



 POLITECNICO DI MILANO

Dipartimento di
Elettronica e Informazione

Planning and Managing Software Projects 2012-13
Class 14

People Dimension

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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/>
- Reuse and republish permission was granted

- Class 12 review
 - Maven
 - SVN
- Project Roles
- Staffing profile
- Hiring
- Team models and successful projects
- The mythical man month
- Optimal team size
- Tools: RAM and Skill Matrix

- What is Maven?
- What is a Project Object Model (POM)?
- Content of a POM
 - Artifact identity card
 - Dependencies
 - Plug-ins and goals
 - Phases and lifecycles
 - Repositories
- Common commands
- Homework 3 requires you to have some basic skills of Maven

- Why version control
- Main concepts
- Basic operations
 - Checkout
 - Commit
 - Update
- Best practices
 1. If it is not under version control, it doesn't exist
 2. Remember the axe-murderer when writing commit messages
 3. You are the only one interested in your configuration and in your output folder
 4. Commit early, commit often and don't spare the horses
 5. Commit often, but think before acting
- Branches and tags
- Homework 3 requires you to have some basic skills of SVN

Project Roles

- Programmers (system engineers)
 - Technical lead, architect, programmer, Sr. programmer
- Quality Assurance (QA) engineers (testers)
 - QA Manager, QA Lead, QA staff
- DBAs
 - DB Administrator, DB Programmer, DB Modeler
- CM engineers (build engineers)
- Network engineers, System Administrators
- Analysts (business analysts)
- UI Designers
- Information Architects
- Documentation writers (editors, documentation specialist)
- Project manager
- Other
 - Security specialist, consultants, trainer

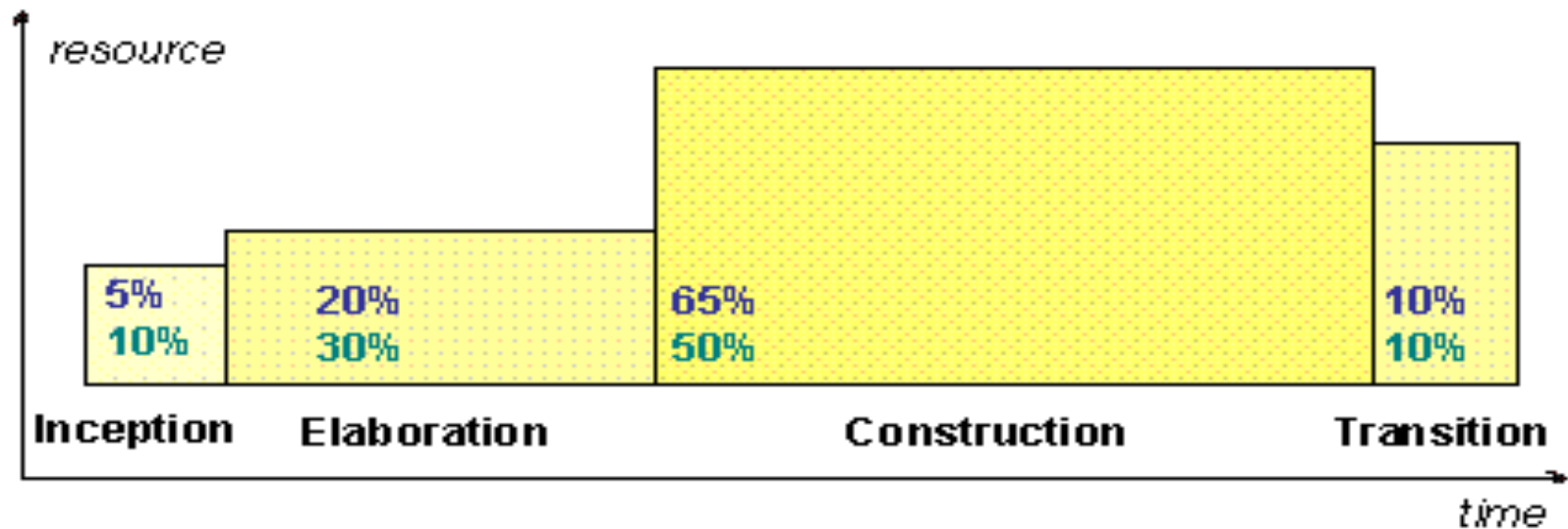
Project Roles & Homework 4

- You need to decide which of these are necessary for your class project
- Depends on what you're building
 - How big is it?
 - Is it UI intensive? Data intensive?
 - Are you installing/managing hardware?
 - Do you need to run an operations center?
 - Is it in-house, contract, Commercial off-the-shelf (COTS), etc?
- Depends on your budget
- More about it in class 15 in the computer laboratory

People Dimension

Staffing Profile

- Projects do not typically have a 'static team size'
- Who and how many varies as needed



Legend:
Actual Effort (% of project total)
Schedule (% of project total)

Copyright: Rational Software 2002

Roll-on & Roll-off

- PM must have a plan as to how & when
- Roll-on
 - Hiring or ‘reserving’ resources
 - Ramp-up time
 - Learning project or company
- Roll-off
 - Knowledge transfer
 - Documentation
 - Cleanup

Staffing Management Plan

- Part of Software Development Plan
- Includes
 - What roles needed, how many, when, who
 - Resource assignments
 - Timing: start/stop dates
 - Cost/salary targets (if hiring)
- Project Directory
 - Simply a list of those involved with contact info.
- Team size: often dictated by budget as often as any other factor

Hiring

- “Hire for Attitude, Train for Skill”
- Look for: “Smart, Gets Things Done”
- Balance the team

- joelonsoftware' s “Guerilla Guide to Interviewing”
 - <http://www.joelonsoftware.com/articles/fog0000000073.html>
 - <http://www.joelonsoftware.com/articles/GuerrillaInterviewing3.html>

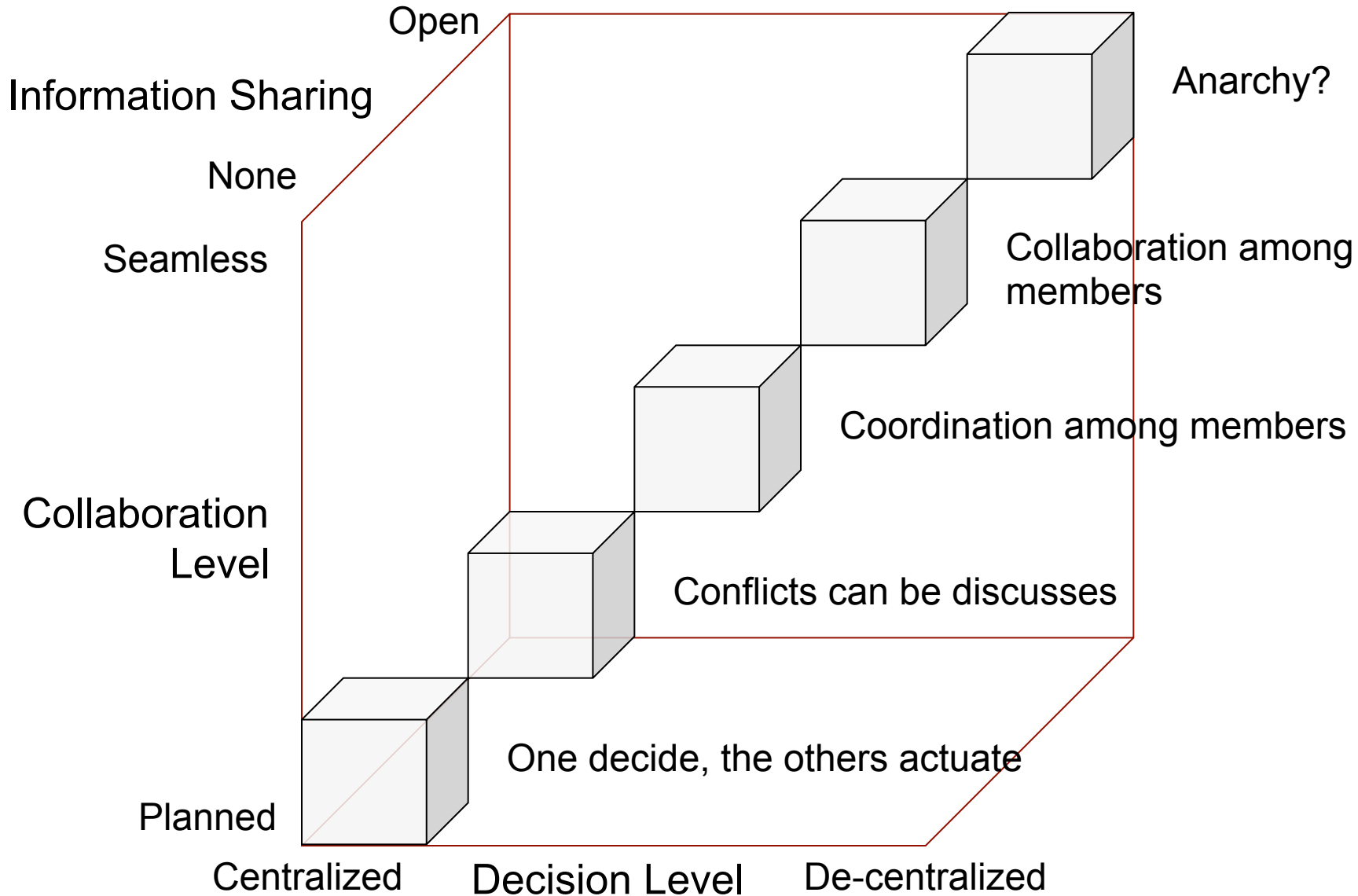
- 1st: What's the team's objective?
 - Problem resolution
 - Complex, poorly-defined problem
 - Focuses on 1-3 specific issues
 - Ex: fixing a showstopper defect
 - Sense of urgency
 - Creativity
 - New product development
 - Tactical execution
 - Carrying-out well-defined plan
 - Focused tasks and clear roles

No single team model is best for all projects



"We're the right team to win this game."

"No, we're the right team to win this game."



THE WAR BETWEEN DEVELOPERS, DESIGNERS & PROJECT MANAGERS



[source <http://www.globalnerdy.com/2011/08/03/the-war-between-developers-designers-and-project-managers/>]

- Most common model
- Technical lead + team (rest team at equal status)
- Hierarchical with one principal contact
- Adaptable and general
- Variation: Democratic Team
 - All decisions made by whole team
 - See Weinberg's "egoless programming" model [1]

[1] Gerald M. Weinberg, "Egoless Programming," IEEE Software, vol. 16, no. 1, pp. 118-120, Jan./Feb. 1999, doi:10.1109/MS.1999.744582
<http://www2.computer.org/portal/web/csdl/doi/10.1109/MS.1999.744582>

Chief-Programmer Team

- From IBM in 70' s
 - See Brooks and Mythical Man-Month
- a.k.a. ‘surgical team’
- Puts a superstar at the top
 - Others then specialize around him/her
 - Backup Programmer
 - Co-pilot or alter-ego
 - Administrator
 - Toolsmith
 - “Language lawyer”
- Issues
 - Difficult to achieve
 - Ego issues: superstar and/or team
- Can be appropriate for creative projects or tactical execution

“Skunkworks” Team [1]

- Put a bunch of talented, creative developers away from the mother ship
 - Off-site literally or figuratively
- Pro: Creates high ownership & buy-in
- Con: Little visibility into team progress
- Applicable: exploratory projects needing creativity
 - Not on well-defined or narrow problem

[1] http://searchcio.techtarget.com/sDefinition/0,,sid182_gci214112,00.html

SWAT Team [1]

- Highly skilled team
- Skills tightly match goal
- Members often work together
- Ex: security SWAT team
- The team model for tactical execution

[1] <http://en.wikipedia.org/wiki/SWAT>

Check out

<http://www.scottberkun.com/blog/2007/asshole-driven-development/> for

- Asshole Driven development
- Cognitive Dissonance development
- Cover Your Ass Engineering
- Development By Denial
- Get Me Promoted Methodology

Team Model	Problem Resolution	Creativity	Tactical Execution
Business Team	***	*	**
Chief-Programmer Team		***	**
“Skunkworks” Team		***	
SWAT Team			***

LEGEND

*** Best suited

* Can be used

The myth of additional manpower

- The problem
 - “Adding manpower to a late project makes it later”
 - Brooks Law http://en.wikipedia.org/wiki/Brooks%27s_law
- The fix
 - Remember!
 - Q: “How does a project get to be a year late?”
 - A: “One day at a time!”
 - Consider the 50% not-coding time when planning
 - Define clearly measurable milestones
 - No “fuzzy” milestones
 - Reduce the role of conflict among persons
 - Identify the “true status” of a task
 - It’s impressive how much effort is needed to move a 90% done task to a 100% done task
 - Don’t add manpower to a late project, reschedule it!
 - More in class 19 in “Project Recovery” section

Large teams

- Communication increases multiplicatively
 - Square of the number of people
 - 50 programmers = 1200 possible paths
 - Communication must be formalized
 - e.g. use deliverables
- Always use a hierarchy
- Reduce units to optimal team sizes

- What is the optimal team size?
 - 4-6 developers
 - Tech lead + developers
 - Small projects inspire stronger identification
 - Increases cohesiveness
 - QA, operations, and design on top of this
 - Always less than 10!

Responsibility Assignment Matrix

- A resource planning tool
- Who does What
- Can be for both planning and tracking
- Identify authority, accountability, responsibility
- Who: can be individual, team or department
- Can have totals/summary at end of row or column (ex: total Contributors on a task)

Simple RAM

Item	WBS	Description		Sponsor	Developer	Developer	QA	Customer
1	1	Initiate Project		A				
2	1.1	PMP Signoff		A				R
3	1.2	Initial UI			L	C		R
4	1.3	DB Model			C	L		
5	1.4	Start Test					L	
	Legend							
	A	Approval						
	L	Lead						
	S	Secondary						
	C	Contributor						
	R	Reviewer						

Sample RAM With Stakeholders

Item		Development	Customer A	Customer B	Mgmt	QA	
Unit Test		A	S	S	R	A	
Systems Test		P	R	R	R	R	
Beta Test		P	R	R	P	R	
User Acceptance Test		A	S	S	S	S	
Accountable	A						
Participant	P						
Reviewer	R						
Sign-off Required	S						

Skills Matrix

- Another resource planning tool
- Resources on one axis, skills on other
- Skills can high level or very specific
- Cells can be X's or numeric (ex: level, # yrs.)

	Analyst	Developer (Java)	Developer (HTML)	QA Tester	Database Design
Dilbert	7	2			
Larry			8		4
Sarah	4	4			
Boss				4	
Fred					5

Questions?