

System Modeling

Introduction

- ❖ Modeling a complex system should be carefully performed in steps and in accordance with a methodology compatible with the system we design.
- ❖ A magical methodology that fits every system doesn't exist.
- ❖ The best we can do is shaping our methodology based on other methodologies choosing those parts that fit our case.

Introduction

- ❖ Having a clear methodology everyone follow in our team will simplify the modeling process and decrease the potential risk for mistakes in our work.

Recommended Stages

❖ Examine Our System as a Black Box

The first recommended stage should include an overview of our system as if it was a black box... without looking into the details... while being focused on its input and output only. During this stage we can examine the system environment and pay attention to our system interface. This stage applies when dealing with existing system as well. Applying an iteratively incremental process should do the work. This stage is usually involved with meeting the system stake holders. Brain storming meetings can assist us to deliver a better system.

Recommended Stages

❖ Model Our System Requirements

Once completing with overview our system from a black box perspective, the next step should be compiling our system requirements. We can use the requirement diagram.

Recommended Stages

❖ Model Our System Use Cases

Once we started modeling our system requirements we can concurrently start working on modeling our system use cases. Concurrently with compiling our system requirements and modeling its use cases we should pay attention to identifying the system actors and its stake holders. Compiling one big general diagram that presents the system from a black box perspective and presents the information flow between the system and its actors can assist us getting a better understanding of the system we need to design.

Recommended Stages

❖ System Development Project Glossary

Concurrently with compiling our system requirements and finalizing our system use cases it can be highly useful to start working on our system glossary, a separated document that can assist all people involved in developing the system.

Recommended Stages

❖ Complete The Design of Our System

Once the requirements and the use cases are clear we can move forward and design our system. During this stage we shall deliver various UML diagrams the development staff can apply in their work. The most important diagram from a developer perspective is the UML Class Diagram.

TIPS

- ❖ TIPS stands for “Theory of Inventive Problem Solving”. It is a theory composed by Genrich Soulovich Altshuller (1926-1998), who believed that inventions aren't coincidence. Altshuller analyzed thousands of patents and found that problems and their solutions repeat an abstract level of abstraction. Altshuller also found that innovations usually occur when different disciplines cooperate.