**The modeling techniques included within this course:**

1. SWOT Analysis
2. Use Cases
3. Organizational Chart
4. Stakeholder Map
5. RACI Matrix
6. Scoring Matrix
7. Process Flowcharts
8. User Stories [NEW]

**Lesson 1. Visual Modeling**

**What is visual modeling?**

Visual modeling is Graphical representation using a modeling language that takes something complex and makes it easier to understand.

**Benefits of Visual Modeling**

* Easily understand complex information
* Gets all stakeholders involved
* Receive requirements efficiently
* Identify the underlying problem
* Analyze ‘What if’ scenarios
* Allows removal of irrelevant information

**SWOT ANALYSIS**

A diagram of a swot analysis

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**SWOT Analysis defined**

* What is it?
* What is it used? (Internal and External)

A colorful squares with white text

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* Why is SWOT used?
* Uncover Opportunities
* Raise Awareness
* What does it accomplish?

**Breakdown of SWOT**

A two circles with white letters and a blue border

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**Internal**

* Customer Feedback
* Employee Survey

1. Capabilities
2. Resources
3. Processes

A red and blue circles with white letters

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**External**

* Market Ecosystem
  + Industry
  + Technology
* Third Parties
  + Competitors
  + Government

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**ORGANIZATION**

What does your organization do well?

What are your unique resources?

What do others view as your strengths?

**PERSONAL**

What do you do well?

What are your unique skills?

What experience do you have?

What do you do better than others?

****

**ORGANIZATION**

* What could you improve?
* What resources do you lack?
* What parts of the organization lack profitability?

**PERSONAL**

* What factors lose your job offers?
* In what areas do you need to improve?
* Where do you need further education or experience?
* What costs you time or money?

****

**ORGANIZATION**

* How can you do more for your existing customers?
* How can technology be used to enhance your business?
* Any new target audiences you can potentially reach?
* Are there new products or services that provide opportunity?

**PERSONAL**

* What additional education would provide a boost?
* How can you leverage technology to aid you?

****

**ORGANIZATION**

* What obstacles do you face?
* Are regulations or standards for your products or services changing?
* Could any weaknesses seriously threaten your business?

**PERSONAL**

* What obstacles do you face?
* What are your job competitors doing?
* Is changing technology threatening your strengths?

A diagram of swot analysis

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**Practical Walkthrough**

**Template Explained** (In File Excel)

**Lesson 2. Use Case**

**What is a Use Case?**

Use cases may contain both textual and diagramming pieces

* Diagrams offer a visual to the written use case
* Could contain one or more diagrams

Generally used for systems

Capture functional requirements (what the system should do)

Describes interactions between actors and the system

**What does it accomplish?**

Uses Cases explain:

* Who will interact with the system
* What the system must do
* The goal of the system

**Why do we create Use Cases?**

* Validates the system (or specific process) is necessary
* Ensure understanding of business needs
* Uncovers actors that will interact with the system
* Captures the goals actors will have in using the system

**Written Use Case Overview**

No standard format

Describes the steps involved between the primary actor and the system

Begin with the success scenario

Then look for alternative paths

**Use Case Elements Breakdown:**

**SYSTEM**

Represented by **rectangle**

Represents the scope of the system that actors will interact with

Contains all of the use cases

Only one system shape per diagram

Use case diagrams may contain external systems, but they will be displayed as actors

**ACTOR**

Represented by **stick or business figure**

* Represents
* People (role, not specific user)

Should be labeled

Primary actor

* Use system’s main function, deriving benefits

Secondary actor

* Supporting role to assist primary actor in achieving goals

**USE CASE**

Represented by an **ellipse**

Represented the goal of an actor

Describes the interaction between the user and the system

**ASSOCIATION**

Represented by a **line**

Connects an actor and a use case

* Indicates actor participates in that use case

**Dependency relationship**

* One use case depends on the existence and execution of another

Include dependency

* Specifies a use case contains the behavior defined in another use case

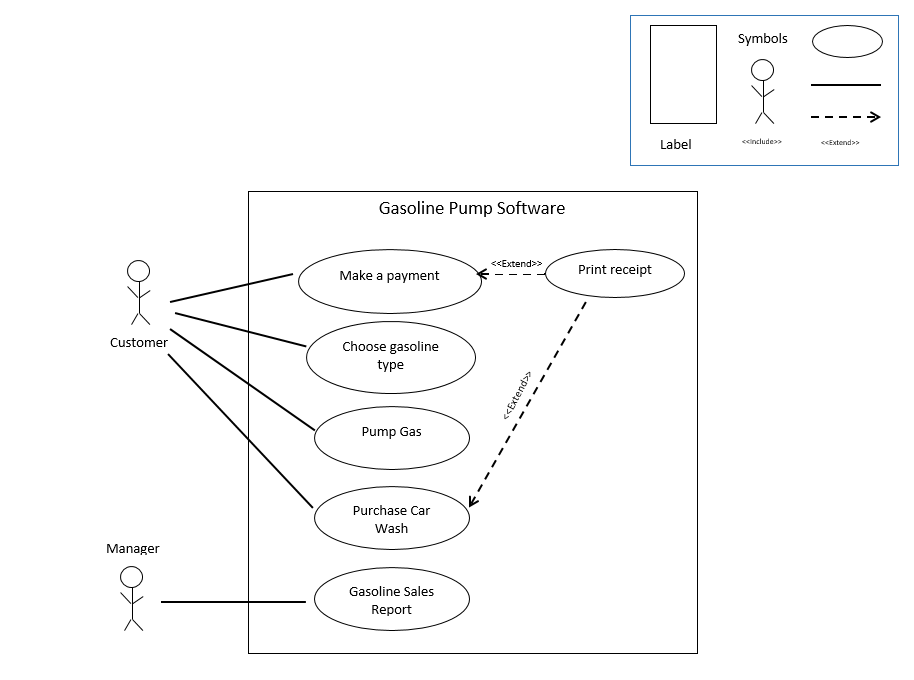
Extend dependency

* Specifies a use case may be extended by the behavior of another

*Ex: A system that has a login. An extended relationship use case could be “Forgot Password”*

**Steps to create a Use Case**

1. Know the system
2. Identify the actors of the system
   * Start with primary actors
3. Define goals of the system and how the actors achieve those goals
   * Start with success paths
   * Move into other paths
4. Build the use case diagram(s)
5. Validate the diagram is intuitive



**Use Case of Gasoline Pump Software**

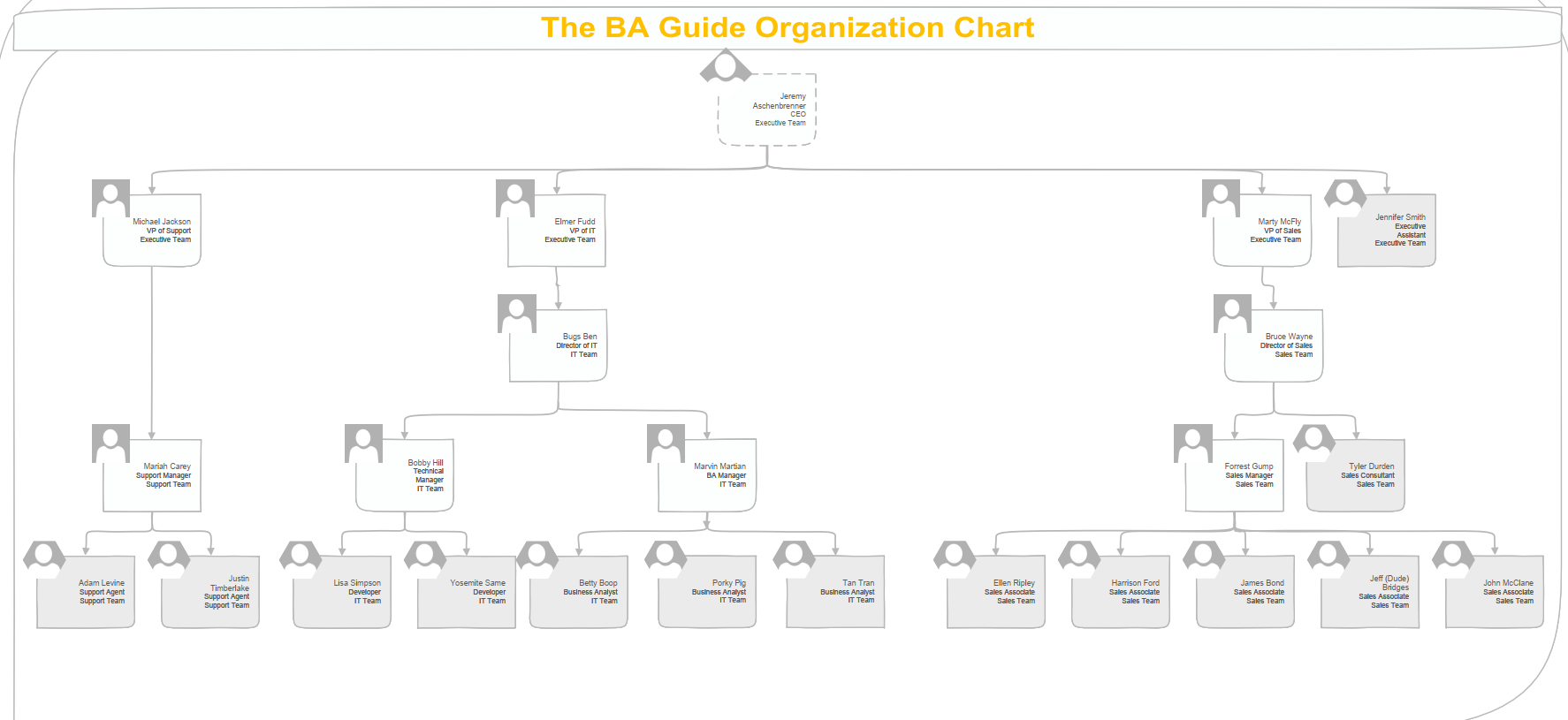
**Lesson 3. Organization Chart**

**Tip:** **Keep it SIMPLE**

2 popular tools used to build the Organization Chart are **Visio** and **Excel**

***Example of Organization Chart***





**Lesson 4. Stakeholder Map & RACI Matrix**

**What is a Stakeholder Map?**

A Stakeholder Map is a visual representation of stakeholders that effected by activities and projects



**What is a stakeholder?**

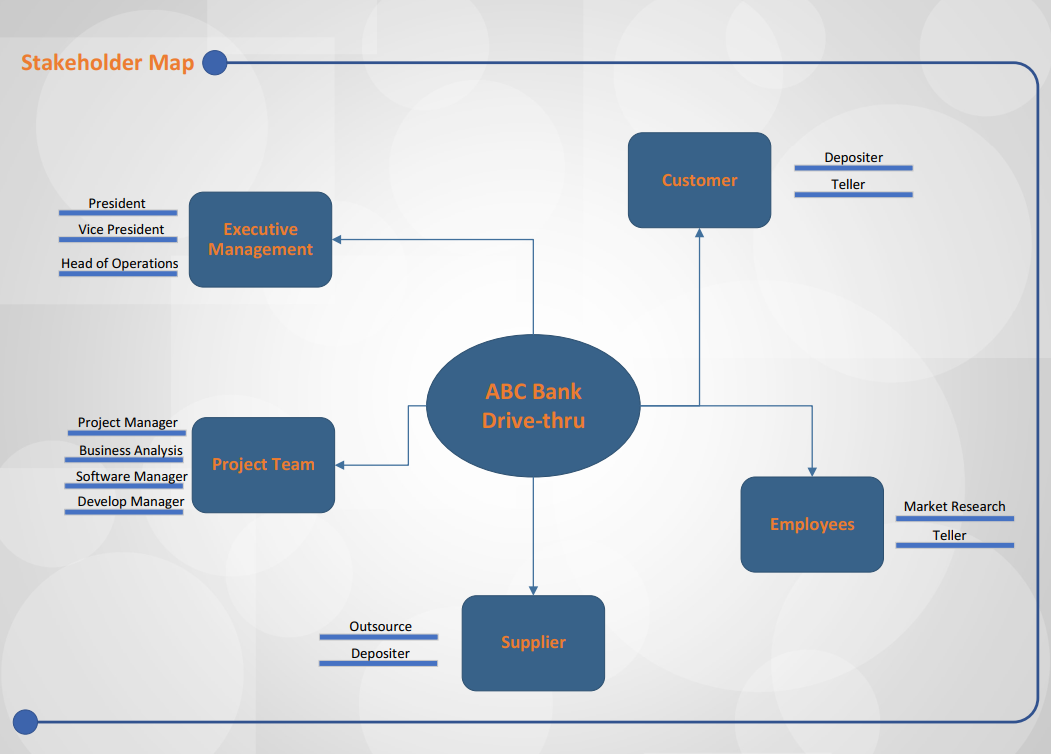
* Project team members
* Customer
* Supplier
* Employees
* City/Community
* Professional organizations
* Any individual impacted by the project
* Any individual to support the project

Why identify stakeholders?

* It increases the chances for success
* Additional ideas
* Varied perspectives
* Gains buy-in
* Increases credibility

How to identify stakeholders to my project?

* Walk through anticipated scope/process
  + Beneficiaries of the effort
  + Directly involved with the beneficiaries of the effort
  + Jobs that may be affected by project or results
  + Government officials
  + Influencers
  + Interest in outcome
* Get ideas from stakeholders as you identify them



**RACI MATRIX**

**Why is it used?**

Critical tool to understand and align the responsibilities of stakeholders.

Alleviates (Decrease) power struggles.

Reduces lack of ownership

Sets clear expectations!

**R** esponsible (Only 1 person/Task)

* Who is/will be doing this task?
* Who is assigned to work on this task?

**A** ccountable (Only 1 person/task)

* Who’s head will roll if this goes wrong?
* Who has the authority to assign off the work?

**C** onsulted (More than 1 person)

* Who can tell me more about this task?
* Who are the Subject Matter Experts?

**I** nformed (More than 1 person)

* Who’s work depends on this task?
* Who has to be kept update about the progress?

**FINAL STEP**

Gain agreement from your stakeholders **before** your project starts

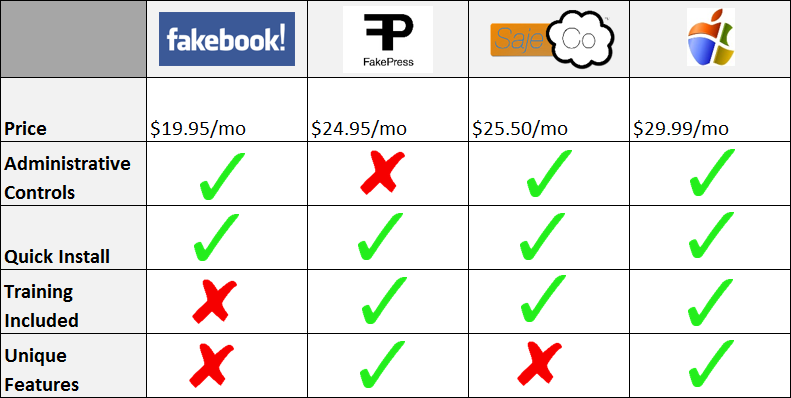
**Lesson 5. Scoring Matrix**

**Scoring Matrix (Competitive Comparison Matrix)**

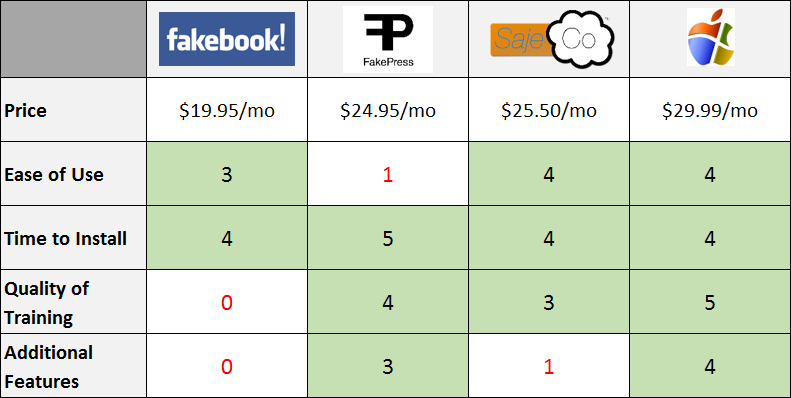
Scoring Matrix is to help make decisions quicker

3 different types of Scoring Matrix:

**Definitive Matrix:** Determining **Yes** or **No**



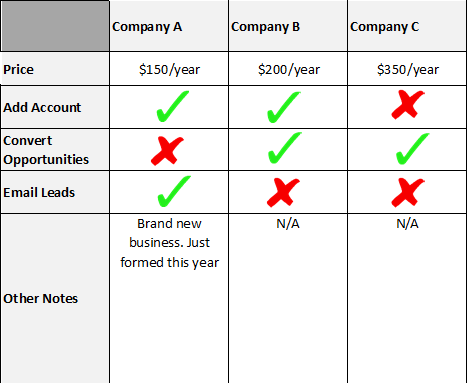
**Rating Matrix**: Use the number base on the range of rate

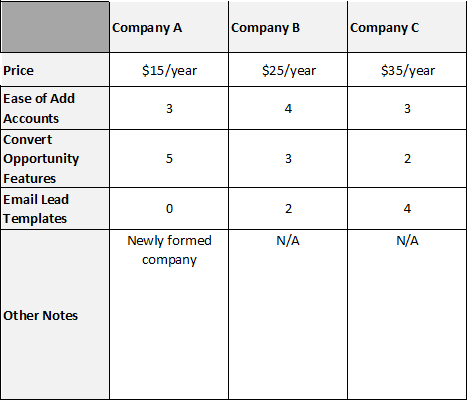


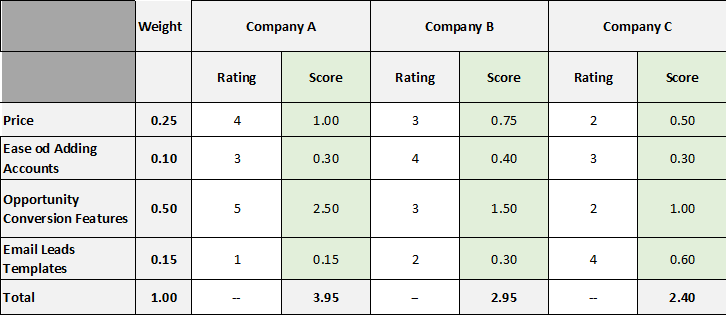
**Weighted Scale**:



***Practice Example***







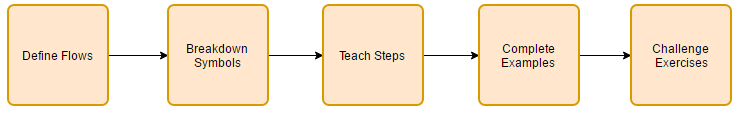
**Steps to Complete**

1. Identify your topic
2. Determine contenders (competitors)
3. Pinpoint your critical success factors
4. Rate/weigh critical success factors
5. Complete the Comparison Matrix utilizing the template

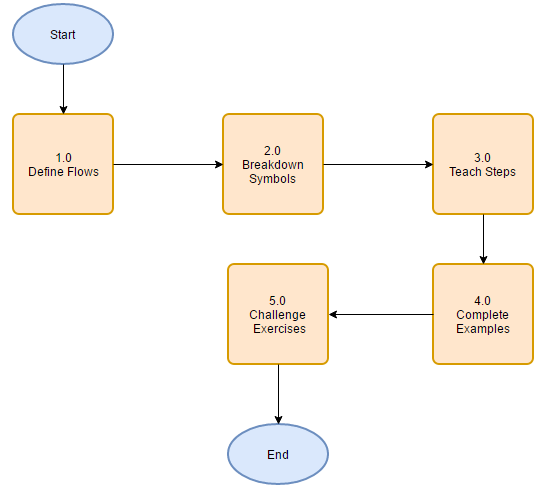
**Lesson 6. Process Flowchart**

**Process Flowchart Defined**

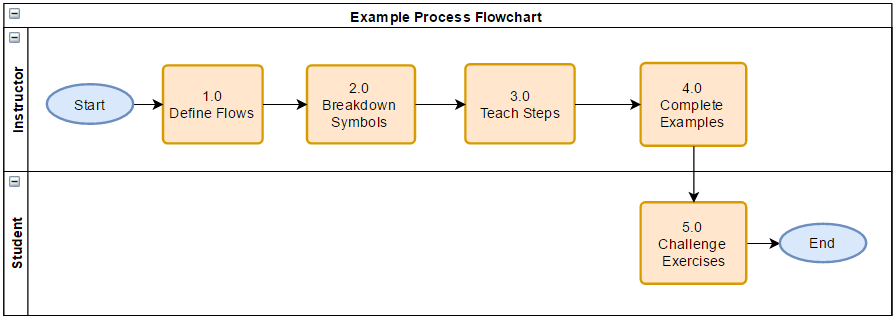
Process Flowchart is a **visual diagram** showing the steps of a process and the sequence they are completed in



Additional Example (**BASIC**)



**SWIMLANE**

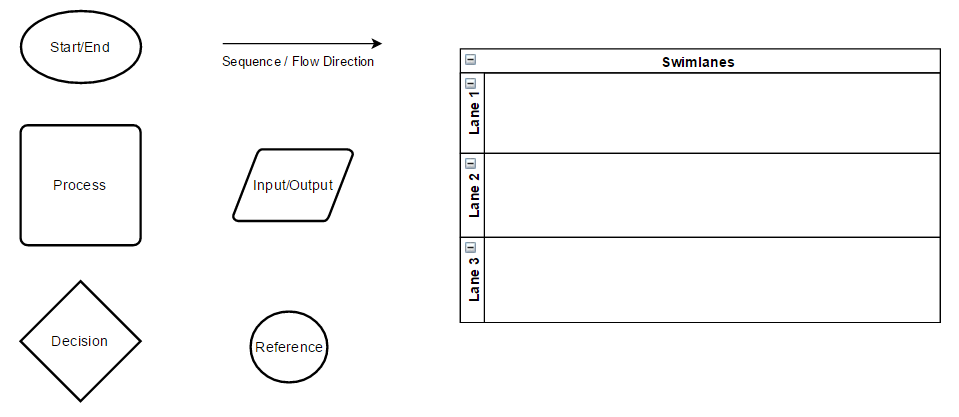


**When is it used?**

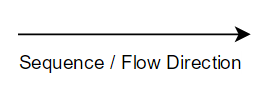
* Develop an **understanding** of how **a process** is done
* Study a process for **improvement**
* **Communicate** to others how a process is done
* Document a process
* **Planning** a project

**#1 RULE: Make the flowchart EASY to read**

**Process Flowchart Symbols**



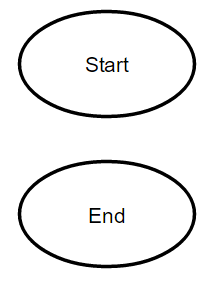
**Symbol: Process Flow**

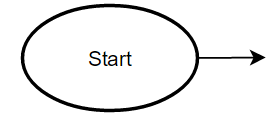
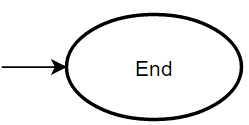


* Represented by a line with an arrow
* Show the direction of the process flow
* Gives sequence of process flow

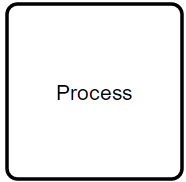
**Symbol: Start / end**

* Represented by an oval
* Generally contain “Start” or “End” text
* **Add clarity** to the start and end of the process (**not require**)
* Only one Start symbol per process
* Can have multiple End symbols if it makes sense
* Start will have one arrow coming out of it
* End will have one (or more) arrows going into it



**Symbol: Process**

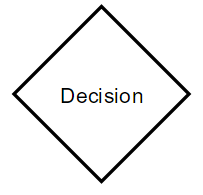


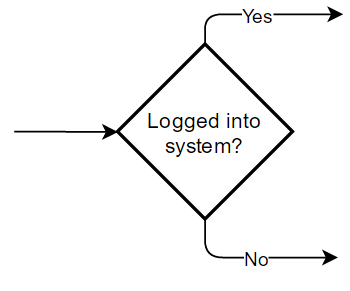
* Represented by a square/rectangle
* Constitutes one step in the process
* Generally one arrow in, one arrow out
* Naming convention is usually two words
  + **Verb** + **Noun**

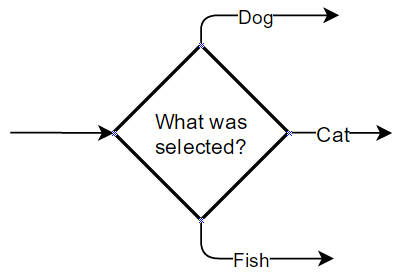
(Ship Product, Teach Class, Run Marathon)

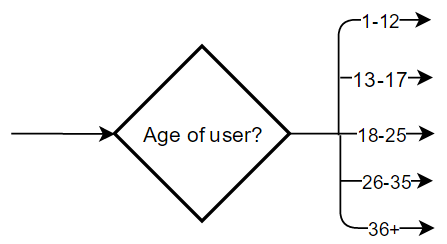
**Symbol: Decision**

* Represented by a diamond
* Text in the symbol shows the question
* Flow is directed based on answer to the question
* One arrow in, two or more arrows out
  + Each arrow out is labeled with a decision choice



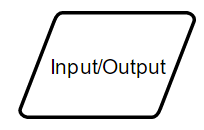






**3 popular types of Decision**

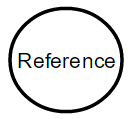
**Symbol: Input / Output**



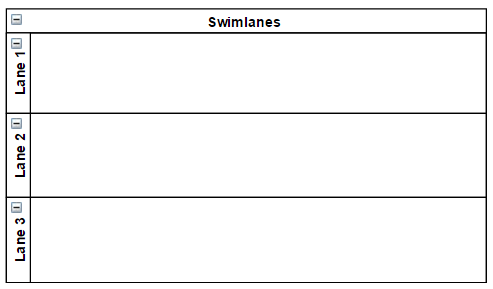
* Represented by a parallelogram
* Constitutes Input or Output in the process flow
  + Input: Receive data, receive email, receiving an order
  + Output: Generate report, sending an email
* Generally one arrow in, one arrow out
* Naming convention is usually two words
  + **Verb** + **Noun** (Receive data, Generate report)

**Symbol: Reference**

* Represented by a circle
* Links to another page or flowchart
* Symbol with same name indicates flow continues there
* Will have one arrow going into it or coming out of it

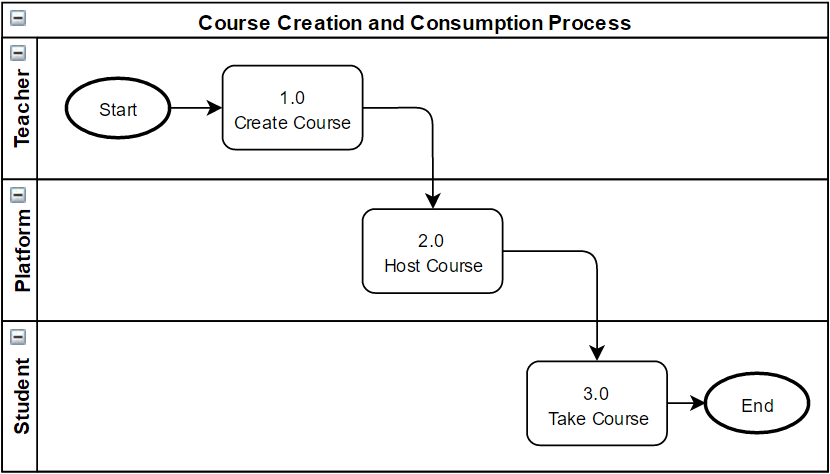


**Symbol: Swimlanes**



* Represented by rectangle divided into pieces
* Used to make **Swimlane Flowchart**
* Contains one or more lanes
* Label of the lane shows the **owner** of the process
* Container for all other process flowchart symbols

***Example of SWIMLANE***



**Suggested Verbs for Process Names**

* acquire
* add
* adjudicate
* assess
* calculate
* cancel
* change
* check
* conduct
* control
* create
* delete
* determine
* identify
* maintain
* manage
* merge
* modify
* obtain
* plan
* query
* record
* receive
* request
* remove
* report
* reject
* review
* roll back
* select
* specify
* submit
* update
* validate
* verify

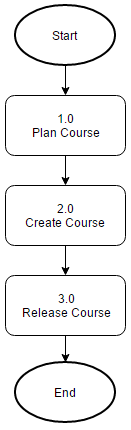
**Flowchart Layer/Levels**

Process Layers:

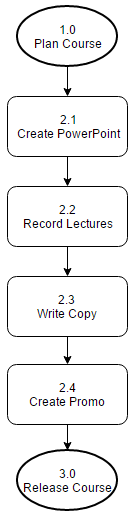
* Each process has several layers
* As you work into the lower layers, items are more detailed
* The layers generally are:
  + Units
  + Tasks
  + Actions
  + Procedures

**Process Layers: Unit**

* Least detailed layer “Ten thousand foot view”
* Depicts highest level of the task
* Provides the best understanding of what   
  makes up the process
* Generally broken up by…
  + Location (corporate office, branch office, field)
  + Type of work (analysis, design, installation)
  + Stages of work (preparing, cooking, serving)
* Process units are labeled with whole numbers
  + 1.0, 2.0, 3.0, etc.



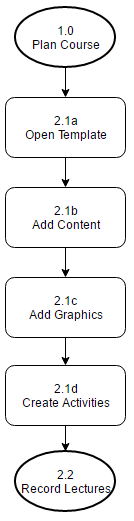
**Process Layers: Tasks**



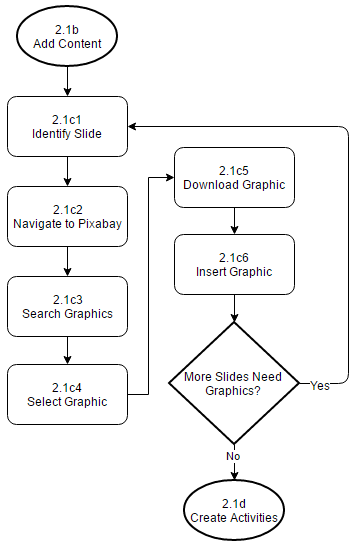
* Each unit can be broken down into tasks
* High level tasks of the process
* Process tasks have same whole number as process unit
  + Increment the tenths spot (2.1, 2.2, 2.3, etc.)
* Links to other process units
  + Shows context of where tasks occur in the full process

**Process Layers: Actions**

* Each task is broken down into actions
* Focuses more on work being performed
* Process actions have same whole number and tenths number as the task
  + Utilize letters after number (2.2a, 2.2b, 2.2c, etc.)
* Links to other process tasks or units
  + Shows context of where actions occur in the full process



**Process Layers: Procedures**



* Each action can be broken down into procedures
* Written description of how each action is performed
* Process procedures have same whole number, tenths number, and letter as the action
  + Increment number after the letters (2.2a1, 2.2a2, 2.2a3, etc.)
* Links to other process tasks, units, or actions
  + Shows context of where procedures occur in the full process

**Business Process Modeling Notation (BPMN) vs Unified Modeling Language (UML)**

**Common Parts**:

**Activity** – Activity within a process, triggered by an event

**Event** – Manual or automated action, or delay in time that triggers an action

**Gateway** – Split of pathways, where multiple paths can be taken or decision on a path must be made per a condition

**Flow** – Direction of the sequence or order of events and actions

**Swimlanes** – Visual distinction of who is doing what within a process

**Steps to create a process flowchart**

1. Understand the **end goal** of the activity
2. Decide on the **scope** of the process
3. **Brainstorm** processes and tasks that take place
4. **Identify the owner** of each process/task
5. **Arrange** into proper sequence
6. **Document** flowchart
7. **Review** with others and make adjustments

**Step 1: Understand the End goal**

* Understand how a process is done
* Document a process
* Improve a process
* Communicate to others how a process is done
* Plan for a project

**Step 2: Determine the Scope**

* Identify the process to focus on
* Define the process boundaries
* Ensure determined scope will meet the end goal

**Step 3: Brainstorm the Process**

* Determine the process at the unit layer
* Break each unit down into tasks, actions, and/or procedures as necessary based on scope determined
* Brainstorm with the users, not management
* Management will tell you how it **should** be done, while users will tell you how it is **actually** being done
* Use labeled sticky notes on wall or whiteboard for units, tasks, actions, and procedures
* Can move to different layers & adjust sequencing easily
* Take pictures of the end result for documentation

**Step 4: Identify the Owners**

* Work through each unit, task, action, and procedure and determine the owner
* Cross-check with users to validate determined ownership

**Step 5: Arrange into Sequence**

* Put each step in the proper sequence
* Gain an understanding of the larger picture
* Be mindful of scope
* If process receives input from a process not part of scope, just label it to show where input is coming from, but don’t go into detail of other process

**Step 6: Document into a Flowchart**

* Take notes and pictures and create process flowchart
* Can use several pieces of software
* Microsoft Excel
* Microsoft Visio
* Draw.io
* …

**Step 7: Review and Finalize**

* Send finalized flowchart out to engaged users
* Ensure everyone agrees on items, sequence, and owners
* Make adjustments as necessary
* Double check your flowcharts
* Spelling/grammar
* Naming conventions
* Numbering conventions
* Arrows connecting all symbols
* All decision symbol flows have labels
* Validate the flowchart is easy to read and understand

**Lesson 7. User Stories**

**What is a User Story?**

A one or two sentence description, written from the viewpoint of the actor, describing what function is needed.

Describes an activity the user should be able to do.

***Example:***

*As a customer, I want to be able to purchase Udemy courses with a credit card, so it is convenient.*

*As a sales manager, I should be able to run reports at anytime, so I can make adjustments to improve our sales numbers.*

**User Story Structure**

**1**

As an **<actor>**,

I want to be able to **<function>**,

so that I can **<business reason>**

**2**

As an **<actor>**,

I should be able to **<function>**,

so that I can **<business reason>**

***Pre-Example***:

*As a* ***customer****,   
I want to be able to* ***purchase Udemy courses with a credit card****,   
so that I can* ***purchase courses conveniently****.*

*As a* ***sales manager****,*

*I should be able to* ***run reports at anytime****,*

*so that I can* ***make adjustments to improve our sales numbers****.*

**Key to a Good User Story**

**I**: Independent - each story should stand alone  
  
**N**: Negotiable - keep the stories nimble until just before implementation  
  
**V**: Valuable - define features and function that provide value to the business  
  
**E**: Estimatable – clear enough to enable a validate estimate  
  
**S**: Small – small enough to be implemented in a single iteration  
  
**T**: Testable – independently verifiable

**Other User Story Examples**

As a **sales rep**, I should be able to **search for my customers by first and last name**, so that I can **access their details**.

As a **truck driver**, I want to be able to **have turn-by-turn navigation in my cab**, so that I can **get directions to my destination**.

As a **customer**, I want to be able to **reset my password via the internet**, so that I can **reset it without having call into the customer service line**.

As a **Human Resources professional**, I want to be able to **attach digital resumes to candidate profiles**, so that I can **access those resumes conveniently**.