

U08784

SOFTWARE PROJECT MANAGEMENT

Lecture 1: Introduction

Peter Lo

What is Project?

- A Project is a **Temporary Endeavor** with a **Beginning** and an **End** to creates a **Unique** product, service, or result.

Term	Means that a Project
temporary	Has a beginning and end
endeavor	Involves effort, work
to create	Has an intention to produce something (project "deliverables")
unique	One of a kind, rather than a collection of identical items
product	Tangible objects, but could include things like computer software, film or stage works
service	Might include the establishment of a day-care center, for instance, but not its daily operations.

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Temporary

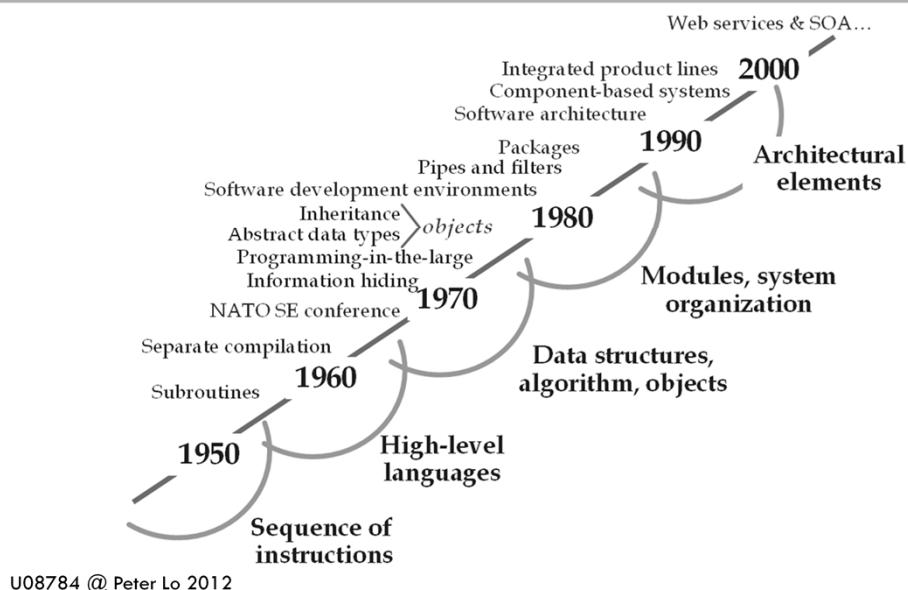
- Has a definite beginning and end, not an on-going effort.
- Ceases when objectives have been attained.
- Team disbanded upon completion.

Unique

- The product or service is different in some way from other products or services.
- Product characteristics are progressively elaborated.

Progressive elaboration is most often used when creating the project or product scope, developing requirements, determining human resources, scheduling, and defining risks and their mitigation plans.

The Evolution of System Development



- 1970s:** Structured system development
System development life cycle
- 1980s:** 4GL (4th Generation Language)
Automation of parts of development such as code generation
- 1990s:** Reliance increased on packages
Increased developer productivity
Decreased maintenance cost
Business process reengineering led to growth on integrated enterprise systems
ERP (Enterprise Resource Planning) System
- Late 1990s:** Sudden emergence of e-business and Internet based systems
- 2000s:** Faster systems development cycles
Integrated enterprise systems

Projects vs. Operations

Project

- Original and unique charter, goals and organization
- Catalyst for change
- Unique product or service
- Heterogeneous teams
- Has start and end date

Operation

- Semi-permanent charter goals and organization
- Maintain status
- Standard product or service
- Homogeneous teams
- Ongoing

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Organizations perform work – either Operations, or Projects

Shared characteristics of projects and operations

- Performed by people
- Constrained by limited resources
- Planned, executed and controlled

Operations are ongoing and repetitive, while Projects are temporary and unique

Reasons for Software Project

- Improved Service
- Better Performance
- More Information
- Stronger Controls
- Reduced Cost



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- Improved Service - Improving service to customers or users within the company
- Better Performance - Current system might not meet performance requirements.
- More Information - Current system might produce information that is insufficient, incomplete, or unable to support the company's changing information needs.
- Stronger Controls - A system must have effective controls to ensure that data is accurate and secure.
- Reduced Cost - Current system could be expensive to operate or maintain due to technical problems, design weaknesses, or the changing demands of the business.

Types of Information Systems Projects

- Software development
- Package implementation
- System enhancement
- Consultancy and business analysis
- Systems migration
- Infrastructure implementation
- Outsourcing and insourcing
- Disaster recovery
- Smaller Information systems projects

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Software Development Projects

- Similar to other 'construction' projects, Main difficulty: Intangibility of product

Package Implementation Projects

- Quicker and cheaper than building a system, Main difficulties: Selecting the right package, Tailoring to meet specific needs, Integrating with other systems.

System Enhancement Projects

- Often handled as 'business as usual' but can involve a lot of work.

Consultancy and Business Analysis

- Main issues: Intangibility of the 'product', Difficult to estimate realistically, Shifting the scope of the project.

Systems Migration Projects

- Moving existing system to new platform, Users judge success by lack of interruptions, May involve some retraining of users, May also involve some software development for interfaces.

Infrastructure Projects

- Installation of hardware and/or Communications networks, Fitting out of computer suites, General project management principles apply, Specific issues to consider: Need to maintain 'business as usual', Supplier management vital.

Outsourcing and Insourcing

- Systems outsourced to: Gain access to specialist expertise, Simplify management, Reduce costs and/or headcount, Concentrate on 'core' business. Involves: 'Due diligence' in handing over systems, Training new people to support systems, Taking inventories of assets transferred/retained, Migrating contracts of employment, Renegotiating supplier contracts, Same issues apply when bringing systems back in-house.

Disaster Recovery Projects

- Can be triggered by wide range of threats, Always involves tight timescales, Prevention always better than cure, Pre-planning vital for success and includes: Well thought-out plan, Arrangements with disaster recovery services suppliers, Arrangements for use of offices etc., Up-to-date lists of key personnel, Equipment stored and accessible for use, Drills and practice deployments.

Smaller Information System projects

- General project management principles apply, But common sense needed too, Challenge is to get adequate control without too much bureaucracy, One document still vital – Project Initiation Document, Simple project plan also useful, Monitoring and control should be tailored to the scale of project

Factors Affecting Software Projects

- User Requests
- Top Management Directives
- Existing Systems
- Information Technology Department
- Economy
- Technology
- Government
- Software and Hardware Vendors
- Competitors
- Customers
- Suppliers

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User Requests - Users rely more heavily on information systems to perform their jobs, they request more IT services and support.

Top Management Directives - Directives from top managers are a prime source of major systems projects.

Existing Systems - Errors or problems in existing systems can trigger requests for systems projects.

Information Technology Department - Many systems project requests come from the IT department.

Economy - Economic activity has a powerful influence on corporate information management.

Technology - Changing technology is a basic force in business and society in general.

Government - Federal, state, and local government regulations affect the design of corporate information systems.

Software and Hardware Vendors - Most companies have a mix of software and hardware that must work together to support information systems requirements.

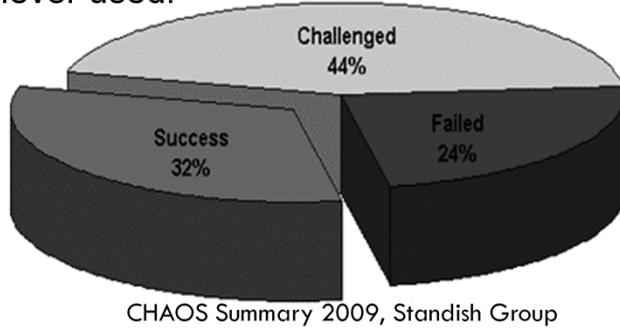
Competitors - Competition drives many information systems decisions.

Customers - Customer service is vitally important, and information systems that interact with customers receive top priority in most firms.

Suppliers - With the growth of Electronic Data Interchange (EDI), relationships with suppliers are critically important.

Software Project Success Rate

- 32% of all projects succeeding which are delivered on time, on budget, with required features and functions
- 44% were challenged which are late, over budget, and/or with less than the required features and functions
- 24% failed which are cancelled prior to completion or delivered and never used.



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CHAOS Summary 2009, Standish Group

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Step for a success project

- Select appropriate processes within the Process Groups that are required to meet the project objectives (tailoring)
- Define approach to adapt the product specifications and plans to meet project and product requirements
- Comply with requirements to meet stakeholder needs, wants and expectations
- Balance the scope, time, cost, quality, resources, and risk to produce a quality product.

Major Reasons for Project Failure

- Poor estimates and plans
- Lack of quality standards and measures
- Lack of guidance about making organizational decisions
- Lack of techniques to make progress visible
- Poor role definition – who does what?
- Incorrect success criteria.
- Inadequate specification of work
- Management ignorance of ICT
- Lack of knowledge of application area
- Lack of standards
- Lack of up-to-date documentation
- Lack of training
- Preceding activities not completed on time – including late delivery of equipment
- Lack of communication between users and technicians and leading to duplication of work
- lack of commitment – especially when a project is tied to one person who then moves
- Narrow scope of technical expertise
- Changing statutory requirements
- Changing software environment
- Deadline pressure
- Lack of quality control
- Remote management

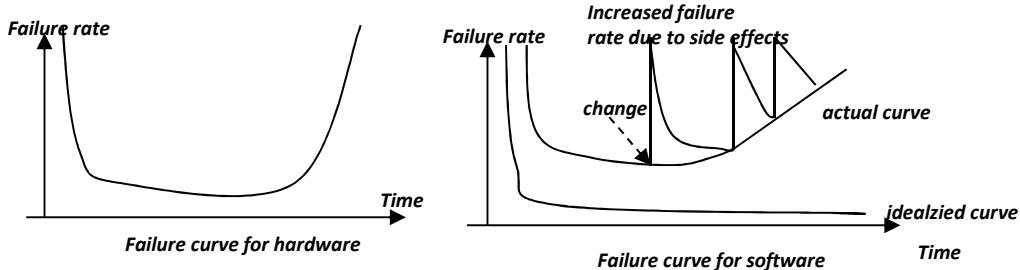
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Projects and project management are carried out in an environment broader than that of the project itself. The project management team must understand this broader context so it can select the life cycle phases, processes, and tools and techniques that appropriately fit the project.

Problems with Software Projects

- Incomplete, ambiguous, inconsistent Requirements and Specifications
- Poor planning and estimating
- No clear assignment of authority and responsibility
- Inadequate "End User" involvement during development
- Lack of adequate experience, tools and techniques
- Dependencies on external sources (vendors, subcontractors, counting on inventions)
- High staff turnover or inadequate training



Projects and Strategic Planning

- Projects are typically authorized as a result of one or more of the following strategic considerations:
 - Market Demand
 - Strategic Opportunity / Business Need
 - Customer Request
 - Technological Advance
 - Legal Requirement

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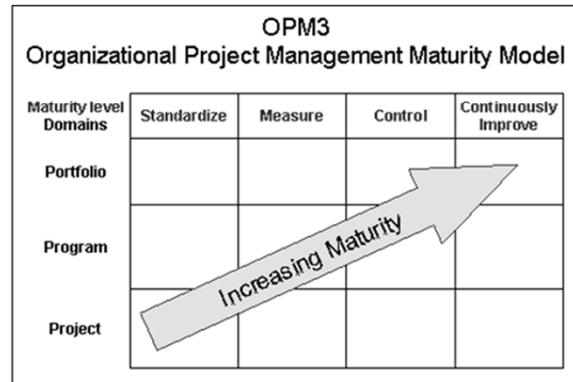
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Projects are often utilized as a means of achieving an organization's strategic plan. Project are typically authorized as a result of one or more of the following strategic considerations:

- Market Demand
 - E.g. A car company authorizing a project to build more fuel-efficient cars in response to gasoline shortages
- Strategic Opportunity / Business Need
 - E.g. A training company authorizing a project to create a new course to increase its revenues
- Customer Request
 - E.g. an electric utility authorizing a project to build a new substation to serve a new industrial park
- Technological Advance
 - E.g. An electronics firm authorizing a new project to develop a faster, cheaper, and smaller laptop after advances in computer memory and electronics technology
- Legal Requirement
 - E.g. a chemical manufacturer authorizes a project to establish guidelines for the handling of a new toxic material.

Organizational Project Management Maturity Model (OPM3)

- PMI's Organizational Project Management Maturity Model (OPM3) uniquely integrates the following domains into one maturity model.
 - Project Management
 - Program Management
 - Portfolio Management



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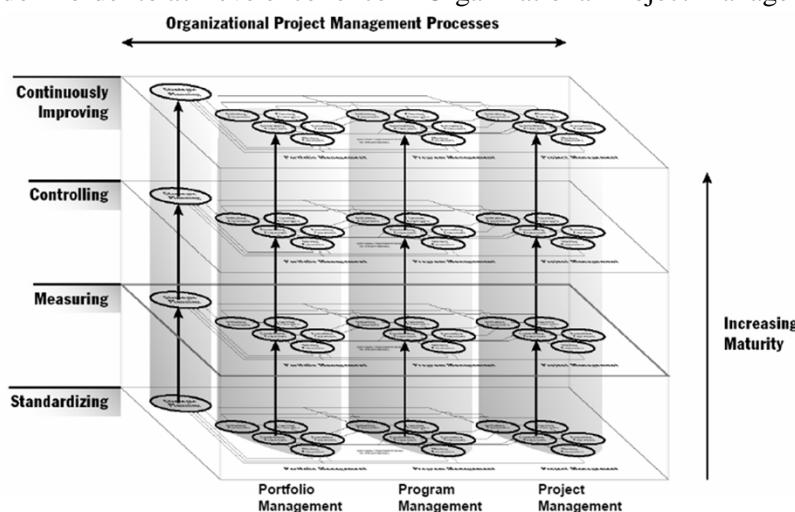
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OPM3 covers the domains of Organizational Project Management, the systematic management of projects, programs, and portfolios in alignment with the achievement of strategic goals.

OPM3 offers the key to OPM with three interlocking elements:

- **Knowledge** - Learn about hundreds of Organizational Project Management (OPM) best practices.
- **Assessment** - Evaluate an organization's current capabilities and identify areas in need of improvement.
- **Improvement** - Use the completed assessment to map out the steps needed to achieve performance improvement goals.

OPM3's intent is not to be prescriptive by telling the user what improvements to make or how to make them. Rather, OPM3 provides guidelines regarding the kinds of things an organization may do in order to achieve excellence in Organizational Project Management.



Project Management

- Project Management is the application of knowledge, skills, tools, and techniques to project activities in order to meet project requirement



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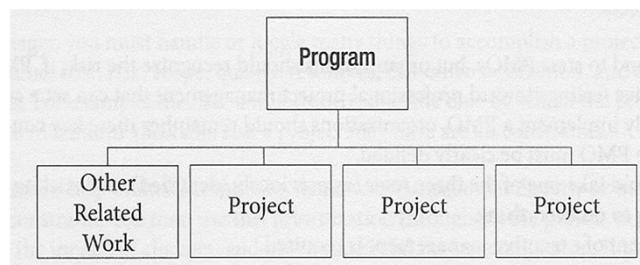
Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management is accomplished through processes, using project management knowledge, skills, tools, and techniques that receive inputs and generate outputs.

In order for a project to be successful, the project team must:

- Select appropriate processes within the Project Management Process Groups (also known as Process Groups) that are required to meet the project objectives
- Use a defined approach to adapt the product specifications and plans to meet project and product requirements
- Comply with requirements to meet stakeholder needs, wants and expectations
- Balance the competing demands of scope, time, cost, quality, resources, and risk to produce a quality product.

Program Management

- Program Management is defined as the centralized coordinated management of a program to achieve the program's strategic objectives and benefits.



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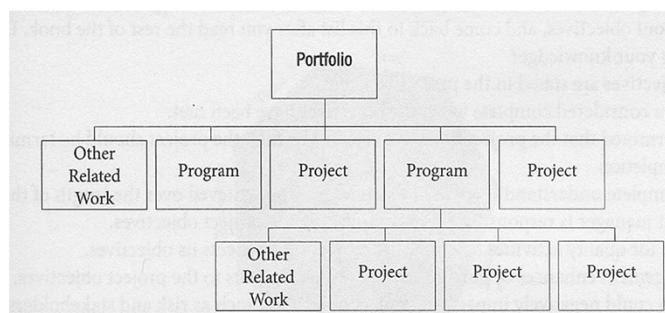
A program is a group of projects. By grouping related projects into a program, an organization can coordinate the management of those projects.

Program management focuses on the project interdependencies and helps to determine the optimal approach for managing them. Actions related to these interdependencies may include:

- Resolving resource constraints and/or conflicts that affect multiple projects within the program
- Aligning organizational/strategic direction that affects project and program goals and objectives
- Resolving issues and change management within a shared government structure.

Portfolio Management

- Portfolio Management refers to the centralized management of one or more portfolios, which includes identifying, prioritizing, authorizing, managing, and controlling projects, programs and other related work, to achieve specific strategic business objectives.



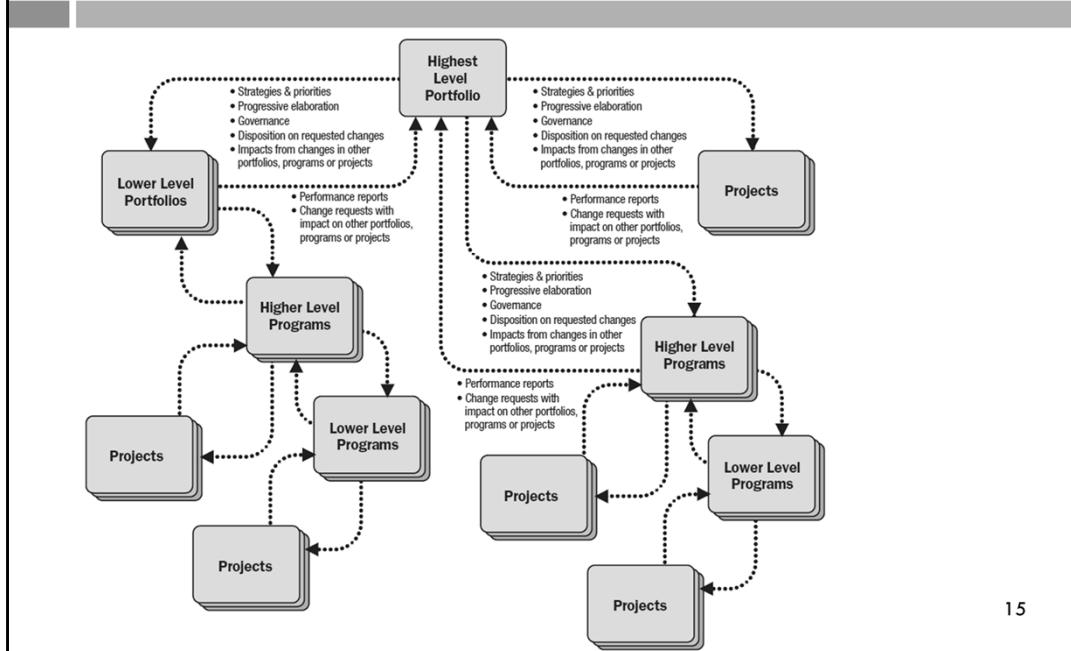
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A portfolio refers to a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives.

Portfolio Management focuses on ensuring that projects and programs are reviewed to prioritize resource allocation, and that the management of the portfolio is consistent with and aligned to organizational strategies

Portfolio, Program and Project Management Interactions



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Comparative Overview of Project, Program and Portfolio Management

	PROJECTS	PROGRAMS	PORTFOLIOS
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the project life cycle.	Programs have a larger scope and provide more significant benefits.	Portfolios have a business scope that changes with the strategic goals of the organization.
Change	Project managers expect change and implement processes to keep change managed and controlled.	The program manager must expect change from both inside and outside the program and be prepared to manage it.	Portfolio managers continually monitor changes in the broad environment.
Planning	Project managers progressively elaborate high-level information into detailed plans throughout the project life cycle.	Program managers develop the overall program plan and create high-level plans to guide detailed planning at the component level.	Portfolio managers create and maintain necessary processes and communication relative to the aggregate portfolio.
Management	Project managers manage the project team to meet the project objectives.	Program managers manage the program staff and the project managers; they provide vision and overall leadership.	Portfolio managers may manage or coordinate portfolio management staff.
Success	Success is measured by product and project quality, timeliness, budget compliance, and degree of customer satisfaction.	Success is measured by the degree to which the program satisfies the needs and benefits for which it was undertaken.	Success is measured in terms of aggregate performance of portfolio components.
Monitoring	Project managers monitor and control the work of producing the products, services or results that the project was undertaken to produce.	Program managers monitor the progress of program components to ensure the overall goals, schedules, budget, and benefits of the program will be met.	Portfolio managers monitor aggregate performance and value indicators.

Project Management Offices (PMO)

- PMO is a department unit within an organization usually takes one of three roles:
 - Provides the policies, methodologies, and templates for managing projects within the organization
 - Provides support and guidance to others in the organization on how to manage projects, trains others in project management and software, and assists with specific tools
 - Provides project managers for different projects, and is responsible for the results of those projects
 - All projects, type, or influence, are managed by PMO.

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A primary function of a PMO is to support project managers in a variety of ways which may include:

- Managing shared resources across all projects administered by the PMO
- Identifying and developing project management methodology, best practices, and standards
- Coaching, mentoring, training, and oversight
- Monitoring compliance with project management standards, policies, procedures, and templates via project audits
- Developing and managing project policies, procedures, templates, and other shared document
- Coordinating communication across projects

Role of a Project Manager

- A project manager is one, who looks into the application of knowledge, skills, tools, and techniques to describe, organize, oversee and control the various project processes.
- Effective project management requires that the project manager possess the following characteristics:
 - Knowledge
 - Performance
 - Personal

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Knowledge

- This refers to what the project manager knows about project management.

Performance

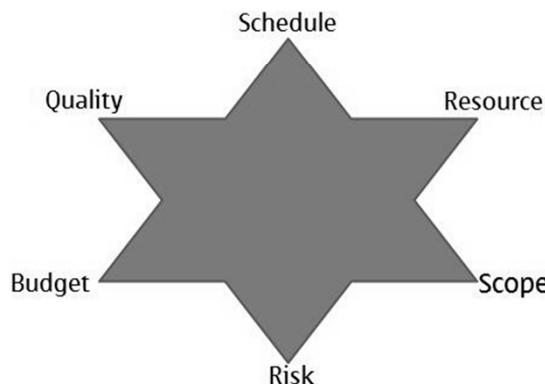
- This refers to what the project manager is able to do or accomplish while applying their project management knowledge

Personal

- This refers to how the project manager behaves when performing the project or related activity. Personal effectiveness encompasses attitudes, core personality characteristics and leadership - the ability to guide the project team while achieving project objectives and balancing the project constraints.

Constraints

- Constraints are limitations placed upon the project that the project manager and team must work within.
- The six constraints are:
 - Schedule
 - Budget
 - Quality
 - Scope
 - Resources
 - Risk



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Schedule - Most projects are end-date driven and therefore this is usually the first constraint to be stated. There are also likely to be milestone time points that need to be managed as well, for example a prototype may need to be demonstrated at a particular point in time.

Budget - This is probably the next often quoted constraint. If the project is for customer and they have been quoted a fixed price, then allowing for a reasonable profit margin, the cost or budget of the project will be determined.

Quality - Finishing on time and within a budget is not much consolation if the result of the project doesn't work, and the common term useful quality is "fit for purpose". This will normally relates to the quality criteria for each product or main deliverable, and the acceptance criteria for the end product.

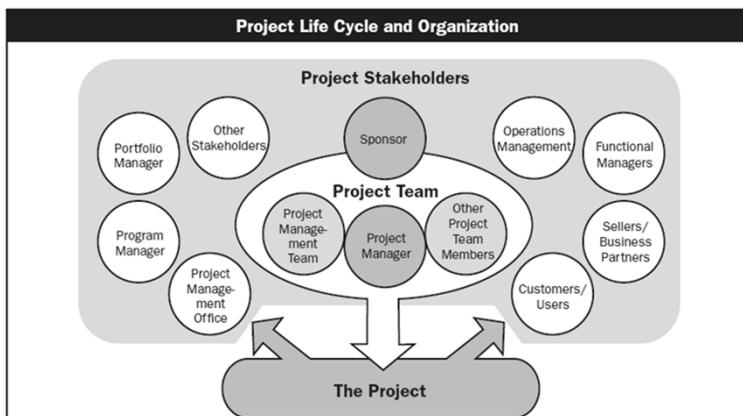
Scope - This isn't often misunderstood term. There are two aspects here, the scope of the project which is focused on the deliverables / products / functionality, and the scope of the project plan in terms of the work that needs to be carried out in order to deliver the above products. When define scope for a particular project it is important to ask the question "what is included within this project – and what is to be excluded". What is to be excluded defines the boundary of the project scope, and as such, is vital in gaining a full agreement between customers and suppliers.

Resources - Broadly, resources come in two flavors; human and non human. When considering human resources, then aspects such as knowledge, skills, experience, ability, availability, and commitment should be considered. Non-human resource examples could be materials, equipment, facilities, goods and services.

Risk - A general term here is "risk appetite" or risk tolerance. The question "how much risk is too much risk? " needs to be asked. Typical attributes of a risk are the risk type, its probability, its impact, and its responses. Risks are generally considered to be negative threats, but you should consider positive impact risks as well, which are called opportunities.

Stakeholder

- Stakeholders are persons or organizations, who are actively involved in the project or whose interest may be positively or negatively affected by the performance or completion of the project

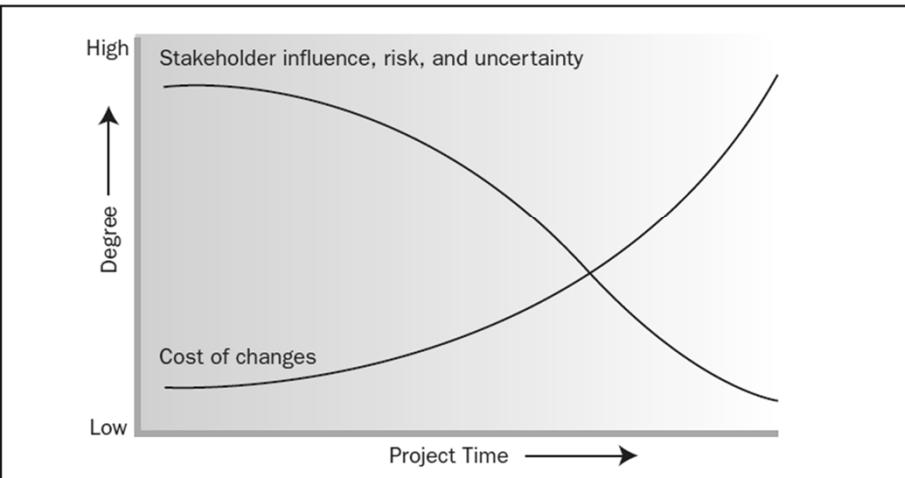


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The following are some examples of project stakeholders:

- Customers/Users - The person or organization that will use the project's product. There may be multiple layers of customers. For example, the customers for a new pharmaceutical product can include the doctors who prescribe it, the patients who take it and the insurers who pay for it. In some application areas, customer and user are synonymous, while in others, customer refers to the entity acquiring the project's product and users are those who will directly utilize the project's product.
- Sponsor - The person or group that provides the financial resources, in cash or in kind, for the project.
- Portfolio Manager/Portfolio Review Board
- Program Manager
- Project Management Office (PMO) - If it exists in the performing organization, the PMO can be a stakeholder if it has direct or indirect responsibility for the outcome of the project.
- Project Manager - The person responsible for managing the project.
- Project Team - The group that is performing the work of the project.
- Functional Managers
- Operation Management
- Sellers/Business Partner

Impact of Variable based on Project Time



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The ability of the stakeholders to influence the final characteristics of the project's product and the final cost of the project is highest at the start, and gets progressively lower as the project continues.

Enterprise Environmental Factors

- Enterprise environmental factors refer to both internal and external environmental factors that surround or influence a project's success.
- These factors may come from any or all of the enterprises involved in the project.
- Enterprise environmental factors may enhance or constrain project management options and may have a positive or negative influence on the outcome.

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Enterprise environmental factors include:

- Organizational culture, structure, and processes;
- Government or industry standards (e.g., regulatory agency regulations, codes of conduct, product standards, quality standards, and workmanship standards);
- Infrastructure (e.g., existing facilities and capital equipment);
- Existing human resources (e.g., skills, disciplines, and knowledge, such as design, development, law, contracting, and purchasing);
- Personnel administration (e.g., staffing and retention guidelines, employee performance reviews and training records, overtime policy, and time tracking);

Organization Structure

- Organizational Structure is an enterprise environment factor which can affect the availability of resources and influence how projects are conducted.
 - ▣ Functional Organization
 - ▣ Matrix Organization
 - Weak Matrix Organization
 - Balanced Matrix Organization
 - Strong Matrix Organization
 - ▣ Projectized Organization
 - ▣ Composite Organization

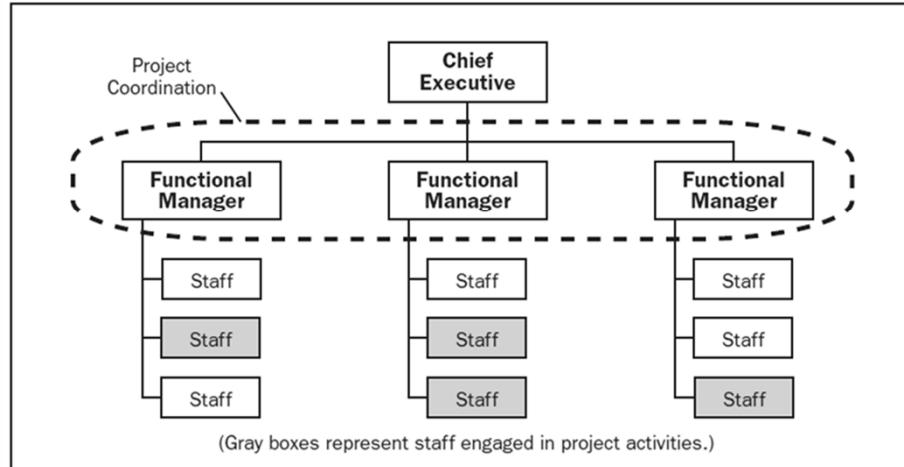
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A company culture is influenced by the organizational structure it employs. As for project managers, the company organizational structure determines how much authority and responsibility the project manager ends up with.

Organizational structures range from functional to projectized, with a variety of matrix structures between them.

Functional Organization



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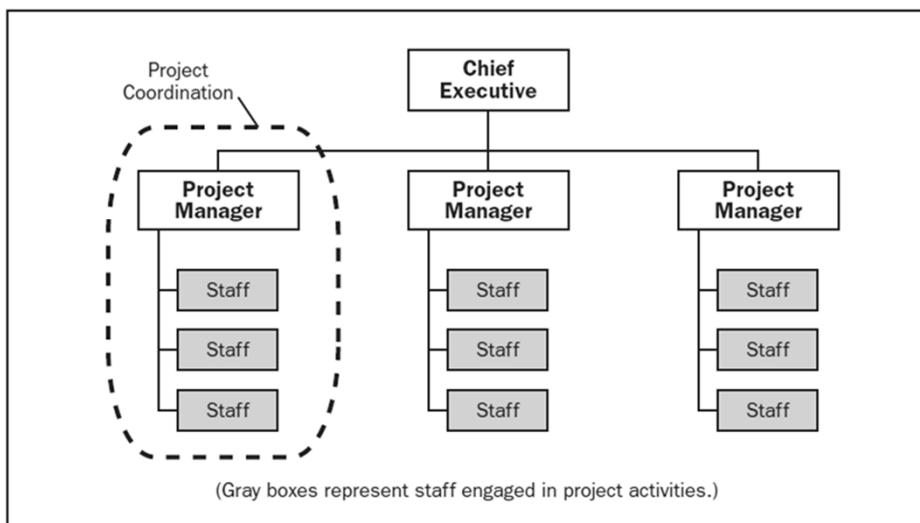
The organization is split into its various functions. For example, under the leadership of the CEO, the main functions such as engineering, marketing, manufacturing, etc. Each function has its own staff beneath it. Clearly, an employee reports to only one boss, and the chain of command is vital. This type of organization is sometimes called a stove pipe type of organization because each reporting line is only concerned with their own functions. Problems occur when one function employee needs to speak to another functions employee. The only way to do this is to escalate upwards to the functional head, then across to the other functional head, and back down again. A clumsy and inefficient way of working, however each function works as a very effective team and is very goals focused. Another advantage is that people with similar skills, knowledge, and experience are easier to manage, making work assignments much easier.

A big disadvantage to a functional organization for projects is that the project manager will have to work with other functions, but to do so with no formal authority.

Within a function, several projects at any one time may have to compete for the available resources, and project team members will have their first loyalty with their line or functional manager.

Advantages	Disadvantages
Specialists are grouped together, and can be managed more easily.	Specialties have greater emphasis than the projects.
Members of the team only need to report to one supervisor, and clear career paths in specialties.	The career path is in the specialties, not in project management.
Resources are organized by specialties, and can be effectively deployed from a centralized point.	Little or no authority goes to the project manager.

Projectized Organization



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In this organization, each project manager reports directly into the CEO. Each project manager will have their own full-time team members and staff. This would only suit an organization where projects and their delivery were the core business.

Project managers have the ultimate authority over the project, but disadvantage is that as projects finish the project teams are dissolved and may find themselves out of work. Team members sit and work in the same physical area as each other.

Advantages

Organized efficiently for Projects.

Resources are more loyal to the project, and have less distractions from the project.

Communication can be more effective, because it is across all disciplines.

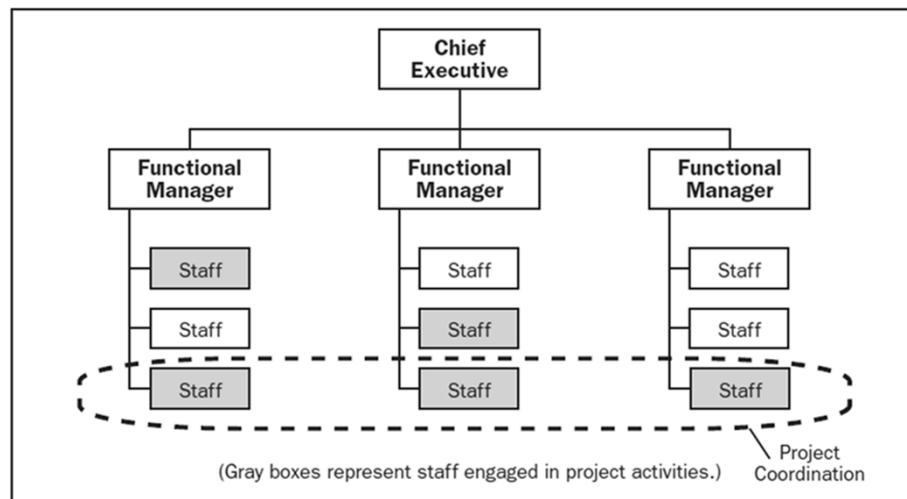
Disadvantages

Project participants don't have a place to go back to when the project completes.

No cohesiveness within disciplines, participants are project resources before functional resources.

Resources used less efficiently because of duplication of facilities and job functions.

Weak Matrix Organization



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Employees in a matrix organization are structured vertically in their functions, but horizontally to a given project manager or more.

Functional managers look after "pay and rations", and the project manager gives out work for their projects.

Both the operational managers and the project managers contribute to performance reviews for the project teams.

The operational manager acts of course, as the resource manager and should be consulted when a project manager seeks resources for their projects. Some compromise is often needed when there is not enough functional staff to serve all projects. When this happens the project managers will need to negotiate with other project managers for resources.

The functional managers have all the Power in a weak matrix, and project managers act as project organizers with little or no authority

Advantages

Project objectives more visible than in a functional organization.

Better control by project manager.

Better support from disciplines than in a projectized organization.

Best organization for co-ordination, may utilize scarce resources the best.

Disadvantages

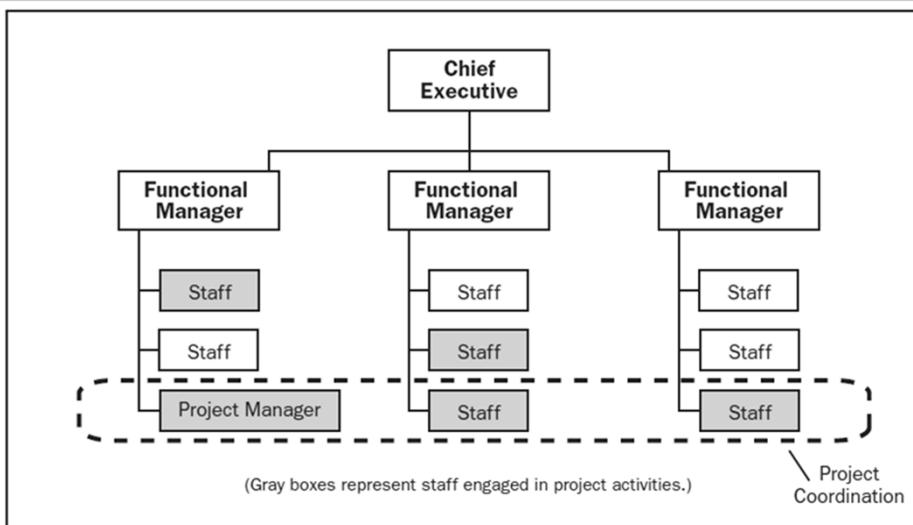
Requires additional administration.

Team members report to more than one "boss".

Monitoring and Controlling is more complex.

Most difficult to allocate resources, may require more policies and procedures to be successful.

Balanced Matrix Organization



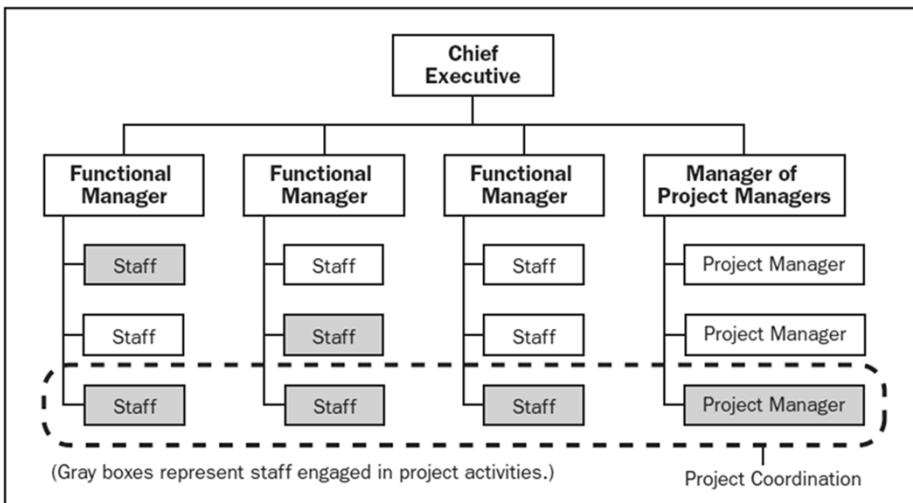
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In a Balanced Matrix, both the Project Manager and Functional Manager have some control over the budget. Organizational structures to the left of the Balanced Matrix on the continuum have the Functional Manager control the budget, and those on right have the Project Manager control the budget.

Each manager has responsibility for their parts of the project organization and staff get assigned based on the needs of the project not on the strength of the manager's position.

Strong Matrix Organization



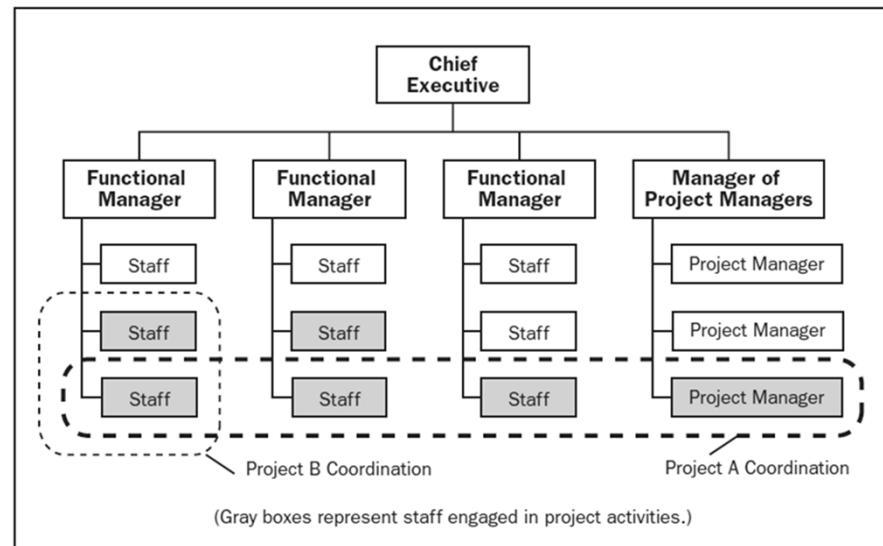
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Here, the Power rests with the project manager, and they are able to force the functional managers to give them their best resources. The project managers can then negotiate these resources amongst themselves, leaving out the functional managers.

The project managers have their own boss, in effect a functional manager, who is the manager of project managers.

Composite Organization



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Many organizations involve all these structures at various levels. For example, even a fundamentally functional organization may create a special project team to handle a critical project. Such a team may have many of the characteristics of a project team in a projectized organization. The team may include full-time staff from different function departments, may develop its own set of operation procedures, and may operate outside the standard, formalized reporting structure.

Organizational Influences on Projects

Project Characteristics	Organization Structure	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	
Resource Availability	Little or None	Limited	Low to Moderate	Moderate to High	High to Almost Total	
Who controls the project budget	Functional Manager	Functional Manager	Mixed	Project Manager	Project Manager	
Project Manager's Role	Part-time	Part-time	Full-time	Full-time	Full-time	
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time	

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A project is typically performed inside an organization called the performing organization, which creates an environment for the project called the project environment. Projects are influenced by the project environment, which is shaped by many elements, such as organizational culture, organizational structure, enterprise environmental factors, organizational process assets, and the maturity of the organization.

Life Cycle

Product Life Cycle

- Phases are non-overlapping
- They may last for several years
- Each phase occurs only once.
- Phases are sequential.

Project Life Cycle

- Phases within one project may be overlapping.
- Typically one project phase does not last more than 6 months.
- Project phases may be repeated during project
- Project phases may not be sequential.

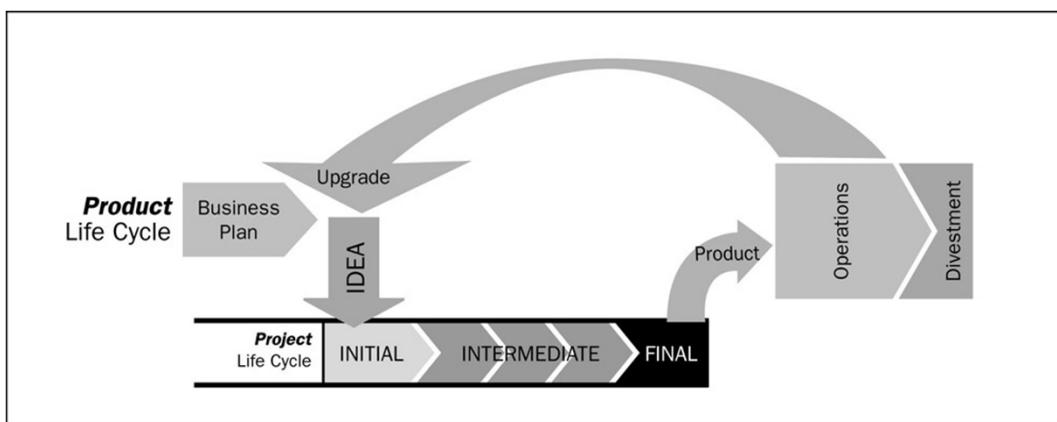
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Life cycle is progression through a series of developmental stages. There are two life cycles: Product Life Cycle & Project Life Cycle. And one overall process: Project Management Process

The project life cycle differs by industry, organization, project type and encompasses sequential and overlapping phases.

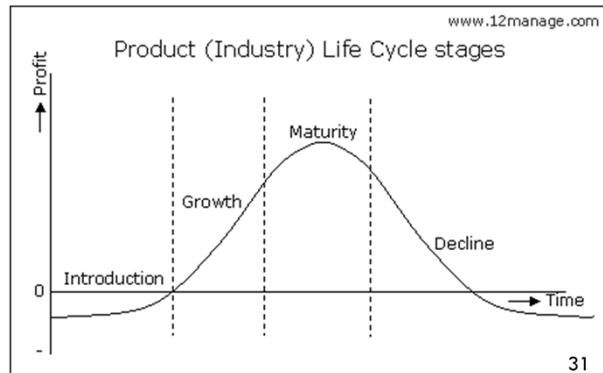
The product life cycle does not differ regardless of the type of product, has sequential but non-overlapping phases, and may include multiple project life cycles.



Product Life Cycle

- The product life cycle reflects the phases involved in any type of product
 - a cell phone, a laptop, a TV, a children's toy, an appliance.
- The product life cycle can include multiple project life cycles.
- The product life cycle has the same sequential, but non-overlapping phases:
 - Ideation
 - Creation
 - Introduction
 - Growth
 - Maturity
 - Decline
 - Retirement

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Product Life Cycle Example

- A project undertaken to build a new cell phone is only a piece of the product life cycle. Prior to beginning the project, there was most likely a business plan and market research from which the idea for the new phone generated.
- The project life cycle would encompass the actual building of the new phone, but once the phone is complete, it is released to operations for sales and marketing and order fulfillment.
- As technology advances and consumer preferences change, the cell phone will mature, decline and eventually be retired. Retirement would potentially drive multiple projects to remove the cell phone from inventory, change company collateral and complete other activities associated with the product retirement.

Project Life Cycle

- Organizations performing projects will usually divide each project into several project phases to improve management control.
- Collectively, the project phases are known as the project life cycle.
Usually they are sequential.
- These are unique to the industries



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The project life cycle defines the phases that connect the beginning of a project to its end. Project life cycles generally define:

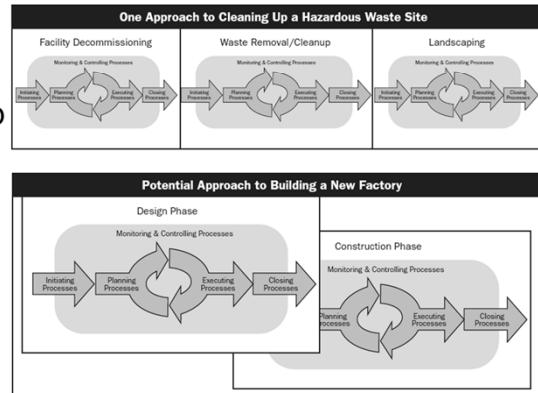
- What technical work to do in each phase (for example, in which phase should the architect's work be performed?)
- When the deliverables are to be generated in each phase and how each deliverable is reviewed, verified, and validated
- Who is involved in each phase (for example, concurrent engineering requires that the implementers be involved with requirements and design)
- How to control and approve each phase.

Significance of Phases

- Ensure correctness and completeness of previous phases
- For contract and payment fulfillment
- Conduct readiness review for next phase
 - Resource estimates and availability
 - Project plan review
- Secure stakeholder approval to proceed

Phase-to-Phase Relationship

- When projects are multi-phased, the phases are part of a generally sequential process designed to ensure proper control of the project and attain the desired product, service, or result.
 - ▣ Sequential Relationship
 - ▣ Overlapping Relationship
 - ▣ Iterative Relationship



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Sequential Relationship

- A phase can only start once the previous phase is complete.
- The step-by-step nature of this approach reduces uncertainty, but may estimate options for reducing the schedule.

Overlapping Relationship

- The phase starts prior to completion of the previous one.
- This can sometimes be applied as an example of the schedule compression technique called Fast Tracking.
- Overlapping phases may increase risk and can result in rework if a subsequent phase begins before accurate information is available from the previous phase.

Iterative Relationship

Only one phase is planned at any given time and the planning for the next is carried out as work progresses on the current phase and deliverables.

This approach is useful in largely undefined, uncertain, or rapidly changing environments such as research, but it can reduce the ability to provide long term planning.

The scope is then managed by continuously delivering increments of the product and prioritizing requirements to minimize project risks and maximize product business value. It also can entail having all of the project team members available throughout the project or, at a minimum, for two consecutive phases.

Project Management Process

- Projects can be managed easily by Phased approach, there are 44 processes and grouped in to 5 major Process groups:
 - Initiate
 - Planning
 - Executing
 - Monitoring & Controlling
 - Closing



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Initialing Process Group

Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.

Planning Process Group

Those processes performed to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.

Executing Process Group

Those processes performed to complete the work defined in the project management plan to satisfy the project specifications.

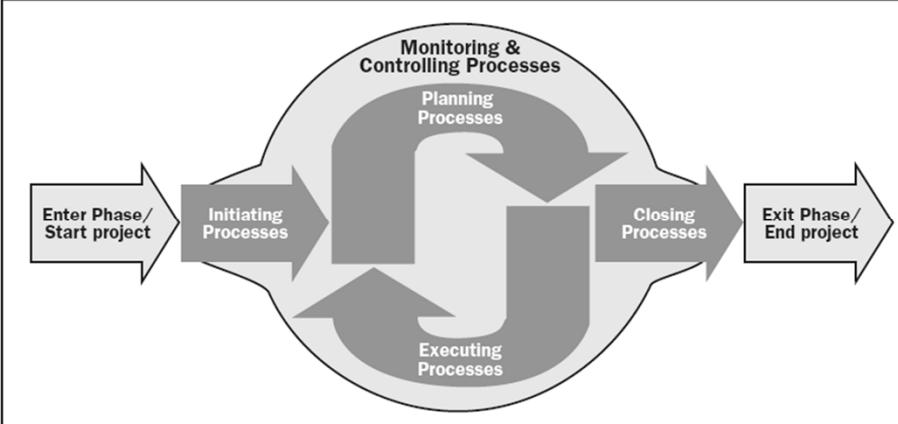
Monitoring and Controlling Process Group

Those processes required to track, review and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Closing Process Group

Those processes performed to finalize all activities across all process groups to formally close the project or phase.

Project Management Process Group



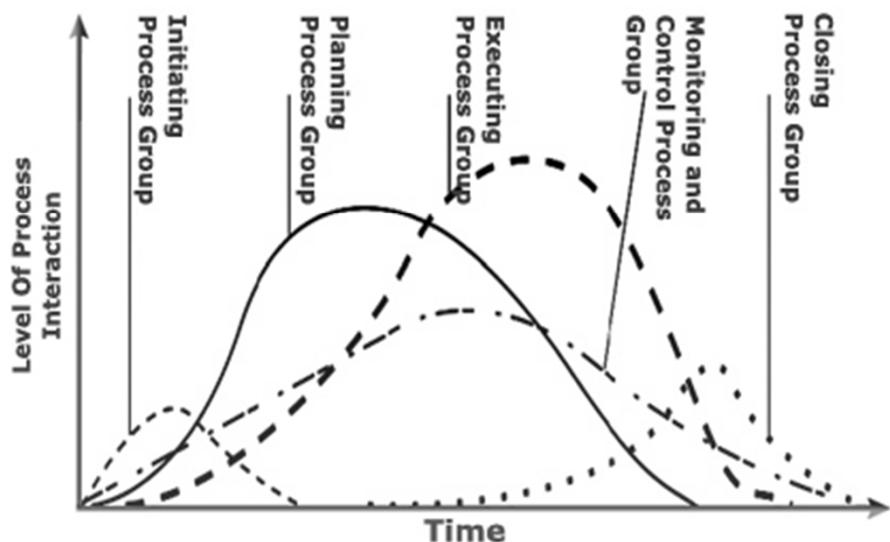
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The integrative nature of project management requires the Monitoring and Controlling Process Group to interact with the other Process Groups.

Since management of a project is a finite effort, the Initializing Process Group begins the project, the Closing Process Group ends it.

Process Groups Interact in a Phase/Project



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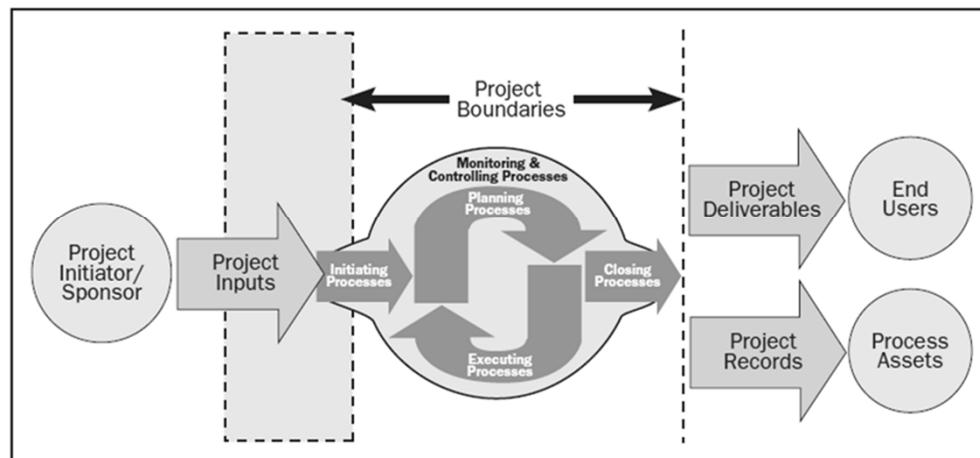
Project Management Process Groups are linked by the outputs they produce.

The Process Group are seldom either discrete or one-time events; they are overlapped activities that occurs throughout the project.

The output of one process generally becomes an input to another process or is a deliverable of the project.

The Planning Process Group provides the Executing Process Group with the project management plan and project documents, and, as the project progresses, it open entails updates to the project progresses, it open entails updates to the project management plan and the project documents.

Project Boundaries



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The project boundaries have something to do with the project scope, but they are not a synonym of the project scope.

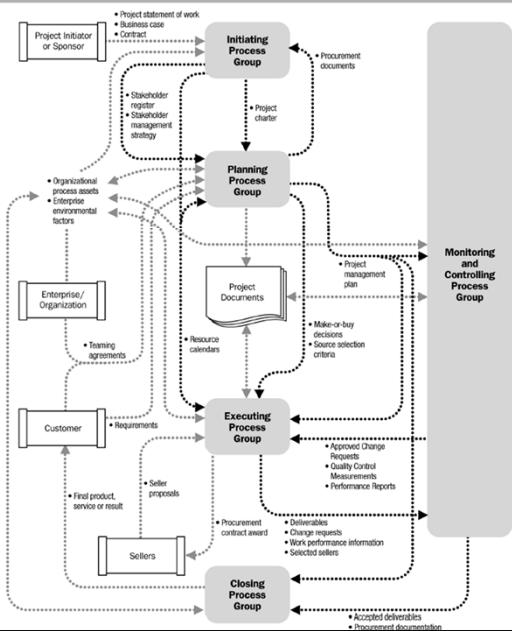
The project boundaries are included in the project scope, and define what the project should NOT include.

The project boundaries should be the features that are typically related to the kind of project you're working on, but they are not included in the scope. This avoids confusion and the thought that there is something missing in the project, and will also alleviate the fear of some missed requirements.

Project Management Process Interaction

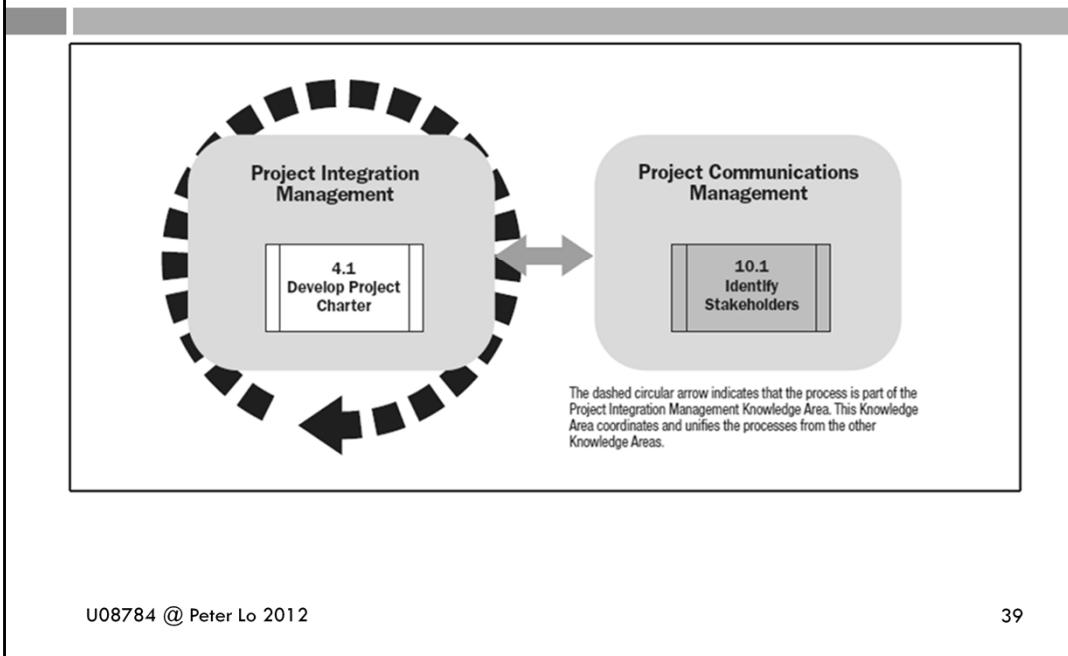
- The mapping of 42 project management processes into 5 Project Management Process Groups and the 9 Project Management Knowledge Area.

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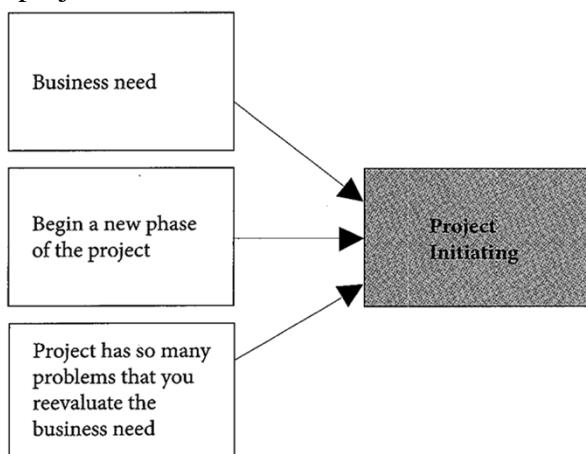


Knowledge Areas	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Execution	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Collect Requirements 5.2 Define Scope 5.3 Create WBS		5.4 Verify Scope 5.5 Control Scope	
6. Project Time Management		6.1 Define Activities 6.2 Sequence Activities 6.3 Estimate Activity Resources 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Estimate Costs 7.2 Determine Budget		7.3 Control Costs	
8. Project Quality Management		8.1 Plan Quality	8.2 Perform Quality Assurance	8.3 Perform Quality Control	
9. Project Human Resource Management		9.1 Develop Human Resource Plan	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management	10.1 Identify Stakeholders	10.2 Plan Communications	10.3 Distribute Information 10.4 Manage Stakeholder Expectations	10.5 Report Performance	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Monitor and Control Risks	
12. Project Procurement Management		12.1 Plan Procurements	12.2 Conduct Procurements	12.3 Administer Procurements	12.4 Close Procurements

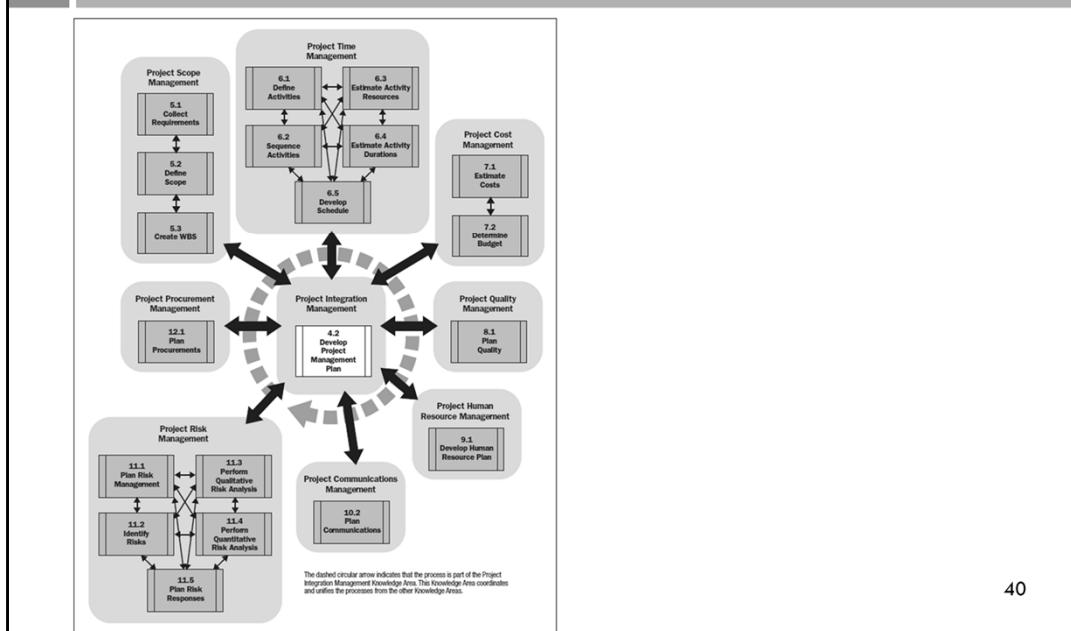
Initiating Process Group



- Facilitate the formal authorization to start a new project or a project phase
- The organization's business needs or requirements are documented
- Document the project scope, the deliverables, project duration, and a forecast of the resources
- Decision is then made whether or not the project is ready to continue or whether the project should be delayed or discontinued
- Involving the customers improves the probability of shared ownership, deliverable acceptance, and customer and other stakeholder satisfaction, which is critical to project success.

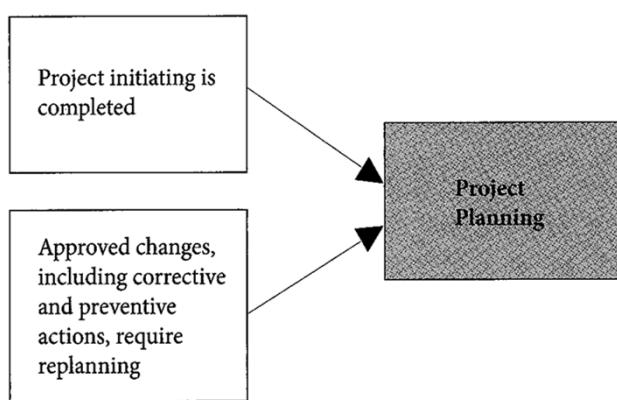


Planning Process Group

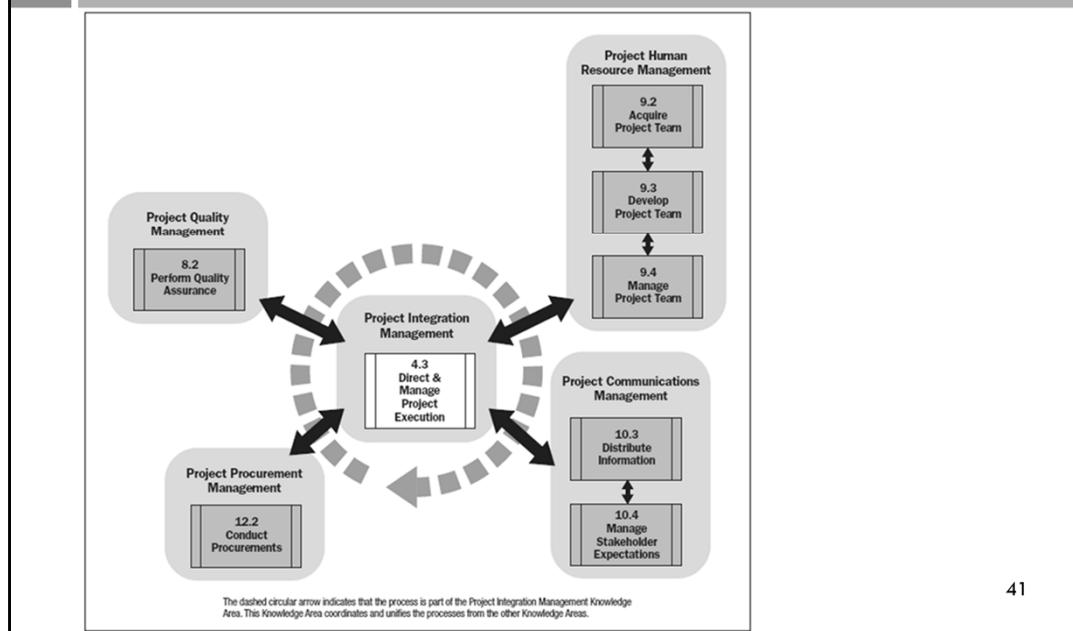


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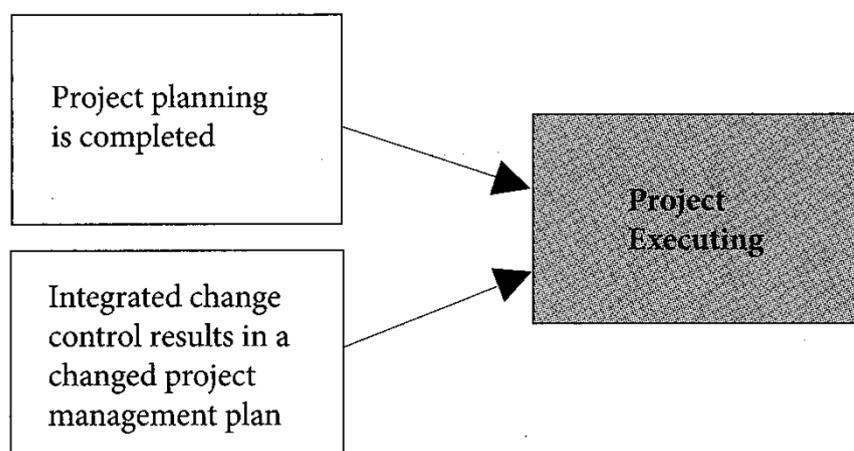
- Gather information from many sources
- Develop the project management plan
- Identify, define, and mature the project scope, project cost, and schedule the project activities that occur within the project
- Should use stakeholders in project planning since the stakeholders have skills and knowledge that can be leveraged in developing the project management plan
- The feedback and refinement process cannot continue indefinitely



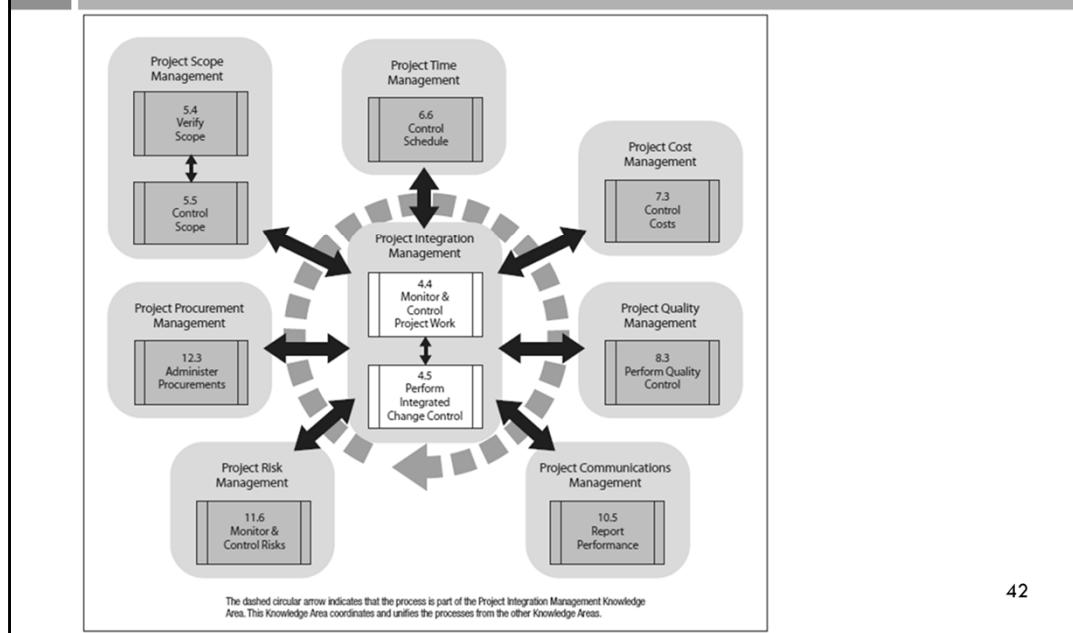
Executing Process Group



- Use to complete the work defined in the project management plan to accomplish the project's requirements.
- Coordinating people and resources
- Integrating and performing the activities of the project in accordance with the project management plan
- Change request that, if approved, would modify the project management plan and possibly require establishing a new baseline
- Vast majority of the project's budget will be expended

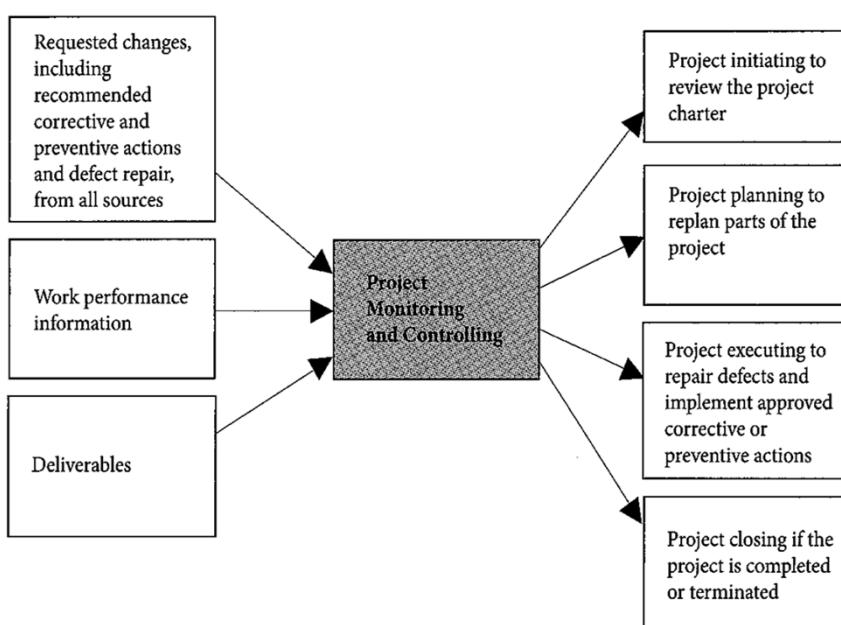


Monitoring and Controlling Process Group

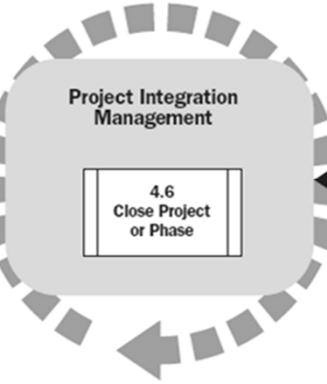


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- Observe project execution so that potential problems can be identified in a timely manner
- Monitoring the project activities against the project management plan and the project performance baseline
- Integrated change control so only approved changes are implemented
- Provides the project team insight into the health of the project
- Highlights any areas that require additional attention



Project Closing Group

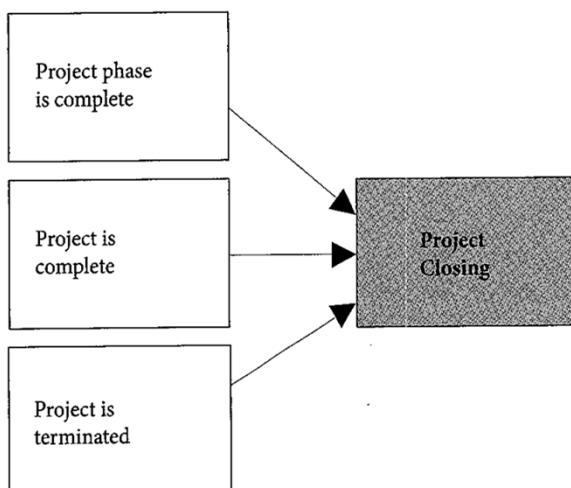


The dashed circular arrow indicates that the process is part of the Project Integration Management Knowledge Area. This Knowledge Area coordinates and unifies the processes from the other Knowledge Areas.

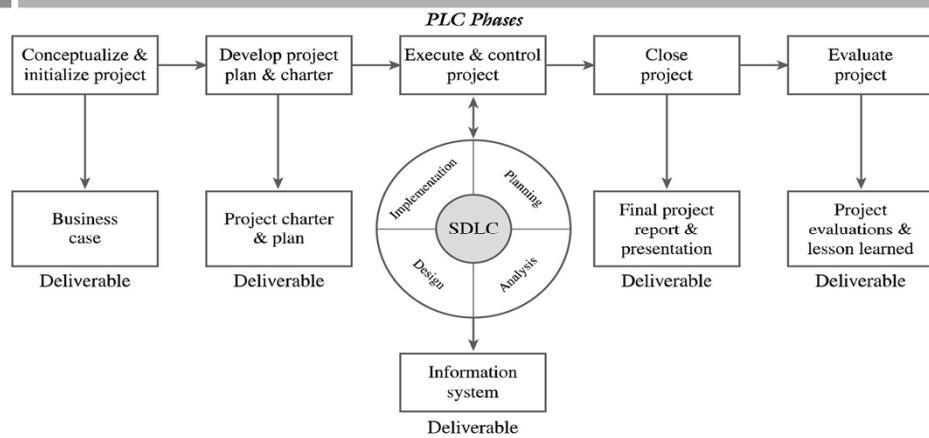
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- Formally terminate all activities of a project or a project phase
- Hand off the completed product to others
- Or, close a cancelled project



An IT Project Methodology



IT Project Management Foundation

PM processes:	Initiating, planning, executing, controlling, closing
PM objectives:	Scope, schedule, budget, quality
Tools:	Project management, information systems development
Infrastructure:	Organizational, project, technical
PMBOK areas:	Integration mgmt, scope mgmt, time mgmt, cost mgmt, quality mgmt, H.R. mgmt, communications mgmt, risk mgmt, procurement mgmt

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A strategic level plan for managing and controlling IT projects.

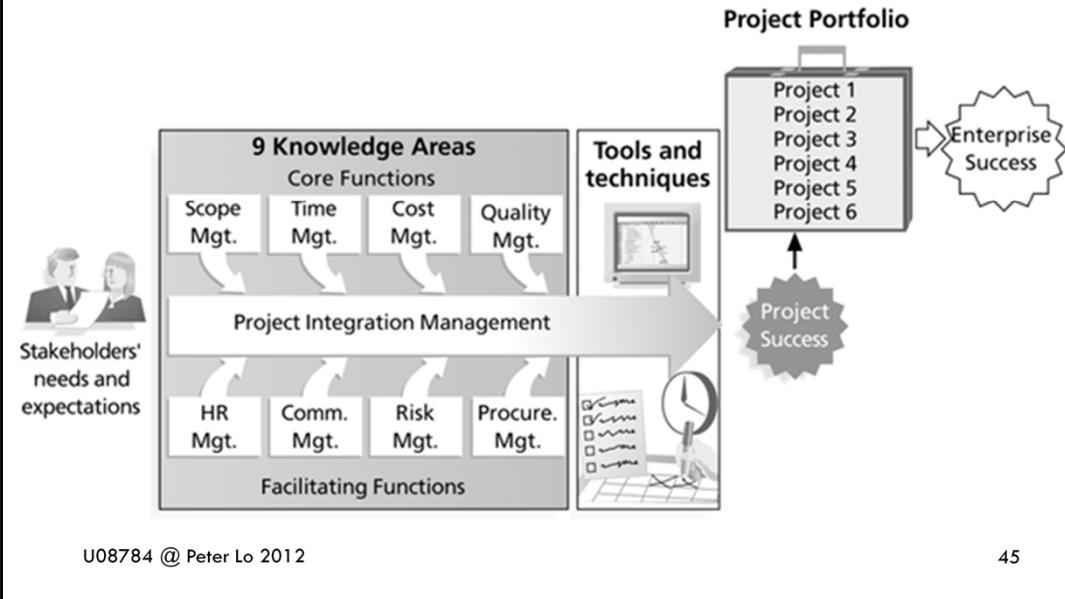
A template for initiating, planning and developing an information system.

Recommends:

- phases
- deliverables
- processes
- tools
- knowledge areas

Must be flexible and include best “practices” learned from experiences over time.

Project Management Framework



The IT Project Management Framework is a standardized, objective methodology that assists in identifying, classifying, documenting and managing IT projects. This section introduces three primary components that significantly shape and support the framework and—within the context of these components—describes a project's life cycle, the five life cycle phases, phase requirements, and individual phase activities.

These components are

- Project Roles and Responsibilities
- Project Life Cycle
- Project Classification.

Reference

- Ch. 1-3, PMBOK Guide, 4th Edition
- Ch. 1-2, PMP Exam Prep, 7th Edition
- Ch. 1, Software Project Management, 4th Edition
- Ch. 1, Project Management for Information Systems, 5th Edition