Software Project Management

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Project Management Concepts

- **What is project?:**
  - A series of works.
  - Well-defined goal.
  - Limited time.

- **Types of projects:**
  - Based on project goal.
  - Production project → product.
  - Investment project → benefit.
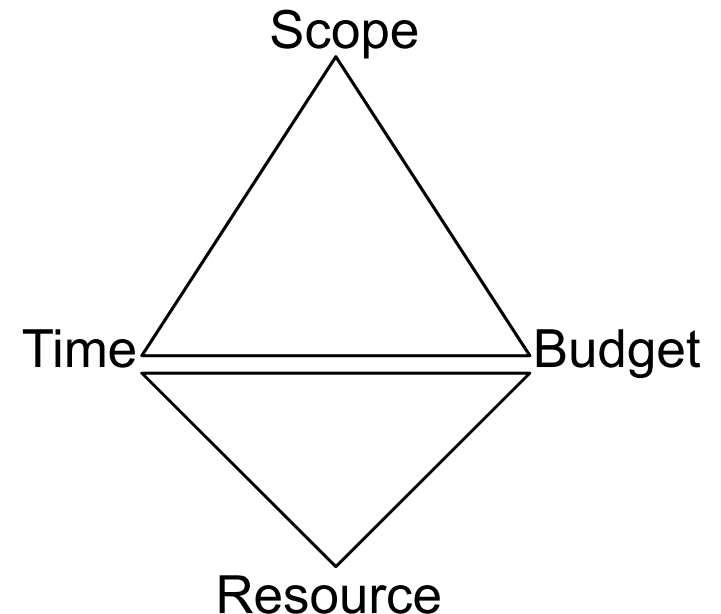 - Research project → knowledge.
  - …

Project Management Concepts

- **How is successful project?**
  - Finish??
    - ➔ Not enough.
  - 3 project factors:
    - ➢ Scope.
    - ➢ Time.
    - ➢ Budget.
  - ➔ Full-fill 3 factors.

Project Management Concepts

- **Software project:**
  - **Characteristics:**
    - Goal: software product.
    - Abstract product.
    - Unknown and fuzzy scope.
      - ➔ Cause 80% failed projects.
  - **Software project management:**
    - Guarantee successful project:
      - Scope, Time, Budget.
    - Executors:
      - Project manager.
      - Project members.
      - Quality manager.

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Project Management Activities

- Main activities:
  - Initiation.
  - Planning.
  - Executing.
  - Tracking.

Project Management Activities

- **Initiation:**
  - Preliminary study and survey.
  - Goals:
    - Feasibility study.
    - Scope identification.
    - Time & budget draft.
  - Deliverables:
    - Feasibility Report.
    - Project Proposal.

Project Management Activities

- **Project Proposal:**
  - **Problem description:**
    - Describe business overview, difficulty.
  - **Proposed solutions:**
    - Software: features, activity models.
    - Hardware: computers, network.
    - Business: changed process.
  - **Project milestones:**
    - Software process phases.
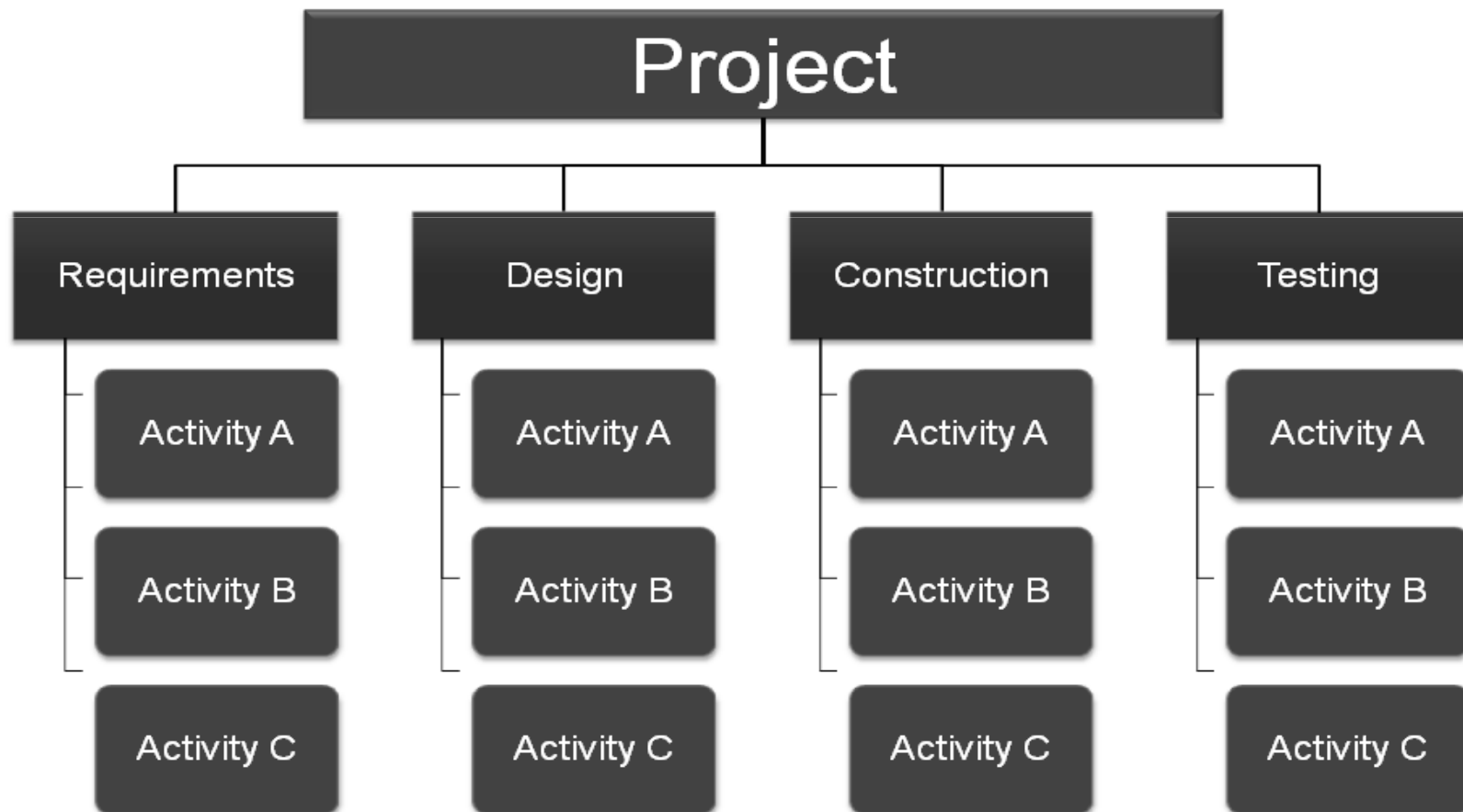   - Deliverables.
  - **Human resource & budget:**
    - Project roles.
    - Effort & cost estimations.
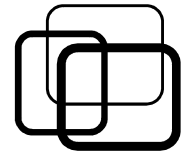
Project Management Activities

- ## Planning:
  - ### Work Breakdown Structure (WBS):

Project Management Activities

- ## Planning:
  - ### Work Schedule:
    - 3-W plan:
      - **W**HO: will join?
      - **W**HEN: to finish?
      - **W**HAT: to deliver?
    - → Gantt Chart.

ID	Task Name	Start	Finish	Duration	Mar 2015														
					5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Giai đoạn phân tích yêu cầu	3/5/2015	3/17/2015	9d														
2	Thu thập yêu cầu	3/5/2015	3/9/2015	3d	An, Hùng													
3	Đặc tả yêu cầu	3/10/2015	3/13/2015	4d						Hùng								
4	Kiểm nghiệm yêu cầu	3/13/2015	3/17/2015	3d									Trang					
5	Giai đoạn thiết kế phần mềm	3/16/2015	3/27/2015	10d														

Project Management Activities

■ **Planning:**

    ■ **Risk Plan:**

        ➢ Identify risks.

        ➢ Risk analysis: probability, scope of effect, what to do.

No.	Risk	Probability	Scope of Effect	What to do
1	Requirement change	High	Scope, time, budget	???
2	Team member quit	Low	Time, budget	???
3	New technology	Medium	Time, budget	???

Project Management Activities

- Planning:
  - Workspace:
    - For documents.
    - For codes.
      - ➔ Version Control System.
  - Communication: email, forum, group.
  - Working rules:
    - Central or remote?
    - Meetings & reports?
    - Solving conflicts?

Project Management Activities

- **Executing:**
  - Follow the master plan.
  - Weekly plan:
    - Detailed tasks.
    - Assigned members.
    - Expected results.

Week 5 (9/3/2015 – 15/3/2015)			
No.	Task	Members	Excepted results
1	Create facebook group	Hùng	- Link group facebook - Write introduction to team and project.
2	Setup google code, github	An	- Link google code, github. - Template and code base.
3	Survey Student Management System	Trang, Hùng	- Download 3 software. - List out common features.

Project Management Activities

- ■ **Tracking:**
  - ■ Guarantee plans are followed (3-W).
    - ➢ WHERE: are we?
    - ➢ WHAT: difficulties?
    - ➢ WHY: have problems?
  - ■ Change Management:
    - ➢ Track changes.
    - ➢ Scope of effect.
    - ➢ Keep 3 project factors.
    - ➢ Give buffers for important activities.

Project Management Activities

- **Tracking:**
  - **Weekly, biweekly reports:**

Week 5 (9/3/2015 – 15/3/2015)				
No.	**Task**	**Members**	**Excepted results**	**Track notes**
1	Create facebook group	Hùng	- Link group facebook - Write introduction to team and project.	
2	Setup google code, github	An	- Link google code, github. - Template and code base.	
3	Survey Student Management System	Trang, Hùng	- Download 3 software. - List out common features.	

  - **Time sheet.**

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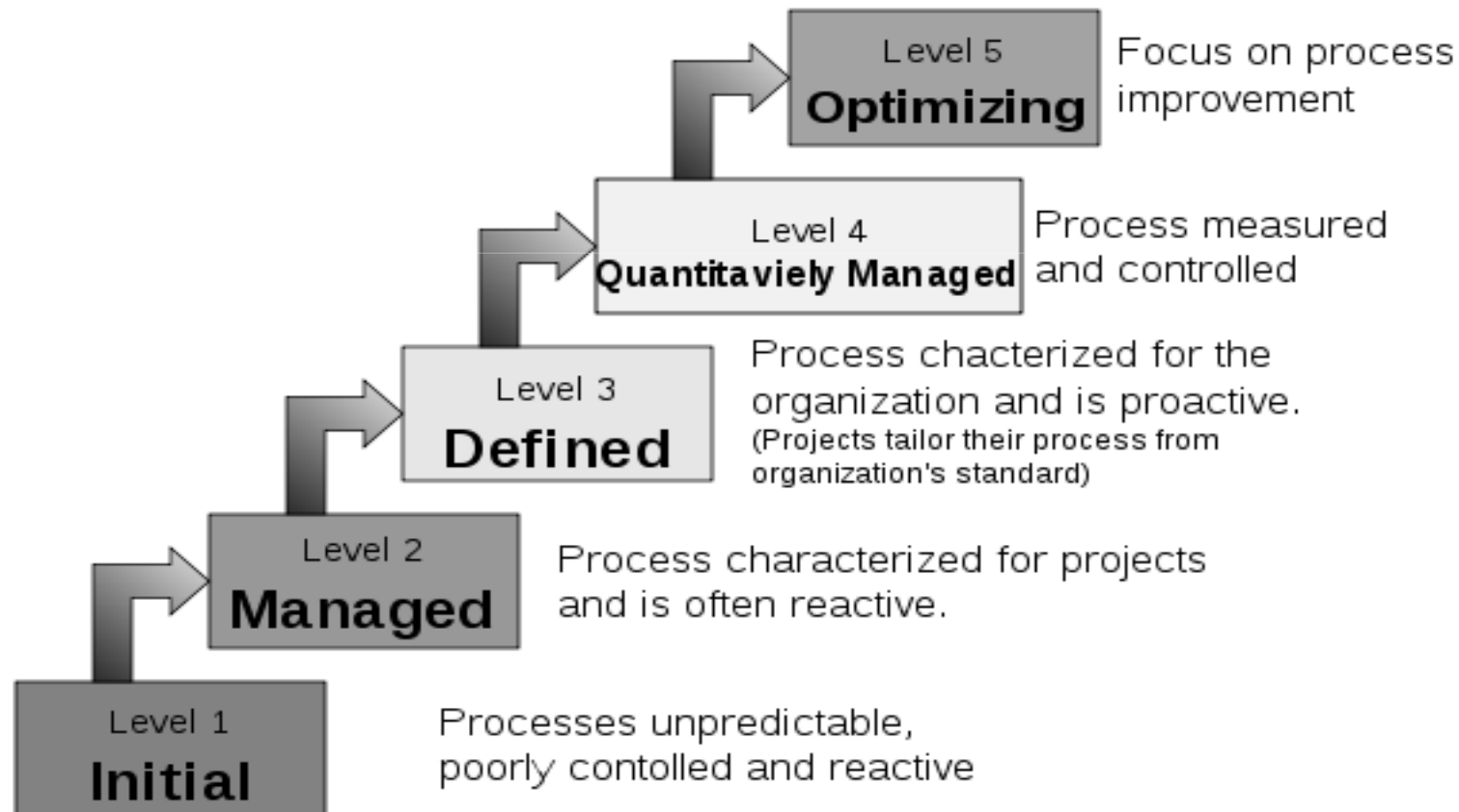
Capability Maturity Model

- **CMM - Capability Maturity Model:**
  - Introduced by SEI of CMU, 2002.
  - Estimate and judge software companies.
  - Guide and train to improve process.
  - Similar to ISO.

Capability Maturity Model

- **Maturity Levels:**

Characteristics of the Maturity levels

Level 5
Optimizing — Focus on process improvement

Level 4
Quantitaviely Managed — Process measured and controlled

Level 3
Defined — Process chacterized for the organization and is proactive. (Projects tailor their process from organization's standard)

Level 2
Managed — Process characterized for projects and is often reactive.

Level 1
Initial — Processes unpredictable, poorly contolled and reactive

Capability Maturity Model

- **CMM in practice:**
  - **Lockheed Martin:**
    - CMM Level 2 (1993), Level 3 (1996), Level 5 (2002).
    - Productivity: 30% up.
    - Cost: 20% down.
    - Software bugs: 15% down..
  - **J.P Morgan Chase & Co:**
    - Invest 4 million dollars to improve process.
    - CMM Level 2 (2001), Level 3 (2003).
    - Improve predictive process.
    - Decrease bugs.
    - Increase productivity.

Capability Maturity Model

- **CMM in Vietnam:**
  - PSV (Level 5).
  - FPT Software (Level 5).
  - Global Cybersoft (Level 4).
  - Viettel Technologies Software (Level 3).

Capability Maturity Model

- **Advices about CMM:**
  - No 100% success.
  - Should not skip maturity level.
  - Should spend 18 months for a level. (8 months in practice).
  - Big companies have more benefits.

Practice

- ## Project Proposal:
  - ### "Student Management System" activities:

1. Students register courses	3. Students pay tuition fees
2. Professors enter course grade reports	4. Student affairs search students

  - ### Tasks:
    - Problem description:
      - Imagine difficulties in activities.
      - Choose 1 activity and describe business process.
    - Proposed solutions:
      - List proposed features to full-fill difficulties.
      - Sketch proposed system structure.
    - Project milestones:
      - Work breakdown structure.
      - Gantt chart.