

REQUIREMENTS ENGINEERING

Software Engineering Seminar

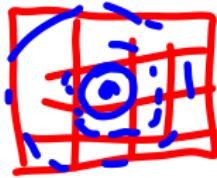
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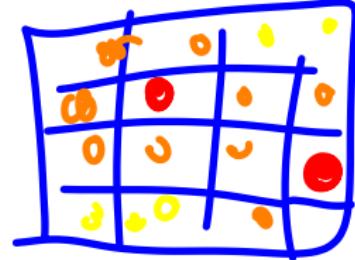
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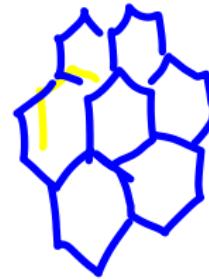
Outline



1 Concepts Generation & Selection



2 Basic Concepts



3 Requirements Engineering



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2 Basic Concepts

3 Requirements Engineering



Concepts Generation

- Concepts generation is the process of creating ideas for a system that meet the needs of its users.
- It involves brainstorming, research, and analysis to generate innovative ideas for a system.
- It is a creative process that encourages innovation and creativity in the development of a system.

business
model processes

improvement point

add value → impact



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pattent

netflix



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Optimization



Innovation and Creativity

- **Innovation** is the process of creating new ideas and solutions that improve the performance of a system.
- Creativity is the ability to generate original and innovative ideas to solve problems and meet the needs of users.
- Resources
- quality
- They are important for ensuring that a system is robust, efficient, and effective.



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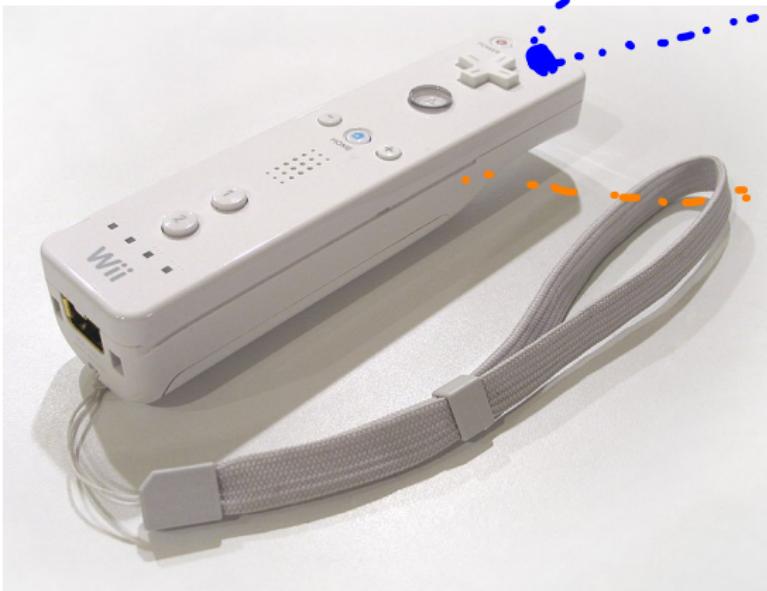
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Is this Innovation & Creativity?

A real videogames console **revolution!**



Concepts Selection

- Concepts selection is the process of evaluating and choosing the best ideas for a system.
- It involves analysis, comparison, and evaluation of concepts to determine which ones are the most feasible and effective.
- It is a critical process that ensures that the final design of a system meets the needs of its users.

Fair



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Stakeholders Vs. Shareholders

- **Stakeholders** are individuals or groups who have an interest in the success of a project.
- **Stakeholders** can be internal or external to a company. For example, customers, employees, suppliers, and regulators are external stakeholders.
- Shareholders are individuals or groups who have an ownership interest in a company.
- Shareholders are typically internal to a company. For example, investors, owners, and managers are considered shareholders.



Stakeholders Vs. Shareholders

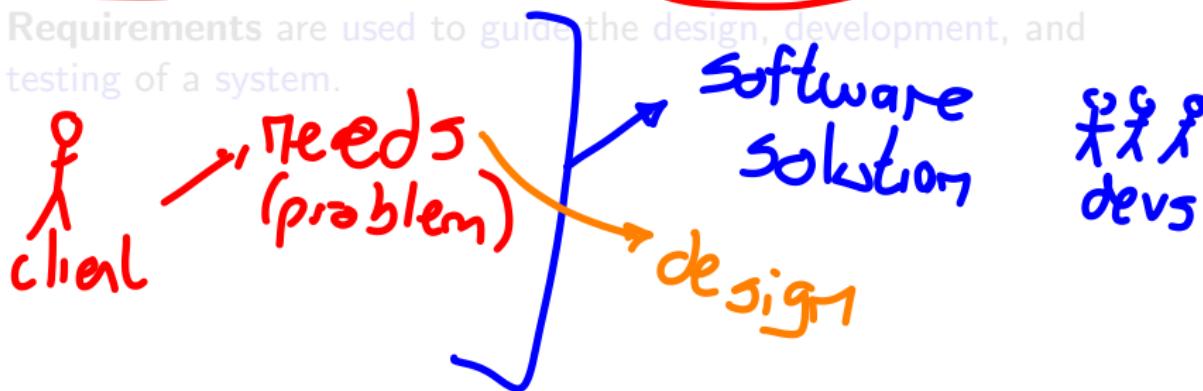
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Owners



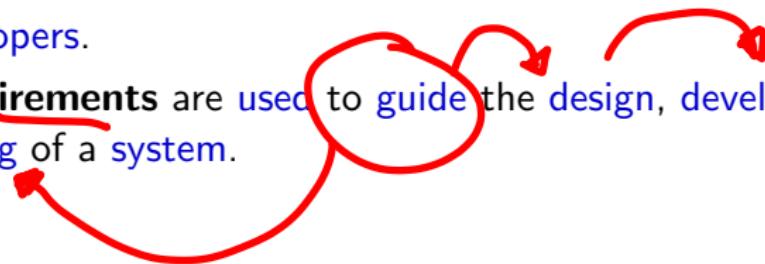
Requirements

- Requirements are statements that describe the features, functions and constraints of a system.
- Requirements are used to communicate the needs of stakeholders to developers.
- Requirements are used to guide the design, development, and testing of a system.



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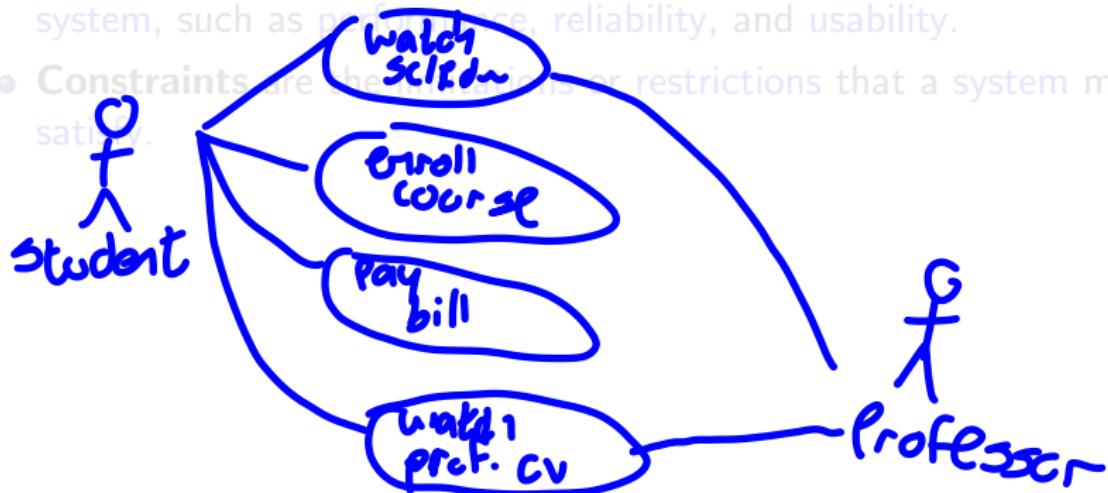


Requirements Types

- **Functional requirements** describe the **functions** and **features** of a system.

LISP cases

- Non-functional requirements describe the quality attributes of a system, such as performance, reliability, and usability.
- Constraints are the limitations or restrictions that a system must satisfy.



Requirements Types

- **Functional requirements** describe the **functions** and **features** of a system.
- **Non-functional requirements** describe the **quality attributes** of a system, such as **performance**, **reliability**, and **usability**.
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scability



Requirements Types

- **Functional requirements** describe the **functions** and **features** of a system.
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- **Constraints** are the limitations or restrictions that a **system** must satisfy.

*business
rules*



User Stories

→ close project

- User stories are short, simple descriptions of a feature or function of a system.
- They are written from the perspective of the user and describe what the user wants to achieve.
- They are used to capture the requirements of a system in a simple and understandable way.

validate

no technical

understanding
comprehension
be 'n the
same page



User Story Format [Example]

User Story

Title: Explicit	Priority:	Estimate:
<p>User Story:</p> <p>As a [description of user], I want [functionality] so that [benefit].</p> <p>Acceptance Criteria:</p> <p>Given [how things begin] When [action taken] Then [outcome of taking action] → expected result</p>		

Planning
Poker

Scope

desired
↑
↓ valid

role
req.
impact

ProductPlan



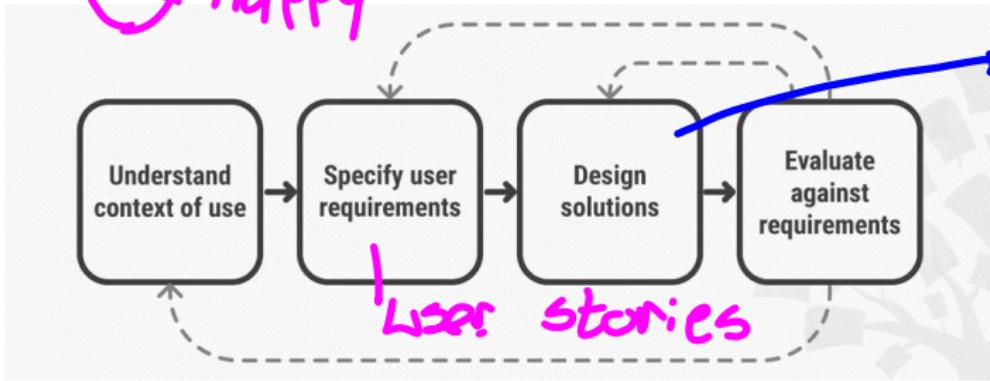
User-Centered Design (UCD)

- **User-centered design** (UCD) is an iterative design process that focuses on understanding the needs, preferences, and behaviors of users.
 - UCD is a collaborative process that involves users in the design and development of a system
 - UCD is used to create systems that are usable, efficient, and satisfying to users.

problem

Final user

User stories



User Story Lifecycle

context



User Needs

Product Backlog



Discovery



Release Backlog



Release planning



Sprint Backlog



Sprint planning



As a _____, I want to
be able to _____ so
that _____

As a _____, I want to
be able to _____ so
that _____

As a _____, I want to
be able to _____ so
that _____

Might have an initial
estimate (perhaps for both
analysis and development),
and an expression of
technical and business
confidence that this is real
and achievable

More detailed estimate, and
a specific acceptance test -
low confidence stories might
be "spiked" or prototyped

I will know this is
done when _____

I will know this is
done when _____

To do this I must:
1) _____
2) _____

Possible automation
of the acceptance
test

Development team
breaks out the
detail of work
needed to pass test

deliver release

technical task



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1 Concepts Generation & Selection

2 Basic Concepts

3 Requirements Engineering



What is Requirements Engineering?

- Requirements engineering is the process of eliciting, analyzing, specifying, validating, and managing the requirements of a system.

- It is a critical activity in the systems development lifecycle that ensures that the system meets the needs of its users.

understanding
backgrounds
perspectives

client
approval

theory

agile

all project
time life



What is Requirements Engineering?

- Requirements engineering is the process of eliciting, analyzing, specifying, validating, and managing the requirements of a system.
- It is a critical activity in the systems development lifecycle that ensures that the system meets the needs of its users.
- It is a collaborative process that involves stakeholders from different backgrounds and perspectives.

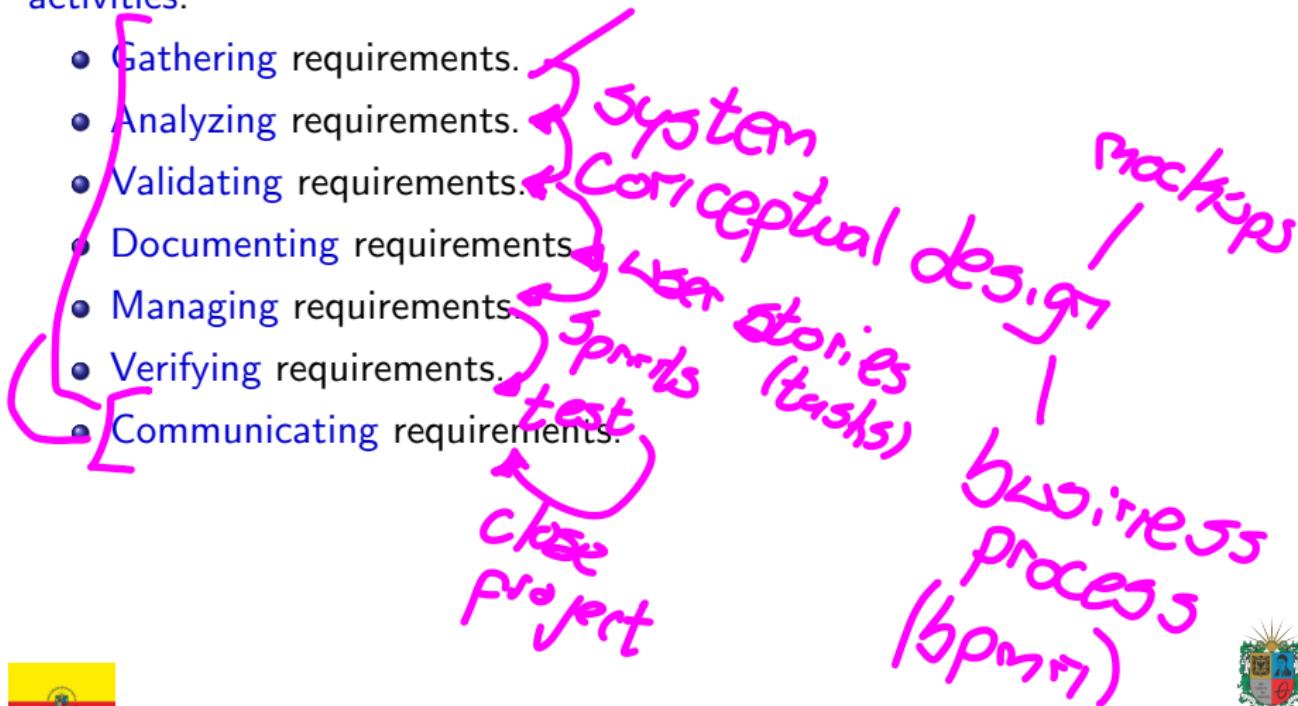
expectations
align.



Requirements Engineering Process

The **requirements engineering** process *consists of the following activities:*

- Gathering requirements.
- Analyzing requirements.
- Validating requirements.
- Documenting requirements.
- Managing requirements.
- Verifying requirements.
- Communicating requirements.



Gathering Requirements

- Gathering requirements is the process of collecting and documenting the needs of stakeholders.
- It involves interviewing stakeholders, conducting surveys, and observing users to understand their requirements.
- It is essential to prioritize requirements based on stakeholder feedback and project goals.

Final Product } Product discovery



Clients Are Not Always Right

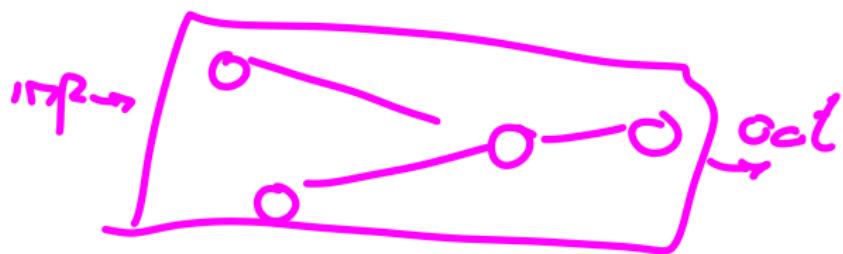
Dear Santa
How are you? I'm good.
Here is what I want for
Christmas.

A <https://www.amazon.com/gp/product/B00032HF60>
Mref=59_hps_bw_g21_ir03?pf_rd_m=ATVPDKIKXODER&pf_rd_s=center-3&pf_rd_d=IXWY42FH2KO3Y78MWQNM&pf_rd_t=101&pf_rd_p=1328901542&pf_rd_i=16579

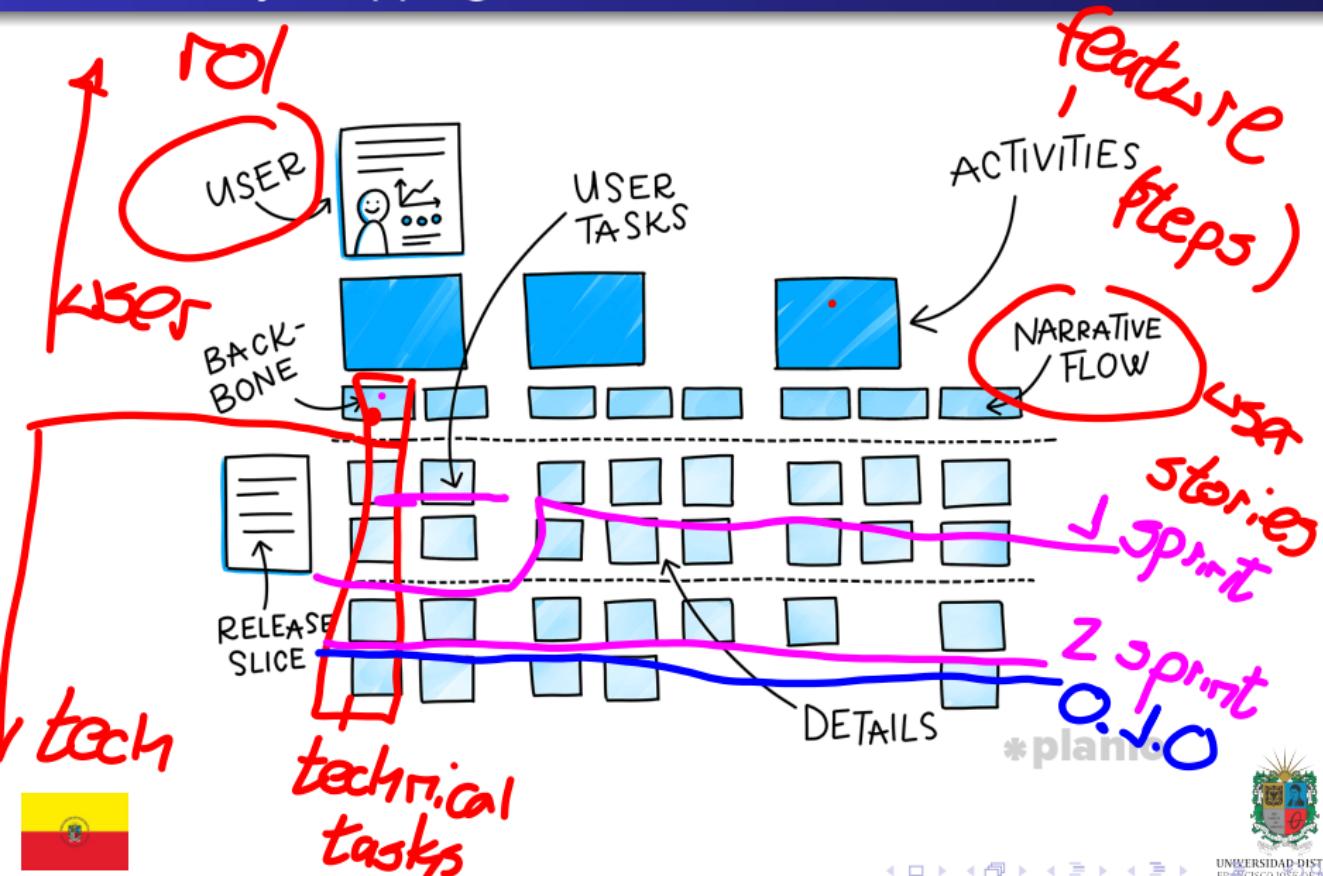


Analyzing Requirements

- **Analyzing** requirements is the process of examining and understanding the requirements of a system. → **diagram**
- It involves identifying dependencies, conflicts, and inconsistencies in the requirements.
- It is a critical activity that ensures that the requirements are complete, consistent, and correct.



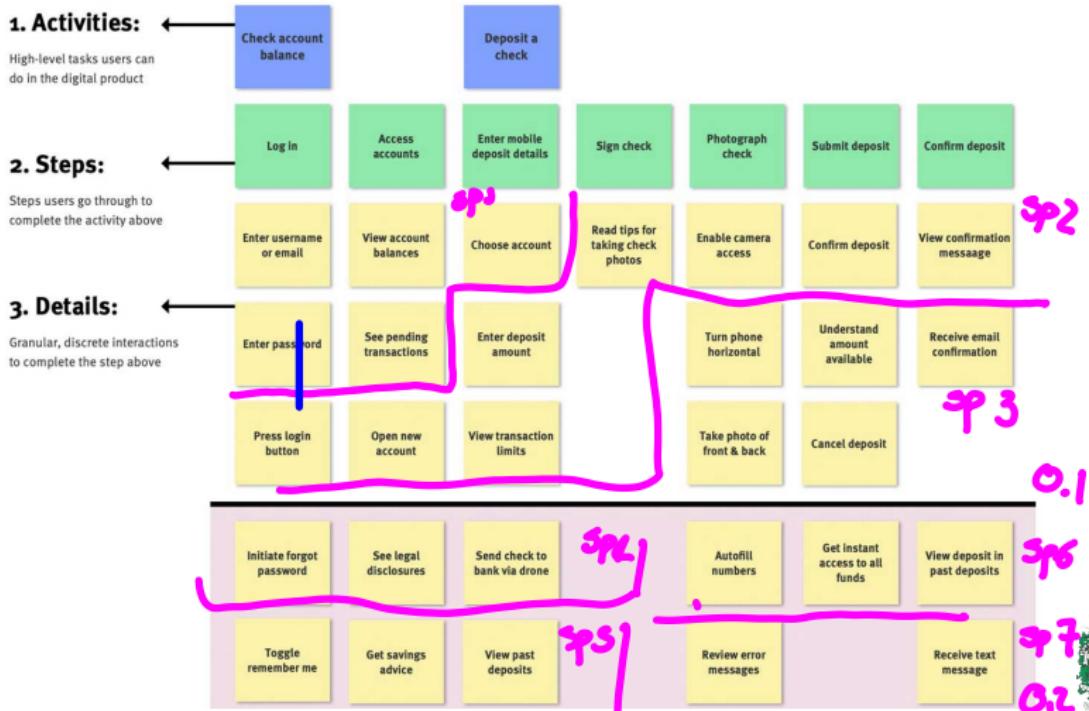
User Story Mapping



USM: Study Case

User-Story Map: Mobile App Feature for Depositing Checks

NNGROUP.COM NN/g



Documenting Requirements

- **Documenting** requirements is the process of writing and organizing the requirements of a system.
- It involves creating documents, diagrams, and models that describe the requirements in a clear and concise way.
- It is a collaborative process that involves stakeholders from different backgrounds and perspectives.

User stories

Mockups

Processes

Business

UML

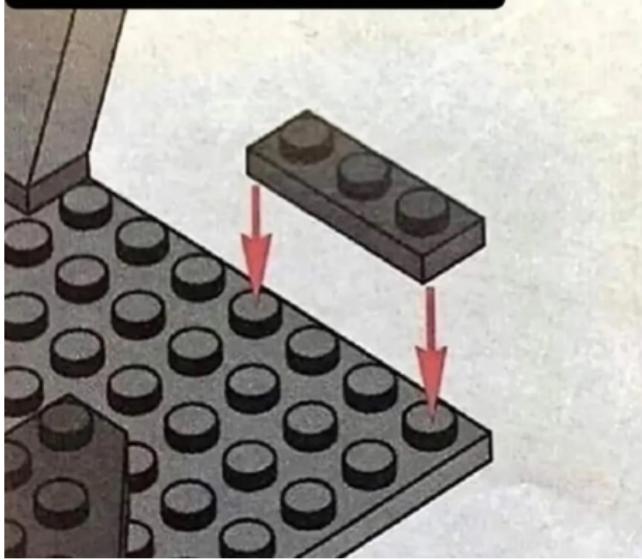


Everyone Hates Writing Documentation

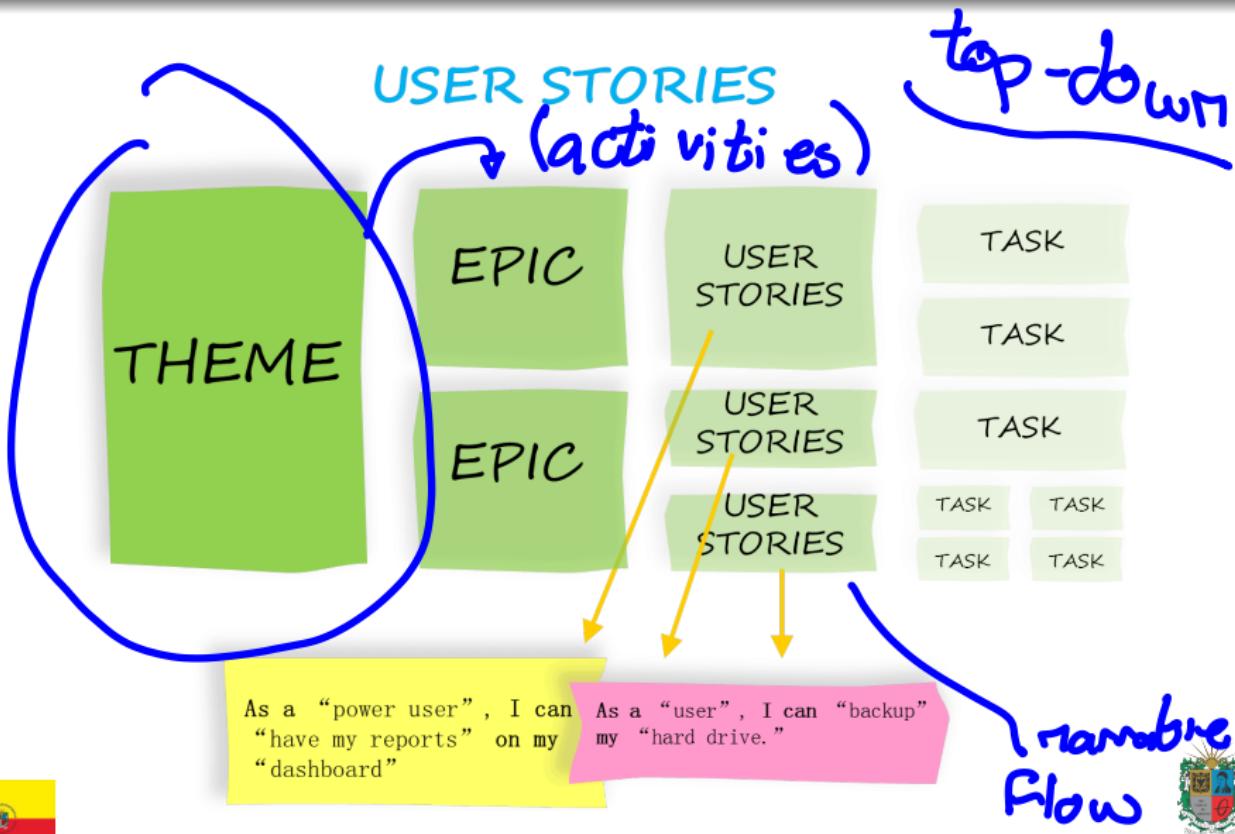
no time
money

**En la documentación
está todo bien explicado**

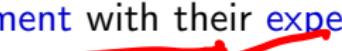
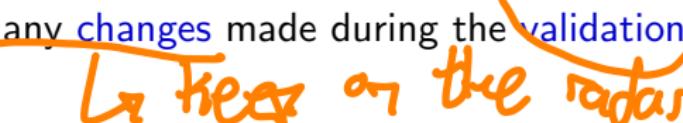
La documentación:



User Stories Hierarchy



Validating Requirements

- **Validating** requirements is the process of ensuring that the requirements are correct and complete. 
- It involves reviewing the requirements with stakeholders to verify that they meet their needs. 
- It is important to document any changes made during the validation process.
- It is also crucial to review the validation results with stakeholders to ensure alignment with their expectations.



Clients Are Not Always Right



Dad Jokes

@Dadsaysjokes

My dad told me his password is:
MickeyMinnieGoofyDonaldPlutoHuey
LouieDeweyDublin.

Because he was told his password
had to contain 8 characters and at
least one Capital.



Verifying Requirements

- **Verifying** requirements is the **process of ensuring** that the requirements are **correctly implemented** in the **system**.
- It involves **testing** the **system** to verify that it **meets** the **requirements**.
- It is a **critical activity** that **ensures** that the **system** is **functional**, **reliable**, and **usable**.



Typical Mistakes When Testing

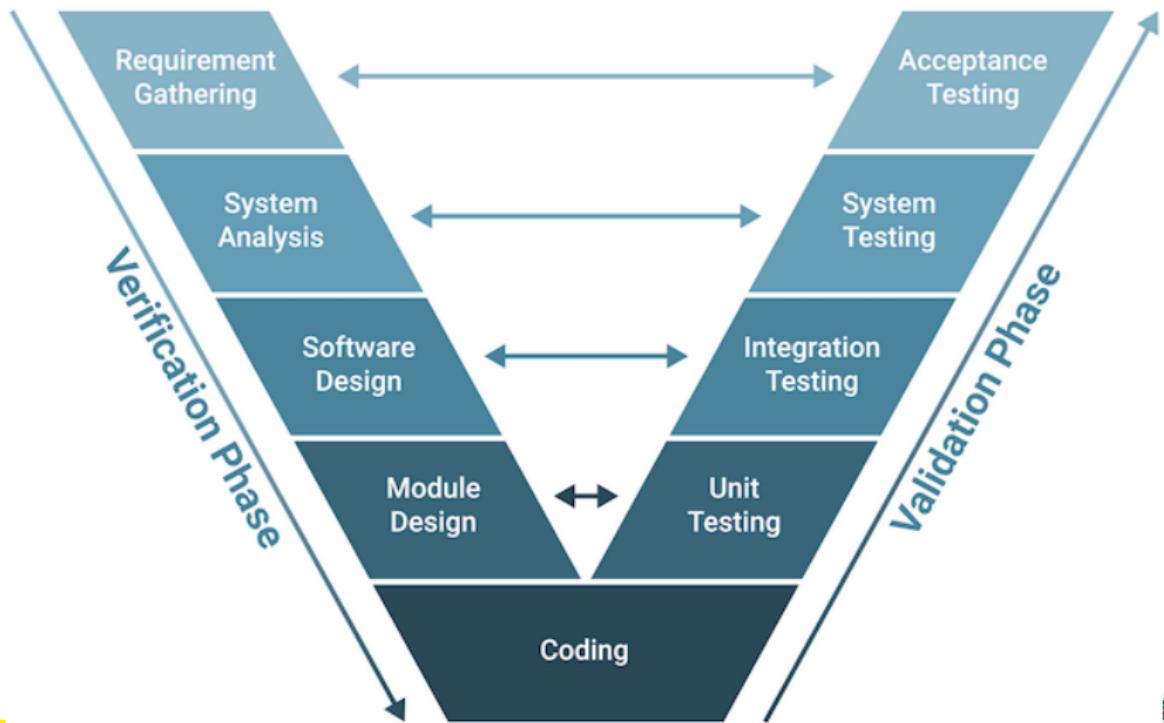
Disturbing Chinese calorie app...



	カシューナッツ	(cashew)	1粒	9 kcal
	ジャムパン	(Pomeranian)	1個	327 kcal



V-Model in SDLC



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Thanks!

Questions?



Repo: www.github.com/EngAndres/ud-public/tree/main/courses/software_engineering_seminar

