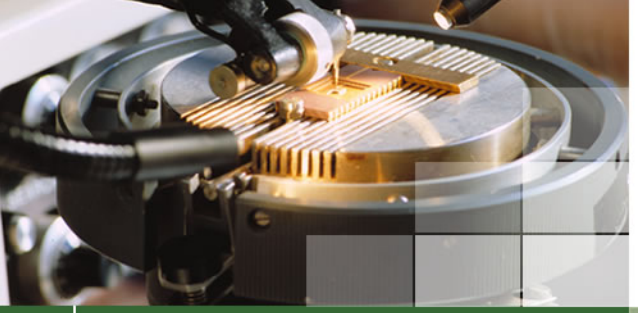

POLITECNICO DI MILANO

Dipartimento di
Elettronica e Informazione

Planning and Managing Software Projects 2012-13

Class 4

More on Software Project Management

Project and Organizations, Project Portfolio Management, Procurement Management

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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

Today

- Project and Organizations
- Program Management a.k.a. Project Portfolio Mangement
- Procurement Management

Class 3 Review

- PMI Fundamentals and Processes
- Project Selection
- Initial documents
  - Statement of Work (SOW)
  - Project Charter

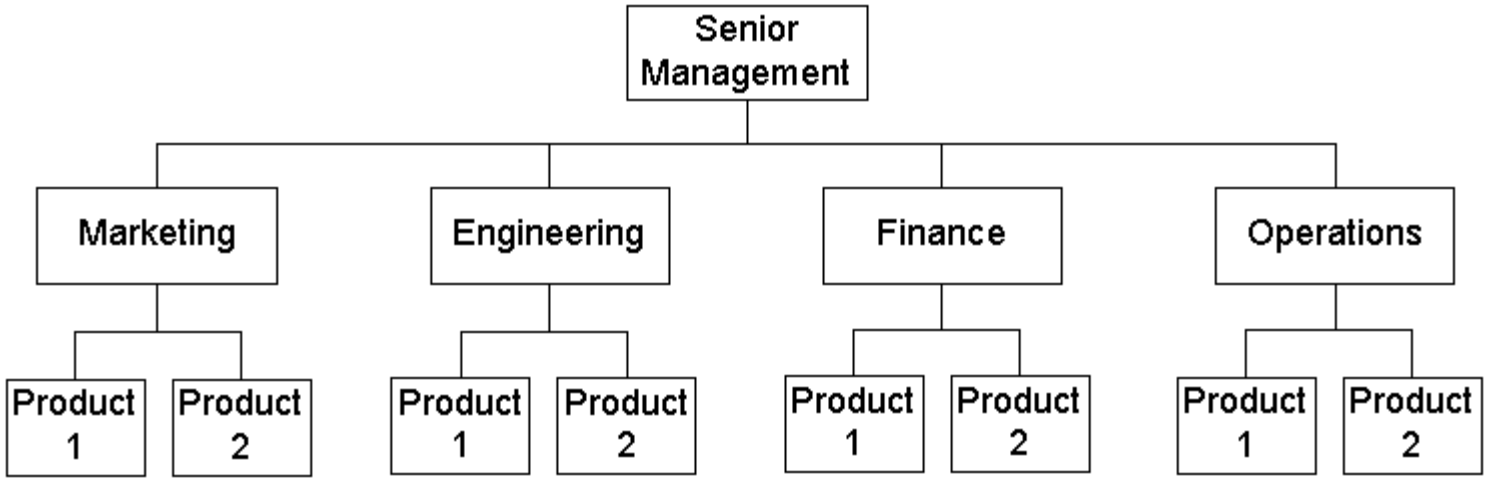
Understanding Organizations

Structural frame: Focuses on roles and responsibilities, coordination and control. Organization charts help define this frame.	**Human resources frame**: Focuses on providing harmony between needs of the organization and needs of people.
Political frame: Assumes organizations are coalitions composed of varied individuals and interest groups. Conflict and power are key issues.	**Symbolic frame**: Focuses on symbols and meanings related to events. Culture is important.

Organizational Structures

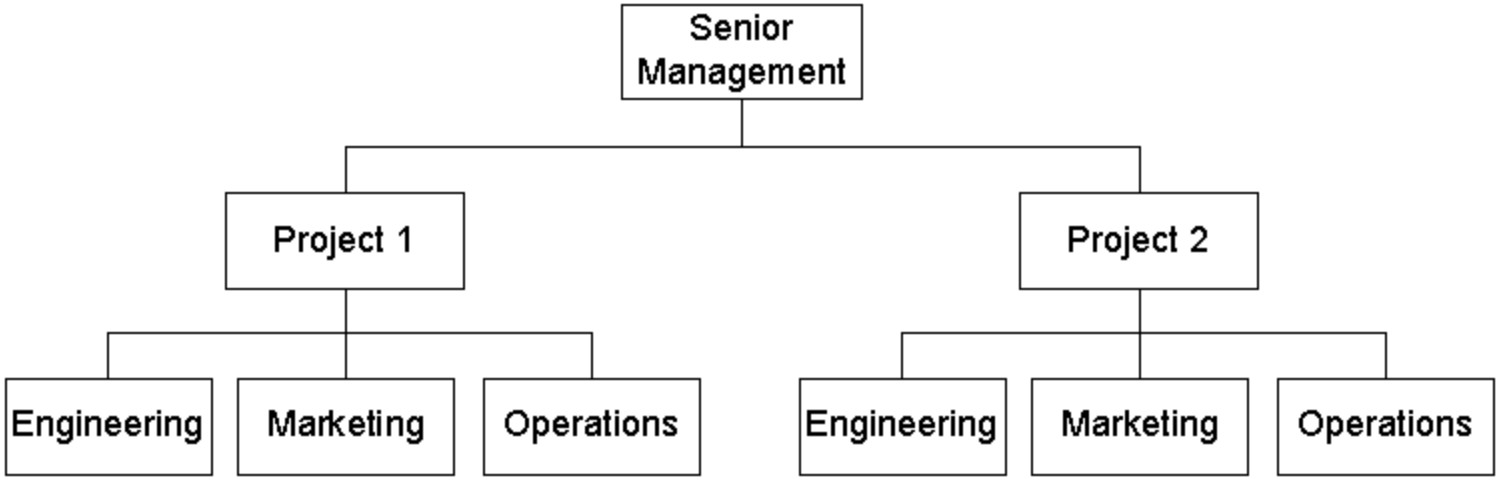
- Functional
  - Engineering, Marketing, Design, etc
  - Production and Logistics (P&L) from production
- Project
  - Project A, Project B
  - Income from projects
  - PM has P&L responsibility
- Matrix
  - Functional and Project based
  - Program Mgmt. Model
  - Shorter cycles, need for rapid development process

Functional Organization



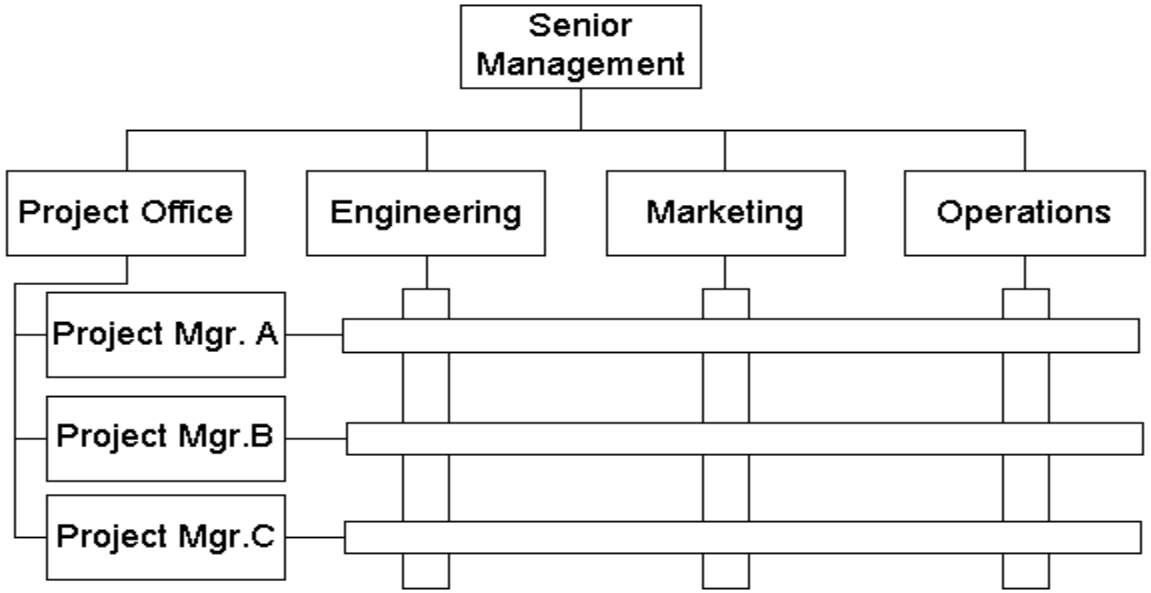
- Pros
  - Clear definition of authority
  - Eliminates duplication
  - Encourages specialization
  - Clear career paths
- Cons
  - "Walls": can lack customer orientation
  - "Silos" create longer decisions cycles
  - Conflicts across functional areas
  - Project leaders have little power

Project Organization



- Pros
  - Unity of command
  - Effective inter-project communication
- Cons
  - Duplication of facilities
  - Career path
- Examples: defense avionics, construction

Matrix Organization



- Pros
  - Project integration across functional lines
  - Efficient use of resources
  - Retains functional teams
- Cons
  - Two bosses for personnel
  - Complexity
  - Resource & priority conflicts

Matrix Forms

- Weak, Strong, Balanced
- Degree of relative power
- Weak: functional-centric
- Strong: project-centric

Organizational Structure Influences on Projects

Organization Type / Project Characteristics	Functional	Matrix			Projectized
		Weak Matrix	Balanced Matrix	Strong Matrix	
Project Manager's Authority	Little or None	Limited	Low to Moderate	Moderate To High	High to Almost Total
Percent of Performing Organization's Personnel Assigned Full-time to Project Work	Virtually None	0-25%	15-60%	50-95%	85-100%
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time
Common Title for Project Manager's Role	Project Coordinator/ Project Leader	Project Coordinator/ Project Leader	Project Manager/ Project Officer	Project Manager/ Program Manager	Project Manager/ Program Manager
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time

PMBOK Guide, 2000, p. 19

Organizational Impact

- Form can greatly impact your role
- Determine what skills you'll need from which functions
- The new "Project Office" [1-2]
  A. As centralized project management
  B. As coach and info. office to project teams
- The "Enterprise PMO" (EPMO)

[1] http://www.projectperfect.com.au/info_setup_po.php

[2] http://en.wikipedia.org/wiki/Project_management_office

Program Management

- A.k.a. Project Portfolio Management
- Program/Portfolio: a group of IT project under a coordinated management structure
- Different ‘program/portfolio models’ are available:
  - Economic return model
    - NPV, IRR, ROI
  - Cost-benefit model
    - Can include less tangible factors
  - Market research model
    - For new products
- Each considers relative value and resource/budget interactions

5 level approach 1/3

A 5 level approach (from CIO magazine)

1. Create a Program/Portfolio Database
   - Information needed
     - Project names & descriptions
     - Estimated costs, timeframes, staffing
   - Benefits
     - Spotting redundancies
     - Communication across orgs & teams
     - Holistic view

5 level approach 2/3

2. Prioritize Projects
   - Try quantifiable rankings
     - Risk and return
   - Still subjectivity and disagreements
3. Divide into budgets based on type
   - To align with business needs
   - Ex: utilities (‘keeping the lights on’), incremental upgrades, strategic investments

5 level approach 3/3

4. Automate the repository
   - Input of new data (new projects)
   - Automated tracking (PM software integration)
5. Apply modern program/portfolio theory
   - More advanced than most of us need

Products - Oracle|Primavera

[Source http://www.oracle.com/applications/primavera/primavera-portfolio-management.html]

Products - Planview

[Source http://www.planview.com/products/enterprise/enterprise-portfolio-management/]

Procurement Management

- Procurement means acquiring goods and/or services from an outside source
  - a.k.a. purchasing or outsourcing
- Know how your project fits-into this model
  - Are you building “in-house”? “for hire”?
    - Thus are you the ‘outside source’?
  - As a startup? (thus in-house but as basis for the business itself)

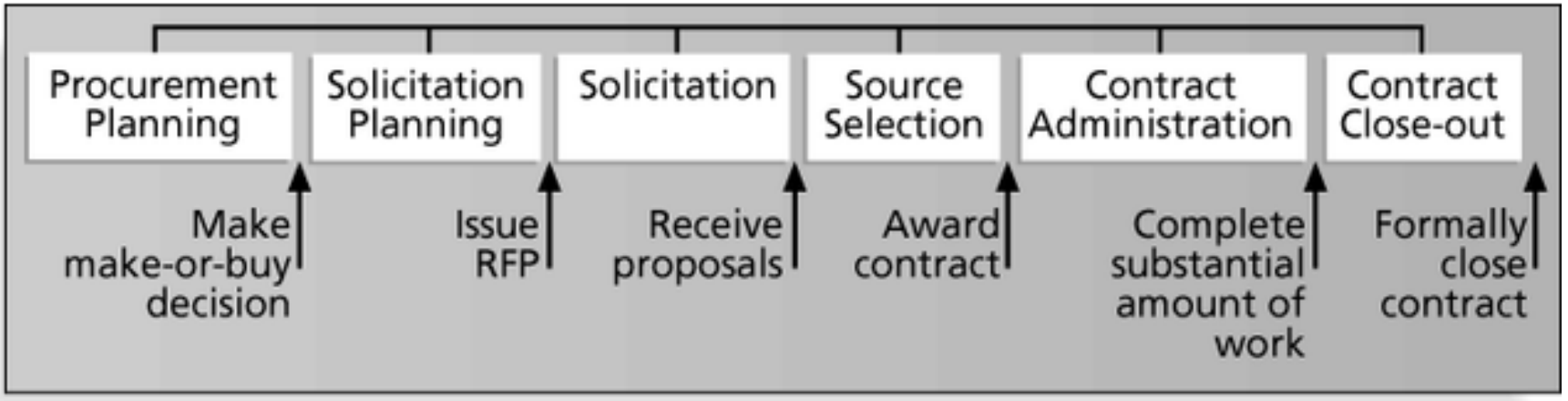
Why Outsource?

- To reduce both fixed and recurrent costs
- To allow the client organization to focus on its core business
- To access skills and technologies
- To provide flexibility
- To increase accountability

Procurement Management

- Procurement planning: determining what to procure and when
- Solicitation planning: documenting product requirements and identifying potential sources
- Solicitation: obtaining quotations, bids, offers, or proposals as appropriate
- Source selection: choosing from among potential vendors
- Contract administration: managing the relationship with the vendor
- Contract close-out: completion and settlement of the contract

Project Procurement Management Processes and Key Outputs



Procurement Tools & Techniques

- Make-or-buy analysis (build vs. buy)
  - Determining whether a particular product or service should be made or performed inside the organization or purchased from someone else. Often involves financial analysis
- Experts
  - Both internal and external, can provide valuable inputs in procurement decisions

Make-or Buy Example

- Assume you can lease an item you need for a project for $150/day. To purchase the item, the investment cost is $1,000, and the daily cost would be another $50/day.
- How long will it take for the lease cost to be the same as the purchase cost?
- If you need the item for 12 days, should you lease it or purchase it?

Make-or Buy Solution

- Set up an equation so the “make” is equal to the “buy”
- In this example, use the following equation. Let d be the number of days to use the item.

  $150d = $1,000 + $50d
- Solve for d as follows:
  - Subtract $50d from the right side of the equation to get

    $100d = $1,000
  - Divide both sides of the equation by $100

    d = 10 days
- The lease cost is the same as the purchase cost at 10 days
- If you need the item for > 12 days, then purchase it

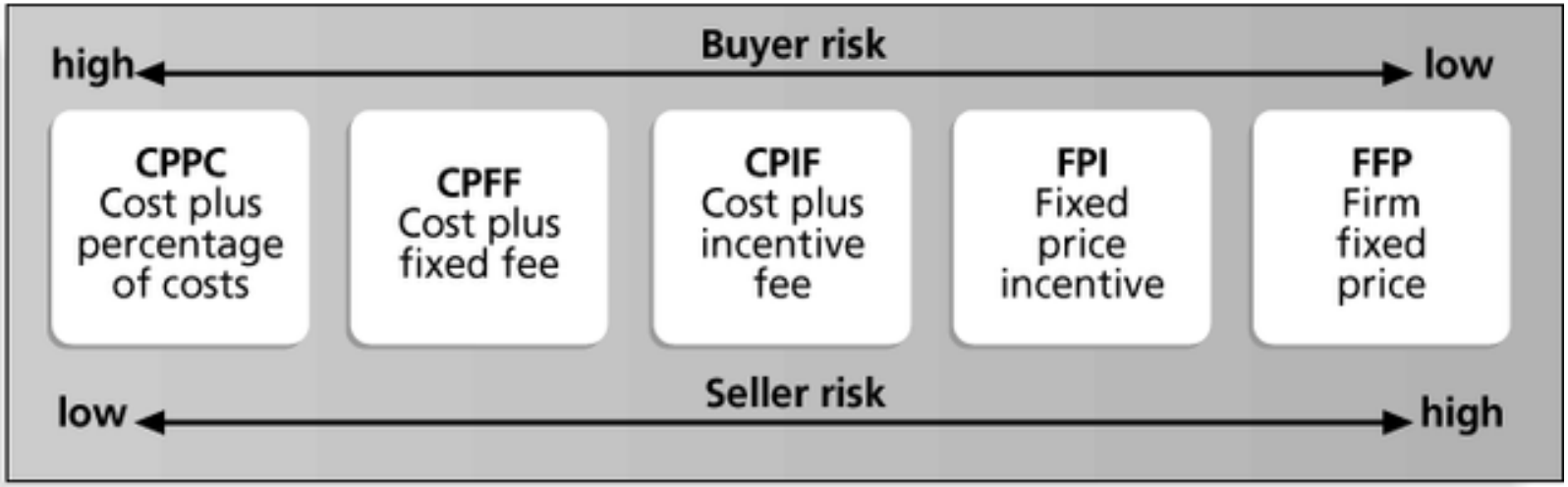
Types of Contracts

- Fixed price or lump sum: involve a fixed total price for a well-defined product or service
- Cost reimbursable: involve payment to the seller for direct and indirect costs
- Time and material contracts: hybrid of both fixed price and cost reimbursable, often used by consultants
- Unit price contracts: require the buyer to pay the seller a predetermined amount per unit of service

Cost Reimbursable Contracts

- Cost plus incentive fee (CPIF)
  - Buyer pays seller for allowable performance costs plus a predetermined fee and an incentive bonus
- Cost plus fixed fee (CPFF)
  - Buyer pays seller for allowable performance costs plus a fixed fee payment usually based on a percentage of estimated costs
- Cost plus percentage of costs (CPPC)
  - Buyer pays seller for allowable performance costs plus a predetermined percentage based on total costs

Contract Types Versus Risk



Optional Reading

- McConnell: 7 “Lifecycle Planning”
- Schwalbe:
  - 3 “Project Integration Management” (62-67),
  - 4 “Project Scope Management”