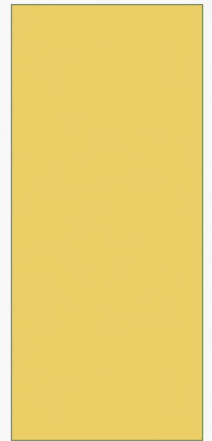


# PERKEMBANGAN PENELITIAN DI BIDANG SISTEM INFORMASI

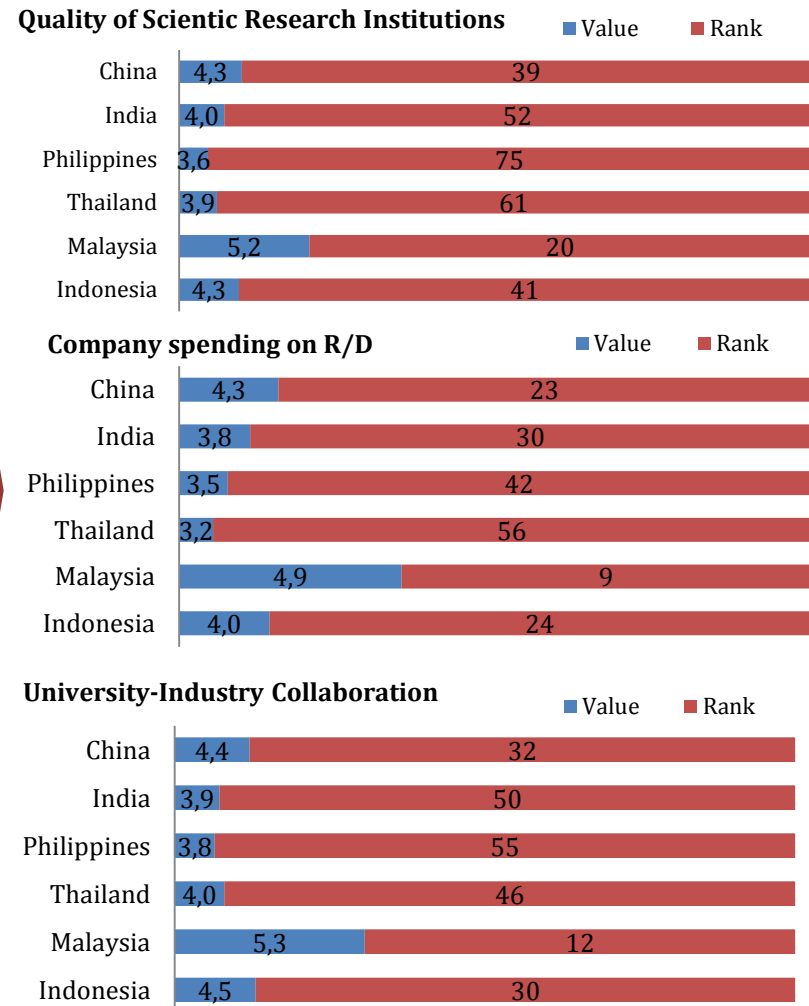
PROF. DR. SRI MULYANI, AK., CA.



# DAYA SAING R&D INDONESIA

GLOBAL COMPETITIVENESS REPORT, WEF

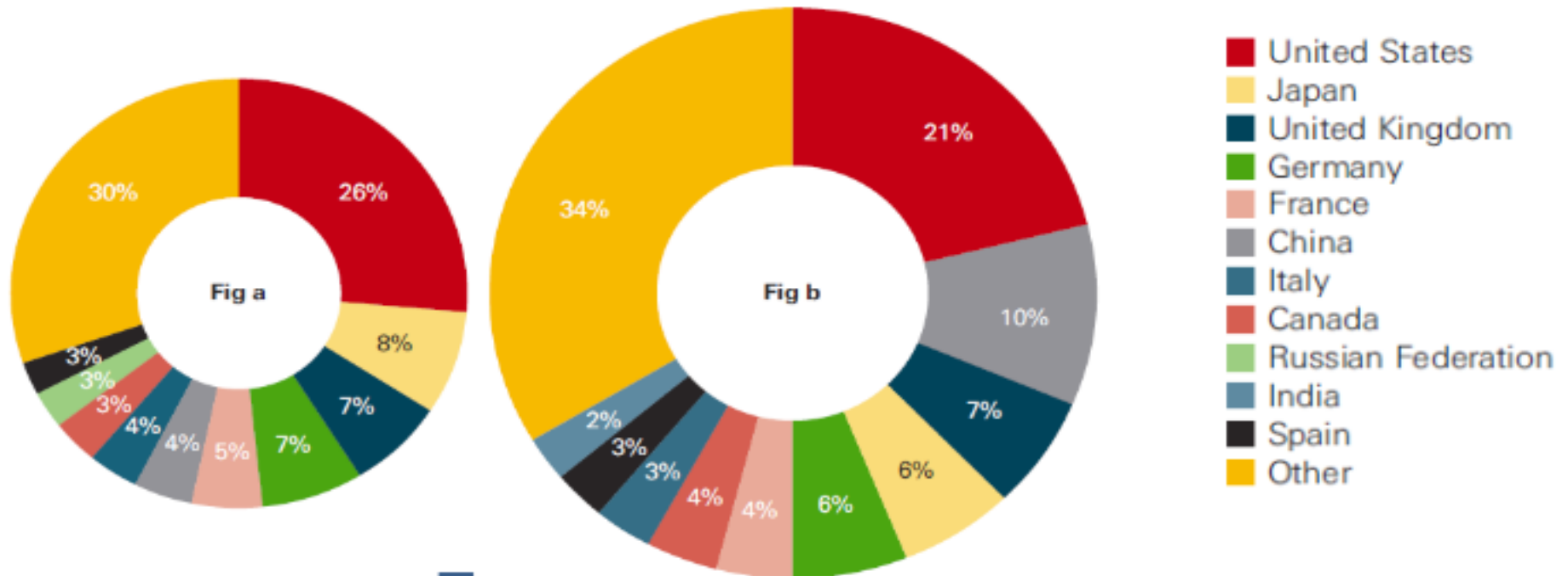
- Salah satu pilar penting untuk meningkatkan daya saing adalah inovasi.
- Inovasi didukung oleh beberapa hal antara lain kualitas institusi riset, dana riset, serta kolaborasi universitas-industri
- Data Global Competitiveness Report menunjukkan bahwa kualitas institusi riset, dana riset dan kolaborasi universitas-industri Indonesia masih tertinggal dibanding negara lain seperti Malaysia



# PROPORSI PUBLIKASI BERDASARKAN NEGARA (10 BESAR)

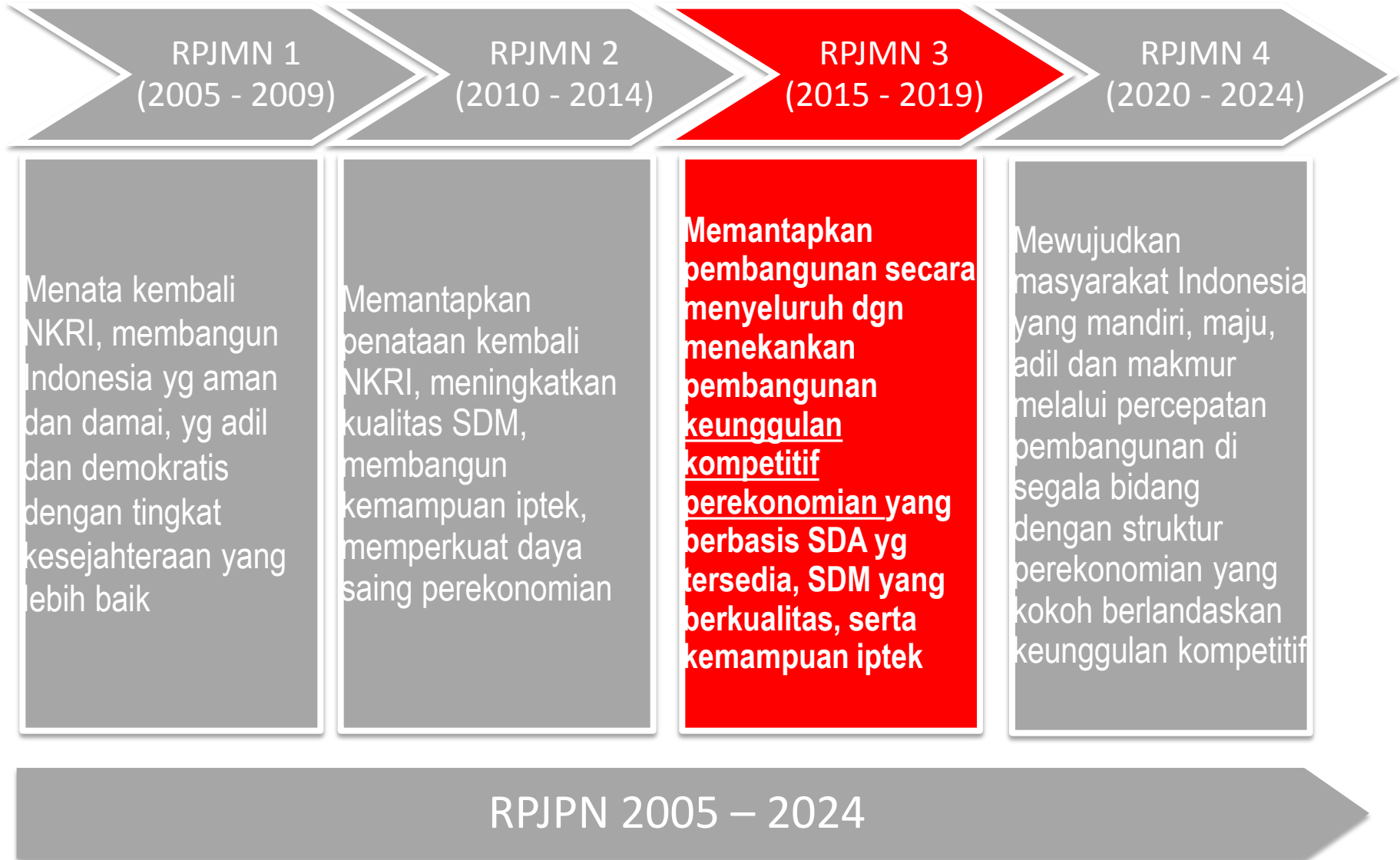
Figure 1.1. Proportion of global publication authorship by country<sup>17</sup>

The top ten producing countries in each period are shown. **Fig a.** 1999-2003. **Fig b.** 2004-2008



- Ada keterkaitan kuat antara produktivitas publikasi dengan kondisi ekonomi suatu negara
- Publikasi pada Jurnal Internasional bereputasi merupakan salah satu tolok ukur daya saing bangsa

# Prioritas RPJMN



# Kerangka Logis Pilar Utama Kemenristekdikti



# Perkembangan Penelitian di Bidang Sistem Informasi

- **Virtual Realities**

- Blurring the Boundaries: Disentangling the Implications of Virtual Space  
Anita Greenhill

- **Software Engineering**

- Surf: Achieving Quality Through Software Reuse—A Process Improvement Experiment in IBM Italia  
Marco Riva and Alessandro Agostoni

- **Knowledge Management: Intra- and Interorganizational Issues**

- Investigating the Contradictions in Knowledge Management  
Ulrike Schultze

- **Collaboration Technology and Workflow**

- Collaboration and Collaborative Information Technology: What is the Nature of Their Relationship?  
Helena Karsten

# Perkembangan Penelitian di Bidang Sistem Informasi

- **Theory as a Vehicle for Exploration**

- Toward a Socio-cognitive Theory of Information Systems: An Analysis of Key Philosophical and Conceptual Issues  
Christopher J. Hemingway

- **Actors and Networks in Systems Development**

- A Social Action Model of Situated Information Systems Design  
Susan Gasson

- **Information Systems Strategy**

- 24 SMEs and the Gains from IS: From Cost Reduction to Value Added  
Margi Levy, Philip Powell, and Philip Yetton

# Perkembangan Penelitian di Bidang Sistem Informasi

- **Standardizing Information Systems**

- **Application Packages**

- 26 International Trade at the Speed of Light: Building an Electronic Trading Infrastructure in Denmark, Finland, and Hong Kong

- **Methods and Models**

- 28 Innovations in Fiefdoms: Developing a Common Student Information System in Six Finnish Universities  
Ari Heiskanen, Michael Newman, and Vesa Saarinen

- **Change and Change Drivers**

- 30 Change Effects and Legacy Information Systems: A Framework to Aid Our Understanding  
Carole Brooke, Magnus Ramage, Keith Bennett, and Nicolas Gold



# **ISU-ISU TERKINI**

# Virtual Reality

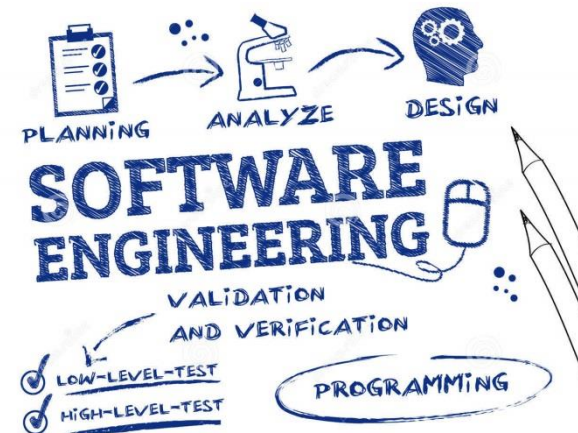
- The virtual reality may be interpreted as a synergy effect, which occurs when information is interpreted and processed across time and space



Information Technology at The Turn of  
Millenium: Past, Present, and Future Trends  
by Tor J. Larsen and Linda Levine

# Software Engineering Practice

- Software quality approach in medium and small size development organizations
- The manager's role in software process improvement
- Project managers as the vehicle for identification of critical issues



Information Technology at The Turn of  
Millennium: Past, Present, and Future Trends  
by Tor J. Larsen and Linda Levine

# Knowledge Management

- The transition of focus from project management to managing innovation capability
- Knowledge sharing may result in competitive advantage, but competitors may also use the gained knowledge to increase their own market share and value



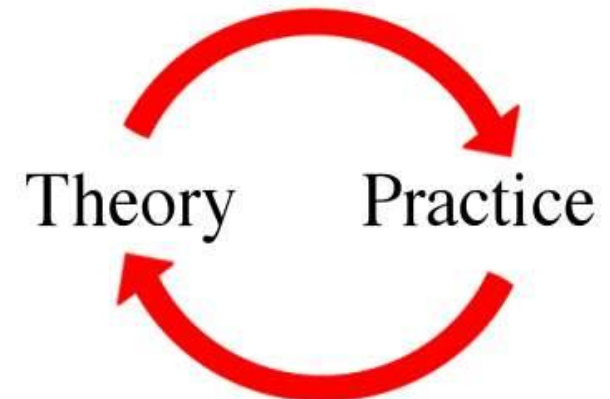
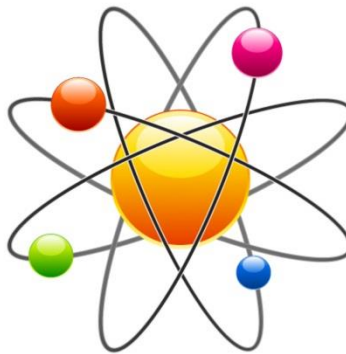
Information Technology at The Turn of  
Millennium: Past, Present, and Future Trends  
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# Theory As A Vehicle for Exploration

- The social characteristics of knowledge, reason, and action as the elements in problem solving

**Theory**



# Actors and Networks in System Development

- The communication between system analysts and their (user) clients
- The need to integrate the technology and the social system of the user



Information Technology at The Turn of  
Millennium: Past, Present, and Future Trends

by Tor J. Larsen and Linda Levine

# Information Systems Strategy

- Businesses must focus on the process by which IT systems are developed and implemented



Information Technology at The Turn of  
Millenium: Past, Present, and Future Trends  
by Tor J. Larsen and Linda Levine



# Standardizing Information Systems

- EDI in electronic trade
- Automation cost as the basis for defining business process steps
- Development standardization within one type of organization
- The issues of the management of IT skills, IT infrastructures, and IT relationships for nurturing IT-based innovation







# IS/IT Education



- Traditional IS education system does not prepare our student for the true state-of-affairs in the practical world



# UNIFIED MODELING LANGUAGE (UML)

The Unified Modeling Language (UML) is the most widely used modeling language across the specification, design and documentation of software intensive systems

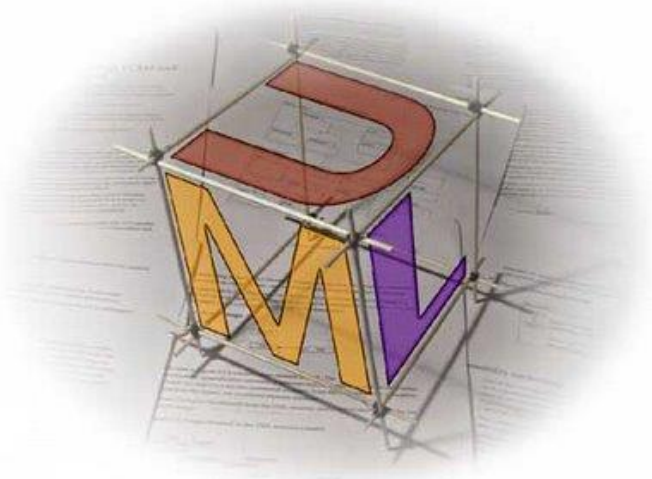


# UML USE CASE

## Definisi

“Langkah-langkah untuk mencapai tujuan, biasanya dengan cara mendefinisikan interaksi antaraktor”

(Jacobson et al, 1992.)



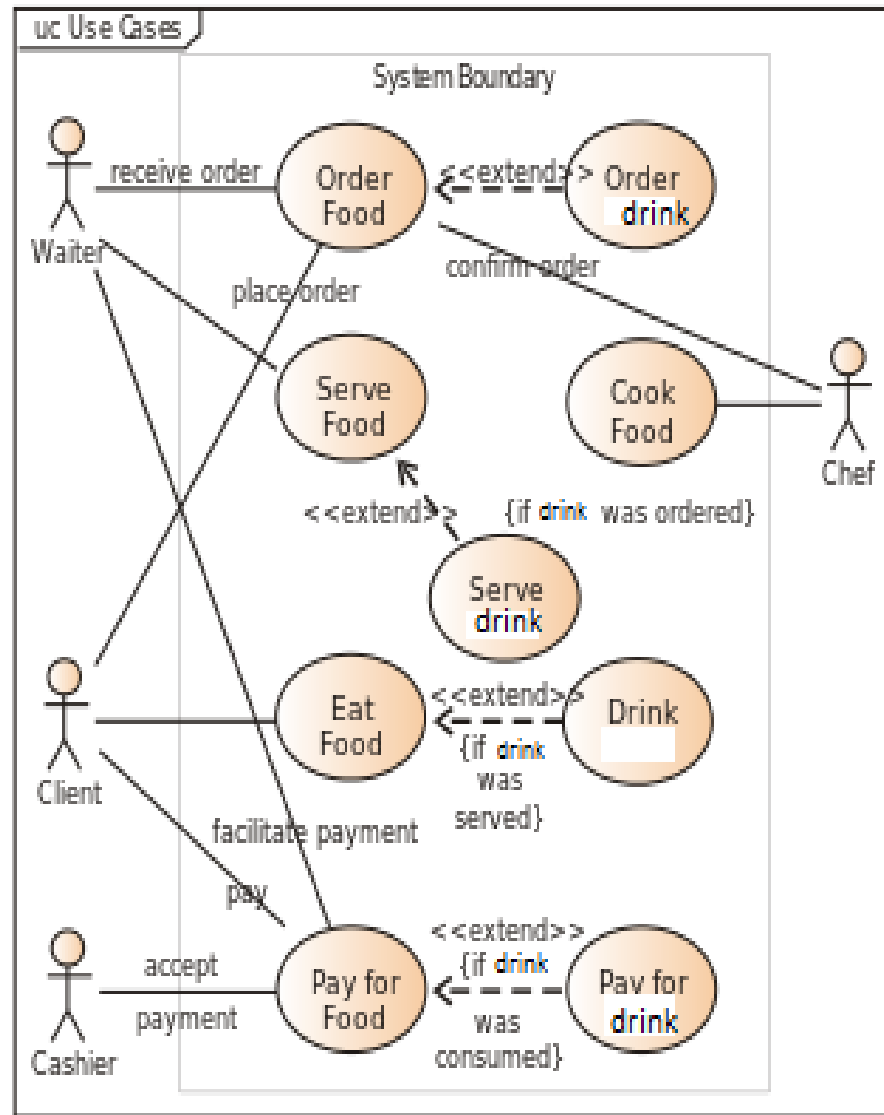
# UML USE CASE

Menurut Alistair Cockburn, struktur UML Use Case mencakup:

- 1) Title (Goals)
- 2) Primary Actor
- 3) Scope
- 4) Level
- 5) Story



# UML USE CASE



Author: Marcel Douwe Dekker

Sumber: [http://en.wikipedia.org/wiki/File:Use\\_case\\_restaurant\\_model.svg](http://en.wikipedia.org/wiki/File:Use_case_restaurant_model.svg)

# UML ACTIVITY

## Definisi

“Merepresentasikan workflow dari aktivitas dan tindakan yang dilakukan jika terdapat pilihan, konkurensi, dan iterasi.”

**Konstruksi activity diagram** terdiri dari bentuk-bentuk yang dihubungkan dengan panah

**Bentuk-bentuk yang umum** digunakan:

- persegi panjang (*rounded-corner*) merepresentasikan *actions*;
- Belah ketupat merepresentasikan *decisions*;
- tongkat (*bars*) merepresentasikan *split* atau *join* dari aktivitas konkuren;
- lingkaran hitam merepresentasikan *initial state of the workflow*;
- lingkaran hitam dengan outline putih merepresentasikan *final state*

Sumber:

UML Revision Task Force.

*OMG Unified Modeling Language Specification, Version 1.4 (final draft). February 2001.*

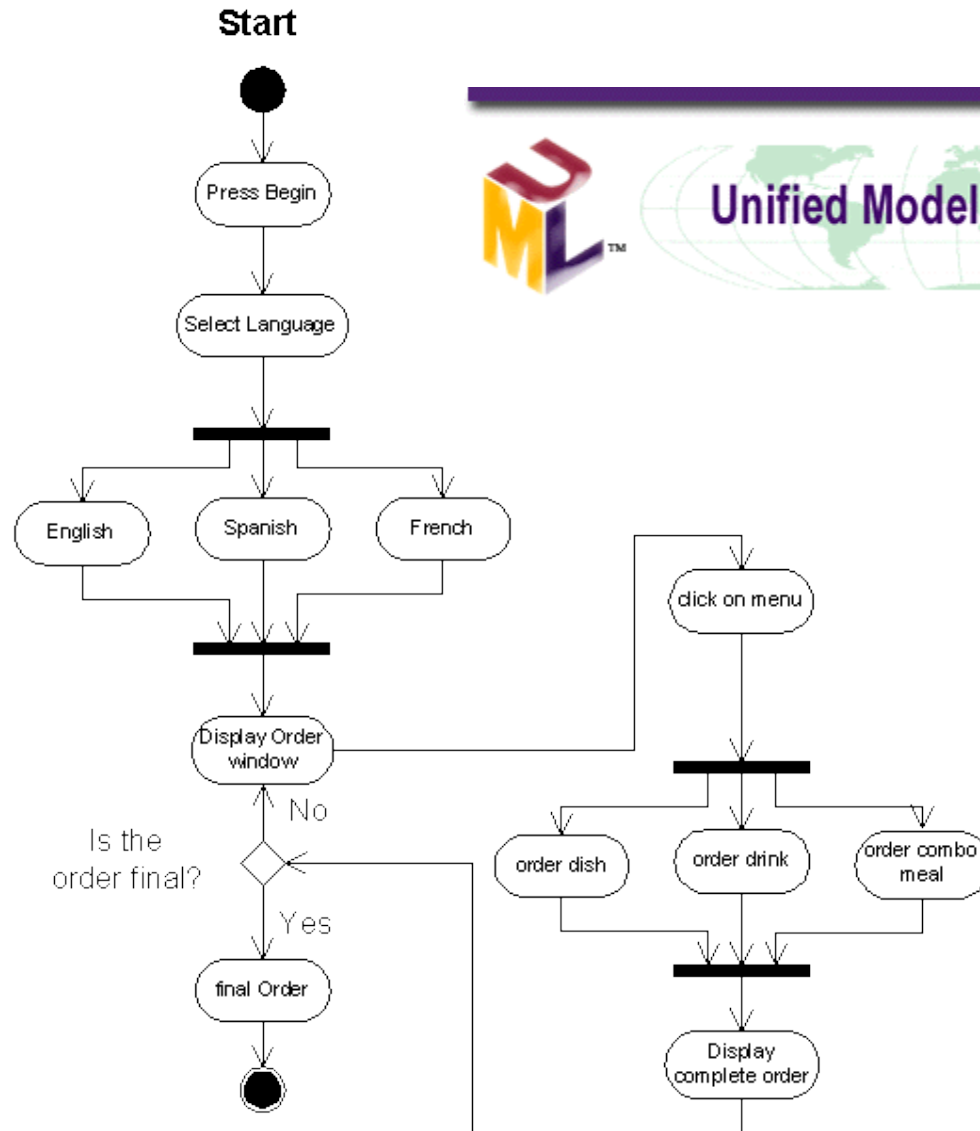
Sumber:

OMG Unified Modeling Language Superstructure Specification, version 2.1.1.

*Document formal/2007-02-05, Object Management Group, February 2007.*

[http://www.omg.org/cgi-bin/doc?formal/2007-02-05.](http://www.omg.org/cgi-bin/doc?formal/2007-02-05)

# UML ACTIVITY



Unified Modeling Language

Sumber:

<http://www.eng.umd.edu/~austin/ense621.d/projects04.d/project-food-ordering/images/ense621-image004.gif>

By: UMD EDU

## CURRENT ISSUES LAINNYA

Big Data

Cryptocurrency

Digital signature

Digital certificate

Business Intelligence

Strategic Information Systems

Cloud Accounting



# Big Data

Ubiquitous Computing

Internet of Thing

Internet of Everything



Massive growth of data



## Industry use:

Banking → data transaksi

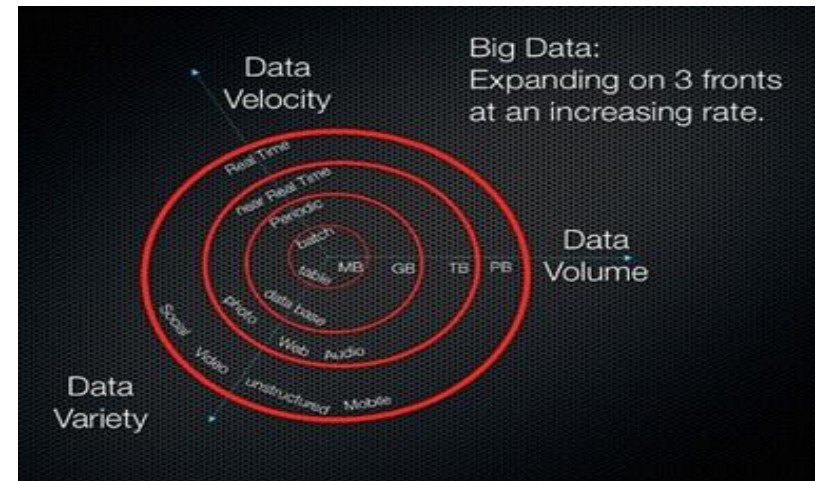
Telecommunication → perilaku pelanggan

Manufacturing → long term trending analysis

Mining and oil & gas → dashboard visualisi holistik

Automotive → perilaku smart car

Government → smart city





# Cryptocurrency

Mata uang digital yang menggunakan teknologi kriptografi untuk keamanan yang membuatnya tidak dapat dipalsukan

Nilainya ditentukan oleh penawaran dan permintaan di pasar

Transaksinya semi anonim yang hampir tidak dapat dilacak

Desentralisasi dan dikelola oleh teknologi peer to peer



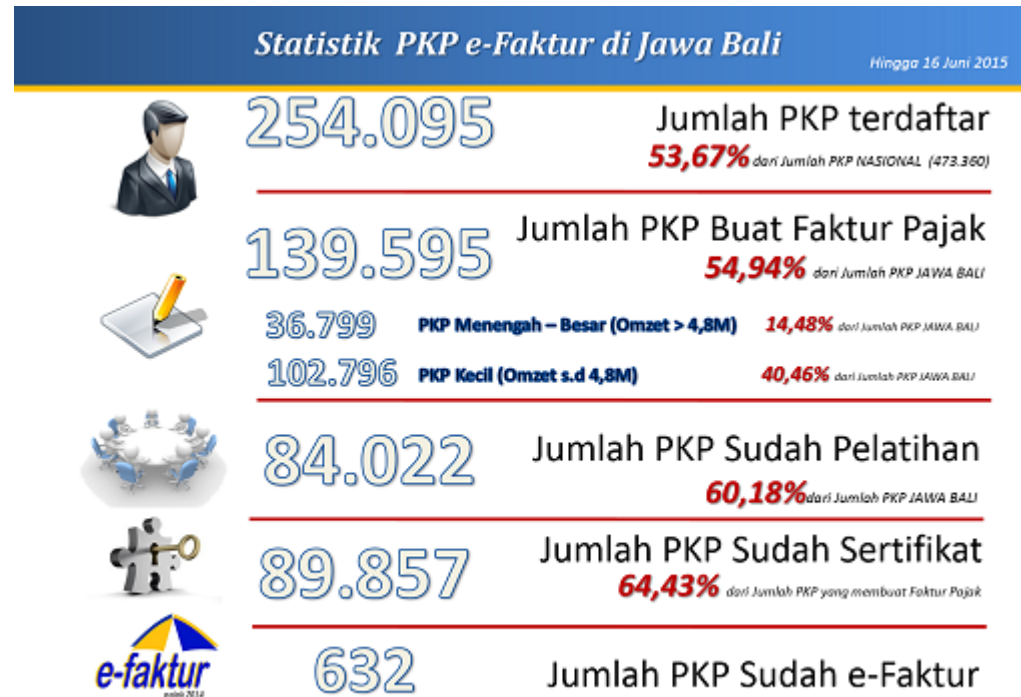
# Digital Signature & Digital Certificate

Sejak bulan Juli 2015 program e-Faktur atau Faktur Pajak diberlakukan oleh DJP untuk Pengusaha Kena Pajak (PKP) seluruh Jawa dan Bali

Pemberlakuan e-Faktur secara nasional akan secara serentak dimulai pada 1 Juli 2016.

Dengan program E-Faktur maka penerbitan Faktur Pajak tidak lagi membutuhkan tanda tangan basah karena Faktur pajak elektronik ini menggunakan **tanda tangan digital (digital signature)** berbentuk QR code

PKP harus memiliki **sertifikat elektronik (digital certificate)** untuk menggunakan e-Faktur



# Business Intelligence

Decision support system terus dikembangkan ke arah **business intelligence**

## Artificial Intelligence



Teknologi produk akhir yang semakin canggih dan siap jual



Teknologi mendukung business process melalui **data mining** dalam hal menyediakan informasi yang tepat guna untuk pengambilan keputusan



Bisnis adalah gabungan antara intuisi dan informasi

Informasi akan memperkuat intuisi dalam mengambil keputusan





# Strategic Information Systems

Strategic information systems are information systems that are developed in response to corporate **business initiative**

They are intended to give **competitive advantage** to the organization

They may **deliver a product or service** that is at a **lower cost**, that is **differentiated**, that **focuses** on a particular market segment, or is **innovative**.

They offer tools for helping companies apply metrics and analytical tools to their information repositories, allowing them to **recognize opportunities for growth and pinpoint ways to improve operational efficiency**.



# Cloud Accounting

On-line Accounting

Data disimpan dan diproses dalam cloud

Dapat diakses kapan saja dan dimana saja selama ada jaringan koneksi internet



TERIMA KASIH

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