Scenarios

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COMPUTER SCIENCE 323 SOFTWARE DESIGN

Scenarios

Scenarios help us understand the system under design. A common way to build a scenario is to use use cases, user stories, or user narratives.

Scenarious help us understand the behavior and structure of our software.

All of these techniques have one common theme. They rely on a **user** sometimes known as **Actors**

User Narratives

User narratives are paragraphs written about our user.

They often elaborate on our understanding of who is using the software and what features they may use.

Ricky the Referee is a long time engineer that enjoys rocket target systems. He's been invited to judge this years competition and will look to award points based on how the system targets enemy structures.

Erin the Engineer focuses on usability issues with software. She spends most of her time working with disabled individuals to build better and simpler graphical user interfaces.

User Narratives

These narratives become the forefront of how we discuss various scenarios, e.g. use cases.

By defining users we can focus on building specialized sub-systems in the software that target aspects we never considered.

Keep in mind that our users, actors, are not always people.

User Stories

User stories are often used to help define a feature, or requirement, and associate value. For each user we may consider different values, and have completely separate features to implement.

We may also identify overlapping interests of various user types

A simple user story may begin with:

As an engineer I want to be able to press a button to start the search and destroy mission, and immediately know the system has started.

User Stories

Knowing that the user, Erin the Engineer, focuses on usability, we may further consider their wishes / needs:

Erin works with disabled people:

- Should we consider blind people, hence the music we should play to inform the user the system is searching
- Should we consider deaf people, hence why we should display the targets on the screen, have a timer, etc.

User stories are easy to create. They take minimal effort and help us define tasks, and sub-tasks that can be easily used during our elaboration phase of our software development process cycle.

Use Cases

Use cases are more formal. These tend to describe the feature in more detail, and document the behavior of a feature.

They include:

- Actors
- Pre-Conditions
- Normal Flow (Steps, or Behavior)
- Post-Conditions
- Related Use Cases
- Alternative pathways

Example Short “Casual” Use Case

ID: UC_01

Actors: Erin The Engineer

Pre-Condition: Erin has started the application and initialized the video feed.

Steps:

1. Erin presses the “S & D” button
2. The Music Starts
3. The Timer Resets
4. The Turret Starts Calibration
5. The Targets are displayed on the screen

Post Conditions: The system is in search and destroy mode.

Alternative Pathways:

The camera failed to acquire an image.

Example Short “Casual” Use Case

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Actor(s): Erin The Engineer

Pre-Condition: Erin has started the application and initialized the video feed.

Normal Flow:

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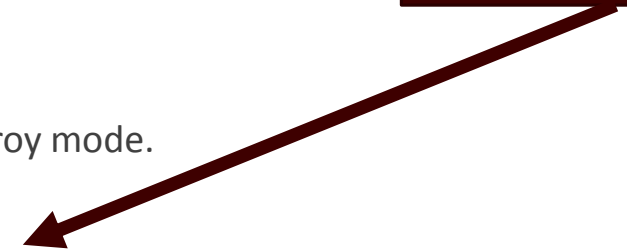
Post Conditions: The system is in search and destroy mode.

Alternative Pathways:

The camera failed to acquire an image.

NOTICE THIS IS WHERE RISKS COULD COME INTO PLAY!



Use Case UML Diagram

We can then transfer these use cases into actual graphical representations.

The UML standard has a way to model use cases

The purpose of this diagram is to show how use cases interact.

UML Use Case Basics

- Includes
  - Sub-use cases
- Extends
  - Doesn't always happen, but can under given conditions
  - You don't put the conditions on the use case diagram
- Associations
  - Show how actors relate to use cases

Example: Use Case UML Basics

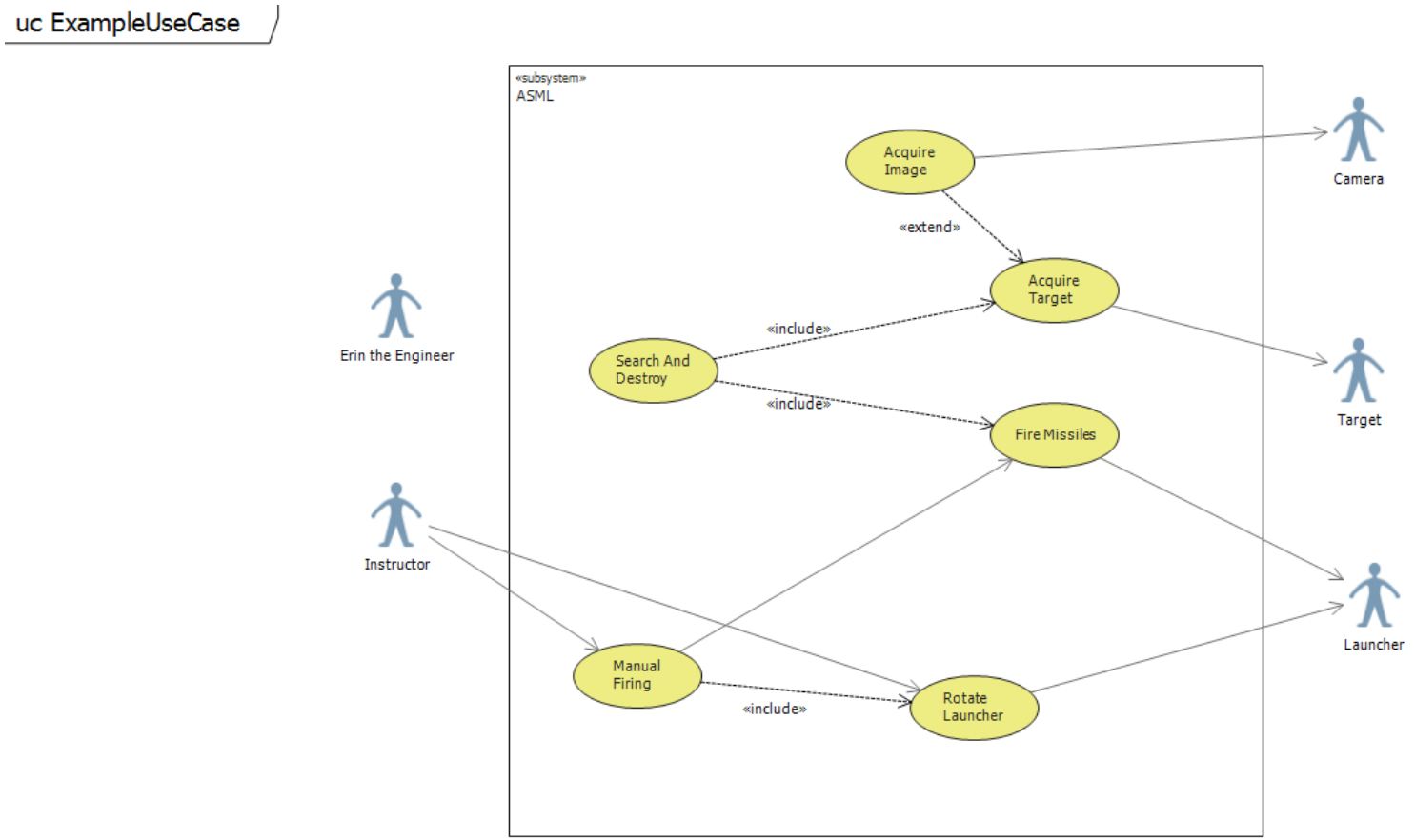
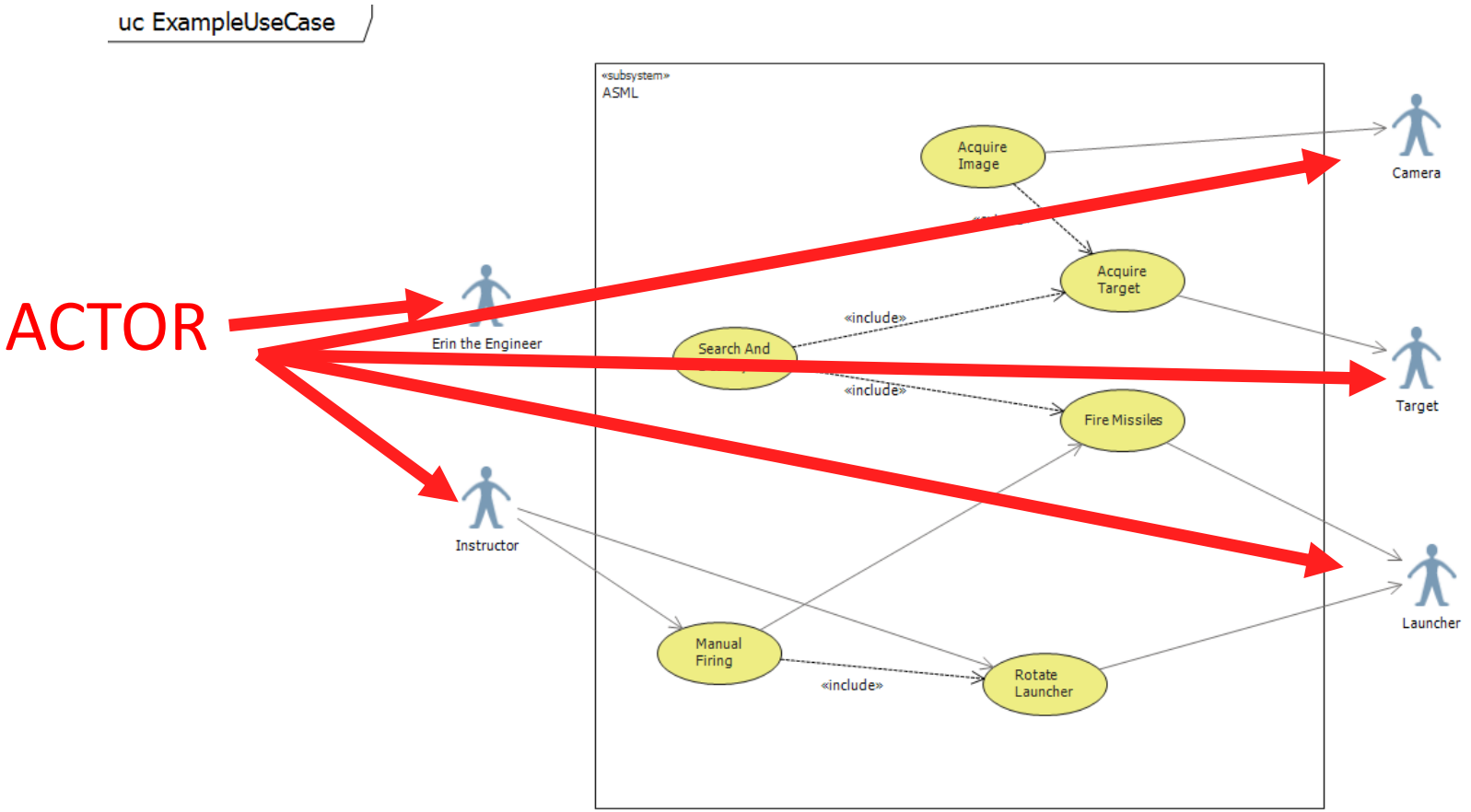
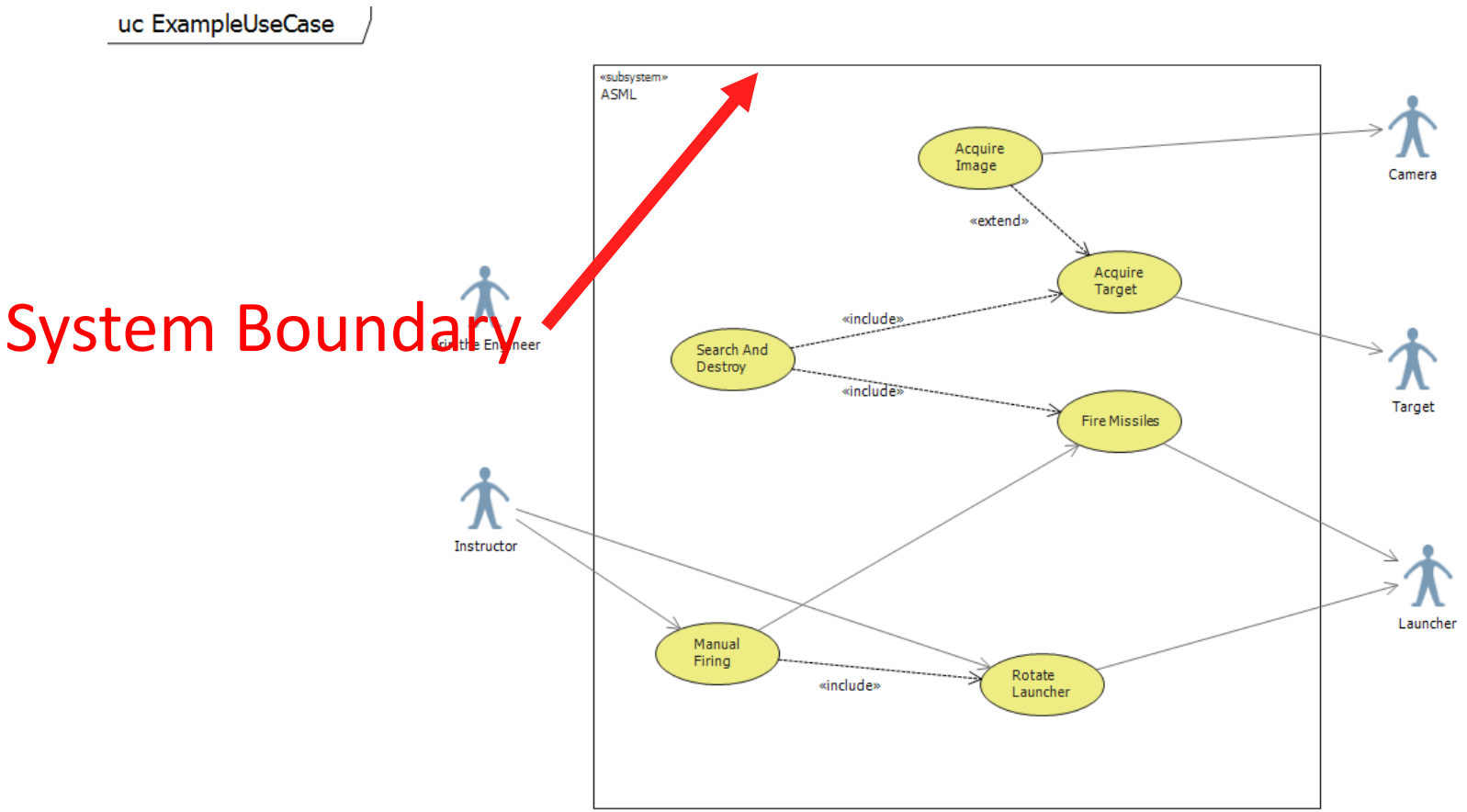


Diagram shows how the system interacts with actors and other use cases

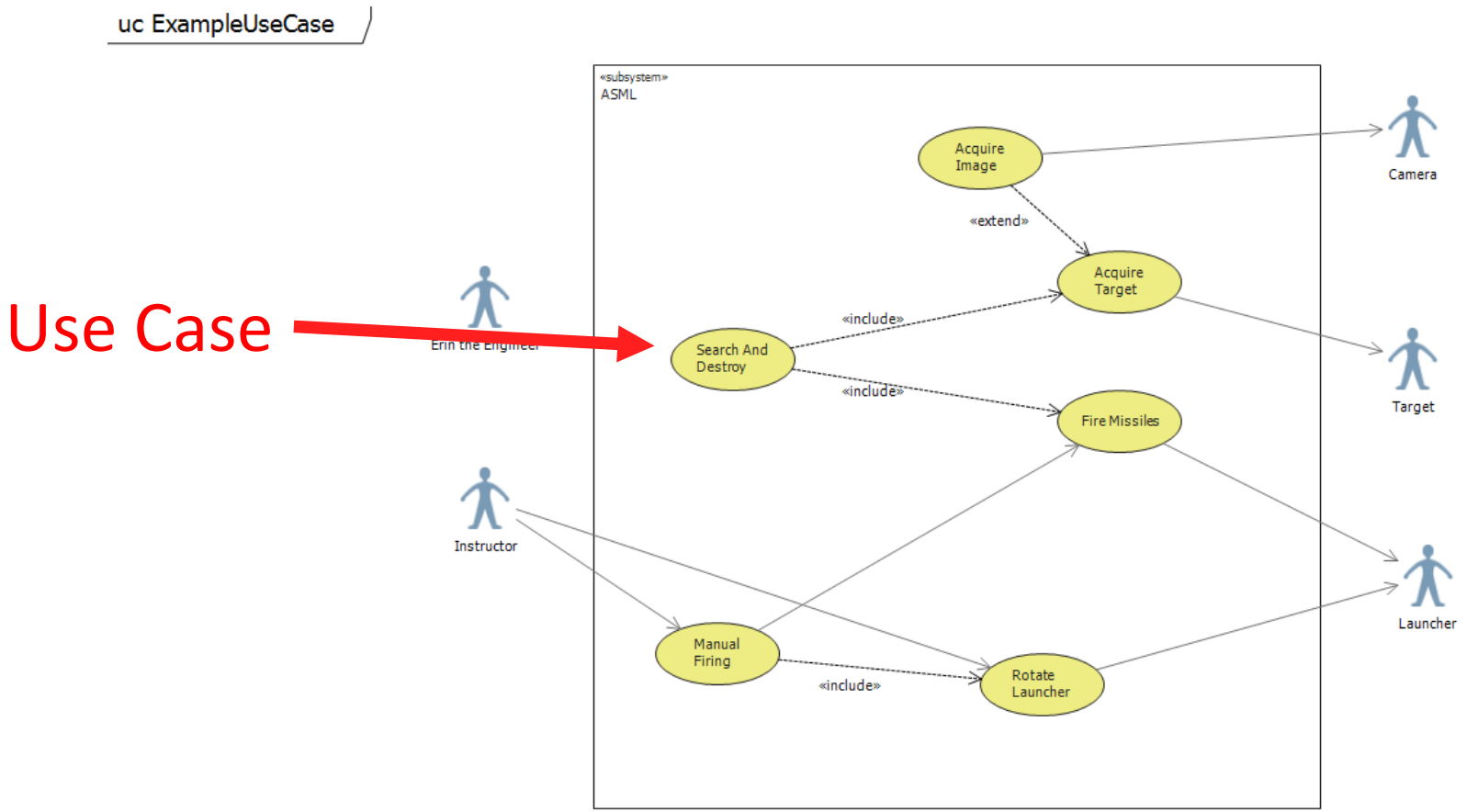
Example: Use Case UML Basics



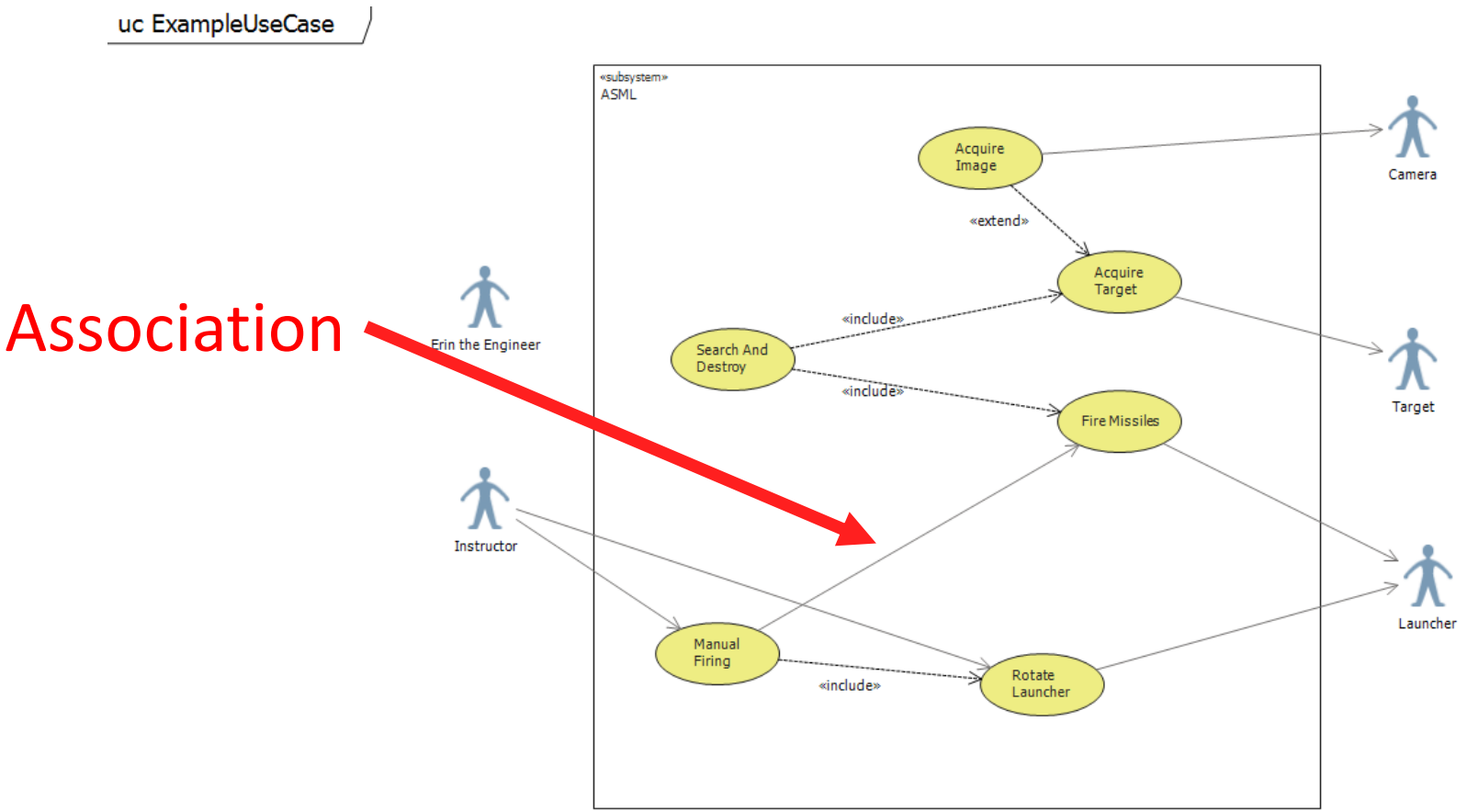
Example: Use Case UML Basics



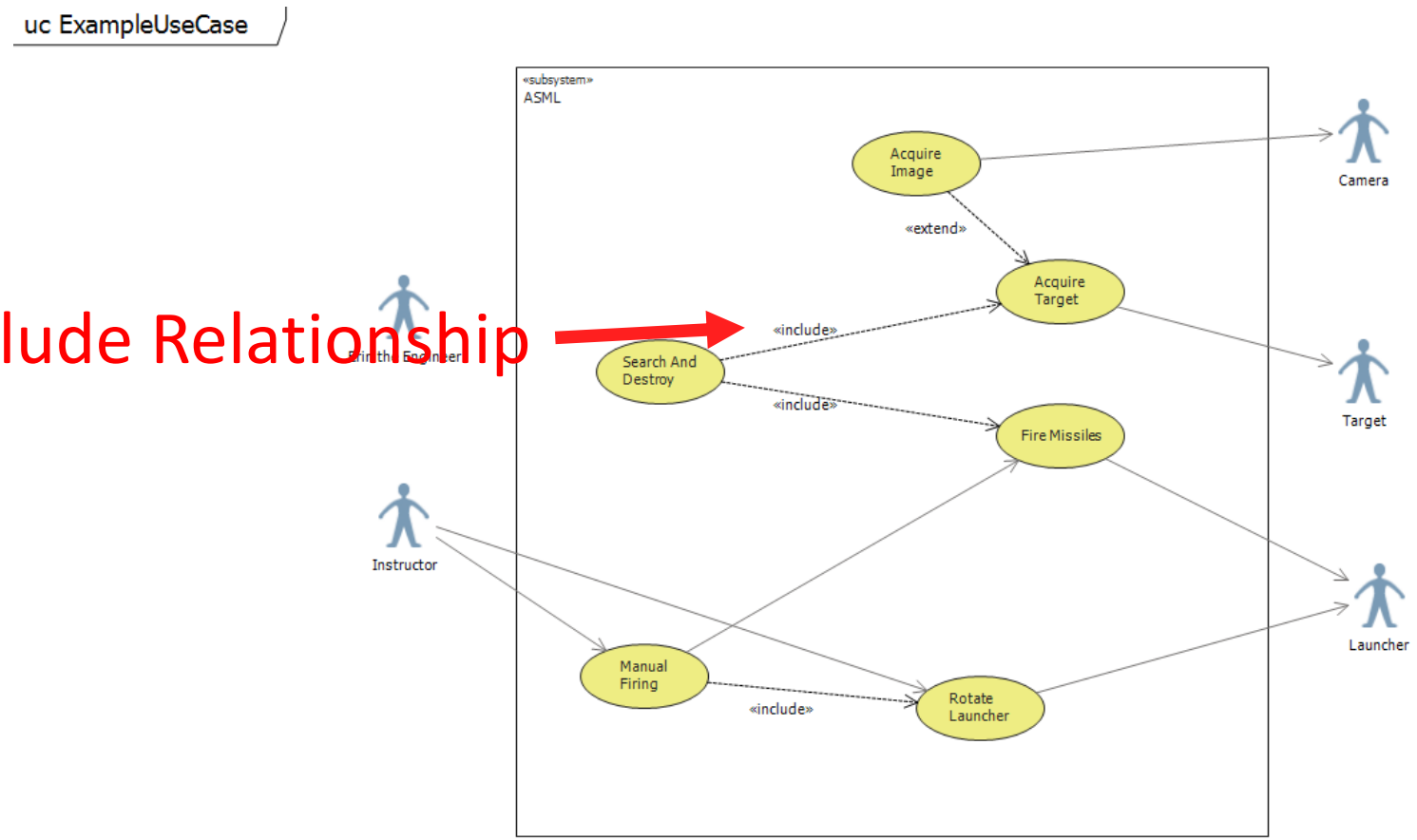
Example: Use Case UML Basics



Example: Use Case UML Basics

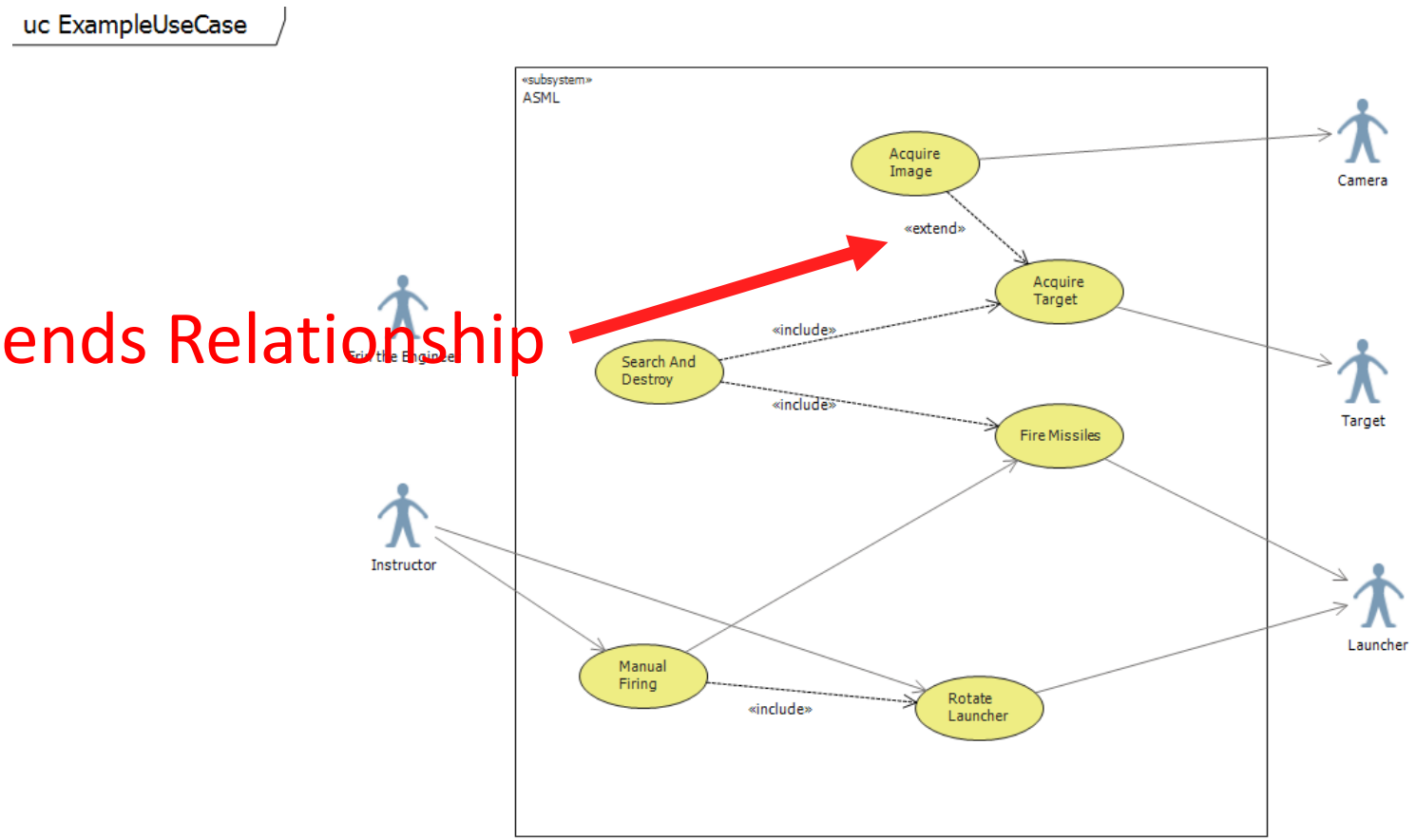


Example: Use Case UML Basics



Use includes when the use case uses another use-case

Example: Use Case UML Basics

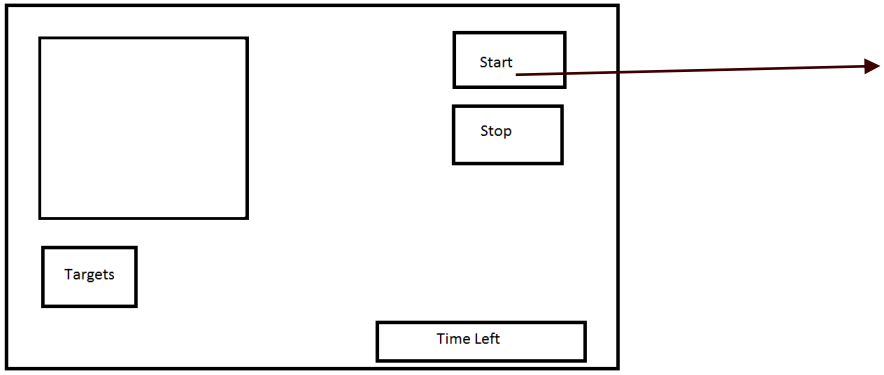


Extends Relationship

Use Extends when you have a special case use case (Alternative pathway)

GUI Prototyping

Use your GUI prototypes to help define use cases.



Storyboarding

Use your GUI prototypes to help define use cases.