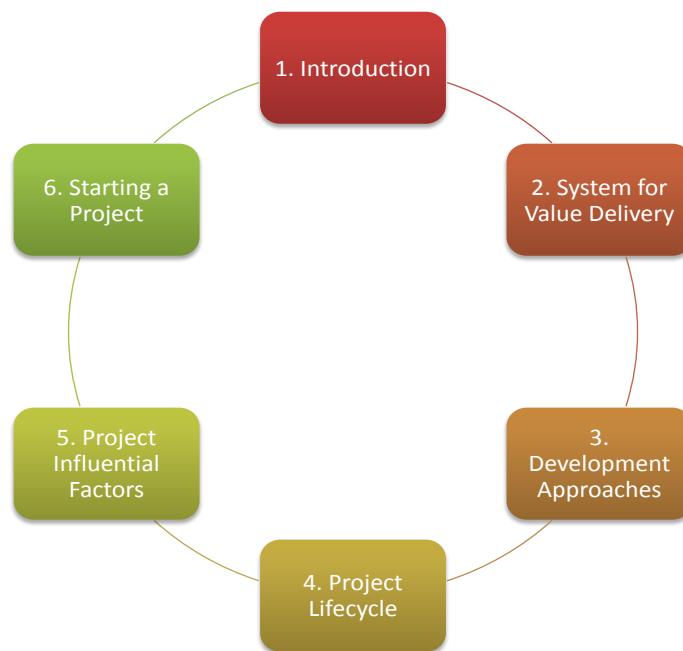


Project Management Introduction



1

Overview



Group discussion



Phân biệt sự khác nhau giữa hoạt động Vận hành (Operation) và hoạt động Dự án (Project)

Project	Operation

1. Introduction: What is Project?



- Is a **temporary endeavor** with a beginning and an end.
- Creates a **unique product, service, or result**

Example of projects:

- Developing a new product or service
- Build a new house
- Implement a core network

1. Introduction: Project vs Operation



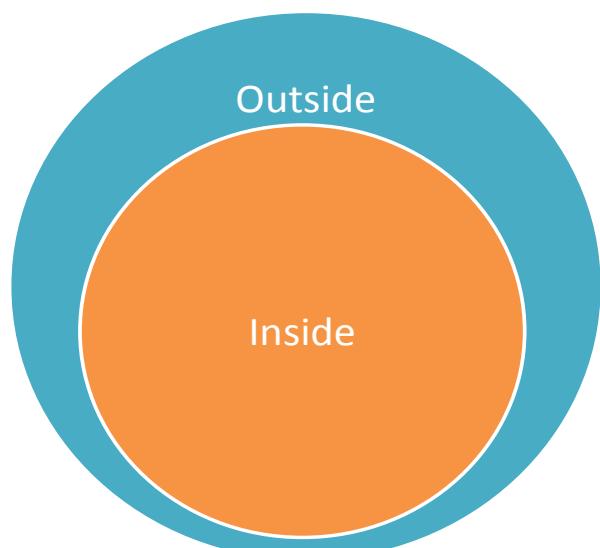
Project	Operation
1. Temporary, has start and end 2. Produce unique output	1. Permanent, 2. Produce repetitive outputs

1. Introduction: Where projects come from?



Reasons to initiate a project:

- 1. From outside of the organization**
 - Customer needs; market demands
 - Regulator and social requirements;
- 2. From inside of the organization**
 - Business strategy or technology advancement
 - Improve or fix products, processes, or services.



Why organizations initiate a project?



Value

- The worth, importance, or usefulness of something.
- Different stakeholders perceive value in different ways. Customers can define value as the ability to use specific features or functions of a product.

- **Business value:** Organizations can focus on business value as determined with financial metrics, such as the benefits less the cost of achieving those benefits.
- **Societal value:** can include the contribution to groups of people, communities, or the environment.



Why do we need to manage project?



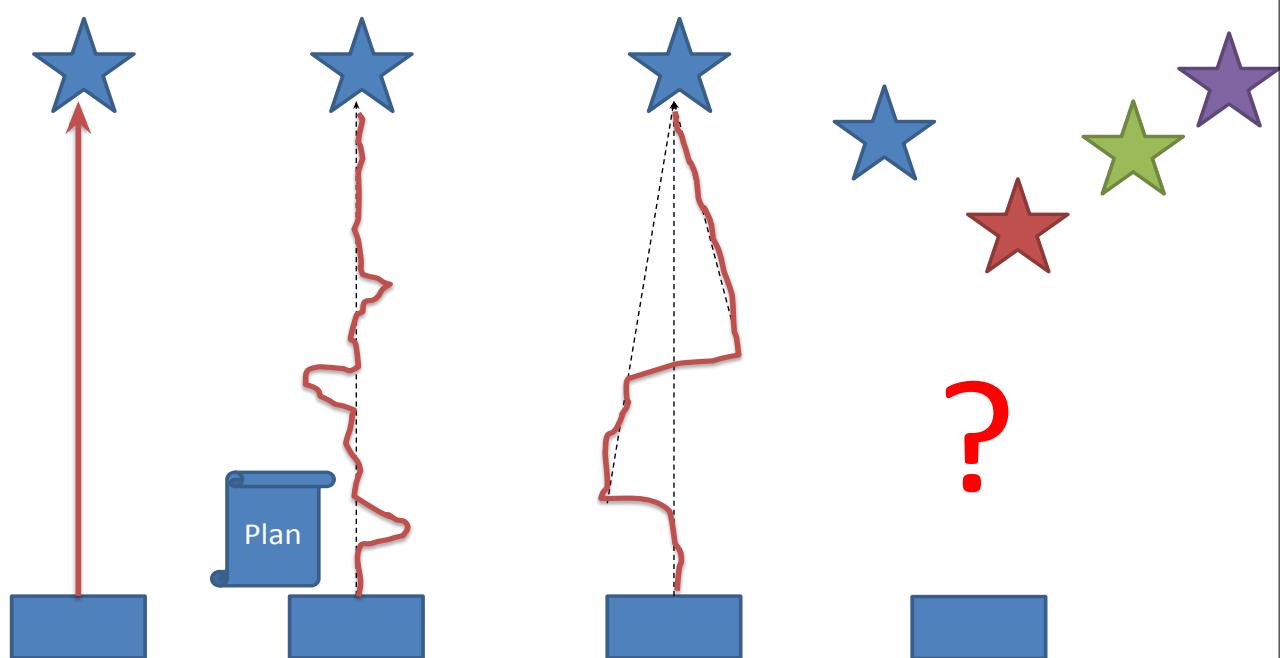
1. Introduction: Who are Stakeholders?



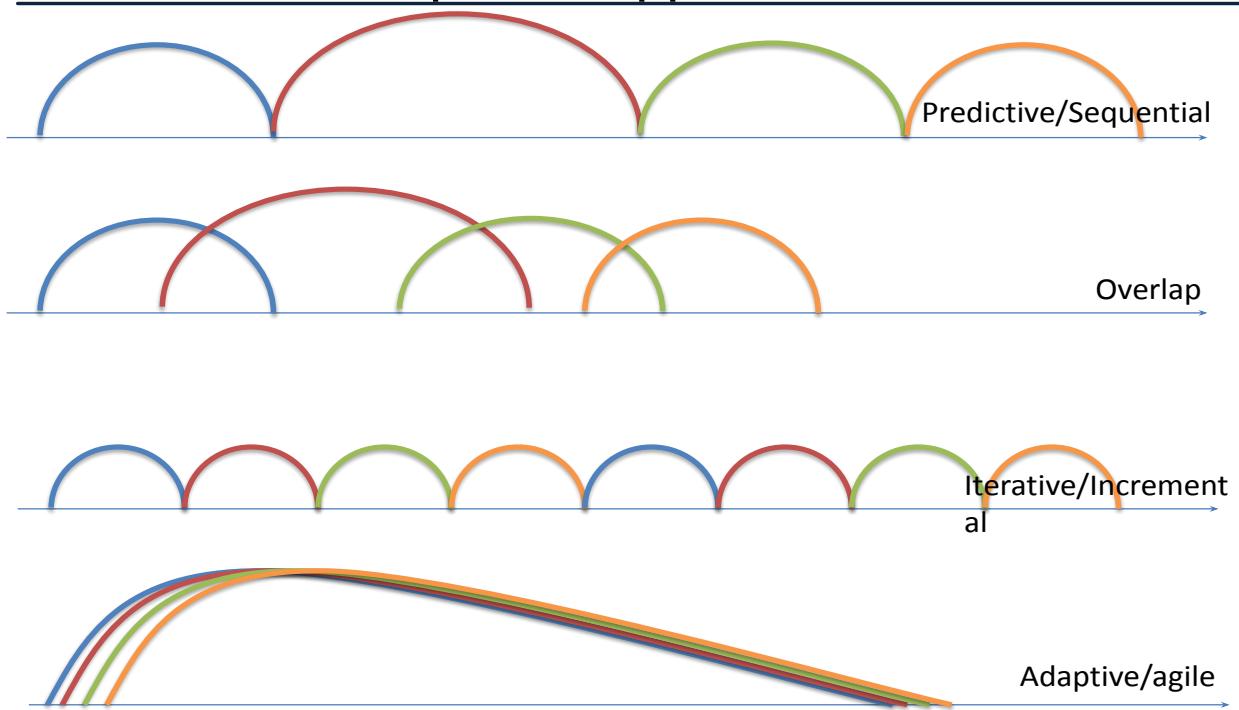
- A stakeholder is someone whose interest may be **positively** or **negatively** impacted by the project.
- Key stakeholders
 - The project manager
 - Customer
 - Performing organization
 - Project Team
 - Project Management Team
 - Sponsor
 - Project Management Office
 - Other influencers



Project Management Expectation vs Reality



Different Development Approaches



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1. Introduction



Project management

- Project teams can achieve the outcomes using a broad range of approaches (e.g., predictive, hybrid, and adaptive).
- Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.
- Project management refers to guiding the project work to deliver the intended outcomes.



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1. Introduction



Project team

- A set of individuals performing the work of the project to achieve its objectives.

Project Manager

- The person assigned by the performing organization to lead the team that is responsible for achieving the project objective.
- Applies project management knowledge and uses personal and leadership skills to achieve project success.



Group Discussion



- Chia sẻ với bạn học về Dự án bạn đang tham gia triển khai:
 - **Nhu cầu:** Dự án đó được thành lập nhằm giải quyết nhu cầu gì? của ai?
 - **Thời hạn:** Thời gian bắt đầu, thời gian kết thúc khi nào ?
 - **Kết quả:** Và kết quả mà dự án cần phải đạt được/ tạo ra được là gì ?

2. System for Value Delivery



Organizations create value for stakeholders. Examples :

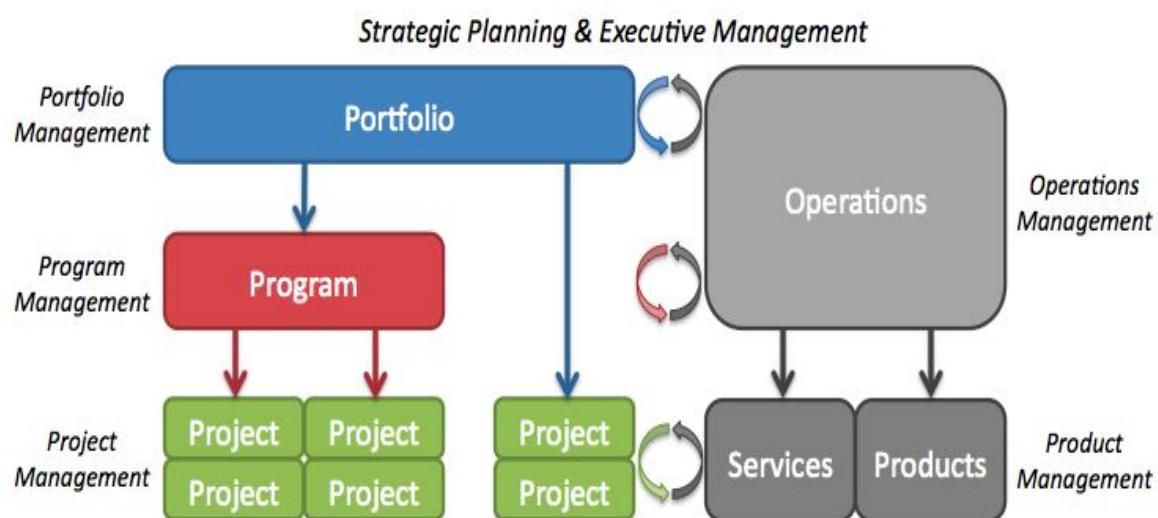
- Creating a new product, service, or result that meets the needs of customers or end users;
- Creating positive social or environmental contributions;
- Improving efficiency, productivity, effectiveness, or responsiveness;
- Enabling the changes needed to facilitate organizational transition to its desired future state; and
- Sustaining benefits enabled by previous programs, projects, or business operations



2. System for Value Delivery



- Portfolios, programs, projects, products, and operations can all be part of an organization's system for value delivery.

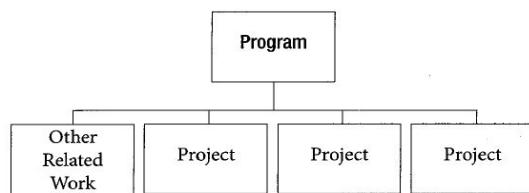


2. System for Value Delivery



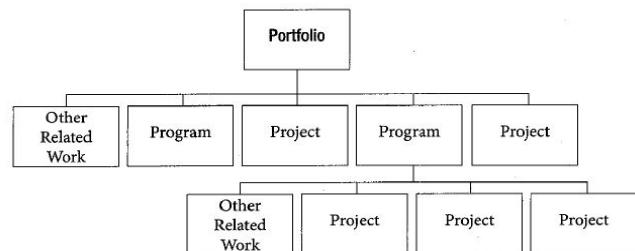
Program

- A group of **related projects**, subprograms, and program activities managed in a coordinated way to obtain benefits **not available from managing them individually**



Portfolio

- Projects, programs, sub portfolios, and operations managed as a group to achieve strategic objectives



Group discussion : Phân biệt các khái niệm



	Project	Program	Portfolio
Objective			
Success measured by	Product, and project quality, timelines, budget, compliance, and degree of customer satisfaction	The ability to deliver its intended benefits to an organization	The aggregate investment performance and benefit realization of the portfolio

Project, Program, Portfolio Comparison



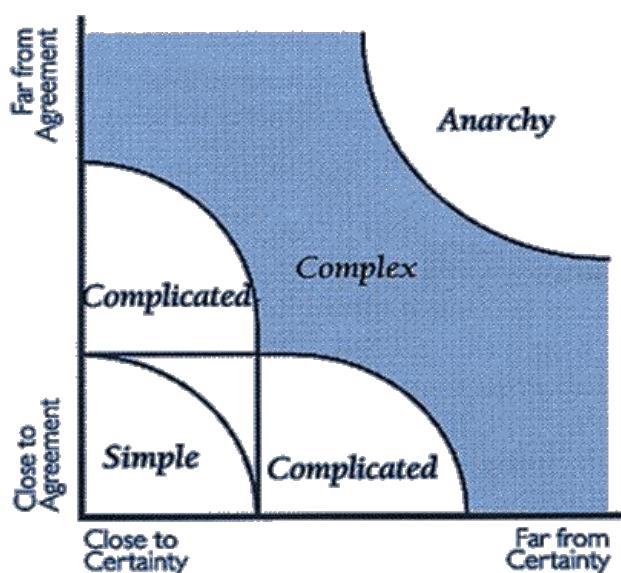
	Project	Program	Portfolio
Objective	Achieves the organizational goals	Harmonizes its program components and controls interdependencies in order to realize specific benefits	Aligns portfolio with organizational strategies by prioritizing the work, selecting the right program/project....
Success measured by	Product, and project quality, timelines, budget, compliance, and degree of customer satisfaction	The ability to deliver its intended benefits to an organization	The aggregate investment performance and benefit realization of the portfolio

3. Development Approaches



Complexity Matrix by Stacey

- **Simple:** cause and effect linkages can be clear
- **Complicated:** cause and effect requires analysis or expertise; there is a range of right answers.
- **Complex:** Cause and effect can only be deduced in retrospect. There are no right answers.
- **Anarchy:** Cause and effect are unclear
- The art of management is having an array of approaches and being aware of when to use which approach.



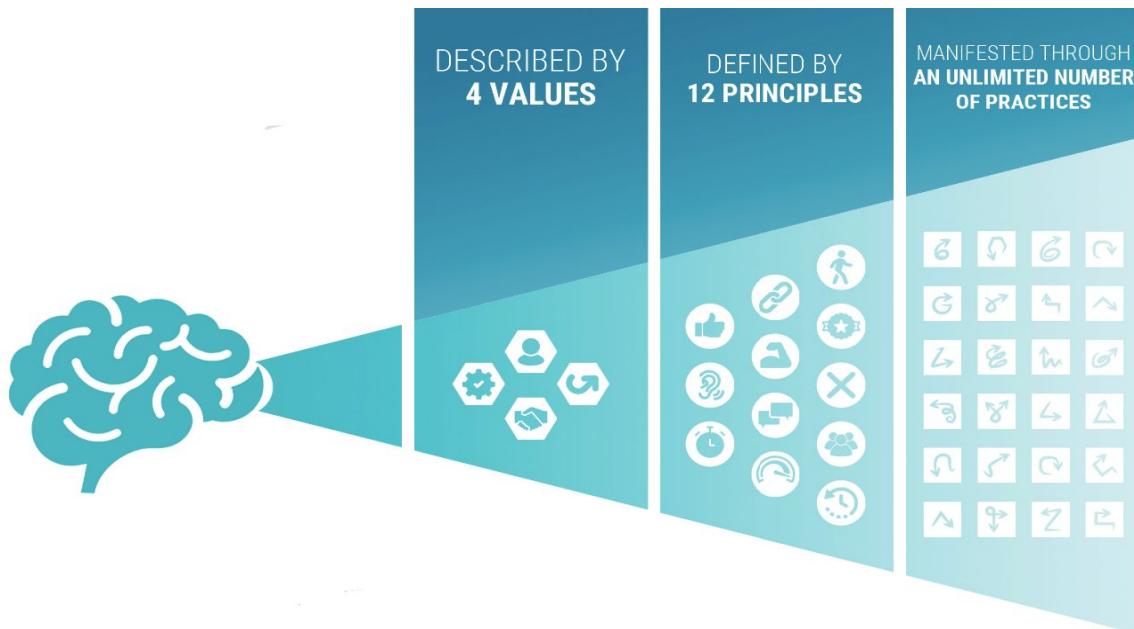
3. Development Approaches



Traditional approach: 5 Process Groups



Agile approach: Principle-based



3. Development Approaches

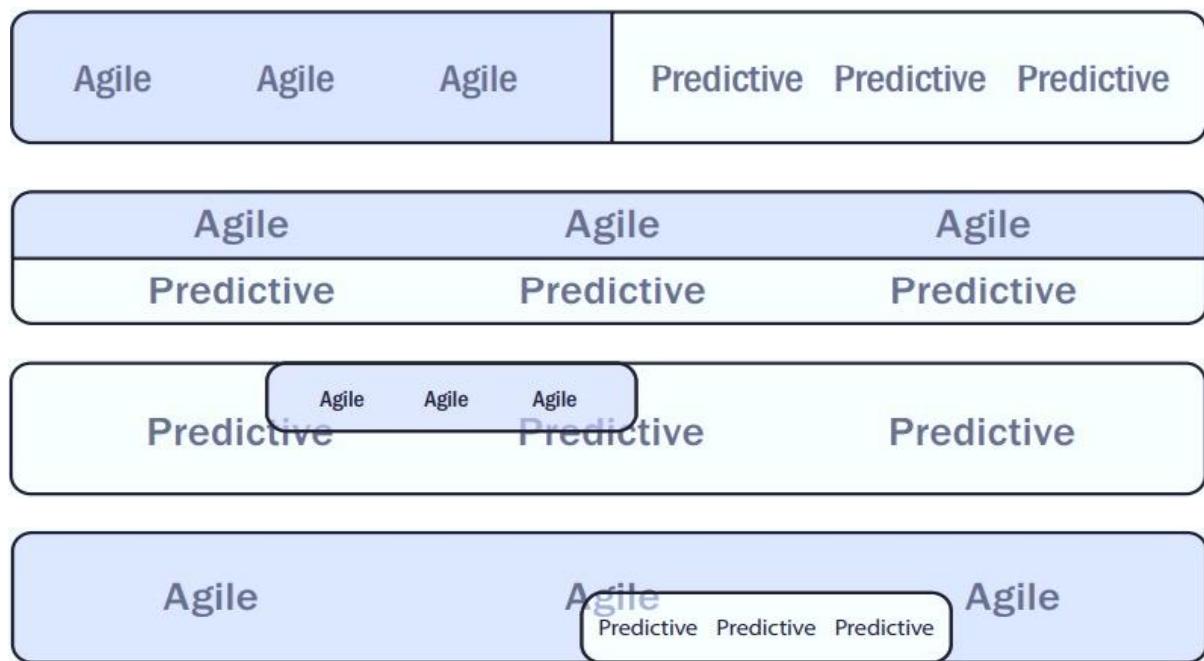


Hybrid Life Cycles As Fit-for-purpose

- The goal of project management is to produce business value in the best possible way given the current environment. It does not matter if that way is agile or predictive. The question to ask is: "How can we be most successful?"

Predictive	Agile/adaptive
Process-based	Principle-based
Definable work	High-uncertainty work
Plan-driven	Value-driven
Prescriptive	Descriptive

3. Development Approaches: Hybrid lifecycle



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4. Project Lifecycle



Project Phase

- A collection of logically related project activities that culminates in the completion of **one or more deliverables**
- The transition from one phase to another within a project's life cycle generally involves some form of technical transfer or handoff. These are also called **as phase gate**



Construction: Feasibility-> Planning -> Design -> Production -> Turnover -> Maintenance

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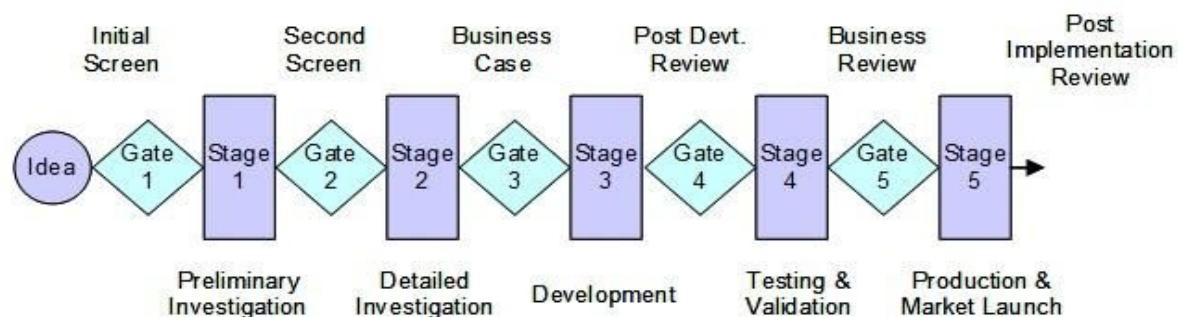
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4. Project Lifecycle



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.
- Maybe referred to by other terms: Phase review, stage gate, kill point, phase entrance or phase exit.
- Decision made maybe: Go, Hold, Kill, Recycle...



4. Project Lifecycle



Project Lifecycle

- The **series of phases** that a project passes through from its initiation to its closure
- There are many different types of project life cycles, depending on the **industry**, or on the **organization's preferences**.

- **IT Project:** Requirement -> Design -> Program -> Test -> Implement



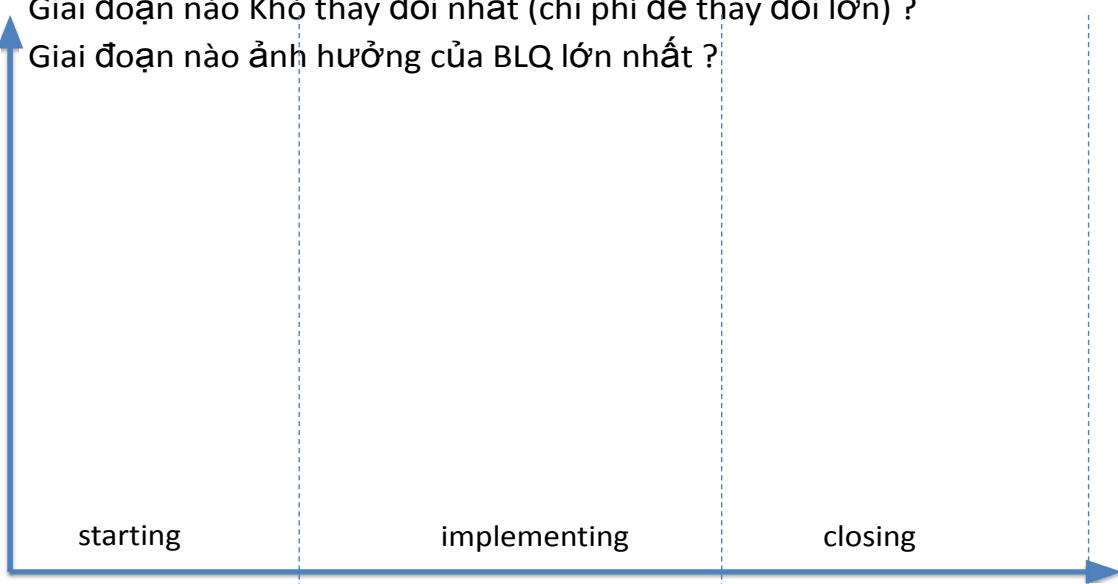
- **Construction:** Feasibility-> Planning -> Design -> Production -> Turnover -> Startup



Group discussion



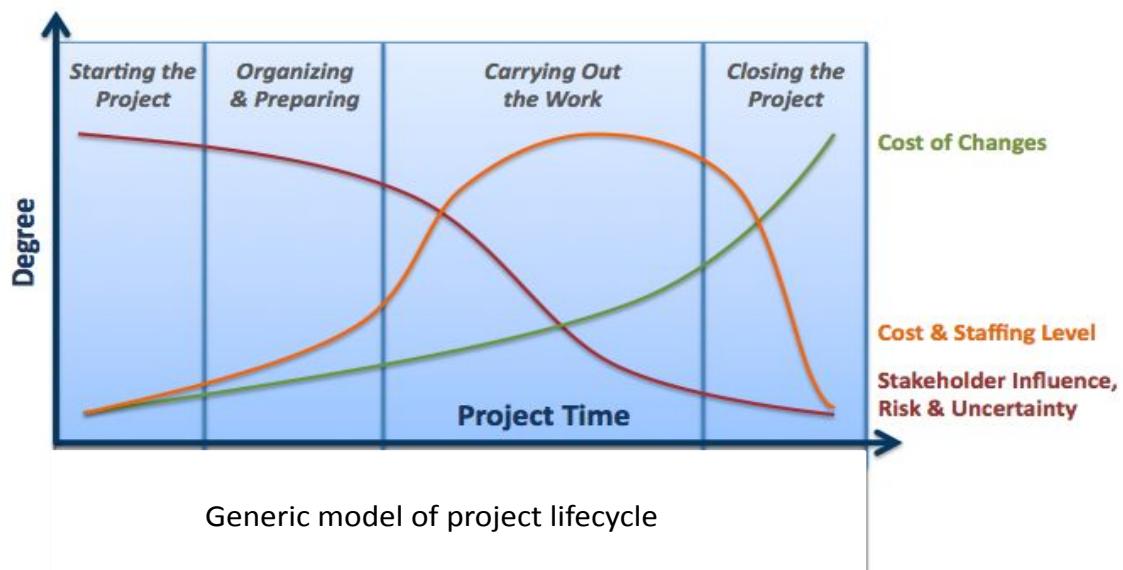
- Giai đoạn nào Tiềm và nguồn lực lớn nhất ?
- Giai đoạn nào Khó thay đổi nhất (chi phí để thay đổi lớn) ?
- Giai đoạn nào ảnh hưởng của BLQ lớn nhất ?



Characteristics of Project Lifecycle



- All projects, large or small, have a similar characteristics



4. Project Lifecycle

Product Lifecycle

- Product lifecycle is the series of phases that represent the evolution of a product, from concept through delivery, growth, maturity and to retirement

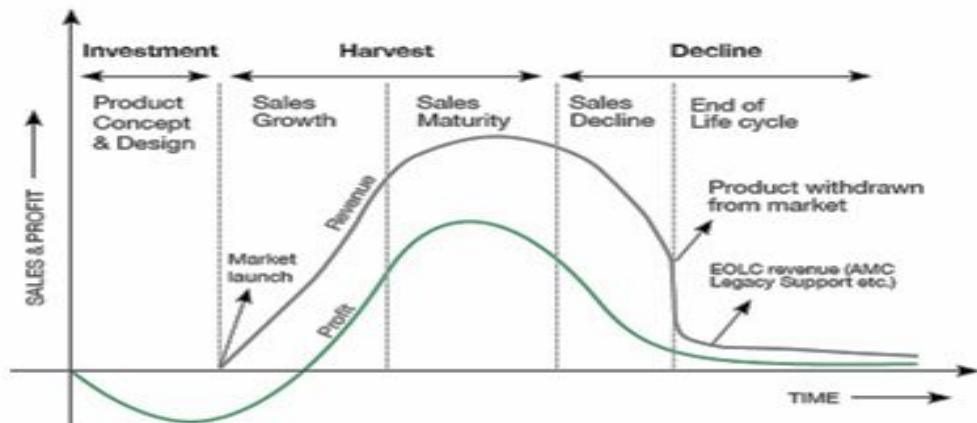


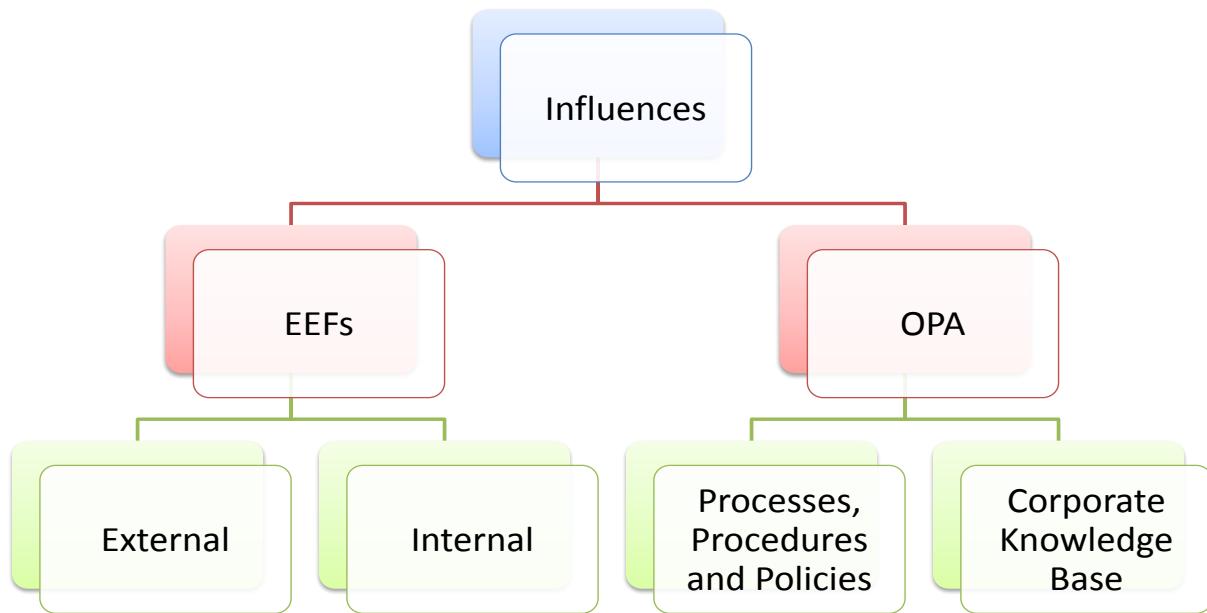
Figure 1: Product Life Cycle Phases

Group discussion

Phân biệt Vòng đời sản phẩm và Vòng đời dự án

- Vòng đời sản phẩm tính từ khi nào tới khi nào ?
- Vòng đời dự án/ sáng kiến tính từ khi nào tới khi nào ?
- Vòng đời sản phẩm có liên quan như thế nào tới vòng đời dự án ?

5. Project Influential Factors



5. Project Influential Factors



Enterprise Environmental Factors (EEF)

- Enterprise Environmental Factors (EEFs) are internal or external factors that can affect a project's success and management. They can have a significant impact on project planning, execution, and control.

Internal	External
<ul style="list-style-type: none">• Organizational culture, structure and governance• Geographic distribution of facilities and resources;• Infrastructure• Project management information system• Existing human resources• Company work authorization systems;	<ul style="list-style-type: none">• Marketplace conditions;• Social and cultural• Legal• Commercial database• Academic research• Government or industry standards• Political climate;

5. Project Influential Factors



Organizational Process Assets (OPA)

- Include any process assets (artifact, practice, or knowledge...) from any or all of the performing organizations involved in the project that can be used to execute or govern the project.
- OPAs are internal to the organization, the project team members may be able to update and add to the organizational process assets as necessary throughout the project.

Processes, Procedures and Policies	Corporate Knowledge Base
<ul style="list-style-type: none">PoliciesProcessesProcedure	<ul style="list-style-type: none">Financial databasesHistorical informationLessons learnedIssue and defect databases

Not updated as part of the project work.

Updated throughout the project

Group discussion



- Phân biệt sự khác nhau giữa EEF và OPA

EEF	OPA

6. Starting a project



Project Selection methods

- Feasibility analysis
- Murder board (shoot down a new project idea)
- Peer review
- Scoring models

Investment Appraisal

- Payback period/Break Even analysis
- Net present value (**NPV**)
- Internal Rate of Return (**IRR**)
- Return on Investment (**ROI**)

Benefit Cost analysis

- Benefit Cost Ratio (**BCR**)
- Opportunity Cost
- Sunk Costs

6. Starting a project



Project business case

- Economic feasibility study used to validate of the **benefits** of a project
- The business case lists
 - the objectives
 - and reasons for project initiation.
- Project Business Case used as a basis:
 - for the authorization of further project management activities.
 - to measure success and progress throughout the project life cycle by comparing the results with the objectives and the identified success criteria.

BUSINESS CASE		
Project Title:		
Project Sponsor:	Date Prepared:	
Business Manager:	Project Customer:	
Problem Definition:		
Project Overview and Strategic Alignment:		
Cost Benefit Analysis:		
Alternatives Analysis:		

Group discussion



- Lựa chọn dự án nào?

Project Name	Project Team	IRR	Investment	Bank loan needed?	Overall Risk
Gold	10 Members	6%	4,500,000	Yes	1.0
Silver	8 Members	5,8%	1,700,000	No	0.9
Platinum	15 Members	5,9%	2,000,000	No	1.3
Diamond	26 Members	3%	3,500,000	Yes	1.2

6. Starting a project



- Project success should be measured with consideration toward achievement of the **project objectives**.
- Project objectives should be documented and agreed upon by the key stakeholders and the project manager.
- Project managers needs to be able to:
 - Clearly document the project objectives (S.M.A.R.T objectives)
 - Resolve competing objectives, balance the demands
 - Prioritize project objectives

Create S.M.A.R.T. Goals



6. Starting a project: Project Charter



Project Charter

The document that:

1. Formally recognizes the existence of the project. (This means that a project does not exist without a project charter.)
2. Gives the authority to Project Manager to apply organizational resources to project activities

When?

- Take place on a project/or phase before it becomes official

Who?

- Project Sponsor and Project Manager, in collaboration with initiating entity

PROJECT CHARTER	
Project Title:	_____
Project Sponsor:	_____
Project Manager:	_____
Project Customer:	_____
Project Purpose or Justification:	
Project Description:	
High-level Project and Product Requirements:	
Summary Budget:	
Initial Risks:	

Review



- Introduction
 - Project Definition
 - Project vs Operation
 - Project Constraints
 - Project Management
 - Project Manager
- System for value delivery
 - Program
 - Portfolio
 - Component's relationship
- Development Approaches
 - Predictive/Sequential
 - Adaptive/Agile
 - Hybrid approach
- Project lifecycle
 - Project Phases
 - Project Lifecycle
 - Product Lifecycle
- Influential factors
 - Enterprise Environment Factors
 - Organizational Process Assets
- Starting a Project
 - Business Case
 - Project Selection Methods
 - Project Charter
 - SMART Goal

Assignment!!!

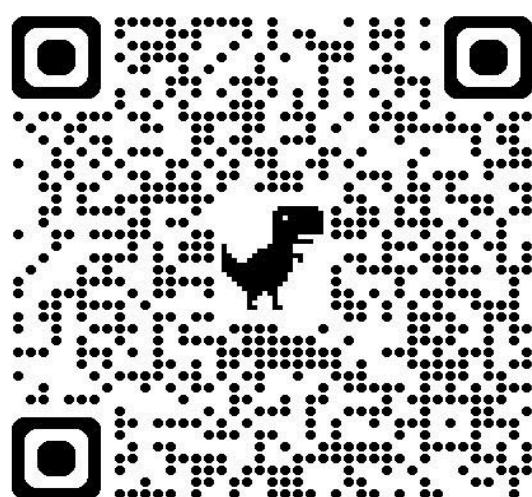


- Làm BTVN trên LMS:
Introduction
- Học nhóm
- Thực hành viết Project Charter cho dự án hiện tại của mình

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



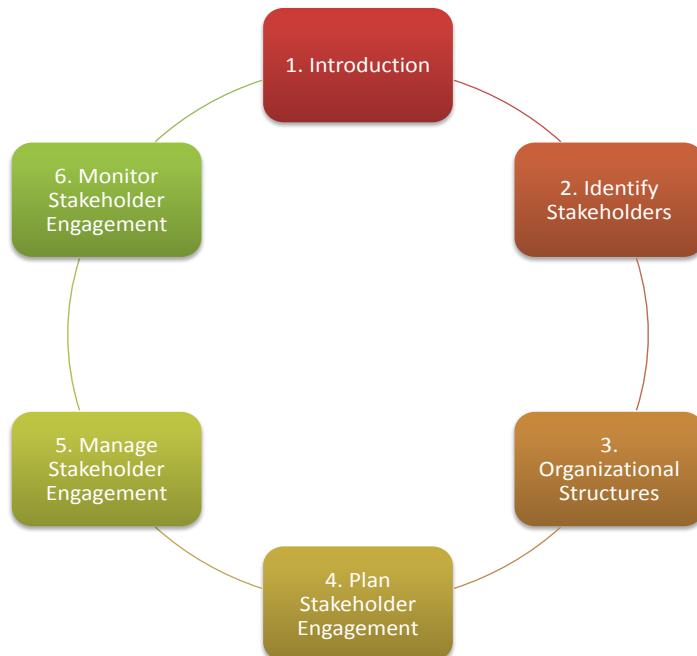
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Project Stakeholder Management



Overview



Group discussion



- Chia sẻ Key stakeholder trong dự án của mình, và lý do vì sao người đó lại quan trọng?



1. Introduction: Who are stakeholders?



- Any individual, group, or organization who:
 - may affect
 - be affected by
 - or perceive itself to be affected by a decision, activity, or outcome of a project.



Why we need to manage stakeholders?



- Active and proper stakeholder management = Lower the risks in your project
- Stakeholder satisfaction is considered as important project objective



2. Identify Stakeholders

What?

- In this process, Project Manager and Project Team identify all people or organizations impacted by the project

- How many stakeholders are there?

Why?

- An unidentified key stakeholder can potentially turn high risk to project.
- Identify the appropriate focus for engagement of each stakeholder or group of stakeholders.

When?

- As early as possible, preferably during initiation and definitely prior to starting of planning.
- Periodically throughout the project



2. Identify Stakeholders

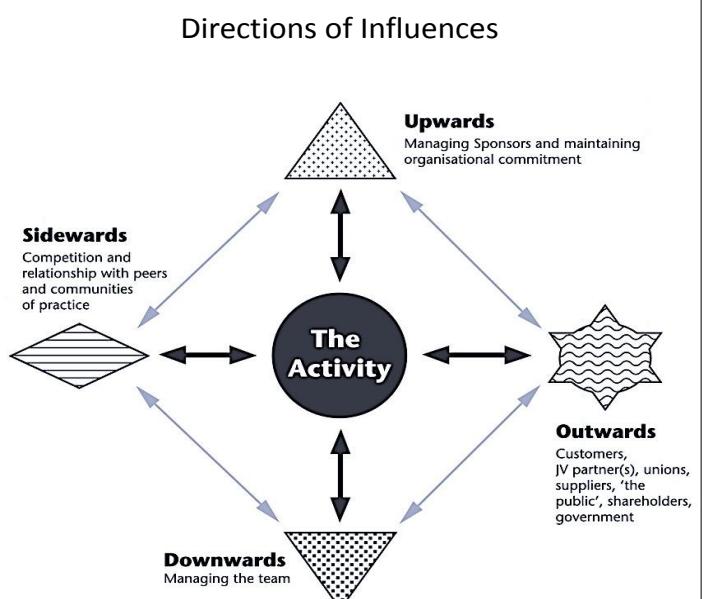
Stakeholder analysis

1. Identify potential project stakeholders

- Identify all stakeholders, not just a limited set
- Directions of influence (Upward, downward, outward, sideward)
- Stakeholder wheel: Customer, Suppliers, Management, Project Team ...

2. Analyze Stakeholder

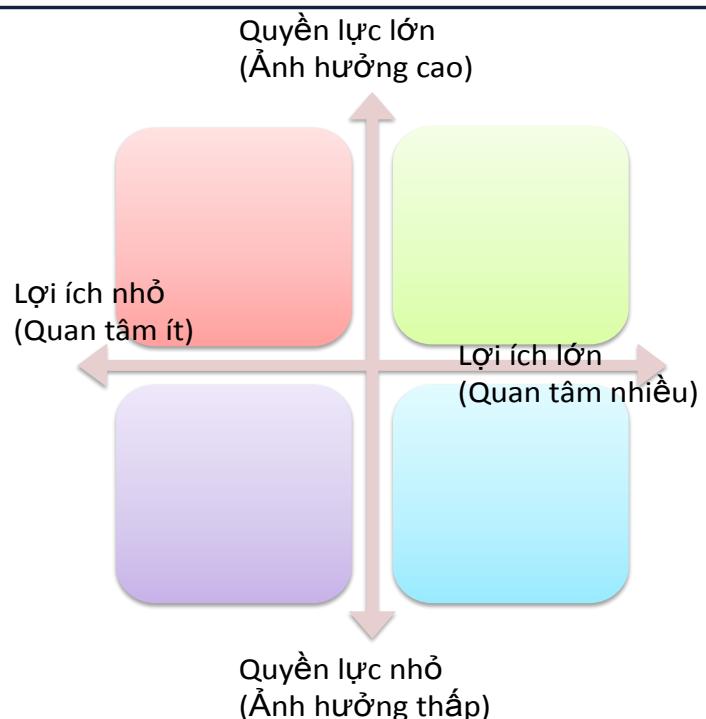
- Determine all of their major requirements, expectations, interests level of influence, knowledge, role, Etc.
- Key stakeholders: **decision-makers**



Group discussion



Thảo luận cách ứng xử, cách quản lý 4 nhóm bên liên quan



2. Identify Stakeholders



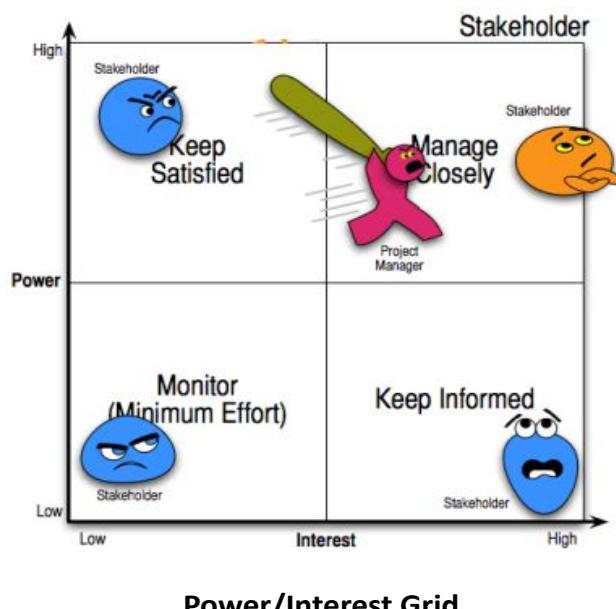
Stakeholder Analysis

3. Classify Stakeholders

- Prioritize the key stakeholders to ensure the efficient use of effort to communicate and manage their expectations.
- There are multiple classification models

4. Define Management Strategy

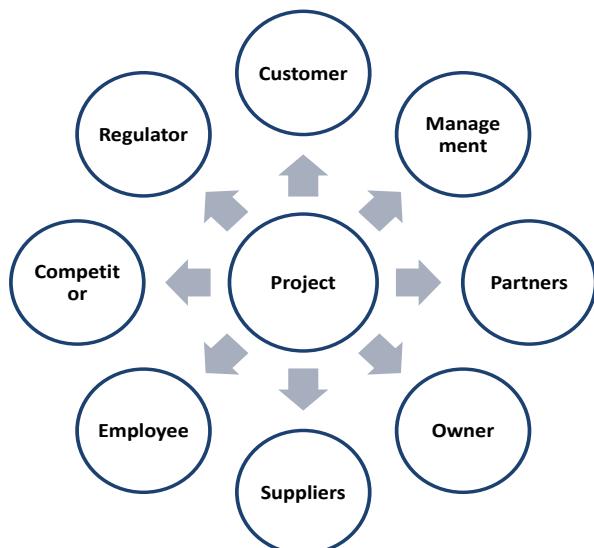
- How you will communicate with them



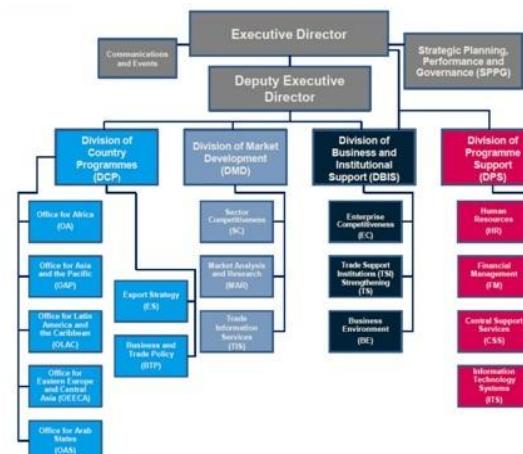
2. Identify Stakeholders



Stakeholders Wheel



Organizational Structures



14/03/2011

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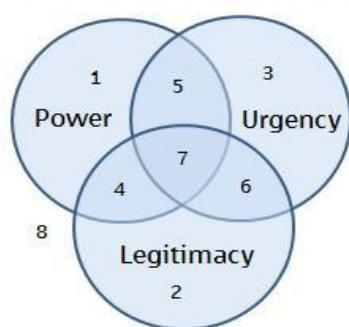
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2. Identify Stakeholders

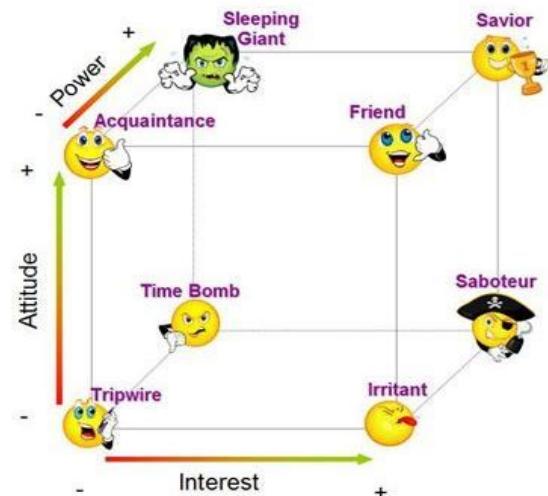


Salience Model



1. Dormant
2. Discretionary
3. Demanding
4. Dominant
5. Dangerous
6. Dependent
7. Definitive
8. Non stakeholder

Stakeholder Cube



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2. Identify Stakeholders



Stakeholder Register

- **Identification information :** Name, organizational position, location, role in the project, contact information
- **Assessment Information :** Major requirements, main expectations, potential influence in the project, phase in the life cycle with the most interest
- **Stakeholder Classification :** internal/external, supporter/neutral/resistor, etc

STAKEHOLDER REGISTER							
Project Title:		Date Prepared:					
Name	Position	Role	Contact Information	Requirements	Expectations	Influence	Classification

Group discussion : Identify Stakeholders

1. Có những stakeholder nào trong dự án của bạn ?
 - *Gợi ý: dựa vào Directions of influence, liệt kê tất cả các stakeholder trong dự án của bạn*
2. Với các stakeholder trong nhóm Key Stakeholder, hãy trả lời:
 - Lợi ích, mong muốn, kỳ vọng về dự án ?
 - Vai trò, mức độ ảnh hưởng của họ ?
 - Các thông tin khác về mối quan tâm, sở thích khác...?
3. Các stakeholder được liệt kê ở trên sẽ nằm ở đâu trong ma trận Power – Interest?
 - *Gợi ý: power: quyền lực, có thể đến từ vị trí, vai trò hoặc mức độ ảnh hưởng. Interest: lợi ích hoặc mối quan tâm*
 - *Vẽ ma trận power – interest*
 - *Hãy đánh giá power và interest của các stakeholder trong dự án,*
 - *Và xếp họ vào các ô tương ứng trong ma trận power – interest.*

Stakeholder Register Sample

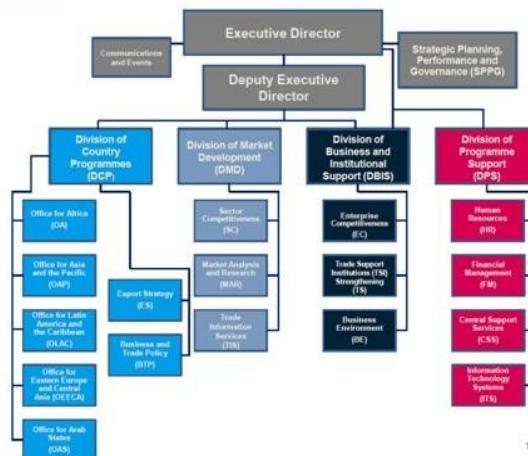


ID	Bên liên quan	Phòng ban/ Bộ phận	Quyền lực Khả năng ảnh hưởng	Mức độ quan tâm	Mong muốn Kỳ vọng	Phân nhóm quản lý
Sample	Trần Duy Hưng	Phòng Chiến Lược	Lớn	Cao	Phối hợp triển khai	Quản lý chặt chẽ
Sample	Nguyễn Thị Thập	Phòng Nhân Sự	Lớn	Thấp	Không có phát sinh ảnh hưởng tới nguồn lực	Giữ hài lòng

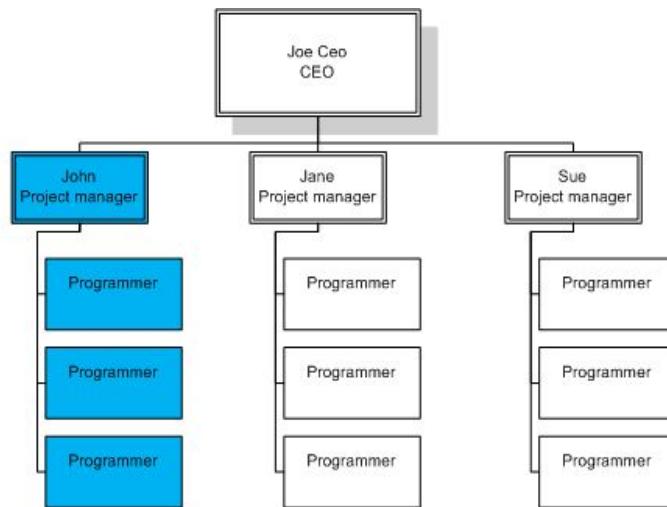
3. Organizational Structures



- The structural model used by an organization will have a huge impact on how project managers interact with team members and stakeholders.
- Types of organization structure
 - Projectized
 - Functional
 - Matrix
 - Strong Matrix
 - Weak Matrix
 - Balanced Matrix
 - Composite



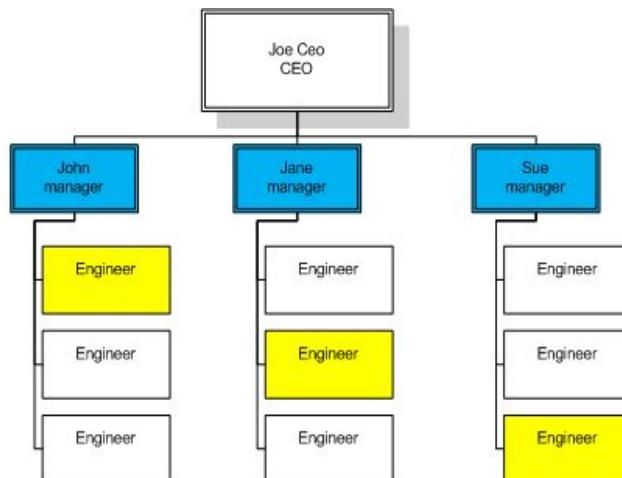
3. Organizational Structures: Projectized



Blue boxes show project coordination

Projectized Organization

3. Organizational Structures: Functional

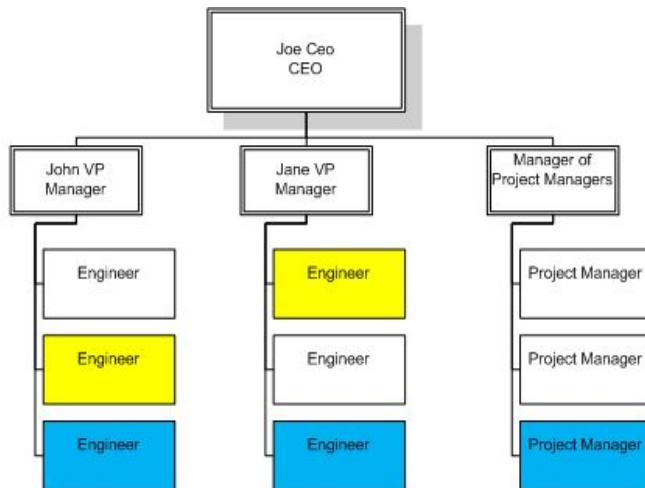


Yellow boxes show team members

Blue boxes show project coordination

Functional Organization

3. Organizational Structures: Strong Matrix



Yellow boxes show team members

Blue boxes show project coordination

Strong Matrix Organization

An organization is said to have a strong matrix when the project manager's authority is higher than that of the functional manager.

3. Organizational Structures

Project manager

- The project manager is the person assigned by the performing organization **to lead the team to meet the project's objectives and stakeholders' expectations.**
- To be the most effective, project managers need to have a balance of these three skill sets:
 - Technical project management.
 - Leadership.
 - Strategic and business management.
- The PMI Talent Triangle®



3. Organizational Structures



Project management team

- There may be too much project management work for one person to perform on large project. Therefore, the project manager may select team members to help **perform the project management activities**.
- The subset of project team. Normally appointed earlier

Project team

- The team is a group of people who will **complete work on the project**.
- The team members can **change** throughout the project as people are added to and removed from the project.

Project Manager



Other team members

3. Organizational Structures



Sponsor/initiator

- Provides the **financial resource** for the project.
- When a project is first conceived, the sponsor **champions** the project.
- Play a main role in the **development** of the **initial scope and charter**.
- In this case, some of the functions otherwise associated with the sponsor may be taken over by **senior management** in the performing organization
- If the project is being done for an **outside customer**, the customer may be both the sponsor and the customer.

Functional Manager

- Manages and **"owns"** the **resources** in a specific department.
- **Approve the final schedule** during schedule development.
- **Approve the final project management plan** during project management plan development.
- Manage activities within their functional area.
- Assist with problems related to **team member performance**.
- To avoid conflict, the project manager and functional managers must coordinate their respective needs regarding the **use of resources** to complete project work.

3. Organizational Structures



Project Management Office (PMO)

- An organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques
- A primary function of a PMO is to support project managers in a variety of ways, there are several types of PMOs:

Type of PMO	Supportive	Controlling	Directive
Degree of Control	Low	Moderate	High
Roles and responsibility	Supplying templates, best practices, training, access to information, and lessons learned from other projects.	Compliance to specific templates, forms, and tools; and conformance to governance frameworks.	Directly managing the projects. Project managers are assigned by and report to the PMO.

Group discussion



So sánh ưu/ nhược điểm của từng loại tổ chức

	Projectized	Functional	Matrix (Strong Matrix)
Ưu điểm			
Nhược điểm			

Advantages & Disadvantages



• Functional

Advantages	Disadvantages
<ul style="list-style-type: none">• Clear career paths in specialization areas• Team members report to one supervisor• Easier specialist• Management	<ul style="list-style-type: none">• Limited collaboration across departments• Slow responses to change• No project managers or project managers have no real authority

• Projectized

Advantages	Disadvantages
<ul style="list-style-type: none">• Efficient project organization• Project loyalty• Simplified communications	<ul style="list-style-type: none">• Lack of professionalism in specialization areas• No “home” when projects are completed• Duplication of facilities and job functions

Advantages & Disadvantages



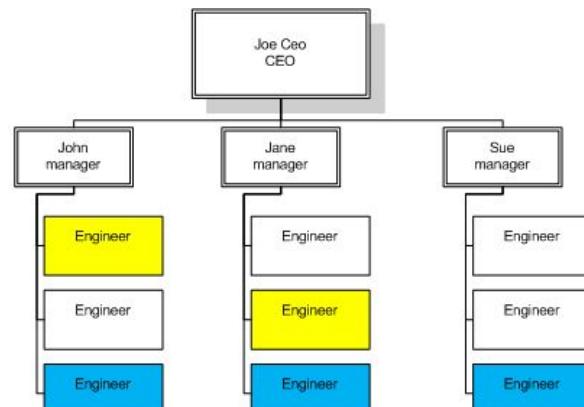
• Matrix

Advantages	Disadvantages
<ul style="list-style-type: none">• Improved project manager control over resources• Project objectives are supported in the organization• More support from functional organization	<ul style="list-style-type: none">• More than one boss for project team members• Resource allocation is challenging• Potential for conflict between functional and project managers

3. Organizational Structures: Weak matrix



- The project manager's role in a weak matrix (or in a functional organization) might be more of a:
- Project Expediter:** acts primarily as a staff assistant and communication coordinator, and cannot make or enforce decisions.
- Project Coordinator:** similar to the project expediter except the coordinator has some power to make decisions, some authority, and reports to higher-level manager.

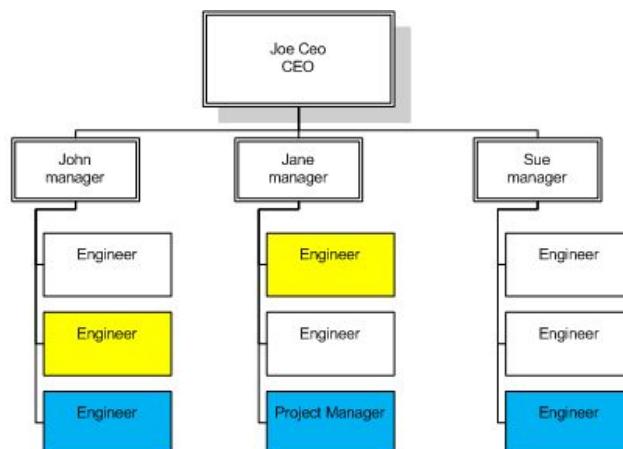


Yellow boxes show team members

Blue boxes show project coordination

Weak Matrix Organization

3. Organizational Structures: Balanced matrix



Yellow boxes show team members

Blue boxes show project coordination

Balanced Matrix Organization

Group discussion



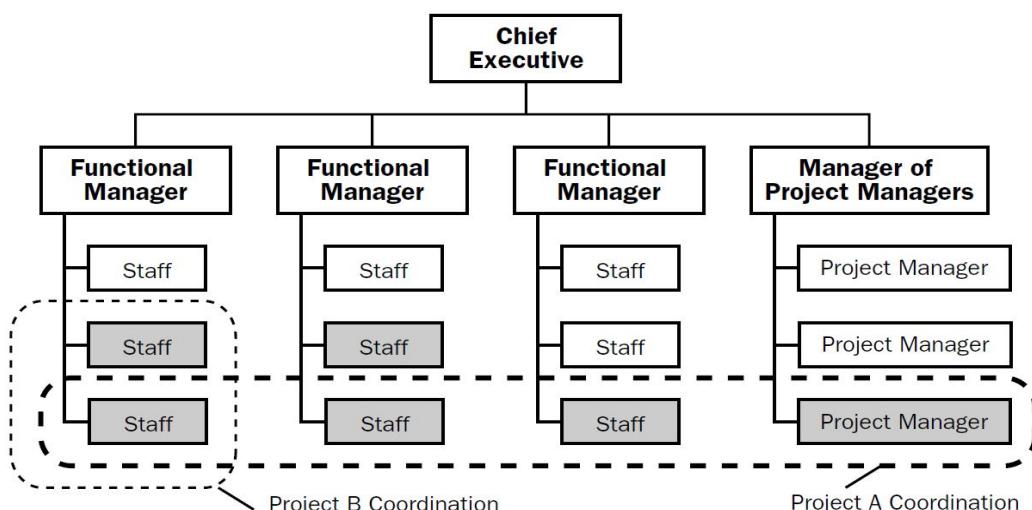
- Phân biệt sự khác nhau giữa các cơ cấu tổ chức

Strong Matrix	Balance Matrix	Weak Matrix

3. Organizational Structures: Composite



- Most modern organizations involve all these structures at various levels. It is a combination of all the other types of organizations.



(Gray boxes represent staff engaged in project activities)

4. Plan Stakeholder Engagement



What?

- Process of developing approaches to involve the stakeholders into your project

Why?

- Stakeholder engagement is critical to project success
- The levels of engagement of each stakeholder are different at each stage of the project

When?

- Periodically throughout the project as needed.



4. Plan Stakeholder Engagement



How?

- Determine upon the level of engagement required at each stage of the project from each stakeholder.



Unaware: unaware of the project or its potential impacts



Resistant: aware of the project impacts and resistance to change



Neutral: aware of the project and neither supports nor resists the project objectives



Supportive: aware of the project and supportive of change



Leading: aware of the project and actively engaged in ensuring project success

Group discussion



- Thảo luận về biểu hiện, hành vi của BLQ tương ứng với 5 level of engagement
 - Nếu bạn nói chuyện với người đó, thì biểu hiện của họ sẽ như thế nào?



Unaware



Resistant



Neutral



Supportive



Leading

4. Plan Stakeholder Engagement



How?

- Compare the current engagement level of all stakeholders to the desired level of engagement required for a successful project completion.

Stakeholder Engagement Assessment Matrix

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Bob	C			D	
Carol			C		D
Ted		C		D	
Alice				C,D	
Joe			C	D	

'C' the current level of engagement.

'D' the desired level of engagement.

4. Plan Stakeholder Engagement



How?

- Investigate the underlying reasons for the gap between current and desired level
- Develop the appropriate communication strategy to close the gap and effectively engage the stakeholder.

Stakeholder Engagement



4. Plan Stakeholder Engagement



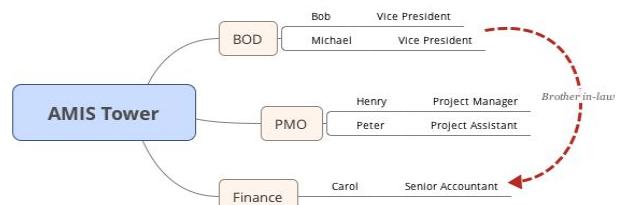
Stakeholder engagement assessment matrix

- supports comparison between the current engagement levels of stakeholders and the desired engagement levels.

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Bob	C			D	
Carol			C		D
Ted		C		D	
Alice				C,D	
Joe			C	D	

Mind mapping

- visually organize information about stakeholders and their relationship to each other and the organization.



4. Plan Stakeholder Engagement



Stakeholder Engagement Plan

- Current and desired engagement levels of stakeholders
- Scope and impact of change to stakeholders
- Stakeholder communication requirements for the current phase of the project: Format, content, level of detail, and language of information to be distributed to stakeholders, timeframe and frequency of distribution of information to stakeholders

STAKEHOLDER MANAGEMENT PLAN

Project Title: _____	Date Prepared: _____				
Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
C = Current level of engagement D = Desired level of engagement					
Stakeholder	Information to be distributed	Reason for the distribution	Time frame and frequency		

Group discussion: Lên kế hoạch Quản lý Bên liên quan



- Hãy đi lần lượt với từng Key Stakeholder trong nhóm Manage Closely và trả lời các câu hỏi sau:
- Mức độ tham dự hiện tại (**current level of engagement**) của họ đang ở đâu?
 - *Gợi ý: có 5 mức độ tham dự: unaware, resistant, neutral, supportive, leading*
- Đễ dự án diễn ra thuận lợi, thì mình cần đưa họ lên mức nào (**desired level of engagement**) ?
 - Lý do vì sao họ vẫn chưa ở mức đấy?
 - *Gợi ý: Tìm hiểu lý do vì sao họ vẫn chưa ủng hộ dự án*
 - Có cách nào để thu hẹp khoảng cách từ trạng thái hiện tại tới trạng thái mong muốn?
 - *Gợi ý: có cách nào để lấy được sự ủng hộ? Nếu không ủng hộ thì làm sao cho họ trung lập? Phương án giao tiếp là gì?*
- Tham khảo ý kiến chuyên gia mà bạn tin tưởng và viết lại kế hoạch quản lý các bên liên quan.

Stakeholder Engagement Plan



ID	Bên liên quan	Không biết	Chống đối	Trung lập	Üng hộ	Dẫn dắt	Phương án giao tiếp	Thời điểm giao tiếp/ Tần suất giao tiếp
Sample	Anh Quang- Lãnh đạo khối CNTT			C	D		Trao đổi thông tin về dự án, đưa ra một số mục tiêu của dự án. Nhờ tư vấn, đóng góp ý kiến về công nghệ cho dự án.	Họp giao ban hàng tuần
Sample	Anh Bình - TP quản lý trung tâm dữ liệu			C		D	Đề nghị giúp thảo gỡ về các vấn đề liên quan đến tích hợp hạ tầng giữa ABC và tập đoàn	Thứ 2, ngày 25/07/2021

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5. Manage Stakeholder Engagement



What?

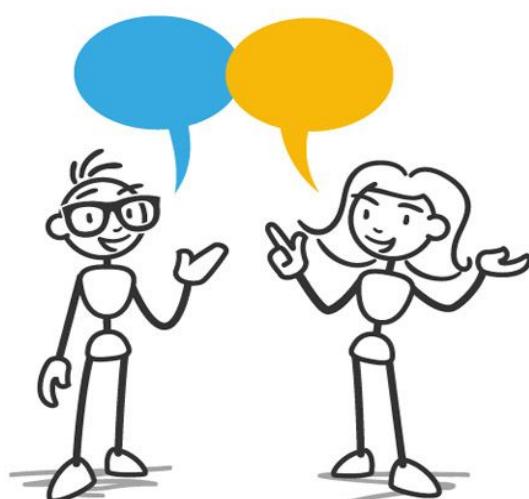
- The process of communicating and working with stakeholders to gain the support, maintain the supports and minimize the resistance or negative impact from stakeholders.

Why?

- Stakeholders attitude and commitment to project can be changed when new event occurs that may affect to them

When?

- Throughout the project.



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Group discussion



- Phân biệt 3 loại sự kiện Risk, Issue, Change

Risk	Issue	Change

5. Manage Stakeholder Engagement



How?

- Work with stakeholders to **meet their needs and expectations**, and foster appropriate stakeholder involvement.
- Address, clarify, and resolve events that may be raised by stakeholders, or may affect to stakeholders :
 - Issues
 - Changes
 - Risks
- Managing **stakeholder expectations** through communication, negotiation and conflict resolution

Stakeholder Expectation



5. Manage Stakeholder Engagement



Ground rules

- A set of expected behaviors that the team agrees to use them, as well as other stakeholders, with regard to stakeholder engagement.
- Ground rules help to reduce conflicts

Communication skills

- **Feedback.** Feedback is used to ensure that the information to stakeholders is received and understood.
- The project management team uses feedback to assist in understanding stakeholder reaction to the various project management activities and key decisions.

Ground Rules

Clear expectations from all parties, is a key component of successful engagement.

We will:

- be clear about who we are and what we do
- consider the interests and concerns of affected stakeholders
- say ‘no’ if we need to, and be consistent

We will not:

- seek stakeholder feedback on decisions that have already been taken
- engage in issues that are beyond the project’s scope
- say “yes” when we know that “no” will come later.

5. Manage Stakeholder Engagement



Issue Logs

- Help project manager to document issues, define the impact, priority and urgency of the issues, assign ownership of those issues, and established due dates for resolution.

ISSUE LOG				
Project Title: _____		Date Prepared: _____		
Issue ID	Category	Issue	Impact on Objectives	Urgency
Responsible Party	Actions	Status	Due Date	Comments

Change Logs

- A change log is a document that tracks changes made during a project's design. It tracks the progress of each change, including whether it's approved, rejected, or deferred.

PROJECT CHANGE LOG								
Project Name:				Project Sponsor:				
#	Originator	Description of Change	Date Received	Date Required	Scope Impact	Schedule Impact	Spending Impact	Approved? Yes/No
1								
2								
3								
4								

Issue Log



ID	Tên sự vụ	Thời điểm phát sinh	Nguyên nhân	Ảnh hưởng	Mức độ nghiêm trọng	Thời hạn xử lý	Người chịu trách nhiệm xử lý	Trạng thái xử lý
Sample	Lỗi Kết nối hệ thống CNTT MC - MB sang	11/08/2021	Hệ thống XXX quá tải, không xử lý được lượng lớn giao dịch từ MC gửi	247 giao dịch chưa được xử lý, hiện đang tạm dừng hệ thống để xử lý bằng tay	Cao	15/8/2021	PM CNTT	Completed
Sample	Hệ thống không quản lý được hạn mức của KH với từng sàn e-Commerce	07/08/2021	Hệ thống cũ chưa có chức năng này	Không triển khai được nhiều đối tác và không tạo ra lợi thế về sự linh hoạt với các đối thủ cạnh tranh khác	Cao	13/8/2021	PM IT	In Progress

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6. Monitor Stakeholder Engagement



What?

- The processes of monitoring overall stakeholder relationships and adjusting strategies and plans for engaging stakeholders in the project.

Why?

- The efficiency and effectiveness of stakeholder engagement activities may not be as expected
- Stakeholder community and stakeholder engagement evolve as the project evolves

When?

- Throughout the project.



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6. Monitor Stakeholder Engagement



How?

- Compare the results of current stakeholders engagement activities with the activities outlined in Stakeholder Engagement Plan
- Identify and quantify any variances
- Propose options to respond to variances: Maintain, increase or decrease the efficiency and effectiveness of stakeholder engagement
- Prioritise options and select the best response for a variance in stakeholder engagement.

Maintain, Increase or Decrease ?



6. Monitor Stakeholder Engagement



Stakeholder analysis.

- determine the level of engagement of stakeholder groups and individuals at any particular time in the project.

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Bob	C			D	
Carol			C		D
Ted		C		D	
Alice				C,D	
Joe			C	D	

Review



- Identify Stakeholders
 - Stakeholder analysis
 - Stakeholder wheel
 - Power/interest grid
 - Salience model
 - Stakeholder cube
 - Stakeholder register
- Organization Structures
 - Projectized
 - Functional
 - Matrix
 - Strong Matrix
 - Weak Matrix
 - Balanced Matrix
- Plan Stakeholder Engagement
 - Stakeholders' level of engagement
 - Unaware
 - Resistant
 - Neutral
 - Supportive
 - Leading
 - Stakeholder engagement assessment matrix
 - Stakeholder Engagement Plan
- Manage Stakeholder Engagement
 - Special events
 - Risk
 - Change
 - Issue
 - Importance of managing stakeholders' expectations
 - Relationships with stakeholders
 - Ground rules
- Monitor Stakeholder Engagement

Assignment!!!

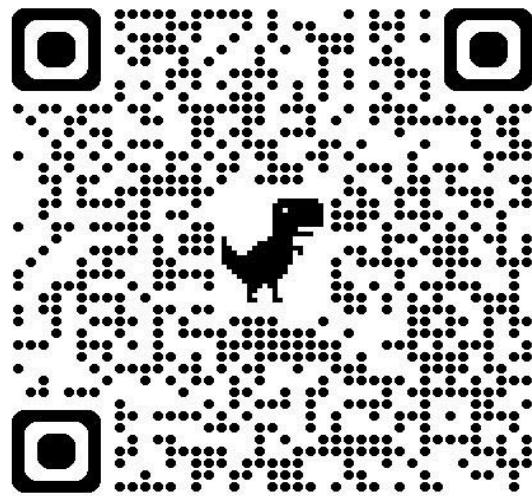


- Làm BTVN trên LMS:
Stakeholder
- Học nhóm
- Thực hành viết Stakeholder
Register cho dự án hiện tại
của mình
- Làm hồ sơ thử theo mẫu
của PMA

Group discussion



- Nội dung nào mới biêt?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?

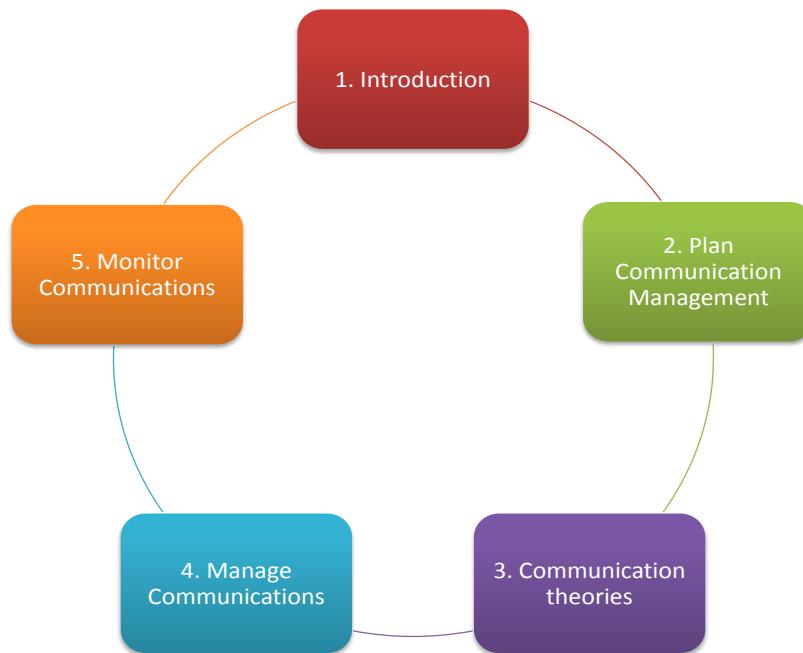


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Project Communications Management



Overview



Group discussion: Case study

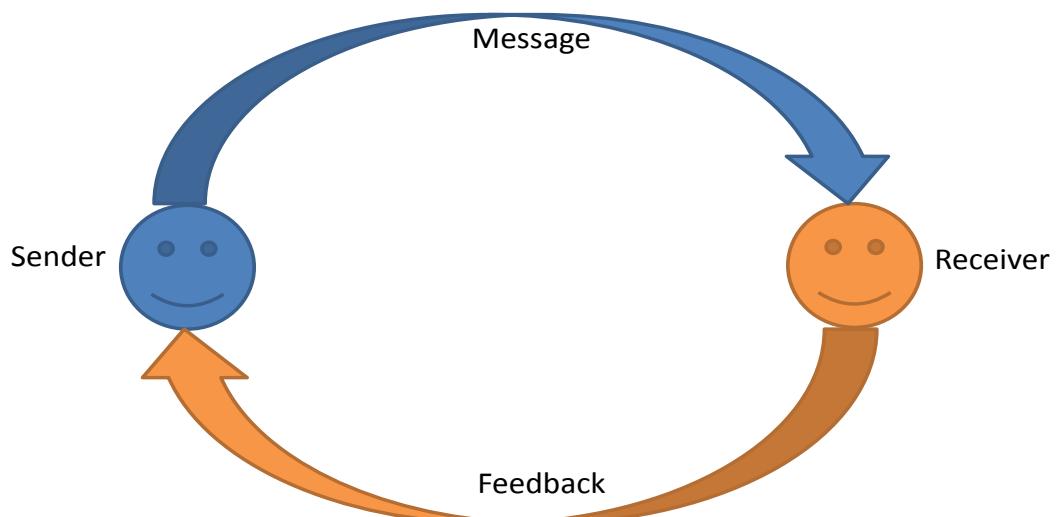


- Tình huống giao tiếp dựa trên một sự kiện có thật giữa bộ phận IT và bộ phận bán hàng trong công ty fintech
- 10AM sáng ngày thứ 4: Anh B (Kỹ thuật hỗ trợ) nhận được email từ chị A (Chuyên viên bộ phận nghiệp vụ)
 - **Chị A:** Em ơi hệ thống có lỗi, em vào xử lý giúp chị được không ?
 - **Anh B:** Chị ơi, chị có thể gửi file log giúp em được không ?
- 8h30 AM Sáng ngày thứ 5
 - **Chị A:** Em ơi hệ thống có lỗi, em vào xử lý giúp chị được không ?
 - **Anh B:** Chị ơi, chị không gửi file log thì em làm sao có thể xử lý cho chị được ah
- 9AM Sáng ngày thứ 6:
 - **Chị A:** Em ơi hệ thống có lỗi, em vào xử lý giúp chị được không ? <Copy file log dài tầm 20 trang A4>
 - **Anh B:** Chị ơi, chị paste vào email như thế này thì em làm sao xử lý được
- 3AM 15 Chiều thứ 6
 - **Chị A:** Em ơi, chị đã làm theo những gì em nói, xử lý hay không là tuỳ em
 - CC: Sếp bộ phận X, sếp bộ phận Y
 - **Anh B:** (Kỹ thuật hỗ trợ): Ô'

1. Introduction: What is Project Communications?



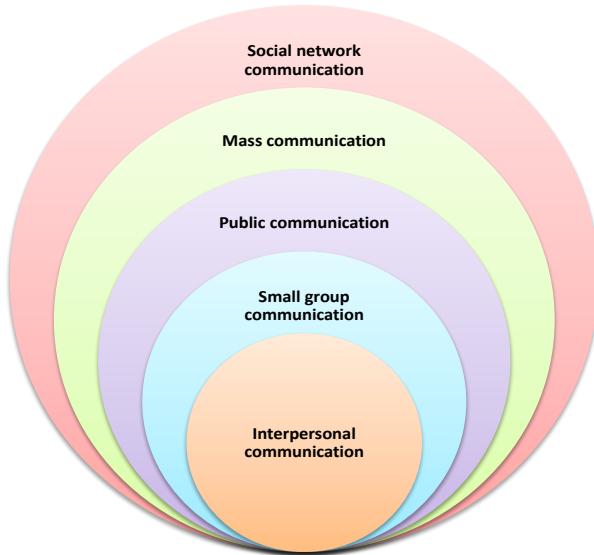
Communication is the exchange of information, intended or involuntary. The information exchanged can be in the form of ideas, instructions, or emotions.



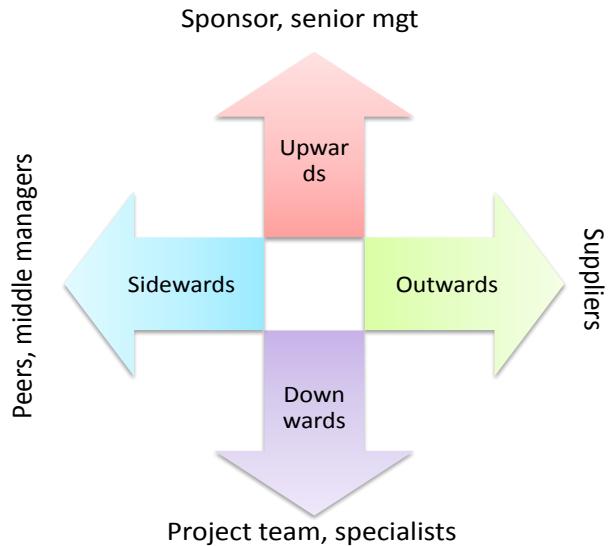
1. Introduction: Communications Types



Levels of communications



Vertical and horizontal communications



1. Introduction: Communication Types



Formal

(reports, minutes, briefings)

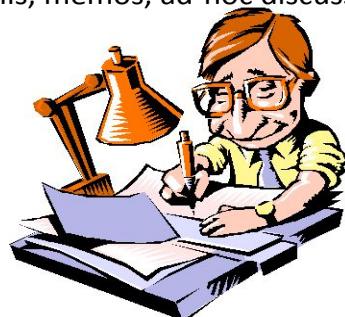


Verbal (voice inflections)
and **nonverbal** (body language).



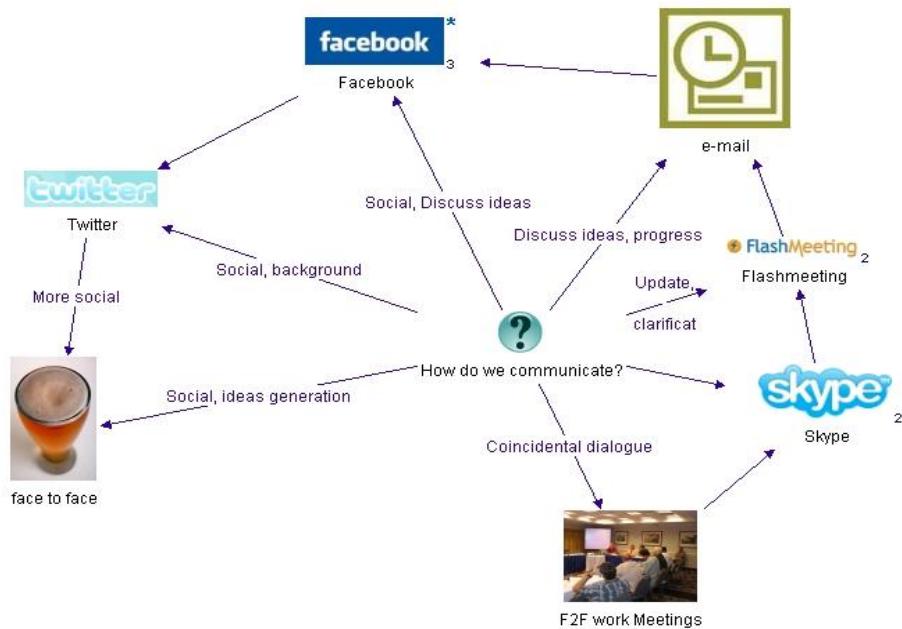
Informal

(emails, memos, ad-hoc discussions);



Written

1. Introduction: Communication Media



1. Introduction: Project Manager's communication

Thousand ways
to communicate in our world
today.

The project manager spends
90% of his time in communication.

The quality of your project is the
quality of your communication



2. Plan Communication Management



What?

- Process of determining the communication needs of the stakeholders and communication approaches



Why?

- Effective stakeholder engagement requires relevant information in a timely manner

When?

- As early as possible
- Should be reviewed periodically throughout the project



irrelevant/ Insufficient information

2. Plan Communication Management



Communication Requirement Analysis

- Stakeholder responsibility, relationships, interdependencies
- Stakeholders information needs
- The format for communicating the information
- How often it's distributed,
- And who prepares it.

In addition, the methods of:

- Storage
- Retrieval
- And disposition of the project information

Horenso: Japan's fundamental business communication techniques

- **Ho:** Report/Presentation
- **Ren:** Contact/ Update
- **So:** Meeting/ Consultation



2. Plan Communication Management



Communication styles assessment

- Often used with unsupportive stakeholders, this assessment may follow a stakeholder engagement assessment to identify gaps in stakeholder engagement that require additional tailored communication activities and artifacts.

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Bob	C			D	
Carol			C		D
Ted		C		D	
Alice				C,D	
Joe			C	D	

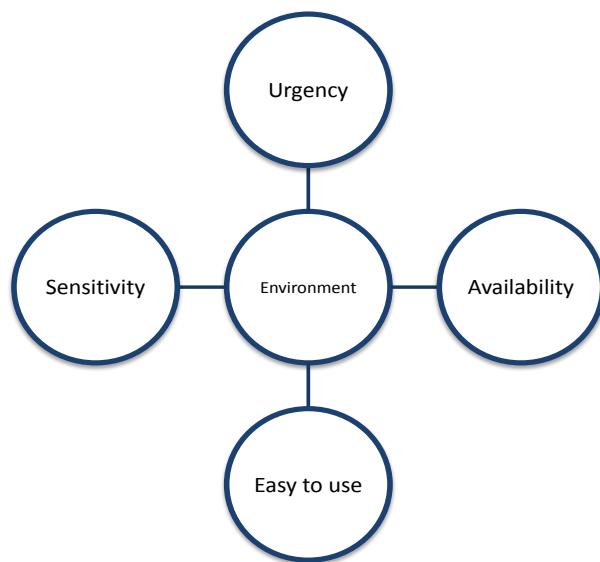
3. Stakeholder engagement assessment matrix

2. Plan Communication Management



Communication Technology

- As part of the communications planning, the project manager should identify all of the required and approved methods of communicating.
- Communication modalities can also include meetings, reports, memos, e-mails, and so on.
- Factors affect the choice of technology:



2. Plan Communication Management



Communications Management Plan

- Can be formal or informal,
- Highly detailed or broadly framed,
- And based on the needs of the project.

COMMUNICATIONS MANAGEMENT PLAN				
Project Title:	Date Prepared:			
Message	Audience	Method	Frequency	Sender
Term or Acronym	Definition			
Communication Constraints or Assumptions:				
Attach relevant communication diagrams or flowcharts.				

Group discussion: Lên kế hoạch giao tiếp

- Lên kế hoạch giao tiếp với 2 stakeholders quan trọng trong dự án:
 - Stakeholder đó là ai? Họ cần những thông tin gì ? Nhu cầu thông tin của họ là gì ?
 - Nhu cầu thông tin đó có thể thỏa mãn qua hình thức giao tiếp nào ?
 - Kênh giao tiếp là gì ?
 - Nội dung giao tiếp ?
 - Thời gian/ Tần suất giao tiếp ?
 - Trường hợp khẩn cấp liên hệ qua kênh nào ?
 - Có cần mã hoá gì không ?
 - Có lưu ý gì đặc biệt không ?

Communication Management Plan Sample



ID	Bên liên quan/ Nhóm bên liên quan (Stakeholders)	Nhu cầu thông tin (Communication Need)	Phương thức giao tiếp (Communication method)	Thời điểm/ Tần suất (Time Frame/ Frequency)	Kênh/ phương tiện giao tiếp (Chanel/ Media)	Người chịu trách nhiệm (Owner)
Sample	Tên Khách hàng Customer	- Update project progress - Cập nhật tiến độ dự án	- Progress Report	- Hàng ngày - Daily	Chatwork	BA
Sample	Tên Khách hàng Customer	- Xem sản phẩm demo - Cung cấp yêu cầu và phản hồi của khách hàng	- Biweekly Meeting	- 2 tuần/ lần - Biweekly	Skype	BA + Project team

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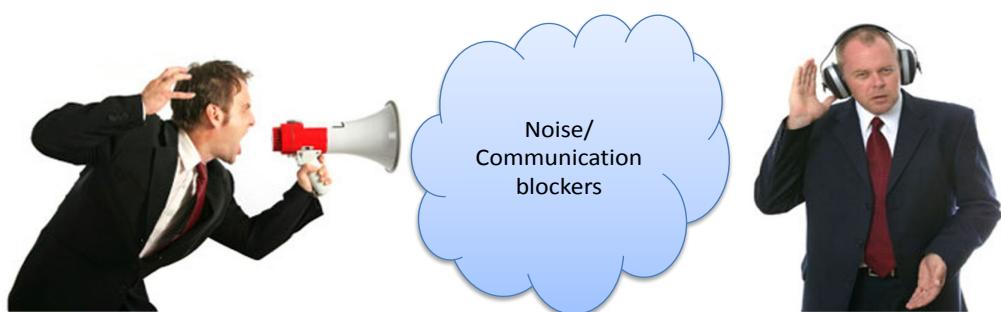
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3. Communication theories



Communication Model

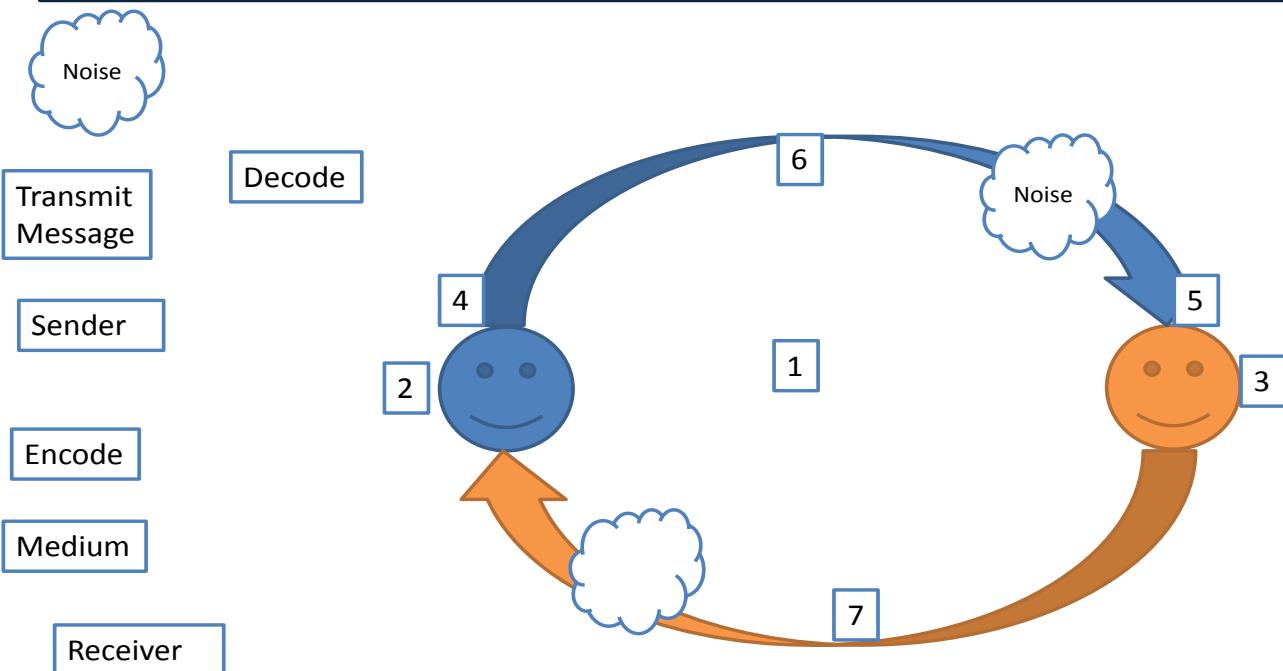
- Communication model is appropriate for the project that is undertaken and that any barriers (noise) are identified and managed.
- Communication blockers:
 - Noise surrounding, distance, improper encoding of messages, negative attitude, language, culture.....



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Group discussion : Xếp vào vị trí phù hợp



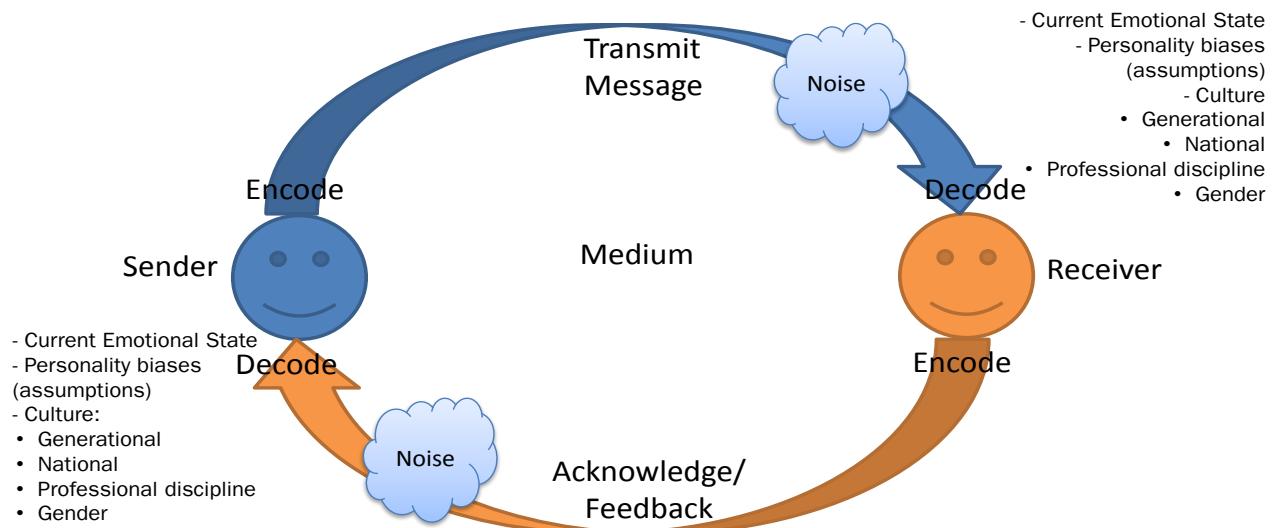
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3. Communication theories



Communication Model



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3. Communication theories



The sender's responsibility

- Encode the message clearly
- Select a communication method
- Send the message
- Confirm that the message was understood by the receiver



The receiver's responsibility

- Make sure that the information is received in its entirety,
- Decode the message
- Confirm that the message was understood

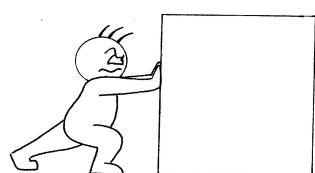


3. Communication theories



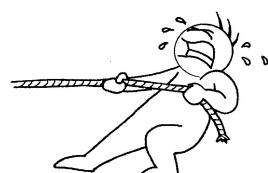
Communication Methods

- **Push communication**
 - Sent a specific information to specific recipients. Examples are letters, memos, e-mails, faxes etc.
 - This ensures that message is sent but will not certify that it is actually received or understood. (Push the message to recipient)



Communication Methods

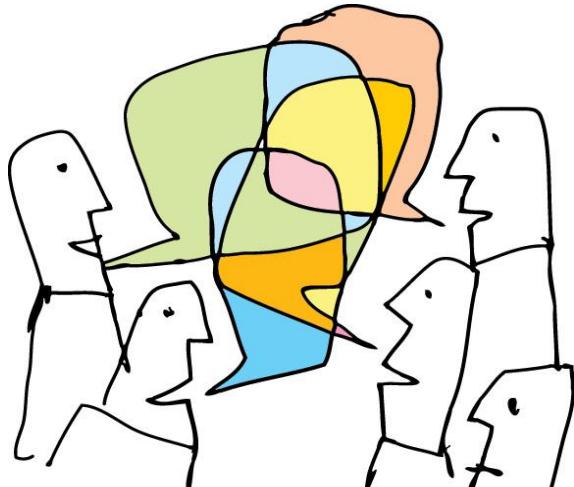
- **Pull communication**
 - Used for large volume of information and large audiences. Examples are internet sites, company databases, e-learning etc.
 - Recipients has to access the communication content (Pull out information) at their own discretion.



3. Communication theories

Communication Methods

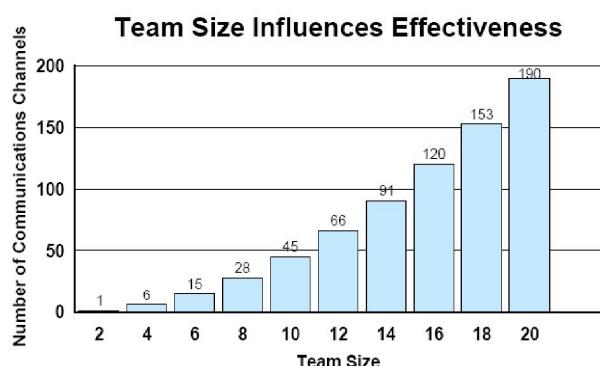
- **Interactive communication**
 - Information are pushed and pulled in real time between two or more parties in multidirectional (Phone calls, meetings, interviews...).
 - **Feedback** is information about reactions to communications, a deliverable, or a situation.
 - Feedback supports interactive communication between the project manager, team and all other project stakeholders.
 - Most effective way.



3. Communication theories

Communication Complexity

- Project communication become exponentially complicated as more people involved
- **Communication channels:** Indicator of the complexity of a project's communications.
- A project with "N" number of stakeholders have $N(N-1)/2$ possible channels of communications



Group discussion



- Lớp có 16 học viên + giảng viên. Tính toán số kênh giao tiếp trong lớp học
- Thêm 2 trợ giảng vào trong lớp. Có thêm bao nhiêu kênh giao tiếp ?

4. Manage Communications



What?

- The process of ensuring timely and collecting, storing, retrieving, distributing, and the ultimate disposition of project information in accordance to the communications management plan.

Why?

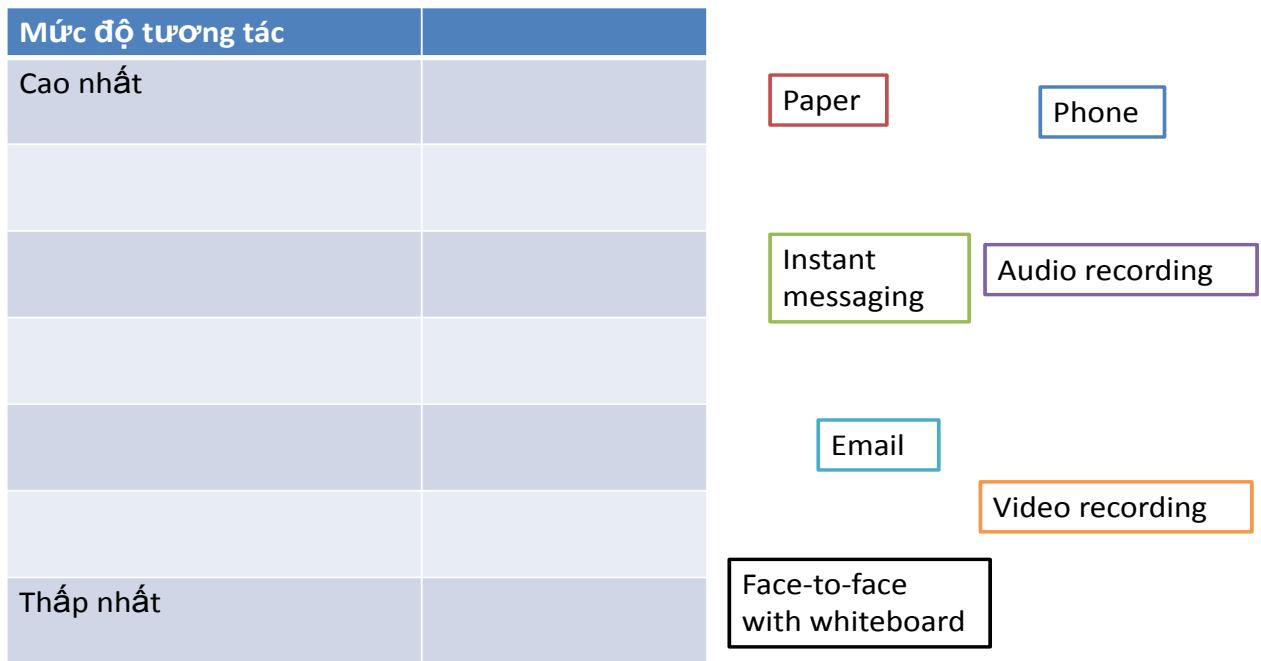
- The key benefit of this process is that it enables an efficient and effective information flow between the project team and the stakeholders.

When?

- Throughout the project.



Group discussion : Mức độ tương tác

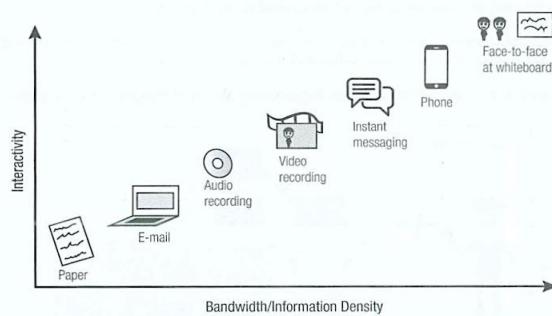


4. Manage communications



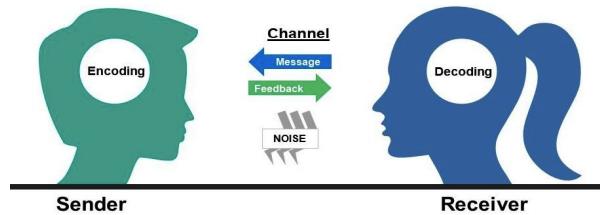
Face to Face Communication

- Preferred way for agile stakeholder to communication
- Highest bandwidth, transfer the most information in a given period of time
- Interactivity in real time



Two way communication

- Knowledge workers tends to know more about their work than people who lead and steward the project
- Information flow is between stakeholders and bidirectional



4. Manage communications



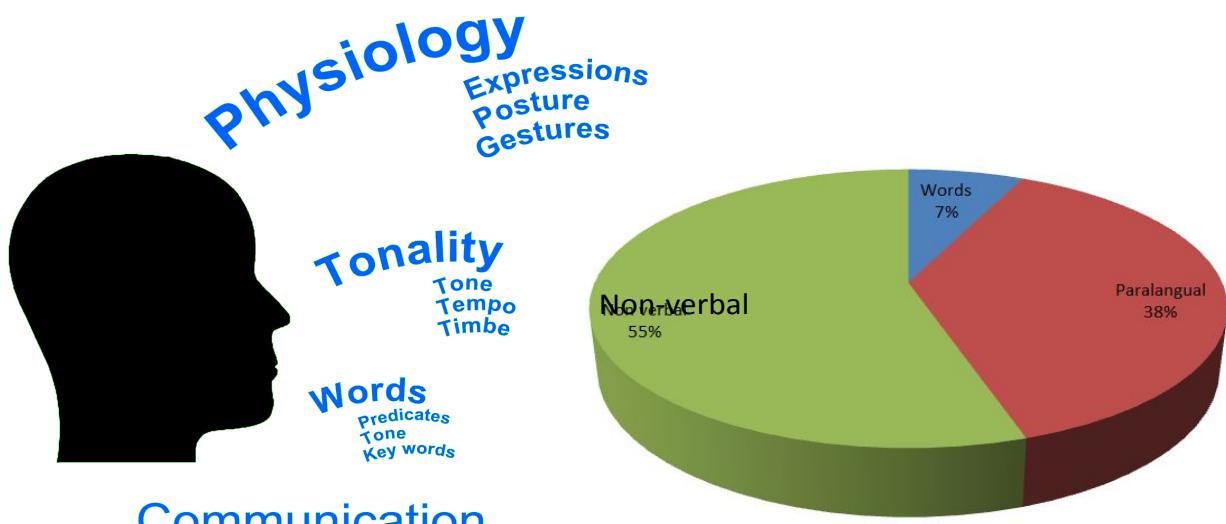
Face-to-face with whiteboard



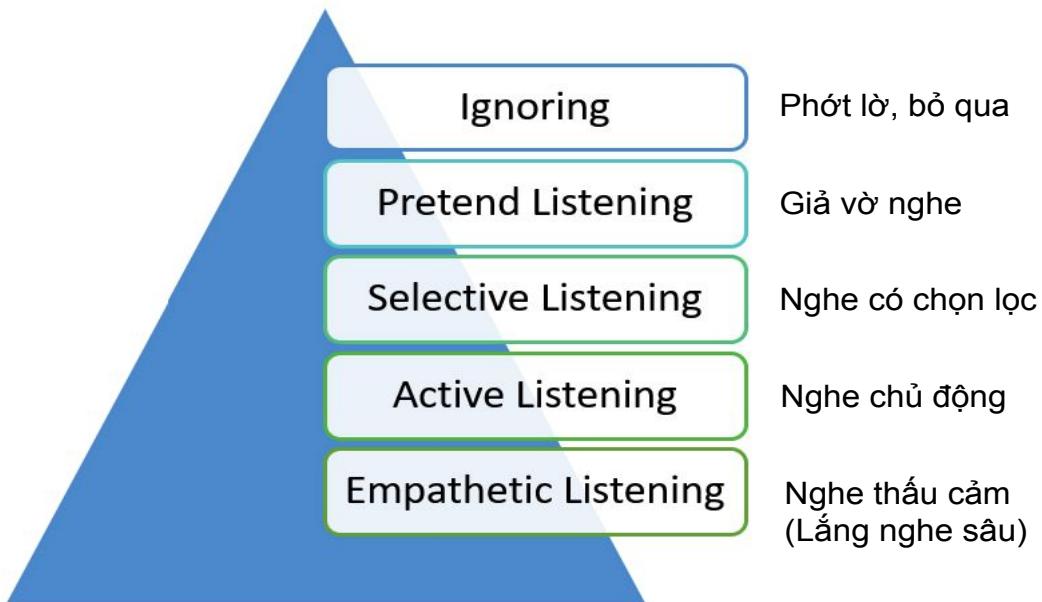
4. Manage communications



Elements in face-to-face communication



Group discussion : Phân biệt 5 cấp độ lắng nghe



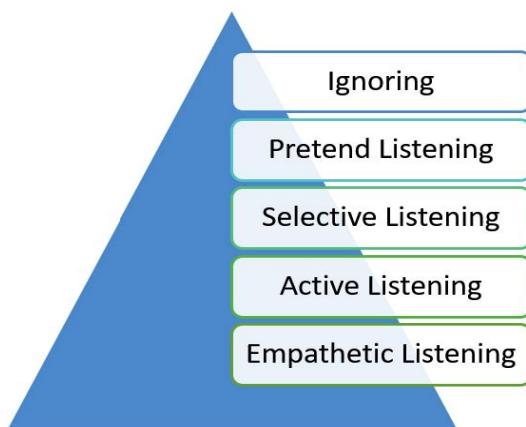
4. Manage communications



Active listening

- Active listening is the ability to fully engage with someone who is speaking to you. It involves listening to understand, rather than to respond. Some active listening techniques include:
 - Being present
 - Showing interest
 - Asking questions
 - Reflecting: Paraphrase and reflect back what has been said.
 - Maintaining a non-judgmental attitude.
 - Showing empathy: Reflect, validate, and show genuine concern for how the other person is thinking or feeling.

Combining active listening with empathy can improve relationships. This combination is called empathetic listening.



4. Manage communications



Written communication

- **Clear:** Ensure that the **purpose** is directed to the **needs**, and information is presented clearly
- **Concise:** Be concise, do not lose the message by being long winded
- **Correct:** Ensure correct grammar and spelling, avoid misleading information
- **Coherent:** Flow of ideas should be structured in logical manner
- **Controlling:** Controlling the flow of words and ideas may involve graphics or just summaries.



Group discussion: Xây dựng Meeting Todo-list

- Liệt kê những việc cần làm để tổ chức một buổi họp hiệu quả

Trước	Trong	Sau

4. Manage communications



Meeting Management

General:

- Schedule recurring meeting in advance
- Meeting with team regularly

Before the meeting:

- Have a purpose/objective for each meeting
- Create and distribute **agenda**
- Bring right people together
- Let people know their responsibility in advance

During the meeting

- Set a time limit and keep it
- Chair and lead the meeting
- Define next actions and persons in charge

After the meeting

- Document and publish meeting minutes



4. Manage communications



Performance reporting

- Is the act of collecting and providing **performance information** at an appropriate level for each audience.
- Requires some basic tasks:
 - Status review
 - Variance analysis and progress measurement
 - Forecast and trend analysis



Report types

- **Status reports:** describe where the project stands at a specific point in time
- **Variance report:** Earned value report integrates scope, time, cost measures to assess project performance (EV, SV, CV, ...)
- **Progress reports:** describe what the project team has accomplished during a certain period of time
- **Trend reports:** Examine project results over time to see if performance is improving or deteriorating
- **Forecasts:** predict future project status and performance based on past information and trends

Group discussion : Phân biệt các loại báo cáo

- Các loại báo cáo
 - Status report: Báo cáo trạng thái
 - Variance report: Báo cáo sai lệch
 - Progress report: Báo cáo tiến độ
 - Trend report: Báo cáo xu hướng
 - Forecast: Dự báo
- Câu hỏi thảo luận:
 - Báo cáo trạng thái và báo cáo tiến độ khác nhau như thế nào ?
 - Báo cáo xu hướng và dự báo khác nhau như thế nào ?

Status Report Sample



MONTHLY PROJECT STATUS REPORT TEMPLATE

PROJECT NAME		PROJECT CODE	
PROJECT MANAGER		DATE OF STATUS ENTRY	
PERIOD COVERED		PROJECTED DATE OF COMPLETION	

PROJECT STATUS THIS MONTH

OVERALL PROJECT STATUS	HEALTHY	SUMMARY	Enter information here about overall status and highlights: "Regained lost time from last period"; "QA began two days earlier than anticipated"; "Delay in some client feedback, but minimal."
------------------------	---------	---------	--

PROJECT COMPONENTS

COMPONENT	STATUS	OWNER / TEAM	NOTES
BUDGET	UNDER		
SCHEDULE	HEALTHY		
QUALITY	AT RISK		
SCOPE	PROGRESS HALTED		

4. Manage communications



Project Communications

- Information on the project at the level of detail required by the various stakeholders.
- Anytime you need to get a message to a client or sponsor, you use formal communication.
- Any project documents: project reports, requirement specification, or especially a contract: is **always formal written**.
- Meetings are **always informal verbal**, even if the meeting is to say something really important.

- **Informal Written:** Email, memos
- **Formal Written:** Contract, legal notices, project reports
- **Informal Verbal:** Meeting, discussion, phone calls
- **Formal Verbal:** Speeches, mass communication, presentations



Informal



Formal



Verbal



Written

5. Monitor Communications



What?

- Process of assessing how communications are going on your project to make sure information is flowing as planned – in the right way, to the right people and at the right time

Why?

- The right message with the right content needs to be delivered to the right audience, through the right channel, and at the right time throughout the project.



5. Monitor Communications



When?

- It should be reviewed regularly and modified when necessary, when the stakeholder community changes or at the start of each new project phase.

How?

- Determine how project communication is performing by comparing the communications that were implemented compared to those that were planned.
- Identify the ineffectiveness of communications and the reasons behind
- Propose the appropriate way to communicate with stakeholders

Communication: Planned vs Reality



Review



- Introduction
- Types of Project Communications
 - Formal/Informal
 - Verbal/ Written
- Plan Communication Management
 - Communication requirement analysis
 - Communication styles assessment
 - Communication methods: Push, Pull, Interactive
 - Communication technologies
 - Communication Management Plan
- Understand how we communicate
 - Communication model
 - Sender/ Receiver
 - Encode/ Decode
 - Non-verbal
- Manage Communications
 - Effective communication
 - 5C of written communication
 - Meeting management
 - Performance reporting
- Control Communications
 - Actual vs Planned
 - Communication complexity

Assignment!!!

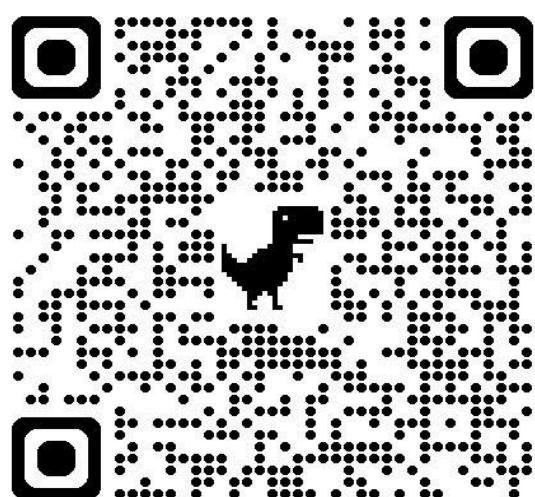


- Làm BTVN trên LMS:
Communication
- Học nhóm
- Thực hành viết
Communication
Management Plan cho dự
án hiện tại của mình
- Làm hồ sơ thử theo mẫu
của PMA. Deadline: trước
buổi học tiếp theo

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công
việc?



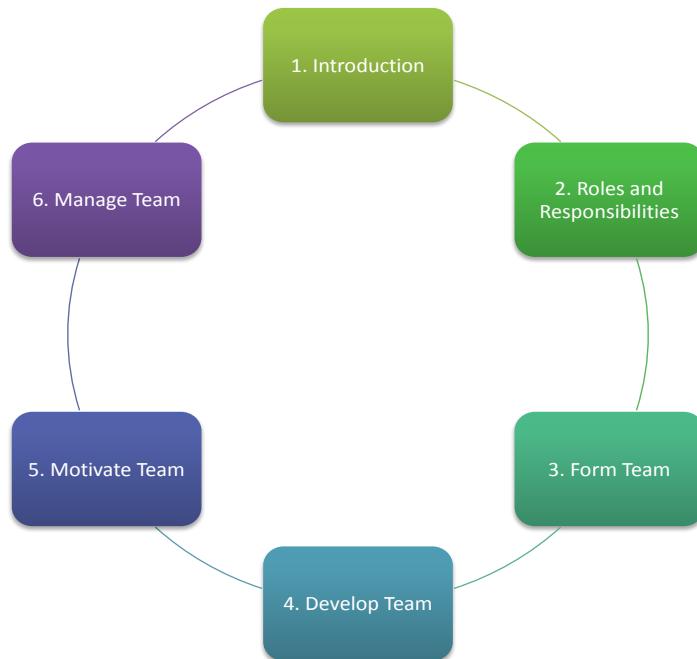
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Project Team Management



Overview



Group discussion



- Team và Group khác nhau như thế nào ?
- Leader và Manager khác nhau như thế nào ?

Team	Group

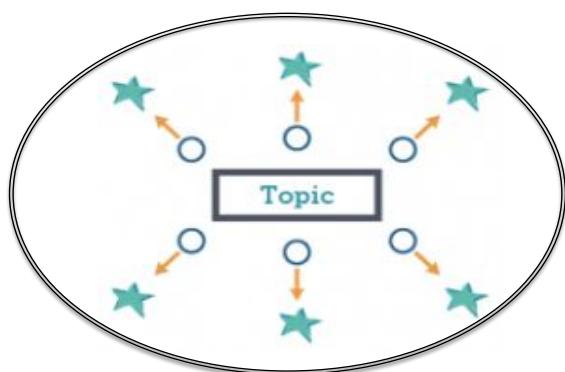
Leadership	Management

1. Introduction: Team vs Group



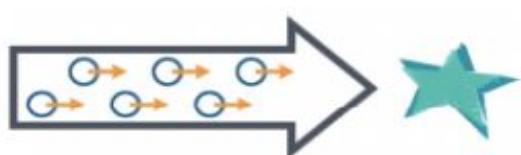
- **Group**

- Common interest



- **Team**

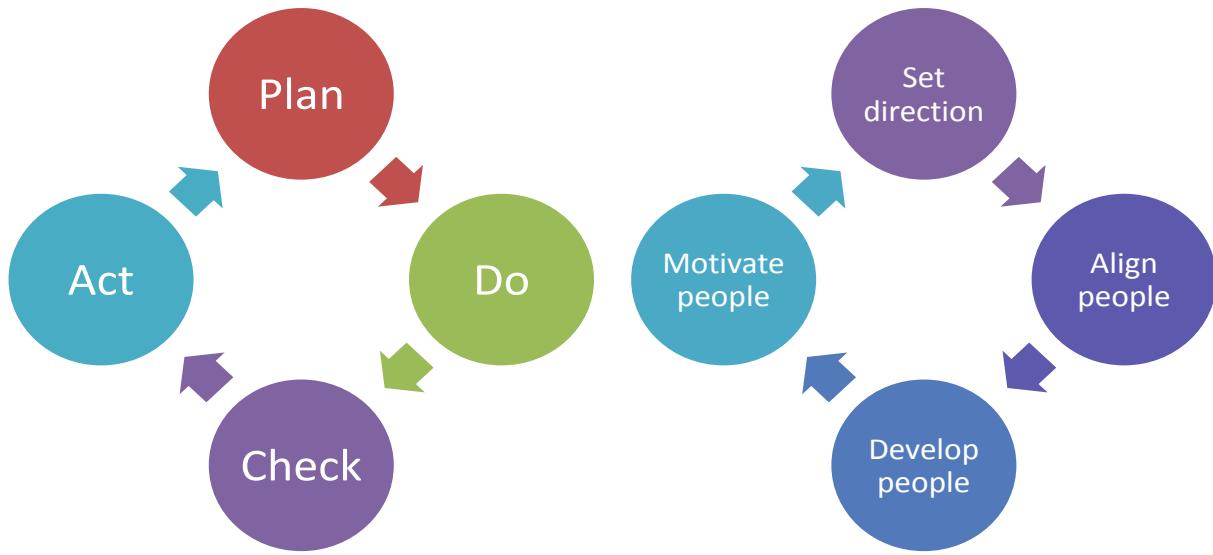
- Shared vision and mission



1. Introduction: Great leaders



1. Introduction: Manager vs Leader

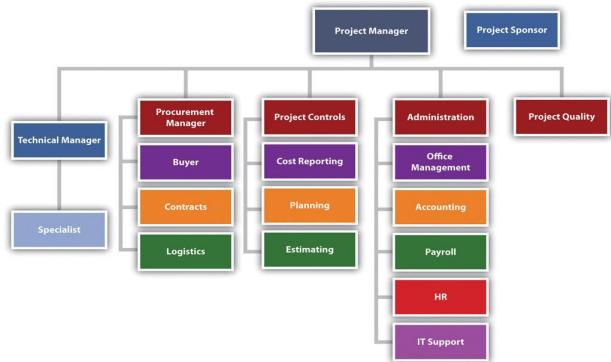


2. Roles & Responsibilities



- The project management team may or **may not have direct control over resource** selection because of collective bargaining agreements, use of subcontractor personnel, a matrix project environment, internal or external reporting relationships, or other reasons.
- Determine all roles and responsibilities to ensure that each work package has an unambiguous owner and all team members have a clear understanding of their roles and responsibilities.
- It's important to recognize that the organization's structure and culture impacts the project organizational structure.

**Organization Chart
(Organization Breakdown
Structure)**



2. Roles & Responsibilities



Responsibility Assignment Matrix (RAM) or RACI chart

- It is used to illustrate the connections between work packages, or activities, and project team members.
- On larger projects, RAMs can be developed at various levels.

	Adam	Ali	Emir	Peter	Sara	Nermin
Collect data	A	I	C	R		I
Analyze data	A	I		R	C	
Order parts	C	A	I			R
Install parts	I	A	R	C		I
Test		A	R	I		
Document	A	I	I		C	R

R: Responsible
A: Accountable
C: Consult
I : Inform

2. Roles & Responsibilities



Position description (Job description)

- Team member responsibilities that require detailed descriptions can be specified in text-oriented, outline format.
- These documents provide information such as responsibilities, authority, competencies, and qualifications.

Description: Project Manager
Project Manager Job Purpose: Accomplishes project objectives by planning and evaluating project activities.
Project Manager Job Duties:
<ul style="list-style-type: none">Accomplishes human resource objectives by recruiting, selecting, orienting, training, assigning, scheduling, coaching, counseling, and disciplining employees; communicating job expectations; planning, monitoring, appraising, and reviewing job contributions; planning and reviewing compensation actions; enforcing policies and procedures.Achieves operational objectives by contributing information and recommendations to strategic plans and reviews; preparing and completing action plans; implementing production, productivity, quality, and customer-service standards; resolving problems; completing audits; identifying trends; determining system improvements; implementing change.Meets financial objectives by forecasting requirements; preparing an annual budget; scheduling expenditures; analyzing variances; initiating corrective actions.Updates job knowledge by participating in educational opportunities; reading professional publications; maintaining personal networks; participating in professional organizations.Enhances department and organization reputation by accepting ownership for accomplishing new and different requests; exploring opportunities to add value to job accomplishments.
Skills/Qualifications: Developing Budgets, Coaching, Supervision, Staffing, Project Management, Management Proficiency, Process Improvement, Tracking Budget Expenses, Self-Development, Planning, Performance Management.

Group discussion



- Có những cách nào (Chiến lược nào) để có được nhân sự cho dự án?

3. Form team



How?

- The resources can be internal or external to the project-performing organization.
- **Internal resources** are acquired (assigned) from functional or resource managers.
- **External resources** are acquired through the procurement processes.
- If the team resources are not available due to constraints such as economic factors or assignment to other projects, the project manager or project team may be required to assign alternative resources, perhaps with different competencies or costs.



3. Form team

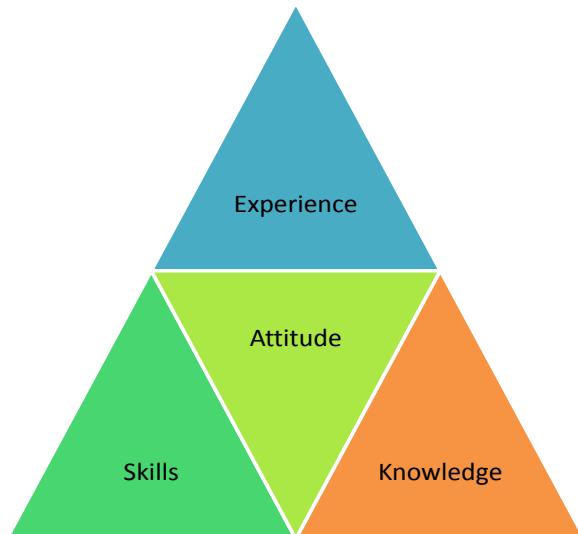


ASK/ASKE Competency model

- Attitude
- Skills
- Knowledge
- Experience

Other criteria

- Availability
- Cost
- Ability
- International factors.

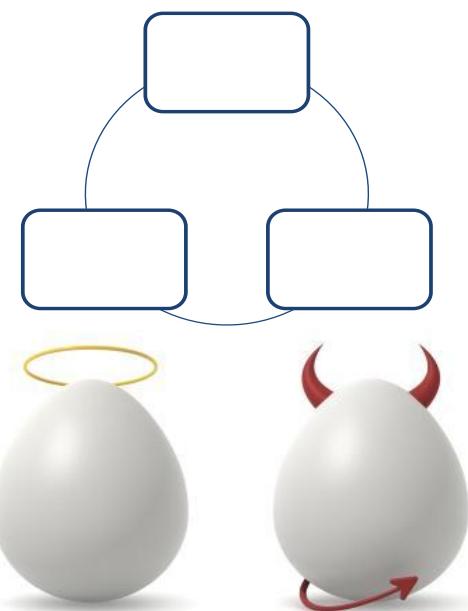


3. Form team



Common mistake: Halo effect

- Ex: You are a great programmer. Therefore we will make you a project manager and expect you to be great at that as well.
- Since these people may not be qualified for the new position, such assumptions can have a negative impact on the project and **should be avoided**.



Group discussion



Thảo luận ưu nhược điểm của từng hình thức team

	Team ngồi chung chỗ (Co-located team)	Team phân tán (Distributed team)
Ưu điểm		
Nhược điểm		

3. Form team



Co-Location

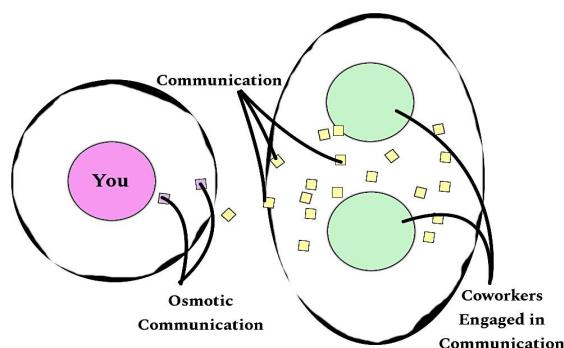
- Placing many or all of the most active project team members in the same physical location
- It can be temporary, such as at strategically important time during the project, or for the entire project
- **War Room**
- Co- location strategy can include a meeting room with electronic communication devices, places to post schedule, to enhance communication and a sense of community



3. Form team: Co-location benefits



Osmotic Communication



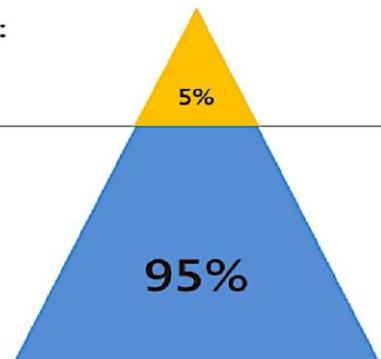
Tacit Knowledge

Explicit knowledge:

- Data, information
- Documents
- Records
- Files

Tacit knowledge:

- Experience
- Thinking
- Competence
- Commitment
- Deed



3. Form team:Caves and Common



Common: Most of the work is done in the large “common” area, where the team members work together as a group

Caves: private spaces, where they can go to make private calls, have one-on-one conversations, or work on their own for short periods of time



3. Form team



Distributed Teams

- At least one team member working off-site.
- Internet offers communication tools and reduced communication costs that make geographically distributed teams not only possible, but also cost-effective



- Better is to start by holding a face-to-face kickoff meeting
- Work together for the first one or two iterations
- Face-to-face release and planning meetings
- Rotating secondment of team members between locations to give the team members in each region an opportunity to work in person with people from the other teams and experience their cultures.

3. Form team



Communication technology

- Communication technology is important in addressing the team development issues in co-located and virtual teams.
- It helps build a harmonious environment for the co-located team and a better understanding for the virtual team, especially those working in different time zones.



3. Form team



Team charter/ Ground rules

- The team charter establishes **clear expectations** regarding acceptable behavior by project team members.
- The team charter works best when the team develops it, or at least has an opportunity to **contribute to it**.
- All project team members **share responsibility** for ensuring the rules documented in the team charter are followed.
- The team charter can be reviewed and updated **periodically** to ensure a continued understanding of the team ground rules and to orient and integrate new team members.



4. Develop Team



What?

- The process of improving competencies, **team member interaction**, and the **overall team environment** to enhance project performance.

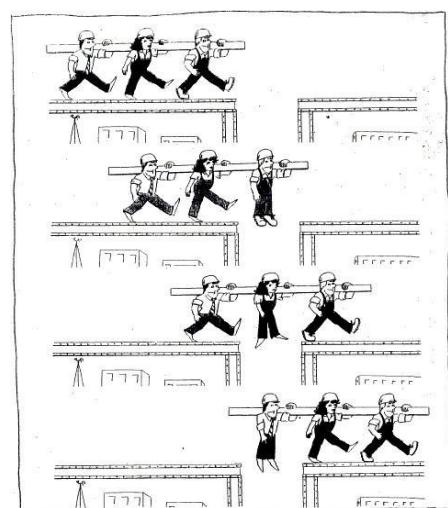
Why?

- Effective team development increases the likelihood of meeting project objectives.

When?

- Throughout the project.

Team work is dream work !



Group discussion



- Phân biệt 5 mức năng lực
 - Novice: Lính mới tò te
 - Beginner: Mới vỡ lòng
 - Competent: Làm được
 - Proficient : Làm thành thạo
 - Expert: Chuyên gia



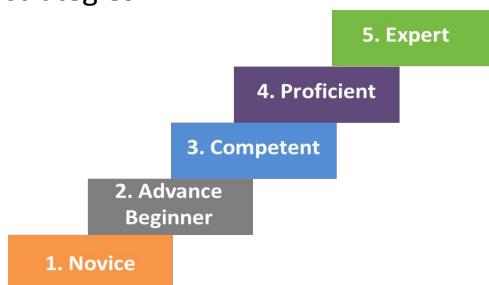
4. Develop Team



Adult Skill Acquisition - Dreyfus Model

- **Novice:** follow the rules they have been given and make analytical decisions
- **Advanced beginner:** gained enough experience with real-world situations to begin to understand the context of the rules
- **Competent:** begin to decide which rules are the best for each situation, and this makes us feel more personally responsible for the choices we are making

- **Proficient:** our decision making is still analytical, but we are actively choosing the best strategy rather than relying on the rules
- **Expert:** able to spontaneously assess the alternatives and select the best approach without having to first analytically examine all the possible strategies.



4. Develop Team

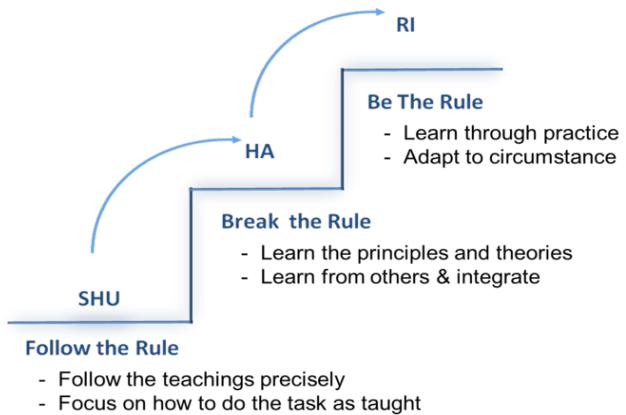


Shu-Ha-Ri Model of Skill

Mastery

- Shu:** Obeying the rules - “to keep, protect, or maintain”
- Ha:** Consciously moving away from the rules - “to detach or break free”
- Ri:** Unconsciously finding an individual path - “to go beyond or transcend”

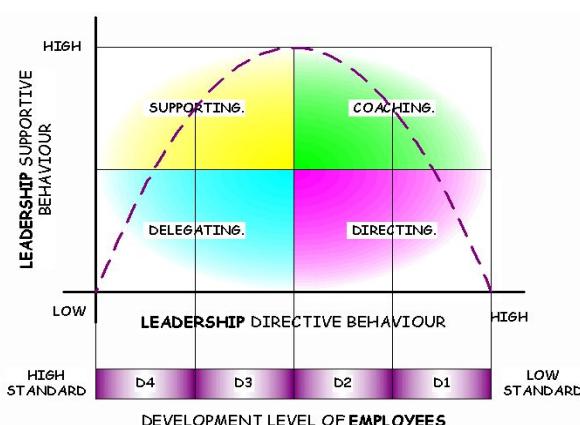
Shu Ha Ri - Stages of Learning



4. Develop Team



Situational Leadership Hersey-Blanchard model



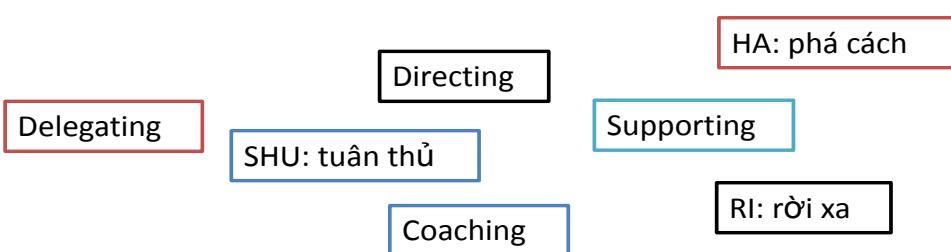
The right leadership style will depend on the person or group being led

- Directing:** This style involves telling others what to do
- Coaching:** In coaching, the manager helps others achieve their goals.
- Supporting:** the project manager provides assistance along the way.
- Delegating:** the leader is still involved in decisions; however, the process and responsibility has been passed to the individual or group. The leader stays involved to monitor progress.

Group discussion



Trình độ	Các tiếp cận
Novice => Beginner	
Beginner => Competent	
Competent => Proficient	
Proficient => Expert	



Group discussion



Trình độ	Các tiếp cận
Novice => Beginner	SHU: tuân thủ Directing
Beginner => Competent	SHU: tuân thủ Coaching
Competent => Proficient	HA: phá cách Supporting
Proficient => Expert	RI: rời xa Delegating

Group discussion



Phân biệt các chiến lược phát triển nhân sự

Training	Coaching	Mentoring

Group discussion



Training	Coaching	Mentoring
Trainer thường được kỳ vọng là người biết trước, biết nhiều về chủ đề mà họ đào tạo	Coach không nhất thiết phải là người đã trải qua, hay biết rõ về vấn đề của coachee	Mentor là người đi trước đã thành công, hướng dẫn lại cho người đi sau
Chương trình, kiến thức sẵn có từ bên ngoài từ trainer	Cách giải quyết và nguồn lực sẵn có bên trong người coachee	Chương trình ko có sẵn, mà phụ thuộc vào câu hỏi, vấn đề của mentee

Group discussion



Giai đoạn	Đặc điểm/ Biểu hiện hành vi của thành viên
Forming	
Storming	
Norming	
Performing	
Adjourning	

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5 stages of Team Development - Tuckman's ladder



Forming
Team acquaints and establishes ground rules. Formalities are preserved and members are treated as strangers.



Storming
Members start to communicate their feelings but still view themselves as individuals rather than part of the team. They resist control by group leaders and show hostility.



Norming
People feel part of the team and realize that they can achieve work if they accept other viewpoints.



Performing
The team works in an open and trusting atmosphere where flexibility is the key and hierarchy is of little importance.



Adjourning
The team conducts an assessment of the year and implements a plan for transitioning roles and recognizing members' contributions.



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Group discussion



Stage	Approach	Why ?
Forming		
Storming		
Norming		
Performing		

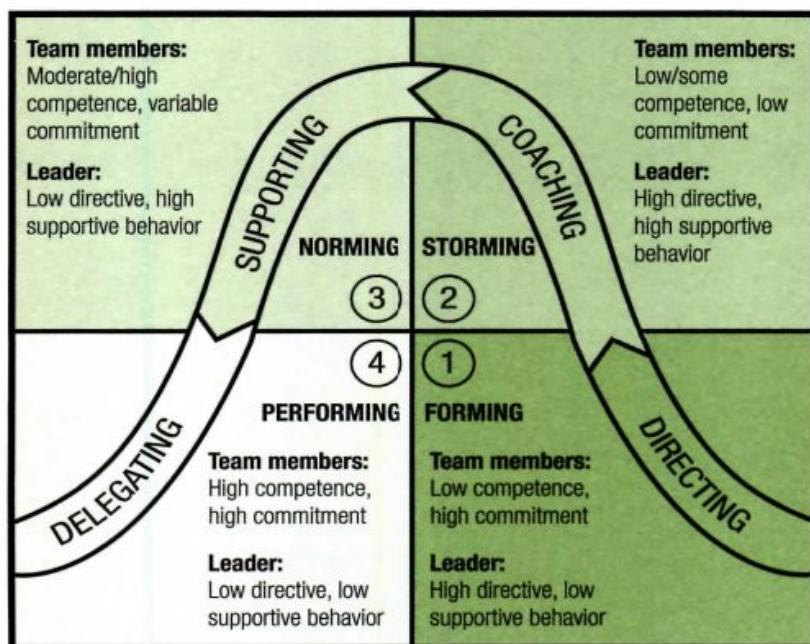
Coaching

Delegating

Supporting

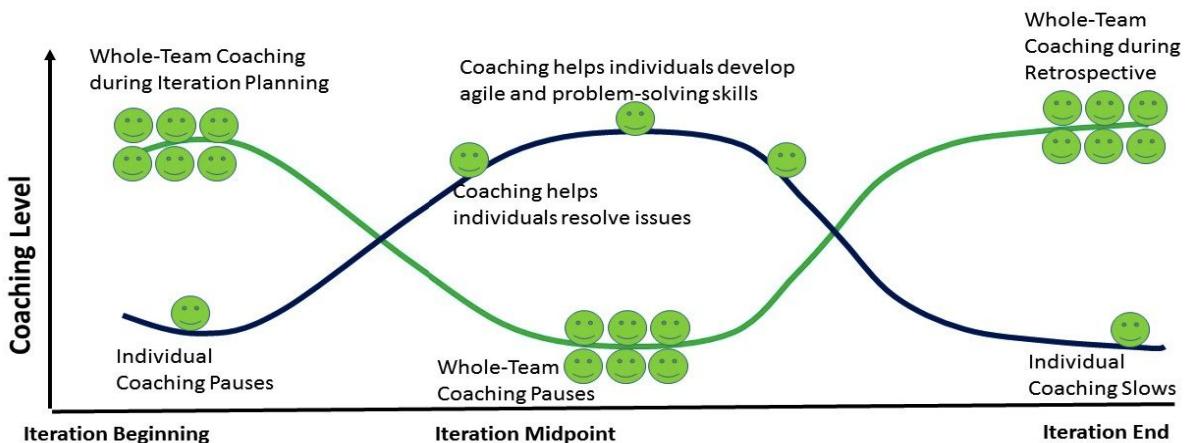
Directing

4. Develop Team



Coaching at the team and individual levels

- The goal of coaching is to help the team members stay on track, overcome issues, and continually improve their skills.
- Coaching is done at two levels – the team and the individual members.



5. Motivate Team

Recognition and Rewards

- Rewards can be tangible (money) or intangible (applause...)
- Only desirable behavior should be rewarded e.g.
 - the willingness to work overtime to meet an aggressive schedule objective?;
 - needing to work overtime as a result of poor planning ???
- Recognition and reward should consider cultural differences.



5. Motivate Team



Recognition and Rewards

1. Win lose (zero sum) rewards

- That only a limited number of project team members can achieve such as team members of the month, can hurt team cohesiveness.



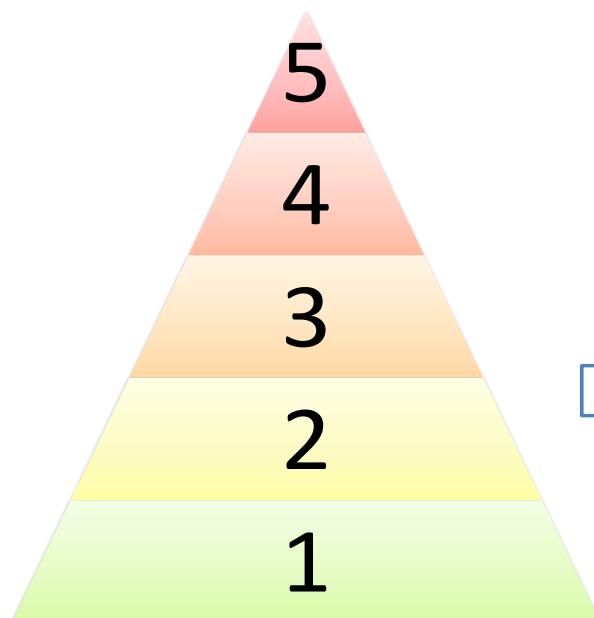
Recognition and Rewards

2. Win-win rewards

- Behavior that everyone can achieve such as turning in progress reports on time, tends to increase support among team members.



Group discussion: Tháp Maslow



Nhu cầu hoàn thiện
Bản thân

Nhu cầu an toàn

Nhu cầu cơ bản, thể lý

Nhu cầu được ghi nhận, tôn trọng

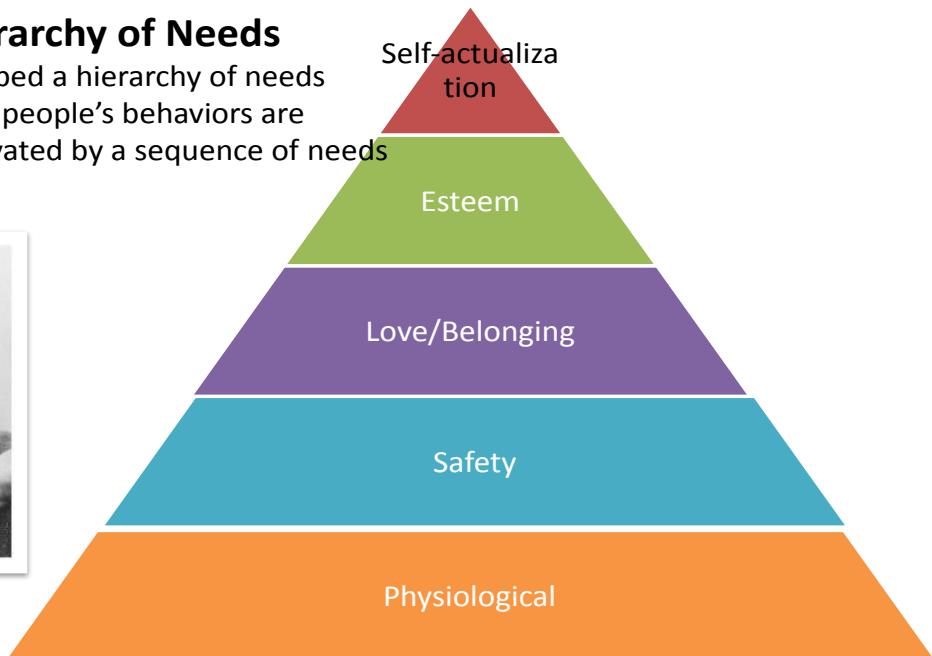
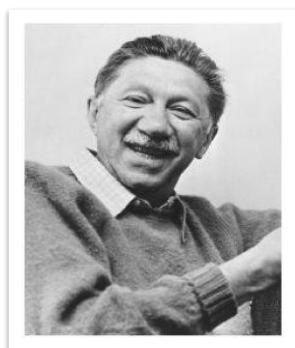
Nhu cầu kết nối xã hội

5. Motivate Team



Maslow's Hierarchy of Needs

- Maslow developed a hierarchy of needs that states that people's behaviors are guided or motivated by a sequence of needs



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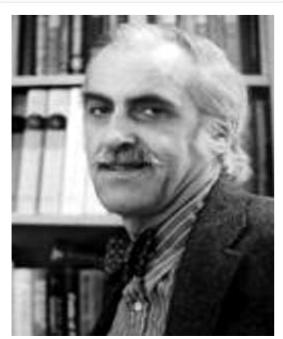
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5. Motivate Team



David McClelland's Theory of Needs

- A person falling into one category would be managed differently than a person falling into another category.



Needs	Behavioral Style
Achievement (N-Ach)	<ul style="list-style-type: none">These people should be given projects that are challenging but are reachableThey like recognition
Affiliation (N-Affil)	<ul style="list-style-type: none">People work best when cooperating with othersThey seek approval rather than recognition
Power (N-Pow)	<ul style="list-style-type: none">People whose need for power is socially oriented, should be allowed to manage othersThese people like to organize and influence others

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5. Motivate Team



Herzberg's Motivational and Hygiene Factors

- **Motivational factors:** produce job satisfaction
- **Hygiene factors:** do not motivate workers to do more but cause dissatisfaction if not present



Motivational Factors

- Responsibility
- Self actualization
- Professional growth
- Recognition

Hygiene Factors

- Working condition
- Personal life
- Relationship at work
- Security
- Status
- Salary

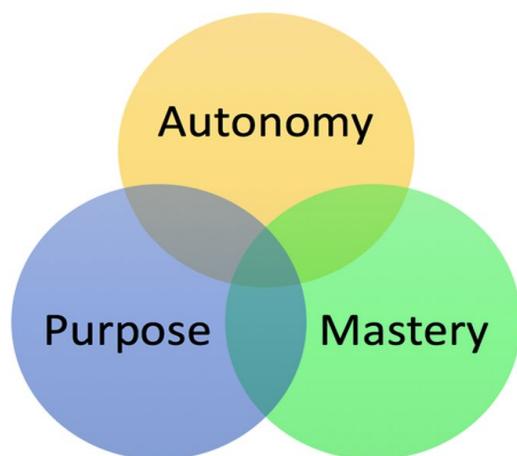


5. Motivate Team



- **Autonomy** is the desire to direct one's own life. This is aligned with being able to determine how, where, and when to accomplish work. Autonomy includes flexible work hours, working from home, and work on self-selecting and self-managing project teams.
- **Mastery** is about being able to improve and excel. The desire to do excellent work, learn, and achieve goals are aspects of mastery.
- **Purpose** speaks to the need to make a difference. Knowing the project vision and how work contributes to achieving that vision allows people to feel like they are making a difference.

- **Intrinsic factors by Daniel Pink**



6. Manage Team



What?

- The process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance.



Why?

- It influences team behavior, manages conflict, and resolves issues.



When?

- Throughout the project.

6. Manage Team



How?

- Regularly observe and communicate with team members
- Appraises team member performance and provide constructive feedbacks
- Help to resolve issues and conflicts, influences team behavior
- Managing team changes, release or recruit team members as needed

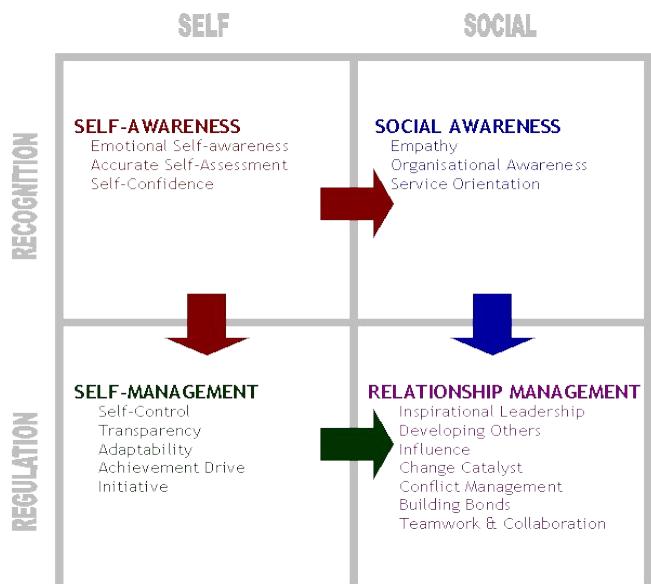


6. Manage Team



Emotional Intelligence

- Emotional intelligence is the capacity to be aware of, control, and express one's emotions, and to handle interpersonal relationships judiciously and empathetically.
- The team can use emotional intelligence to reduce tension and increase cooperation by identifying, assessing, and controlling the sentiments of project team members, anticipating their actions, acknowledging their concerns, and following up on their issues.



6. Manage Team



Influencing

- Because project managers often have **little or no direct authority** over team members **in a matrix environment**, their ability to influence stakeholders on a timely basis is critical to project success.



- Key influencing skills include:
 - Gathering relevant information to address issues and reach agreements while maintaining mutual trust.
 - Clearly articulating points and positions;
 - Awareness of, and consideration for, the various perspectives in any situation;
 - Ability to be persuasive;

Group discussion



Mức độ hiệu quả	Dạng quyền lực (ảnh hưởng)
Cao nhất	<p>Gây ảnh hưởng bằng đạo đức, lý tưởng</p> <p>Gây ảnh hưởng bằng hình phạt</p>
	<p>Gây ảnh hưởng bằng kiến thức, chuyên môn</p> <p>Gây ảnh hưởng bằng vị trí, địa vị</p>
Thấp nhất	Gây ảnh hưởng bằng phần thưởng

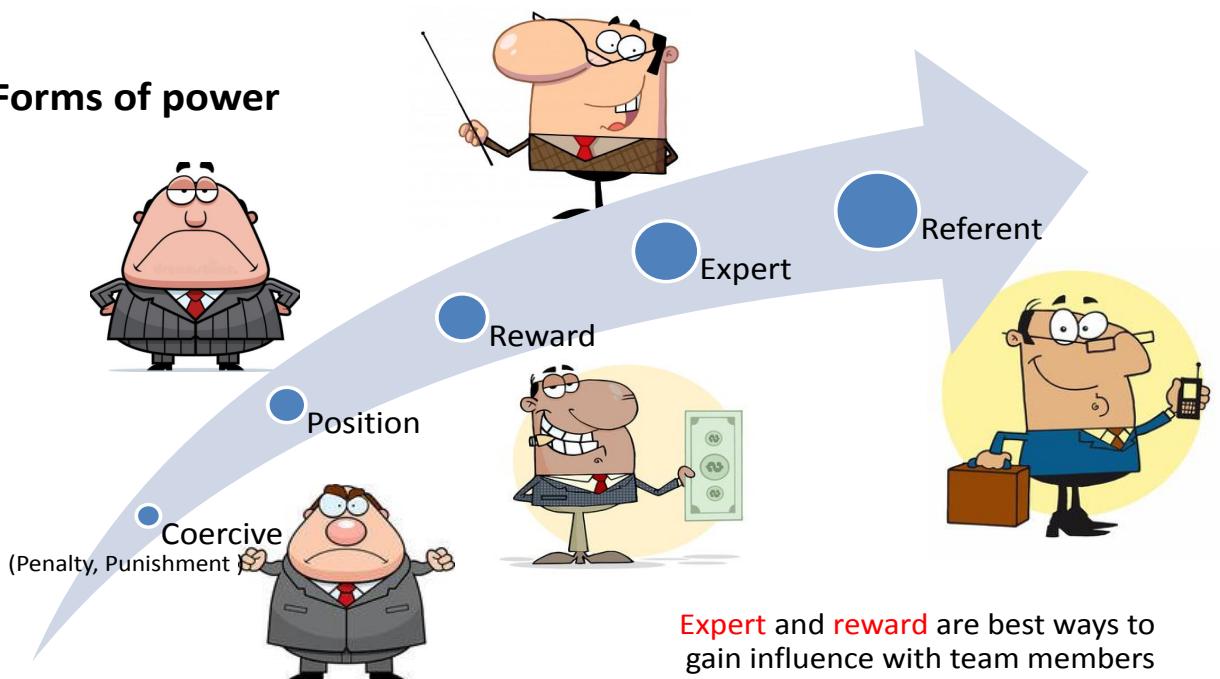
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6. Manage Team



Forms of power



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6. Manage Team

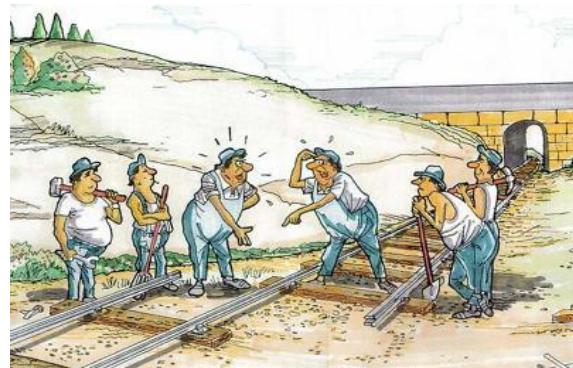


Conflict Management

Seven sources of conflict:

1. Schedules
2. Project Priorities
3. Resources
4. Technical Opinions
5. Administrative Procedure
6. Cost
7. Personality

- Let's share your bloody story



6. Manage Team



Conflict Resolution

1. Confronting

- **1a. Collaborating:** incorporating multiple viewpoints and insights from differing perspectives; leads to consensus and commitment.
- **1b. Problem solving:** Resolving the root cause of issue. **Win - win** strategy and best solution



2. Forcing

- Pushing one's viewpoint at the expense of others; offers only **win-lose** solutions (do it my way)



6. Manage Team



3. Compromising

- Searching for solutions that bring some degree of satisfaction to all the parties.
Lose-lose condition. (Lets implement some part of your suggestion and his suggestion also)



4. Smoothing /accommodating :

- Emphasizing areas of agreement rather than areas of difference (your disagreement may cause delay and lets get in to an agreement)



5. Withdrawal/avoiding:

- Retreating from an actual or potential conflict situation (lets deal with this by next meeting)



Group discussion

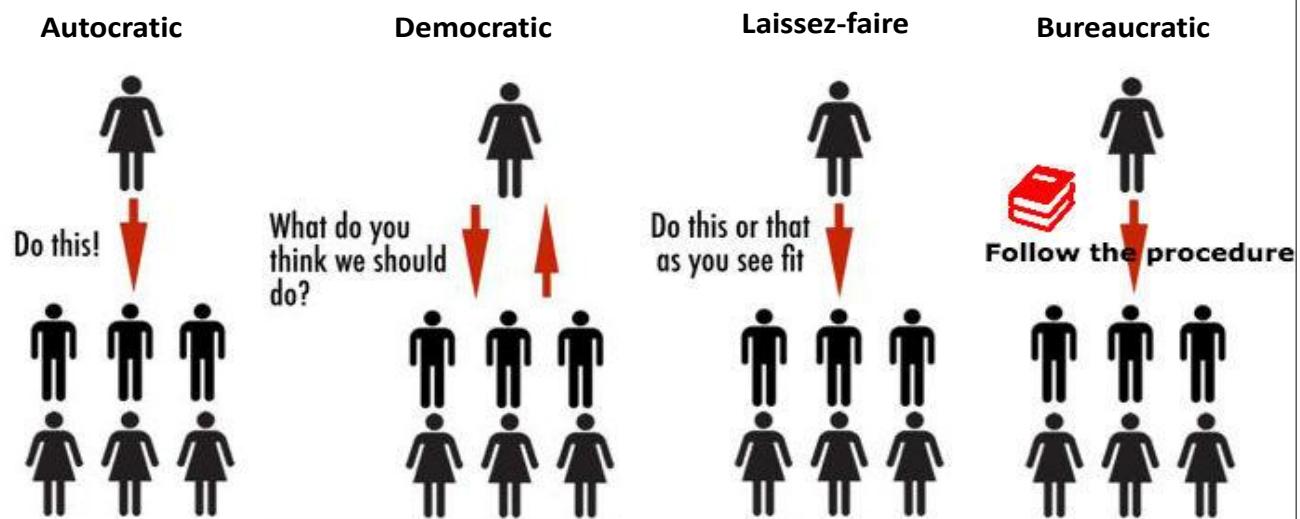


- Phân biệt sự khác nhau của 5 chiến lược giải quyết xung đột
 - Confronting (Problem Solving, win-win)
 - Forcing
 - Compromising
 - Smoothing
 - Withdrawing

6. Manage Team



Leadership styles



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6. Manage Team



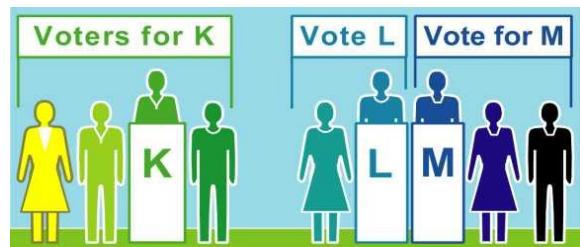
Decision Making (1)

- Voting - Majority :** support from more than 50% of the members of the group



Decision Making (2)

- Voting - Plurality :** the largest block in a group decides even if a majority is not achieved



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6. Manage Team



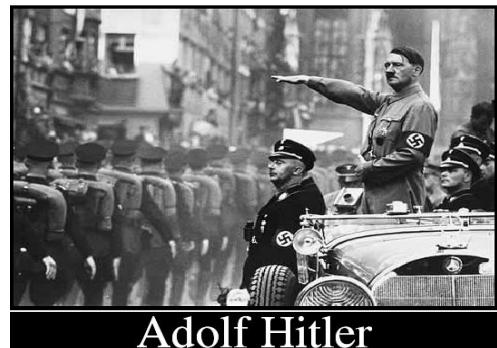
Decision Making (3)

- **Voting - Unanimity** : everyone agrees on a single course of action



Decision Making (4)

- **Autocratic** : one individual makes the decision for the group



Group discussion



- Phân biệt sự khác nhau của các cách ra quyết định

Majority	Plurality
Unanimity	Autocratic (Dictatorship)

6. Manage Team



Decision Making (5)

- **Multi-criteria decision analysis**
- Explicitly considers multiple criteria in decision-making environments.
- **Example:**
- considering three different types of car and evaluating them for criteria such as speed, cost and fuel efficiency. MCDM would suggest that the car that has the highest total rating across those three categories would be the best car to buy.

	Criteria			
	X	Y	Z	
Car A	1	3	2	6
Car B	2	2	1	5
Car C	3	1	3	7

Summary



- Team vs Group
- Leadership vs Management
- Roles & responsibilities
 - Organizational theory
 - Organizational breakdown structure
 - Responsibility assignment matrix
 - RACI chart
 - Position descriptions
- Role of:
 - Project manager
 - PM team
 - Sponsor
 - Functional manager
- Form team
 - Team acquisition strategies
 - ASK/ ASKE
 - Halo Effect
 - Co-location
 - Distributed teams
 - Team charter (Ground rule)
- Develop Team
 - Dreyfus' model of skills acquisition
 - SHU-HA-RI model
 - Situational Leadership
 - Coaching
 - Training, Coaching, Mentoring
 - Tuckman's 5 stages of team development

Summary



- Motivate Team
 - Maslow's Hierarchy of Needs
 - David McClelland's Theory of Needs
 - Intrinsic Factors
 - Hygiene Factors
- Manage Team
 - Emotional Intelligence
 - Leadership Styles
 - Conflict Management
 - Decision Making

Assignment!!!

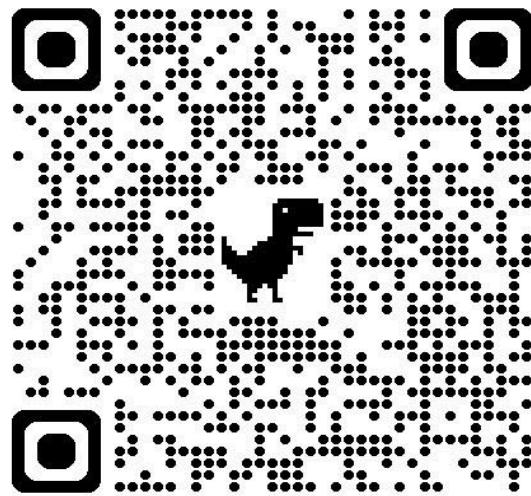


- Làm BTVN trên LMS: Team
- Học nhóm
- Thực hành viết Team Charter cho dự án hiện tại của mình
- Phối hợp với trợ giảng để điều chỉnh hồ sơ

Group discussion



- Nội dung nào mới biêt?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



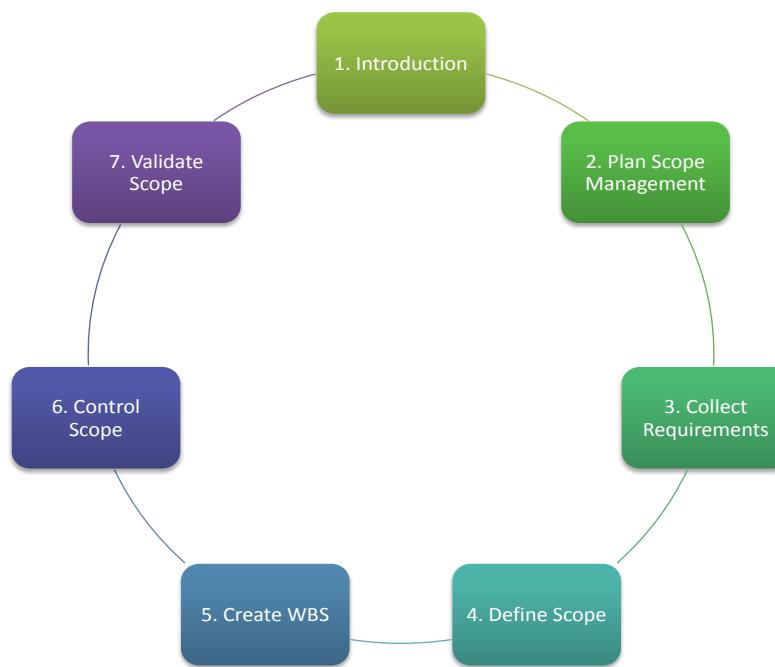
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Project Scope Management



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Overview



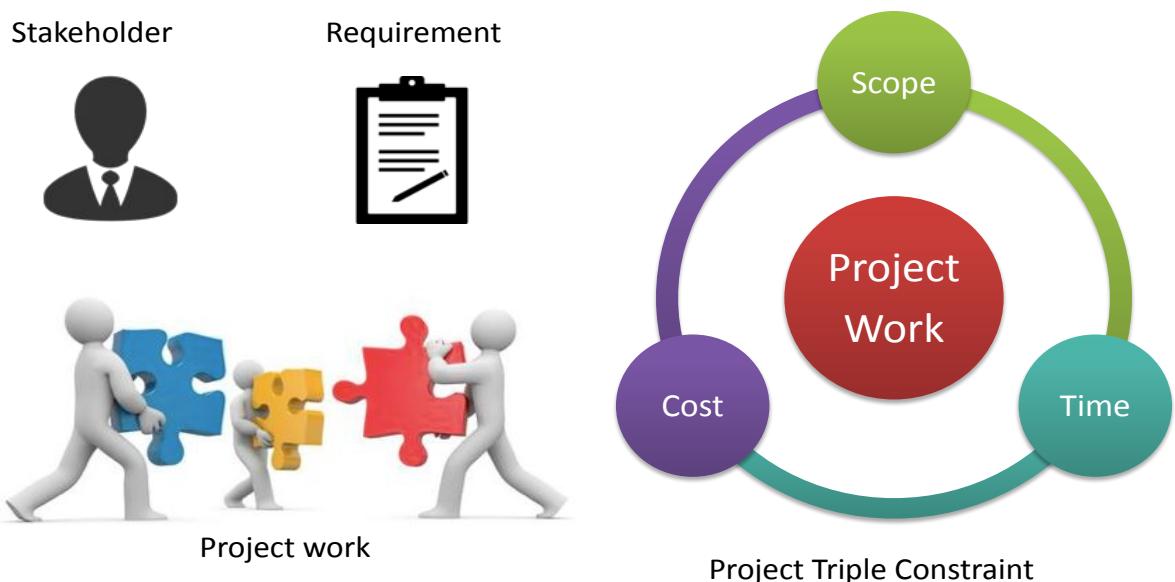
Group discussion



- Chia sẻ các vấn đề bạn hay gặp khi nghiệm thu giai đoạn với khách hàng



1. Introduction



1. Introduction: What is Requirement?



- A condition or capability needed by a stakeholder to solve a problem or achieve an objective.
- A condition or capability that must be met or possessed by a solution or solution component to satisfy a contract, standard, specification, or other formally imposed documents.

Business requirements



Stakeholder's requirements

Transition requirements



Solution requirements

- Functional requirements
- Non-functional requirement



Project work requirements (time, cost,...)

Group discussion: Phân biệt sự khác nhau



- Product Scope
- Project Scope

1. Introduction



Project Scope

- The work that must be done to deliver a product, service, or result with the specified features and functions.
- Completion is measured against the project management plan.
- *Project scope is sometimes viewed as including product scope.*

Product Scope

- The features and functions that are to be included in your products or service or result of the project.
- Completion is measured against the product requirements.



Common mistakes in project scope management



Scope Creep

- is also known as requirement creep, which refers to the uncontrolled changes in the project's or product's scope.



Gold Plating

- Adding extra features or functions to the products which were not asked by the customer.



2. Plan Scope Management



What?

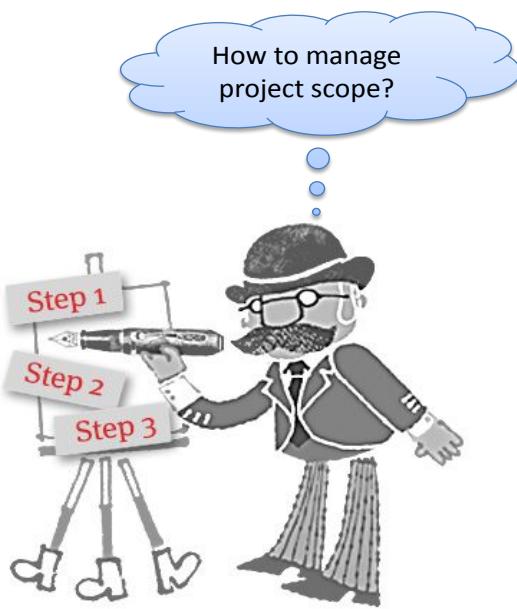
- Process to provide guidance and direction on how scope will be managed throughout project.

Why?

- Stakeholders and project team need to understand how project scope be managed. This helps reduce the risk of project scope creep.

When?

- Once or at predefined points in the project.



2. Plan Scope Management



How?

- Analysis of project charter, the latest approved subsidiary plans of the project management plan, historical information, and any other relevant enterprise environmental factors.
- Determine way of collecting requirements, elaborating the project and product scope, creating the product, validating the scope, and controlling the scope are evaluated.



2. Plan Scope Management



Scope Management Plan

- The scope management plan is a component of the project or program management plan that describes how the scope will be defined, developed, monitored, controlled, and validated.
- Can be formal or informal, broadly framed or highly detailed, based on the needs of the project.

SCOPE MANAGEMENT PLAN

Project Title: _____	Date: _____	
Roles and Responsibilities		
Name	Role	Responsibilities
Scope Statement Development:		
WBS and WBS Dictionary:		
Scope baseline maintenance:		
Scope Change:		
Deliverable Acceptance:		
Scope and requirement integration:		

2. Plan Scope Management



Requirement Management Plan

- Describes how project and product requirements will be analyzed, documented, and managed.
- Requirements management plan components are strongly influenced by phase-to-phase relationship

REQUIREMENTS MANAGEMENT PLAN

Project Title: _____	Date: _____
Requirements Collection:	
Categories:	
Prioritization:	
Traceability:	
Configuration Management:	
Verification:	

3. Collect Requirements



What?

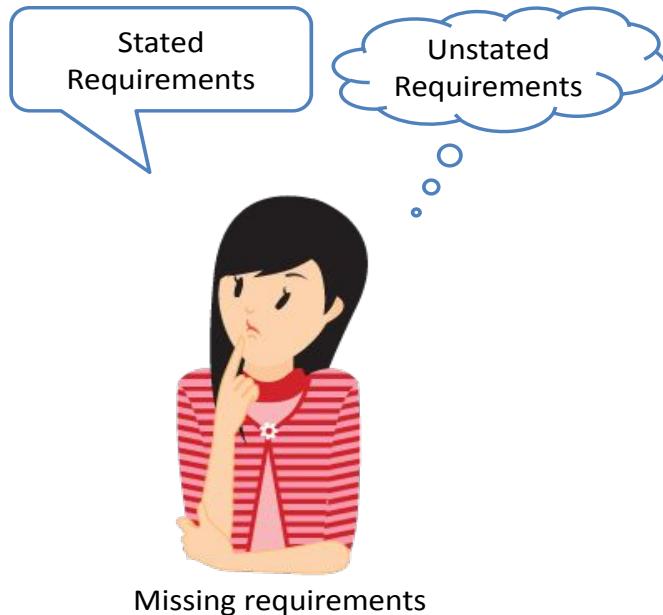
- Collect the requirements for the project based on the stakeholders' needs, which will determine the product scope and project scope.

Why?

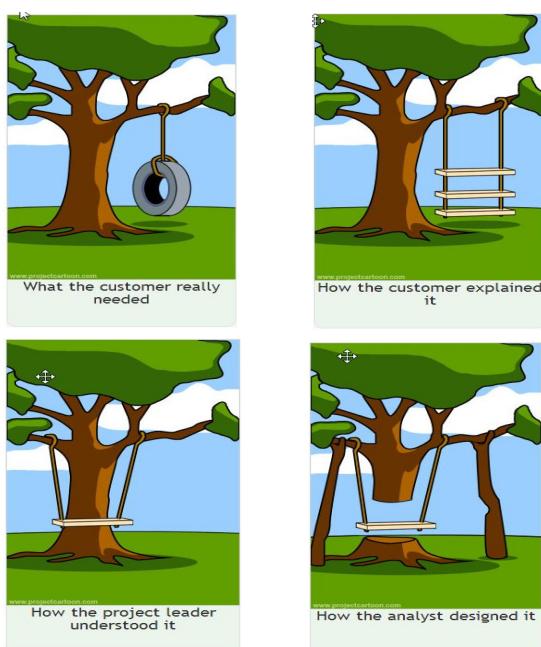
- The basis for defining the product scope and project scope.

When?

- Once or at predefined points in the project



Common mistakes in requirement management



- **The gulf of evaluation** is the degree to which an item supports the user in discovering how to interpret the item and interact with it effectively. The same parking example would show a gulf of evaluation if the controls were not designed in such a way that the driver could easily determine how to initiate the self-parking function.
- **The gulf of execution** as the degree to which an item corresponds with what a person expects it to do. A car that has the ability to parallel park itself would have a gulf of execution if the driver expected to push a button labeled “park” and have the car park itself, and the car did not park itself.

Group discussion



- Chia sẻ kinh nghiệm lấy yêu cầu của khách hàng/bên liên quan mà không bị hiểu nhầm, hiểu sai



3. Collect Requirements



Document analysis

- There are a wide range of documents that may be analyzed to help elicit relevant requirements.
- **Example:** *business plans, marketing literature, agreements, requests for proposal, current process flows, logical data models, business rules ...*



Interviews

- Is a formal or informal approach to discover information from stakeholders by talking to them directly
- **Individually meeting** between an Interviewer and an interviewee



3. Collect Requirements



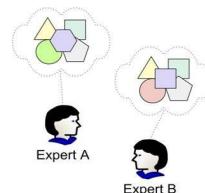
Brainstorming:

- Gathering a list of ideas spontaneously contributed by its members.
- Rules for brainstorming :
 - Go for **quantity**
 - Withhold **criticism**
 - Welcome wild ideas
 - Combine and improve ideas



Delphi Technique

- is an anonymous method to query a panel of experts.
- Participants can express ideas or opinions without fear or getting intimidated.
- The process is stopped after a predefined stop criterion (e.g. number of rounds, achievement of consensus, stability of results)

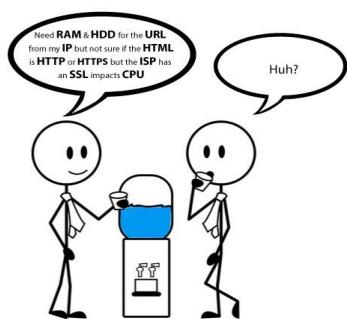


3. Collect Requirements



Jargon

- Specialized terminology associated with a particular field or area of activity
- Keep jargon to a minimum when working with new customers



Agile Modeling

- Various modeling techniques that are commonly used on agile projects
- Main value often lies in the **discussion and creation of model**, rather than the final output
- Use Case Diagram, Data Model, Screen Design

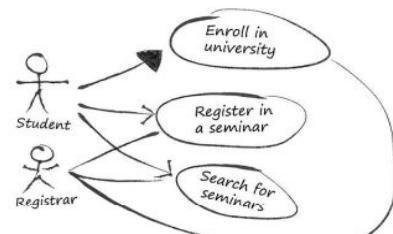


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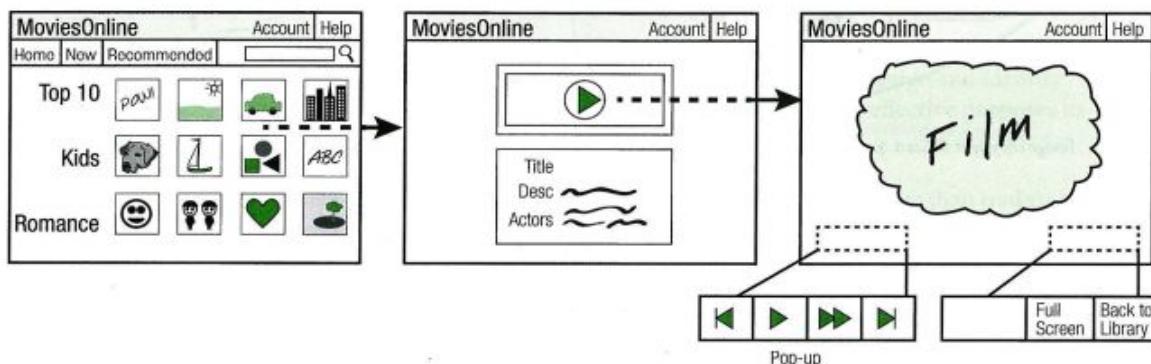
3. Collect Requirements



Wireframe

- Create a mock-up of what will be built before you get into the business of building
- Visual representation of the scene before it is shot
- Low-fidelity prototypes, paper, hand-drawn

MoviesOnline Basic Ordering Workflow



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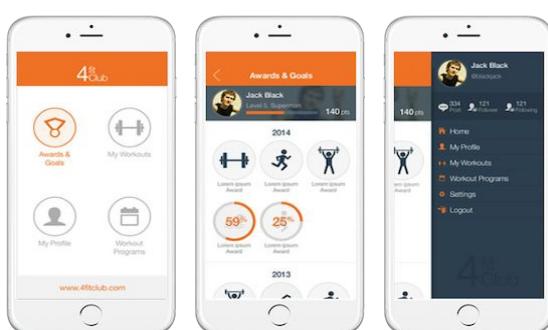
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3. Collect Requirements



Prototypes

- A working model of the expected product before actually building it
- The requirements obtained from the prototype are sufficiently complete to move to a design or a build phase



Observation/conversation

- Observation (also called “**job shadowing**”) is usually done externally by the observer viewing the user performing his or her job .
- It can also be done by a “**participant observer**” who actually performs a process to experience how it is done to uncover hidden requirements



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3. Collect Requirements



Questionnaires and Surveys

- Questionnaires and surveys are written sets of questions designed to quickly accumulate information from a wide number of respondents .



Benchmarking

- Generate ideas for improvement, and provide a basis for measuring performance by comparing actual or planned practices, such as processes and operations, to those of comparable organizations to identify best practices



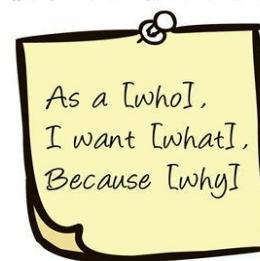
3. Collect Requirements



Requirements Documentation

- Describe how individual requirements relate the project
- Requirements need to be unambiguous (measurable and testable), traceable, complete, consistent, and acceptable to key stakeholders.
- May range from a simple listing form to more elaborate forms
- **User stories:** are often developed during a requirements workshop.

REQUIREMENTS DOCUMENTATION				
Project Title: _____		Date Prepared: _____		
Stakeholder	Requirement	Category	Priority	Acceptance Criteria



3. Collect Requirements



Requirements Traceability Matrix

- It is a matrix that links requirements to the business and project objectives and the deliverables that satisfy them.
- That helps to trace them throughout the project life cycle .

Requirements Traceability Matrix								
Requirement Information					Relationship Traceability			
ID	Requirement	Priority	Category	Source	Relates to Objective	Manifests in WBS Deliverable	Verification	Validation

4. Define Scope



What?

- Define Scope is the process of developing a detailed description of the project and product scope.

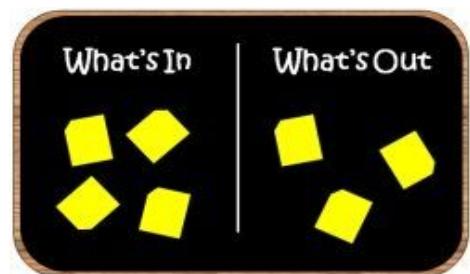
Why?

- Stakeholders and project team need to have a **common understanding** of what is included in and excluded from the project work and what factors define its success.

When?

- Depends on project lifecycle, Define scope process can be used once or highly iterative

- During project initiation, the major deliverables, assumptions, and constraints that are documented
- During project planning, the project scope is defined and described with greater specificity as more information about the project is known.



Group discussion



- Phân biệt giữa Define Scope và Define Tasks

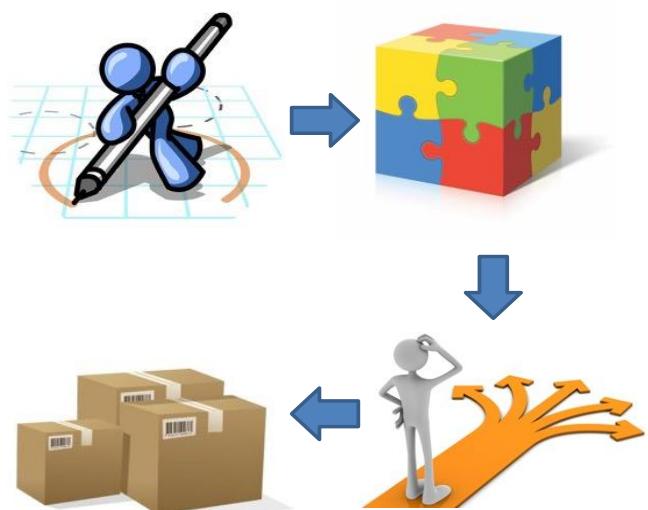
Define Scope	Define Tasks

4. Define Scope



How?

- Selects the final project requirements from the requirements documentation
- Develops a detailed description of the project and product, service, or result.
- Analyse alternatives and determine the best approach to complete or deliver it
- Analyse existing risks, assumptions, and constraints for completeness and added or updated as necessary.
- Get agreement on project **deliverables** and **acceptance criteria**

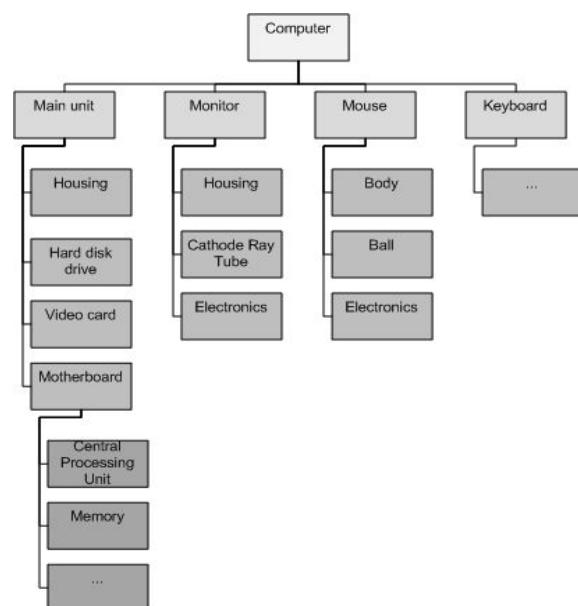


4. Define Scope

Product Analysis

- Methods for translating high-level product descriptions into tangible deliverables. Each application area has one or more generally accepted methods: *Product breakdown, Systems analysis, Requirements analysis, Systems engineering...*
- Generally asking questions about a product and forming answers to describe the use, characteristics, and other the relevant aspects of what is going to be manufactured.

- Product Breakdown Structure



4. Define Scope

Alternative analysis:

- Generate and analysis different approaches to execute and perform the work of the project.
- A variety of general management techniques can be used, such as:
 - *Brainstorming, Lateral thinking, Analysis of alternatives...*



4. Define Scope



Project Scope Statement

- Project scope statements documents the entire scope, including project and product scope. It describes the project's deliverables in detail.
- It helps to create a **common understanding** among stakeholders (avoid scope creep).
- It may contain explicit scope exclusions that can assist in managing stakeholder expectations.
- The project team and the project stakeholders need to agree to the scope statement before project execution.

The form is titled "PROJECT SCOPE STATEMENT". It includes fields for "Project Title" and "Date Prepared", both with input boxes. Below these are sections for "Product Scope Description", "Project Deliverables", "Project Acceptance Criteria", "Project Exclusions", "Project Constraints", and "Project Assumptions", each with its own input box.

Group discussion: Xây dựng Scope Statement

- Bạn đang trong phase nào của dự án ?
 - Tên giai đoạn, mục đích giai đoạn
- Ở thời điểm kết thúc giai đoạn, key stakeholders sẽ nhận được những gì từ bạn ?
 - *Gợi ý: Suy nghĩ về Deliverables mà họ sẽ nhận được và làm họ thoả mãn*
 - **Deliverable:** sản phẩm chuyển giao. **Đặt tên cho Deliverable bằng Danh từ.**
- Tiêu chí nghiệm thu (Acceptance Criteria) cho các Deliverable đó là gì ?
- Những cái gì không thuộc phạm vi chuyển giao cần (có thể) làm rõ từ đầu ?

Project Scope Statement Sample



Tên dự án	
Product Description	
<Functions, features>	
Mobile app hỗ trợ vận chuyển hàng hóa: - Truy xuất thông tin hàng hoá - Cập nhật hành trình - Xuất hóa đơn chứng từ.	
Project Scope	
<deliverables, works must be done to deliver project successfully>	
- Architecture Design - Detail Design - File APK - Source code - Test report	
Acceptance Criteria	
<criteria, conditions that project must satisfy to be accepted>	
- Test report: 100% test cases - Bug report: 0 bug UI bug, 0 critical bug - <2% bug won't fix	
Scope Exclusion	
<out of scope>	
- Source code backend, server - purchased Tools - UT	

5. Create WBS

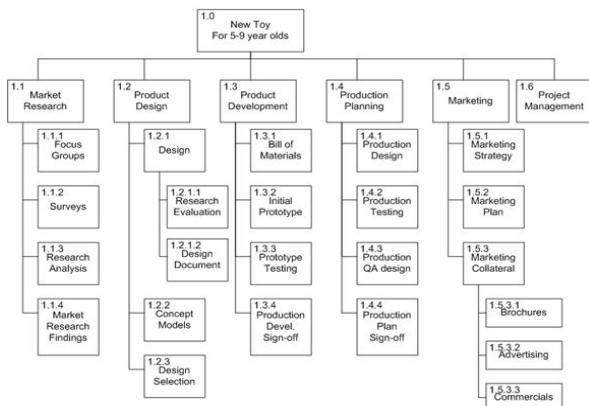


What?

- Process of decomposing project work into smaller, more manageable work components.

Why?

- “Divide to conquer”
- Easier to estimate, allocate resources and to track project performance
- WBS visually defines the scope into manageable chunks that stakeholders can understand

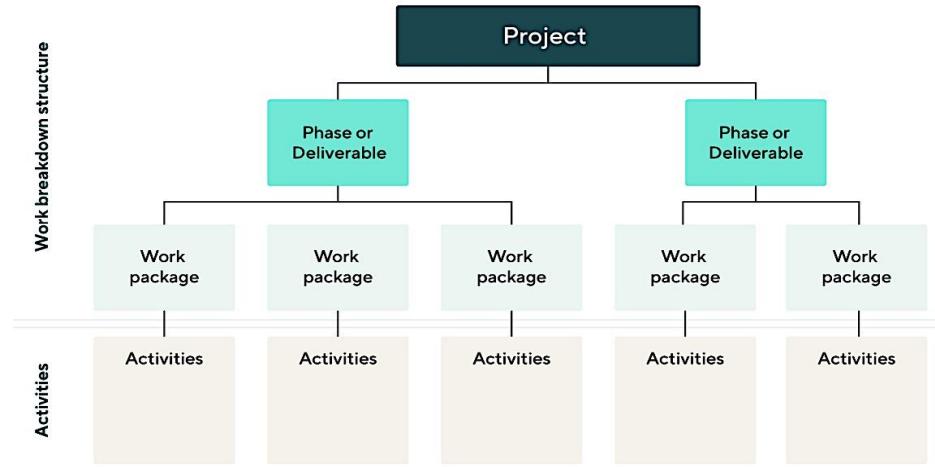


When?

- Once or at predefined points in the project.

Group discussion: Mối liên hệ giữa các khái niệm

- WBS
- Deliverable
- Work package
- Activity (Task)

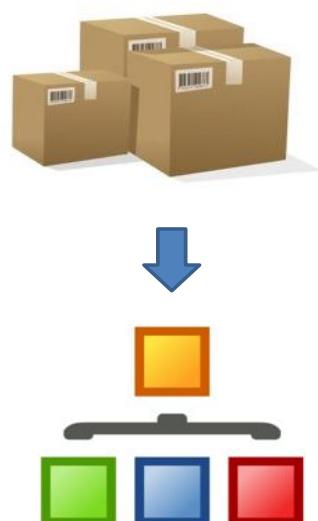


5. Create WBS



How?

- Identifying and analyzing the deliverables and related work
- Structuring and organizing the WBS
- **Decomposing** the upper WBS levels into lower-level detailed components
- Verifying that the degree of decomposition of the deliverables is appropriate.
- Developing and assigning identification codes to the WBS components
- Get approved and baseline project scope documents



5. Create WBS



Decomposition

- The technique involves breaking down the project into smaller, more manageable components of work.
- WBS can be organized by :
 - Project phases
 - Major deliverables and subprojects
 - Combination approach
- WBS may be created through:
 - Top-down:** use WBS templates or organization-specific guidelines.
 - Bottom-up:** constructed from the inputs of project team members who actually do the work (team buy-in)



5. Create WBS



Decomposition

- The lowest level of WBS components always are deliverables
- Note: Plan deliverables (outcomes), not actions !**

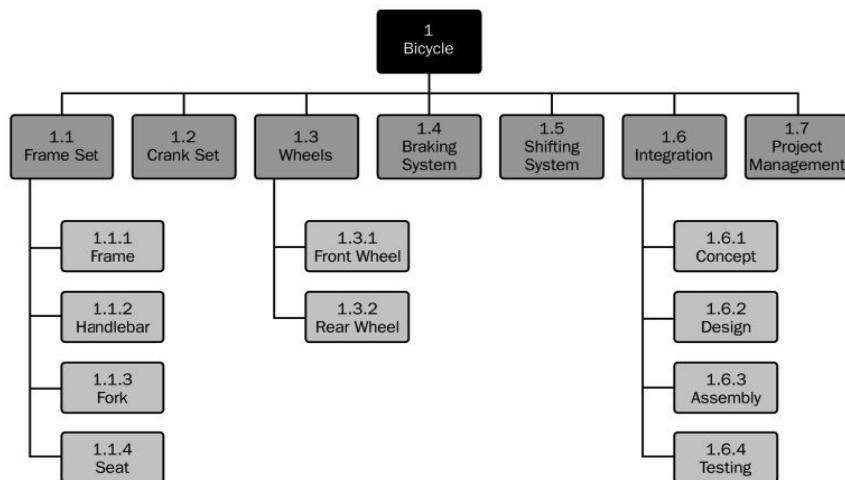
What WBS is Not	What WBS is
<ul style="list-style-type: none">A WBS is not an exhaustive list of work.	<ul style="list-style-type: none">It is instead a comprehensive classification of project scope.
<ul style="list-style-type: none">A WBS is neither a project plan, a schedule, nor a chronological listing.	<ul style="list-style-type: none">It specifies what will be done, not how or when.
<ul style="list-style-type: none">A WBS is not an organizational hierarchy	<ul style="list-style-type: none">It may be used when assigning responsibilities.

5. Create WBS



Rule 100%

- The sum of the work at the “child” level must equal 100% of the work represented by the “parent”, and the WBS should not include any work that falls outside the actual scope of the project



5. Create WBS



Decomposition

- The level of decomposition** is often guided by the degree of control needed to effectively manage the project.
- The level of detail for work packages will vary with the size and complexity of the project.
- Excessive decomposition can lead to nonproductive, micro-management effort

Rule of thumb (Heuristic):

- No work package should be more than a **single reporting period**
- No work package should not be less than 8h and not be bigger than 80h of work



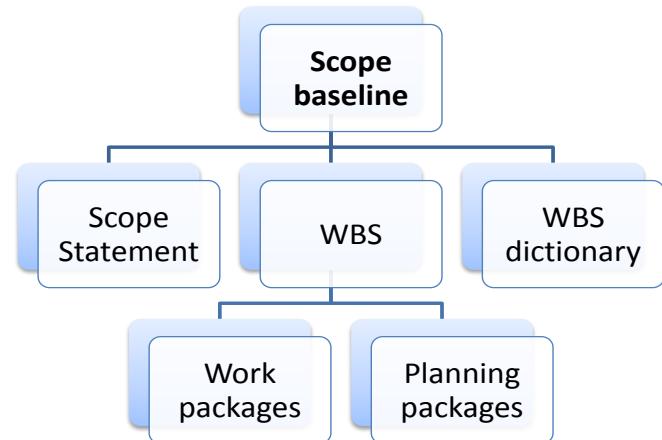
8/80 hours

5. Create WBS



Scope Baseline

- The approved version of a scope statement, WBS, and its associated WBS dictionary
- Scope baseline is a component of the project management plan.
- It can be changed only through formal change control procedures and is used as a basis for comparison.

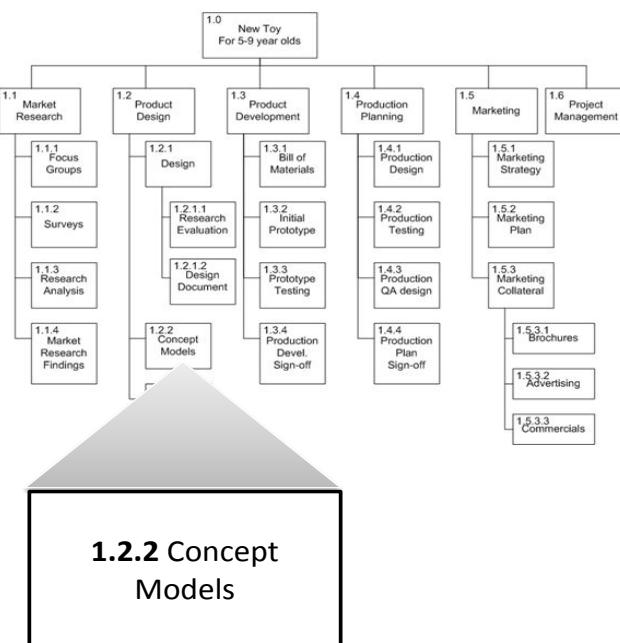


5. Create WBS



WBS dictionary

- Document that supports the WBS where detail work descriptions are documented.
- Information in the WBS dictionary may includes:
 - Code of accounts:** a numbering system used to uniquely identify each component of the work breakdown structure (WBS).
 - Description of work
 - Assumptions and constraints
 - Responsible organization
 - Schedule milestones...



Group discussion: Xây dựng WBS



- Dự án của bạn hiện đang ở giai đoạn nào?
 - Xác định giai đoạn hiện tại của dự án
- Giai đoạn đó cần chuyển giao những hạng mục gì?
 - Xác định Major Deliverables (Các hạng mục chính) của giai đoạn
- Hạng mục đó có thể chia nhỏ theo những cách nào?
 - Lưu ý: Chia nhỏ các Major Deliverables đến mức có thể hoàn thành được trong một chu kỳ báo cáo

6. Control Scope



What?

- Process of monitoring the status of the project and product scope and managing changes to the scope baseline.

Why?

- Maintain the scope baseline

When?

- Throughout the project.

How?

- Determining the cause and degree of variance relative to the scope baseline
- Deciding whether corrective or preventive action is required.



Group discussion



- Thống nhất các bước xử lý khi nhận được Yêu cầu thay đổi từ khách hàng (hoặc Bên liên quan)

Bước	Việc
1	...
2	
3	
4	
5	
6	
7	
8	
9	

6. Control Scope



Process of Making Changes

- Understand the change
- Prevent unnecessary changes
- Identify root cause of change
- Look at the impact of the change
- Create a change request
- Perform Integrated Change Control
- Adjust the project management plan and baseline
- Notify stakeholders affected by the change
- Manage the project to the new project management plan

- No Scope Creep

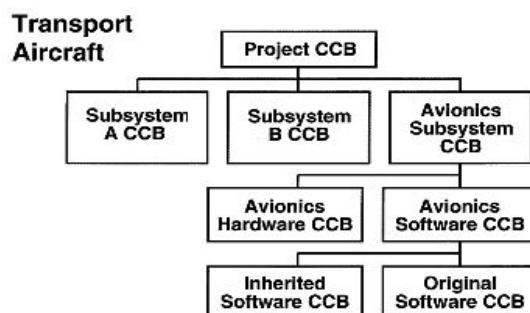


6. Control Scope



Change Control Board

- The board is given the authority to **approve or deny change** requests as defined by the organization.
- CCB members may include **stakeholders**, managers, project team members, and others who may not have any connection to the project at hand.
- The roles and responsibilities of these boards are **clearly defined** and agreed upon by the appropriate stakeholders and are documented in the change management plan.
- Some other names you might see are *Technical assessment board (TAB)*, *Technical review board (TRB)*, *Engineering review board (ERB)*



7. Validate Scope



What?

- Process of validating completed deliverables with stakeholders and formalizing their acceptance.

Why?

- Decrease the reworks, increase likelihood of closing the project.

When?

- Periodically throughout the project as needed.
- Usually performed after **Control Quality**, and before **Close Project or Phase**.



Group discussion



- Trong trường hợp sản phẩm bàn giao đã đạt tiêu chuẩn (như trong đặc tả hoặc hợp đồng), hồ sơ bàn giao-nghiệm thu đã đầy đủ, nhưng khách hàng vẫn chưa nghiệm thu, bạn sẽ làm gì?

7. Validate Scope



How?

- Project team presents project deliverables to customer or sponsor. After customer checks the deliverables, there are 3 possible outcomes:
- If the **deliverable meets their requirements** agreed in project scope, the customer accepts it (**formal acceptance**).
- If the deliverable has **defects** or requirements are not met, they must be fixed by the project team.
- If there are change request, they will be evaluated by the change control board (only approved change requests will be implemented in the project.)



7. Validate Scope



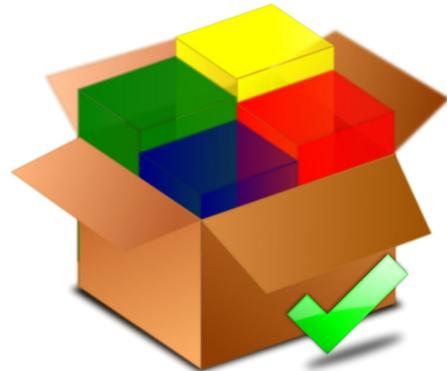
Verified deliverables

- Verified deliverables are project deliverables that are completed and checked for correctness through the Control Quality process.



Accepted deliverables

- Deliverables that meet the acceptance criteria are **formally signed off** and approved by the customer or sponsor.



Review



- Definition of scope
 - Product scope
 - Project scope
- Plan Scope Management
 - Scope management plan
 - Requirements management plan
- Collect Requirements
 - Requirements documentation
 - Requirements traceability matrix
 - Requirements gathering techniques
- Define Scope
 - Product analysis
 - Product breakdown structure
 - Project scope statement
- Create WBS
 - Work breakdown structure (WBS)
 - Benefits of a WBS
 - How to create a WBS
 - Decomposition
 - Work package
 - Scope baseline
 - WBS dictionary
- Control Scope
 - Scope creep
 - Gold plating
 - Change control procedure
- Validate Scope
 - Accepted deliverables
 - Verified deliverables

Assignment!!!

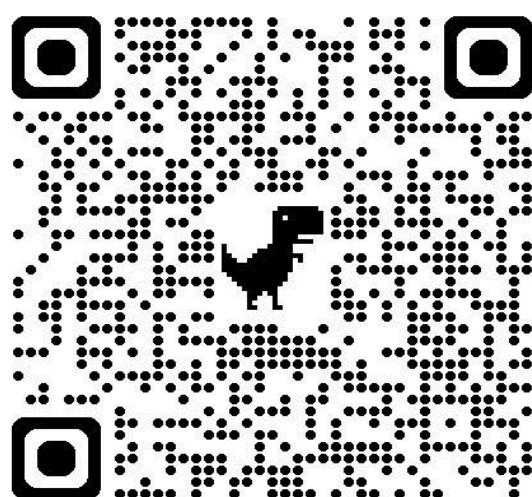


- Làm BTVN trên LMS:
Scope
- Học nhóm
- Thực hành viết WBS cho
dự án hiện tại của mình
- Phối hợp với trợ giảng để
điều chỉnh hồ sơ

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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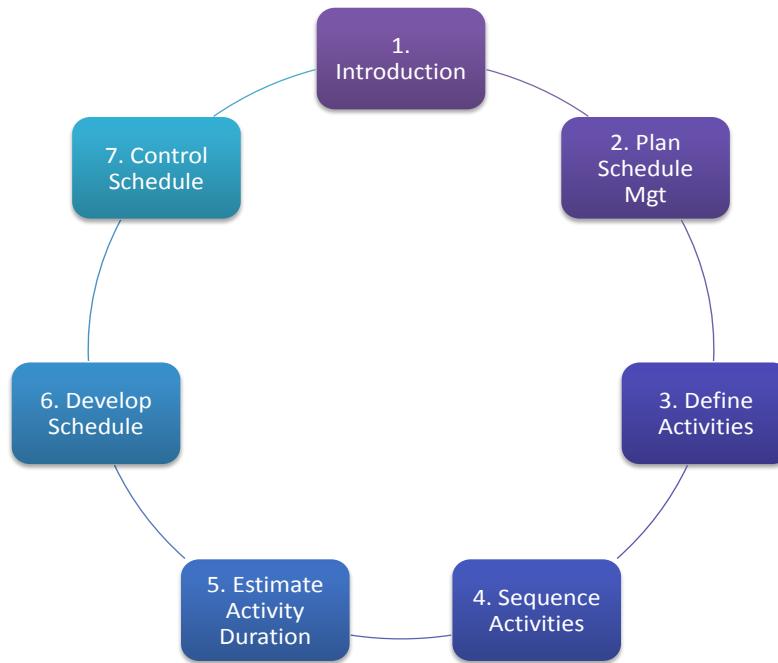
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Project Schedule Management



Overview



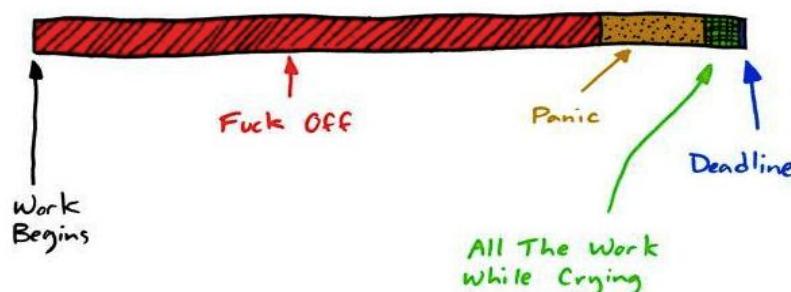
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Group Discussion:



- Chia sẻ tình trạng tiến độ dự án của bạn hiện tại đang như thế nào?

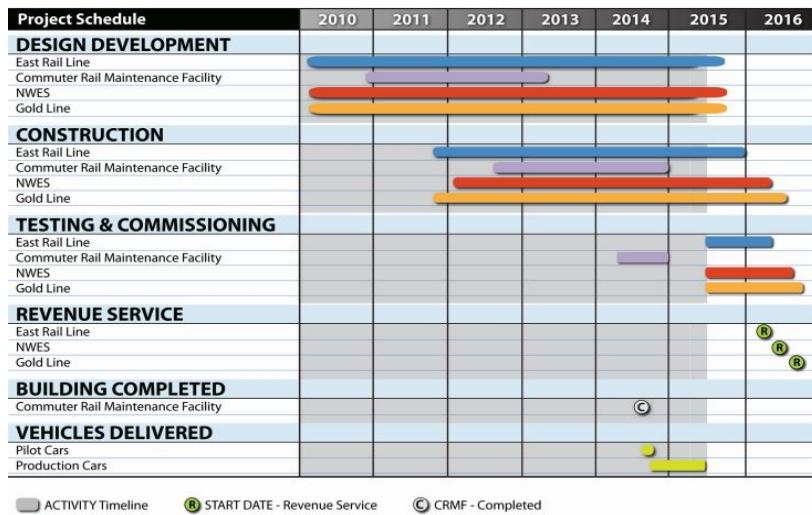


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1. Introduction: What is project schedule?

- A schedule is a listing of a project's milestones, deliverables, and activities usually with intended start and finish dates.



1. Introduction: Why schedule management?

Milestone

- Major accomplishments or a significant event of the project and mark the completion of major deliverables or some other key event in the project.
- It represents nothing more than a moment in time; hence, when scheduling, milestones should be assigned zero duration.
- Duration: 0**



You have a deadline !



1. Introduction: Why schedule management?

Risk & Uncertainty

- **Murphy's law:** What can go wrong, will go wrong

Padding

- Team members have a tendency to pad activity duration estimates to account for uncertainties.



- **Student Syndrome:** Waiting until the latest possible time to start

- **Parkinson's law:** Work expands to fill available time



2. Plan Schedule Management



What?

- Process of establishing the policies, procedures, and documentation for developing, managing, and controlling the project schedule.

Why?

- Provide project team and stakeholders with guideline and direction on how the project schedule will be developed, managed and controlled.

When?

- Once or at predefined points in the project.



2. Plan Schedule Management



Schedule management plan

- Formal or informal, highly detailed, or broadly framed based on the needs of the project
- That establishes the procedure, policies and the activities for developing, monitoring, and controlling the schedule.
- A component of the project management plan

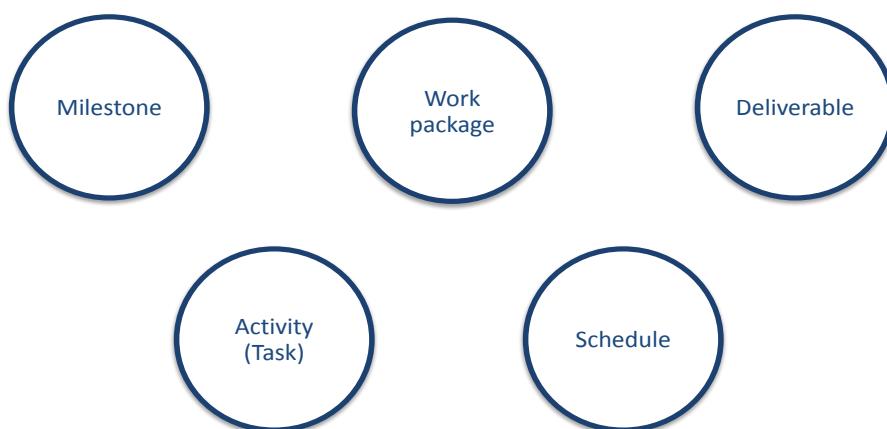
Schedule management plan

- Project schedule model development (and tool)
- Release and iteration length
- Level of accuracy
- Units of measure
- Rules of performance measurement.
 - % complete
 - Schedule variance (SV) and schedule performance index (SPI)
- Control thresholds
- Project schedule model maintenance.
- Reporting formats.

Group discussion



- Phân biệt các khái niệm và Xác định mối quan hệ giữa các khái niệm



3. Define Activities



What?

- Process of identifying and documenting the specific actions (activities) to be performed to produce the project deliverables.

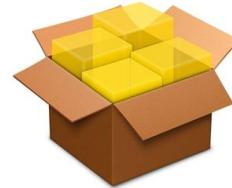
Why?

- Basis for estimating, scheduling, executing, monitoring, and controlling the project work.

When?

- Performed throughout the project.

Work Package	Activity
<ul style="list-style-type: none">• Work package is a set of activities needed to produce deliverables• Work packages often involves multiple <u>groups</u> of people.	<ul style="list-style-type: none">• The activity is an effort needed to complete work package.• Should be decomposed into <u>individual</u> schedule activities.

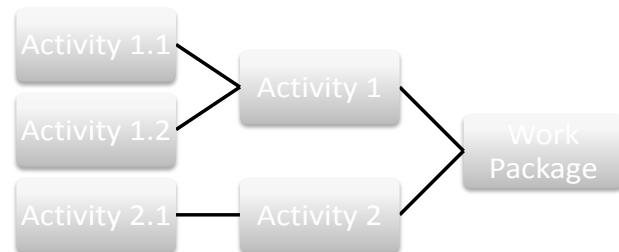
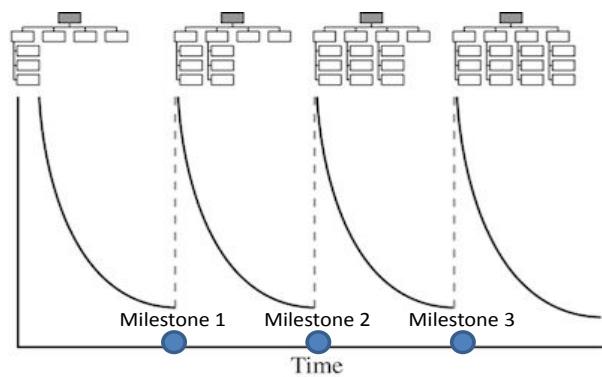


3. Define Activities



How?

- Determine milestones and associated deliverables
- Define activities needed to produce deliverables
- Describe activity detailed enough to estimate, schedule, monitor and control.
- **Rolling wave planning:** the work to be accomplished in the near term is planned in detail, while work further in the future is planned at a higher level.

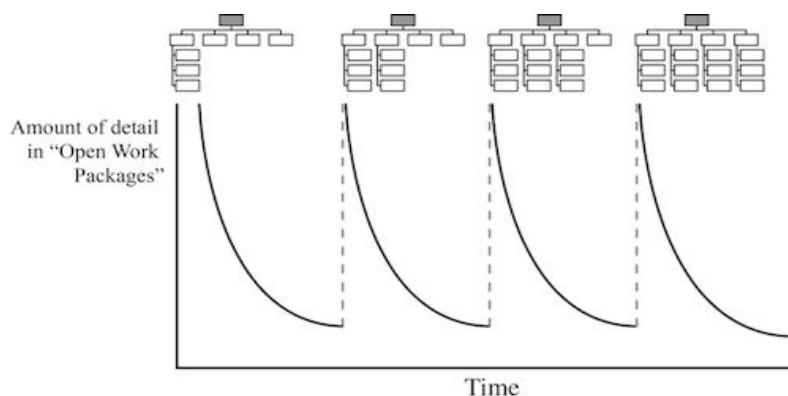


3. Define Activities



Rolling WAVE planning (1)

- **An iterative planning technique:** work that is imminent is planned in detail while work that is way off in the future is planned at a high level.
- As the work in the future approaches more and more details are available enabling team to do further planning.



3. Define Activities



Rolling WAVE planning (2)

- **Near term deliverables:** are decomposed into activities necessary to produce the deliverables. Deliverables are also called as **Work packages**.
- **Long term deliverables:** are more broadly defined, called as **Planning packages**.

Work package	Planning package
• Lowest level element of WBS	• Lowest level element of WBS at a given point of time
• No further decomposition (in term of Scope management)	• Will get decomposed into work packages at later stage
• Primary input to identify activities process	• Decomposed into work package or they get converted into work package when work get more visibility • Planning package will not have activities under them

Group discussion



- Ưu điểm, nhược điểm của PM chia task và của Team Member chia task

Ưu điểm

Nhược điểm

3. Define Activities



Decomposition

When to stop decomposition?

- Can have their progress determined and tracked, their expected costs reasonably established, their resource needs estimated
- Are assignable to **one person**



Expert Judgment

- **Best source:** The person who will ultimately be responsible for executing the work package or the schedule activity, although that may not be known at this point.
- Team members, consultants, functional managers, etc.



3. Define Activities



Milestone List

- A **milestone list** is a project management document that identifies all project **milestones**.

Activity list

- List of activities to be included on a project schedule that includes:
 - The activity name
 - An activity identifier or number
 - A brief description of the activity

Activity attributes

- Describe the characteristics of the activities and are an extension of the activity list. The details may include but not limited:
 - predecessors,
 - successors,
 - logical relationships,
 - leads and lags,
 - resource requirements,
 - constraints,
 - imposed dates,
 - and assumptions related to the activity

4. Sequence Activities



What is it?

- Process of converting the project activities from a list to a logical sequence.

Why?

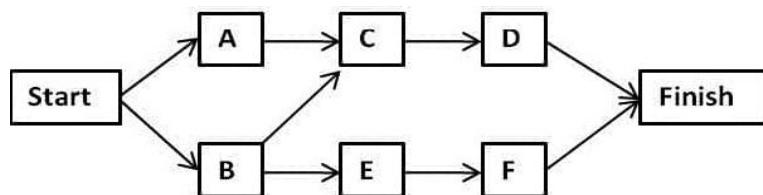
- Logical relationships is the basis to create a realistic project schedule given all project constraints.

When?

- Throughout the project.

How?

- Determine dependencies between activities
- Sequence activities by using appropriate diagramming technique
- Applying leads and lags if necessary to support a realistic and achievable schedule



4. Sequence Activities



Dependency Determination

1 Internal dependencies

- As its name implies, these are dependencies inside of the project's control.
- Example: project schedule is very rush but engineer team have not finished the engine design.

Dependency Determination

2 External dependencies

- As its name implies, these are dependencies outside of the project's control.
- Example: the delivery of deliverable of another project, or the decision of a committee, lawsuit, or expected new law.

4. Sequence Activities



Dependency Determination

3 Mandatory Dependencies

- Legally or contractually required or inherent in the nature of work.
- This dependency is also called **Hard Logic**.
- Example: You can't begin building your house until your foundation is in place.
- Contract says prototype must be approved prior to start work.

Dependency Determination

4 Discretionary dependencies

- Preferred order of activities. It is defined by the project management team based on the knowledge of best practice in each field.
- These relationship are also known as **soft logic, preferred logic, or preferential logic**.
- Example: Painting the walls and carpeting the floors

4. Sequence Activities



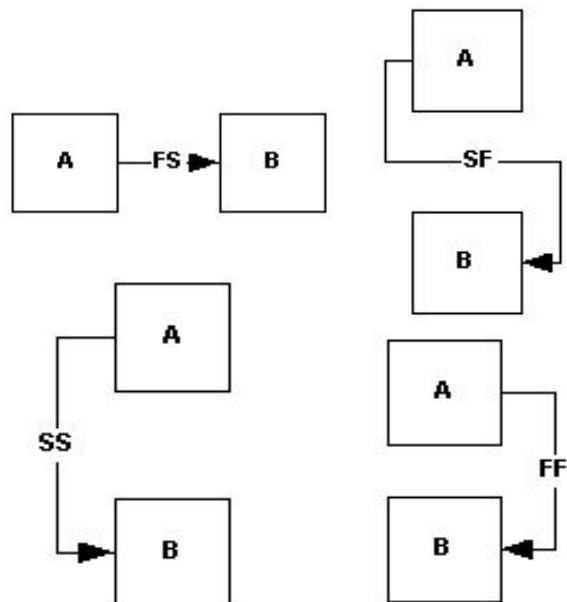
Precedence Diagramming Method (PDM)

4 logical relationships

- **Finish-to-start (FS):** most common type of relationship
 - Activity A: Predecessor
 - Activity B: Successor
- Finish-to-finish (FF)
- Start-to-start (SS)
- Start-to-finish (SF): very rarely used

Not recommend:

- Closed loop or Multiple relationships between the same activities



Group discussion



Tìm ví dụ cho 4 loại quan hệ

Finish-to-Start

Finish-to-Finish

Start-to-Start

Start-to-Finish

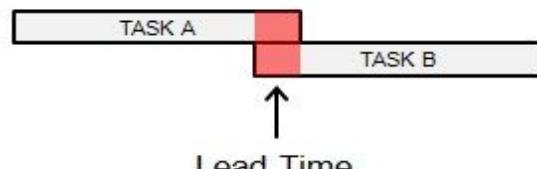
4. Sequence Activities



Leads and Lags

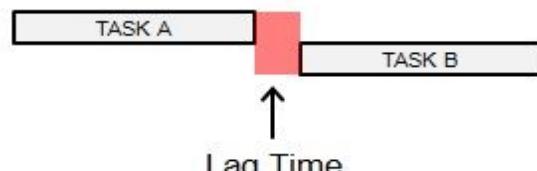
Lead

- The amount of time that a successor activity may be started prior to completion or predecessor.
- Ex: the landscaping could be scheduled to start 2 weeks prior to the scheduled punch list completion.



Lag

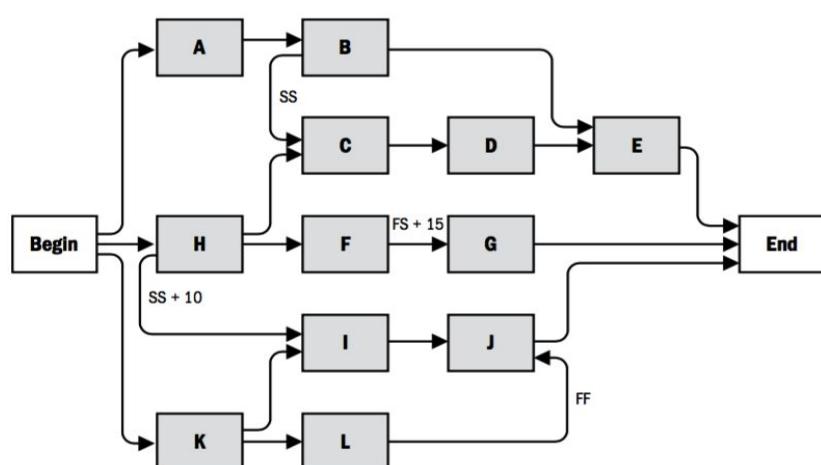
- The waiting time that a successor activity may have to wait after the completion of predecessor.
- Ex: construction only starts after finish foundation 3 days



4. Sequence Activities



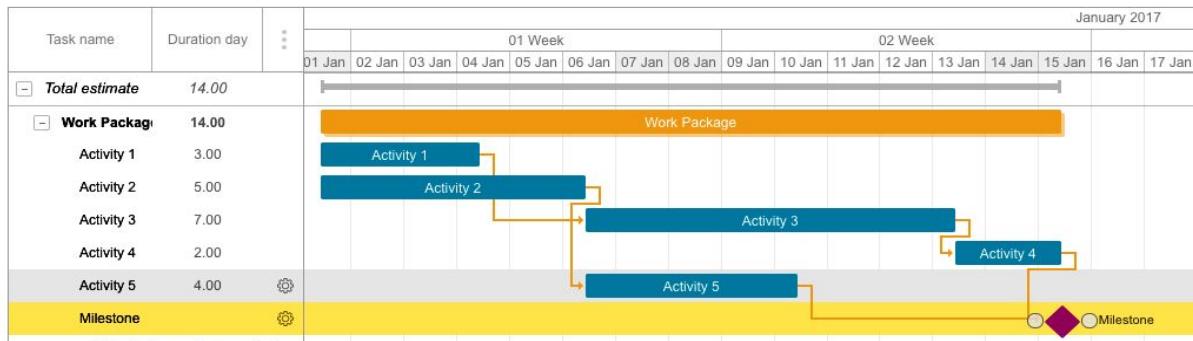
Project Schedule Network Diagrams



4. Sequence Activities



Gantt Chart (Bar chart)



5. Estimate Activity Durations



What is it?

- Estimate the duration needed to complete each activity with estimated resources.

Why?

- Under-estimate the amount of time each activity will take to complete.
- Estimate without correlation with resource availability.

When?

- Throughout the project.

Project resources: They can be material, people, equipment, or anything else capable of definition (usually other than labour) required for the completion of a project activity.



5. Estimate Activity Durations



How?

- Consider the **given assumptions and constraints** (quality and quantity of resources, motivation of staff, deadline, ...)
- Estimate **activity duration** with appropriate techniques
- Determine the uncertainty and estimate **contingent reserve**.
- Re-evaluate and determine the optimal way to complete the activity if needed
- Finalize and document the duration estimates

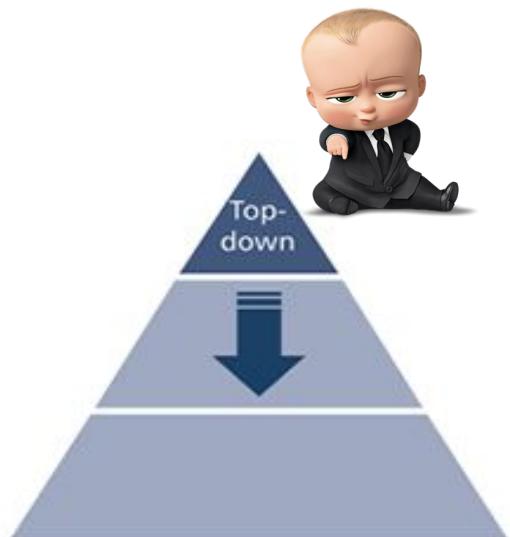


5. Estimate Activity Durations



Analogous Estimating

- Uses information from a previous, similar project, such as duration, budget, size and complexity for future project.
- Analogous estimate is generally **less costly** and time consuming but generally **less accurate**.
- This estimate will be more accurate if previous project is similar in nature and not just in appearance.
- Analogous estimating is also known as **top-down** estimating and is a form of expert judgment using historical information.



5. Estimate Activity Durations



Parametric Estimating

- Parametric estimate uses a **statistical relationship** between historical data and other variables.
- **More accurate** than analogous estimate
- Example - A resource will take 20hrs per module and hence 50 modules will take 1000hrs ($50 \times 20 = 1000$ hrs)
- Estimation is done by multiplying quantity of work by labor hours per unit of work.

Duration = $1/(1+yield/k)[1 \times pvcf1 + 2 \times pvcf2 + \dots + n \times pvcfn / k \times Price]$

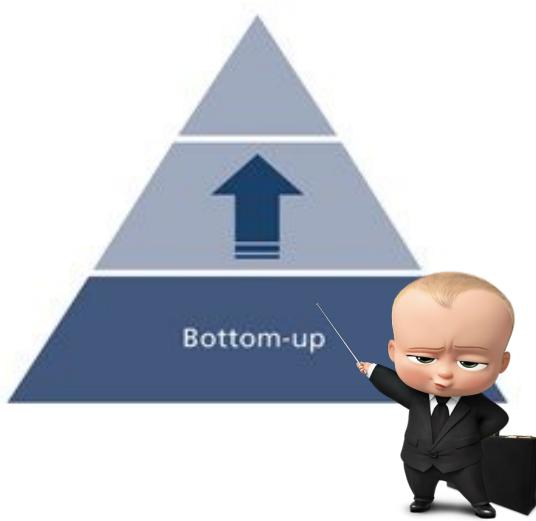


5. Estimate Activity Durations



Bottom-up Estimating

- When an activity cannot be estimated with a reasonable degree of confidence, the work within the activity is decomposed into more detail.
- Once these estimations have been performed, the pieces may be summed up from the bottom back to activity level.
- The most accurate



Group discussion



So sánh 3 loại ước lượng

	Analogous	Parametric	Bottom Up
Mức độ chính xác			
Thời gian ước lượng			
Ai là người ước lượng			

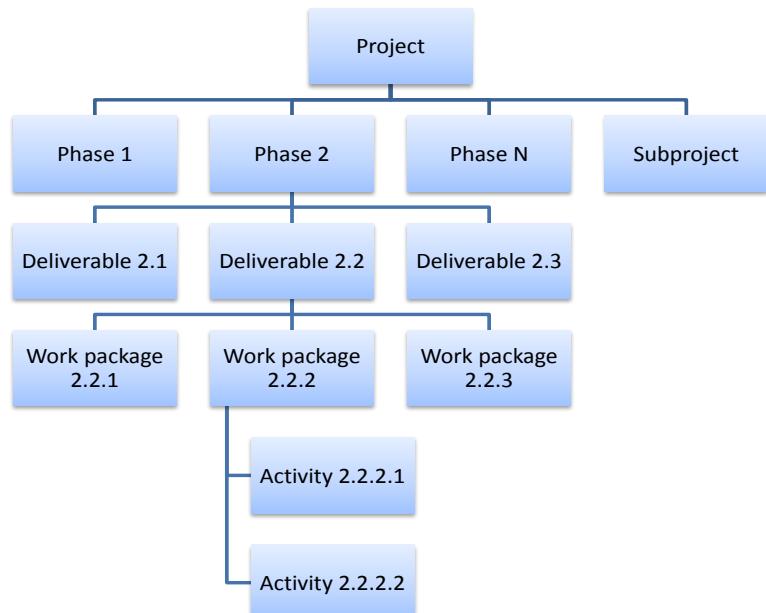
5. Estimate Activity Durations



Analogous

Parametric

Bottom-up



5. Estimate Activity Durations



Three point estimates (PERT)

- When there is insufficient historical data or when using judgmental data.
- A three-point estimate uses average of optimistic, most likely, and pessimistic estimates and hence improving the accuracy.
- Pessimistic estimate (P)** assumes the worst case scenario
- Most likely estimate (M)** – The realistic and most likely estimate
- Optimistic estimate (O)** is the best case scenario.



Triangular distribution: $E = (P + M + O) / 3$

Beta distribution: $E = (P + 4M + O) / 6$

5. Estimate Activity Durations



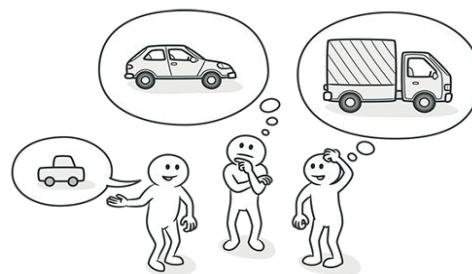
Reserve Analysis

- Contingent Reserve time —also called **time reserves**
- You might choose to add a percentage of time or a set number of work periods to the activity or the overall schedule.
- Contingency reserve shall be clearly identified and documented for future analysis



Alternatives analysis.

- Many activities can be completed in different ways and using various resource allocations.
- Alternative analysis is used to choose the best way to complete an activity.



5. Estimate Activity Durations



Activity duration estimates

- Quantitative assessments of the likely number of time periods that are required to complete an activity, a phase, or a project.
- Do not include any lags
- May include some indication of the range of possible results. Ex: 15 days ± 2 days, or 80% probability of exceeding 1 month

Basis of estimates

- Additional details supporting the duration estimate

ACTIVITY DURATION ESTIMATES			
Project Title:	Date Prepared:		
WBS ID	Activity	Effort Hours	Duration Estimate

6. Develop Schedule



What?

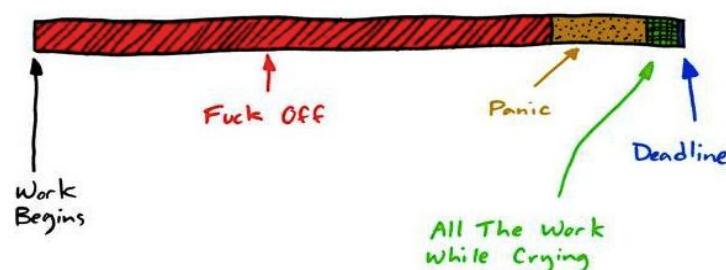
- Process of analyzing activity sequence, duration, resources requirement and constraints to create project **schedule model**

Why?

- A **viable** and **acceptable** schedule model is used to determine the planned start and finish dates for project activities and milestones.

When?

- Iterative process and throughout the project.



6. Develop Schedule



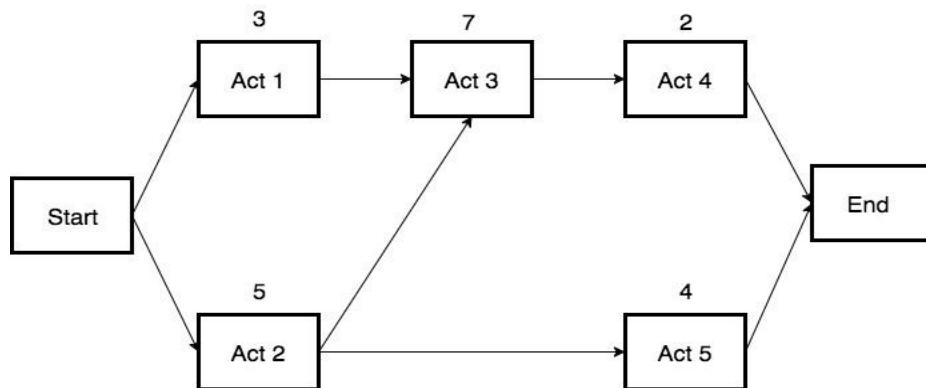
How?

- Once the project start or finish dates have been imposed, it is common to have the project staff assigned to the activities review their assigned activities. The project schedule is then analyzed to:
- Estimate the minimum project duration (**critical path**) and determine the amount of schedule flexibility.
- Determine conflicts with resource calendar and if **resource optimization** is required
- Determine conflict with milestones and if **schedule compression** is required
- Review and revise the duration estimates, resource estimates, and **schedule reserves** needed for risks
- Establish an approved project schedule that can serve as a **baseline** to track progress.

Group discussion : Critical Path Method



- Để hoàn thành tất cả các Activities, cần bao nhiêu thời gian ?
- Activity 5 được phép trễ tối đa bao nhiêu ngày mà không ảnh hưởng tới đến ngày kết thúc (End)?
- Xác định ngày sớm nhất Activity 5 có thể bắt đầu, ngày trễ nhất có thể bắt đầu ? (Start bắt đầu từ ngày 1)
- Activity 1 được phép trễ bao nhiêu lâu mà không làm ảnh hưởng tới Activity 3?
- Customer muốn chuyển giao vào ngày thứ 10. Có những phương án nào để đẩy nhanh tiến độ?

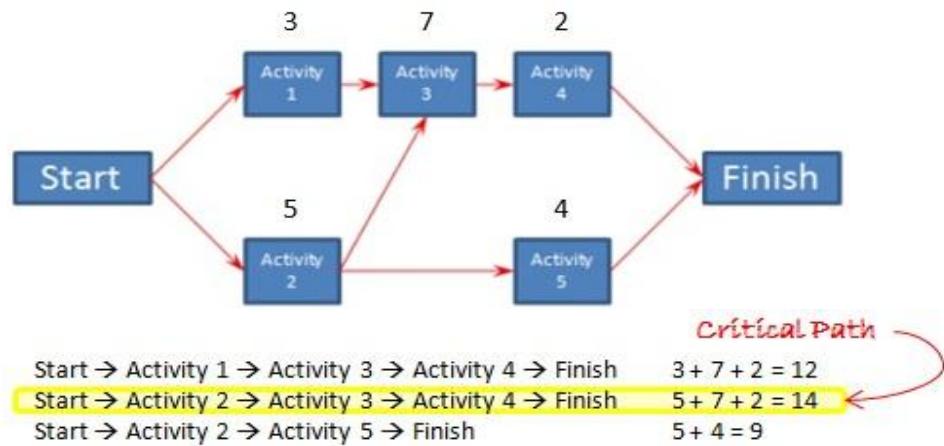


6. Develop Schedule



Critical Path Method (CPM)

- CPM is used to calculate the **critical path(s)** and the amount of schedule flexibility (**total float**).
- The **critical path** is the one with the longest duration, which is the shortest possible project duration.

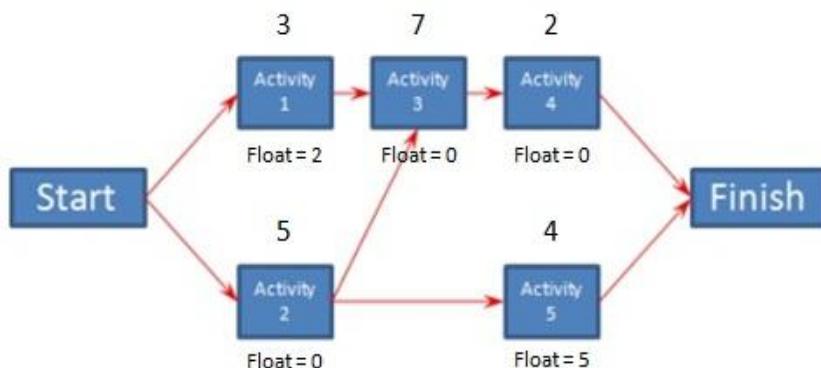


6. Develop Schedule



Float (or total float) determination

- Activities 2, 3, and 4 are on the critical path -> **float of zero**.
- The next longest path is Activities 1, 3, and 4. the float will be the $14 - 12 = 2$. So Activity 1 has a **float of 2**.
- **Float of activity 5???**



6. Develop Schedule



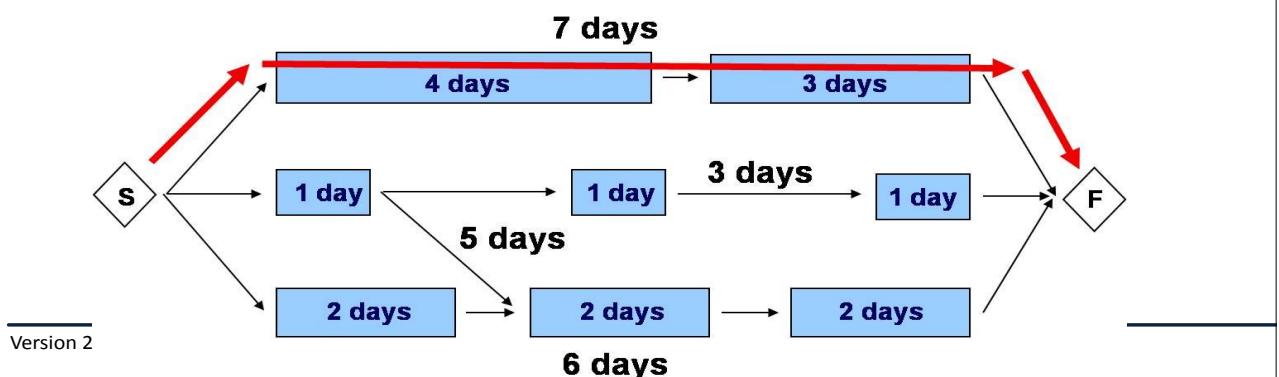
Float (or Slack)

1. **Float or total float:** the total amount of time that a schedule activity may be delayed from its early start date without delaying the project finish date, or violation a schedule constraint
2. **Free float:** the amount of the time that a schedule activity can be delayed without delaying the early start date of any immediately following schedule activity. **Free float can only occur when two or more activities share a common successor**
3. **Project float:** project float is the amount of time a project can be delayed without delaying the externally imposed project completion date required by the customer or management, or the date previously committed to by the project manager

6. Develop Schedule



- Can we have more than one critical path?
 - Yes, in this case the risk will be increase.
- Can we change the critical path?
 - Yes.
- Can the critical path have negative total float?
 - It means project is behind schedule
- Near-critical path?
 - A lesser critical sequence of activities



6. Develop Schedule



Network Diagram Nodes

- ES = Earliest date an activity can be started
- EF = Earliest date an activity can be completed
- LS = Latest date an activity can start
- LF = Latest date an activity can be completed

Early Start	Duration	Early Finish
Activity Name		
Late Start	Total Float	Late Finish

Early Start & Early Finish Calculation

- **Forward Pass:** to determine the earliest start and finish date
- **Early Finish (EF) = Early Start (ES) + Duration - 1**

Late Start & Late Finish Calculation

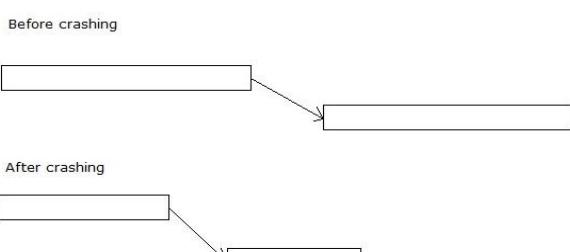
- **Backward Pass:** to determine the latest start and finish date
- **Late Start (LS) = Late Finish (LF) - Duration + 1**

6. Develop Schedule



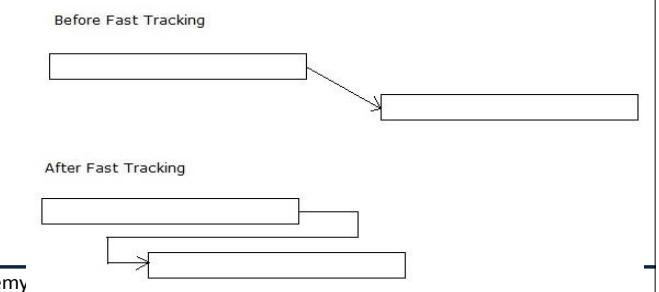
Schedule Compression (1)

- **Crashing** – This approach **adds more resources** to activities on the critical path to complete the project earlier.
- Crashing almost always result in **increased cost**. Many options are considered and the option with maximum compression with minimum cost impact is selected.



Schedule Compression (2)

- **Fast Tracking** –Critical activities that would normally be done in sequence are allowed to be **done in parallel** or with some overlap.
- Fast track may result in rework and **increases the risk**. Communication requirements increases during fast tracking.

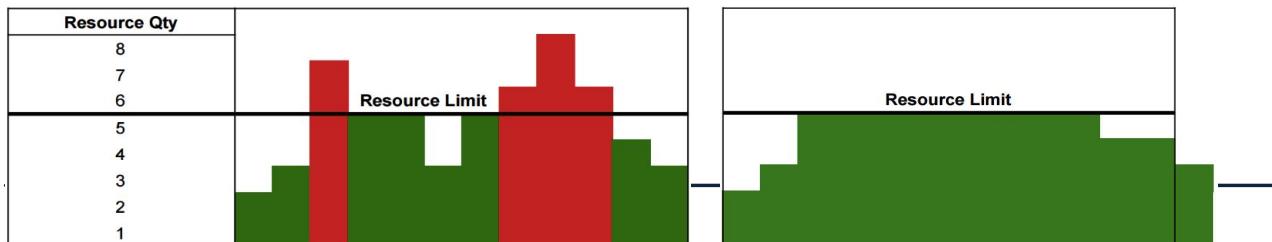
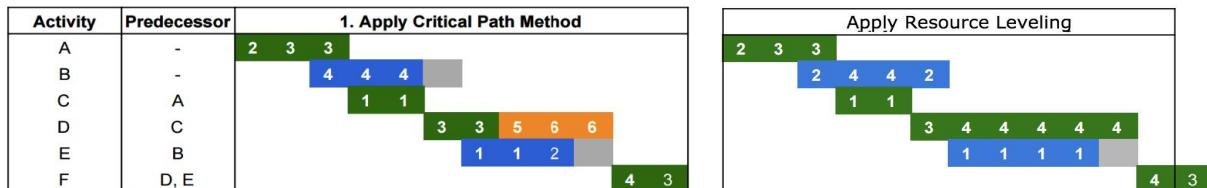


6. Develop Schedule



Resource Optimization Techniques (1)

- Resource leveling:** Technique to adjust activities to **balance demand for resources**
- Used when shared and critical resources only available at certain times, or a resource assigned to two or more activities at the same time
- Project's critical path is changed, usually to increase

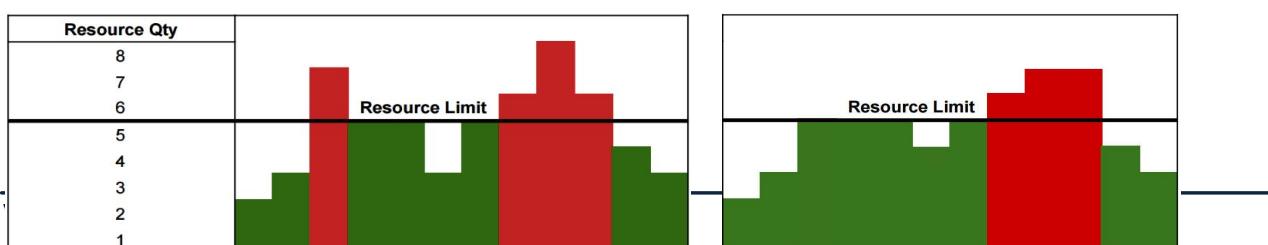
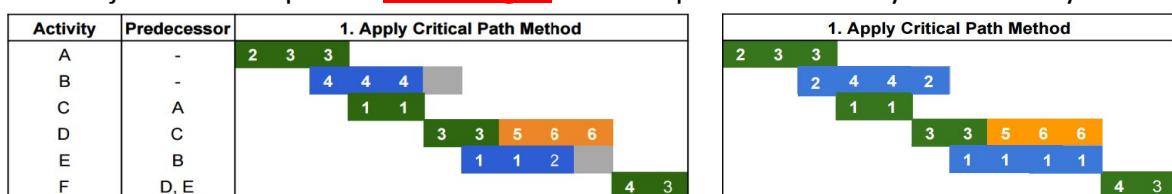


6. Develop Schedule



Resource Optimization Techniques (2)

- Resource Smoothing:** Technique to adjust activities to meet **predefined resources limits**
- Activities only be delayed within their free and total float. Resource smoothing may not be able to optimize all resources
- Project's critical path is not changed and completion date may not be delayed



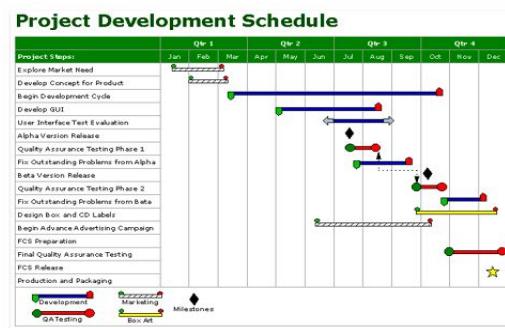
6. Develop Schedule



Project Schedule

- Output of a **schedule model**, including planned dates, durations, milestones and resources
- At the beginning of project execution, the Project Schedule is the same as the Schedule baseline.
- As work is done on the project, the actual progress is updated on the Project Schedule. At any given date, the latest version of the actual (Project) Schedule is referred to as the “Project Schedule”.

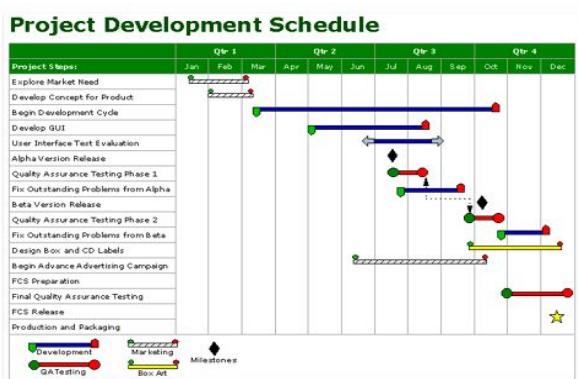
- The schedule can be displayed in a variety of ways:
 - *Milestone Charts (or Master schedule)*
 - *Project Schedule Network Diagram (PDM)*
 - *Gantt Charts/ Bar Charts*



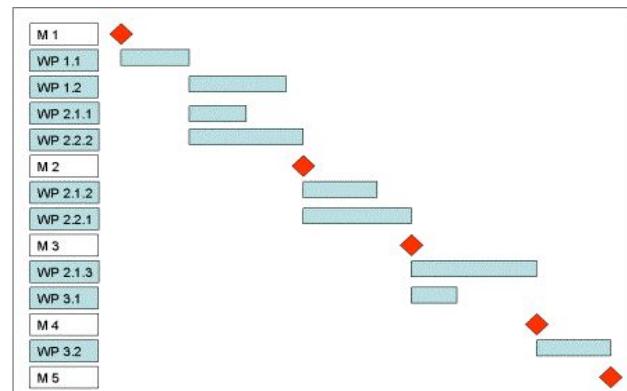
6. Develop Schedule



• Gantt Charts/ Bar Charts



• Milestone Charts



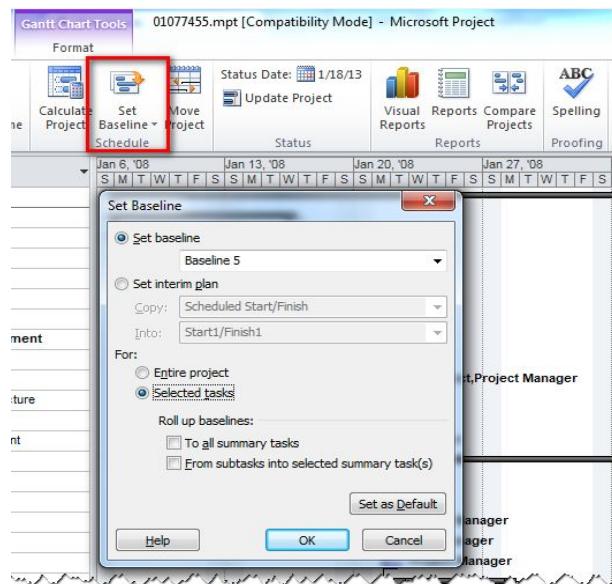
Milestone charts are used to report to senior management, while **Bar charts** are used to track progress, to report to the team.

6. Develop Schedule



Schedule Baseline

- A specific version of the project schedule developed from the schedule network analysis
- It is accepted and approved by the appropriate stakeholders, normally the project management team and functional managers.
- Can be changed only through formal change control procedures
- The schedule baseline is a component of the **project management plan**



7. Control Schedule



What?

- Monitoring the status of the project and maintaining the project schedule baseline to sustain a realistic schedule continues throughout the duration of the project

Hurry up! You are behind the **Schedule**

Why?

- Missing deadline, behind the schedule
- The schedule baseline is maintained throughout the project.

When?

- Throughout the project.

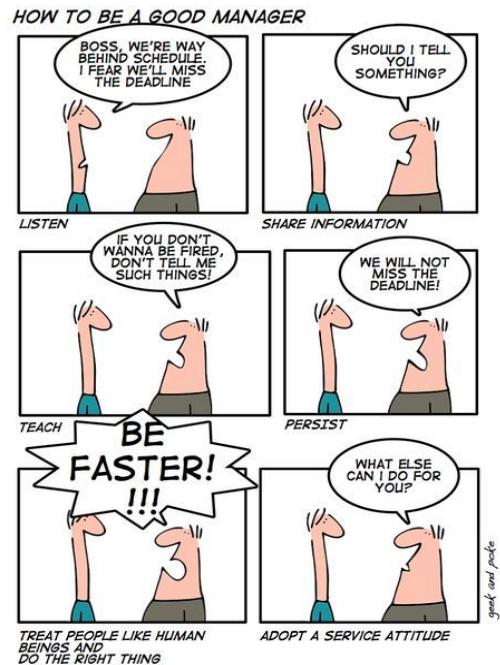


7. Control Schedule



How?

- Monitoring status of project activities and knowing the actual performance to date.
- Updating the schedule model
- Compare the actual start and finish dates to the approved baseline dates to determine if variances have occurred.
- Manage change to the schedule baseline.
- Any change to the schedule baseline can only be approved through the Perform Integrated Change Control process



Review



- Introduction
 - Milestones
 - Murphy's law
 - Padding
 - Student syndrome
 - Parkinson's law
- Plan Schedule Management
 - Plan Schedule Management
- Define Activities
 - Rolling wave planning
 - Work package vs Planning package
 - Activity list
 - Activity attributes
 - Milestones list
- Sequence Activities
 - Dependencies
 - Mandatory
 - Discretionary
 - External
 - Internal
 - Precedence diagramming method (PDM)
 - Activity Relationship types:
 - Finish to Start
 - Finish to Finish
 - Start to Finish
 - Start to Start
 - Leads and lags
 - Schedule Network Diagram

Review



- Estimate Activity Duration
 - Analogous estimating
 - Parametric estimating
 - Bottom-up estimating
 - Three-point estimate
 - Reserve analysis
 - Activity Duration Estimate
- Develop Schedule
 - Critical path method
 - Near-critical path
- Float (Slack)
 - Free float
 - Total float
 - Project float
- Schedule compression
 - Crashing
 - Fast tracking
- Resource optimization
 - Resource leveling
 - Resource smoothing
- Bar charts
- Milestone charts
- Schedule baseline
- Control Schedule

Assignment!!!

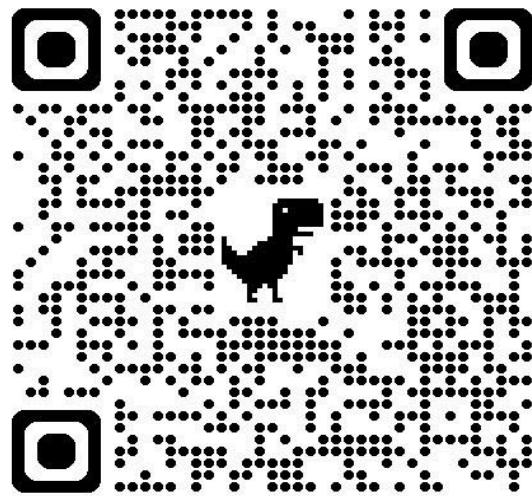


- Làm BTVN trên LMS:
Schedule
- Học nhóm
- Thực hành viết Schedule
cho dự án hiện tại của mình
- Nộp hồ sơ lên PMI

Group discussion



- Nội dung nào mới biêt?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?

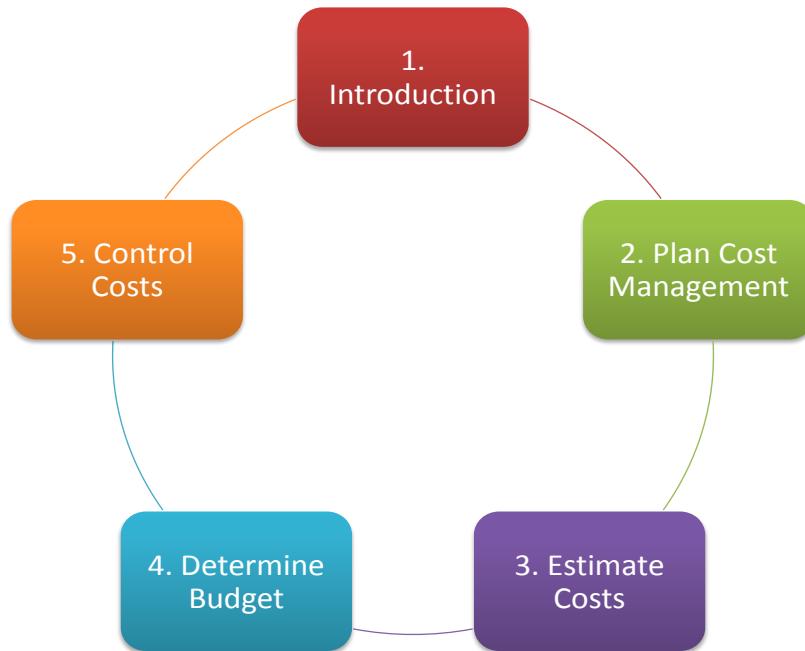


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Project Cost Management



Overview



Group discussion: Case-study



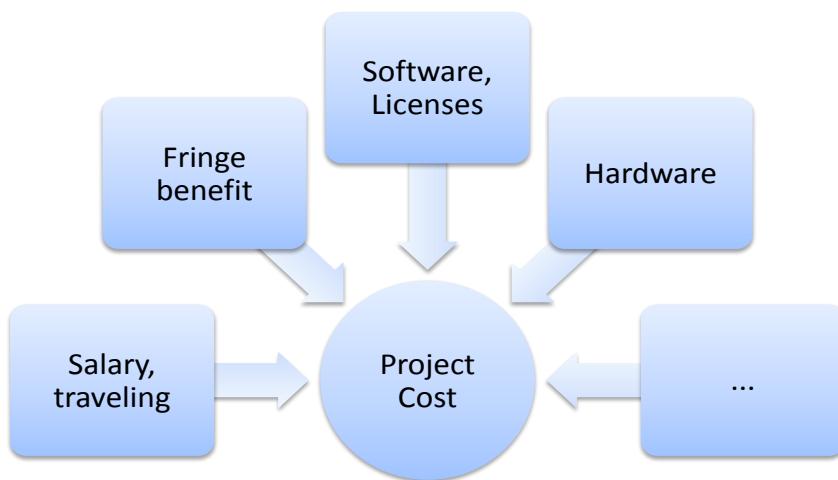
- Dự án cao tốc (Đại lộ Thăng Long, Hà Nội).
- Khởi công 03/2005: tổng mức đầu tư là **5.379 tỉ đồng**. Giá đầu tư với 179 tỷ đồng/km
- Đến tháng 10/2007: bộ GTVT điều chỉnh dự án với tổng mức đầu tư điều chỉnh tăng lên đến hơn **7.527 tỷ đồng**. Theo đó, giá đầu tư mỗi km lên đến hơn 250 tỷ đồng.
- Báo CAND ra ngày 28/5/2009, tác giả Khánh Chi cho biết: “Chính phủ vừa bổ sung gần 4.000 tỷ đồng để đẩy nhanh tiến độ đường Láng - Hòa Lạc...”



1. Introduction: What is Project Cost ?



Costs are estimated for all resources that will be charged to the project. This includes but is not limited to labor, materials, equipment, services, and facilities, as well as special categories such as an inflation allowance, cost of financing, or contingency costs.



Group discussion



- Phân biệt sự khác nhau

Direct Cost	Indirect Cost
Variable Cost	Fixed Cost

1. Introduction: Types of Project Cost



Cost can be Direct or Indirect

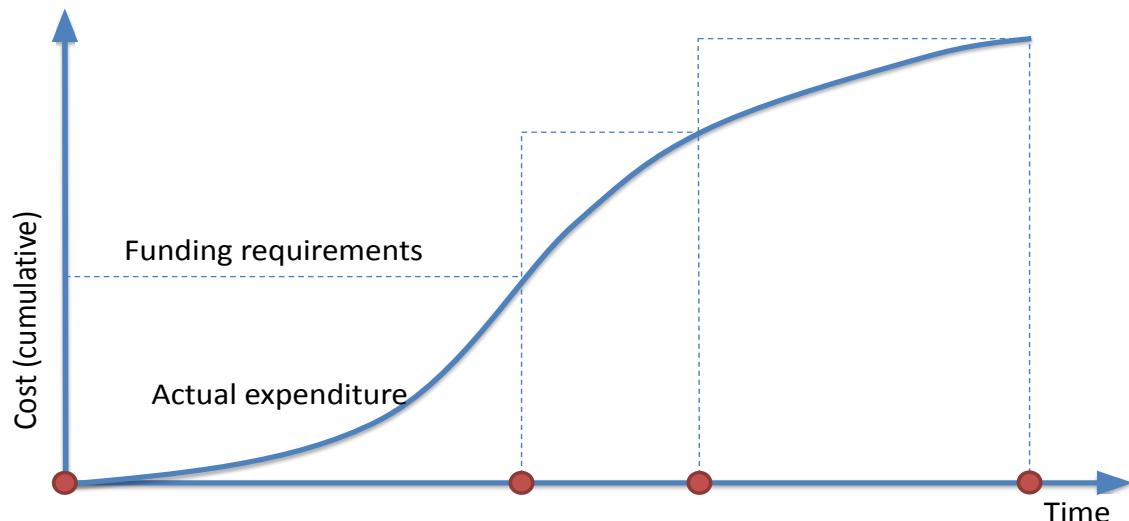
- Direct costs**
 - These costs are attributed **directly** to the project work and cannot be shared among projects (Wages, Material, Equipment etc.).
- Indirect costs**
 - Overhead costs that incurred for the benefit of **more than one project** (Taxes, training, project management software license, and so on).

Cost can be Variable or Fixed

- Variable costs**
 - Costs that **vary** depending on the amount of work or production (Cost of materials, supplies, wages etc..).
- Fixed costs**
 - These costs remain **constant** throughout the project (Cost of office setup, rentals etc...).

1. Introduction: Why Project Cost Management?

- It is common practice for **high-level budgets** to be determined prior to knowing costs. Therefore, actual expenditures must conform to their approved planned uses of funds.



2. Plan Cost Management

What?

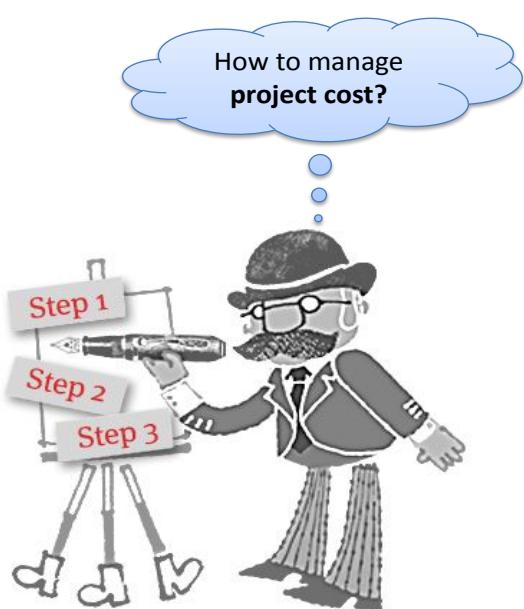
- Process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled.

Why?

- Provides guidance and direction on how the project costs will be managed throughout the project.

When?

- Once or at predefined points in the project.



2. Plan Cost Management



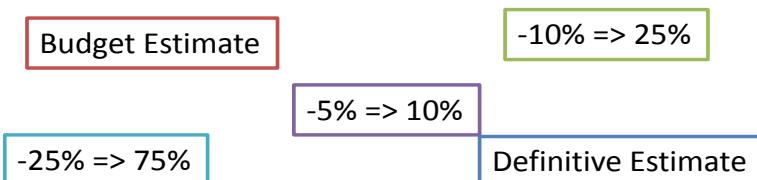
Cost management plan

- A component of the project management plan
- That establishes the procedure, policies and the activities for developing, monitoring, and controlling the project cost.

Schedule cost plan

- Units of measure
- Level of precision: round up or down (e.g. \$100.49 to \$100)
- **Level of accuracy:** acceptable ranges (e.g. +/- 10%)
- Organizational procedures links.
- Control thresholds
- Rules of performance measurement
- Reporting formats

Group discussion: Sắp xếp vào ô phù hợp



No	Name of estimate	Range	Remark
1	Rough Order of Magnitude (ROM)		During project initiating
2			During project planning
3			As the project progresses, the estimate will become more refined

2. Plan Cost Management



Level of Accuracy

- Accuracy of estimate is normally refined during the course of project to reflect additional details as it becomes available.
- Refinements and range of accuracy depends on policies of individual organizations.

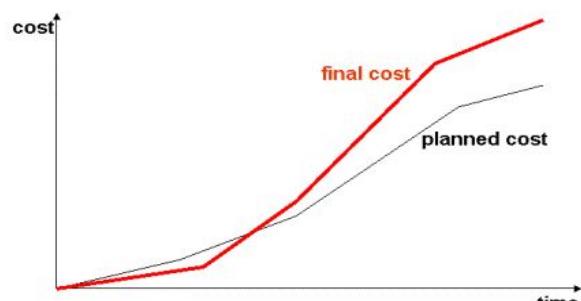
No	Name of estimate	Range	Remark
1	Rough Order of Magnitude (ROM)	-25% => 75%	During project initiating
2	Budget Estimate	-10% => 25%	During project planning
3	Definitive Estimate	-5% => 10%	As the project progresses, the estimate will become more refined

3. Estimate Costs



What is it?

- Developing an approximation of the monetary resources needed to complete project activities.



Why?

- We often end up with a (much) higher final cost than originally planned before contract signatures.
- Another question: How can we decrease cost on the project while maintaining the same scope?

When?

- Periodically throughout the project

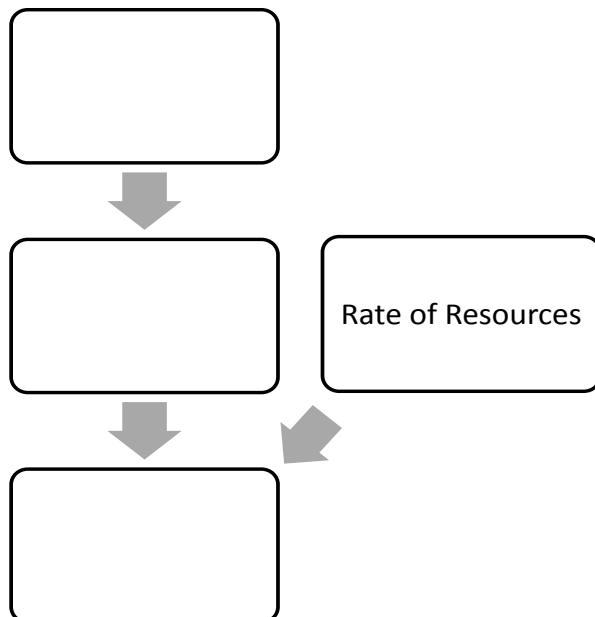


3. Estimate Costs



How?

- Consider the given assumptions and constraints of **resource requirements**
- Applying **rates** against those resources and activities to create cost estimates
- Determine the cost risks and estimate **contingent reserve**.
- Re-evaluate and determine the optimal way to complete the activity if needed
- Finalize and document the cost estimates



3. Estimate Costs



Analogous Estimating

- Analogous estimating relies on **historical information** to predict the cost of the current project. It is also known as top-down estimating.
- The process of analogous estimating takes the actual cost of a historical project as a basis for the current project.
- Less costlier than other methods, faster but less accurate

Parametric Estimating

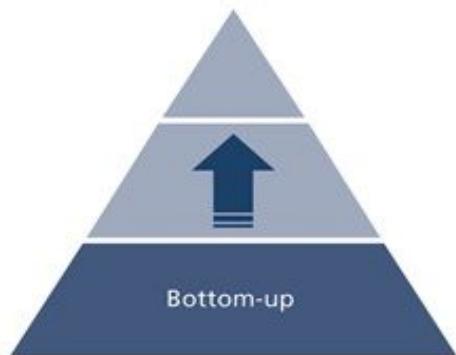
- Parametric estimate uses **statistical relationship** between historical data and other variables
- Per sq.ft cost of previous project of similar nature was XYZ and hence the new project shall cost XYZ multiplied by new total area.
- Parametric estimate can be applied to total project or part of project.

3. Estimate Costs



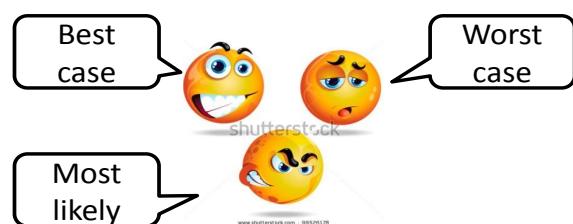
Bottom-up Estimating

- Cost estimation starts from **bottom level**.
- While this method is more expensive, it is also one of the most accurate.



Three Point Estimates (PERT)

- PERT analysis calculates an Expected (E) activity cost using a weighted average of three estimates
- PERT analysis consider estimation **uncertainties** and risks and hence accuracy of estimate is improved.



<ul style="list-style-type: none">Đào tạoLàm lại	<ul style="list-style-type: none">Kiểm thử phá hủy
Tài liệu hoá quy trình	<ul style="list-style-type: none">NợThanh tra
<ul style="list-style-type: none">Bảo hànhPhế liệu	<ul style="list-style-type: none">Kiểm traDành thời gian lên kế hoạch
	<ul style="list-style-type: none">Mất cơ hội kinh doanh
<p>Chi phí Phù hợp (Money spent during the project to avoid failures)</p>	<p>Chi phí Không phù hợp (Money spent during and after the project because of failures)</p>
<p>Chi phí phòng ngừa (build a quality product)</p>	<p>Chi phí lỗi nội bộ (failures found by the project)</p>
<p>Chi phí đánh giá (assess the quality)</p>	<p>Chi phí lỗi bên ngoài (failures found by the customer)</p>

3. Estimate Costs



Cost of Quality (COQ)

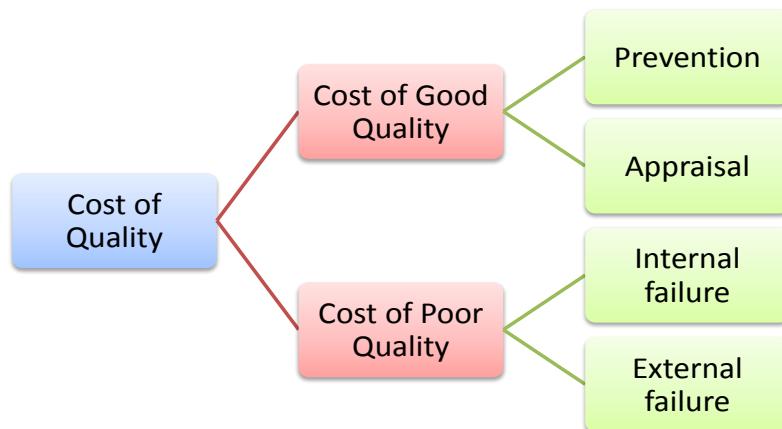
Cost of conformance	Cost of non conformance
Prevention costs (<i>build a quality product</i>) <ul style="list-style-type: none">• Training• Document processes• Equipment• Time to do it right	Internal failure costs (<i>failures found by the project</i>) <ul style="list-style-type: none">• Rework• Scrap
Appraisal costs (<i>assess the quality</i>) <ul style="list-style-type: none">• Testing• Destructive testing loss• Inspection	External failure costs (<i>failures found by the customer</i>) <ul style="list-style-type: none">• Liabilities• Warranty work• Lost business
Money spent during the project to avoid failures	Money spent during and after the project because of failures

3. Estimate Costs



Cost of Quality (COQ)

- Assumptions about costs of quality may be used to prepare the activity cost estimate.
- Details about cost of quality in quality knowledge area



3. Estimate Costs



Contingency Reserve

- Reserves are added to costing to cover **identified risks**, cost overruns an error associated with costing.
- The contingency reserve may be a **percentage** of the estimated cost, a **fixed number**, or may be developed by using quantitative analysis methods.
- As more precise information about the project becomes available, the contingency reserve may be **used, reduced, or eliminated**.

Do you still have enough money to go home?



3. Estimate Costs

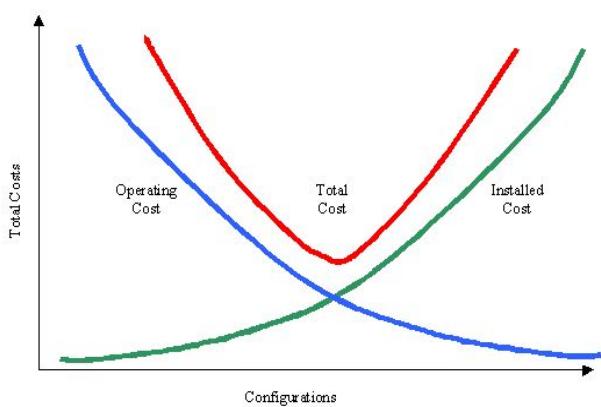


Alternative analysis:

- Identify and evaluate options in order to select the cost effective approaches.
- Cost trade-offs and risks should be considered, such as make versus buy, buy versus lease, and the sharing of resources in order to achieve optimal costs for the project. Ex: hire someone else to do the work, because the needed skill set doesn't exist within the organization.
- Value Analysis (Value Engineering)**
- Its focus is to find a **less costly way** to do the same work.

Life Cycle Cost

- Reduction in some features of project may reduce project cost but may make future operations more difficult and hence resulting **overall more cost** to organizations.



Group discussion: Tìm sự tương đồng và xếp cột phù hợp



Basis of Estimates		
Activity	Tài liệu chính	Tài liệu bổ sung/ thuyết minh
Basis of Estimates		
Activity Duration Estimates		
Cost Estimates		
Activity Attribute		
WBS		
WBS Dictionary		

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4. Determine Budget



What?

- The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

An unrealistic budget is project manager's fault

Why?

- Establish a realistic and acceptable cost baseline that conforms to financial condition of project.

When?

- Once or at predefined points in the project.



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4. Determine Budget



How?

- Aggregate project cost by time period to see the scheduled spending per time period
- Analyse and determine project reserves
- Compare and reconcile the fund limitation
- Acquire funding, ensure financial resources based on projected cash flow
- Get approval of cost baseline and the financial resources



4. Determine Budget

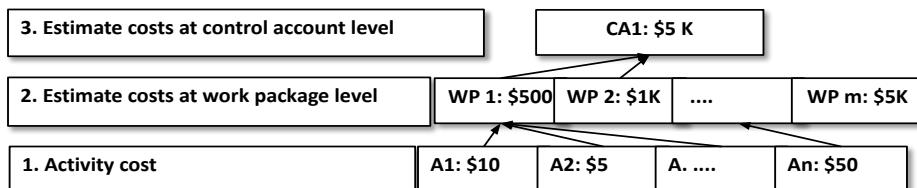


Historical Relationships

- This method uses the **statistical relationship** between historical data and variable (Data multiplied by variable)
- Parametric or Analogous estimates can be used.

Cost Aggregation

- Activity costs are rolled up to work package costs.
- Work package costs are rolled up to **control account** costs
- and finally into project costs.
- Budgeting will result in S-curve showing time phased cost requirements

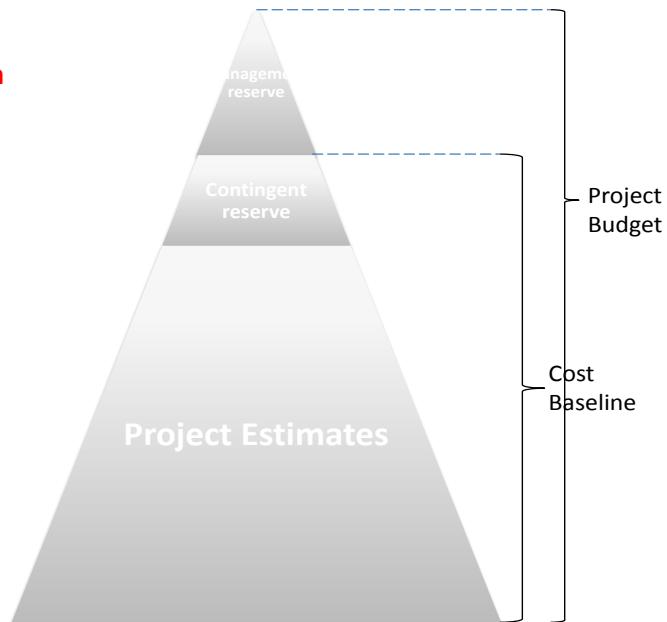


4. Determine Budget



Management reserves

- are intended to address **the unknown risks** that can affect a project.
- The management reserve is **not included** in the cost baseline but is part of the overall project budget and funding requirements.
- When an amount of management reserves is used to fund unforeseen work, the amount of management reserve used is added to the cost baseline, thus requiring an approved change to the cost baseline.
- Project manager will normally have the authority to utilize contingency reserves.



4. Determine Budget



Funding Limit Reconciliation

- Funding limit reconciliation is an organization's approach to **managing cash flow**.
- Project manager shall **negotiate fund requirements** with organization prior to finalization of cost baseline and schedule.
- Changes in funding may result in changes to project management plan and schedule

Financing

- Technique of acquiring funding for projects.
- Sources of funds may be internal or external
- If a project is funded externally, the funding entity may have certain requirements that are required to be met.



4. Determine Budget



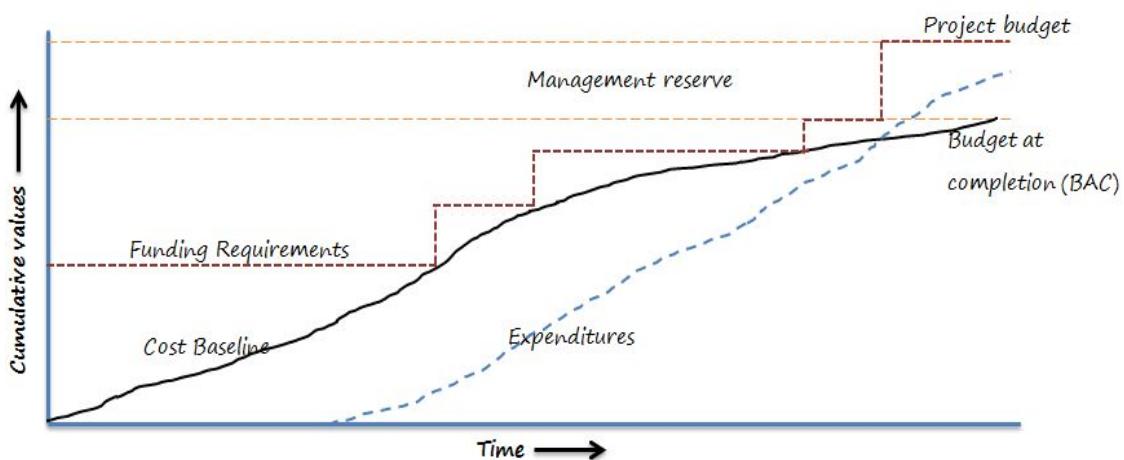
Cost Baseline

- A project's cost baseline is an **authorized time-phased budget** used to measure, monitor and control overall cost performance of the project.
- Cost baselines forms the shape of an **S-curve** indicating low spending in the initial stages of project and increasing towards end of the project.
- Cost baseline **includes** contingency reserves, but **excludes** management reserves.

Project Funding Requirements

- Funding requirements are derived from cost baselines
- Funding often occurs in incremental rather than continuous
- Total funds required are cost baseline plus management reserve, if any.

4. Determine Budget



Group discussion



Hạng mục 5km đường trong 6 tháng

Ước lượng chi phí dự kiến theo thời gian thực hiện (Đơn vị: Triệu đồng)

Hãy vẽ đường Cost baseline (Gợi ý: Xác định chi phí tích lũy theo từng tháng)

Hạng mục công việc	Tháng 1	Tháng 2	Tháng 3	Tháng 4	Tháng 5	Tháng 6	Ngân sách phân bổ
Đường nhựa	500	500	500	500	500		2500
Sơn chỉ giới				200		200	400
Biển báo			50		50	70	170
Hàng rào bảo vệ			300	300	300		900
Nghiệm thu chất lượng						400	400
Ngân sách từng tháng	500	500	850	1000	850	670	4370



5. Control Costs



What?

- The processes of monitoring the status of project based on cost baseline

Why?

- Ensuring that cost expenditures do not exceed the authorized funding by period
- Maintain the cost baseline throughout the project

When?

- Throughout the project.

How?

- Same principles as other control processes
- Earned value management



5. Control Costs



Earned Value Analysis

- PV, EV and AC can be monitored and reported on both a period-by-period basis (typically weekly or monthly) and on a cumulative basis.
- Requires development of integrated baseline – Results in better project definition and planning
- Accurate picture of project status – Cost, schedule, and technical
- Early identification of trends and problems
- Enables project manager to make informed decisions based on facts
- Results in successful projects: **On time, in budget**



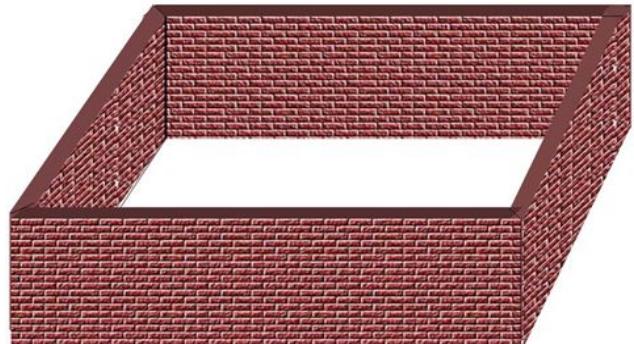
Garden Building Work Package



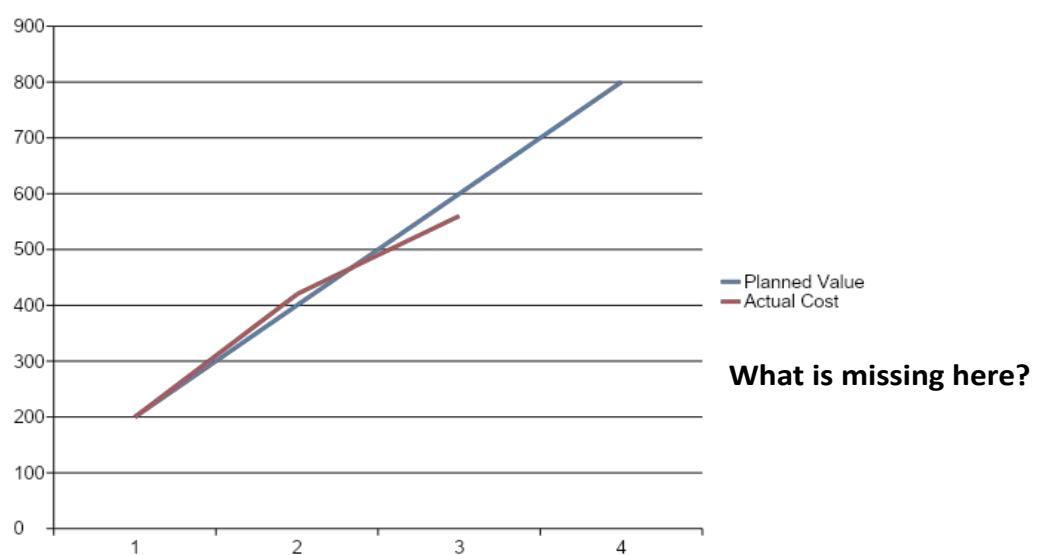
Example 1:

Our work package is to build a wall around a garden

- **Scope:** Wall of 4 sides
- **Schedule:** 1 side/day
- **Cost:** \$200/side
- **Summary:** 4 sides in 4 days with a cost of \$800.



How much over/under budget are we?



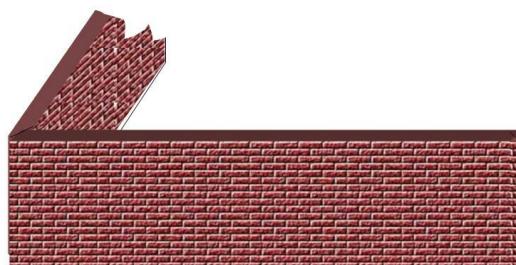
Project Progress



- **Day 1 Progress**
- Front wall completed and the budget of \$200 spent – perfect!



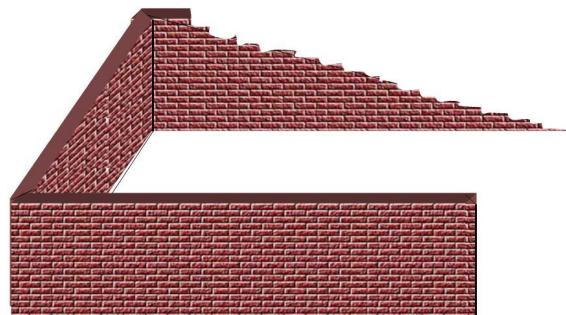
- **Day 2 Progress**
- Left side started, but the foundations had to go deeper than expected using more materials so the side was not quite completed and the spend was \$220



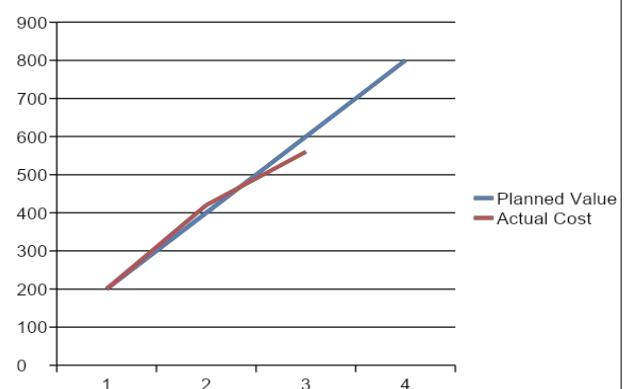
Project Progress



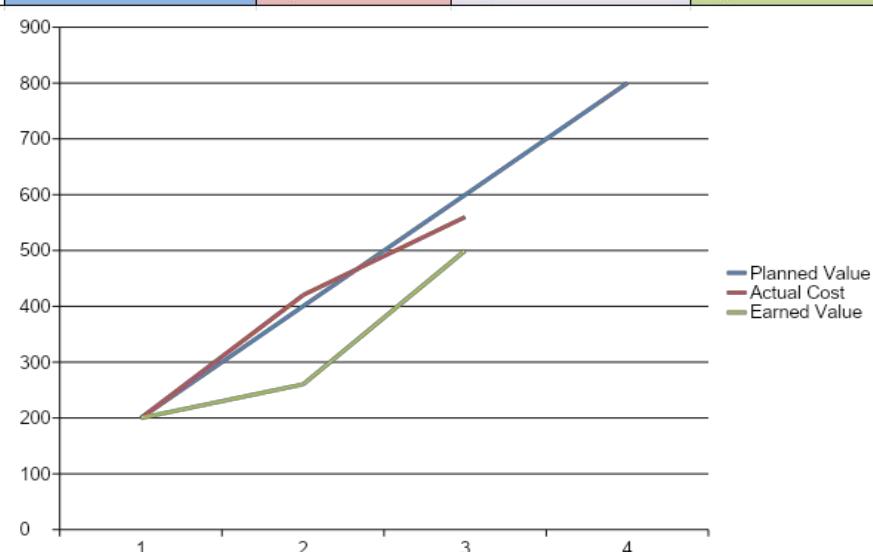
- **Day 3 Progress**
- Side 1 was finished, only half of the back wall was built, but the team left early and only spent \$140 that day



- How much over/under budget are we?



	Planned Value	Actual Cost	%work completed	Earned Value
Day 1	200	200	25%	200
Day 2	400	420	33%	260
Day 3	600	560	63%	500
Day 4	800	N/A	N/A	N/A



5. Control Costs



Earned Value Management

1. Planned Value (PV)

- Authorized budget assigned to the work to be accomplished on a particular day
- Total Planned Value for project will be approved total budget and is known as **Budget at Completion (BAC)**

2. Earned Value (EV)

- Estimated (not actual) value of work actually completed in monetary terms

3. Actual Cost (AC)

- Actual cost spent to complete the work completed

Group discussion



- Work package XXX have a 4 stages and each stage will take one week to complete with \$500 estimated cost per stage.
- End of 2nd week 3 stages were completed and contractor has spend 1700. What is the PV, EV & AC?

	Value	Why ?
PV (Planned Value)		
EV (Earned Value)		
AC (Actual Cost)		

5. Control Costs



Example 2:

- Work package XXX have a 4 stages and each stage will take one week to complete with \$500 estimated cost per stage.
- End of 2nd week 3 stages were completed and contractor has spend 1700. What is the PV, EV & AC?

Answer:

- PV on 2nd Week = Total value of planned work to be completed on second week in monetary terms ($500 \times 2 = 1000$)
- EV on 2nd week = Estimated value of work completed ($500 \times 3 = 1500$)
- AC on 2nd Week = Actual cost spend of work already completed (1700)

Earning Rules - Progress Reporting



0/100 method <ul style="list-style-type: none"> - 1 accounting period - No EV at start - 100% EV at completion <p>0% 100% </p>	Milestones <ul style="list-style-type: none"> - 3 or more accounting periods - Identifiable milestones - Milestone weight should correlate to the resources required <p>0% 20% 80% 100% </p>
50/50 method <ul style="list-style-type: none"> - No more than 2 accounting period - 50% EV at start - 50% EV at completion <p>50% 50% </p>	Percent complete <ul style="list-style-type: none"> - least desirable - Somewhat subjective - If used, apply quantitative back-up data <p>0% 60% 100% </p>

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Group discussion: Dự án làm 5km đường

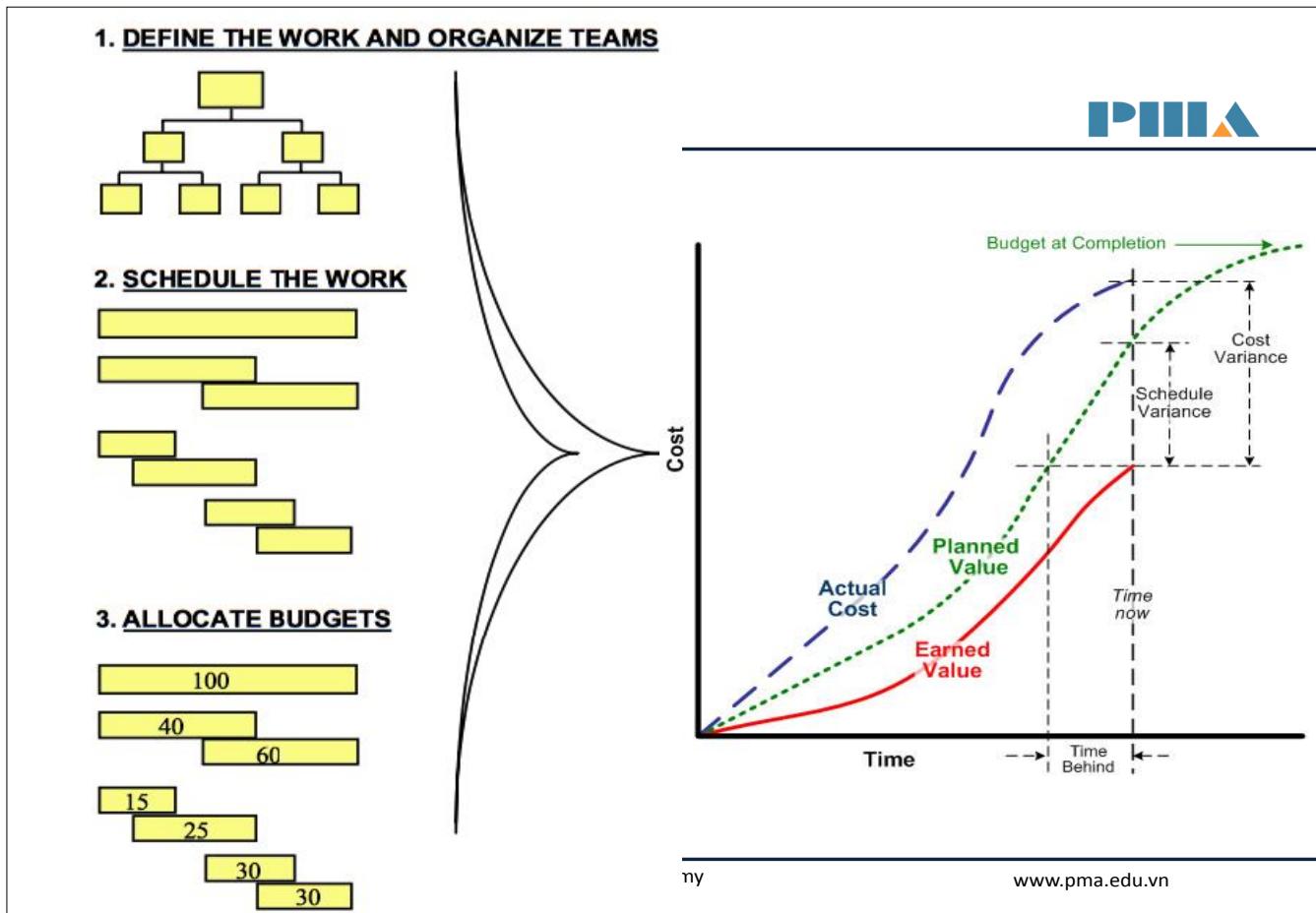
- Tìm hiểu bảng dữ liệu

Thực tế ghi nhận được ở tháng thứ 4

Gói công việc và Cách tính giá trị thu về	Chỉ số	Chú thích	Giá trị
Đường nhựa (đơn vị hoàn thành)	Dự kiến (PV)		2000
	Thực chi (AC)		1800
	Thu về (EV)	Chỉ thu về được 3km đường	1500
Sơn chỉ giới (50/50)	Dự kiến (PV)		200
	Thực chi (AC)	Thanh toán đợt đầu	200
	Thu về (EV)		200
Biển báo (mốc chuyển giao)	Dự kiến (PV)		50
	Thực chi (AC)		50
	Thu về (EV)	Giao đủ hàng trước kỳ hạn	100
Hàng rào bảo vệ (% hoàn thành)	Dự kiến (PV)		600
	Thực chi (AC)	Phát sinh do thay đổi vật liệu	700
	Thu về (EV)		500
Nghiệm thu chất lượng (0/100)	Dự kiến (PV)		0
	Thực chi (AC)		0
	Thu về (EV)		0

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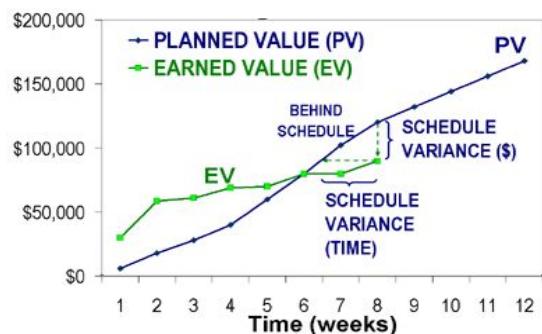


5. Control Costs



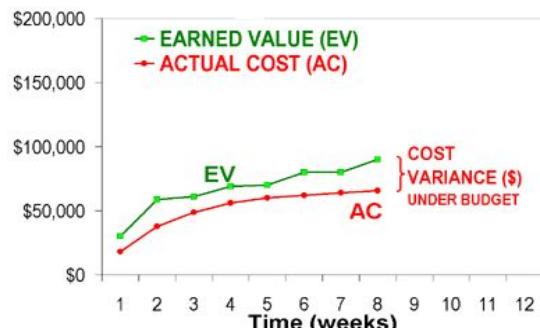
Variance Analysis

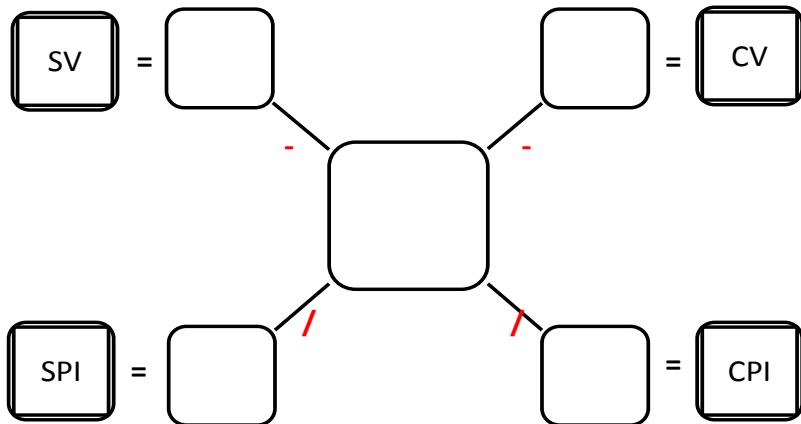
- SV (Schedule Variance) = EV-PV
- SPI (Schedule Performance Index) = EV/PV



Variance Analysis

- CV (Cost Variance) = EV-AC
- CPI (Cost Performance Index) = EV/AC





SV > 0: Ahead of schedule
CV > 0: Under budget
SPI > 1: Good performance
CPI > 1: Good performance

SV < 0: Behind the schedule
CV < 0: Over budget
SPI < 1: Bad performance
CPI < 1: Bad performance

Group discussion: Dự án làm 5km đường PMA

Với dữ liệu của tháng thứ 4

1. Sai lệch về tiến độ (SV) và Chỉ số hiệu suất tiến độ (SPI)?

1. Dự án đang vượt hay chậm tiến độ?

1. Sai lệch về chi phí (CV) và Chỉ số hiệu suất chi phí (CPI)

1. Dự án đang vượt ngân sách hay trong ngân sách cho phép ?

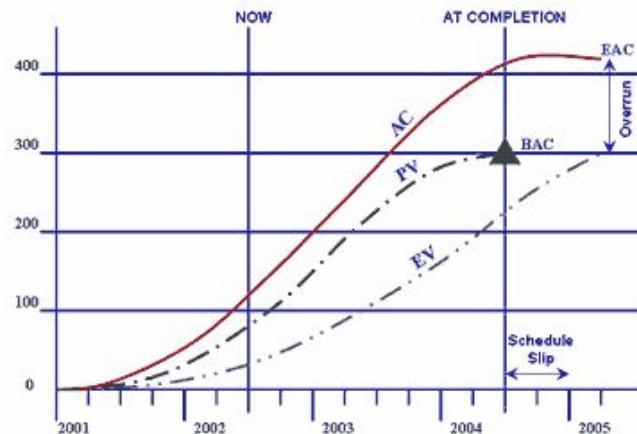
5. Control Costs



Trend analysis and Forecast

How much do we need at completion?

- => Estimate at completion (EAC)
- How much do we need more to complete?
- => Estimate to complete (ETC)
- Estimate at completion (EAC) may differ from Budget at Completion (BAC)



- Variance At Completion
 $VAC = BAC - EAC$

5. Control Costs



Scenario 1. The changes project experience will continue to occur for remaining work.

- $ETC = EAC - AC$
- $EAC = BAC/CPI$

Current CPI is normal (when current variances are thought to be typical)

Scenario 2. There will be no variation for remaining work and will progress as planned before

- $ETC = BAC - EV$
- $EAC = AC + ETC$

Current CPI is abnormal (when current variances are thought to be atypical)

Scenario 3. Original estimate is no longer valid (Original estimate if fundamentally flawed (floored)).

- $ETC = \text{New estimate for remaining work}$
- $EAC = AC + ETC$

Scenario 4. Project is over budget but has to meet a deadline

- $ETC = (BAC-EV)/(CPI \times SPI)$
- $EAC = AC + (BAC-EV)/(CPI \times SPI)$

Here team considers that remaining work will be completed at the same efficiency rate considering cost and schedule performance

Group discussion



Với Kịch bản 1: Sai lệch được xem là bình thường và tiếp tục diễn ra cho đến hết dự án. Hãy tính toán

- Dự kiến cần thêm bao nhiêu tiền nữa mới hoàn thành dự án (ETC)?
- Khi hoàn thành dự án sẽ hết bao nhiêu tiền (EAC)?

5. Control Costs



To Complete Performance Index (TCPI)

1. TCPI predicts the efficiency that must be achieved to complete the remaining works with available budget
2. If it is obvious that earlier estimated BAC can not be achieved, Project manager develops a forecasted EAC. Once approved through integrative change control process, EAC will supersede BAC and cost baselines will be revised.

TCPI = Work Remaining/Funds remaining

$$TCPI_{BAC} = \frac{BAC - EV}{BAC - AC}$$

$$TCPI_{EAC} = \frac{BAC - EV}{EAC - AC}$$

5. Control Costs



TCPI >1

- means in future, more work must be achieved per every dollar spent in the future compared to actual work achieved previously per dollar.
- Harder to complete

TCPI <1

- means in future lesser work need to be achieved for every dollar spent compared to past performance
- Easier to complete

Group discussion



- Chỉ số chỉ số hiệu suất để hoàn thành (TCPI)?
- Với ngân sách còn lại, có dễ dàng để hoàn thành dự án không?

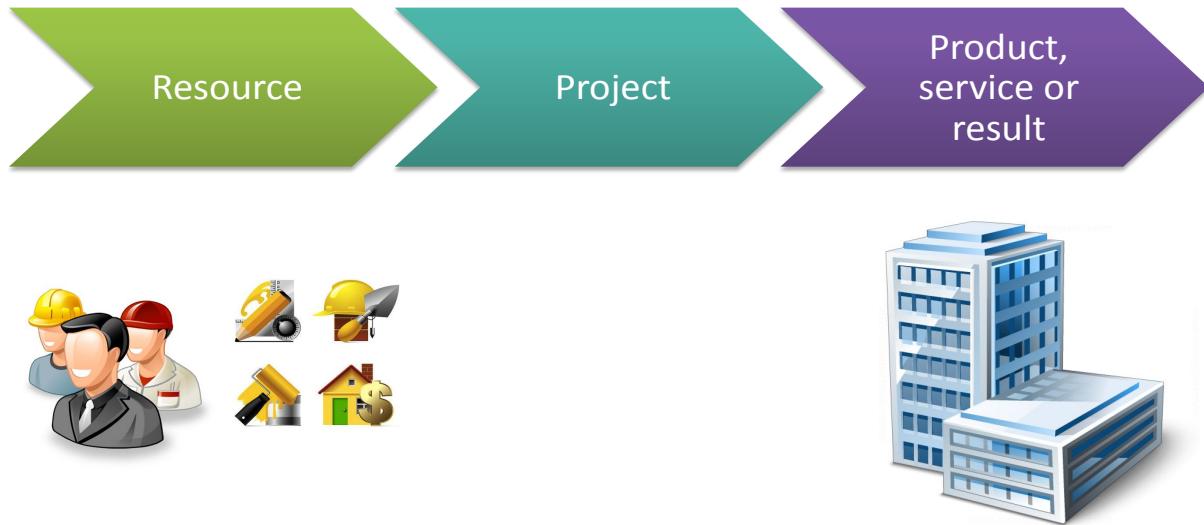
Project Resource Management



Overview



1. Introduction: What is Project Resource?



1. Introduction: What is Project Resource?

Human resources

- People who make up the workforce of the project



Physical resources

- Equipment, materials, facilities, infrastructure



2. Plan Resource Management



What?

- The process of defining how to estimate, acquire, manage, and use human and physical resources.

Why?

- It establishes the approach and level of management effort needed for managing project resources based on the type and complexity of the project.

When?

- Once or at predefined points in the project.



2. Plan Resource Management



How?

- In consideration of technical aspects, project schedule and budget, project team identify and determine **approaches** to ensure that sufficient resources are available for the successful completion of the project.
- Those resources can be obtained from the organization's **internal** assets or from **outside** the organization through a procurement process.
- Effective resource planning should consider and plan for the availability of, **or competition for, scarce resources**.
- Competing or scarce resources** may significantly impact project costs, schedules, risks, quality, and other project areas.



2. Plan Resource Management



Resource Management Plan

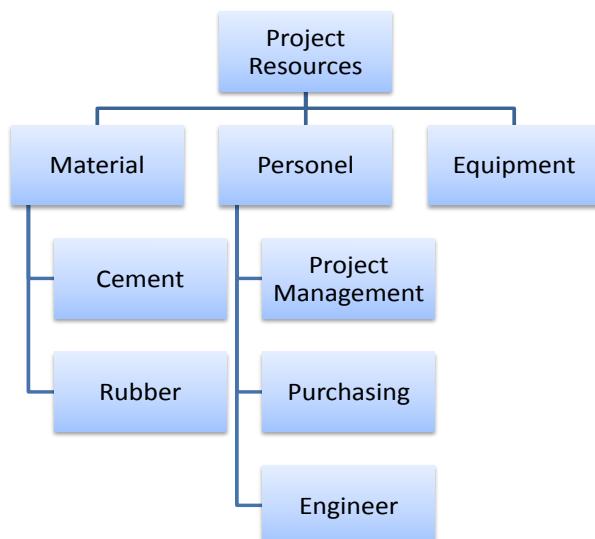
- **Team resource management plan**
- Guidance on how project team resources should be defined, staffed, managed, and eventually released.
- Include but not to be limited to the following:
 - **Project organization chart**
 - Roles & responsibilities
 - Authority & competences
 - Resources identification
 - Team acquisition
 - Team training
 - Team development
 - Recognition and reward
 - Team release
- **Physical resource management plan**
- Guidance on how physical resources should be identified, categorized, allocated, managed, controlled and released.
- Include but not to be limited to the following:
 - **Resource breakdown structure**
 - Resource identification
 - Resource acquisition
 - Resource allocation
 - Resource control
 - Resource release

2. Plan Resource Management



Resource Breakdown Structure (RBS)

- A resource breakdown structure is a **hierarchical structure** of the identified resources by resource category and resource type .
- E.g. of resource categories - labor, material, equipment , supplies etc
- Resource Types can include the skill level, grade level, etc
- In **Plan Resource Management**, the resource breakdown structure was used to guide the categorization for the project.

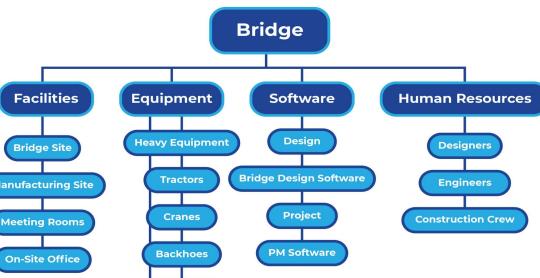
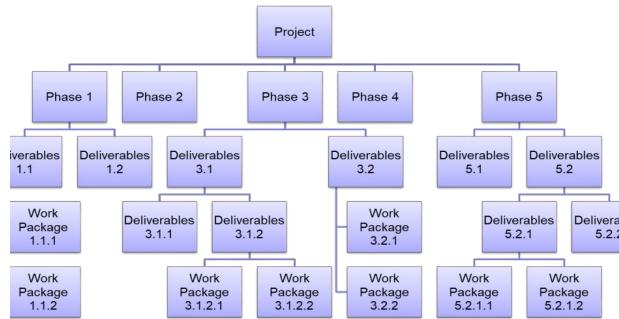


Group discussion



- So sánh 3 biểu đồ
 - Work Breakdown Structure
 - Organizational Breakdown Structure
 - Resource Breakdown Structure

Resource Breakdown Structure (RBS) Example



Organizational Breakdown Structure (OBS)



3. Estimate Activity Resources



What?

- Process of estimating team resources and the type and quantities of materials, equipment, and supplies necessary to perform project work.

Why?

- It identifies the type, quantity, and characteristics of resources required to complete the project.

When?

- Periodically throughout the project.
- Closely coordinated with Estimate Activity Duration and Estimate Costs processes.

Being on the first date

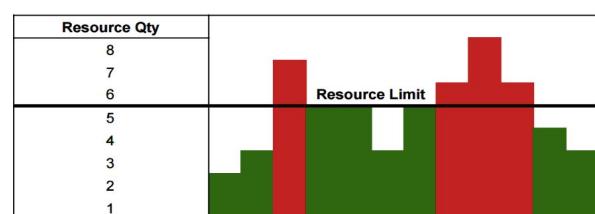
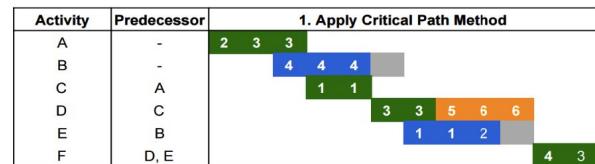


3. Estimate Activity Resources



How?

- Determine resource type and estimate the quantity of resources to complete the activities.
- Re-evaluate and decide the optimal way to complete the activity within the given assumptions and constraints (technical aspects, schedule, budget, ...) if needed.
- Finalize and document the Resource requirements



3. Estimate Activity Resources



Analogous estimating

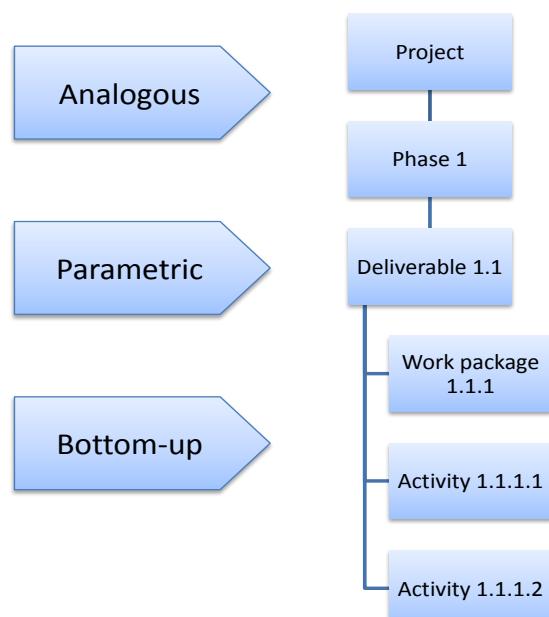
- It is used as quick estimating method and can be used when the project manager can only identify a few top levels of the WBS.

Parametric estimating

- This technique can produce higher levels of accuracy depending on the sophistication and underlying data built into the model.

Bottom-up estimating

- Team and physical resources are estimated at the activity level and then aggregated to develop the estimates for work packages, control accounts, and summary project levels.



3. Estimate Activity Resources



Alternative Analysis

- Many activities can be completed in different ways and using various resource allocations.
- Alternative analysis is used to choose **the best way to complete an activity within the defined constraints**.
- Ex: Hiring a tower crane may be less cost than buying in short term perspective but buying may be better for organization in long term.



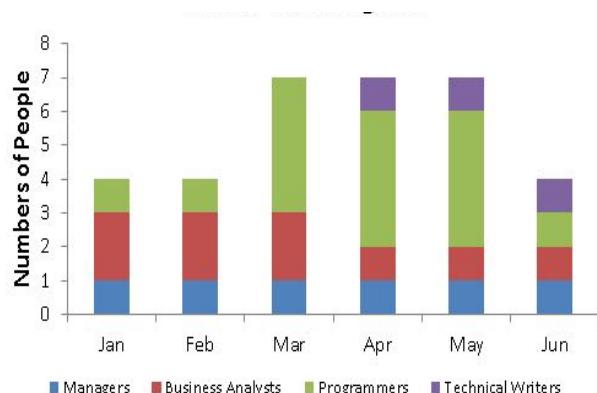
3. Estimate Activity Resources



Resource requirements

- Need to specify the kind of resource and the number of these resources for how long.
- For instance, if 2 senior programmers are required for 4 months or if 3 junior programmers are required for 5 months.

Resource Requirements & Resource Histogram



Basis of estimates

- The amount and type of additional details supporting the resource estimate.

4. Acquire Resources



What?

- The process of obtaining team members, facilities, equipment, materials, supplies, and other resources necessary to complete project work.
- Failure to acquire the necessary resources or insufficient resources decrease the probability of success and, in a worst-case scenario, could result in project cancellation.

Why?

- It outlines and guides the selection of resources and assigns them to their respective activities.

When?

- Periodically throughout the project



Dumbo's regular partner fell unexpectedly ill overnight, so circus management brought in a replacement.

4. Acquire Resources



Pre-Assignment

- Staff assignments are defined within the Project Charter or other processes before the initial Resource Management Plan has been completed.
- Known in advance i.e. pre-assigned.
- Expertise of particular persons



Negotiation

- PM team may need to negotiate with:
 - Functional manager to ensure availability of component staff.
 - Other PM teams to assign scarce / specialized resources.



4. Acquire Resources



Negotiation

- acquiring from outside may take place due to shortage / lack of in-house resources.

We're looking for people who can help make this project successful!



Virtual Teams

- No time nor conditions to meeting face to face.
- Electronic communication: e-mail, video conferencing, has made such teams feasible.

Thanks to Internet!



4. Acquire Resources



Team Resource Assignments

- Documentation of team assignments records the team members and their roles and responsibilities for the project.
- A project team/staff directory

Physical Resource Assignments

- Documentation of the physical resource assignments records the material, equipment, supplies, locations, and other physical resources that will be used during the project.

- Team Directory/Staff Directory

Name	Title
Norris Austin	Web Developer
Richard Rocco	CEO
Tahir Sarkis	Account Manager
Helen Leon	Marketing Director
Sara Wirth	Client Support
Jamal Edwards	VP of Sales
Jacob Bach	Software Developer

4. Acquire Resources



Resource Calendar

- Resource Calendars specify WHEN and HOW LONG identified project resource will be available during the project.
- Holidays of human resource are normally included in a composite resource calendar.

«Dec		January 08					Feb»	
Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	REF:00 Frank Smith 12:00:00 - 15:00:00 		REF:01 Frank Smith 09:00:00 - 23:59:59 	REF:01 Frank Smith 09:00:01 - 09:00:00 				
	REF:09 Sam West 16:00:00 - 18:00:00 							
		REF:93 Frank Smith 10:00:00 - 23:59:59 	REF:93 Frank Smith <- ALL DAY -> 	REF:93 Frank Smith 00:00:01 - 09:00:00 				
		REF:101 Sam West 09:00:00 - 23:59:59 	REF:101 Sam West <- ALL DAY -> 	REF:101 Sam West <- ALL DAY -> 	REF:101 Sam West 09:00:01 - 15:00:00 			

5. Control Resources



What?

- The process of ensuring that the **physical resources** assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual utilization of resources and taking corrective action as necessary.

Why?

- The resources needed for the project should be assigned and released at the right time, right place, and right amount for the project to continue without delays.

When?

- Throughout the project.

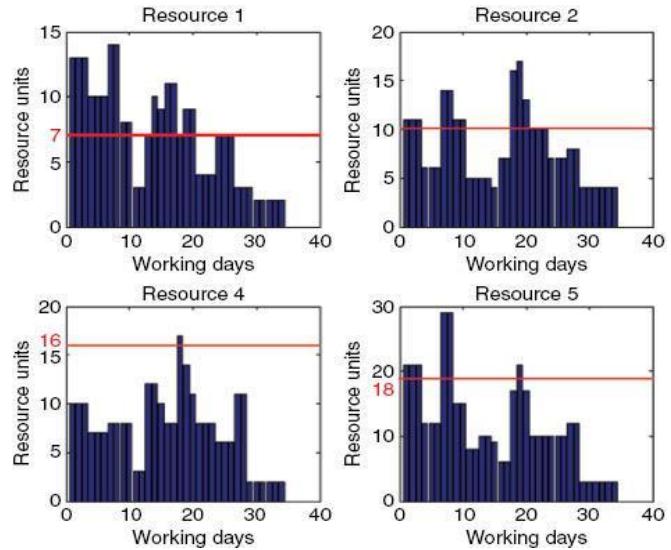


5. Control Resources



How?

- Monitoring resource expenditures
- Ensuring that resources are used and released according to the plan and project needs
- Review actual resources have been used to date and what is still needed.
- Identifying and dealing with resource shortage/surplus in a timely manner,
- Managing the actual changes as they occur.
- Influencing the factors that can create resources utilization change
- Updating resource allocation



Review



- Introduction
 - Human (Team) resource
 - Physical resource
- Plan Resource Management
 - Plan Resource Management
 - Resource Breakdown Structure (RBS)
- Estimate Resources
 - Resource requirement (Resource histogram)
 - Basis of estimate
- Acquire Resource
 - Pre-assignment
 - Team resource assignment
 - Physical resource assignment
 - Resource calendar
- Control Resource

Review



- Introduction
 - Cost types
 - Fixed cost
 - Variable cost
 - Direct cost
 - Indirect cost
- Plan Cost Management
 - Cost Management Plan
 - Accuracy estimating
 - ROM estimate
 - Budget estimate
 - Definitive estimate
- Estimate Costs
 - Estimation techniques
 - Cost of Quality
 - Contingent reserve
 - Alternative Analysis
 - Lifecycle costing
 - Value analysis/ Value engineering
 - Cost estimates
 - Basic of estimates
- Determine Budget
 - Cost aggregation
 - Historical relationships
 - Reserve analysis
 - Contingency reserve
 - Management reserve
 - Funding limit reconciliation
 - Cost baseline
 - Funding requirement

Summary



- Control Cost
 - Earned value measurement
 - PV
 - EV
 - AC
 - BAC
 - Earning rules (0/100 rule, 50 /50 rule ...)
 - Variance analysis
 - CV
 - SV
 - CPI
 - SPI
 - Forecast
 - EAC
 - ETC
 - VAC
 - To complete performance index (TCPI)

Assignment!!!

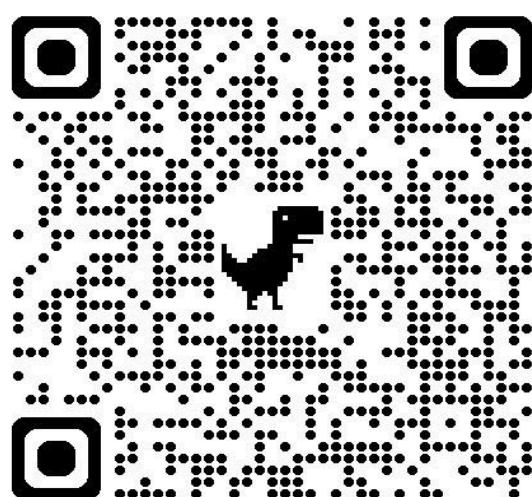


- Làm BTVN trên LMS: Team
- Học nhóm
- Thực hành viết Resource Requirement cho dự án hiện tại của mình

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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Project Quality Management



Overview



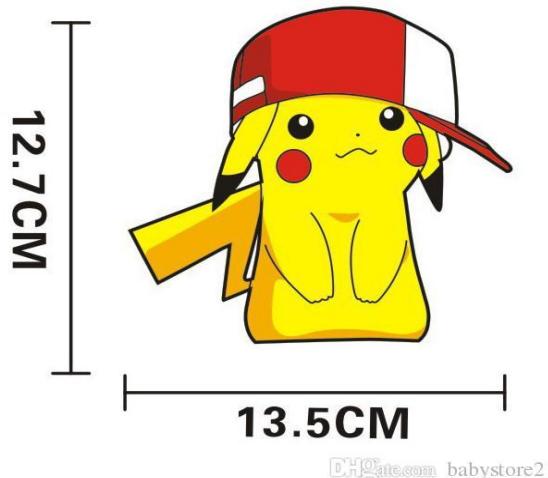
Group discussion: Bên nào có chất lượng cao hơn?



1. Introduction: Product Attributes



- A **product attribute** is a **characteristic** that defines a particular product and will affect a consumer's purchase decision.
- **Tangible Attributes:** Tangible attributes can include such product characteristics as size, color, weight, volume, smell, taste, touch, quantity, or material composition.
- **Intangible Attributes:** Intangible attributes may include such characteristics as price, reliability, beauty or aesthetics, and "je ne sais quoi" (an indefinable, elusive pleasing quality).



DHgate.com babystore2

1. Introduction: What is Quality?



- **Quality** is "the degree to which a set of inherent characteristics fulfill requirements." (ISO 9000)
- **Project Quality** Management addresses the management of the project and the project's deliverables regarding **organization's quality policy** in order to meet **stakeholders' objectives**.



Group discussion



Xe nào có chất lượng cao hơn ?



TOYOTA



ROLLS ROYCE

1. Introduction: Which one is higher quality?



TOYOTA



ROLLS ROYCE

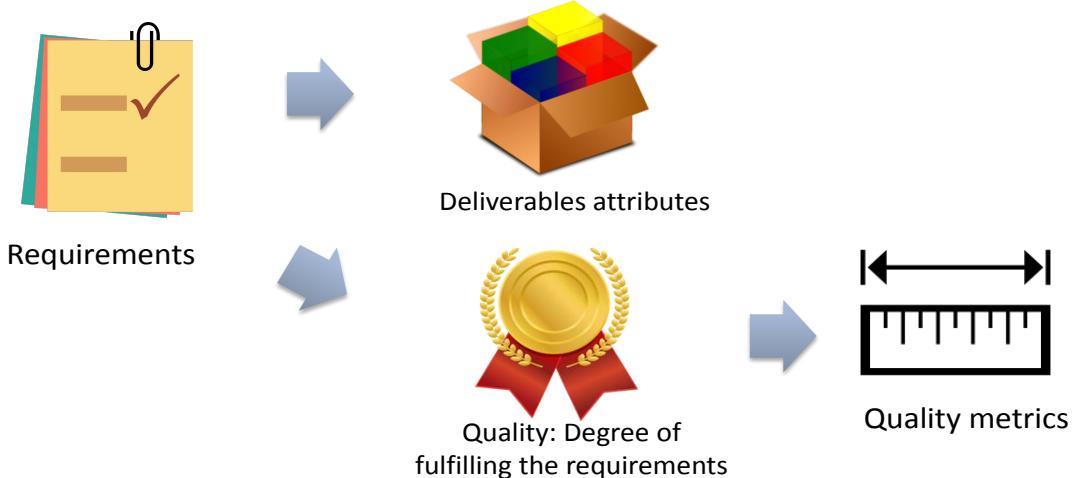
- **Grade** is a category assigned to products or services having the same functional use but different technical characteristics.
- **Low Quality is always a problem; low grade may not be.**

1. Introduction



Quality Metrics

- A quality metric specifically describes a project or product attribute and how the Control Quality process will verify compliance to it.



1. Introduction: Which one is more accurate?

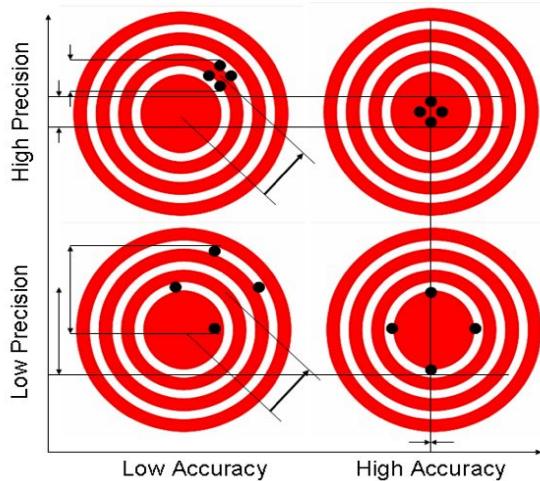


Precision



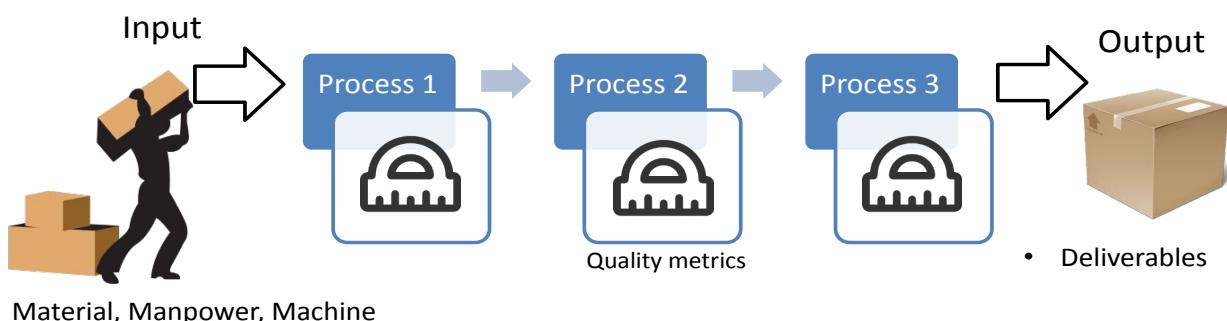
Accuracy

1. Introduction: Accuracy vs Precision



- **Accuracy:** is correctness that the measured value is very close to the true value
- **Precision:** is consistency that the value of repeated measurements are clustered and have little scatter.

1. Introduction: Production system



Material, Manpower, Machine

Group discussion: Phân biệt 2 vai trò



Quality Assurance	Quality Control

1. Introduction: Quality Assurance vs Quality Control



Quality Assurance

- QA deal with the **process**
- QA is for entire life cycle
- QA is **preventive** process
- QA make sure we are doing right things, the right way
- QA focuses on building in quality and hence preventing the defects

Quality Control

- QC deals with the **products**
- QC is for testing part
- QC is **corrective** process
- QC make sure the results of what we've done as expected
- QC focuses on testing of quality and hence detecting defects

1. Introduction



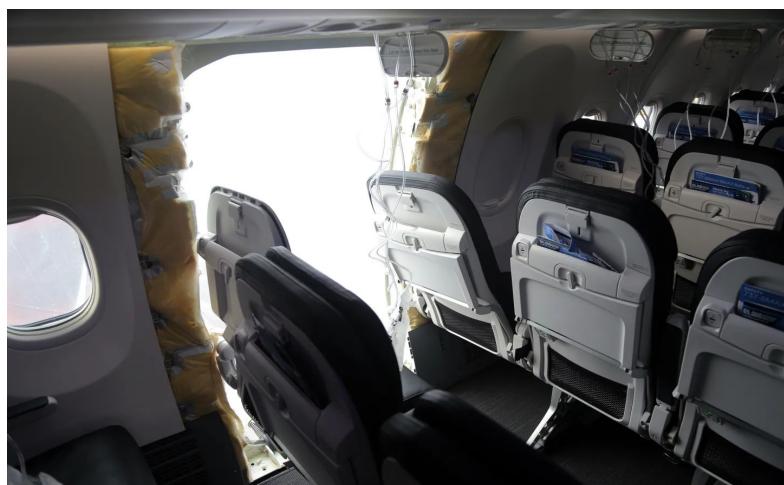
Quality Management Department

- **Quality Management** departments usually have cross-organizational experience in using quality tools and techniques and are a good resource for the project.
- The project manager and project team may use the organization's Quality Management department to execute some of the Quality Management activities such as failure analysis, design of experiments, and quality improvement.
- In traditional projects, quality management is often the responsibility of **specific team members**.



1. Introduction: Why do we need Quality?

- Which one do you choose?



2. Plan Quality Management



What?

- The process of identifying quality **requirements and/or standards** for the **project and its deliverables**, and documenting how the project will demonstrate compliance with quality requirements and/or standards.

Why?

- Guidance and direction on how quality will be managed and verified throughout the project.

When?

- Once or at predefined points in the project. Often in parallel with the other planning processes.

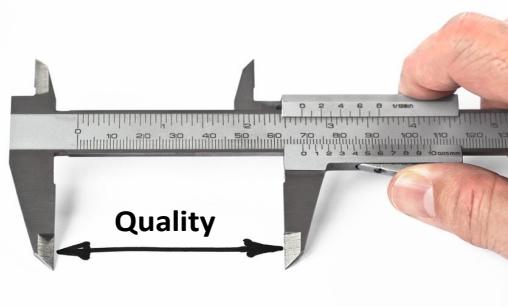


2. Plan Quality Management



How?

- Determine project quality objective align with the expectation of stakeholders
- Determine quality standards to be applied
- Conduct cost-benefit** analysis for meeting quality standards
- Plan project management and project control activities within the planned costs and the stated benefits
- Allocate responsibilities, authority, and resources for quality management
- Determine project requirements, project deliverables and acceptance criteria
- Establish **quality metrics** and how to measure the quality



Group discussion: Làm rõ từng loại chi phí

Chi phí Phù hợp (Money spent during the project to avoid failures)	Chi phí Không phù hợp (Money spent during and after the project because of failures)
Chi phí phòng ngừa (build a quality product)	Chi phí lỗi nội bộ (failures found by the project)
Chi phí đánh giá (assess the quality)	Chi phí lỗi bên ngoài (failures found by the customer)

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2. Plan Quality Management



Cost of Quality (COQ)

Cost of conformance	Cost of non conformance
Prevention costs (<i>build a quality product</i>) <ul style="list-style-type: none"> Training Document processes Equipment Time to do it right 	Internal failure costs (<i>failures found by the project</i>) <ul style="list-style-type: none"> Rework Scrap
Appraisal costs (<i>assess the quality</i>) <ul style="list-style-type: none"> Testing Destructive testing loss Inspection 	External failure costs (<i>failures found by the customer</i>) <ul style="list-style-type: none"> Liabilities Warranty work Lost business
Money spent during the project to avoid failures	Money spent during and after the project because of failures

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2. Plan Quality Management



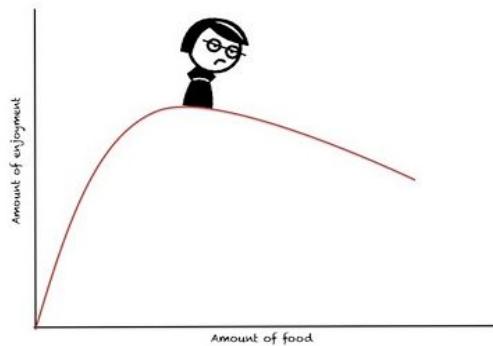
Cost Benefits Analysis

is looking at how much your quality activities will cost versus how much you will gain from doing them.



Marginal analysis: refers to looking for the point where the benefits or revenue to be received from improving quality equals the incremental cost to achieve the quality.

Law of Diminishing Returns

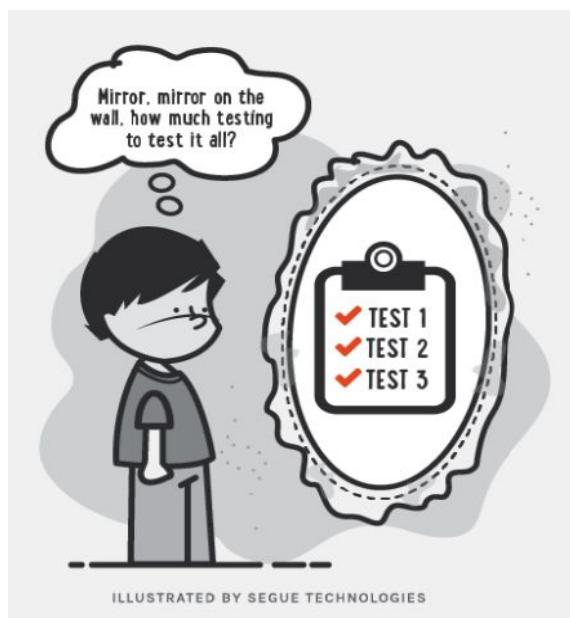


2. Plan Quality Management



Test and inspection planning

- Project manager and Project team determine **how to test or inspect** the product, deliverable, or service to meet the stakeholders' needs and expectations, as well as how to meet the goal for the product's performance and reliability.
- The tests and inspections are industry dependent. Ex: alpha and beta tests in software projects, strength tests in construction projects, inspection in manufacturing, and field tests and nondestructive tests in engineering.



2. Plan Quality Management



Benchmarking

- It compares actual or planned project practices to those projects to generate ideas for improvement and to provide a basis by which to measure performance.



Expert judgment

- Expertise should be considered from individuals or groups with specialized knowledge or training in quality management topics.



2. Plan Quality Management



Quality Management Plan

- It describes how the project management team will implement the performing organization's quality policy.
- The quality management plan is a component or a subsidiary plan of the project management plan
- The quality management plan provides inputs to the overall project management plan and must address quality control (QC), quality assurance (QA) and quality management for the project.
- The quality management plan should be reviewed early in the project

Quality Management Plan

- Quality objectives
- Quality standards
- Quality roles and responsibilities;
- Project deliverables and processes subject to quality review;
- Quality management
- Quality control
- Quality tools

2. Plan Quality Management



Quality Metrics

- Defines how Quality will be measured
- It can include any type of applicable measurement, including defect rates, bug rates, failure rates, etc.



Group discussion: Xây dựng Metric đo đạc

- Bạn sẽ chuyển giao cái gì (**Deliverable**) vào milestone gần nhất?
 - *Gợi ý: Xem lại Mục tiêu, WBS bạn đã xây dựng ở những bài trước*
- Yêu cầu chất lượng cho kết quả chuyển giao là gì?
 - *Gợi ý: Ví dụ như không có lỗi, hoạt động bình thường trong điều kiện trời mưa....*
- Có thể đo đạc mức độ thỏa mãn yêu cầu bằng chỉ số chất lượng (**Quality Metric**) nào?
 - *Gợi ý:*
 - Metric nên ở dạng tỉ lệ (rate)
 - Dữ liệu có thể dễ dàng thu thập
 - Có thể theo dõi được hàng ngày

Group discussion: Đưa ra Metric cho dự án của bạn

Mỗi thành viên cho 1 ví dụ trong dự án của mình

Ví dụ:

ID	Thuộc tính cần đo (Item)	Chỉ số đo (Metric)	Phương pháp đo (Measurement Method)
	Thời gian hoàn thành đơn hàng	Cycle Time	Tính từ lúc khách hàng đặt hàng đến khi sản phẩm, dịch vụ đang được vận chuyển đến với khách hàng và có xác nhận trên hệ thống
	Tỉ lệ lỗi	Defect rate	Số lượng lỗi / số lượng đơn vị kiểm thử
	Thời gian xử lý của 1 booking	TPS	Từ lúc khách hàng tạo 1 booking đến lúc admin nhìn thấy được booking đó
	CPU/Disk chiếm dụng	% CPU	Từ lúc 1 API được gọi trong 1 khoảng thời gian live của nó
	Số lượng người truy cập đồng thời	Traffic rate	Trong 1s thì có bao nhiêu người truy cập hệ thống cùng lúc

ID	Thuộc tính cần đo (Item)	Chỉ số đo (Metric)	Phương pháp đo (Measurement Method)

3. Manage Quality



What?

- The process of executing the quality activities defined in quality management plan to incorporate the organization's quality policies into the project.

- What if we don't comply to working standards?

Why?

- Increases the probability of meeting the quality objectives as well as identifying ineffective processes and causes of poor quality.

When?

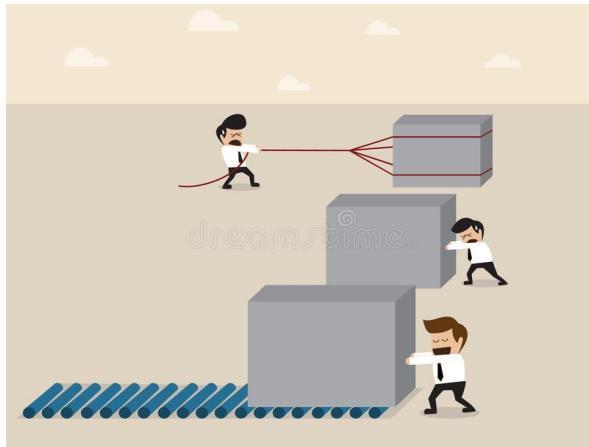
- Throughout the project.



3. Manage Quality



- We don't improve processes
- And our design is bad



3. Manage Quality



How?

- Confirm that the quality processes are used and that their use meets the quality objectives of the project, and
- Improve the efficiency and effectiveness of processes and activities.
- Design an optimal and mature product by implementing specific design guidelines
- Build confidence that a future output will be completed in a manner that meets the specified requirements and expectations through quality assurance tools and techniques such as quality audits and failure analysis



3. Manage Quality



Quality Checklists

- A checklist is a structured tool to verify that a set of required steps has been performed
- Quality checklists are often used to ensure consistency in frequently performed tasks.
- It may be simple or complex phrased as imperatives (do this) or Interrogatories (Have you done this) in which process you may ask it
- Quality checklists should incorporate the **acceptance criteria** included in the **scope baseline**.

No.	Question	Yes	No	Requires Action
6.3	Does the SLA cover payment terms for charges?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4	Does the SLA include statements concerning the payment of taxes arising out of the agreement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5	Does the SLA include notification of penalty interest for late payments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.6	CUSTOMER DUTIES AND RESPONSIBILITIES			
6.1	Does the SLA include information on the clients responsibilities for providing access, facilities and resources?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2	Does the SLA cover Client responsibilities for providing training to their personnel on operating technical or specialised equipment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.0	WARRANTIES AND REMEDIES			
7.1	Does the SLA include a warranty in respect of quality of service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2	Does the SLA include a indemnification in respect of supplier negligence?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3	Does the SLA include a warranty in respect of copy rights, patents and trade secrets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4	Does the SLA exclude responsibility for client errors contributing to such infringements to third party assets?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Group discussion: Xây dựng Quality Checklist

- Chọn một quá trình trong dự án hay phát sinh lỗi**
- Quá trình trên hay gặp những lỗi gì (common defects) ? Hay bị thiếu sót những việc gì?
 - Gợi ý: Hãy xem lại CSDL của công ty hoặc hỏi chuyên gia để biết các lỗi hay gặp
- Làm thế nào để phát hiện ra lỗi (**Defect**) trên Deliverable? Làm thế nào để biết được Deliverable đã thoả mãn yêu cầu?
 - Gợi ý: Các bài kiểm thử, các bước thanh tra kiểm tra
- Để quá trình trên không bị lỗi, thì **cần kiểm tra gì trước khi bàn giao kết quả** cho bước sau ?
 - Gợi ý: Xây dựng **Checklist** (Danh sách những mục cần kiểm tra) để đảm bảo chất lượng đầu ra ở từng bước xử lý

Group discussion: Đưa ra Quality Checklist cho dự án của bạn



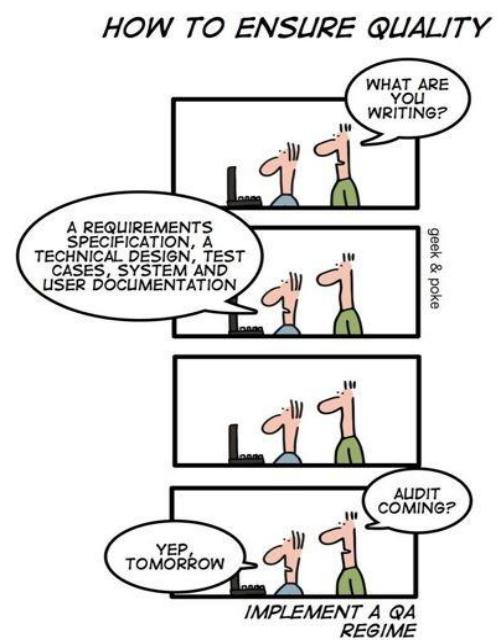
ID	Điểm/ lỗi cần kiểm (Quality item)	Yes	No	N/A	Ngày kiểm tra (Verification Date)	Chú ý (Note)
0	Đã bật chế độ maintain trước khi deploy?	x			25/05/2021	
1	Đã tạo tag (source code) hay chưa?					
2	Đã setting cấu hình production?					
3	Đã xoá cache sau khi deploy?					
4	Các tính năng ở production hoạt động bình thường sau khi deploy?					

3. Manage Quality



Quality Audits

- It is structured, independent review to determine whether project activities comply with org. & project policies, processes and procedures.
- Quality audit may be scheduled or random and may be conducted by internal or external auditors.
- Audit results help to reduce cost of quality and increase in sponsor or customer acceptance of the project's product.

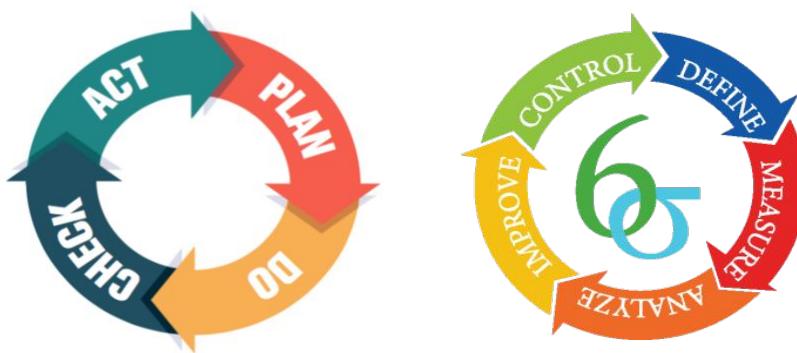


3. Manage Quality



Quality improvement methods

- Quality improvements can occur based on findings and recommendations from quality control processes, the findings of the quality audits, or problem solving in the manage quality process.
- **Plan- Do- Check- Act** and **Six Sigma** are two of the most common quality improvement tools used to analyze and evaluate opportunities for improvement.



3. Manage Quality



Lean Manufacturing (Production)

- Toyota

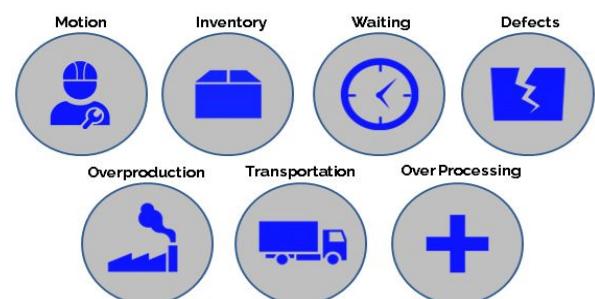
Just-In-Time (JIT):

- A manufacturing method that brings **inventory down to Zero** (or near Zero) levels.

Kaizen approach

- Quality technique from Japan.
(Continuous improvement)
- Improve the quality of people first, then quality of products or service.

The 7 Wastes of Lean



Japanese are awesome!

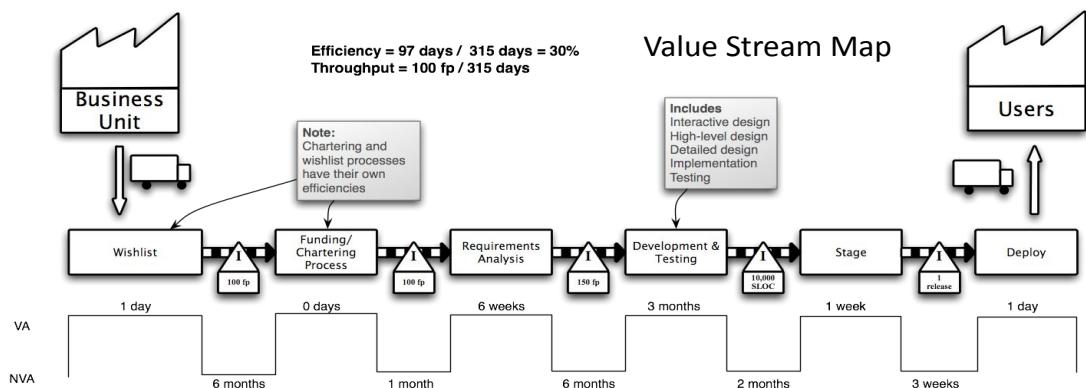


3. Manage Quality



Process analysis

- Process analysis identifies **non-add-value activities** and examines problems and constraints experienced during process operation.
- Process analysis is part of the **continuous improvement** effort on the project.



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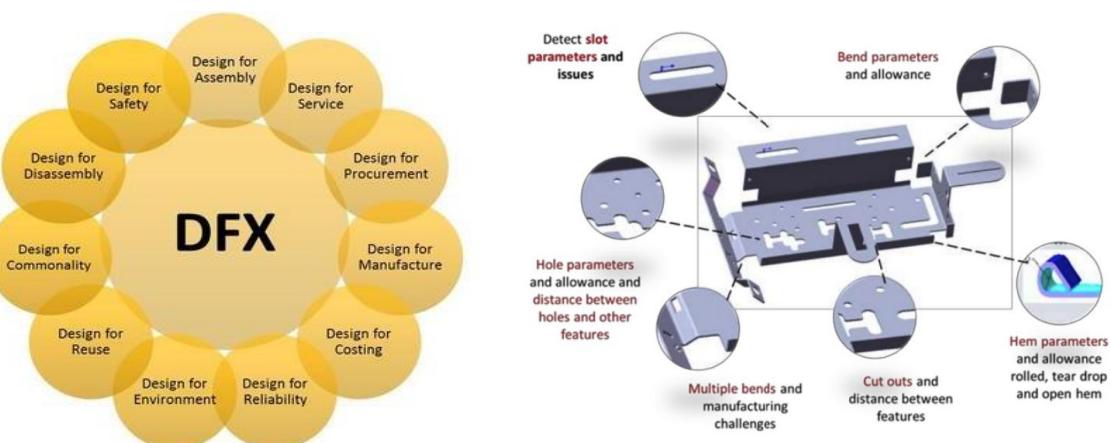
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3. Manage Quality



Design For X (DfX)

- Design for X (DfX) is a set of **technical guidelines** that may be applied during the design of a product for the optimization of a specific aspect of the design.
- The X in DfX can be different aspects of product development, such as reliability, deployment, assembly, manufacturing, cost, service, usability, safety, and quality.



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3. Manage Quality



Quality reports

- The information presented in the quality reports may include:
- All quality management issues escalated by the team;
- Recommendations for process, project, and product improvements;
- Corrective actions recommendations
- etc.



Test and evaluation documents

These documents may include:

- Dedicated checklists and
- Detailed requirements traceability matrices.
- They are inputs to the Control Quality process and are used to evaluate the achievement of quality objectives.



4. Control Quality



What?

- Process of determining if the project outputs do what they were intended to do.
- Those outputs need to comply with all **applicable standards, requirements, regulations, and specifications**.

Why?

- Control defect rates within control limit

When?

- Throughout the project.

Customer dissatisfaction guide: Defects



4. Control Quality



Inspection

- Inspection includes **measurements**
- It is the examination of a work to determine whether it **conforms to standards**.
- Inspections can be conducted at any level i.e. results of a **single activity or the final product** can be inspected
- Inspections are also used to **validate defect repairs**.
- Also called **reviews, peer reviews, audits, and walk through**

Inspection, you are doing it right

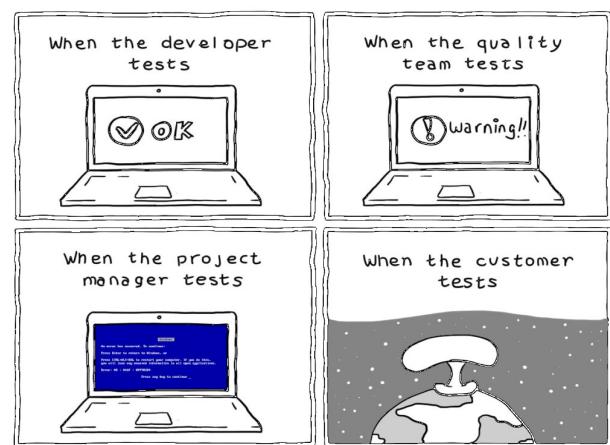


4. Control Quality



Testing/product evaluations

- **The intent** of testing is to find errors, defects, bugs, or other non conformance problems in the product or service.
- **The type, amount, and extent of tests** needed to evaluate each requirement are part of the project quality plan and depend on the nature of the project, time, budget, and other constraints.
- **Early testing** helps identify non conformance problems and helps reduce the cost of fixing the nonconforming components.



Group discussion: Phân biệt sự khác nhau



- Kiểm thử (Testing)
- Thanh tra (Inspection)

Group discussion: Phân biệt sự khác nhau



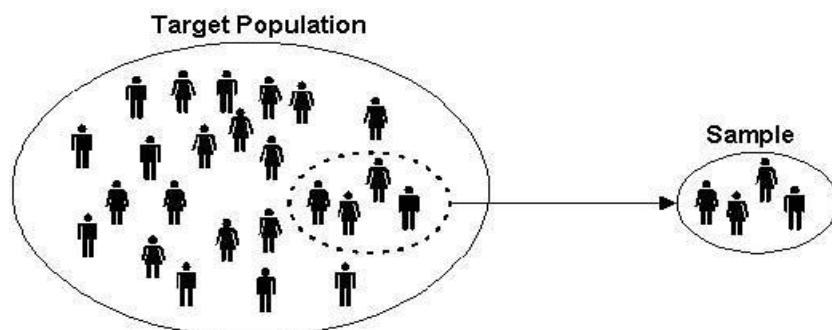
Testing	Inspection
Requires execution of system	not require execution of system
Applied to whole system after development.	Applied to representation of system i.e. design, data, requirements
Check system conformance with specification , user requirement and non functional requirement.	Check system conformance with specification only.

4. Control Quality



Statistical Sampling

- It is used to choose part of a population of interest for inspection
- A sample selected according to statistical calculation is tested / checked rather than all products.
- Sample **frequency** and **sizes** shall be determined during plan quality process.



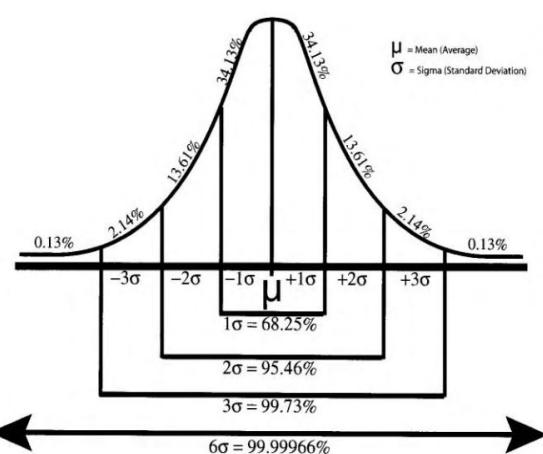
Statistical and Probability Terms



- **Statistical Independence:**
 - When the outcomes of two processes are not linked together or dependent upon each other, they are statistically independent.
- **Mutually exclusive events:**
 - One choice excludes the others. For example: flip a coin.
- **Standard deviation:**
 - is a statistical calculation used to measure and describe how data is organized.

Six Sigma

- Level of accuracy:



4. Control Quality

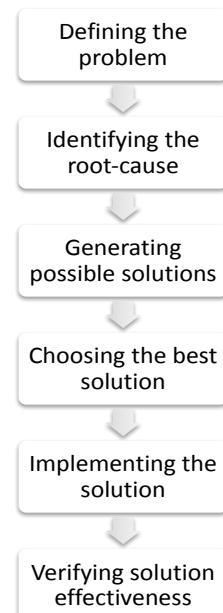


Problem solving

- Problems can arise as a result of the Control Quality process or from quality audits and can be associated with a process or deliverable.
- Using a structured problem-solving method will help eliminate the problem and develop a **long-lasting solution**.

Decision making

- **Product decisions** can include evaluating the life cycle cost, schedule, stakeholder satisfaction, and risks associated with resolving product defects.



4. Control Quality



Quality control measurements

- Are all of the results of your inspections: the numbers of defects you've found, numbers of tests that passed or failed

Verified Deliverables

- QC aims to determine the correctness of deliverables
- The result of the execution quality control process are validated deliverables.



Group discussion:



- Phân biệt Control Quality vs Validate Scope

Control Quality	Validate Scope

4. Control Quality

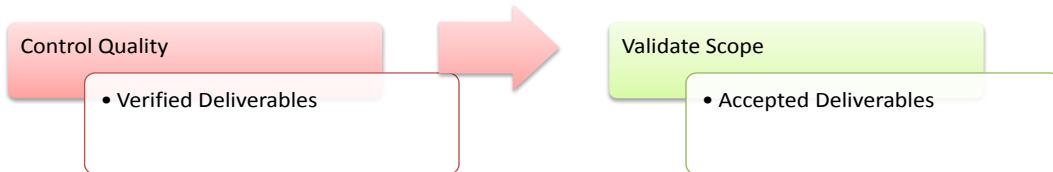


Control Quality

- Evaluates the project deliverables to ensure they comply with quality standards
- Internal** quality check of the products or deliverables prior to giving them to the customer
- Key outputs from QC are the “verified deliverables”

Validate Scope

- Secures formal acceptance from the customer
- External** quality check / user acceptance testing
- Key outputs from verify scope are the “accepted deliverables”

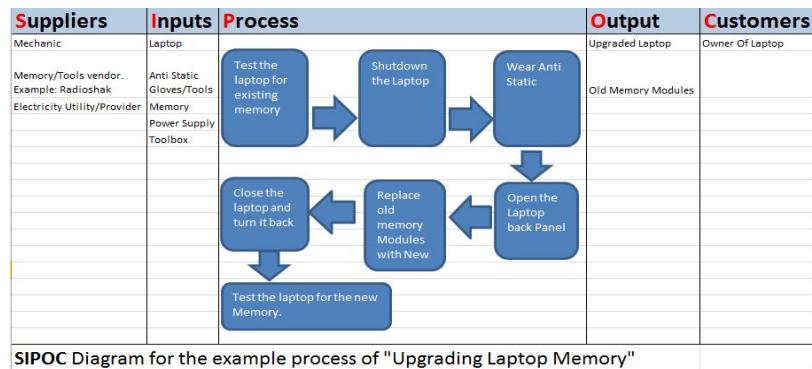


5. Seven Basic Quality Tools



Flowcharting : A flowchart is a graphical representation of a process showing the relationships among the process steps.

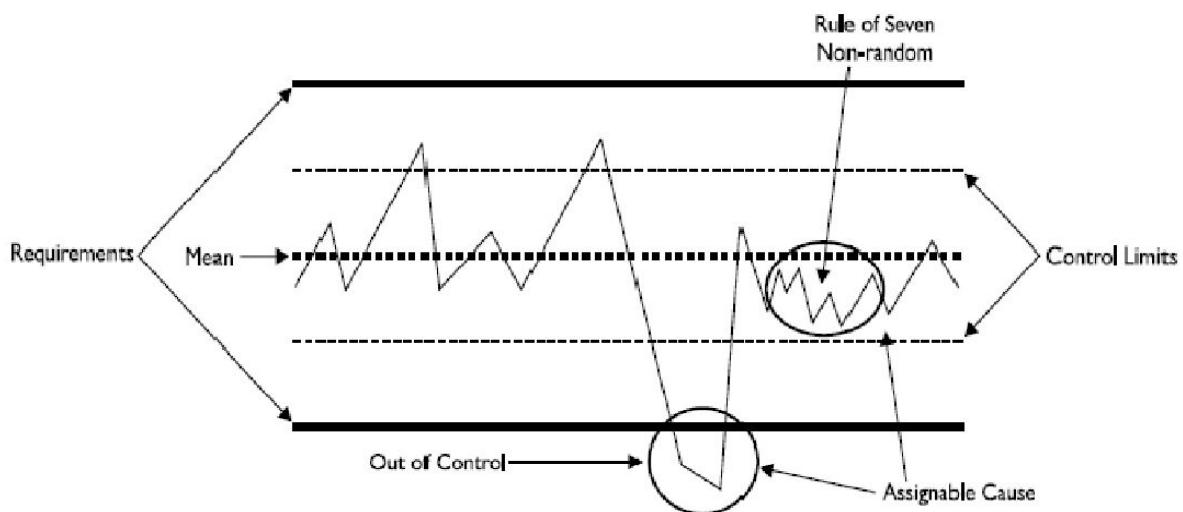
- Represent the steps in a process
- Help in understanding and estimating the cost of quality for a process.
- Identify where quality defects can occur or where to incorporate quality checks.
- As well as for process improvement



5. Seven Basic Quality Tools



Control Chart



5. Seven Basic Quality Tools: Control Chart

- **Purpose:**
 - It determines whether a process is in control or out of control.
 - It determines whether or not a process is stable or predictable performance.
- **Specification limit** – are normally drawn from contract or customer requirement. It may be stringent than control limits
- **Mean** represent the average of control limits or specification limits
- **Out of control** – A process is considered out of control if
 - A data point falls out of control limits
 - Breaks the rule of seven
- **Rule of seven** – Is a rule of thumb or heuristic. A consecutive seven data points one single side of mean is considered out of control, even though the data points are within control limits.
- **Assignable cause / Special Cause Variation** – is a data point that requires investigation (either out of control limits or breaks rule of seven)

5. Seven Basic Quality Tools



Checksheet

- is used to collect data in real time at the location where the data is generated. The data it captures can be quantitative or qualitative. When the information is quantitative, the check sheet is sometimes called a **tally sheet**.

Motor Assembly Check Sheet

Name of Data Recorder: Lester B. Rapp
Location: Rochester, New York
Data Collection Dates: 1/17 - 1/23

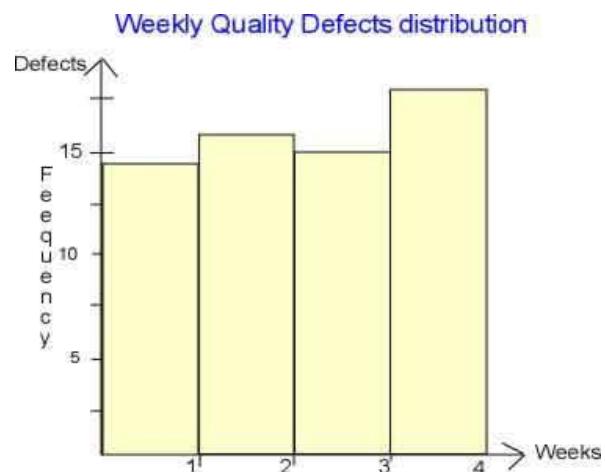
Defect Types/ Event Occurrence	Dates							TOTAL
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Supplied parts rusted								20
Misaligned weld								5
Improper test procedure								0
Wrong part issued								3
Film on parts								0
Voids in casting								6
Incorrect dimensions								2
Adhesive failure								0
Masking insufficient								1
Spray failure								5
TOTAL		10	13	10	5	4		

5. Seven Basic Quality Tools



Histogram

- A histogram displays data in the form of bars or columns. This tool shows what problems are worth dealing with.
- A typical histogram presents data in no particular order



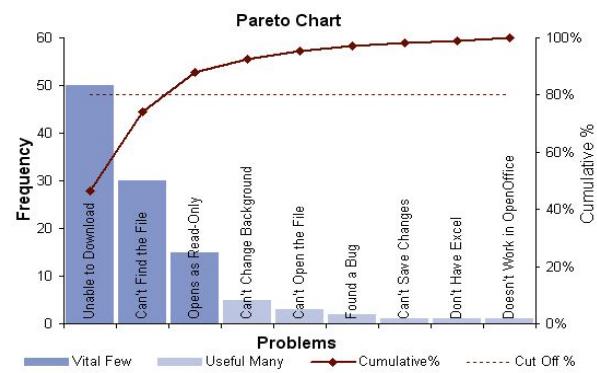
5. Seven Basic Quality Tools



Pareto Chart (80/20

Principles)

- Pareto charts go together with the 80/20 rule: “80 percent of the problems you’ll encounter in your project are caused by 20 percent of the root causes you can find.”
- Helps focus attention on most critical issues
- Prioritize potential causes of the problem
- Separate the critical few from the uncritical many



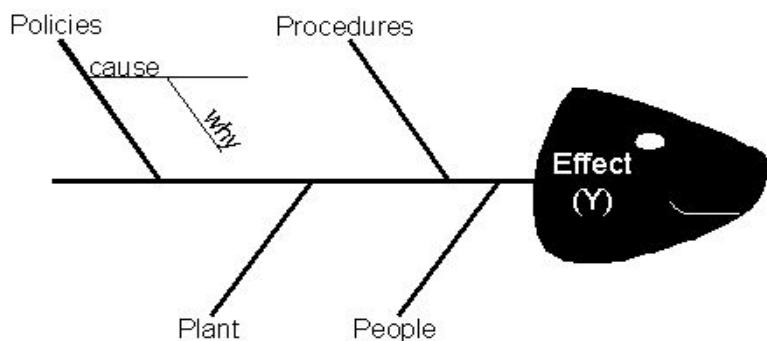
80/20
Pareto Principle

5. Seven Basic Quality Tools



Cause and Effect diagram

- Fishbone Diagram, Ishikawa Diagram,
- Root cause analysis is used to identify the source of defects.
- A creative way to look at the causes of a problem (root cause).
- Helps stimulate thinking, organize thoughts, and generate discussion.
- Can be used to explore the factors that will result in a desired future outcome.



5. Seven Basic Quality Tools

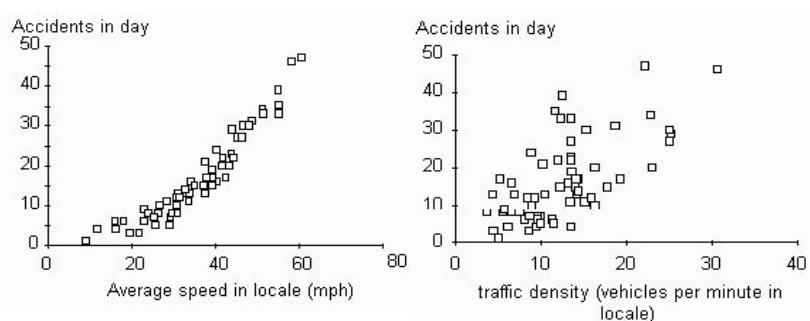


Scatter Diagram

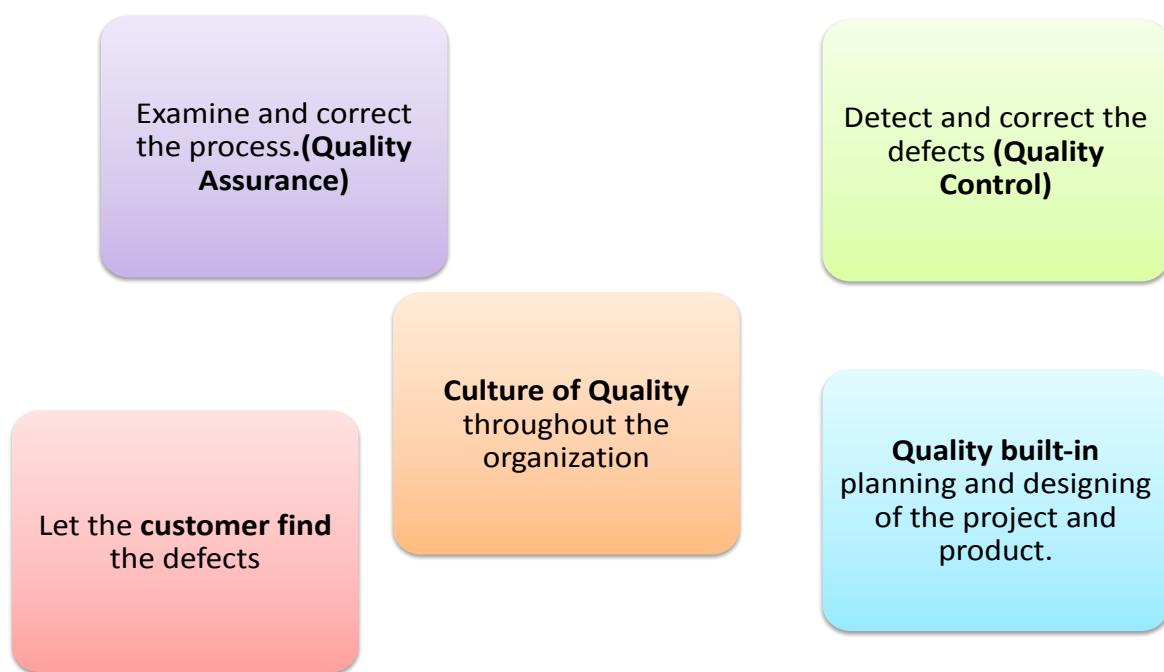
Scatter charts help you look at the relationship between two different kinds of data.

- Dependent variables versus independent variables are plotted.
- The closer the points are to a diagonal line the more closely they are related.

Road condition index	Average speed (mph)	Traffic density (veh/min)	Accidents in day
1	28.4	13.4	11
1	37.6	4.3	13
0	39.4	14.3	17
7	19.6	4.4	3
1	31.0	6.8	13
5	16.2	6.1	4



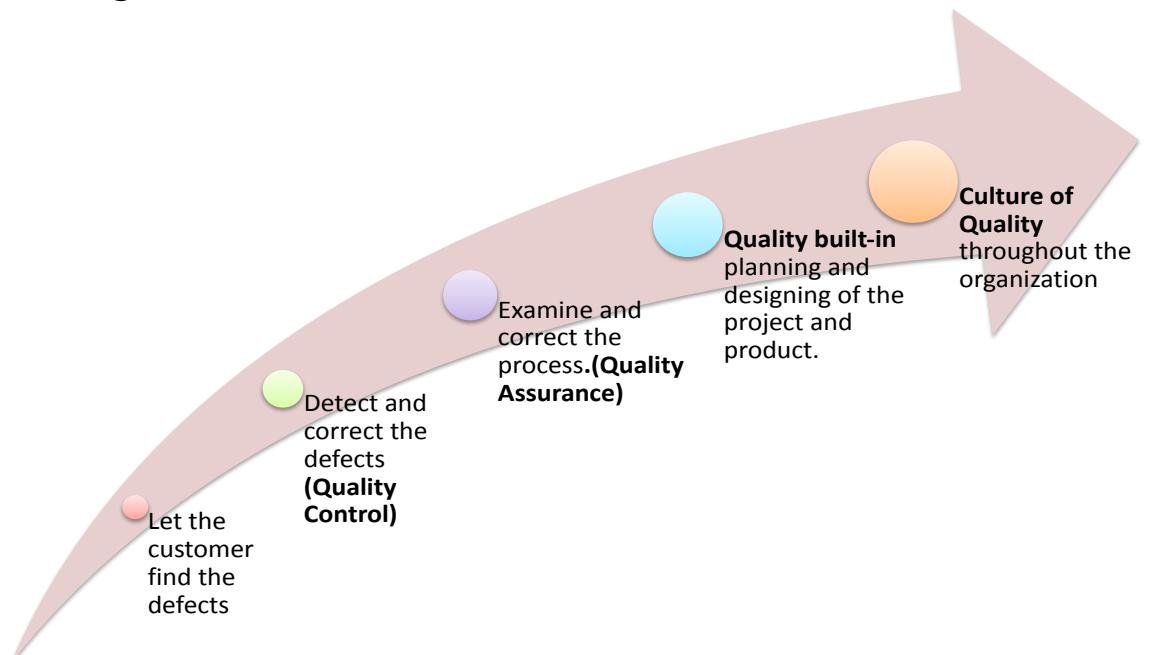
Group Discussion: Sắp xếp mức độ hiệu quả



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5 levels of increasingly effective quality management



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Review



- Introduction
 - Product attribute
 - Quality definition
 - Quality vs Grade
 - Precision vs Accuracy
 - QA vs QC
- Plan Quality Management
 - Cost of Quality
 - Cost-benefit analysis
 - Test and inspection planning
 - Benchmarking
 - Quality Management Plan
 - Quality metric
- Manage Quality
 - Quality checklist
 - Quality audit
 - Quality management system
 - Process analysis
 - Design for Excellence
 - Test and evaluation document
 - Quality report
- Control Quality
 - Testing
 - Inspection
 - Statistical sampling
 - Verified deliverable
 - Quality control measurement

Review



- Seven Basic Quality Tools
 - Flow chart
 - Control Chart
 - Checksheet
 - Histogram
 - Pareto's Chart
 - Fishbone Diagram
 - Scatter Diagram

Assignment!!!

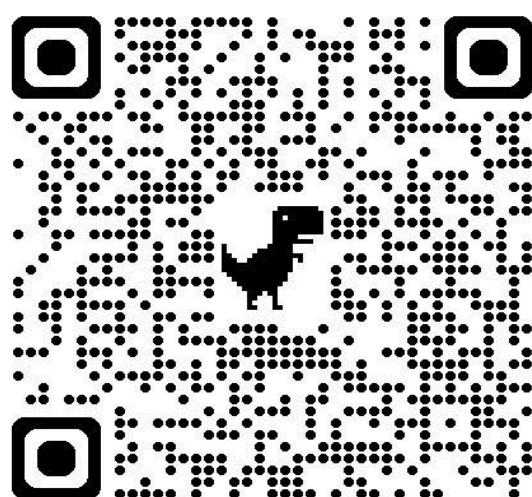


- Làm BTVN trên LMS:
Quality
- Học nhóm
- Thực hành viết Test & Evaluation Document cho dự án hiện tại của mình
- Đóng tiền!!!

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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Project Risk Management



Overview



Group discussion



Risk có thuộc tính nào dưới đây ?

Chắc chắn	Không chắc chắn
Tốt	Xấu
Kiểm soát được	Không kiểm soát được
Biết trước	Không biết trước
Lớn	Nhỏ
Phát hiện được	Không phát hiện được
Khẩn cấp	Không khẩn cấp
Sẽ ảnh hưởng	Có thể ảnh hưởng

1. Introduction: What is Project Risk?



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1. Introduction: Risk vs Issue

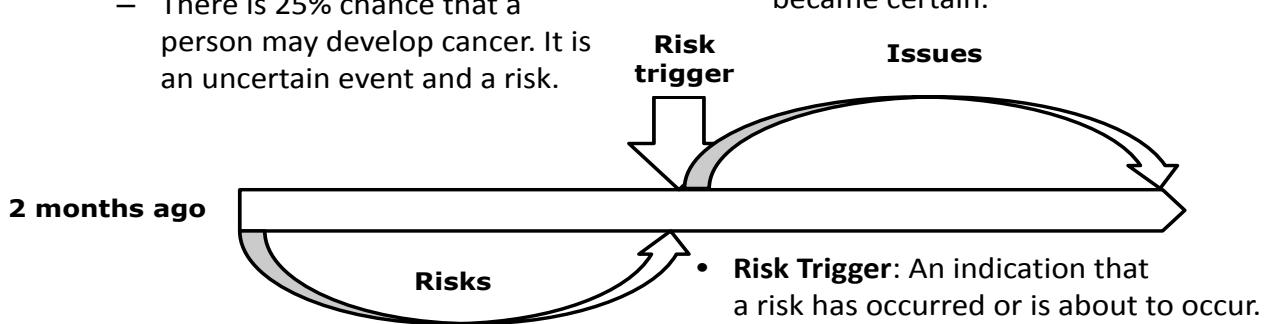


Risk

- Is an **uncertain event or condition** that, if it occurs, has an effect on at least one of the project objectives.
- Uncertainty and associated risks are **always on FUTURE**.
 - There is 25% chance that a person may develop cancer. It is an uncertain event and a risk.

Issue

- When a risk happens, then it may be called an event or issue.
 - If a person develops cancer, it is no longer a risk, but a health issue. Now the uncertainty became certain.



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1. Introduction: Risk attributes



Risk attributes

1. Probability

- The probability of it occurring can range anywhere from just above 0 % to just below 100 %.
- Note: *it can't be exactly 100 percent, because then it would be a certainty, not a risk. And it can't be exactly 0 percent, or it wouldn't be a risk.)*

2. Impact

- The size of the impact varies in terms of cost and impact on health, human life, or some other critical factor.



1. Introduction: Which project is riskier?



Individual project risk vs Overall project risk

Individual risk	Overall project risk
Individual project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.	Overall project risk is the effect of uncertainty on the project as a whole , arising from all sources of uncertainty including individual risks, both positive and negative.
What are the risks in my project?	How risky is my project?
Specific risks within the project	The overall riskiness of the project
Recorded in a Risk Register or similar document.	Result in project selection and Risk Reports
From the project manager's perspective	From the project sponsor's perspective
Mostly during the remainder of the project lifecycle.	During the pre-project or concept phase

Project Risk Management considers both individual project risks and sources of overall project risk.

1. Introduction: Known or Unknown?



Known Risks

- Project management team is aware of this risks and can be analyzed. Also called **known unknowns** risks.
- Ex: The new food developed contains gluten and result in claims related to gluten allergy (**Known risk**).



Unknown Risks

- Project management team is unaware of this risks and cannot be analyzed. Also called **unknown unknowns** risks.
- Ex: Heavy rain and tornado in Baltimore delayed shipment of cooling tower. (**Unknown risk**)



1. Introduction: Threat or Opportunity?

Negative Risks or Threats

- If occurs will negatively affect objectives



Positive Risks or Opportunities

- If occurs will positively affect objectives



Group discussion:



- Bạn chọn cơ hội nào, và vì sao ?

Cơ hội 1
70 tỷ
0,000001%

Cơ hội 2
7 triệu
95%

1. Introduction: Risk attitudes - Utility theory



- A person can be both risk averse and risk seeking at different times.



1. Introduction: Why Project Risk Management?

- Decrease the probability and/or impact of negative risks
- Increase the probability and/or impact of positive



2. Plan Risk Management



What?

- The process of defining how to conduct risk management activities for a project.

Why?

- It ensures that the degree, type, and visibility of risk management are proportionate to both risks and the importance of the project to the organization and other stakeholders.

When?

- Once or at predefined points in the project.

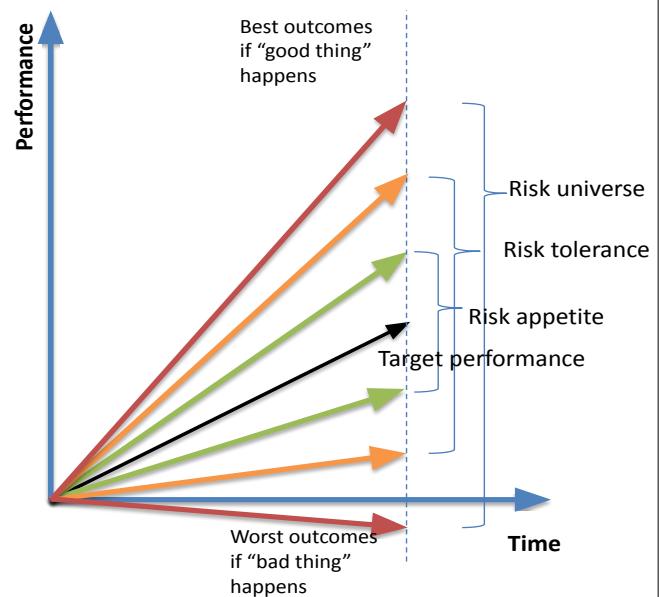


2. Plan Risk Management



Stakeholder analysis

- This is useful in determining stakeholders' roles and responsibilities for managing risk on the project, as well as their risk attitudes, **risk appetite**, as well as setting **risk thresholds** for the project.
- Risk appetite:** the amount and type of risk an organization is willing to accept in pursuit of its business objectives.
- Risk tolerance:** the specific maximum risk that an organization is willing to take regarding each relevant risk.
- Risk threshold:** specific point at which risk become unacceptable



2. Plan Risk Management



Risk management plan

- The risk management plan is a component of the project management plan that describes how risk management activities will be structured and performed.
- The risk management plan may include some or all of the following elements:

Risk Management Plan

- Risk strategy.
- Methodology.
- Roles and responsibilities.
- Funding.
- Timing.
- Risk categories.
 - Risk breakdown structure (RBS)
- Stakeholder risk appetite.
- Definitions of risk probability and impacts.
- Probability and impact matrix.
- Reporting formats.
- Tracking.

3. Identify Risks



What?

- Determining which risks are likely to affect a project and documenting the characteristics of each.

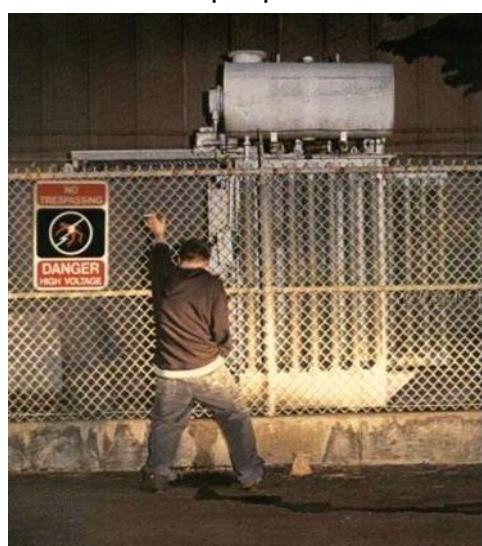
Why?

- Helps project team to understand project risks so they can respond appropriately.

When?

- Iteratively throughout the project.

The last time people saw him



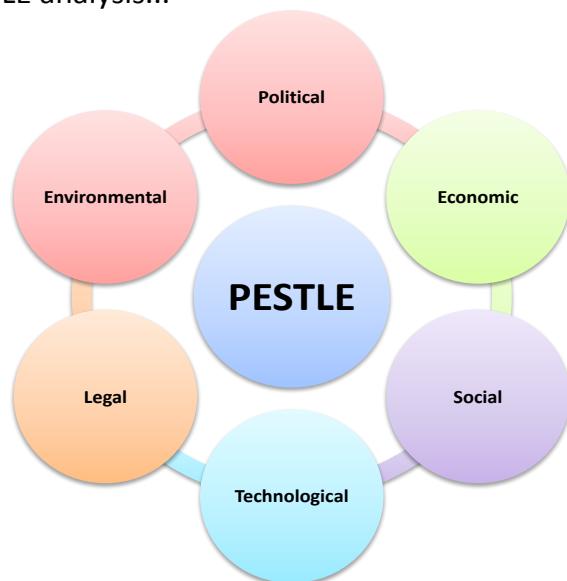
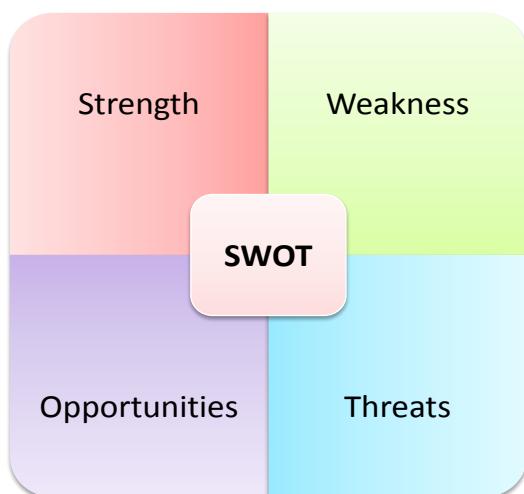
He forgot to identify risks

3. Identify Risks



How?

- Overall project risk: SWOT analysis, PESTLE analysis...

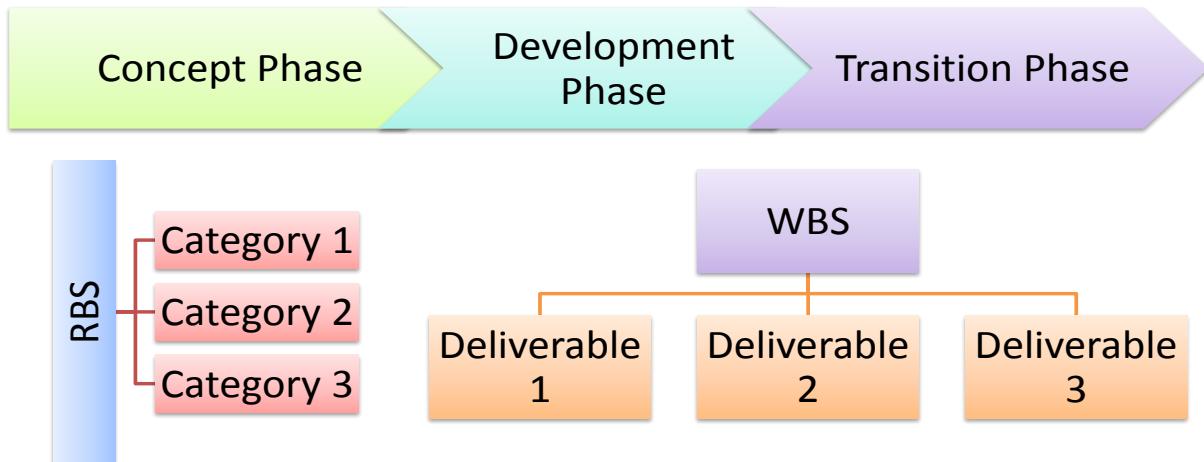


3. Identify Risks



How?

- Individual project risk
- All project stakeholders should be encouraged to identify individual project risks.



3. Identify Risks



Prompt lists

- A prompt list is a predetermined list of **risk categories** that might give rise to individual project risks and that could also act as sources of overall project risk.
- The prompt list can be used as a framework to aid the project team in idea generation when using risk identification techniques.
- The categories in the lowest level of the RBS or WBS can be used as a prompt list for individual project risks.

Overall project risks:

- **SWOT** (Strength, Weakness, Opportunities, Threats)
- **PESTLE** (Political, Economic, Social, Technological, Legal, Environmental)
- **TECOP** (Technical, Environmental, Commercial, Operational, Political), or
- **VUCA** (Volatility, Uncertainty, Complexity, Ambiguity).

Individual project risks:

- **WBS** (Work Breakdown Structure)
- **RBS** (Risk Breakdown Structure)

3. Identify Risks



Risk Checklists

- Risk checklists are developed based on historical information and knowledge that has been accumulated from similar projects and from other sources of information. It is often used as a **reminder**.
- The organization may maintain **its own** risk checklist or may use generic risk checklists from the industry.
- While a checklist may be quick and simple to use, **it is impossible to build an exhaustive one**, and care should be taken to ensure the checklist is not used to avoid the effort of proper risk identification.

Risk Management Checklist			
Description	Risk Present?	Specific Risks	How will you limit or remove this risk?
Access to Facilities and Restrooms	<input type="checkbox"/>		
Accommodation Requirements / ADA Compliance and Access	<input type="checkbox"/>		
Alcohol Consumption	<input type="checkbox"/>		
Cash Handling	<input type="checkbox"/>		
Contracts Involved	<input type="checkbox"/>		
Disruptive or Aggressive Individuals	<input type="checkbox"/>		
Electrical/Lighting Concerns-Heating or Cooling	<input type="checkbox"/>		
Excessive Noise or Amplified Sound (potential complaints)	<input type="checkbox"/>		
Excessive Trash or Debris	<input type="checkbox"/>		
First Aid / Emergency Response	<input type="checkbox"/>		
Food Being Served/Cooked	<input type="checkbox"/>		

3. Identify Risks



Document analysis

- The project management plan, project documents, other project files, contracts, agreements and technical documentation should be reviewed.
- Constraints and assumptions should be reviewed, considered, and analyzed for risks.
- Uncertainty or ambiguity in project documents, as well as inconsistencies within a document or between different documents, may be indicators of risk on the project.

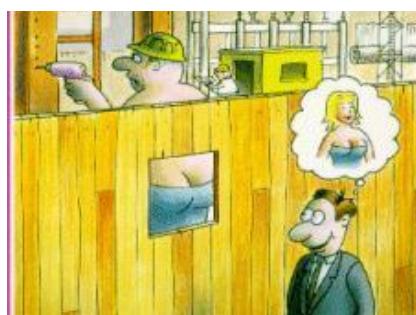


3. Identify Risks



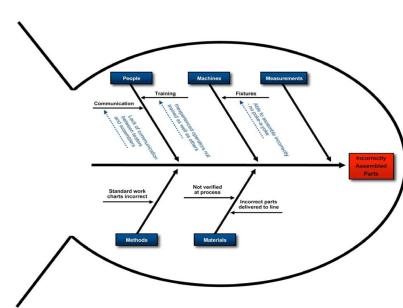
Assumptions analysis

- Assumption analysis is the process of examining the assumptions to see what risk may stem from false assumptions.



Root cause analysis

- Is a specific technique to identify a problem, discover the underlying causes that lead to it, and develop a preventive action.



3. Identify Risks



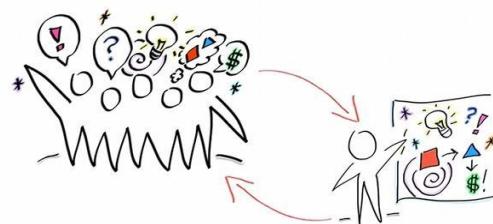
Risk workshop

- Most risk workshops include some form of brainstorming, but other risk identification techniques may be included
- Use of a skilled facilitator will increase the effectiveness of the meeting.



Facilitation

- A skilled facilitator can help participants remain focused on the risk identification task, follow the techniques accurately, ensure clear risk descriptions, identify and overcome sources of bias, and resolve any disagreements that may arise.



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2. Identify Risks



Risk report

May include but is not limited to:

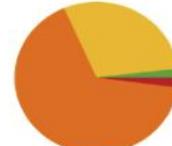
- **Sources of overall project risk**, indicating which are the most important drivers of overall project risk exposure; and
- Summary information on identified **individual project risks**, such as number of identified threats and opportunities, distribution of risks across risk categories, metrics and trends, etc.
- **Additional information** may be included in the risk report, depending on the reporting requirements specified in the risk management plan.

Overall Risk

The Overall Risk Chart presents a series of components that present detailed information about the vulnerabilities found to exist within a network. This information can assist the organization in understanding and reviewing the risks associated with corresponding vulnerabilities.

The Summary by Severity pie chart provides a visual depiction of current vulnerabilities found to exist in the network. The overall total has been divided to show severity are included. Vulnerabilities in several less are not included. Each segment shows its relationship along with the number of vulnerabilities by severity and the percentage by severity.

Overall Risk - Summary by Severity



The Details by Severity matrix presents details for severity about vulnerabilities found to exist in the environment. At each severity level, the number of vulnerabilities are displayed, along with their percentage column and the number of hosts affected. This percentage column shows the percentages of the vulnerabilities that are single hosts, published more than 90 days ago, and have a patch available. It also includes the number of hosts that are affected by these vulnerabilities. The critical category is 2.03%, because it is impossible to patch critical vulnerabilities, and vulnerabilities with patches available should have been mitigated already.

Overall Risk - Details by Severity

Total	Exploitables	Vuln Publ > 90d	Patch Avail > 90d	Hosts
All Severities	51637	40%	27%	51637
Critical	417	40%	27%	102
High	15732	40%	27%	150
Medium	7059	40%	27%	349
Low	407	40%	27%	148

tenable
network security

Understanding Risk Report

4

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2. Identify Risks



Risk Register

- The risk register may contain **limited** or **extensive** risk information depending on project variables such as size and complexity.
- On completion of the Identify Risks process, the content of the risk register may include but is not limited to:
 - Identified risks.**
 - Potential risk owners..**
 - Potential risk responses.**
- Risk Register will get detailed and updated through other processes in Risk.

Potential risk owner

- This will be confirmed during the **Perform Qualitative Risk Analysis** process

Potential risk response

- This will be confirmed during the **Plan Risk Responses** process.

Risk	Potential Response	Potential Owner
Car Breakdown	Car garage list	Father
Sickness	Medicament	Mother
Alien attack	Alien gun	Daughter
Lost	GPS	Father
...

Group discussion: Nhận diện rủi ro



- Đâu là 3 mục tiêu/ hạng mục quan trọng nhất bạn cần hoàn thành trong giai đoạn này?
 -
- Đâu là những sự kiện, điều kiện có thể có làm ảnh hưởng tới hạng mục?
 -
- Ghi nhận lại các rủi ro ở format như sau: <**Tên hạng mục công việc**> có khả năng bị <**tên rủi ro**> vì lý do <**nguyên nhân**>
 -
- Ví dụ: Phần hạ tầng có khả năng bị trễ tiến độ do thiết bị về chậm
 -
- Đâu là những mặt tích cực của những rủi ro trên?

Risk Register Sample



ID	Ngày ghi nhận (Raised Date)	Mô tả rủi ro (Risk description)	Người chịu trách nhiệm (Risk owner)	Trạng thái (Status)
Sample	02/09/2021	Licences hệ thống sẽ hết hạn trong 3 tháng nữa, nhưng chi phí gia hạn đã không được tính trong ngân sách dự án ban đầu, điều ngày có thể làm tăng ngân sách dự án.	QuangNH	Managed
Sample	25/08/2021	Giao diện cũ không giống giao diện website mới, khiến người dùng gặp khó trong việc truy cập file. Thời gian thiết kế lại khá lâu có thể làm trễ tiến độ dự án.	HangLT	Open

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4. Perform Qualitative Risk Analysis



What?

- The process of prioritizing **individual project risks** for further analysis or action

- Don't worry! Not every risk has the same priority.

Why?

- It may not be feasible or necessary for organizations to put same efforts for all risks identified. We need to prioritize where to concentrate at a given time.

When?

- Regularly throughout the project.



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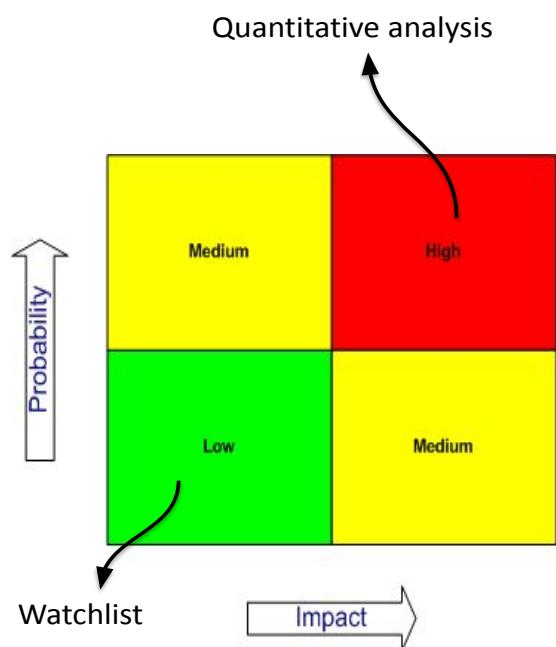
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4. Perform Qualitative Risk Analysis



How?

- Assesses the priority of identified individual project risks using their **probability** of occurrence, the corresponding **impact** on project objectives if the risks occur, and other **factors**.
- Such assessments are **subjective** as they are based on perceptions of risk by the project team and other stakeholders, so attention should be paid to identifying **bias** and correcting for it.
- Identifies a **risk owner** for each risk who will take responsibility for planning an appropriate risk response and ensuring that it is implemented.



Group discussion



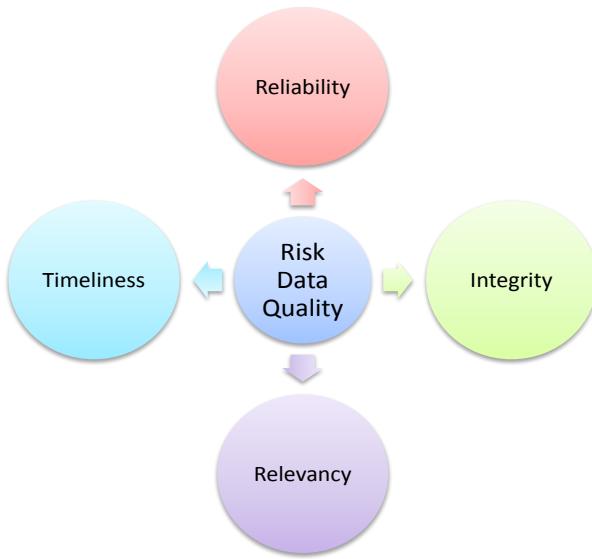
- Do nắng nóng kéo dài, nhiều nhà sử dụng điều hoà nhiều nên có khả năng cắt điện luân phiên. Team dự án lo lắng sẽ bị mất điện đúng hôm có sự kiện.
- Làm sao để biết (đánh giá) được Rủi ro có:
 - Khả năng xảy ra Cao hay Thấp ?
 - Mức độ ảnh hưởng Lớn hay Nhỏ ?
 - Mức độ khẩn cấp Khẩn cấp hay Chưa Khẩn cấp ?

4. Perform Qualitative Risk Analysis



Risk Data Quality Assessment

- Mistakes in risk data collection can lead to wrong analysis and assessment
- Team here analyze risk data collected for quality
 - Relevancy,
 - Reliability
 - Integrity
 - Timeliness
- If found not satisfactory, a new data shall be collected for analysis



4. Perform Qualitative Risk Analysis



Risk probability and impact assessment

- Probability:** Probability is the likelihood that an event will occur.
 - Ex: The classic example is flipping a coin. There is a .50 probability of getting heads and a .50 probability of getting tails on the flip.
- Impact:** Impact is the amount of pain (or the amount of gain for positive risks) the risk event poses to the project.
 - The **risk impact** scale can be a relative scale that assigns values such as high-medium-low (or some combination of these) or a numeric scale known as a **cardinal scale**.
 - Organizations can give weightage for any specific parameter/s (Normally Scope, Cost, Quality and Time) in definition of score.
- Organizations normally have defined parameters for risk probability and impact rating and thresholds however team normally tailor it for specific project during creation of Risk Management Plan.

4. Perform Qualitative Risk Analysis



- Risk Impact Scale**

Scale	Probability	Probability score	Impact on Project				Impact score
			Schedule	Cost	Scope		
VLO	<10%	0.1	<2 weeks	<1%	Temporary defects, causing minor short term consequences		0.05
LO	10 to <30%	0.3	2 weeks to <1 month	1% to <2%	Product performance shortfall in area of tertiary (minor) importance		0.1
MED	30 to <50%	0.5	1 month to <2 months	2% to <4%	Product performance shortfall in area of secondary importance		0.2
HI	50 to <70%	0.7	2 months to <4 months	4% to <8%	Minor product performance shortfall in area of primary (critical) importance		0.4
VHI	70% plus	0.9	4 months plus	8% plus	Significant failure of product to meet one of its primary (critical) purposes		0.8

4. Perform Qualitative Risk Analysis



Probability and Impact Matrix

- Risks now rated according to the definitions given in Risk Management Plan, and arranged in a matrix for further analysis as per the probability and impact assessment.

Probability	Threats							Opportunities			
	0.90	0.05	0.09	0.18	0.36	0.72	0.72	0.36	0.18	0.09	0.05
	0.70	0.04	0.07	0.14	0.28	0.56	0.56	0.28	0.14	0.07	0.04
	0.50	0.03	0.05	0.10	0.20	0.40	0.40	0.20	0.10	0.05	0.03
	0.30	0.02	0.03	0.06	0.12	0.24	0.24	0.12	0.06	0.03	0.02
	0.10	0.01	0.01	0.02	0.04	0.08	0.08	0.04	0.02	0.01	0.01
	Impact										

4. Perform Qualitative Risk Analysis



Other risk parameters assessment

- **Urgency:** risks that may happen soon may require an urgent attention
- Following factors are considered to decide urgency of risk
 - How much time it will take for risk response plan to be effective
 - **Symptoms or warning signs** that one particular risk is going to happen
- Risks with higher rating normally need urgent attention

- Other risk parameters:
 - Controllability
 - Detectability
 -

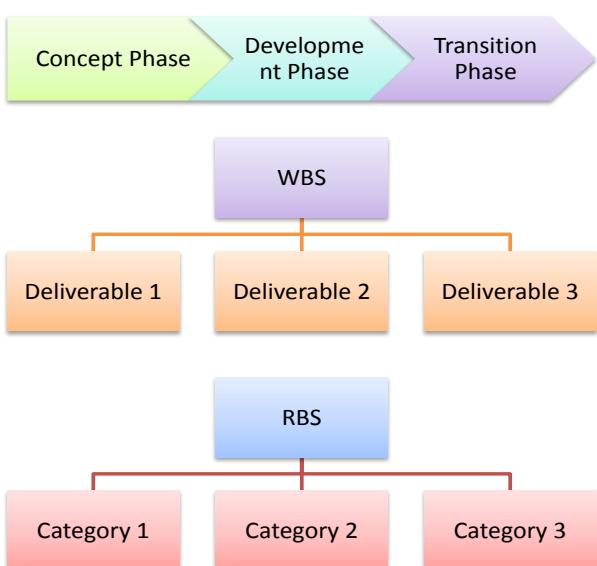


4. Perform Qualitative Risk Analysis



Risk Categorizations:

- Grouping risks into categories can lead to the development of more effective risk responses by focusing attention and effort on the areas of highest risk exposure, or by developing generic risk responses to address groups of related risks.
- Identified risks can be categorized in many ways:
 - Project phases
 - Work Breakdown Structure(WBS)
 - Risk Breakdown Structure (RBS)
 - Common root causes



4. Perform Qualitative Risk Analysis



Risk report update

- The risk report is updated to reflect the most important individual project risks (usually those with the highest probability and impact), as well as a prioritized list of all identified risks on the project and a summary conclusion.

Risk Register updates

- You may update the risk register with the following information:
 - Risks grouped by categories
 - Risk ranking (or priority/ risk score) for the identified risks
 - The **nominated risk owner**
 - List of risks requiring near-term responses
 - List of risks for additional analysis and response
 - Watch list of low-priority risks
 - Trends in Qualitative Risk Analysis results

Risk Register (Update)



ID	Ngày ghi nhận (Raised Date)	Mô tả rủi ro (Risk description)	Khả năng xảy ra (Likelihood)	Mức độ ảnh hưởng (Impact)	Điểm ưu tiên (Rating)	Nhóm rủi ro (Category)
Sample	02/09/2021	Licences hệ thống sẽ hết hạn trong 3 tháng nữa, nhưng chi phí gia hạn đã không được tính trong ngân sách dự án ban đầu, điều này có thể làm tăng ngân sách dự án.	0.9	0.8	0.72	Budget
Sample	25/08/2021	Giao diện cũ không giống giao diện website mới, khiến người dùng gặp khó trong việc truy cập file. Thời gian thiết kế lại khá lâu có thể làm trễ tiến độ dự án.	0.4	0.5	0.20	Schedule
					0	
					0	
					0	
					0	
					0	

5. Perform Quantitative Risk Analysis



What?

- The process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives.

I need to know WHY,
quantitatively !

Why?

- It quantifies overall project risk exposure, and it can also provide additional quantitative risk information to support risk response planning.

When?

- The quantitative risk analysis process can follow either the risk identification process or the qualitative risk analysis process.



5. Perform Quantitative Risk Analysis



How?

- Translating information on individual project risks and other sources of uncertainty into **numeric inputs** for the quantitative risk analysis model
- Selecting the most appropriate **representation of uncertainty**
- Identifying which **tools** for the selected modeling techniques
- Modeling** the risks or other sources of uncertainty in the context of the project
- Interpreting** the outputs of quantitative risk analysis.

- Quantitative risk analysis is usually very lengthy and difficult and hence done for **only high priority risks**.
- This process is **not required** for all projects



Group discussion: Chơi hay không chơi ?

Example 1:

Let's play a game:

- Your friend ask you to join a bet. If the card that you chosen from a standard deck is a heart, then you win \$200. But if it is the other ones, you will lose \$100. Should you join the game?



5. Perform Quantitative Risk Analysis

Example 1:

Let's play a game:

- Your friend ask you to join a bet. If the card that you chosen from a standard deck is a heart, then you win \$200. But if it is the other ones, you will lose \$100. Should you join the game?



Answer:

- You have a 1 in 4 chance of getting a heart, and a 3 in 4 chance of getting any other suit.
- Let's calculate the risk exposure:
 - Risk exposure of the heart
 $= \$200 * 25\% = \50
 - Risk exposure of the other suits
 $= -\$100 * 75\% = (-\$75)$
 - Risk exposure of the game
 $= \$50 + -\$75 = -\$25$
- Should you join the bet ?

5. Perform Quantitative Risk Analysis



Expected Monetary Value (EMV)

- A statistical technique in risk management that is used to quantify the risks, which in turn, assists the project manager to calculate the contingency reserve.
- **EMV = (Probability x Impact)**

Expectation



Reality



5. Perform Quantitative Risk Analysis



Example 2: Tennis Tournament



Place	Weather	Guests	Ticket	Income?	EMV?
Outdoor	40% Rain	2000	105		
Indoor	40% Rain	3500	110		
Outdoor	60% Sunshine	5000	105		
Indoor	60% Sunshine	4000	110		

Group discussion: Tổ chức trong nhà hay ngoài trời?



Example 2: Tennis Tournament



Place	Weather	Guests	Ticket	Income?	EMV?
Outdoor	40% Rain	2000	105		
Indoor	40% Rain	3500	110		
Outdoor	60% Sunshine	5000	105		
Indoor	60% Sunshine	4000	110		

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5. Perform Quantitative Risk Analysis



Tennis Tournament



Place	Weather	Guests	Ticket	Income	EMV
Outdoor	40% Rain	2000	105	210.000	84.000
Indoor	40% Rain	3500	110	385.000	154.000
Outdoor	60% Sunshine	5000	105	525.000	315.000
Indoor	60% Sunshine	4000	110	440.000	264.000

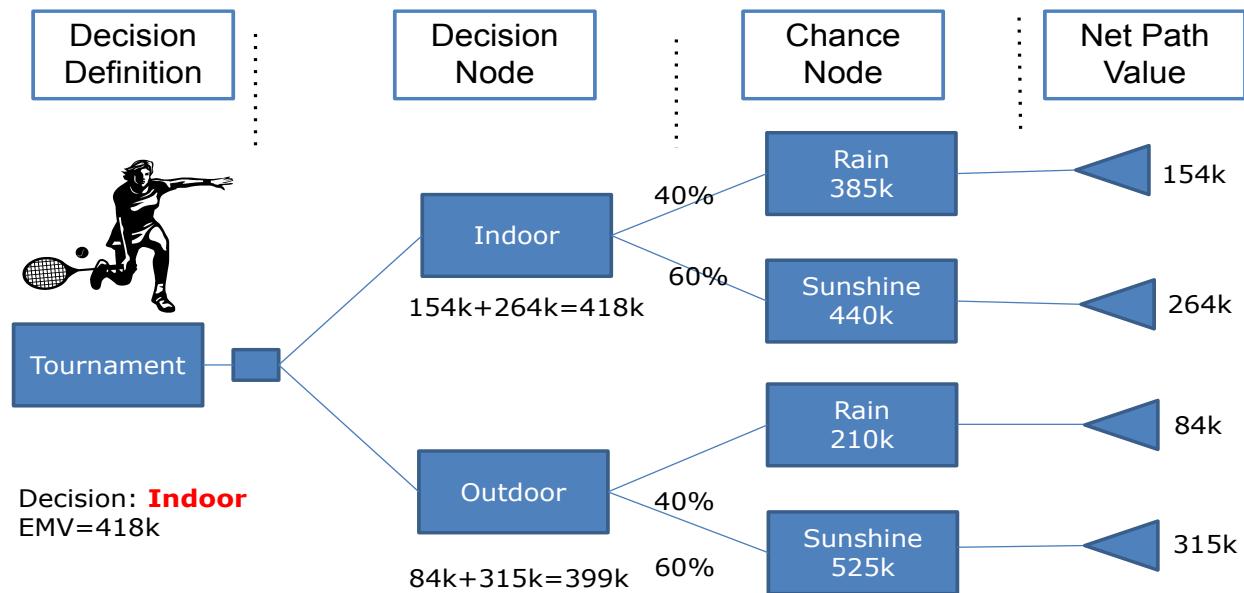
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5. Perform Quantitative Risk Analysis



Decision tree analysis



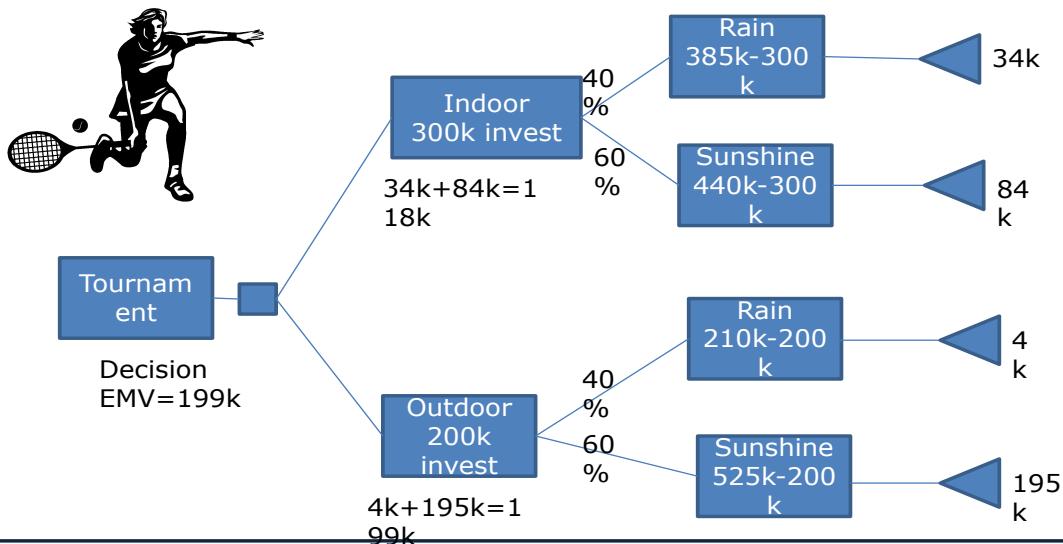
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5. Perform Quantitative Risk Analysis



- What happen if Indoor tournament need to Invest 300k and Outdoor tournament need 200k to EMV in each situation?
- Where should the Tournament take place?



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5. Perform Quantitative Risk Analysis



Interviews

- May be used to generate inputs for the quantitative risk analysis, drawing on inputs that include individual project risks and other sources of uncertainty.
- Project team members, stakeholders, and subject matter experts are prime candidates for risk interviews
- This is particularly useful where information is required from experts.

WBS elements	Low	Most likely	High
Design	\$4M	\$6M	\$10M
Build	\$16M	\$20M	\$35M
Test	\$11M	\$15M	\$23M
Total	\$31M	\$41M	\$68M

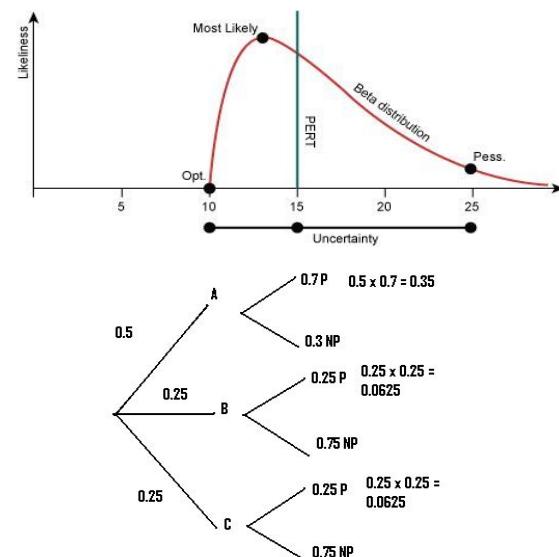
- Normally experts are asked to provide their optimistic, most likely and pessimistic estimates.

5. Perform Quantitative Risk Analysis



Representations of uncertainty

- Probability distribution** is to represent and analyze expert judgments and type and quantity of data collected will depend upon which probability distribution is used.
- The most commonly used are triangular, normal, lognormal, beta, uniform, or discrete distributions.
- Probabilistic branches**
- Where optional activities are added to the model to represent the time and/or cost impact of the risk should it occur, and the chance that these activities actually occur in a particular simulation run matches the risk probability

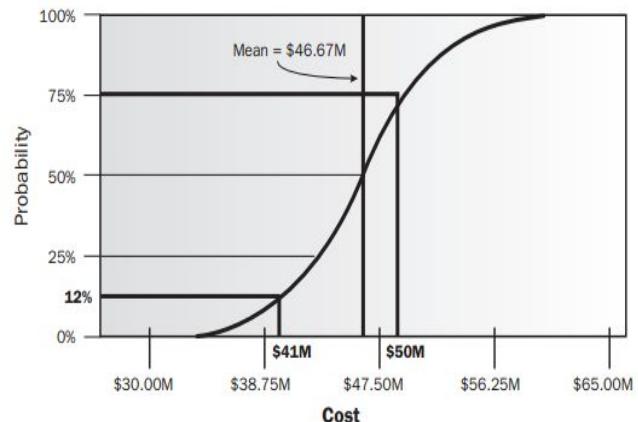


5. Perform Quantitative Risk Analysis



Simulation

- Simulation typically completed through a **computer software** program, performed **Monte Carlo** analysis to simulates a project with values for all **possible variables** to predict the most likely model.
- Project simulations allow the project team to **play "what-if" games** without affecting any areas of production.
- Schedule simulations are usually performed using the **precedence diagramming** method, while cost simulation typically uses the **WBS** as its basis.

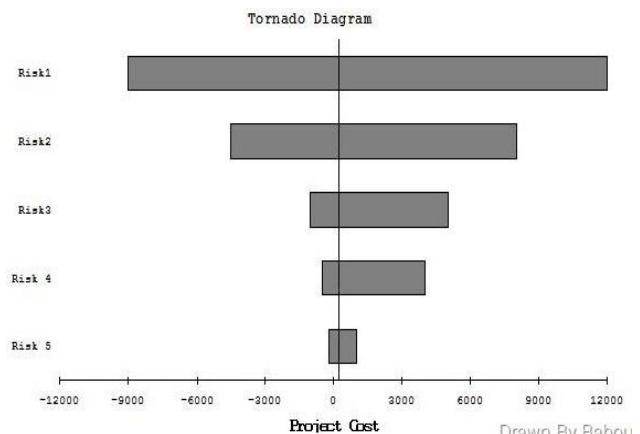


5. Perform Quantitative Risk Analysis



Sensitivity analysis

- Sensitivity analysis is a method of analyzing the potential impact of risk events on the project and determining which risk has the greatest potential for impact.
- All other risks are kept at the baseline while analyzing one risk
- Sensitivity analysis helps to determine which individual project risks or other sources of uncertainty have the **most potential impact** on project outcomes.



One of the ways sensitivity analysis data is displayed is a **tornado diagram**

5. Perform Quantitative Risk Analysis



Risk report updates

- Assessment of overall project risk exposure.
 - The probability that the project will achieve its key objectives
 - The range of possible project outcomes.
- Prioritized list of individual project risks.
- Trends in quantitative risk analysis results.
- Recommended risk responses.

- Detailed probabilistic analysis of the project.
 - S-curves,
 - Tornado diagrams, and
 - Critical path analysis,
 - Narrative interpretation of the results.
- Possible detailed results of a quantitative risk analysis:
 - Amount of contingency reserve
 - Identification of individual project risks or other sources of uncertainty
 - Major drivers of overall project risk

6. Plan Risk Responses



What?

- The process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.

- What are appropriate ways to address overall project risk and individual project risks?

Why?

- Effective and appropriate risk responses can minimize individual threats, maximize individual opportunities, and reduce overall project risk exposure.
- Unsuitable risk responses can have the converse effect.

When?

- Throughout the project.



6. Plan Risk Responses



How?

- Determine risk **response strategies** and consider how to respond for each risk.
- Select the most appropriate response strategy and define response **activities**
- Once the risk responses are confirmed, the necessary **budget & resources** should be allocated to each action associated with a risk response plan.
- An effective risk responses should be:
 - **Cost-effective** in meeting the challenge
 - **Appropriate** for the significance of the risk
 - **Realistic** within the project context
 - **Agreed** upon by all parties involved
 - **Owned** by a responsible person.

Group discussion: Ứng phó với Bão

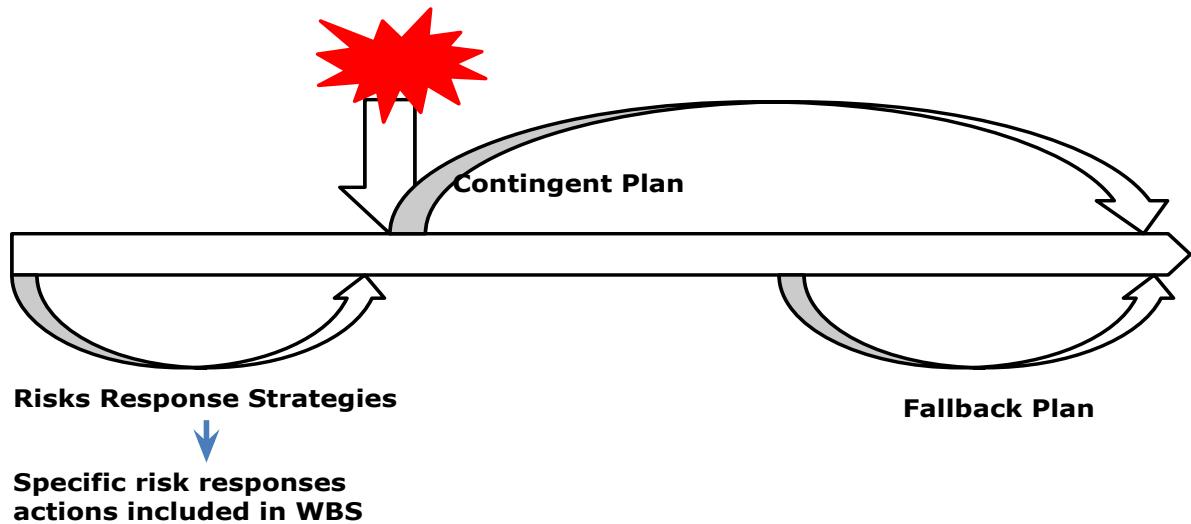


Dự án xây dựng trong mùa mưa. Đài báo có cơn bão chuẩn bị đổ bộ. Hãy thảo luận các câu hỏi dưới đây :

1. Trước khi bão tới, chúng ta cần làm gì ?
2. Đang triển khai mà bão lớn hơn dự kiến, chúng ta sẽ làm gì ?
3. Trong tình huống xấu nhất, chúng ta sẽ làm gì ?



6. Plan Risk Responses

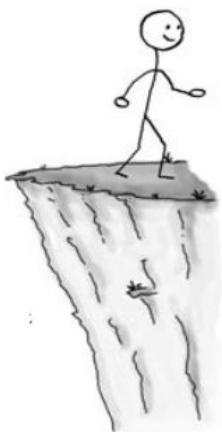


6. Plan Risk Responses



1. Strategies for Negative Risks or Threats

- Avoid
- Transfer



6. Plan Risk Responses

1. Strategies for Negative Risks or Threats

- Mitigate

- Accept



6. Plan Risk Responses

2. Strategies for Positive Risks or Opportunities

- Exploit

- Share



6. Plan Risk Responses

2. Strategies for Positive Risks or Opportunities

- Enhance
- Accept



6. Plan Risk Responses

2. Strategies for individual project risks

- Escalate.
- Escalation is appropriate when the project team or the project sponsor agrees that a risk is **outside the scope of the project** or that the proposed response would exceed the project manager's authority.
- It is important that ownership of escalated risks is **accepted by the relevant party** in the organization.
- Escalated threats/opportunities are **not monitored further** by the project team after escalation, although they may be recorded in the risk register for information.

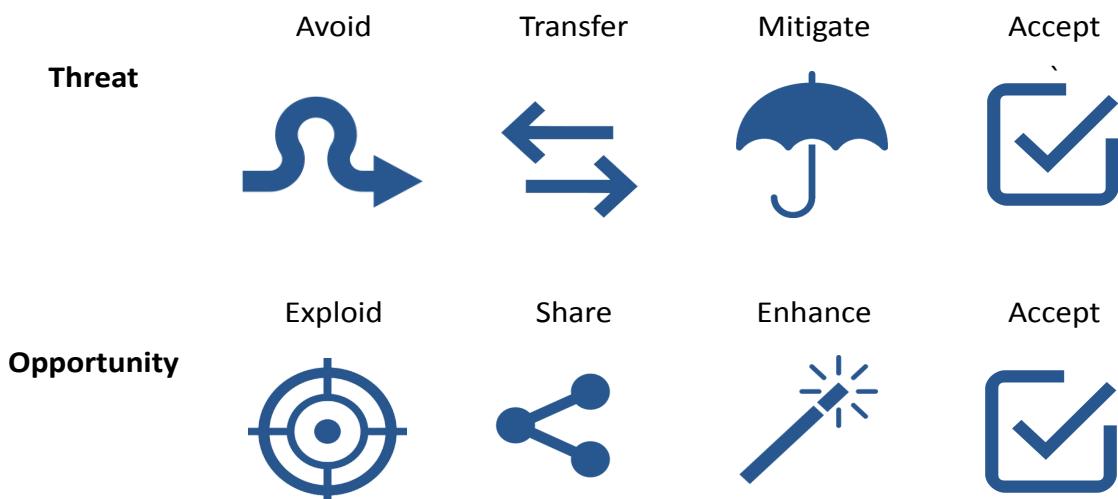


6. Plan Risk Responses



Strategies for overall project risk

- The same risk response strategies that are used to deal with individual project risks can also be applied to overall project risk:



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6. Plan Risk Responses



Contingent response strategies

- Accepting the Risks**
 - Risk acceptance is the process of simply accepting the risks because no other action is feasible; or the risks are deemed to be of small probability, impact, or both and that a formal response is not warranted.
 - Passive acceptance** requires no action; the project team deals with the risks as they happen.
 - Active acceptance** entails developing a **contingency plan** (contingent response plan) should the risk occur. Acceptance may be used for both positive and negative risks.



Active acceptance

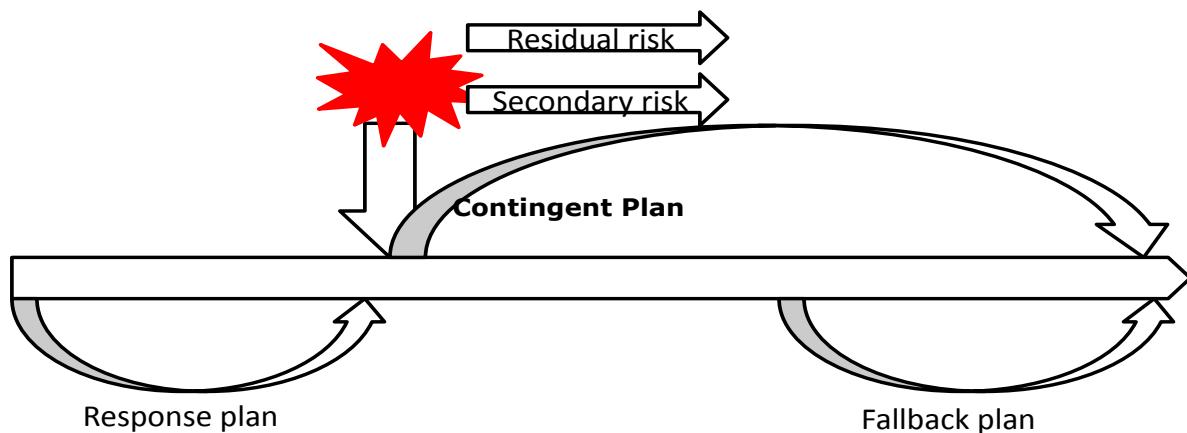
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Group discussion



- Giải thích về mối quan hệ giữa các kế hoạch: Kế hoạch Ứng phó, kế hoạch dự phòng, và kế hoạch rút lui.
- Phân biệt sự khác nhau giữa Residual Risk và Secondary Risk. Cho ví dụ cụ thể



6. Plan Risk Responses



Contingent response

Strategies

- Contingent response plan will be executed under certain predefined conditions: **Symptoms, warning signs or trigger**.
- Events that trigger the contingency response, such as missing intermediate milestones or gaining higher priority with a supplier, should be defined and tracked.



6. Plan Risk Responses



- **Risk register updates**
 - Response strategies
 - Residual risks
 - Secondary risks
 - The budget and schedule for risk responses
 - Both the contingency and fallback plans
 - Risk owners and their assigned responsibilities
- **Risk related contract decisions**
 - The contract may be needed for insurance purposes, customer acceptance, or the acknowledgement of responsibilities between the entities completing the project.
 - More on procurement section

Group discussion: Lên kế hoạch ứng phó rủi ro

- Với rủi ro được ưu tiên ở bước trước, hãy trả lời những câu hỏi sau:
- Trước khi rủi ro đó xảy ra, có những cách nào để ứng phó với nó?
 - Có cách nào để tránh hẳn nó đi ? (Avoid)
 - Có cách nào giảm thiểu khả năng, hậu quả ? (Mitigate)
 - Có cách nào để chuyển rủi ro cho đối tượng khác ? (Transfer)
- Nếu trong trường hợp đã ứng phó rồi mà rủi ro vẫn có thể xảy ra, chúng ta có phương án nào để dự phòng?
 -
- Trong trường hợp xấu nhất xảy ra, bạn sẽ làm gì?
 -
- Xác định người chịu trách nhiệm ứng phó với rủi ro đó

Risk Register (Update)



ID	Ngày ghi nhận (Raised Date)	Mô tả rủi ro (Risk description)	Người chịu trách nhiệm (Risk owner)	Chiến lược ứng phó (Response strategies)	Phương án dự phòng (Contingent plan)	Phương án Rút lui (Nếu cần/có) (Fallback plan)
Sam ple	02/09/2021	Licences hệ thống sẽ hết hạn trong 3 tháng nữa, nhưng chi phí gia hạn đã không được tính trong ngân sách dự án ban đầu, điều này có thể làm tăng ngân sách dự án.	QuangNH	Acceptance Cập nhật chi phí và xin phê duyệt ngân sách bổ sung trong quý tới	- Tạm dừng bản crack	N/A
Sam ple	25/08/2021	Giao diện cũ không giống giao diện website mới, khiến người dùng gặp khó trong việc truy cập file. Thời gian thiết kế lại khá lâu có thể làm trễ tiến độ dự án.	HangLT			

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7. Monitor Risks



What?

- The process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project.

Why?

- Ensure that the project team and key stakeholders are aware of the current level of risk exposure and make right decisions about overall project risk and individual project risks.

When?

- Throughout the project



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7. Monitor Risks



How?

- Determining the current level of overall project risk and if project strategy is still valid.
- Tracking identified individual risks for signs that they may be occurring
- Monitoring residual risks
- Reviewing that project assumptions are still valid
- Looking for new individual risks that may develop during project phase
- Analyse contingency reserves for cost or schedule require modification
- Performing risk audit to determine if:
 - Implemented risk responses are effective
 - Risk management policies and procedures are being followed
 - Risk management approach is still appropriate



7. Monitor Risks



Meeting

- The periodic risk review is a regularly scheduled discussion throughout the project to
 - Identification of new risks,
 - Reassessment of current risks,
 - And the closing of risks that are outdated.
- The risk review may be conducted as part of a periodic project **status meeting** or a **dedicated risk review** meeting may be held, as specified in the risk management plan.



7. Monitor Risks



Risk response audits

- The risk audit should measure the **effectiveness of the risk owner** in implementing the risk response
- As well as the effectiveness of **risk management process**
- Risk audits may be included during routine project review meetings or may form part of a risk review meeting, or the team may choose to hold separate risk audit meetings.
- The format for the risk audit and its objectives should be clearly defined before the audit is conducted.



7. Monitor Risks



Technical performance analysis

- Technical performance measurement compares actual results against targets: weight, transaction times, number of delivered defects, storage capacity, etc
- Deviation can indicate the potential impact of threats or opportunities.
- Level of conformance can help to forecast the degree of success in achieving the project's scope.

Reserve Analysis

- Reserve analysis compares the amount of the contingency reserves remaining to the amount of risk remaining at any time in the project in order to determine if the remaining reserve is adequate.
- Reserve analysis from starting to end of the project will give indications to health of the project and risks
- Remember Critical Path Method, burndown chart

Review



- **Introduction**
 - Risk definition
 - Risk attributes
 - Individual vs Overall risk
 - Risk attitudes
- **Plan Risk Management**
 - Stakeholder analysis
 - Risk appetite
 - Risk tolerance
 - Risk threshold
 - Risk management plan
- **Identify Risks**
 - Prompt list
 - Risk checklist
 - Document analysis
 - Root cause analysis
 - Risk workshop
 - Risk statement
 - Risk report
 - Risk register
- **Perform Qualitative Risk Analysis**
 - Risk Data Quality Assessment
 - Probability and Impact Assessment
 - Other risk parameters assessment
 - Risk rating (ranking) matrix
 - Risk categorizations

Review



- **Perform Quantitative Risk Analysis**
 - Expected monetary value (EMV)
 - Decision tree
 - Representation of uncertainty
 - Simulation
 - Sensitivity analysis
- **Plan Risk Response**
 - Strategies for Negative risks
 - Strategies for Positive risks
 - Contingency plan
 - Fallback plan
 - Risk contractual decision
- **Monitor Risks**
 - Status meeting
 - Risk audit
 - Technical performance review
 - Contingent reserve

Assignment!!!

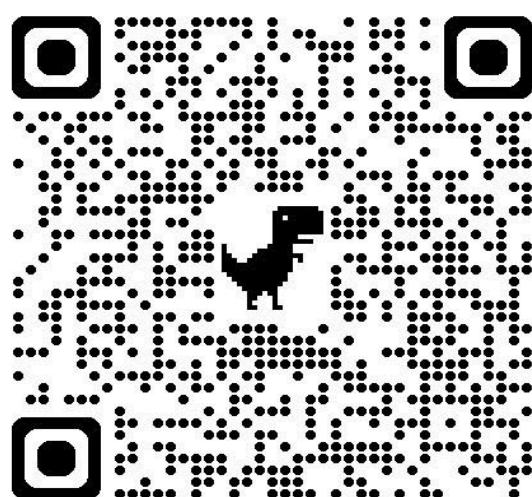


- Làm BTVN trên LMS: Risk
- Học nhóm
- Thực hành viết Risk Register và lập Risk Response Plan cho dự án hiện tại của mình
- Đóng tiền!!!

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



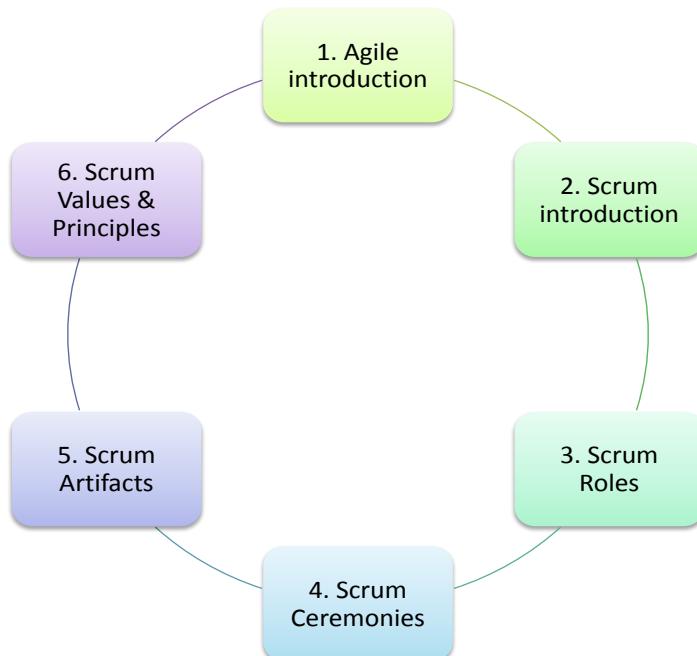
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Agile Mindset & Scrum Framework



Overview



Group discussion: Nokia Case-study



“We didn’t do anything wrong, but somehow, we lost.”
- Nokia CEO -



The final steps of the giant



- In 2007: N95 smartphone (music features, GPS navigation, a large screen, and full internet browsing capability).
 - Software compromises were accepted to get it ready on time. It was a success,
 - but serious quality problems soon emerged.
- In 2008: The 5800 first touchscreen phone.
 - It was a commercial success but it was about “one and a half years late”
 - because of **software development problems**.
- In 2009: the N97 was launched
 - One top manager admitted: “a total fiasco in terms of the **quality of the product**.”
- In 2010 came the purported “iPhone killer” with a touchscreen
 - One year later than planned,
 - but it **underperformed in usability** and failed to match up to the sleek competition of iOS and Android.
- In 2011, A new CEO decided that Nokia would be better off buying software from elsewhere and formed an alliance with Microsoft
- In 2013, As we know, this move accelerated the company’s decline and Microsoft went on to acquire Nokia’s phone business.

Group discussion



- Thảo luận về nguyên nhân thất bại của Nokia ?
 - Nguyên nhân :
- Giả thiết tình huống: Nếu quay trở lại năm 2007, và anh chị là CEO của Nokia, anh chị sẽ làm gì để tránh cho Nokia khỏi sự sụp đổ ?
 - Giải pháp :



One of the reasons



- Nokia was, at its heart, a hardware company rather than a software company.
- **Nokia's development process was long dominated by hardware engineers; software experts were marginalized.**
- In the end, the company profoundly underestimated the importance of software, including the apps that run on smartphones, to the experience of using a phone.



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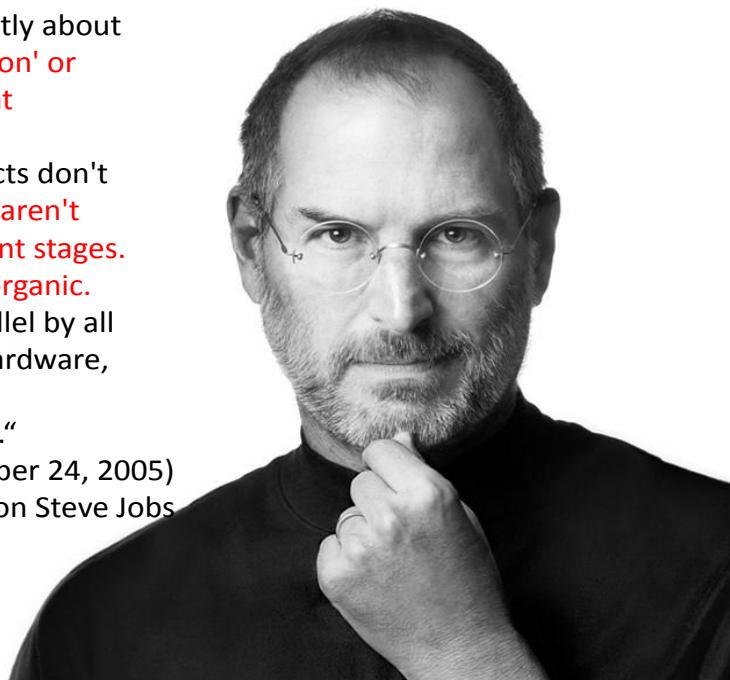
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The other side of the table



- "Apple employees talk incessantly about what they call 'deep collaboration' or 'cross-pollination' or 'concurrent engineering.'
- Essentially it means that products don't pass from team to team. **There aren't discrete, sequential development stages.**
- **Instead, it's simultaneous and organic.**
Products get worked on in parallel by all departments at once—design, hardware, software in endless rounds of interdisciplinary design reviews."

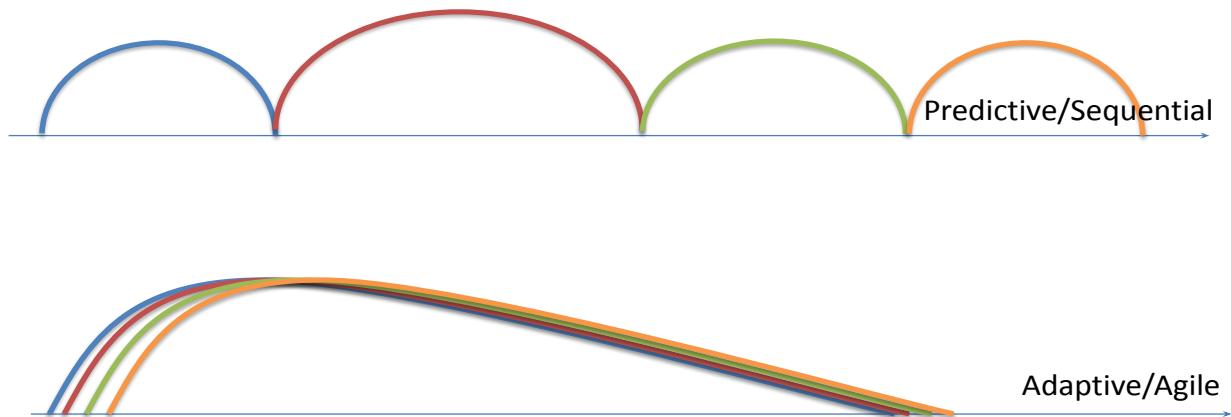
Time magazine cover story (October 24, 2005)
on Steve Jobs



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Product Development Styles



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Who use Agile?



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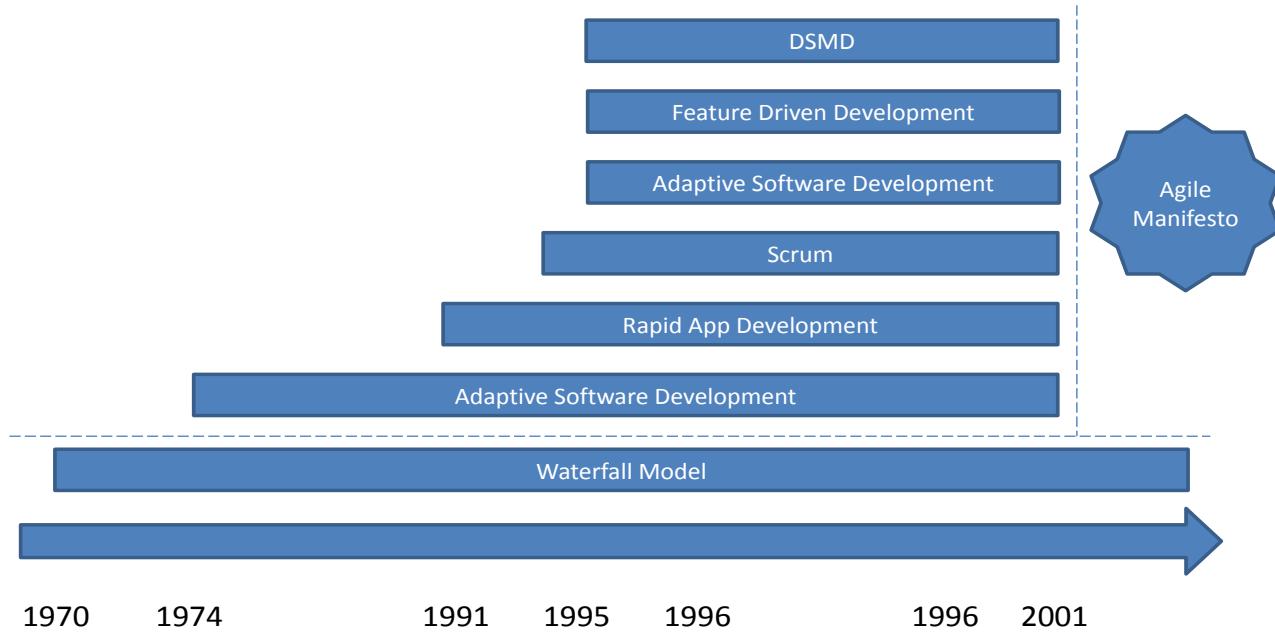
Group discussion : Xếp vào vị trí phù hợp

Cách mạng công nghiệp	Cách mạng thông tin/ tri thức
Thích nghi với sự thay đổi	Tối đa lợi ích trên mỗi nguồn lực
Ra lệnh và kiểm soát	Trao quyền và tự trị
Con người là tài sản, hơn là chi phí	Môi trường thay đổi chậm
Sản phẩm sờ nắm được	Ôn định và chắc chắn
Đòi hỏi sự sáng tạo	Sản phẩm không sờ nắm được
Đòi hỏi sự tuân thủ	Môi trường thay đổi nhanh
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Group discussion : Xếp vào vị trí phù hợp

Cách mạng công nghiệp	Cách mạng thông tin/ tri thức
Môi trường thay đổi chậm	Môi trường thay đổi nhanh
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Agile timeline



Group discussion



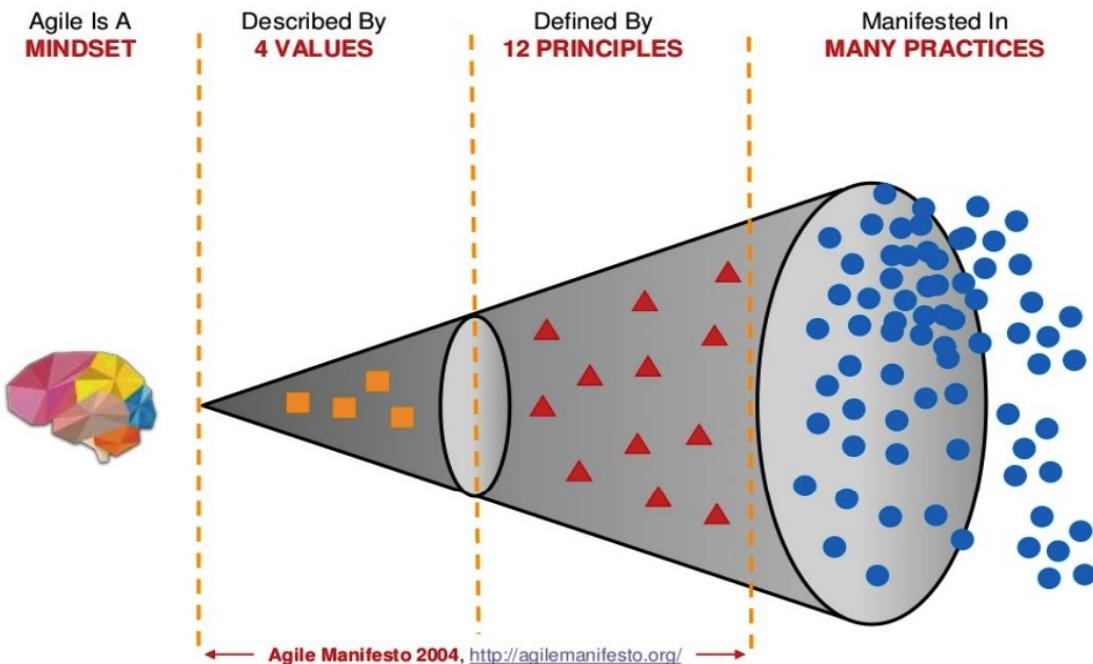
- Theo trải nghiệm cá nhân của bạn, đâu là yếu tố quan trọng quyết định thành công của dự án công nghệ thông tin?
 - Liệt kê 3-5 yếu tố hàng đầu

Agile Manifesto



At that moment, they realise they have a same school of thought

Agile is a Mindset



Agile principles



1. Customer satisfaction by early and continuous delivery of valuable software.
2. Welcome changing requirements, even in late development.
3. Deliver working software frequently (weeks rather than months)
4. Close, daily cooperation between business people and developers
5. Projects are built around motivated individuals, who should be trusted
6. Face-to-face conversation is the best form of communication (co-location)
7. Working software is the primary measure of progress
8. Sustainable development, able to maintain a constant pace
9. Continuous attention to technical excellence and good design
10. Simplicity—the art of maximizing the amount of work not done—is essential
11. Best architectures, requirements, and designs emerge from self-organizing teams
12. Regularly, the team reflects on how to become more effective, and adjusts accordingly

Group discussion



ID	Principle	Summary
1	Customer satisfaction by early and continuous delivery of valuable software.	Customer Satisfaction
2	Welcome changing requirements, even in late development.	
3	Deliver working software frequently (weeks rather than months)	
4	Close, daily cooperation between business people and developers	
5	Projects are built around motivated individuals, who should be trusted	
6	Face-to-face conversation is the best form of communication (co-location)	
7	Working software is the primary measure of progress	

Group discussion



ID	Principle	Summary
8	Sustainable development, able to maintain a constant pace	Sustainable development
9	Continuous attention to technical excellence and good design	
10	Simplicity—the art of maximizing the amount of work not done—is essential	
11	Best architectures, requirements, and designs emerge from self-organizing teams	
12	Regularly, the team reflects on how to become more effective, and adjusts accordingly	

12 Agile Principles

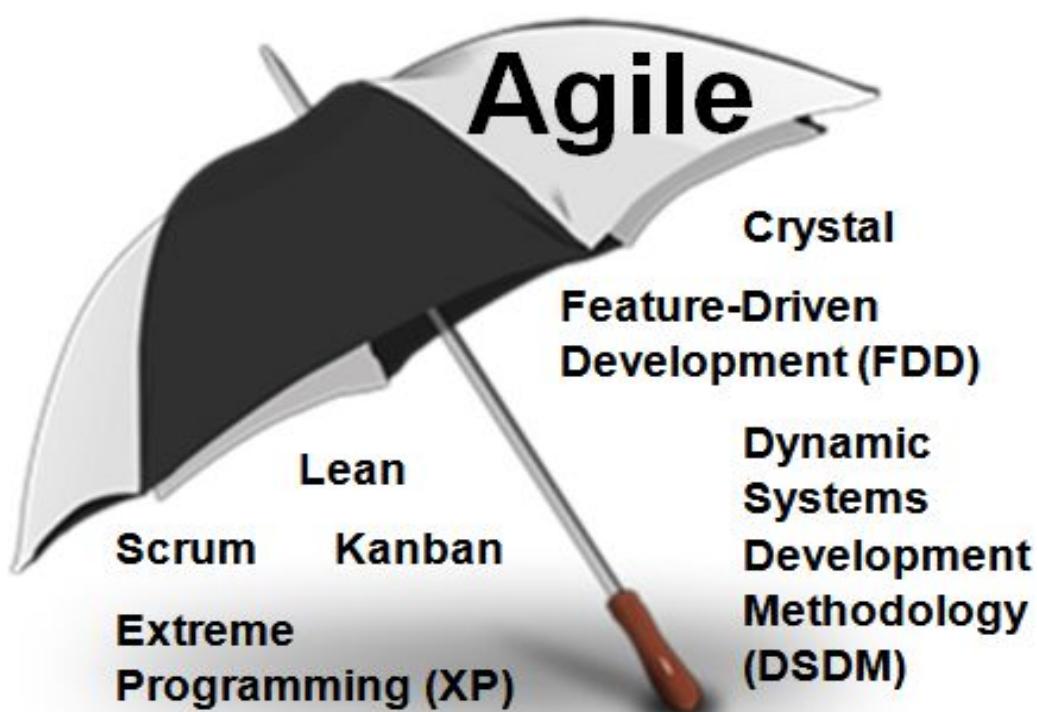


1 Satisfy the customer	2 Welcome change	3 Deliver frequently	4 Work together
5 Trust and support	6 Face-to-face conversation	7 Working software	8 Sustainable development
9 Continuous attention	10 Maintain simplicity	11 Self-organizing teams	12 Reflect and adjust

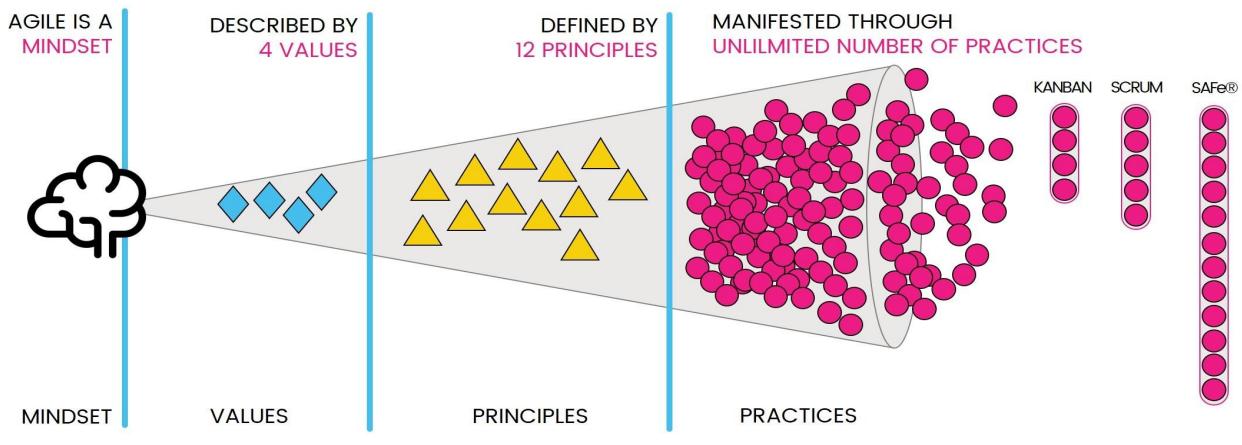
Common misunderstandings



- Agile has no Plan?
 - No, it has Plan. But the plan accept and adapt with change
- Agile has no Document?
 - No, it has Document. But it will do the document at the last responsibility moment
- Agile has no Process?
 - No, it has Process. But it accepts that process will be defined by team
- Agile have no Contract?
 - No, it has Contract. But the contract allow change and accept agile methodology from both sides



Agile is a Mindset

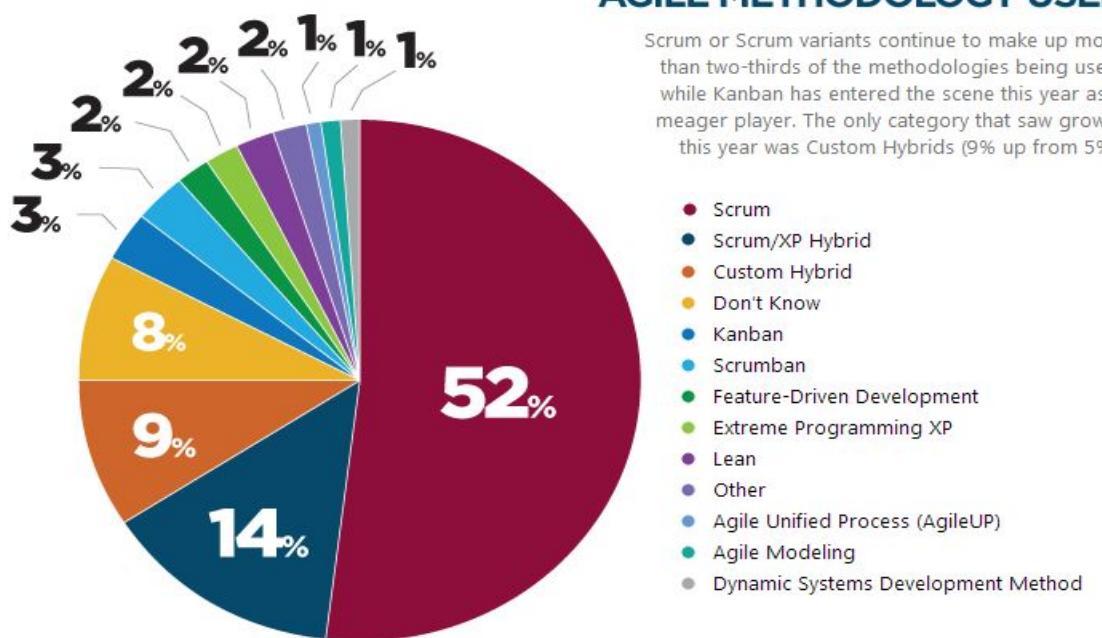


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2. Scrum Introduction: Agile methodologies

AGILE METHODOLOGY USED



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2. Scrum Introduction: Scrum history



- 1986 – The name Scrum appears in a paper by management experts Hirotaka Takeuchi and Ikujiro Nonaka, called “The New New Product Development Game”, relating to **rugby** stressing team collaboration for project success
- 1995 – Jeff Sutherland and Ken Schwaber come up with process, which they presented to the OOPSLA conference in Austin, Texas



2. Scrum Introduction: Scrum history



- 2001 – Sutherland and Schwaber and 15 other software development leaders created the Manifesto for Agile Software Development
- 2002 – The Scrum Alliance is founded by Schwaber
- 2006 – Sutherland creates Scrum Inc
- 2009 - Schwaber leaves the Scrum Alliance to start Scrum.org
- 2010 - First publication of the Scrum Guide



The Scrum Guide™

The Definitive Guide to Scrum:
The Rules of the Game



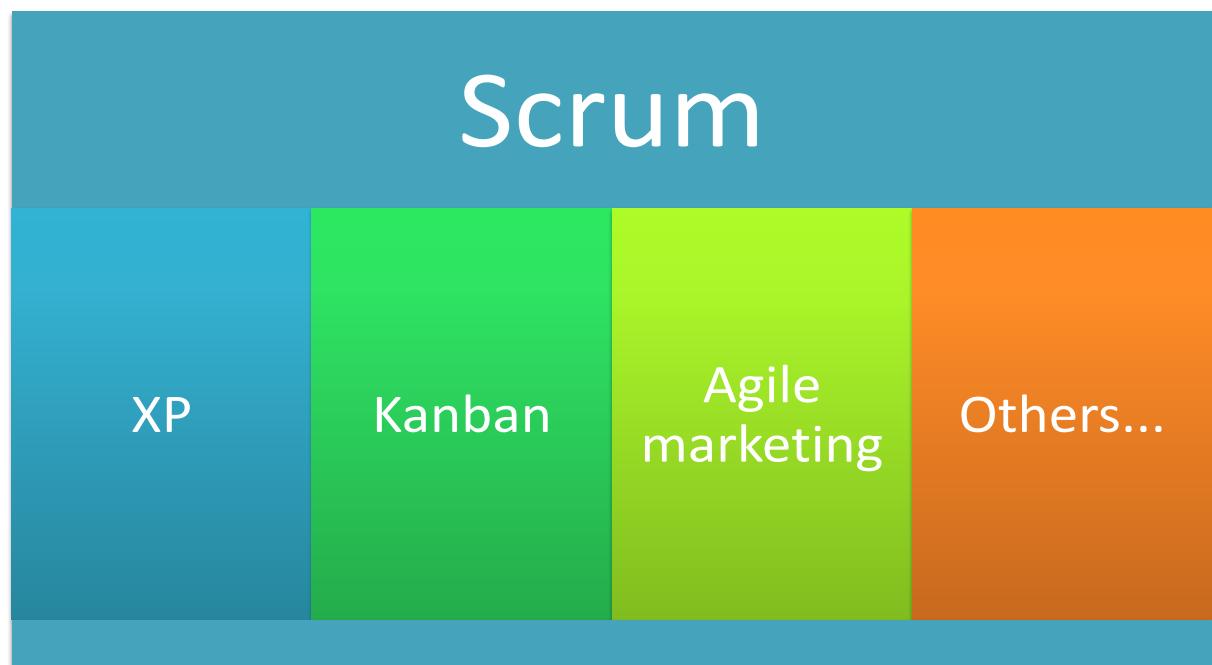
Developed and sustained by Scrum creators, Ken Schwaber and Jeff Sutherland.

2. Scrum Introduction: What is Scrum?



- Scrum (n): A framework within which people can address **complex adaptive problems**, while productively and creatively delivering products of the highest possible value.
- Scrum is not a process or a technique for building products; rather, it is a **framework** within which you can employ various processes and techniques.
- Scrum is:
 - Lightweight
 - Simple to understand
 - Difficult to master

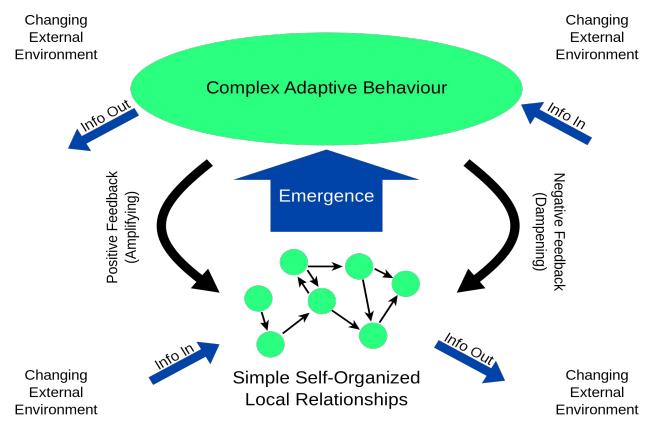
2. Scrum Introduction: Scrum framework



Complex Adaptive System Theory



- Living systems are complex, in that they consist of a great many **autonomous agents** interacting with each other in many ways
- The interaction of individual agents is governed by **simple, localized rules** and characterized by **constant feedback**
- Complex order, known as emergent order, **arises from the system itself**, rather than from an external dominating force
- These complex, self-organizing **Complex Adaptive Systems (CAS)** are adaptive in that they react differently under different circumstances, and co-evolve with their environment



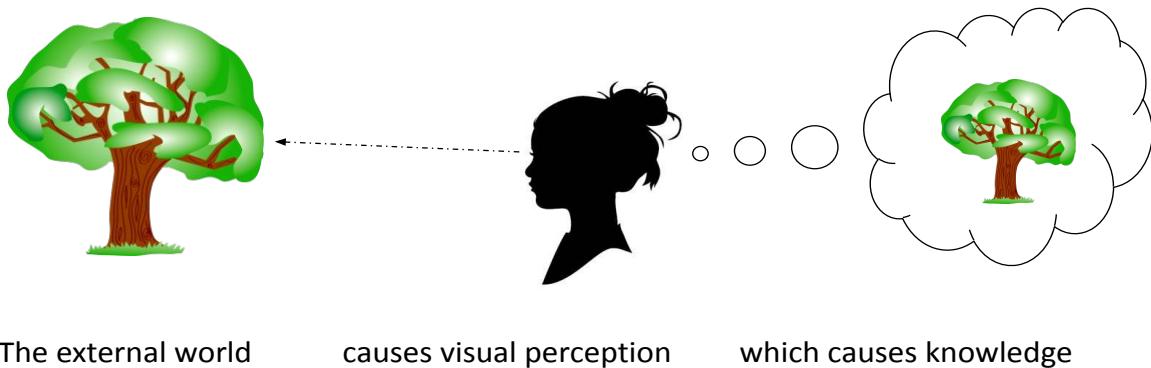
Natural Complex Adaptive System



Empirical Process Control Theory



- Scrum is founded on empirical process control theory, or empiricism.
 - knowledge comes from experience and**
 - making decisions based on what is known.**
- Scrum employs an iterative, incremental approach to optimize predictability and control risk.



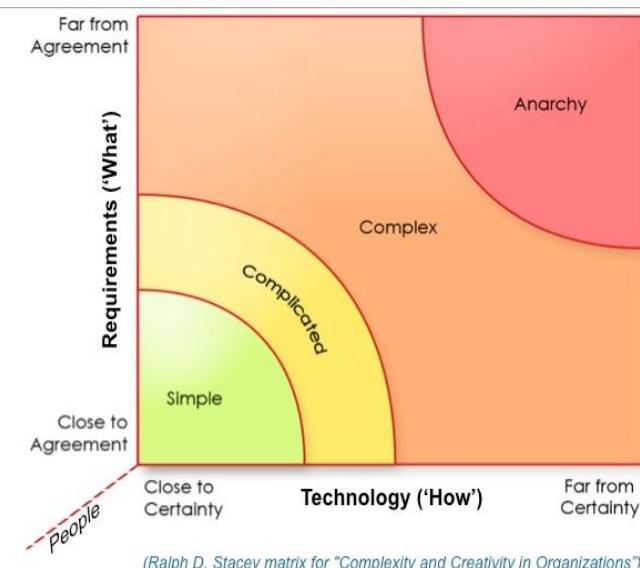
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Group discussion



- Scrum phù hợp sử dụng trong môi trường nào?



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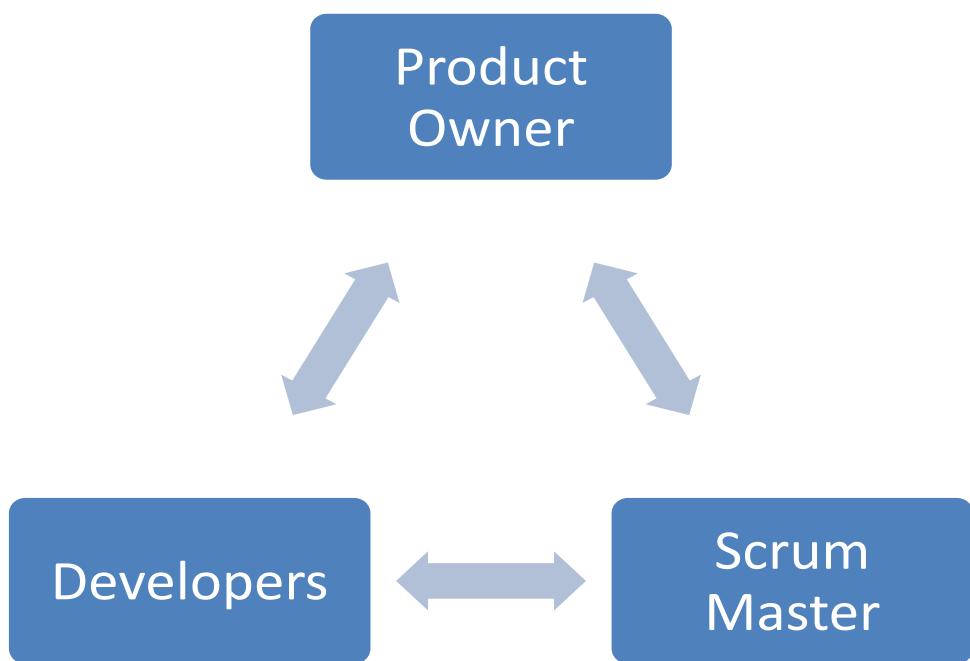
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2. Scrum Introduction



Roles	Ceremonies	Artifacts	Values & Principles
<ul style="list-style-type: none">• Product Owner• Scrum Master• Development Team	<ul style="list-style-type: none">• Sprint Planning• Daily Scrum• Sprint Review• Sprint Retrospective	<ul style="list-style-type: none">• Product Backlog• Sprint Backlog• Increment	<ul style="list-style-type: none">• 3 pillars• 5 values

3. Roles & Responsibilities



Group discussion: Xếp vào ô phù hợp



Product Owner	Create and evolve the product Accept or reject work results.
Developers	Removing impediments to the Development Team's progress;
Scrum Master	Coaching the Development Team in self-organization and cross-functionality Maximize the value of the product and the work of the Development Team

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Group discussion: Xếp vào ô phù hợp



Product Owner	Maximize the value of the product and the work of the Development Team Accept or reject work results.
Developers	Create and evolve the product
Scrum Master	Removing impediments to the Development Team's progress; Coaching the Development Team in self-organization and cross-functionality

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3. Roles: Scrum Team Characteristics



- **A small number of people**, typically 12 or fewer members
- **Committed to a common purpose**, as to how the goals will be measured and how the team should go about the work
- **Self organizing teams** are empowered to work collectively to create their norms and make their own local decisions
- **Complementary skills**, generalizing specialists, cross-functional skills
- **Hold themselves mutually accountable**, shared ownership for the outcome of the project



3. Roles & Responsibilities: What if ?



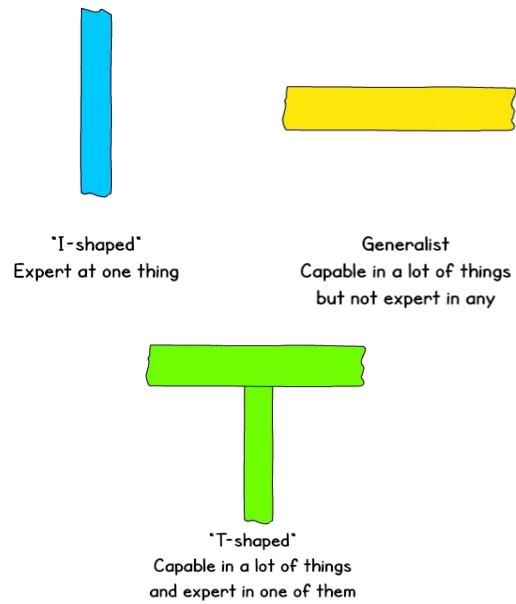
- If the team's estimates are way off or if they make poor technical decision, these issues will be identified and discussed at the iteration retrospective.
- Self-organizing attributes of agile teams are goal – we do not start there. The team members initially need support and guidance, once the team has stabilized we can introduce the goals of self-organization as long-term objectives for group



3. Roles: Generalizing Specialists



- Having team members who can perform different tasks helps the team minimize hand offs and avoid peaks and troughs in their workload
- Also help solve the bottleneck problem by sharing the workload
- T-shaped**
 - Spend most of their time deep in one role but can and sometimes do spend time on activities that come before and after that work
- I-shaped**
 - Deeply skilled in one role and spend all their time there

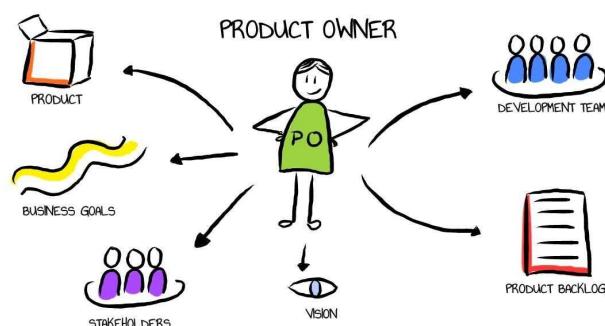


3. Roles & Responsibilities



Product Owner

- Maximize value of the product and the value of the work of the development team
- Manage product backlog
- Business Representative



3. Roles & Responsibilities



Scrum Master

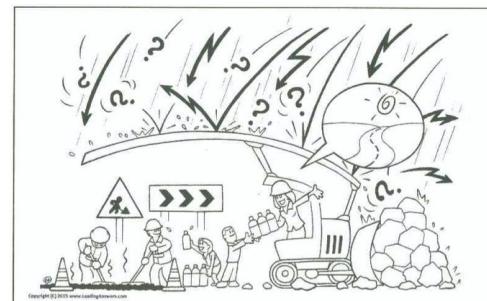
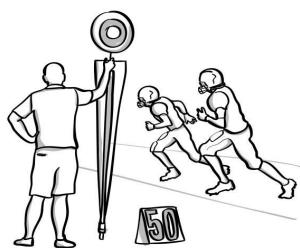
- Servant leader
- Coaching team and stakeholders about Scrum
- Make sure Scrum team adheres to the Scrum framework practices and rules
- Remove impediment
- Agile Project Manager



Servant Leadership



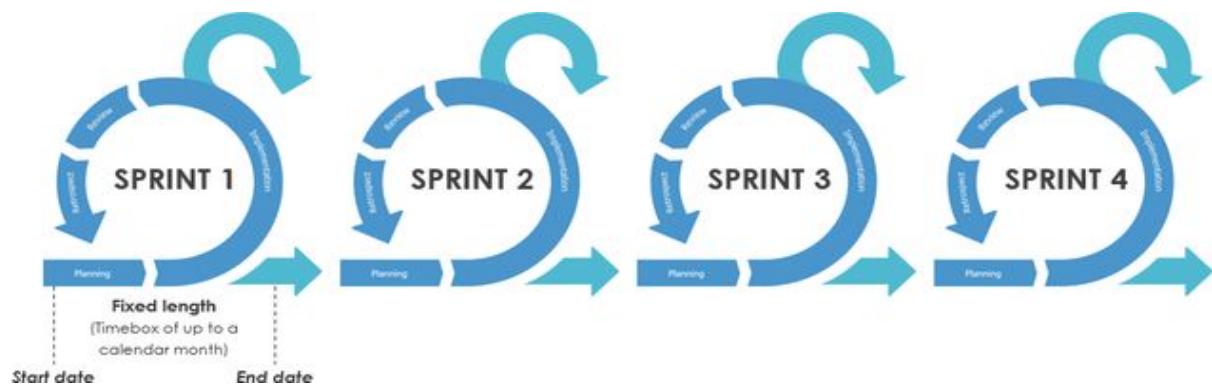
- **Coaching**
 - Coaching team and stakeholder about agile mindset and practices
 - Ensure team use practices with right purpose and understand
- **Remove impediment**
 - Shield the team from interruptions
 - Communicate (and re-communicate) the project vision
 - Carry food and water



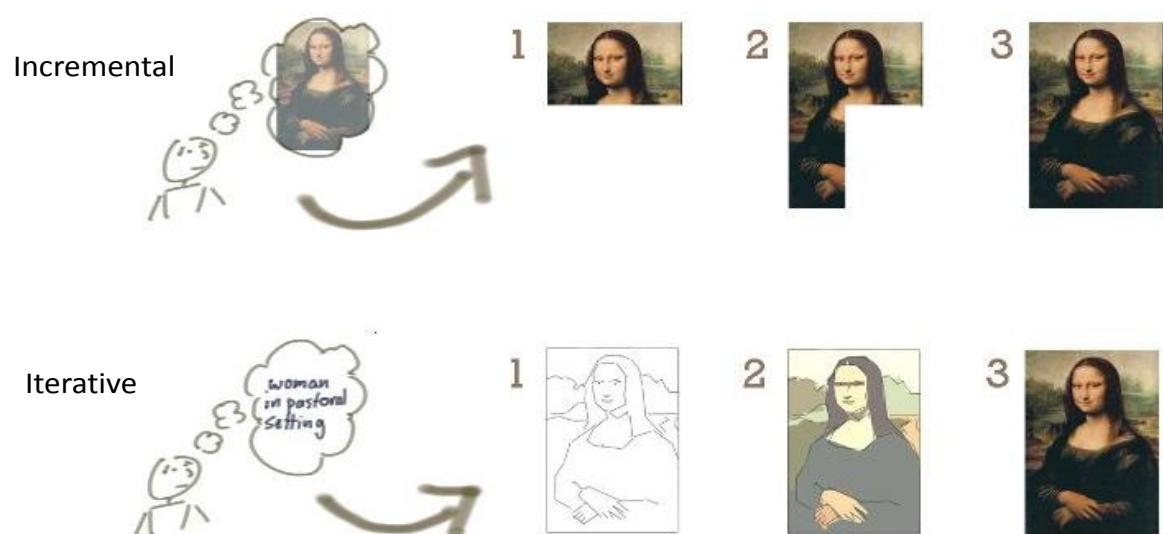
4. Ceremonies: Timebox and Sprints



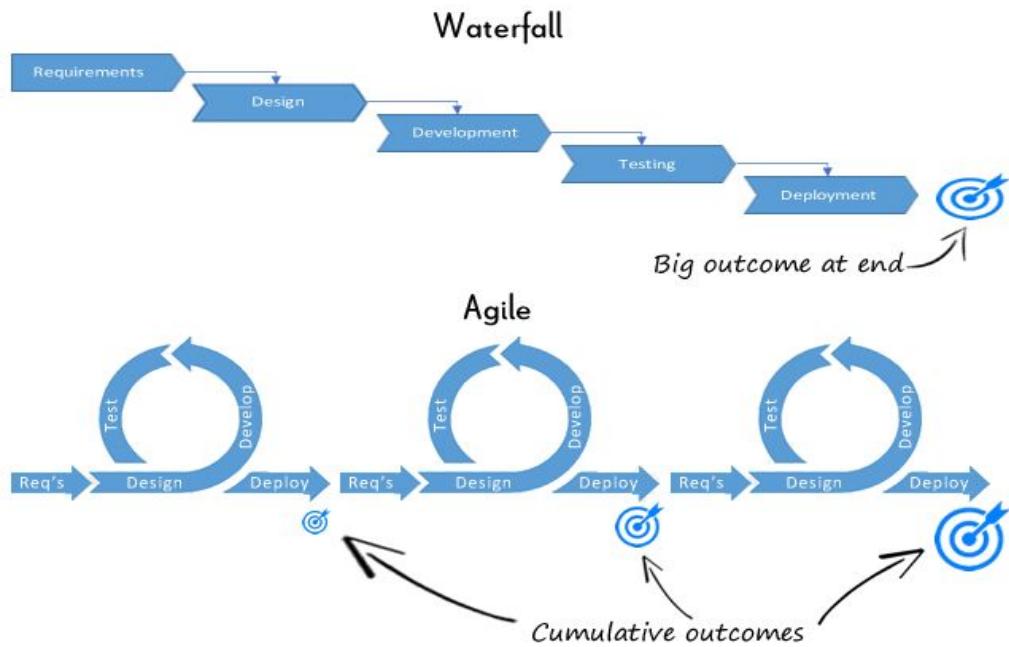
- Timeboxed
- No changes are made in middle of a sprint that could endanger the goal
- Output with a product increment
- Like a mini project



Group discussion: Phân biệt 2 cách phát triển



Waterfall vs Agile



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4. Ceremonies: Sprints



The Sprint Goal

- An objective that will be met with this sprint through the implementation of the product backlog items
- Providing guidance on why the team is building this particular increment



The Definition of Done

- Shared understanding of what it means for the actual work to be complete
- Provides transparency and guards against misinterpretations and misunderstandings



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Definition of “Done” (DoD)



• DoD Sprint 2

- Unit tests written and green
- Source code committed on server
- Jenkins build version and all tests green
- Code review completed (or pair-programmed)
- How-to-Demo verified before presentation to Product Owner
- Ok from Product Owner

Definition of Done: A shared understanding of what it means for work to be complete, to ensure transparency

• DoD Sprint 3

- Potentially releasable build available for download*
- Summary of changes updated to include newly implemented features*
- Inactive/unimplemented features hidden or greyed out (not executable)*
- Unit tests written and green
- Source code committed on server
- Jenkins build version and all tests green
- Code review completed (or pair-programmed)
- How to Demo verified before presentation to Product Owner
- Ok from Product Owner

Group discussion: 4 sự kiện



Planning	Daily meeting	Review	Retrospective

cải tiến quy trình

demo sản phẩm và nhận phản hồi

xác định các hạng mục cần phải thực hiện

cải thiện tương tác

đồng bộ thông tin

cập nhật điều chỉnh công việc

xác định mục tiêu của sprint

Group discussion: 4 sự kiện



Planning	Daily meeting	Review	Retrospective
xác định mục tiêu của sprint	cập nhật điều chỉnh công việc		cải tiến quy trình
xác định các hạng mục cần phải thực hiện	đồng bộ thông tin	demo sản phẩm và nhận phản hồi	cải thiện tương tác

4. Ceremonies



Sprint Planning Meeting

- Timeboxed
- Everyone in team join and discuss what will be delivered in this sprint
- Activities
 - Product owner present latest updated product backlog
 - PO and Team discuss to ensure they have shared understanding
 - Team forecast what can be delivered in the sprint
 - Team define the goal
 - Team plan to achieve the goal

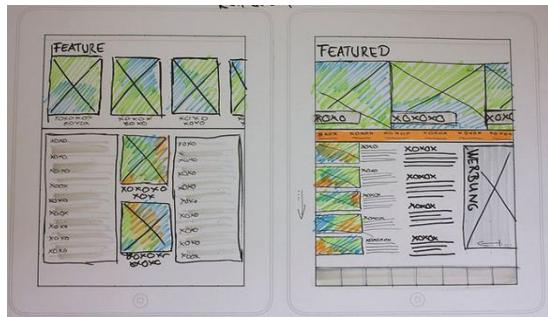
Sprint Planning Meeting



Sprint Planning



As a vacation planner, I want to see photos of the hotels.



Code the middle tier (8 hours)
Code the user interface (4)
Write test fixtures (4)
Code the foo class (6)
Update performance tests (4)



4. Ceremonies



Daily Scrum

- 15-mins timeboxed meeting
- Quick update
 - Same time
 - Same place
 - Same person
 - Same question
- Questions:
 - What do you do yesterday?
 - What do you do today?
 - Any impediments?



4. Ceremonies: Daily Scrum



- Should not be held far from the work location.
- Is NOT status meeting to report progress to the Scrum Master
- Is NOT a problem solving session nor technical discussion
- Is NOT a way to identify WHO is behind the schedule
- Should be held near a Scrum board
- Team members are commitments in front of peers
- Is synchronization session
- Is inspection and replanning for the next 24 hours



4. Ceremonies



Sprint Review

- Get together with the **product owner** and determine whether the increment is **done**
- Informal meeting and not a status meeting
- Team present the increment to the product owner in order to gain their feedback and to encourage collaboration
- Looking forward to determining the next things that could be done to optimize value

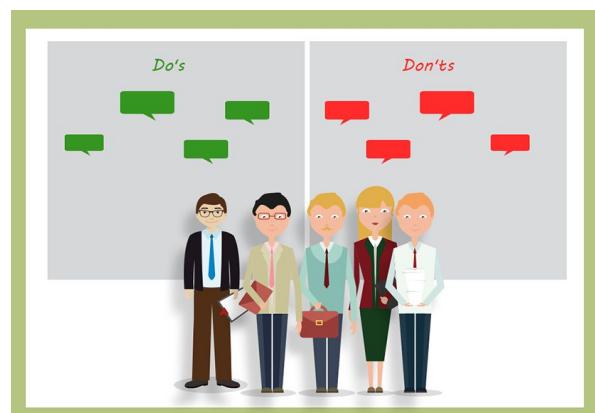


4. Ceremonies



Sprint Retrospective

- A very open and honest meeting
- Transparent about their feelings on what went well, what did not go well, and what changes they would like to see made
- Have identified improvements that it will implement in the next sprint



Group discussion



Thực hành họp Retrospective

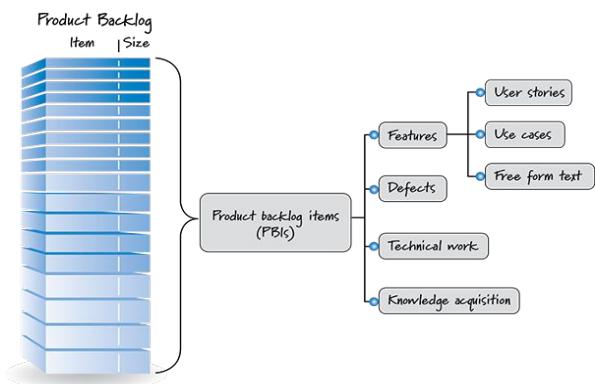
- Trên thang điểm 1-10, bạn chấm điểm chất lượng buổi học nhóm được bao nhiêu điểm?
- Vì sao bạn cho điểm như vậy? Chia sẻ lý do này với bạn học
- Làm thế nào để cải thiện chất lượng buổi học nhóm? Làm thế nào để đạt 10 điểm?

5. Artifacts



Product Backlog

- Prioritized list of all work that need to be done to build the product
- Include features, functions, requirements, quality attributes, enhancements and fixes
- Dynamic and need to be continually updated and refined
- Manage by **product owner**

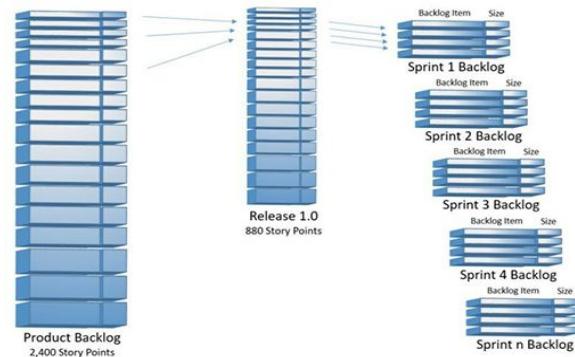


5. Artifacts



Sprint Backlog

- Subset items of product backlog
- Selected as a goal of specific sprint
- Select by **development team**
- Team plan for how they achieve the sprint goal
- Highly visible view of work being undertaken
- Only be updated by team

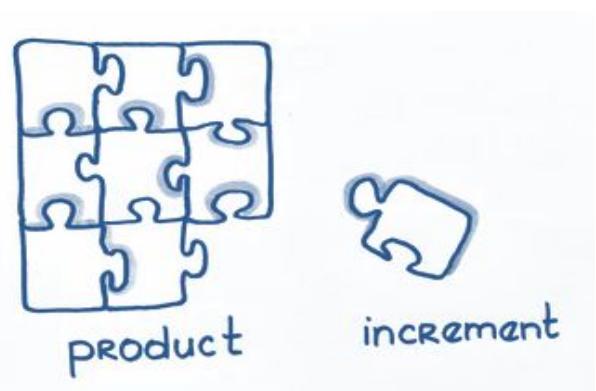


5. Artifacts



Product Increment

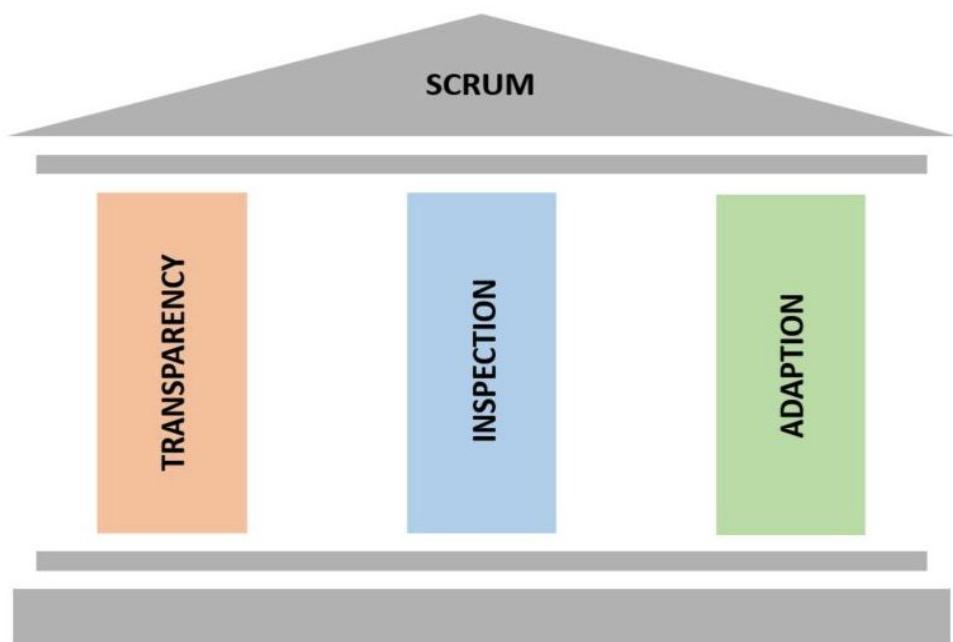
- An increment of the end product of project
- Team demo the latest increment to product owner to get feedback and find out if item is done.
- Team and product owner need to agree upon of definition of done before the team begins working on it



Group discussion: Tương phản sự khác biệt

Agile/Scrum	Traditional Project Mgt
Scrum Master	Project Manager
Sprint (iteration)	Project phase, milestones
4 ceremonies	PDCA
Daily Standup	Status report
Product backlog/ Sprint backlog	WBS
(Shippable) Increment	Deliverables

6. Pillars and Values



6. Pillars and Values



Review



- Agile Introduction
 - Agile history
 - 4 values
 - 12 principles
 - Agile umbrella
- Scrum Introduction
 - Scrum history
 - Complex adaptive system
 - Empiricism (empirical process control)
- Scrum Roles
 - Product Owner
- Scrum Roles
 - Developers
 - Self-organized
 - Cross-functional
 - Scrum Master
 - Servant Leader
- Scrum Events
 - Sprint and Timeboxed
 - Planning
 - Daily Scrum
 - Review
 - Retrospective
- Scrum Artifacts
 - Product backlog
 - Sprint backlog
 - Product increment
- Principles & Values
 - 3 pillars
 - 5 values

Assignment!!!

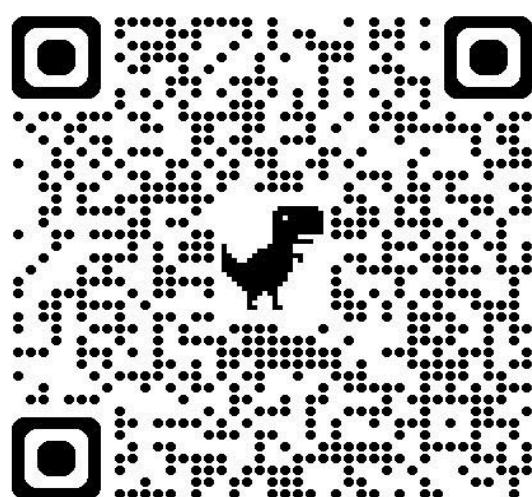


- Làm BTVN trên LMS: Agile & Scrum
- Học nhóm
- Thực hành viết Sprint Goal cho dự án hiện tại của mình
- Chuẩn bị cho Final (Cuối tuần này)

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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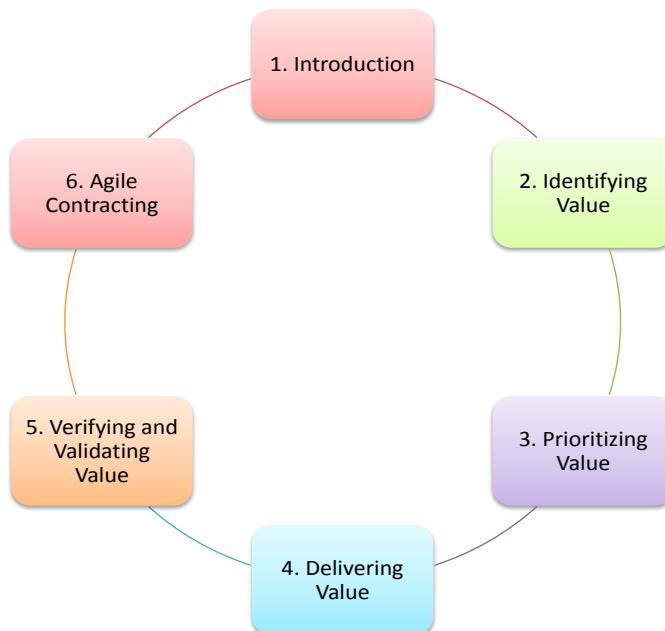


Value-driven Delivery

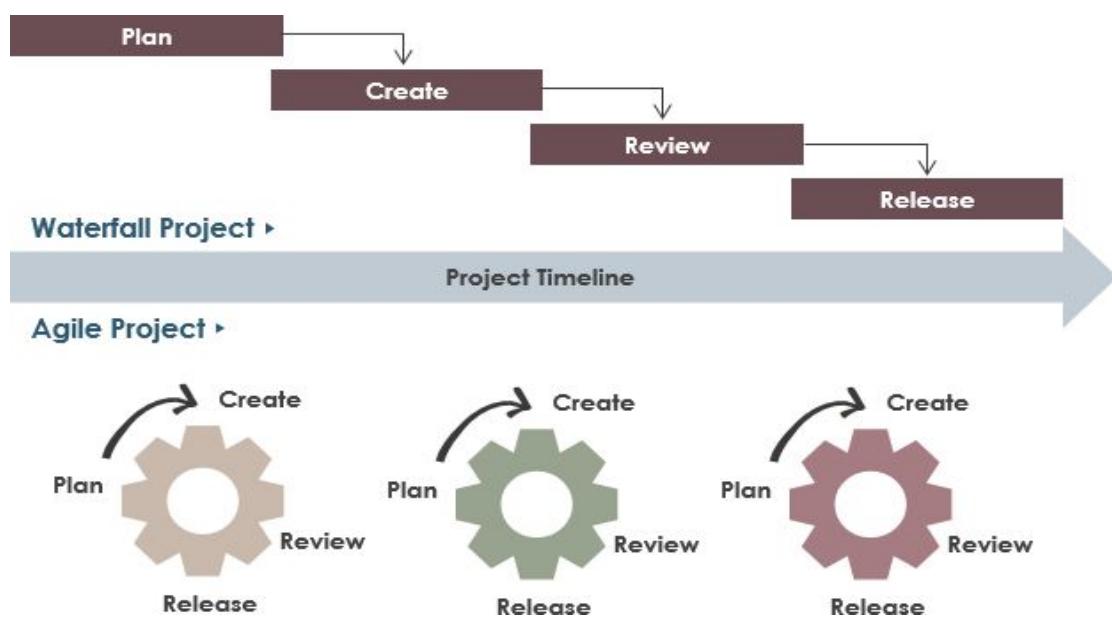


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Overview



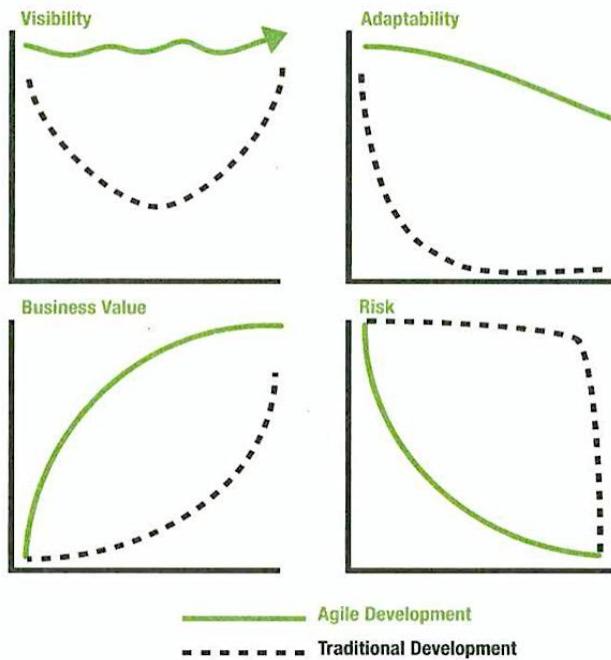
1. Introduction



Group discussion:



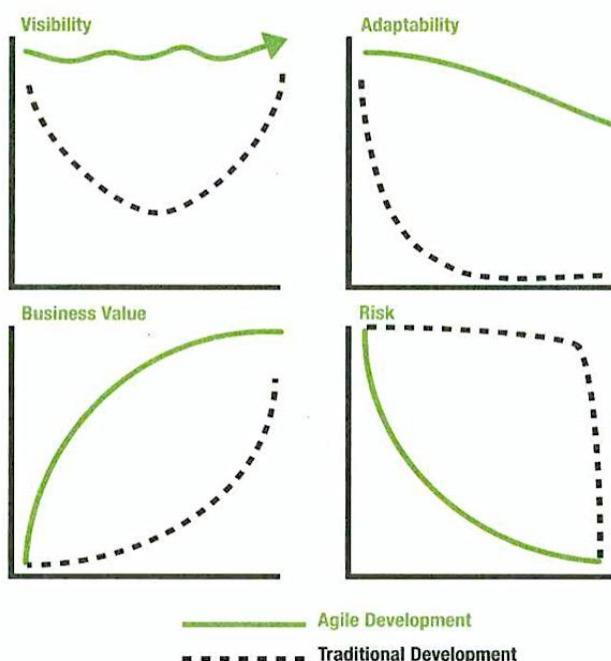
- Giải thích ý nghĩa các biểu đồ



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1. Introduction: Agile Delivery Benefits



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1. Introduction: Value, Non-value & Anti-Value

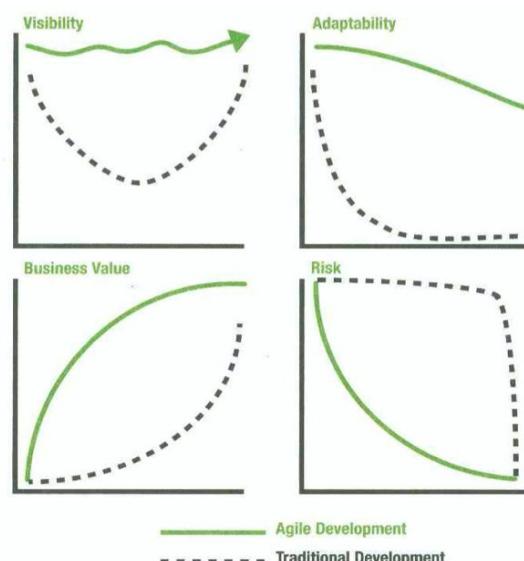


Concept	Description	Examples
Value	Activities, features, or tasks that directly contribute to achieving project or product goals.	Implementing customer-requested features, Fixing critical bugs, Improving user experience
Non-value (Waste)	Activities, features, or tasks that do not directly contribute to achieving project or product goals.	Excessive documentation, Unnecessary meetings, Rarely used features
Anti-value	Activities, features, or tasks that actively detract from achieving project or product goals.	Introducing defects or bugs, Implementing features that decrease usability, Spending time on low-priority tasks at the expense of critical work

1. Introduction: Value-driven delivery



- Delivery Value Early (Eat your dessert first!)
 - Deliver the highest-value portions of the project **as soon as possible**
 - Stakeholder satisfaction
- While minimizing waste
 - Non-value-adding activities
- And reducing anti-value



2. Identifying Value: User Story



User story

- As a [user role]
- I want [goal]
- So that [reason]

As who, I want
what so that why.

For example:

- As a registered user I want to log in so I can access subscriber-only content

2. Identifying Value: 3C of a User story



- **CARD:** a physical token giving tangible and durable form to what would otherwise only be an abstraction;
- **CONVERSATION:** taking place at different time and places during a project between the various people concerned by a given feature of a software product: customers, users, developers, testers; this conversation is largely verbal but most often supplemented by documentation;
- **CONFIRMATION:** finally, the more formal the better, that the objectives the conversation revolved around have been reached.



User Story Detail



- How detailed should be?
 - Detailed enough for the team to start work from, and further details to be established and clarified at the time of development.

#0001 | **USER LOGIN** Fibonacci Size # 3

As a [registered user], I want to [log in], so I can [access subscriber content].

For new features, annotated wireframe. For bugs, steps to reproduce with screenshot. For non-functional stories, explain scope/standards.

User Login

Username: User's email address. Validate format.

Password: Authenticate against SRS using new web service.

Remember me Go to forgotten password page.

[message] Display message here if not successful. (see confirmation scenarios over)

Store cookie if ticked and login successful.

Further information is attached to this story on VSTS Product Backlog.

User Story Acceptance Criteria



Confirmation

1. Success – valid user logged in and referred to home page.
 - a. ‘Remember me’ ticked – store cookie / automatic login next time.
 - b. ‘Remember me’ not ticked – force login next time.
2. Failure – display message:
 - a) “Email address in wrong format”
 - b) “Unrecognised user name, please try again”
 - c) “Incorrect password, please try again”
 - d) “Service unavailable, please try again”
 - e) Account has expired – refer to account renewal sales page.

Acceptance Criteria vs Definition of Done



	Acceptance Criteria	Definition of Done
Describes...	What the product does	What the team does
Quality of the ...	Product from user perspective	Work from process perspective
Applies to...	Specifically this backlog item	Generally all backlog items
Met when ...	Verified by a test	Agreed inside team

Group discussion



Ví dụ:

Ký hợp đồng văn kiện tín dụng

- **Là** một người dùng
- **Tôi muốn** ký hợp đồng văn kiện tín dụng, điện tử
- **Để** có thể bổ sung hồ sơ văn kiện tín dụng điện tử vào danh sách hồ sơ cần thiết.

Tiêu chí chấp thuận:

- **Với điều kiện** đã có hợp đồng chưa ký trên hệ thống
- **Khi** khách hàng xác nhận đúng OTP khi ký hợp đồng điện tử
- **Thì** đảm bảo hợp đồng điện tử có chữ ký của khách hàng
- **Và** được xác thực bởi bên trung gian.

Viết User Story về Ứng dụng luyện thi PMP Online. Tính năng Làm bài thi online

User story

- **Là**
- **Tôi muốn**
- **Để**

Acceptance Criteria

- **Với điều kiện**
- **Khi**
- **Thì**
- **(và)**

2. Identifying Value: INVEST in an User Story

INVEST

A good user story should be:

- “I” ndependent (of all others)
- “N” egotiable (not a specific contract for features)
- “V” aluable (or vertical)
- “E” stimable (to a good approximation)
- “S” mall (so as to fit within an iteration)
- “T” estable (in principle, even if there isn’t a test for it yet)



2. Identifying Value: Risk as anti-value

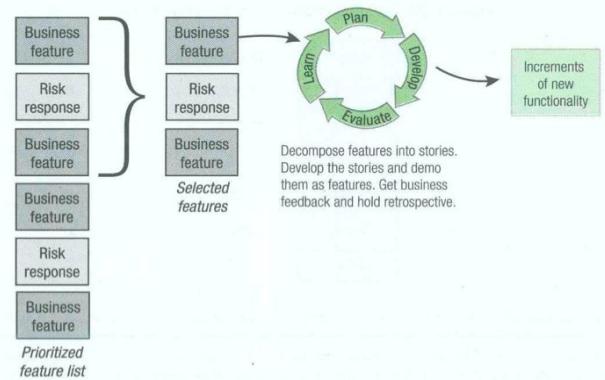
Risk as anti-value

- A choice that could lead to **future problems or rework** won’t deliver the most value to customer, only gives **illusions of early progress**

- Single prioritized list is what allows agile teams to focus simultaneously on both value delivery and risk reduction activities

Risk-adjusted backlog

- Risk-adjusted backlog
 - Risk response activities are added and prioritized (based on their anti-value)



2. Identifying Value: Regulatory Compliance



Regulatory Compliance

- Regulations are typically designed to **ensure safety**
- Regulations are **non-negotiable, mandatory**
- Approaches
 - Weave it into the regular development work as the team progresses
 - To allow time after creating the product to undertake the regulatory work and produce the required evidence and document



DesignerHipster.com

2. Prioritizing Value



Customer-Value prioritization

- Working on the items that yield the **highest value to the customer** first
- Learn about customers motivations, risks and acceptance criteria



2. Prioritizing Value



Simple Schemes

- Label items:
 - Priority 1, Priority 2, ...
 - High, Medium, Low
- Problems
 - Stakeholders have a tendency to designate everything in a High priority
 - Too many items are High priority, the scheme becomes ineffective
 - Rarely ask for a new feature and say it should be Medium or Low, since they know that low-priority items risk getting cut out of the project
- Need a shared, defendable reason for what defines High Priority.



2. Prioritizing Value



Requirement Prioritization Model

- More mathematically method of calculating priority
- The benefit, penalty, cost and risk of every proposed feature is rated on a relative scale from 1 to 9.
 - Customer rate benefit score and penalty score
 - Developers rate cost and risk
 - Score will be calculated with a weighted formula

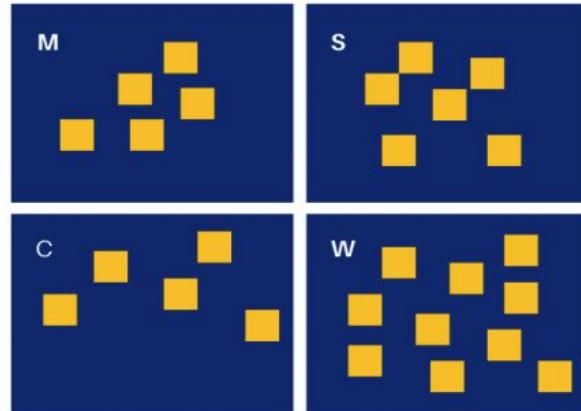
Feature	Relative Weights:		2		1		1		0.5	
	Relative Benefit	Relative Penalty	Total Value	Value %	Relative Cost	Cost %	Relative Risk	Risk %	Priority	
1. Query status of a vendor order	5	3	13	8.4	2	4.8	1	3.0	1.345	
2. Generate a Chemical Stockroom inventory report	9	7	25	16.2	5	11.9	3	9.1	0.987	
3. See history of a specific chemical container	5	5	15	9.7	3	7.1	2	6.1	0.957	
4. Print a chemical safety datasheet	2	1	5	3.2	1	2.4	1	3.0	0.833	
5. Maintain a list of hazardous chemicals	4	9	17	11.0	4	9.5	4	12.1	0.708	
6. Modify a pending chemical request	4	3	11	7.1	3	7.1	2	6.1	0.702	

2. Prioritizing Value



MoSCoW

- **Must have:** Fundamental to the system, without them, system will have no value
- **Should have:** Important, without them, the system will not work correctly
- **Could have:** useful, add tangible value
- **Would like to have, but not this time:** nice-to-have requests that are duly noted – but unlikely to make the cut



Group discussion



Nhóm phát triển một mẫu xe đẹp mới. Hãy xác định mức độ ưu tiên của các tính năng cần phát triển

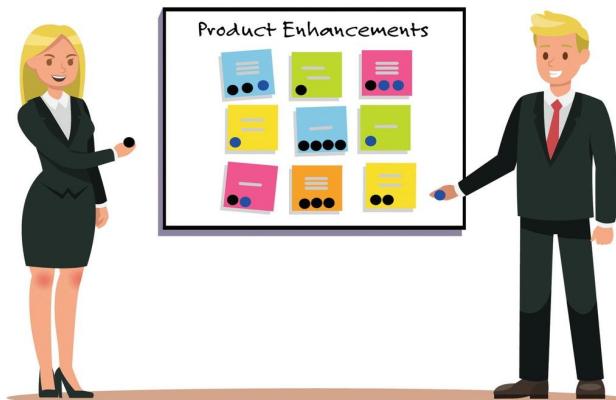
Bộ phận	Độ ưu tiên
Khung xe	Must Have
2 bánh xe	
Khả năng điều chỉnh yên xe cao - thấp	
Hệ thống phanh	
Còi xe	
Hộp bảo vệ cho dây xích truyền động	
Màu sắc hấp dẫn	
Bộ giảm sóc	
Gác-ba-ga (ghế sau)	
Pê-dan (bàn đạp)	

2. Prioritizing Value



Dot Voting – Multi Voting

- Each stakeholder gets a predetermined number of dots to distribute among the options presented
- Can be public or private with someone tallying
- Problems: Power struggles and strategic voting



2. Prioritizing Value



Monopoly Money

- Give stakeholder Monopoly money equal to the amount of project budget and distribute those funds amongst the system features.
- Identifying the general priority of system components
- Most effective when it's limited to prioritizing business features

100-Point Method

- Give 100 points that stakeholders can use to vote for the most important requirements



2. Prioritizing Value



Kano Analysis

- Classify customer preferences into 4 categories
- Delighters / Excitors:** unexpected, novel or high-value benefit, high level of customer support
- Satisfiers:** the more the better, bring value to the customer
- Dissatisfiers:** cause a user to dislike the product if they are not there, but will not necessarily raise satisfaction if they are present
- Indifferent:** No impact on customers. Try to eliminate, minimize or defer them

- Understand how customer need relate to customer satisfaction



Group discussion: Dịch vụ khách sạn



Tranh Cô gái bên hoa huệ
(tranh chép).

Bánh sinh nhật + kèm
theo lời chúc viết tay

Nước nóng

Wifi siêu tốc miễn phí

Ga giường
sạch

TV HD màn hình rộng

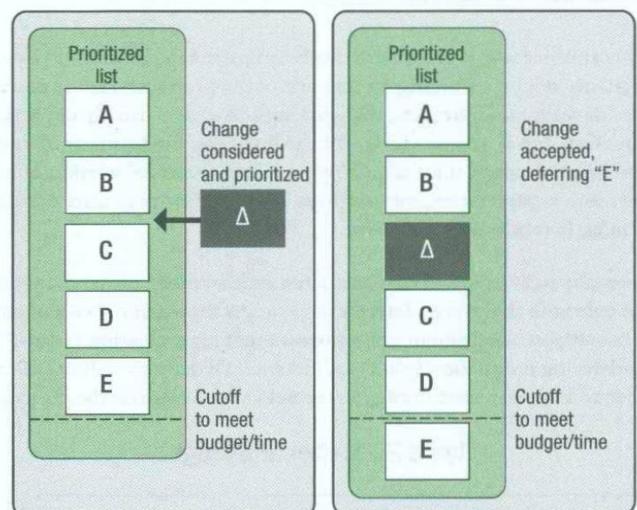


2. Prioritizing Value



Relative Prioritization / Ranking

- Single prioritized work list, rather than separated buckets
- No high/medium/low, no category 1, 2, 3, no must-have
- Only “What items are more important than this change?”
- Insert new change into the prioritized work list at the appropriate point

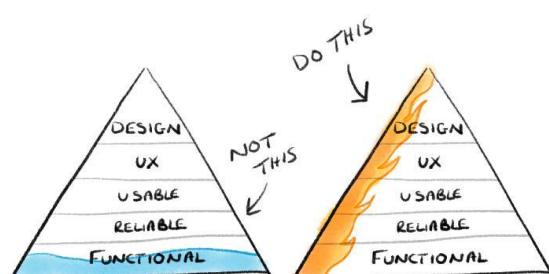


3. Delivering Value



Minimal Viable Product (MVP)

- A package of functionality that is complete enough to be useful to the users of the market, yet still small enough
- In software development, it maybe possible to transfer increments of the final product to the user community early so that business can start getting some benefits from the application before the entire project is completed

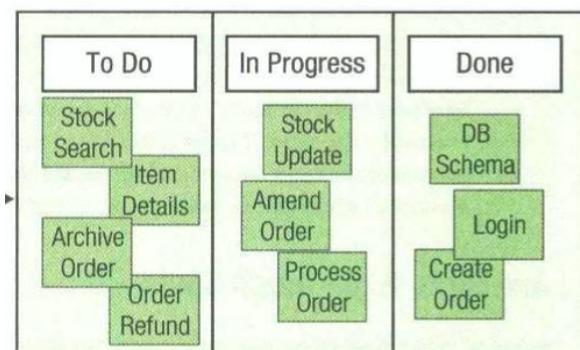


3. Delivering Value



Kanban method

- **Visualize the Workflow:** Make the workflow visible by creating a Kanban board, which typically consists of columns representing different stages of the workflow (e.g., "To Do," "In Progress," "Done").



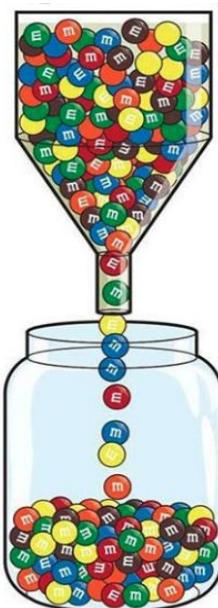
- **Limit Work in Progress (WIP):** Place limits on the number of tasks allowed in each stage of the workflow to prevent overloading the team and to maintain a smooth flow of work.
- **Manage Flow:** Focus on continuously improving the flow of work through the system. Identify bottlenecks and constraints and work to address them to optimize flow.
- **Make Process Policies Explicit:** Define and agree on explicit policies for how work is handled at each stage of the workflow. This helps ensure consistency and clarity.
- **Implement Feedback Loops:** Encourage feedback loops at all levels to facilitate continuous improvement.

3. Delivering Value: Kanban method



Theory of Constraints

- Change to most of the variables in an organization usually have **only small impacts** on global performance. There are **few variables** for which a significant change in local performance will affect a significant change in global performance
- To achieve the greatest benefits, we should find the **constraints (or bottlenecks in the system)** and focus on improving these issues



Group discussion: Bài toán Quán phở

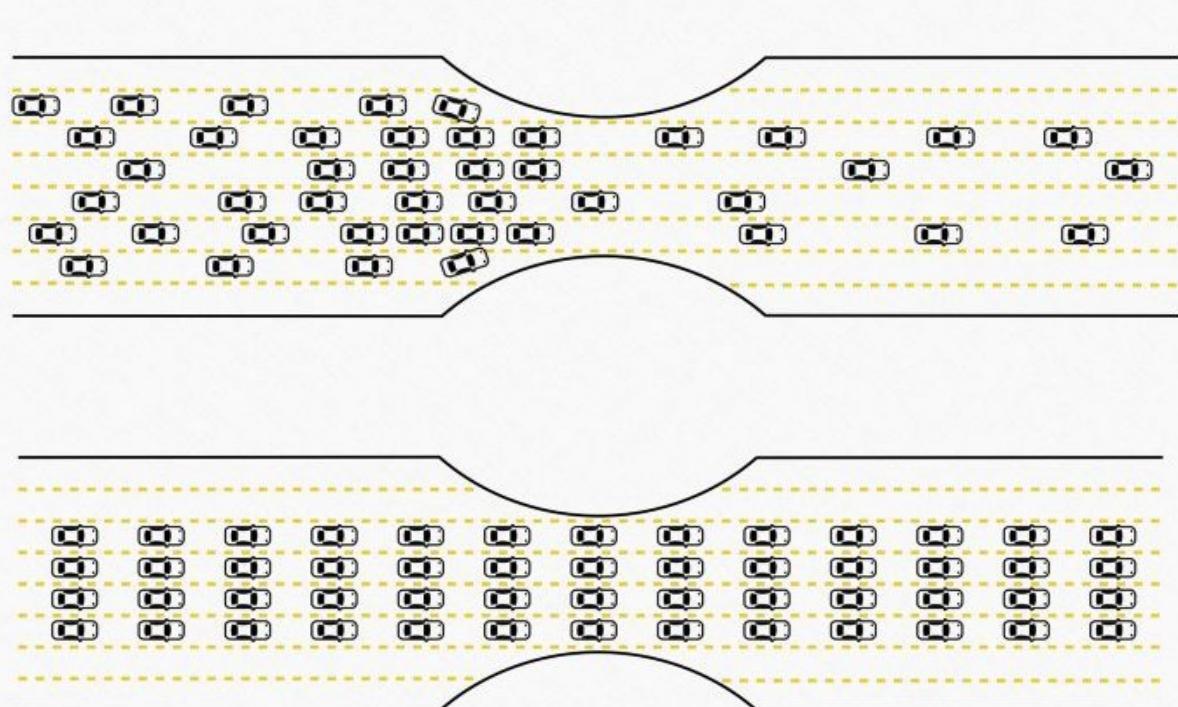


Bài toán Quán phở

- Mỗi bát phở đi qua 3 bước
 - Chần phở : 1 phút
 - Xếp thịt + chan nước: 30s
 - Bê đồ ra cho khách : 3 phút
- Có 1 người chần phở, 1 người xếp thịt, 2 người bê đồ

Câu hỏi:

- 1) Sau bao lâu thì xong 1 bát phở ?
- 2) Làm 100 bát phở mà ai cũng chạy hết công suất thì chuyện gì xảy ra ?
- 3) Có thêm 1 nhân sự nữa, thì xếp vào vị trí nào ?



3. Delivering Value: Kanban method



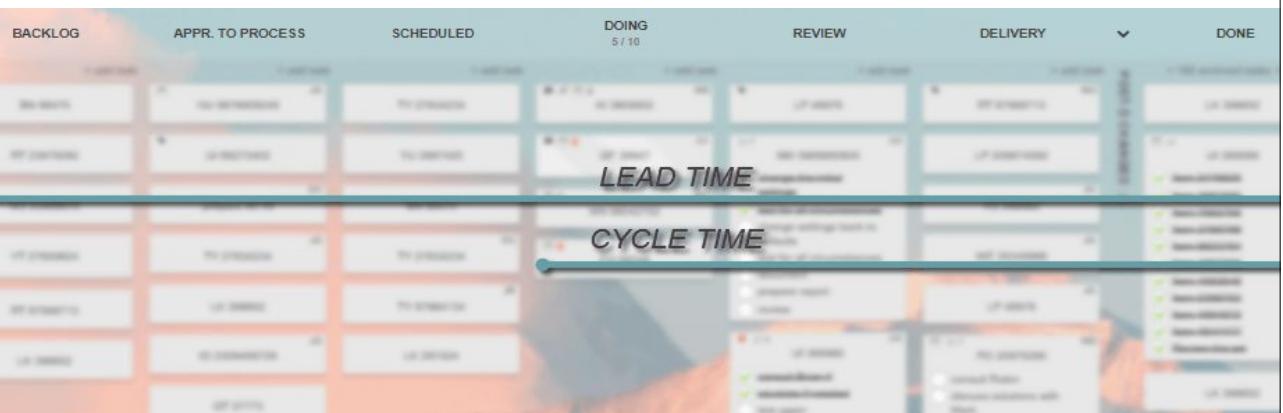
Work in Progress

- Work has been **started** but **not** yet been **completed**
- Consumes **investment capital** and delivers **no return on investment**
- Bottlenecks in process
- Risk in form of **potential rework**, since there may still be **changes** to items until those items have been accepted
- A lot of scrap and expensive rework if a change is required

WIP Limits

- Prevent team to take too many different pieces of work all at once
- Use Kanban board and **restrict the amount of work** in the system
- Help to identify and remove **bottlenecks**
- Reduce the risk of tied-up capital, rework and waste on the project
- Optimize the **throughput**, not optimize **resource utilization**

Lead time vs Cycle time



Group discussion

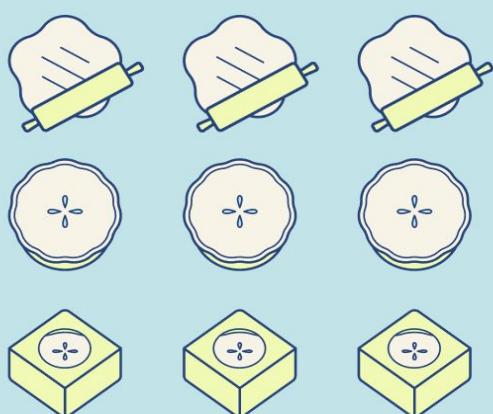


- Định luật Little:
 - Cycle Time = Work In Progress / Throughput
- Giả thiết:
 - WIP = 15 items
 - Throughput = 3 items/ sprint
- Câu hỏi:
 - Cần bao nhiêu Sprints để xử lý hết 15 items
 - Có cách nào để giảm Cycle time ?
 - Có cách nào để tăng Throughput ?

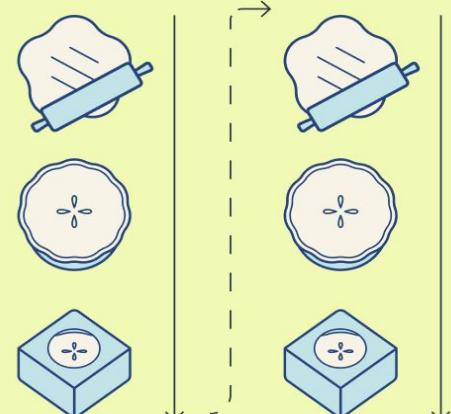
Working in Batches vs Continuous Flow



Working in Batches:



Continuous Flow:



Group discussion:



Bài toán Quán phở

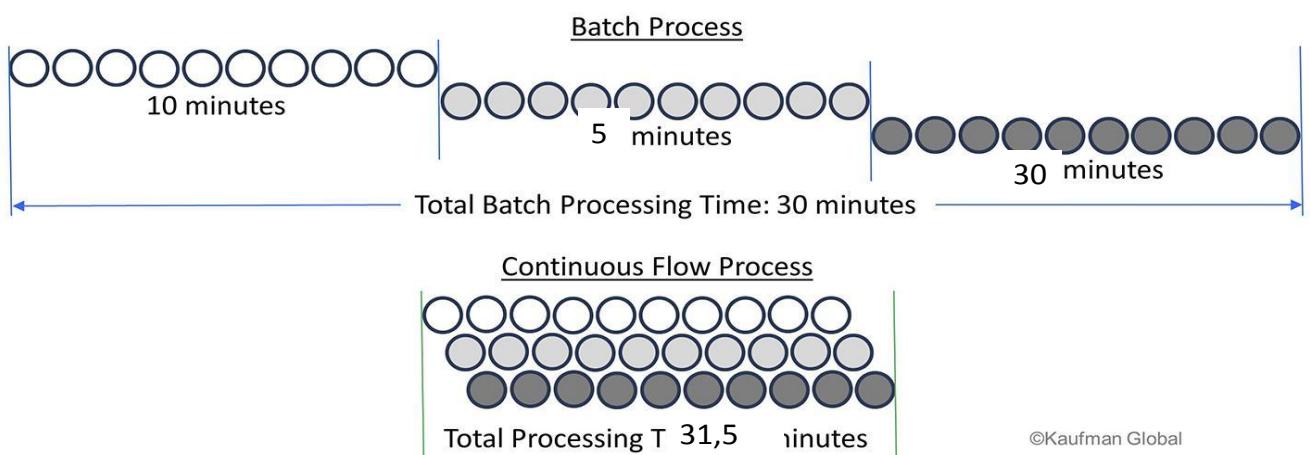
- Mỗi bát phở đi qua 3 bước
 - Chần phở : 1 phút
 - Xếp thịt + chan nước: 30s
 - Bê đồ ra cho khách : 3 phút
- Có 1 người chần phở, 1 người xếp thịt, 1 người bê đồ

Câu hỏi:

- 1) Sau bao lâu thì xong 1 bát phở ?
- 2) Xử lý theo lô (Batch processing)
 - Sau bao lâu thì xong 10 bát phở ?
- 3) Xử lý luồng liên tục (Continuous flow)
 - Sau bao lâu thì xong 10 bát phở ?



Xử lý theo lô và Xử lý theo luồng liên tục

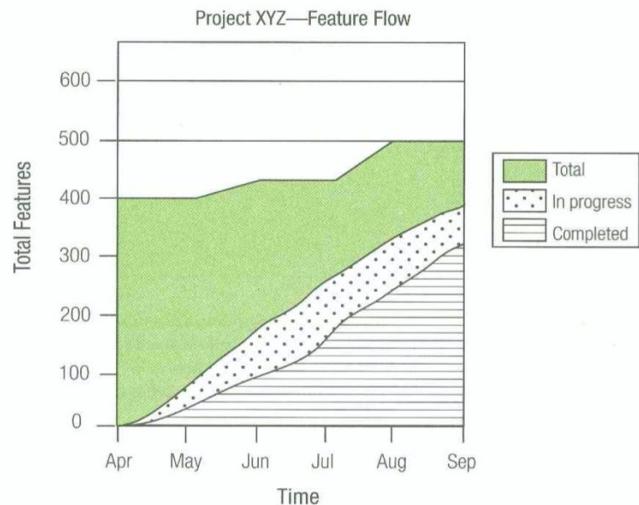


3. Delivering Value: Kanban method



Cumulative Flow Diagrams

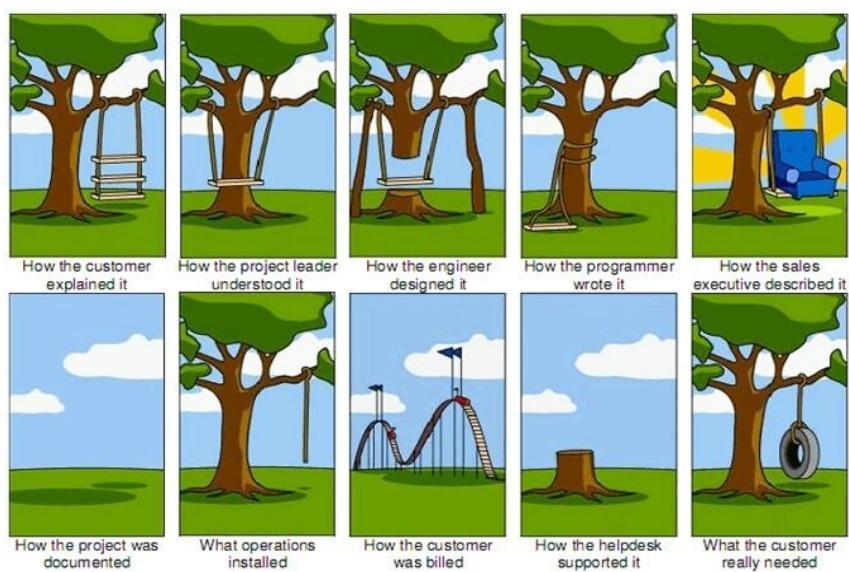
- Tool for tracking and forecasting the delivery of value
- Insight of issues, cycle times, likely completion date
- Little's Law: WIP zone
 - Vertical shows how many items are in the queue
 - Horizontal shows how long it will take to complete those items



Software development problem



Gulf of evaluation

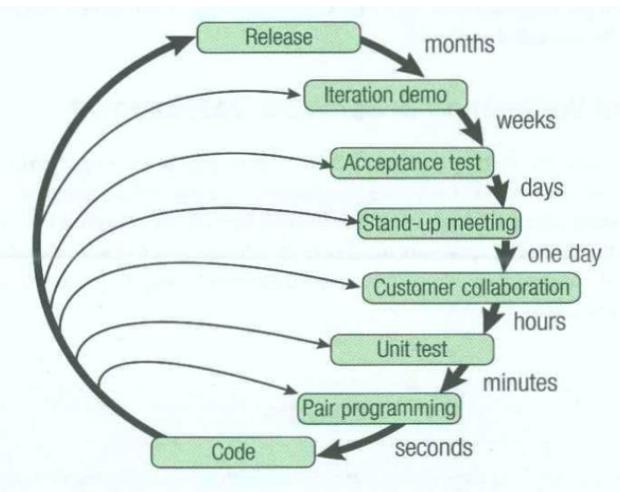


5. Verifying and Validating value



Frequent Verification and Validation

- Making mistakes is a part of being human
- Mismatch of expectations that arises when the team interprets the customer's end goal differently than intended
- Resolve problems as soon as possible, before they can grow bigger

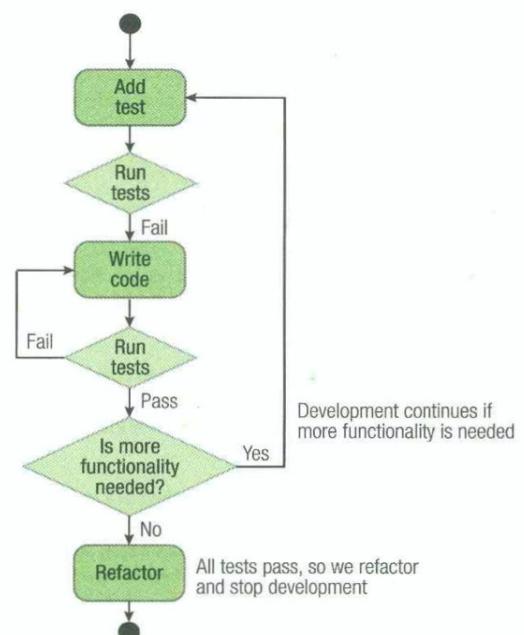


5. Verifying and Validating value



Test Driven Development (TDD)

- Test should be written **before** the code is written
- Think about how function should be tested **before** they actually begin developing the code

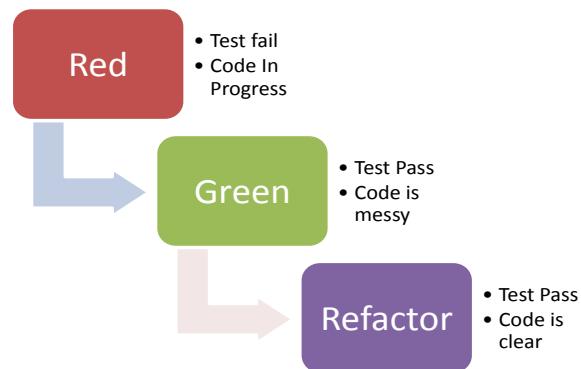


5. Verifying and Validating value



Red, Green, Clean

- **Red:** Initially, test will fail, because no code is written
- **Green:** Developer will write the code and running the tests until the code passed all the test.
- **Clean (Refactor):** Then, if necessary, they clean up the design to make it easier to understand and maintain without change the code behavior.

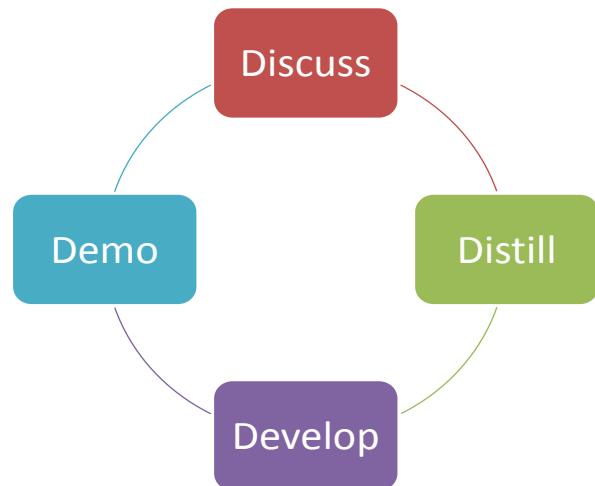


5. Verifying and Validating value



Acceptance Test-Driven Development (ATDD)

- Move the testing focus from the code to business requirement
- Some functional test framework
 - FIT (Framework for Integrated testing)
 - FitNesse
- Enforce the discussion of the “Definition of Done” at a very granular level of each requirement



5. Verifying and Validating value



Testing and Verification in Software Development

- Agile isn't only applicable to software development work. However, agile was originally developed in a **software development setting**
- Agile software project **automate as many of their test as possible**, which remove human element from their execution, **allow tests to be run more frequently at a lower cost**

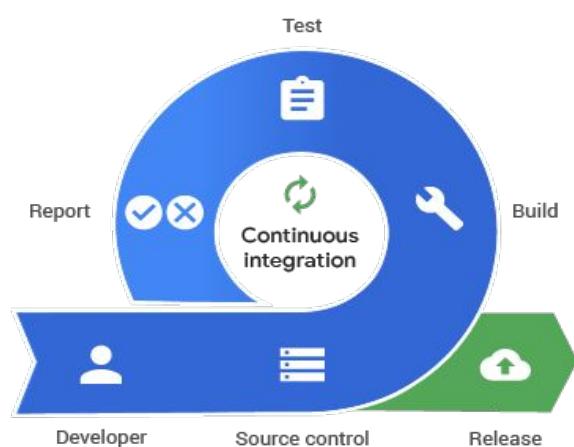


5. Verifying and Validating value



Continuous Integration

- Frequently incorporate new and changed code into their project code repository
- More frequent code commit, smaller amount of code need to be changed to allow new build or version of software to compile successfully, so we can **find and resolve problems as early as possible**
- Usually use with automated unit tests to ensure that the system still performs as intended after new code is integrated

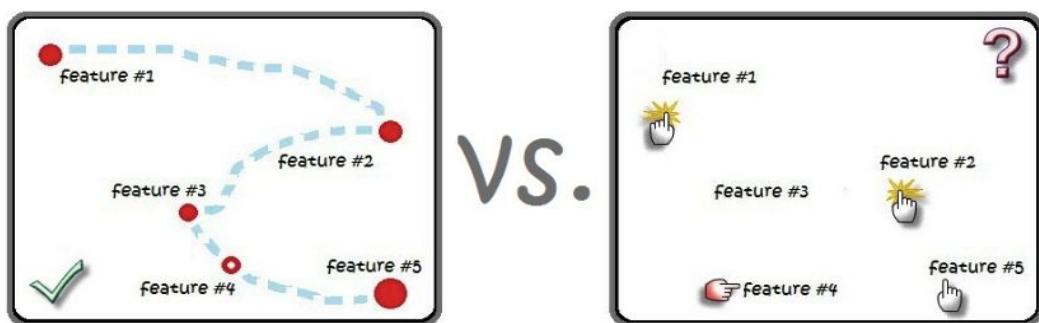


5. Verifying and Validating value



Exploratory Testing

- Differs from scripted testing that attempts to exercise all the functional components of a system
- Relies on the tester's autonomy, skill, and creativity in trying to **discover issues and unexpected behavior**
- Use a long with scripted testing to increase test coverage and reduces the risk that a defect won't be detected



5. Verifying and Validating value



Usability Testing

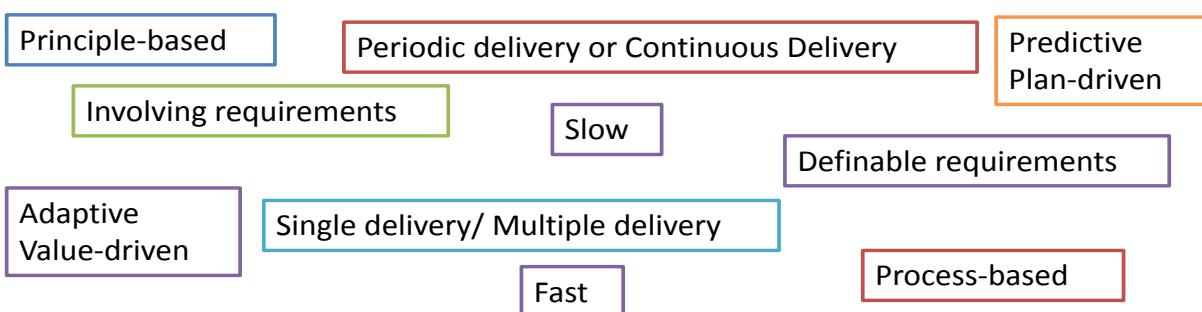
- How will an **end user** response to the system under **realistic conditions**?
- Diagnose **how easy** it is to use the system
- Uncover where there are problems that might need redesign or changes
- Involves observing users as they interact with system for the first time



Group discussion: Phân biệt sự khác nhau



	Traditional	Agile
Requirements		
Delivery Cadence		
Time to market		
Management Approach		
Development Approach		



Group discussion: Phân biệt sự khác nhau



	Traditional	Agile
Requirements	Definable requirements	Involving requirements
Delivery Cadence	Single delivery/ Multiple delivery	Periodic delivery or Continuous Delivery
Time to market	Slow	Fast
Management Approach	Process-based	Principle-based
Development Approach	Predictive Plan-driven	Adaptive Value-driven

Review



- Introduction
 - Traditional delivery vs Agile delivery
 - Value/ Non-value (Waste) and Anti-value
 - Value-driven delivery definition
- Identify Value
 - User story
 - 3C of User story
 - INVEST in User story
 - Risk-adjusted backlog
 - Regulatory Compliance
- Prioritize Value
 - Simple scheme
 - Requirement Prioritization Model
 - Monopoly money/ 100 points
 - Dot voting
 - MOSCOW
 - Kano analysis
 - Relative prioritization
- Delivery Value
 - Minimum Viable Product (MVP)
 - Kanban method and Kanban board
 - Theory of Constraints
 - WIP and Limit WIP
 - Continuous Flow
 - Lead time and Cycle time
 - Little's Law
 - Cumulative Flow Diagram
- Verify and Validate Value
 - Frequent Verification and Validation
 - TDD/ Red-Green-Clean
 - ATDD
 - Continuous Integration
 - Automation Testing
 - Exploratory Testing
 - Usability Testing

Assignment!!!

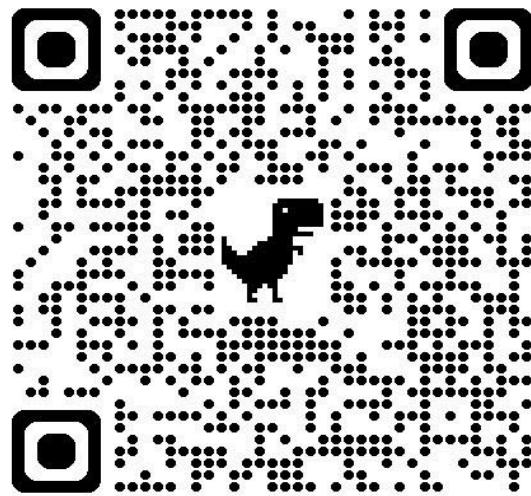


- Làm BTVN trên LMS: Value Driven Delivery
- Học nhóm
- Thực hành lên độ ưu tiên cho backlog của mình
- Book lịch sau bài final
 - $\geq 65\%$: 2 tuần sau bế giảng
 - $< 65\%$: 3 tuần sau bế giảng

Group discussion



- Nội dung nào mới biêt?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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Adaptive Planning & Tracking



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Overview



Group discussion



	Lên kế hoạch truyền thống	Lên kế hoạch linh hoạt
Thay đổi		
Tiếp cận		
Quy trình		
Giấy tờ		
Hoạt động sản xuất		

Các hoạt động diễn ra tuần tự và tuyến tính

Chốt thời gian và nguồn lực, rồi đưa là phạm vi công việc

Chốt phạm vi công việc, rồi đưa ra tiến độ và chi phí

Khám phá và chào đón thay đổi

Nhiều kế hoạch và tài liệu chi tiết

Các hoạt động diễn ra lặp đi lặp lại (iterative) ở nhiều mức

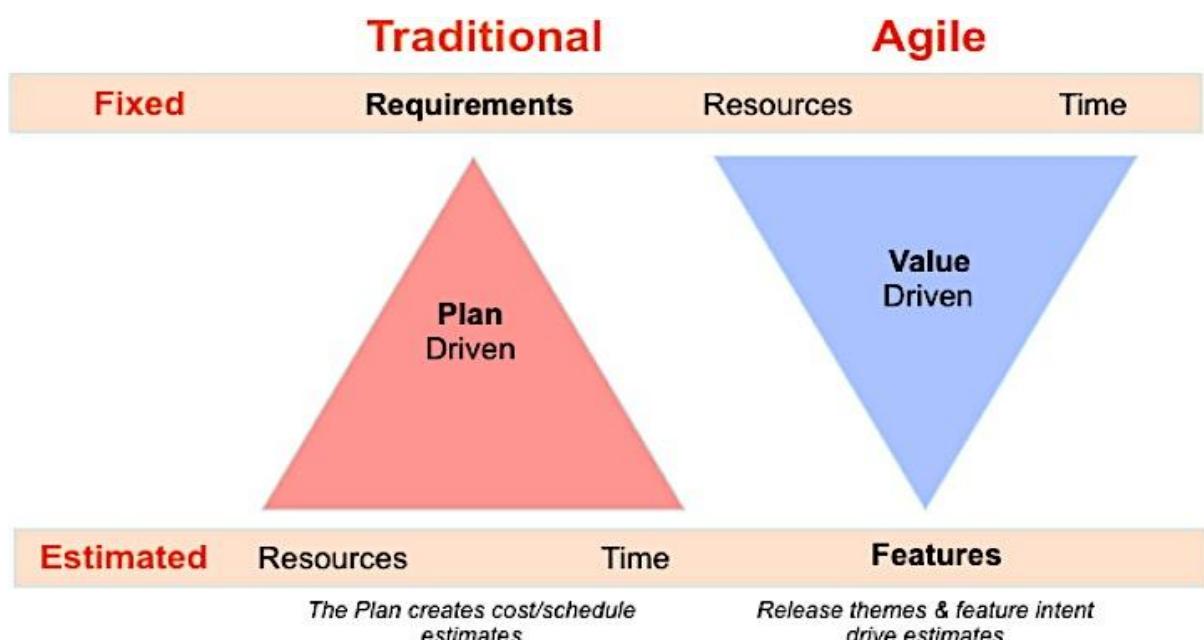
Lên kế hoạch vừa đủ, và vừa làm vừa điều chỉnh

Lên kế hoạch chi tiết từ trước

Cố gắng giảm thiểu thay đổi

Các tạo tác thô sơ và đơn giản

Traditional planning vs Agile planning



Group discussion



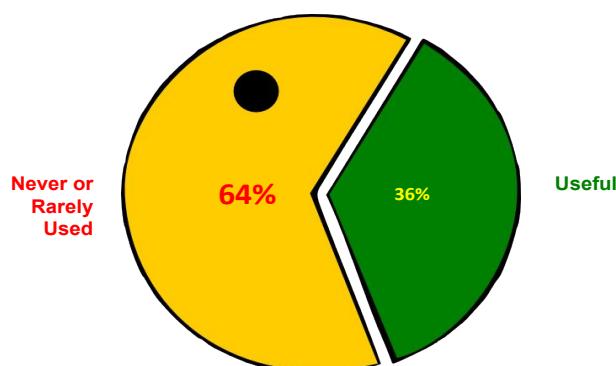
	Lên kế hoạch truyền thống	Lên kế hoạch linh hoạt
Thay đổi	Cố gắng giảm thiểu thay đổi	Khám phá và chào đón thay đổi
Tiếp cận	Lên kế hoạch chi tiết từ trước	Lên kế hoạch vừa đủ, và vừa làm vừa điều chỉnh
Quy trình	Chốt phạm vi công việc, rồi đưa ra tiến độ và chi phí	Chốt thời gian và nguồn lực, rồi đưa là phạm vi công việc
Giấy tờ	Nhiều kế hoạch và tài liệu chi tiết	Các tạo tác thô sơ và đơn giản
Hoạt động sản xuất	Các hoạt động diễn ra tuần tự và tuyến tính	Các hoạt động diễn ra lặp đi lặp lại (iterative) ở nhiều mức

1. Introduction - Traditional planning fails

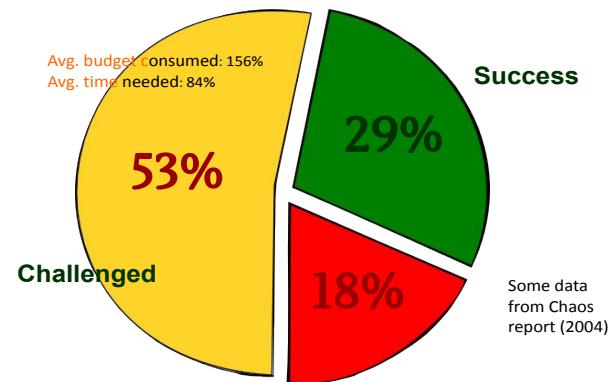
"He who fails to plan is
planning to fail"
- Sir Winston Churchill

1. Introduction - Traditional planning fails

- Usage of Features



- Project Success Rate



Source: Jim Johnson, 2000

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1. Introduction - Traditional planning problems

“Planning Risks” Graph



Corollary Risk of Doing Too Much Up-Front Planning



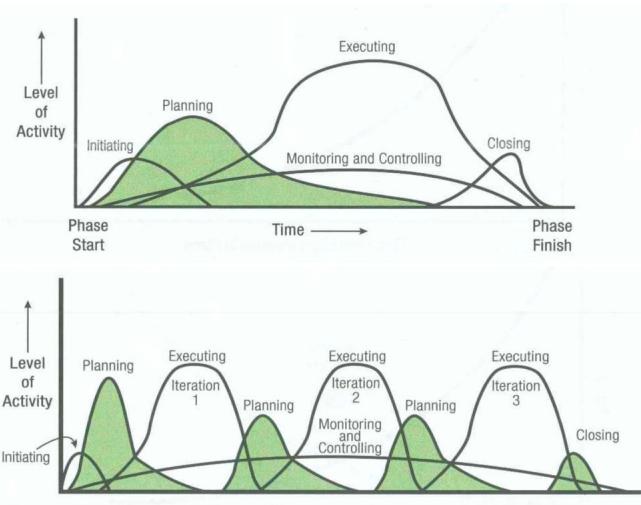
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1. Introduction - Agile Planning Characteristics

Adaptive Planning

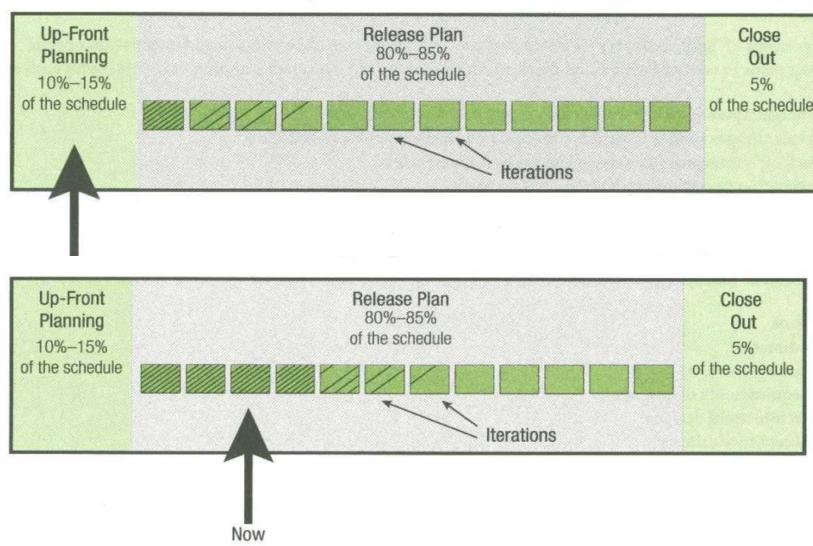
- Trial and demo uncover the true requirement, which then require replan
- Planning activities don't directly add business functionality, they could be **considered waste**.
- Agile planning is less of an up-front effort, and is instead done throughout the project
- Midcourse adjustments are the norm
- **Adaptive planning = Plan to replan**



1. Introduction - Agile Planning Characteristics

“Just in Time” Planning

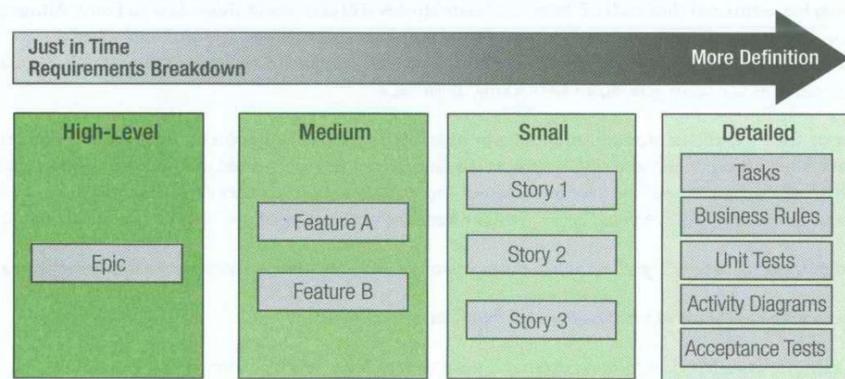
- The project requirements are broken down “just in time” or at the “last responsible moment” as the team gets closer to doing the work



1. Introduction - Agile Planning Characteristics

Progressive Elaboration

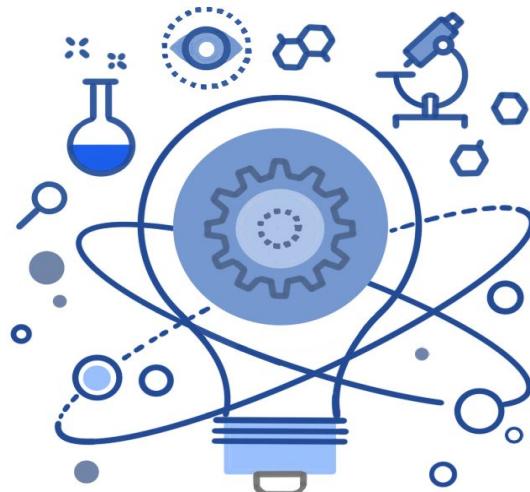
- Progressive elaboration refers to the process of **adding more detail** as new information emerges
- The highest-level requirements (such as epics) are progressively refined into features, stories, and then the most detailed pieces of work—such as tasks, business rules, acceptance tests, and so on.



1. Introduction - Agile Planning Characteristics

Agile Discovery

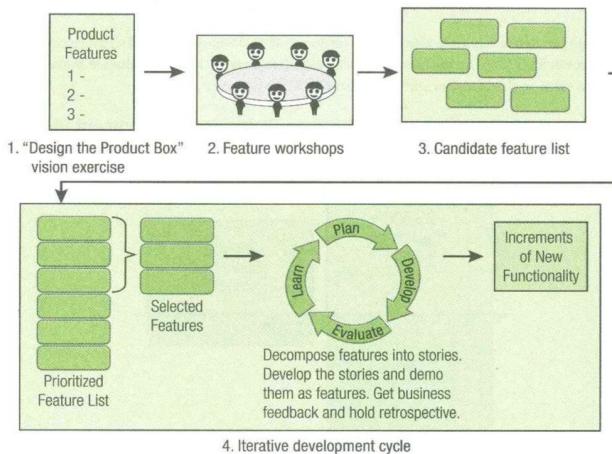
- Emergent plans and designs versus predictive plans and designs
- Pre Planning activities together consensus on the best approach to follow
- Backlog refinement (grooming) and how it is performed
- Estimating uncertain work versus certain work
- The characteristics of new product development versus well-understood and repeatable projects



1. Introduction - Agile Planning Characteristics

Value-Based Decomposition

- Continuation of the process of value-based analysis.
- Elicits requirements from stakeholders
- Groups, breaks down, and ranks those requirements
- Pulls the prioritized requirements into the development process.



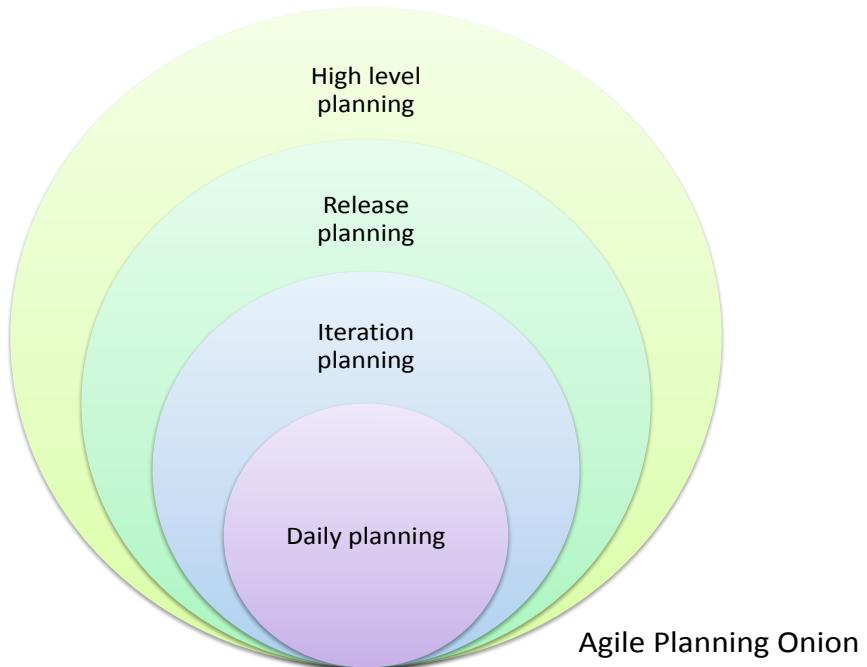
1. Introduction - Agile Planning Characteristics

Timeboxing

- A short, fixed-duration period of time in which a defined set of activities or work is undertaken
- If the work planned for the timebox isn't complete when the time runs out, we stop what we're doing and simply move the uncompleted work into another timebox.
- Adjust the scope to achieve the highest-priority, best-quality product within a fixed cost and timeframe
- Provide frequent checkpoints where the team can gauge their progress and replan their ongoing approach



1. Introduction - Agile Planning Characteristics



2. Daily Planning



Group discussion



Review lại kiến thức về buổi Daily Meeting

1. Ý nghĩa của buổi họp ?
2. Tổ chức ở đâu ?
3. Tổ chức khi nào ?
4. Trong thời gian bao lâu ?
5. Cách thức tổ chức buổi họp ?
6. 3 câu hỏi trong buổi họp?
7. Tại sao lại họp đứng ?
8. Đây có phải là buổi họp báo cáo ?
9. Đây có phải là buổi họp giải quyết vấn đề ?

3. Iteration Planning



First half

- The product owner describes the backlog items they'd like to see developed in the sprint,
- The team members select a set of items that they think are achievable

Second half

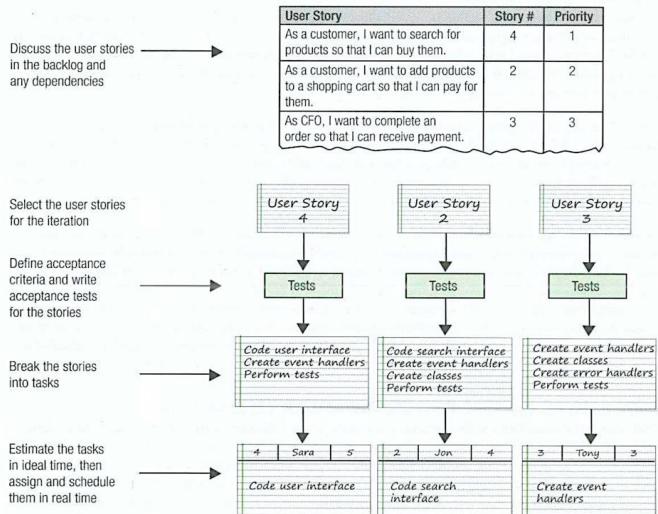
- The team breaks down the selected backlog items into the smallest unit of work – tasks – to come up with a list of the action items for the iteration
- Discuss how the work will be done, and make a commitment to undertake the work within the sprint timebox

3. Iteration Planning



HOW

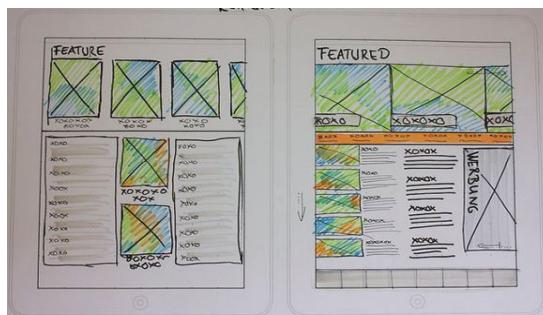
- Discuss the user stories in the backlog
- Select the user stories for the iteration
- Define the acceptance criteria and write the acceptance tests for the stories
- Break stories into tasks
- Estimate the tasks



3. Iteration Planning



As a vacation planner, I want to see photos of the hotels.



Code the middle tier (8 hours)
Code the user interface (4)
Write test fixtures (4)
Code the foo class (6)
Update performance tests (4)

Relative Sizing and Story Points

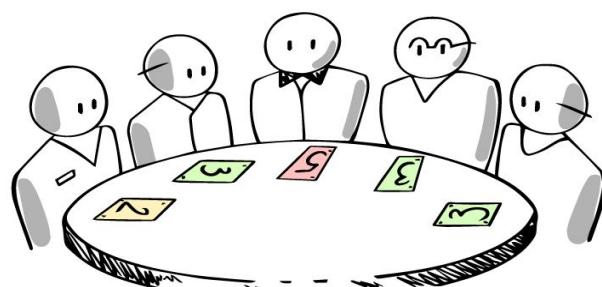
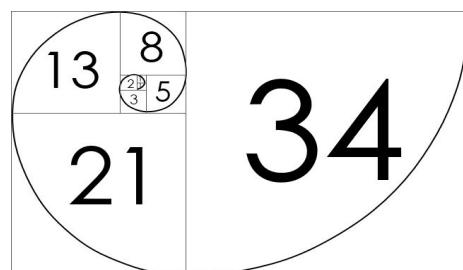


- Why:
 - People work at different speeds
 - Removes discussions like "this would only take me two hours" and allows the team to focus on the work.
 - Estimates weren't made in a vacuum
- Making comparative (relative) estimates
- Relative unit called "story points"
 - Give a function 1 story points (or 2, or any number that you want)
 - Compare other functions with that function

Planning Poker

- Most common way
- Collaborative game
- Fibonacci sequence
- Facilitator: Product Owner, ScrumMaster or team member
 - Read a user story
 - Count to three, lay down the cards
 - When the range is small and there is a rough consensus on the estimate, the largest estimate is selected
 - Team will discuss the outlier
 - Do another round

Planning Poker



Planning poker - Example



Estimator	Round 1	Round 2
Nam	3	5
Ngân	8	5
Thắng	2	5
Long	5	8

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Group discussion: Thực hành Planning Poker

- Đưa ra ước lượng story point cho các món ăn dưới đây
 - Bằng cách so sánh độ khó của việc nấu các món ăn sau với công việc Nấu cơm (1 point)
 - Tool online: <https://planningpokeronline.com/>

Chả cỗm rán



Mực hấp nhồi thịt



Tôm cuộn khoai tây



Bê tái chanh



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Relative Estimating Problem



- Can you distinguish a 1-point story from a 2?
 - How about a 17 from an 18?
- Use a set of Fibonacci numbers that make sense:
 - 1, 2, 3, 5, 8, 13
- Stay mostly in a 1-10 range



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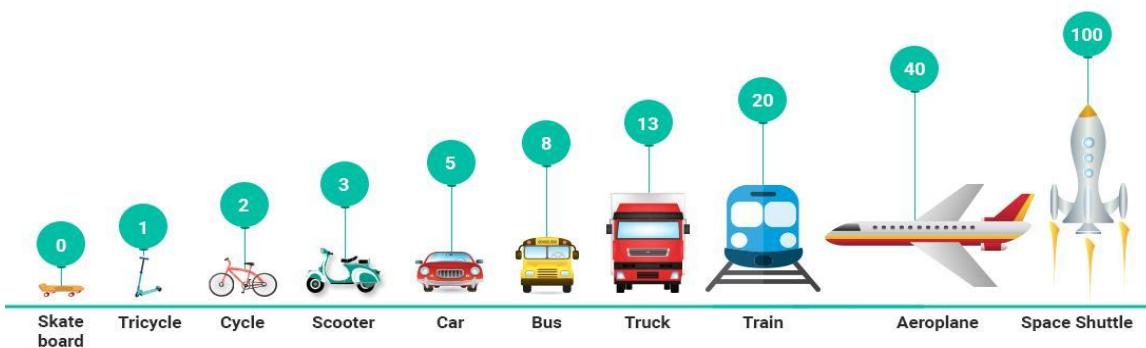
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Relative Sizing and Story Points



Guidelines for Using Story Points

- The team should own the definition of their story points
- The point sizes should be relative
- When disaggregating estimates, the totals don't need to match
- Story point estimates should be all-inclusive
 - Complexity, work effort, and risk should all be included in the estimates



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Estimating the Tasks



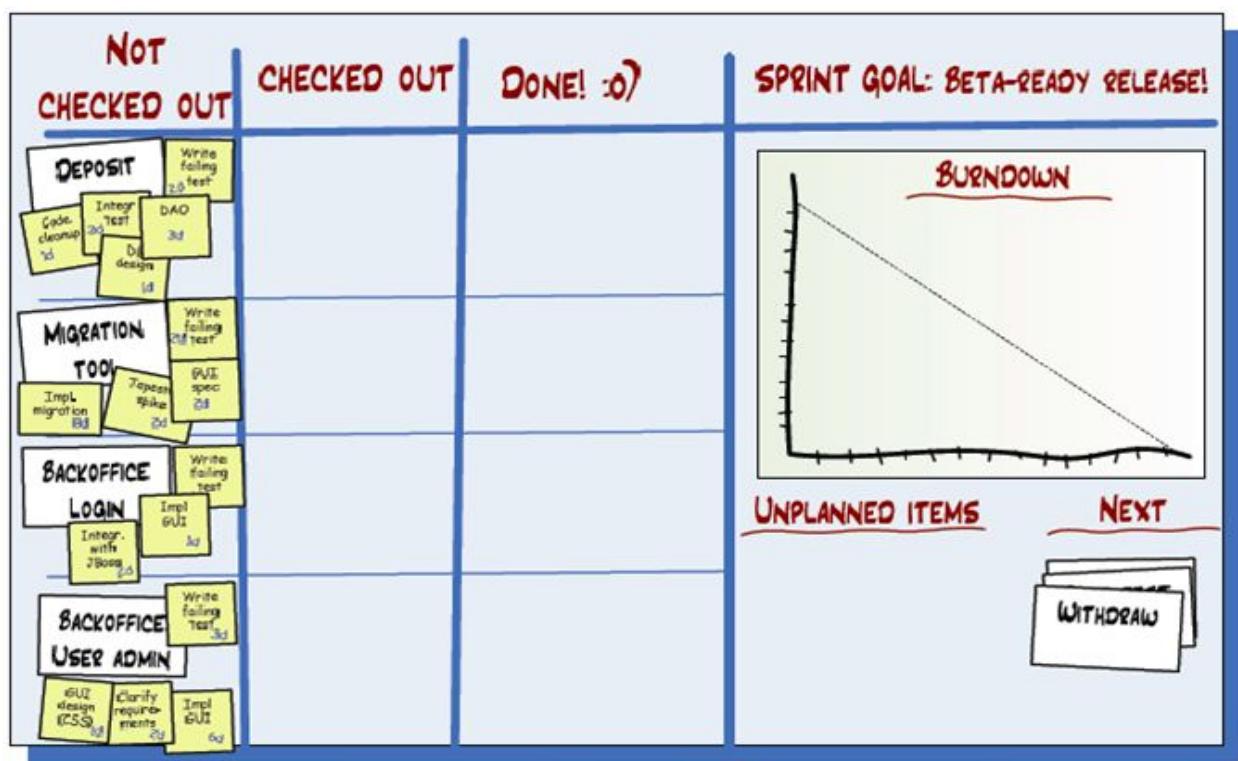
Ideal Time = effort

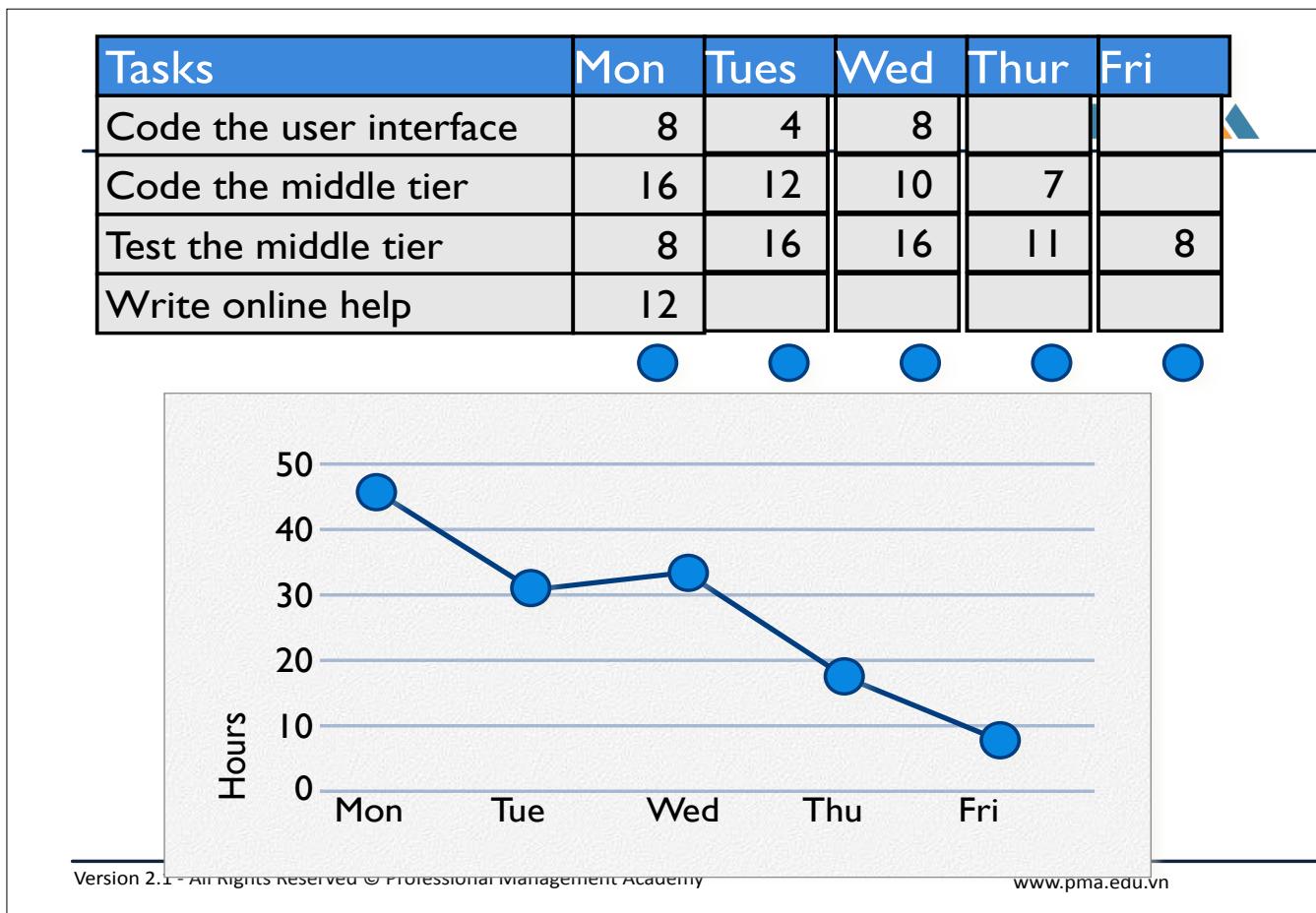
- How long a task will take if all other peripheral work and distractions are removed.
 - The only thing that is being worked on
 - There will be no interruptions
 - We have everything we need to complete that work item

Real Time = duration

- The actual time to complete the task, includes breaks, distractions, delays
 - Difficult to estimate, must be derived

Scrum Board





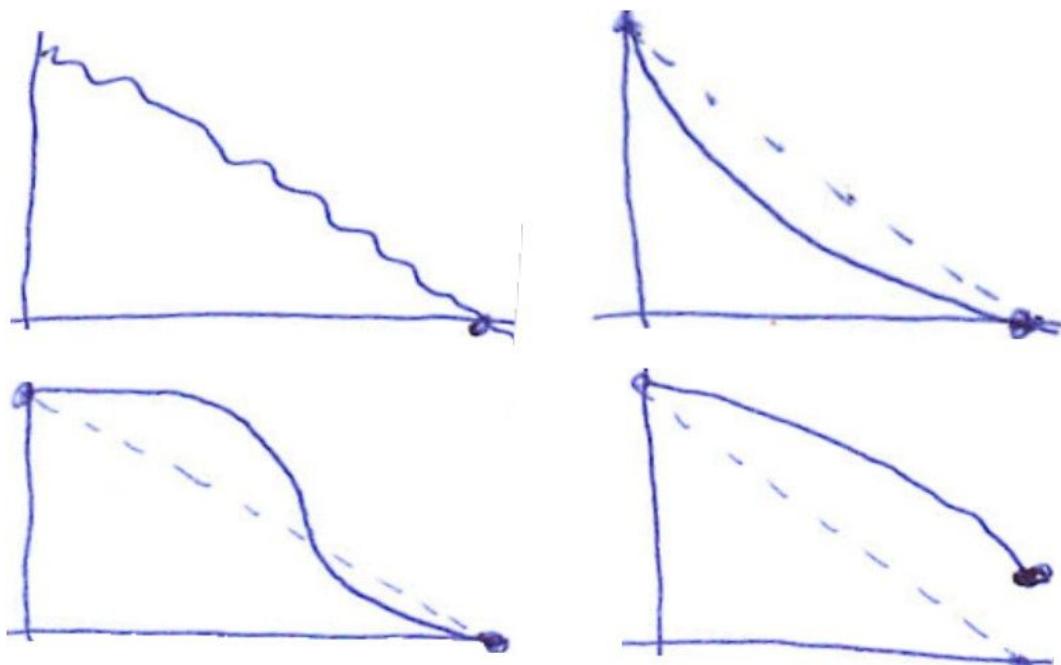
A sprint backlog



- Work for the sprint emerges
- Estimated work remaining is updated daily

Tasks	Mon	Tues	Wed	Thur	Fri
Code the user interface	8	4	8		
Code the middle tier	16	12	10	4	
Test the middle tier	8	16	16	11	8
Write online help	12				
Write the foo class	8	8	8	8	8
Add error logging			8	4	

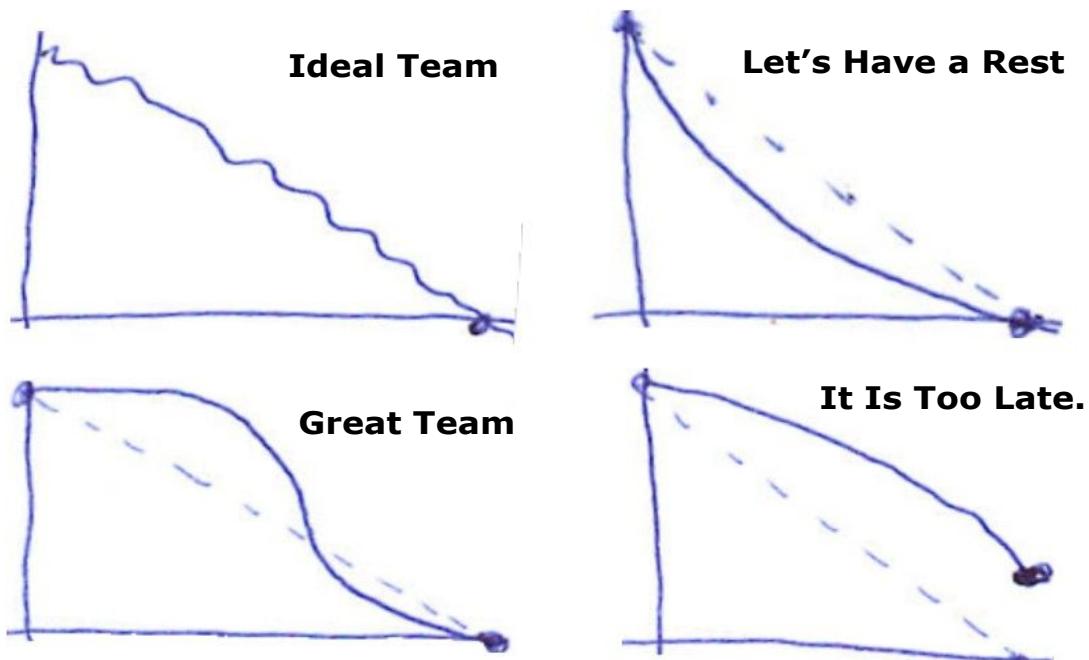
Group discussion: Đánh giá kết quả làm việc của nhóm



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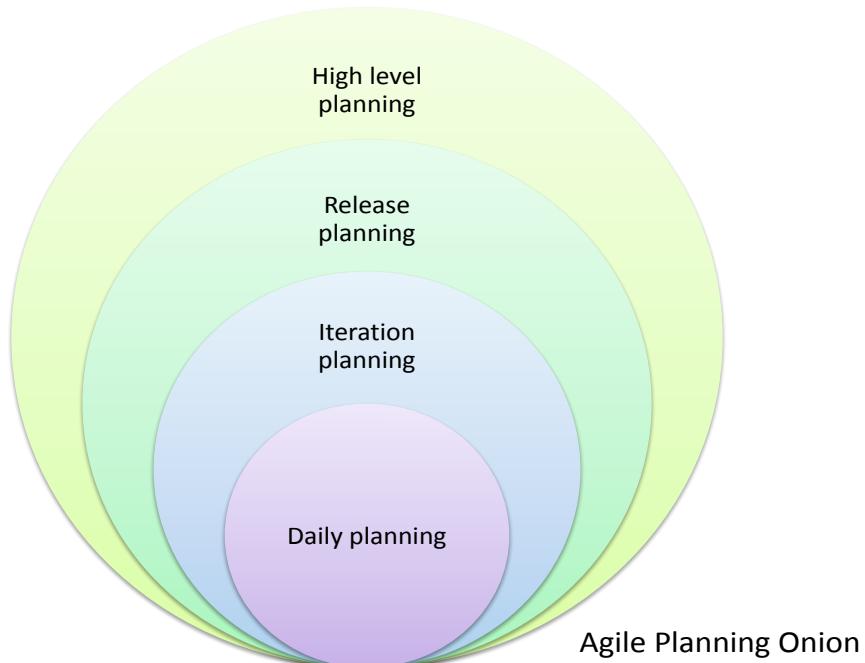
What a Burndown Chart Can Say?



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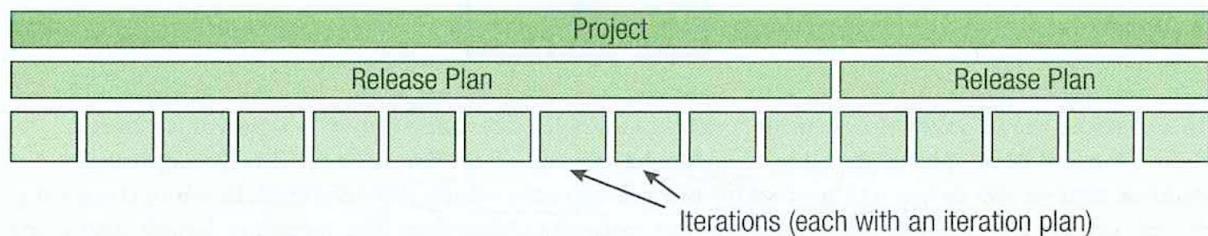
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Agile Planning Onion

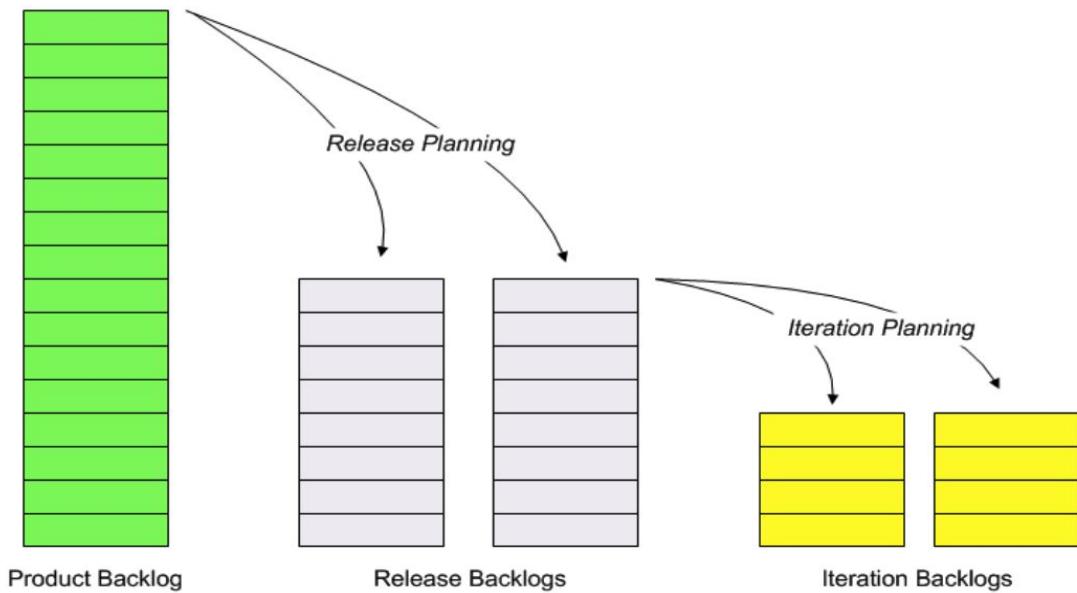


4. Release planning - Release and Iteration Planning

- An iteration is a short, timeboxed development period, typically one to four weeks in duration
- A release is a group of iterations that results in the completion of a valuable deliverable on the project



4. Release Planning- Release Backlogs

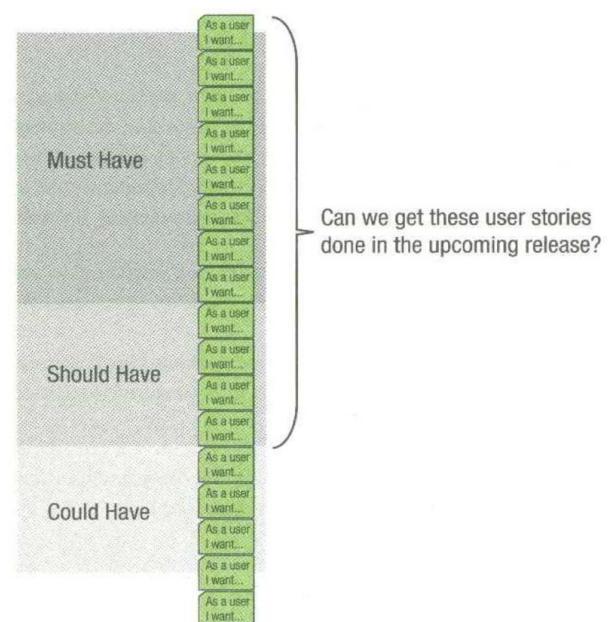


4. Release Planning



Selecting the User Stories for the Release

- Delivering useful and valuable functionality to the customer
- Date driven or functionality driven
- What proportion of the user story backlog can be delivered in this release?



4. Release planning



WHY

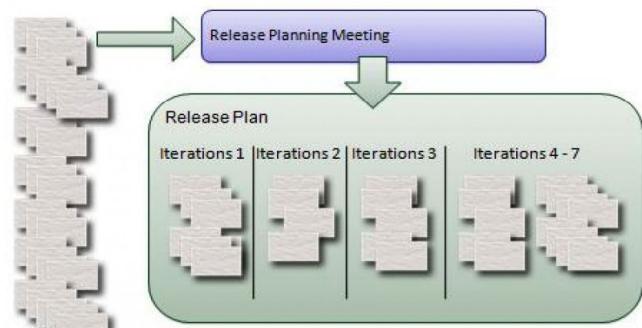
- Determine which stories will be done in which iterations for the upcoming release and, in less detail, for the subsequent releases

WHO

- All the stakeholders are represented

WHEN

- Before we start work on each new release
- Done in a meeting



4. Release planning



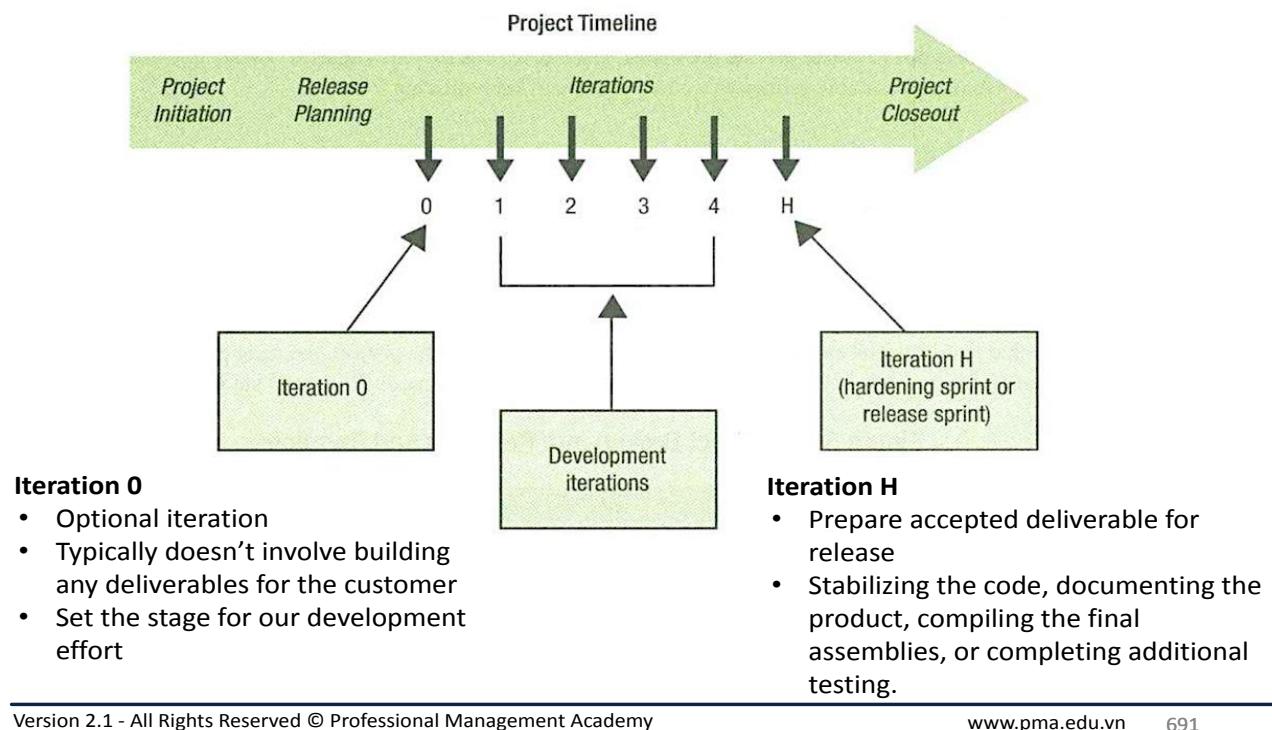
HOW

- Assess the prioritized backlog and review the sizing of stories, resizing them as needed.
- Sort the stories by release, selecting those that will be in the upcoming release, the next release, and future releases.
- Refine our initial outline or roadmap for the upcoming release, changing it as needed
- Slice the stories that will be done in the upcoming release into pieces of work that are small enough to be completed within one iteration.

OUTPUT

- A shared understanding of the release goal
- A list of the stories to be done in the upcoming release, sliced into manageable chunks
- A roadmap for completing those stories (i.e., a plan for what we will accomplish in each iteration)
- A rough outline of what will be done in the future releases

4. Release planning - Types of Iterations

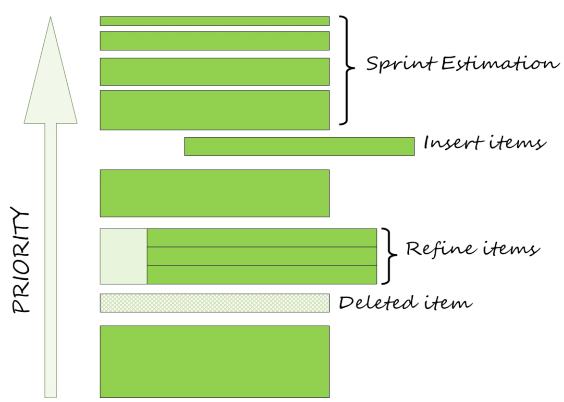


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4. Release Planning-Refining (Grooming) the Backlog

- Refining the backlog involves progressively adding more detail and adjusting the estimates and priorities of the backlog items, as well as adding new work and removing items that are no longer important
 - New stories may be added
 - Existing stories may be reprioritized or removed
 - Stories may be sliced into smaller chunks or resized
- Sometime mentioned as “Requirements Reviews”
- Any changes to the backlog should be discussed in the next planning meeting to ensure that they are understood by everyone



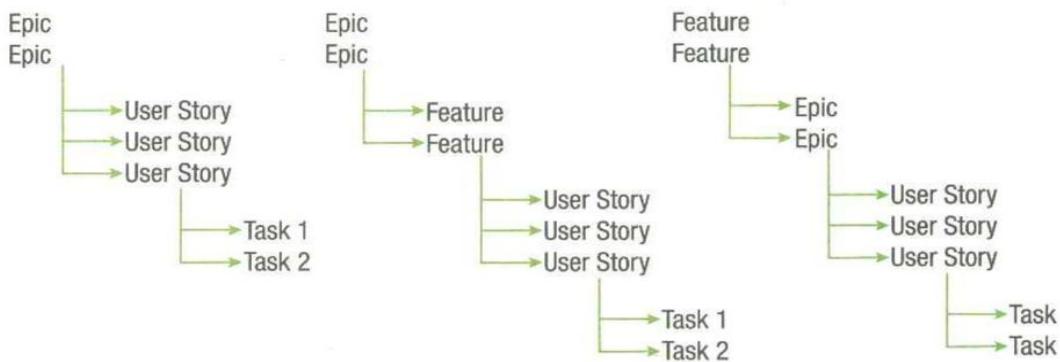
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4. Release Planning- Slicing the Stories



- **Epics:** large user stories that span one or more iterations—and there is no single, universally agreed-upon way to do this
- There isn't one “right” way to structure a requirements hierarchy

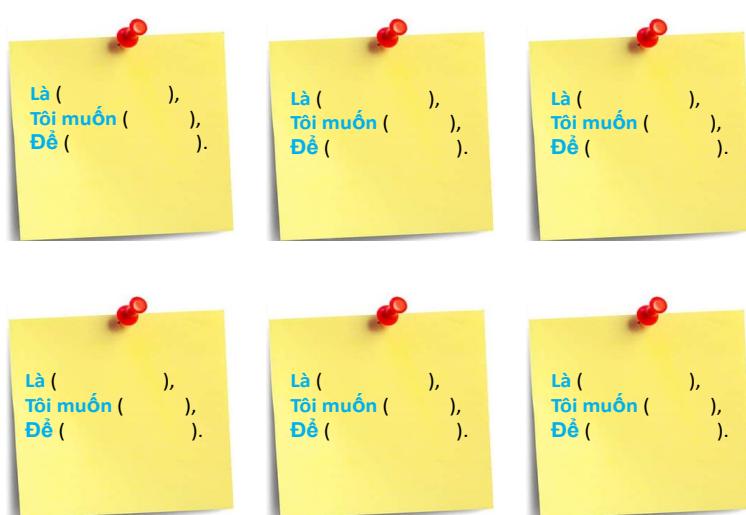


Group discussion: chia nhỏ User Story



Gợi ý: Hãy nhớ xem flow mua sắm Shopee của bạn như thế nào? Có thể chia nhỏ theo flow đấy được không?

Là khách hàng,
Tôi muốn thanh toán
cho hàng hóa ở trong
giờ mua sắm,
Để tôi có thể nhận
được hàng hóa tại
nhà.



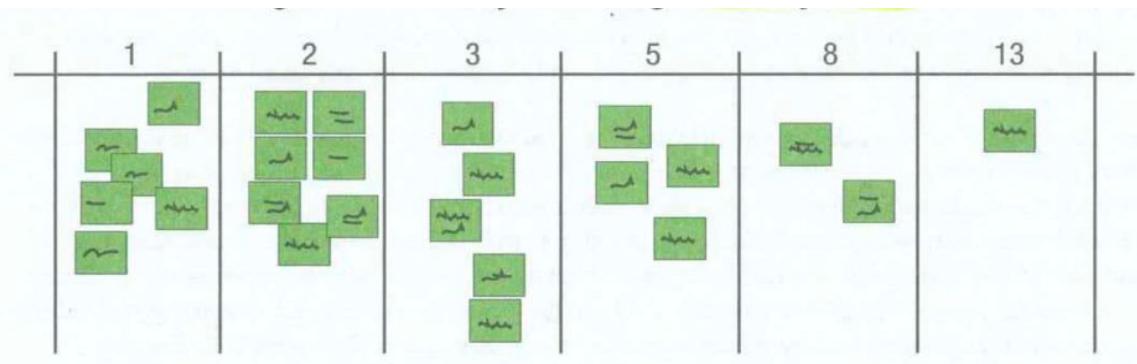
Chia theo flow



4. Release planning - Affinity Estimating

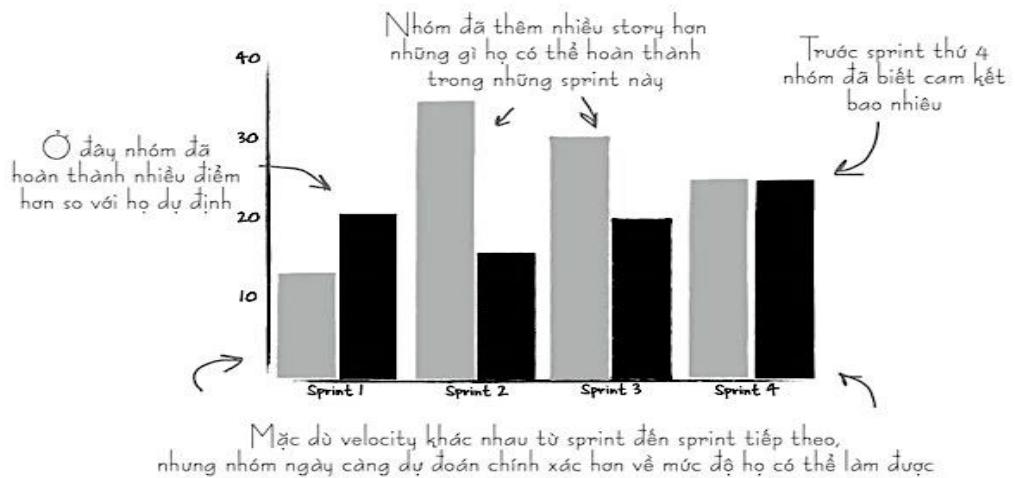


- Grouping items into similar categories or collections
- Comparative view of the estimates and provides a reality check
- Easier to see whether stories with similar estimates are in fact comparable in size.



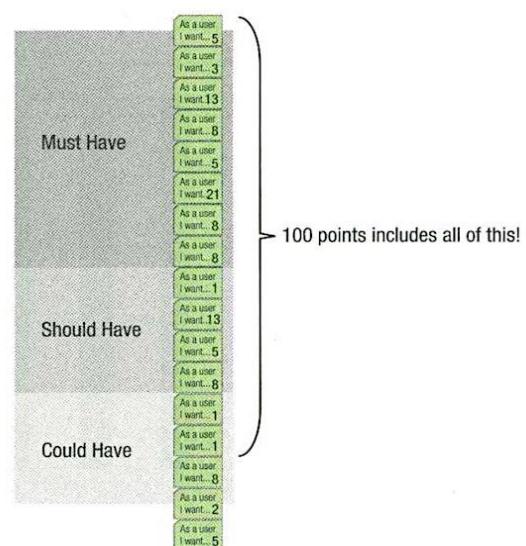
4. Release planning - Velocity and Velocity Chart

- Velocity = number of story points completed per iteration
- More accurately stated, it is measured in terms of the stabilized **number of Story Points a team can deliver per sprint of a given length, and with a given definition of Done.**



4. Release planning - How Much Can We Get Done?

- Velocity = number of story points completed per iteration
- Calculate average or most likely Velocity
- Number of story points for a release = velocity * number of iteration
- Add up the story points for the backlog items, working from the top down, until we reach the story points



Group discussion: Tính Velocity



- Team A có velocity của 4 sprint gần nhất 38, 29, 38, 39 point. Velocity dự kiến cho sprint tới là bao nhiêu ?
- Làm thế nào để ước lượng velocity cho Sprint đầu tiên (chưa có dữ liệu lịch sử) ?
- Team A có velocity của 4 sprint gần nhất 38, 29, 38, 39 point. Team B có velocity của 4 sprint gần nhất 46, 36, 38, 36. Team nào có performance tốt hơn ?

Group discussion:



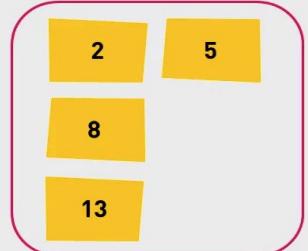
Estimating Velocity for the 1st Iteration

- Based on each person's capacity, which of the top-priority stories in the backlog for this release can we realistically commit to finishing in the first iteration
- The total points for these stories become our initial velocity estimate
- Because of the uncertainty of estimating initial velocity, some teams add a buffer to their velocity estimates for the first few iterations

Team Ignition: Sprint 1

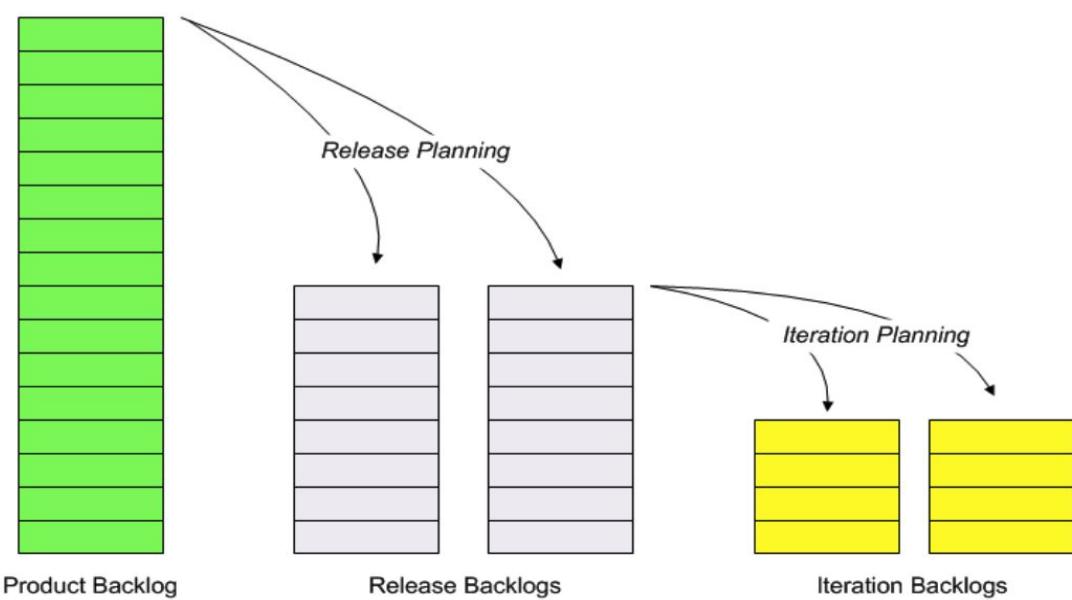
Planned Done

2	5
8	8
13	5



Velocity: 28

Agile release planning



5. High-Level Planning: Product Vision



What ?

- A vision is a desired end-state, often described as a set of desired objectives and outcomes.

Why ?

- Defining and sharing a clear vision at the start of the project can enable good relationships and alignment throughout the project.

When?

- When a new project is commenced, it is critical to have a clear vision of the desired end objectives.



Elevator statement (elevator pitch)



- An **elevator statement** (often referred to as a vision statement or an elevator pitch) is a short description of a product, that helps us focus on product goals with an understanding of what the product is, what it is not, who it's for and how it's different compared to the competition.
- **The product owner** creates, manages and own the elevator statement. However, it's essential the whole team contributes when created the vision for the product.

For:	Target customers
Who:	Need (opportunity or problem)
The:	Product/service name
Is a:	Product category
That:	Key benefits/reason to buy
Unlike:	Primary competitive alternative(s)
We:	Primary differentiation



The Elevator Pitch

- For [individual construction teams]
- who [need track road access on the construction site],
- the [Road Closure System (RCS)]
- is a [safety communication tool],
- that [informs crews when roads will be closed].
- Unlike [the current paper-based system]
- our product [is web based and can be accessed by all contractors anywhere anytime].

Thực hành: Tạo tầm nhìn sản phẩm



Cú pháp

- Dành cho: <khách hàng mục tiêu>
- Người có nhu cầu: <nhu cầu của khách hàng>
- <tên sản phẩm> là <nhóm sản phẩm> mà <lợi ích chính>
- Không giống như <tên đối thủ>, sản phẩm có <sự khác biệt độc đáo>

Elevator Pitch sentence structure:
FOR (target customer), WHO HAS
(customer need), (product name) IS A
(market category) THAT (one key benefit).
UNLIKE (competition), THE
PRODUCT (unique differentiator).

Xoá nội dung này đi và tạo ra một tầm nhìn tốt hơn

- Dành cho Khách hàng cá nhân
- Những người có nhu cầu **vay tiêu dùng**
- App **Đu Đủ** là một ứng dụng **tài chính cá nhân** mà **cho phép thực hiện các khoản vay nhanh chóng**
- Không giống các app cùng loại: **F88**, **hay FECredit** App **Đu đù** giúp KH ký hợp đồng nhanh chóng mà không phải chứng minh thu nhập

5. High-Level Planning



WHO

- Participants: product owner, sponsor, key members of the delivery team, major stakeholders

HOW

- Identifying and roughly sizing the product features and user stories
- Create our initial **coarse-grained estimates** using tools such as affinity estimating, T-shirt sizing, story maps, and the product roadmap—that we will progressively refine as the project continues.

OUTPUTS

- An updated, prioritized backlog of user stories and risk response actions
- High-level (coarse-grained) relative estimates for each user story
- A release goal (i.e., deliverable) focused on customer value
- A target date for the release

5. High-Level Planning



“Coarse-Grained” Requirements

- Initially keep the requirements “coarse-grained”, and then progressively refine them as the planning process continues.
- Keep the overall design balanced, prevent over development
- Delays decisions on implementation details until the “last responsible moment.”

coarse-grained



fine-grained

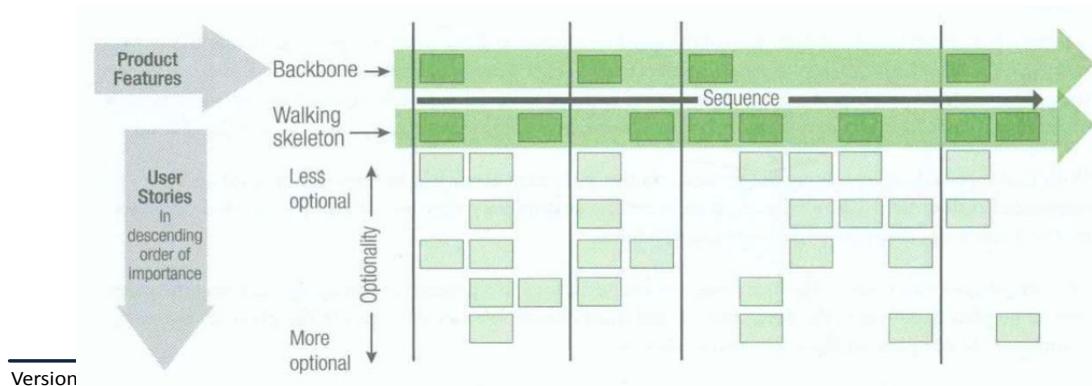


5. High-level Planning



Story Map

- Use to map out the project priorities early in the planning process
- **Backbone:** stories that describe the essential functions needed for the system to work
- **Walking skeleton:** smallest version of system that will meet the customer most basic need
- Other stories is placed in descending order of priority

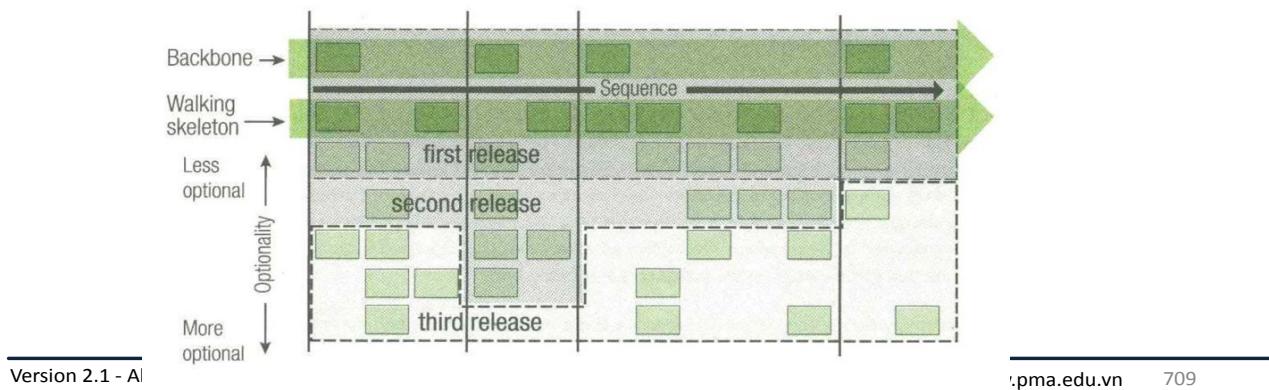


5. High-level Planning



Product Roadmap

- The team balances the customers priorities with their projected capacity, and outlines what they plan to deliver in each release
- Show this to the product owner to communicate our plan for these first three releases.
- Product roadmap for a project will typically consist of one or more story maps showing what will be delivered in each release.



Product roadmap examples

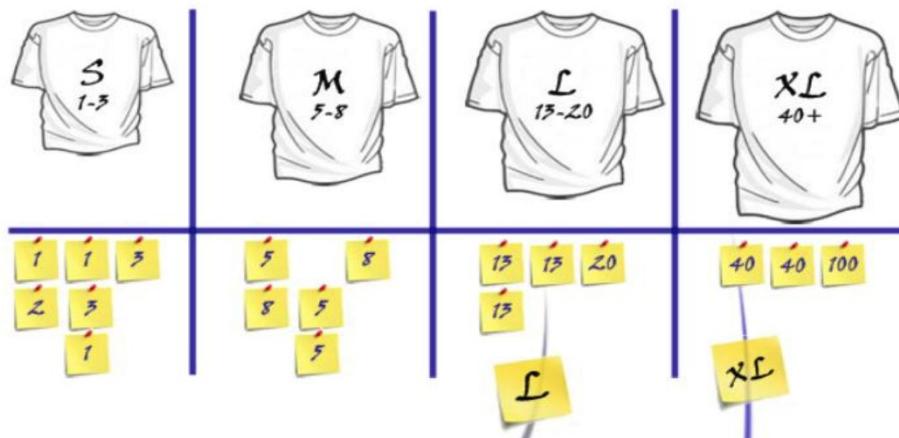


5. High-level Planning



T-shirt Sizing

- High-level estimating tool that is used to do the initial “coarse-grained” estimates
- During the initiation stage
- Ranging from Extra Small (ES) to Extra-Extra Large (XXL)



Review



- Introduction
 - Adaptive planning
 - Just-in-time Planning
 - Agile discovery
 - Value-based decomposition
 - Time-boxed
 - Multi-level planning
- Daily planning
- Iteration planning
 - Estimate Tasks
 - Relative estimating & Planning Poker
 - Story points
 - Ideal time and real time
 - Burndown Chart
- Release planning
 - Types of Iterations
 - Release planning
 - Product roadmap
 - Affinity estimating
 - Backlog grooming
 - Slicing User Stories
 - Velocity and Velocity Chart
- High-level planning
 - Product visioning
 - Elevator statement (Elevator pitch)
 - Coarse-grained requirements
 - Story map
 - T-shirt sizing

Assignment!!!

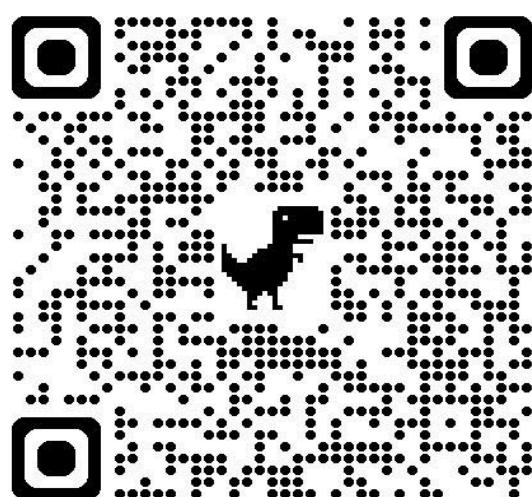


- Làm BTVN trên LMS:
Adaptive Planning
- Học nhóm
- Thực hành viết Product
Backlog cho dự án hiện tại
của mình
- Bắt đầu làm Mock (ngày
thường) và Full Test (cuối
tuần)

Group discussion



- Nội dung nào mới biết?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công
việc?



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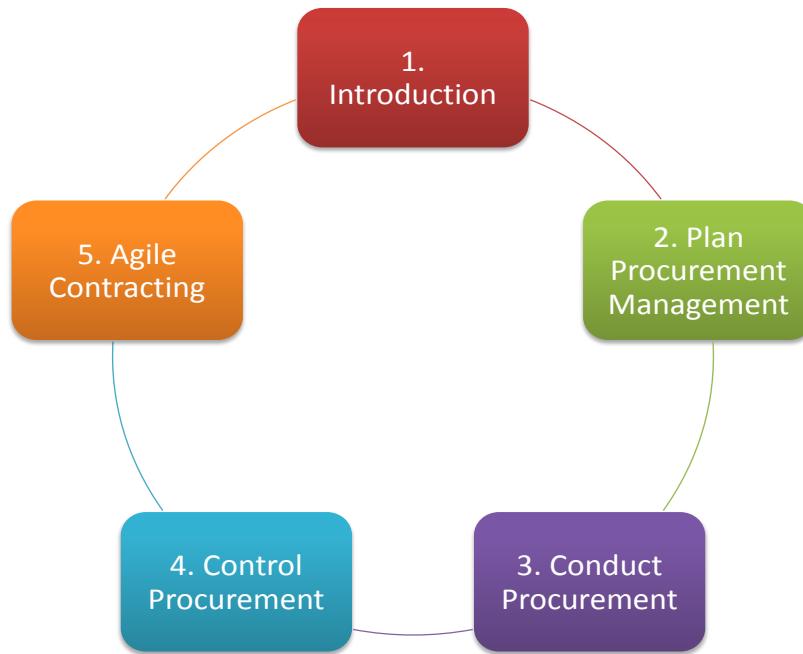
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Project Procurement Management



Overview



Group discussion

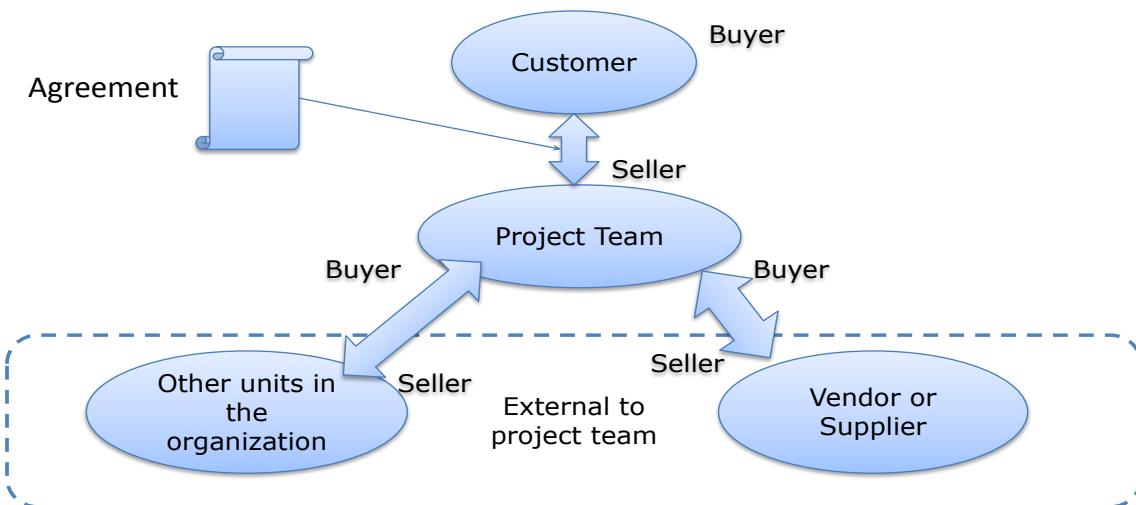


- Khi nào nên tự làm? Khi nào nên đi mua/thuê bên ngoài?

1. Introduction: What is Project Procurement?



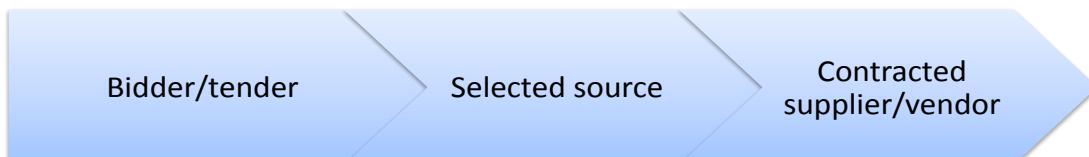
- The process to acquire product or services, or result needed **from outside** the project team.



1. Introduction: Seller and Buyer



- Depending on the buyer's position in the project acquisition cycle, the buyer may be called a **client, customer, prime contractor, acquiring organization, service requestor, or purchaser**.
- Depending on the application area, the seller may be identified as a **contractor, subcontractor, vendor, supplier, or service provider**.
- The seller can be viewed during the contract life cycle first as:



1. Introduction: Agreement/Contract



- A agreement can also be represented as a contract, a memo of understanding (MOU), a purchase order (PO), or internal service level agreements (SLAs)
- Contracts are **legal agreements** between a buyer and a seller.
- A contract represents a **mutually binding agreement** that obligates the seller to provide something of value (e.g., specified products, services, or results) and obligates the buyer to provide monetary or other valuable compensation.
- A procurement contract includes **terms and conditions**

Agreement

- Applicable laws
- Party A
- Party B
- Statement of Work
- Term of payment
- Responsibility Party A
- Responsibility Party B
- Force majeure
- Penalty
- Anything **not in the contract** cannot be legally enforced.

1. Introduction: Contract Types



1. Fixed Price Contract

- **Firm Fixed Price Contracts (FFP):**
 - Contract = \$1,100,000. Any cost increase due to adverse performance is the responsibility of the seller .
- **Fixed Price Incentive Fee Contracts (FPIF)**
 - Contract = \$1,100,000. For every month early the project is finished, an additional \$10,000 is paid to the seller.
- **Fixed Price Economic Price Adjustment (FPEPA)**
 - Contract = \$ 1,100,00 but a price increase will be allowed in year two based on the Consumer Price Increase report for year one.
- **Purchase Order (PO)**
 - Contract to purchase 30 laptops.
 - This type of contract is normally unilateral (signed by one party) instead of bilateral.

1. Introduction: Contract Types



2. Cost-reimbursable Contract

- **Cost plus Fixed Fee (CPFF)**
 - Contract = Cost + Fee of \$100,000
- **Cost Plus Fee (CPF) or Cost Plus Percentage of Costs (CPPC)**
 - Contract = Cost + 10% of costs as fee.
- **Cost Plus Incentive Fee (CPIF)**
 - Contract = Cost + Bonus for performance objectives
- **Cost Plus Award Fee (CPAF) :**
 - Contract = Cost + Award Fee
 - The determination of the fee is solely on the subjective determination of seller performance by the buyer , and is generally not subject to appeals

1. Introduction: Contract Types



3. Time and Material (T&M) or Unit Price

- A hybrid type of contractual arrangement with aspects of both cost-reimbursable and fixed-price contracts.
- They are often used for staff augmentation, acquisition of experts, and any outside support when a precise statement of work cannot be quickly prescribed.
- Ex: contract = \$100 per hour + expenses or materials at cost or \$10 per linear meter of wood.



Group discussion



- Loại hợp đồng nào sẽ rủi ro cho
 - Bên bán (Seller) ?
 - Bên mua (Buyer) ?
- Với vai trò Bên mua, khi nào nên sử dụng loại hợp đồng nào ?

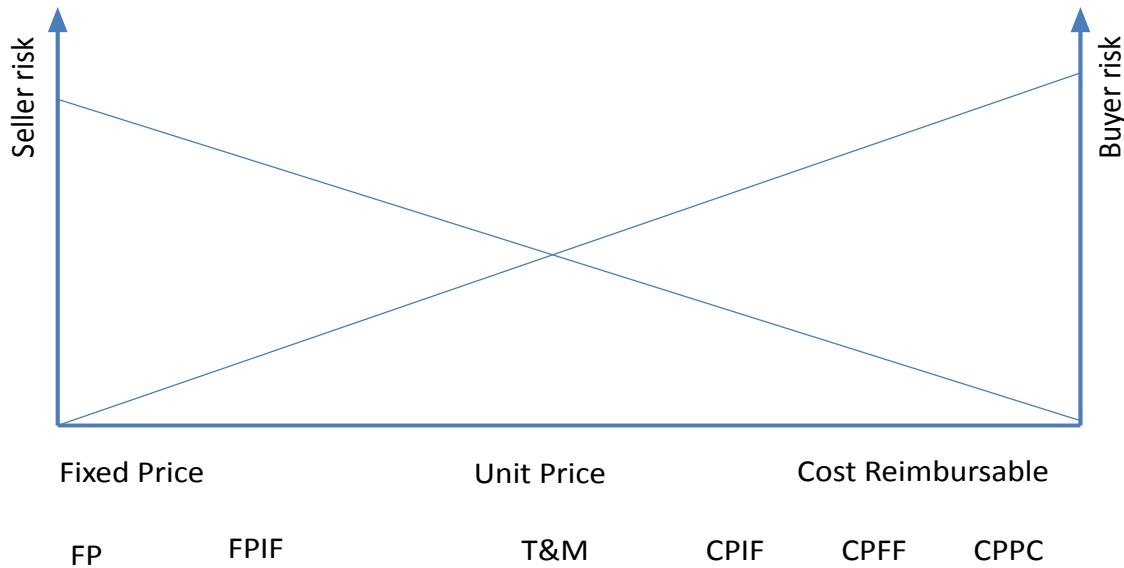
Tính chất công việc	Loại hợp đồng
Yêu cầu rõ ràng	Cost Reimbursable
Yêu cầu chưa rõ ràng	Time & Material
Cần ngay, thời gian ngắn	Fixed Price

Comparison of Major Contract Types



Fixed-price (FP) contracts	Cost Reimbursable (CR) contracts	Time & Material (T&M) contracts
<ul style="list-style-type: none"> • Used for acquiring goods or services with well defined specifications or requirements. • Seller is most concerned with the SOW • Seller would need huge amount of reserves • Seller can try to increase profit by cutting scope 	<ul style="list-style-type: none"> • Used when work is uncertain and, therefore, costs cannot be estimated accurately enough • Requires the seller to have an accounting system that can track costs • Buyer requires auditing seller's invoice 	<ul style="list-style-type: none"> • Used for service efforts in which the level of effort cannot be defined at the time the contract is awarded • To make sure the costs do not become higher than budgeted, the buyer may put a "Not to Exceed" and time limits clause in the contract. • Often used for staff augmentation, acquisition of experts, outside support

1. Introduction: Which one is riskier?



Centralized/ Decentralized Contracting



Centralized contracting

- There is one procurement department, and a procurement manager may handle procurements on projects



Decentralized contracting

- The project manager may assume the purchasing authority role to negotiate and sign contracts directly



Group discussion



- Thảo luận vai trò trách nhiệm của các bên :

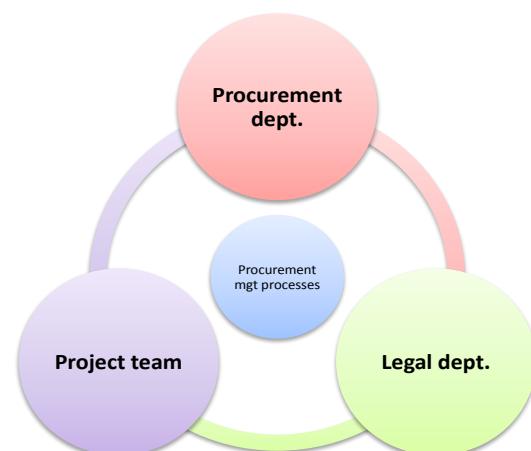
Phòng Mua Sắm	Phòng Pháp Chế	Đội Dự Án

1. Introduction: Roles & Responsibilities

PMA

- There are different names for departments or divisions that deal with procurement, such as: purchasing, contracting, procurement, or acquisitions; however, the responsibilities are likely to be similar.
- Although all project documents may be subject to some form of review and approval, the legally binding nature of a contract means it will be subjected to a more extensive approval process, often involving the **legal department**.

- Participants in the procurement process may include personnel from the procurement department as well as legal department.



Procurement Manager vs Project Manager



Procurement Manager	Project Manager
Manage procurement processes to obtain goods/services required by project.	Involve in procurement process to make sure contract contains the project need.
Make sure organizational policies on purchasing are followed.	Integrate contract's work into the project.
Determine type of contracts, procurement document.	Manage risk that come along with the contract.
Negotiate terms, contracts.	Work with procurement manager to manage changes to the contract.

2. Plan Procurement Management



What?

- The process of documenting project procurement decisions, specifying the approach and identifying potential sellers.

Why?

- The key benefit of this process is that it determines whether to acquire goods and services from outside the project and, if so, what to acquire as well as how and when to acquire it.

When?

- Once or at predefined points in the project. Generally, procurement decisions are made early on in the planning processes.



Group discussion: Lên kế hoạch mua Server

- Tình huống Đội Dự Án cần mua một thiết bị (Ví dụ mua Server) để phục vụ dự án.
- Hãy liệt kê cách bước cần làm trong quá trình Lên Kế Hoạch Quản Lý Mua Sắm

BƯỚC	Task
1	
2	
3	
4	
5	
....	
Outputs	Hồ sơ thầu

2. Plan Procurement Management



How?

- Determine roles and responsibility in procurement processes
- Determine what needed to be procured from outside.
- Conduct market analysis and find capable potential sellers
- Perform Make-or-buy analysis in consideration of given constraints (project schedule, budget...)
- Determine procurement strategy
 - Delivery methods
 - Contract types
 - Procurement phases
- Prepare the procurement statement of work (SOW) or terms of reference (TOR).
- Prepare a high-level cost estimate to determine the budget.
- Define source selection criteria
- Prepare and issue bid documents.



2. Plan Procurement Management



Market Research

- Find potential bidders who can provide the materials or services desired
- Examine specific vendor capabilities.



Meeting

- Meetings with potential bidders helps to formulate a procurement strategy while the supplier can influence a mutually beneficial approach or product



2. Plan Procurement Management



Make-or-Buy Analysis

- Determine whether a product or service needs to be procured or can be produced by the project team.
- Purchase or make - purchase or renting/leasing



- **Common reasons to buys:**
 - Capacity and capability
 - Exploit opportunity
 - Shift risk (cost, time, or scope)
- **Common reasons to make:**
 - Idle resources
 - Want to control
 - Confidential information

2. Plan Procurement Management



Source selection analysis

- It is a good practice to include the evaluation method in the procurement documents so bidders know how they will be evaluated.
- Common selection methods:
 - Least cost
 - Qualifications only
 - Quality-based/highest technical proposal score
 - Quality and cost-based
 - Fixed budget
 - Sole source.

Criteria	Weight	Proposal 1		Proposal 2		Proposal 3, etc.	
		Rating	Score	Rating	Score	Rating	Score
Technical approach	30%						
Management approach	30%						
Past performance	20%						
Price	20%						
Total score	100%						

2. Plan Procurement Management



Expert Judgment

- Expert judgment for procurement management planning can come from the following:
 - Units or individuals within the performing organization
 - Consultants and subject matter experts
 - Professional, trade, or technical associations
 - Industry groups



2. Plan Procurement Management



Procurement Management Plan

- The procurement management plan contains the activities to be undertaken during the procurement process.
- Can be formal or informal, can be highly detailed or broadly framed, and is based upon the needs of each project.
- If the project is financed externally, the sources and availability of funding should be aligned with the procurement management plan and the project schedule.

Procurement Management Plan

- Procurement processes
- Standardized procurement documents
- Timetable of key procurement activities;
- Procurement metrics
- Stakeholders' roles and responsibilities
- The legal jurisdiction
- Independent estimates
- Risk management issues
- Prequalified sellers
- Managing multiple providers
- Constraints and assumptions

2. Plan Procurement Management



Make-or-Buy Decisions

- Decision of whether particular work can best be accomplished by the project team or needs to be purchased from outside sources

Make-or-Buy?



Procurement Strategy

- Once the make-or-buy analysis is complete and the decision is made to acquire from outside the project, a procurement strategy should be identified.



1. Delivery method?
2. Procurement phases?
3. Contract type ?

2. Plan Procurement Management



Procurement Statements of Work (SOW)

- The statement of work (SOW) for each procurement is developed from the project **scope baseline** and defines only that portion of the project scope that is to be included within the related contract.
- A SOW contains the details of the procurement item in **clear, complete and concise** terms.
- The SOW can be revised as required as it moves through the procurement process until incorporated into a signed agreement.

Statement of Work

- The project objectives
- Description of the work of the project
- Post-project operational support needed
- Specifications of the product or services required
- The project schedule, time period of services, and work location
-

2. Plan Procurement Management



Terms Of Reference (TOR)

- This phrase "terms of reference" often refers to the task(s) assigned to a consultant or advisor.
- Such a consultant or advisor may be engaged via a contract with general terms of engagement that also incorporate the terms of reference that specifically describe the consultant's task.
- They are documented by the project manager and presented to the project sponsor or sponsors for approval. Once the terms have been approved, the members of the project team have a clear definition of the scope of the project.

Terms of reference

- Tasks to perform
- Coordination requirements
- Applicable standards
- Outputs for approval
- Inputs (if any)
- Schedule for initial submission
- Review/approval time required

2. Plan Procurement Management



Independent cost estimates

- For large procurements, the procuring organization may elect to either prepare its own independent estimate or have a cost estimate prepared by an outside professional estimator to serve as a benchmark on proposed responses.
- Significant differences in cost estimates can be an indication that the procurement SOW was deficient or ambiguous, or that the prospective sellers either misunderstood or failed to respond fully to the procurement SOW.



2. Plan Procurement Management



Source Selection Criteria

- The criteria will be part of a **weighting system** that can be used to select a single seller and establish a negotiating sequence by ranking all the proposals by the weighted evaluation scores assigned to each proposal.
- The specific criteria may be a **numerical score**, color-code, or a written description of how well the seller satisfies the buying organization's needs.

Source selection criteria

- Past performance
- Understanding of need
- Overall or life cycle cost
- References
- Technical capability and approach
- Specific relevant experience;
- Management approach
- Financial stability and capacity
- ...

2. Plan Procurement Management



Procurement Documents

- **Request for Information (RFI)**
 - Used when more information on the goods and services to be acquired is needed from the sellers.
- **Request for Proposals (RFP)**
 - Generally used when other considerations such as technical capability or technical approach are the most important.
- **Requests for Quotes (RFQ)**
 - Generally used when the seller selection decision is based on price (as when buying commercial or standard items).

Procurement Documents

- **Invitation for bid (IFB)**
 - An invitation to contractors or equipment suppliers to submit an offer
- **Non-Disclosure Agreement (NDA)**
 - Legal contract between two or more parties that signifies a confidential relationship exists between the parties involved.
- **Letter of Intent (LOI)**
 - It is not a contract, that says the buyer intends to hire seller.

3. Conduct Procurements



What?

- The process of obtaining seller responses, selecting a seller, and awarding a contract.

Why?

- The key benefit of this process is that it selects a qualified seller and implements the legal agreement for delivery.

When?

- Periodically throughout the project as needed.



Group discussion: Conduct Procurement

- Tiềm đe: Đã chuẩn bị xong hồ sơ, giấy tờ
- Cần làm những bước gì, công việc gì, để lựa chọn ra được nhà Cung cấp phù hợp ? Liệt kê các bước thực hiện

BƯỚC	Task
1	
2	
3	
4	
5	
6	
....	
Outputs	Nhà cung cấp Và hợp đồng

3. Conduct Procurements

How?

- Advertise the opportunity to all potential vendors or contractors.
- Organize a bidders' conference
- Prepare and submit proposals by the seller.
- Conduct a technical evaluation of the proposals including quality.
- Perform a cost evaluation of the proposals.
- Identify a short list of qualified sellers.
- The short-listed sellers may be asked to make presentations
- Prepare the final combined quality and cost evaluation to select the winning proposal.
- The selected seller then asked to go on to negotiations
- Finalize negotiations and sign contract between the buyer and the seller.



3. Conduct Procurements



Advertising

- To expand the existing lists of potential sellers
- Or to let potential vendors know that an RFP is available.



Bidder Conferences

- Sometimes called *contractor conferences, vendor conferences, and pre-bid conferences*
- Bidder conferences are meetings with prospective vendors or sellers that occur prior to the completion of their response proposal.
- To ensure that all prospective sellers have a clear and **common understanding** of the procurement requirements,
- And that no bidders receive preferential treatment

3. Conduct Procurements



3. Conduct Procurements



Proposal evaluation

- The list of sellers may be narrowed down to a few (short-list)
- All proposal must be treated equally and evaluated using the same criteria and methods
- There is no one way to evaluate proposals. In reality, there are as many techniques as there are buyers.

Expert judgment

- Expert judgment may be used in evaluating seller proposals.



3. Conduct Procurements



Procurement negotiations

- The short-listed sellers may be asked to make presentations and the selected seller then asked to go on to negotiations
- Or some combination of presentations and negotiations
- The buyer can negotiate with more than one seller

- The project manager may not be the lead negotiator on procurements.
- The **objectives** of negotiation are to:
 - Obtain a fair and reasonable price
 - Develop a good relationship with the seller



3. Conduct Procurements



Procurement negotiations

- Main items to negotiate:
 - Requirements or performance
 - Responsibilities
 - Authority
 - Applicable law
 - Technical and business management approaches
 - Schedule
 - Payment and price

Negotiating Tactics

- **Deadline:** Strategic Delay
- **Good guy/Bad guy:** One side is helpful, another is difficult
- **Limited Authority:** Withdrawal
- **Missing Man:** Unreasonable
- **Fair and Reasonable:** Suggesting Arbitration
- **Fait Accompli:** A done deal



3. Conduct Procurements



Selected Sellers

- Contractor who is actually selected to perform the work

Agreement

- The end results of the process are the established agreements including formal contracts that:
 - obligates the seller to provide the specified products, services, or results;
 - obligates the buyer to compensate the seller;
 - and represents a legal relationship that is subject to remedy in the courts.



4. Control Procurements



What?

- The process of managing procurement relationships; monitoring contract performance, and making changes and corrections as appropriate; and closing out contracts.

Why?

- It ensures that both the seller's and buyer's performance meet the project's requirements according to the terms of the legal agreement.

When?

- Throughout the project as needed.

It shouldn't be this way



4. Control Procurements



How?

- Buyer-conducted performance reviews:
 - Identify progress against the contract (SOW, milestones, ...)
 - Quantify seller's ability (or not) to perform work
- Refine procurement plans and schedules; request changes if necessary
- Inspections and audits:
 - Identify weaknesses in seller's processes or deliverables
- Perform integration of the outputs from procurement processes into the overall management of the project.
- Perform procurement-related performance reporting to the organization:
 - Determine how effectively seller is performing to the contract
- Make payments to the sellers according to contracted terms and conditions.
- Claims administration:
 - Settle disputes regarding compensation for changes
- Collect data, manage project records, store invoices and financial records...

Group discussion



Loại hợp đồng	Rủi ro	Giải pháp/ Ứng phó
Fixed Price		
Cost Reimbursable		
Time & Material		

Bị cắt giảm chất lượng/
phạm vi

Bị padding thời gian

Bị làm giả hoá đơn
hoặc tăng vật tư ko cần thiết

4. Control Procurements



Contract Controlling

1. Fixed Price

- Review the statement of work to ensure that the scope is clearly understood by both parties.
- Look out for excessive change orders - it may be an indication that the **seller's profit is being impacted**.
- Audit the sellers work to ensure that scope and quality are not being impacted.
- The seller may try to cut corners in order to bring in the contract at a fixed price without impacting their profit margin.
 - Bait and switch is a typical tactic here; for example, on a construction project the seller might swap out a stainless steel electrical conduit for PVC without making the buyer aware of it.

4. Control Procurements



Contract Controlling

2. Cost Reimbursable

- All invoices need to be audited - ensure that the work is being performed corresponds to the resources performing the work.
- Look out for additional charges that were not part of the original plan.
- If specific resources with specific skill sets have been contracted, ensure they are not replaced with lower cost, less experienced resources for the same price.
- Ensure deliverables meet their expected milestone dates. Tie payments in the contract to delivered milestones.

3. Time and Materials

- Ensure that hours are not padded.
- Keep the project to a fixed length.
- Require that deliverables are defined and met by specific milestone dates.

Things you must watch out



Fixed Price Contract

- Watch for seller cutting scope
- Watch for seller cutting quality
- Check for scope misunderstanding
- Look out for excessive change orders

T&M Contract

- Ensure that hours are not padded.
- Keep the project to a fixed length.
- Provide day-to-day direction to sellers

Cost-reimbursable Contract

- Audit every invoice
- Look out for additional charges
- Ensure deliverables meet expected milestones
- Watch for seller adding resources but not add value



4. Control Procurements



Inspections

- As the contractor completes the contracted work, the buyer will need to inspect the work for progress, compliance with contract requirements, and adherence to agreed-to time, cost, and quality constraints.
- An inspection is a structured review of the work being performed by the contractor. This may involve a simple review of the deliverables or an actual physical review of the work itself.



4. Control Procurements



Procurement Audits

- Procurement audits examine the procurement process to determine areas of improvement and to identify flawed processes or procedures.
- Resulting audit observations should be brought to the attention of the buyer's project manager and the seller's project manager for adjustments to the project, when necessary.
- The primary purpose of the procurement audit is to identify **lessons learned** during the procurement process.

*why buy when
you can...*



4. Control Procurements



Claims administration

- A claim is an assertion that the buyer did something that has hurt the seller and the seller asking for compensation.
- Another way of looking at claims is that they are a form of **seller's change requests**.
- Changes that cannot be agreed upon are called **contested changes**.
- Claims administration involves documenting, monitoring, and managing changes to the contract.

What's my claim status?



4. Control Procurements



Contract change control

- The contract change control system defines the procedures for how the contract may be changed.
- It documents how to submit changes, establishes the approval process, and outlines authority levels.
- It includes a tracking system to number the change requests and record their status
- The system is part of integrated change control.



4. Control Procurements



Negotiated Settlements

- When they cannot be resolved, they become disputes and finally appeals.
- In all procurement relationships the final equitable settlement of all outstanding issues , claims , and disputes by **negotiations** is a primary goal.
- Whenever settlement cannot be achieved by direct negotiation , some form of **alternative dispute resolution (ADR)** including **mediation** or **arbitration** may be explored .

When all else fails , **litigation in the courts** is the least desirable option



4. Control Procurements



Closed procurements

- The buyer, usually through its authorized **procurement administrator**, provides the seller with **formal written notice that the contract has been completed**.
- Market research shows that very few project managers actually close out procurements. Someone in **contracts, procurement or legal departments** **usually has that authority**.
- The project management team should have evaluated all completed deliverables and compared them to the contract prior to closure.



5. Agile Contracting: Problems

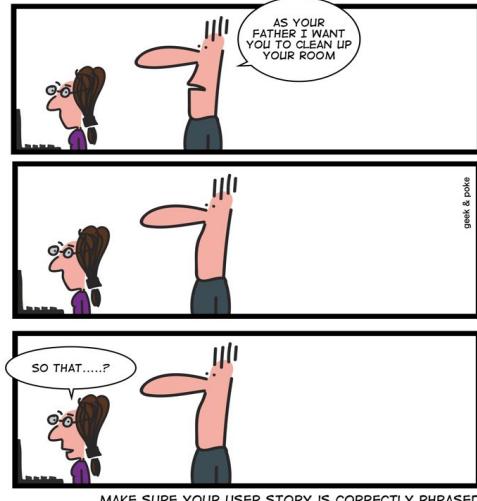


Dynamic Scope



Non-agile Customer

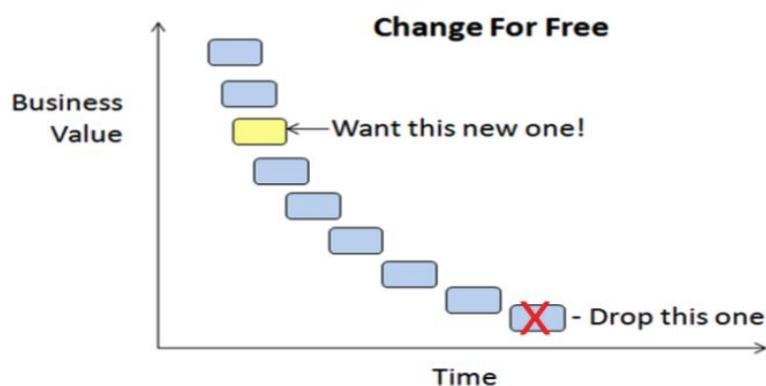
AGILE FAMILIES



5. Agile Contracting: Change for Free



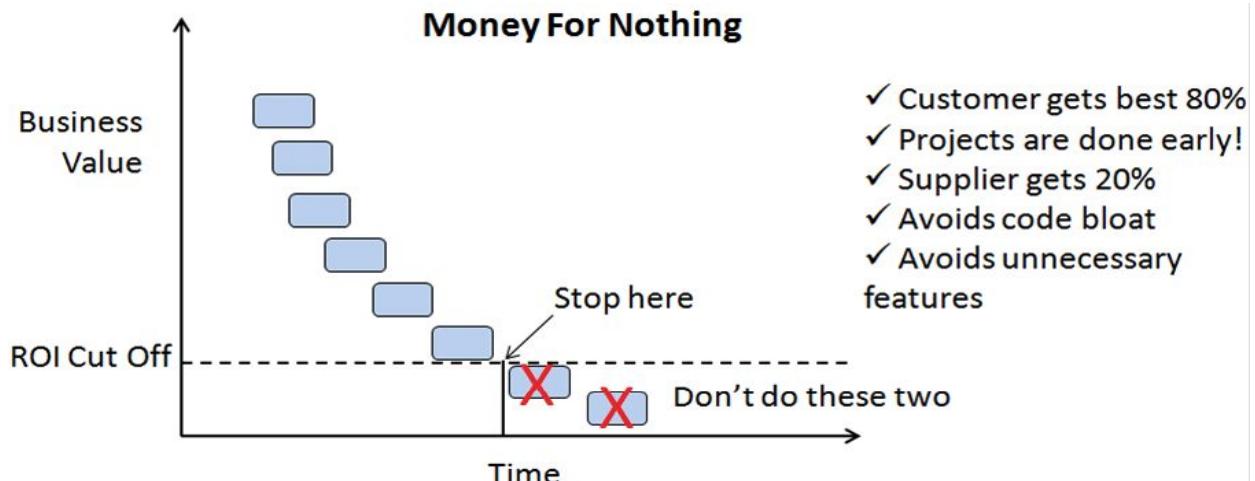
- Standard fixed-price contract, include T&M for additional work and change for free option clause
- Customer can only use change for free clause if **they work with the team on every iteration**. If not, the contract reverts back to T&M
- The change will be free if the **total amount of contracted work has not changed**
- Allow new features to be added if lower priority items that require same amount of time and effort are removed



5. Agile Contracting: Money for Nothing



- Money for nothing clause only valid if the customer plays their part in the agile project
- Allow customer to terminate the project early when they feel there is no longer sufficient ROI in the backlog to warrant further iterations



5. Agile Contracting



Graduated Fixed-Price Contract

- Both parties share some of the risk and reward associated with schedule variance
- **Different hourly rates based on early, on-time or late delivery**
- Example:

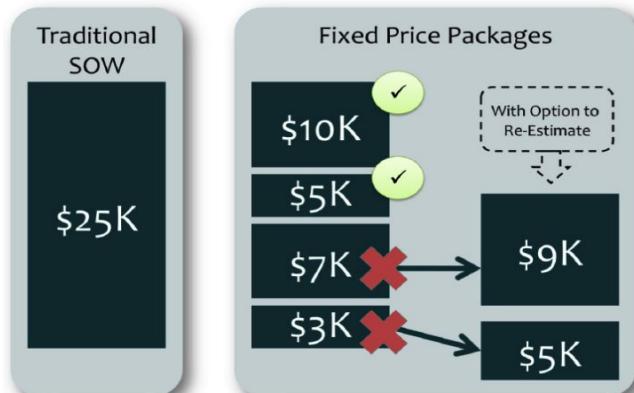
Project Completion	Total Fee	Graduated Rate
Finish Early	\$87,000	\$117/hour
Finish On-Time	\$100,000	\$100/hour
Finish Late	\$113,000	\$90/hour

5. Agile Contracting



Fixed-Price Work Packages

- Mitigate the risks of underestimating or overestimating a chunk of work by reducing scope and cost involved in the work being estimated
- Change will be localized to a small component (work packages)
- If extra fund required, identify the need and justify it



Group discussion



Rủi ro	Điều khoản
Phát sinh thời gian hơn dự kiến	
Phát sinh công việc hơn dự kiến	
Thay đổi (thêm tính năng)	
Thay đổi (bớt tính năng)	

Graduated Fixed Price

Money for nothing

Fixed Price Work Packages

Change for free

Group discussion



Rủi ro	Điều khoản
Phát sinh thời gian hơn dự kiến	Graduated Fixed Price
Phát sinh công việc hơn dự kiến	Fixed Price Work Packages
Thay đổi (thêm tính năng)	Change for free
Thay đổi (bớt tính năng)	Money for nothing

5. Agile Contracting



Master Service Agreement

- In complex environments, specific sellers may be used to extend the team.
- In these cases, a governing agreement such as a **master services agreement (MSA)** may be used for the overall engagement, with the **adaptive** work being placed in an **appendix** or supplement.
- This allows changes to occur on the adaptive scope without impacting the overall contract.



6. Closing Project or a Phase



What?

- Close project or phase is the process of finalizing all activities for the **project, phase, or contract.**

Why?

- The planned work is completed
- The project or phase information is archived
- And organizational team resources are released to pursue new endeavors.

When?

- Once or at predefined points in the project.



Group Discussion



Thảo luận các bước cần thực hiện khi đóng dự án

STT	Task
BƯỚC 1
BƯỚC 2	
....	

6. Closing Project or a Phase



- **Project Ending:** Projects come to an end for several reasons:
 - They're completed successfully.
 - They're canceled or killed prior to completion.
 - They evolve into ongoing operations and no longer exist as projects.
- **Administrative closure** of the project or phase:
 - Obtain **final acceptance** of the project deliverables from sponsor and/or customer,
 - **Transfer the ownership** of deliverables to the assigned stakeholders
 - Obtain financial, legal, and **administrative closure**
 - Distribute the **final report** to all stakeholders.
 - Collate **lessons learned** through comprehensive project review
 - **Archive** project documents
 - Measure customer satisfaction, capturing customer **feedback**

6. Closing Project or a Phase



Final Product, Service, or Result Transition

- This usually requires a **formal sign-off** and, in the case of a project performed on contract, definitely requires a formal sign-off or receipt indicating acceptance of the project.

Final report

- The final report provides a summary of the project performance.

Organizational Process Assets (updates)

- Closure will include the development of the index and location of project documentation using the configuration management system.

Final Report

- **Summary description** of the project or phase.
- **Scope objectives:**
 - the criteria used to evaluate the scope, and evidence that the completion criteria were met.
- **Schedule objectives:**
 - the verification and actual milestone delivery dates, and reasons for variances.
- **Cost objectives:**
 - including the acceptable cost range, actual costs, and reasons for any variances.
- **Quality objectives:**
 - the criteria used to evaluate the project and product quality,
- **Summary of the validation** information for the final product, service, or result.

- Introduction
 - Seller and Buyer
 - Contract types
 - Fixed Price
 - Cost-reimbursable
 - T&M
 - Contract-related risks
 - Centralized-contracting vs Decentralized contracting
- Plan Procurement Management
 - Make-or-buy decision
 - Procurement statement of work
 - Independent estimate
 - Source selection criteria
 - Procurement document
- Conduct Procurement
 - Advertising
 - Bidder conference
 - Proposal evaluation
- Conduct Procurement
 - Contract negotiation and Negotiation tactics
 - Selected seller
 - Agreement
- Control Procurement
 - Contract-related risks and counter-measures
 - Performance review
 - Inspection
 - Procurement audit
 - Contract change control system
 - Procurement closure
- Agile Contracting
 - Money for Nothing
 - Change for free
 - Fixed-Price Work Packages
 - Graduated Fixed-Price Contract
 - Master service agreement (MSA)

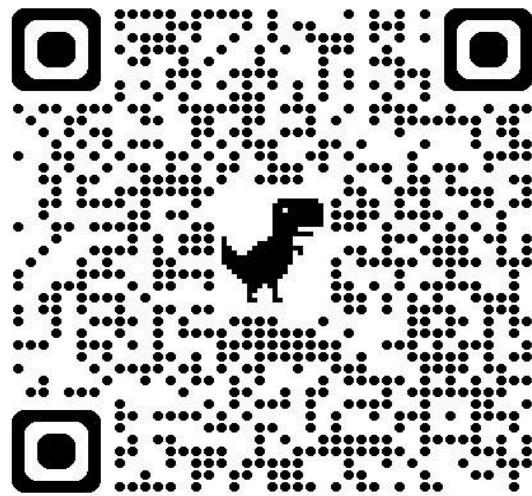
Assignment!!!

- Làm BTVN trên LMS:
Procurement
- Học nhóm
- Bắt đầu làm Mock (ngày thường) và Full Test (cuối tuần)

Group discussion



- Nội dung nào mới biêt?
- Nội dung nào cảm thấy thú vị?
- Nội dung nào sẽ áp dụng vào công việc?



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