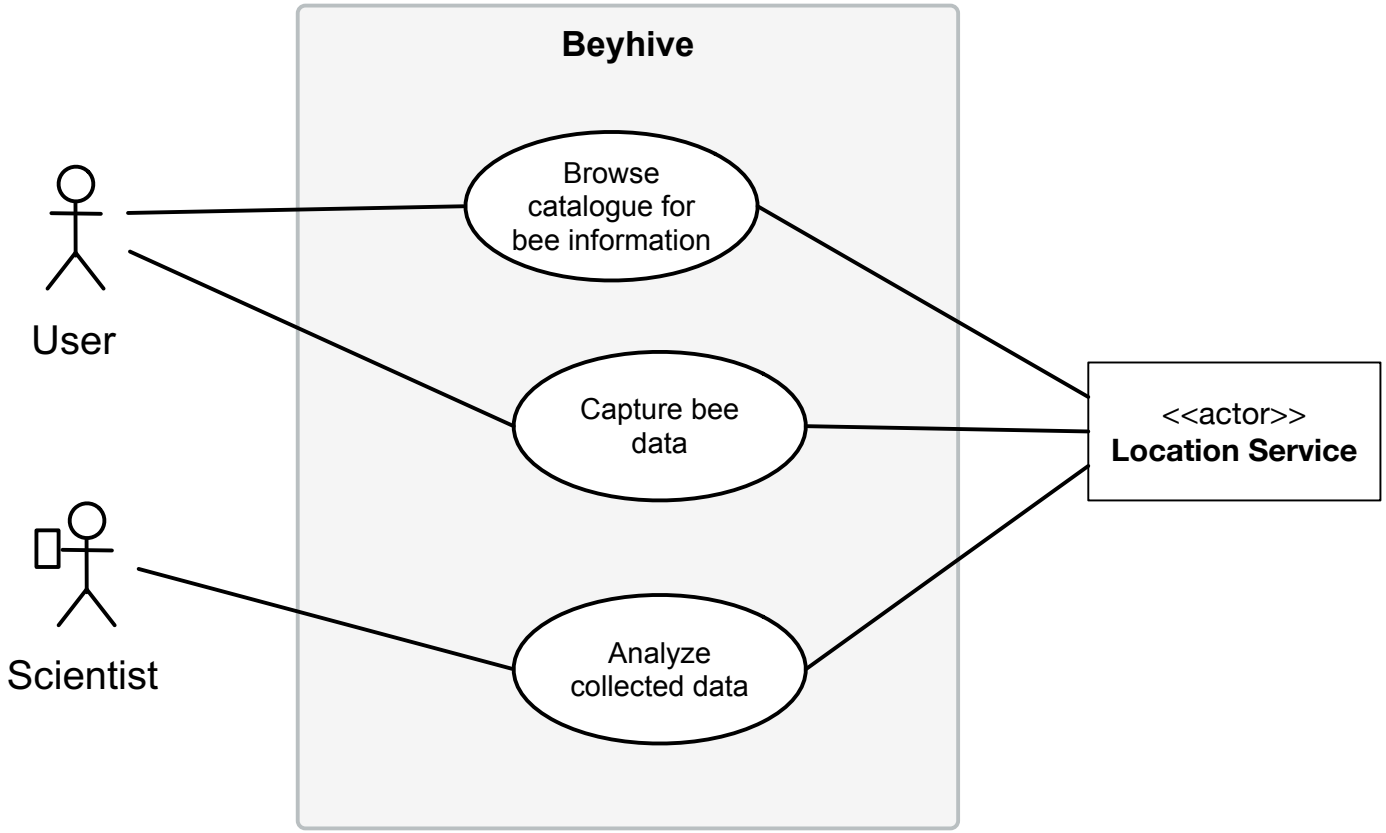
CS445 / ECE451 / CS645 / SE463

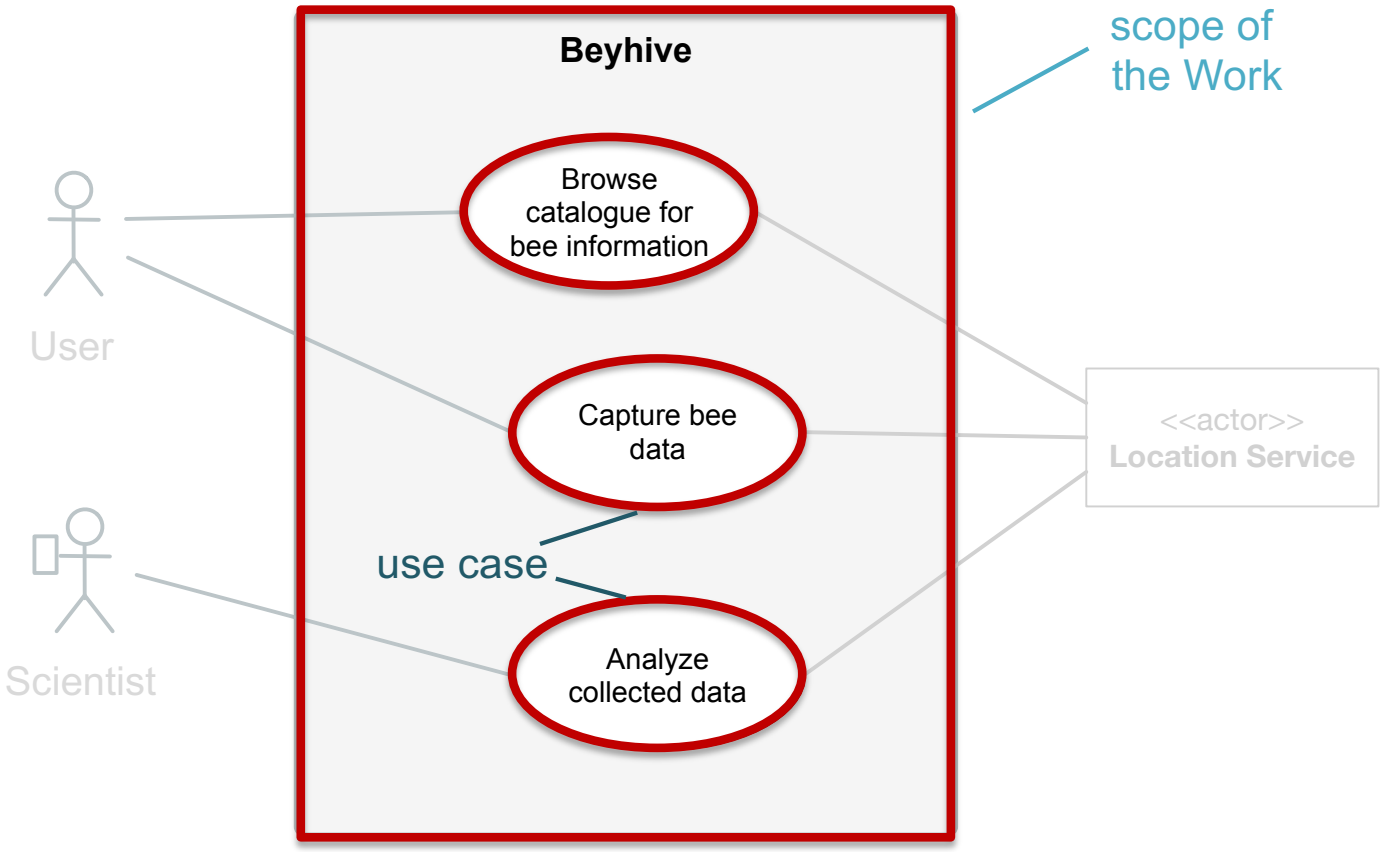
Software Requirements Specification & Analysis

Use Case Diagrams

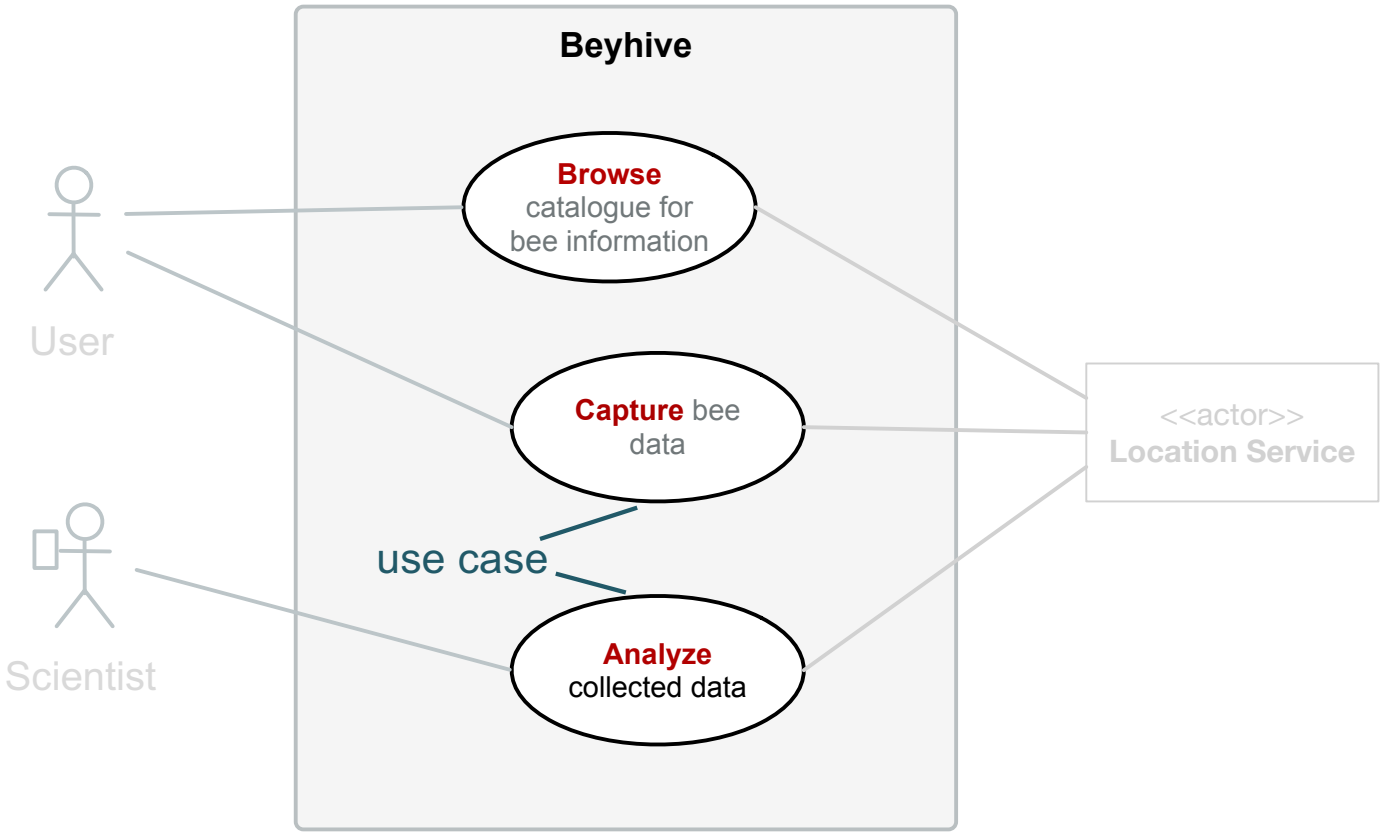
Use Case Diagram
[Beyhive]



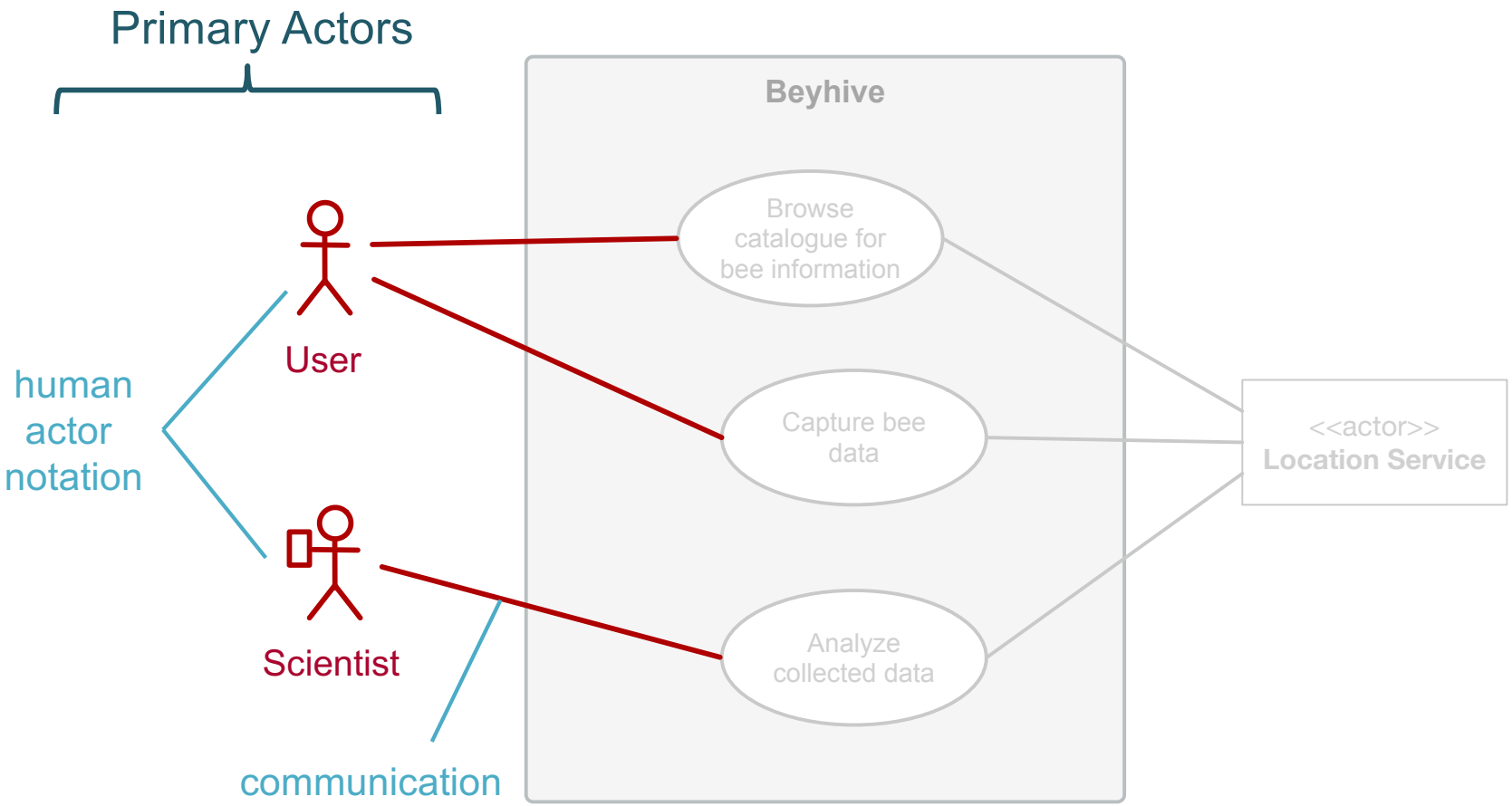
Use Case Diagram
[Beyhive]



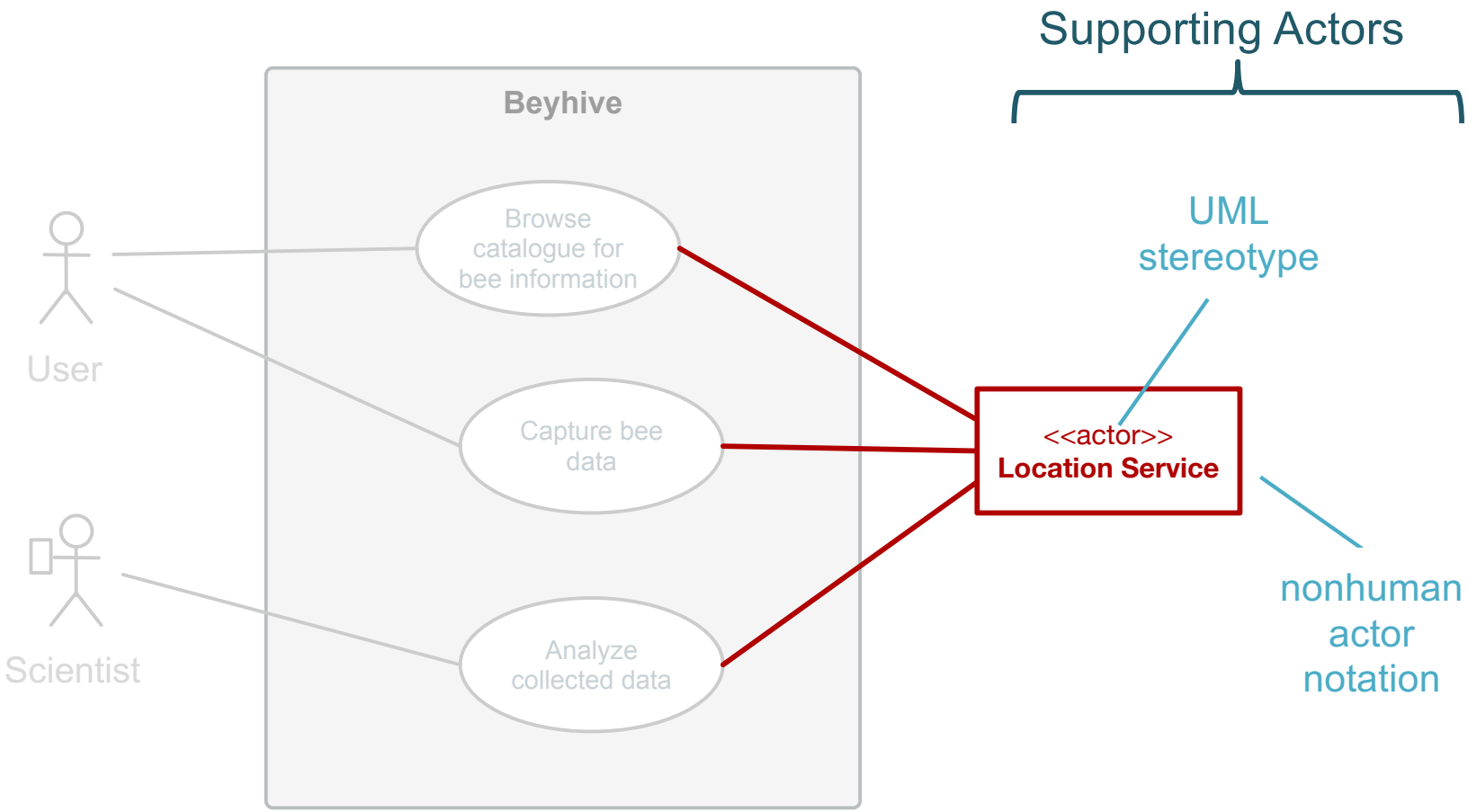
Use Case Diagram
[Beyhive]



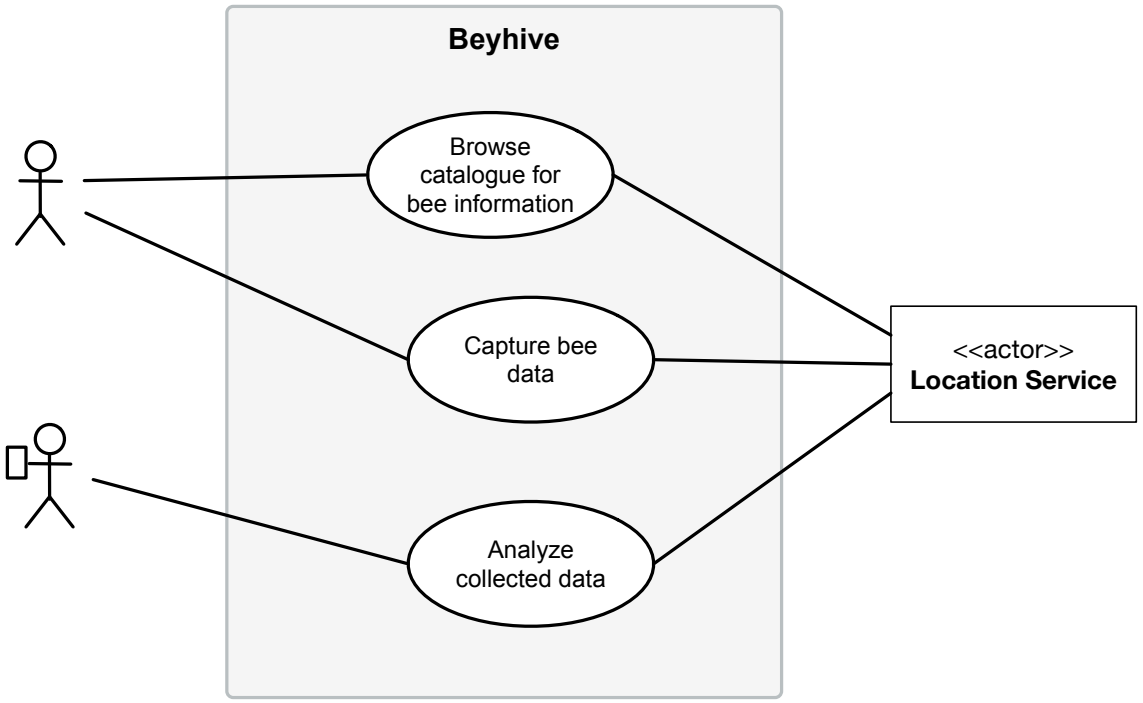
Use Case Diagram
[Beyhive]



Use Case Diagram
[Beyhive]



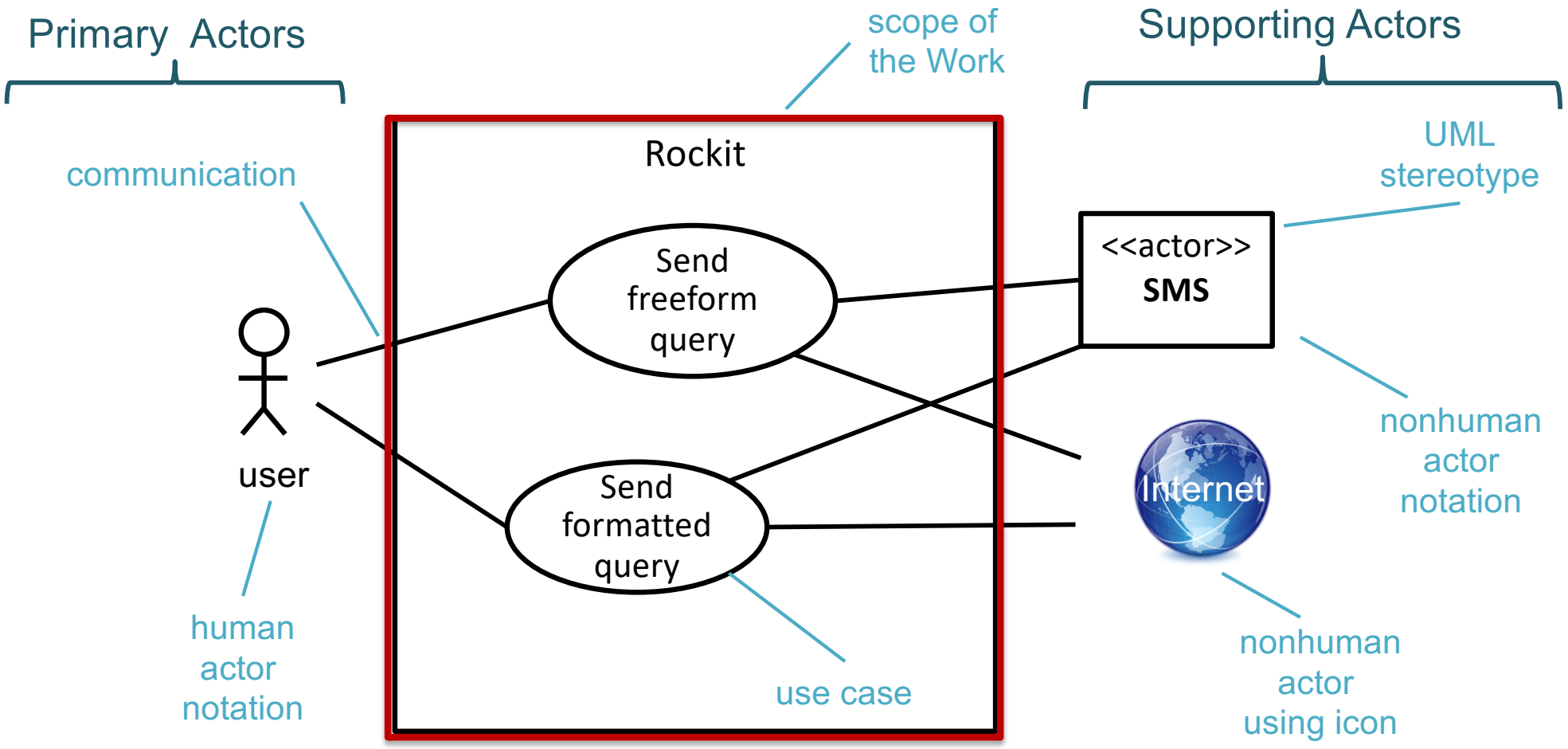
Use Case Diagram
[Beyhive]



Captures:

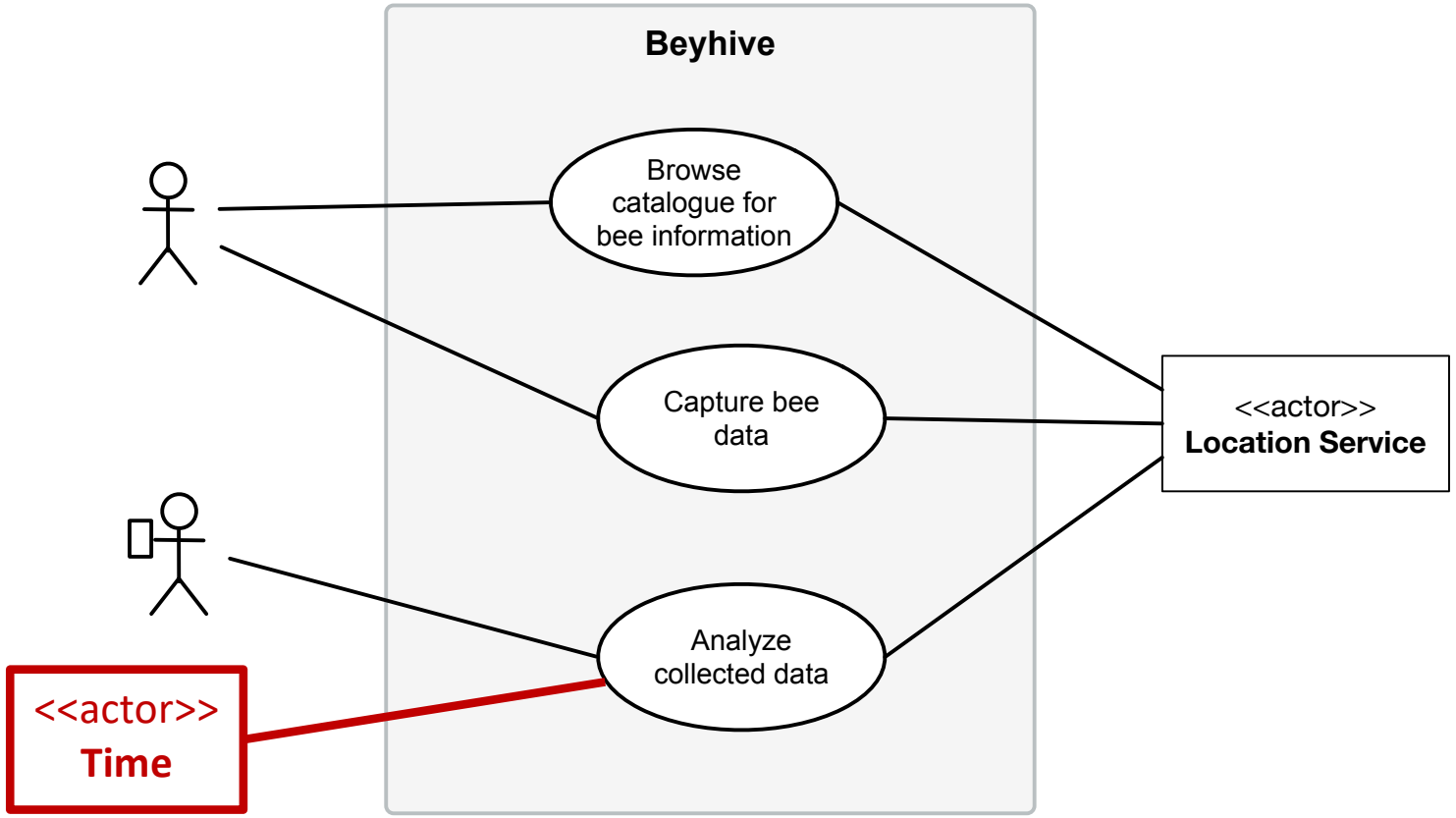
- scope of Work
- adjacent systems
- use cases (= business events + responses)
- interactions

Use Case Diagram
[Rockit]



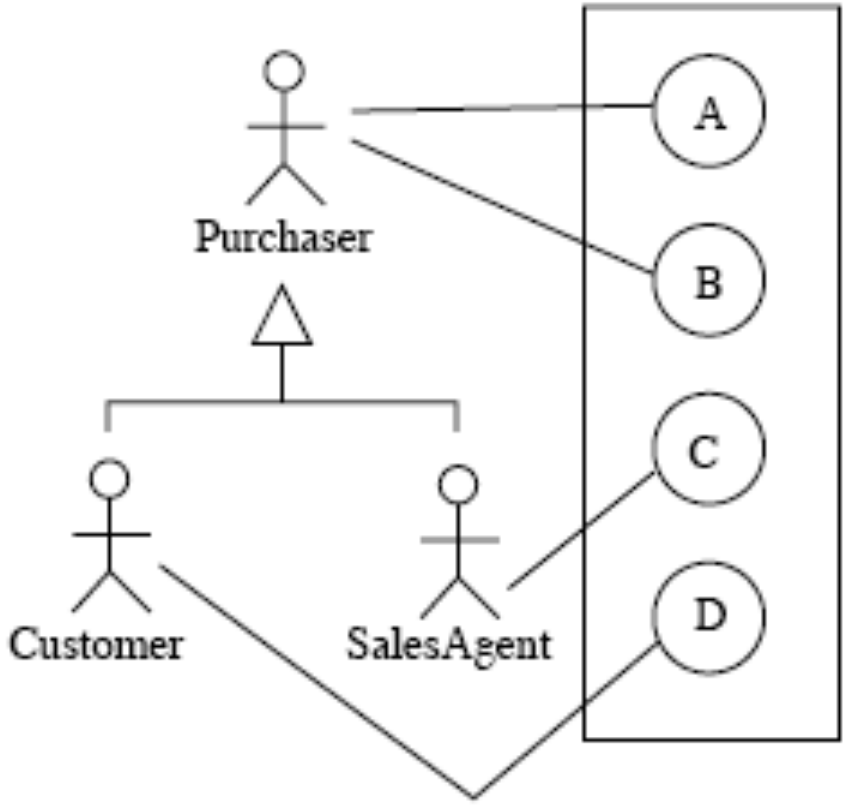
Time-Triggered Use Case

Time-triggered use cases are activated when a date or time comes to pass.



Actor Generalization

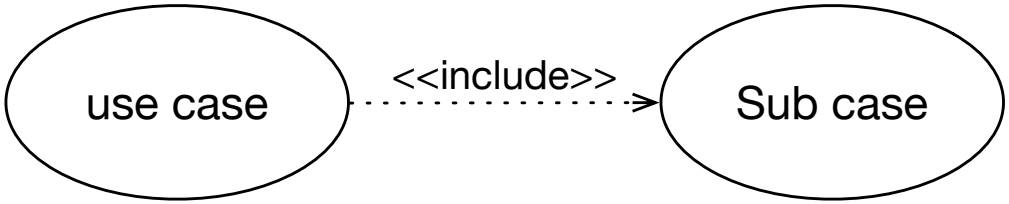
- Use actor generalization when actors have common *interesting* behaviour
  - i.e., they interact with many of the same use cases
- Factor out common behaviour as an abstract actor
  - Children inherit all relationships with use cases of the parent



«include»

<<include>> - a sub use case that is used within multiple other use cases (like a procedure call)

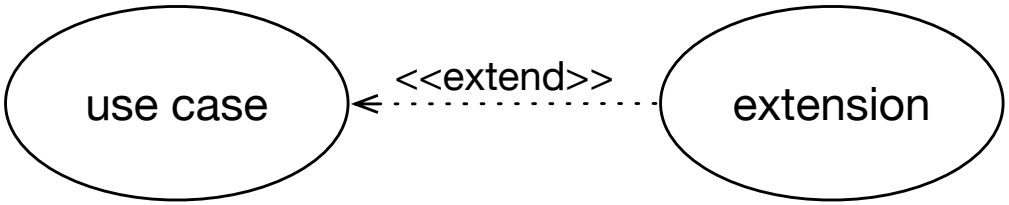
- Purpose is to highlight essential functionality that is part of multiple use cases
- Avoids repetition of the same steps in multiple use cases, improving readability
- Specify point of inclusion in the base use case
- When sub use case completes, control returns to the base use case



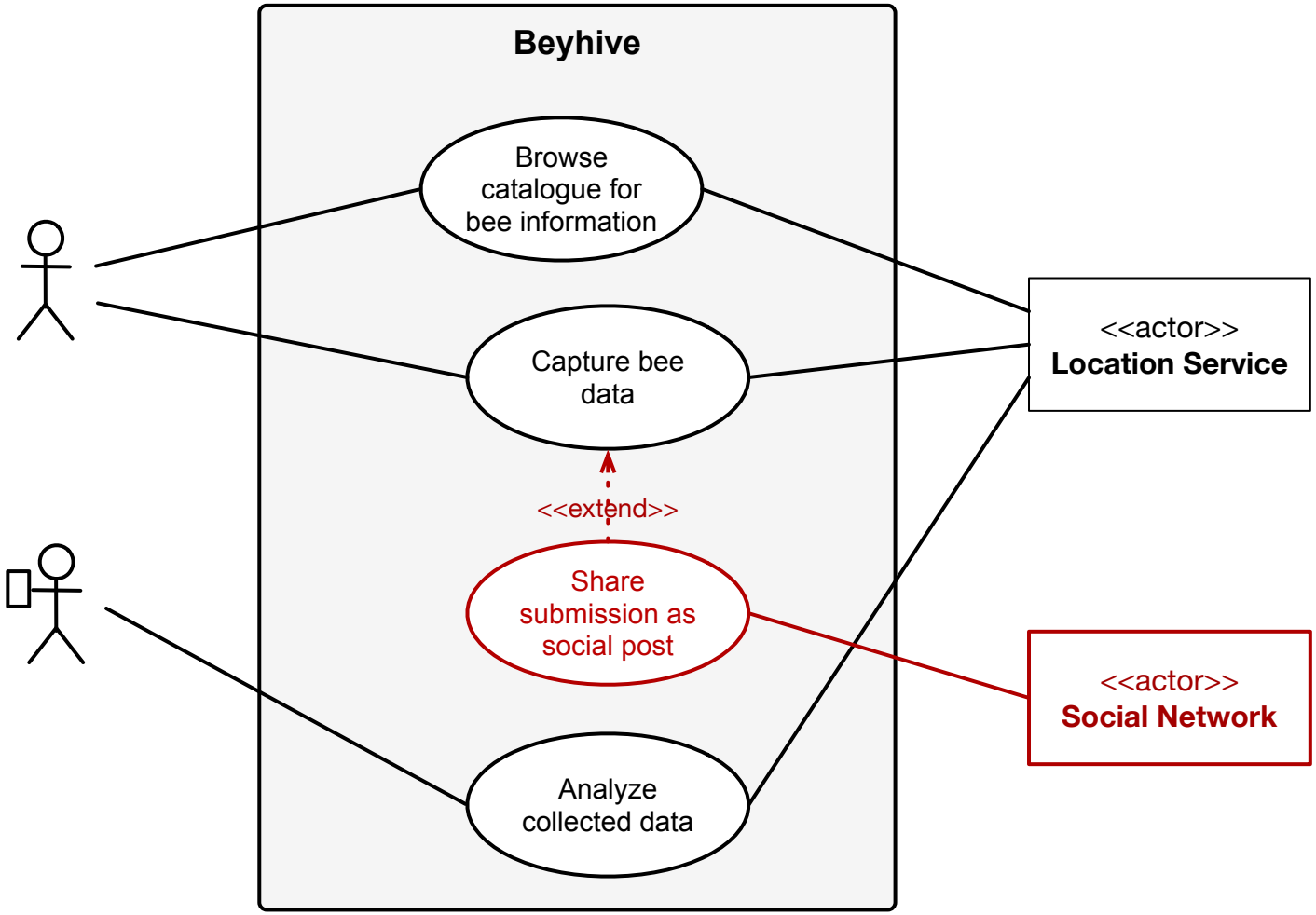
«extend»

<<extend>> - a sub use case that extends or replaces the end of an existing use case

- Purpose is to highlight new functionality that extends an existing use case (cf. adding a new use case)
- Base use case has hooks where it can be extended
- Unlike «include», the base case is complete without the extension sub case

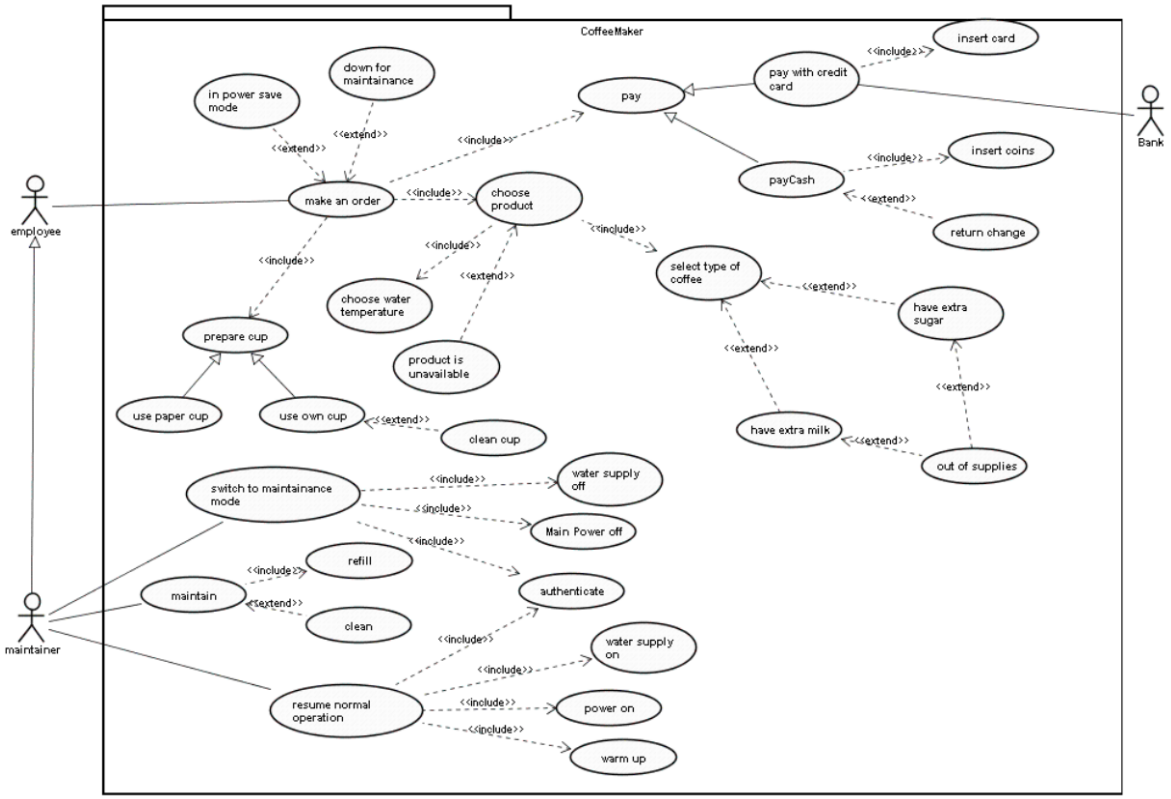


Example



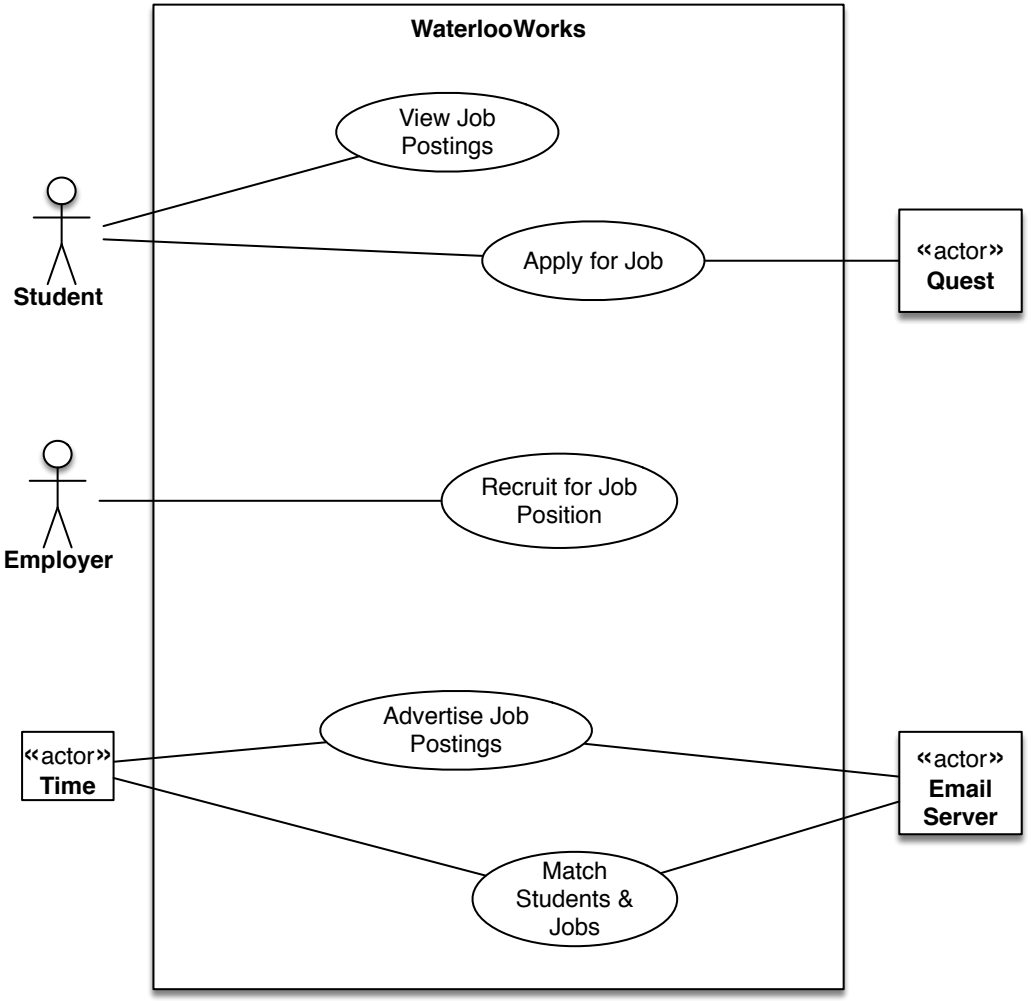
Bad Example (from the Web)

Use <<include>> and <<extend>> sparingly.



http://www.iai.uni-bonn.de/III/lehre/vorlesungen/SWT/OOSC06/exercises/exercise2.html

Keep it Simple



References

Karl E. Wiegers and Joy Beatty. *Software Requirements, 3ed.* Microsoft Press, 2013.

- Chapter 8: "Understanding user requirements”

Larman, C., *Applying UML and Patterns*, 3ed, 2004.

- Chapter 6: "Use Cases"