Use Cases and Use Case Diagrams

Lecture Objectives:

1) List the activities which occur following blastoff in the Volere requirements process
2) List the 9 types of UML diagrams
3) Define Actor
4) Define a use case
5) Interpret the meaning of a use case diagram.
6) Explain the relationship between Use Case Diagrams and Use Case Scenarios

Volere Requirements Process

Lab

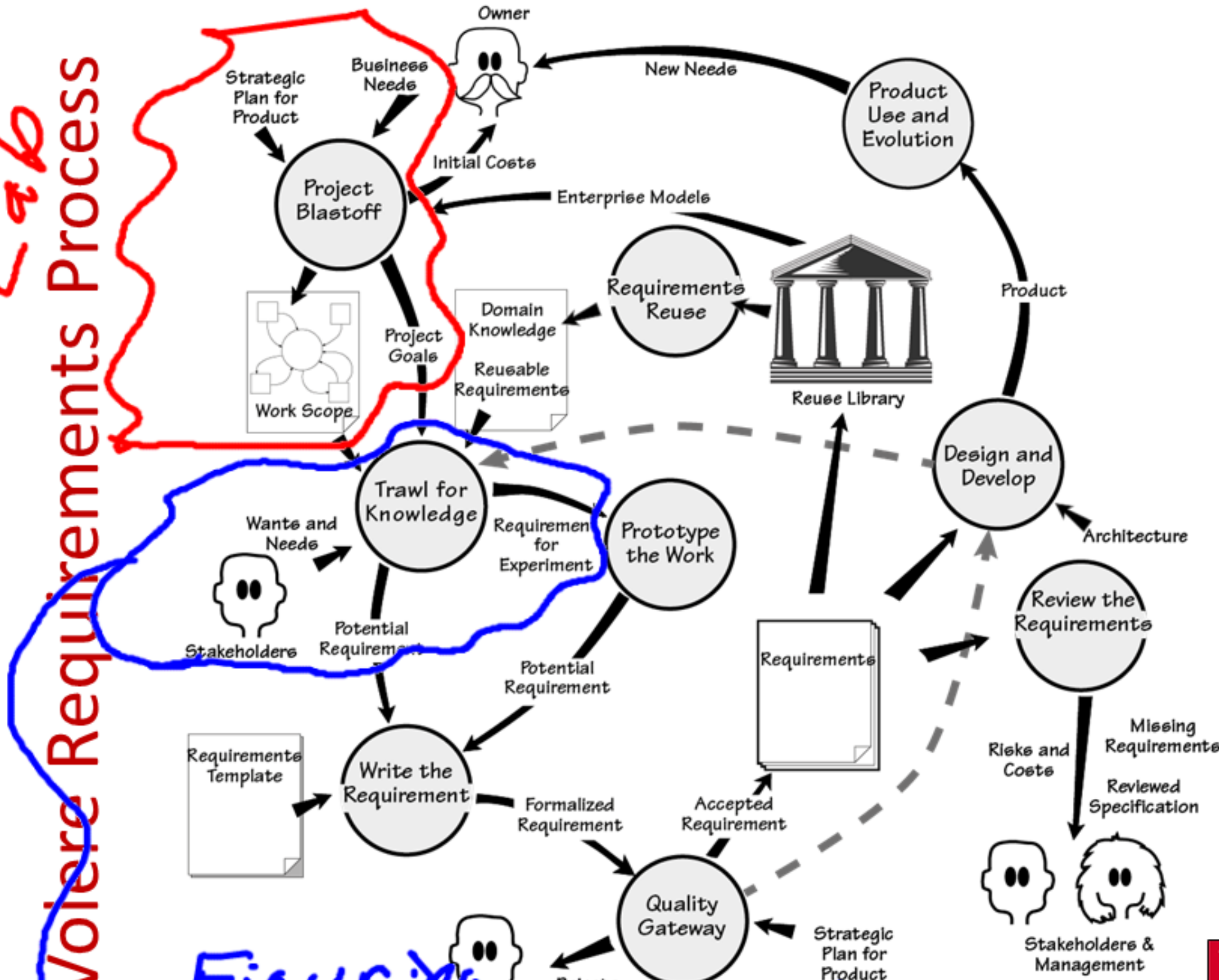


Figure 2.1 Volere what customer wants

Trawling for requirements

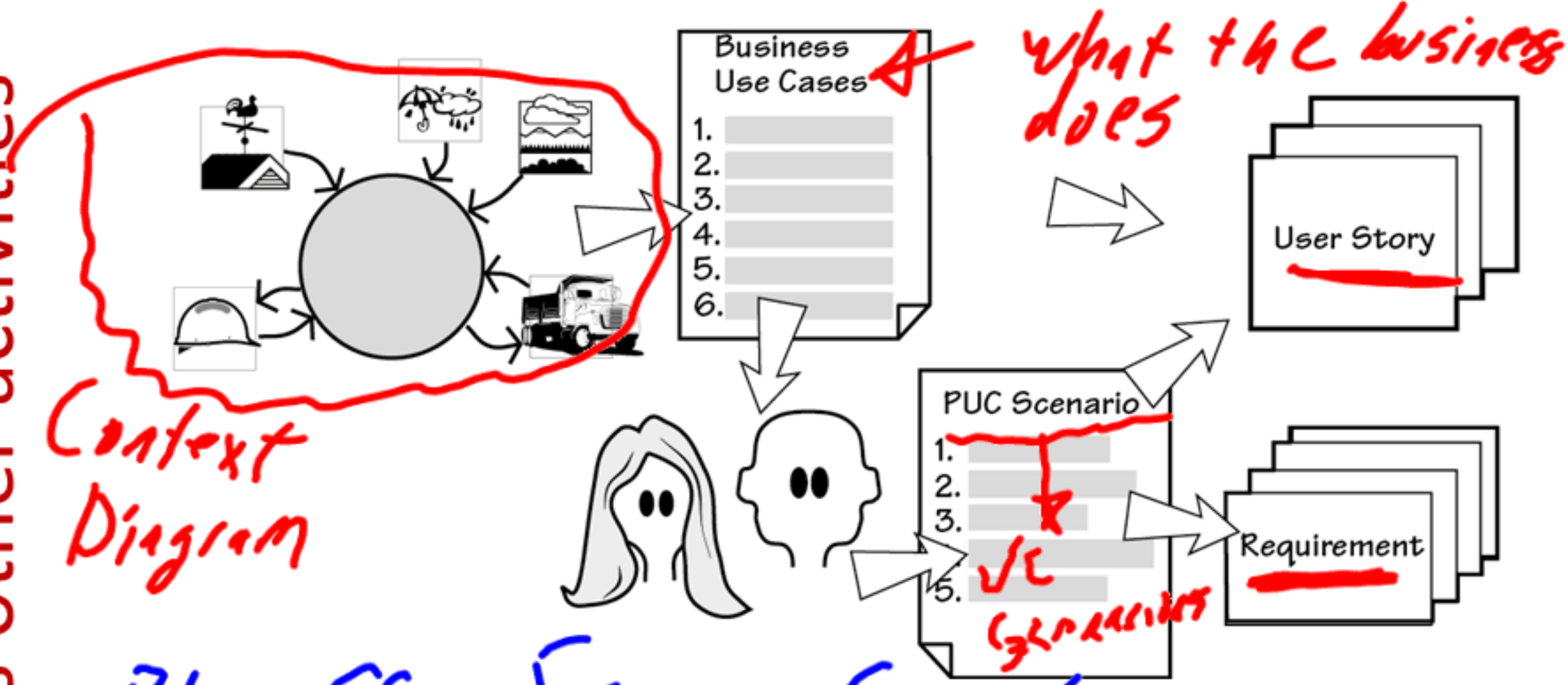
- Business analyst learns the details of the work
  - Business use case – a piece of functionality needed to respond to a business event
- Involves discussion with stakeholders
  - Need to be careful about stakeholder input

Buy product

Stakeholder inquisitory talk about their perceived solution to the problem.

→ Goal: Find the essence of the system.

Blastoff versus other activities



Blastoff: Scope of work the be impacted

UML Review

- With your neighbor, list the 9 types of UML diagrams

- Class
- Sequence
- Statechart
- Activity Diagram 2030
- Use case diagrams 2030
- Collaboration Diagrams
- Object Diagrams
- Component Diagram
- Deployment Diagram

Use Cases and Use case Diagrams

- Use Case
  - A named capability of a structural entity within a system
  - Explanation of how someone would use the system or a capability of the system

Things the system does

- Use Case Diagram
  - A diagram showing use cases and the relationship with Actors
  - Actor
    - An external entity which interacts with the system

Something outside the scope of our system.

Definition

- Actor
  - An object outside of the scope of the system which has significant interactions with the system
  - Typically users are a good example, but they are not the only example
  - Named with singular nouns → things

Question

- How many use cases should a software system have?

Jacobson – Large system should have no more than 70–80 use cases.

∴ Most systems should only have 20–50 use cases

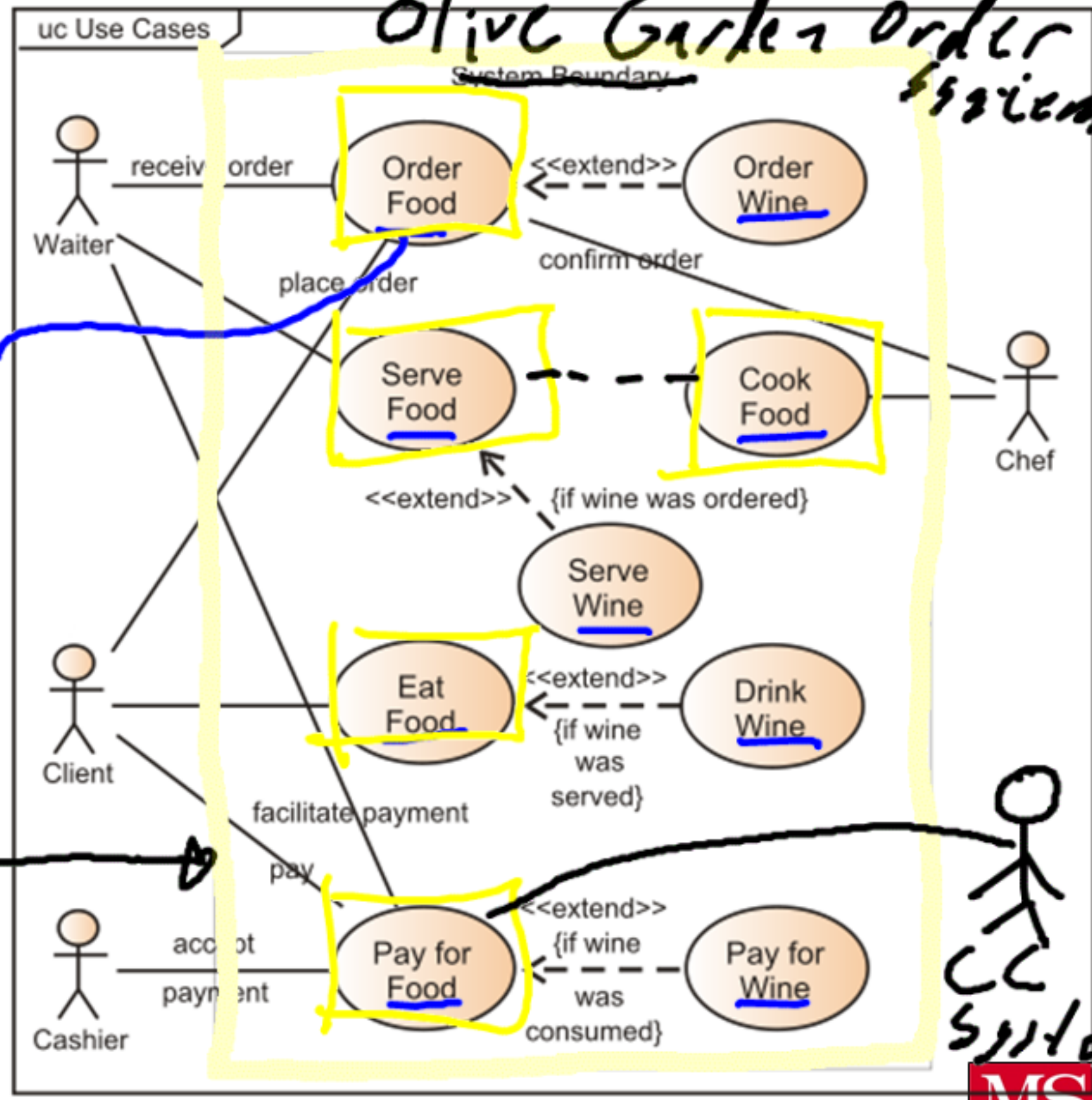
Each use case may have multiple scenarios

Use Case Diagram

Actors

Use cases

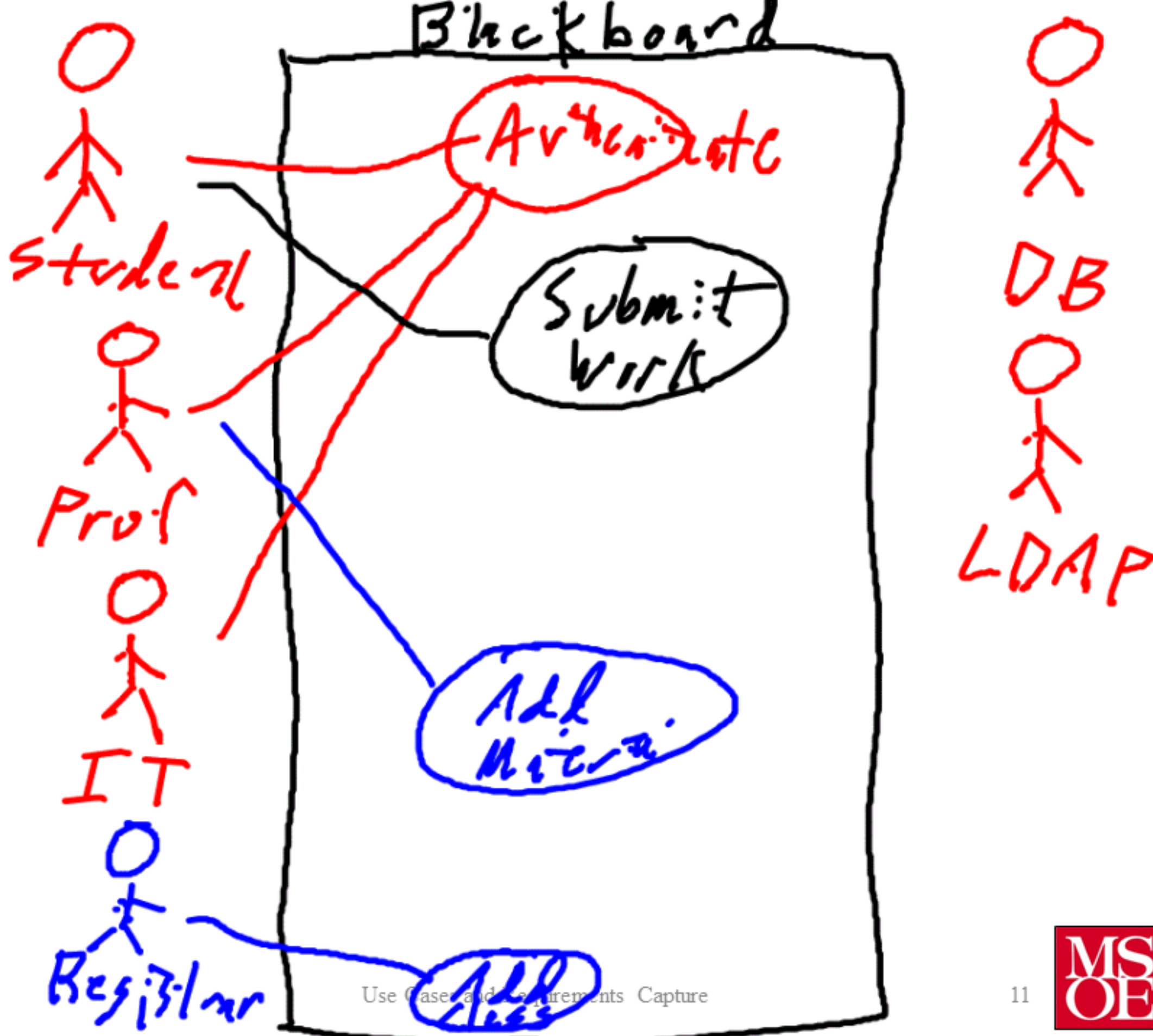
Scope



In Class Exercise

- Work with your neighbor next to you
  - Take out a sheet of paper
  - Identify the actors within the Blackboard system
  - Draw a use case diagram for Blackboard
    - What are the use cases you can identify

Blackboard

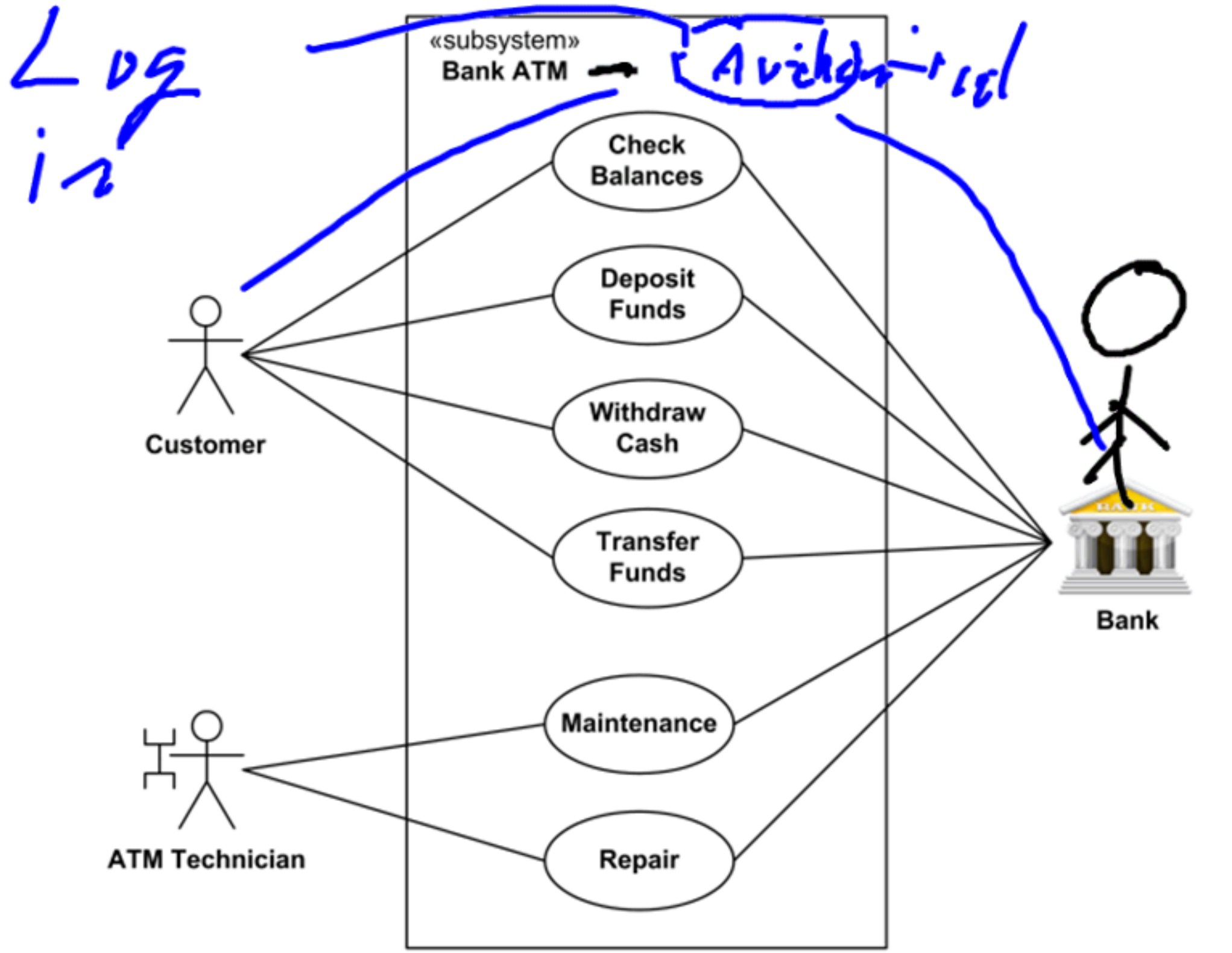

Blackboard
Student
Prof
IT
Registrar
Authenticate
Submit Work
Add Materials
Add Users
DB
LDAP

Example 2

- Work with the partner beside you, draw a use case diagram for an ATM system

ATM Sample use case Diagram

http://www.uml-diagrams.org/use-case-diagrams-examples.html#atm



- Depend on development phase cycles

Use Case Types

- High Level
  - Short one paragraph brief description only
- Essential/Analysis
  - Describe what the system does
  - Should be UI independent
- Real
  - Describe what the system does
  - Focuses on how the UI supports the operations
    - Typically a re-write of the analysis use case

Most Detailed

Scenario

Use Case

- Describes
  - describes the context of a use case for a particular user
    - conditions, motivation, and environment of the task for a particular user.
- Used by designers as a way to understand users' motivation and tasks in an interface

Pieces of a good use case scenario

- Use case name
  - The name of the use case
  - Matches the name on a Use Case Diagram
- Actors
  - Who is involved in the use case / may use the use case
- High Level Description
  - Describe briefly what the use case does
- Preconditions
  - Things which must be met before the use case can be executed
- Use Case Flow
  - Describe what happens as the use case flows
- Alternate flows
  - What happens if a problem develops
- Outcomes
  - What happens as a result of the use case occuring

Lets work an example

- Blackboard
  - Submit Assignment Use Case

Solution

- Submit Assignment
- Actors
  - Student
- High Level Description
  - This use case describes how a student would submit an assignment into the system. By submitting an assignment, a student indicates that the Assignment is complete and ready to be graded.
- Preconditions
  - Student has been authenticated by the system.
- Use Case Flow:
  1. Student indicates a desire to submit an assignment into Blackboard.
  2. BlackBoard displays a set of assignments which the user can submit at the current time.
  3. Student indicates the assignment that they wish to submit.
  4. Blackboard prompts the user to upload the file(s) which constitute the assignment. (Transition to the file upload use case)
  5. Blackboard prompts the user to agree with assignment submission statement.
  6. Blackboard archives the assignment internally for grading.
  7. Blackboard displays to the user that the assignment has been submitted successfully.
- Alternate flows:
  - 2-a-1. Student has no assignments due at the present time. Exit use case scenario.
  - 4-a-1. Student does not upload any files to the system. Prompt the user that they must upload at least one file for assignment submission. Retry file upload use case. If still no uploads are performed, exit use case.
  - 5-a-1. Student fails to agree to the terms of service.
- Outcome:
  - The students assignment is submitted.