CSCI 375

USE CASES

Upcoming Project deliverables

Project Requirements **(this is a big one!):**

- This needs to be based on user-gathered information
- You will need to interview users
  - We all know how fun this is!
  - Design an interview/questionnaire
  - Make sure it is targeted
  - Interview enough people: how many?
- Testing plan
  - Test environment, tools, processes
  - What requirements will be tested

User Stories

Definition: One short sentence that states what a user does as part of their work. It should be in the user's language.

"As a <role>, I want to <goal>, so that <reason>"

- As a customer I want to withdraw cash and feel confident that I get the correct amount
- As a teller, I want to balance my cash drawer to confirm there were no errors.

Acceptance Criteria

Each user story should have a list of acceptance criteria

- things that are necessary for the actor to be satisfied
- can be used in testing
- can be used to clarify expectations of users

Example:

- User Story:
  - As a teller, I want to make a deposit to quickly serve more customers
- Acceptance Criteria:
  1. customer look up must be by name or account number
  2. customer photo and signature would be nice to see
  3. check-hold requirements must be shown
  4. current balance and new balance must be shown

User Stories practice

Come up with 2 user Stories (for different kinds of users) for:

- VIU Learn
- “As a <role>, I want to <goal>, so that <reason>”
- List at least 3 acceptance criteria for each one

Use Cases

Definition: an activity that the system performs in response to a request by the user (or an agent)

Two techniques for developing use cases:

- User Goal Technique
- Event Decomposition

RMO: Use Case Examples

Use Case	Description
Look up supplier	Using supplier name, find supplier information and contacts
Enter/update supplier information	Enter (new) or update (existing) supplier information
Look up contact	Using contact name, find contact information
Enter/update contact information	Enter (new) or update (existing) contact information
Look up product information	Using description or supplier name, look up product information
Enter/update product information	Enter (new) or update (existing) product information
Upload product image	Upload images of the merchandise product

User Goal Technique

1. Identify all users
2. Classify all users in terms of their functional role
3. Classify all users by organizational level
4. Interview all users (or all types)
   - what are their specific goals?
   - frame all in *imperative verb-noun format*
     - Update order
     - Add customer
5. Create a list of use cases, organized by type of user
6. Look for duplicates, resolve inconsistencies
7. Identify where different users have the same use case
8. Review updated list with users and stakeholders

VIU Learn example

Identify all types of user

Classify them by:

- functional role
- by organizational level

Interview them

List all the things you need to do with the system

VIU Learn example

Identify all types of user

Classify them by:

- functional role
- by organizational level

Interview them

List all the things you need to do with the system

- convert them to verb-noun format: update order
- Ignore security and login functionality

VIU Learn Example

Come up with use cases based on whole class's list

Use Case	Description
Example: Look up supplier	*Using supplier name, find supplier information and contacts*

VIU Learn Example: Instructor Use Cases

Use Case	Description
Enter Grades	Using course identifier, enter grade values for all students who have completed a specific assignment
Email Students	Using course identifier access list of enrolled students and send them an email
View Assignment	Using a course identifier, and assignment identifier, view the settings and files for an assignment
View Assignment Submission for a student	Using a course identifier, an assignment identifier, and student identifier, view the submitted files and information
Mark Assignment Submission	Using a course identifier, an assignment identifier, and student identifier, enter feedback and mark
View courses	View list of all current courses

Event Decomposition Technique

Definition: technique used to identify use cases based on business events the system must handle and respond to

Easier said than done:

- Identifying the events that are associated with use cases *at the right level of detail* is difficult

Example:

- enter a name on a form
- add a new customer to the system
- add customers and update customer records

Which is best level of detail?

Event Decomposition Technique

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Example:

- enter a name on a form
- **add a new customer to the system**
- add customers and update customer records

Event Decomposition

The right level of detail corresponds to a task:

- That is performed by one person
- adds measurable business value
- leaves the system and data in a stable state

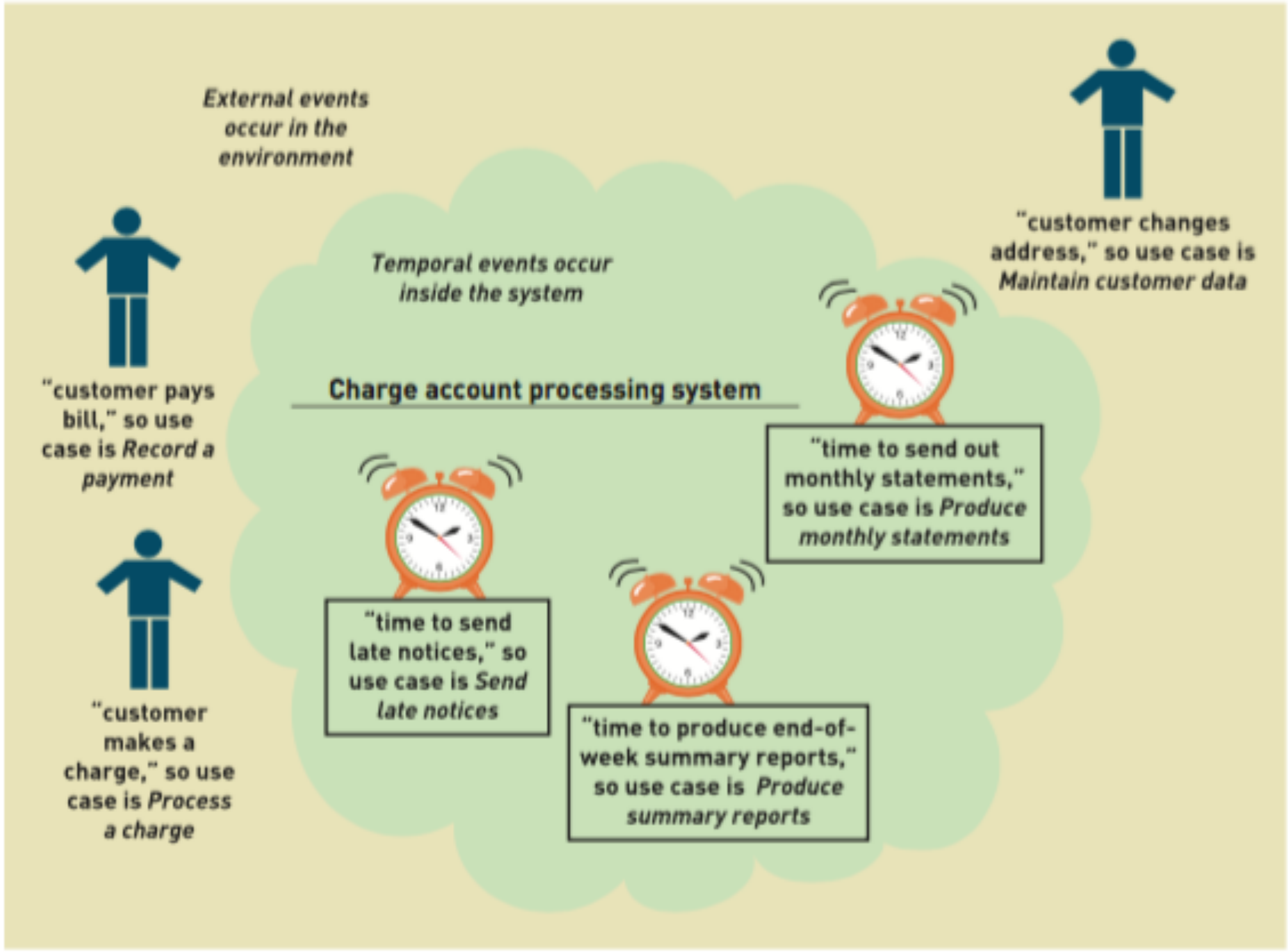
We call this: **Elementary Business Process** (EBP)

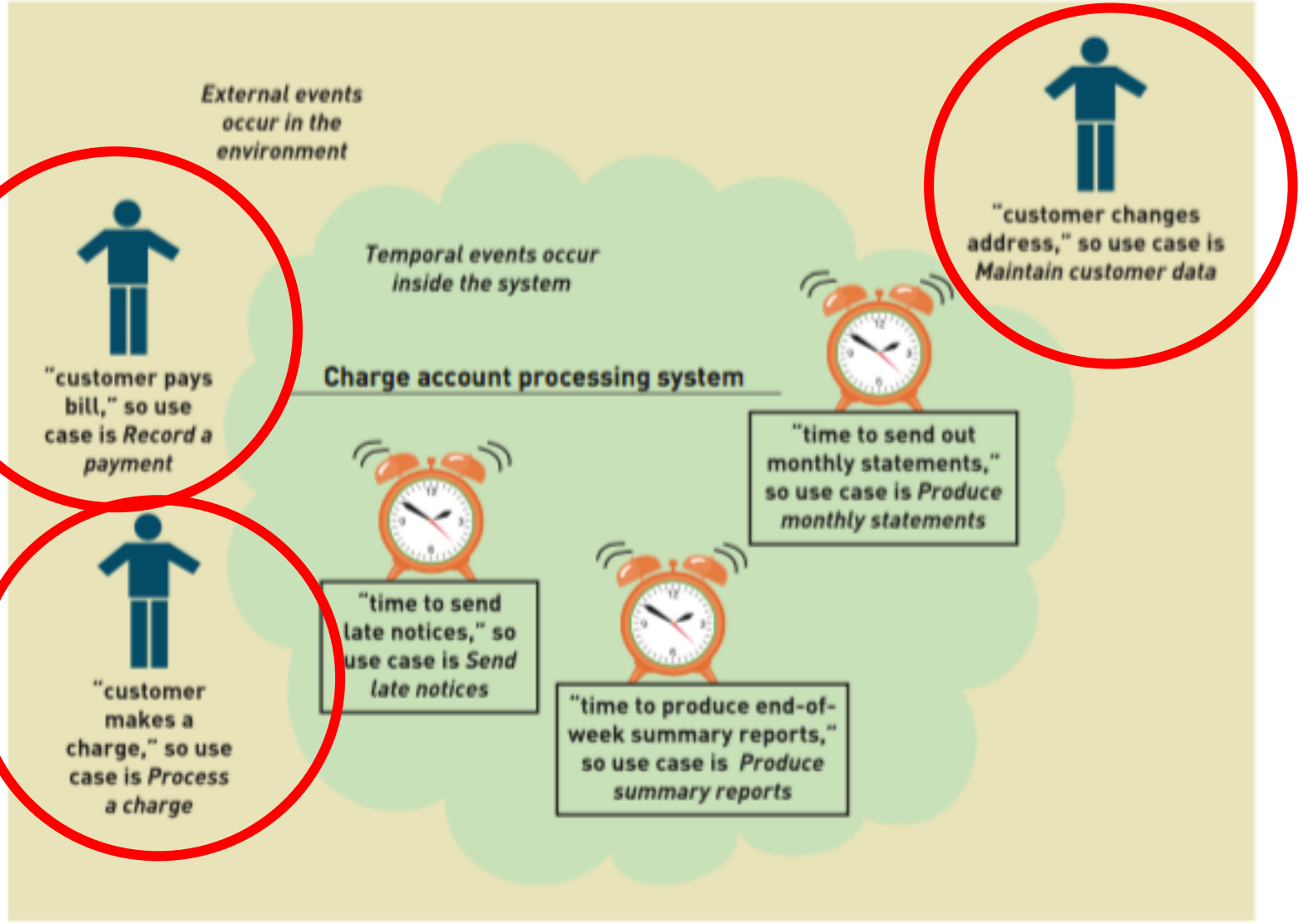
Fill a shopping cart: Is this a EBP?

Event Decomposition Technique

Ask ourselves:

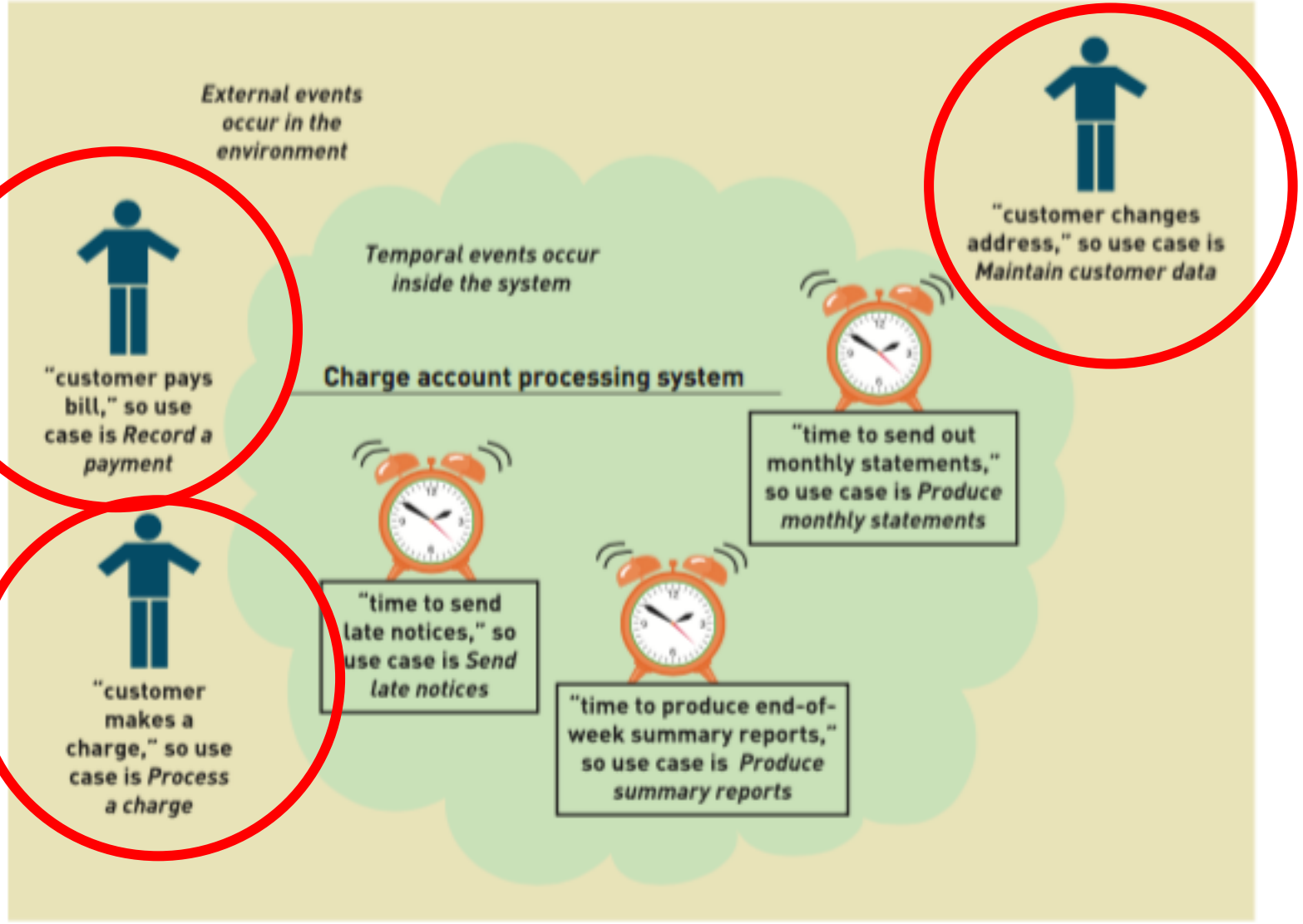
- What business events happen that the system will need to respond to?


External events occur in the environment
"customer changes address," so use case is Maintain customer data
Temporal events occur inside the system
"customer pays bill," so use case is Record a payment
Charge account processing system
"time to send out monthly statements," so use case is Produce monthly statements
"time to send late notices," so use case is Send late notices
"customer makes a charge," so use case is Process a charge
"time to produce end-of-week summary reports," so use case is Produce summary reports



Three Events:

- Customer pays a bill
- Customer makes a charge
- Customer changes their address

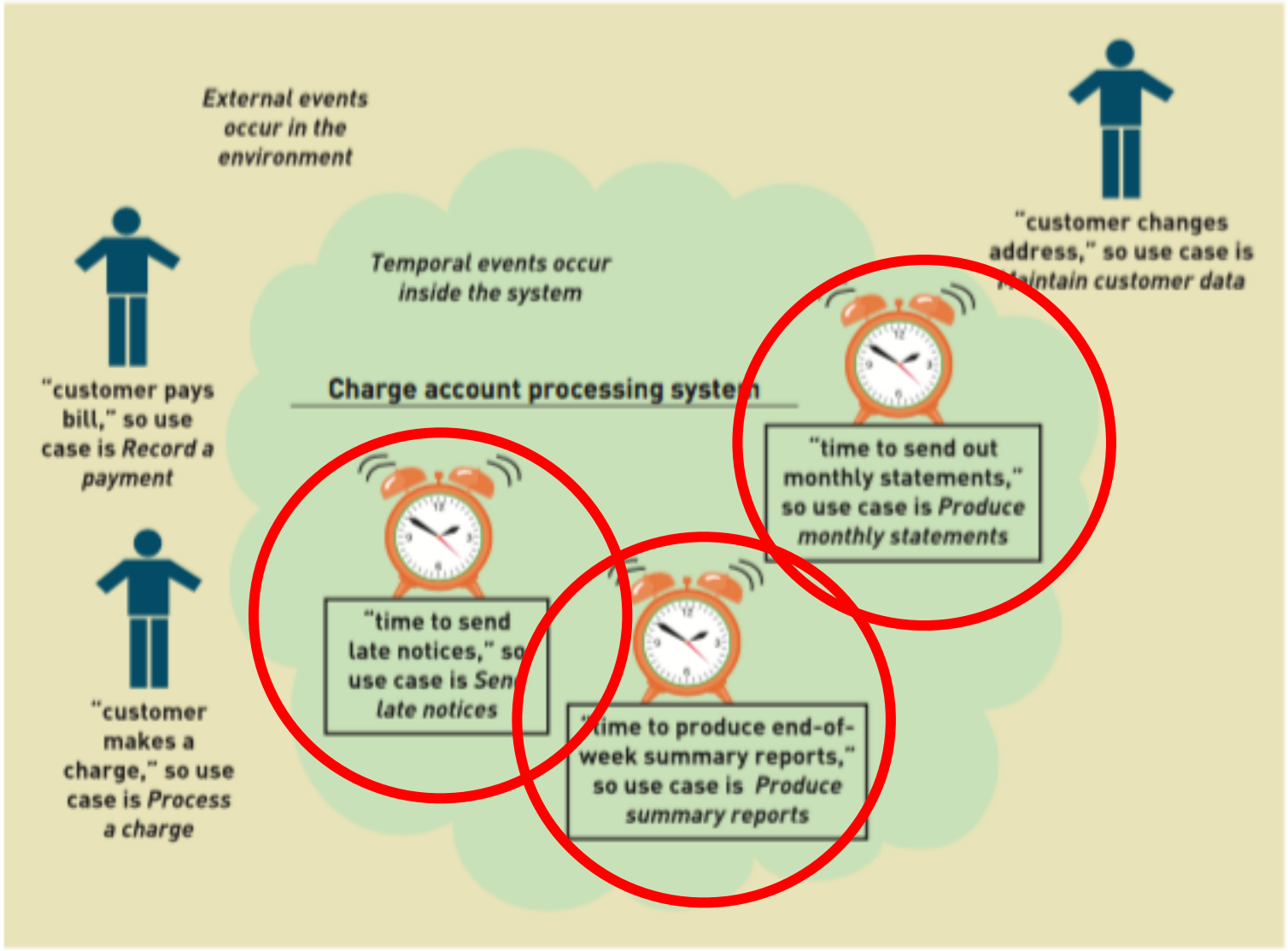


Three Events:

- Customer pays a bill
- Customer makes a charge
- Customer changes their address

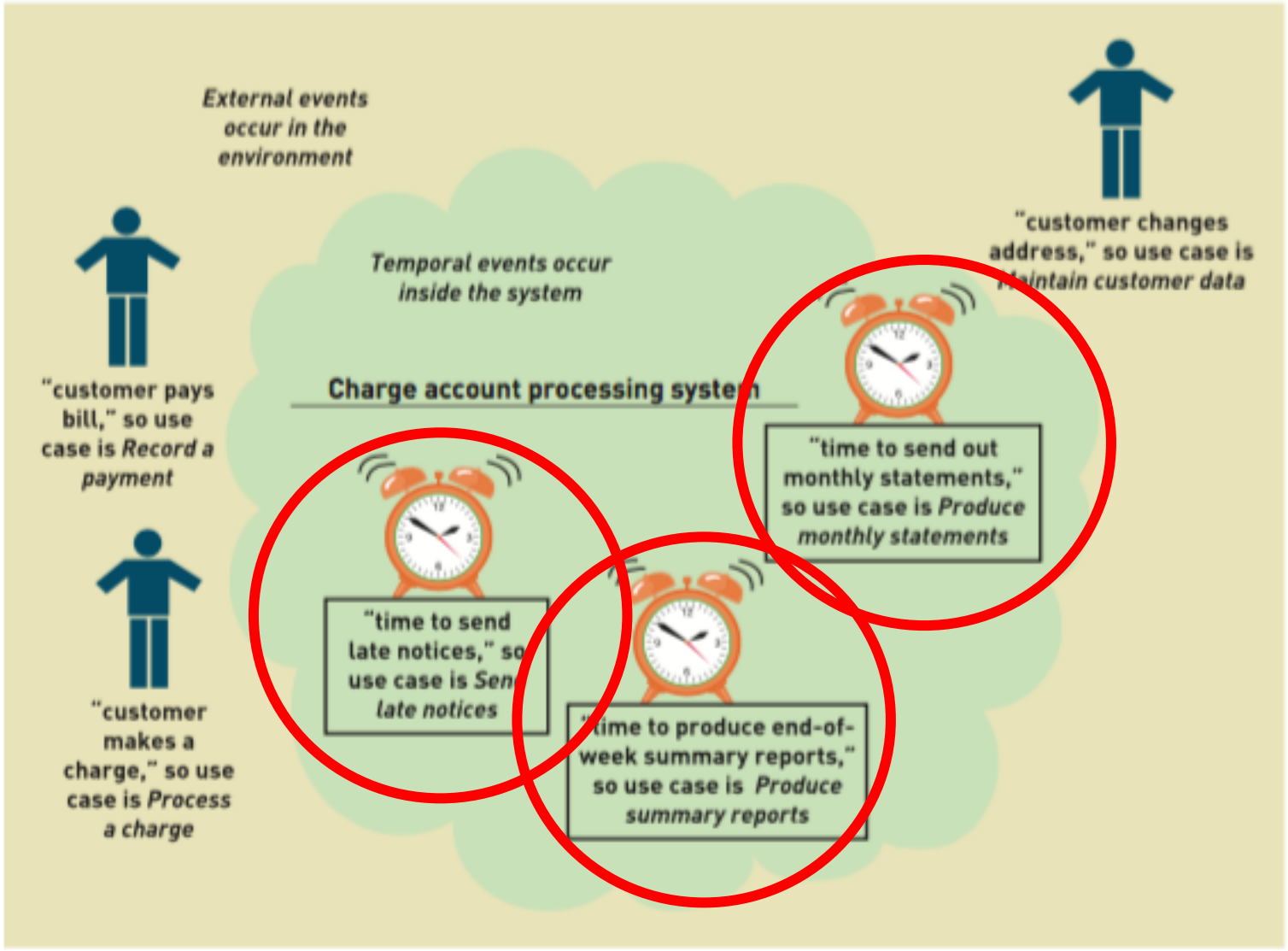
Three Use Cases:

- Record a payment
- Process a change
- Maintain customer



Three Temporal Events:

- Time to send late notices
- Time to send out monthly statements
- Time to produce end of week summary reports



Three Temporal Events:

- Time to send late notices
- Time to send out monthly statements
- Time to produce end of week summary reports

Three Use Cases:

- Send late notices
- Produce monthly statements
- Produce summary reports

Types of Event

External Events

Temporal Events

State Events

RMO example

Identify all the external agents of RMO

RMO example

Identify all the external agents of RMO.

What kinds of events can a **customer** trigger?

Naming events

Should include:

- agent is named
- identify the action

Example:

- customer *places an order*

Types of Event

External Events

- can also be triggered by employees or departments
- Checklist:
  - external agent wants something, that results in a transaction
  - external agent wants some information
  - data changed, and needs to be updated
  - management wants some information

Temporal Events

State Events

Types of Event

External Events

Temporal Events

- Ask:
  - What deadlines occur?
  - What outputs are associated with those deadlines?

State Events

Temporal Events Exercise

What are temporal events in VIU Learn?

Types of Event

External Events

Temporal Events

State Events

State events example

What are some state events of VIU Learn?

Identifying Events

Consider the following sequence

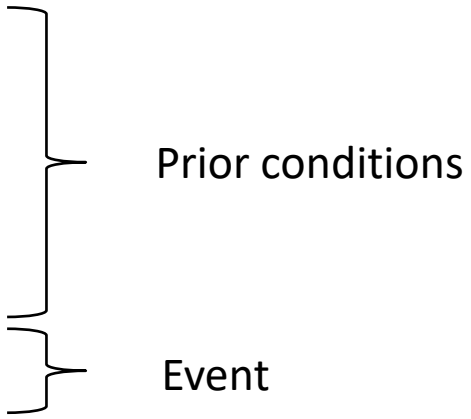
- Customer is hungry
- They google nearby restaurants
- They check out a Taco Shop's menu online
- They drive to Burrito Barn
- They order the Bean Supreme and pay for it

Which of these represents an event for the Burrito Barn's system?

Identifying Events

Consider the following sequence

- Customer is hungry
- They google nearby restaurants
- They check out a Taco Shop's menu online
- They drive to Burrito Barn
- They order the Bean Supreme and pay for it



Which of these represents an event?

Identifying Events

Consider the following sequence

- Customer wants to pay for the shirt
- The systems asks for the credit card
- The customer supplies the card

Which of these represents an event?

Trick:

- Ask yourself: Are there any significant pauses?

Identifying Events

Consider the following sequence

- Customer buys a shirt
- It is time to send the monthly bill
- Customer pays the bill

Which of these represents an event?

Tracing a Transaction's Life Cycle

Customer goes to company website

Customer searches for an item

Customer places an order

Customer changes their order

Customer wants to check the order status

Customer updates their account information

Customer posts a review of the product to the company website

RMO Example

Identify transactions that could result from a new customer

- how do they go from showing interest, to becoming an actual customer?

Technology-Dependent Events and System Controls

Can be best of ignore these at start of project

- *System Controls*
  - *Checks*
  - *Safety procedures*
  - *Protection of integrity of system*
- *Technology-dependent Events*

Summary of Decomposition Steps

1. Identify external events that require response from the system
2. For each event, identify and name a use case
3. Identify the temporal events that need a system response
4. For each event, identify and name a use case the system requires
    1. then identify the point in time that triggers the use case
5. Identify the state events the system might respond to
6. For each state event, identify and name the use case the system needs and the state change
7. Assuming perfect technology, check each use case is needed, and ignore system controls for now

RMO Example

According to System Vision:

- Sales
- Order Fulfillment
- Customer Account
- Marketing
- Reporting

Sales Subsystem Use Cases

Use Case	Actors
Search for item	Customer, customer service rep., store sales representative
View product comments/ratings	Customer, customer service rep., store sales representative
View accessory combinations	Customer, customer service rep., store sales representative
Fill shopping cart	Customer
Empty shopping cart	Customer
Check out shopping cart	Customer
Fill reserve cart	Customer
Empty reserve cart	Customer
Convert reserve cart	Customer
Create phone sale	Customer service representative
Create store sale	Store sales representative

Order Fulfillment Subsystem Use Cases

Use Case	Actors
Ship items	Shipping
Manage shippers	Shipping
Create backorder	Shipping
Create item return	Shipping, customer
Look up order status	Shipping, customer, management
Track shipment	Shipping, customer, marketing
Rate and comment on product	Customer
Provide suggestion	Customer
Review suggestions	Management
Ship items	Shipping
Manage shippers	Shipping

Customer Account Subsystem Use Cases

Use Case	Actors
Create/update customer account	Customer, customer service representative, store sales representative
Process account adjustment	Management
Send messages	Customer
Browse messages	Customer
Request friend linkup	Customer
Reply to linkup message	Customer
Sent/receive points	Customer
View “mountain bucks”	Customer
Transfer “mountain bucks”	Customer

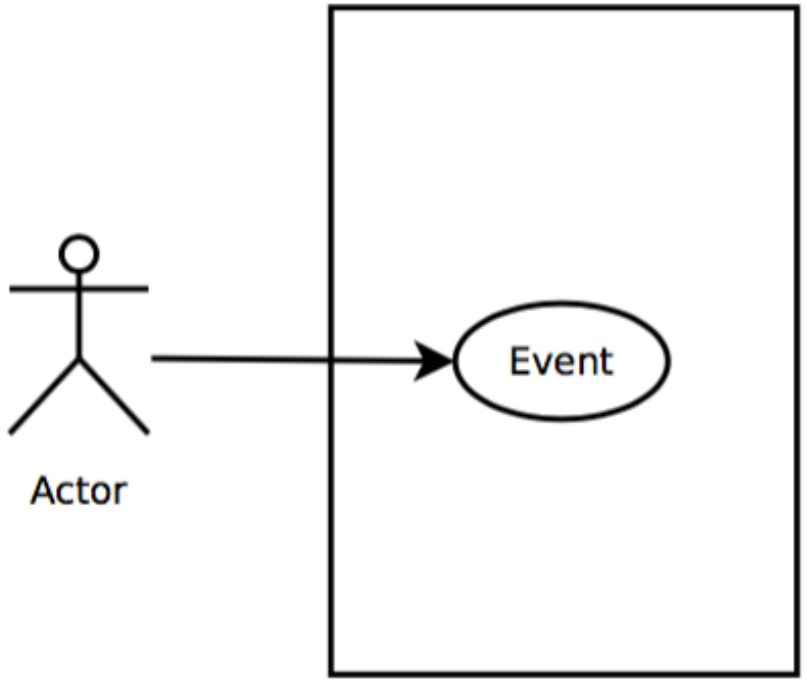
Marketing Subsystem Use Cases

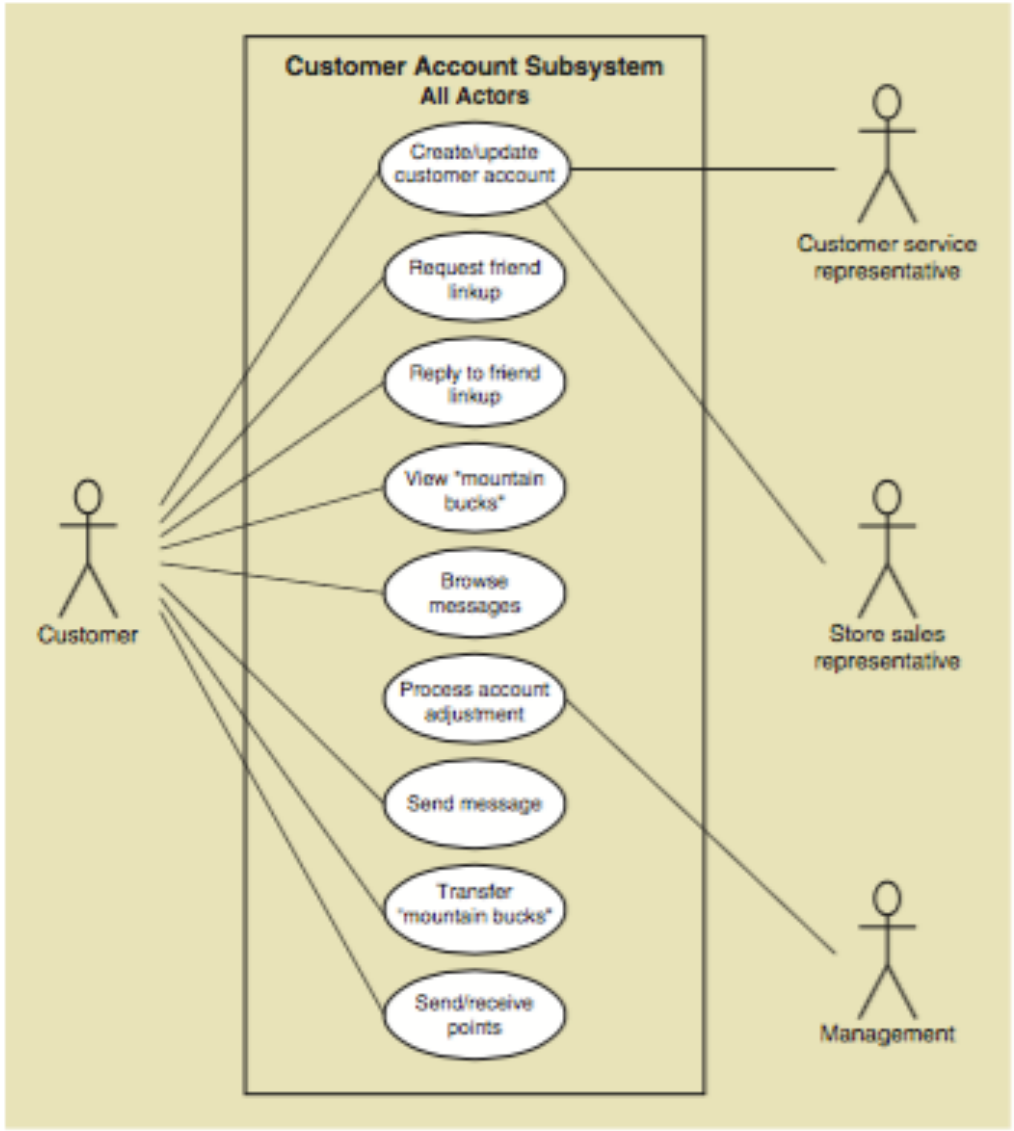
Use Case	Actors
Add/update product information	Merchandising, marketing
Add/update promotion	Marketing
Add/update accessory package	Merchandising
Add/update business partner link	Marketing

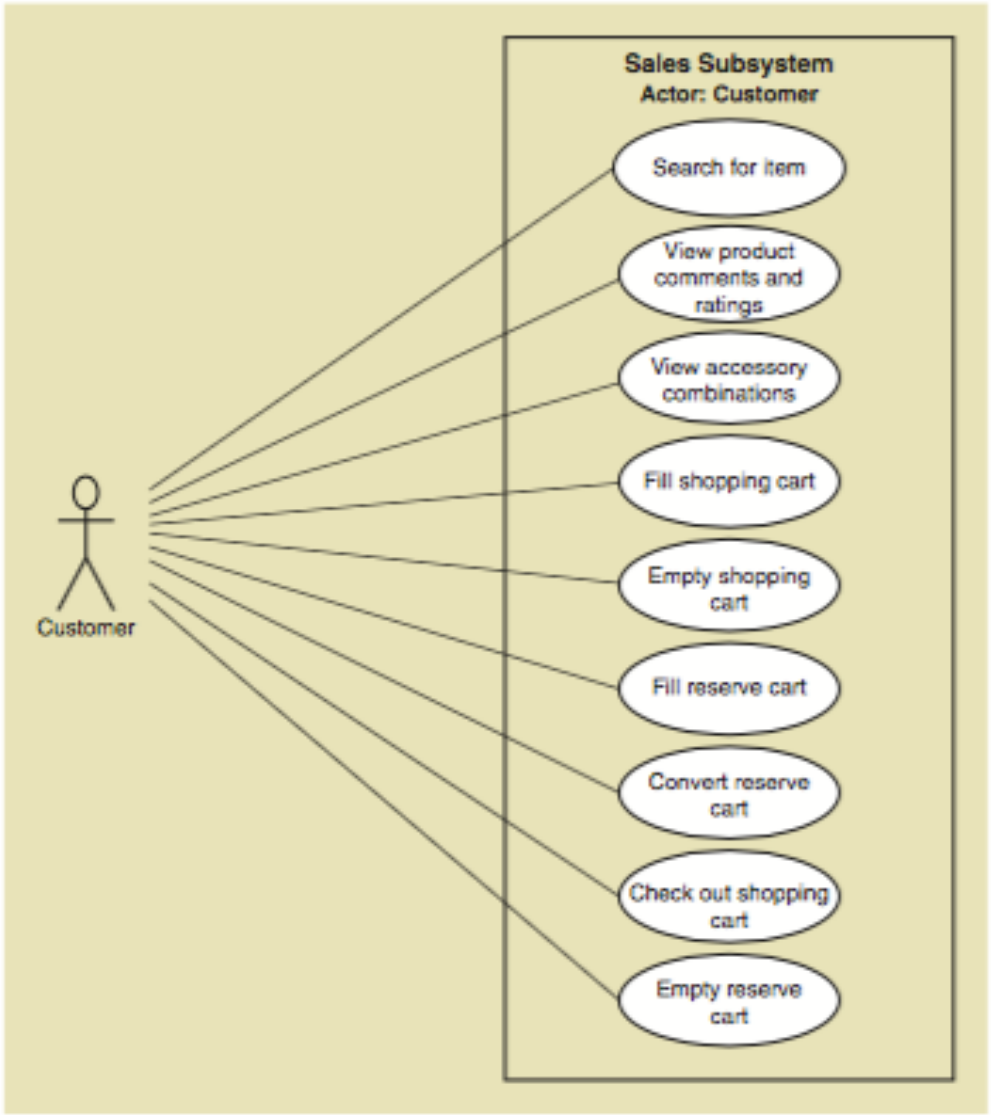
Reporting Subsystem Use Cases

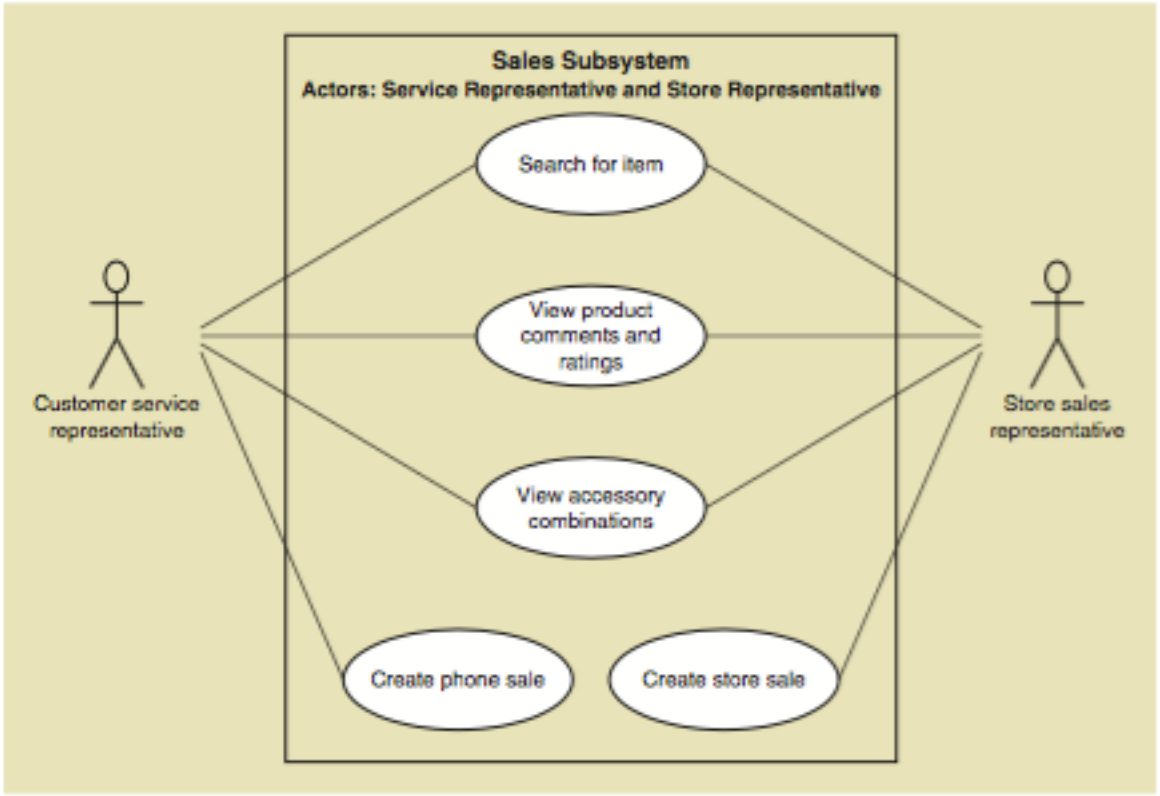
Use Case	Actors
Produce daily transaction summary report	Management
Produce sales history report	Management, marketing
Produce sales trends report	Marketing
Produce customer usage report	Marketing
Produce shipment history report	Management, shipping
Produce promotion impact report	Marketing
Produce business partner activity report	Management, marketing

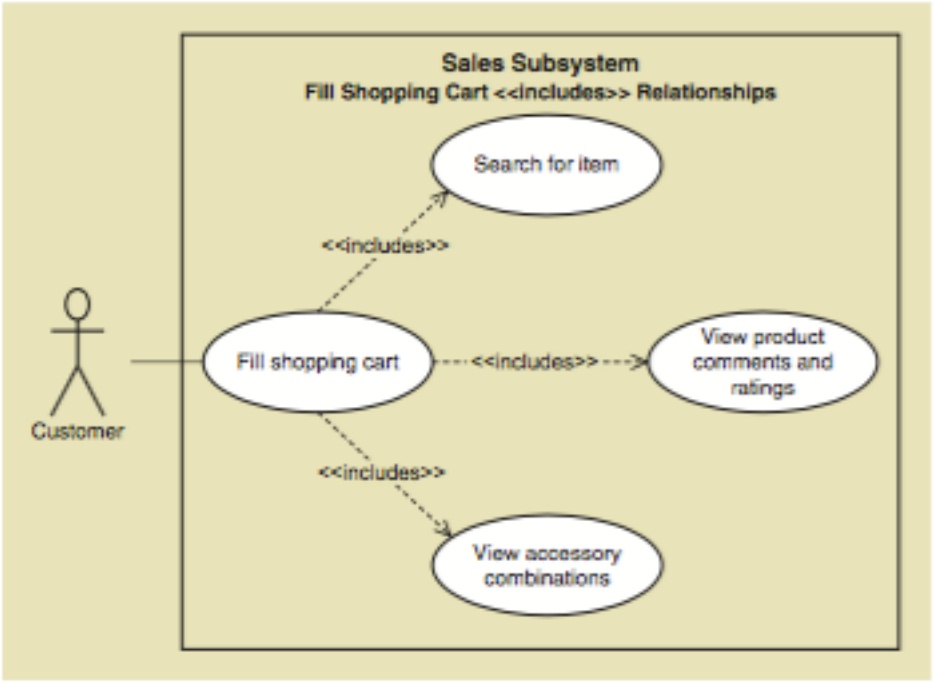
Use Case Diagram




Customer Account Subsystem
All Actors
Create/update customer account
Request friend linkup
Reply to friend linkup
View "mountain bucks"
Browse messages
Process account adjustment
Send message
Transfer "mountain bucks"
Send/receive points
Customer
Customer service representative
Store sales representative
Management


Sales Subsystem
Actor: Customer
Search for item
View product comments and ratings
View accessory combinations
Fill shopping cart
Empty shopping cart
Fill reserve cart
Convert reserve cart
Check out shopping cart
Empty reserve cart
Customer


Sales Subsystem
Actors: Service Representative and Store Representative
Search for item
View product comments and ratings
View accessory combinations
Create phone sale
Create store sale
Customer service representative
Store sales representative


Sales Subsystem
Fill Shopping Cart <<includes>> Relationships
Search for item
<<includes>>
Fill shopping cart
<<includes>>
View product comments and ratings
<<includes>>
View accessory combinations
Customer

Developing a Use Case Diagram

1. Identify all stakeholders and users (actors)
2. Identify which use case diagrams would be of interest to a specific user/stakeholder. Typically includes use case diagrams
    1. for each user
    2. for use cases with <<includes>> relationships
    3. for each use case that might be of interest to specific stakeholders
3. Select the appropriate use case diagrams for a specific stakeholder/user and draw them up
4. Name each use case diagram, and decide when to use the diagram to communicate with specific users.

Summary

We've seen:

- how to develop user stories
- different techniques to identify use cases
- ways to model use cases

Readings

Chapter 4 Domain Modeling

https://en.wikipedia.org/wiki/Domain_model

https://en.wikipedia.org/wiki/Unified_Modeling_Language

Chapter 5: Use Case Modeling

https://en.wikipedia.org/wiki/Activity_diagram

https://en.wikipedia.org/wiki/System_sequence_diagram