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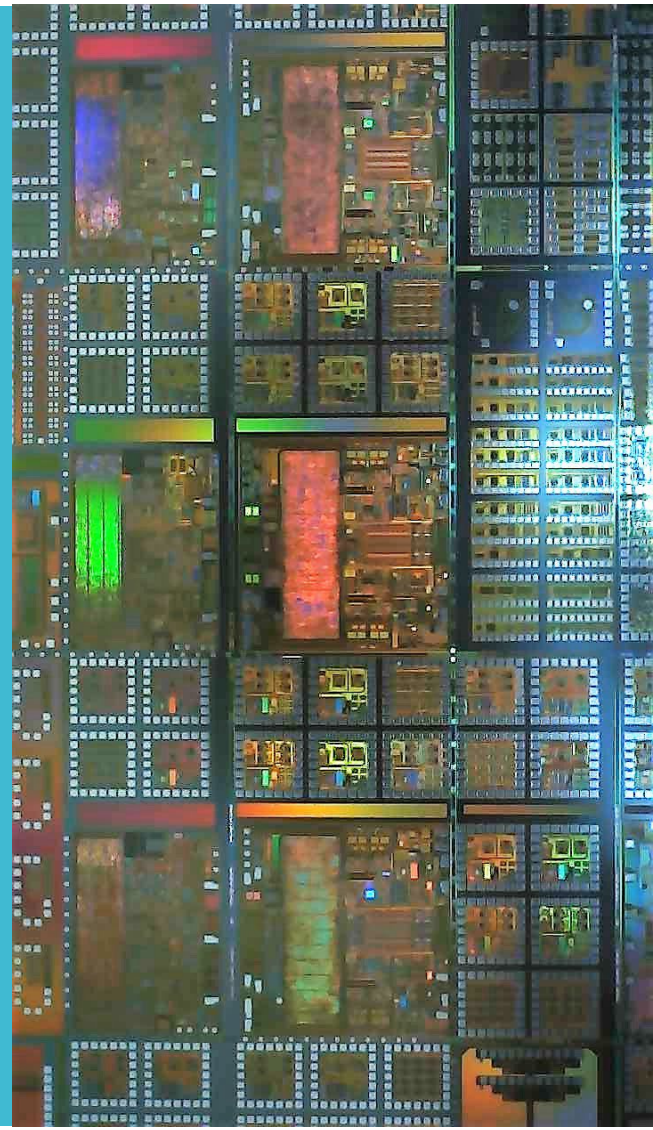
FACULTAD DE INGENIERÍA

Class 1: Introduction and Foundations

Agenda:

- Introduction / Professors brief background and experience
- Course Overview.
- Practical Assignment #1
- What makes a project Successful or unsuccessful. Examples.
- Intro to PMI and PMBOK
- Wrap-up.



ALLEGRO microsystems

Staff Introductions

(20 minutes)

1. **Pablo Radovitzky**
   Sr. Program Manager @Allegro
   +3 Years experience in SC industry

2. **Pablo Ferrara**
   Sr. Program Manager @Allegro
   +2 Years experience in SC industry

3. **Guillermo Fairhurst**
   Sr. Program Manager @Allegro
   +1 Year experience in SC industry.

Course Overview:

(15 minutes)

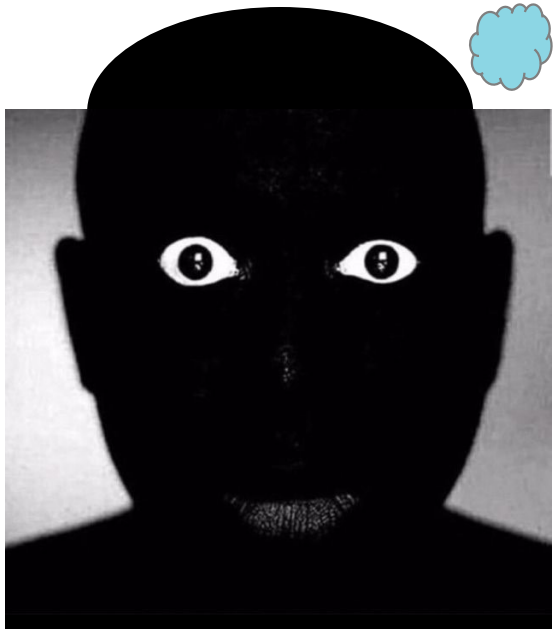
Class 1	Class 2	Class 3	Class 4
Ago-22	**Ago-29**	**Sep-5**	**Sep-12**
Introduction & Foundations	**Project Life Cyle**	**Risk Management**	**Quality Management**
• Course overview • What is Project and Program management? • Introduction to PMI and PMBOK	• Program Lifecycle	• Risk definition • Risk identification • Risk management and tools. • Common risks and impacts in Semiconductor industry.	• Plan Quality • Manage Quality • Control Quality • Quality in SC industry

Course Overview (cont'):

Class 5 Sep-19	Class 6 Sep-26	Class 7 Oct-3	Class 8 Oct-10
Scheduling Part I	**Scheduling Part II**	**Work on Assignments**	**Open Discussion with Industry expert**
• Program Scheduling • Scheduling techniques and tools.	• Continue.	• Team Assignments.	• Course wrap-up with industry expert Program Manager.

Course Evaluation Method

- **Team assignment (50%)**
  - Work on teams of 4 students each.
  - #1 Describe CT roles and their Scope of Work **(25%)**
  - #2 Prepare a Case Study Project and deliver: **(25%)**
    - Project Charter
    - Risk Management Analysis
    - Quality Management Analysis
    - Schedule Management Analysis
- **Individual assignment (40%)**
  - #3 Based on your own Master Thesis, deliver:
    - Project Charter
    - Risk Management Analysis
    - Quality Management Analysis
    - Schedule Management Analysis
- **Class Participation (10%)**



What is a Project Manager?

What is a Project?

What is a Program?

1. Define Project and Program Management
2. Explain when a project may be considered successful and when not.
3. Provide 3 reasons for project failure.

Assignment 1: Whiteboard Session

(15 minutes) Clase 1 - actividad 1 - Miro

Each Student must complete a virtual post-it, explaining their understanding of project management, when a project may or may not be considered successful and finally list 3 possible reasons for project failures.

Project Manager

few definitions

"A project manager is the person assigned by the performing organization to lead the team that is responsible for achieving the project objectives."
PMBOK® Guide – Seventh Edition

The project manager must have a combination of skills including an **ability to ask penetrating questions, detect unstated assumptions and resolve conflicts**, as well as more general management skills.

"A project manager is a person who **has the overall responsibility** for the successful initiation, planning, design, execution, monitoring, controlling, and closure of a project."
Gray, C. F., & Larson, E. W. (2018). Project Management: The Managerial Process

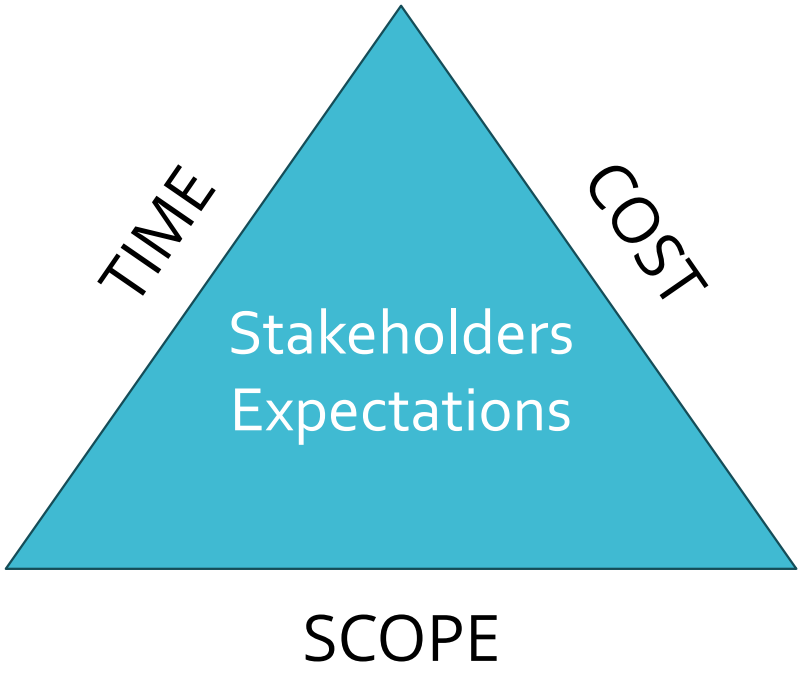
A project manager is a person who is responsible for making decisions, both large and small. The project manager should **make sure they control risk and minimize uncertainty**. Every decision the project manager makes must directly benefit their project.

"A project manager is **like a doctor** who leads the trauma team and decides the course of action for a patient - both at the same time. Without the right kind of authority to efficiently handle all the project management issues, development teams can easily get into trouble."
Scott Berkun, author of "Making Things Happen"

Project Manager Role

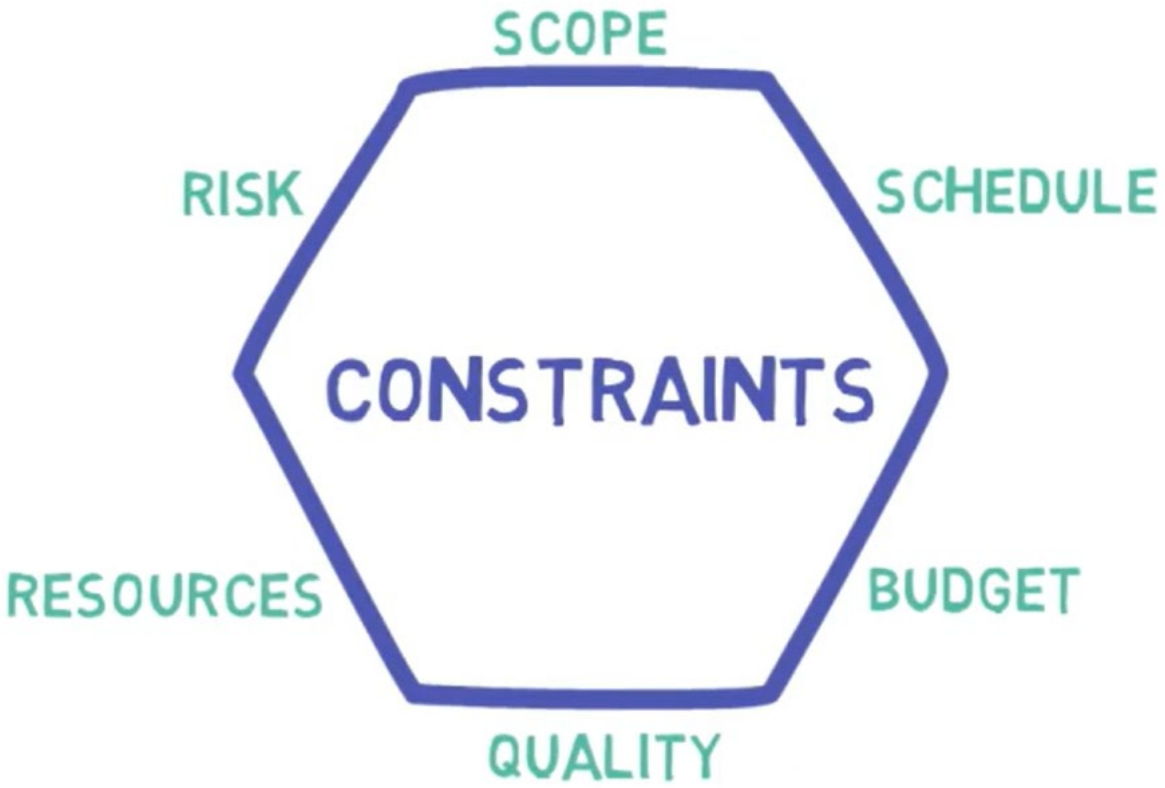
- Leadership
- Organization
- Communication
- Finance
- Technical Knowledge
- Team building

Triple Constraint



Changes to any element of the triple constraint requires changes in one or more of the others

Triple Constraint Enhanced

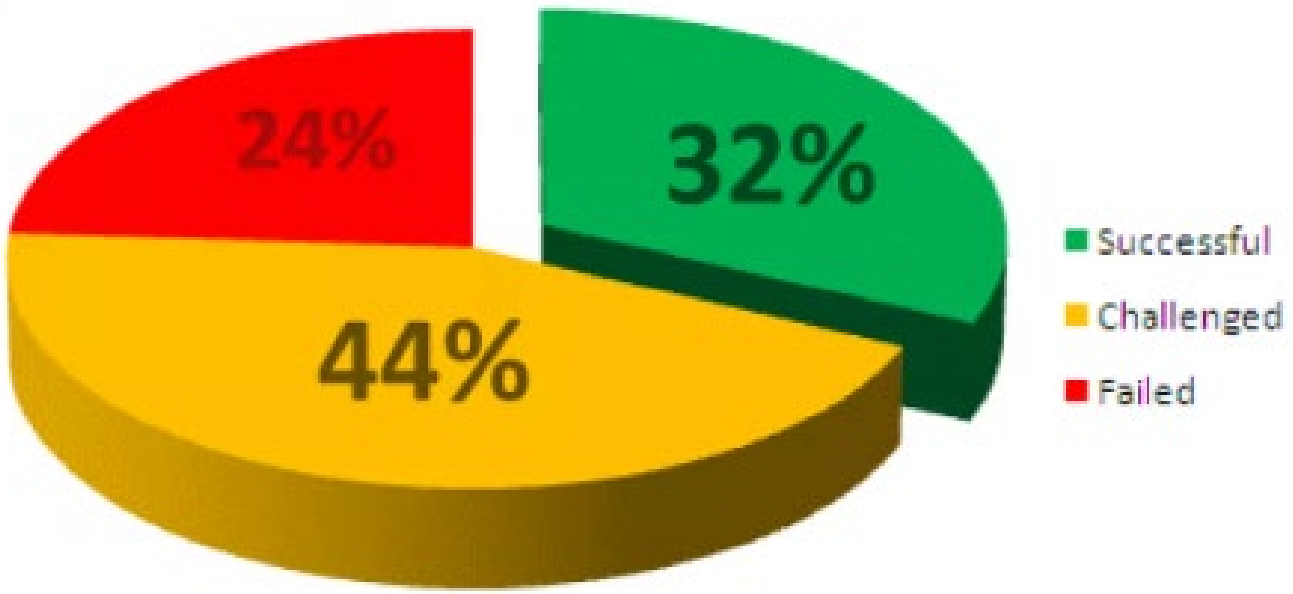


Break

(15 minutes)

🚀 Pomodoro Timer — Do more in less time, stress-free

What Percentage of overall projects succeed?



- **32%** of the projects succeed
- **44%** of the projects are either late, over budget, or do not deliver all the features
- **24%** of the projects never finish or are cancelled

Successful and Unsuccessful Programs

What is a Failed Project?

A project is considered unsuccessful when it **fails to deliver what was required within the agreed-upon budget or timeline or both.** Even a project that initially appears to be successful can be considered a failure if it does not meet projected ROI (Return over Investments) targets.

Lessons Learned:

A failed project can provide valuable insights into which aspects worked as planned. **Identifying the areas that were successful helps the team better understand the difference between those areas and the parts of the project that didn't work.** This knowledge is crucial in making the necessary adjustments for future projects.

Examples of reasons for **project failure**:

1. Unclear Expectations.
2. Scope Creep (continuous changing scope)
3. Lack of Planning
4. Limited Resources
5. Poor Communication
6. Siloed Teams
7. Lack of Leadership

Good practices for **project Success**:

1. Embrace accountability
2. Extend forgiveness and foster collaboration.
3. Maintain perspective and avoid personalizing failure
4. Initiate actions for enhancement

Successful

Lessons from Success

We'll explore some real-world examples of successful semiconductor programs, highlighting the key factors that contributed to their achievements.

Unsuccessful

Lessons from Failure

We'll also examine cases where semiconductor programs have failed, delving into the underlying causes and the lessons learned. Analyzing these failures will provide valuable insights into the common pitfalls program managers must navigate.

Unsuccessful #1 : Challenger space shuttle

Technical Lessons:

•**O-Ring Failure:** The primary cause of the accident was the failure of an O-ring seal in the right solid rocket booster. The O-ring, which was designed to prevent hot gases from escaping during the booster's ignition, lost its elasticity in the unusually cold temperatures on the morning of the launch. This allowed hot gases to leak through the joint, eventually leading to the catastrophic failure.

•**Material Limitations:** The O-ring material was not adequately tested at low temperatures, and its performance degradation in cold conditions was not fully understood. **This highlights the importance of thorough material testing and understanding the limitations of materials in extreme environments.**

Organizational Lessons:

•**Communication Breakdown:** There was a significant breakdown in communication between engineers who had concerns about the O-ring performance in cold temperatures and managers who made the final decision to launch. Engineers' warnings were not effectively communicated or adequately considered in the decision-making process.
•**Normalization of Deviance:** Over time, the acceptance of deviations from expected performance, such as previous instances of O-ring erosion, became normalized within the organization. This normalization of deviance created a false sense of security and reduced the perceived risk associated with launching under certain conditions.
•**"Go Fever":** The investigation revealed a culture of "go fever" within NASA, where the pressure to launch on schedule sometimes overshadowed safety concerns. This pressure to meet deadlines and maintain launch schedules can lead to a dangerous bias towards downplaying risks.

Summary:

The disaster highlighted the importance of **decision-making**, **effective communication**, and a **strong safety culture** in any organization, especially those involved in high-risk endeavors.

Unsuccessful #2 : Sydney Opera House

While now an iconic landmark, the **Sydney Opera House** project shows the critical importance of establishing a clear and detailed project scope before the project kick-off.

The project experienced severe cost and time overruns, from an ***initial estimate of AUS 7 millions over 4 years to a final AUS 102 millions over 14 years***.

The absence of detailed planning meant estimates were made in a vacuum, with no realistic assessment of the complexities involved. While architect was a visionary, the absence of a dedicated project manager resulted in shifting goals, unclear decision-making processes, and a lack of accountability.

Lessons Learned:

- **Clearly Defined Goals and Deliverables:** What exactly are we building, and what are the specific features and functionalities?
- **Detailed Design and Engineering Plans:** How will we build it? This includes architectural blueprints, structural engineering plans, and detailed specifications for materials and construction methods.
- **Realistic Timeline and Budget:** How long will it take, and how much will it cost? This requires a thorough understanding of the project's complexity, resource requirements, and potential risks.
- **Defined Roles and Responsibilities:** Who is responsible for what? A clear organizational structure with well-defined roles and responsibilities ensures accountability and streamlines decision-making.

Introduction to PMI and PMBOK

Project Management Institute (PMI)

We'll introduce the **Project Management Institute (PMI)** and its role in setting industry standards for program and project management. Understanding the PMI's influence and resources will be crucial as you navigate your career in the semiconductor industry.

PMBOK Guide

Next, we'll provide a high-level overview of the **Project Management Body of Knowledge (PMBOK)** and its key knowledge areas. We'll focus on the aspects most relevant to the semiconductor industry, such as risk management, stakeholder management, and schedule management.

PMBOK 6th ed. vs. 7th ed.

Las **principales diferencias** entre ambas ediciones son:

- Cambio de enfoque de procesos a principios y prácticas
- Mayor énfasis en la agilidad y adaptabilidad
- Reducción del número de procesos y mayor flexibilidad
- Mayor énfasis en la entrega de valor y la satisfacción del cliente

PMBOK 6th ed. (2017):

- Se centraba en procesos y fases de gestión de proyectos
- Presentaba un enfoque predictivo y secuencial
- Incluía 49 procesos de gestión de proyectos
- Se enfocaba en la entrega de productos y servicios

PMBOK 7th ed (2021):

- Se centra en principios y prácticas de gestión de proyectos
- Presenta un enfoque ágil y adaptativo
- Incluye 12 principios de gestión de proyectos y 8 prácticas de gestión de proyectos
- Se enfoca en la entrega de valor y la satisfacción del cliente

PMBOK 6th ed

Five Process Groups (*categories*)

1. **Initiating:** Define project scope, goals, and deliverables
2. **Planning:** Create project management plan and define project scope
3. **Executing:** Carry out project tasks and activities
4. **Monitoring and Controlling:** Track project progress and take corrective action
5. **Closing:** Formalize project completion and document lessons learned and evaluate project success

Ten Knowledge Areas (*skills*)

1. **Integration Management:** Coordinate all aspects of project management
2. **Scope Management:** Define and manage project scope
3. **Time Management:** Develop and control project schedule
4. **Cost Management:** Establish and control project budget
5. **Quality Management:** Ensure project quality
6. **Resource Management:** Plan and manage project resources
7. **Communications Management:** Plan and manage project communications
8. **Risk Management:** Identify and manage project risks
9. **Procurement Management:** Plan and manage project procurements
10. **Stakeholder Management:** Identify and manage project stakeholders

49 Processes (*actions needed to achieve category goal*)

Initiating (4)

1. Develop Project Charter
2. Identify Stakeholders
3. Develop Project Management Plan
4. Develop Project Scope Statement

Planning (21)

1. Collect Requirements
2. Define Scope
3. Create WBS (work breakdown structure)
4. Develop Project Schedule
5. Determine Budget
6. Plan Quality Management
7. Plan Resource Management
8. Plan Communications Management
9. Plan Risk Management
10. Plan Procurement Management
11. Plan Stakeholder Management
12. Define Activities
13. Sequence Activities
14. Estimate Activity Resources
15. Estimate Activity Durations
16. Develop Project Schedule
17. Determine Budget
18. Plan Quality Management
19. Plan Resource Management
20. Plan Communications Management
21. Identify Risks

Executing (10)

1. Direct and Manage Project Work
2. Perform Quality Assurance
3. Acquire Resources
4. Develop Project Team
5. Manage Communications
6. Conduct Procurements
7. Manage Stakeholder Engagement
8. Implement Risk Responses
9. Distribute Information
10. Manage Project Knowledge

Monitoring and Controlling (12)

1. Track Project Work
2. Perform Integrated Change Control
3. Validate Scope
4. Control Schedule
5. Control Costs
6. Control Quality
7. Control Resources
8. Control Communications
9. Control Risks
10. Control Procurements
11. Monitor Stakeholder Engagement
12. Report Performance

Closing (2)

1. Formalize Lessons Learned
2. Close Project or Phase

Process Group and Knowledge Area Mapping

Knowledge Areas	Project Management Process Groups © WWW.PM2.BIZ				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor and Control Project Work 4.6 Perform Integrated Change Control	4.7 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Manage Quality	8.3 Control Quality	
9. Project Resource Management		9.1 Plan Resource Management 9.2 Estimate Activity Resources	9.3 Acquire Resources 9.4 Develop Team 9.5 Manage Team	9.6 Control Resources	
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Monitor Communications	
11. Project Risk Management © WWW.PM2.BIZ		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

PMBOK 7th ed

PMBOK 7th edition focuses on principles, practices, and tailoring to fit individual projects

Eight Performance Domains

These represent the key areas of focus for project managers to ensure successful project delivery

1. **Stakeholders:** Identify, analyze, and engage stakeholders to ensure their needs and expectations are met.
2. **Team:** Build, manage, and lead a high-performing team to achieve project goals.
3. **Development Approach and Life Cycle:** Select and tailor the development approach and life cycle to fit the project's unique needs.
4. **Planning and Monitoring:** Plan and monitor project activities, resources, and progress to ensure successful delivery.
5. **Execution and Delivery:** Carry out project tasks, activities, and deliverables to meet stakeholder expectations.
6. **Measurement and Evaluation:** Measure and evaluate project performance, progress, and outcomes to inform decision-making.
7. **Uncertainty and Risk:** Identify, assess, and respond to uncertainty and risk to minimize their impact on the project.
8. **Change and Adaptation:** Embrace and manage change, adapting the project approach as needed to stay aligned with stakeholder needs and expectations.

Twelve Principles guide.

These principles emphasizing the importance of leadership, collaboration, and adaptability.

1. **Stewardship:** Act with integrity, transparency, and accountability to ensure project success.
2. **Teamwork:** Collaborate and empower team members to achieve project goals.
3. **Leadership:** Inspire, motivate, and direct the team to achieve project objectives.
4. **Respect:** Treat team members, stakeholders, and sponsors with respect and dignity.
5. **Fairness:** Ensure equal opportunities, fair treatment, and unbiased decision-making.
6. **Transparency:** Provide clear and accurate communication to stakeholders and team members.
7. **Accountability:** Take ownership and responsibility for project actions and outcomes.
8. **Agility:** Embrace change, adapt to new requirements, and navigate uncertainty.
9. **Adaptability:** Adjust plans and approaches to respond to changing project conditions.
10. **Resilience:** Anticipate, prepare for, and respond to risks, challenges, and setbacks.
11. **Continuous Improvement:** Encourage learning, innovation, and improvement throughout the project.
12. **Learning:** Foster a culture of knowledge sharing, reflection, and growth.

Models, Methods & Artifacts

essential tools for project management.

Models: frameworks to help PM to understand complex concepts
Methods: are the means for achieving outcomes, results, or project deliverables. They provide specific techniques and procedures to accomplish tasks.
Artifacts: templates, documents, outputs, or project deliverables that are created and used throughout the project lifecycle

Tailoring

There is an entire section dedicated to tailoring the project management approach to fit the specific needs of the project

1. Choose a development approach that best suits the project's nature. This could be predictive (waterfall), adaptive (agile), or a hybrid approach
2. Adjust the approach to align with organizational policies, governance, and quality assurance standards
3. Tailor the approach further based on the project's size, complexity, criticality, and other factors. This might involve adding, removing, or modifying aspects of the chosen approach.
4. Continuously inspect and adapt the approach throughout the project lifecycle.

Important takeaways !!

Keyword	Definition
Project	Is a temporary effort to create a product, service, or result. A project has a definite start and end.
Program	A program is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually.
Project Management	is the application of knowledge, skills and techniques to execute projects effectively. It involves, planning, organizing, and controlling resources to achieve specific goals.
Program Management	Involves managing a group of projects, often called programs.
When a project may be considered successful	It's important to note that project **success criteria should be defined and agreed upon by key stakeholders at the beginning of the project**. Also, a project that meets all its objectives may still be considered a failure if it doesn't deliver the expected business value or if it causes unforeseen negative impacts. Conversely, a project that falls short in some areas might still be considered successful if it delivers significant value or important lessons for the organization. In modern project management, there's an increasing focus on overall value delivery and stakeholder satisfaction, rather than just meeting the traditional constraints of scope, time, and cost.
When a project may be considered unsuccessful	1. Fails to meet goals or deliver expected value. 2. Exceeds budget or timeline 3. Does not meet quality standards 4. Affects stakeholders' reputation, 5. Etc.
Typical Reasons for project failure	1. Poor communication 2. Poor Risk management 3. Insufficient resources 4. Unrealistic expectations 5. Etc.

Wrap-up:

Advantages of using formal Project Management

- Better control of financial, physical and human resources
- Improved customer relations
- Shorter development times
- Lower costs
- Higher quality and increased reliability
- Higher profit margins
- Improved productivity
- Better internal coordination
- Higher worker morale

The Art & Science of Project Management

- The science of project management
  - Planning
  - Scheduling
  - Cost control
  - Administration
  - Detailed technical tasks

- The art of project management
  - Leadership
  - Negotiation
  - Motivation
  - Team-building
  - Facilitation
  - Innovation

The Triple Constraint