PROJECT MANAGEMENT STANDARDS AND PERFORMANCE DOMAINS
PROJECT PHASES AND PROJECT LIFE CYCLE

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Overview

- Project processes
- Standards of project management
  - The 5 process groups
  - The 12 project delivery principles
  - Mapping knowledge areas to process groups
  - Relative importance of the knowledge areas
- Project management performance domains
  - The ten project knowledge areas
  - The eight performance domains
- Project phases
- Project life cycle
- Process groups and PMLC
- The 5 PMLC Models

Project Processes

- A process is a series of actions bringing about a result.

- Projects are composed of processes
  - Project management processes describe, organize and complete the work of the project.
  - Product oriented processes specify and create the project's product and are typically defined by the project life cycle.

Standards of PMBOK Guide

- The PMI defines a standard as: “a document established by consensus and approved by a recognized body.”
  - In the context of the PMBOK Guide, the 6th edition standard is process-based, whereas the 7th edition is principle-based.

Standards		
Sixth edition	*Seventh edition*	
Process Groups	**Project Delivery Principles**	
• *Initiating* • *Planning* • *Executing* • *Monitoring & Controlling* • *Closing*	• *Stewardship* • *Team* • *Stakeholders* • *Value* • *Holistic Thinking* • *Quality* • *Complexity*	• *Leadership* • *Tailoring* • *Opportunities & Threats* • *Adaptability & Resilience* • *Change management*

Defining the Five Process Groups

- The Scoping Process Group (Initiating Processes in PMBOK)
- The Planning Process Group
- The Launching Process Group (Executing Processes in PMBOK)
- The Monitoring & Controlling Process Group
- The Closing Process Group

The Scoping Process Group

- Develop and gain approval of a general statement of the goal and business value of the project.
  - Eliciting the true needs of the client
  - Documenting the client's needs
  - Negotiating with the client how these needs will be met
  - Defining the major project goals
  - Assigning the project manager
  - Writing a one-page description of the project
  - Gaining senior management approval to plan the project

The Planning Process Group

- Identify work to be done and estimate time, cost and resource requirements and gain approval to do the project.
  - Defining all of the work of the project
  - Write and publish the scope statement
  - Determine project deliverables
  - Estimating how long it will take to complete this work
  - Estimating the resources required to complete the work
  - Estimating the total cost of the work, establish a project budget
  - Determine any special skills required
  - Sequencing the work
  - Building the initial project schedule
  - Analyzing & adjusting the project schedule
  - Writing a risk management plan
  - Documenting the project plan
  - Gaining senior management approval to launch the project

The Launching Process Group

- Recruit the team and establish team operating rules.
  - Recruiting the project team
  - Direct the project team
  - Writing the Project Description Document
  - Establishing team operating rules
  - Secure other project resources
  - Conduct status review meetings
  - Establishing the scope change management process
  - Managing team communications
  - Finalizing the project schedule
  - Writing work packages
  - Implement quality assurance procedures

The Monitoring & Controlling Process Group

- Respond to change requests and resolve problem situations to maintain project progress.
  - Monitoring project performance
  - Taking corrective action when tasks slip
  - Evaluate corrective actions
  - Establishing the project performance and reporting system
  - Monitoring risk
  - Reporting project status
  - Processing scope change requests
  - Discovering and solving problems

The Closing Process Group

- Assure attainment of client requirements and install deliverables.
  - Gaining client approval of having met project requirements
  - Planning and installing deliverables
  - Document lessons learned
  - Writing the final project report
  - Archive project records
  - Conducting the post-implementation audit
  - Formalize the project closure
  - Release project resources

Delivery Principles of PMBOK Guide

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Project Management Principles

- **Principles serve as foundational guidelines for strategy, decision making, and problem solving.**
- The principles are intended to guide the behavior of people involved in projects. They are **broadly** based so there are many ways individuals and organizations can maintain alignment with the principles.
- The degree of application and the way in which they are applied are influenced by the context of the organization, project, deliverables, project team, stakeholders, and other factors.
- No principle contradicts any other principle. However, in practice they can overlap.

Principles: Stewardship

- Stewards act responsibly to carry out activities with integrity, care, and trustworthiness while maintaining compliance with internal and external guidelines.

- Responsibilities:
  - Demonstrate a broad commitment to financial, social, and environmental impacts of the projects they support.
  - Commitment to and respectful engagement of project team members, including their compensation, access to opportunity, and fair treatment.
  - Consider financial, social, technical, and sustainable environmental awareness.
  - Understand the appropriate use of authority, accountability, and responsibility, particularly in leadership positions.
  - Operate in alignment with the organization, its objectives, strategy, vision, mission, and sustainment of its long-term value;

Principles: Team

- Projects are delivered by project teams.
- Project teams work within organizational and professional cultures and guidelines, often establishing their own “local” culture.
- A collaborative project team environment facilitates:
  - Alignment with other organizational cultures and guidelines
  - Individual and team learning and development
  - Optimal contributions to deliver desired outcomes

Principles: Stakeholders

- Stakeholders influence projects, performance, and outcomes.
- Project teams serve other stakeholders by engaging with them.
- Stakeholder engagement proactively advances value delivery.

Principles: Value

- Value, including outcomes from the perspective of the customer or end user, is the ultimate success indicator and driver of projects.
- Value can be realized throughout the project, at the end of the project, or after the project is complete.
- Value, and the benefits that contribute to value, can be defined in quantitative and/or qualitative terms.
- A focus on outcomes allows project teams to support the intended benefits that lead to value creation.
- Project teams evaluate progress and adapt to maximize the expected value.

Principles: Systems Thinking

- A project is a system of interdependent and interacting domains of activity.
- Systems thinking entails taking a holistic view of how project parts interact with each other and with external systems.
- Systems are constantly changing, requiring consistent attention to internal and external conditions.
- Being responsive to system interactions allows project teams to leverage positive outcomes.

Principles: Leadership

- Effective leadership promotes project success and contributes to positive project outcomes.
- Any project team member can demonstrate leadership behaviors.
- Leadership is different than authority.
- Effective leaders adapt their style to the situation.
- Effective leaders recognize differences in motivation among project team members.
- Leaders demonstrate desired behavior in areas of honesty, integrity, and ethical conduct.

Principles: Tailoring

- Design the project development approach based on the context of the project, its objectives, stakeholders, governance, and the environment using **"just enough"** process to achieve the desired outcome while maximizing value, managing cost, and enhancing speed.

- Each project is unique so success is based on adapting to this unique context of the project to determine the most appropriate methods of producing the desired outcomes.

- Tailoring the approach is iterative, and therefore is a continuous process throughout the project.
  - Processes that are not tailored may add little value to the project or its outcomes while increasing cost and lengthening schedule.

Principles: Quality

- Maintain a focus on quality that produces deliverables that meet project objectives and align to the needs, uses, and acceptance requirements set forth by relevant stakeholders.

Principles: Complexity

- Aim is to continually evaluate and navigate project complexity so that approaches and plans enable the project team to successfully navigate the project life cycle.
- Complexity is the result of human behavior, system interactions, uncertainty, ambiguity, technological innovation.
  - Alternatively, a few causes may converge to produce a single complex effect, which makes isolating a specific cause of complexity difficult.
- Complexity can emerge at any point during the project.
- Complexity can be introduced by events or conditions that affect value, scope, communications, stakeholders, risk, and technological innovation.
- Project teams can stay vigilant in identifying elements of complexity and use a variety of methods to reduce the amount or impact of complexity.

Principles: Risk

- Continually evaluate exposure to risk, both opportunities and threats, to maximize positive impacts and minimize negative impacts to the project and its outcomes.

Principles: Adaptability and Resiliency

- Build adaptability and resiliency into the organization's and project team's approaches to help the project accommodate change, recover from setbacks, and advance the work of the project.
- **Adaptability** is the ability to respond to changing conditions.
- **Resiliency** is the ability to absorb impacts and to recover quickly from a setback or failure.
- A focus on outcomes rather than outputs facilitates adaptability.
- Unexpected changes and circumstances in a project system can also present opportunities.
  - To optimize value delivery, project teams should use problem solving as well as a holistic-thinking approach to changes and unplanned events.

Principles: Change

- Change can originate from internal influences or external sources.
- A structured approach to change helps individuals, groups, and the organization from the current state to the intended future state created by the project outcomes.
- Enabling change can be challenging as not all stakeholders embrace change.
  - Stakeholder engagement and motivational approaches assist in change adoption.
- Attempting too much change in a short time can lead to change fatigue and/or resistance.
- Change management is different from project change control, which is a process whereby modifications to documents, deliverables, or baselines associated with the project are identified and documented, and then are approved or rejected.

Project Performance Domains

- The ten knowledge areas of the PMBOK Guide – 6th edition have been replaced by a set of 8 performance domains in the PMBOK Guide – 7th edition.

- The PMI defines a domain as “groups of related activities that are critical for the effective delivery of project outcomes.”

PMBOK® 6th Edition

10 Knowledge Areas

1. Integration Management
2. Scope Management
3. Schedule Management
4. Cost Management
5. Quality Management
6. Resources Management
7. Communications Management
8. Risk Management
9. Procurement Management
10. Stakeholder Management

PMBOK® 7th Edition

8 Performance Domains

1. Stakeholders
2. Team
3. Development Approach and Life Cycle
4. Planning
5. Project Work
6. Delivery
7. Measurement
8. Uncertainty

What Are Knowledge Areas?

How do you remember everything that needs to be planned, executed, and monitored for a properly coordinated project?

- Knowledge areas provide a way to organize and categorize knowledge and skills needed in a particular specialty.

- **Knowledge areas describe the overall knowledge and skills you'll need as a project manager.**

Defining the Knowledge Areas

- To help organize all the knowledge a project manager needs to effectively perform the role, project management processes, key concepts, and activities had been organized into 10 best practice areas, or knowledge areas.

- They are all present in every project management life cycle

- They are part of more than one process group.

The Ten Project Management Knowledge Areas

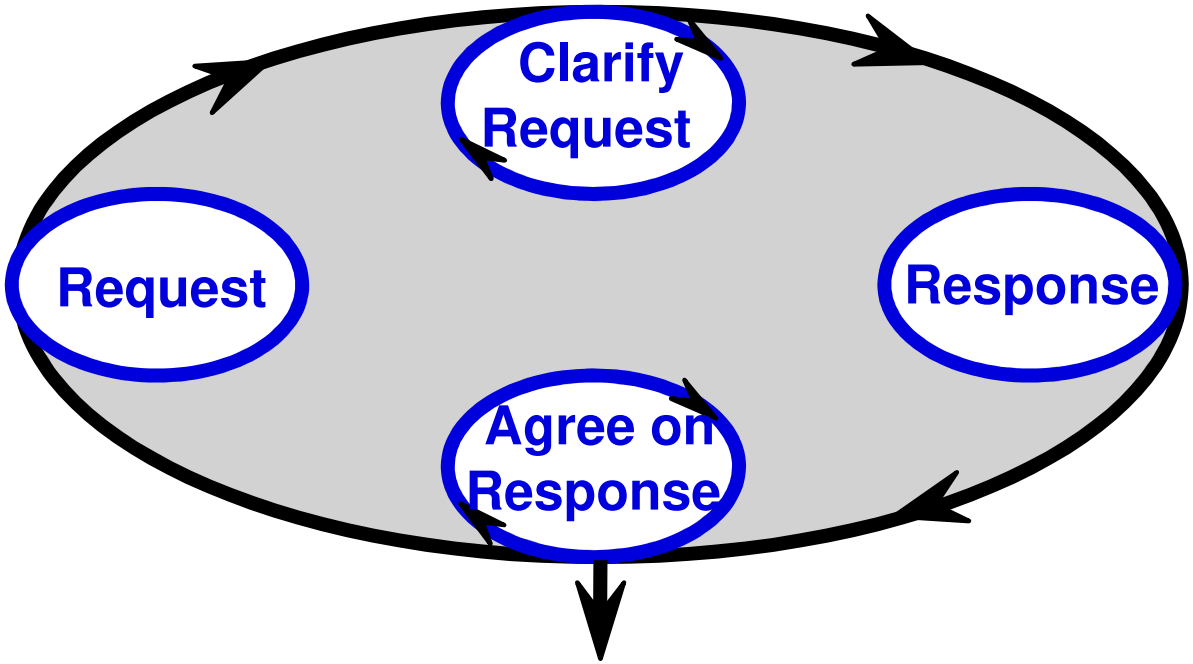
- Integration Management
- Scope Management
- Time Management
- Cost Management
- Quality Management
- Human Resources Management
- Communications Management
- Risk Management
- Procurement Management
- Stakeholder Management

Integration Management

- Integration management ties together components from all other project management knowledge areas.
- During the planning stages integration management is focused on crafting a viable project plan.
- Integration is focused on completing the project.
- If changes are introduced into a project, it is necessary to coordinate these modifications.

Scope Management – Conditions of Satisfaction

- Identification and documentation of client requirements



Time & Cost & Risk Management

- **Time Management**
  - **Time planning** provides time estimates for both the duration of a project task and the actual labor time required to complete the task.
  - **Control** is part of the Monitoring and Controlling Process Group and involves comparing estimated times to actual times as well as managing the schedule and cost variances.

- **Cost Management** is primarily concerned with the cost of the resources and project decisions needed to complete project activities.
  - Planning includes building the budget and mapping those costs into the project schedule.
  - Control is monitored via variance and earned value reports.

- **Risk Management** life cycle
  - Risk identification
  - Risk assessment
  - Risk mitigation
  - Risk monitoring and control

Quality & Stakeholder Management

- Definition of **Quality**
  - Fit for use
  - Meets all client requirements
  - Delivered on time within budget and according to client specifications
- Types of Quality
  - Process Quality: The quality of the project management process that produced the product
  - Product Quality: The quality of the deliverables from the project

- In PMBOK 5 a tenth Knowledge Area, Project **Stakeholder Management**, was added.
  - Stakeholder Management was part of Communications Management knowledge area before.
- In PMBOK 7 it is one of the principles of project management standards.

- The project manager must keep the stakeholders engaged throughout the project, not just informed.

Human Resources & Communications Management

- **Human resources management** makes the most effective use of people involved with the project
  - Organizational planning – project roles, responsibilities, and reporting relationships.
  - Staff acquisition
  - Team development

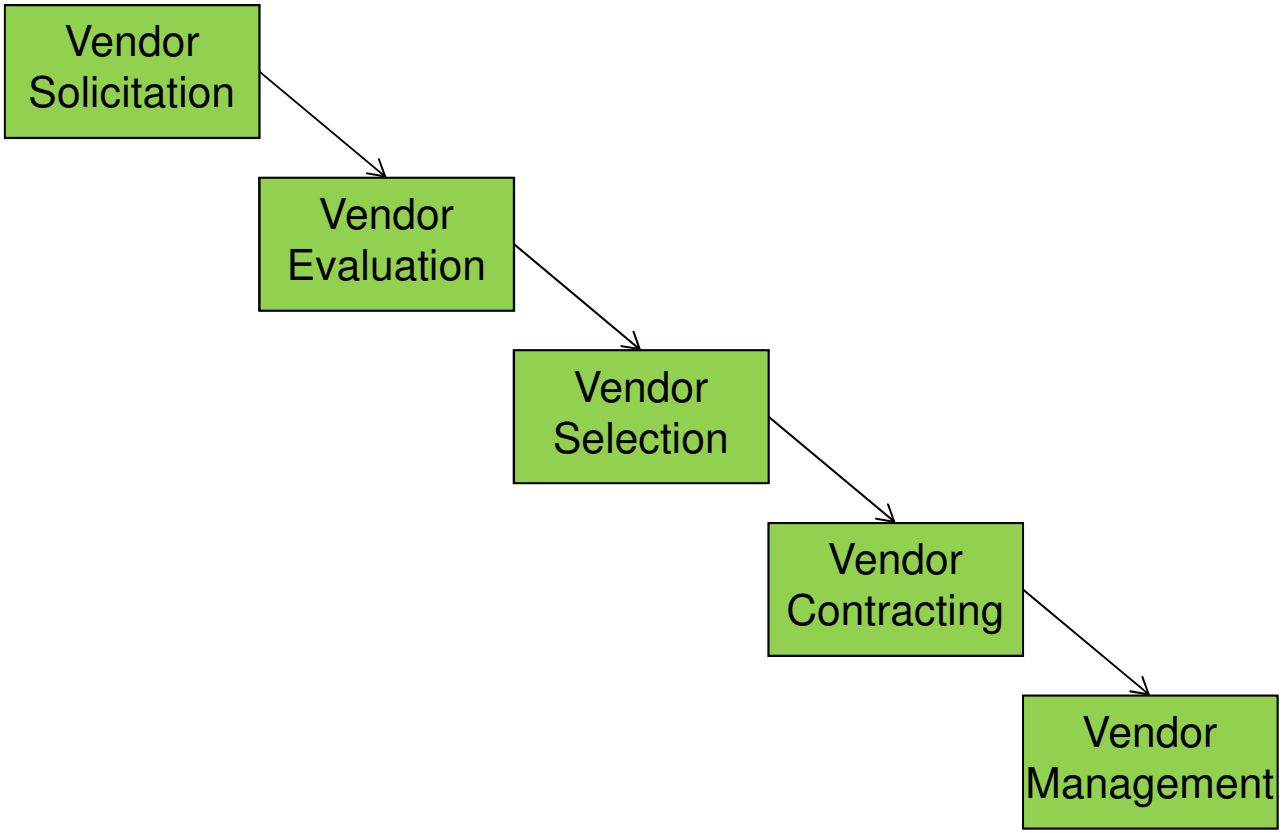
- **Communications management** is timely and appropriate generation, collection, dissemination, storage, and disposition of project information.

Outsourcing to Vendors and Contractors

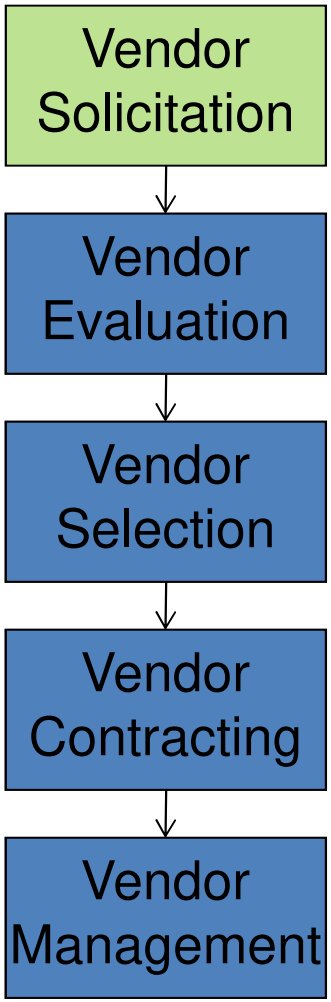
- When?
  - You do not have the necessary skills and competencies on your staff
  - Buying the solution is less costly and more effective than building the solution
  - There is a commercial product available that will meet your needs
  - It is more cost effective to have a specialist provide the service
  - It is not part of your core business activity
  - You would like to develop the skills by first using a contractor

Procurement Management – The Life Cycle

- Processes required to acquire goods and services from outside the performing organization.

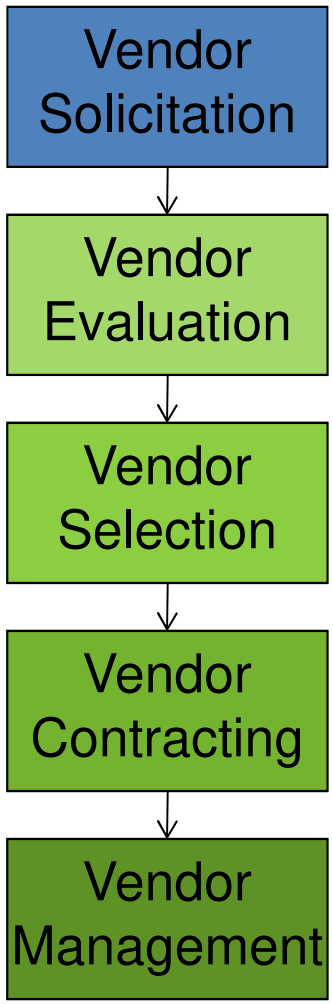


Procurement Management Life Cycle



- Develop RBS
- Decide to use a vendor
- Identify potential vendors
- Select procurement management team (PMT)
- Determine vendor relationship
- Determine the acquisition strategy
- Establish vendor evaluation criteria
- Develop contract management
- Prepare & distribute Request for Proposal (RFP)
- Respond to bidder's questions

Procurement Management Life Cycle



- Evaluate vendors
- Evaluate responses to RFP
- Reduce list of companies
- Conduct onsite presentations (optional)

- Select the final vendor(s)

- Negotiate the final contract

- Set vendor expectations
- Monitor progress and performance
- Conduct acceptance testing
- Transition from vendor to client

Mapping Knowledge Areas to Process Groups

- Mapping shows how interdependent the Knowledge Areas are with the Process Groups
- Mapping helps to design project management approach

Knowledge Areas	Scoping Process Group	Planning Process Group	Launching Process Group	Monitoring & Controlling Process Group	Closing Process Group
Integration	X	X	X	X	X
Scope		X		X	
Time		X		X	
Cost		X		X	
Quality		X	X	X	
HR		X	X	X	
Communications		X	X	X	
Risk		X		X	
Procurement		X	X	X	X
Stakeholders	X	X	X	X	

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Project Performance Domains

- Project performance domains are interactive, interrelated, and interdependent areas of focus that work in unison to achieve desired project outcomes.
- The performance domains operate as an integrated system.
- The specific activities undertaken within each of the performance domains are determined by the context of the organization, the project, deliverables, the project team, stakeholders, and other factors.

Domains: Stakeholders

- This performance domain entails working with stakeholders to maintain alignment and engaging with them to foster positive relationships and satisfaction.

- Effective execution of this performance domain results in the following desired outcomes:
  - A productive working relationship with stakeholders.
  - Stakeholder agreement with project objectives.
  - Satisfied and supportive stakeholders who do not negatively impact project outcomes.

Domains: Team Performance

- Addresses activities and functions associated with the people who are responsible for producing project deliverables that realize business outcomes.
  - Shared ownership.
  - A high-performing team.
  - Applicable leadership and other interpersonal skills demonstrated by all team members.

Domain: Development Approach and Life Cycle Performance

- Establish the development approach, delivery cadence, and project life cycle needed to optimize project outcomes.
  - Development approaches consistent with project deliverables
  - A project life cycle consisting of phases that
    - connect the delivery of business and stakeholder value from the beginning to the end of the project.
    - facilitate the delivery cadence and development approach required to produce the project deliverables.

Domain: Planning

- The purpose of planning is to proactively develop an approach to create the project deliverables that drive the outcomes the project was undertaken to achieve.
- Because each project is unique, the amount, timing, and frequency of planning varies.
- Variables that influence planning include, but are not limited to:
  - Development approach
  - Project deliverables
  - Organizational requirements
  - Market conditions
  - Legal or regulatory restrictions

Domain: Project Work

- Project work is associated with establishing the processes and performing the work to enable the project team to deliver the expected deliverables and outcomes.
  - Managing the flow of existing work, new work, and changes to work;
  - Keeping the project team focused;
  - Establishing efficient project systems and processes;
  - Communicating with stakeholders;
  - Managing material, equipment, supplies, and logistics;
  - Procurement management with contractors vendors;
  - Monitoring changes that can affect the project; and
  - Enabling project learning and knowledge transfer.

Domain: Delivery

- Project delivery focuses on meeting requirements, scope, and quality expectations to produce the expected deliverables that will drive the intended outcomes.

- Deliverables reflect the stakeholder requirements, scope, and quality, along with the long-term impacts to profit, people, and the planet.

- In uncertain and rapidly changing environments “good enough for release” or “done” goal may be subject to change → moving target of completion.
  - Project teams track the planned rate of project goal achievement relative to the rate of progress toward completion.

Domain: Measurement

- Measurement involves assessing project performance and implementing appropriate responses to maintain optimal performance.
  - evaluates the degree to which the work done in the Delivery Performance Domain is meeting the metrics identified in the Planning Performance Domain.

- The value of measurements is not in the collection and dissemination of the data, but rather in the conversations about how to use the data to take appropriate action.

- The intent in measuring and displaying data is to learn and improve.

Domain: Uncertainty

- Uncertainty presents threats and opportunities that project teams explore, assess, and decide how to handle.
- Successfully navigating uncertainty begins with understanding the larger environment within which the project is operating.
- Volatility exists in an environment that is subject to rapid and unpredictable change and usually impacts cost and schedule.
- Risks are an aspect of uncertainty. Negative risks are called threats, and positive risks are called opportunities

Project Phases

- Organizations may divide projects to phases for improved management
- **Project Phase** - A collection of logically related project activities that culminates in the completion of one or more deliverables.
- Each phase is marked by completion of one or more deliverables
  - Conclusionary review (stage gates/phase exits)
    - Deliverables
    - Performance
    - Go/No Go into next phase
- Project phases make up Project Life Cycle

Delivery Cadence

- The type of project deliverable(s) determines how it can be developed and hence influence the number and cadence for project deliveries.
- The deliverable approach and the desired delivery cadence determine the project life cycle and its phases.
  - Single delivery: deliver at the end of the project.
  - Multiple deliveries: A project may have multiple components that are delivered at different times (sequentially or developed separately). All of the deliveries are concluded before the project is considered to be completed.
  - Periodic deliveries: they are like multiple deliveries, but on a fixed delivery schedule, such as monthly or bimonthly.
  - Continuous delivery: deliver feature increments immediately to customers through the use of small batches of work and automation technology. From the product management point of view, the emphasis is on delivering benefits and value throughout the product life cycle.

Project Phases Example - 1

- Sample Agile project phases for a software product release

Project Phases Example - 2

- Release Start – Checklist

Owner	Deliverable	Description
Product Management	Release Candidate Content List (CCL) w/ Required Release Dates	Prioritized view of release content with required Release Readiness dates including any controlled availability requirements prior to Release Readiness.3
Product Management	Product Business Plan	Vision, strategy, goals, including identification of solution or solution the product delivers into. Assumptions, dependencies, restrictions.
Product Management	Third Party Supplier Identification, Selection, Approval, and Contracting Strategy	Many of our projects have key 3rd party dependencies ranging from full OEM hardware and software to embedded software in our designs. At RS the intention of the Third Party Identification strategy is to acknowledge this key project dependency, highlight any risks and challenges associated with this dependency and kick off the required engagement and planning activity. Shortlist of potential suppliers Considerations (including technical) for selection Engagement team
Product Management	Release strategy and Feature overview	Release strategy and Short summary of known CCL features for the release. Feature overview is required at the start of the Dev Sprints for any new features not covered at Release Start and should be updated for Release Cut so all teams can assess impacts.
Product Management	New Product, Perform CVAA Assessment (Draft) for New Product - Address any key compliance gaps with requirements	For CVAA Compliance, for each new product we introduce or each new release of a current product, we need to perform a CVAA assessment or if one already exists, update that CVAA assessment. That is our record of CVAA compliance for each product. Based on that assessment, we may or may not decide to invest in enhancements to improve our level of compliancy.
Product Management	Product Security Roadmap Commitment	Review Product Security Assessment and Baseline Security Scans in order to develop Security FDR feature(s) to track relevant security updates to: - OS Updates - 3rd party packages - open vulnerabilities with CVSS scores below 5.0 from previous/current scans (next time /next major release) - CIS benchmark product hardening "move the yardstick" items - Other flagged security issues (password control, ciphers, SSLv2/v3 disablement, etc)
Product Management	Plan date for Product Structure	A plan must be provided for so dependent teams (Q2C, PCA, SPLM) can plan accordingly
Program Manager	Release Readiness Plan (draft)	Release Plan defines extended Teams, Release Readiness Date, Release Readiness Definition (GA/LA/SA), Delivery Sprint DoD, and define key metrics: Release Defintion of Done including key metrics such as SV regression, gating defect targets. The Release Plan also defines the feature commitment process, i.e. when features move from CCL->POI->POR
Global Trials	Controlled deployment plan (if any is known)	Key for Agile and completing the feedback loop after Sprint completion Dependency on PLM to have view of sites Resource & capital material/funding requirements Trial goals (per customer) and Soak period requirements Test plans/cases, Acceptance criteria, timelines, customer-specific information Training requirements/timing

Project Phases Example - 3

- Release Cut Checklist

Owner	Deliverable	Description
Release Manager with Product Owner	Summary of completed content meeting DoD. Any content not completed is removed from POR or PO decision made to add additional Dev Sprints and extend release	(was All Development Sprints are complete and meet the definition of done)
TPM/SoSM	Draft Load Line-Up Available	View of dependent product or sub-product release versions that will be integrated with this product. Visibility to the set and ensuring those projects have the plans and risks to meet the required integration and delivery time is crucial.
TPM/SoSM	Code Cutoff (eg FC) Plans are in place	FC is the one of the key deliverables for the Downstream teams, they'll make their plan for GA accordingly. Defect Management and Vaulting Plans are in place (may be optional depending on products)
TPM/SoSM	Procurement Plan for design support services (ODM, partner, contract, OEM s/w)	Decision(s) on use of 3rd party suppliers List of candidate embedded OEM software Legal, contractual, regulatory requirements As part of the development of new features the solution domain might be provided by software and/or hardware from outside of GENBAND. In this case a Procurement Plan for design support services (ODM, partner, contract, OEM s/w) is required to substantiate the arrangement with the respective third party supplier.
TPM/SoSM	Technology Transfer Licenses (TTL's) in place for program	this should be done as soon as possible after Release Launch, this is a check at RC
Solution Verification Prime	System / Solution Verification & Regression Strategy [Approved]	This strategy is started at RS and should be updated regularly on a sprint by print basis, and finalized with plans to support at RC. Testing strategy and verification coverage Product/solution regression Verification requirements
Solution Verification Prime	Release Over Release (ROR) System Regression Test Cases available	Actual regression testcases to be executed SV Release Over Release Testcases are identified, approved and submitted to QC prior to SDC The “System Verification and Validation” Process (RD-P-09) should be understood by anyone creating the system regression related deliverables.

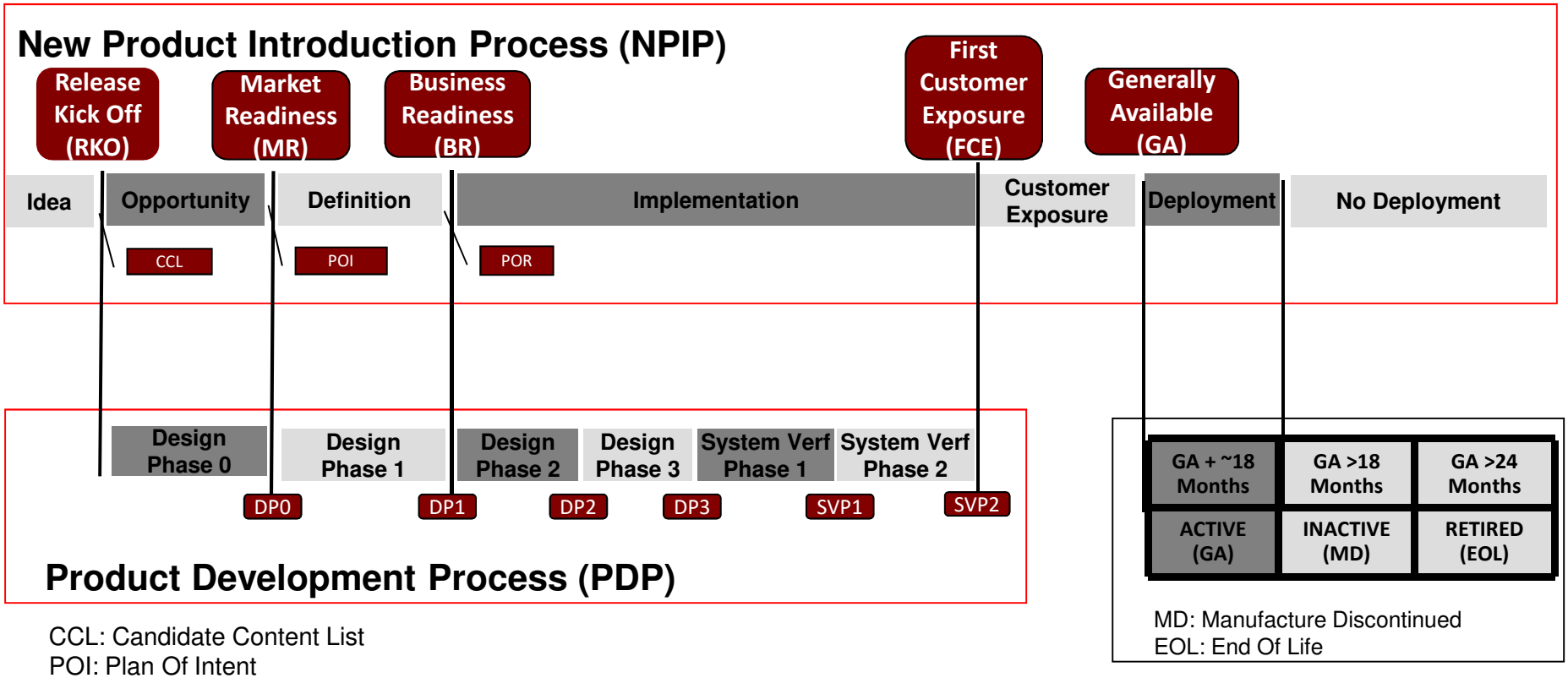
Project Phases Example - 4

- Release Cut Review Meeting Outcome
- Gating Actions
  - There are no Gating actions.
- Follow up Actions
  - Chart location
- Report Location
  - Report location

	Vote
Product Management	Go/Go
R&D	Go
System Validation	Go
Supply Chain	Go
Marketing	Go
Technical Documentation	Go
Customer Training	Go
Software Delivery	Go
Services Enablement	Go
Database-Translations Engineering	n/a
Return and Repair	n/a
Technical Support	Go
Trials / Controlled Deployment	Go
Product Introduction	Go

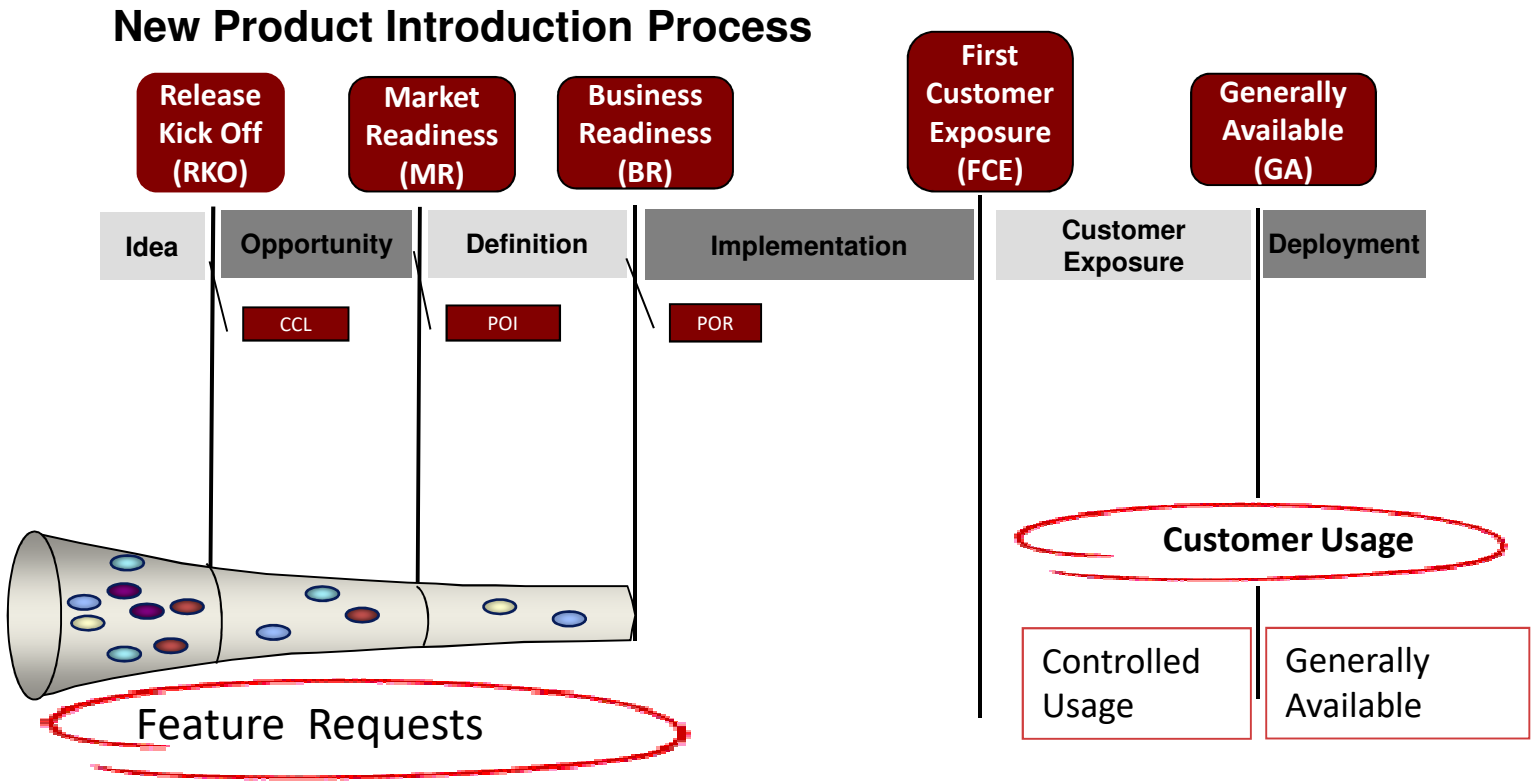
Project Phases Example - 5

- Waterfall phases for software product release



CCL: Candidate Content List
POI: Plan Of Intent
POR: Plan Of Record

Project Phases Example - 6



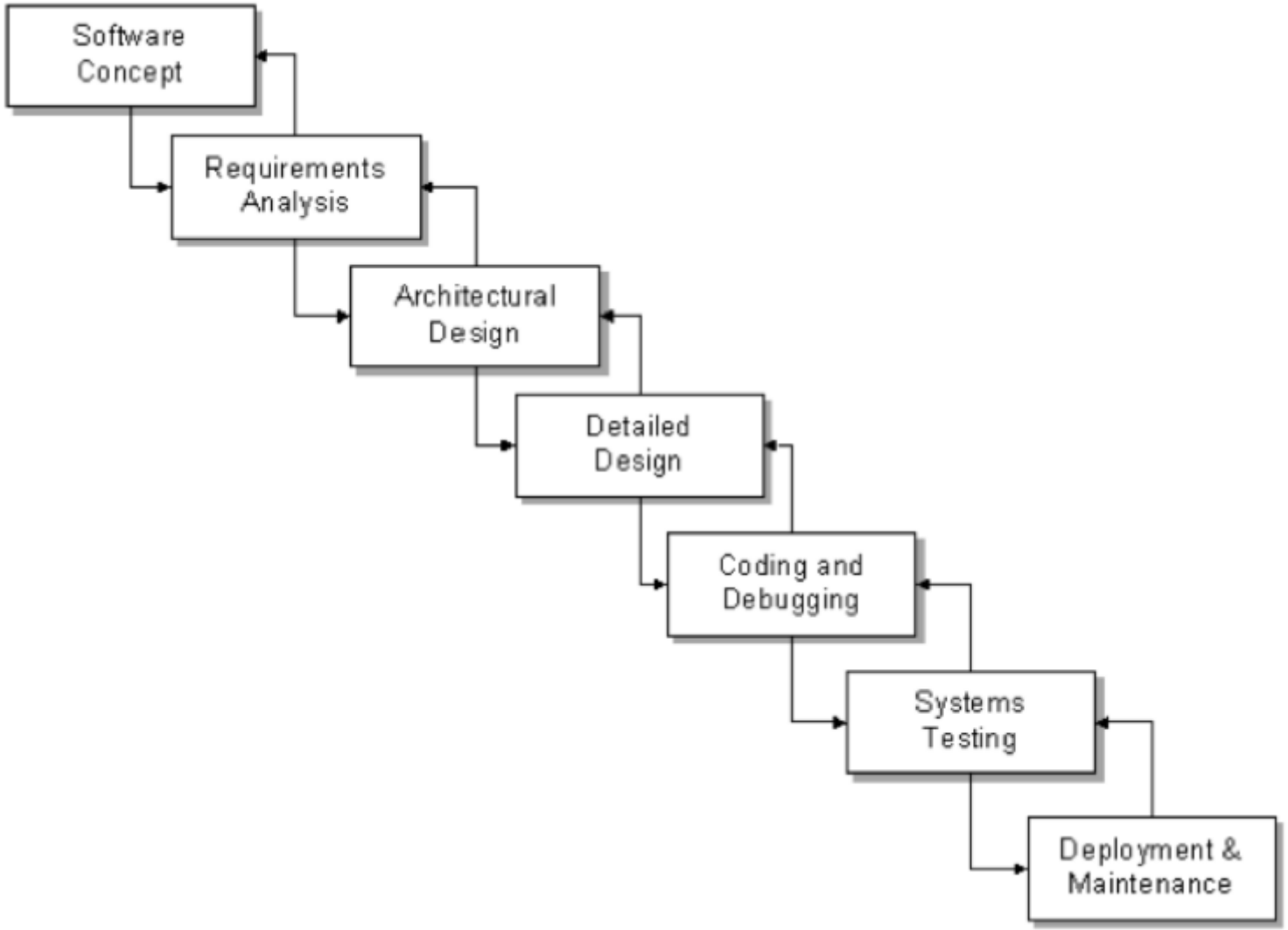
CCL	Candidate Content List	Content and dates tentative
POI	Plan Of Intent	Content and dates are firm but subject to change
POR	**Plan Of Record**	**Content & dates are locked in**

Project Phases Example - 7

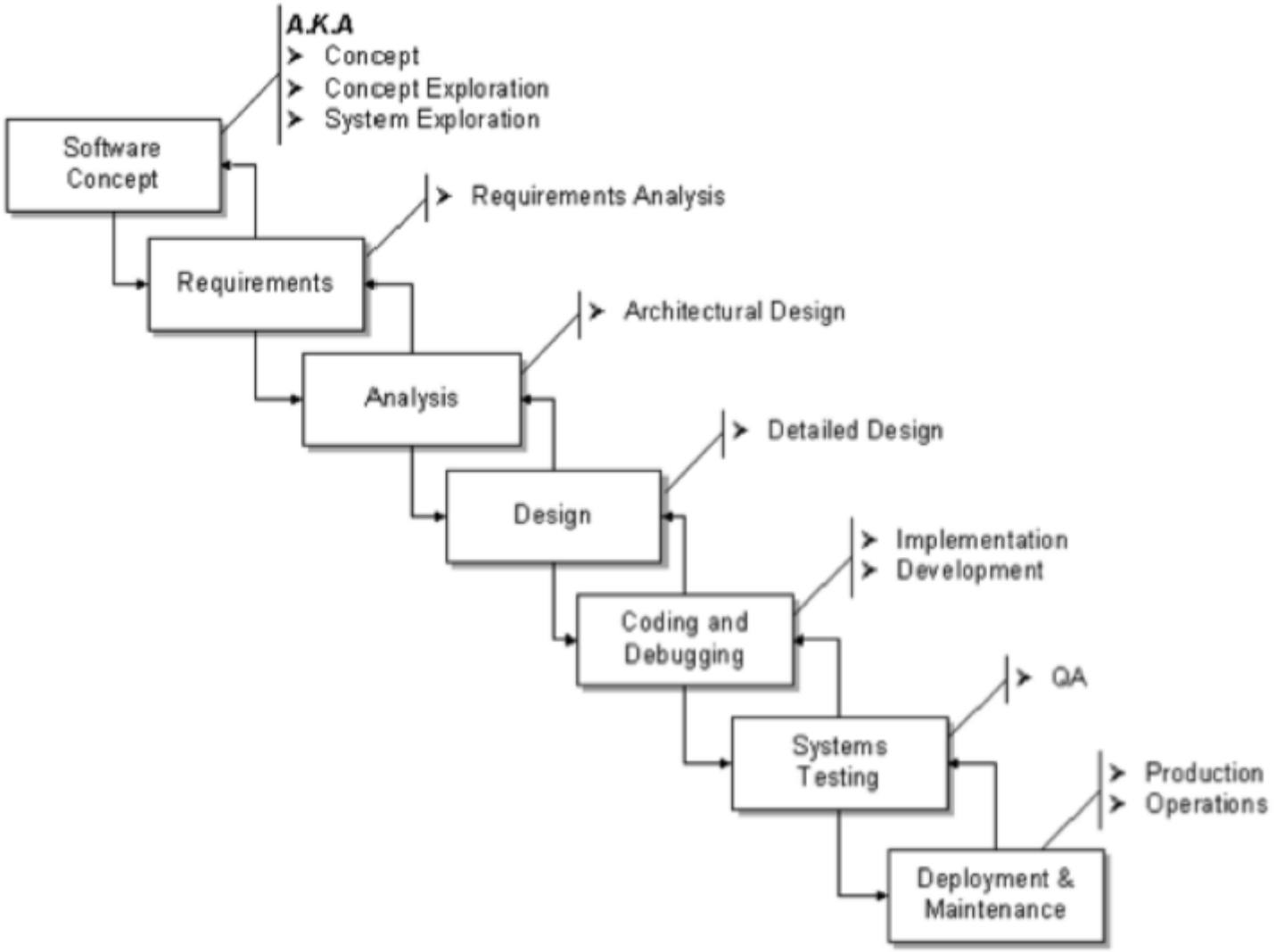
- Business decision points (RKO, MR, BR, FCE,GA) key deliverables

BDP	Owner	Key Deliverable
RKO	PLM	Candidate Content List (CCL)
	PLM	Feature Requirements Specification (Available)
MR	Design	Design Phase 0 (DP0) Exit Criteria Met
	Marketing	Marketing & Sales Readiness Plan - Approved
	PLM	Plan Of Intent (POI) [Approved]
	PLM	Product Business Plan (including Business Case Financials) @ MR [Approved]
BR	CustDoc & Train	Customer Documentation & Training Release Management Plan (PMP) [Approved]
	Design	Design Phase 1 (DP1) Exit Criteria Met
	PLM	Plan Of Record (POR) [Approved]
	Pricing	Pre-Commercial Pricing Strategy Package
	Proj Office	Approach Proclaimed: First Customer Exposure BDP & Customer Exposure Phase
	SPLM	Services Definition & Delivery Plan [Approved]
	Supply Chain	Supply Chain Readiness Plan [Approved]
FCE	CustDoc & Train	Training Plan For Channel Partners [Approved]
	CustDoc & Train	Customer Documentation Available for customer on portal
	Design	Design Phase 2 (DP2), DP3, System Verification Phase 1(SVP1) & SVP2 Exit Criteria Met
	Marketing	Marketing & Sales Readiness Plan - Executed
	Proj Office	Customer Exposure Phase Plan Approved
GA	CustDoc & Train	Customer Documentation Updated for customer on portal; DVD available
	CustDoc & Train	Training Courses available for customers
	Proj Office	Customer Exposure Phase Plan Executed [If Applicable]
	Supply Chain	Supply Chain Readiness Plan Achieved

Software Development Core Project Phases - 1



Software Development Core Project Phases - 2



Project Life Cycle Defines…

- What technical work should be done in each phase
- Who should be involved in each phase
- The project life cycle is a general, high level view that a project manager might use to communicate the big picture objectives of the project to the various stakeholders.

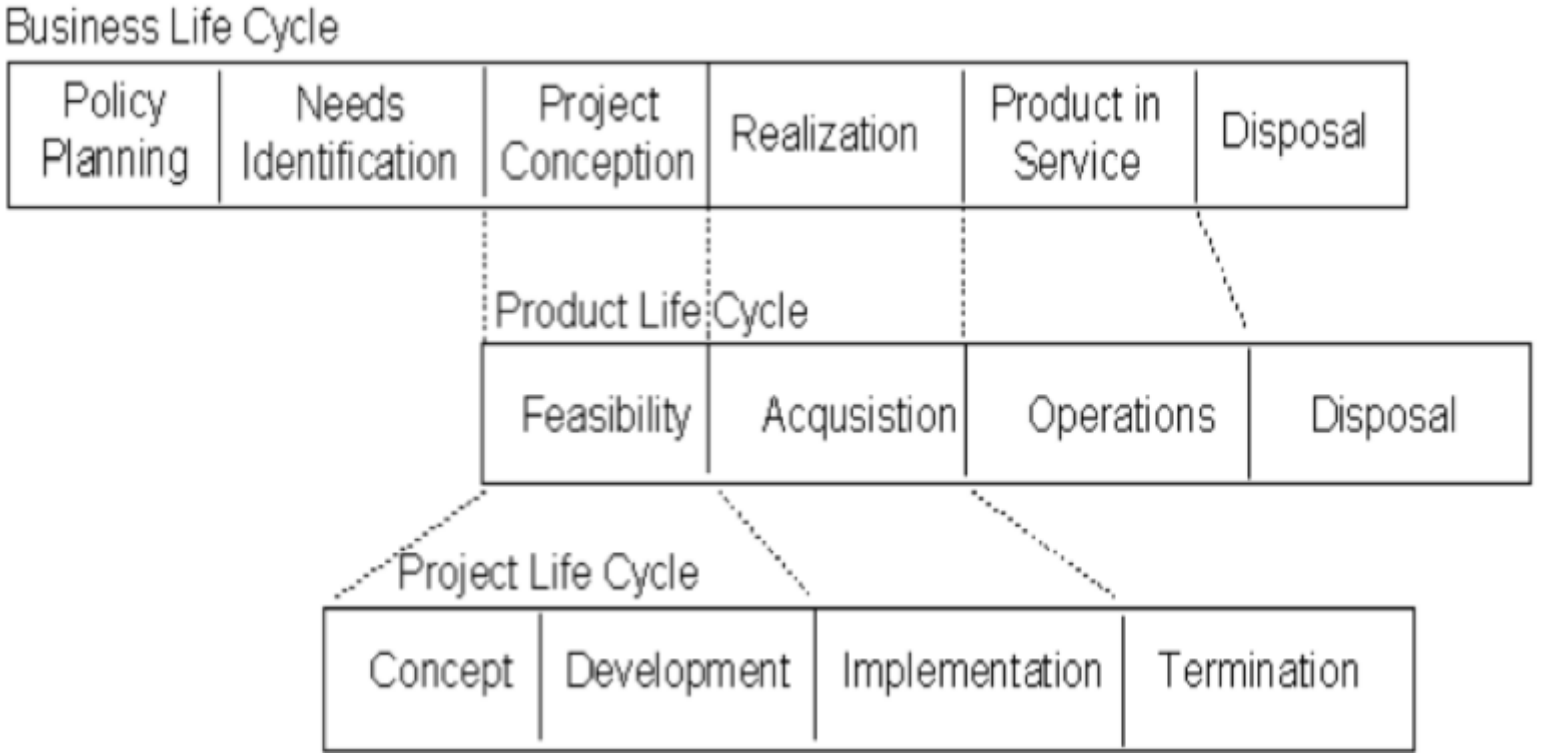
Characteristics of Project Life Cyle

- Cost and staffing levels are low at the beginning, high toward the end, and drop rapidly at conclusion
- Probability of success is the lowest and risk is the highest at the beginning
- Stakeholders' influence is high at the beginning and decreases progressively

Project Life Cycle vs. Product Life Cycle

- Throughout product life cycle, many projects can be carried out.
  - A software product can have many versions each containing different projects. E.g:
    - Internet Explorer is the product of which life cycle spans decades
    - Integrating Silverlight in IE is a project with its own life cycle

Lifecycle Relationships



The Project Management Life Cycle (PMLC)

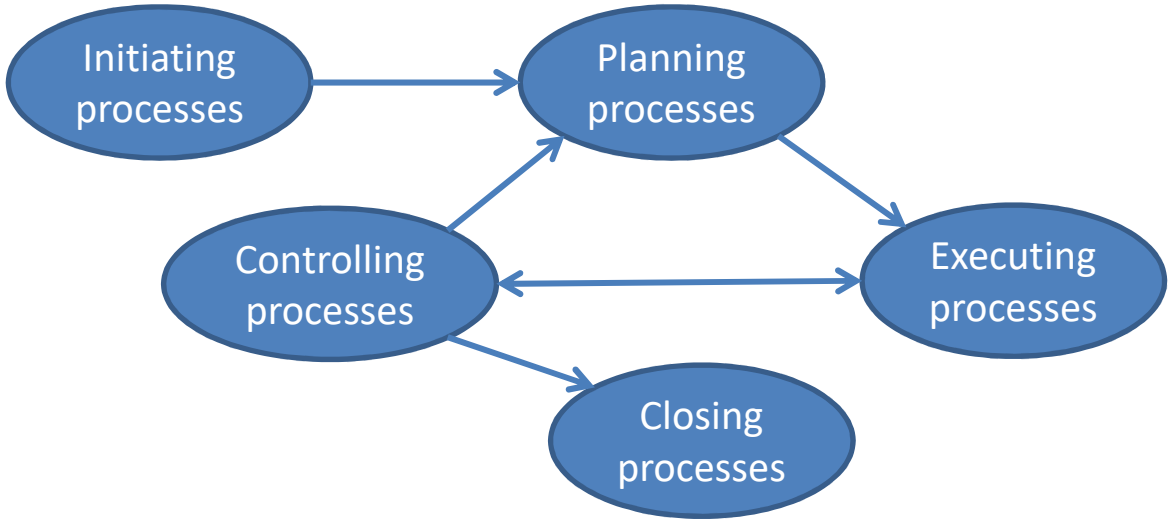
- A project management life cycle (PMLC) is a series of phases that a project passes through from its start to its completion.

- Projects that follow a process-based approach may use the following five process groupings as an organizing structure: Initiating, Planning, Executing, Monitoring and Controlling, Closing.
  - In a process-based approach, the output of one process generally becomes an input to another process or is a deliverable of the project or project phase.

  - Intervening processes must each be done at least once and may be repeated any number of times in some logical order

Links among Process Groups in PMLC

- Project management process groups are not discrete, one-time events. They are overlapping activities that occur at varying levels of intensity throughout each phase of the project.



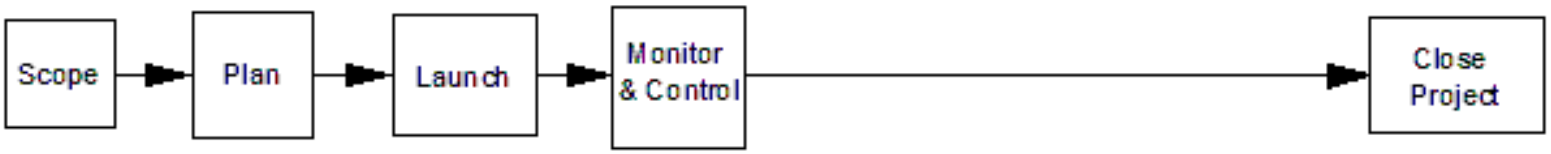
The Project Management Life Cycle (PMLC)

- Contrary to Public Opinion Process Groups are not a PMLC.

- Process Groups will be mapped to form Complex PMLCs.

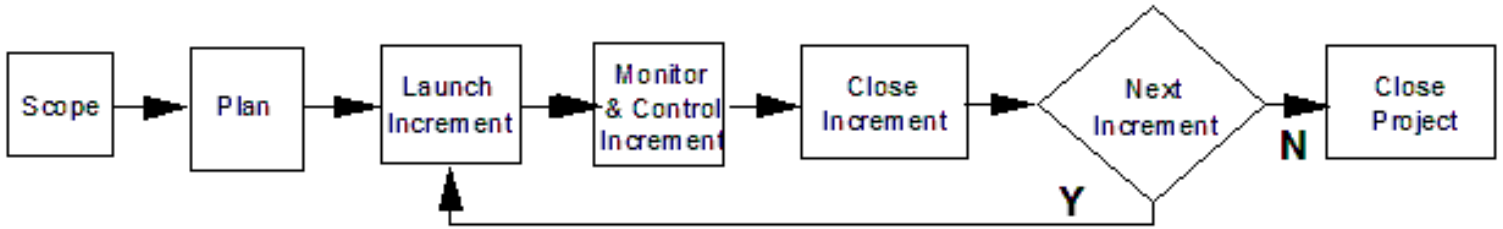
Linear Project Management Life Cycle Model

- Traditional PMLC
- The five process groups are each executed once in the order shown in the figure.
- Major weakness: knowledge gained from one process group cannot be used to revise and improve the deliverables from a previously completed process group.
- A scope change request from the client upsets the balance in the Linear PMLC model schedule and the resource schedule as well.
  - **The Linear PMLC model is change intolerant.**



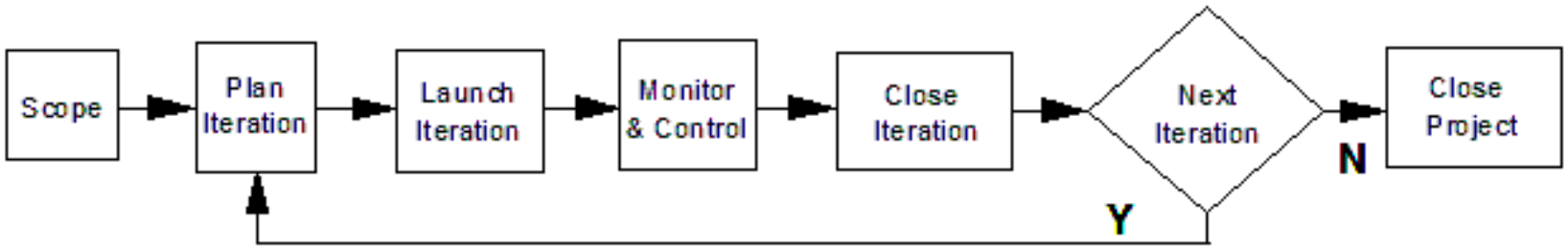
Incremental Project Management Life Cycle Model

- Traditional PMLC
- Deliverables in the Incremental approach are released according to a schedule
- Market-driven decision to use an Incremental PMLC over the Linear PMLC model
- In both models, the complete solution is known at the outset.
- All of this incremental release happens in a linear fashion
- There is some additional management overhead.
- Scope change is encouraged.
- The release schedule needs to be consistent with the dependencies that exist between each partial solution.



Iterative Project Management Life Cycle Model

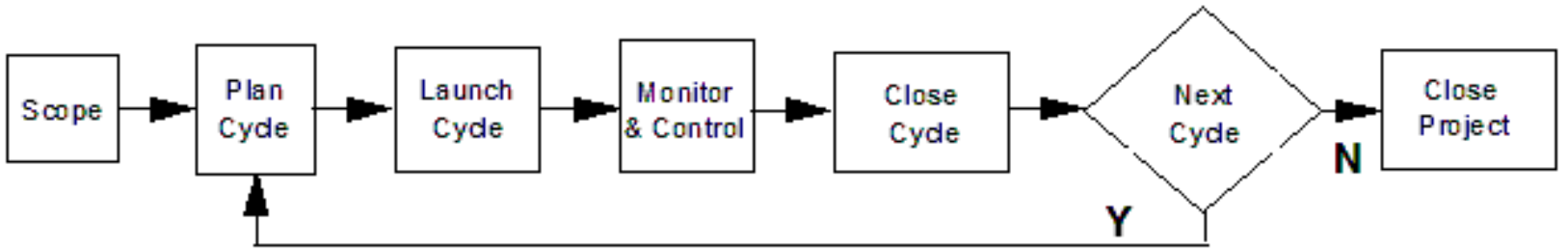
- Agile PMLC approach
- When to use?
  - Any of the details of a solution are not clearly defined or missing
- A working solution is delivered from every iteration.
- Objective is to show the client an intermediate / incomplete solution and ask them for feedback on changes or additions.
- Difference from the Incremental PMLC model: change is expected, in fact it is necessary.
- Provides opportunity to learn and discover
- Strong collaborative environment



Adaptive Project Management Life Cycle Model

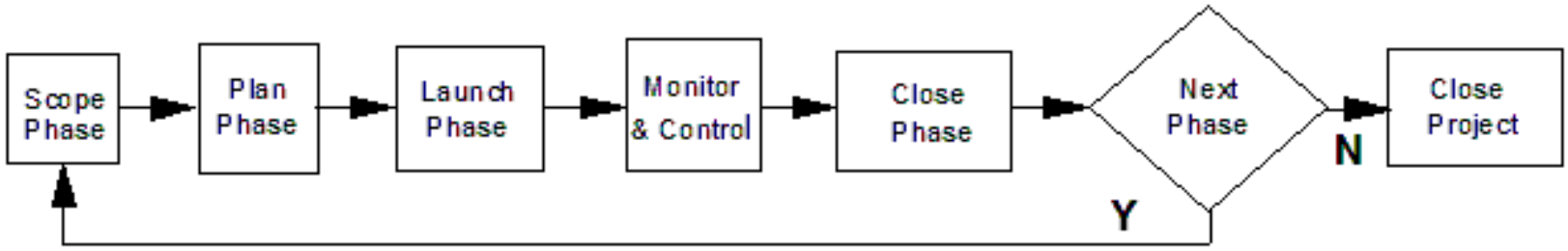
- Missing pieces of the solution extend to functionality that is missing or not clearly defined

- At the process group level, it is identical to the Iterative PMLC model. Within each process group, the differences will become obvious.

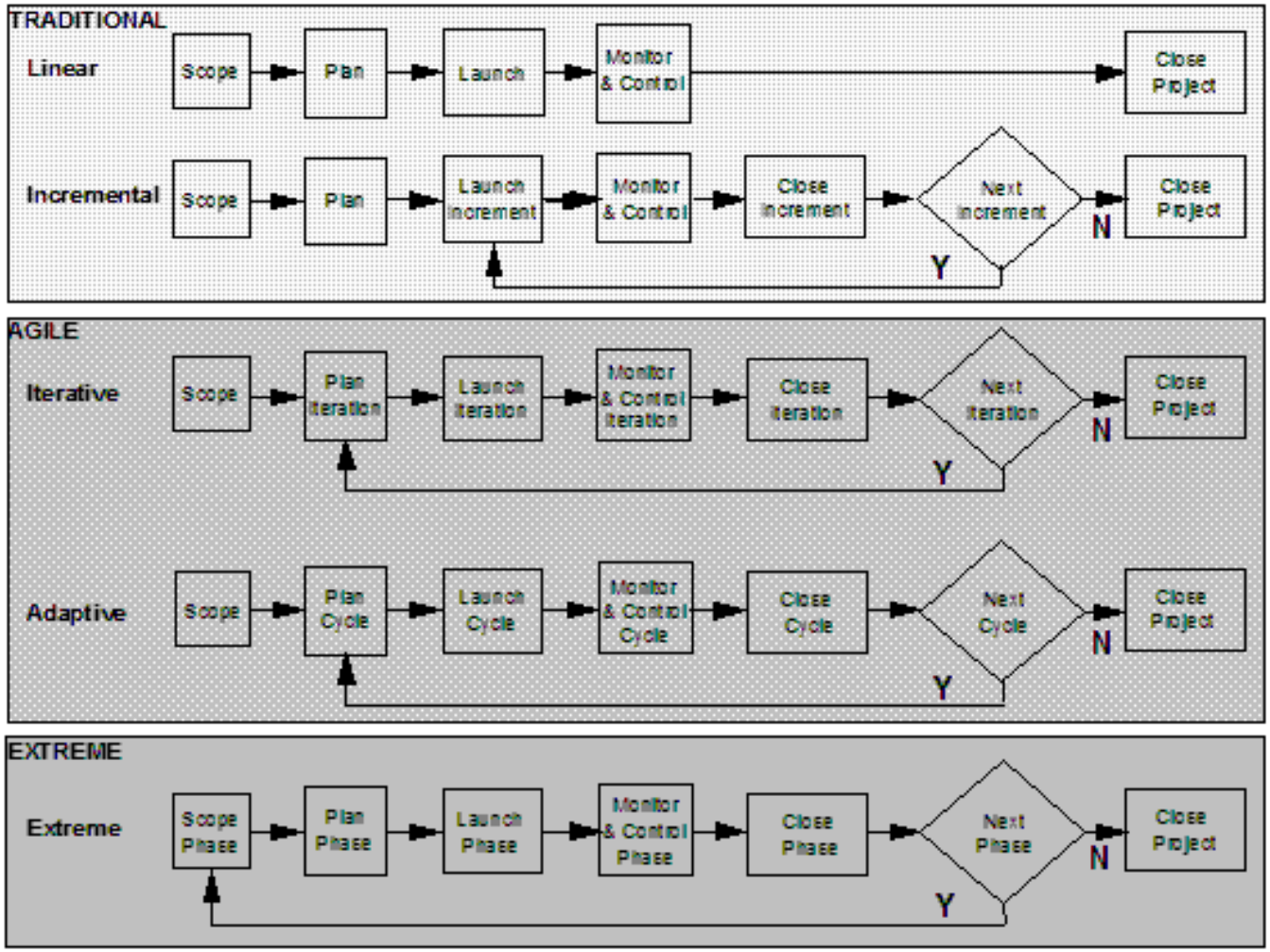


Extreme Project Management Life Cycle Model

- Used when solution and goal are not known or not clearly defined
  - E.g. pure R & D, new product development
- Unstructured, iterative
- Learning and discovery take place between the client and the development team in each phase, thus moving the project forward
- Major differences from Adaptive PMLC
  - Goal is unknown
  - Use of the Scope Process Group
  - Requires the client to be more involved within and between phases.
- Project stops
  - When a solution and the goal it supports are found and they both make business sense
  - When the sponsor is not willing to continue the funding



The 5 PMLC Models



Recap of the PMLC Models

Similarities

- All 5 Process Groups are used in each PMLC Model
- Each PMLC Model begins with a Scope Process Group
- Each PMLC Model ends with a Close Process Group

Differences

- The models form a natural ordering (Linear, Incremental, Iterative, Adaptive, Extreme) by degree of solution uncertainty
- The processes that form repetitive groups recognize the effect of increasing uncertainty as you traverse the natural ordering
- Complete project planning is replaced by just-in-time project planning as the degree of uncertainty increases
- Risk management becomes more significant as degree of solution uncertainty increases
- The need for meaningful client involvement increases as degree of solution uncertainty increases

When to Use one of 5 PMLC Models - 1

Linear

- Clearly defined solution and requirements
- Not many scope change requests
- Routine and repetitive projects
- Uses established templates

Incremental

- Same as linear but delivers business value early and often
- Some likelihood of scope change requests

Iterative

- Unstable or incomplete requirements and functionality
- Learn by doing and by discovery

When to Use one of 5 PMLC Models - 2

Adaptive

- Goal known but solution not known
- Solution highly influenced by expected changes
- New product development and process improvement projects

Extreme

- Goal and solution not known
- Through iteration converge on goal and solution
- Typically for R&D projects

Summary

- The 5 process groups
  - Scoping, planning, launching, monitoring & controlling, closing
- The 10 knowledge areas
  - Integration Management
  - Scope Management
  - Time Management
  - Cost Management
  - Quality Management
  - Human Resource Management
  - Communications Management
  - Risk Management
  - Procurement Management
  - Stakeholder Management

- The 12 delivery principles
  - Stewardship
  - Team
  - Stakeholders
  - Value
  - Holistic thinking
  - Quality
  - Complexity
  - Leadership
  - Tailoring
  - Opportunities & threats
  - Adaptability & resilience
  - Change management
- The 8 performance domains
  - Team
  - Stakeholders
  - Life cycle
  - Planning
  - Navigating uncertainty & abiguity
  - Delivery
  - Performance
  - Project work

- Modern project management methodologies shift from process oriented to project team and outcome focused approaches.
- Mapping knowledge areas to process groups helps to design project management approach. The identification of the most influential knowledge areas may help to improve decision making.
- Principles serve as foundational guidelines for strategy, decision making, and problem solving
- Performance domains are areas of focus that work in unison to achieve desired project outcomes.
- PMLC is a series of phases that a project passes through from its start to its completion. Project phases make up project life cycle.
  - Project life cycle defines technical work and action owners in each phase
- The 5 Project Management Life Cycle Models: Linear, Incremental, Iterative, Adaptive, Extreme

The Relative Importance of the Knowledge Areas During Project Planning - 1

Ref: https://www.pmi.org/learning/library/relative-importance-pmbok-guides-nine-knowledge-areas-during-project-planning-2409

- PMBOK Guide does not identify the relative importance of each Knowledge Area.
- Most project managers often have limited time to perform all the knowledge areas.
  - May choose to perform only those processes that are most familiar or easier to perform.
  - Risk of giving lower priority to Knowledge Areas that have higher impact on project success.
- This article analyzes the relative importance of knowledge areas by calculating the impact of their related planning processes on project success.
- The identification of the most influential knowledge areas
  - May be used as an aid for deciding on the most effective level of effort that should be devoted to each Knowledge Area.
  - May help project managers improve decision making with regard to the way that time and resources are allocated among different knowledge areas and associated processes.

Relative Importance of the Knowledge Areas - 2

- A knowledge area is important to project success when the higher extent of use of its related processes significantly improves project success.

- Seven knowledge areas have a significant impact on project success.
  - The Time Knowledge Area has the greatest impact on project success.
  - The more frequently planning processes—which are related to these Knowledge Areas—are performed, the better project success is.

- **In software organizations, Quality and Human Resources knowledge areas were found to be relatively important.**
  - The lack of resources enforces project managers to invest more planning effort in these knowledge areas.
  - Pay more attention to Quality and Human Resources planning.

Relative Importance of the Knowledge Areas - 3

Knowledge Area	Contribution to Project Success (ranked)
Time	1
Risk	2
Scope	3
Human resources	4
Integration	5
Quality	6
Communications	7
Cost	8
Procurement	9

Importance of the nine Knowledge Areas to project success

Knowledge Area	Ranked Extent of Use
Integration	1
Time	2
Scope	3
HR	4
Cost	5
Risk	6
Quality	7
Communications	8
Procurement	9

The average extent of use of each Knowledge Area during the planning phase of a project

Relative Importance of the Knowledge Areas - 4

Ranking of knowledge areas' relative importance in each industry type

Knowledge Areas	Construction and Engineering	Software	Production	Communications	Services	Government
Integration	1	6	3	3	7	8
Scope	9	9	8	8	8	9
Time	7	1	6	1	1	2
Cost	2	5	9	4	2	5
Quality	6	2	2	2	6	3
Human resources	3	3	7	9	5	6
Communications	5	7	1	6	9	4
Risk	4	4	5	7	4	1
Procurement	8	8	4	5	3	7