6 Mitos Kesalahan Pengembangan Software

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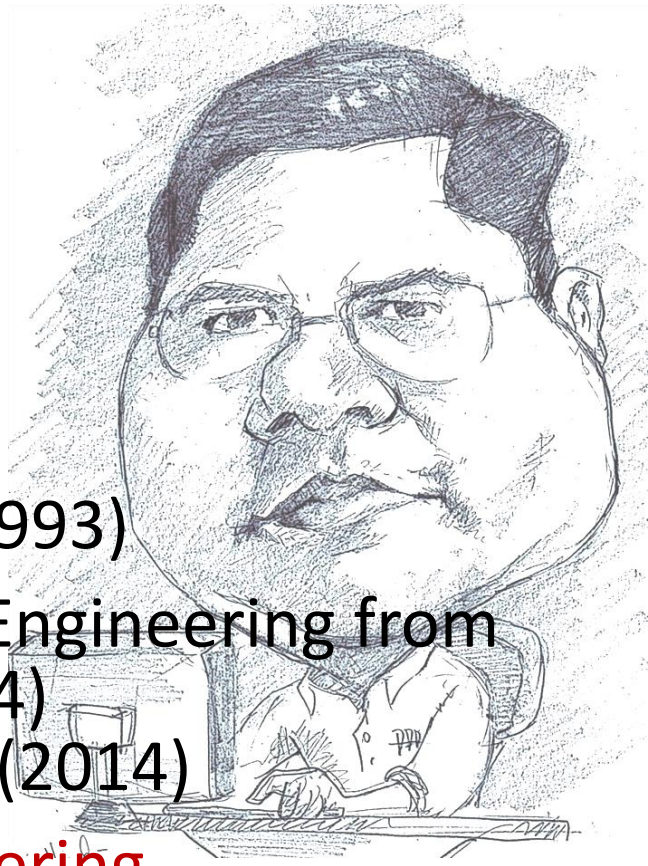


- SD Sompok Semarang (1987)
- SMPN 8 Semarang (1990)
- SMA Taruna Nusantara Magelang (1993)
- B.Eng, M.Eng and Ph.D in Software Engineering from Saitama University Japan (1994-2004)
  Universiti Teknikal Malaysia Melaka (2014)
- Research Interests: Software Engineering, Machine Learning
- Founder dan Koordinator IlmuKomputer.Com
- Peneliti LIPI (2004-2007)
- Founder dan CEO PT Brainmatics Cipta Informatika

Mengapa Pengembangan Software?

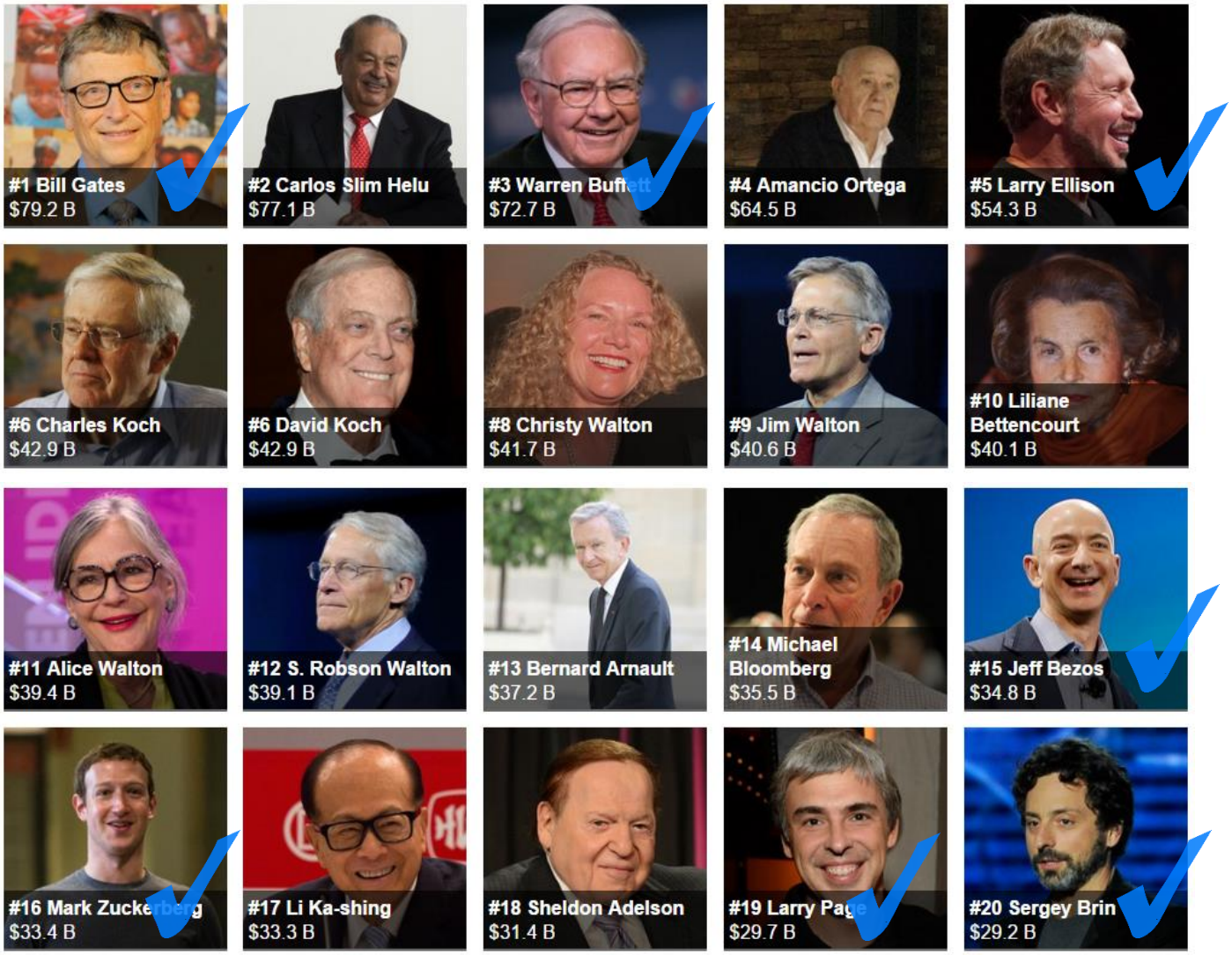
Software adalah Hidup Kita!

- Hampir semua peralatan elektronik digerakkan oleh software!
  - Mobil, pesawat terbang, kapal laut, …
  - Telepon, bangunan, kota, …
- Semua disiplin ilmu menggunakan software!
  - Teknik dan sains (teknik sipil, teknik mesin, teknik geologi, …)
  - Kedokteran, farmasi, …
- Hardware tidak berfungsi tanpa software di dalamnya

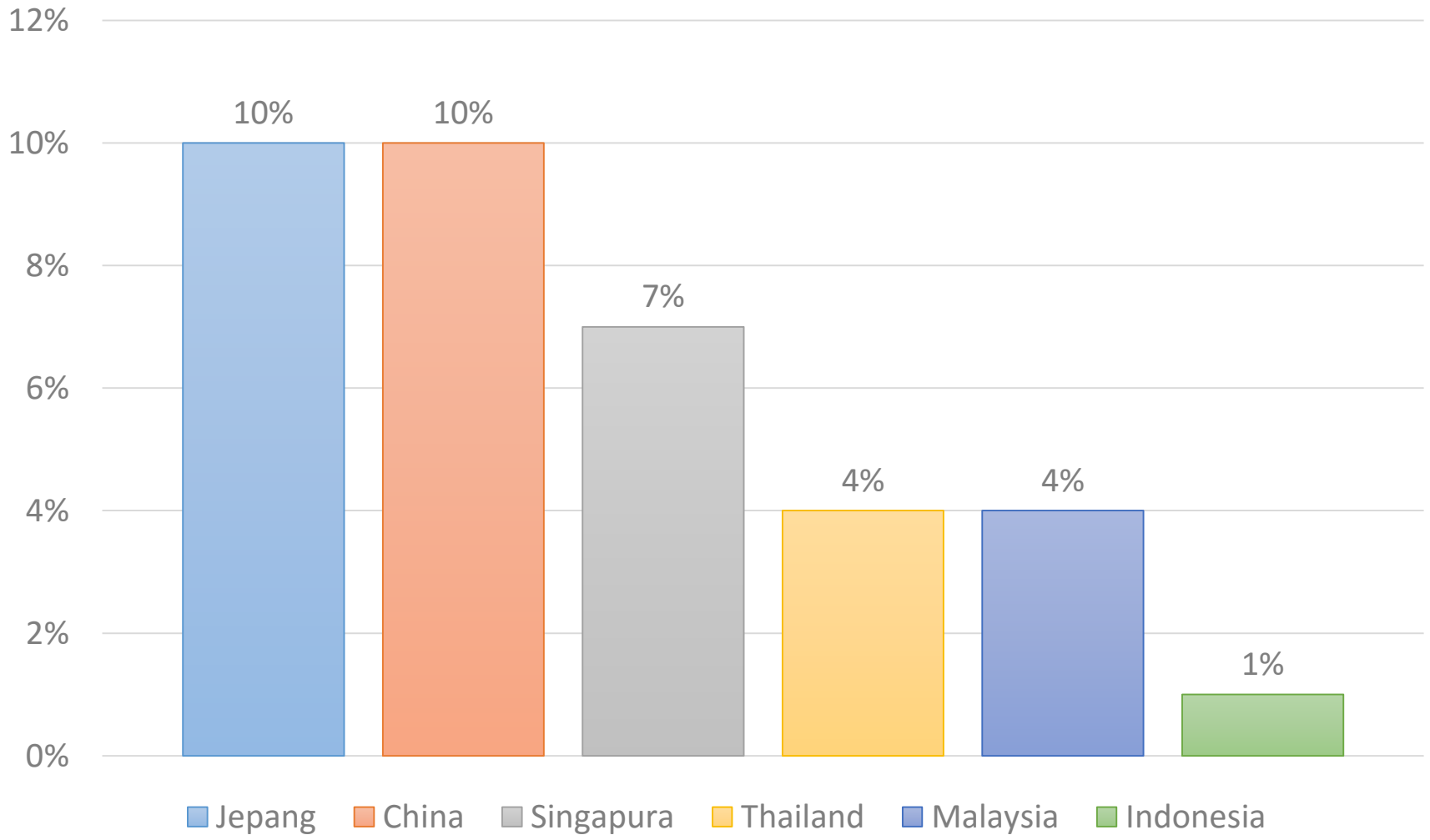
5 Best Jobs in the World

1. Software Engineer:
   - $80,500 Average Pay and 46% 10 Year Growth
2. College Professor:
   - $81,500 Average Pay and 31% 10 Year Growth
3. Financial Adviser:
   - $122,500 Average Pay and 26% 10 Year Growth
4. Human Resources Manager:
   - $73,500 Average Pay and 23% 10 Year Growth
5. Physician Assistant:
   - $75,000 Average Pay and 50% 10 Year Growth

The World's Billionaires



Rasio Jumlah Entrepreneur



6 Mitos Kesalahan Pengembangan Software

MITOS 1

Cara yang Ada Sekarang Masih Manual, Karena Itu Akan Saya Buatkan Softwarenya!

Kegagalan Pengembangan Software

Lebih dari 50% project pengembangan software gagal (42% - Standish Group, 53% - General Accounting Office)

- Dibatalkan sebelum selesai
- Software selesai tapi tidak pernah dipakai
- Software tidak bermanfaat bagi pengguna
- Software tidak sesuai dengan keinginan pengguna

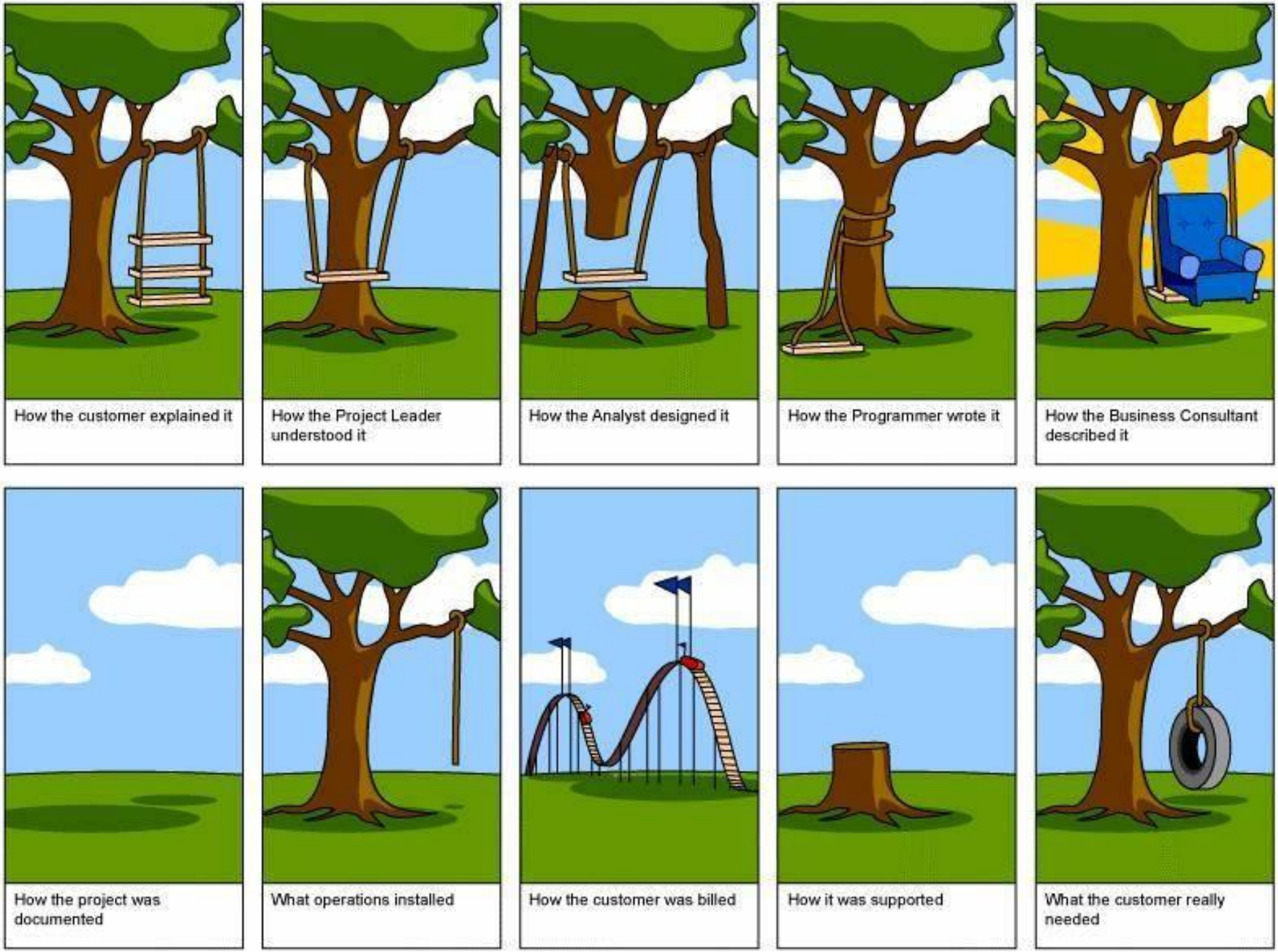
Size Berbanding Lurus dengan Kegagalan

Company	Year	Outcome
Hudson Bay (Canada)	2005	Inventory system problems lead to $33.3 million loss
UK Inland Revenue	2004/5	$3.45 billion tax-credit overpayment caused by software errors
Avis Europe PLC (UK)	2004	Enterprise resource planning (ERP) system cancelled after $54.5 million spent
Ford Motor Co.	2004	Purchasing system abandoned after deployment costing approximately $400 M
Hewlett-Packard Co.	2004	ERP system problems contribute to $160 million loss
AT&T Wireless	2004	Customer relations management (CRM) system upgrade problems lead to $100M loss

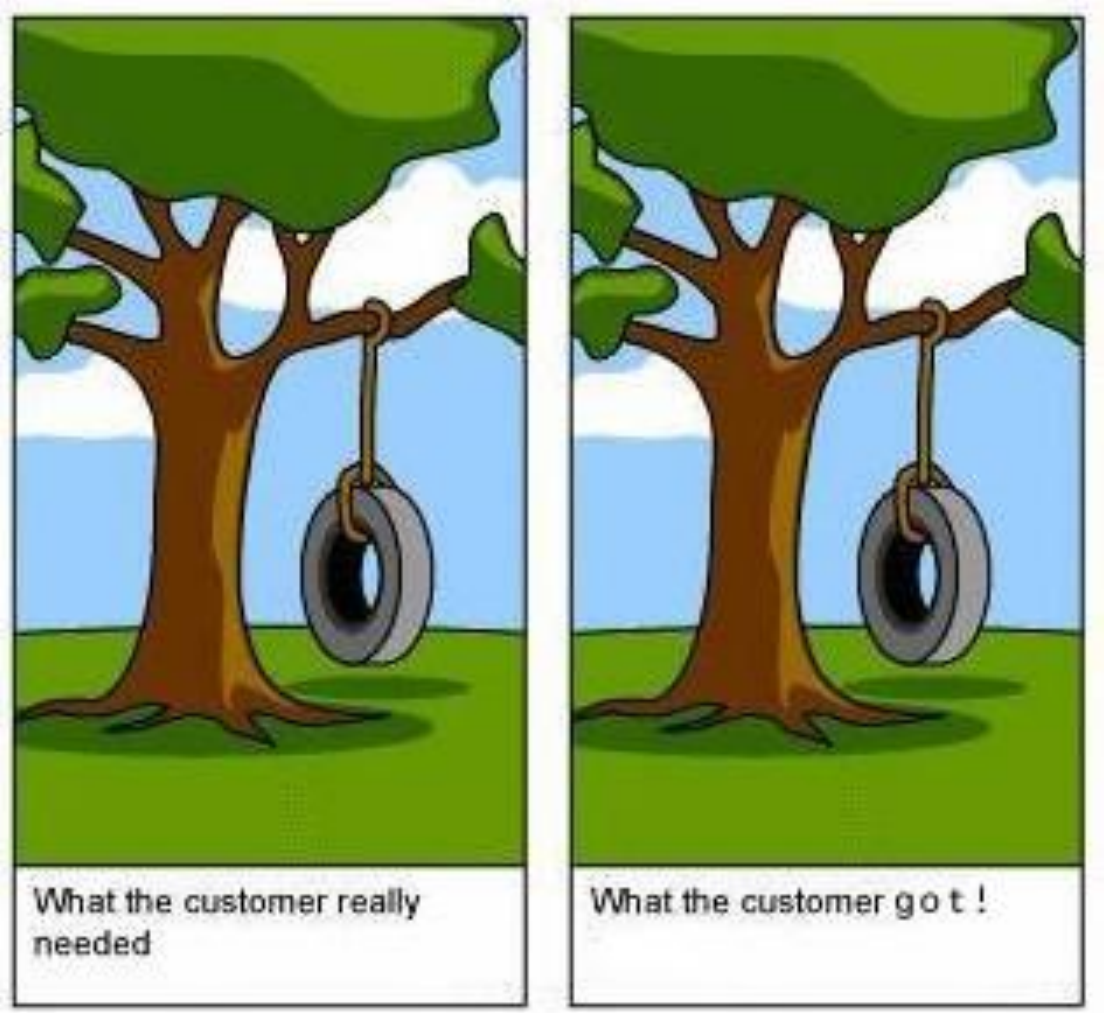
Membangun Software itu Sulit

Building software will always be hard.
There is inherently no silver bullet

(Brooks, 1987)


How the customer explained it
How the Project Leader understood it
How the Analyst designed it
How the Programmer wrote it
How the Business Consultant described it
How the project was documented
What operations installed
How the customer was billed
How it was supported
What the customer really needed

Tantangan di Pengembangan Software



Good software:

- Should deliver the functionality and performance that the software users need
- Should be maintainable, dependable and usable

(Sommerville, 2012)

Teori Dasar Komputasi

- Manusia itu lambat tapi cerdas
- Komputer itu cepat tapi bodoh

- Serahkan masalah kecepatan pada komputer, dan prioritaskan urusan kecerdasan kepada manusia

Analisis Kembali Sistem di Sekitar Kita

- Sistem Komputerisasi KTP
- Sistem e-KTP
- Sistem Pencatatan Pembersihan Toilet
- Sistem e-Learning di Universitas

Komputer dan Software Datang untuk Memberi Manfaat dan Mempercepat Pekerjaan Manusia

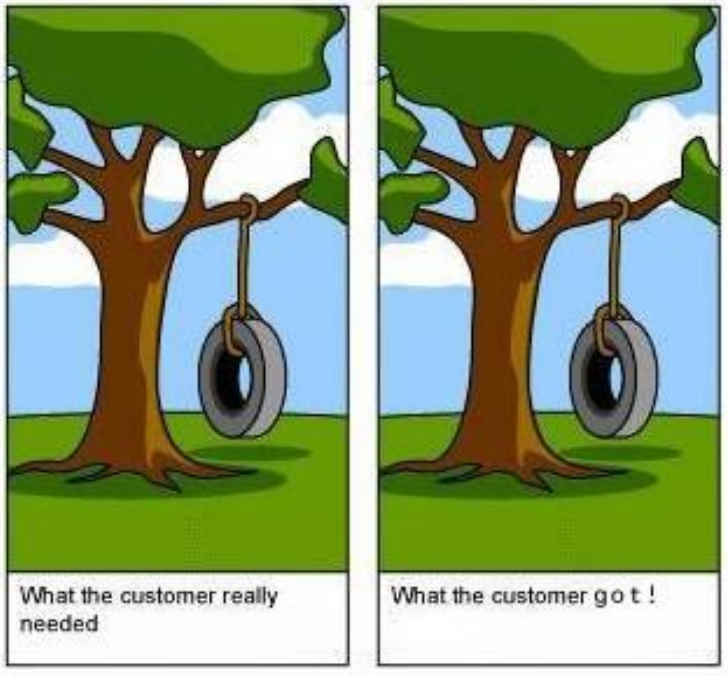
MITOS 2

Kualitas Software Dinilai dari Teknologi yang Digunakan

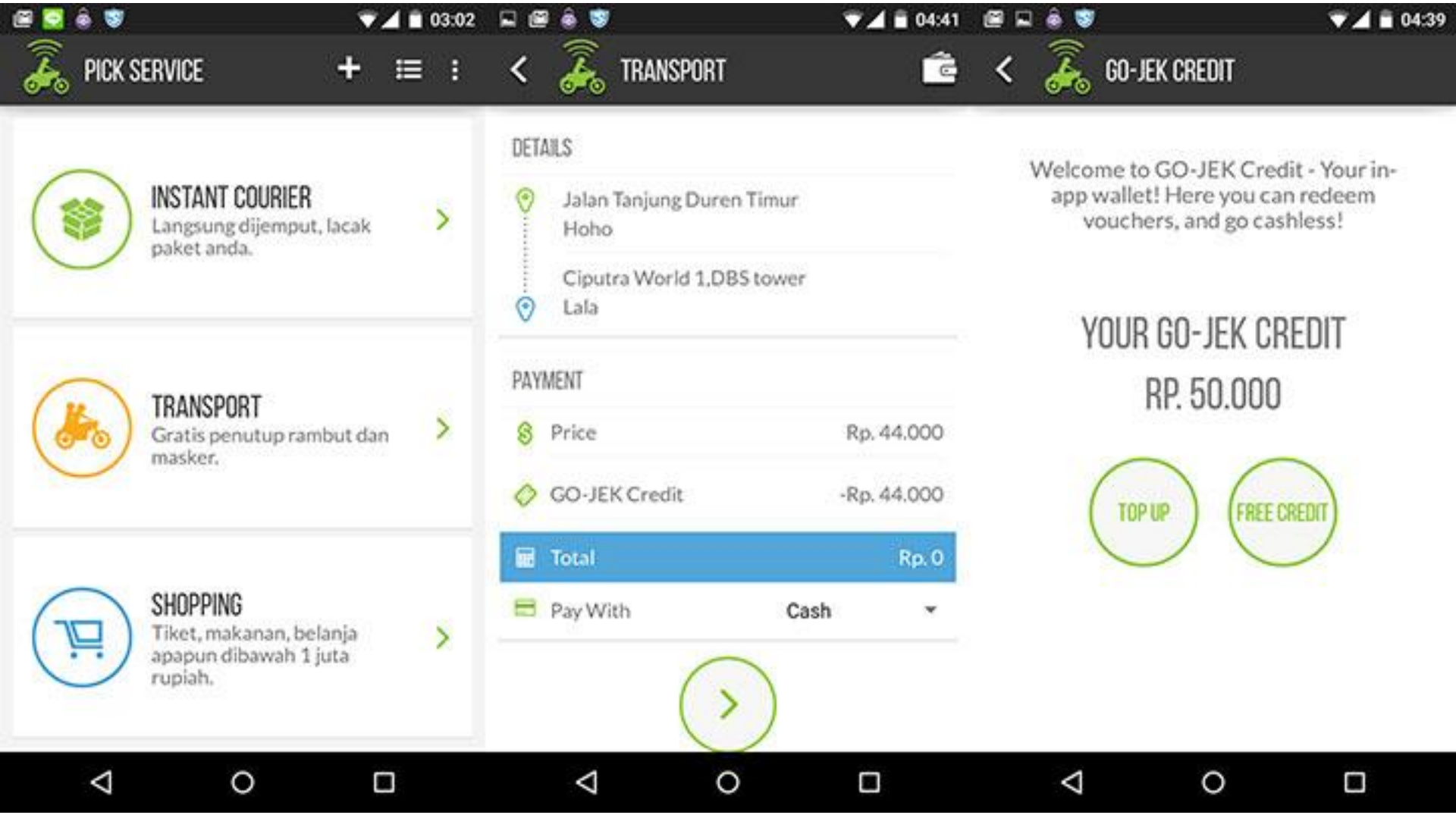
Kualitas Software

Software quality is *(IEEE, 1991)*:

1. The degree to which a system, component, or process meets specified requirements
2. The degree to which a system, component, or process meets customer expectation or user needs (benefits)



Software untuk Pesan Ojek (Go-Jek)



Kualitas Software?

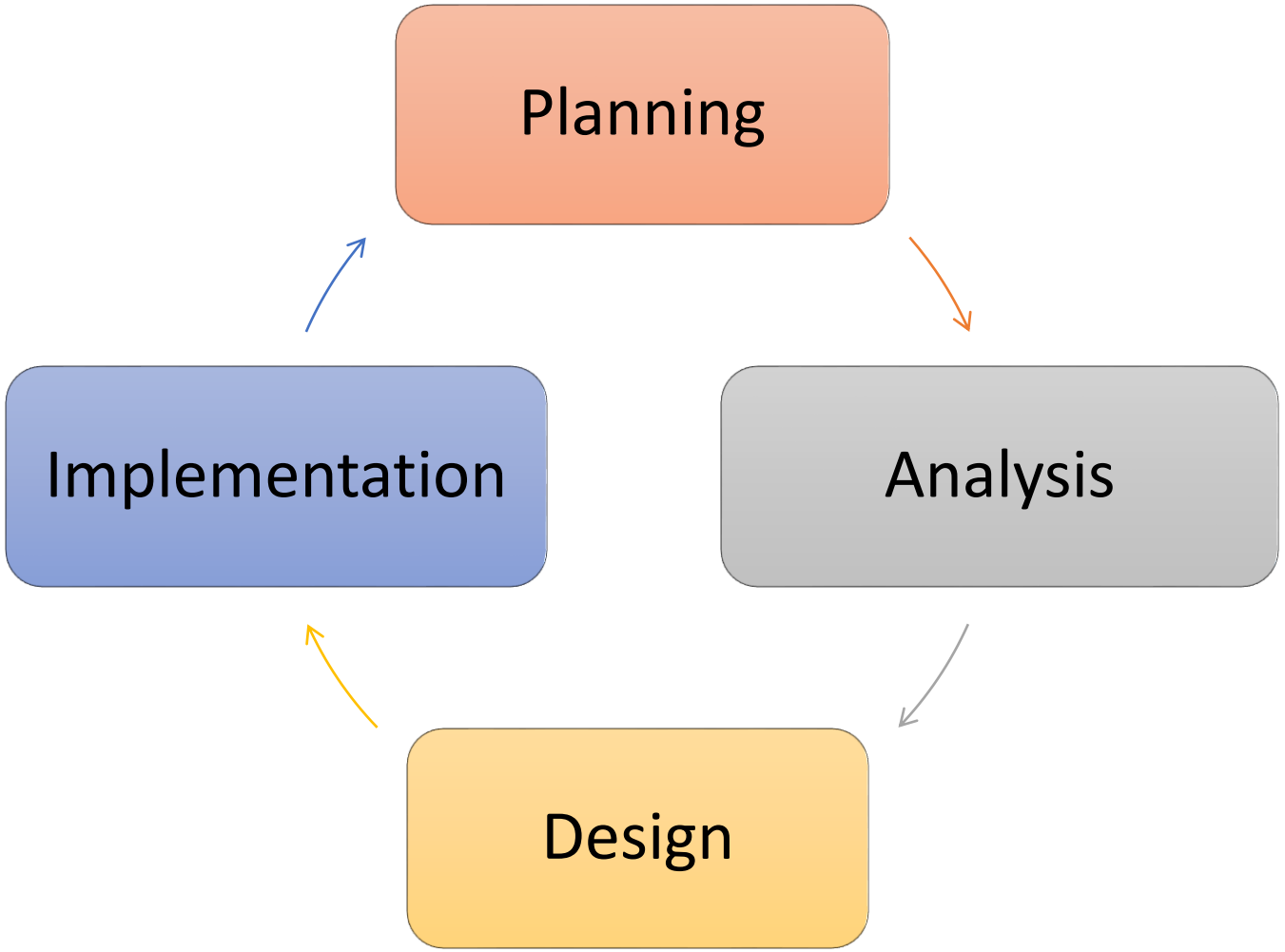
- Teknologi bukan faktor terpenting dari kualitas software!

- Keunikan ide, bermanfaat dan sesuai kebutuhan adalah hal yang menentukan kualitas software

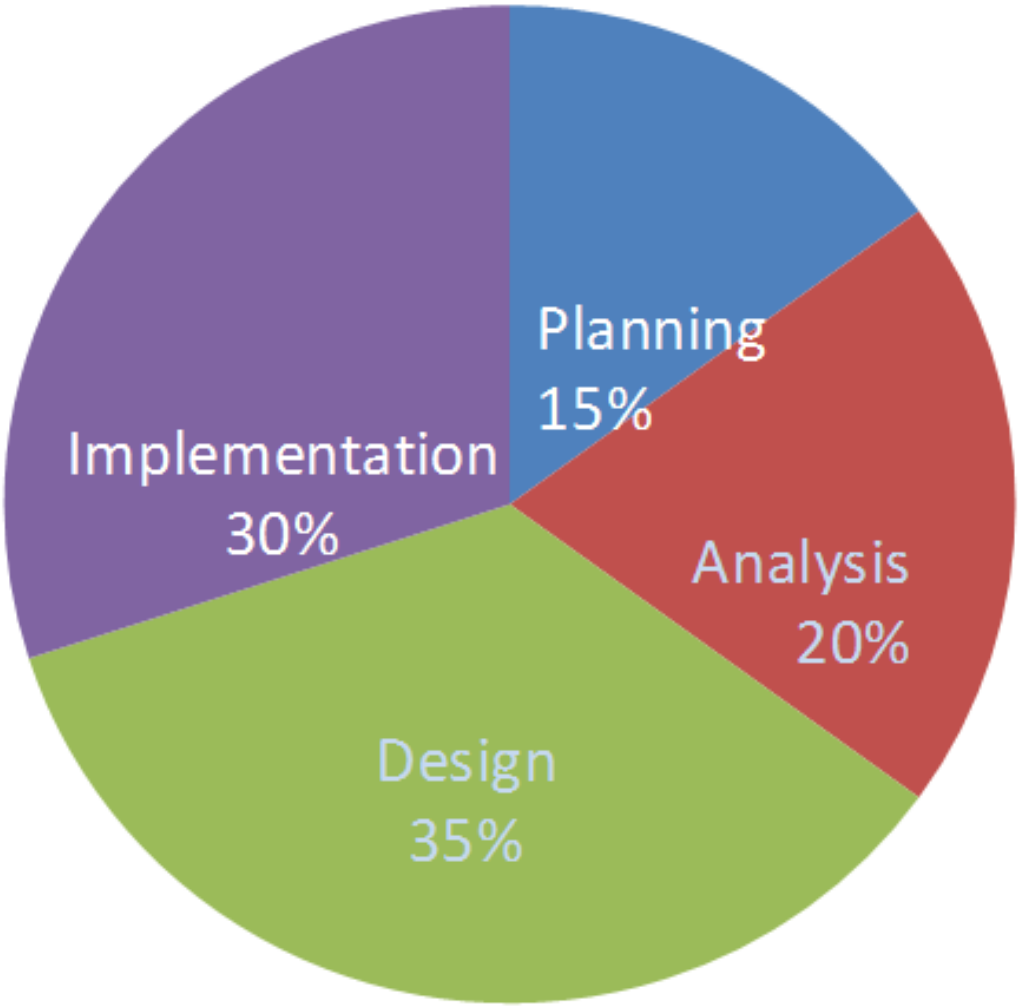
MITOS 3

Kemampuan Terpenting bagi Pengembang adalah Kemampuan Coding

Tahapan Pengembangan Software



Distribusi Cost Pengembangan Software



Planning

1. Identifying business value
   - Lower costs
   - Increase profits

2. Analyze feasibility
   - Technical Feasibility
   - Economic Feasibility
   - Organizational Feasibility

(System Proposal)

System Request – Online ATM System

Project Sponsor:	Margaret Mooney, Vice President of Marketing
Business Need:	Project ini dibuat dengan tujuan untuk mendapatkan pelanggan baru yang menggunakan Internet dam memberikan layanan yang lebih baik ke pelanggan yang ada melalui layanan berbasis Internet

Business Requirements:

Dengan menggunakan Online ATM System, pelanggan dapat melakukan seluruh transaksi perbankan. Fitur utama yang ada pada sistem ini adalah:

1. Pengecekan Saldo
2. Pengiriman Uang
3. Transaksi Pembayaran Tagihan

Business Value:

Keuntungan Intangible:

- Meningkatkan layanan ke pelanggan
- Mengurangi komplen dari pelanggan

Keuntungan Tangible:

- $750,000 transaksi keuangan dari pelangan baru
- $1,875,000 transaksi keuangan dari pelanggan lama
- $50,000 pengurangan biaya telepon untuk melayani pelanggan

Feasibility Analysis - Online ATM System

Margaret Mooney and Alec Adams created the following feasibility analysis for the Online ATM System Project.

1. Technical Feasibility

The Online ATM System is feasible technically, although there is some risk.

1.1 Online ATM System's risk regarding familiarity with the application is high

- The Marketing Department has little experience with Internet-based marketing and sales
- The IT Department has strong knowledge of the company's existing ATM systems, however, it has not worked with Web-enabled ATM systems.

1.2 Online ATM System's risk regarding familiarity with the technology is medium

- The IT Department has relied on external consultants to develop its existing Web env.
- The IT Department has learned about Web technology by maintaining the corporate site

1.3 The project size is considered medium risk

- The project team likely will include less than ten people
- Business user involvement will be required
- The project timeframe cannot exceed a year and it should be much shorter

1.4 The compatibility with existing technical infrastructure should be good

- The current ATM System is a client-server system built using open standards. An interface with the Web should be possible
- Retail bank already place and maintain orders electronically
- An Internet infrastructure already is in place at retail bank and at the corporate headquarters

2. Economic Feasibility

- A cost–benefit analysis was performed. A conservative approach shows that the Online ATM System has a good chance of adding to the bottom line of the company significantly.
  - Return on Investment (ROI) over 3 years: 229 percent
  - Break-even point (BEP) occurs: after 1.7 years
  - Total benefit after three years: $3.5 million

- Intangible Costs and Benefits
  - Improved customer satisfaction
  - Greater brand recognition

3. Organizational Feasibility

- From an organizational perspective, this project has low risk. The objective of the system, which is to increase sales, is aligned well with the senior management's goal of increasing sales for the company. The move to the Internet also aligns with Marketing's goal to become more savvy in Internet marketing and sales.
- The project has a project champion, Margaret Mooney, Vice President of Marketing. Margaret is well positioned to sponsor this project and to educate the rest of the senior management team when necessary. Much of senior management is aware of and supports the initiative.

	2003	2004	2005	Total
Increased sales from new customers	0	750,000	772,500	
Increased sales from existing customers	0	1,875,000	1,931,250	
Reduction in customer complaint calls	0	50,000	50,000	
Total Benefits:	**0**	**2,675,000**	**2,753,750**	
PV of Benefits:	**0**	**2,521,444**	**2,520,071**	**5,041,515**
PV of All Benefits:	**0**	**2,521,444**	**5,041,515**	
Labor: Analysis, Design and Implementation	162,000	0	0	
Consultant Fees	50,000	0	0	
Office Space and Equipment	7,000	0	0	
Software and Hardware	35,000	0	0	
Total Development Costs:	**254,000**	**0**	**0**	
Labor: Webmaster	85,000	87,550	90,177	
Labor: Network Technician	60,000	61,800	63,654	
Labor: Computer Operations	50,000	51,500	53,045	
Labor: Business Manager	60,000	61,800	63,654	
Labor: Assistant Manager	45,000	46,350	47,741	
Labor: 3 Staff	90,000	92,700	95,481	
Software upgrades and licenses	4,000	1,000	1,000	
Hardware upgrades	5,000	3,000	3,000	
User training	2,000	1,000	1,000	
Communications charges	20,000	20,000	20,000	
Marketing expenses	25,000	25,000	25,000	
Total Operational Costs:	**446,000**	**452,700**	**464,751**	
Total Costs:	**700,000**	**452,700**	**464,751**	
PV of Costs:	**679,612**	**426,713**	**425,313**	**1,531,638**
PV of all Costs:	**679,612**	**1,106,325**	**1,531,638**	
Total Project Costs Less Benefits:	**(700,000)**	**2,222,300**	**2,288,999**	
Yearly NPV:	**(679,612)**	**2,094,731**	**2,094,758**	**3,509,878**
Cumulative NPV:	**(679,612)**	**1,415,119**	**3,509,878**	
Return on Investment (ROI):	**229.16%**	**(3,509,878/1,531,638)**		
Break-even Point (BEP):	**1.32 years**	**(BEP in Year 2 = [2,094,731 – 1,415,119] / 2,094,731 = 0.32)**		

Kemampuan Coding?

- Penting!

- Tapi lebih penting lagi kemampuan membaca kebutuhan riil masyarakat dan kemampuan analisis kelayakan dari software yang kita kembangkan

MITOS 4

Kalau Project Software Molor, Tinggal Tambah Pengembang Saja!

Hukum Penambahan Pengembang

- Adding manpower to a late project makes it later (Brook, 1975)

- "Just because a woman can make a baby in nine months, it does not follow that nine women can make a baby in one month"

Anekdot di Pengembangan Software

- Project Manager is a person who thinks nine women can deliver a baby in one month
- Developer is a person who thinks it will take 18 months to deliver a baby
- Client is the one who doesn't know why he wants a baby
- Marketing Manager is a person who thinks he can deliver a baby even if no man and woman are available
- Tester is a person who always tells his wife that this is not the right baby
- Human Resource is a person who thinks that a donkey can deliver a human baby if given 9 months

MITOS 5

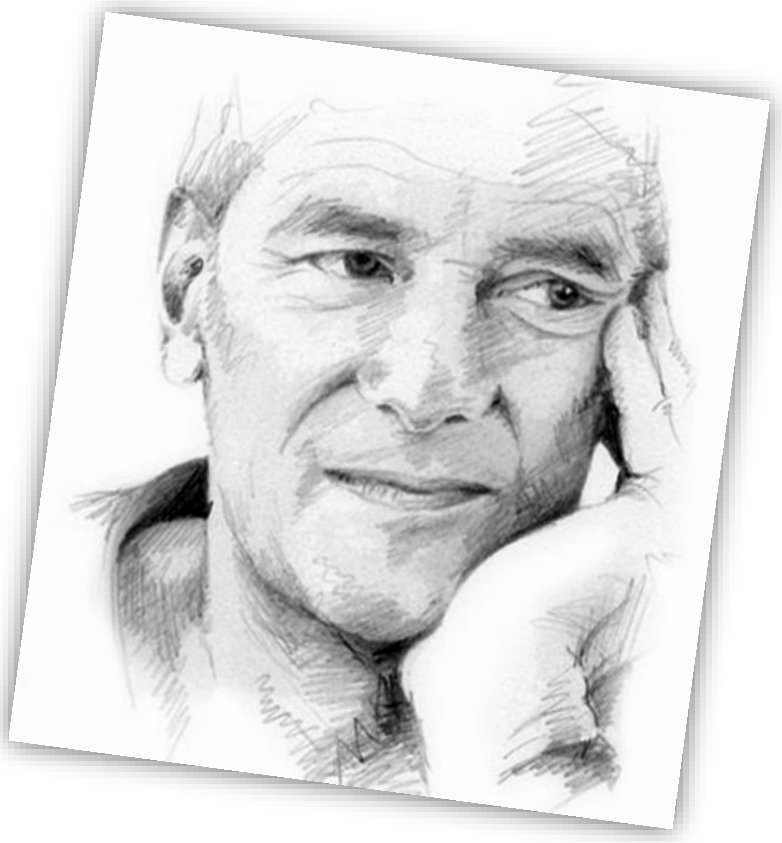
Software Akan Membuat Software Seperti Yang Ada Itu!

Kejar Ceruk Pasar Baru

- Don't Reinvent The Wheel!
- Jangan pernah membuat software yang sama saja dengan yang ada saat ini
- Lakukan komparasi terhadap aplikasi sejenis, lihat dimana ada gap dan ceruk pasar yang belum tergarap
- Buat aplikasi untuk segmen pasar baru dan diprediksi besar

MITOS 6

Meskipun Saya Nggak Suka Buat Software, Saya Tetap Yakin Bisa Sukses di Bisnis Software!



Saya tidak keberatan dengan **5 tahun dan 5126 kegagalan** saya dalam membuat penyedot debu *dual cyclone* tanpa kantung...

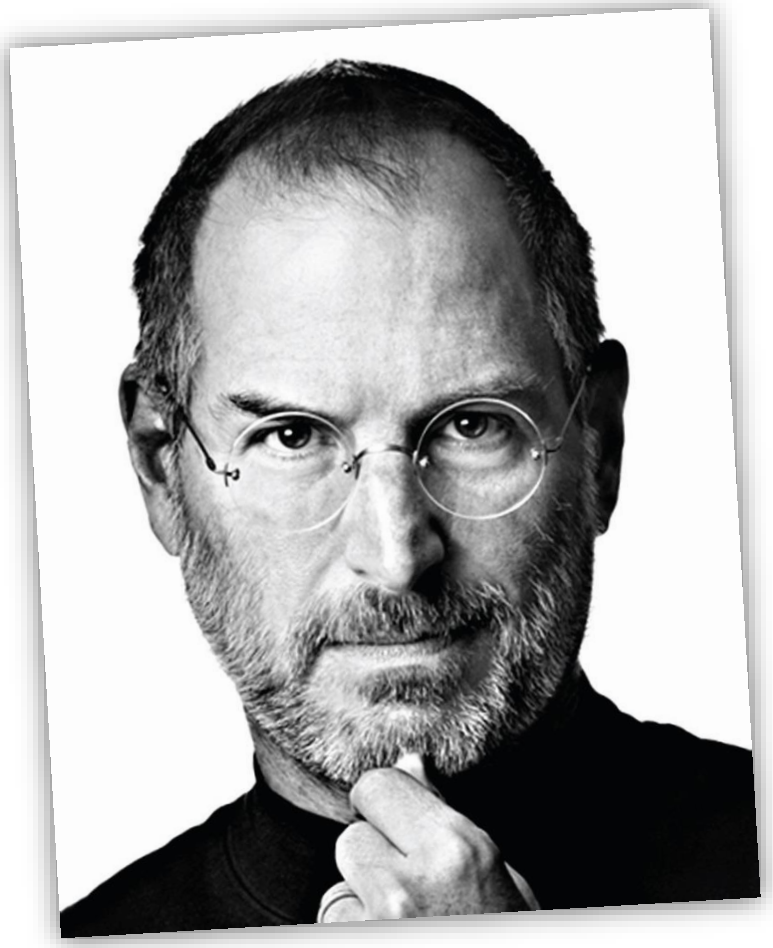
(James Dyson)

Kesalahan terbesar saya adalah mencoba membuat alat pancing, padahal **saya tidak suka memancing dan tidak pernah pergi memancing**...

(Eli Harari)

Satu hal yang membuat saya tetap bertahan adalah bahwa saya **mencintai apa yang saya lakukan**...

(Steve Jobs)



Cintai Pekerjaanmu, Maka Dia Akan Mencintaimu!

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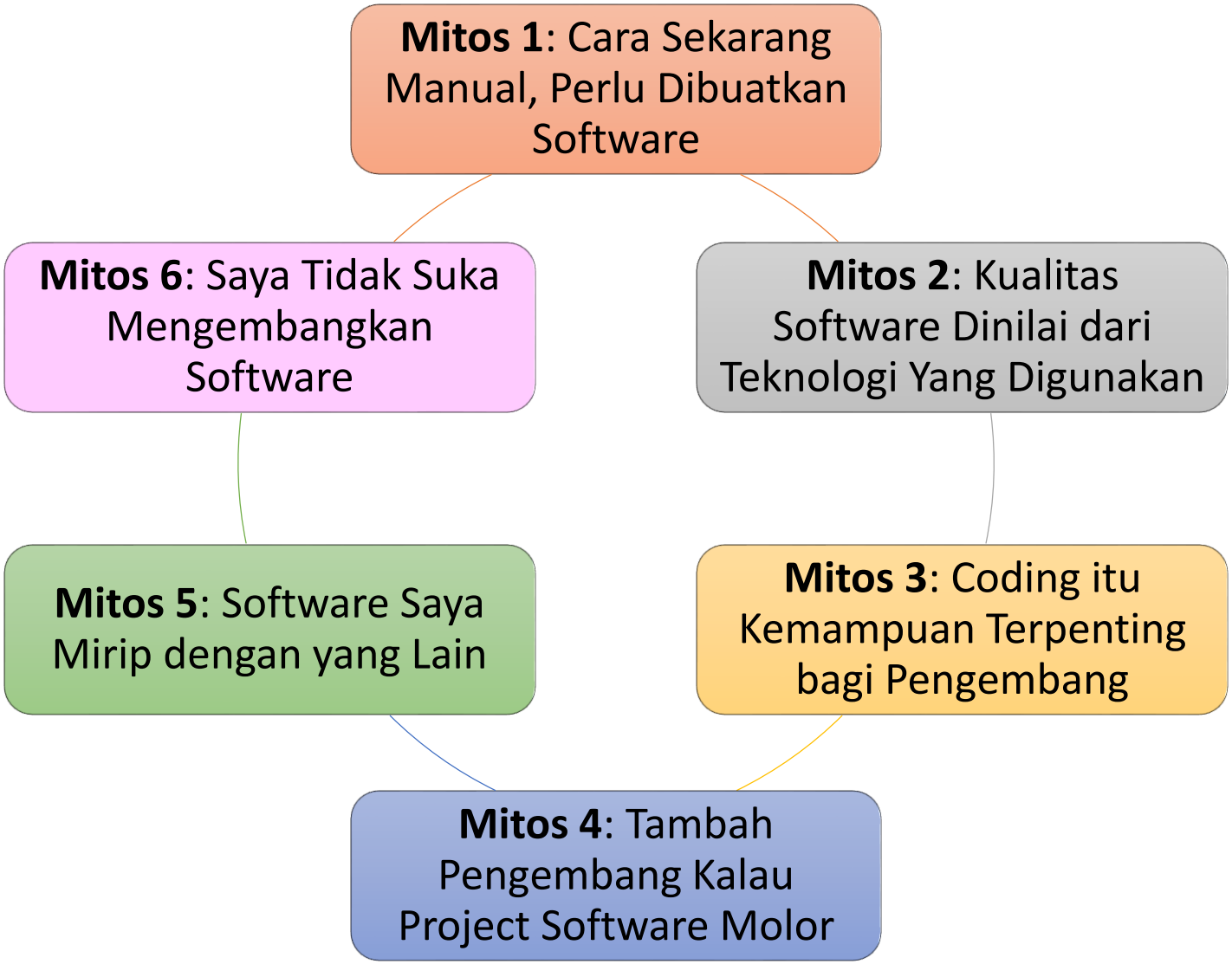

Terima Kasih

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