



# 8 Steps to Effective Use Cases

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## 8 Steps to Effective Use Cases

**Use cases identify how the system will be used.**

1. Define the system boundaries
2. Identify the actors
3. Determine interactions
4. Establish pre & post conditions
5. Document the main success scenario
6. Branch to alternatives & exceptions
7. Merge or create sub-use cases as appropriate
8. Record additional information

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## Step 1 - Define the System Boundaries

Gas Station

System Under Consideration = Gas Station

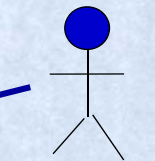
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## Step 2 – Identify the Actors

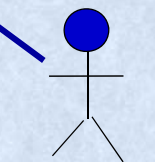
Gas Station

Owner

Attendant



Customer

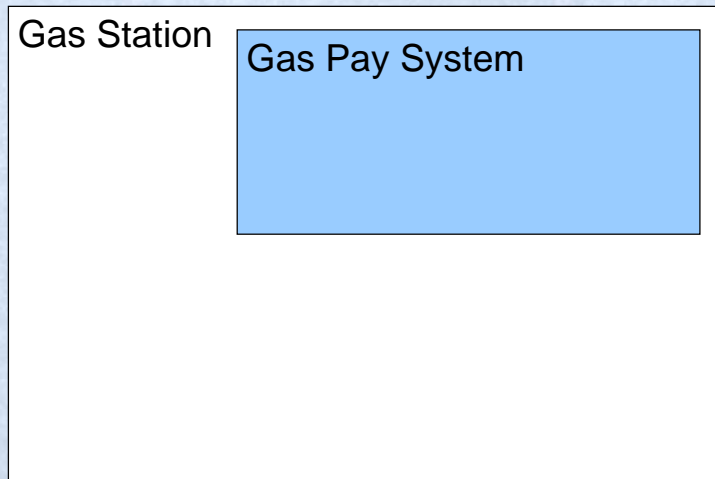


Credit Card  
Clearing  
House

System Under Consideration = Gas Station

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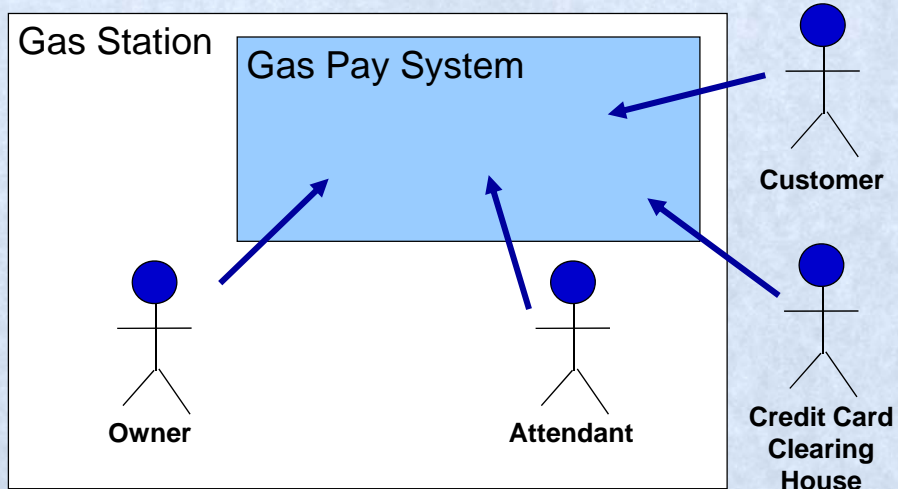
## Another Perspective – System Boundaries



System Under Consideration = Gas Pay System

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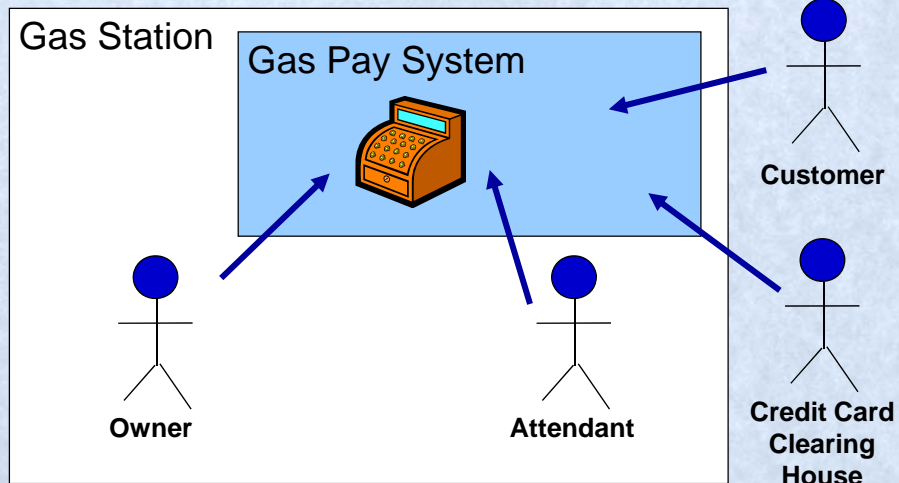
## Another Perspective – Identify Actors



System Under Consideration = Gas Pay System

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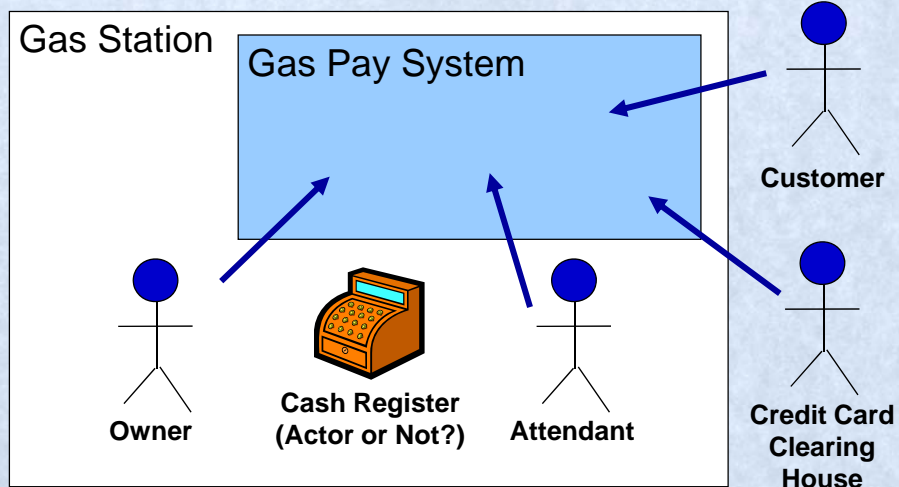
## Where is the Cash Register?



System Under Consideration = Gas Pay System

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## Where is the Cash Register? (cont.)

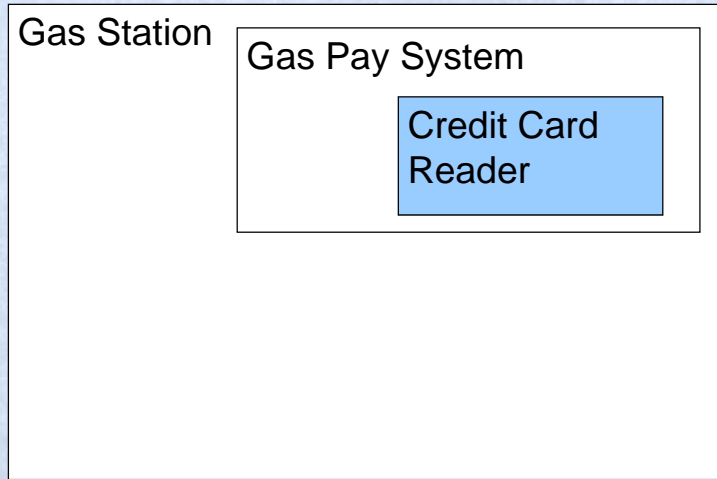


System Under Consideration = Gas Pay System

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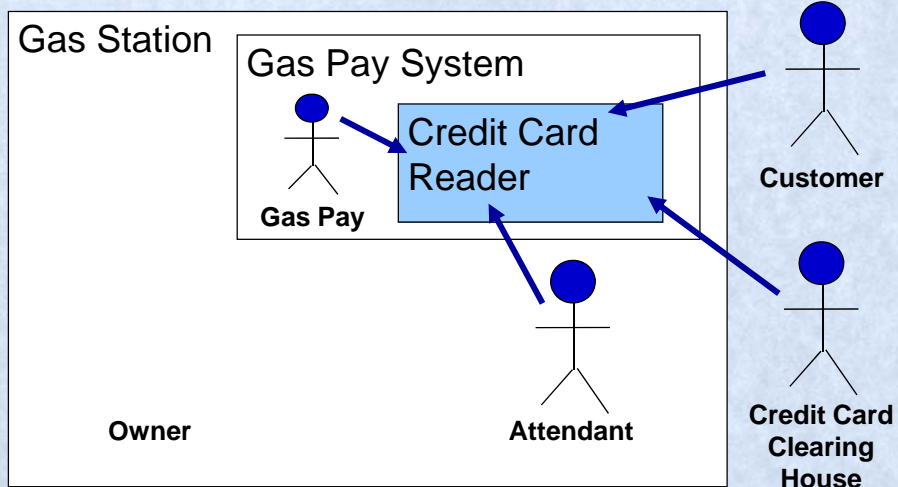
## Yet Another Perspective – System Boundaries



System Under Consideration = Credit Card Reader

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## Yet Another Perspective – Identify Actors



System Under Consideration = Credit Card Reader

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## Step 3 - Determine Interactions

**For each identified actor, determine:**

- Main tasks or functions performed using the system
- Data acquired, produced, or changed in the system
- Information given to or wanted from the system
- Notifications or alarms wanted from the system

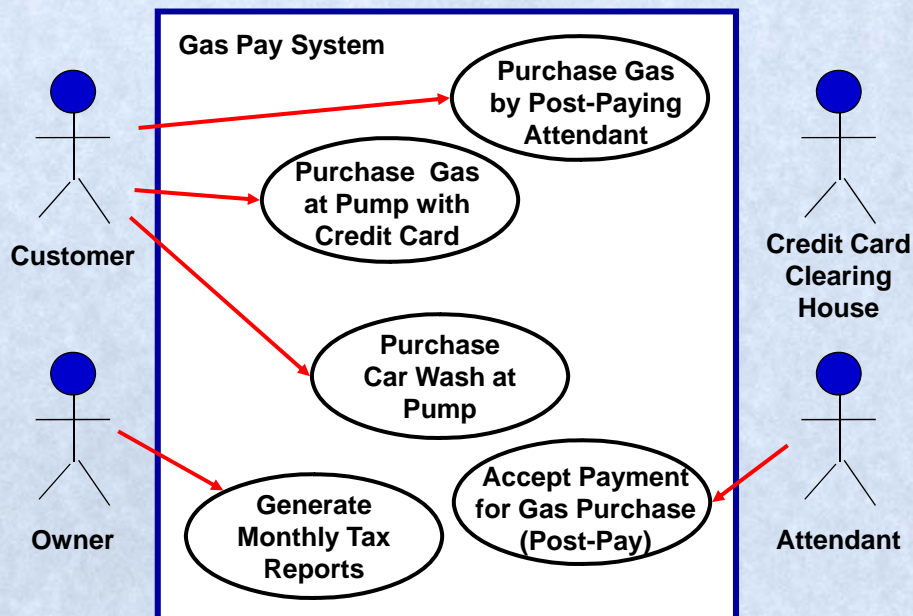
**Primary actor:**

- Initiates the use case
- The use case is initiated for that actor

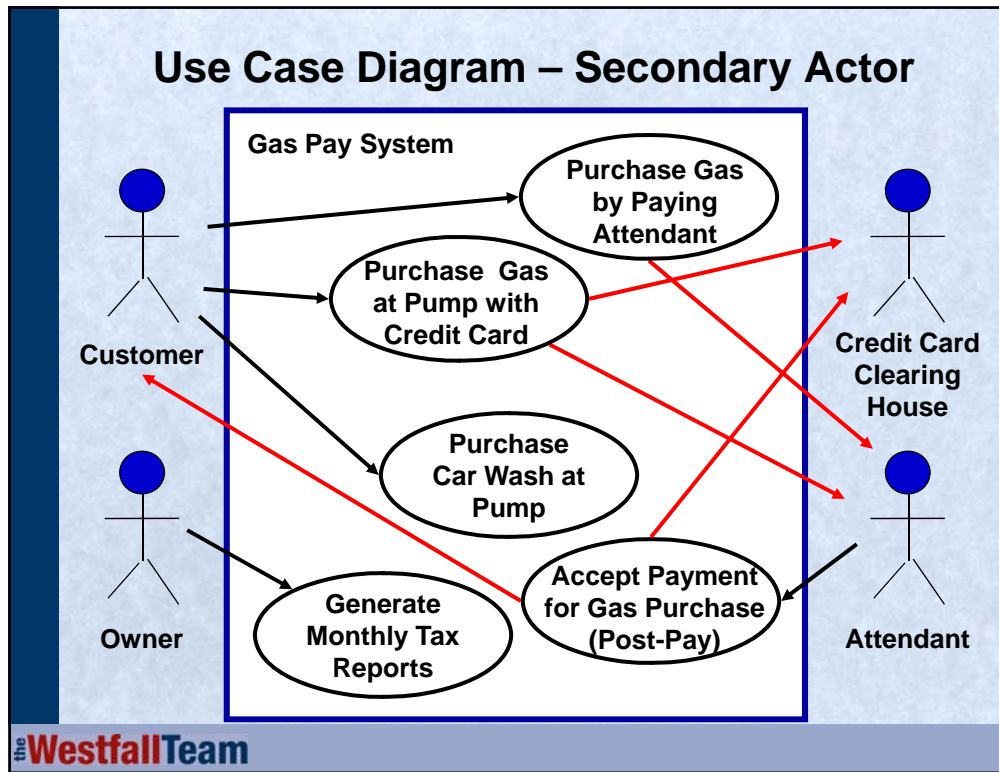
**Secondary actor:** Other actor(s) involved in the use case

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## Use Case Diagrams – Primary Actor



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## Step 4 - Establish Pre & Post Conditions

### For each use case establish its:

- Pre conditions (entry criteria): What must be true before the use case can start?
- Post conditions (exit criteria): What must be true before the use case is successfully completed?

### Purchase gas at pump with credit card - example:

- | • Pre conditions | • Post conditions |
|------------------|-------------------|
| •                | •                 |
| •                | •                 |
| •                | •                 |



## Use Case - Example

**Use Case:** Accept Payment for Gas (Post-Pay)

**Primary Actor:** Attendant

**Secondary Actors:** Customer, Bank Consortium

**Preconditions:**

- Gas has been successfully pumped
- Customer has arrived at Attendant to pay for gas

**Post Conditions:**

- Payment has been received
- Customer was able to pay for gas with payment type of preference
- Customer received receipt

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## Step 5 - Document Main Success Scenario

**Main Success Scenario:**

1. Attendant acknowledges next customer
2. Customer pays for the gas they pumped
3. Attendant gives customer change & receipt

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## Main Success Scenario – Detailed Example

### Main Success Scenario:

Actor Actions	System Responses
1. Attendant greets Customer & asks which pump	
2. Customer identifies pumps	
3. Attendant polls system for pump information	4. System reports gallons pumped & total price
5. Attendant confirms price with customer & acknowledges price with system	6. System accepts price & displays price on cash register display
7. Attendant ask if other items & Customer responds no	
8. Attendant asks for payment type & Customer pays in cash	
9. Attendant enters cash tendered into cash register	10. System calculates & displays change & prints receipt
11. Attendant provides change & receipt to customer	
12. Attendant ends transaction	13. System saves transaction information & resets pump

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## Step 6 - Branch to Alternatives & Exceptions

### Alternative Scenarios:

Actor Actions	System Responses
1. Attendant greets Customer & asks which pump	
2. Customer identifies pumps	
3. Attendant polls system for pump information	4. System reports gallons pumped & total price
5. Attendant confirms price with customer & acknowledges price with system	
7. Attendant ask if other items & responds no	
8. Attendant asks for payment type & Customer pays in cash	
9. Attendant enters cash tendered into cash register	
11. Attendant provides change & receipt to customer	10. System calculates & displays change & prints receipt
12. Attendant ends transaction	13. System saves transaction information & resets pump

Actor Actions	System Responses
5a1. Customer identified <b>wrong pump</b> & changes pump identification	
5a2. Attendant cancels previous pump	5a3. System resets to no pump identified
5a4. Return to step 3	

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## Other Alternative - Examples

### Alternative Scenarios:

Actor Actions	System Responses	
1. Attendant greets Customer & asks which pump		
2. Customer identifies pumps		
3. Attendant polls system for pump information	4. System reports gallons pumped & total price	
5. Attendant confirms price with customer & acknowledges price with system	6. System accepts price & displays price on cash register display	
	Actor Actions	System Responses
7. Attendant ask if other items & Customer responds no	7a1. Customer purchase another item	7a3. System accepts price & displays item price & running total price on cash register
8. Attendant asks for payment type & Customer pays in cash	7a2. Attendant enters price for additional item in cash register	
9. Attendant enters cash tendered in cash register	7a4. Return to step 8	
11. Attendant provides change & resets pump		
12. Attendant ends transaction	13. System saves transaction information & resets pump	

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## Other Alternative – Examples (cont.)

### Alternative Scenarios:

Actor Actions	System Responses	
1. Attendant greets Customer & asks which pump		
2. Customer identifies pumps		
3. Attendant polls system for pump information	4. System reports gallons pumped & total price	
5. Attendant confirms price with customer & acknowledges price with system	6. System accepts price & displays price on cash register display	
7. Attendant ask if other items & Customer responds no		
	Actor Actions	System Responses
8. Attendant asks for payment type & Customer pays in cash	4a2. Attendant manually checks pump display & enters amount into cash register	4a1. System can not communicate with pump
9. Attendant enters cash tendered in cash register		
11. Attendant provides change & resets pump		
12. Attendant ends transaction	4a3. Return to step 7	

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## Exception – Examples

### Exception Scenarios:

Actor Actions	System Responses							
1. Attendant greets Customer & asks which pump								
2. Customer identifies pumps								
3. Attendant polls system for pump information								
5. Attendant confirms price with customer & acknowledges price with system								
7. Attendant ask if other items & customer responds no								
8. Attendant asks for payment type & Customer pays in cash								
9. Attendant enters cash tendered into cash register								
11. Attendant provides change & receipt to customer								
12. Attendant ends transaction								
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	10. System calculates & displays change & prints receipt							
	13. System saves transaction information & resets pump							

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## Exception – Examples (cont.)

### Exception Scenarios:

Actor Actions	System Responses									
1. Attendant greets Customer & asks which pump										
2. Customer identifies pumps										
3. Attendant polls system for pump information										
5. Attendant confirms price with customer & acknowledges price with system										
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8b4. Bank Consortium disapproves transaction	8b3. System establishes communications with Bank Consortium & transmits merchant information, credit card information & transaction amount									
8b6. Return to step 8	8b5. System displays disapproval									

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## Exception Example – Example

### Exception Scenarios:

Actor Actions	System Responses
4a2. Attendant manually checks pump display & enters amount into cash register 4a3. Return to step 7	4a1. System <b>can not communicate with pump</b>
8c1. Attendant asks for payment type & Customer swipes <b>invalid credit card type (not accepted type of card)</b> 8c4. Return to step 8	8c2. System reads & parses magnetic strip 8c3. System displays error
8d1. Attendant asks for payment type & Customer swipes <b>invalid credit card (expired, reported stolen or over limit)</b> correctly (after one or more tries) 8d4. Bank Consortium disapproves transaction 8d6. Return to step 8	8d2. System reads & parses magnetic strip 8d3. System establishes communications with Bank Consortium & transmits merchant information, credit card information & transaction amount 8d5. System displays disapproval

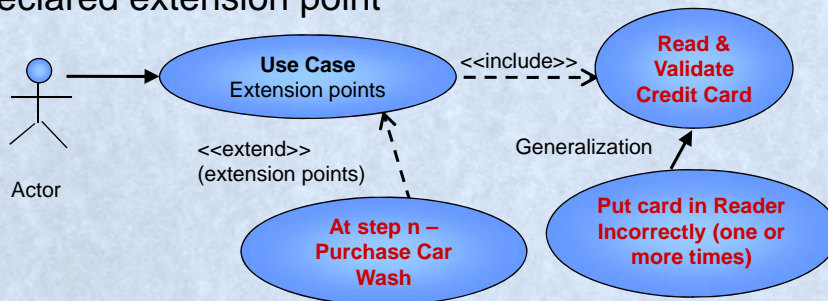
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## Step 7 - Merge or Create Sub-Use Cases

**<<include>>** behavior similar across more than one use case

**generalization** one use case similar to another case but does a bit more

**<<extend>>** generalization that can only occur at a declared extension point



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## Step 8 – Record Additional Information

**Other information that should be captured for each use case:**

- Use case identifier & use case name
- Created by & date
- Modification history (modifiers & dates)
- Use case description
- Priority
- Frequency of use
- Related business rules
- Assumptions

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