Activity Diagrams

Like state diagrams, activity diagrams describe activities which involve concurrency and synchronization.
Activity diagrams focus on the flow of actions and events.
Can be used:
- To model a human task (e.g., a business process).
- To describe a system function represented by a use case.
- To describe the logic of an operation.

Petri Nets

Petri nets generalize state diagrams by allowing transitions which involve several input and output states:

Before

After

Order Processing

[failed]

[in stock]

[need to reorder]

Decision Points

Decision points:

- Charge customer's account
- Get authorization

Dead ends: there may be transitions in an activity diagram with no destination state; this can mean that:
- Not all processing has been specified;
- Or, that another activity diagram will take over.
**Swimlanes**

**Order Processing**
- Receive Order
- Reorder Item
- Dispatch Order
- Check Line Item
- Assign to Order for each line item on order*

- [in stock]
- [need to reorder]
- [stock assigned to all line items and payment authorized]

**Stock Manager**
- Receive Payment (failed)
- Receive Payment (succeeded)
- Cancel Order
- Assign Goods to Order for each chosen order item*

- [all outstanding order items filled]
- Add Remainder to Stock

**Finance**
- Authorize Payment
- Cancel Order
- [succeeded]
- [failed]

**When to Use What?**

- State diagrams are good for modeling the lifetime of an object or actor, also for modeling user interfaces and business processes which involve many states.
- Activity diagrams are good for modeling business processes and system processes that involve a lot of concurrency.
- Sequence and collaboration diagrams are useful for modeling interactions; several of them can be used to model dialogue structure for a user interface, or a business process.

**Additional Readings**