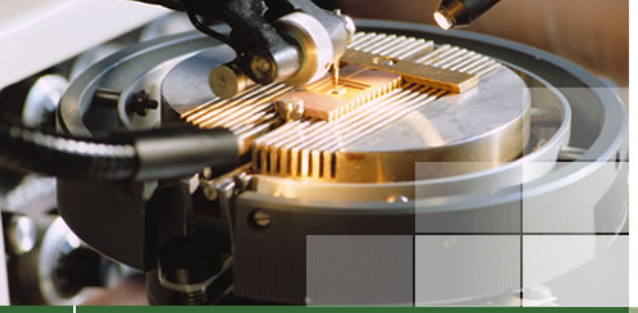

POLITECNICO DI MILANO

Dipartimento di
Elettronica e Informazione

Planning and Managing Software Projects 2013-14

Class 6

Planning Phase – Part II

Matching Life Cycles to Project and Project Plans

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Credits

- This slides are largely based on Prof. John Musser class notes on “Principles of Software Project Management”
- Original slides are available at http://www.projectreference.com/
- Reuse and republish permission was granted

Last Class, Today and Next Classes

- Last Class
  - Phases in Detail
    - Step-by-step of typical software project
  - Lifecycles
- Today
  - Matching Lifecycles to Project
  - Project plans
- Next Weeks:
  - Lots of Project-ish Details: WBS, PERT, CPM, Scheduling & Estimation

Class 5 Review

- Phases in Detail
  - Know your pure waterfall, 7 phase model
  - Understand the steps in each phase
  - Know typical deliverables of each
  - Know the primary issues and goals of each
- Lifecycles
  - Know a representative sample
  - Waterfall and variation, 1-2 iterative ones
  - Learn a bit about XP and other Agile methods

Lifecycle Planning

- a.k.a. Lifecycle Management or Systems Development Life Cycle (SDLC)
- Greatly influences your chance of success
- Not choosing a lifecycle is a bad option
- Three primary lifecycle model components
  - Phases and their order
  - Intermediate products of each phase
  - Reviews used in each phase

Lifecycle Planning

- Different projects require different approaches
- You do not need to know all models by name
- You should know how that if given a certain scenario what sort of SDLC would be appropriate
- There are more than covered here
- A lifecycle is not a design, modeling or diagramming technique
  - The same technique (UML, DFD, etc) can be used with multiple lifecycles

Matching Life Cycles to Project

- Varies by project
- Opt for “iterative” or “incremental”
- How well are requirements understood?
- What are the risks?
- Is there a fixed deadline?
- How experienced is the team or customer?

McConnell's way of choosing a Lifeclycle

Model	a	b	c	d	e	f	g	h	i	j	k
Pure Waterfall			x	x		~				~	~
Code-and-Fix							x				x
Spiral	x	x	x	x	x	~	~	~	x	x	
Modified Waterfalls (sashimi)	~	~	x	x	~	~	x	~	~	~	
Evolutionary Prototyping	x		~	x	~		~	x	x	~	
Staged Delivery			x	x	~	~	~		~	x	
Commercial (COTS)	x					x	x				~

Legend:
x = excellent,
~ = fair to excellent,
empty box = poor.

a. Works with poorly understood requirements
b. Works with poorly understood architecture
c. Produces highly reliable system
d. Produces system with large growth envelope
e. Manages risks
f. Can be constrained to a predefined schedule
g. Has low overhead
h. Allows for midcourse corrections
i. Provides customer with progress visibility
j. Provides management with progress visibility
k. Requires little manager or developer sophistication

Adding Lifecycles to McConnell's way

Model	a	b	c	d	e	f	g	h	i	j	k
Pure Waterfall			x	x		~				~	~
Code-and-Fix							x				x
Spiral	x	x	x	x	x	~	~	~	x	x	
Modified Waterfalls (sashimi)	~	~	x	x	~	~	x	~	~	~	
Evolutionary Prototyping	x		~	x	~		~	x	x	~	
Staged Delivery			x	x	~	~	~		~	x	
Commercial (COTS)	x					x	x				~
Rapid Application Development	x	x		x	~	x	~	x	x	x	
Extreme Programming	x	x		x	~		x	x	x	~	
Agile Software Development	x	x		x	~		~	x	x	~	
SCRUM	x	x		x	~	x	~	x	x	~	

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Planning

- “Plans are nothing. But planning is everything.”

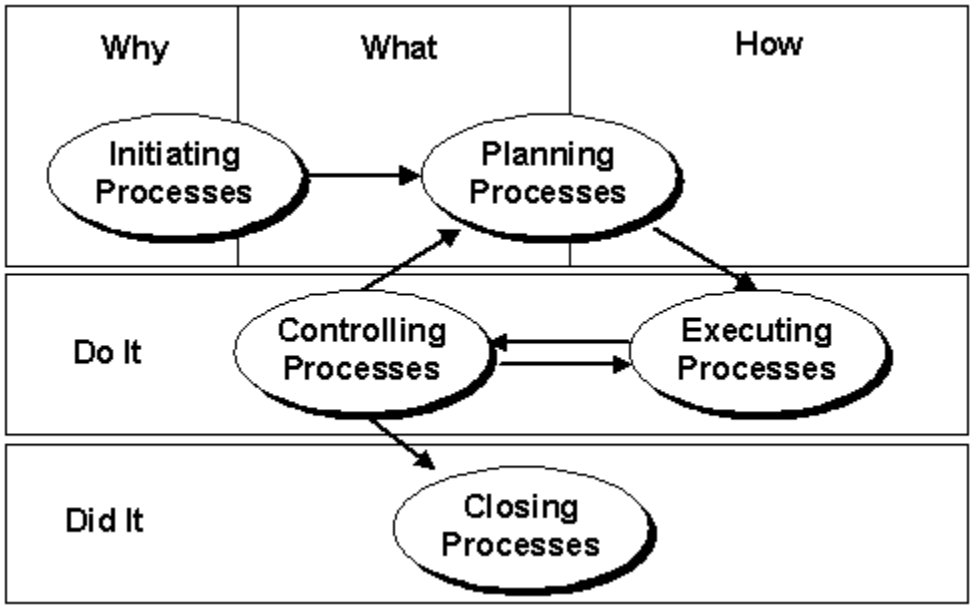
-- Gen. Dwight Eisenhower

Planning

- Preliminary planning starts on day one
- Even in the pre-project phase
- Should not be conducted “in secret”
- Need buy-in and approval
  - Very important step
  - Both from above and below

Your PM Process

- Why
  - Deliverable: ROI
- What
  - SOW, Requirements
- How
  - Design Specification, Software Development Plan, Lifecycle
- Do it
  - Execution
- Did it
  - Post Project Report



Futrell, Shafer, Shafer, "Quality Software Project Management"

Primary Planning Steps

- Identify project scope and objectives
- Identify project organizational environment
- Analyze project characteristics
- Identify project products and activities
- Estimate effort for each activity
- Identify risk
- Allocate resources
- Review and communicate plan

Documents

- Planning
- Product

Planning Documents

- Software Development Plan (SDP)
- Software Quality Assurance Plan (SQAP)
- Software Configuration Management Plan (SCMP)
- Risk Management Plan
- Software Process Improvement Plan
- Communications Management Plan
- Migration Plan
- Operations Plan

Planning Documents

- You (the PM) need to choose which documents are appropriate
- Docs do not have to be lengthy
- Small Set:
  - Software Development Plan
  - Risk Management Plan
  - Software Quality Assurance Plan
  - Software Configuration Management Plan

My Choice

- Statement of Work (SOW)
- Project Charter
- Software Project Management Plan (SPMP)
- Budget
- Responsibility Assignment Matrix (RAM)
- Risk Management Plan

Product Documents

- Statement of Need
- System Interface Specification
- Software Requirements Specification
- Software Design Specification
- Software Validation & Verification Plan
- User Documentation
- Support Plan
- Maintenance Documentation

Software Project Survival Guide

- Another McConnell book
- See construx.com's SPSG section
  http://www.construx.com/thought_leadership/books/survival_guide/
  - Good content online
  - Documents
  - Schedules
  - Checklists
  - Project web site template
- I tool I've often used
  - Software Project Survival Test
    - http://www.construx.com/Thought_Leadership/Books/Survival_Guide/Resources_by_Subject/Survival_Test/

Planning

- How much will it cost?
- How long will it take?
- How many people will it take?
- What might go wrong?

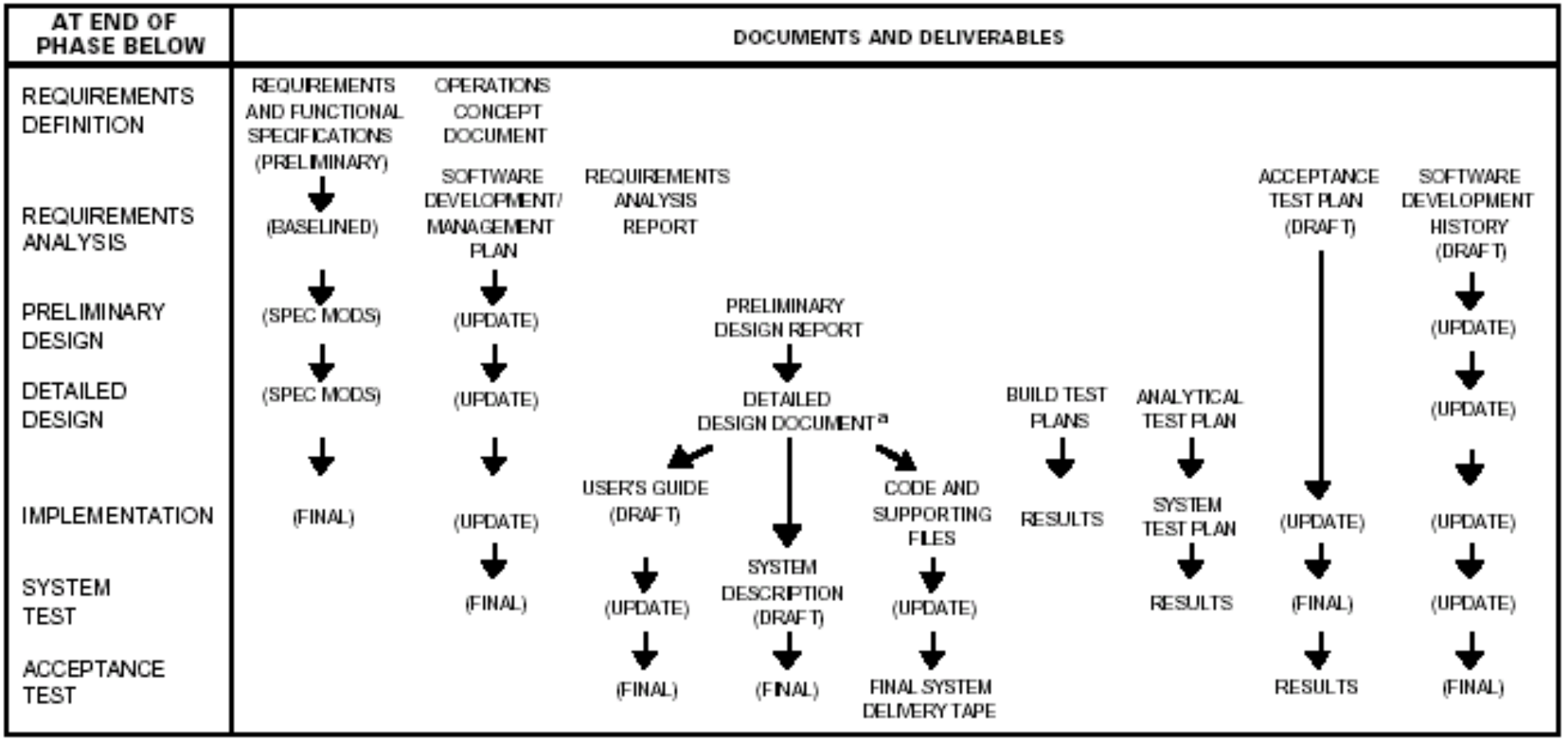
Planning

- Scoping
- Estimation
- Risk
- Schedule
- Control Strategy

Process Issues

- You want a fairly sophisticated process without incurring much overhead
- Remember, projects are often larger than they first appear
- Easier to loosen too much process than add later

Plans Evolve Over Time



NASA's "Manager's Handbook for Software Development"

Software Development Plan

- Software Project Management Plan (SPMP)
- Some consider it the most important document in the project (along with SRS)
  - Can be seen as an aggregation of other core documents
- Evolves over time as pieces come together

SDP / SPMP

- Fundamental Sections
  - Project overview
  - Deliverables
  - Project organization
  - Managerial processes
  - Technical processes
  - Budget
  - Schedule

Communications Management Plan

- Often a section of SPMP
- Describes information flow to all parties
  - Gathering and distributing information
- Status meetings
  - Monthly, Weekly, Daily?
  - Status reports are vital

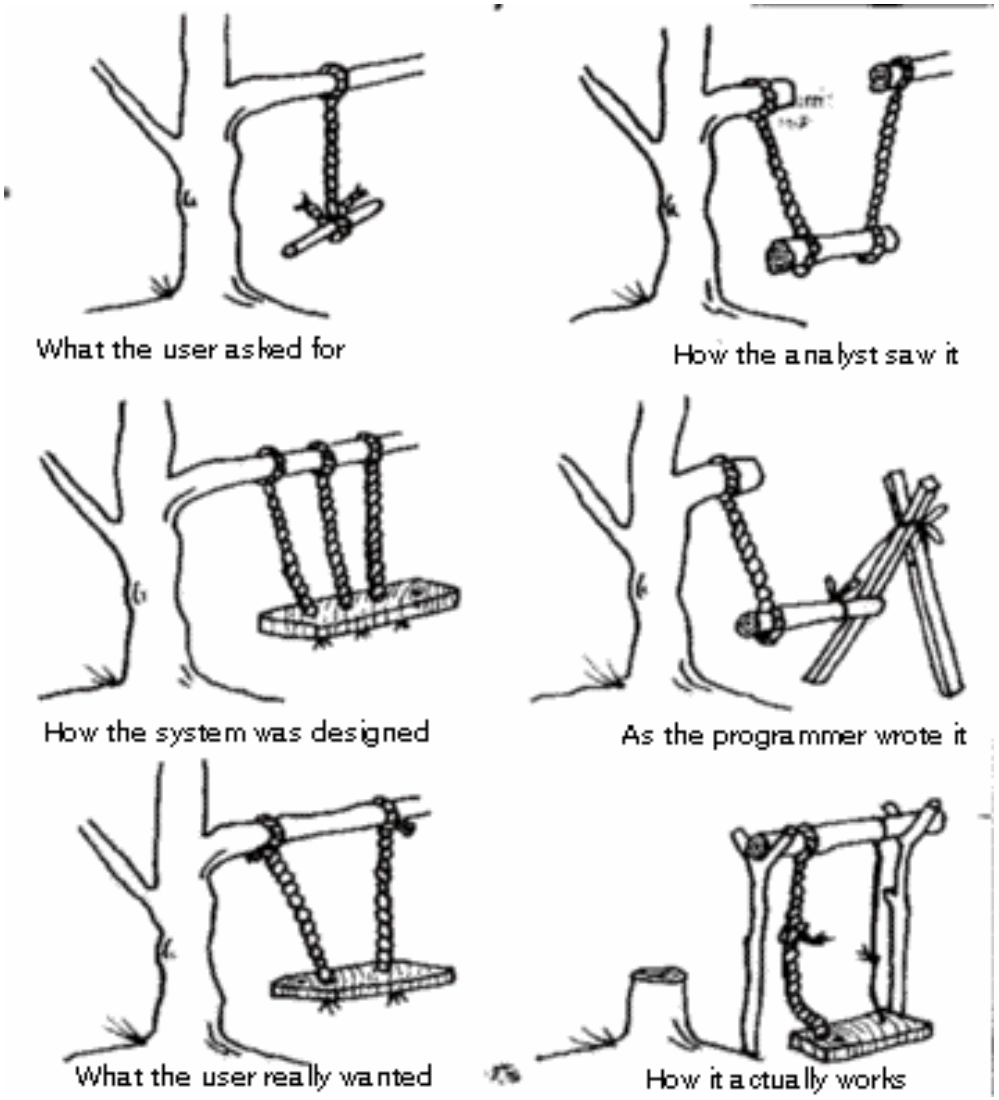
Create a Project Intranet

- A great communications tool
- Reference all project resources here
- For instance have a look at portals of my current projects
  - http://www.larkc.eu and http://wiki.larkc.eu
  - http://www.search-computing.it/

Optional Readings

- Thayer:
  - Cori pg. 171-182 “Fundamentals of Master Scheduling”,
  - Fairley 183-194 “Work Breakdown Structures”

Comics



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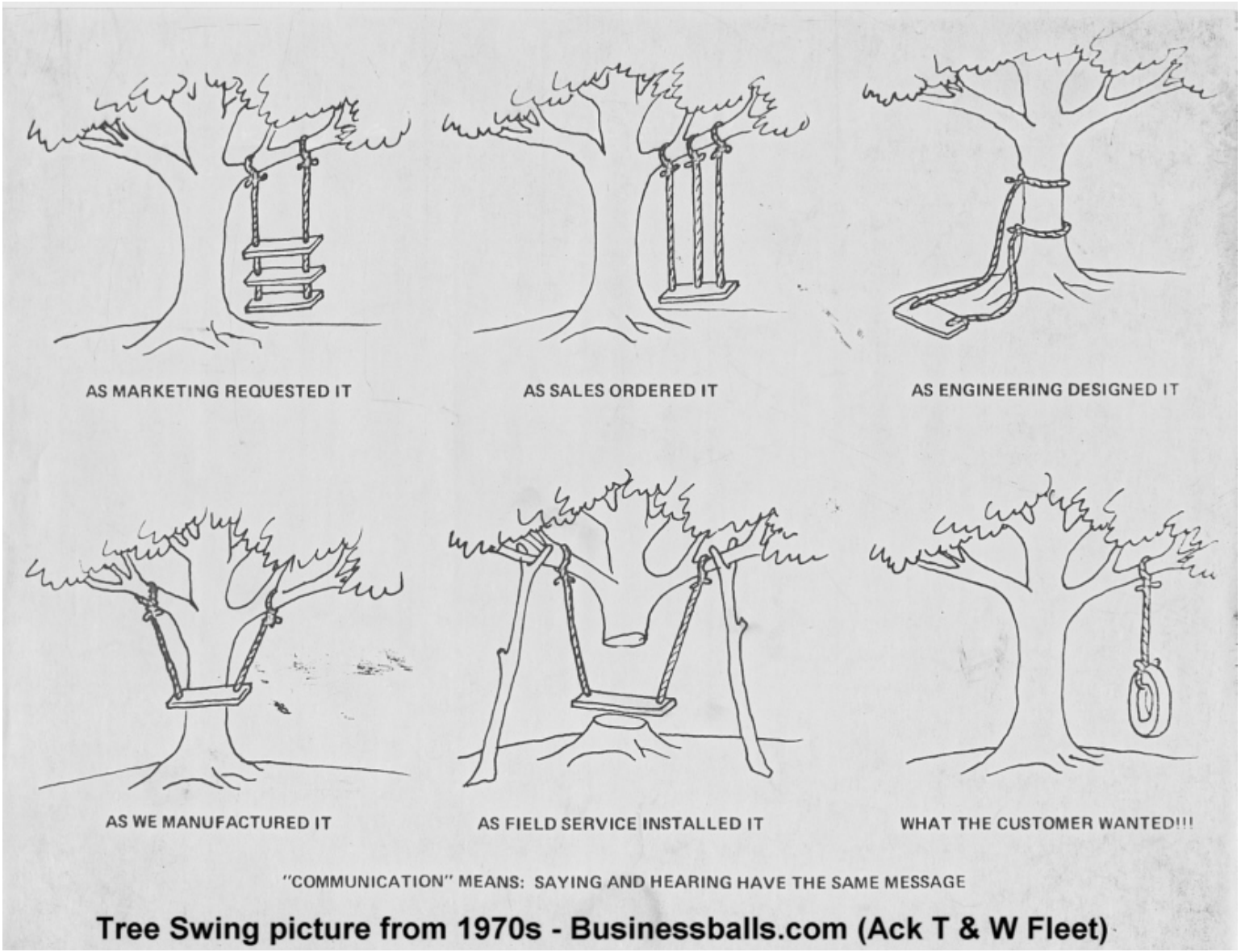
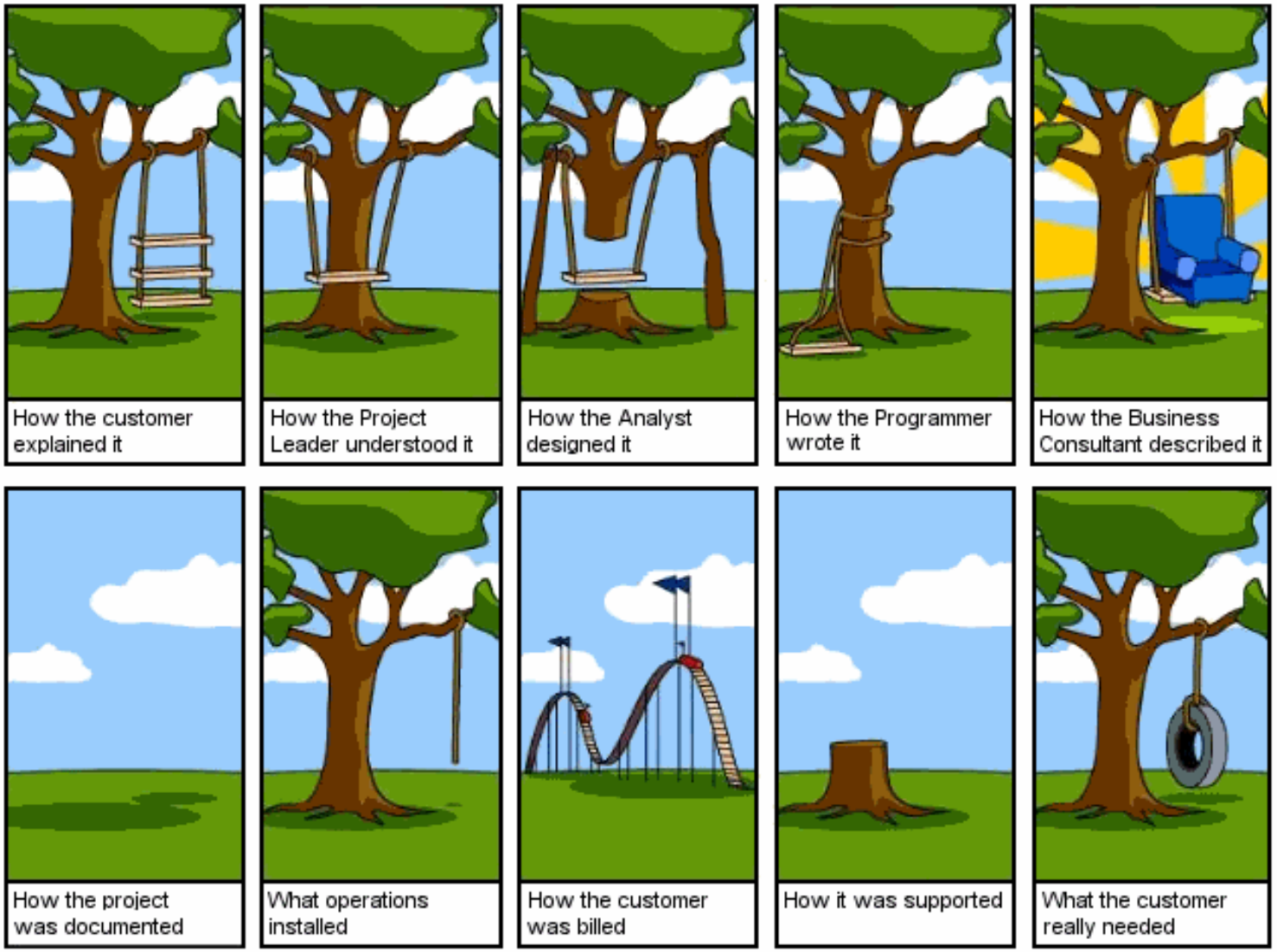


Tree Swing picture from 1970s - Businessballs.com (Ack T & W Fleet)

Comics



[source http://www.codinghorror.com/blog/images/software-engineering-explained.png]

Read out more about the tree swing

- http://www.businessballs.com/treeswing.htm