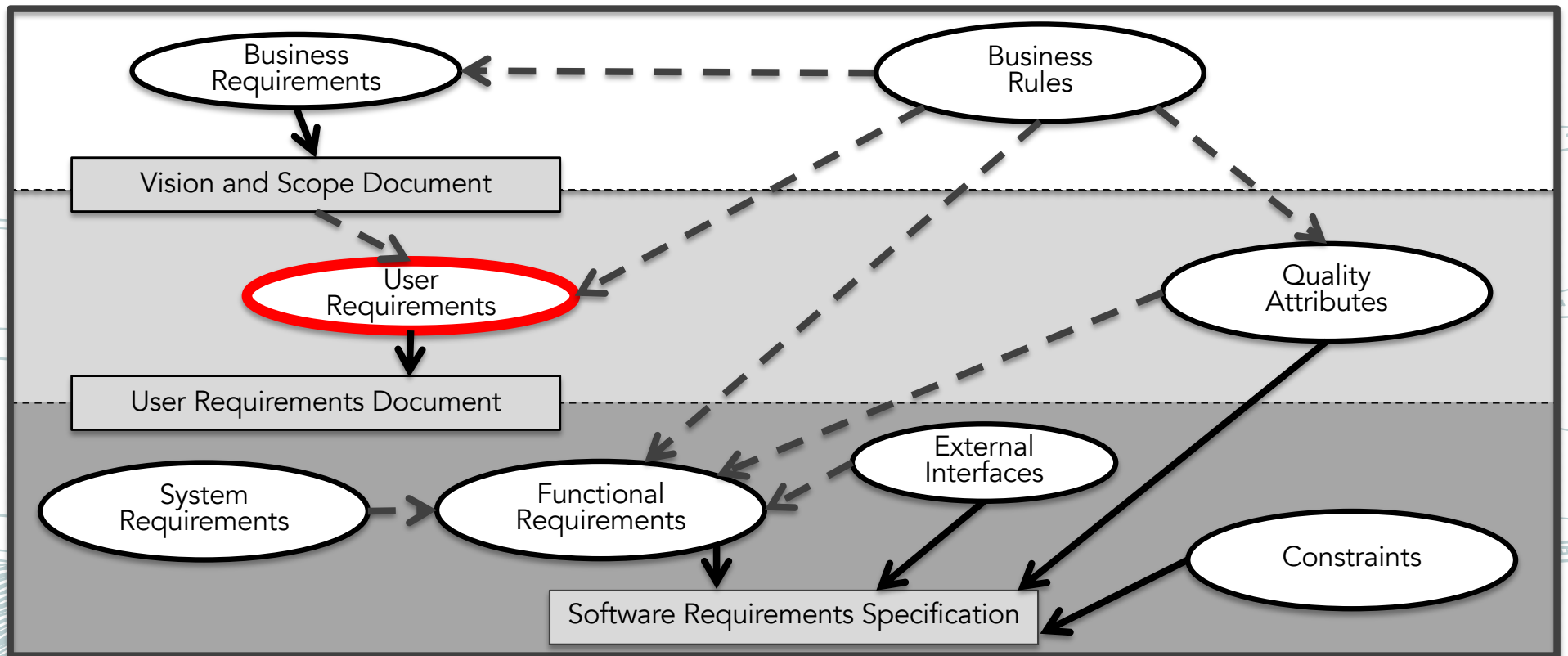
Software Architecture

Lecture 05:
User Requirements

Outline

1. User Requirements
2. Use Cases and Use Case Diagrams
3. User Stories
4. User Story Maps
5. Summary

Requirements Types



* From K.E. Wiegers. 2013. *Software Requirements* (3 ed.). Microsoft Press, Redmond, WA, USA.

What is a user requirement?

User Requirements

- Describe tasks that the users must be able to perform with the product.
- Describe what the user will be able to do with the system.
- Valuable ways to represent user requirements include use cases, and user stories.

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Use Cases

- Use cases were introduced in 1986 by Ivar Jacobson, a main contributor to the UML.
- A Use Case (UC) describes how an actor uses a system to accomplish a particular goal.
- A UC describes a way in which an actor interacts with the system.
- A complete set of use cases can be used to partition the functionality of a system.

UC Fully Dressed

Use Case UC1: Process Sale

Fully dressed two columns

Primary Actor: ...
... as before ...

Main Success Scenario:

Actor Action (or Intention)	System Responsibility
1. Customer arrives at a POS checkout with goods and/or services to purchase.	
2. Cashier starts a new sale.	
3. Cashier enters item identifier.	4. Records each sale line item and pre sents item description and running total.
Cashier repeats steps 3-4 until indicates done.	5. System presents total with taxes calculated.
6. Cashier tells Customer the total, and asks for payment.	
7. Customer pays.	8. Handles payment.

Use Case Diagrams

A use case diagram shows the relationships among actors and use cases within a system.

There are two main **things** in a use case diagrams:

1. Actor: It is something with behavior
2. Use Cases represent a user requirement.

Use Case Diagrams

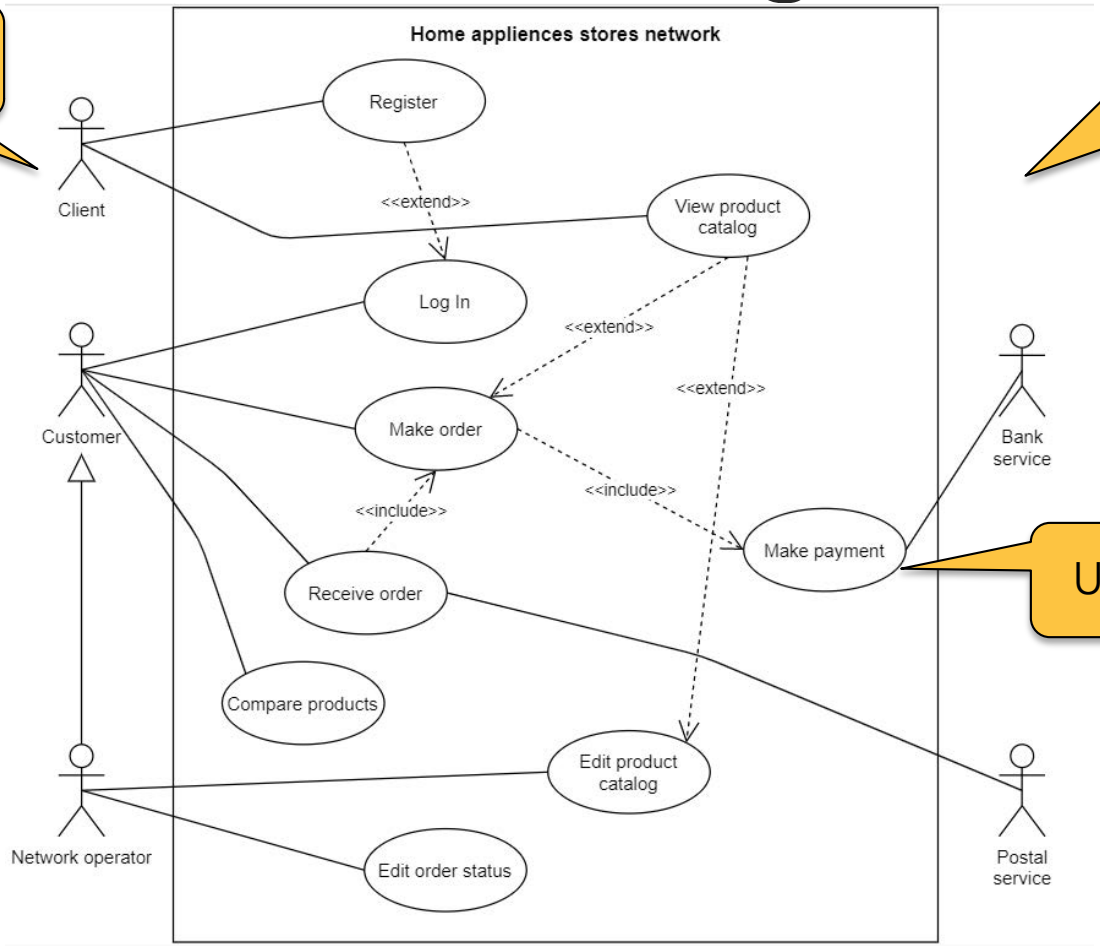
There are four main types of **relationships** in a use case diagrams:

1. Communicates is used to connect an actor to a use case
2. Includes describes the situation where a use case contains a behavior that is common to more than one use case
3. Extends describes the situation where one use case possesses the behavior that allows the new use case to handle a variation or exception
4. Generalizes implies that one thing is more typical than the other thing

Use Case Diagrams

Actor

A use case diagram is an excellent picture of the system context.



Use case

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What is a User Story?

- A concise, written description of a piece of functionality that will be valuable to a user (or owner) of the software.
- One or more sentences in the everyday or business language of the end user or user of a system that captures what a user does or needs to do as part of his or her job function.

User Story Description

Who?

What?

As a [role]

I want/need/can [goal/outcome]

so that [reason/value]

Why?

User Story Description

As a dog I want to order food on line so I do need to rely on people anymore

User Story Description

Good:

- As a business traveller I want to cancel a reservation …
- As a vacation traveller I want to see photos of the hotels …

Why all these are bad examples ?

Bad:

- As a manager I want the system to be stable so that I can please my customers …
- As a manager I want the system to be written in Ruby …

Where are the details?

"As a business traveller I want to cancel a reservation"

- Does the business traveller get a refund?
- How far ahead must the reservation be cancelled?
- Is that the same for all hotels?
- …

Is it enough?

Where are the details?

- User stories are short and general
- User stories replace up-front documentation of software requirements
- User stories require a further conversations among users and developers to agree and specify the details .

Where are the details?

One alternative:

"As a business traveller I want to cancel a reservation"

Front

- ❑ A premium member can cancel the same day without fee.
- ❑ A premium member is charged 10% for same day cancelations
- ❑ An email confirmation is sent
- ❑ Notify the hotel about the cancelation

Back

Conditions of satisfaction
Acceptance criteria

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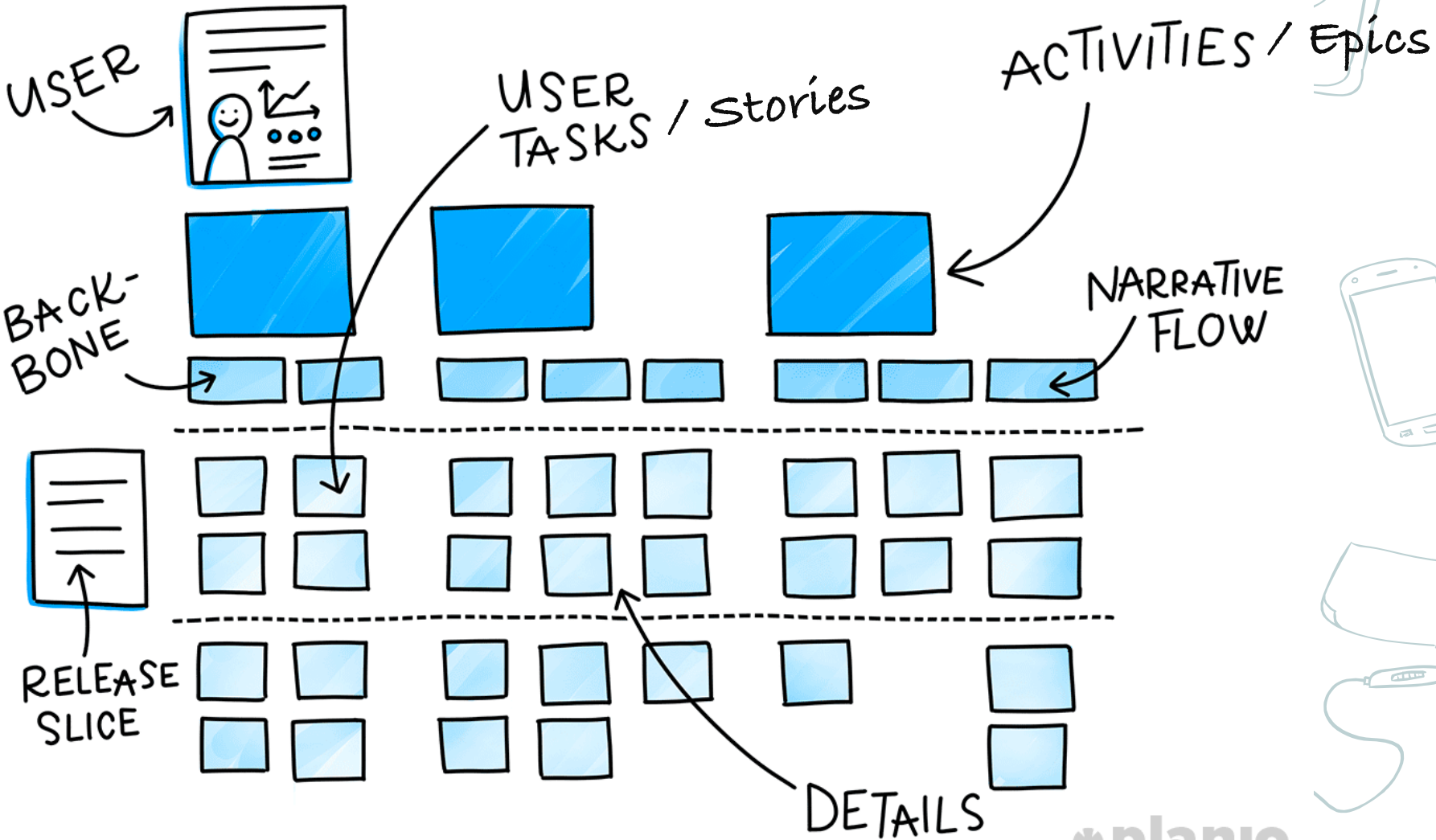
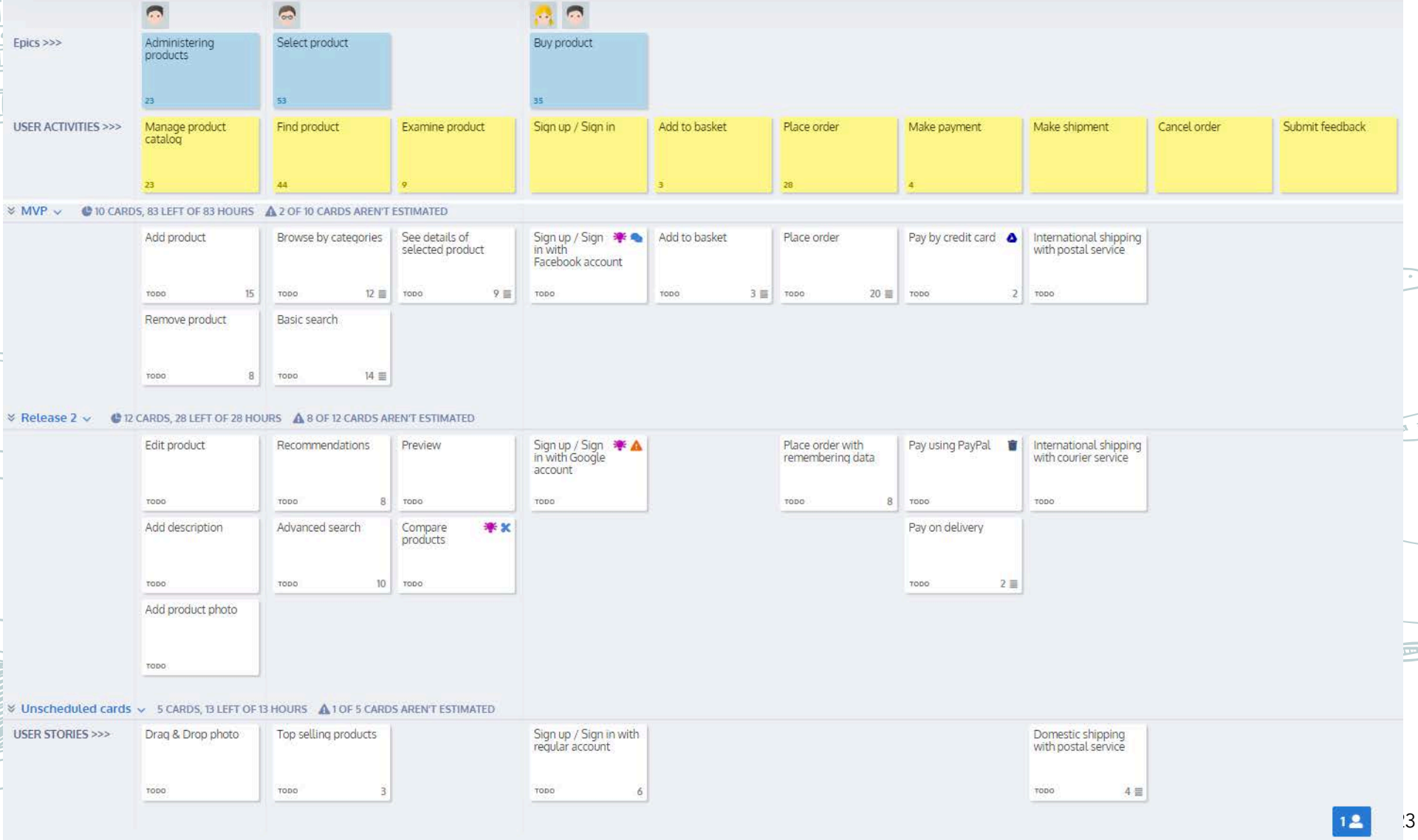
Story map

It is a effective and useful tool to capture **user requirements** in the form of user stories


USER
USER TASKS / stories
ACTIVITIES / Epics
BACK-BONE
NARRATIVE FLOW
RELEASE SLICE
DETAILS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TODO
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TODO
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TODO
Advanced search
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TODO
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Drag & Drop photo
TODO
Top selling products
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Sign up / Sign in with regular account
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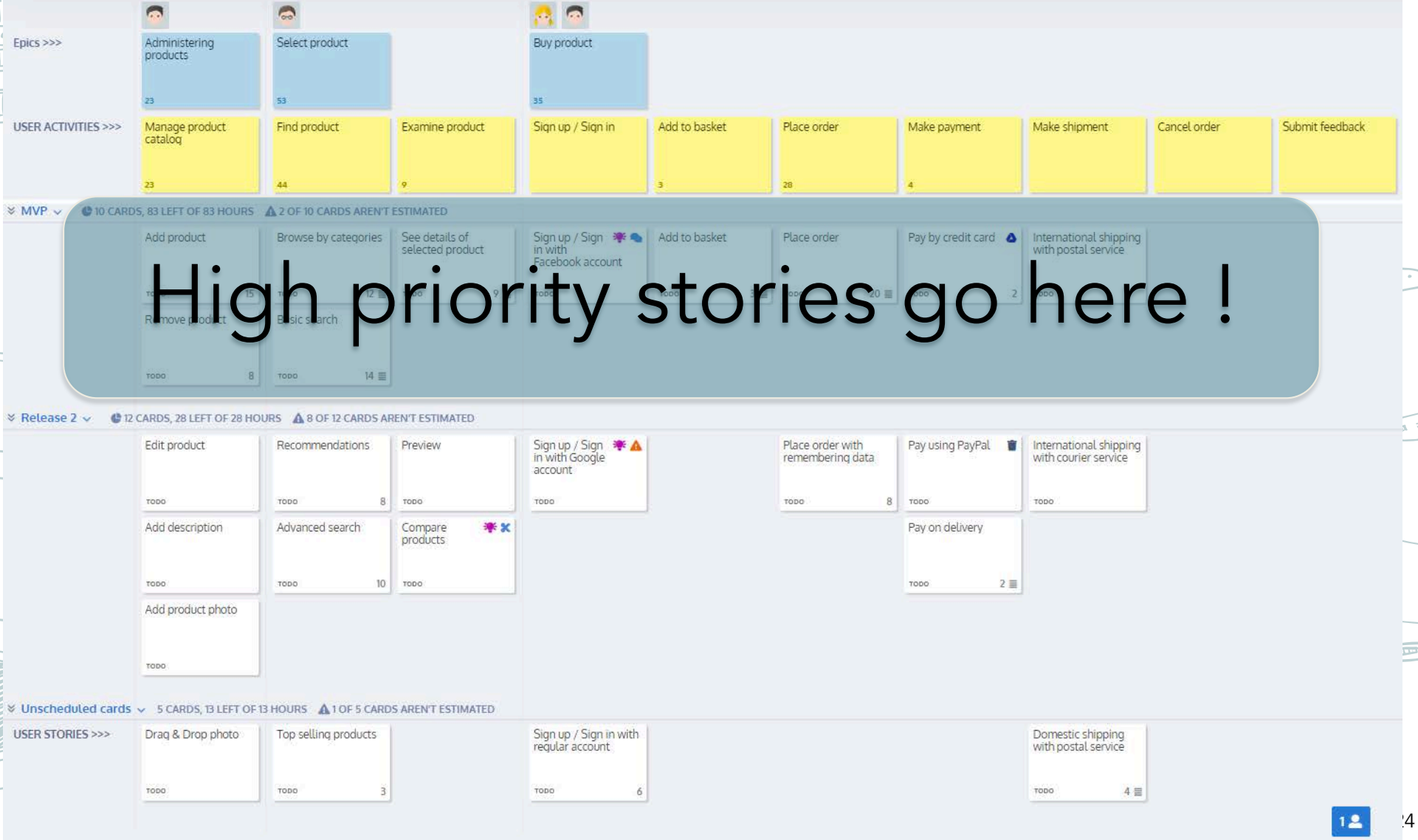
Domestic shipping with postal service
TODO 4
1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TODO
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TODO
14
High priority stories go here !
Release 2
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4
TODO

Why do prioritize requirements?

- You need to make sure the product delivers the **most critical** or **valuable** requirements, to reach maximum **business value** as quickly as possible within the project constraints.
- Establishing the relative priority of each requirement lets you **plan construction** to provide the highest value at the lowest cost.

Who is involved requirements prioritization?

Various stakeholders need to participate in prioritization, representing:

- users
- project sponsors
- project management
- development

... and perhaps other perspectives

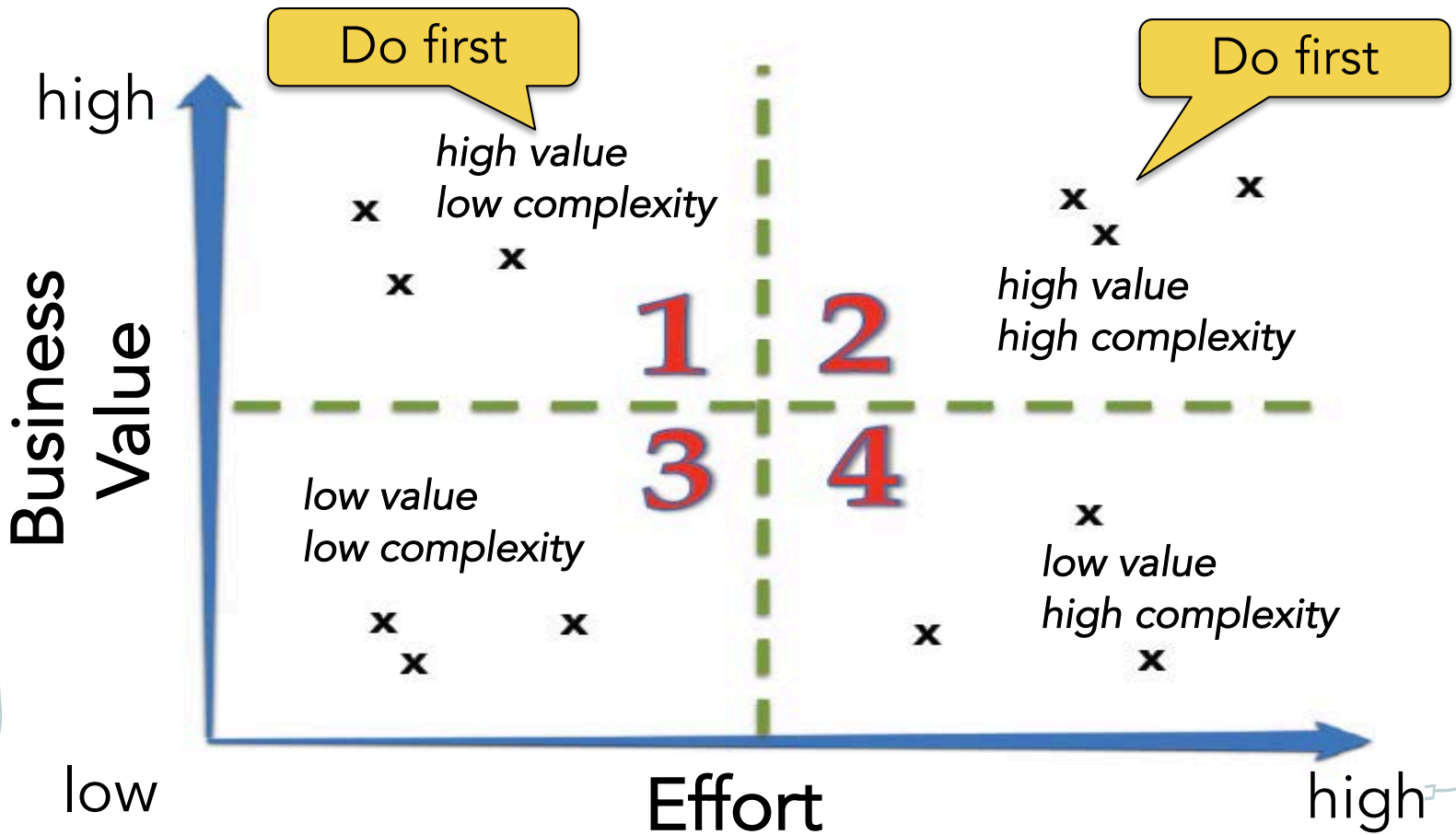
What criteria is used to requirements prioritization?

The prioritization can include **considerations** of:

- customer/business value
- business or technical risk
- cost
- difficulty of implementation
- time to market
- regulatory or policy compliance
- competitive marketplace advantage
- contractual commitments

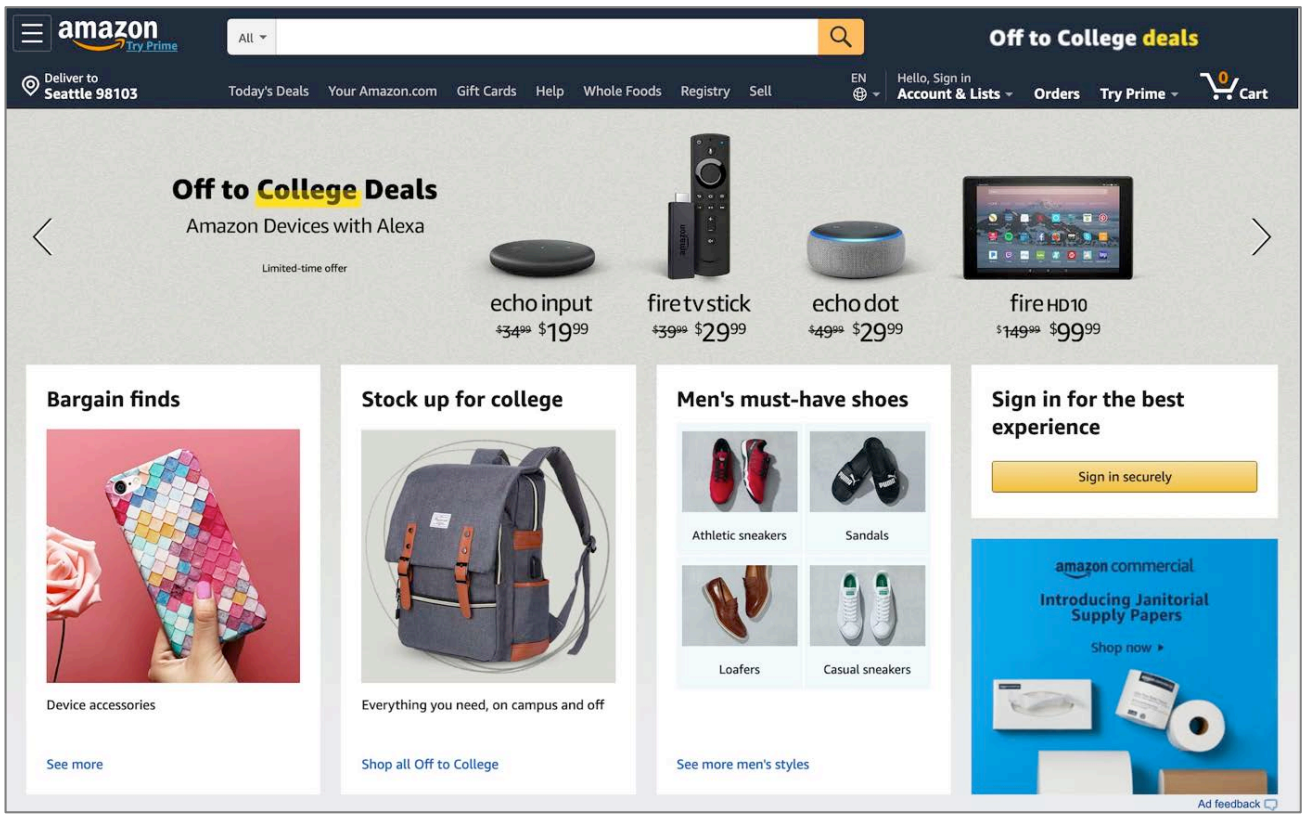
… and perhaps other.

Priority Quadrants

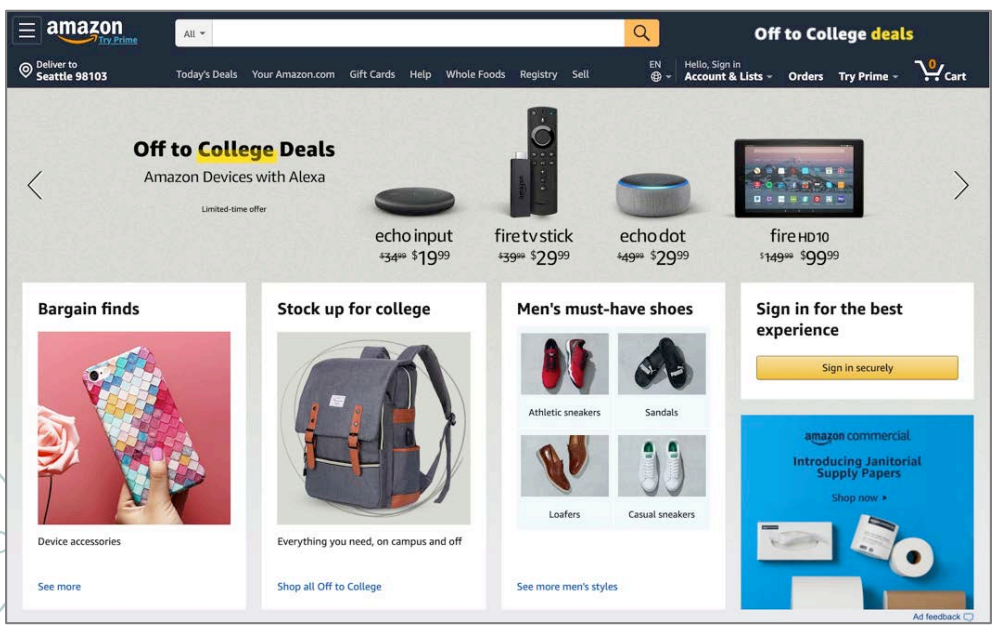


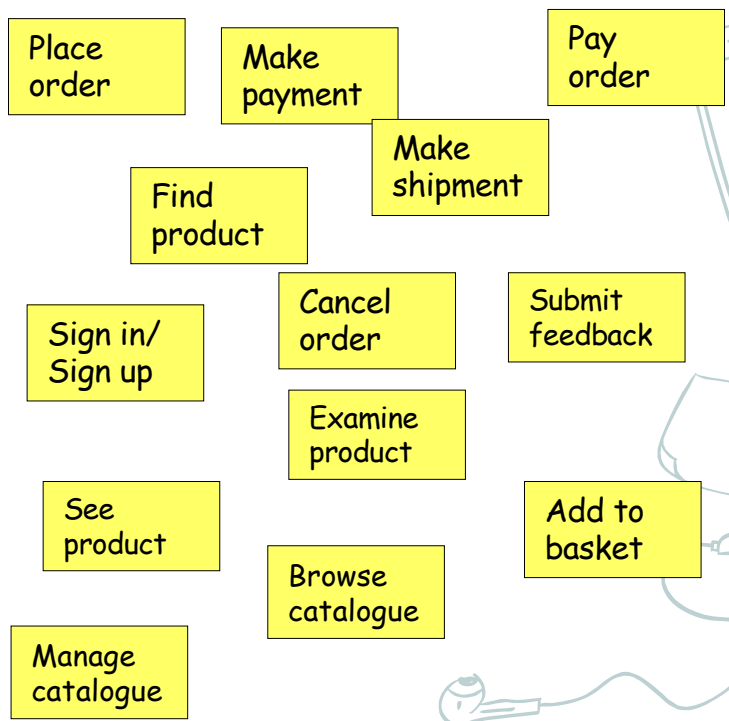
We start with the backbone

1. [silently] “Things People Do”

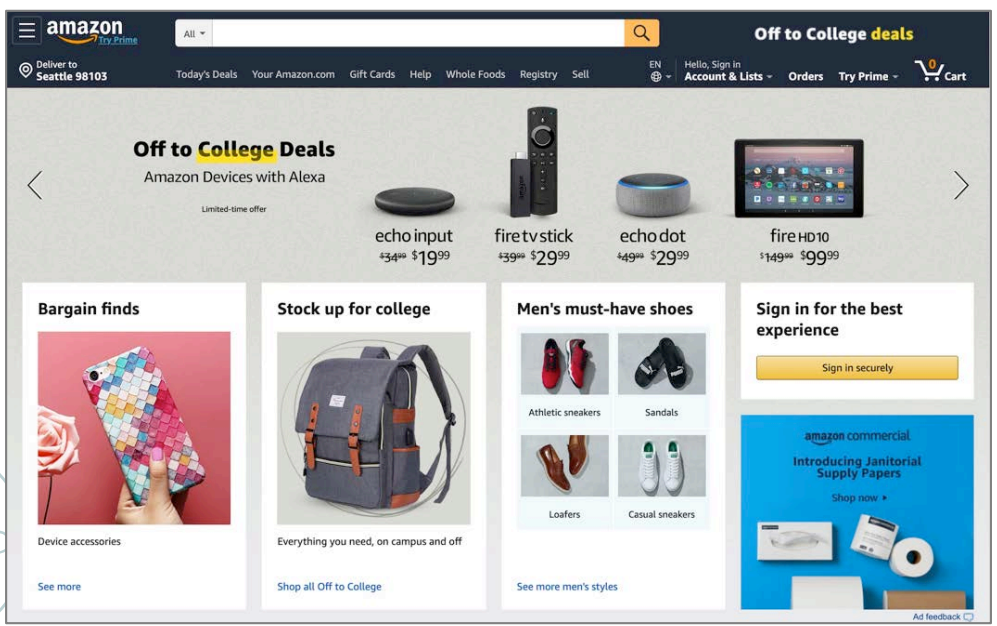


2. Read & Remove duplicates





3. [silently] Group



Examine product

Find product

Cancel order

Submit feedback

Make shipment

Make payment

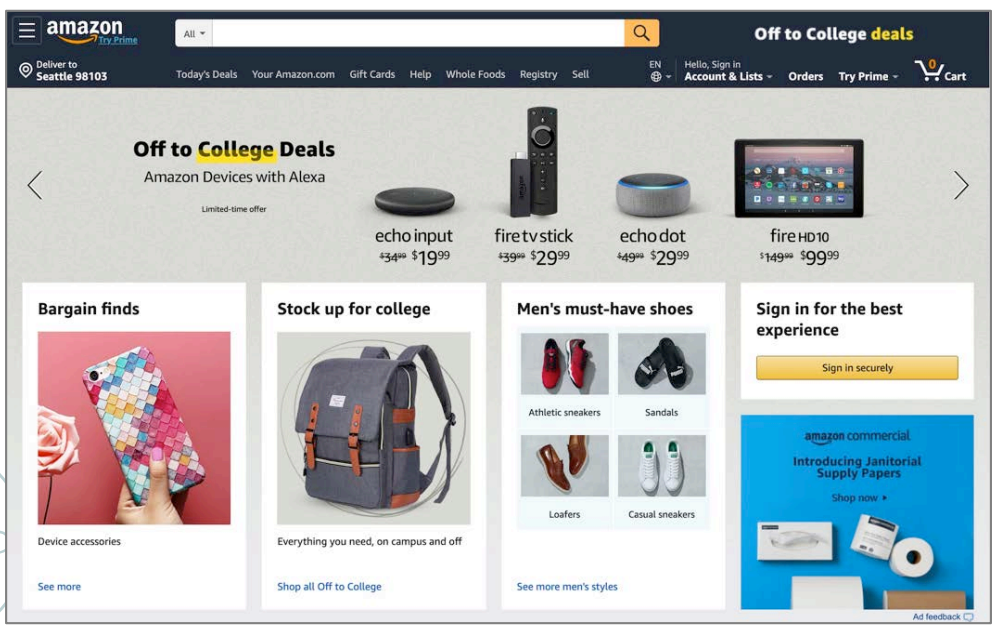
Place order

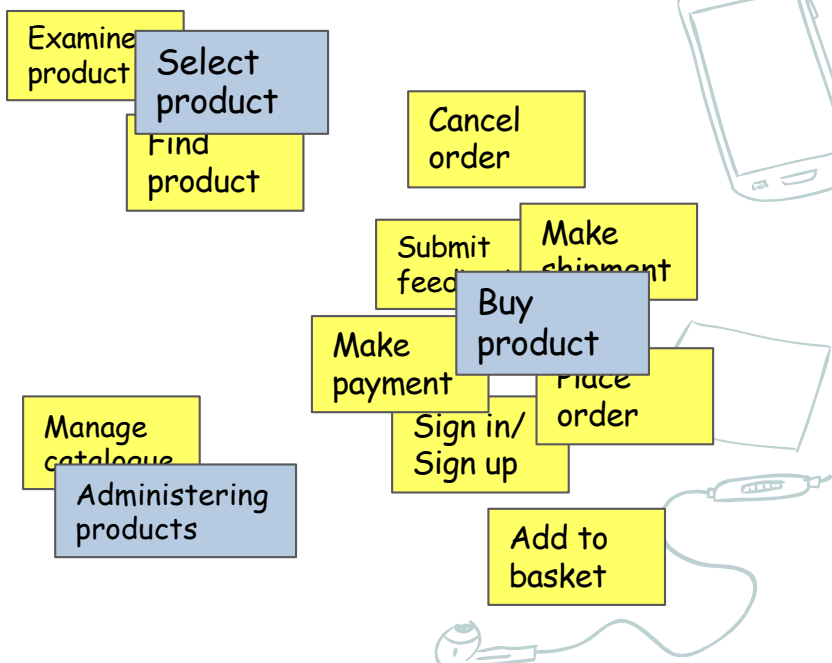
Manage catalogue

Sign in/ Sign up

Add to basket

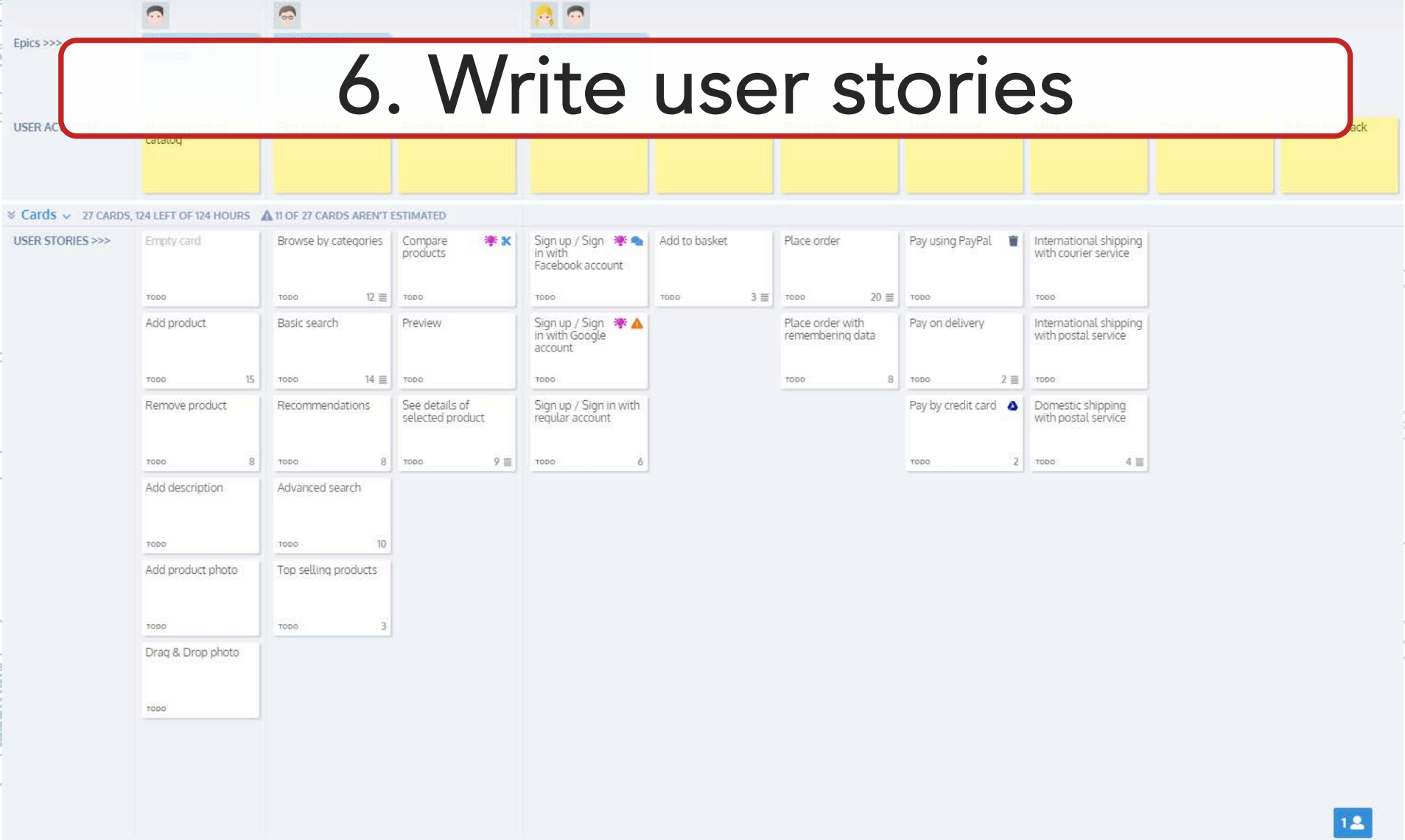
4. Name your groups



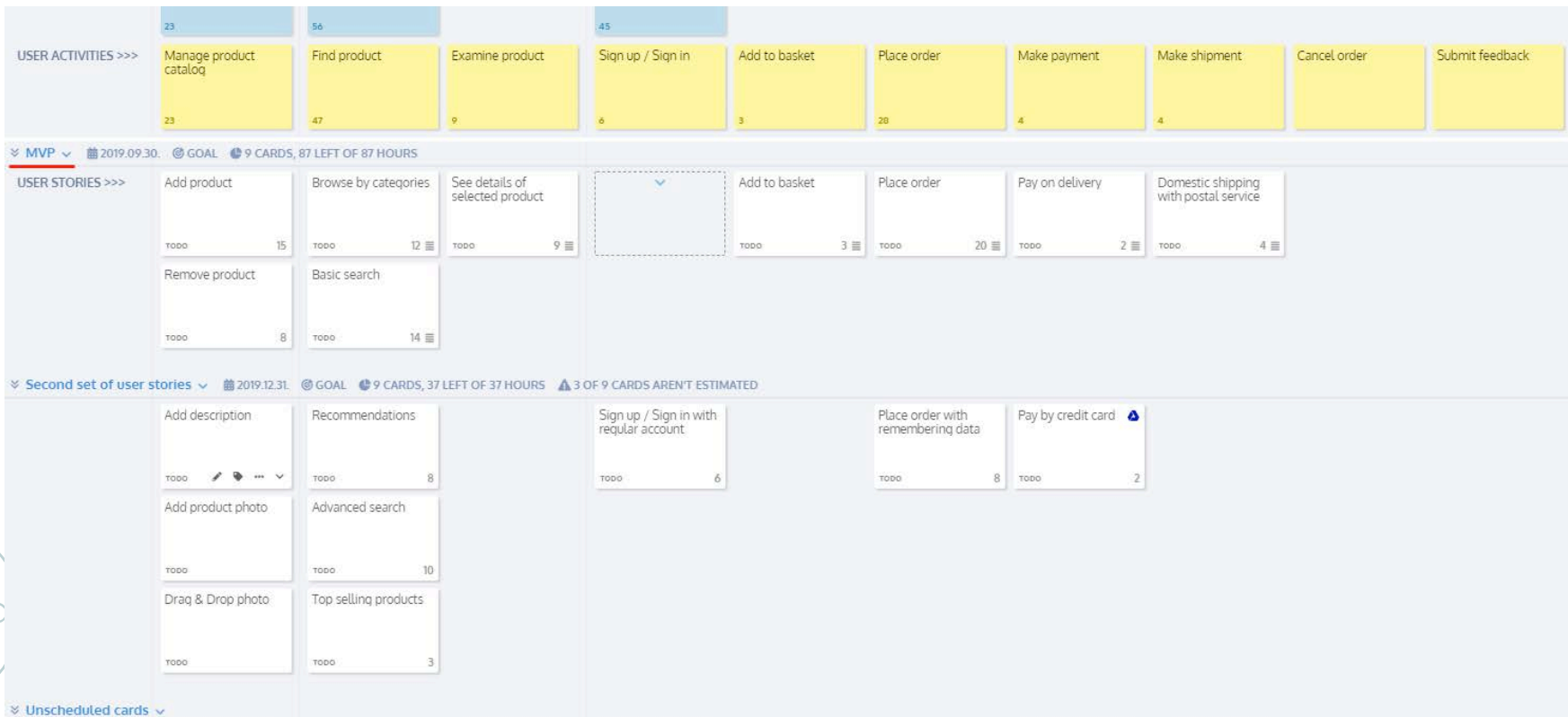


5. Arrange left to right

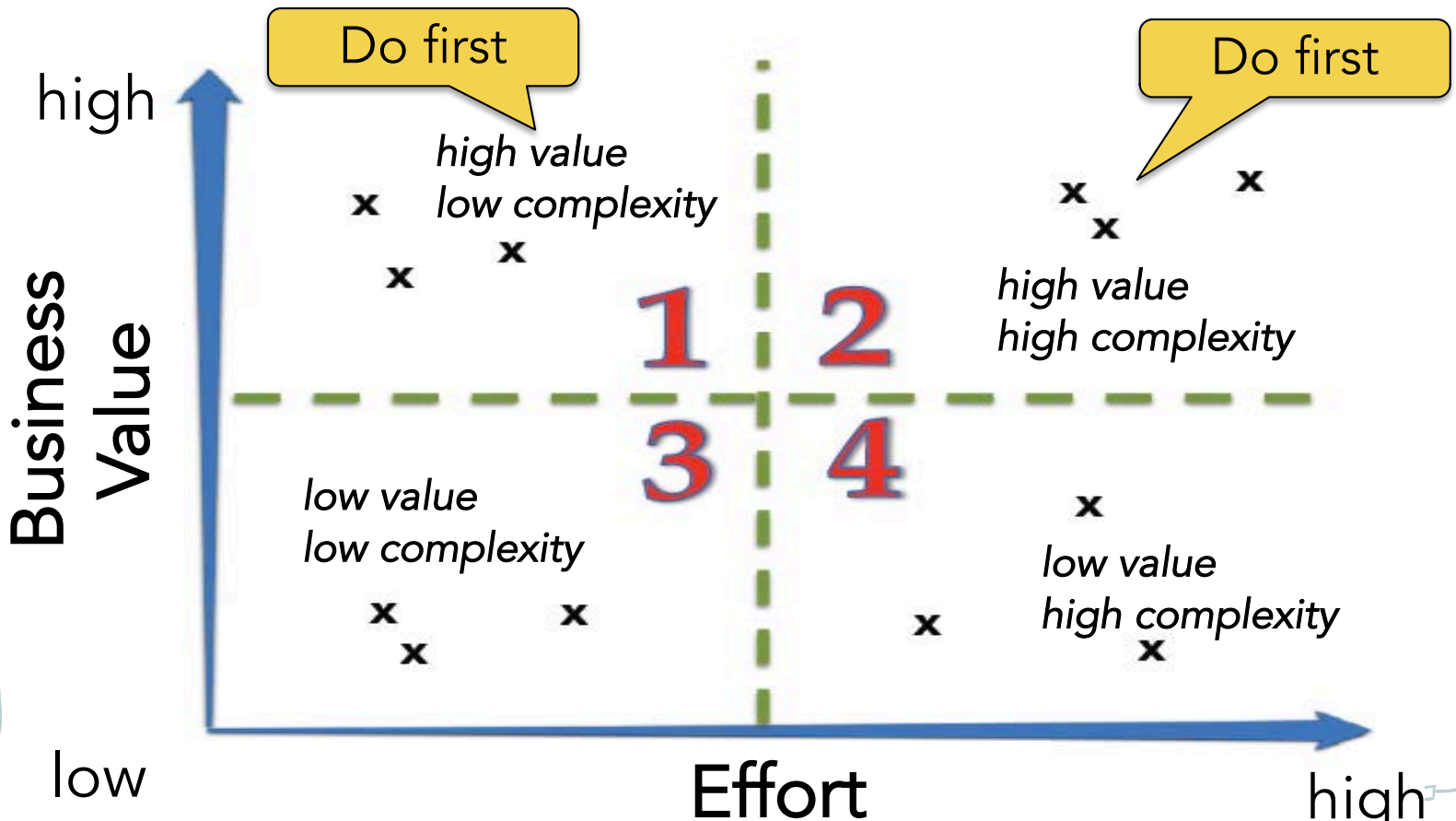
6. Write user stories

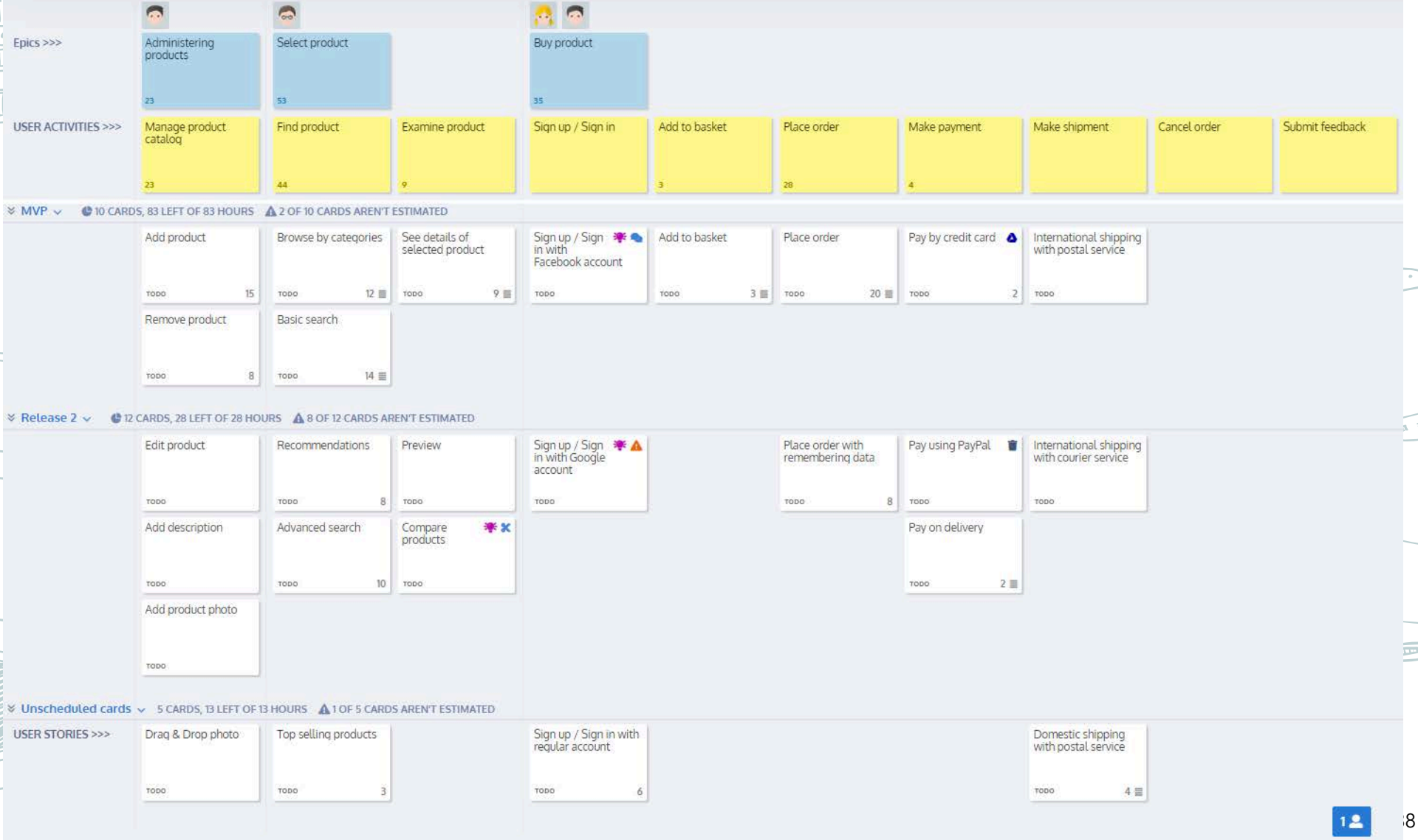


7: Prioritize Stories and Outline MVP



Priority Quadrants

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Advantages of Story Mapping

- Visual presentation of the product backlog
- Story map structure helps with prioritization
- Allows for easy slicing of the backlog into releases and carve out MVP

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User Stories vs Use Cases

User Stories	Use Cases
Provide a small-scale and easy-to-use presentation of information.	Describe a process and its steps in detail and may be worded in terms of a formal model.
Are generally formulated in the everyday language of the user and contain little detail, thus remaining open to interpretation.	Provide sufficient detail for it to be understood on its own.
They should help the reader understand what the software should accomplish.	A use case has been described as “a generalized description of a set of interactions between the system and one or more actors, where an actor is either a user or another system”
Must be accompanied by acceptance testing procedures (acceptance criteria) for clarification of behavior where stories appear ambiguous.	May be delivered in a stand-alone document.

Questions?
Comments?