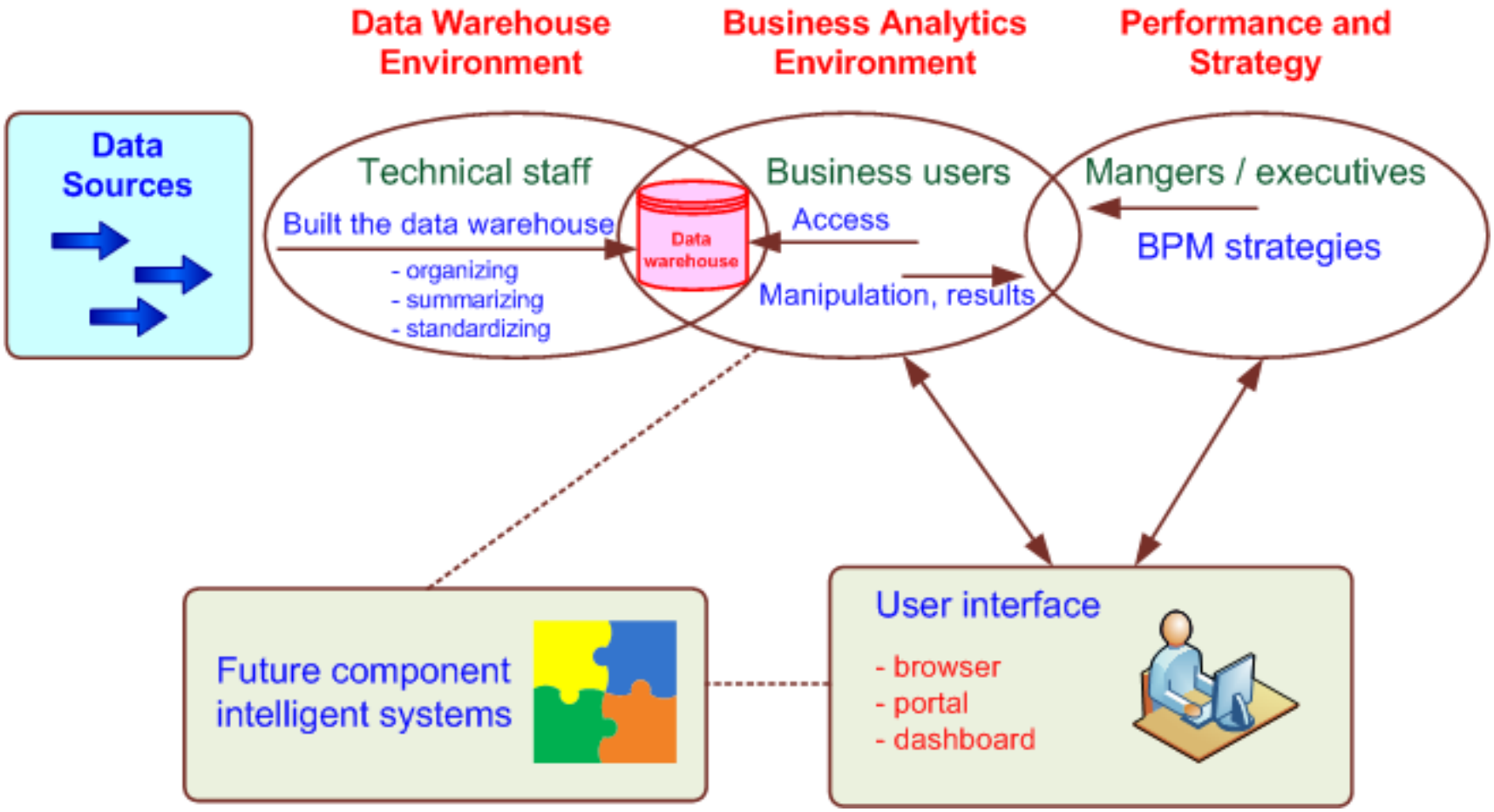


Source: Han & Kamber (2006)

The Evolution of BI Capabilities

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

A High-Level Architecture of BI



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

Business Intelligence and Analytics

- Business Intelligence 2.0 (BI 2.0)
  - Web Intelligence
  - Web Analytics
  - Web 2.0
  - Social Networking and Microblogging sites
- Data Trends
  - Big Data
- Platform Technology Trends
  - Cloud computing platform

Source: Lim, E. P., Chen, H., & Chen, G. (2013). Business Intelligence and Analytics: Research Directions. *ACM Transactions on Management Information Systems (TMIS)*, *3*(4), 17

Business Intelligence and Analytics: Research Directions

1. Big Data Analytics
   - Data analytics using Hadoop / MapReduce framework
2. Text Analytics
   - From Information Extraction to Question Answering
   - From Sentiment Analysis to Opinion Mining
3. Network Analysis
   - Link mining
   - Community Detection
   - Social Recommendation

Source: Lim, E. P., Chen, H., & Chen, G. (2013). Business Intelligence and Analytics: Research Directions. *ACM Transactions on Management Information Systems (TMIS)*, *3*(4), 17

Big Data, Big Analytics:

Emerging Business Intelligence and Analytic Trends for Today's Businesses

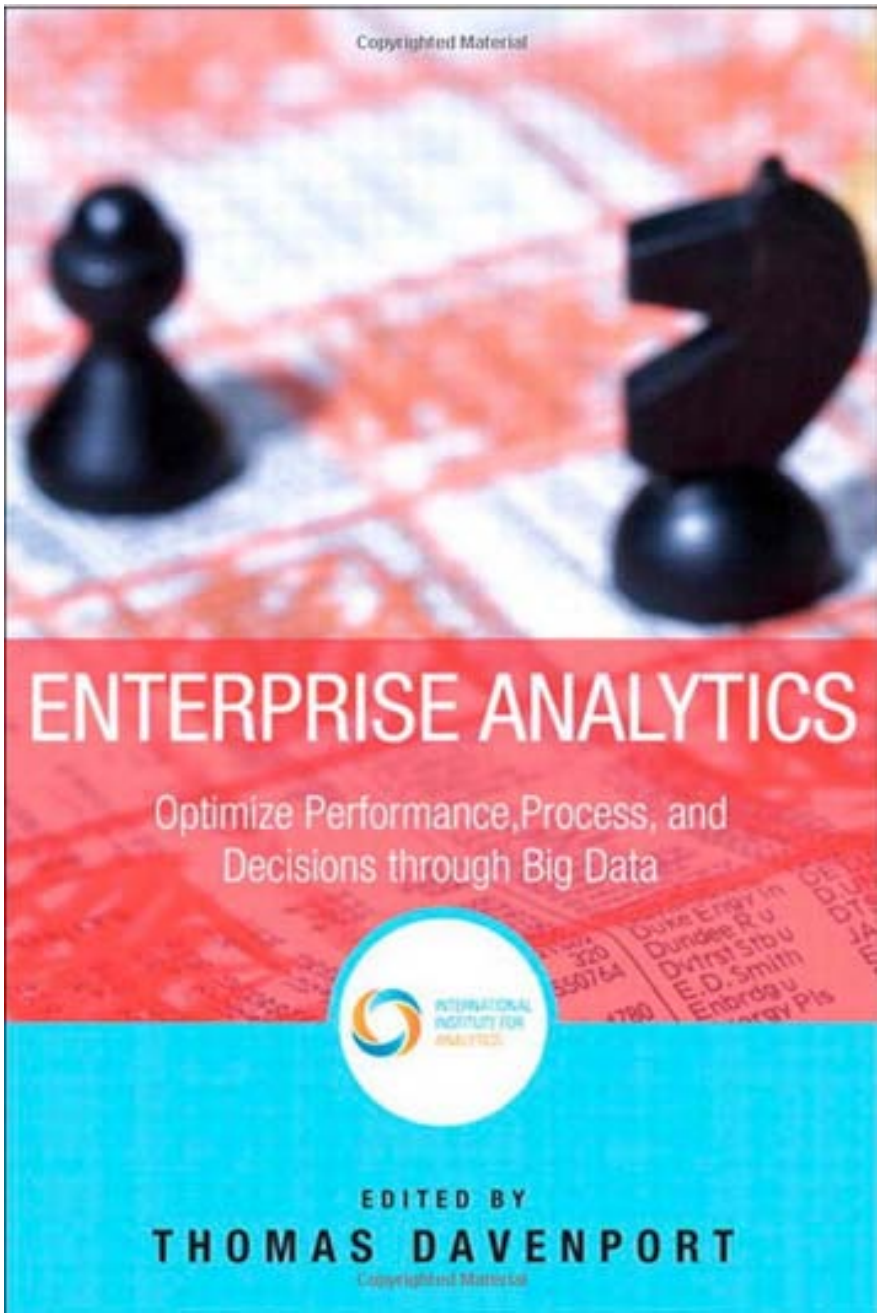
Source: http://www.amazon.com/Big-Data-Analytics-Intelligence-Businesses/dp/111814760X

Big Data:

The Management Revolution

Source: McAfee, A., & Brynjolfsson, E. (2012). Big data: the management revolution.*Harvard business review*.

Source: McAfee, A., & Brynjolfsson, E. (2012). Big data: the management revolution.*Harvard business review*.



Source: http://www.amazon.com/Enterprise-Analytics-Performance-Operations-Management/dp/0133039439

Business Intelligence and Enterprise Analytics

- Predictive analytics
- Data mining
- Business analytics
- Web analytics
- Big-data analytics

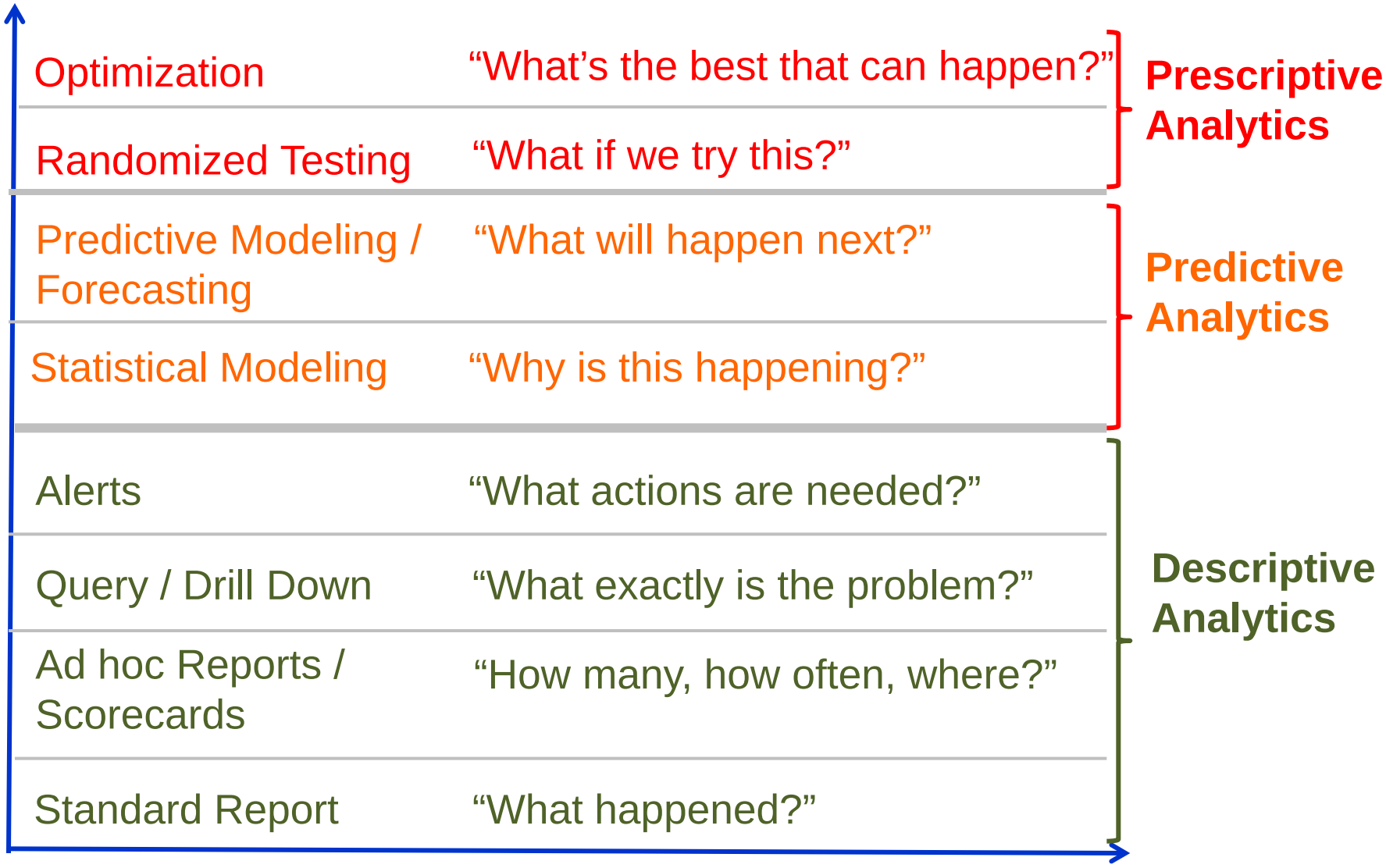
Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

Three Types of Business Analytics

- Prescriptive Analytics
- Predictive Analytics
- Descriptive Analytics

Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

Three Types of Business Analytics



Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

Big-Data Analysis

- **Too Big,**
  too Unstructured,
  too many different source
  to be manageable through traditional databases

Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

The Rise of "Big Data"

- "Too Big" means databases or data flows in **petabytes (1,000 terabytes)**
  - Google processes about 24 petabytes of data per day
- "Too unstructured" means that the data isn't easily put into the traditional rows and columns of conventional databases

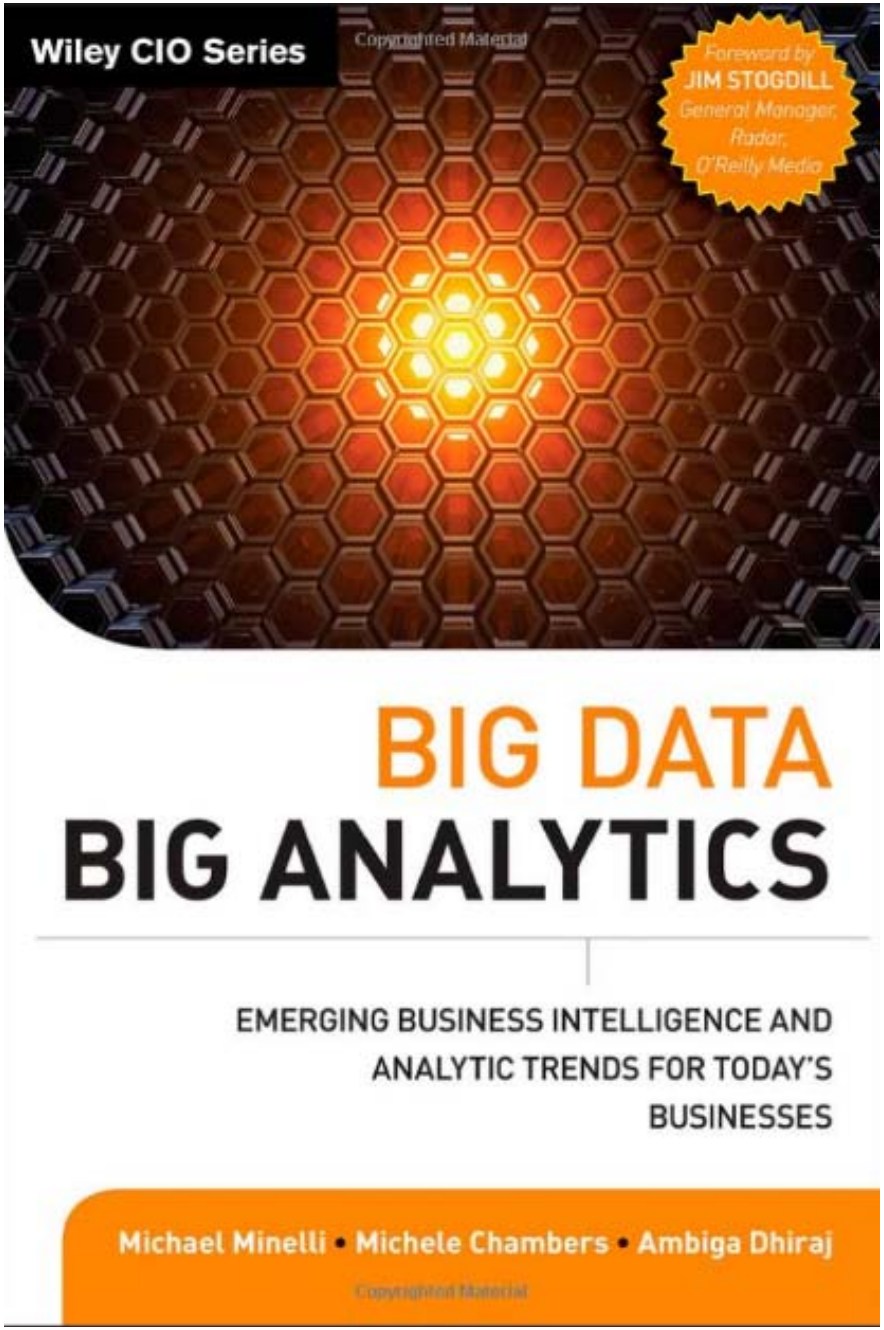
Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

Examples of Big Data

- Online information
  - Clickstream data from Web and social media content
    - Tweets
    - Blogs
    - Wall postings
- Video data
  - Retail and crime/intelligence environments
  - Rendering of video entertainment
- Voice data
  - call centers and intelligence intervention
- Life sciences
  - Genomic and proteomic data from biological research and medicine

Source: Thomas H. Davenport, "Enterprise Analytics: Optimize Performance, Process, and Decisions Through Big Data", FT Press, 2012

Source: http://www.amazon.com/Big-Data-Analytics-Intelligence-Businesses/dp/111814760X



Source: http://www.amazon.com/Big-Data-Analytics-Intelligence-Businesses/dp/111814760X

Big Data, Big Analytics:

Emerging Business Intelligence and Analytic Trends for Today's Businesses

- What Big Data is and why it's important
- Industry examples (Financial Services, Healthcare, etc.)
- Big Data and the New School of Marketing
- Fraud, risk, and Big Data
- Big Data technology
- Old versus new approaches
- Open source technology for Big Data analytics
- The Cloud and Big Data

Source: http://www.amazon.com/Big-Data-Analytics-Intelligence-Businesses/dp/111814760X

Big Data, Big Analytics:

Emerging Business Intelligence and Analytic Trends for Today's Businesses

- Predictive analytics
- Crowdsourcing analytics
- Computing platforms, limitations, and emerging technologies
- Consumption of analytics
- Data visualization as a way to take immediate action
- Moving from beyond the tools to analytic applications
- Creating a culture that nurtures decision science talent
- A thorough summary of ethical and privacy issues

Source: http://www.amazon.com/Big-Data-Analytics-Intelligence-Businesses/dp/111814760X

What is BIG Data?

Volume

Large amount of data

Velocity

Needs to be analyzed **quickly**

Variety

Different types of structured and unstructured data

Source: http://visual.ly/what-big-data

Data Scientist:

The Sexiest Job of the 21st Century

(Davenport & Patil, 2012)(HBR)

Source: Davenport, T. H., & Patil, D. J. (2012). Data Scientist. *Harvard business review*

Data Scientist:

The Sexiest Job of the 21st Century

Meet the people who can coax treasure out of messy, unstructured data.

by Thomas H. Davenport and D.J. Patil

When Jonathan Goldman arrived for work in June 2006 at LinkedIn, the business networking site, the place still felt like a start-up. The company had just under 8 million accounts, and the number was growing quickly as existing members invited their friends and colleagues to join. But users weren't seeking out connections with the people who were already on the site at the rate executives had expected. Something was apparently missing in the social experience. As one LinkedIn manager put it, "It was like arriving at a conference reception and realizing you don't know anyone. So you just stand in the corner sipping your drink—and you probably leave early."

Source: Davenport, T. H., & Patil, D. J. (2012). Data Scientist. *Harvard business review*

Case Study: Google, Apple, and Microsoft (Chap. 7)

Google, Apple, and Microsoft struggle for Your Internet Experience

1. Define and compare the business models and areas of strength of Apple, Google, and Microsoft.
2. Why is mobile computing so important to these three firms? Evaluate the mobile platform offerings of each firm.
3. What is the significance of applications and app stores to the success or failure of mobile computing?
4. Which company and business model do you believe will prevail in this epic struggle? Explain your answer.
5. What difference would it make to you as a manager or individual consumer if Apple, Google, or Microsoft dominated the Internet experience? Explain your answer.

資訊管理個案
(Case Study for Information Management)

1. 請同學於資訊管理個案討論前
   應詳細研讀個案，並思考個案研究問題。
2. 請同學於上課前複習相關資訊管理相關
   理論，以作為個案分析及擬定管理對策的
   依據。
3. 請同學於上課前
   先繳交個案研究問題書面報告。

References

- Kenneth C. Laudon & Jane P. Laudon (2012), Management Information Systems: Managing the Digital Firm, Twelfth Edition, Pearson.
- 周宣光　譯 (2011)，
  資訊管理系統—管理數位化公司，
  第12版，東華書局