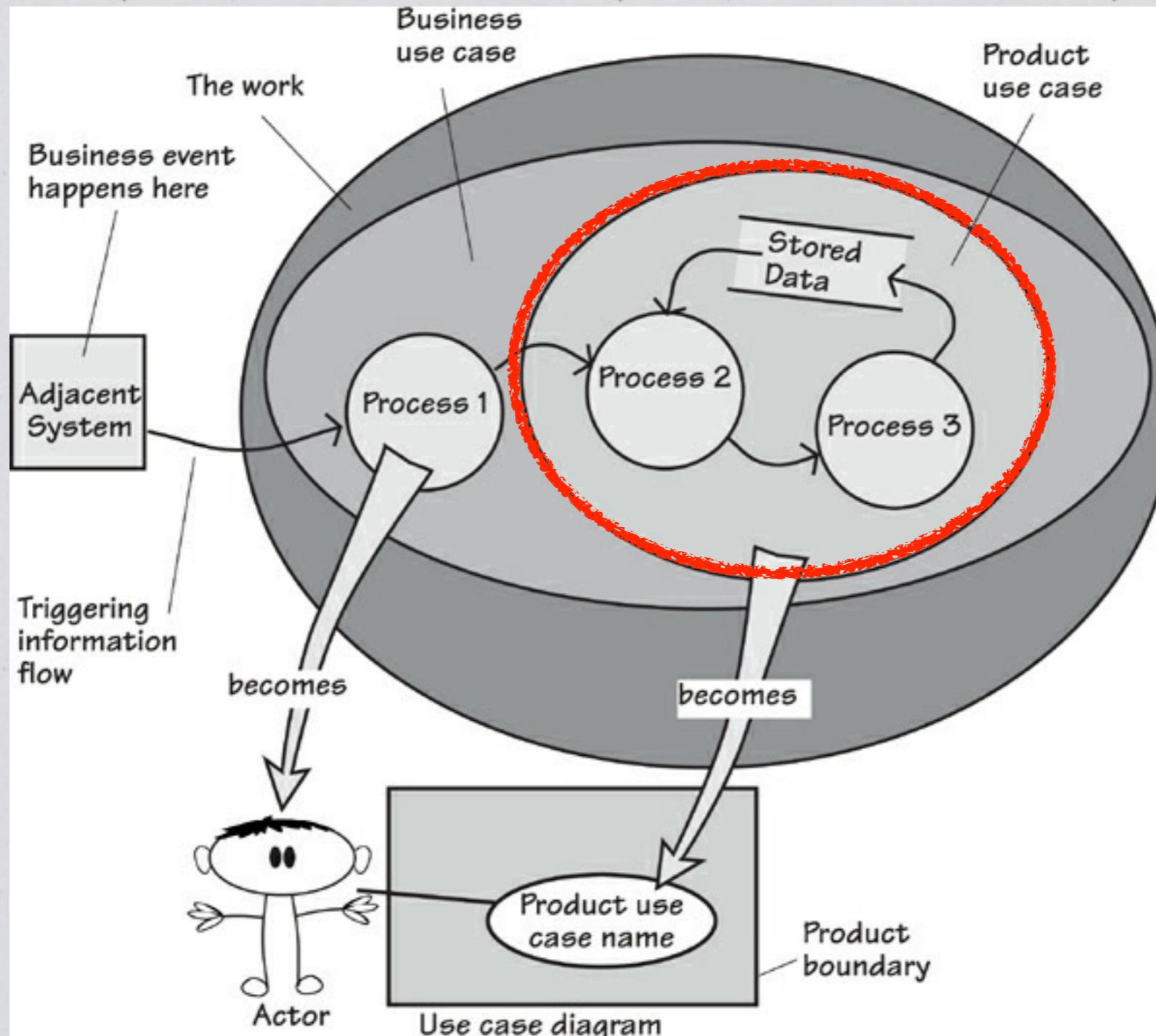


Figure 8.1

You have reached the last quadrant of the Brown Cow Model. Here you decide how you are going to implement the essential business.

Product Use Case

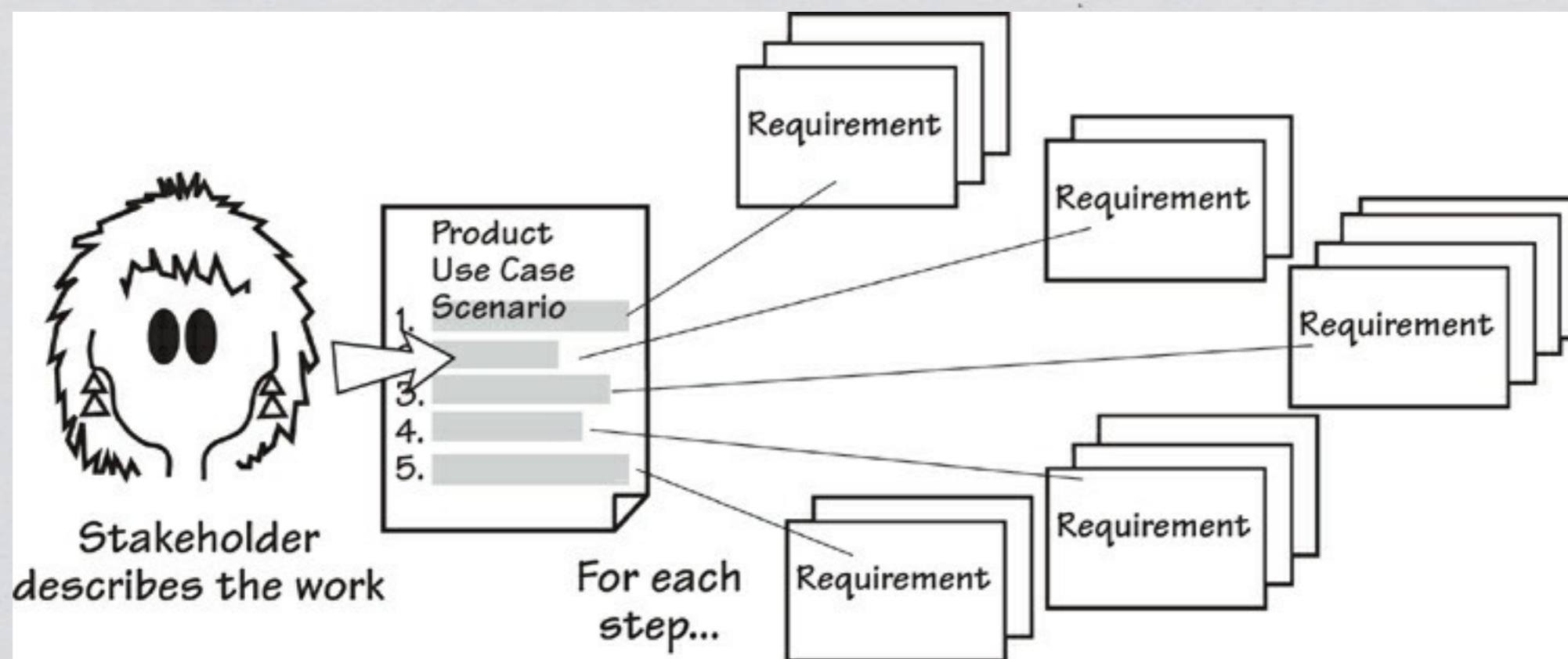


Whatever is immediately outside the scope of the product becomes the actor

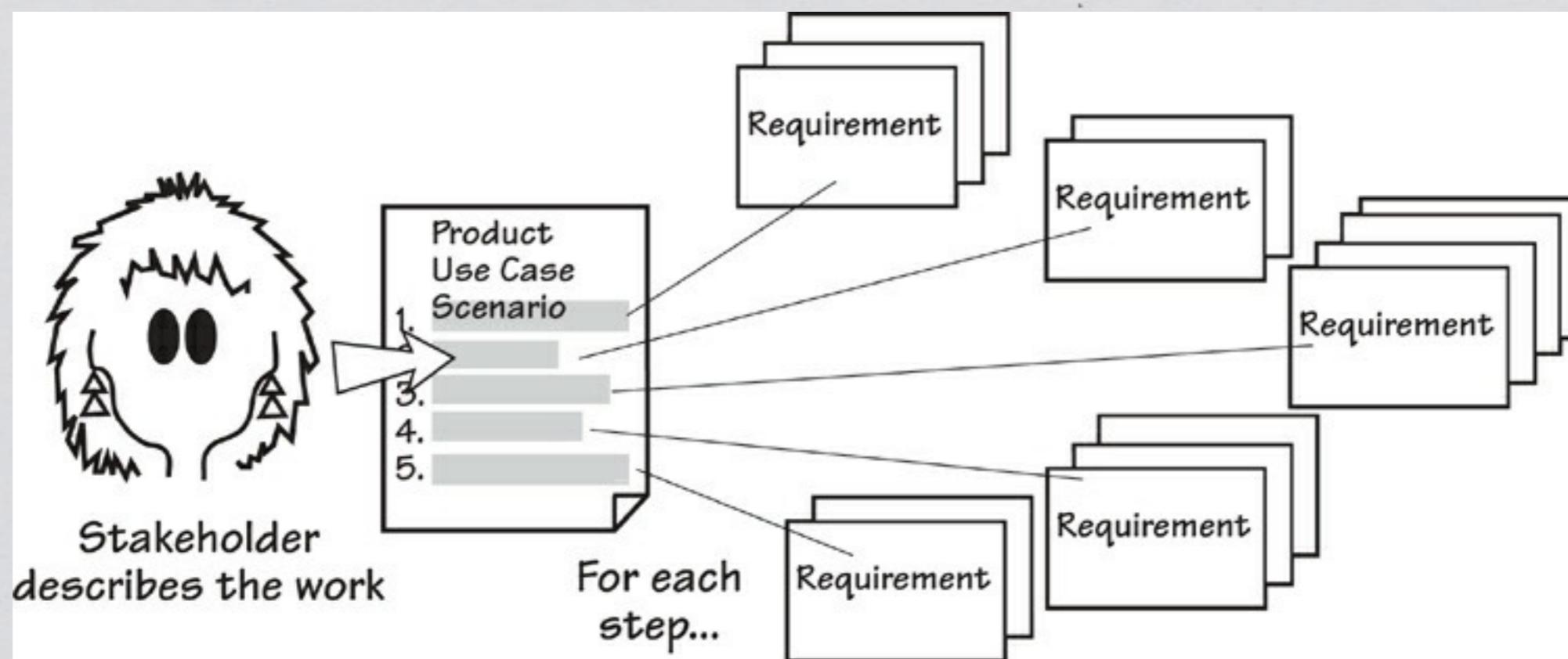
Functional Requirements

(Chapter 11)

- ◆ Functional Requirements: describe what the product has to do to support and enable the owner's work. They should be, as far as possible, independent of the technology used by the eventual product.

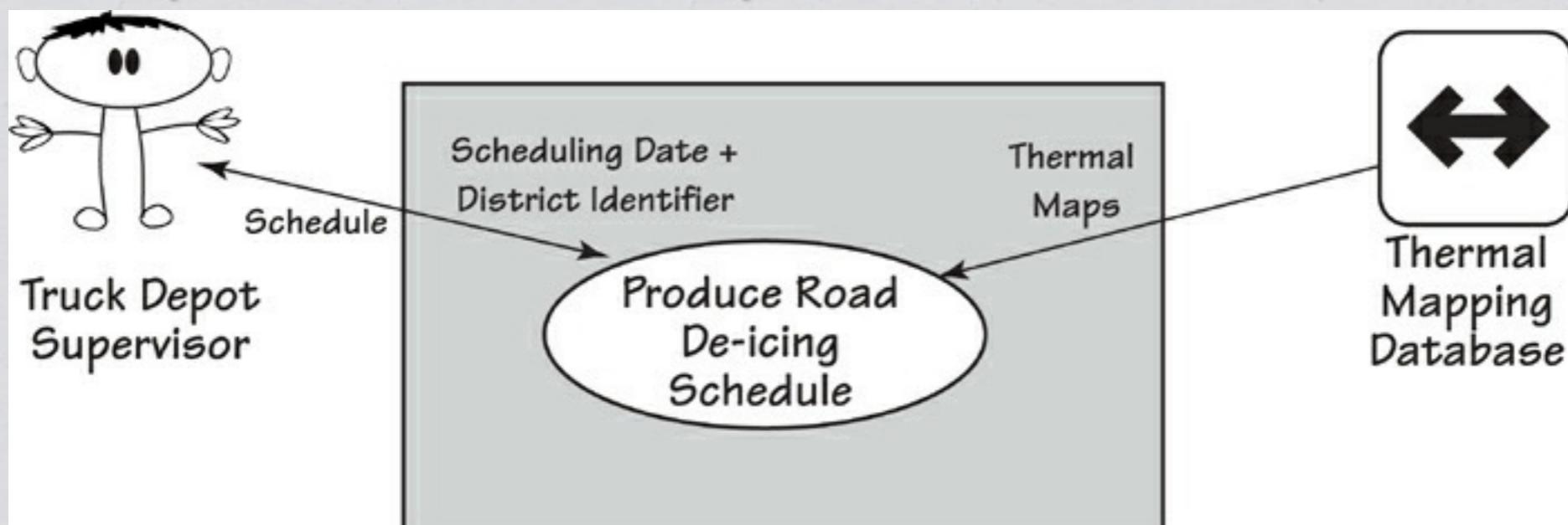


- ◆ The scenario is a convenient way to work with stakeholders to determine the necessary functionality for a product use case. Each of the scenario's steps is decomposed into its atomic functional requirements. The collection of atomic functional requirements reveals what the product has to do to fulfill the product use case.



Example

- ◆ PUC: Produce road de-icing schedule.
- ◆ Actor: Truck Depot Supervisor.



Example

- ◆ PUC: Produce road de-icing schedule.
 1. Engineer provides a scheduling date and district identifier to the product.
 2. Product retrieves the relevant thermal maps.
 3. Product uses the thermal maps, district temperature readings, and weather forecasts to predict temperatures for each road section for the district.
 4. Product predicts which roads will freeze and when they will freeze.
 5. Product schedules available trucks from the relevant depots.
 6. Product advises the engineer of the schedule.

Atomic Functional Requirements

- ♦ For each step, ask: What does the product have to do to complete this step?
 1. Engineer provides a scheduling date and district identifier.
 - The product shall accept a scheduling date.*
 - The product shall warn if the scheduling date is neither today nor the next day.*
 - The product shall accept a valid district identifier.*
 - The product shall verify that the district is within the de-icing responsibility of the area covered by this installation.*
 - The product shall verify that the district is the one wanted by the engineer.*

Atomic Functional Requirements

4. Product determines which roads will freeze and when they will freeze.

-The product shall determine which areas in the district are predicted to freeze.

-The product shall determine which road sections are in the areas that are predicted to freeze.

-The product shall determine when each road section will freeze.

Atomic Functional Requirements

- ◆ Atomic Functional Requirements are written as a single sentence with a single verb.
- ◆ Use a separate component of your requirement to indicate the priority of the requirement.
- ◆ Add rationale which indicates whether the requirement is worthy of some attention:

Description: The product shall record roads that have been treated.

Rationale: To be able to schedule untreated roads and highlight potential danger.

Atomic Functional Requirements

Description: The product shall record the start and end time of a truck's scheduled activity.

Rationale: The truck depot foreman wants to know which trucks are being most used.

Rationale: Trucks are to be scheduled a maximum of 20 out of 24 hours to allow for maintenance and cleaning.

By knowing why something is there, the developers and the testers know much more about the effort they should expend on it.

Atomic Functional Requirements

Description: The product shall provide the bus network route map on a touch screen.

Rationale: Passengers have to provide their destination for the fare to be calculated.

Regardless of how the need is finally implemented, it is clear that writing both the description and the rationale leads to discovery of the real requirement.

Exceptions

- ◆ Exceptions are unwanted but inevitable deviations from the normal case caused by errors of processing and incorrect actions.
- ◆ The procedure for writing the requirements remains the same: go through each of the exception steps and determine what the product must do to accomplish that step.
- ◆ Identify a block of requirements as being attached to a particular exception or write each one to include the exception condition.
- ◆ Example: *If there are no trucks available, the product shall generate an emergency request to truck depots in adjacent counties.*

Alternatives

- ◆ Alternatives are allowable variations from the normal case, which are usually provided at the behest of the business stakeholders.

The product shall add the selected item to the shopping cart.

If 1-Click is used, the product shall record the sale of the selected item.

Conditional Requirements

If a road scheduled for treatment has not been reported within 30 minutes of its scheduled time, the product shall issue an untreated road alert.

The product shall play the music if requested.

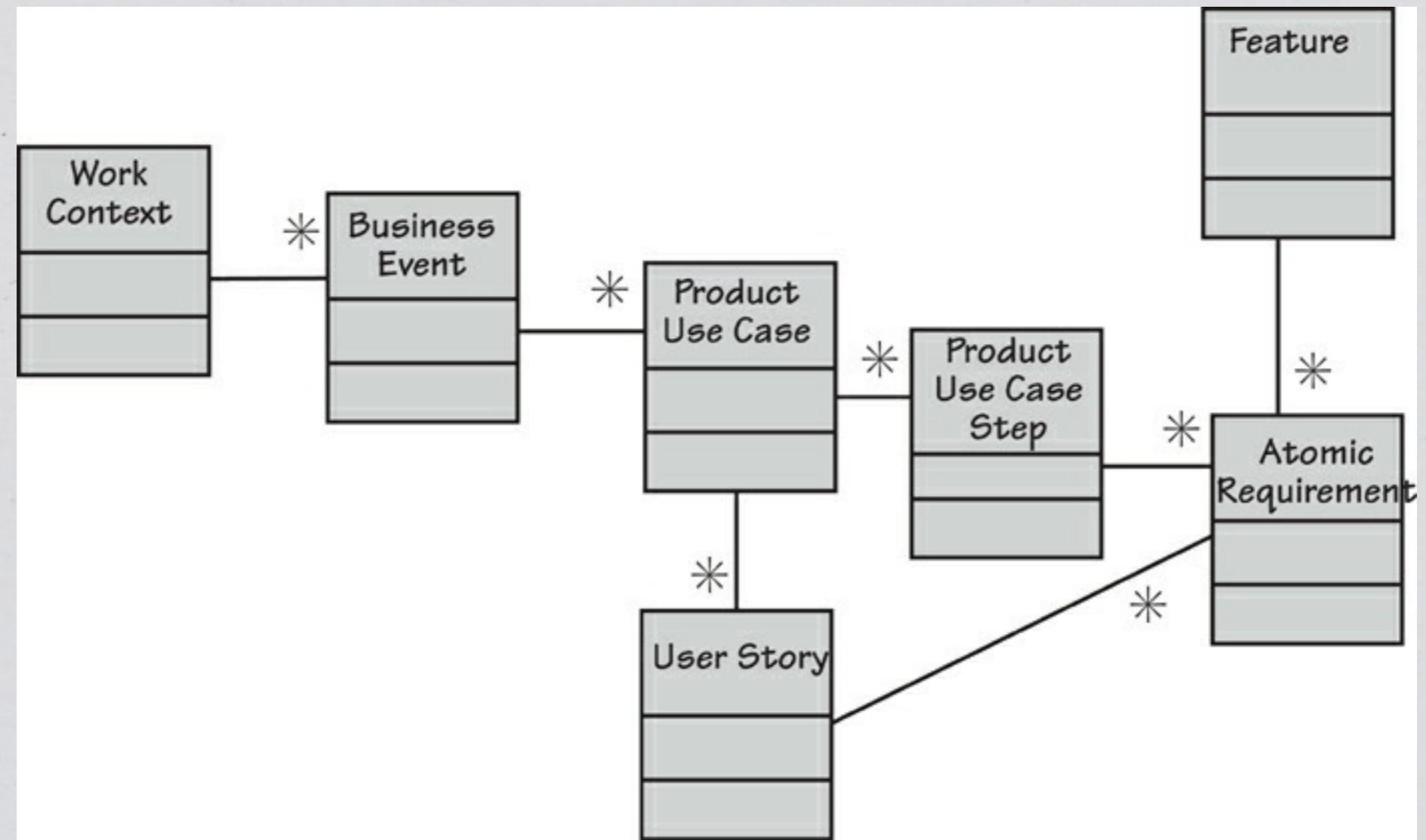
The product shall highlight any overdrawn accounts.

Technological Requirements

- ◆ Technological requirements arise purely because of the chosen technology.
- ◆ They are not there for business reasons, but rather to make the chosen implementation work.
- ◆ In the example of the use case that produces the de-icing schedule, the product interacts with the thermal mapping database. Suppose the designer decides that handling this interaction via an Internet connection is the best option. Because of this technological choice, the product has a need to establish a secure connection.

Grouping Requirements

- ◆ Use cases are one way to group requirements.
- ◆ Another way is by product features, e.g, turning on the light.



Requirements for COTS

- ◆ COTS (commercial off-the-shelf) product is any installable software product.
- ◆ Begin your business analysis by building a context diagram of the work area that will be affected by the COTS product.
- ◆ This activity leads you to the business events of that business area, which you can then compare with the equivalent business event supported by the COTS product.

Requirements for COTS

- ◆ Pay attention to the incoming and outgoing data from each of the business events. Compare this data to the data inputs and outputs of the COTS product, and write requirements for any modifications needed to bring the COTS data in line with the organizational need for data.
- ◆ Alternatively, you can choose to change the organization rather than the COTS product. In this case you write a user manual for the people involved in the business area. This document would describe the new work practices necessary to accommodate the COTS product.