

# ECE444: Software Engineering

## Requirements 3: Documentation, Use Cases, User Stories

Shurui Zhou



The Edward S. Rogers Sr. Department  
of Electrical & Computer Engineering  
**UNIVERSITY OF TORONTO**

# Learning Goals

- Understand tradeoffs of different documentation strategies
- Document requirements using use cases and user stories
- Evaluate the quality of a user story by INVEST
- (Understand risk and its role in requirements, specifically how it can be identified, analyzed, and then mitigated/handled in system design.)

# Personas

*“Personas are detailed descriptions of imaginary people constructed out of well-understood, highly specified data about real people”*

*—John Pruitt & Tamara Adlin*



Partitioning the stakeholders into personas

Diversify your selections

- The common case (most users)
- The extremes (rare, but demanding users)

# Creating Personas

Identify important categories of stakeholder

- **Roles** describe the kind of work people do, or their relationship in time to the product
- **Goals** describe what the users hope to achieve
- **Segments** describe shared demographic, attitudes or behaviors of your users

# User Roles and Goals

How to describe a role?

- Defined by tasks, job descriptions, responsibilities
- Occupation (shopper, assistant, manager)
- Sub-divide by status: new shopper, repeat customer

What do they care about? How do they feel?

- Defined by their goals
- Behavior (“only browsing”, “get it done”, “max sales”)
- Life phases (adolescence, parenthood, retirement)

# User Segments

- Can we segment our users by demographics?
  - Age ranges
  - Gender
  - Income level
- What about attitudes or behaviors?
  - Physically active, always moving, can't slow down
  - Likes routine, avoids uncertainty, rigid
  - Telecommuter, works from home, free spirit
  - Experienced, technically minded, geek

# Example Persona



## Cher

Gender : Female

Age: 35

Status: Married, one kid

Job: Full time employee  
Part-time distance learning student

### Behavior & Belief

Cher is 35 years old, married to Luke and is a mother of a 5 year old. She works as a business analyst in Chicago and is a distance learning student at University of Washington. She wakes up early to exercise, drops her kid to school, goes to work and studies while commuting and late in the evening. She uses multiple apps to balance her work and life. Even in her hectic schedule she sometimes manages to go for ice skating and dancing.

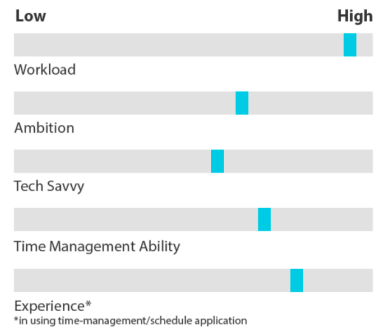
### Goals

- To do well academically and advance in professional career
- No compromises on her family's well-being
- Continue to follow her hobbies
- To get good grades by finishing work on

### Values

- Provide feedback on what could be done better
- Would prefer using only one app which fulfills her needs
- Distraction free

### Characteristics



### Fears

- Get delayed in important events such as picking up her kid from school

### Pain Point

- Too many apps with redundant features

*"Both family and work are very important. Plus, I also want to be a good student."*



## Tom

Gender : Male

Age: 25

Status: In a relationship

Job: Graduate student & TA

### Behavior & Belief

Tom lives in a rented apartment and commutes to college daily. He works as a T. A. and aims to get a good job, so that he can repay his student loan. He manages his tasks by writing down work in a calendar application. He stopped using time tracking software because he forgot to record his activities. He believes that quality of work is important and often spends huge amount of time doing one task. He mostly uses his laptop for his work and has an internet connection.

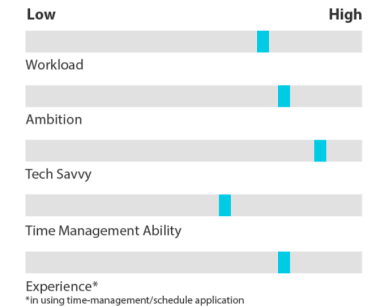
### Goals

- To get a good job
- To repay his student loan
- To get good grades by finishing work on time

### Values

- Automated tracking to record activities
- Analysis reports to better split time

### Characteristics



### Fears

- Forget to record his tasks

### Pain Point

- Hates to manually enter time

*"I would like to track my time but I often forget."*



## Lee

Gender : Male

Age: 23

Status: Single

Job: Graduate student, first year

### Behavior & Belief

Lee had just started his first year in the MSE program. He is taking 51 units and is still getting the feel of how the workload is. But so far, he has been overwhelmed. He has had a lot of sleepless nights. He used the to-do list app on his phone but has not been using it since, Canvas has that feature. He has trouble focusing on a task for more than 30 minutes, so he does it over a period of time. Apart from his study, he practices vocal singing and plays badminton every day. He also likes to cook different dishes. He's on his mobile phone almost all the time to access the social media.

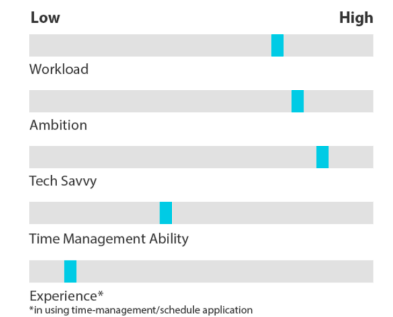
### Goals

- Get a high GPA without burning out
- To continue following his hobbies

### Values

- Get a reminder when he is behind schedule
- Get motivation to work
- Free to use

### Characteristics



### Fears

- Missing a deadline

### Pain Point

- Managing deadlines

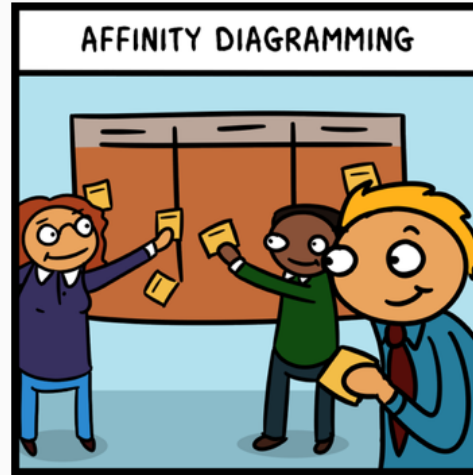
*"My heart is in the work. It's hard to balance."*

# Partitioning the stakeholders into personas

- Use a data-driven approach, whenever possible
  - Data collected using surveys or focus groups
  - Data reported in research studies
  - Data inferred using affinity diagrams
- Diversify your selections
  - The common case (most users)
  - The extremes (rare, but demanding users)



# Synthesis Interviews through Affinity Diagrams



# Synthesis Interviews through Affinity Diagrams



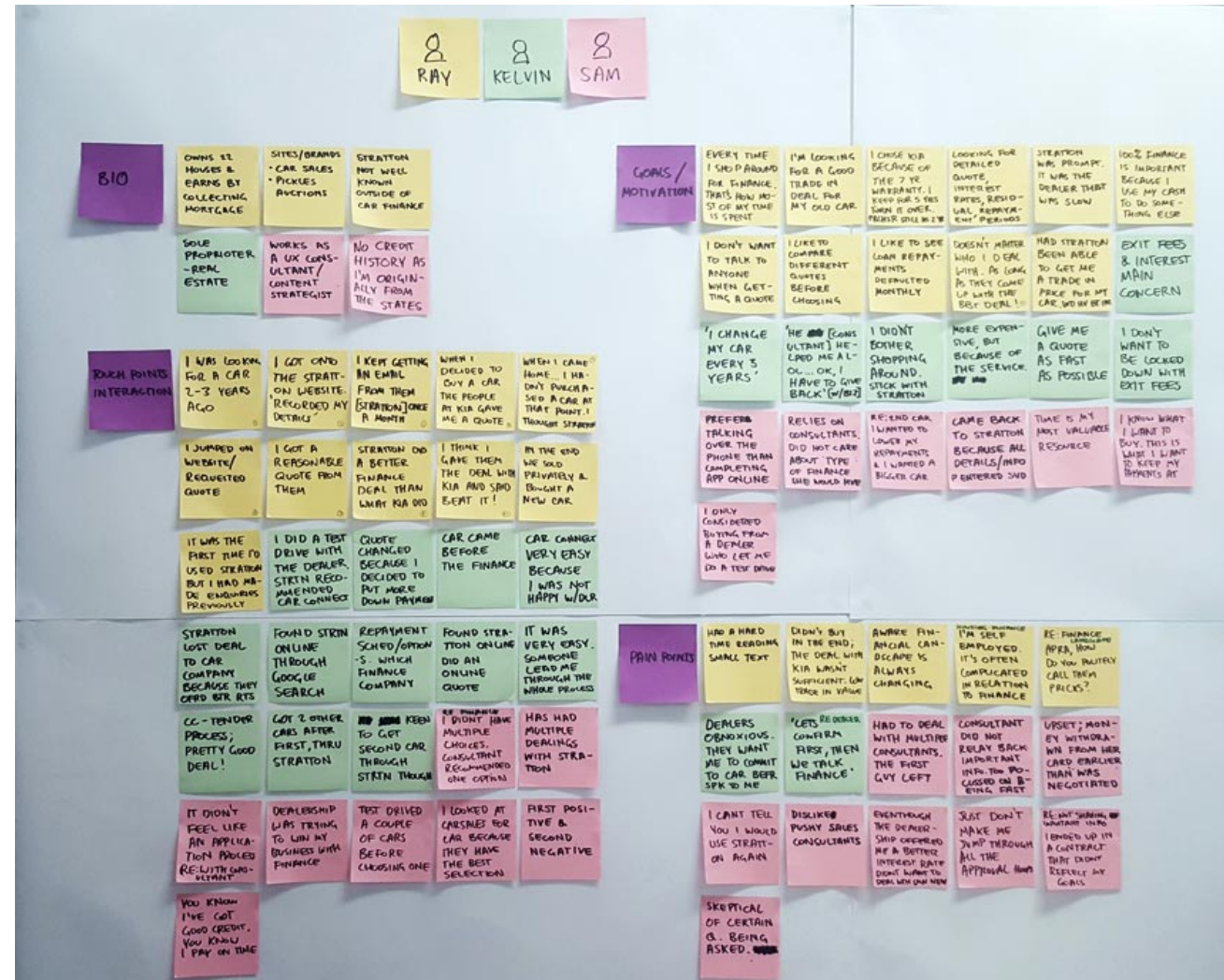
I DIDN'T BOTHER SHOPPING AROUND. STICK WITH STRATTON	GIVE ME A QUOTE AS FAST AS POSSIBLE	DEALERS 'OBNOXIOUS. THEY WANT ME TO COMMIT TO CAR. BEER SPEAK TO ME	'LETS CONFIRM FIRST, THEN WE TALK FINANCE'	CAR CANNOT BE VERY EASY BECAUSE I WAS NOT HAPPY W/DUR	I DON'T WANT TO BE LOCKED DOWN WITH EXIT FEES	REPAYMENT SCHED/OPTIONS - WHICH FINANCE COMPANY	QUOTE CHANGED BECAUSE I DECIDED TO PUT MORE DOWN PAYMENT	SOLE PROPRIETOR - REAL ESTATE
FOUND STRIN ONLINE THROUGH GOOGLE SEARCH	I DID A TEST DRIVE WITH THE DEALER. STRIN RECOMMENDED CAR CONNECT	'I CHANGE MY CAR EVERY 3 YEARS'	'HE [STRIN] [SEEMS ULTIMATE] HE-OL... OK, I HAVE TO GIVE BACK [W/DUR]	HE WAS KEEN TO GET SECOND CAR THROUGH STRIN THOUGH	STRATTON LOST DEAL TO CAR COMPANY BECAUSE THEY OFFER BETT. RTS.	EXIT FEES & INTEREST MAIN CONCERN	I GOT A REASONABLE QUOTE FROM THEM	DOESN'T MATTER WHO I DEAL WITH AS LONG AS THEY COME UP WITH THE BEST DEAL!!
CC - PENDER PROCESS; BUT PRETTY GOOD DEAL!	MORE EXPENSIVE, BUT BECAUSE OF THE SERVICE	CAR CAME BEFORE THE FINANCE	LOT 2 OTHER CARS AFTER FIRST, THRU STRATTON	FOUND STRATTON ONLINE DID AN ONLINE QUOTE	IT WAS VERY EASY. SOMEONE LEAD ME THROUGH THE WHOLE PROCESS	LOOKING FOR DETAILED QUOTE, INTEREST RATES, RESIDUAL REPAYMENT PERIODS	I JUMPED ON WEBSITE/ REQUESTED QUOTE	I GOT ON THE STRATTON WEBSITE. RECORDED MY DETAILS
RE-FINANCE APR. HOW DO YOU BUILT CALL THEM PRICES?	I LIKE TO SEE LOAN REPAYMENTS DEFERRED MONTHLY	OWNS IT HOUSE & EARN BY COLLECTING MORTGAGE	I LOSE KIA BECAUSE OF THE 7 YR WARRANTY. I SEE KIA'S RES. THAN IT OVER. FEARSHILL WILL BE	SITES/BRANDS - CAR SALES - PICKUPS AUCTIONS	HAD A HARD TIME BOOKING SMALL TEXT	I'M LOOKING FOR A GOOD TRADE IN DEAL FOR MY OLD CAR	I THINK I GAVE THEM THE DEAL WITH KIA AND SPD BEAT IT!	I WAS LOOKING FOR A CAR 2-3 YEARS AGO
AWARE FINANCIAL LANDSCAPE IS ALWAYS CHANGING	I LIKE TO COMPARE DIFFERENT QUOTES BEFORE CHOOSING	FINANCE STRATTON IS SELF EMPLOYED. IT'S OFTEN COMPLICATED IN RELATION TO FINANCE	I DON'T WANT TO TALK TO ANYONE WHEN GETTING A QUOTE	EVERY TIME I SHOW AROUND FOR FINANCE. THAT'S HOW MOST OF MY TIME IS SPENT	IT WAS THE FIRST TIME I USED STRATTON PRIVATELY & BOUGHT A NEW CAR	IN THE END WE SOLD PRIVATELY & BOUGHT A NEW CAR	WHEN I CAME HOME... I HADN'T PURCHASED A CAR AT THAT POINT. I THOUGHT STRATTON	
I KEPT GETTING AN EMAIL FROM THEM STRATTON JOKE A MONTH	STRATTON DID A BETTER DEAL THAN WHAT KIA DID	STRATTON WAS PROMPT. IT WAS THE DEALER THAT WAS SLOW	STRATTON WAS WELL KNOWN OUTSIDE OF CAR FINANCE	DIDN'T BUY IN THE END. THE DEAL WITH KIA WASN'T SUFFICIENT. LOW TRADE IN VALUE	HAD STRATTON BEEN ABLE TO GET ME A TRADE IN PRICE FOR MY CAR, WOULD BE	100% FINANCE IS INCONVENIENT BECAUSE I USE MY CASH TO DO SOME-THING ELSE	WHEN I DECIDED TO BUY A CAR THE PEOPLE AT KIA GAVE ME A QUOTE	

WANTED TO LOWER MY REPAYMENTS & I WANTED A BIGGER CAR	I LOOKED AT CARSENTER FOR CAR BECAUSE THEY HAVE THE BEST SELECTION	TIME IS MY MOST VALUABLE RESOURCE	ALTHOUGH THE DEALERSHIP OFFERED ME A BETTER INTEREST RATE DIDN'T WANT TO DEAL WITH THEM	DEALERSHIP WAS TRYING TO LIN UP BUSINESS WITH FINANCE	RE-FINANCE I DIDN'T HAVE MULTIPLE CHOICES CONSULTANT RECOMMENDED ONE OPTION	IT DIDN'T FEEL LIKE AN APPLICATION PROBLEM RESULTS WOULD BE	SHE TEST DROVE A COUPLE OF CARS BEFORE SHE CHOSE ONE
JUST DON'T MAKE ME JUMP THROUGH ALL THE APPELLAL	YOU KNOW I'M GET CREDIT. YOU KNOW I PAY ON TIME	I ONLY CONSIDERED BUYING FROM A DEALER WHO LET ME DO A TEST DRIVE	I KNOW WHAT I WANT TO BUY. THIS IS WHAT I WANT TO KEEP MY PAYMENTS AT	CONSULTANT DID NOT RELAY BACK IMPORTANT INFO. THE PRO-CESSED ON BEING FIRST	RENTAL SHARING WHAT I ENDED UP IN A CONTRACT THAT DIDN'T REFLECT MY GOALS	CAME BACK TO STRATTON BECAUSE ALL DETAILS/WRO PREFERRED SUV	NO CREDIT HISTORY AS SHE IS ORIGINALLY FROM THE STATES
HAS HAD MULTIPLE DEALINGS WITH STRATTON	WORKS AS A UX CONSULTANT/CONTENT STRATEGIST	RELIES ON CONSULTANTS. DID NOT CARE ABOUT TYPE OF CONSULTANT SHE WOULD HAD	I CAN'T TELL YOU I WOULD USE STRATTON AGAIN	HAD TO DEAL WITH MULTIPLE CONSULTANTS. THE FIRST GUY LEFT	PREFERS TALKING OVER THE PHONE THAN COMPLETING ANY ONLINE	UPSET; MONKEY WITHDRAWN FROM HER CARD EARLIER THAN WAS NEGOTIATED	FIRST POSITIVE & SECOND NEGATIVE
DISLIKES PUSHY SALES CONSULTANTS	SKEPTICAL OF CERTAIN Q. BEING ASKED						



# Synthesis Interviews through Affinity Diagrams

- biographical information
- frustrations
- interactions/touch points
- goals/motivations



# Documentation Requirements

# Goals

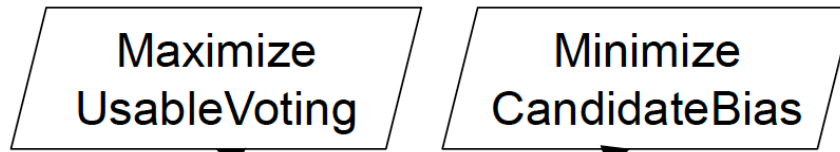
Begin convergence

# Goal

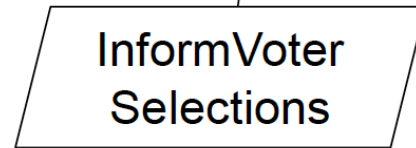
- What is the purpose of this project?
- What are the problems it will solve?
- What improvements does your product offer over current solutions?
- What is the product vision?

# Goal Diagrams

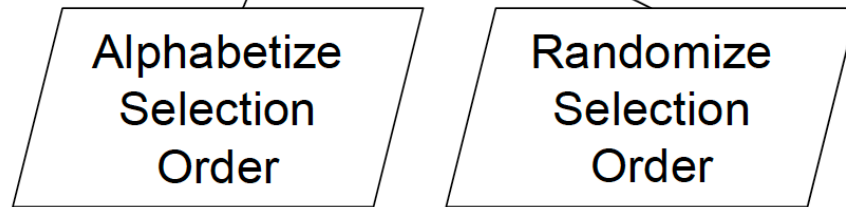
High-level Goals



Mid-level Goals



Low-level Goals



AND-relation with complete refinement (closed circle)

OR-relation uses separate arrows

# Goals - example

- Our goal is to create a mobile version of the website. Sometimes users click on a link in an email notification using their mobile phone and need to be able to access our application from mobile Chrome or Safari.
- We want to meet feature parity with most functions - except we can skip creating events.

## **Example2:**

For the case of building a ToDo app, our primary purpose is creating an app that lets users track and mark off their daily tasks and important commitments. It will help them stay organized and ensure they don't overlook any items, without requiring much interaction from the user. The app will need to perform well such that it stands out from its existing competitors, and ultimately act as a "better mousetrap" in terms of its usability and functionality.



# Many different forms

- Informal vs formal
- Unstructured vs structured
- Text vs diagrams
- Structured text common in practice
- Tool supported for traceability and process integration

# Software Requirements Specification (SRS)

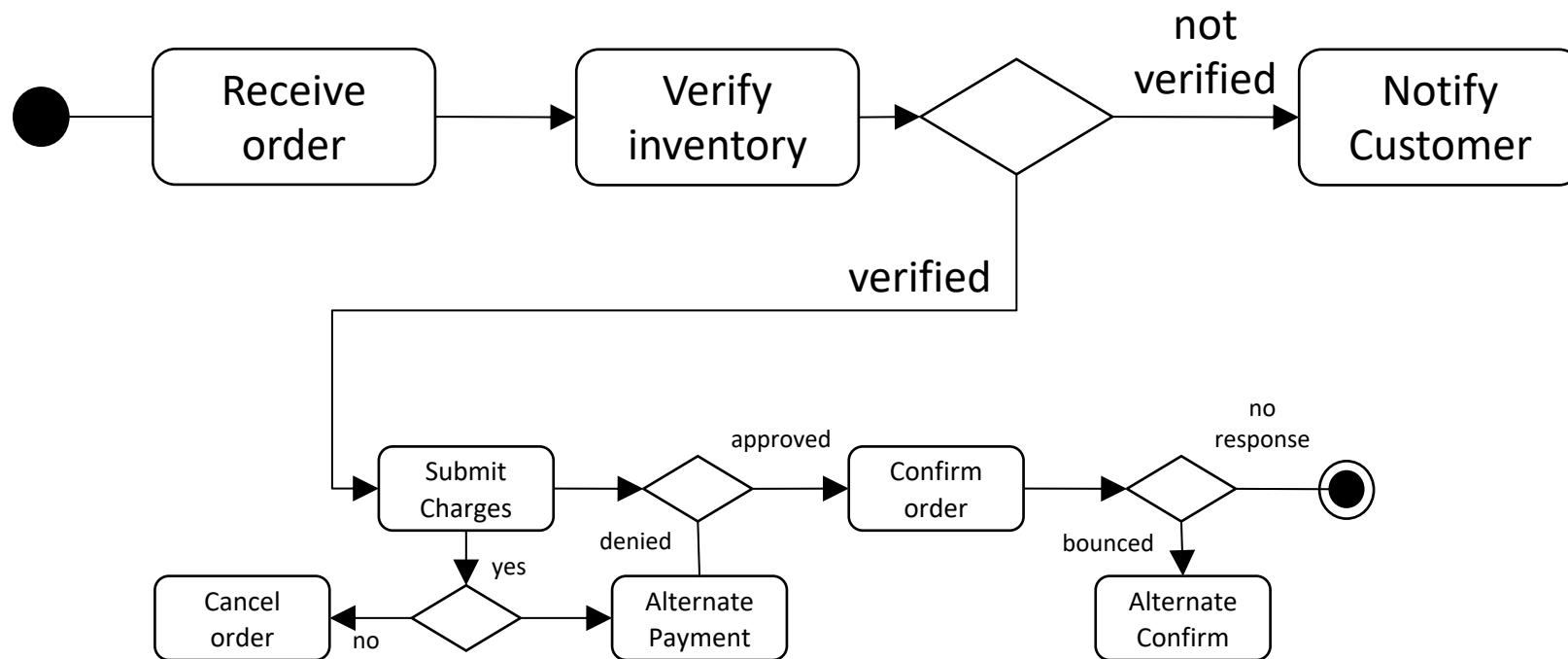
- Formal requirements document
- Several standards exists
- Often basis for contracts

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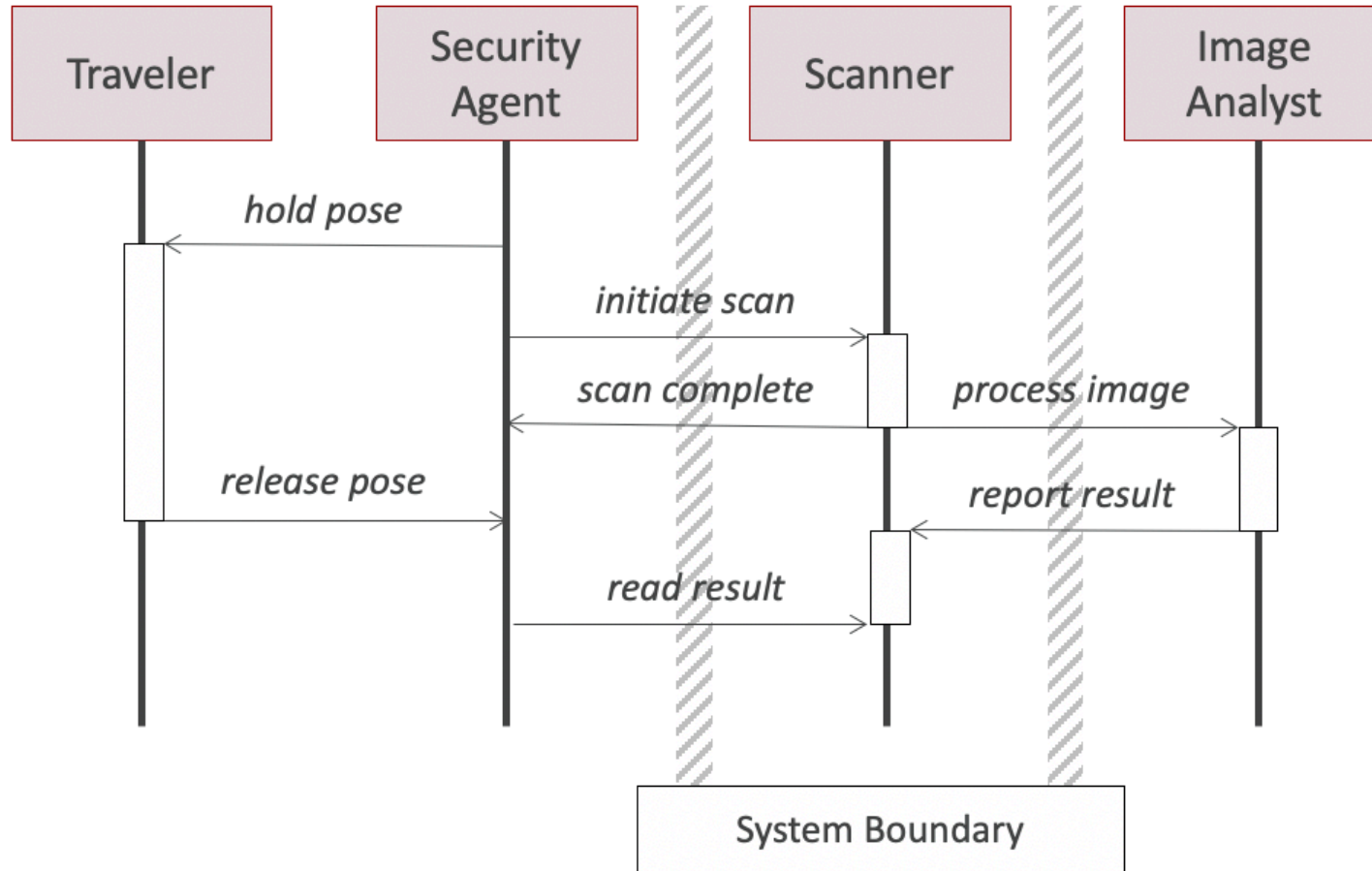
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# Activity Diagrams

- Activity diagrams (or flow charts) represent the logic in a graph notation



# Sequence Diagramming



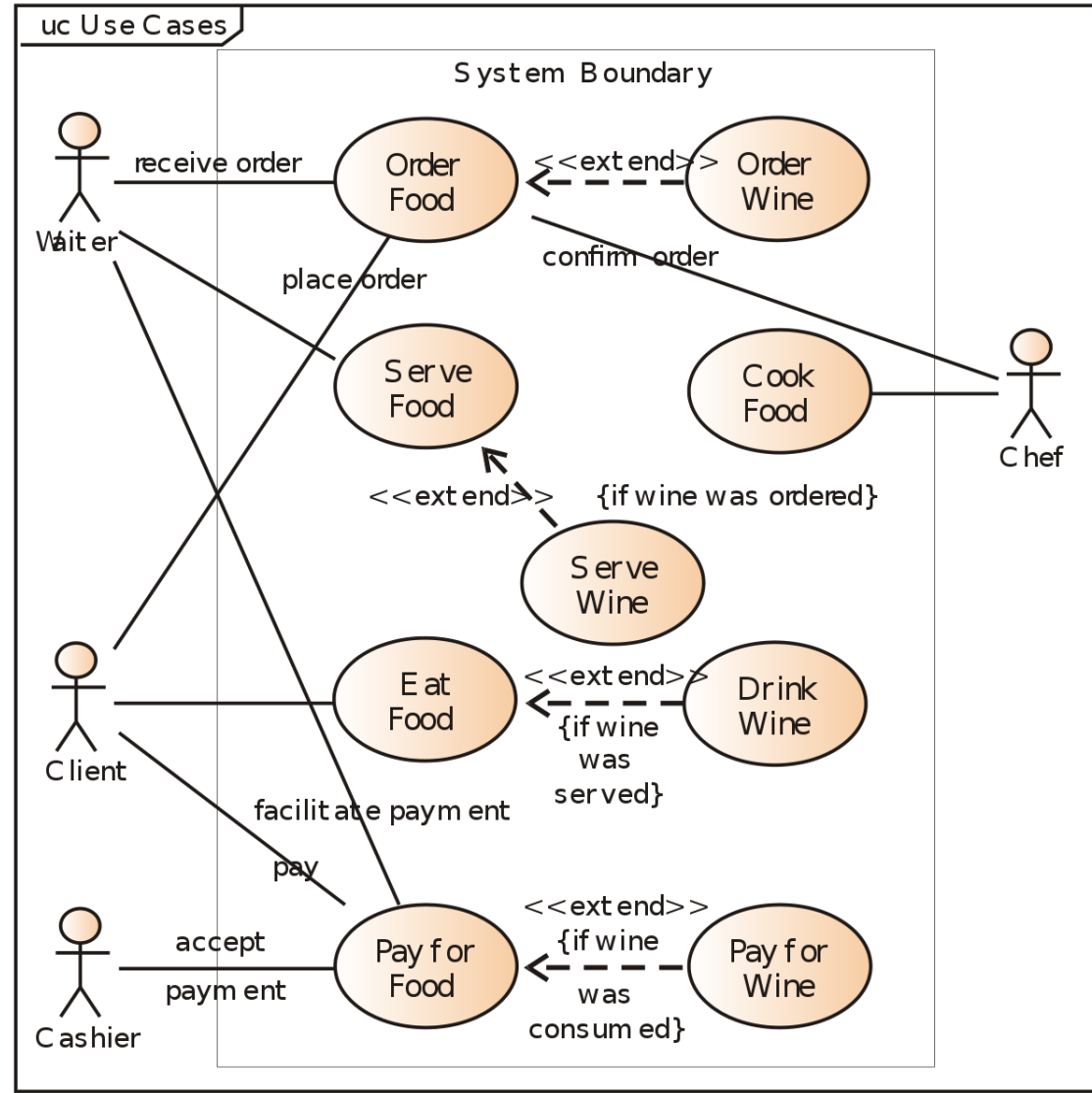
# Formal Specification

- Logical expressions of shared actions at the interface of the machine
- Includes linking domain properties and agent actions as pre- and post-conditions

$$\forall s \forall c(\text{enrolled}(s, c) \Rightarrow \text{student}(s) \wedge \text{course}(c))$$

# Use Case Diagram

- Actor + action



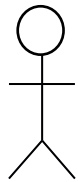
# Use Case

Use Cases help requirements analysts to...

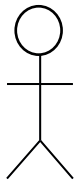
- Identify actors and events around the system
- Define the system boundary –what is or is not within the system scope?
- Investigate early design interactions  
(uses cases need not be descriptions of the final design)

# Defining actors/agents

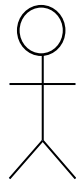
- An actor is an entity that interacts with the system for the purpose of completing an event [Jacobson, 1992].
  - Not as broad as stakeholders.
- Actors can be a user, an organization, a device, or an external system.



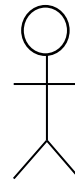
Sales  
Specialist



Marketing



GPS  
Receiver



Inventory  
System



# Example: Place an order?

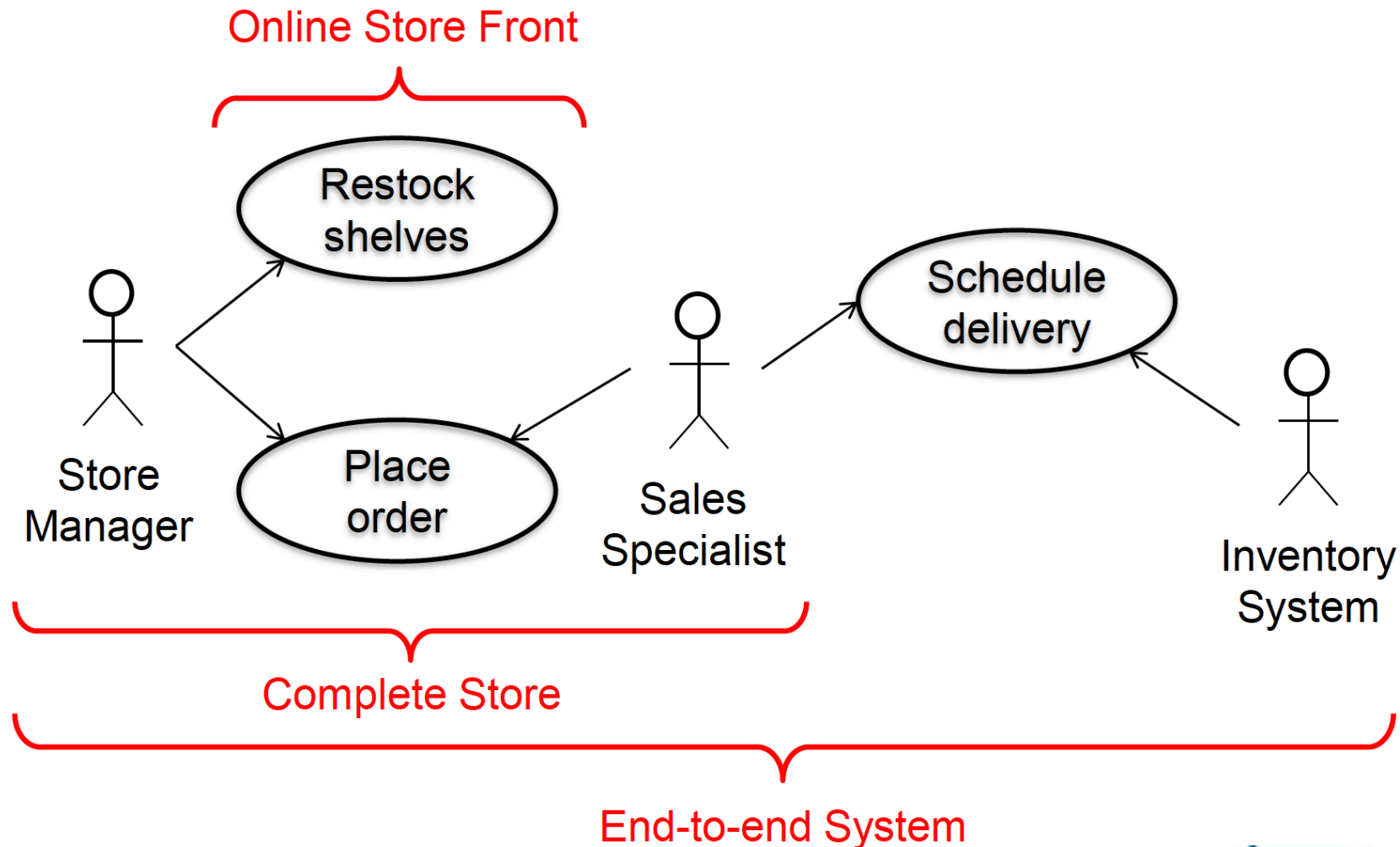
## **Buyer's View**

- Selecting the products
- Reviewing the order
- Submitting the order
- Receiving delivery

## **Seller's View**

- Receiving the order
- Checking the inventory
- Filling the order
- Shipping the order
- Confirming delivery

# Defining the system boundary



# Pre-and post-conditions

- **Pre-conditions:** true before the use case begins
- **Post-conditions:** true at the end of the use case
- Should be written at the same “level of detail” as the use case
- Apply to the state of the system, not the environment outside the system [Armour & Miller]
  - The book has a status of borrowed
  - The patron is free to leave the library with the book

# Use Case Templates

Use Case Name	Place order
Actors	(Primary) Store Manager, Sales Specialist
Pre-conditions	
Flow of events	
Post-conditions	

# Use Case Templates

Use Case Name	Place order
Actors	(Primary) Store Manager, Sales Specialist
Pre-conditions	The store manager is under-stocked or the manager anticipates an increase in next period's sales
Flow of events	
Post-conditions	An order to restock the shelves is being processed

# Use Case Templates

<b>Use Case Name</b>	<b>Place order</b>
Actors	(Primary) Store Manager, Sales Specialist
Pre-conditions	The store manager is under-stocked or the manager anticipates an increase in next period's sales
Flow of events	<ol style="list-style-type: none"><li>1. Sales specialist identifies manager's account</li><li>2. Manager finds the products to reorder<ol style="list-style-type: none"><li>2.1 Manager browses or searches by keyword</li><li>2.2 Manager decides product quantities</li></ol></li><li>3. Manager reviews and places the order</li><li>4. Specialist receives and processes the order</li></ol>
Post-conditions	An order to restock the shelves is being processed

# Surfacing Assumptions

- The Manager has an Internet connection
- The System manages user accounts
- The Manager has a list of products that they can provide by browsing and searching

<b>Use Case Name</b>	<b>Place order</b>
Actors	(Primary) Store Manager, Sales Specialist
Pre-conditions	The store manager is under-stocked or the manager anticipates an increase in next period's sales
Flow of events	<ol style="list-style-type: none"><li>1. Sales specialist identifies manager's account</li><li>2. Manager finds the products to reorder<ol style="list-style-type: none"><li>2.1 Manager browses or searches by keyword</li><li>2.2 Manager decides product quantities</li></ol></li><li>3. Manager reviews and places the order</li><li>4. Specialist receives and processes the order</li></ol>
Post-conditions	An order to restock the shelves is being processed

# Identify Key system behaviors

- What system activities must be performed to help fulfill the use case?  
(These may not be transparent to a user)

<b>Use Case Name</b>	<b>Process order</b>
Actors	Sales Specialist, Store Manager
Pre-conditions	The store manager places an order
Flow of events	<ol style="list-style-type: none"><li>1. Specialist receives the order</li><li>2. Specialist verifies inventory contains order</li><li>3. Specialist submits charges for payment</li><li>4. Specialist sends manager order confirmation</li></ol>
Post-conditions	Order is scheduled for fulfillment and shipping



# Alternative Flows

Alternative flows include:

- Different processing options based on user input
- Decision taken within an existing flow
- An exception condition that occurs in a flow

# Alternative Flows & Exceptions

<b>Use Case Name</b>	<b>Process order</b>
Actors	Sales Specialist, Store Manager
Pre-conditions	The store manager places an order
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Post-conditions	Order is scheduled for fulfillment and shipping
Alternate flows and exceptions	

# Alternative Flows & Exceptions

<b>Use Case Name</b>	<b>Process order</b>
Actors	Sales Specialist, Store Manager
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Flow of events	<ol style="list-style-type: none"><li>1. Specialist receives the order</li><li>2. Specialist verifies inventory contains order</li><li>3. Specialist submits charges for payment ←</li><li>4. Specialist sends manager order confirmation</li></ol>
Post-conditions	Order is scheduled for fulfillment and shipping
Alternate flows and exceptions	<ul style="list-style-type: none"><li>• The inventory does not contain an ordered item</li><li>• The payment is not authorized</li><li>• The payment service times out</li><li>• The order confirmation is returned (bounces)</li></ul>

# Alternative flow descriptions

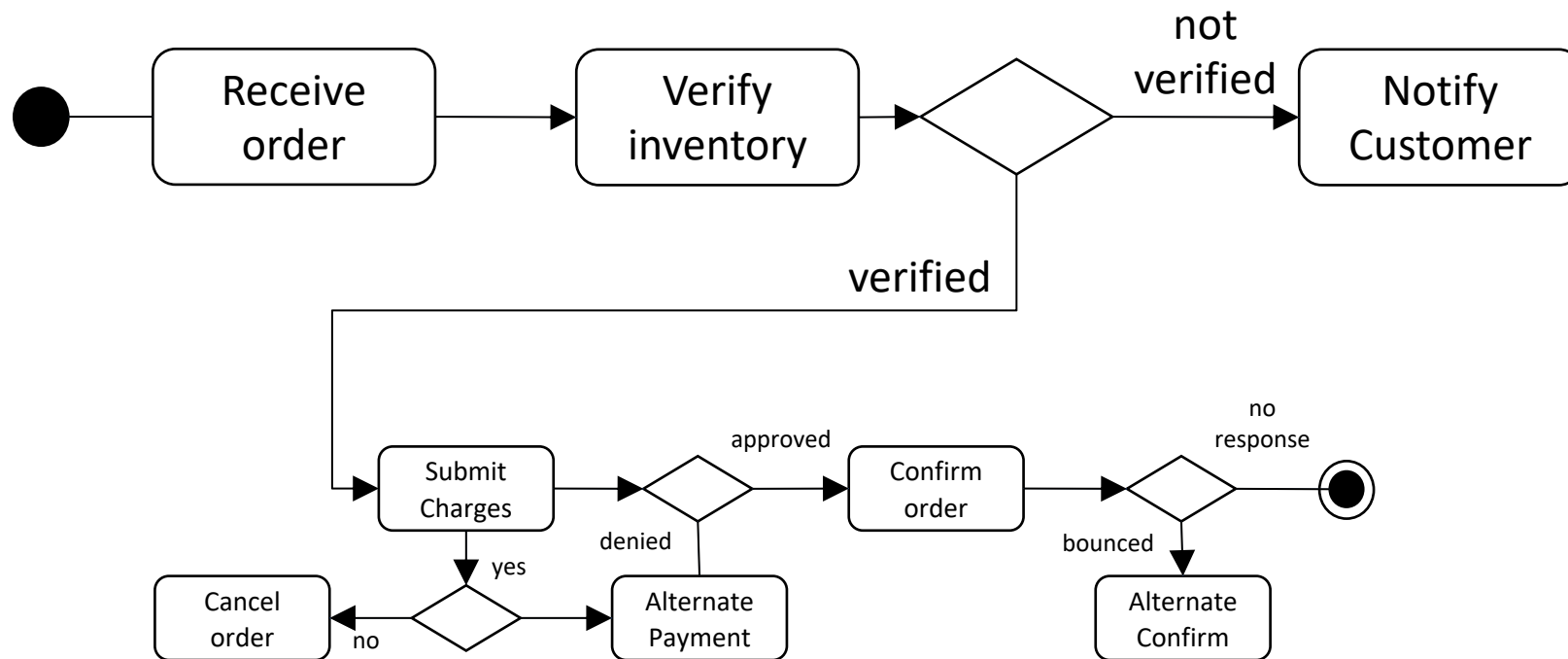
<b>Alternative Name</b>	<b>Unauthorized Payment</b>
Actors	Sales Specialist, Store Manager
Insertion Point:	Step 3, specialist submits charges for payment
Pre-conditions	The payment processing is not authorized
Flow of events	<ol style="list-style-type: none"><li>1. Specialist sends a problem notice to the store manager</li><li>2. Store manager may submit an alternative payment method</li></ol>
Post-conditions	A new payment method is submitted, repeat Step 3, or the order is cancelled
Non-behavioral requirements	The notice provides a convenient method to submit an alternative method of payment

# Integrating conditional logic

<b>Use Case Name</b>	<b>Process order – Integrated logic</b>
Actors	Sales Specialist, Store Manager
Pre-conditions	The store manager places an order
Flow of events	<ol style="list-style-type: none"><li>1. Specialist receives the order</li><li>2. Specialist verifies inventory contains order <b>If</b> the inventory does not contain the order...</li><li>3. Specialist submits charges for payment <b>If</b> the payment is not authorized...</li><li>4. Specialist sends manager order confirmation <b>If</b> the confirmation is returned...</li></ol>
Post-conditions	Order is scheduled for fulfillment and shipping

# Activity Diagrams

- Activity diagrams (or flow charts) represent the logic in a graph notation



# Non-behavioral Requirements

- **Performance** – How long will the use case take to complete? What are normal and peak conditions?
- **Capacity** – How many actor instances must be supported?
- **Security** – Are there confidentiality, integrity or availability concerns?
- **Usability**– What do actors need to do to fulfill the use case?

# Non-behavioral Requirements

<b>Use Case Name</b>	<b>Process order</b>
Actors	Sales Specialist, Store Manager
Pre-conditions	The store manager places an order
Flow of events	<ol style="list-style-type: none"><li>1. Specialist receives the order</li><li>2. Specialist verifies inventory contains order</li><li>3. Specialist submits charges for payment</li><li>4. Specialist sends manager order confirmation</li></ol>
Post-conditions	Order is scheduled for fulfillment and shipping
Non-behavioral requirements	<ul style="list-style-type: none"><li>• Inventory is routinely refreshed and kept up to date</li><li>• Orders should be processed within 10 minutes</li></ul>

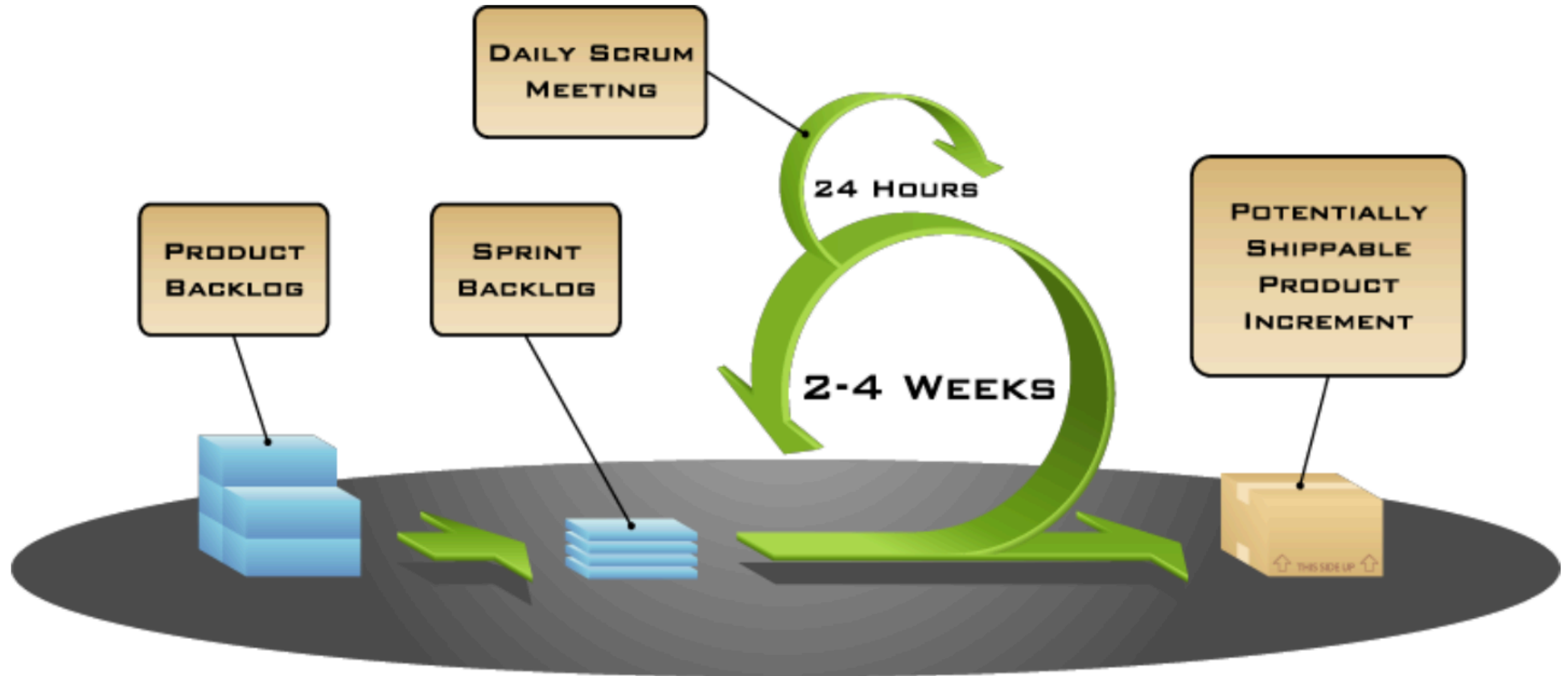




# Use cases Template

Use Case Name	(Title)
Scope	System under design
Level	User level, subprocess level
Primary actor	(actors can be primary, supporting, or offstage)
Stakeholders, interests	Important! A use case should include everything necessary to satisfy the stakeholders' interests.
Preconditions	What must always be true before a scenario begins. Not tested; assumed. Don't fill with pointless noise.
Success guarantees.	Aka post conditions
Main success scenario	Basic flow, "happy path", typical flow. Defer all conditions to the extensions. Records steps: interaction between actors, a validation, a state change by the system.
Extensions	Aka alternate flows. Usually the majority of the text. Sometimes branches off into another use case.
Special requirements	Where the non-functional/quality requirements live.
Technology and data variations list	Unavoidable technology constraints; try to keep to I/O technologies.
Frequency of occurrence	
Miscellaneous	

# Agile?



**Just a  
reminder...**



# User Stories

- Informal descriptions of user-valued features scheduled for implementation
- Details left for negotiation with customer later or pointer to real requirements
- Common agile development practice



# User Stories

## Who (User)

This should describe a fairly detailed user. It is not sufficient to just say "user." Strive towards something like "broke college student on a mobile device user." When we express the **who** with more detail we are able to better empathize with that particular user, determine the best solution and uncover implicit needs.

## What (Goal)

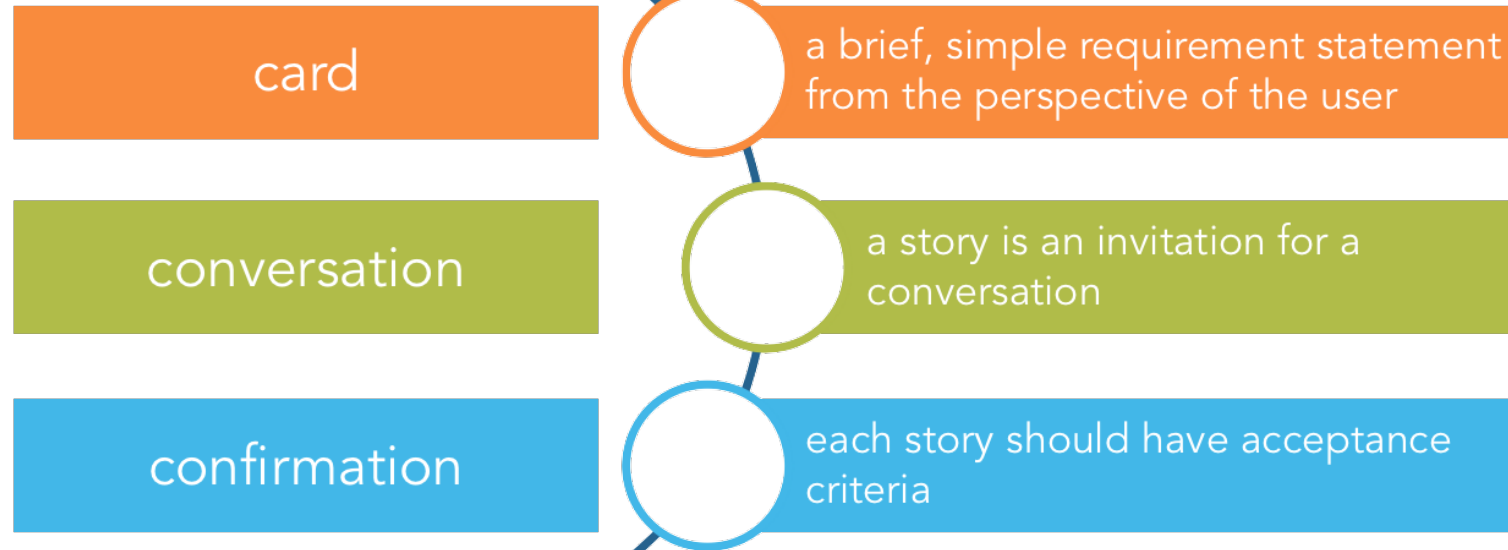
The goal or action the user intends to take.

## Why (Benefit)

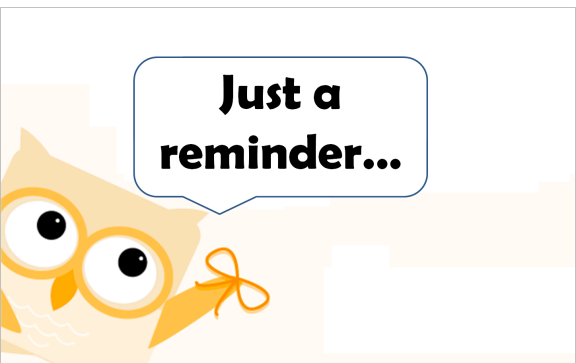
Expressing the benefit to the user is by far the most important in my experience. Some of the most creative and inexpensive solutions come from the developers and users understanding why they are building something.

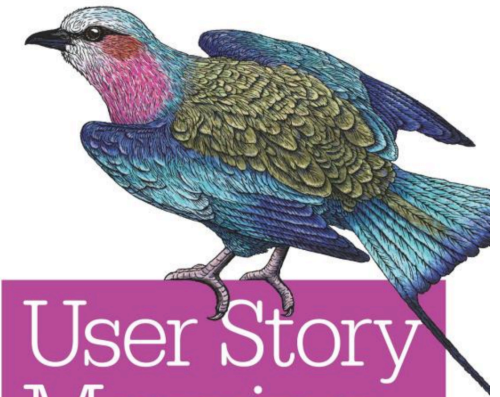


# User Stories -- Concept of 3C's



**Just a  
reminder...**



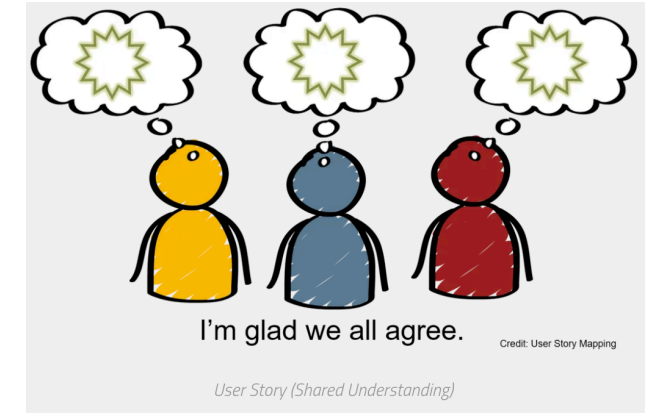
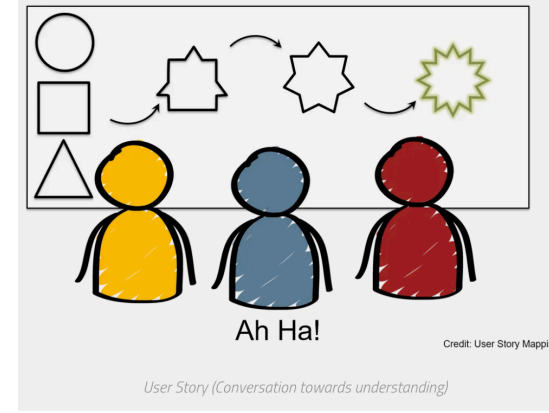
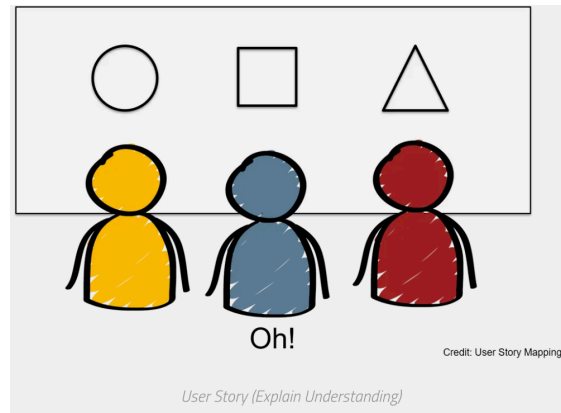


# User Story Mapping

DISCOVER THE WHOLE STORY,  
BUILD THE RIGHT PRODUCT

# The conversation

- An open dialog between everyone working on the project and the client
- Split up Epic Stories if needed



# User Story Examples

- "As a [persona]": Who are we building this for? We're not just after a job title, we're after the persona of the person. Max. Our team should have a shared understanding of who Max is. We've hopefully interviewed plenty of Max's. We understand how that person works, how they think and what they feel. We have empathy for Max.
- "Wants to": Here we're describing their intent — not the features they use. What is it they're actually trying to achieve? This statement should be implementation free — if you're describing any part of the UI and not what the user goal is you're missing the point.
- "So that": how does their immediate desire to do something fit into their bigger picture? What's the overall benefit they're trying to achieve? What is the big problem that needs solving?

# User Story Examples

- iPhone users need access to a vertical view of the live feed when using the mobile app.
- Desktop users need a “view fullscreen” button in the lower right hand corner of the video player.
- Android users need to be linked to apple store.

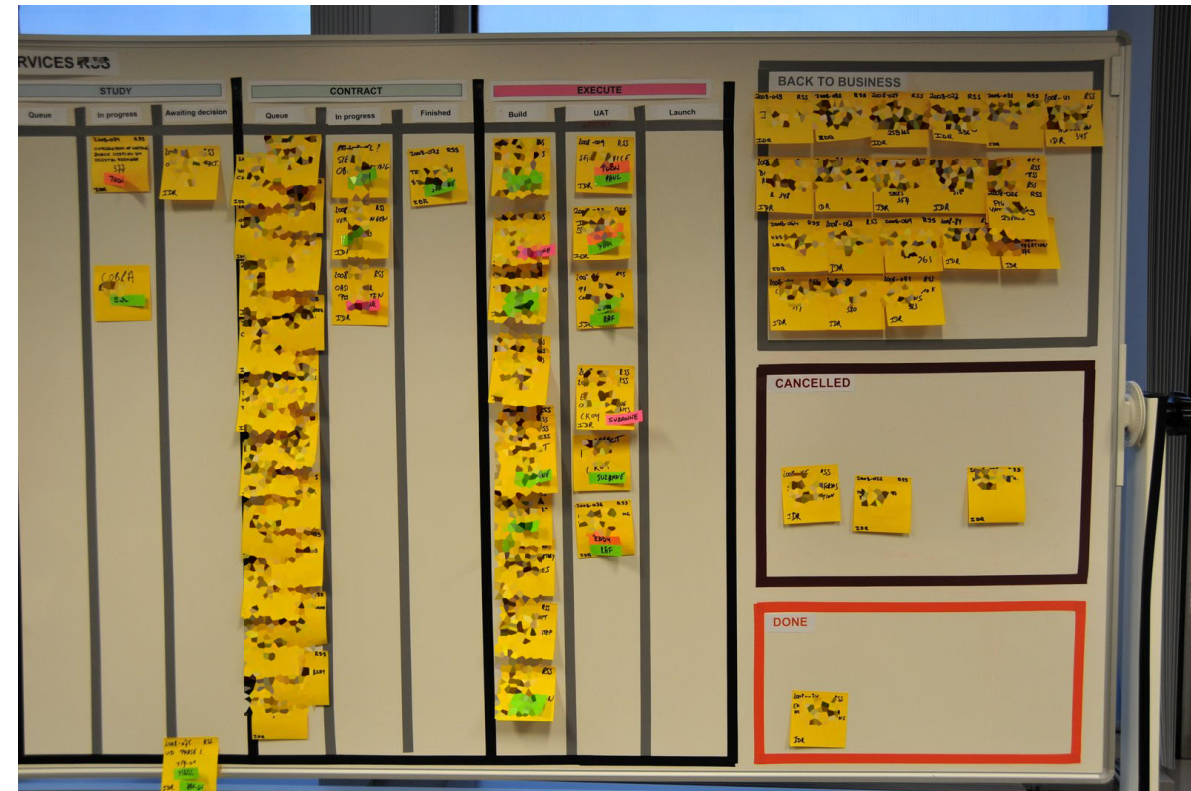
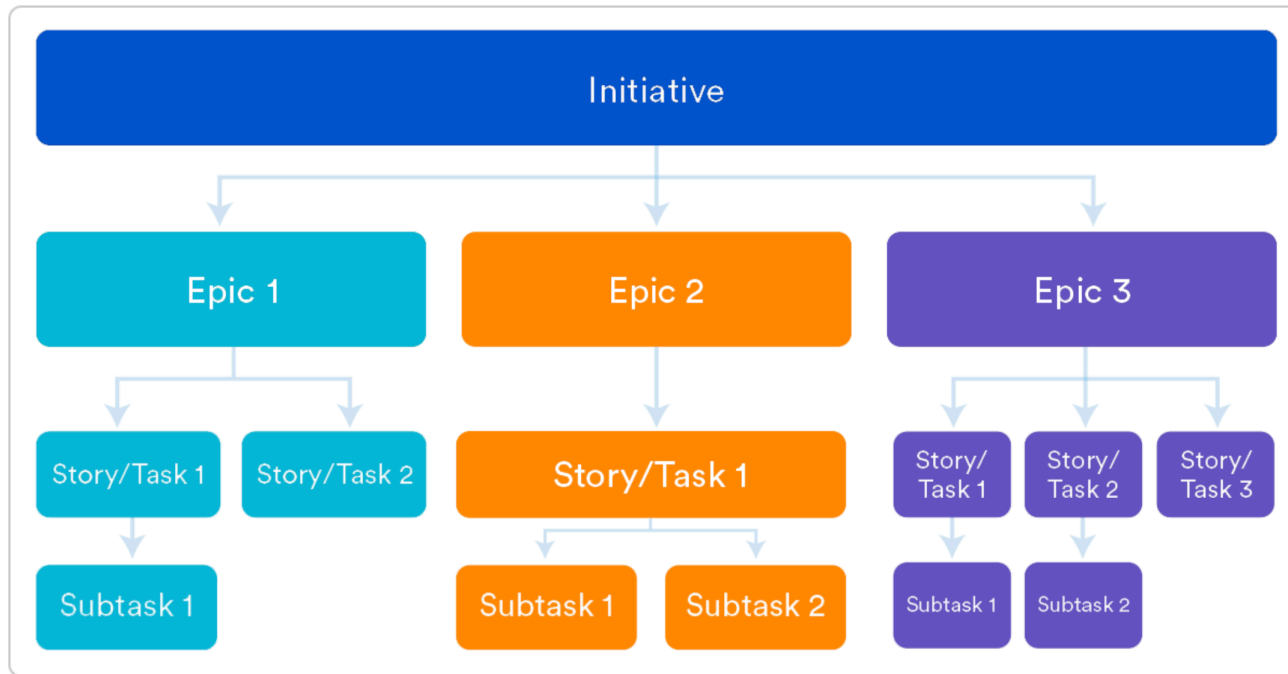


# User Story Examples

- As Max, I want to invite my friends, so we can enjoy this service together.
- As Sascha, I want to organize my work, so I can feel more in control.
- As a manager, I want to be able to understand my colleagues progress, so I can better report our success and failures.

# Use of User Stories

- Keep a board of user stories, group them into “epics”



# The Confirmation

- A confirmation criteria that will show when the task is completed
- Could be automated or manual

# How to evaluate user study?

Follow the INVEST  
guidelines for good  
user stories!



one|80  
SERVICES



# I independent

- Schedule in any order.
- Not overlapping in concept
- Not always possible

I	independent
N	negotiable
V	valuable
E	estimable
S	small
T	testable

# N negotiable

- Details to be negotiated during development
- Good Story captures the essence, not the details

I	independent
N	negotiable
V	valuable
E	estimable
S	small
T	testable

# V valuable

- This story needs to have value to someone (hopefully the customer)
- Especially relevant to splitting up issues

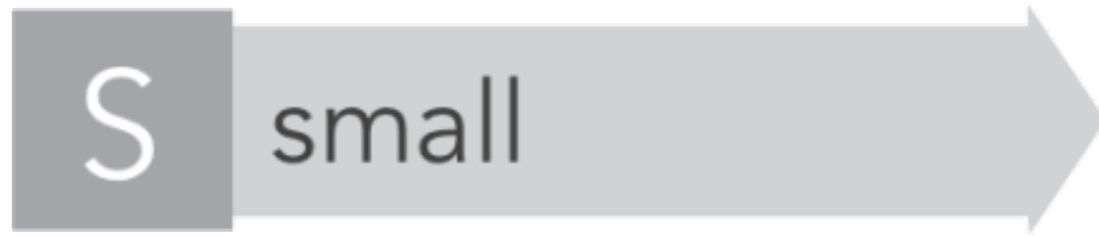
I	independent
N	negotiable
V	valuable
E	estimable
S	small
T	testable

# E estimable

- Helps keep the size small
- Ensure we negotiated correctly
- “Plans are nothing, planning is everything” -Dwight D. Eisenhower







- Fit on 3x5 card
- At most two person-weeks of work
- Too big == unable to estimate



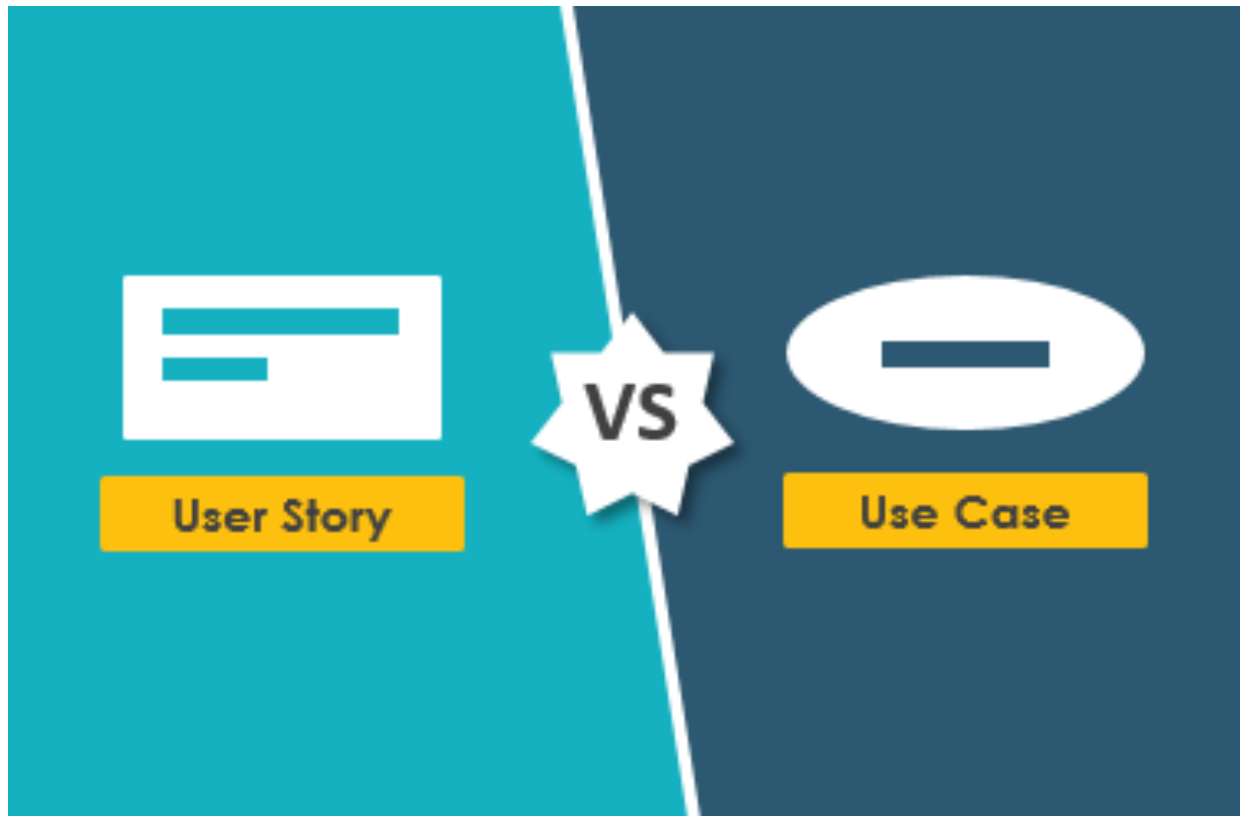
# T testable

- Ensures understanding of task
- We know when we can mark task “Done”
- Unable to test == do not understand



However...

**"Is a User Story the same thing as a Use Case?"**



Agile Development: User stories  
are the new requirements  
document

# Is a User Story the same thing as a Use Case?

- **Not interchangeable**
- **User Stories** are centered on the result and the benefit of the thing you're describing
- **Use Cases** can be more granular, and describe how your system will act.

# Use Cases vs User Story

- Similarity
  - User Stories: user role, goal and acceptance criteria.
  - Use Cases: an actor, flow of events and post conditions
- Difference
  - Less details in User Story
  - Small increments for getting feedback more frequently, rather than having more detailed up-front requirement specification as in Use Cases.

# Why we still need Use Cases?

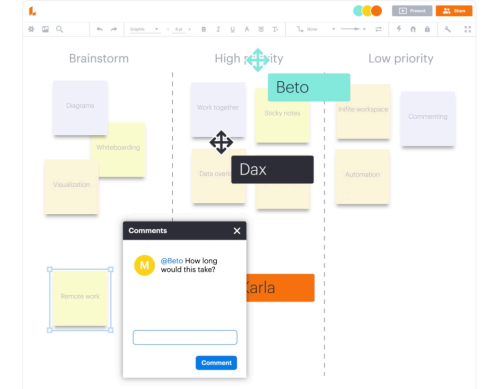
- Problem of User Story:
  - Lack of context
  - Sense of completeness that you covered all bases relating to a goal.
  - No mechanism for looking ahead at upcoming work.

# Integrate Use Case, User Story and Story Mapping techniques

- Lucidchart
- Jira Agile
- Team Foundation Server
- BoardThing
- Stories on Board
- FeatureMap

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TO DO 3

Engage Jupiter Express for outer solar system travel

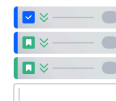
SPACE TRAVEL PARTNERS

IN PROGRESS 3

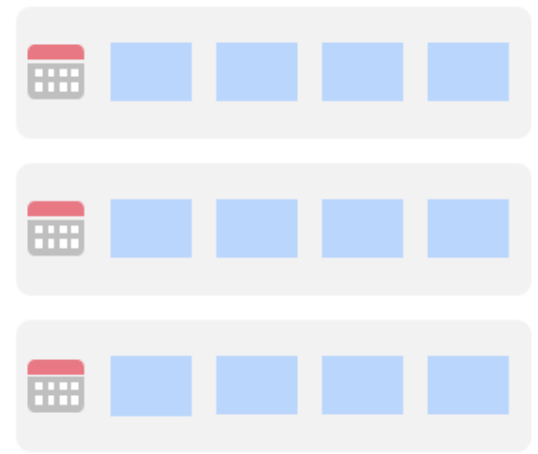
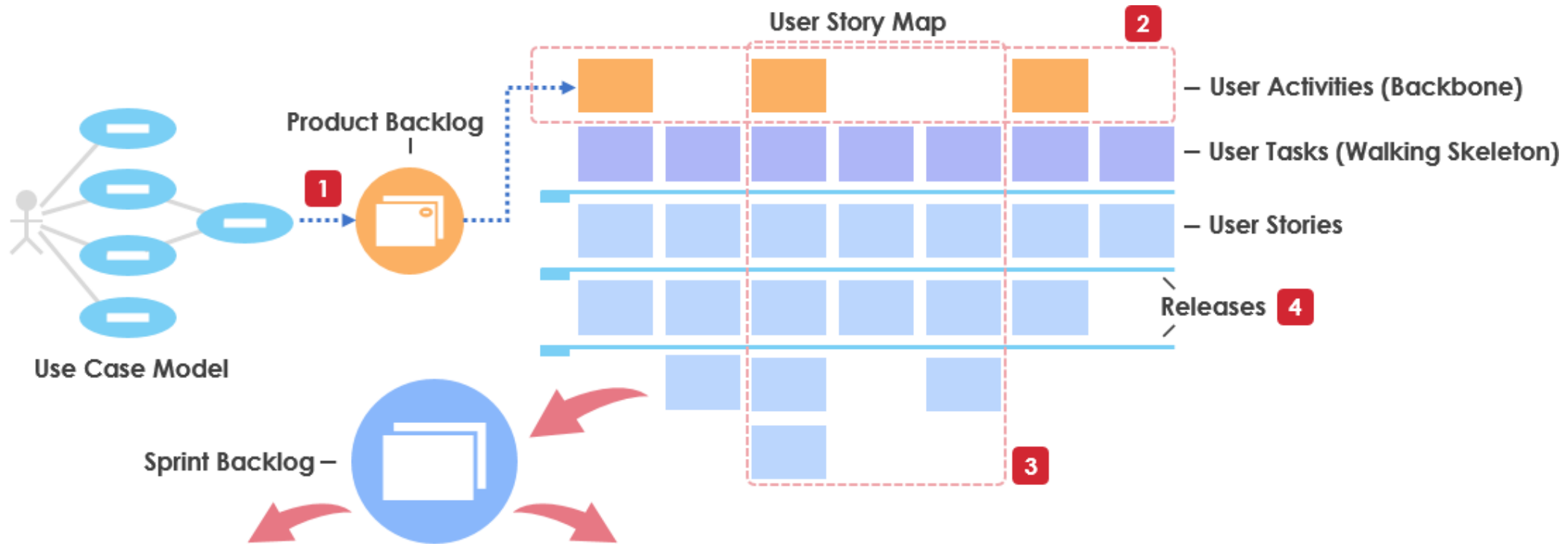
Requesting available flights is now taking > 5 seconds

SEESPACEEZ PLUS

Fit your framework







**5** Affinity Estimation

**6** Sprint

**7** Sprint Task Board

→ Effort    → Risk

# Requirements prioritization

- Cost, time, and other limits
- Dependencies among requirements
- Nice to have
- Strategies to base on value contribution

# Product Requirement Document (PRD)

1. Goals
2. User Personas
3. User Stories
4. Functional Requirements
5. Non-Functional Requirements
6. User interaction and design
7. Questions
8. Out of Scope

# Summary

- Many documentation strategies; our focus is on *user stories*

# Further Reading

- Larman, Craig. *Applying UML and Patterns: An Introduction to Object Oriented Analysis and Design and Iterative Development*. Pearson, 2012. Chap. 6
- Van Lamsweerde A. *Requirements engineering: From system goals to UML models to software*. John Wiley & Sons; 2009. Chapter 2-4
- “Advanced Use Case Modeling, Volume I”, Frank Armour, Granville Miller, Addison-Wesley, 2001, Ch 8-10.
- <https://aanimesh.files.wordpress.com/2013/09/applying-uml-and-patterns-3rd.pdf>