

 POLITECNICO DI MILANO

Dipartimento di
Elettronica e Informazione

Planning and Managing Software Projects 2011-12
Class 6

Planning Phase

Matching Life Cycles to Project and Project Plans

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

- 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

- 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

- 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

- 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?

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

[source <http://acmesoftware.com/acme/default.asp>]

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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- <http://www.creativedd.com/projlifecycle.html>

- “Plans are nothing. But planning is everything.”
-- Gen. Dwight Eisenhower

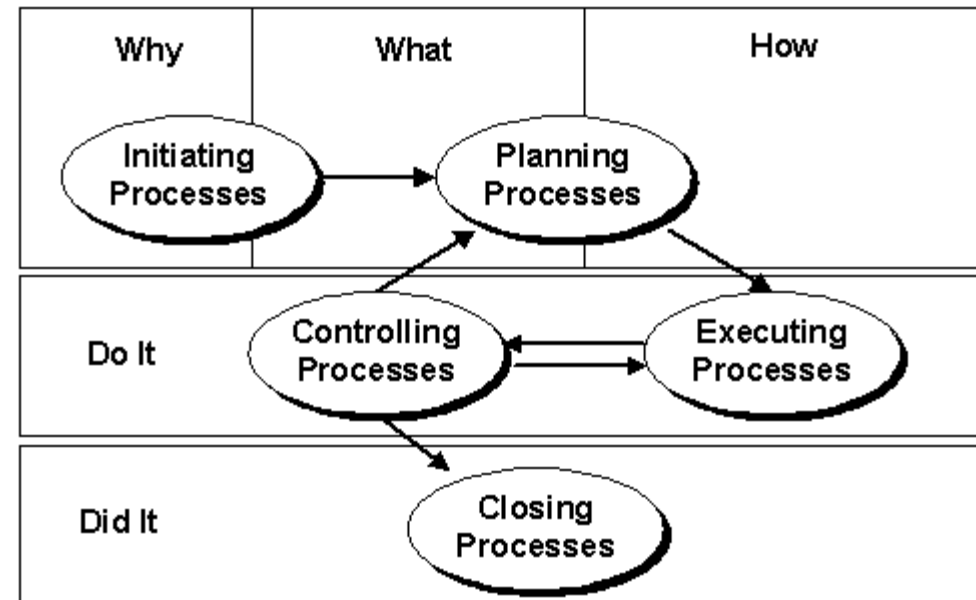
- Preliminary planning starts on day one
- Even in the pre-project phase
- Should not be conducted “in secret”
- Need buy-in and approval
 - Very important step
 - Both from above and below

Project Plans

Your PM Process

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- 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"

- 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

Project Plans Documents

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- Planning
- Product

- 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

- 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

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

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

- Another McConnell book
- See construx.com's SPSG section
<http://www.construx.com/Page.aspx?cid=1034>
 - Good content online
 - Documents
 - Schedules
 - Checklists
 - Project web site template
- I tool I've often used
 - Software Project Survival Test
 - <http://www.construx.com/Page.aspx?cid=1229>

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

- Scoping
- Estimation
- Risk
- Schedule
- Control Strategy

- 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

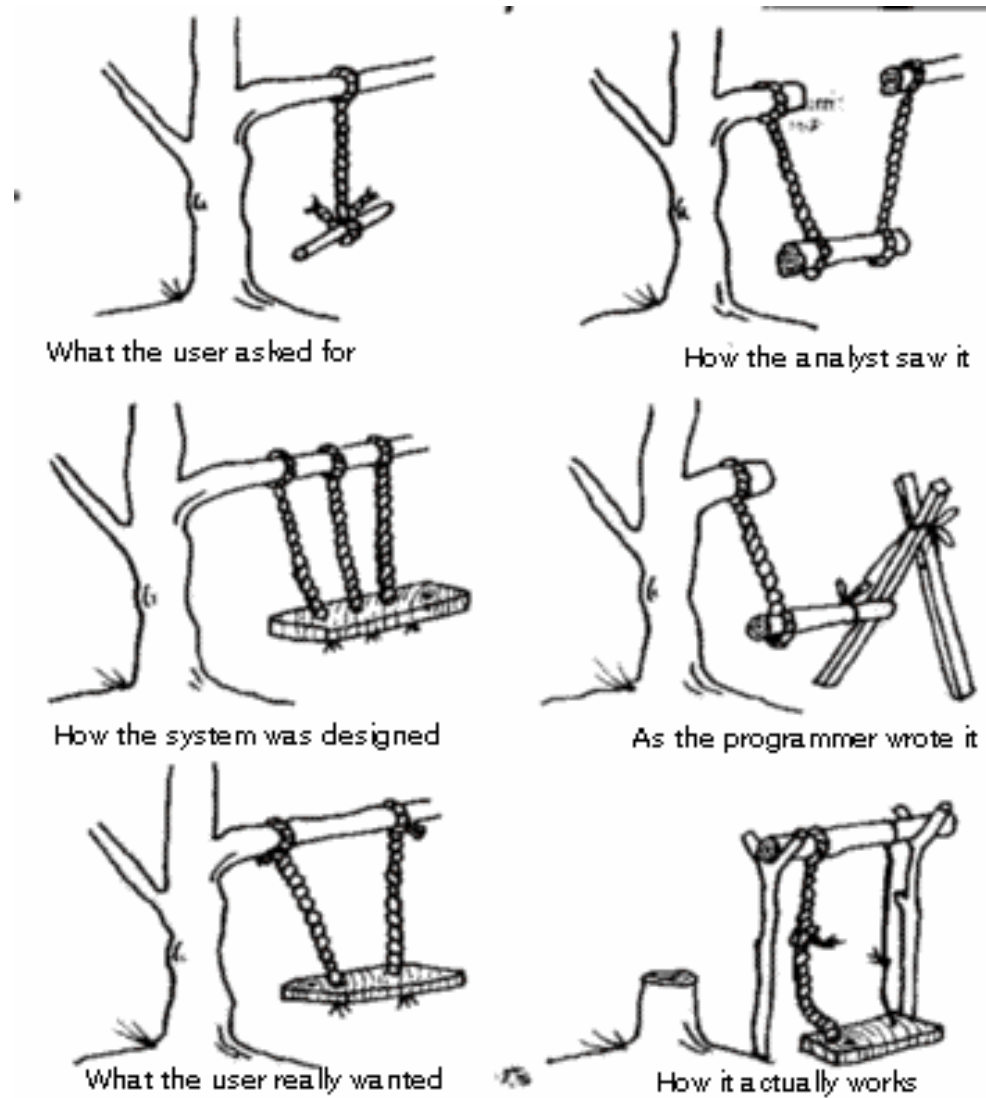
- Software Project Management Plan (SPMP)
- Some consider it the most important document in the project (along with SRS)
 - Can be seen as an aggregation of other core documents
- Evolves over time as pieces come together
- McConnell's example
 - <http://www.construx.com/Page.aspx?nid=240>

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

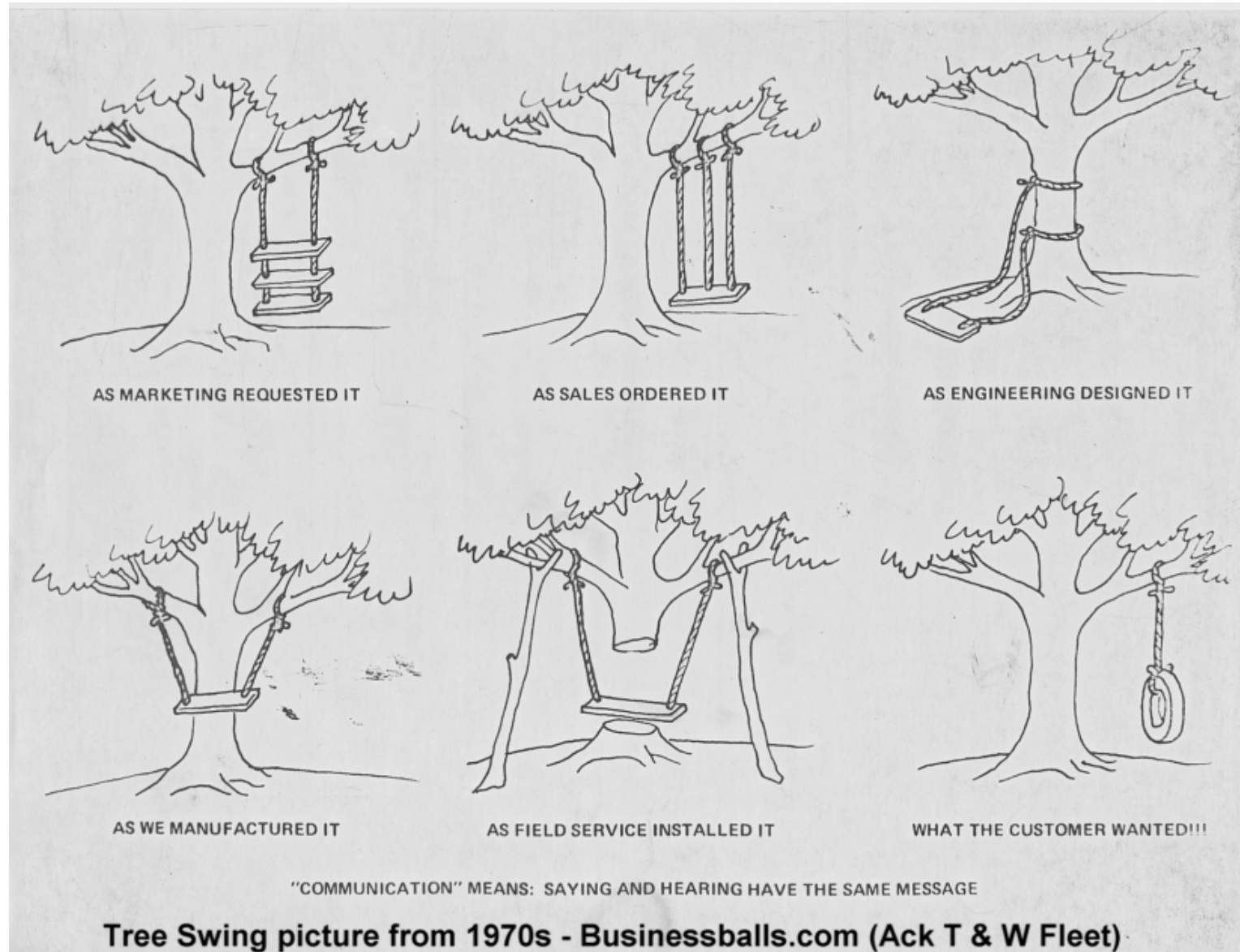
- Often a section of SPMP
- Describes information flow to all parties
 - Gathering and distributing information
- Status meetings
 - Monthly, Weekly, Daily?
 - Status reports are vital

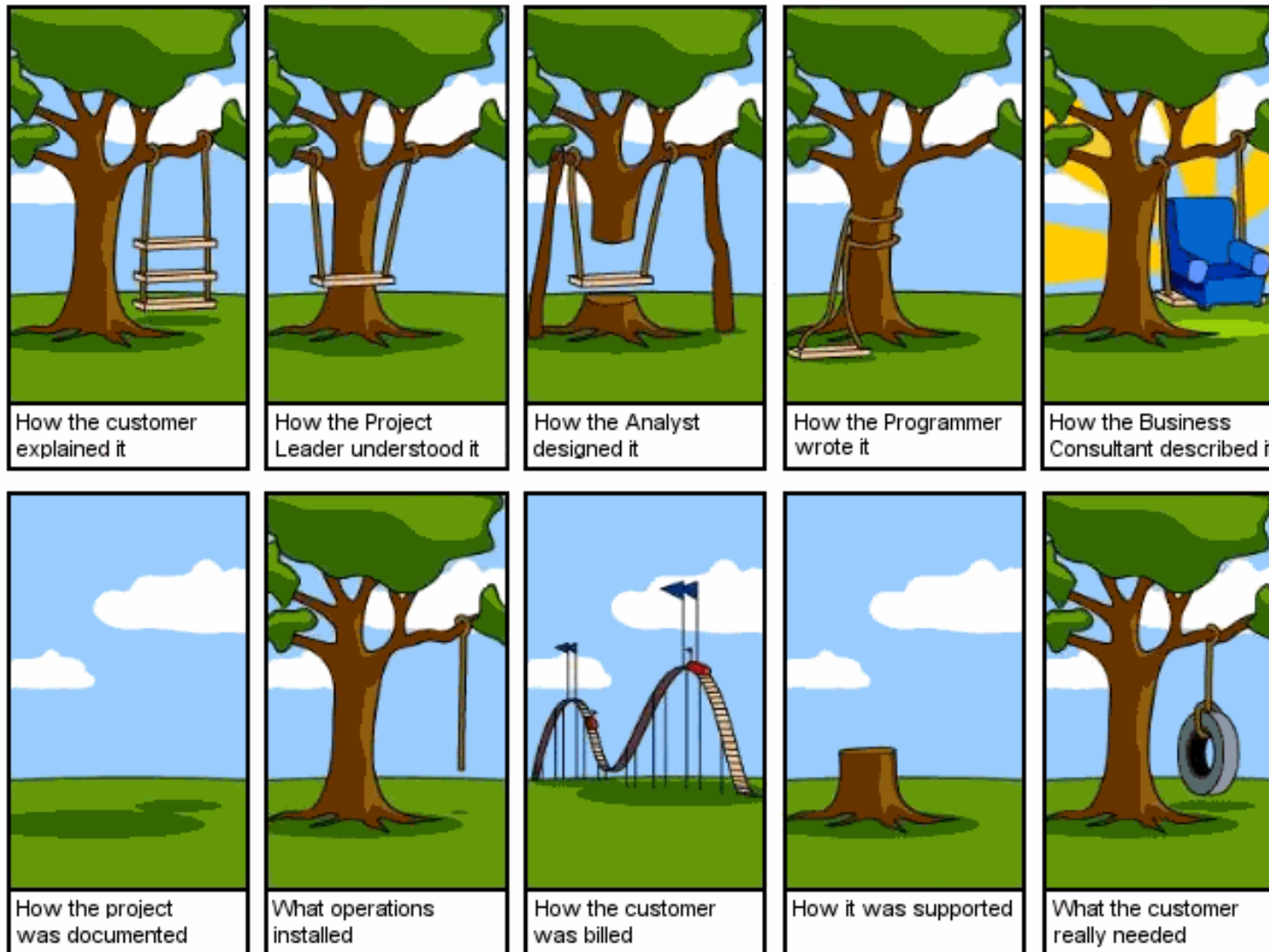
- A great communications tool
- Reference all project resources here
- For instance have a look at portals of my current projects
 - <http://www.service-finder.eu>
 - <http://www.larkc.eu> and <http://wiki.larkc.eu>
 - <http://www.search-computing.it/>

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



[source <http://www.cs.ucl.ac.uk/external/atanu/req.gif>]





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

Read out more about the tree swing

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