Lecture 2: Project Management Framework

- Key learning points from Lecture 1:
  - Top 3 key project success factors:
    1. Executive support
    2. Emotional maturity
    3. User involvement
  - Effective project manager often takes on both leader and manager roles:
    - Leader role: focuses on long-term goals and big-picture objectives while inspiring people to reach those goals
    - Manager role: deals with the day-to-day details of meeting specific goals.

Lecture 2: Project Management Framework

- Project Management Framework:
  - Understand the organization.
  - Involve the users.
  - Manage the processes – PMBOK vs. PRINCE2

2.1. Understand the Organization

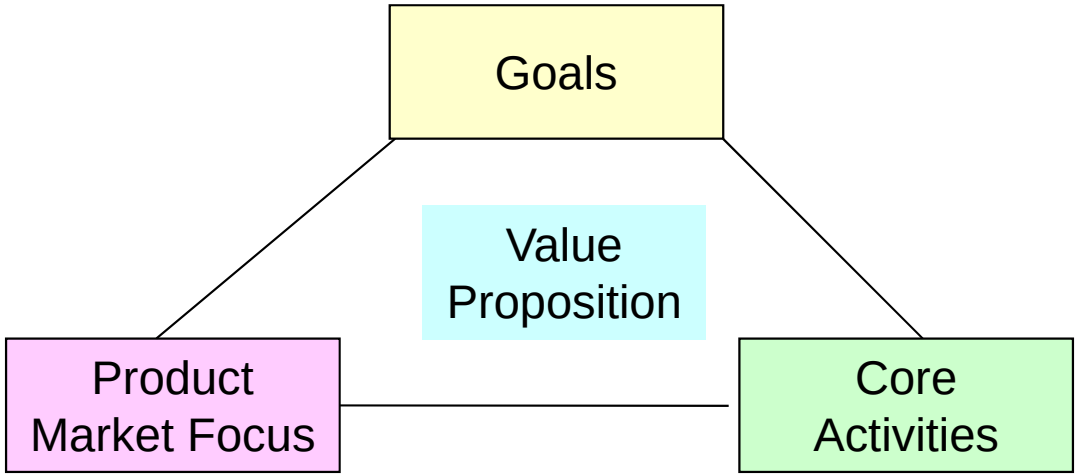
- Projects cannot be run in isolation.
- Projects must operate in a broad organizational environment.
- Project managers need to use **system thinking**:
  - Taking a holistic view of a project and understanding how it relates to the larger organization.
- Senior managers must make sure projects continue to support current business needs.

2.1. Understand the Organization

Strategy frame: Focuses on the business nature and the way the organization competes in the marketplace.	**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.	**Cultural frame:** Focuses on shared assumptions, values, and behaviors that characterize the functioning of an organization.

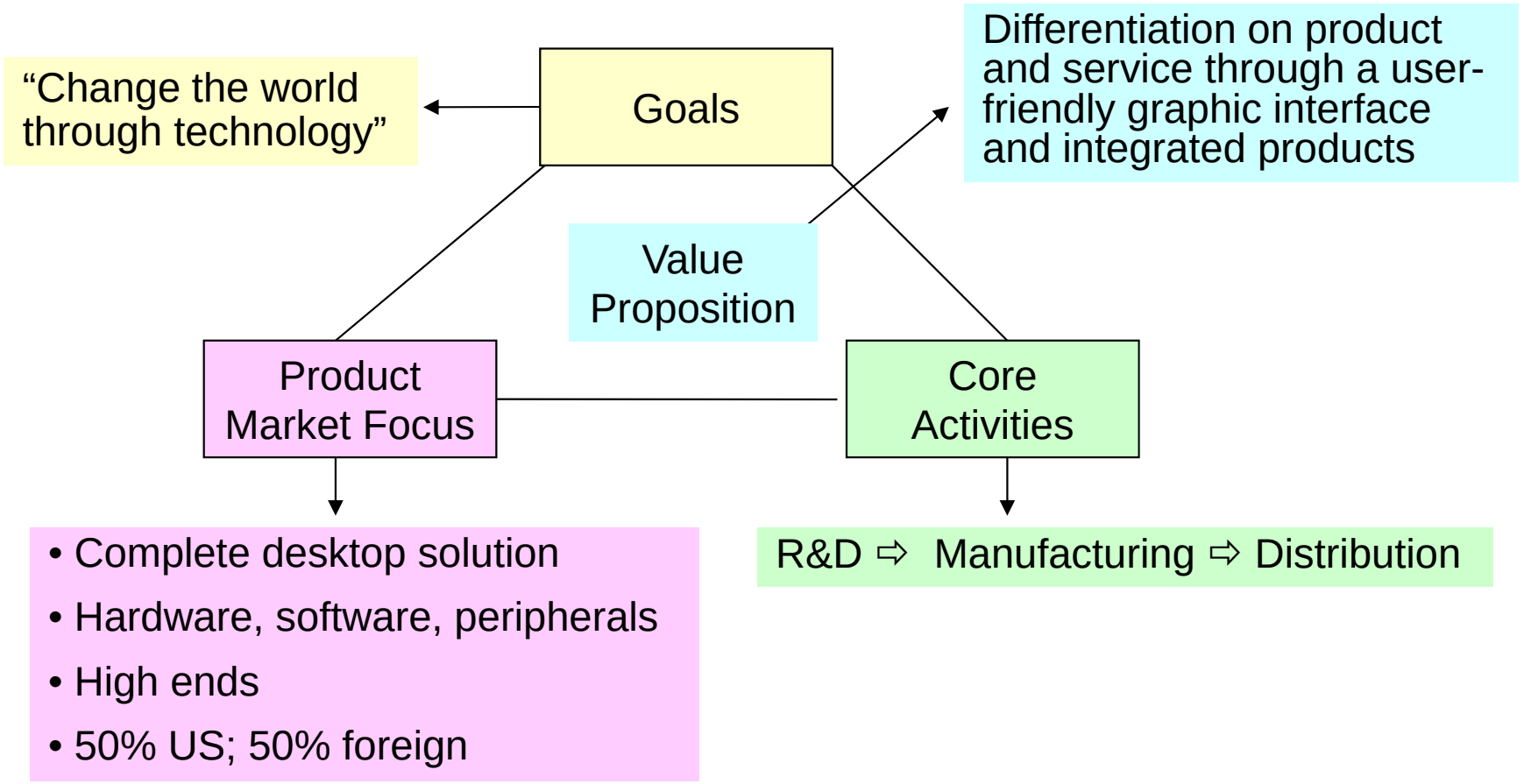
2.1.1. Strategy Frame

- A strategy is a long term plan of action designed to achieve a particular goal.
- Components of strategy:



2.1.1. Strategy Frame

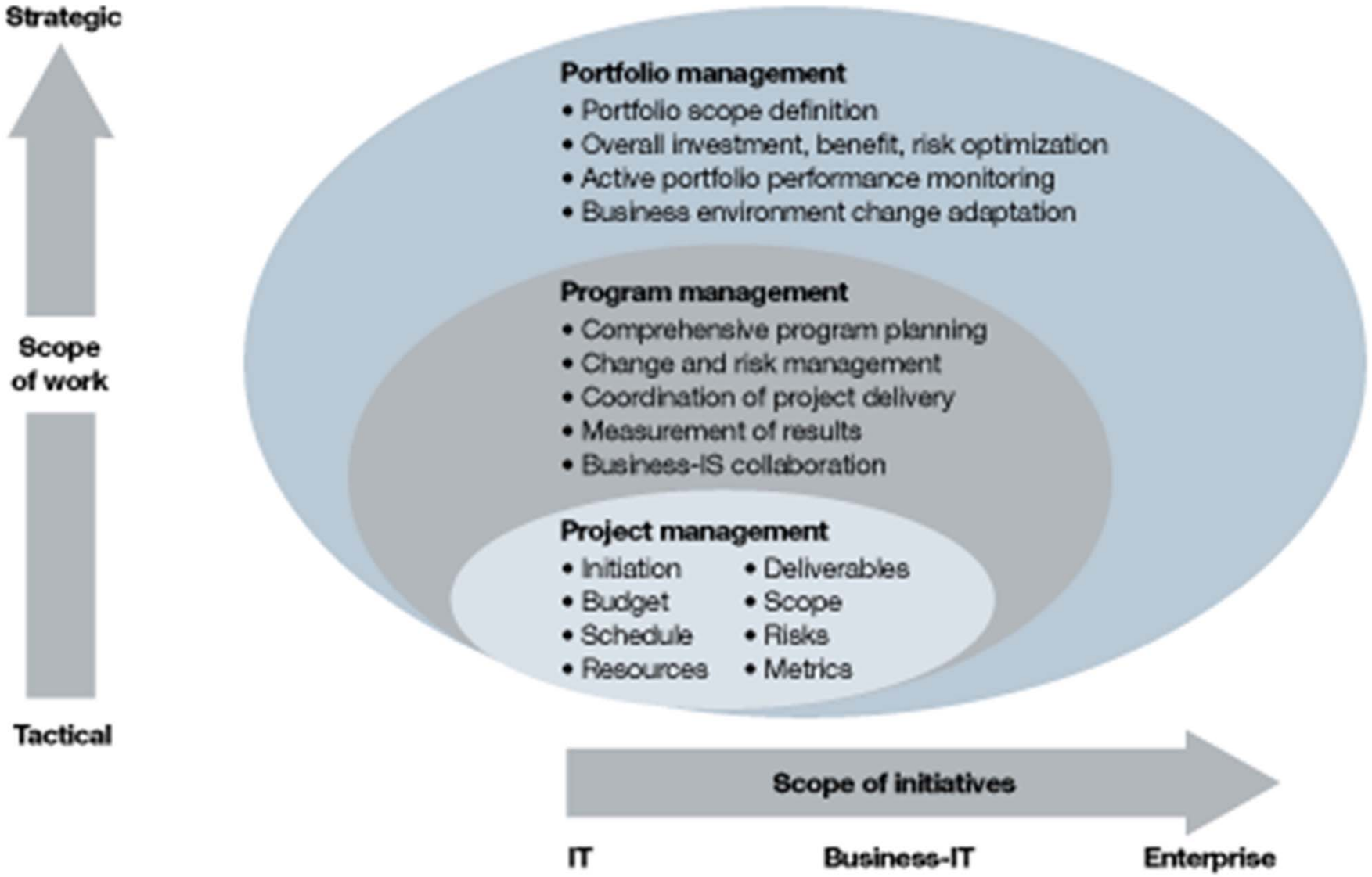
- Apple's strategy:



2.1.1. Strategy Frame

- Strategy vs Tactics:
  - "Strategy without tactics is the slowest route to victory. Tactics without strategy is the noise before defeat." (Chinese military strategist Sun Tzu)
    - Strategy defines your long-term goals and how you're planning to achieve them. Strategy gives you the path you need toward achieving your organization's mission.
    - Tactics are much more concrete and are often oriented toward smaller steps and shorter timeframes along the way. They involve best practices, specific plans, resources, etc. They're also called "initiatives."

2.1.1. Strategy Frame



2.1.1. Strategy Frame

- Three roles of IT in businesses:
  - Efficiency: Doing things better.
    - e.g. computerization from manual process
  - Effectiveness: Doing better things within the organization.
    - e.g. ERP deployment
  - Competitive advantage: Doing better and new things for customers.
    - e.g. Google vs Yahoo search engine

2.1.1. Strategy Frame

- Project managers need to understand how a project fits into the overall organization's strategy.
- Reasons:
  - Helpful in persuading executives to continue to support the project.
  - Helpful in understanding what functionality are important to the project $\rightarrow$ controlling scope creeps.

2.1.2. Structural Frame

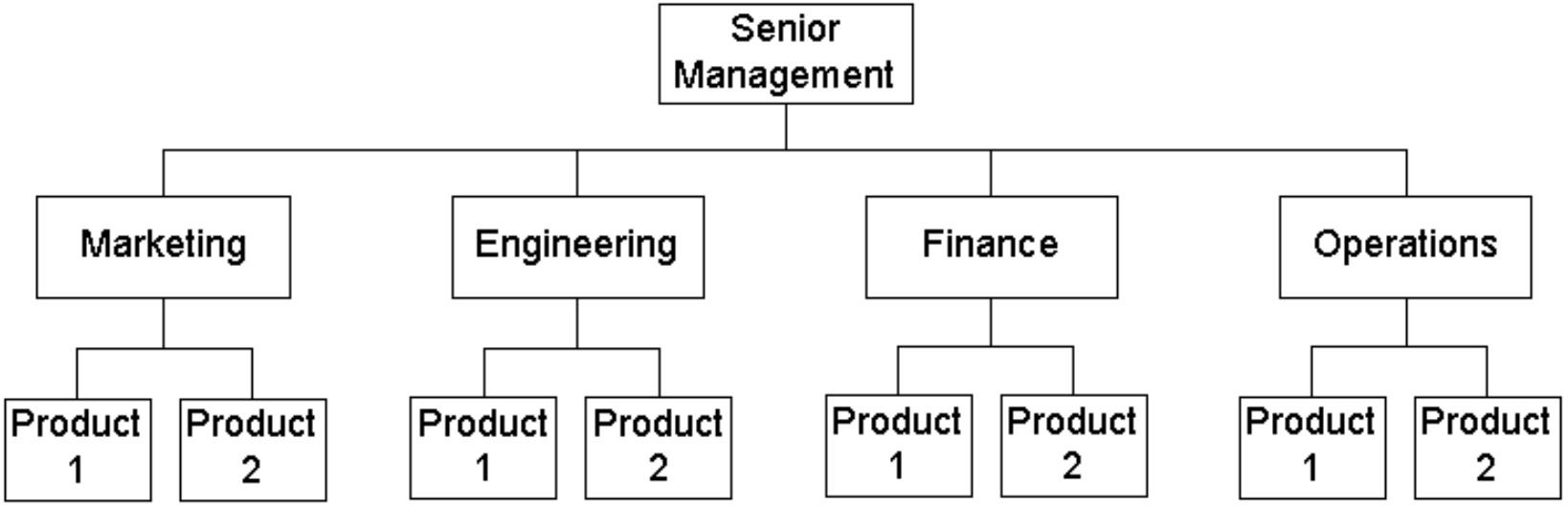
- Organization structure is the formal decision-making framework by which job tasks are divided, grouped, and coordinated.
- An organization chart displays the organizational structure and shows job titles, lines of authority, and relationships between departments.

2.1.2. Structural Frame

- Three basic organizational structures:
  - Functional:
    - Group similar or related occupational specialties or processes together under the familiar headings of finance, manufacturing, marketing, etc.
  - Project or Divisional:
    - Made up of self-contained strategic business units that each produces a single product.
  - Matrix:
    - Middle ground between functional and project structures.

2.1.2. Structural Frame

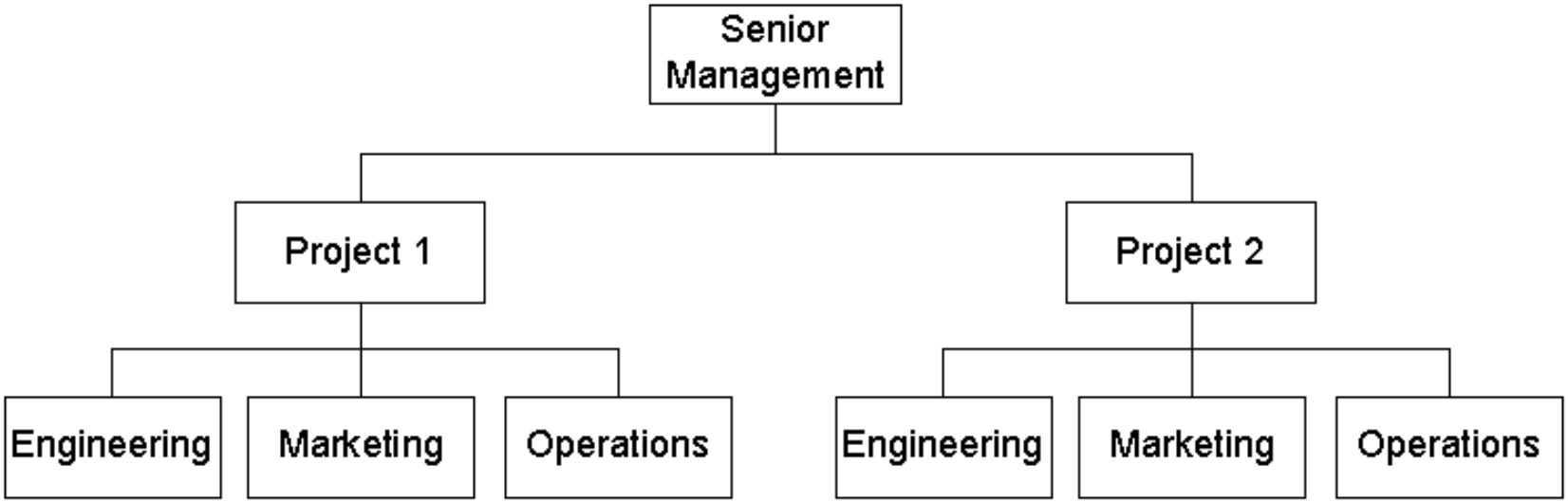
- Functional organization:



- Pro:
  - 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

2.1.2. Structural Frame

- Project organization:

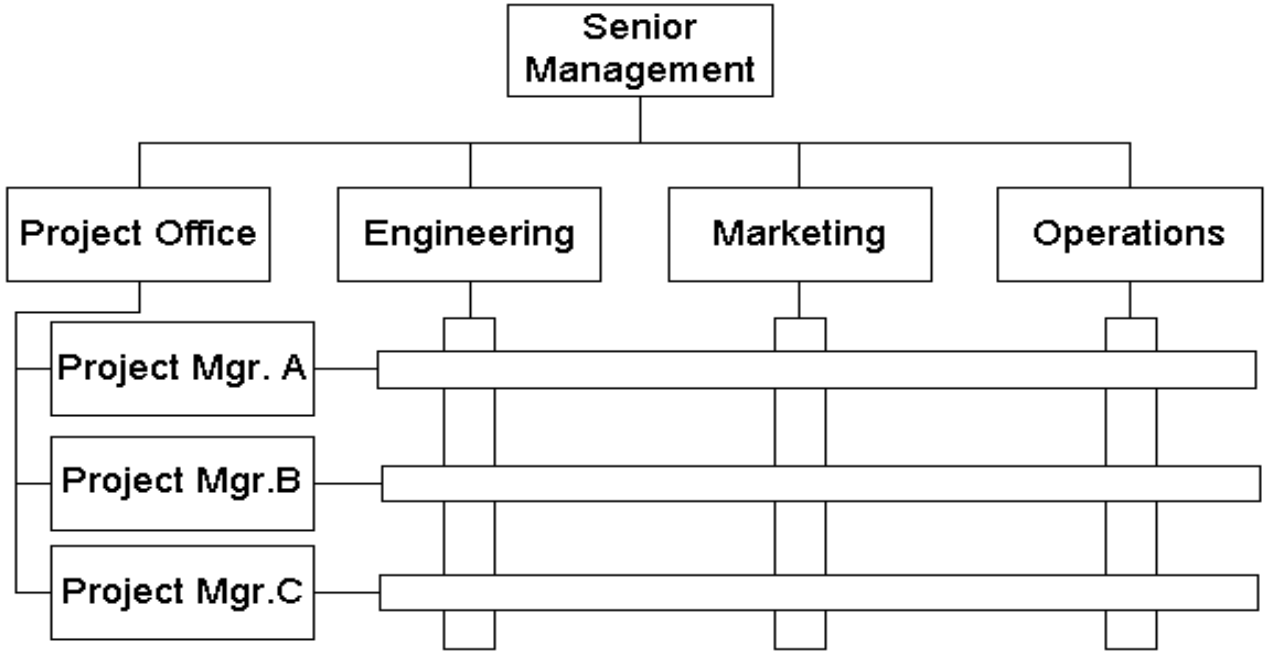


- Pro:
  - Unity of command
  - Effective inter-project communication
- Cons:
  - Duplication of facilities
  - Less defined career path

Examples: car, defense, avionics, construction

2.1.2. Structural Frame

- Matrix organization:



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

2.1.2. Structural Frame

- Matrix organization categories based on degree of relative power:
  - Weak, Strong, Balanced
  - Weak: functional-centric
  - Strong: project-centric

2.1.2. Structural Frame

- Organizational structure influences on projects:

Structure / 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 Personnel Assigned Full-time to Project Work	Virtually None	0-25%	15-60%	50-95%	85-100%
Who controls the project budget	Functional manager		Mixed	Project manager	
Project Manager's Role	Part-time		Full-time	Full-time	
Common Title for Project Manager's Role	Project Coordinator/ Project Leader		Project Manager/ Project Officer	Project Manager/ Program Manager	
Project Management Administrative Staff	Part-time		Part-time	Full-time	

2.1.2. Structural Frame

- Project managers need to understand the organization structure.
- Reasons:
  - Organization structure can greatly impact their role.
  - Determine what skills they will need from which functions.

2.1.3. Human Resources Frame

- Human resources deal with various aspects of managing the people in an organization which include:
  - Selection
  - Reward systems
  - Training and development
  - Performance appraisal
  - Rotation through company

2.1.3. Human Resources Frame

- Project managers need to know who are the people they will work with.
- Reasons:
  - Helpful in selecting team member.
  - Helpful in understanding how to motivate their team.
  - More in Lecture 8.

2.1.4. Cultural Frame

- Organizational culture is a set of shared assumptions, values, and behaviors that characterize the functioning of an organization.
- Many experts believe the underlying causes of many companies' problems are not the structure or staff, but the culture.

2.1.4. Cultural Frame

- Ten characteristics of organizational culture:
  - Member identity*
  - Group emphasis*
  - People focus
  - Unit integration*
  - Control
  - Risk tolerance*
  - Reward criteria*
  - Conflict tolerance*
  - Means-ends orientation
  - Open-systems focus*

* Project work is most successful in an organizational culture where these characteristics are highly prevalent and where the other characteristics are balanced.

2.1.5. Stakeholder Management

- Project managers must take time to identify, understand, and manage relationships with all project stakeholders.
- Using the four frames of organizations can help you meet stakeholder needs and expectations.
- Senior executives and top management are very important stakeholders.

2.1.5. Stakeholder Management

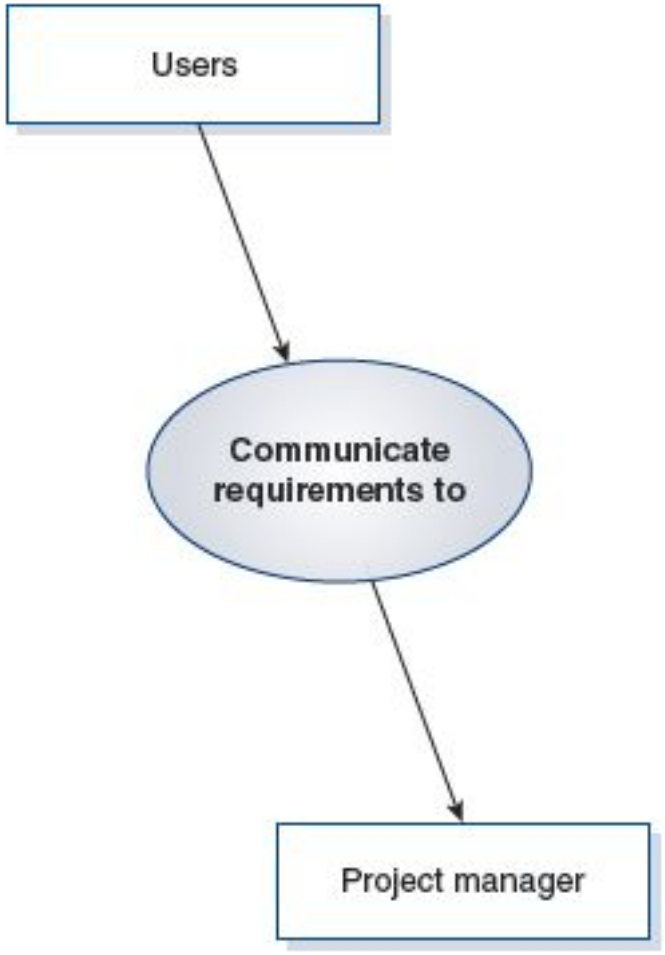
- Several studies cite top management commitment as one of the key factors associated with project success.
- Top management can help project managers:
  - Secure adequate resources.
  - Get approval for unique project needs in a timely manner.
  - Receive cooperation from people throughout the organization.
  - Learn how to be better leaders.

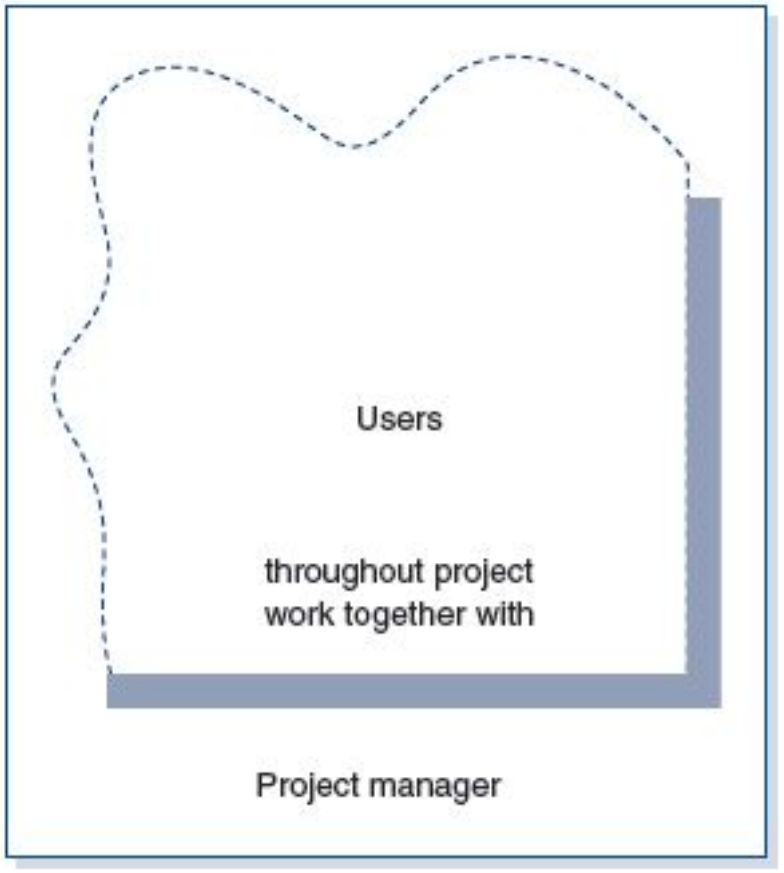
2.2. Involve the Users

- Users often not the ones who pay for the projects.
- Involve the users include:
  - Identify them.
    - Who are they?
  - Know them:
    - What are their level of IT knowledge/skills
    - What are their interest in the project?
    - How they will be affected by the project?
  - Talk to them:
    - Do it early.

2.2. Involve the Users

- The Changing Relationship Between Users and the Project Manager





2.2. Involve the Users

- “Users aren’t always available to provide feedback during development, so it’s the project manager’s responsibility to track down the necessary information and incorporate it into the project.”
- The end user walks a fine line between providing too much and not enough information. Project manager needs to know when enough is enough.

Source:
http://www.boxesandarrows.com/view/users_in_the_development_cycle_effective_project_communication

2.3. Manage the Process

- A process is a series of actions directed toward a particular result.
- Project management can be viewed as a number of interlinked processes or phases.
- Each phase defines:
  - What work will be performed.
  - What deliverables will be produced and when.
    - A **deliverable** is a product or service produced or provided as part of a project.
  - Who will be involved.
  - How management will control and approve work produced in this phase.

2.3. Manage the Process

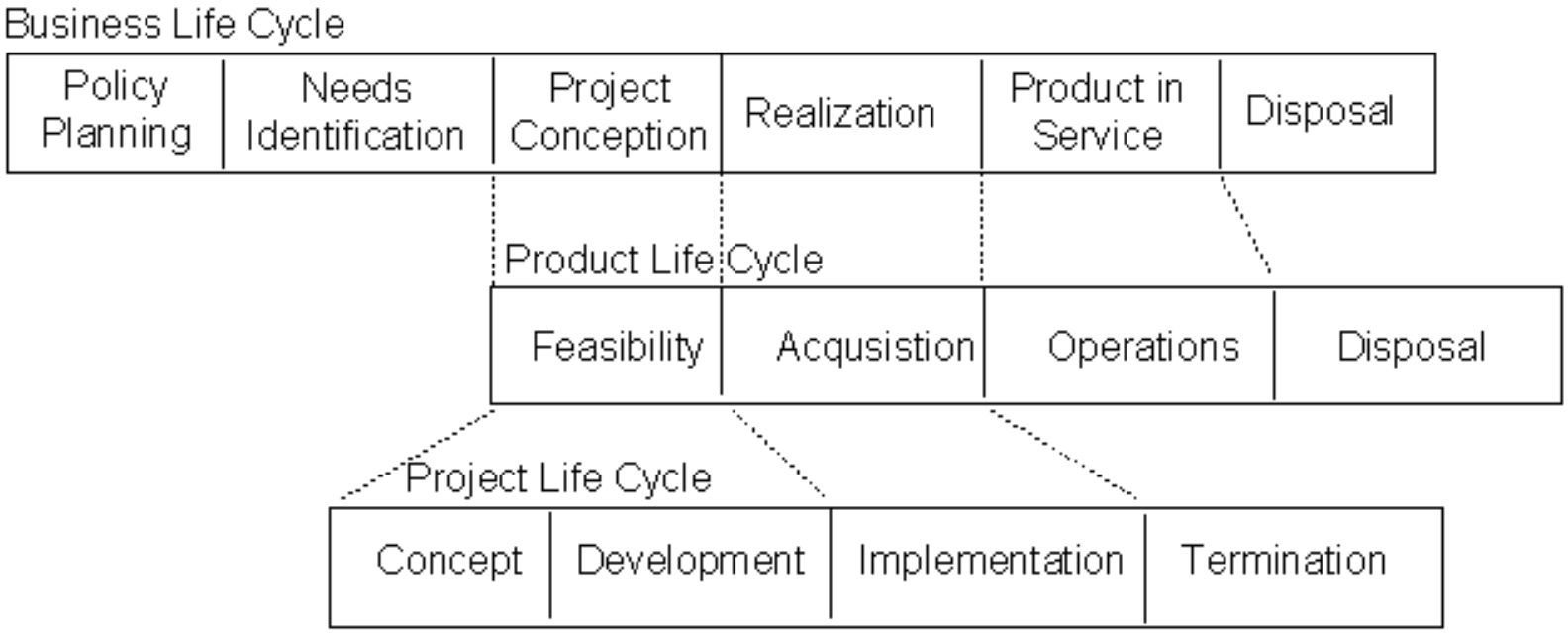
- Phases provide management review points:
  - “Phase exits” or “kill points”.
  - Ensure continued alignment with goals.
  - Form of Validation & Verification (V&V).
- A project should successfully pass through each of the project phases in order to continue on to the next.

2.3. Manage the Process

- Two types of processes:
  - Project management processes: describing and organizing the work of the project.
    - Also known as project lifecycle.
    - Similar for all projects
  - Product-oriented processes: specifying and building the project's product.
    - Also known as product lifecycle.
    - Product-specific.
    - In software development, it is also known as systems development lifecycle (SDLC).

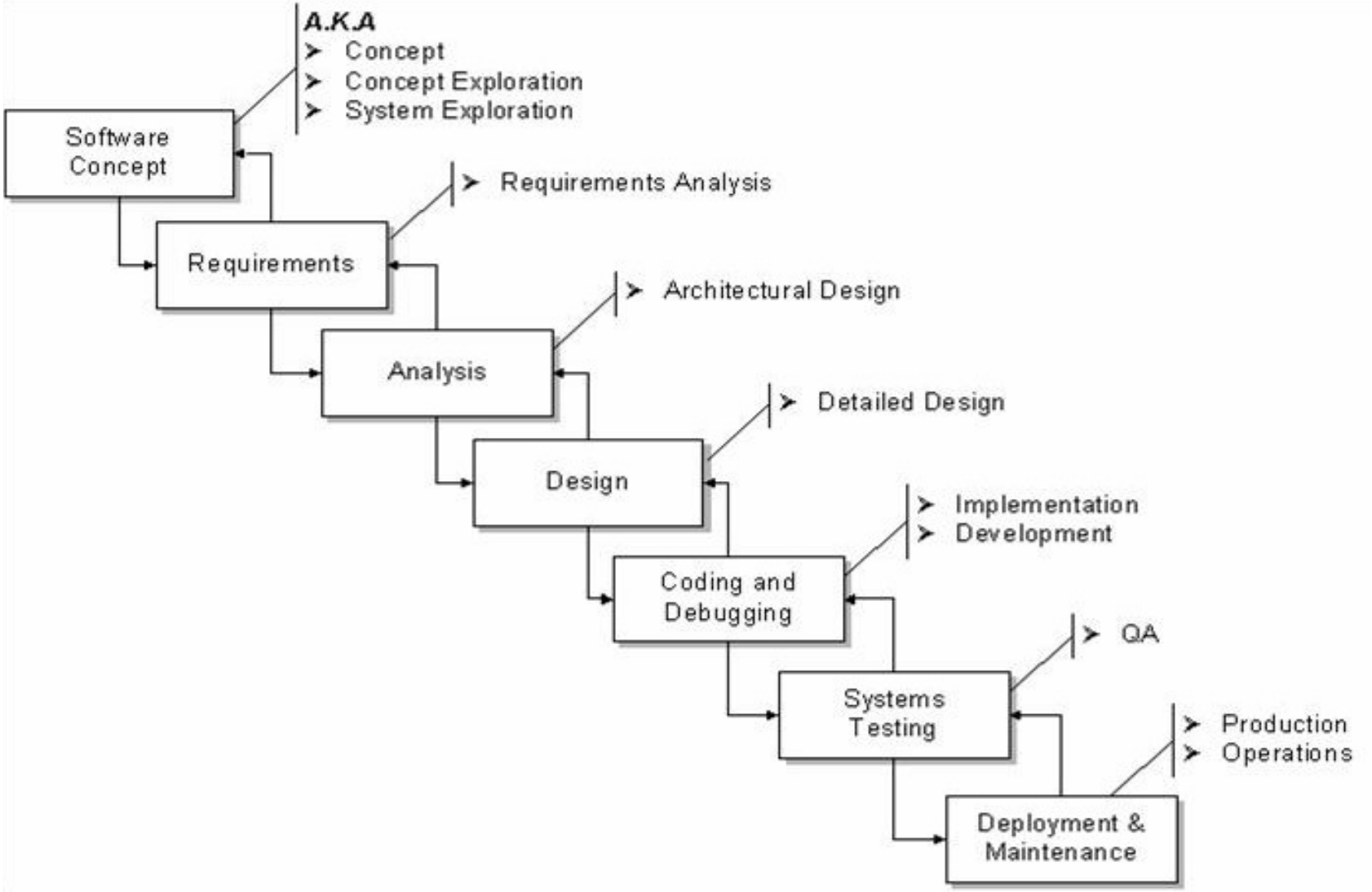
2.3. Manage the Process

- Relationship between project and product lifecycle:



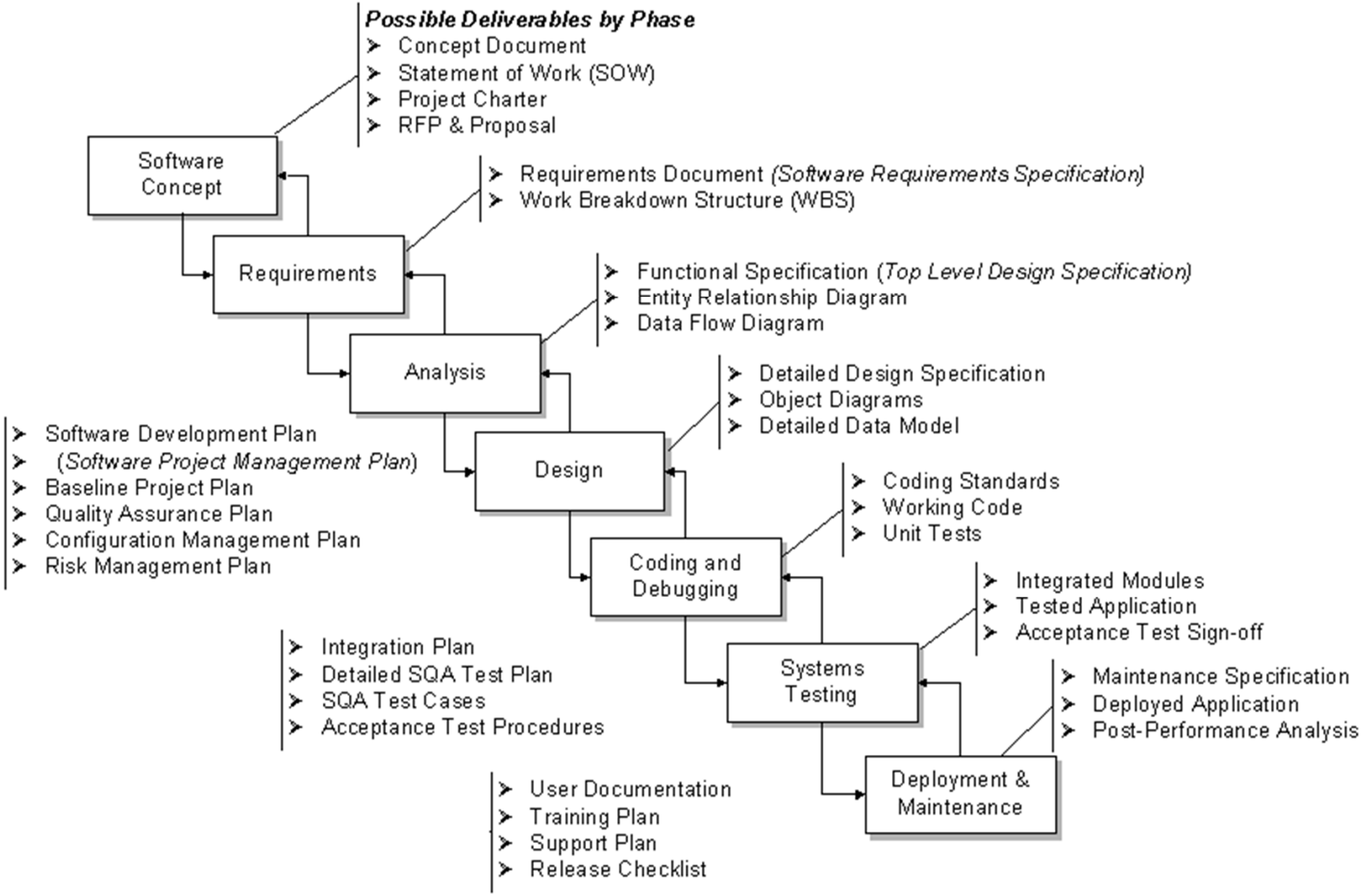
2.3.1. Product Lifecycle

- Seven core software phases - SDLC:



2.3.1. Product Lifecycle

- Potential deliverables by phase:



2.3.1. Product Lifecycle

- Time allocation by system sizes:

Activity	Small Project (2.5K LOC)	Large Project (500K LOC)
Analysis	10%	30%
Design	20%	20%
Code	25%	10%
Unit Test	20%	5%
Integration	15%	20%
System test	10%	15%

2.3.2. Project Lifecycle

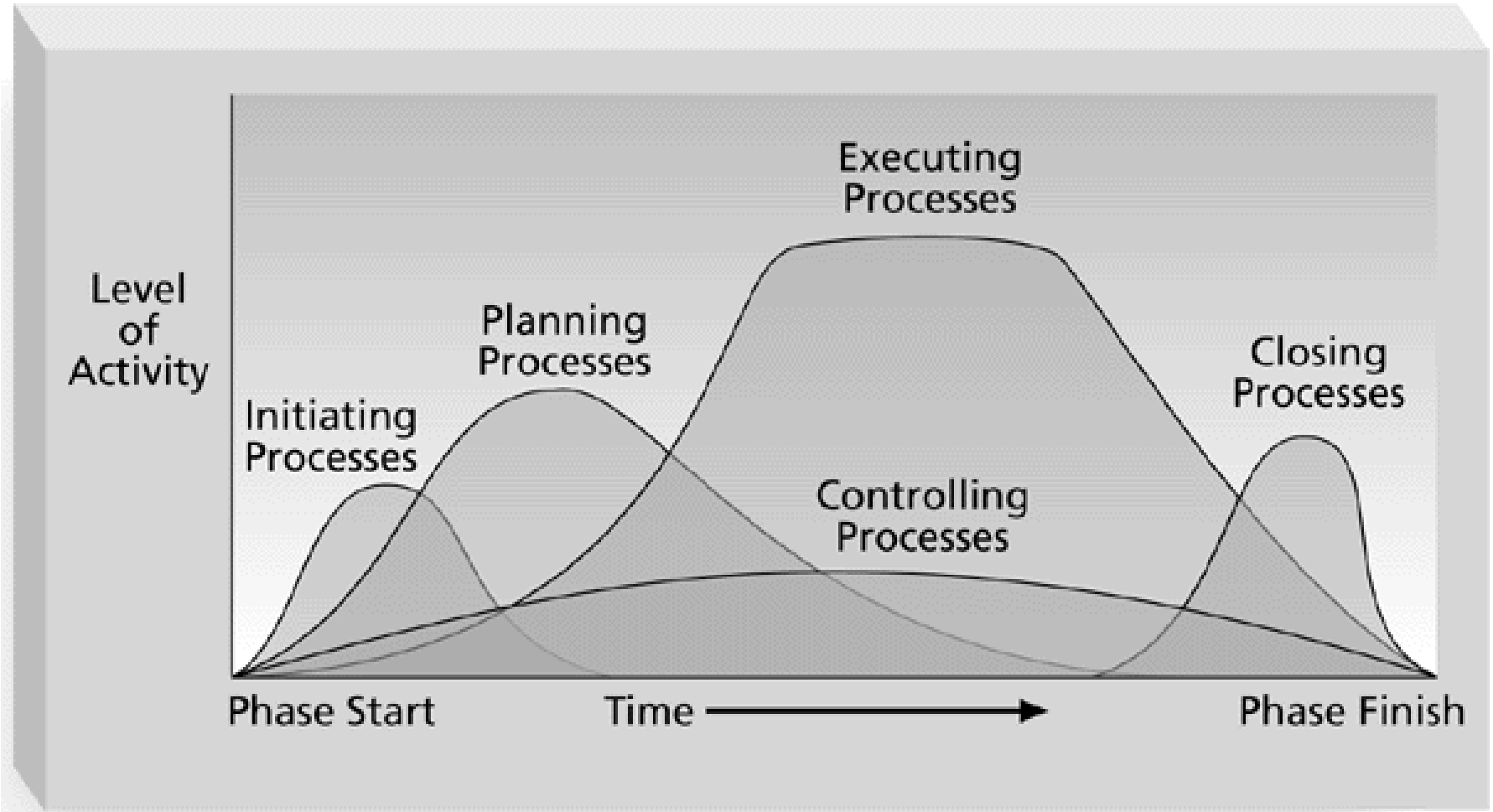
- PMBOK and PRINCE are two project standard that specifies what to do within the project lifecycle – including the norms, processes, practices and methods that are most likely used in project management.
  - PMBOK = Project Management Body of Knowledge – currently in v5
    - http://www.pmi.org/Resources/Pages/Library-of-PMI-Global-Standards.aspx
  - PRINCE = PRojects IN Controlled Environments – currently in v2 (PRINCE2)
    - http://www.prince2.com/

2.3.2.1. PMBOK

- PMBOK organizes the project management process into five process groups:
  - Initiating
  - Planning
  - Executing
  - Monitoring and controlling
  - Closing
- PMBOK describes the process within each process group by its inputs, tools and techniques, outputs.

2.3.2.1. PMBOK

- Level of activity and overlap of process groups over time:

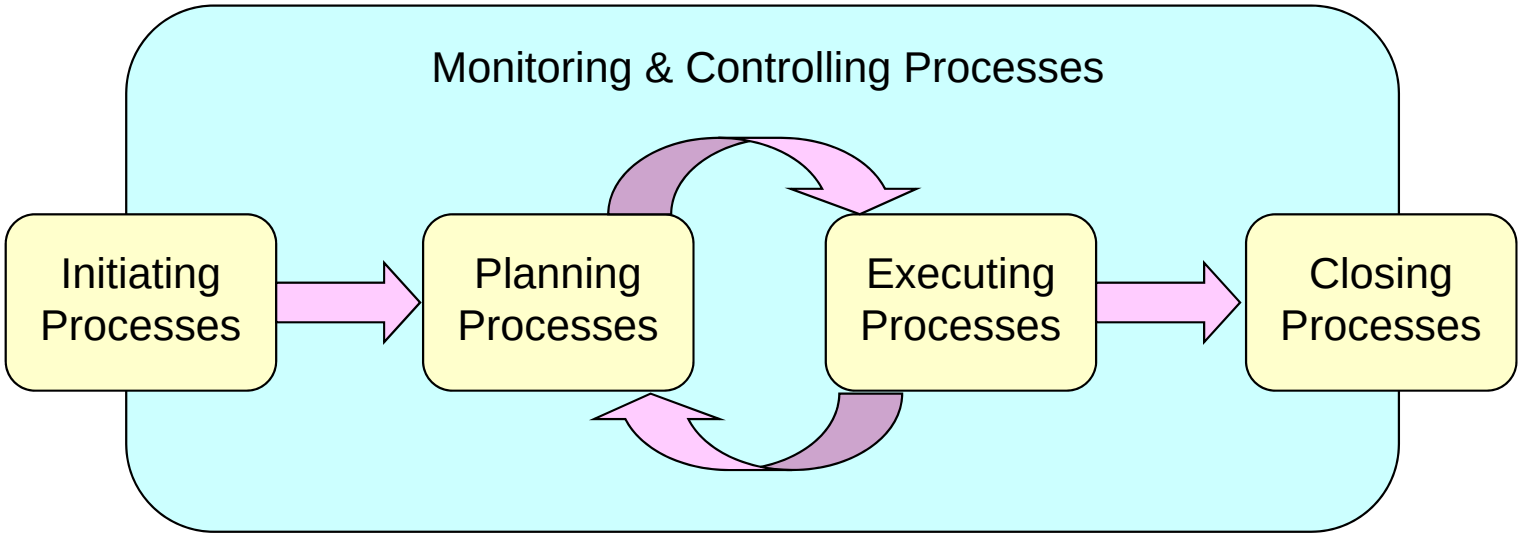


2.3.2.1. PMBOK

- In the early phases of a project life cycle:
  - Resource needs are usually lowest.
  - The level of uncertainty (risk) is highest.
  - Project stakeholders have the greatest opportunity to influence the project.
- In the middle phases of a project life cycle:
  - The certainty of completing a project increases.
  - More resources are needed.
- In the final phase of a project life cycle:
  - The focus is on ensuring that project requirements were met.
  - The sponsor approves completion of the project.

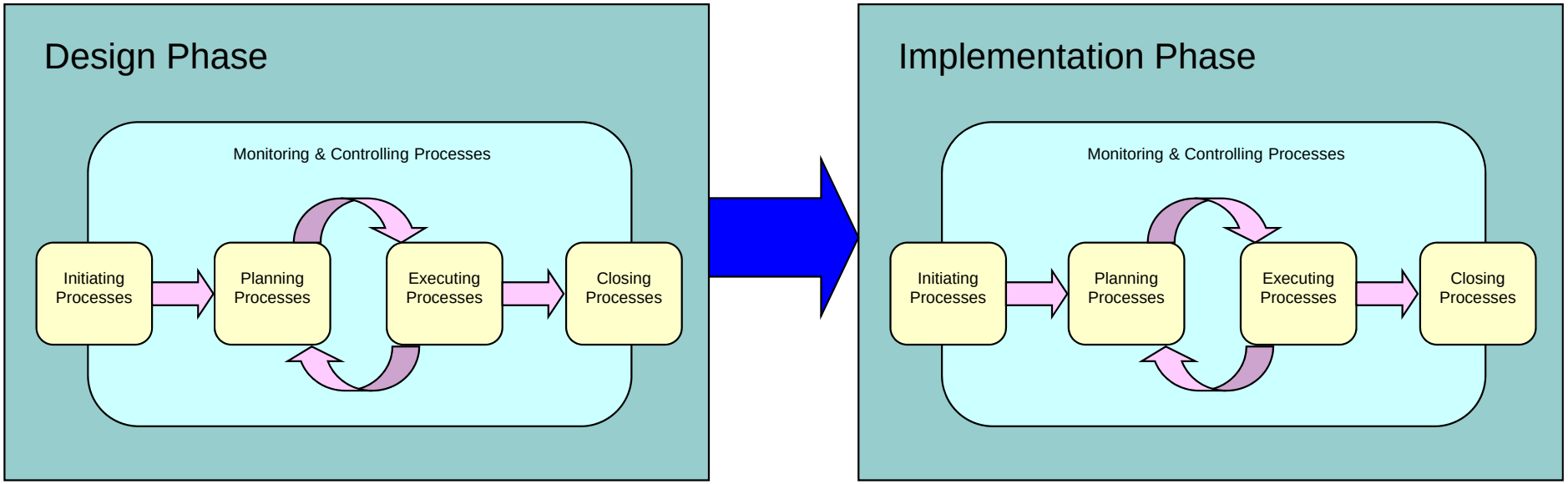
2.3.2.1. PMBOK

- Process links:



2.3.2.1. PMBOK

- Interaction with product phases:



2.3.2.1. PMBOK

- Initiating Process:
  - To formally select and start-off projects.
  - May be preceded by a pre-initiation phase, which includes developing a business case.
- Inputs:
  - Product description
  - Strategic plan
  - Project selection criteria
  - Business case
  - Historical information
- Outputs:
  - Project charter
  - Project manager assigned
  - Constraints
  - Assumptions

A Business Case = a sales pitch, justifies the need to undertake the project.
A Project Charter gives formal authority to the Project Manager to undertake the project.

2.3.2.1. PMBOK

- Planning Process:
  - To devise and maintain a workable scheme to accomplish the business need that the project was undertaken to address
- Activities:
  - Scope planning
  - Resource planning
  - Cost estimation and budgeting
  - Quality planning
  - Risk planning
  - Staff acquisition
  - etc.
- Outputs:
  - A team contract
  - A scope statement
  - A work breakdown structure (WBS)
  - A project schedule, in the form of a Gantt chart with all dependencies and resources entered
  - A list of prioritized risks

2.3.2.1. PMBOK

- Executing Process:
  - To coordinating people and other resources to carry out the plan.
  - Usually takes the most time and resources.
  - Most challenging phase for project managers.
- Activities:
  - Project Plan Execution
  - Scope Verification
  - Quality Assurance
  - Team Development
  - Solicitation
  - Source Selection
  - Contract Administration
- Outputs:
  - Final products or services

2.3.2.1. PMBOK

- Controlling Process:
  - To ensure that project objectives are met by monitoring and measuring progress and taking corrective measures when necessary
- Activities:
  - Overall Change Control
  - Scope Change Control
  - Schedule Control
  - Cost Control
  - Quality Control
  - Performance Reporting
  - Risk Response Control
- Outputs:
  - Performance reports
  - Requested changes
  - Updates to various plans

2.3.2.1. PMBOK

- Closing Process:
  - To gain stakeholder and customer acceptance of the final products and services and to bring the project to an orderly end
  - Even if projects are not completed, they should be formally closed in order to reflect on what can be learned to improve future projects.
- Activities:
  - Administrative closure
  - Contract close-out
- Outputs:
  - Project archives and lessons learned
  - Final report and presentation to the sponsor or senior management

2.3.2.1. PMBOK

- You can map the main activities of each PM process group into the ten knowledge areas by using the *PMBOK*.
- Key observations:
  - All initiating activities are part of the project integration management knowledge area.
  - There are activities from each knowledge area under the planning process group.

2.3.2.1. PMBOK

Knowledge Areas	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
Project Integration Management	1. Develop Project Charter	2. Develop Project Management Plan	3. Direct and Manage Project Execution	4. Monitor and Control Project Work 5. Perform Integrated Change Control	6. Close Project or Phase
Project Scope Management		1. Plan Scope Management 2. Collect Requirements 3. Define Scope 4. Create WBS		5. Validate Scope 6. Control Scope	
Project Time Management		1. Plan Schedule Management 2. Define Activities 3. Sequence Activities 4. Estimate Activity Resources 5. Estimate Activity Durations 6. Develop Schedule		6. Control Schedule	
Project Cost Management		1. Plan Cost Management 2. Estimate Costs 3. Determine Budget		4. Control Costs	

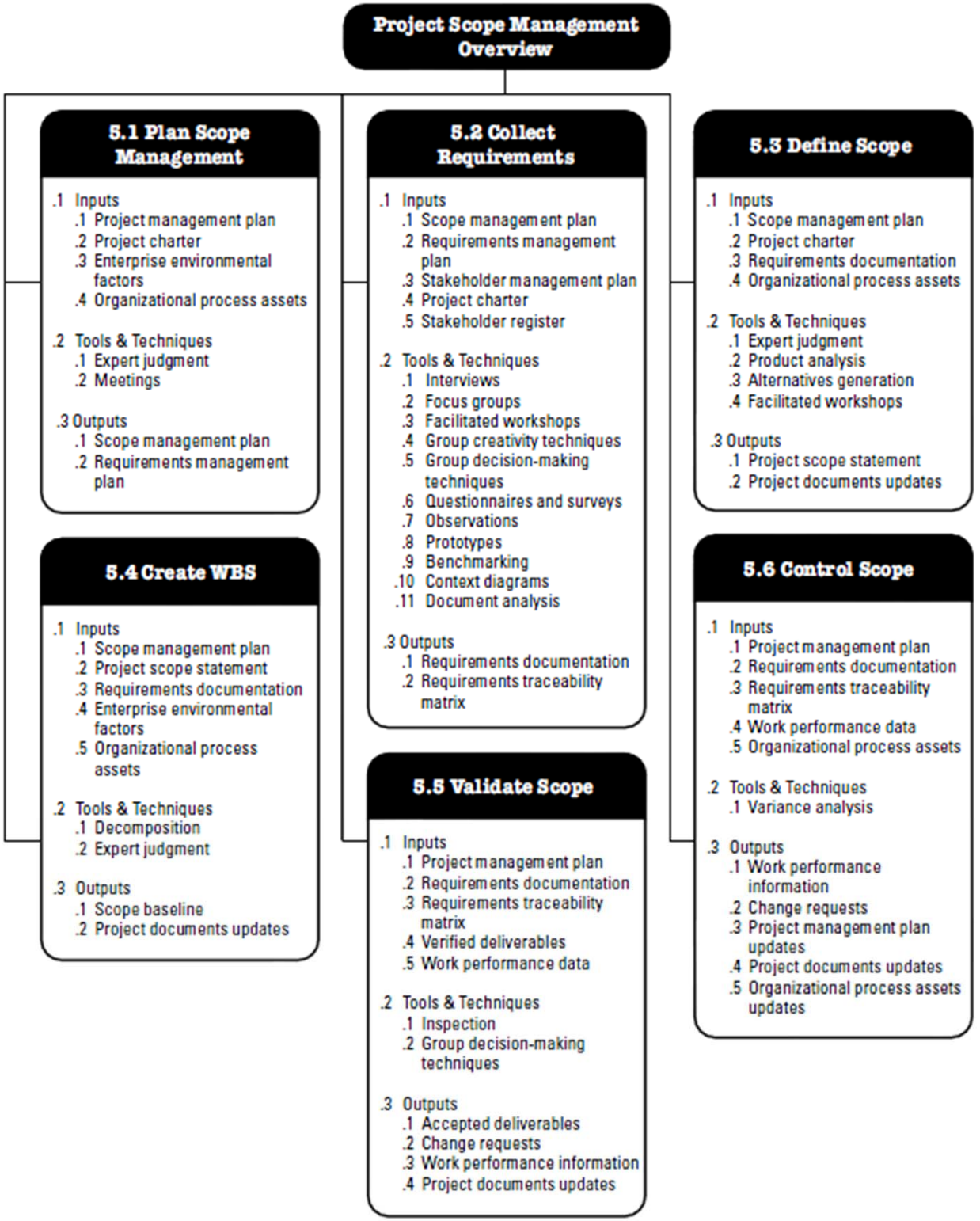
2.3.2.1. PMBOK

5.1 Plan Scope Management

.1 Inputs
- .1 Project management plan
- .2 Project charter
- .3 Enterprise environmental factors
- .4 Organizational process assets

.2 Tools & Techniques
- .1 Expert judgment
- .2 Meetings

.3 Outputs
- .1 Scope management plan
- .2 Requirements management plan



2.3.2.1. PMBOK

Knowledge Areas	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
Project Quality Management		1. Plan Quality Management	2. Perform Quality Assurance	3. Perform Quality Control	
Project Human Resource Management		1. Plan Human Resource Management	2. Acquire Project Team 3. Develop Project Team 4. Manage Project Team		
Project Communications Management		1. Plan Communications Management	2. Manage Communications	3. Control Communications	
Project Stakeholder Management		1. Identify Stakeholders 2. Plan Stakeholder Management	3. Manage Stakeholder Engagement	4. Control Stakeholder Engagement	

2.3.2.1. PMBOK

Knowledge Areas	Project Management Process Groups				
	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
Project Risk Management		1. Plan Risk Management 2. Identify Risks 3. Perform Qualitative Risk Analysis 4. Perform Quantitative Risk Anaysis 5. Plan Risk Responses		6. Control Risks	
Project Procurement Management		1. Plan Procurements	2. Conduct Procurements	3. Control Procurements	4. Close Procurements

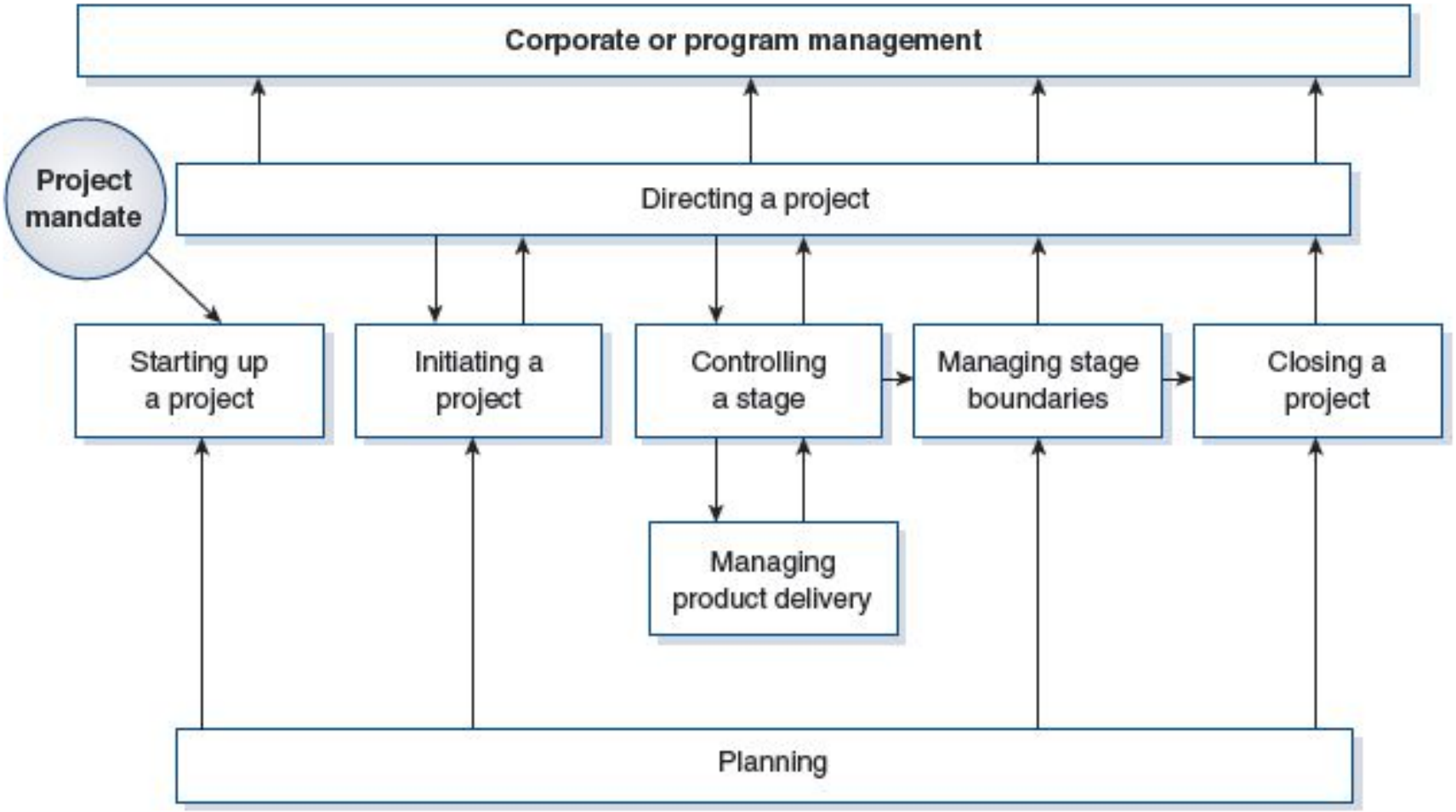
2.3.2.2. PRINCE2

- PRINCE2:
  - Stands for PRojects IN Controlled Environments
  - Registered trademark
  - UK Government recognized best practice project management methodology
  - Open method - no license fee
  - Business case driven

A Business Case = a sales pitch, justifies the need to undertake the project.
A Project Charter gives formal authority to the Project Manager to undertake the project.

2.3.2.2. PRINCE2

- PRINCE 2 processes:

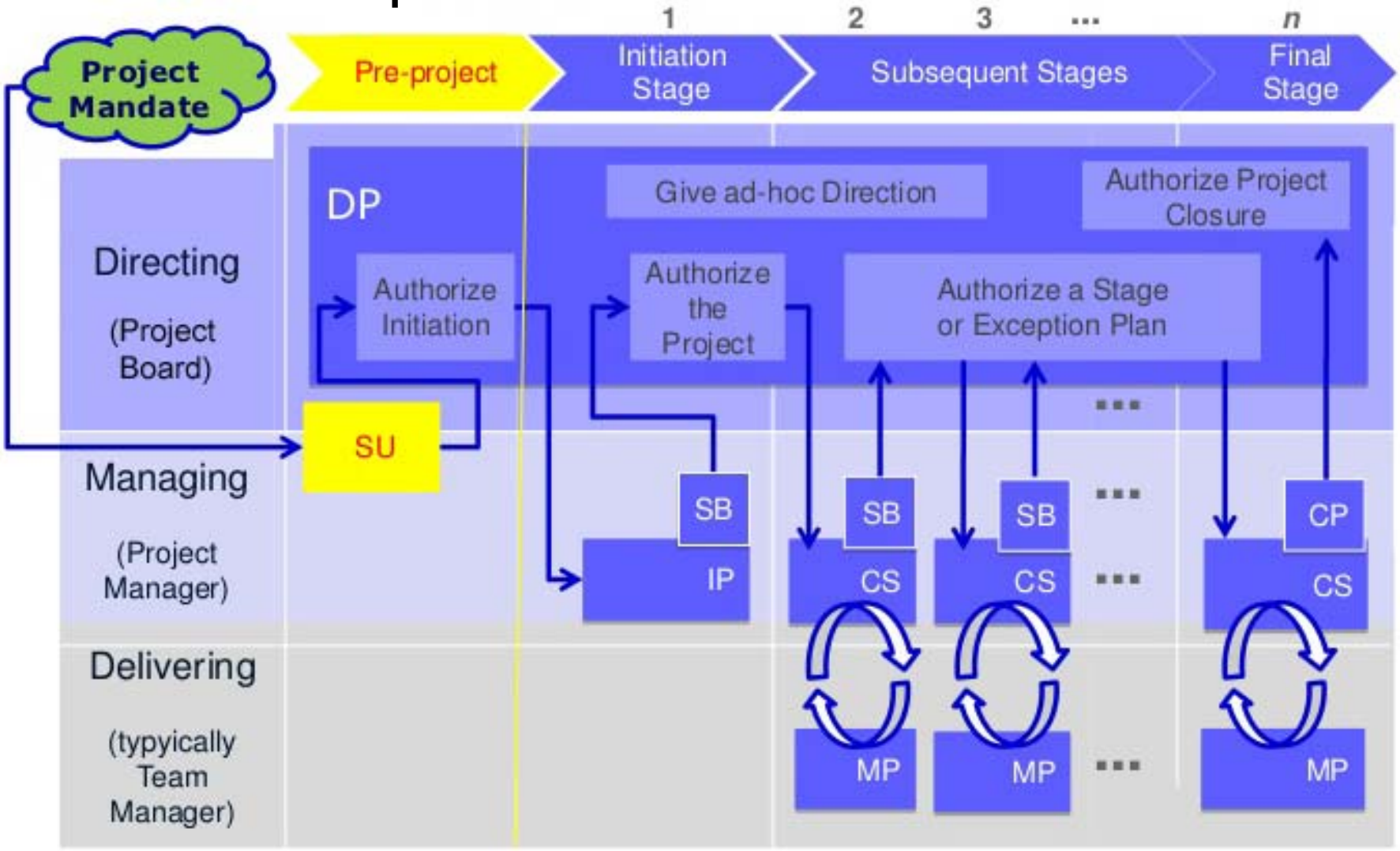


2.3.2.2. PRINCE2

SU = Starting up a project
DP = Directing a project
IP = Initiating a project
CP = Closing a project

SB = Managing a stage boundary
CS = Controlling a stage
MP = Managing product delivery

- PRINCE 2 processes:



2.3.2.2. PRINCE2

- PRINCE2 components / themes:
  - Business case
  - Risk management
  - Change control
  - Quality management
  - Plans
  - Organization
  - Progress monitoring

2.3.2.2. PRINCE2

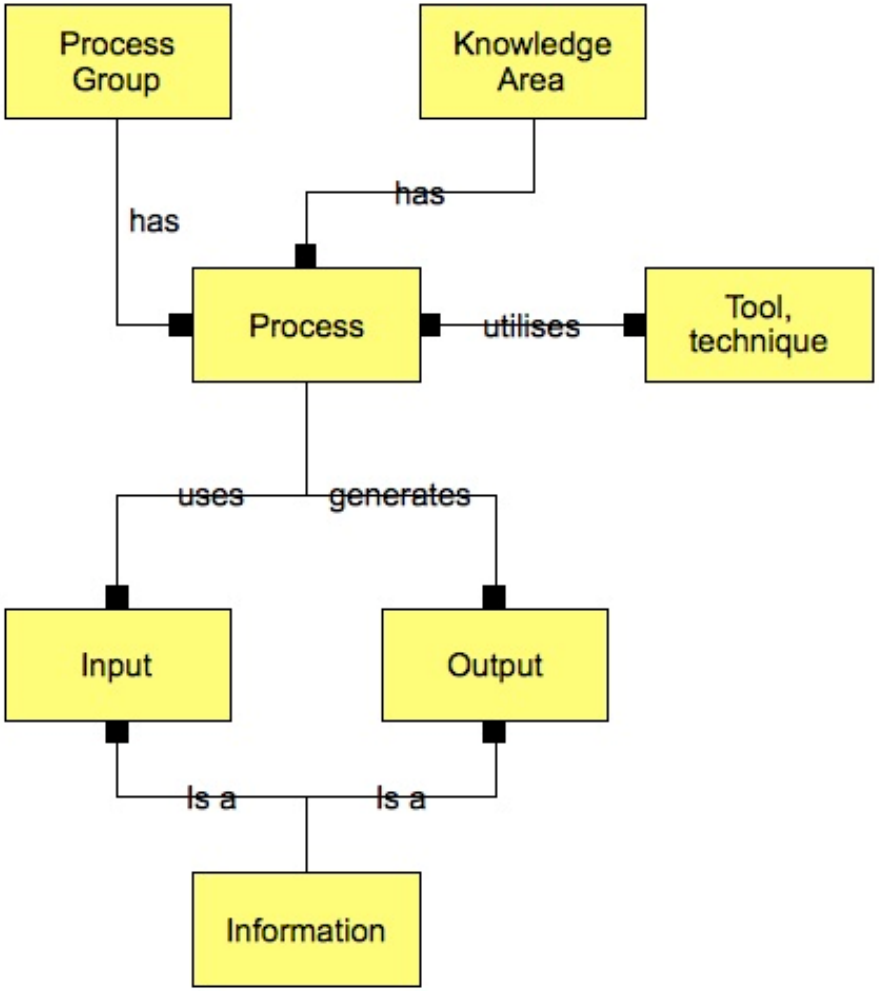
- Components needed in each process:

2.3.2.3. PMBOK vs. PRINCE2

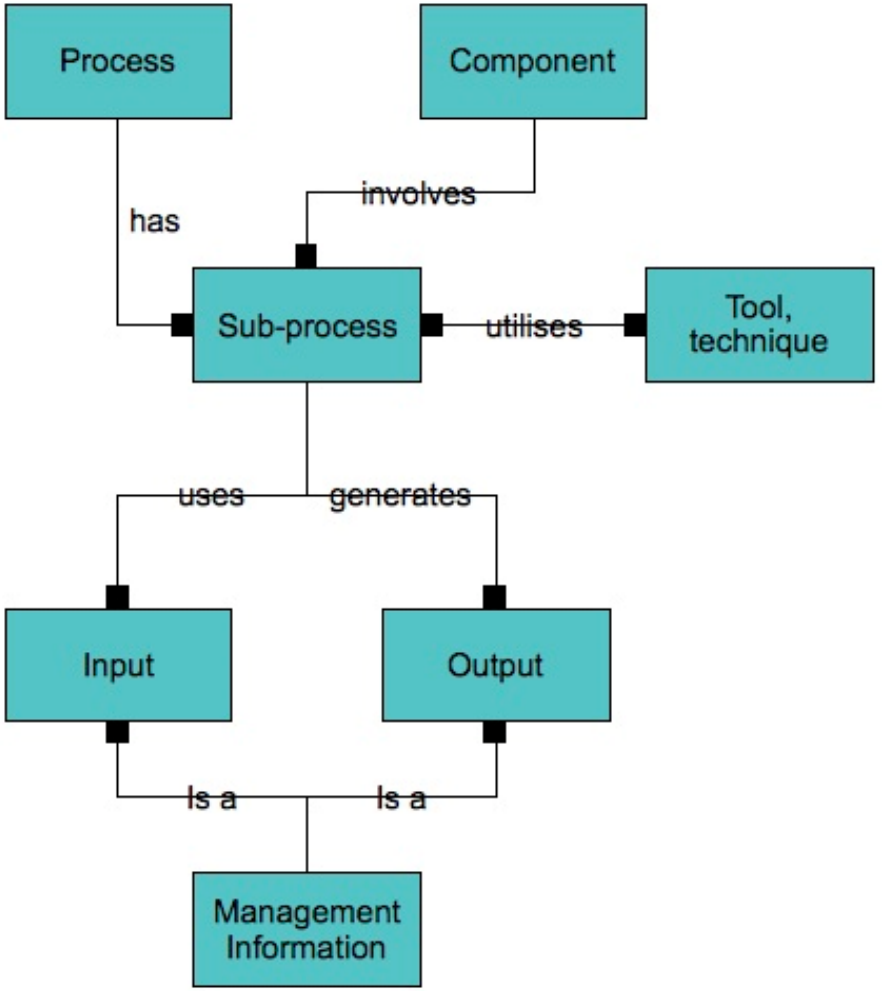
- Basic contrast:

PMBOK	PRINCE2
US/International Standard	UK Standard
Comprehensive	Focuses on key risk areas only; does not claim to be complete
Core and facilitating processes; need to be scaled to needs of project	All processes should be considered; also need to be scaled
Customer requirements driven	Business case driven
Sponsor and stakeholders	Clear project ownership and direction by senior management
Largely descriptive, prescriptive on a high level	Highly prescriptive, especially on Process Structure, but adaptable to any size project

2.3.2.3. PMBOK vs. PRINCE2



PMBOK



Prince2

2.3.2.3. PMBOK vs. PRINCE2

- Processes match up:

PMBOK	PRINCE2 Project Level	PRINCE2 Stage Level ("phase-by-phase")
Initiating	Starting Up; Directing	Managing Stage Boundaries; Directing
Planning	Initiating, Planning	Managing Stage Boundaries; Planning
Executing/ Controlling	[managed on a stage-by-stage basis]	Controlling a Stage; Managing Product Delivery; Directing
Closing	Closing a project	Managing Stage Boundaries

2.3.2.3. PMBOK vs. PRINCE2

- Components match up:

PMBOK Knowledge Areas	PRINCE2 Components
Integration	Combined Processes and Components, Change Control
Scope, Time, Cost	Plans, Business Case
Quality	Quality Management
Risk	Risk Management
Communications	Progress Monitoring
Human Resources	Organization
Procurement	Not covered

2.4. Case Study: London Ambulance Service

- Questions:
  - Do you think the LASCAD success was more about “having the right team,” “having the right project manager,” or “having the right approach”?
  - What aspects of “organizational culture” were changed for the system to be successful?
  - What attributes of Gorham and Tighe that make them good leaders and project managers.
  - Discuss the attributes of Gorham and Tighe that make them good leaders and project managers.

2.5. Concluding Remarks

- 97 percent of project successes is due to experienced project managers, who:
  - Understand the organization in order to get executive support
  - Involve the users
  - Manage the processes well (PMBOK or PRINCE2)

2.5. Concluding Remarks

<table>
<tr><th rowspan="2">KNOWLEDGE AREA</th><th colspan="5">PROJECT PROCESS GROUPS</th></tr>
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<tr><td>Integration</td><td rowspan="10">Lecture 3</td><td colspan="3">Lecture 3</td><td rowspan="10">Lecture 10</td></tr>
<tr><td>Scope</td><td colspan="3" rowspan="3">Lecture 4</td></tr>
<tr><td>Time</td></tr>
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<tr><td>Quality</td><td colspan="3">Lecture 7</td></tr>
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