#### **Kecerdasan Bisnis Terapan**

# Future Trends, Privacy and Managerial Considerations in Analytics

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Sumber awal: http://mail.tku.edu.tw/myday/teaching/1071/BI/1071BI13\_Business\_Intelligence.pptx



**Future Trends, Privacy** and Managerial **Considerations in Analytics** 

## Outline

- Internet of Things (IoT)
- Cloud Computing and Business Analytics
- Location-Based Analytics for Organizations
- Issues of Legality, Privacy, and Ethics
- Impacts of Analytics in Organizations
- Data Scientist as a Profession



Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017), Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

## Business Intelligence and Business Analytics



#### **Advanced Analytics**

Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017), Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

**Business Intelligence** 

# Building Blocks of IoT Technology Infrastructure



## **RFID Data Tag**

**Binary:** 

#### 



## Difference between Fog Nodes and a Cloud Platform

Fog Nodes	Cloud Platform
	Receives and aggregates data from
Receive data from IoT devices	fog nodes
Run IoT real-time analytics in millisecond response time	Analysis is performed on huge amounts of business data and can take hours or weeks

Physical device / Sensors Fog device generating data

Data Center / Cloud

### **Internet of Things Ecosystem**



### **Internet of Things Landscape 2018**

Internet of Things Landscape 2018

#### **APPLICATIONS (VERTICALS)**

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#### PLATFORMS (HORIZONTALS)

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**BUILDING BLOCKS** 

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HARDWARE	INFRASTRUCTURE	CONNECTIVITY		PARTNERS			
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## Managerial Considerations in the Internet of Things

- Organizational Alignment
- Interoperability Challenges
- Security

## Cloud Computing and Business Analytics

 The National Institute of Standards and Technology (NIST) defines cloud computing as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, and services) that can be rapidly provisioned and released with minimal management effort or serviceprovider interaction."

# Conceptual Architecture of a Cloud-Oriented Support System



Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017), Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

#### Infrastructure, Platform, Software, Data, Information, and Analytics as a Service

- Analytics as a Service (AaaS)
- Data as a Service (DaaS)
- Software as a Service (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (laaS)

# Technology Stack as a Service for Different Types of Cloud Offerings

Application	Application	Application	
Data	Data	Data	
Runtime	Runtime	Runtime	Managed by Client
Middleware	Middleware	Middleware	Managed by Cloud Vendo
Operating System	Operating System	Operating System	
Virtualization	Virtualization	Virtualization	
Servers	Servers	Servers	
Storage	Storage	Storage	
Networking	Networking	Networking	
nfrastructure as a Service	Platform as a Service	Software as a Service	
laaS	PaaS	SaaS	

Source: Ramesh Sharda, Dursun Delen, and Efraim Turban (2017), Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition, Pearson

# Essential Technologies for Cloud Computing

- VIRTUALIZATION
  - Virtualization is the creation of a virtual version of something like an operating system or server
  - Virtualization can be in all three areas of computing:
    - 1. Network virtualization
    - 2. Storage virtualization
    - 3. Server virtualization

## **Cloud Deployment Models**

- Private cloud
  - internal cloud or corporate cloud
- Public cloud
  - the subscriber uses the resources offered by service providers over the Internet
    - Microsoft Azure platform
    - Google App Engine
    - Amazon AWS
- Hybrid cloud
  - moving workloads between private and public cloud

# Major Cloud Platform Providers in Analytics

- Amazon Elastic Beanstalk
- IBM Bluemix
- Microsoft Azure
- Google App Engine
- OpenShift

## Representative Analytics as a Service (AaaS) Offerings

- ASTER ANALYTICS AS A SERVICE
- IBM WATSON ANALYTICS
- MINEMYTEXT.COM
- SAS VISUAL ANALYTICS AND VISUAL STATISTICS
- TABLEAU
- SNOWFLAKE
- PREDIX BY GENERAL ELECTRIC



## Issues of Legality, Privacy, and Ethics

#### • Legal Issues

- What is the value of an expert opinion in court when the expertise is encoded in a computer?
- Who is liable for wrong advice (or information) provided by an intelligent application?
- What happens if a manager enters an incorrect judgment value into an analytic application and the result is damage or a disaster?
- Who owns the knowledge in a knowledge base?
- Can management force experts to contribute their expertise?

## **Privacy Issues**

- Privacy means different things to different people.
- Privacy is the right to be left alone and the right to be free from unreasonable personal intrusions.
- Two rules of privacy

(1) the right of privacy is not absolute.Privacy must be balanced against the needs of society.

(2) The public's right to know is superior to the individual's right to privacy.

#### **Ethics in Decision Making and Support**

- Electronic surveillance
- Ethics in DSS design
- Software piracy
- Invasion of individuals' privacy
- Use of proprietary databases
- Use of intellectual property such as knowledge and expertise
- Exposure of employees to unsafe environments related to computers
- Computer accessibility for workers with disabilities
- Accuracy of data, information, and knowledge
- Protection of the rights of users
- Accessibility to information
- Use of corporate computers for non-work-related purposes
- How much decision making to delegate to computers

## **Impact of Analytics on Organizations**



## **Data Scientist as a Profession**

- Data scientist is a role or a job frequently associated with Big Data
- Data scientists use a combination of their business and technical skills to investigate Big Data
  - looking for ways to improve current business analytics practices (from descriptive to predictive and prescriptive) and
  - hence to improve decisions for new business opportunities.

## **Skills that define a Data Scientist**



## Summary

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