

Critical Path Analysis
Change Log
Communication Channels
Time Management
Cost Management
Stakeholder Management
Certification
PMP ITTO
Issue Log
Enterprise Environmental Factors
Expected Monetary Value (EMV) Actual Cost (AC)
Scope Management Risk management
Earned Value Management (EVM)
Procurement



PMP® Exam Preparation Course

(Based on PMBOK 6th Ed.)

Fereydoun Fardad

(MSc, PE, PMP, RMP, PBA, ACP, PRINCE2, IPMA-C, PSM, SFC, SFPC, CASF, SMPC, CASF, EBCL *A, ICPA, OCB A)

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Personal &
Organizational
Development Academy

فرقی نمی‌کند ۲۰ ساله
هستید یا ۸۰ ساله. هر کس
آموختن را متوقف کند پیر
می‌شود و هر کس پیوسته
بیاموزد، جوان خواهد ماند.
مهمترین چیز در زندگی،
داشتن ذهنی جوان است

هنری فورد



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با سلام

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لذا با توجه به اینکه برای تهیه جزوه فوق زمان، هزینه و انرژی بسیار زیادی صرف شده تا از هر نظر ممتاز باشد، از شما تقاضا دارم اصول کپی رایت را رعایت کرده و در صورت نیاز، سفارش خرید آن را به تهیه کننده بدهید.
با تشکر

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My Symbols



This icon gives you a heads-up on information you should absolutely know for the PMP exam.



This icon presents meanings of terms as they are defined in the PMBOK Guide Glossary.



This icon gives you important and tricky points for PMP Exam.

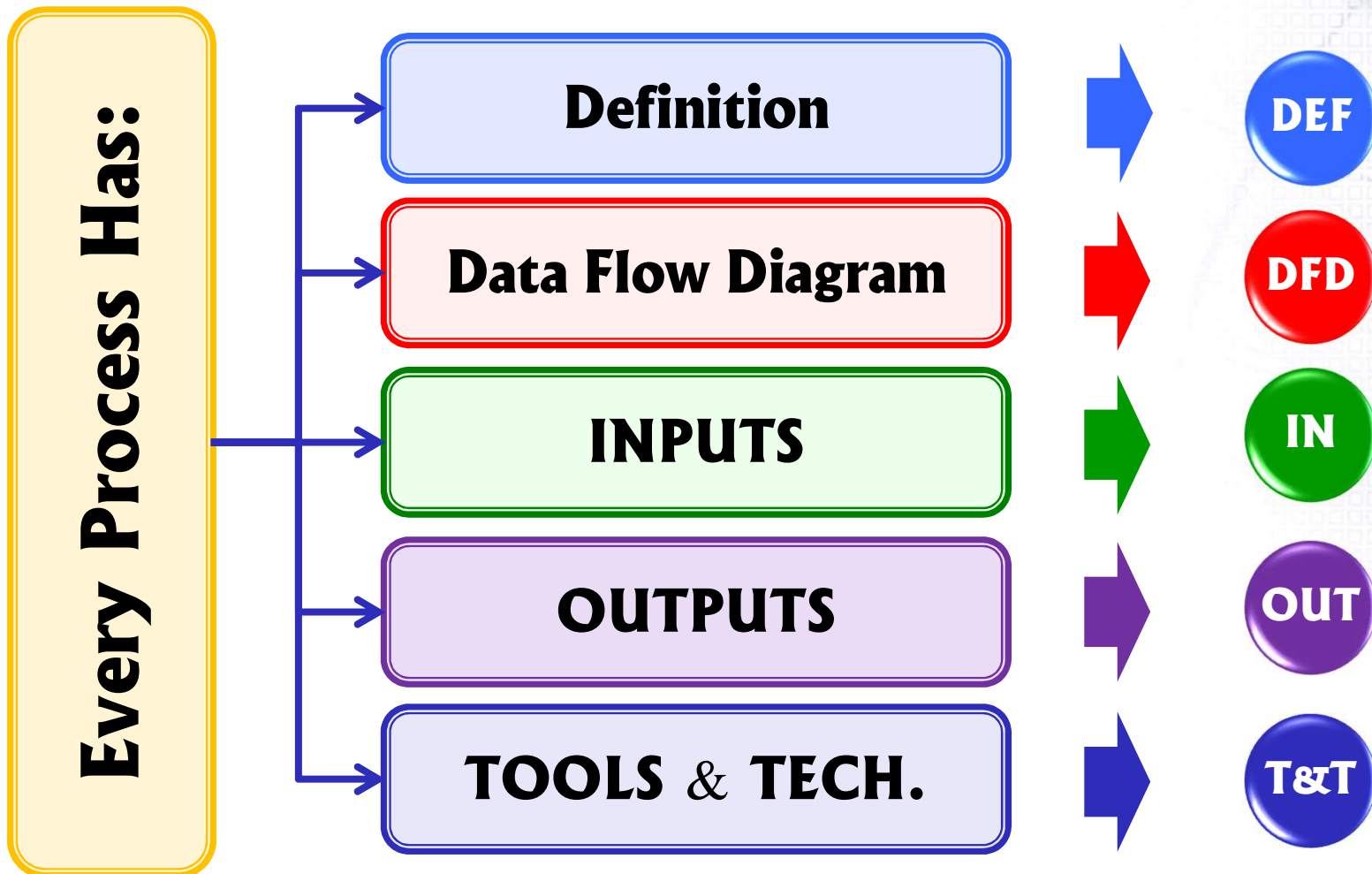


This icon points out something you should avoid or not do at all.



This icon flags information that I already presented, or helps you remember things that will help you on PMP Exam.

Guide for Each Process





Course Schedule



Day	Content
1	<i>Course Start and Chapters 1-2-3</i>
2	<i>Chapters 3,4</i>
3	<i>Chapters 4-5</i>
4	<i>Chapters 5-6</i>
5	<i>Chapters 7-8</i>
6	<i>Chapters 9-10-13</i>
7	<i>Chapters 11-12</i>



Introduction To PMP Exam

- ✿ **Qualifying to Take the Exam**
- ✿ **Structure of PMP Exam**
- ✿ **PMP Certification Process**
- ✿ **PMP Exam Domains**
- ✿ **What to Expect on Exam Day**
- ✿ **About the Exam Questions**



Qualifying to Take the Exam



- To achieve PMP® certification, candidates must satisfy **Educational** and **Experiential** requirements established by PMI and must demonstrate an acceptable level of **understanding and knowledge** about PM, as tested by the PMP exam.
- **Eligibility Criteria:** To complete PMP certification, candidates must satisfy all requirements in one of two categories.
- To take this exam, you must meet the requirement outlined by PMI. The current requirement are described in the following table.



Category	General Education	PM Education	PM Experience		# of Question
1	Bachelors degree	35 contact hours	4500 hours	3 years	180
2	High school graduate	35 contact hours	7500 hours	5 years	180

Application Process



- The PMP® application can be completed either **Online** (at www.pmi.org) & **Paper** forms
- Your certification fee must accompany your application (**credit card** only if online).
- Your application must be submitted in **English**.
- Although PMI asks for **10 to 14 working days to process** your paper-based application, it's actually much faster.
- **Online applications** generally are processed within **48 to 72** hours.
- Once your application is approved, you will receive an **Eligibility Letter** with **Identification Code** and detailed testing information. You have **One Year** to take the PMP® examination, which begins from the date your application is approved.
- PMI audits **10% of applicants**, who are notified electronically.
- Be thorough, **Accurate**, and **Honest** with your application information.
- PMI now requires candidates to **document their Experience** in leading/directing projects and performing tasks within all domains: **Initiating, Planning, Executing, Monitoring & Controlling, Closing**.

PMP Simulation



Remaining Time: 03:23:02

1. In the course of completing work on the project, the project manager needs to complete an activity she has never done before . During this time, the project manager attends a professional association discussion where the presenter shares how he completed a difficult activity on his project that is similar to the project manager's activity. He provides a handout describing his process. The project manager should:

- ☐ A Ignore the information.
- ☐ B Use the process to complete the activity.
- ☐ C Ask the speaker for permission to use the information.
- ☐ D Ask her manager for guidance.

If you choose this, it would changed to:

Unmark

Previous

Next

Calculator

Mark

Review

PMP Certification Process



■ STEP 1) PMI Membership:

- Fee: \$139 for new members; \$129 for annual extensions.
- Discount on exams & Discount on purchasing from PMI.
- Free access to electronic (PDF) version of all PMI standards.
- Receiving monthly magazines (PM Network) and newsletters (PMI Today) and quarterly journals (Project Management Journal).

■ STEP 2) Registration for PMP Exam

- Fee: \$405 for PMI members; \$555 for others.
- Online registration is easier and more straightforward.

■ STEP 3) Evaluation of Documents by PMI

■ STEP 4) Submission of Certifying Documents (IF Audited Only):

- University graduation certificate
- Training certificate(s) for 35 contact hours
- Confirmation of your employer(s) for 4,500 hours and 3 years of experience
- The whole package shall be mailed to PMI within 2 months.



PMP Certification Process



■ STEP 5) Issue of “Eligibility Letter” by PMI:

- An eligibility code is assigned to you, required for appointing a date/time.
- You may take the exam within **one year** after issue of the letter.

■ STEP 6) Appointing a Date/Time With Pearson VUE

- Pearson VUE is an organization specialized in giving a variety of exams (TOEFL, GRE, ...).
- You can register online at: <https://home.pearsonvue.com/pmi>
- No additional fee is charged by Pearson VUE.
- In order to appoint your preferred date/time (not already booked by others), it is wise to apply 2-3 months earlier.

■ STEP 7) Taking The Exam at The Exam Site:

- The result (pass/fail and the score report) is reported to you immediately after the exam.

PMP Certification Process



■ STEP 8) Receiving Certificate

- PMP Certificate
- PMP Lapel Pin
- Detailed analysis of your exam performance
- Continuing Certification Requirements (CCR) Handbook
- Your certificate is valid for *three years*.

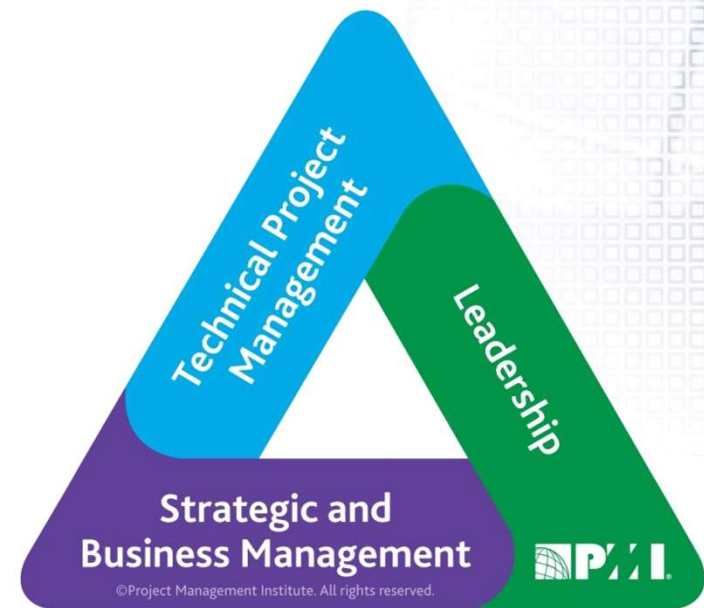
■ STEP 9) Maintaining Your Certificate:

- PDU: Professional Development Unit
- You shall earn **60 PDUs** in the 3 year period to 'recertify'.
- You may report your earned PDUs either at the end of the period or as soon as they reach 60 units.
- A recertification fee of **\$150** (\$60 for PMI members) is charged.

About PMP Continuing Certification

- 60 PDUs every three years.
- PMI charges a recertification fee of \$60 (US) for PMI members, \$150 (US) for non-PMI members.

**PDU (Professional Development Units)=
one PDU is earned for every 1
hour spent in a planned,
structured learning experience
or activity**



PMI Talent Triangle

PMP Exam Domains



Domains	% of Exam	# of Questions
People	42 %	74
Process	50 %	90
Business Environment	8 %	16
Total	100	180

PMP Exam Domains



Topics	Level of Difficulty
Process & Domains	<p>More Difficult</p> <p>↑</p> <p>↓</p> <p>Less Difficult</p>
Procurement Management	
Risk Management	
Quality Management	
Integration Management	
Schedule Management	
Cost Management	
Project Management Framework	
Scope Management	
Resource Management	
Stakeholder Management	
Communication Management	

Exam Result Report

- PMI will not reveal exam answers so you will never know the specific questions you got right or wrong.
- However, they do provide a score report to give you some idea of how well you did in a Process Groups.



Your Exam Result Report



Your Name Here

Project Management Professional (PMP)®

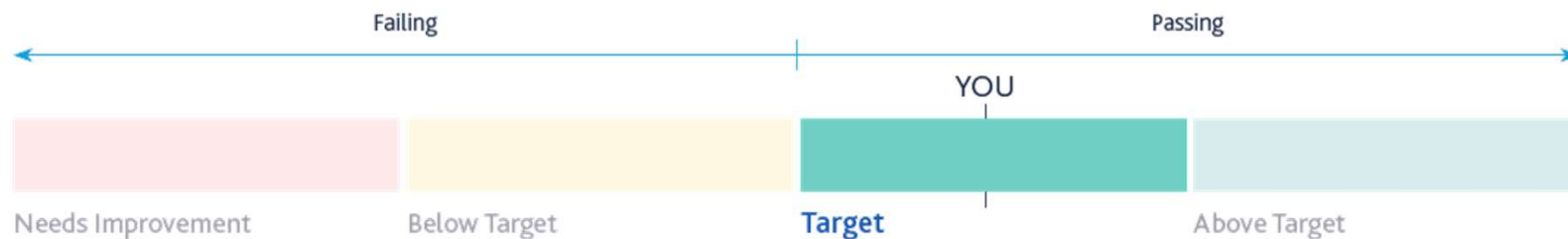
Eligibility Code: 01234

May 26, 2016

Test Center Code: 01234

Your Overall Performance: **Pass**

Congratulations! You passed your exam and have successfully earned your PMI certification. This is a tremendous accomplishment!



Performance Rating Categories

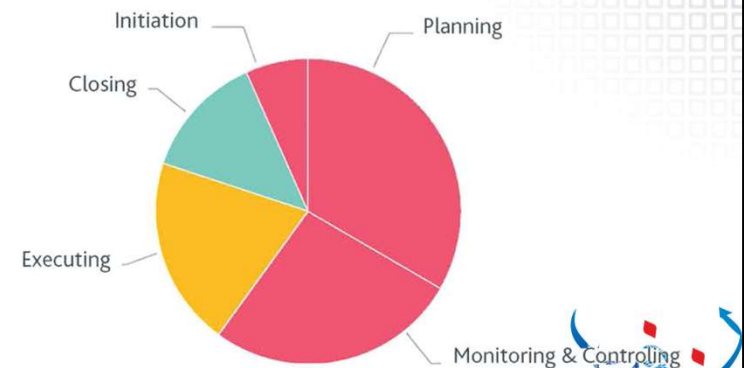


- **Above Target:** Your performance **exceeds the minimum** requirements for this exam.
- **Target:** Your performance **meets the minimum requirements** for this exam.
- **Below Target:** Your performance is **slightly below target and fails to meet the minimum requirements** for this exam.
- **Needs Improvement:** Your performance is **far below target and fails to meet the minimum requirements** for this exam. Additional preparation is strongly recommended before re-examination.

Exam Breakdown

Domain proportion and performance by target level.

■ Needs Improvement ■ Below Target ■ Target ■ Above Target





Project Management Framework

- ✿ **What is Project & Project Management?**
- ✿ **Program and Portfolio**
- ✿ **Project Management Office (PMO)**
- ✿ **Organizational Project Management**
- ✿ **Project and Product Life Cycle**
- ✿ **Project Business Document**





What is Project?



A Project is a Temporary Endeavor Undertaken to Create a Unique Product, Service, or Result.

■ **Temporary Endeavor**

■ **Unique Product, Services or Result**

■ **Progressive Elaboration**

- **Progressively:** proceeding in steps.
- **Elaborated:** Worked with care and detail.
- Developing in steps, and continuing in increments.
- Continuously improving and detailing a plan as more detailed and specific information and more accurate estimates become available.
- **NOT Scope Creep! (Uncontrolled Changes).**





Projects Vs Operations



- Operations management is concerned with the **Ongoing** production of goods and/or services.
- Operations management is responsible for **overseeing**, **directing**, and **controlling business operations**.
- It involves ensuring that business operations continue efficiently by using the optimum resources needed and meeting customer demands.
- The **need to change or improve operational work** may prompt the initiation of a project.
- Operations evolve to support the day-to-day business, and are necessary to achieve strategic and tactical goals of the business.

Projects	Project Management	Temporary & Unique	Attain Its Objectives	Close
Operations	Business Process Management	Ongoing & Repetitive	Sustain The Business	Live

Project & Development Life Cycle



Project Life Cycle

- Is the series of phases that a project passes through from its start to its completion.
- It provides the basic framework for managing the project.
- Can be predictive or adaptive.

Development Life Cycle

- Within a project life cycle, there are generally one or more phases that are associated with the development of the product, service, or result.
- Can be predictive, iterative, incremental, adaptive, or a hybrid model.

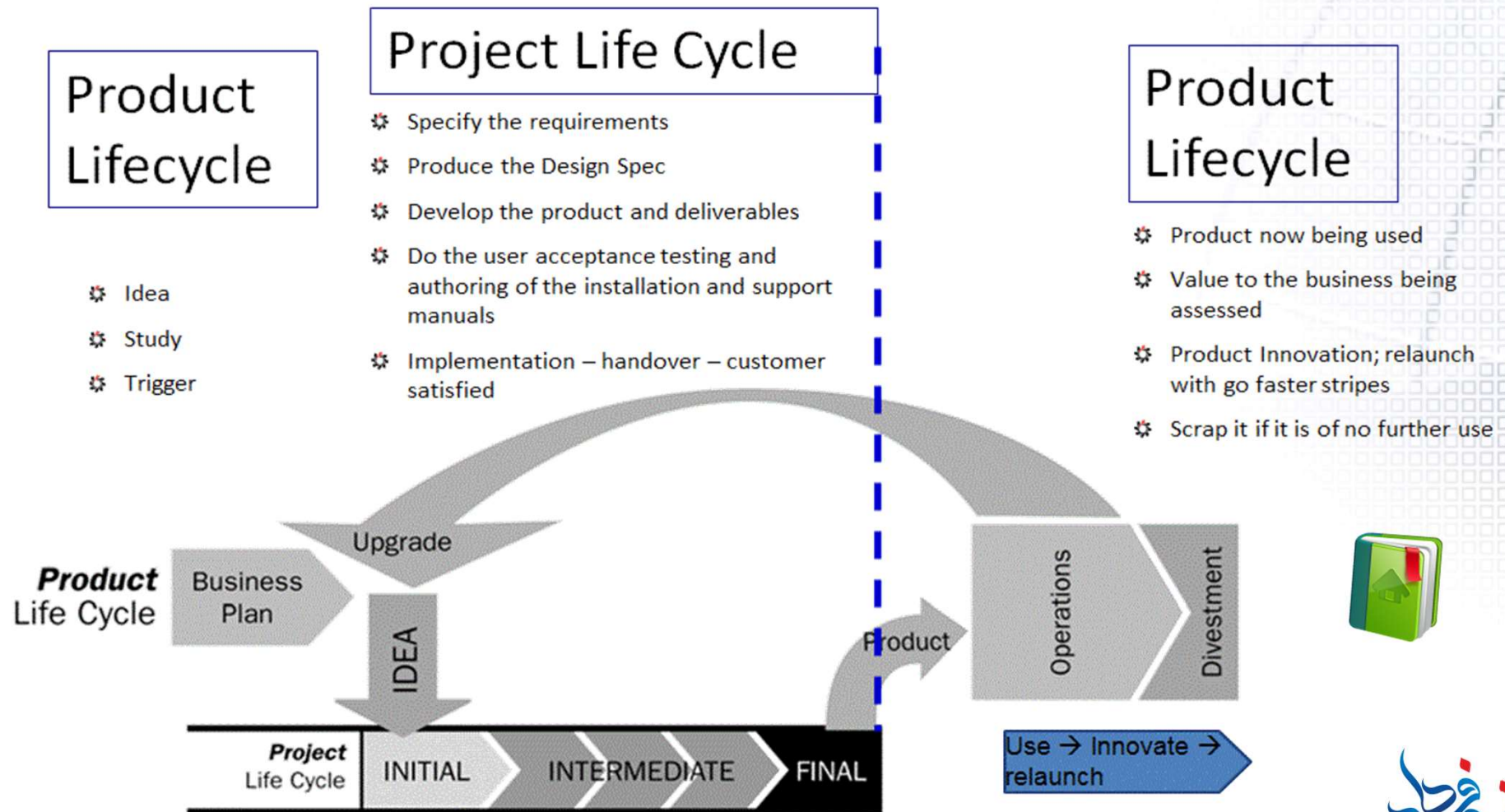
- This basic framework applies regardless of the specific project work involved.
- The phases may be sequential, iterative, or overlapping



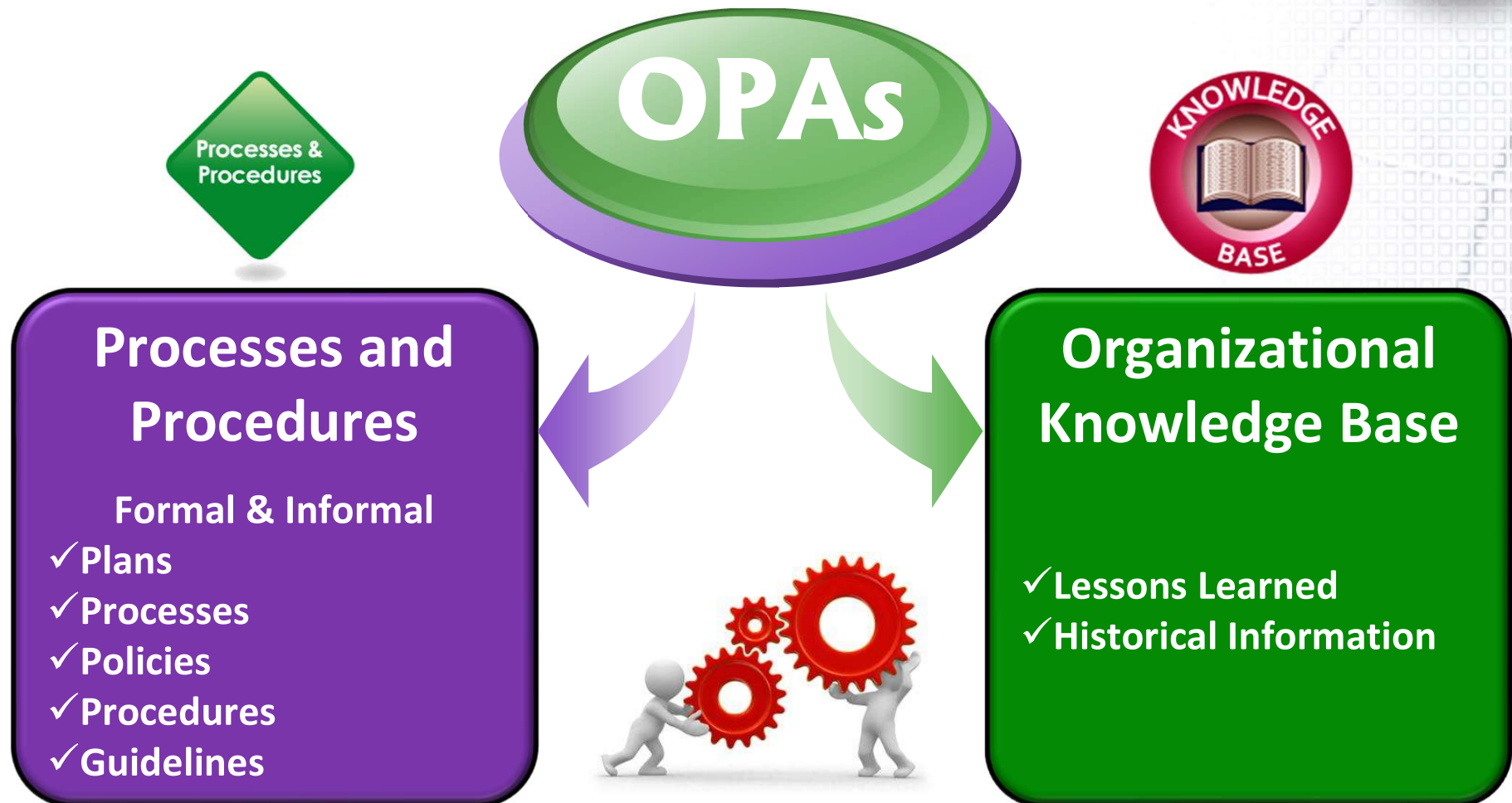
Product Life Cycle



✱ The Product Lifecycle is longer than the Project Lifecycle



Organizational Process Assets





Organizational Structure



<div>Organization Structure</div> <div>Project Characteristics</div>	<i>Functional</i>	<i>Matrix</i>			<i>Project-Oriented</i>
		Weak Matrix	Balanced Matrix	Strong Matrix	
Project Manager's Authority	Little or None	Low	Low to Moderate	Moderate to High	High to Almost Total
Resource Availability	Little or None	Low	Low to Moderate	Moderate to High	High to Almost Total
Who manages the project budget	Functional Manager	Functional Manager	Mixed (Shared)	Project Manager	Project Manager
Project Manager's Role	Part-time	Part-time	Part-time	Full-time	Full-time
Project Management Administrative Staff	Part-time	Part-time	Part-time	Full-time	Full-time

Expeditor Vs. Coordinator



Expeditor

- A PE is not given the authority (or very low authority) to make or enforce decisions.
- The PE will communicate with various parties of the project to ensure timely action.
- For larger projects, the PM may have some Pes assisting them for communication and logistics.

Coordinator

- A PC is usually given some sort of authority to make decision.
- For larger projects, the PM may have some PC reporting to them.
- Reports to higher level functional manager.
- Carries the responsibility of partially managing the project under the supervision of other managers.

- In Weak Matrix organizations, there are usually no “real” project managers; even if there is a post of “Project Manager”, they usually perform the role more of a Project Coordinator or Project Expeditor.
- For strong matrix and projectized organizations, Project Expeditor and Project Coordinator **don't exist**.

Organization Charts EXAM Tips



- ❖ The exam typically does not identify the form of organization being discussed. When it does not specify a form, assume matrix.
- ❖ A tight matrix has nothing to do with a matrix organization. It simply refers to co-location



Additional Tips for Exam



- **Backlog:** A listing of product requirements and deliverables to be completed, written as stories, and prioritized by the business to manage and organize the project's work.
- **Methodology:** A system of practices, techniques, procedures, and rules used by those who work in a discipline.
- **Phase Gate:** A review at the end of a phase in which a decision is made to continue to the next phase, to continue with modification, or to end a project or program.
- **Team Building** is the **Easiest** in project-oriented organization and is **Most Difficult** in matrix organization. Its main purpose is to improve team performance.

Business Environment (Eco D3)



- Having an understanding of the business environment within which a project operates allows a project manager to deliver the benefits and value for which it was selected.
- Do you consider the business environment when managing a project?
- Do you understand how a business environment may impact and is impacted by a project?
- The term **“Business Environment”** can mean many things.
- The following should help you understand the tasks associated with the Business Environment domain within the Examination Content Outline (ECO).

Business Environment (Task 1)



Plan and Manage Project Compliance:

- Confirm project compliance requirements (security, health and safety, regulatory compliance)
- Classify compliance categories
- Determine potential threats to compliance
- Use methods to support compliance
- Analyze the consequences of noncompliance
- Determine necessary approach and action to address compliance needs (risk, legal)
- Measure the extent to which the project is in compliance

Business Environment (Task 2)



Evaluate and Deliver Project Benefits and Value

- Investigate that benefits are identified
- Document agreement on ownership for ongoing benefit realization
- Verify measurement system is in place to track benefits
- Evaluate delivery options to demonstrate value
- Appraise stakeholders of value gain progress



Business Environment (Task 3)



Evaluate and Address External Business Environment Changes For Impact on Scope

- Survey changes to external business environment (regulations, technology, geopolitical, market)
- Assess and prioritize impact on project scope/backlog based on changes in external business environment
- Recommend options for scope/backlog changes (schedule, cost changes)
- Continually review external business environment for impacts on project scope/backlog

Business Environment (Task 4)



Support Organizational Change

- Assess **organizational culture**
- Evaluate impact of **organizational change** to project and determine required actions
- Evaluate **impact of the project** to the organization and determine required actions



Business Environment (Eco D3)



- The **First Task** addresses project compliance as it relates to security, health and safety, regulatory and other policy-related requirements internal or external to the organization.
- It's important for a PM to elicit all compliance-related requirements and ensure that all project-related work remains in compliance with those requirements.
- The **Second Task** is specifically for delivering the project's benefits and value.
- The **Last 2 Tasks** involve **managing change**: the **Third** is about addressing **external business environment changes** as they may impact scope, and the **Fourth Task** is about **supporting (internal) organizational change**.
- Although PMI states that this domain makes up approximately 8% of exam questions, a question may be on any project management-related topic and require an understanding of the business environment in order to answer it correctly.
- In other words, a good PM will understand the needs of their project in the context of the business environment.

Organizational Culture



- Projects are impacted by, and have an impact on internal cultural norms, and organizational management policies and procedures.
- These factors are increasingly important in global organizations in which team members are often located in different offices and in multiple countries.
- Organizations may have employees from many different cultures and multiple organizational cultures will exist among various branches of the organization.
- **PMs should be able to adapt their approach to leading the project by understanding these cultures and their impacts within the organization and the project.**

Organizational Culture



- It is important to consider **organizational culture** not only when initiating a project, but **throughout its life cycle**.
- Why? Imagine you've planned a project and uncovered key requirements the supporting organization didn't initially disclose.
- The plan will most certainly need to change to adhere to these new requirements.
- Was it an oversight or was there a specific reason the requirements remained unexposed?
- How will the organizational culture be affected by these changes?
- Likewise, how will these changes affect organizational culture?
- Will the team support the necessary changes to the project? Will the customer support the changes?

Managing Change



- We have organized how change is managed into **3 Main Categories:**
- **Project Change, Transitional Change, and Environmental Change.**
- While these are not terms you will find on the exam, these categories may help you understand how change is managed on a project.
- The first category is **Project Change:**
- Those changes within a project that affect the success of the project.
- The second category is brought about by the solution.
- We will call this second category **Transitional Change:**
- Those **positive changes** your project is meant to bring to your organization and its associated stakeholders (customers, communities, government, sellers).

Managing Change



- The third category represents **Environmental Changes**
- External to the project that will potentially **affect the first two categories of change.**
- While these categories make for a convenient way to articulate different qualities of change, they are not **mutually exclusive.**
- Different types of change overlap and are often interdependent.
- Like project constraints, you cannot evaluate change in one category without thinking about its effects on the others.

Project Change



- Iterative and rolling wave planning support the understanding within traditional project management that as a project progresses new information will become available and some information will change and plans will need to be updated periodically.
- In traditional project management, the progression from rough order of magnitude (ROM) estimating for project selection and initiation is followed by more definitive estimating using tools like scope decomposition, network diagramming, and three-point estimating during planning.
- Phase-gate systems for projects allow the team and stakeholders to pause, evaluate, and approve what has happened so far on the project and then make a decision to move on to the next phase.
- Changes may be made to policies and procedures at these milestones.
- Integrated change control is the process of managing changes within the project, ensuring that changes to the project are necessary and carried out systematically.
- Agile project management supports a continual state of project change through iterative and incremental planning and execution.
- Delivery of successive MVP increments and fine tuning of development work can be done with tools such as high-level release planning, experimental spikes for exploring uncertainty, and cycles of time-boxed iterations.

Transitional Change



- Why do we do projects in the first place?
- A project is undertaken for the express purpose of filling a business need to bring about positive change of a specific nature. So, before a project starts **its stakeholders are in a situation called a current state.**
- **The project is meant to bring the stakeholders to a future state defined by the project objectives and requirements.**
- Project management is geared toward building the end result but also toward helping stakeholders make the transition from current to future state.
- By their very nature, projects are about managing change.
- However positive a new solution is, people need help making the transition to it.
- Following are some examples of how that might be managed:(Next Slide)

Transitional Change



- A simple change to an already existing software product automatically downloads on stakeholder devices and a pop up summarizes the changes.
- A new software rollout will completely change the way processes are completed in the organization.
- The project is part of a coordinated program that includes a communications director managing a carefully planned communications project while a training director manages an implementation and training project.
- An already excellent product is being updated, so included in the new product rollout is a trade-in and rebate program that gives customers incentives to buy the new product.

Environment Change



- Changes to the external business environment that **may impact your project and organizational change** that may impact (or be impacted by) your project
Let's say a project has already started and is going well
- The PM has a plan to address changes and can easily take change requests within the project into consideration.
- But, for example, what happens when something changes within the supporting organization?
- Organizational changes may require **changes to the project team, rework, schedule changes, and more.**
- Understanding organizational culture, politics, and governance will enable you to make needed changes in ways that minimize negative effects and keep the project moving forward.
- What about the external business environment?
- The industry you are working in, **technology, regulations, geopolitical factors, and marketplace sectors** can all experience change that will impact your project.

Facilitating Change

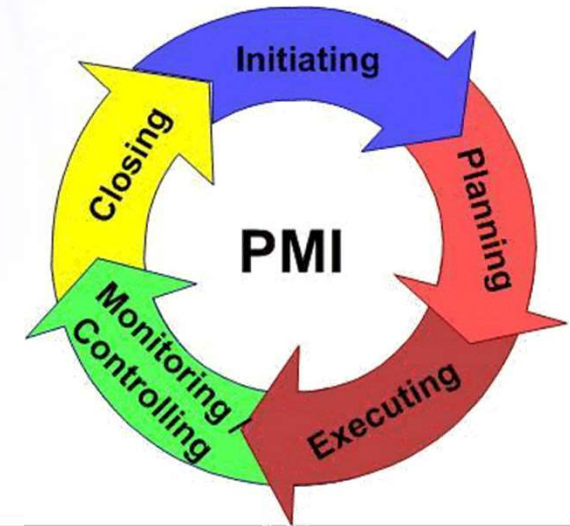


- Regardless of the type of changes taking place on your project or in your environment, the process is the same!
 - Have a **high level of sophistication** about your products and services, your organization, and your environment.
 - **Maintain awareness** and **monitor** the possibility of change of any kind.
 - As potential changes are identified, **evaluate** the changes and **their impacts**.
 - **Plan your response**.
 - **Lead the team** in operating within the organization and the project to support your planned response.



Project Management Processes and Domains

- ❖ **Project Management Processes**
- ❖ **Project Management Processes Groups**
- ❖ **Project Interactions**
- ❖ **Tailoring**





Additional Tips for Exam



Processes

INPUT

Any item, whether internal or external to the project that is required by a process before that process proceeds. May be an output from a predecessor process.

TOOL

Something tangible, such as a template or software program, used in performing an activity to produce a product or result.



TECHNIQUE

A defined systematic procedure employed by a human resource to perform an activity to produce a product or result or deliver a service, and that may employ one or more tools.



OUTPUT

A product, result, or service generated by a process. May be an input to a successor process.



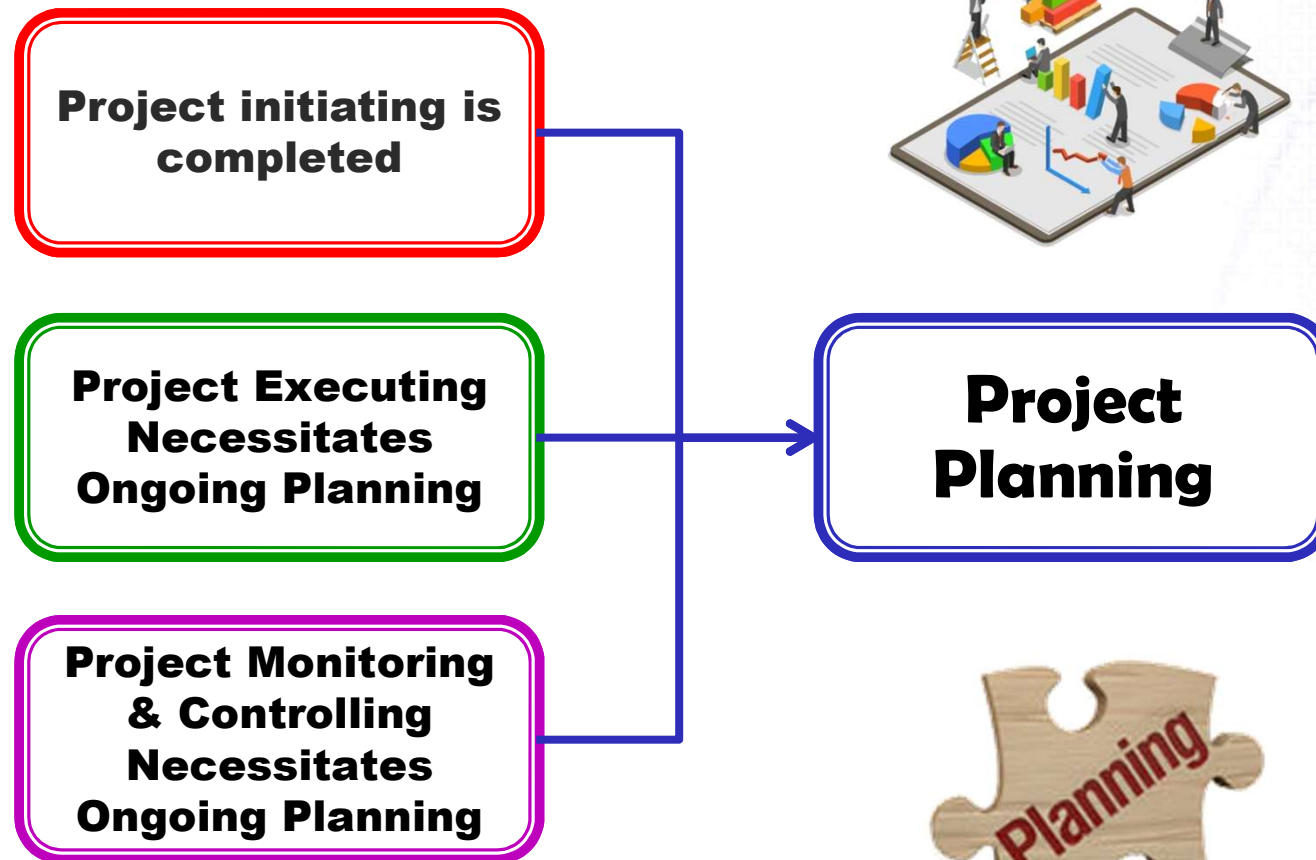
What Happens in Initiating PG?



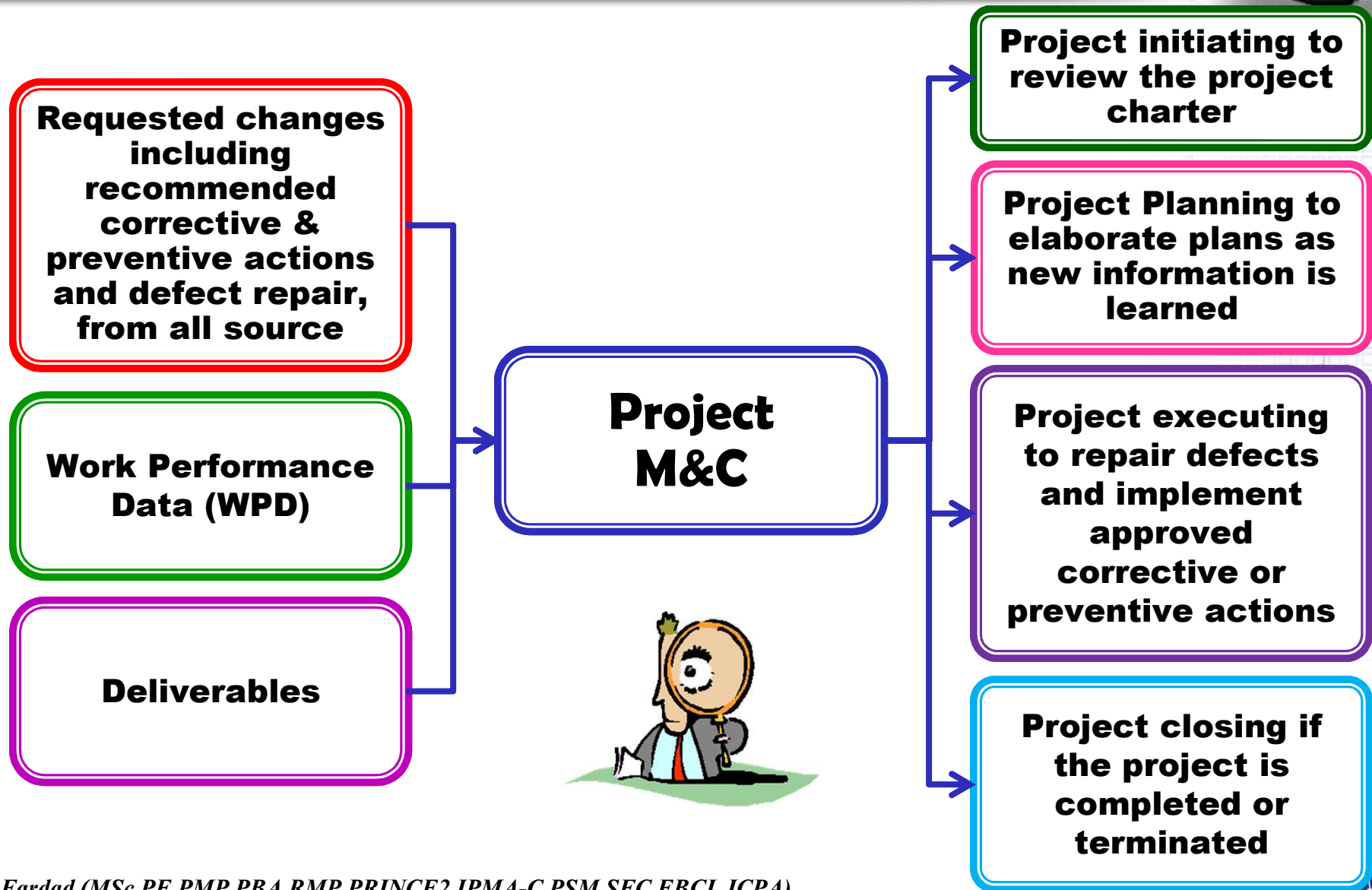
- Select Project Manager
- Determine company culture and existing systems (EEFs)
- Collect processes, procedures, and historical information (OPAs)
- Divide large projects into phases or smaller projects
- Understand the business case and benefit management plan
- Uncover initial/ high level requirements, risks, assumptions, constraint
- Understand the existing agreements
- Determine high level scope, summary budget and schedule milestone
- Assess project and product feasibility within the given constraints
- Create Measurable Objectives and success criteria
- Develop Project Charter
- Identify stakeholders and determine expectations, interests, influence, and impact
- Request changes
- Gain commitment and acceptance for the project
- Develop assumption log
- Develop stakeholder register



Reasons for Entering Project Planning



Reasons for Entering Project Monitoring & Controlling



For the EXAM Assume:



- You have a formal PMP that is realistic and complete to the level appropriate for the project.
- You have **plans** already in place for how and when you will measure time, cost, and scope performance against the **PMB**.
- You are **accountable** for meeting the **PMB**.
- You take action to correct any variances that warrant action.
- Any deviations from the plan **should be made up, rather than requesting a change** to the project to accommodate them. Submitting a change request should be the **very last resort and only used** if there is no other way to make up deviation.

3 Domain (New ECO): People



- The **People Domain** relates to several tools and techniques along with a unique set of skills that may include the following:
- leadership, team building, motivation, and conflict management.
- This domain also relates to the ability to interact with and support the needs of project stakeholders.
- This can mean from the sponsor to the project team and the performing organization, and from the customer to the larger community in which all stakeholders work together.
- Stakeholder engagement is as much about **managing expectations** as it is about **meeting them.**
- To build and maintain a **shared understanding**, you must deliver the **overall value of the project** within scope while simultaneously managing expectations.

3 Domain (New ECO): People



The following list is a good representation of the skills, abilities, and attributes needed to manage a project:

Active listening

Negotiation

Adaptive leadership

Participatory decision making

Coaching and mentoring

Personal integrity and trust building

Collaboration

Rewards and recognition systems

Conflict resolution

Team and individual performance evaluation

Emotional intelligence

Team building and development

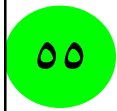
Facilitation

Understanding of motivation

3 Domain (New ECO): Process



- The **Process Domain** includes the technical project management skills and activities needed to manage a project with the overall goal to deliver the benefits for which the project was undertaken.
- The PM and project team work together in this effort, so, as you would expect, you are using the skills needed from the People domain.
- You lead the development and organization of the project with these skills and a deep and balanced understanding of the business environment in which you and the team continually deliver value.
- The project management tasks within this domain include not only the management of stakeholder engagement, resources, and communications but scope, schedule, cost, quality; risk, and procurement management,



3 Domain (New ECO): Business Environment



- Projects occur within the larger organization and business environment.
- The presentation of the business environment as a separate domain helps you understand how critical this is to accomplishing project objectives and delivering value.
- It's also important to have **knowledge and understanding of project and organizational lessons learned** and the importance of how they are used between projects.
- **Organizational and project governance** are both essential to overall project success as it relates to the business environment.
- Organizations evaluate the external business environment during **project selection**.
- The environment is also **continuously evaluated** throughout the project to ensure that changes do not affect procurements, project objectives, and other project needs.

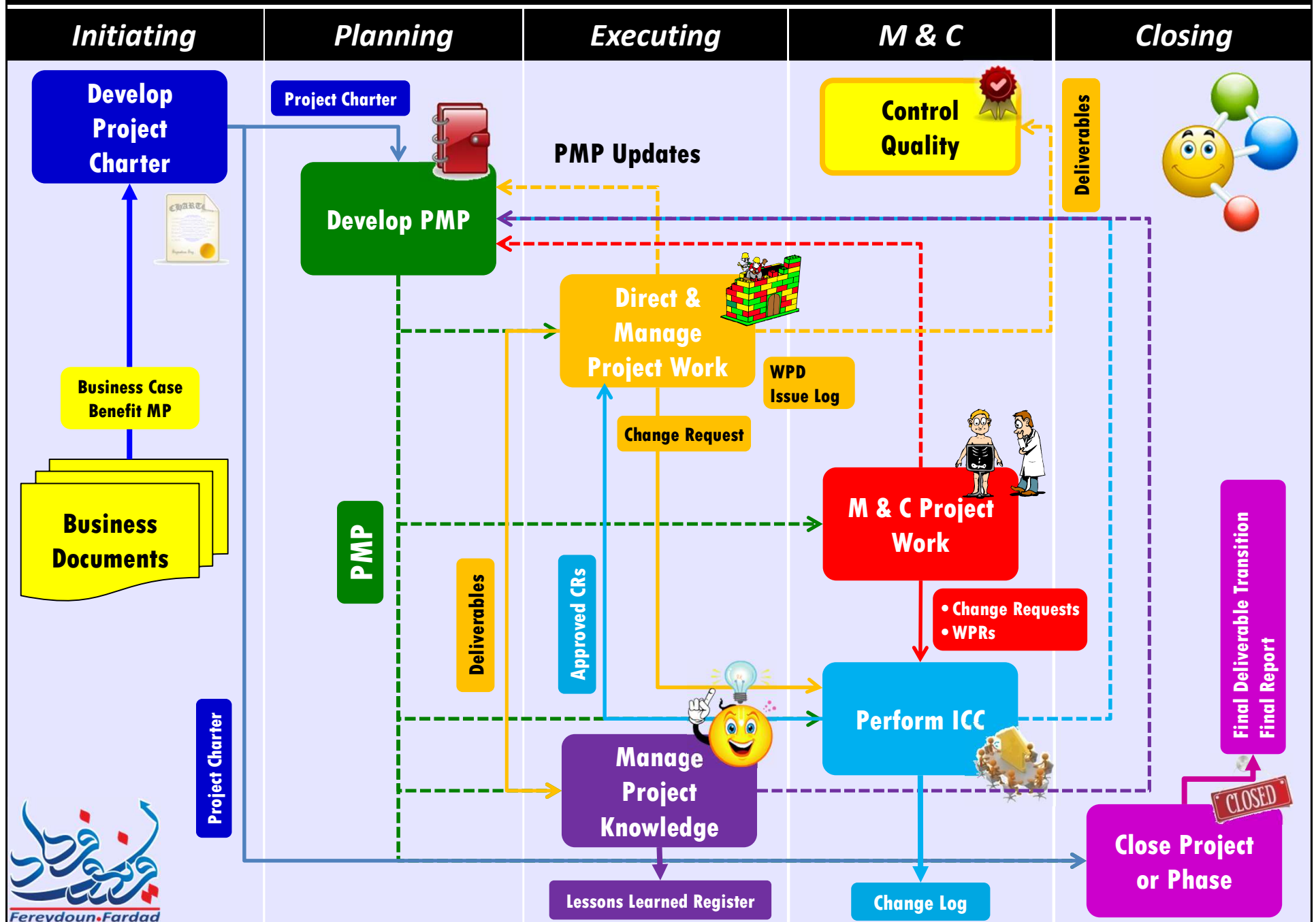


Project Integration Management

- ✿ **Develop Charter**
- ✿ **Develop Project Management Plan**
- ✿ **Direct & Manage Project Work**
- ✿ **Manage Project Knowledge**
- ✿ **Monitor & Control Project Work**
- ✿ **Perform ICC**
- ✿ **Close Project or Phase**



Project Integration Management



ECO Domain 2: Process



- **Task 1:** Execute Project with the Urgency Required to Deliver Business Value
- **Task 9:** Integrate Project Planning Activities
- **Task 10:** Manage Project Changes
- **Task 12:** Manage Project Artifacts (Develop PMP & ICC)
- **Task 13:** Determine Appropriate Project Methodology /Methods and Practices
- **Task 16:** Ensure Knowledge Transfer for Project Continuity
- **Task 17:** Plan and Manage Project/Phase Closure or Transitions.





Agreements

- Agreements are used to define **initial intentions** for a project.
- Typically, a **contract** is used when a project is being performed for an **external customer**. Agreements may take the **form of**:
 - **Contracts, Memorandums of understanding (MOUs), Service Level Agreements (SLA), Letters Of Agreement (LOA), Letters Of Intent (LOI), Verbal Agreements, Email, or Other written agreements.**

MOU



Is an agreement between two or more parties, which should be signed by all parties to be valid

01

LOI



Is the intent from one party to another and does not have to be signed by both parties

02

LOA



Written list of goods, services, or space to be provided at the agreed-to prices, terms, and time. It becomes a binding contract when signed by the associated parties.

03

SLA



is a contract between a service provider and its customers that documents what services the provider will furnish and defines the service standards the provider is obligated to meet

04

PMP Content



PMB

- An integrated scope-schedule-cost plan for the project work against which project execution is compared to measure and manage performance.

Project Life Cycle

- Describes the series of phases that a project passes through from its initiation to its closure.

Development Approach

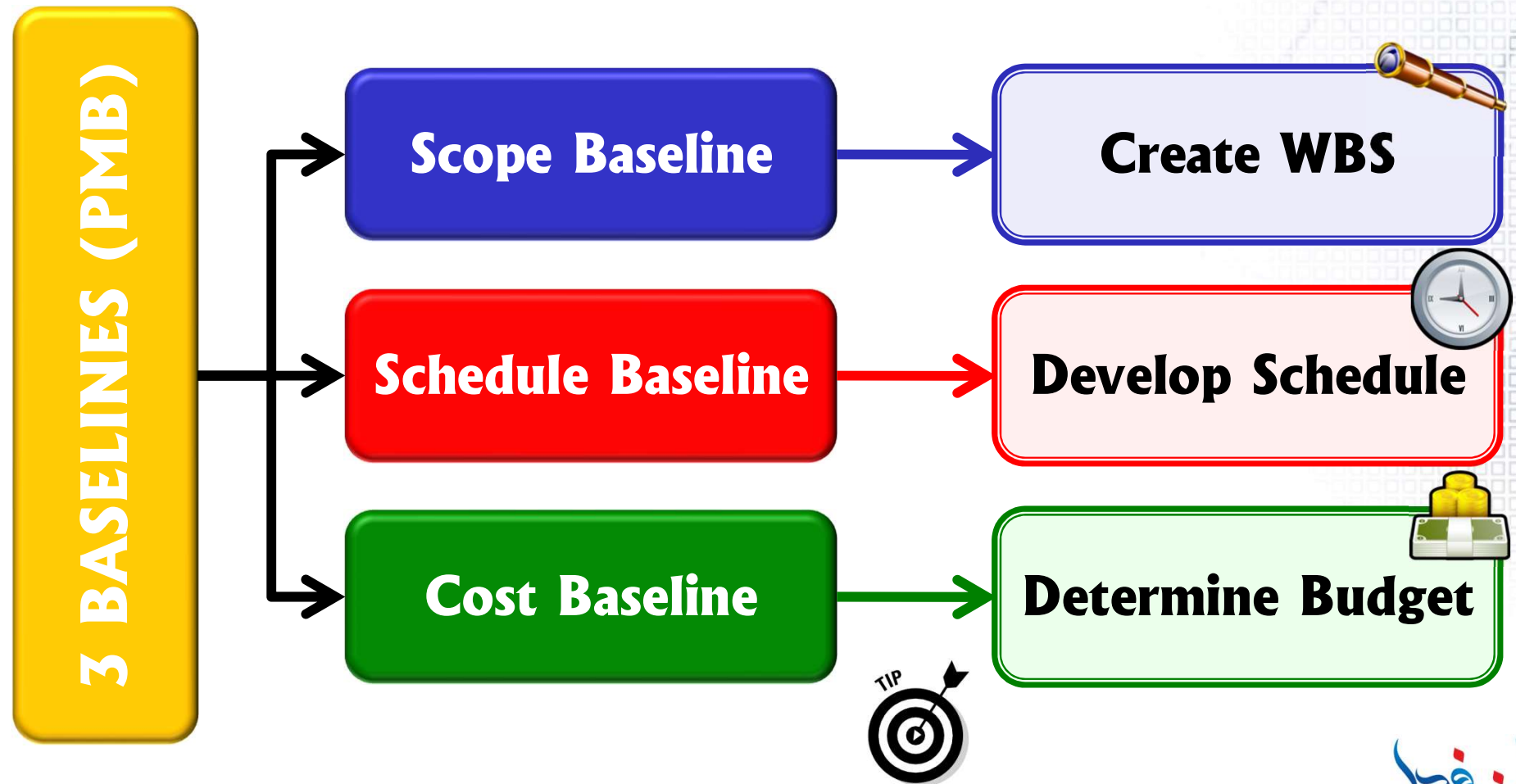
- Describes the product, service, or result development approach, such as predictive, iterative, agile, or a hybrid model.

Management Reviews

- Identifies the Points in the project when the PM and stakeholders will review the project progress to determine if performance is as expected, or if preventive or corrective actions are necessary.



Three Baselines (PMB)



Configuration MS. Vs Change MS.



Configuration MS

- Configuration Control focuses on the specifications of both the deliverables and the processes.
- A Configuration MP documents how configuration management will be performed. It defines those items that are configurable, those that require formal change control, and the process for controlling changes to such items.
- Configuration MP only guides you in making changes which are specific to the Product Configuration.
- The configuration management oversees how any change to the "product" (Output) should be done.

Change MS

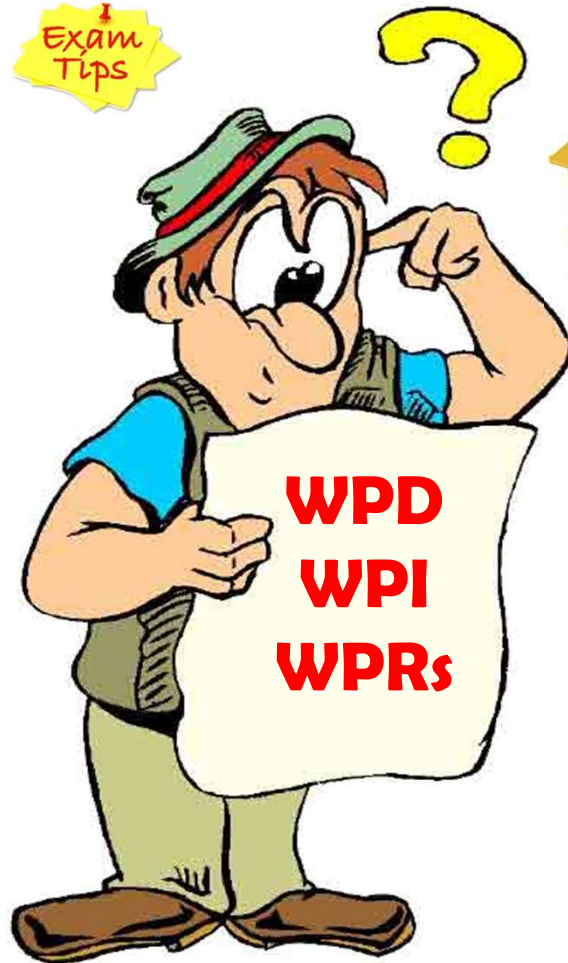
- Change Control is focused on identifying, documenting and controlling changes to the project and the project baselines.
- A Change MP documents how changes will be monitored and controlled. The plan defines the process for managing change on the project.
- Change Management Plan is a generic plan that guides the Project Manager in terms of making any kind of change on the project, specially the ones that can impact the 3 baselines .
- The change management plan oversees how any change to the "process" should be done.



Challenging Terms: WPD, WPI, WPRs

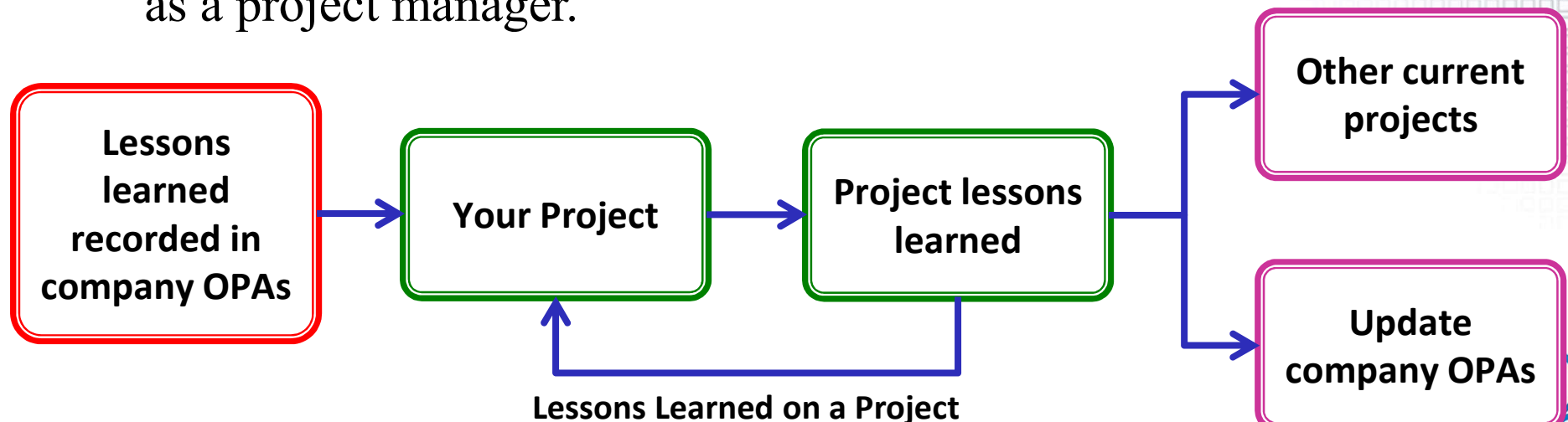


Exam
Tips



Lessons Learned (Postmortem)

- Lessons learned should cover three area:
- **Technical Aspect of Project Management:** What was the right and wrong about how we complete the work to produce the product.
 - **Project Management:** How did we do with WBS creation, Risk planning and etc...
 - **Management:** How did I do with communication and leadership as a project manager.



Approved Change Request

Change requests are processed according to the **Change Management Plan** by the **Project Manager, CCB, or an assigned team member**

As a **result**, changes may be *Approved, Deferred, or Rejected*

Approved Change requests will be **Implemented** through the Direct and Manage Project Work process.

Deferred or Rejected Change requests are **Communicated** to the person or group requesting the change.

The **disposition** of all change requests are recorded in the change log as a project document update.

Agile Change Management



- In agile and hybrid environments, the change control process is **streamlined** as there could be a **dozen** changes to evaluate and make decisions about every day.
- Waiting for a formal change control board to meet, discuss, and decide on each change would likely introduce too many **delays**.
- **Instead, agile and hybrid approaches delegate much of the decision-making authority to the product owner.**
- **Changes that would not significantly alter the outcome or benefits of the project will be authorized by the product owner.**
- This way the project team is not delayed waiting for the change control.
- Note that there are some additional guidelines in relation to agile change management.
- For example, the product owner is typically given a description of business benefits to deliver within a firm budget and timeline.
- Changes that would impact the intended benefits or require more time or budget than tolerances allow still need to be escalated outside the project to a **steering committee or sponsors for approval.**
- **However, everyday decisions and minor changes that come with building something new or complex are managed within the team.**

SCOPE



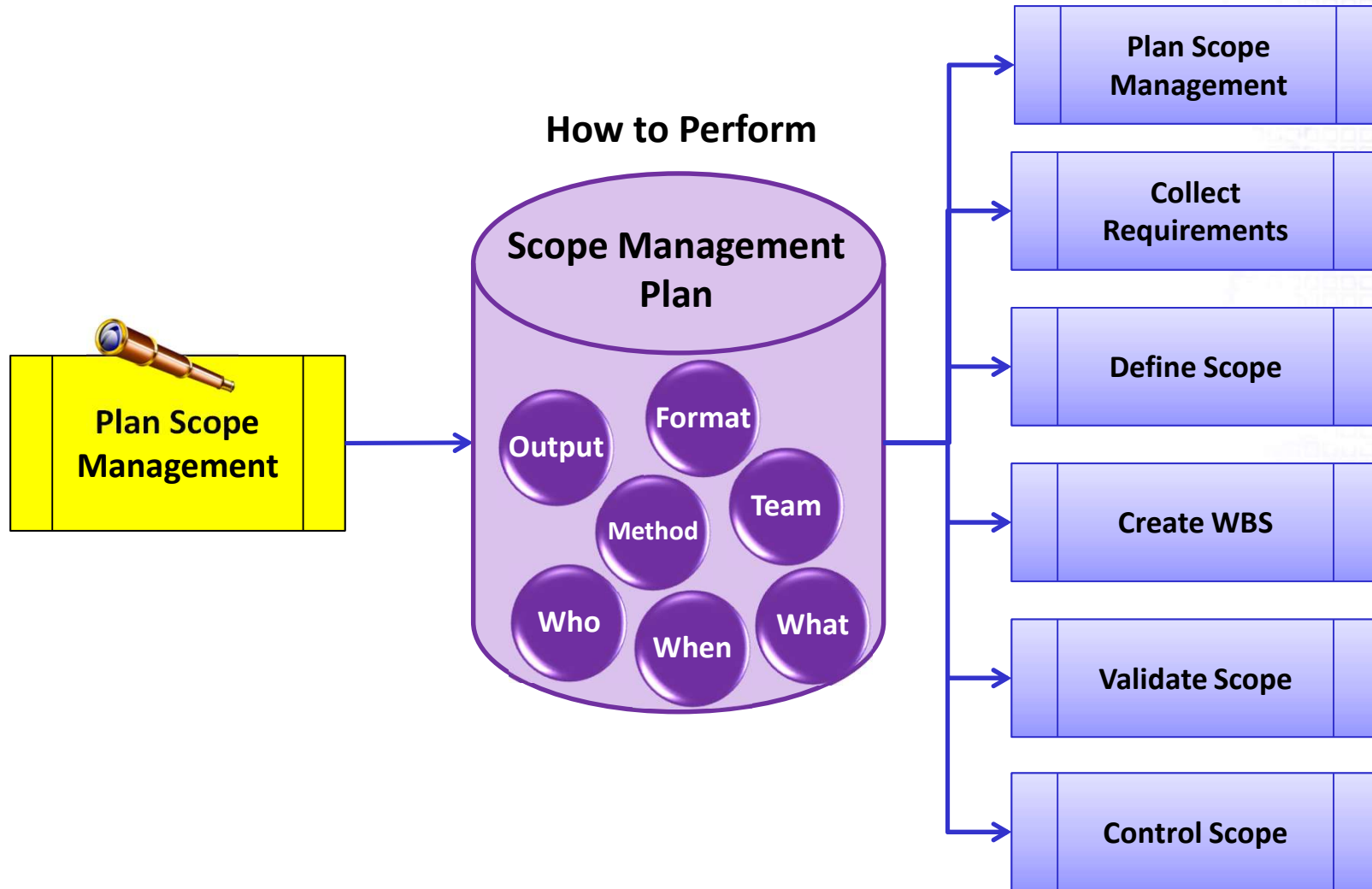
Project Scope Management

- **Plan Scope Management**
- **Collect Requirements**
- **Define Scope**
- **Create WBS**
- **Validate Scope**
- **Control Scope**



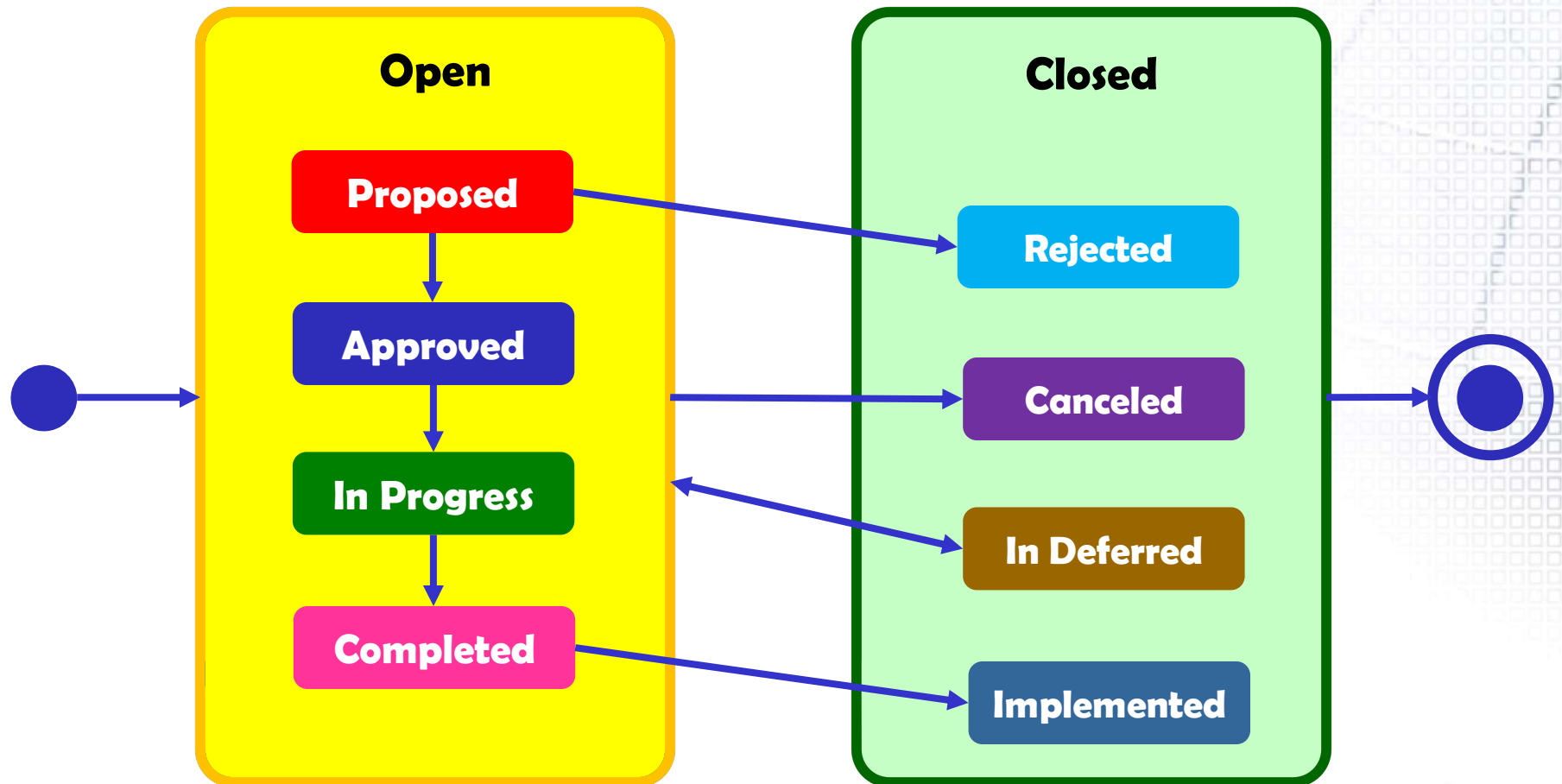
Scope Management Plan

OUT



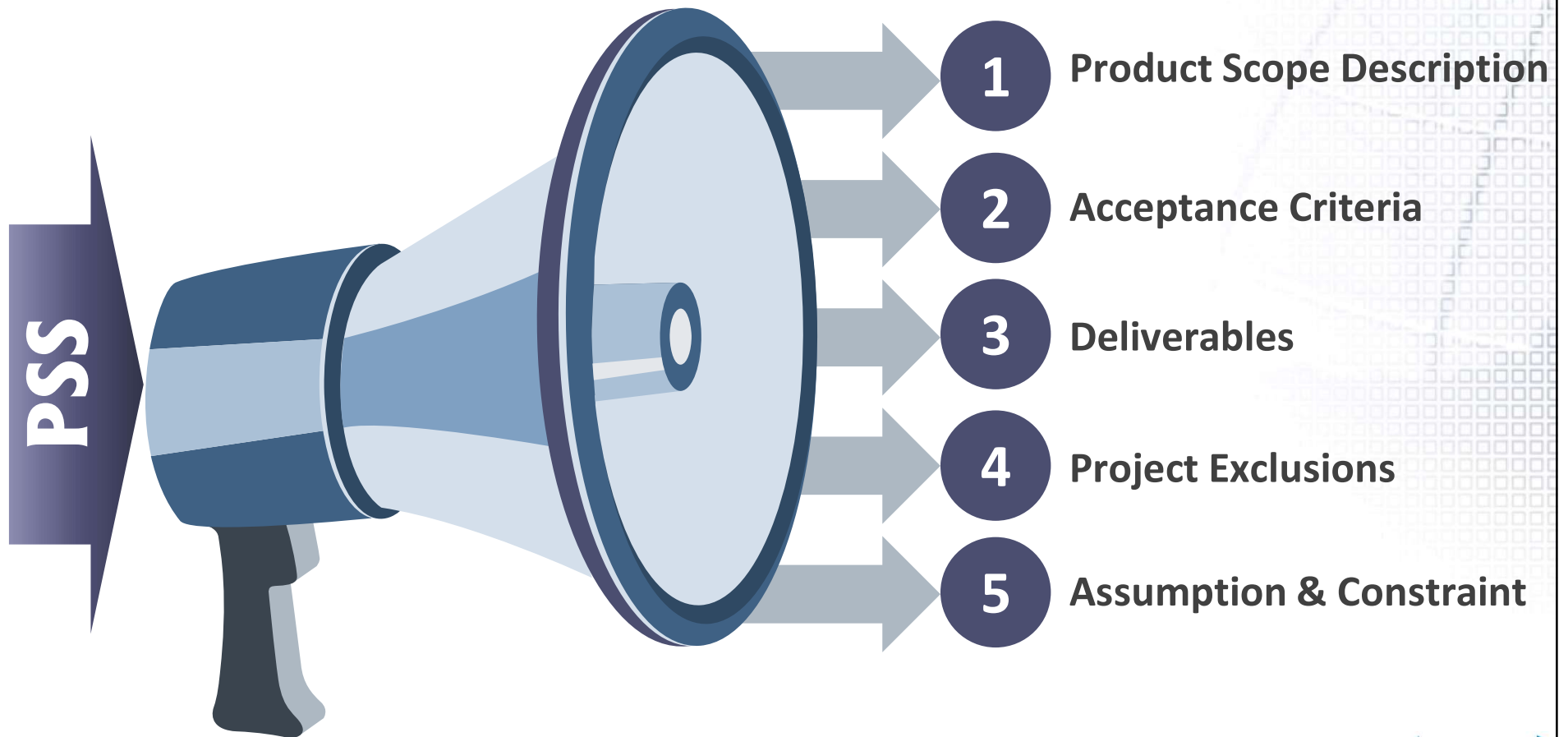
Requirements Life Cycle

OUT



Project Scope Statements

OUT



Validate Scope Vs Control Quality



Validate Scope

- Validate Scope Formalizing the Acceptance of deliverables.
- Belongs to Project Scope Management.
- Focused on Acceptance the deliverables.
- Done by the customer or sponsor.
- Output of process: Accepted Deliverables.
- Done at the end of each project phase.

Control Quality

- Ensuring that deliverables meet the quality requirements defined in the Quality MP.
- Belongs to Project Quality Management.
- Focused on Correctness of the deliverables.
- Usually done by the QC department.
- Output of process: Verified Deliverables.
- Performed during the project execution.

- ✳ Both are done as part of M&C Process Group.
- ✳ Both can result in Change Request.
- ✳ Control Quality is generally performed before Validate Scope, although the two processes may be performed in parallel.



Reference: <http://www.deepfriedbrainproject.com/2009/11/perform-quality-control-vs-verify-scope.html>

Product Backlog



- A product backlog is a single, visible master list of all the functional and nonfunctional work identified for the project.
- In other words, a backlog is a list of work that needs to be done, and items are removed from the list as they are completed.
- It's also important to know that items on the backlog are reviewed for risks by the team and prioritized by the business.
- Backlog items may be tagged with the business benefit of the items and the acceptance criteria needed to prioritize the items and determine when they are complete on the traceability matrix.
- backlog item may also be tagged to the stakeholder who requested it.
- The backlog is organized by priority from the top down, so the highest value items or stories are always at the top, which informs the development team where to focus their attention.
- While the product backlog contains all the formally recognized scope, low priority items at the bottom of the backlog may never get developed if the cost to produce them is deemed higher than the value they would return.
- A product backlog is primarily used to ensure adaptability.

Product Roadmap



- A product roadmap is a visual depiction of the product releases and the main components that will be included in each release of an agile project
- This is a **communication tool** that provides project stakeholders with a quick view of the primary release points and intended functionality that will be delivered.
- Although the product roadmap shows what we plan to deliver in each release, remember that **this is a high-level planning tool-and we know there will be changes.**
- So, in planning each release, we will go back to the roadmap and confirm that the basic plan will still work or make any necessary adjustments.
- The product backlog and the product roadmap work together to help the team plan the project.
- Think of the backlog as a tool that guides the work of the development team, while the product roadmap is more of a plan of how the product is likely to grow.
- **Both tools will influence the other, and any changes to the priorities or requirements of the project should be reflected on both.**

Time Boxing



- A time box is a **short, fixed period** in which a **defined set of activities or work is undertaken**.
- *If the work planned for the timebox isn't complete within the timeframe given, the team stops what they're doing and simply leaves the uncompleted work on the backlog to be undertaken in another timebox.*
- Timeboxes allow agile teams to **adjust** their scope to achieve the highest-priority, best-quality product within a fixed cost and timeframe.
- Timeboxes help bring some level of order and consistency to an otherwise highly variable work environment.
- They offer regular opportunities to assess results, gather feedback, and control the overall costs and risks of a project.



Project Schedule Management

- **Plan Schedule Management**
- **Define Activities**
- **Sequence Activities**
- **Estimate Activity Durations**
- **Develop Schedule**
- **Control Schedule**



T-Shirt Sizing



- T-shirt sizing is a **high-level estimating approach** that is used to do the initial estimates of the product features and user stories during the **early stages** of an adaptive project.
- At that point in the project, the team is not trying to generate detailed estimates; they are aiming to do **just enough estimating** to map out the **overall** effort they expect will be involved in the project and get the work started.
- This is referred to as coarse-grained estimating, since these early estimates will be progressively refined as the project continues.
- Since you haven't done any work on the project yet, you'll have to make these estimates based on your experience with similar work items in the **past**.
- To reflect the uncertainty involved in those estimates, the estimating unit will be T-shirt sizes, ranging from Extra Small (ES) to Extra-Extra-Large (XXL).

T-Shirt Sizing

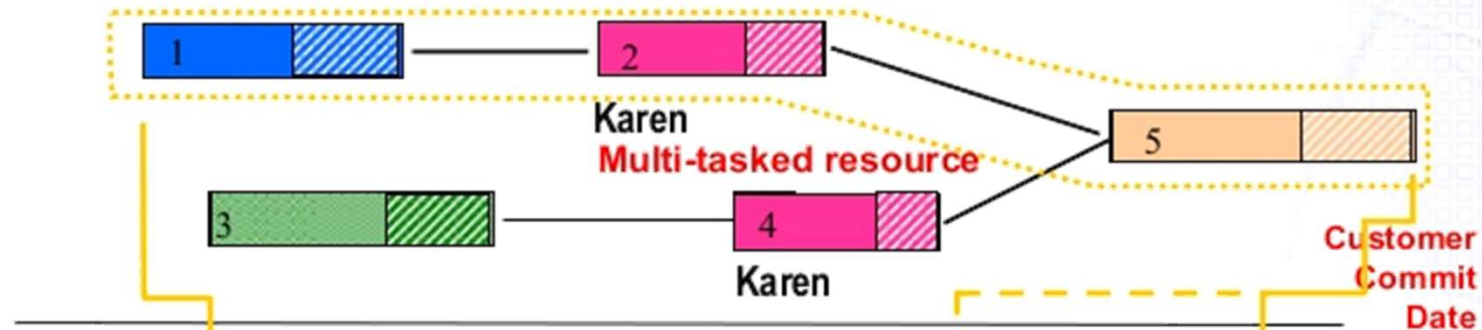
- You won't try to estimate the **absolute** size of each category, or even how much bigger or smaller each size is compared to the other sizes.
- All we will know is that Extra Small is smaller than Small, which is smaller than Medium, and so on.
- Next, you need to decompose these six product features into user stories.
- User story represent all the work that you estimate will need to be done to build the product.



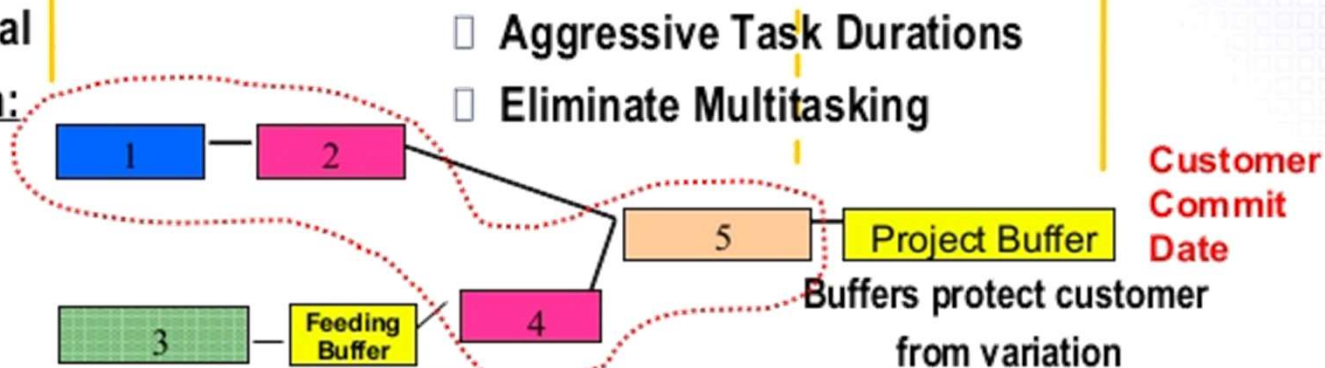
Critical Chain Method (CCM)

Raytheon
Missile Systems

Traditional Critical Path Planning With Safety Built Into Each Task:



Critical Chain:



Inherent Variation is managed and controlled through buffers

Click the Mouse to Continue

Agile Release Planning

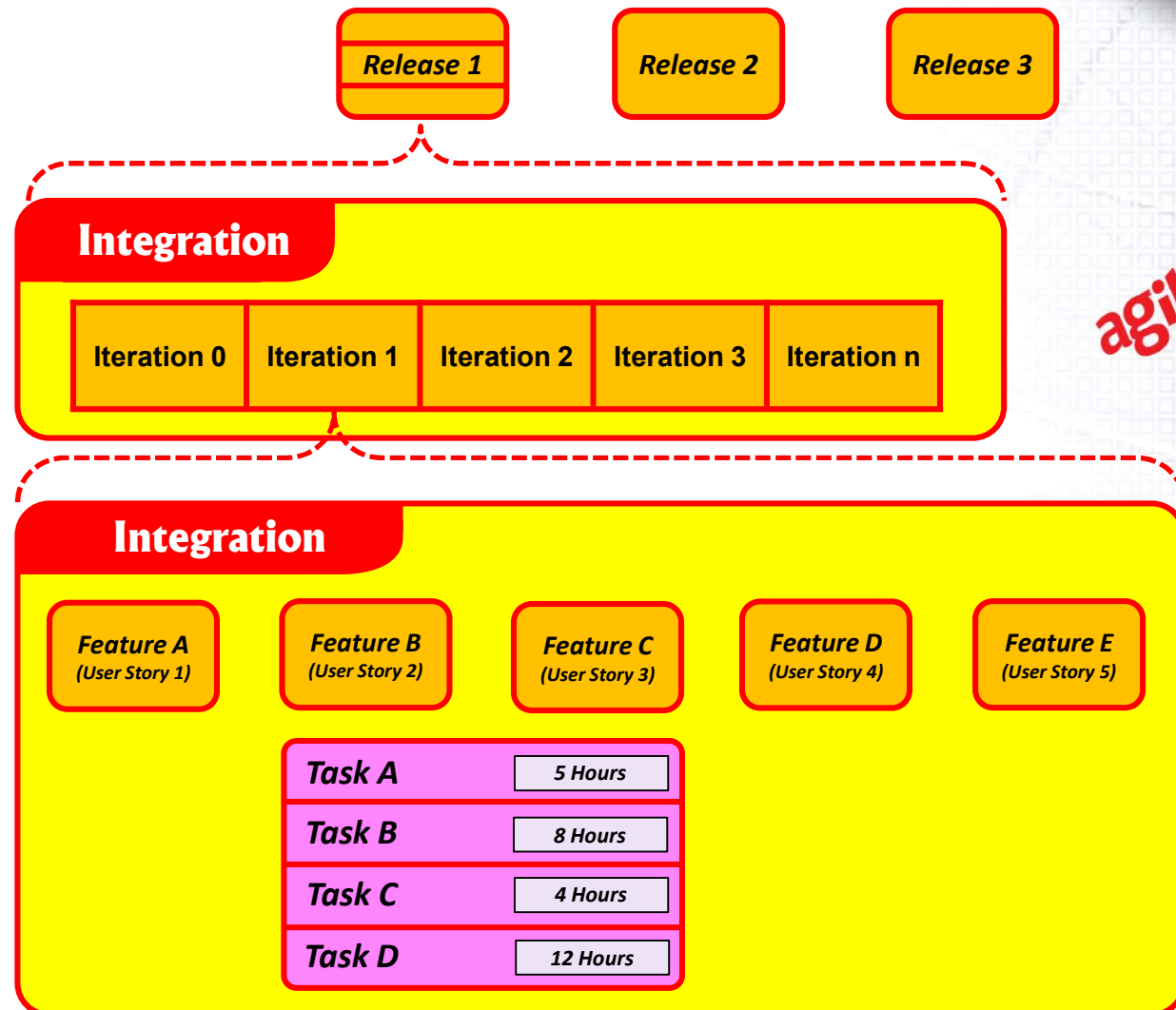
Product vision drives
product roadmap
Product roadmap
drives release plans

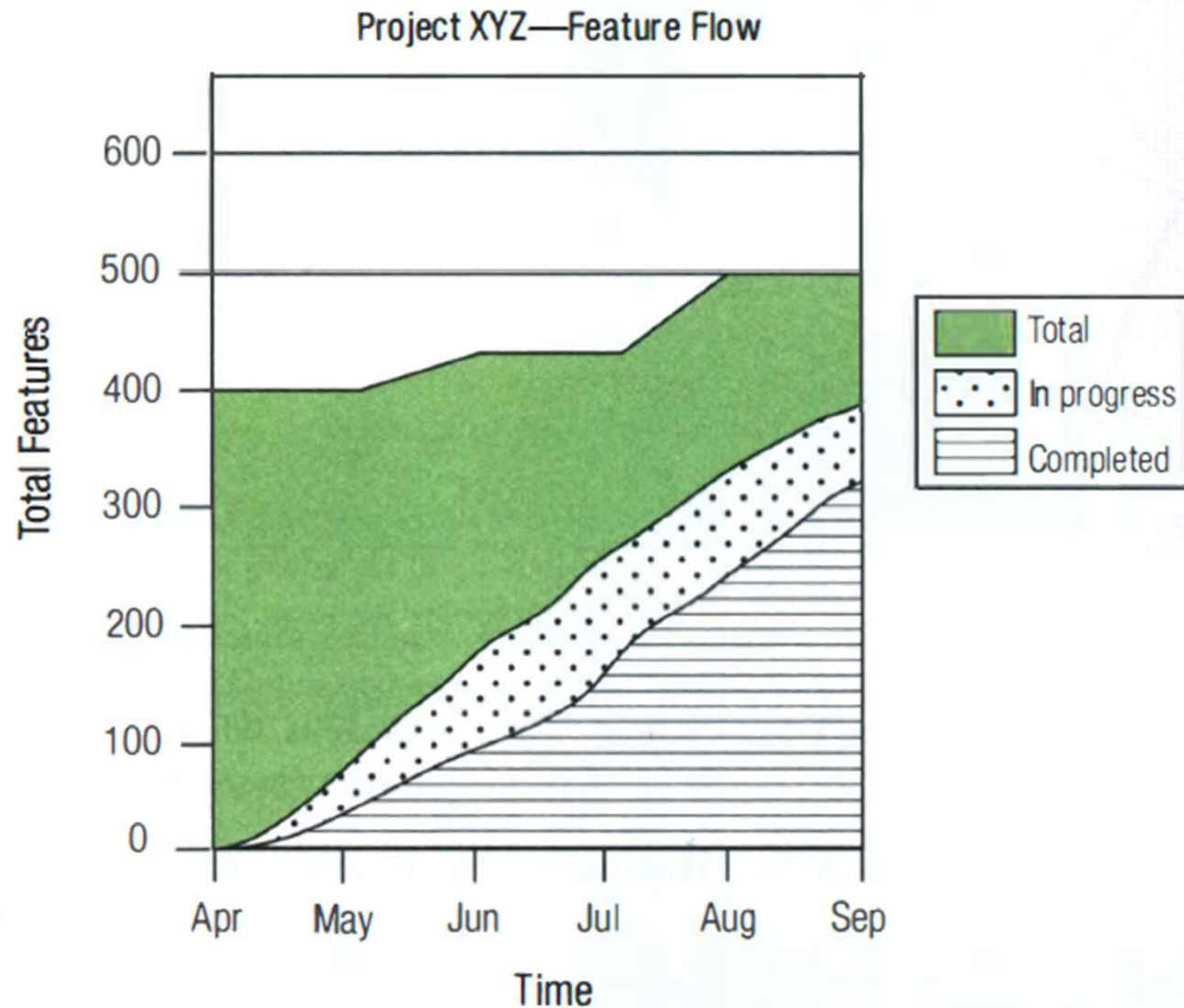
Release plan
establishes
the iterations

Iteration plans
schedules feature
development

Prioritized features
delivered by user
stories (estimated in
story points)

Tasks (estimated in
hours) created to
deliver user stories





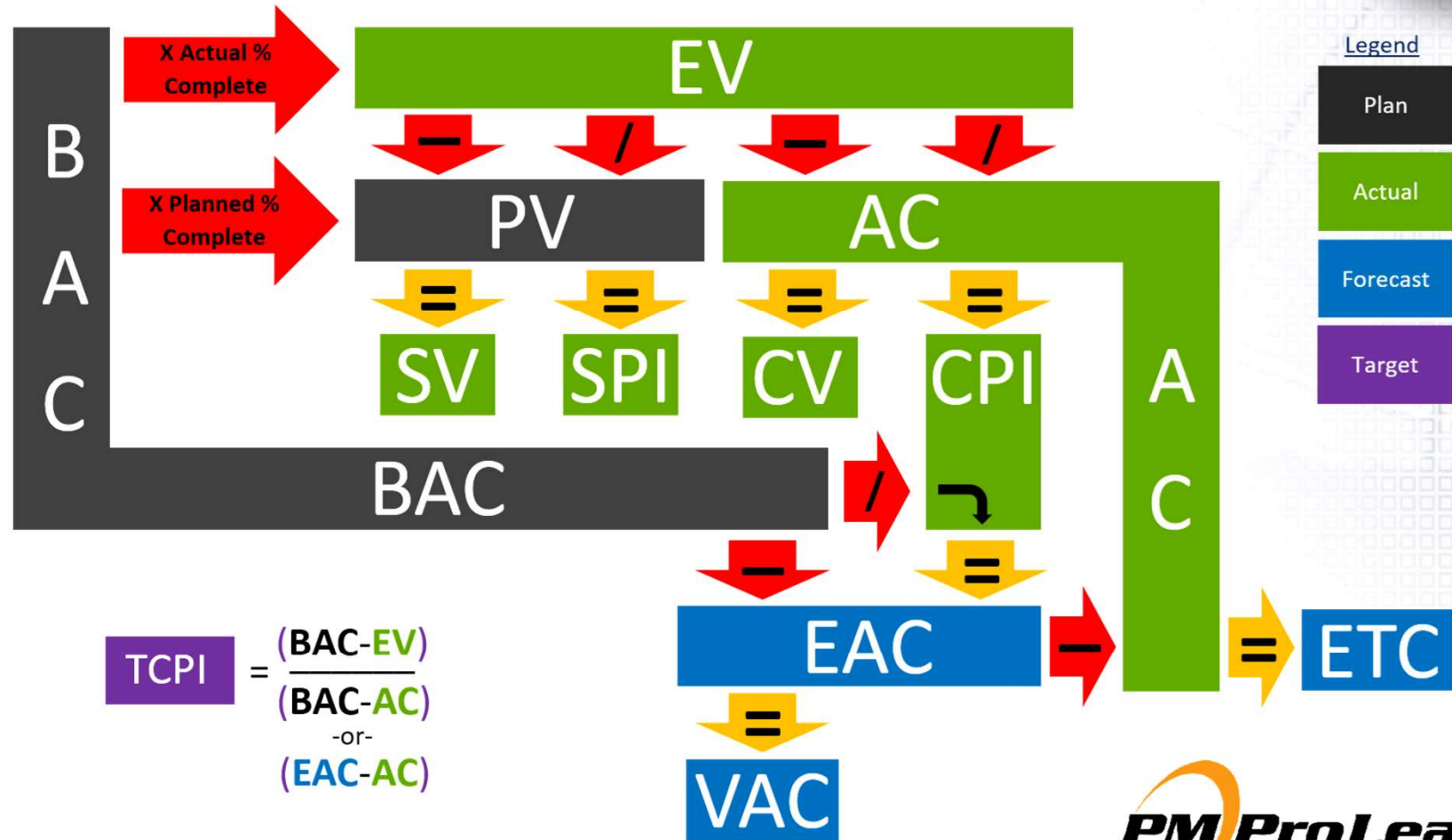


Project Cost Management

- ❖ **Plan Cost Management**
- ❖ **Estimate Costs**
- ❖ **Determine Budget**
- ❖ **Control Cost**



Earned Value Summary Formula





Additional Tips for Exam



- **Sunk Costs:** A historical or expended cost. Since the cost has been expended, we **No Longer Have Control** over the cost. And Should not be considered when deciding whether to continue with a troubled project.
 - There is no calculation required for arriving at the Sunk Cost. It is always equal to the Actual Cost spent to date.
 - In evaluating whether a project should continue or not, the sunk costs should not be considered-they are gone forever.
- **Q:** The management is reviewing the budget for the year 2013, and is evaluating the projects ROI, and its usefulness in the market. The management is also going to look at the projects that were started in the past 5 years, but were put on hold for some reason. In making future project decisions, which of the following should not be considered?
A. Earned Value B. Benefit Cost Ratio C. Sunk Cost D. Fixed Cost



Project Quality Management

- **Plan Quality Management**
- **Manage Quality**
- **Control Quality**





QC Vs MQ



Quality Control	Manage Quality
Inspection	Audit
Micro-level supervision (for each deliverable)	Macro-level supervision (for the entire project / project phase)
Mainly corrective approach	Mainly preventive approach
Concern of the project execution team	Concern of the project management team
An activity of the day-to-day operations of the system	A 'periodical checkup' to ensure that the 'system' works properly
Product-oriented	Process-oriented / system-oriented
Project wide	Organizational wide
Short term improvement based on QC Measurement	Long term improvement based on QC Measurement & WPI
Mainly technical expertise	Mainly managerial expertise
Reactive process	Proactive process

Reference: PMBOK Course: Saeed Zamani

F.Fardad (MSc,PE,PMP,PBA,RMP,PRINCE2,IPMA-C,PSM,SFC,EBCL,ICPA)

Retrospective



- A retrospective is a meeting that may be held after a release, or even the entire project.
- However, this term most often refers to the meeting that is held at the end of each short, time-boxed iteration of product development.
- Regardless of which part of the project is being reviewed, **this meeting is an opportunity for the members of the development team to inspect and improve their methods and teamwork.**
- During the retrospective, the following questions may be discussed:
 - What is going well?
 - What areas could use improvement?
 - What should we be doing differently?



Additional Tips for Exam: **Lean**



- Comes from the concept of Lean Manufacturing, a practice that is over 100 years old.
- The principle behind lean is to **Remove Waste From a Process**.
- Agile is a derivative of this approach, which has evolved to encompass the efficient use of human as well as physical resource.
- The goal of lean management is to **eliminate waste of time, effort, and resource**.



Lean Core Concepts

re:source



Project Resource Management

- **Plan Resource Management**
- **Estimate Activity Resources**
- **Acquire Resources**
- **Develop Team**
- **Manage Team**
- **Control Resources**



Shu-Ha-Ri Model of Skill Mastery



The Shu-Ha-Ri model describes a three-step process of **increasing mastery**:

SHU

- Obeying the rules-Shu means: **to keep, protect, or maintain.**

HA

- Consciously moving away from the rules, Ha means: **to detach or break free.**

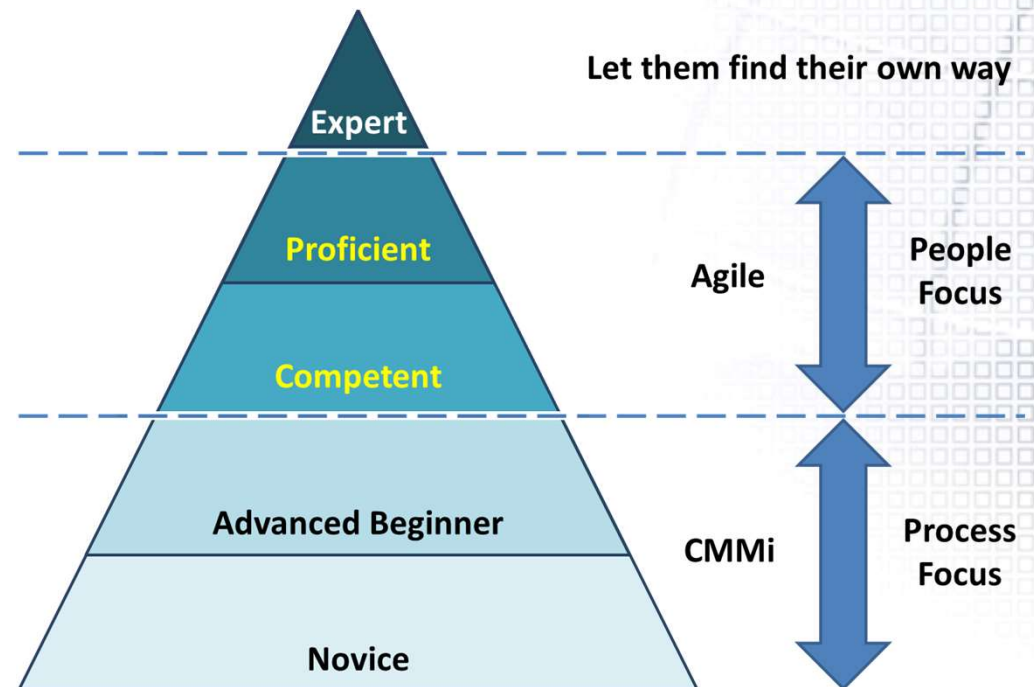
RI

- Unconsciously finding an individual path-Ri means: **to go beyond or transcend.**

Dreyfus Model of Adult Skill Acquisition



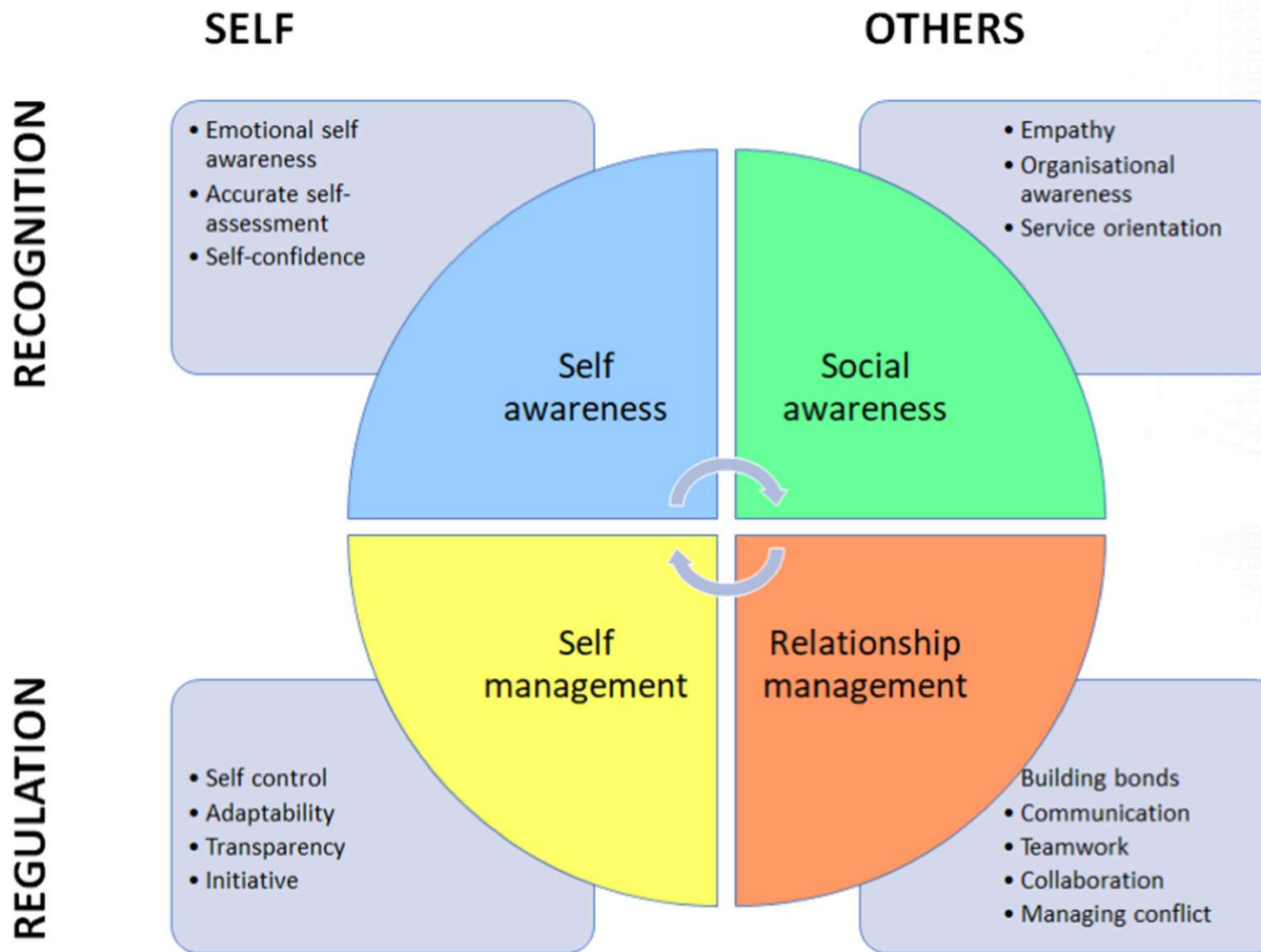
- This model by Stuart E.
- Dreyfus suggests that adults learn new skills over five stages-novice, advanced beginner, competent, proficient, and expert.
- In addition to improving your skills as you move through each of these stages your level of commitment, approach to decision making, and perspective on the task evolve as well.



Agile, Offshore and Dreyfus Model of Skill Acquisition



Emotional Intelligence

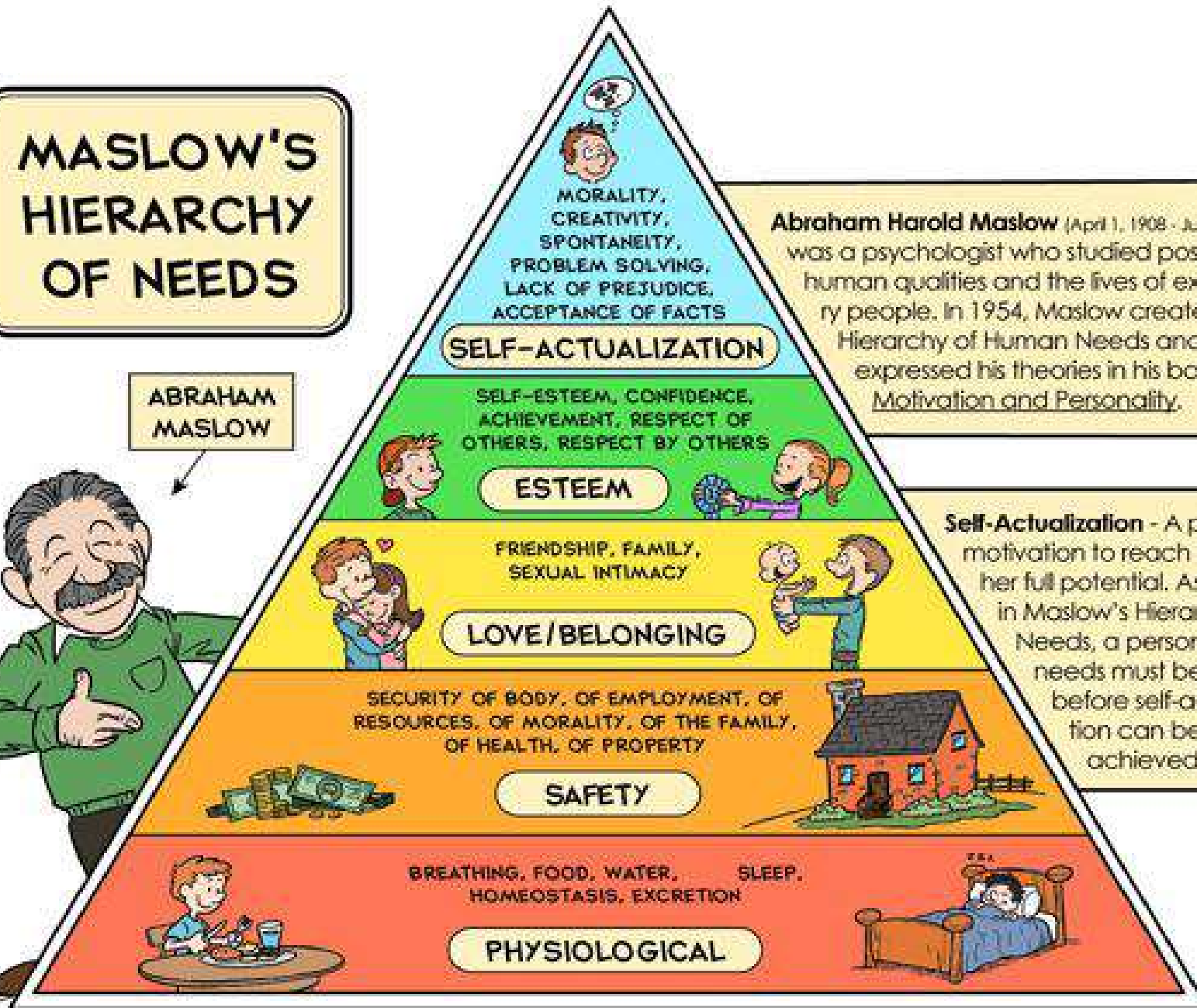


5 Level of Conflict

Level	Name	Characteristic	Language	Atmosphere/Environment
1	Problem to Solve	Information Sharing & Collaboration	Open & Fact-Base	People have different opinions or misunderstandings, or there are conflicting goals or values. The atmosphere isn't comfortable, but it isn't emotionally charged either.
2	Disagreement	Personal protection trumps resolving the conflict	Guarded and open to interspersion	Self-protection becomes important. Team members distance themselves from the debate. Discussions happen off-line (outside of the team environment). Good-natured joking moves to half-joking barbs.
3	Contest	Winning trumps resolving the conflict	Includes Personal Attack	The aim is to win. People take sides. Blaming flourishes.
4	Crusade	Protecting one's own group becomes the focus	Ideological	Resolving the situation is not good enough. Team members believe that people "on the other side" will not change and need to be removed.
5	World War	Destroy the Other!	Little or nonexistent	Destroy! is the battle cry. The combatants must be separated. No constructive outcome can be had.

MASLOW'S HIERARCHY OF NEEDS

ABRAHAM MASLOW



Abraham Harold Maslow (April 1, 1908 - June 8, 1970) was a psychologist who studied positive human qualities and the lives of exemplary people. In 1954, Maslow created the Hierarchy of Human Needs and expressed his theories in his book, Motivation and Personality.

Self-Actualization - A person's motivation to reach his or her full potential. As shown in Maslow's Hierarchy of Needs, a person's basic needs must be met before self-actualization can be achieved.

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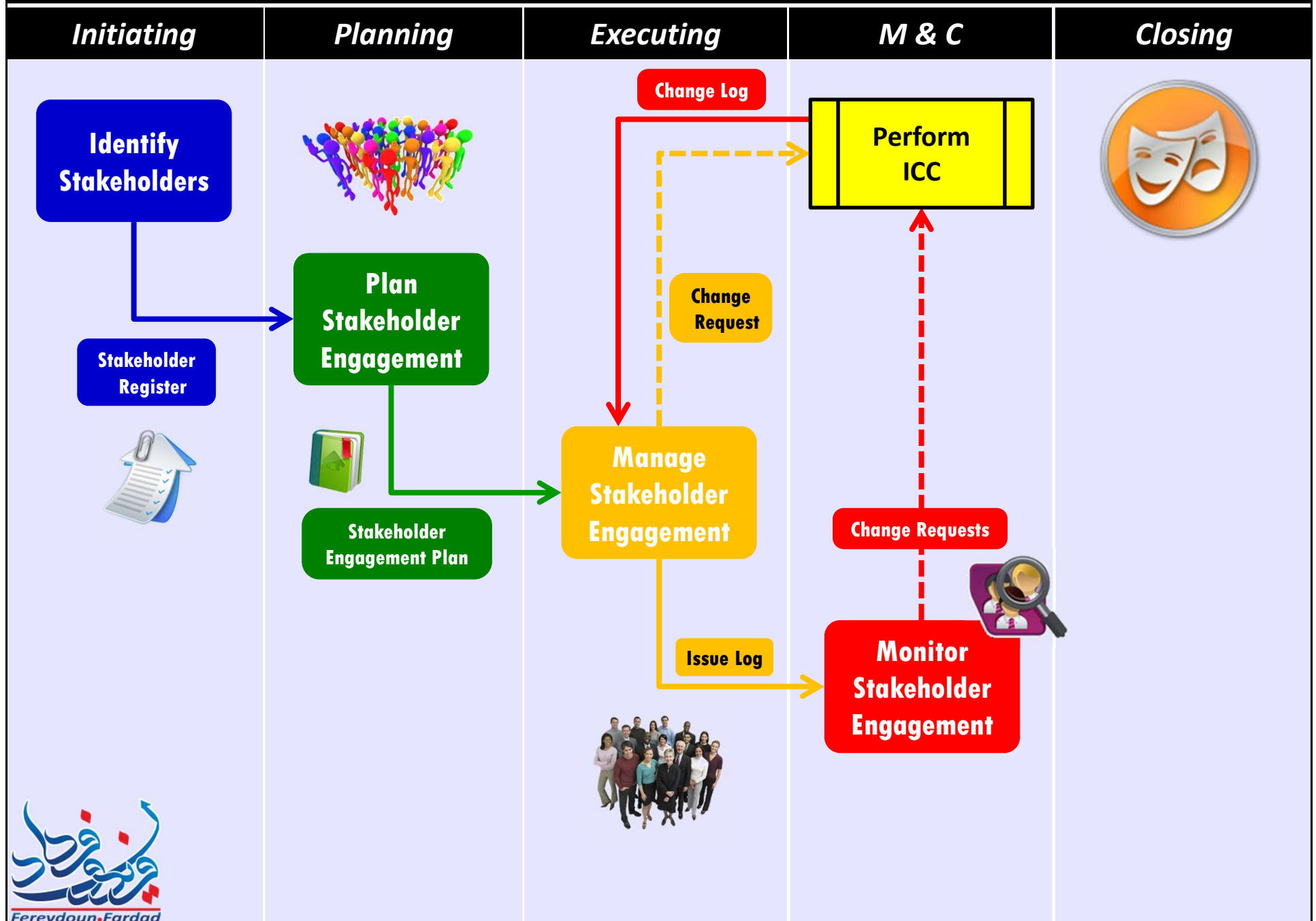


Project Stakeholder Management

- **Identify Stakeholders**
- **Plan Stakeholder Engagement**
- **Manage Stakeholder Engagement**
- **Monitor Stakeholder Engagement**



Project Stakeholder Management



Personas



- Personas are **quick guides of key stakeholders** on the project and their interests.
- Agile software projects, for example, commonly create personas for the different types of people who will use the system that is being built.
- **Personas may be based on profiles of real people or composites of multiple users.**
- When they are used as a project tool, personas should:
 - Provide an **archetypal description** of users
 - Be **grounded** in reality
 - Be **goal-oriented, specific, and relevant**
 - Be **tangible** and **actionable**
 - **Generate focus**
- Personas help keep stakeholders' values and needs in mind during the project.
- Agile teams often use personas to focus the project on delivering the features that users will find valuable, which leads to better decision making on the project.





Project Communication Management

- **Plan Communication Management**
- **Manage Communications**
- **Monitor Communications**



Plan Communications Management

DEF

Effective Communication

- Means that the information is provided in the **right Format**, at the **right Time**, to the **right Audience**, and with the **right Impact (FIAT)**.

Efficient Communication

- Means providing **only** the information that is **needed**.



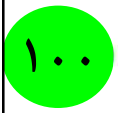
- ❖ To plan communication on a project it's essential that you determine and analyze stakeholders' communication requirements.
- ❖ Different stakeholders need to receive different information in various format and you must figure out in advance what each stakeholder needs when it comes to communication.



Project Risk Management

- ✿ Plan Risk Management
- ✿ Identify Risks
- ✿ Perform Qualitative Risk Analysis
- ✿ Perform Quantitative Risk Analysis
- ✿ Plan Risk Responses
- ✿ Implement Risk Responses
- ✿ Monitor Risks





Agile Project Pre-Mortems



- A project pre-mortem is a facilitated team exercise that aims to identify the possible failure points on a project before they happen, so that we can avoid and/ or minimize those threats.
- The PM describes a scenario and tells the team the project has failed and that their task is to explain what happened.
- After generating a list of potential failure points, the team looks for ways to adapt the project plan to avoid or mitigate any issues.
- A pre-mortem exercise typically includes four steps;
 - Imagine the Failure
 - Generate the Reasons for the Failure
 - Consolidate the List
 - Revisit the Plan



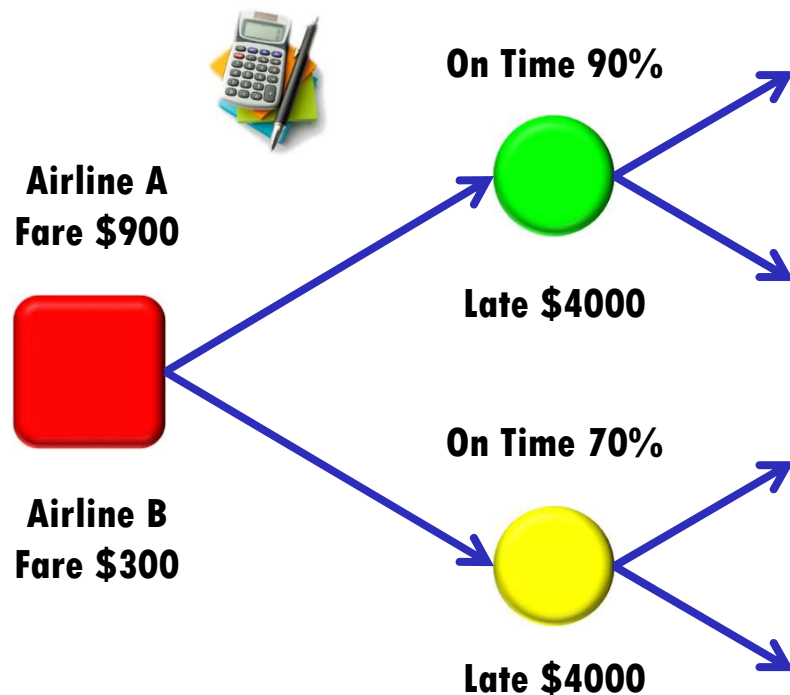
Risk Register

OUT

- The risk register captures details of identified individual project risks.
- The results of Perform Qualitative Risk Analysis, Plan Risk Responses, Implement Risk Responses, and Monitor Risks are recorded in the risk register as those processes are conducted throughout the project.
- The risk register may contain limited or extensive risk information depending on project variables such as size and complexity.
- The content of the risk register may include
 - **List of identified risks (Cause, Risk, Effect)**
 - **Potential risk owners & List of potential risk responses**
 - **Root Cause of Risks & RBS Updated**
- Additional data:
 - **A short risk title, risk category, current risk status, one or more causes, one or more effects on objectives, risk triggers (events or conditions that indicate that a risk is about to occur), WBS reference of affected activities, and timing information (when was the risk identified, when might the risk occur, when might it no longer be relevant, and what is the deadline for taking action).**

Register ➔

Data Analysis: Decision Tree Analysis



You need to fly from one city to another. You can take airline A or B. Considering the data provided, which airline should you take, and what is the expected monetary value of your decision?



Airline A: $(10\% \times \$ -4000 = \$ -400) + (90\% \times \$0 = \$0) + \$ -900 = \$ -1300$

Airline B: $(30\% \times \$ -4000 = \$ -1200) + (70\% \times \$0 = \$0) + \$ -300 = \$ -1500$

Plan Risk Responses

Plan Risk Response Should Be:

Appropriate for the significance of the risk

Cost-effective in meeting the challenge

Realistic within the project context

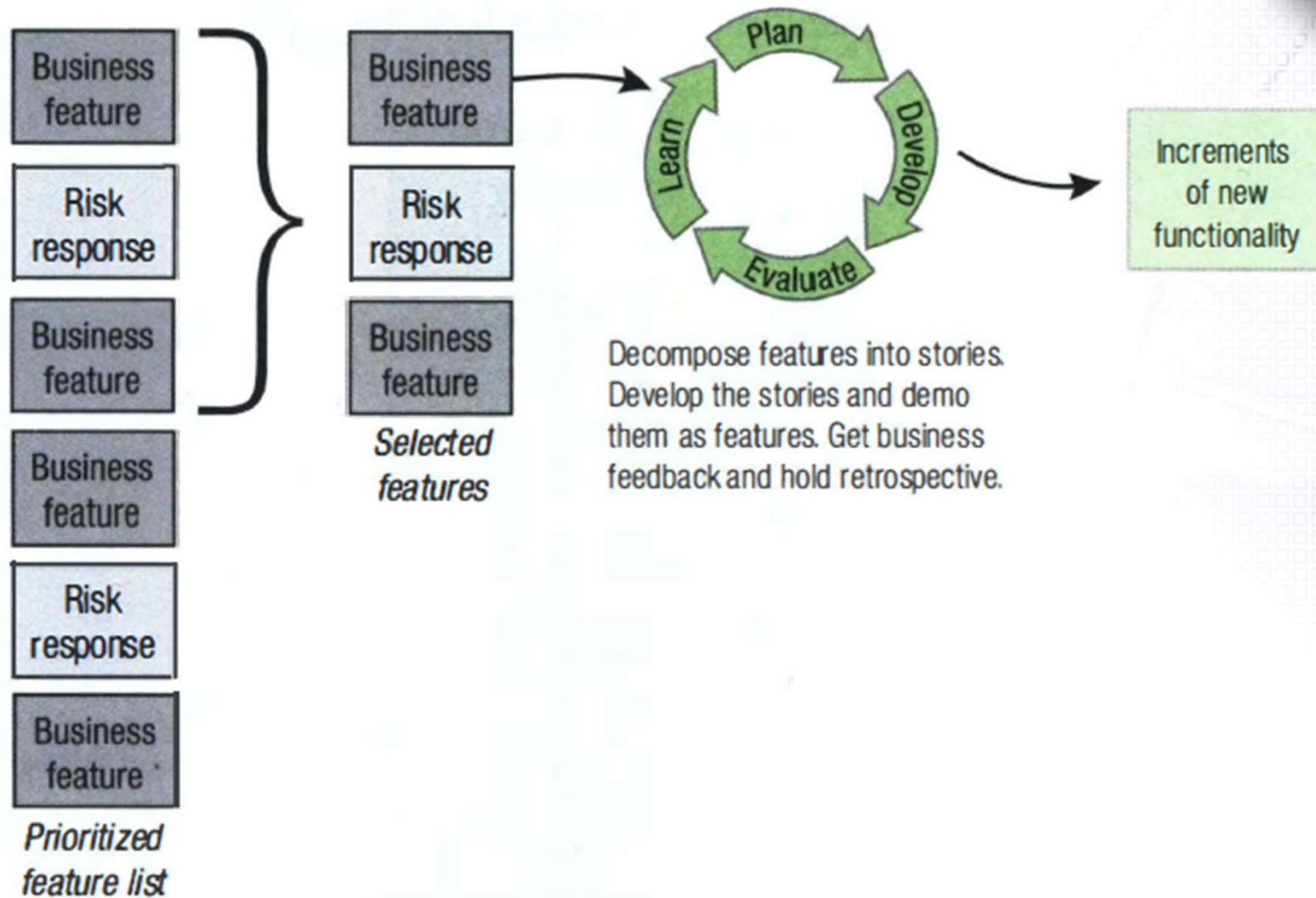
Agreed upon by all parties involved

Owned by a responsible person

They must also be **Timely**



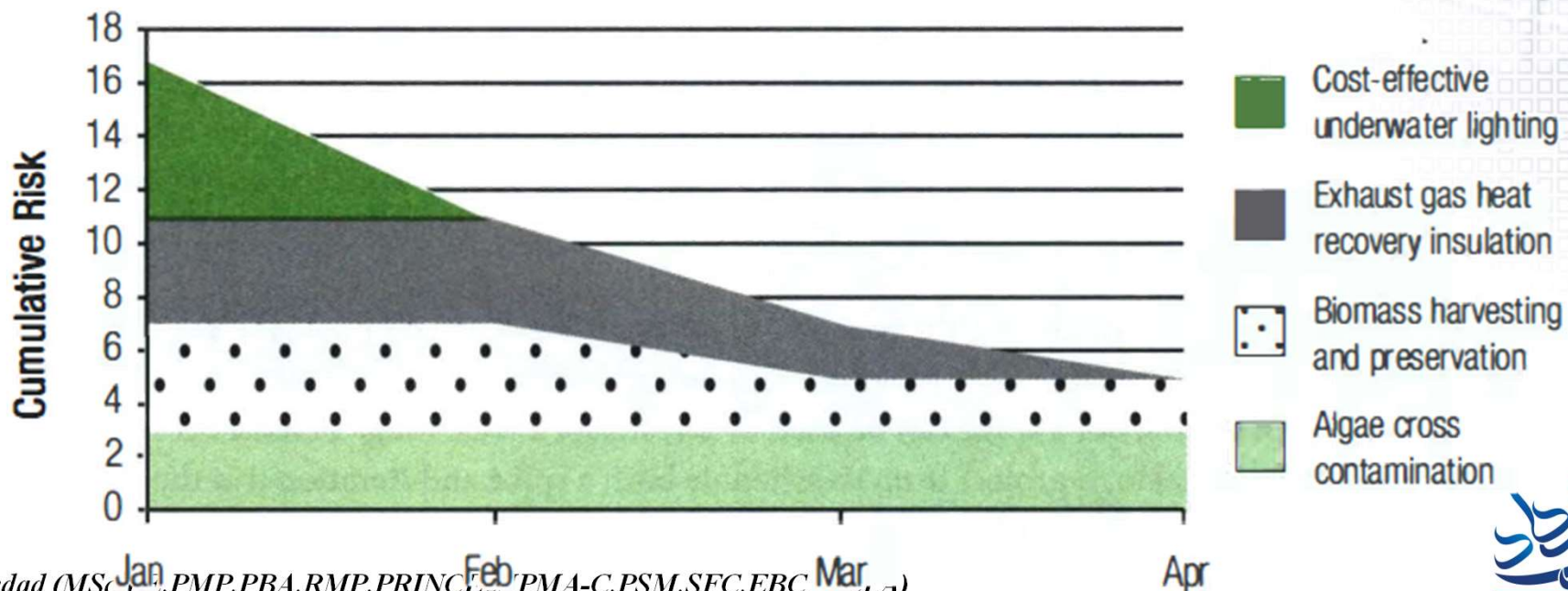
Risk Exam Tips



Retrospective & Burndown Chart



- Risk burndown charts may be used for planning, managing, and controlling risk.
- These charts allow stakeholders to easily see a risk profile on a project.
- Risk burn down graphs quickly inform stakeholders whether the threats are moving in the right direction (downward), or if they are escalating.
- Figure Below shows that a spike in January to explore cost-effective underwater lighting was successful. The associated risk was eliminated and in turn the overall project risk was reduced by early February.





Procurement



Project Procurement Management

- **Plan Procurement Management**
- **Conduct Procurements**
- **Control Procurements**



Centralized Contracting



A contracting department and a contract manager may handle contracts on many projects.

Advantage	Disadvantage
procurement managers with higher levels of expertise.	One procurement manager may work on many projects. so this individual must divide his or her attention among many projects.
A procurement department will provide its employees with continuous improvement, training, and shared lessons learned.	It may be more difficult for the project manager to obtain contracting help when needed.
Standardized company practices allow efficiency and help improve understanding.	
Individuals in this department have a clearly defined career path in procurement.	

Decentralized Contracting



A contract manager is assigned to one project full time and reports directly to the PM.

Advantage	Disadvantage
The PM has easier access to contracting expertise because the procurement manager is a member of the team.	There is no "home" department for the procurement manager to return to after the project is completed.
The procurement manager has more loyalty to the project.	It is more difficult to maintain a high level of contracting expertise in the company, because there is no procurement department with a focus on improving expertise.
The procurement manager has a better understanding of the project and its procurement needs.	There may be <u>duplication</u> of expertise and inefficient use of procurement resources in projects across the organization.
	There may be little standardization of procurement practices from one project to the next.
	There may not be a career path as a procurement manager in the company.

Source Selection Analysis

Selection Methods

Least Costs

Qualifications Only

Quality-based/highest technical proposal score

Quality and Cost-Based

Sole Source

Fixed Budget