

Pragmatic Use Case Writing

Presented by:



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Review Sample

Student Manual

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Use Case Introduction

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What is a Use Case?

According to Alistair Cockburn ¹

- A use case is a contract among stakeholders, and a description of how the system under discussion responds to requests from the system's users

According to the Rational Unified Process, a use case is

- “a sequence of actions a system performs that yields an observable result of value to a particular actor.”

— Rational Unified Process v7

A well-formed use case provides a user-centered perspective that is just not attainable with traditional, paragraph-style specifications.

Use cases capture the process flow that is lacking in traditional, paragraph-style requirements specifications

A use case

- Is a written, textual document — not a diagram
- Describes a business, or system, process which is visible to users
 - » A use case captures *behavioral* requirements of a system
- Focuses on the interaction between the system and actors to meet a goal
- May describe both automated and non-automated aspects of the process
- Is intended to communicate process, not solution, to the stakeholders

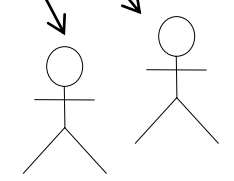
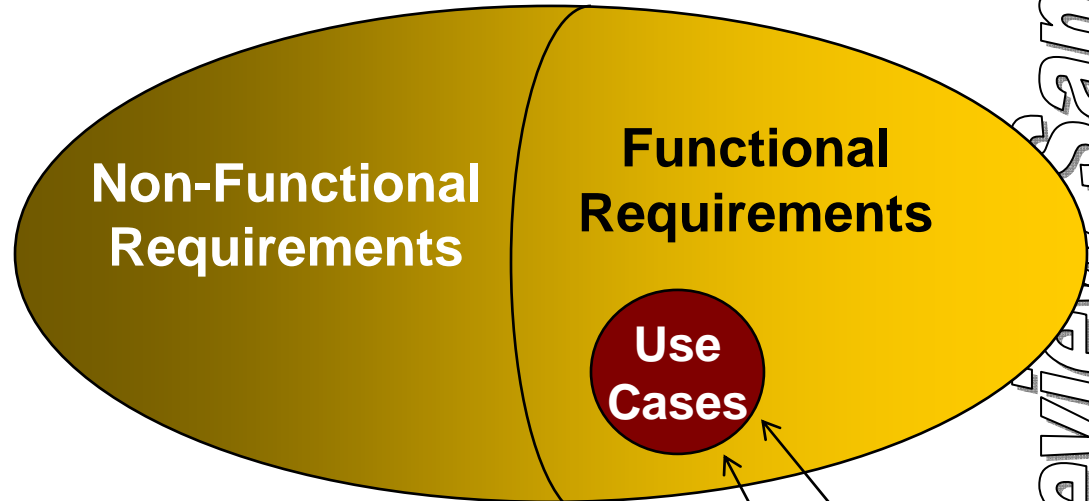
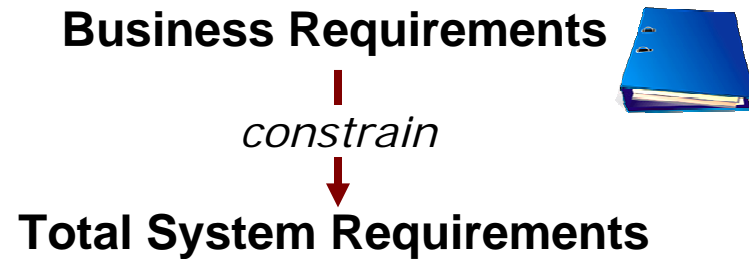
¹ Alistair Cockburn. *Writing Effective Use Cases*. Addison-Wesley, 2001.

Where Do Use Cases Fit?

Use cases capture those functional requirements which are visible to the system's actors (users)

- These are the *behavioral* requirements

Use cases are only a portion of the system's total requirements



Actors
(users)

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**Nutshell Summary:
Use cases alone are not enough!**

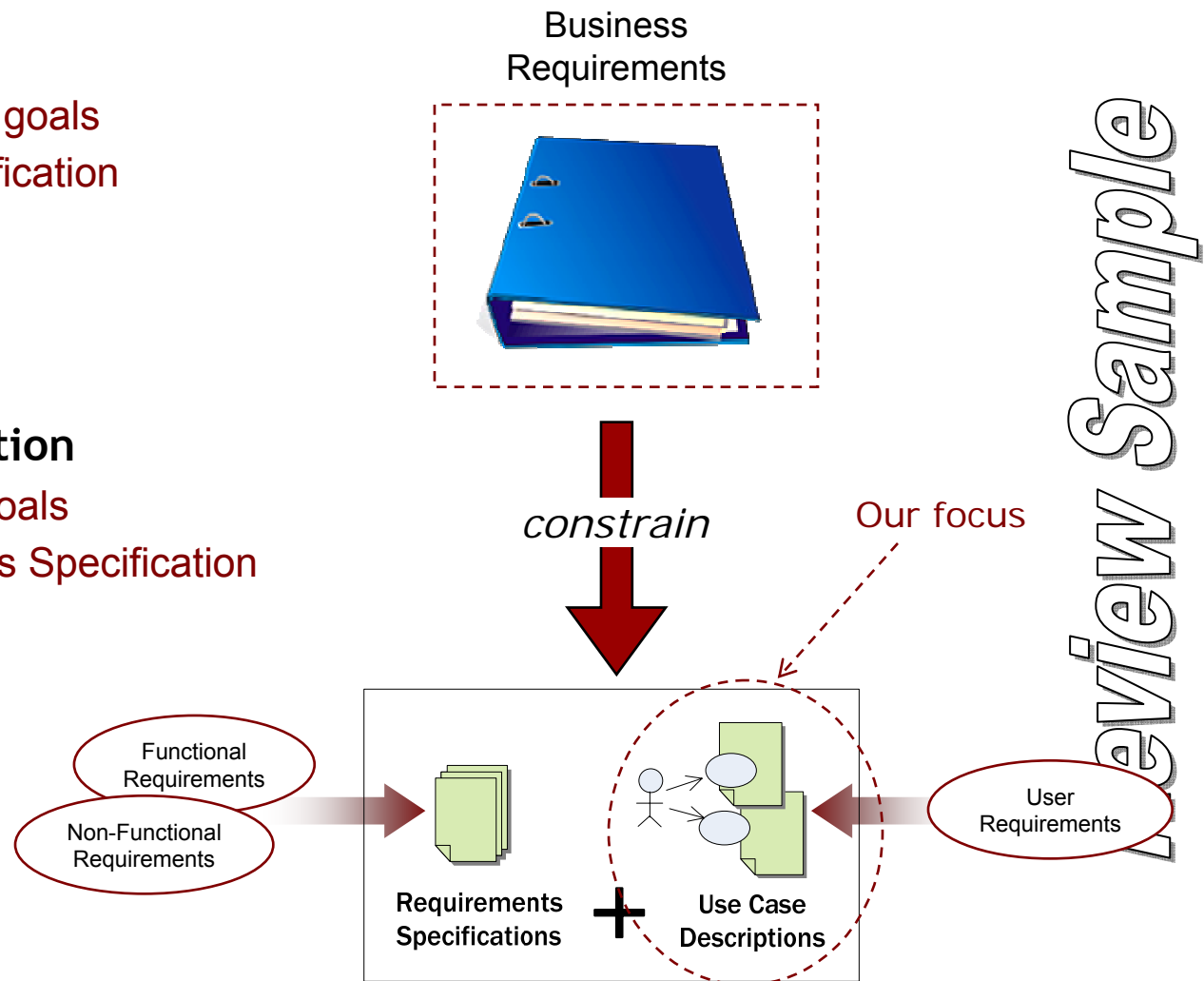
What Will You Deliver?

Business Requirements

- Describe the business goals
- Business Vision Specification
- Business Use Cases
- Business Actors

Requirements Identification

- Describe the system goals
- Software Requirements Specification
- Use Cases
- Actors



Use Case Examples

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Use Case Examples

Before we discuss the details of use cases, let's see some examples of

- What they look like
- What content they contain
- What they do not contain

Your instructor will direct you to these examples in your course materials

- Apply for Life Insurance Policy (A business use case)
- Withdraw Funds from ATM (A system use case)



Turn to page Ex-1 and Ex-2 to see these examples.

Use Case Examples

From these examples we can see that

- A use case is a textual form – not a diagram
- It should not include
 - » User Interface (UI) design elements
 - » UI navigation (clicks, drag-'n-drop, ...)
 - » Data formats
 - » Specification of internal algorithms or components
- It separates the scenarios where the sequence executes without deviation (main flow), from those scenarios (exception flows) where the system or business must attempt recovery, and may fail to recover
- It should describe what the system, or business, does to satisfy the users' goals
 - » It should not describe “how” these goals are met – that is for design
- It should be written in brief, readable steps that make very clear who is acting – i.e., the user, or the system or business

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Group Discussion – Use Case Production

Organize into small groups of 2-3 people

Discuss together these questions:

- Who is writing the use cases on your projects?
- How long are your use cases?
- Who is reading, or using, the use cases on your projects?
- Who validates your use cases?
- Do your use cases contain design or implementation content?
- How do your use cases differ from the examples we just reviewed?
- Is anyone willing to bring in some of your use cases for review?



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Be prepared to share your answers with the entire class



Estimate: 15 mins.

Use Case Writing “Miniature”

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Use Case Writing Miniature

Before we start, let's see the whole use case writing process

We will select a single use case from our example case study

- A vehicle rental system

We will quickly show all four (4) steps of writing a selected use case

- Identify the primary actor(s) and the use case scope
- Write the main flow (aka, the “happy path”)
- Identify the exception flows and the conditions that cause a deviation from the main flow
- Write the behavior of the actor(s) and system to attempt recovery from the exception flow back to the main flow

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Miniature – Actors and Use Case Scope

Use Case (for a Vehicle Rental system)

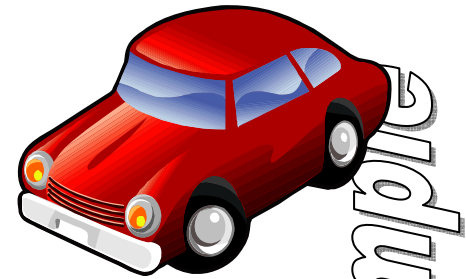
- Receive Vehicle from Customer

Primary actor(s)

- Garage Representative

Use Case Scope

- System use case
(because the Garage Representative will use an automated system to carry out the tasks of recording that a customer has returned a vehicle)



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Questions:

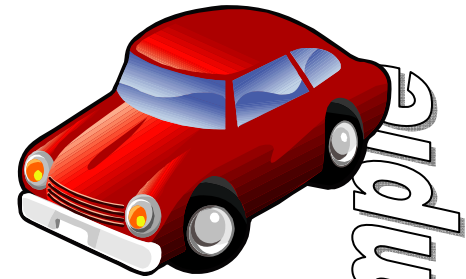
- Does this seem like a reasonable use case?
- Do you think there is significant interaction between the primary actor and the system?
- What steps do you think will be performed in this use case?

Miniature – The Main Flow

Use Case: Receive Vehicle from Customer
Scope: System
Primary actor: Garage Representative (GR)

Main Flow

1. GR informs system of vehicle being returned.
2. System presents vehicle rental information for verification by GR.
3. GR informs system that no vehicle issues (damage, mechanical problems) are observed, or reported by customer.
4. GR informs system of gasoline level in vehicle. System calculates re-fueling charge based on current level and any pre-payment agreement.
5. GR informs system to apply rental charge to credit card used on vehicle reservation.
6. System prints itemized receipt of rental charges.



Questions:

- We can have our business people “vet” the main flow
- Will we have deviations, or “exception” behavior at any of these steps?
- Can you name some exceptions?

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Miniature – Exception Flow Conditions

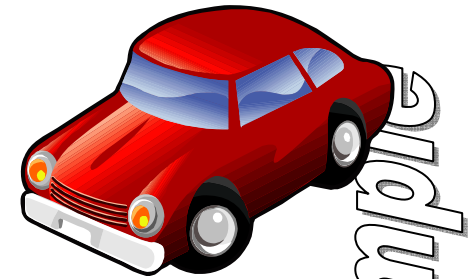
Use Case: Receive Vehicle from Customer
Scope: System
Primary actor: Garage Representative (GR)

Main Flow

1. GR informs system of vehicle being returned.
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3. GR informs system that no vehicle issues (damage, mechanical problems) are observed, or reported by customer.
4. GR informs system of gasoline level in vehicle. System calculates re-fueling charge based on current level and any pre-payment agreement.
5. GR informs system to apply rental charge to credit card used on vehicle reservation.
6. System prints itemized receipt of rental charges.

Exception Flows

- 2a. Not our vehicle
- 3a. Vehicle issues found
- 5a. Apply charges to different credit card



Question:

- What behavior do you think the system should exhibit when it encounters each of these exceptions?

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Miniature – Exception Flow Behavior

Use Case: Receive Vehicle from Customer
 Scope: System
 Primary actor: Garage Representative (GR)

Main Flow

1. GR informs system of vehicle being returned.
2. System presents vehicle rental information for verification by GR.
3. GR informs system that no vehicle issues (damage, mechanical problems) are observed, or reported by customer.
4. GR informs system of gasoline level in vehicle. System calculates re-fueling charge based on current level and any pre-payment agreement.
5. GR informs system to apply rental charge to credit card used on vehicle reservation.
6. System prints itemized receipt of rental charges.

Exception Flows

2a. Not our vehicle

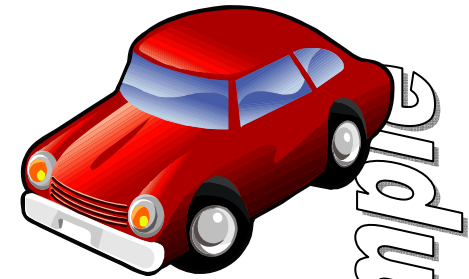
- 2a.1 GR informs customer this vehicle is not property of this rental company. This use case ends.

3a. Vehicle issues found

- 3a.1 GR informs system of problems reported by customer, or that damage is present.
- 3a.2 When damage is found, GR directs customer to branch Customer Service Representative to obtain details on damage.

5a. Apply charges to different credit card

- 5a.1 GR directs customer to branch Customer Service Representative to validate different credit card and transfer rental charges to that card.



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We now have a complete use case, for review by our customer or end-users.

This is the process you will follow in this course to write your use cases.

Business Actors and Use Cases

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Business Use Case Model

The Business Use Case Model

- Focuses on analysis of the business organization and its business processes
- It is a model of the business goals and intended functions

It captures

- Business actors
- Business use cases

Its purpose is to describe

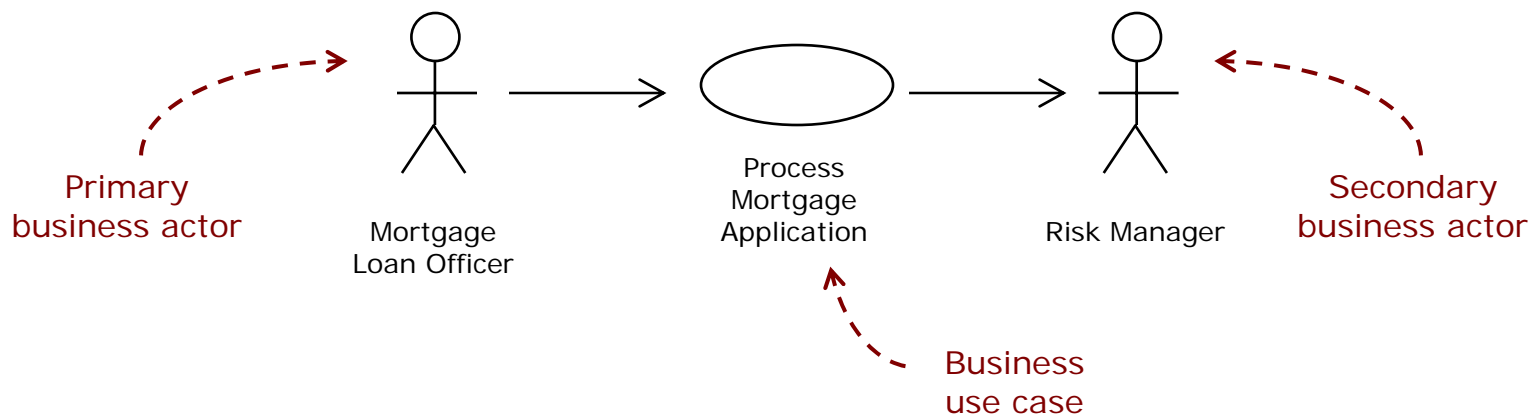
- The relationships between each business actor and the business use cases that provide services to those actors

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Business Actors and Business Use Cases

Business Actor

- *Primary* business actor: a person or business entity that is a requestor of a service represented by a business use case
- *Secondary* business actor: a person or business entity that provides a service to the business being modeled



Business Use Case

- A sequence of actions that a business performs that yields an observable result of value to a particular (primary) business actor
- A business use case can have both automated, and non-automated, steps

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Example – Business Use Case

An example business use case:

Use Case: Process a Purchase Request
 Scope: Business
 Primary Actors: Buyer, Purchase Officer, Accounting

*Underlined phrases
 indicate sub-use cases*

Main Flow

1. Buyer submits product purchase request to Purchasing Department.
2. Purchase Officer verifies purchase request is complete.
3. Purchase Officer selects potential product vendors.
4. Purchase Officer submits purchase request for approval by Financial Officer, Budget Administrator, and Accounting.
5. Purchase Officer submits approved purchase request to potential vendors according to company bidding process.
6. Purchase Officer submits Purchase Order to the selected Vendor.
7. Vendor delivers product to Buyer.
8. Vendor submits invoice to Purchase Officer.
9. Purchase Officer verifies Buyer received the product satisfactorily.
10. Purchase Officer performs three-way verification (original request, P order fulfillment, and notifies Accounting to release payment.
11. Accounting issues payment to Vendor.

Turn to page Ex-8 to see this example.

Preview Sample

System Actors and Use Cases

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Use Case Model

The Use-Case Model

- Focuses on analysis of the system's functionality seen by users
- It is a model of the system's intended functions and the interactions users have with those intended functions

It captures

- (System) Actors
- (System) Use Cases

Its purpose is to describe

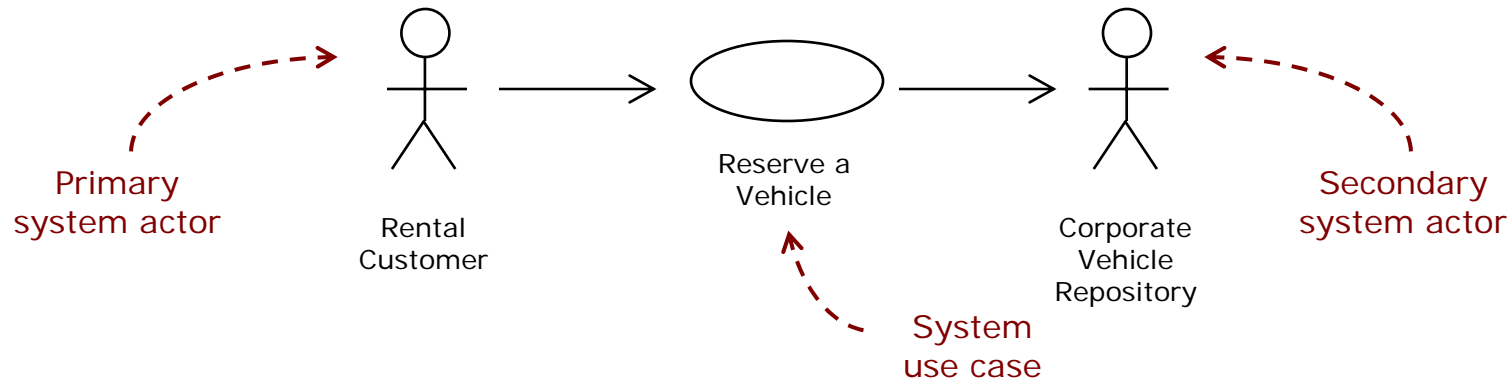
- The relationships between each system actor and the use cases that provide services to those actors

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System Actors and System Use Cases

System Actor

- *Primary actor*: is a user of the system; a requestor of a service represented by a use case
- *Secondary actor*: is used by the system under discussion; it provides services to this system



System Use Case

- Describes a sequence of actions a system performs that yields an observable result of value to a particular actor
- I.e., system use cases are automated

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Example – System Use Case

An example system use case:

Use Case: Checkout Groceries on Self-checkout System
Scope: System
Primary Actor: Store Customer

Main Flow

1. Customer indicates national language to use during checkout session.

At any time during the session prior to making payment the customer may

- Scan store loyalty card
- Scan coupons to apply to purchases
- Cancel the checkout session

Repeat Steps 2-4 until customer is ready to pay for items.

2. Customer scans item to purchase.

3. System updates running-receipt of items purchased, applying any coupon or loyalty card discounts.

4. Customer places item into grocery bag on bag-scale, and system verifies proper

5. Customer indicates he/she is ready to pay for items.

6. System presents allowed methods of payment. Customer indicates choice.

7. System guides customer in applying chosen method of payment until session amount due is obtained.

8. System prints receipt, and prepares for next customer checkout session.



Preview Sample

Turn to page Ex-9 to see this example.

Group Discussion – Use Case Scope



Organize into small groups of 2-3 people

Discuss together these questions:

- At what scope are you writing your use cases — business, system, or both?
- If you are doing both,
 - » Are different people or groups writing and validating them?
- If you are only doing system use cases,
 - » What are you using to describe your high-level business workflows and processes?
- If you are only doing business use cases,
 - » What are you using to describe how your software meets the goals of your software's users?

Be prepared to share your answers with the entire class



Estimate: 15 mins.

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