Introduction to Software Engineering

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Important Definitions:

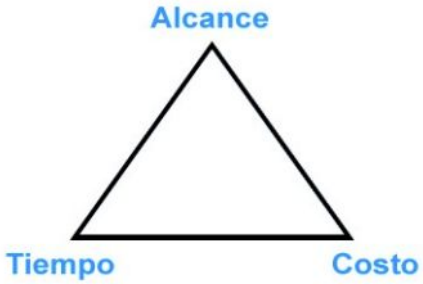
1. Engineering Discipline: Engineers make things work. They apply theories, methods and tools where they are convenient, but they use it selectively and always trying to discover solutions to problems, even when there are no applicable theories and methods to solve them.

2. All aspects of software production: Software engineering not only encompasses the technical processes of software development, but also with activities such as software project management and the development of tools, methods and theories to support the software production.

3. Software Engineering: “Software Engineering is not yet a true engineering discipline, but it has the potential to become one "

The steel triangle:

- Develop quality software on time and on budget.
- Enemies: Ill-defined problems with partial solutions.



Common problems in software projects:

1. Company: Strategies, challenges, restrictions, etc.
2. Employees: Human Factor.
3. Money: Project budget.
4. Time: Delivery expectations and limitations.
5. Laws: External elements that typically place restrictions on the project.
6. Work team: Skills, changes, etc.
7. Technology: Rates of change, suppliers.
8. Environment: Forces of the environment.

General concepts:

Analysis: Analysis emphasizes an investigation of the problem and requirements, rather than a solution

Design: Design emphasizes a conceptual solution that satisfies requirements, rather than putting it into implementation.

Object-oriented analysis: Special attention is paid to finding and describing the objects or concepts in the problem domain.

Object-oriented design: Special attention is paid to defining software objects and how they collaborate to meet requirements.

UML: Language to specify, visualize, construct and document the artifacts of the systems

Common activities within software development:

1. **Business Modeling:** Risk Management, Identification of Stakeholders, Problem / Opportunity, Objectives, Identification of information sources.
2. **Analysis:** Identification of ideas or needs, Capture of Requirements, Coding of Requirements, Prioritization of Requirements, Data analysis.
3. **Design:** Definition of architecture, definition of databases, interface design, solution code design.
4. **Implementation:** Coding, integration of the solution, configuration, documentation of the solution.
5. **Verification:** Definition of test procedures, creation and execution of tests, evaluation of results, automation of tests, retrospectives and demonstrations.