Ch1: Intro to Project Management

Project: A temporary endeavor with a purpose developed with progressive elaboration (beginning with a broad definition as specific aspects become clearer with time and development) thus it should be developed in increments. It requires resources such as **people**, **hardware**, and **software** and should have a **primary client/sponsor** though stakeholders/involved parties can be plenty. It also requires a **budget**.

Software Development Project: Set of activities to produce quantifiable and qualifiable software deliverables.

Every year around 25% of projects succeed, 25% fail, and 50% are challenged: **Cost overruns**, **delays**, or **failure to deliver** all that is promised. 50% of projects fail from the requirements stage; Developers can never satisfy the client if they don't have the same goals in mind.

UML 2.0: 13 diagram types split into **structure**, **behavior**, and **interaction** diagrams.

Business Use Case Diagram: Represent the functionality provided by an organization as a whole. They are drawn from the organizational perspective. They do not differentiate between manual and automated processes. Unrelated to Use Case diagrams.

Note: There are no specific rules for these, just give a diagram that can be understood by someone who majored in business and not CS and forget what you know about standard use cases; go wild. Example:

Why Projects Fail:

- **Poor Documentation**
- **Poor Communication**
- **Inadequate Risk Management**
- **Poor Scope Definition:** Users – Functions – Dimensions - Constrai

Ch2: Skills for Project Managers

Project Manager: Works closely with stakeholders and developers to manage the design, implementation, and delivery of the project.

- Defining and managing all the work required to complete the project successfully
- Estimating how long it will take to complete the work, developing an acceptable project schedule, and ensuring timely completion
- Ensuring that the project will satisfy the stated or implied needs for which it was undertaken
- Making effective use of the people involved with the project
- Generating, collecting, disseminating, and storing project information
- Identifying, analyzing, and responding to risks related to the project
- Acquiring or procuring goods and services for a project from outside the performing organization
- Identifying and analyzing stakeholder needs while managing and controlling their engagement throughout the life of the project
- Project integration management; an overarching function that affects and is affected by all of the other knowledge areas

Project managers should understand important topics related to financial management, accounting, procurement, sales, marketing, contracts, manufacturing, distribution, logistics, the supply chain, strategic planning, tactical planning, operations management, organizational structures and behavior, personnel administration, compensation, benefits, career paths, and health and safety practices

Soft Skills: Ability to lead, communicate, negotiate, solve problems, and influence the organization at large.

They need to be able to **listen actively** to what others are saying, help **develop new approaches for solving problems,** and then **persuade others** to work toward achieving project goals. Project managers need to be able to **cope with criticism and constant change.**
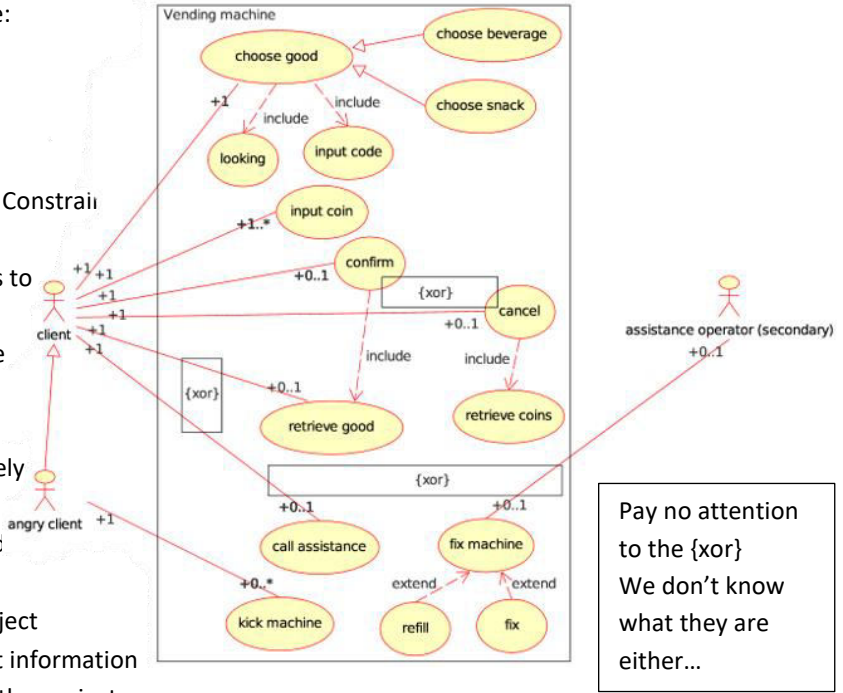
Constraints:

- **Scope/Quality (**expected products/services and work needed to deliver them**)**
- **Cost/Resources (**what money, materials, and effort needed to deliver**)**   **The project manager has to balance these three.**
- **Time/Schedule (**time required to complete the project**).**

Stakeholders: **People involved in or affected by the project(**Sponsors, team, support staff, customers, users, suppliers, & opponents**)**

Common exam questions:

- Identify if something is a constraint or not
- Specify if a given skill is required for project managers

Vending machine diagram (Business Use Case example)

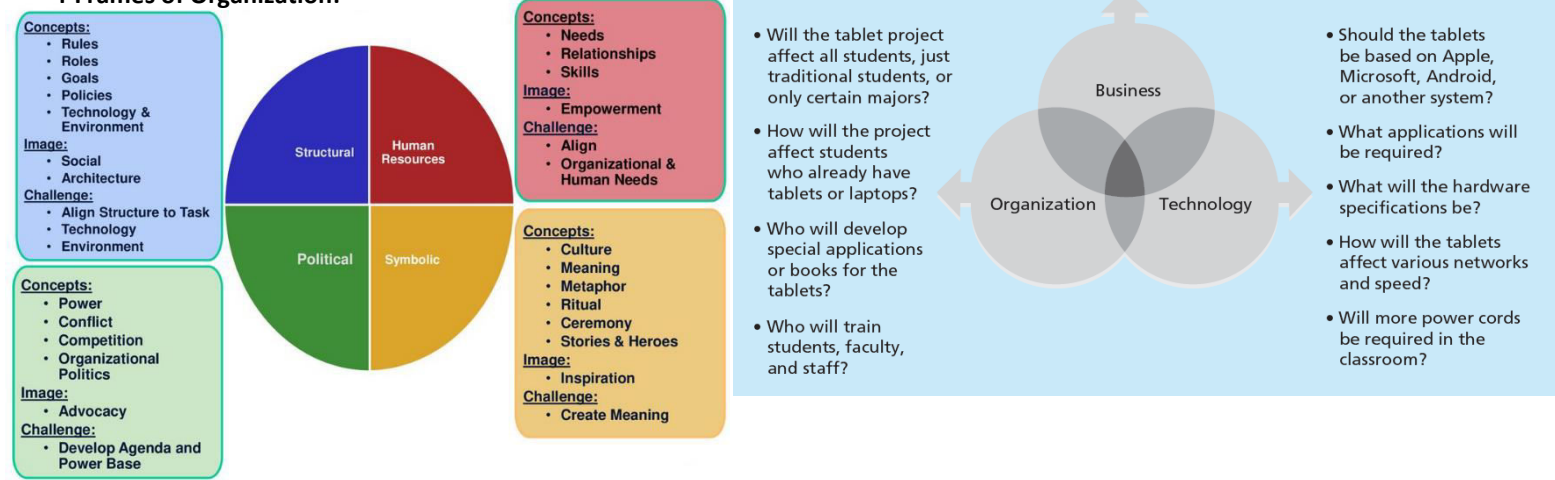Pay no attention to the {xor} We don't know what they are either…

Ch3: Concepts Involved in Understanding the Project Environments

- **Systems Approach:** Describe a holistic and analytical approach to solving complex problems that includes using
    - **Systems Philosophy:** Ability to see systems with each individual component working together for a purpose
    - **Systems Analysis:** Defining the scope, dividing components, and solving problems one by one
    - **Systems Management:** Addresses the business aspect of a system. "Does it make financial sense to pursue this new technology?" or "Should the company develop this software in-house or purchase it off the shelf?"
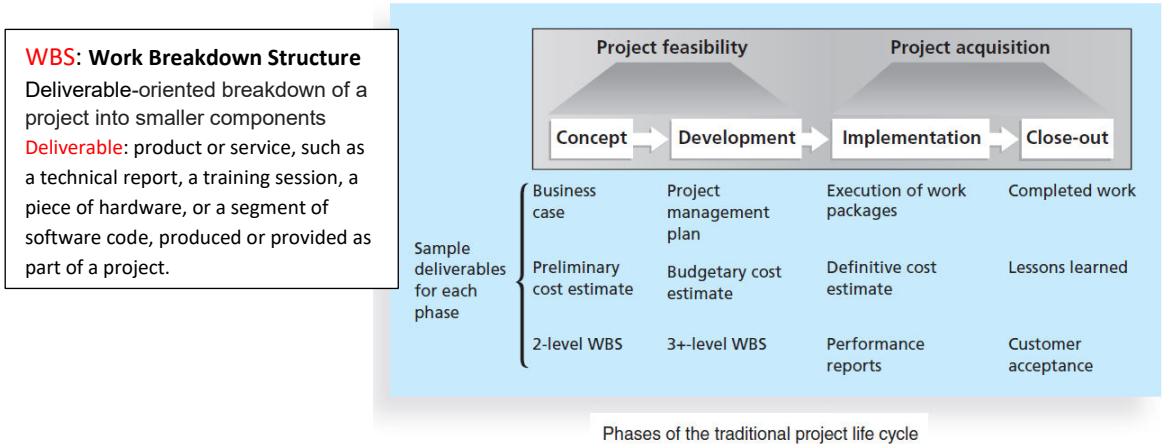   **For proper management we use the 3-sphere model; below is an example about designing a Tablet:**

- **Understanding Organizations:** considering the political context of a project or the culture of the organization and those working on the project. For this we need the
  4-Frames of Organization:

Structural
Concepts:
- Rules
- Roles
- Goals
- Policies
- Technology & Environment
Image:
- Social
- Architecture
Challenge:
- Align Structure to Task
- Technology
- Environment

Human Resources
Concepts:
- Needs
- Relationships
- Skills
Image:
- Empowerment
Challenge:
- Align
- Organizational & Human Needs

Political
Concepts:
- Power
- Conflict
- Competition
- Organizational Politics
Image:
- Advocacy
Challenge:
- Develop Agenda and Power Base

Symbolic
Concepts:
- Culture
- Meaning
- Metaphor
- Ritual
- Ceremony
- Stories & Heroes
Image:
- Inspiration
Challenge:
- Create Meaning

Business
- What will the tablet project cost the college?
- What will it cost students?
- What will support costs be?
- What will the impact be on enrollments?

Organization
- Will the tablet project affect all students, just traditional students, or only certain majors?
- How will the project affect students who already have tablets or laptops?
- Who will develop special applications or books for the tablets?
- Who will train students, faculty, and staff?

Technology
- Should the tablets be based on Apple, Microsoft, Android, or another system?
- What applications will be required?
- What will the hardware specifications be?
- How will the tablets affect various networks and speed?
- Will more power cords be required in the classroom?

- **Managing Stakeholders:** People **involved** in or **affected** by project activities **inside** or **outside** the organization
    - **Internal:** Project Sponsor, Project Team, Support Staff, and Internal Customers of the project, and managers who are affected since projects use up the organization's limited resources
    - **External:** Customers (if they are external to the organization), Competitors, Suppliers, and sometimes government officials or concerned citizens
- **Project Life Cycle:** Collection of phases that break projects down into smaller, more manageable pieces to reduce uncertainty

WBS: **Work Breakdown Structure**
Deliverable-oriented breakdown of a project into smaller components
Deliverable: product or service, such as a technical report, a training session, a piece of hardware, or a segment of software code, produced or provided as part of a project.

Project feasibility | **Project acquisition**

Concept → Development → Implementation → Close-out

	Concept	Development	Implementation	Close-out
Sample deliverables for each phase	Business case	Project management plan	Execution of work packages	Completed work
	Preliminary cost estimate	Budgetary cost estimate	Definitive cost estimate	Lessons learned
	2-level WBS	3+-level WBS	Performance reports	Customer acceptance

Phases of the traditional project life cycle

- **Understanding the Context of IT Projects:** Differences in technical knowledge can make communication between professionals challenging with many diverse technologies changing rapidly. This fast-paced environment requires equally fast-paced processes to manage and produce IT projects and products
- **Reviewing Recent Trends that affect IT Project Management:** Increased **Globalization, Outsourcing, Virtual teams,** and **Agile**
    - **Globalization:** PMs must seek to maintain **Communication**, **Trust**, **Common Practices**, and unified **Tools** in a diverse workplace that spans multiple offices in different cultures. Ex: companies make their own unique tools & software
    - **Outsourcing:** Acquisition of goods and services from an outside source which could be cheaper and save time by receiving certain parts of the product externally instead of maintaining a team to deliver them
    - **Offshoring:** Outsourcing from another country
    - **Virtual Teams:** People who work together despite time and space boundaries using communication technologies
        - **+:** Lower costs, more flexibility, and work-life balance
        - **-:** Isolation, communication problems, reduced networking, and high reliability on software
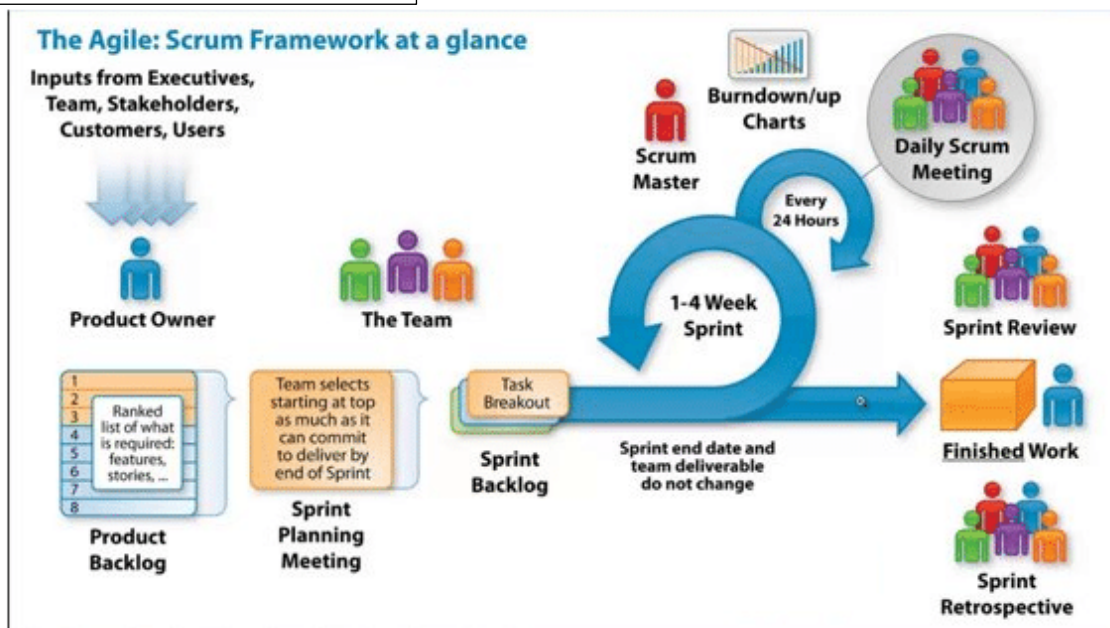
- **Agile:**

Scrum Master
Responsible for enacting Scrum values and practices
Ensure that the team is fully functional and productive
Enable close cooperation across all roles and functions

Team
Cross-functional: Programmers, testers, user experience designers, etc. Members should be full-time and self-organizing

The Agile: Scrum Framework at a glance

Product Owner
Defines features and release plans
Prioritize features every iteration as needed
Accept or reject work results

Sprint review
Demo of new features to customer/product owner
Team presents work accomplished during the sprint
All major stakeholders participate

Sprint retrospective
Periodic post mortem to review what's working and what's not
Done after every sprint
All major stakeholders participate

Ch4: Project management Characteristics [Process Group]

Project management consists of 10 knowledge areas:

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

Decisions and actions taken in one knowledge area at a certain time usually affect other knowledge areas

Closing processes include formalizing acceptance of the project or project phase and ending it efficiently. Administrative activities are often involved in this process group, such as archiving project files, closing out contracts, documenting lessons learned, and receiving formal acceptance of the delivered work as part of the phase or project A common monitoring and controlling process is reporting performance, where project stakeholders can identify any necessary changes that may be required to keep the project on track.

Monitoring and controlling processes include regularly measuring and monitoring progress to ensure that the project team meets the project objectives. The project manager and staff monitor and measure progress against the plans and take corrective action when necessary. A common monitoring and controlling process is reporting performance, where project stakeholders can identify any necessary changes that may be required to keep the project on track.

CLOSING   INITIATING
MONITORING & CONTROLLING   Five Process Groups   PLANNING
EXECUTING
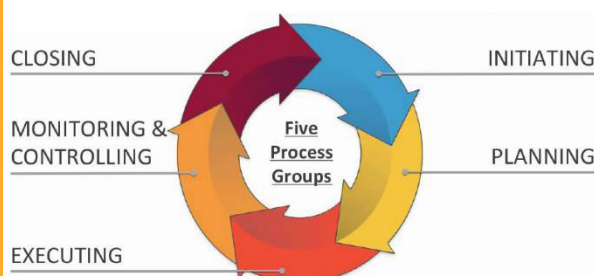
Initiating processes include defining and authorizing a project or project phase. Initiating processes take place during *each* phase of a project. For example, in the close-out phase, initiating processes are used to ensure that the project team completes all the work, that someone documents lessons learned, and that the customer accepts the work

Executing processes include coordinating people and other resources to carry out the various plans and create the products, services, or results of the project or phase. Examples of executing processes include acquiring and developing the project team, performing quality assurance, distributing information, managing stakeholder expectations, and conducting procurements

Planning processes include devising and maintaining a workable scheme to ensure that the project addresses the organization's needs. Projects include several plans, such as the scope management plan, schedule management plan, cost management plan, and procurement management plan. These plans define each knowledge area as it relates to the project at a particular point in time.