SOFTWARE REQUIREMENT ENGINEERING

LECTURE NO: 10

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Understanding User Requirements

Use cases

A *use case* describes a sequence of interactions between a system and an external actor that results in the actor being able to achieve some outcome of value.

The names of use cases are always written in the form of a verb followed by an object. Select strong, descriptive names to make it evident from the name that the use case will deliver something valuable for some user.

- *As a chemist, I want to request a chemical so that I can perform experiments.*

- *As a chemist, I want to request a chemical from the Chemical Stockroom so that I can use it immediately.*

- *As a chemist, I want to request a chemical from a vendor because I don't trust the purity of any of the samples available in the Chemical Stockroom.*

Sample use cases for Various Applications

Application	Sample use case
Chemical tracking system	Request a Chemical Print Material Safety Data Sheet Change a Chemical Request Check Status of an Order Generate Quarterly Chemical-Usage Reports
Airport check-in kiosk	Check in for a Flight Print Boarding Passes Change Seats Check Luggage Purchase an Upgrade
Accounting system	Create an Invoice Reconcile an Account Statement Enter a Credit Card Transaction Print Tax Forms for Vendors Search for a Specific Transaction
Online bookstore	Update Customer Profile Search for an Item Buy an Item Track a Shipped Package Cancel an Unshipped Order

Some sample use cases and corresponding user stories

Application	Sample use case	Corresponding user story
Chemical tracking system	Request a Chemical	As a chemist, I want to request a chemical so that I can perform experiments.
Airport check-in kiosk	Check in for a Flight	As a traveler, I want to check in for a flight so that I can fly to my destination.
Accounting system	Create an Invoice	As a small business owner, I want to create an invoice so that I can bill a customer.
Online bookstore	Update Customer Profile	As a customer, I want to update my customer profile so that future purchases are billed to a new credit card number.

The use case approach

❑Who (or what) is notified when something occurs within the system?

❑Who (or what) provides information or services to the system?

❑ Who (or what) helps the system respond to and complete a task ?

Partial Specification of the Chemical Tracking System's "Request a Chemical" use case

ID and Name:	UC-4 Request a Chemical
Created By:	Lori Date Created: 8/22/13
Primary Actor:	Requester Secondary Actors: Buyer, Chemical Stockroom, Training Database
Description:	The Requester specifies the desired chemical to request by entering its name or chemical ID number or by importing its structure from a chemical drawing tool. The system either offers the Requester a container of the chemical from the chemical stockroom or lets the Requester order one from a vendor.
Trigger:	Requester indicates that he wants to request a chemical.
Preconditions:	PRE-1. User's identity has been authenticated. PRE-2. User is authorized to request chemicals. PRE-3. Chemical inventory database is online.
Postconditions:	POST-1. Request is stored in the CTS. POST-2. Request was sent to the Chemical Stockroom or to a Buyer.
Normal Flow:	**4.0 Request a Chemical from the Chemical Stockroom** 1. Requester specifies the desired chemical. 2. System lists containers of the desired chemical that are in the chemical stockroom, if any. 3. System gives Requester the option to View Container History for any container. 4. Requester selects a specific container or asks to place a vendor order (see 4.1). 5. Requester enters other information to complete the request. 6. System stores the request and notifies the Chemical Stockroom.
Alternative Flows:	**4.1 Request a Chemical from a Vendor** 1. Requester searches vendor catalogs for the chemical (see 4.1.E1). 2. System displays a list of vendors for the chemical with available container sizes, grades, and prices. 3. Requester selects a vendor, container size, grade, and number of containers. 4. Requester enters other information to complete the request. 5. System stores the request and notifies the Buyer.
Exceptions:	**4.1.E1 Chemical Is Not Commercially Available** 1. System displays message: No vendors for that chemical. 2. System asks Requester if he wants to request another chemical (3a) or to exit (4a). 3a. Requester asks to request another chemical. 3b. System starts normal flow over. 4a. Requester asks to exit. 4b. System terminates use case.
Priority:	High
Frequency of Use:	Approximately 5 times per week by each chemist, 200 times per week by chemical stockroom staff
Business Rules:	BR-28, BR-31
Other Information:	The system must be able to import a chemical structure in the standard encoded form from any of the supported chemical drawing packages.
Assumptions:	Imported chemical structures are assumed to be valid.

Preconditions and postconditions

Preconditions define prerequisites that must be met before the system can begin executing the use case.

Postconditions describe the state of the system after the use case executed successfully

Normal flows, alternative flows, and exceptions

One scenario is identified as the ***normal flow*** of events for the use case. It's also called the main flow, basic flow, normal course, primary scenario, main success scenario, sunny-day scenario, and happy path.

The normal flow for the "Request a Chemical" use case is to request a chemical   available in the chemical stockroom.

Other success scenarios within the use case are called ***alternative flows*** or *secondary scenarios.* Alternative flows deliver the same business outcome (sometimes with variations) as the normal flow

Conditions that have the potential to prevent a use case from succeeding are called *exceptions*.
Exceptions describe anticipated error conditions that could occur during execution of the use case and how they are to be handled

One exception for the "Request a Chemical" use case is "Chemical Is Not Commercially Available,"