Project Development (IV_SYP_PRE)

UML Activity Diagrams

Unit 8

Purpose

- Verify the mental model of a use case
- Model the flow of events of a use case
- Validate the use case by reviewing the activity diagram with the project stake holders
- Describes *dynamic* behavior of the system
- Developer – customer communication
- Developer – developer communication

Basic Elements

Name of activity

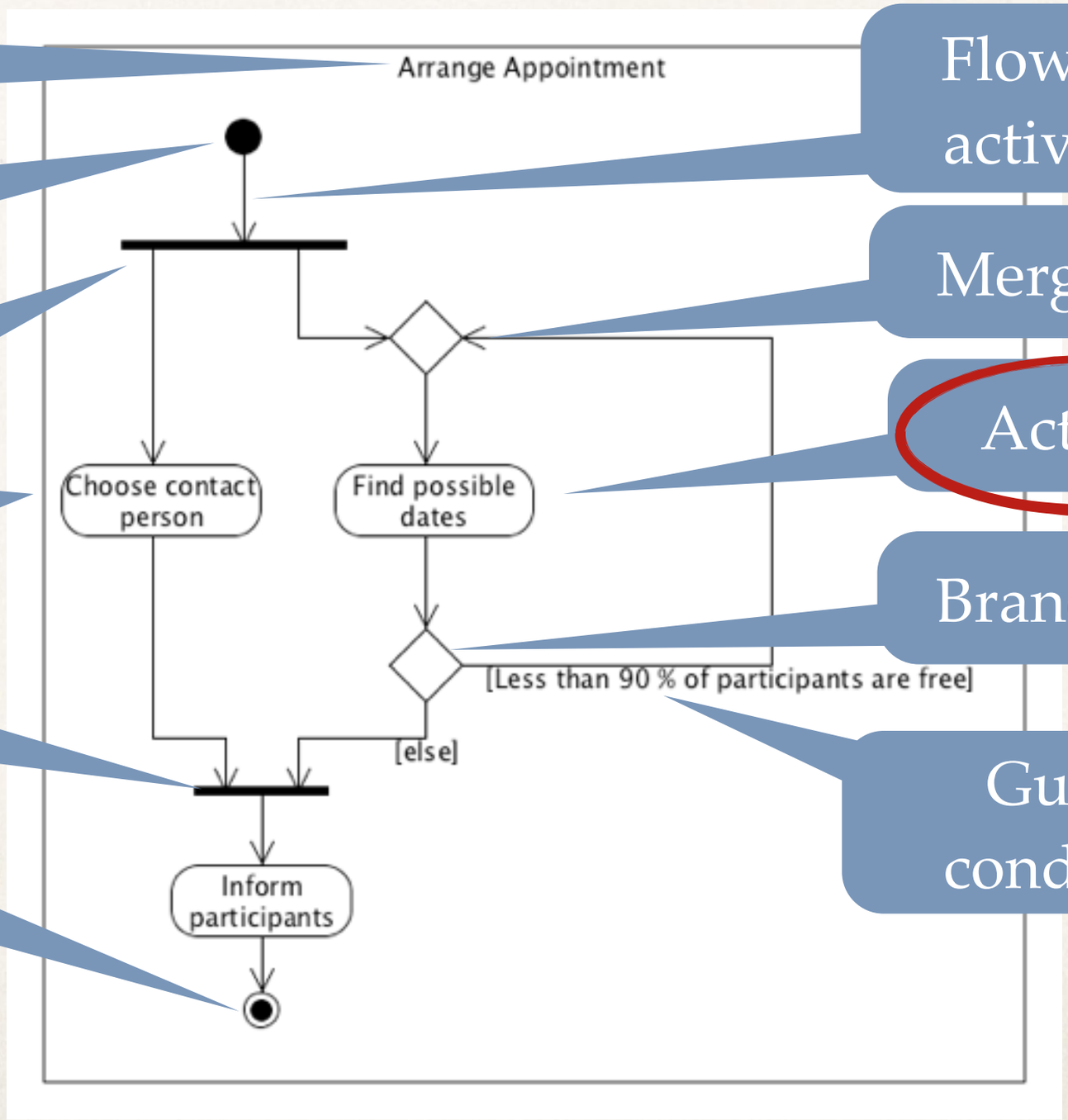
Start node

Fork bar

Activity

Join bar

Stop node



Flow of activity

Merge node

Action

Branch node

Guard condition

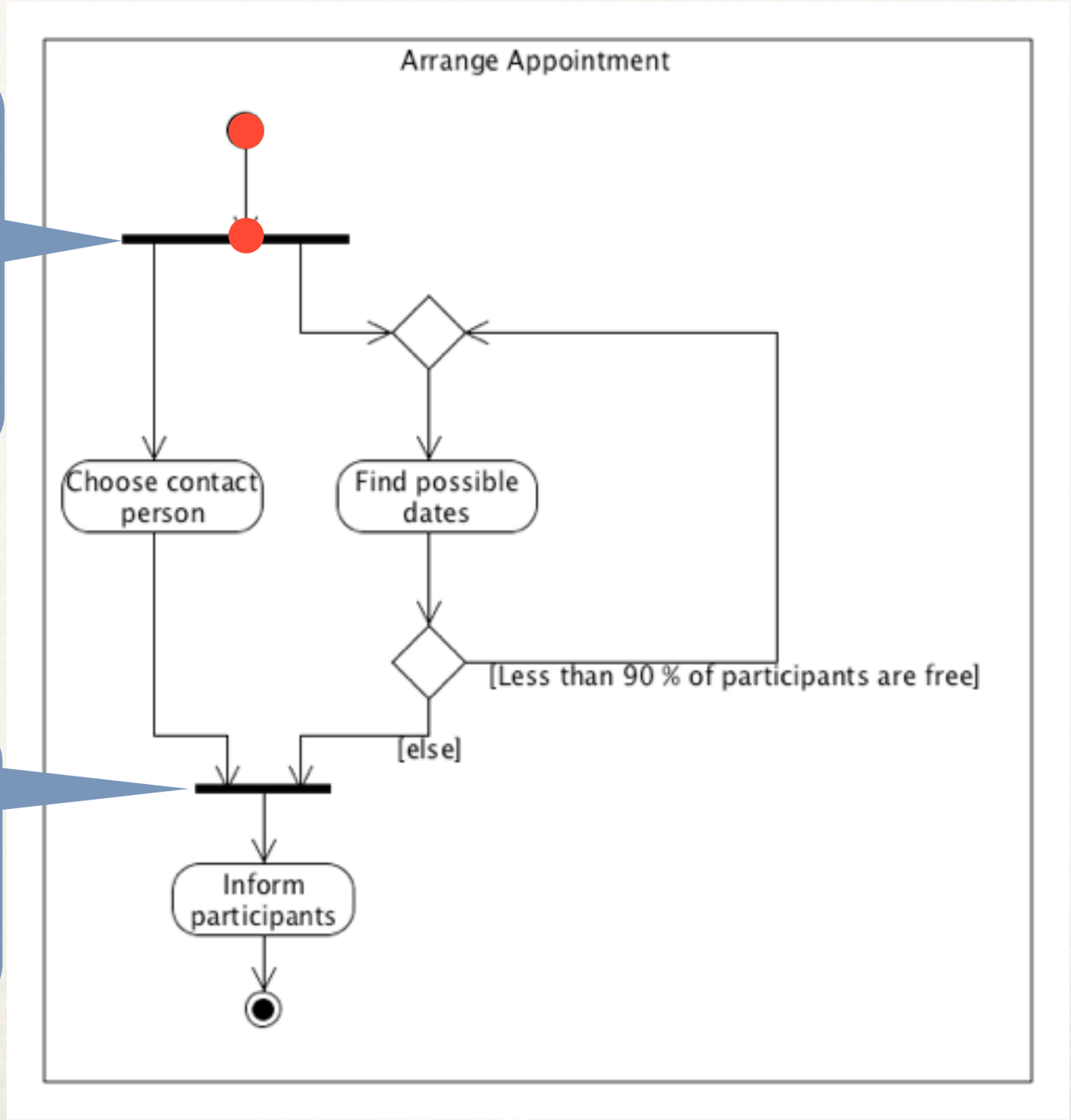
Actions vs. Activities

- Both nodes take the same notation
- An activity can be subdivided into other activities or actions
- An action is an atomic node which can't be subdivided in the current context

Token-Based Semantics

After fork the tokens run independently and in parallel

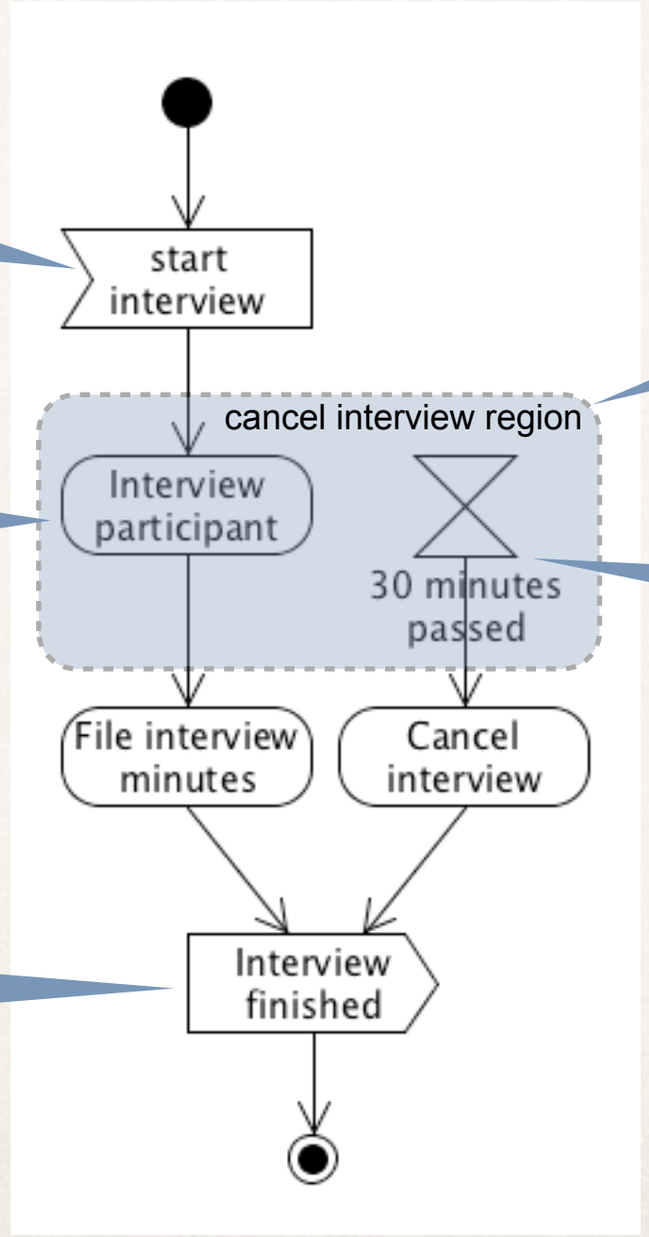
Join bar blocks until all parallel threads arrive



Signals and Interruptible Activity Regions

Receive signal

Interruptible activity region



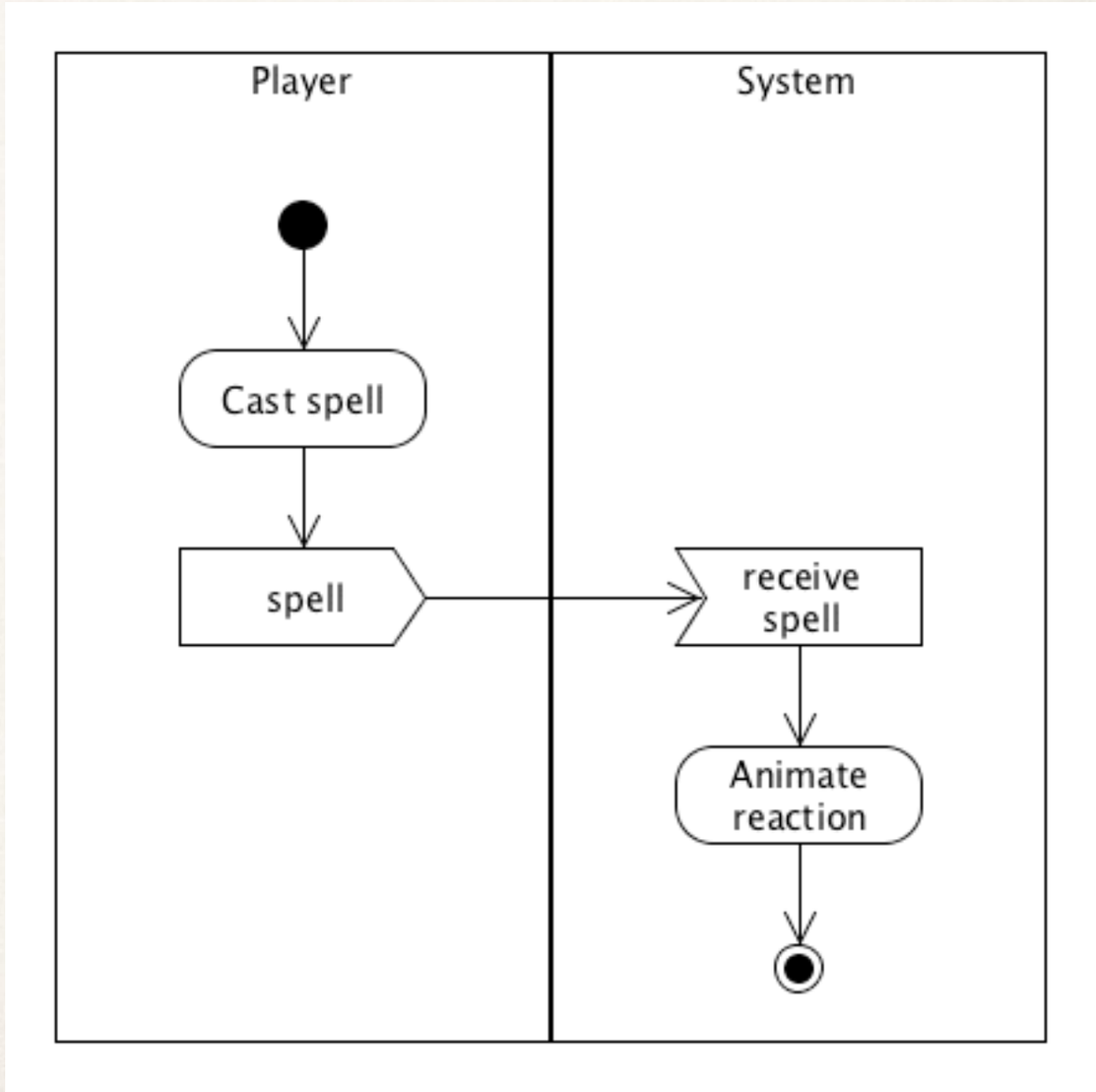
If canceled this token “dies”

If 30 minutes are passed the activity “Interview participant” is canceled.

Send signal

Partitions

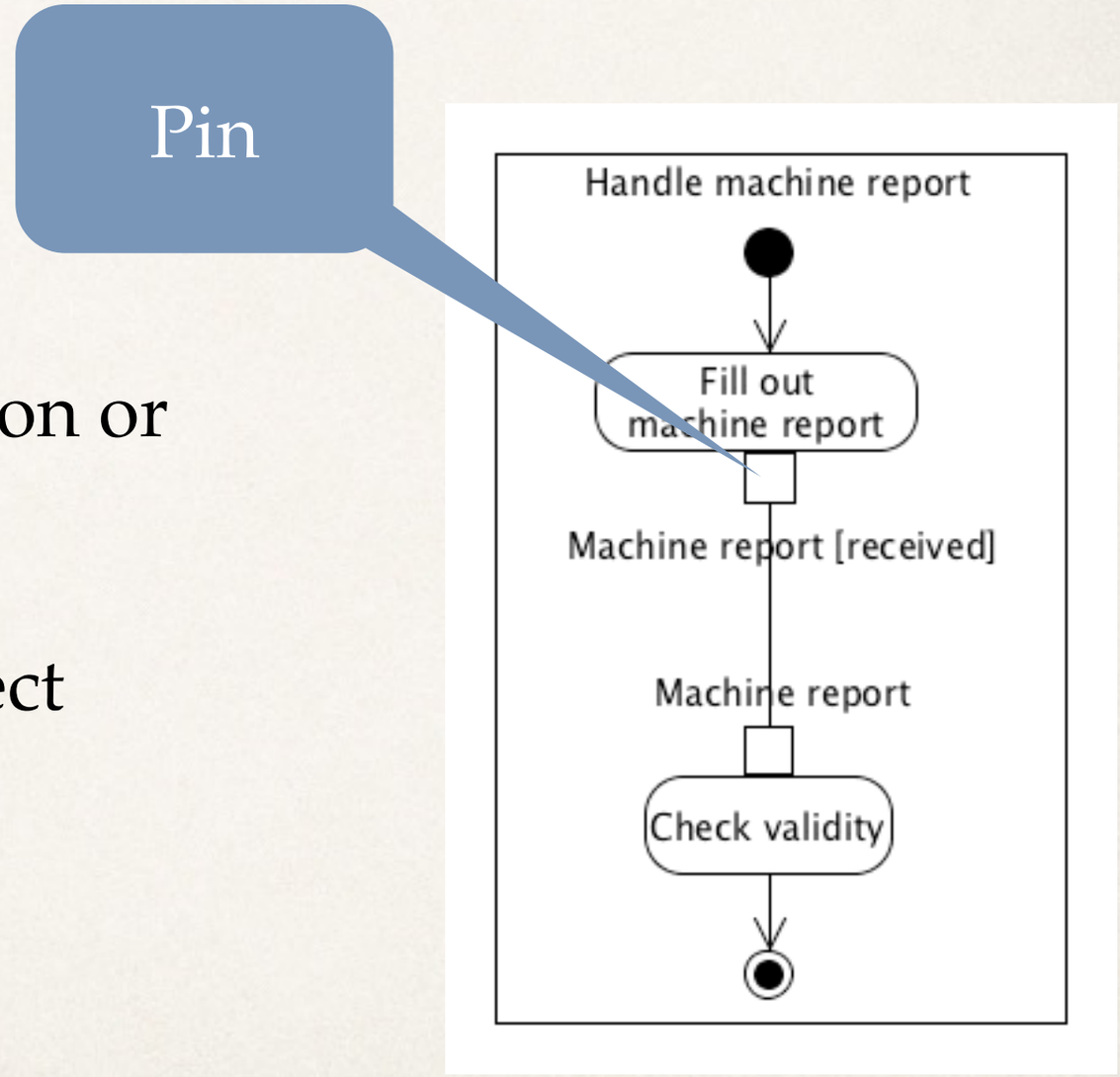
- Used for grouping
- Criteria for groups may be chosen freely
- Notation
  - Swim lanes



Passing Objects between Actions or Activities

- A pin is a connection point of an action or activity for input or output

- The name of the pin denotes the object being passed



Give it a Try

- Model activities in your use cases

Reasoning about States

- Most objects have states

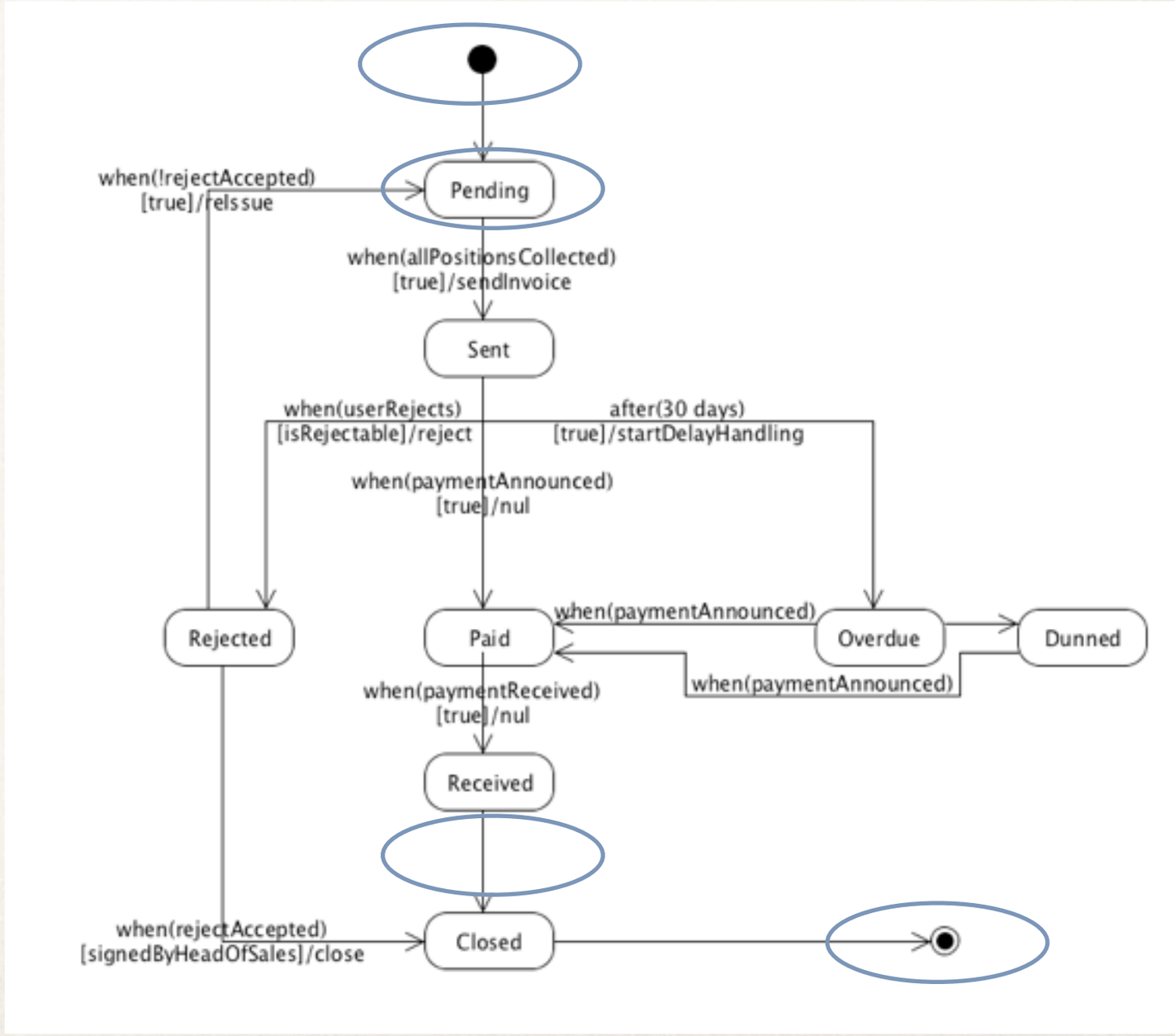
- For some it makes sense to describe their behavior relative to external stimuli

Purpose

- Verify the mental model of a use case
- Model the flow of states according to external stimuli of a use case
- Validate the use case by reviewing the state diagram with the project stake holders
- Describes *dynamic* behavior of the system
- Developer – customer communication
- Developer – developer communication

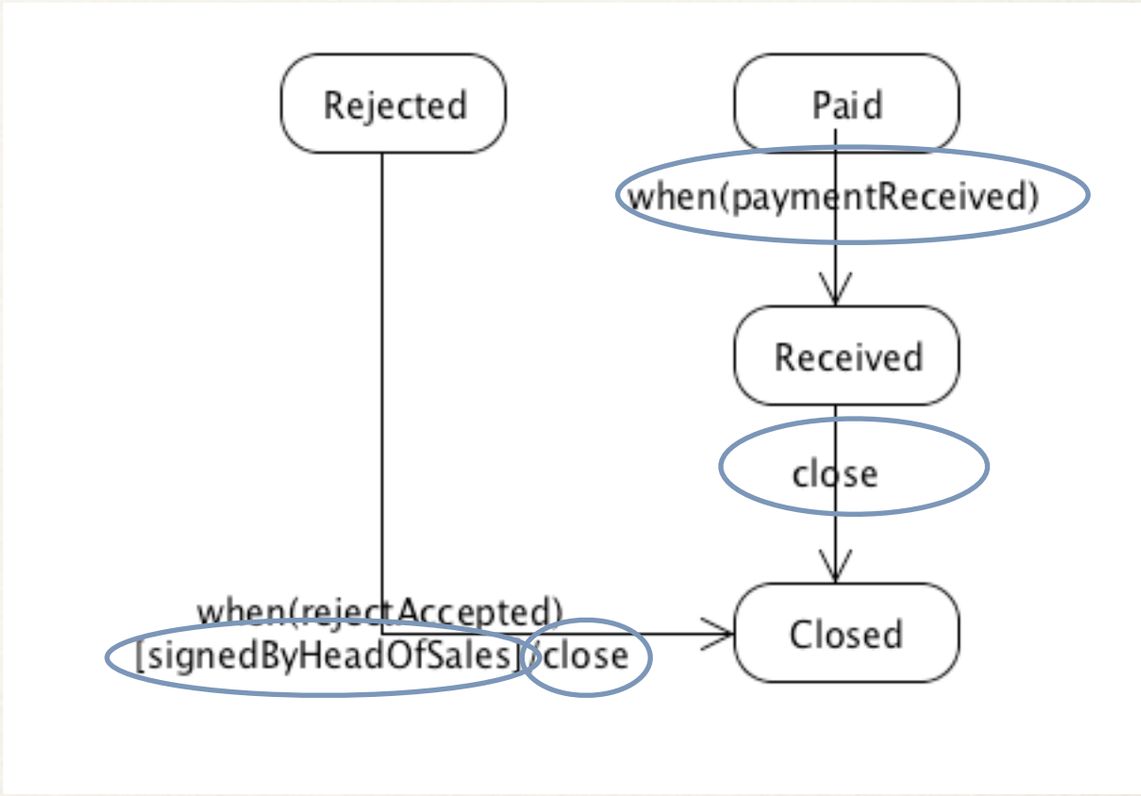
Parts of a UML State Diagram – States of an Invoice

- State node
- Initial state
- Final state
- State transitions



Transitions

- Transition triggers
- Triggering events
- Guard conditions
- Actions



After Event

- Events that should occur after a period of time are shown by using an after trigger event.

- To fire a transition after,e.g., 30 days, specify the event on the transition as `after(30 days)`.

- This event is often used for timeouts.

Give it a Try

- Model states in your use cases