

Project Business Analysis

PMG 461 – MGM 461

Lecture 7

Business Modeling

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In Previous Lectures



Business Analysts elicit requirements from stakeholders using various qualitative and quantitative techniques.



Business analysts contribute to identifying and engaging stakeholders.



Business analyst captures Different stakeholders views in Business Activity Models



Requirements are engineered through elicitation, analysis, documentation, validation, and requirements management.



It is important to plan for business analysis plan and work plan before starting the analysis



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What we will cover

1. Business Models Overview
2. Scope Models
3. Process Models
4. Rule Models
5. Data Models

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Business Models Overview



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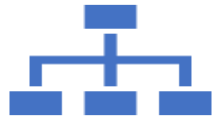
Definition of a Model

- A model is a visual representation of information that operates under a set of rules to efficiently arrange and convey a lot of information in a concise manner.
- Business analysis model is a structured representation of information.
- Models can be in the form of diagrams, tables, or structured text.
- Created with a variety of tools from formal modeling software to whiteboards or artistic software.
- There are many business analysis models serving different purposes.

Purpose of Models

- Provide context to better understand information.
- Facilitate analysis of information through visualization and summarization.
- Help convey information clearly.
- Help find gaps or missing information.
- To identify irrelevant information.

Categories of Models (1 / 3)



Scope Models

Models that structure and organize the features, functions, and boundaries

Examples:

- Goal and Business objectives model
- Ecosystem map
- Context diagrams
- Feature Model
- Organization Charts
- Use Case Diagram
- Fishbone Diagram
- SWOT Diagram



Process Models

Models that describe business processes and ways in which stakeholders interact with those processes.

Examples:

- Process Flow
- Use Case
- User Story

Categories of Models (2 / 3)



Rule Models

Models of concepts and behaviors that define or constrain aspects of a business in order to enforce established business policies

Examples:

- Business rules catalog
- Decision Tree
- Decision Table.



Data Models

Models that document the data used in a process or system and its lifecycle

Examples:

- Entity relationship diagram
- Data flow diagram
- Data dictionary
- State table
- State diagram

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Categories of Models (3 / 3)



Interface Models

Models that assist in **understanding** specific systems and their relationships within a solution

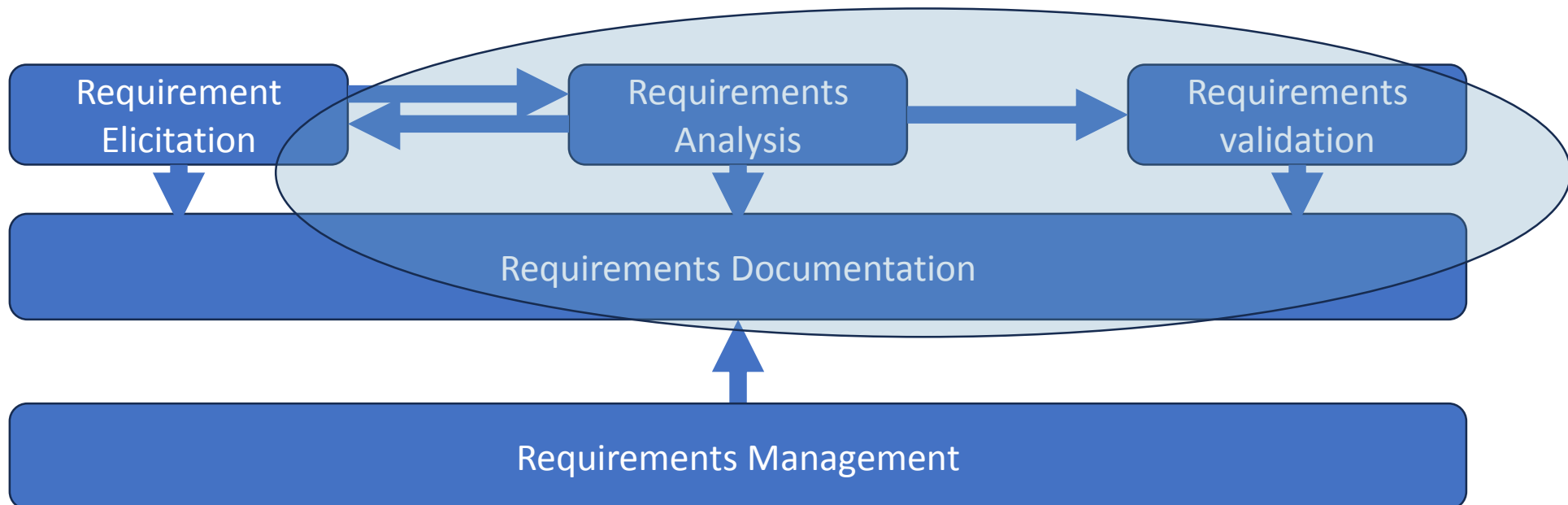
Examples:

- Report table
- System interface table
- User Interface flow
- Wireframes
- Display-Action-Response

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- Business Modeling is performed within Requirements Analysis and Documentation.
- Business Models are validated in Requirements Validation.



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Selection of Models

- There may be multiple valid model choices.
- We can use more than one type of Model.
- Models should be prioritized based on applicability.
- Several factors to consider when choosing which model to use.

Methodology

- Traditional or Agile

Characteristics

- nature, scope, and complexity of project

Timing

- early phases or late phases of requirements management

Categories of Models

- better to cover more than one category or even all in some projects.

Level of Abstraction

- level of details needed

Examples

Agile project → user stories rather than use cases

Analytics project → data models, data dictionary, and data tables

System migration project → ecosystem map or context diagram,
data dictionary, and business rules catalog.

Examples

Early in a project (High-level Analysis) → ecosystem map, context diagram, and data dictionary

Later in a project (Detailed level Analysis) → state models, decision models, and user interface models

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Scope Models

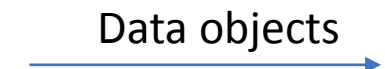
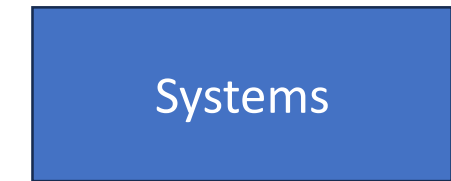


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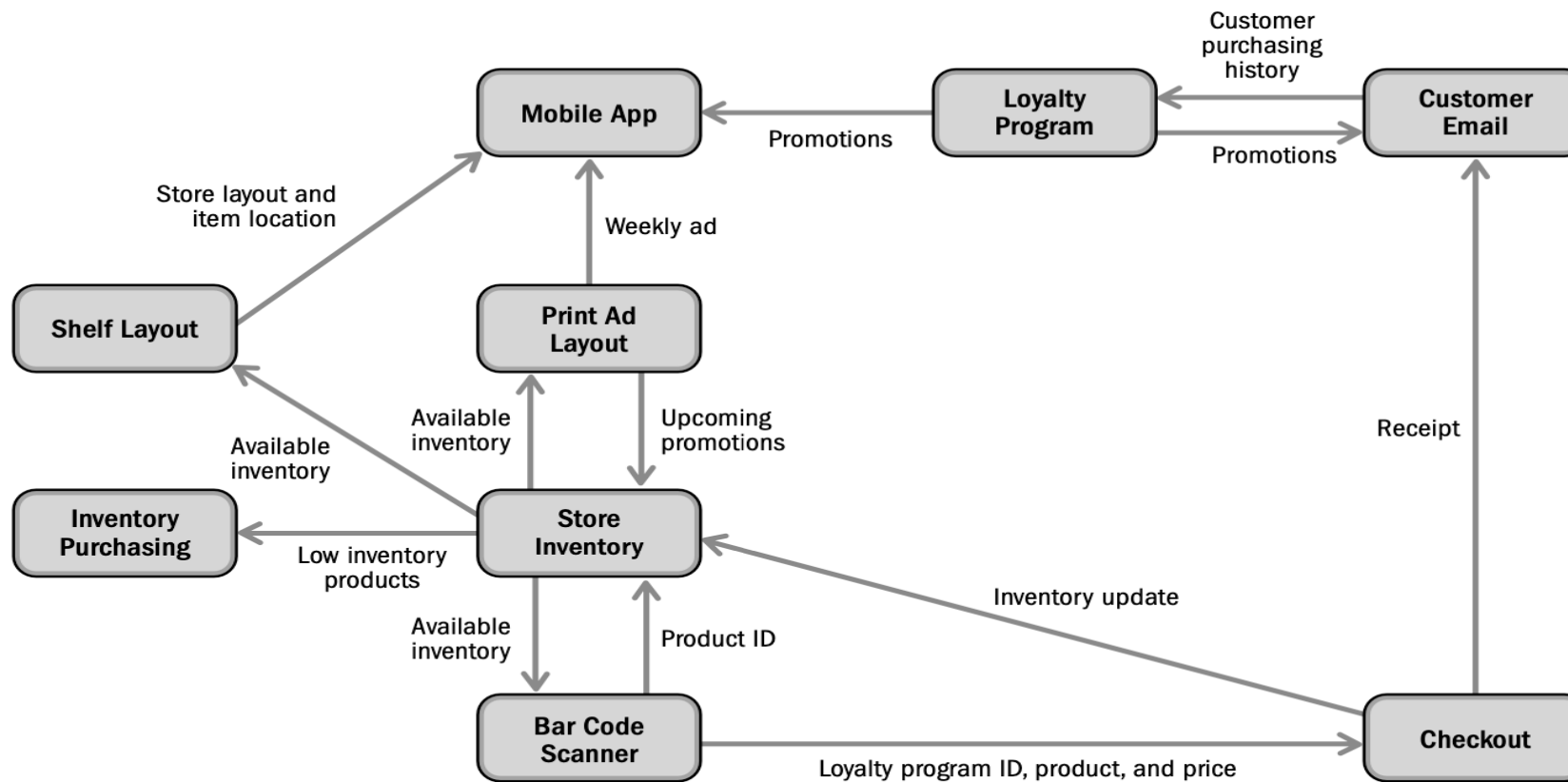
Ecosystem Map

- A diagram that shows all relevant systems, relationships between them, and any data objects passed between them.
- Made up of boxes representing the systems and lines depicting the relationships, labels identify data objects.
- Shows all in scope systems that passes or consumes data.
- Used to understand all systems that are affected by the in-scope systems and shows interface requirements.



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Ecosystem Map Sample

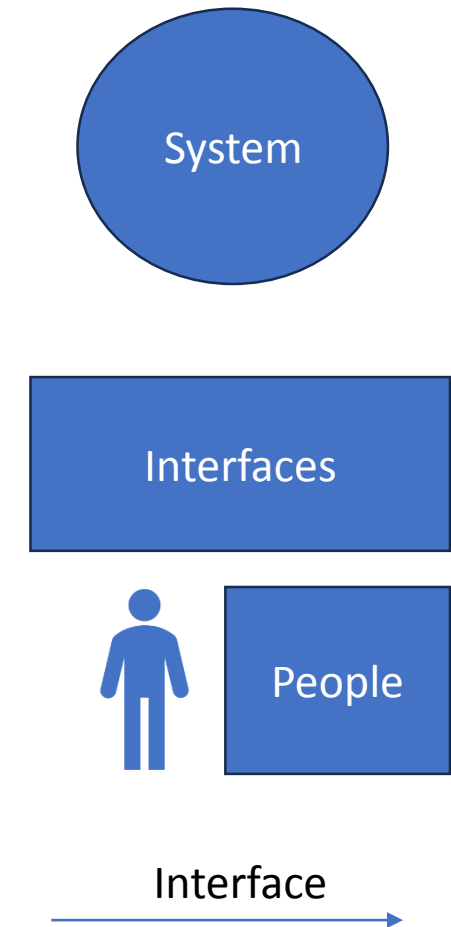


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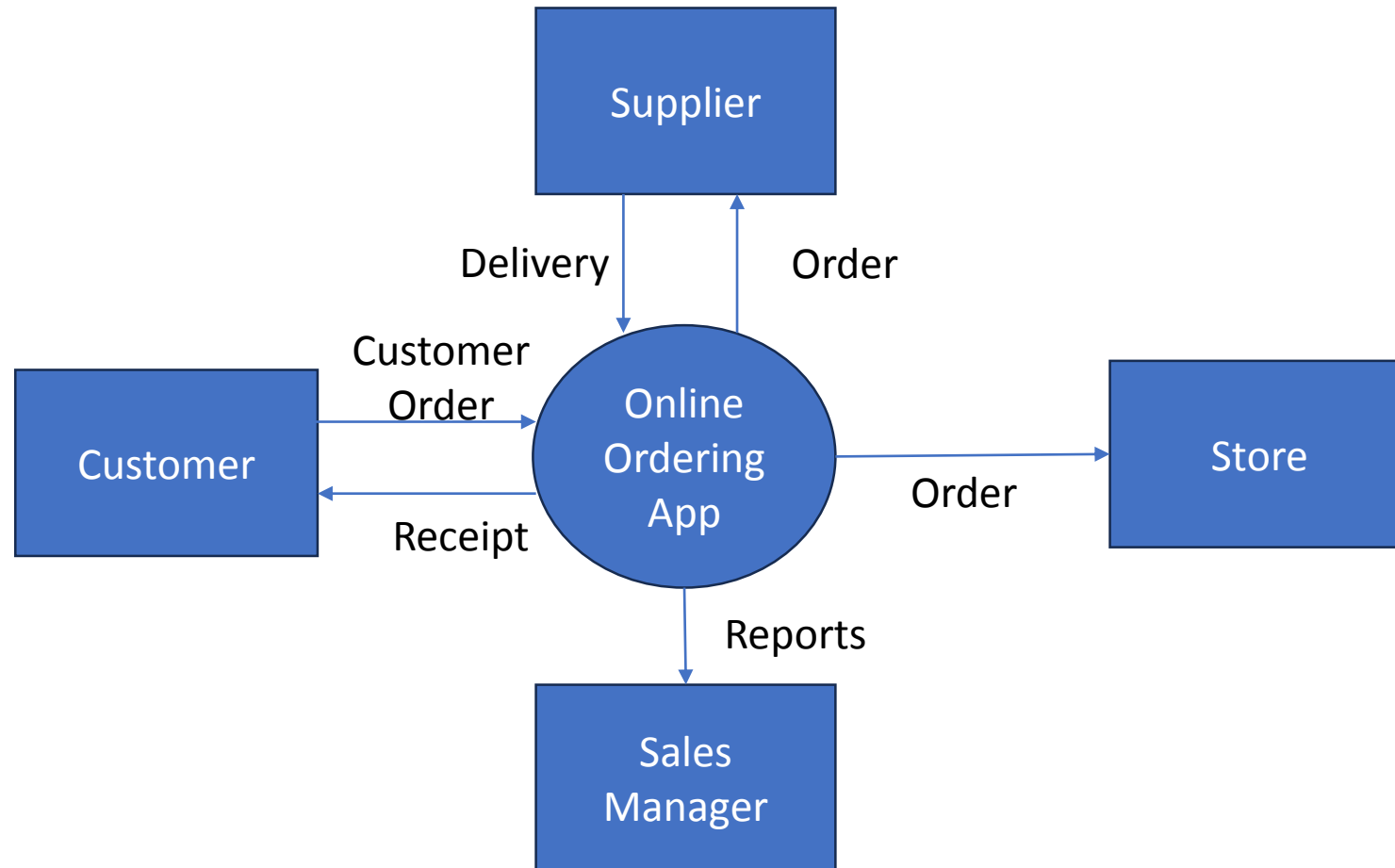
Context Diagrams

- Shows all direct and human interfaces to systems within a solution.
- System is represented as a circle in the middle, interfaces as boxes. Human actors as people shapes or boxes, lines to show actual interface and data passed.
- Called LEVEL 0 of a data flow diagram which digs deeper in details.
- Used early in a project to specify the scope and interfaces.
- Shows external touch points between the system and the other systems or people,
- Helpful in determining where an interface is needed.
- Easy to build and understand the as-is and to-be systems.



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Context Diagram Sample Online Ordering Application

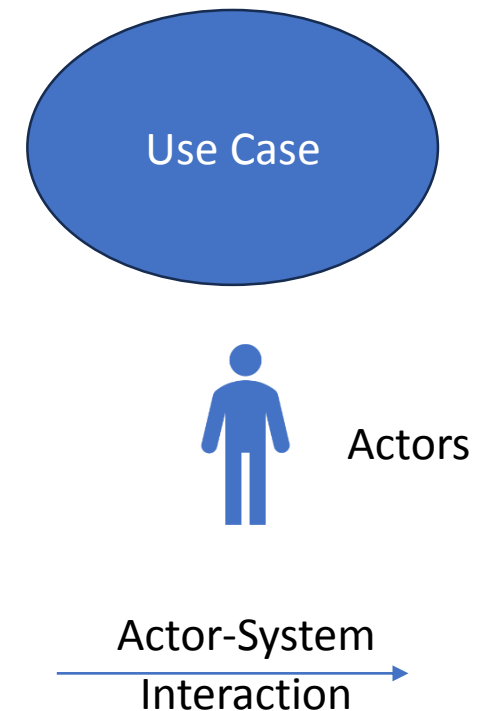


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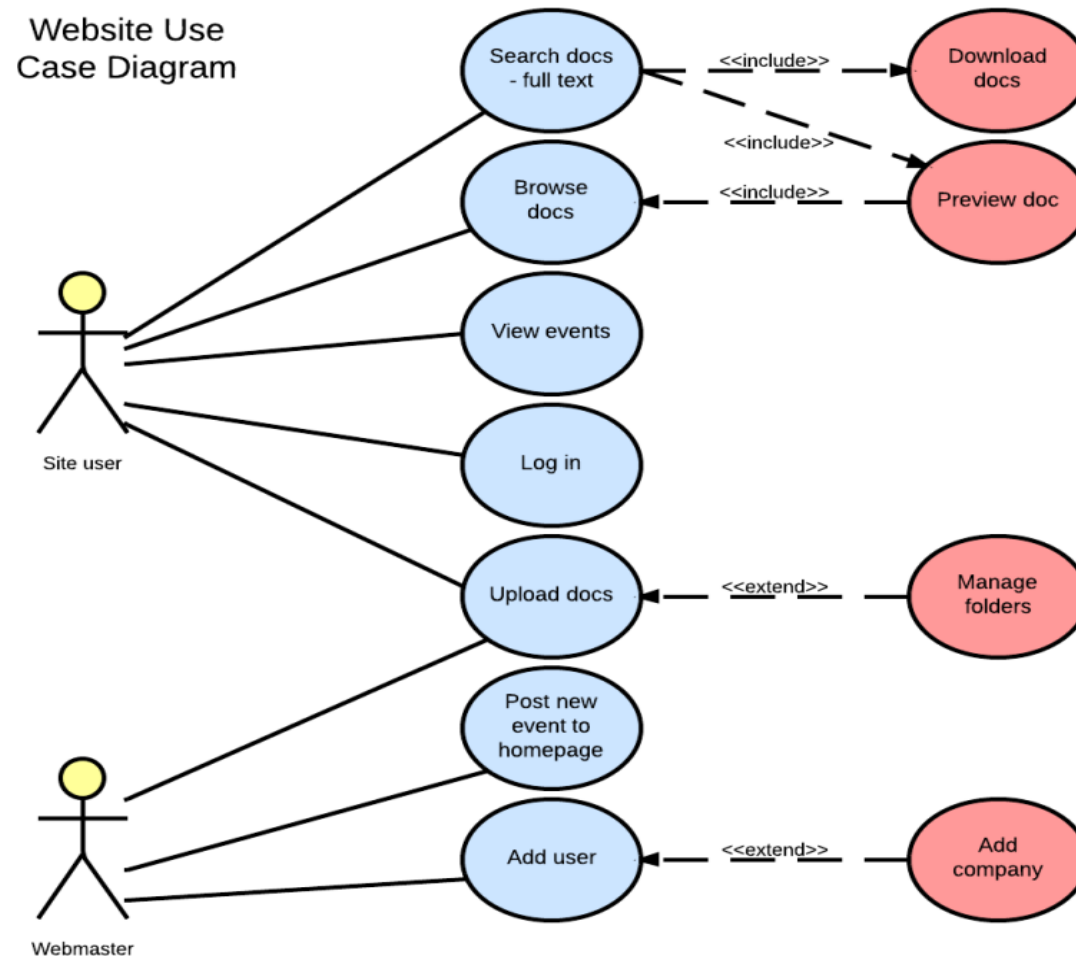
Use Case Diagram

- Shows all of the in-scope use cases for a system.
- Use case is represented by an oval, actors as stick figures, lines for actor-system interaction, and human interfaces to systems within a solution.
- Used to summarize the scope of a solution, highlighting main features.
- Shows stakeholders who directly interact with the system, and interfaces needed.
- Indicates out of scope to manage stakeholder expectations.
- Helpful in planning and tracking progress in building a solution as it summarizes scope of features.
- it does not show requirements, but helps to organize requirements in a requirements document.



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Use Case Diagram Sample



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Process Models

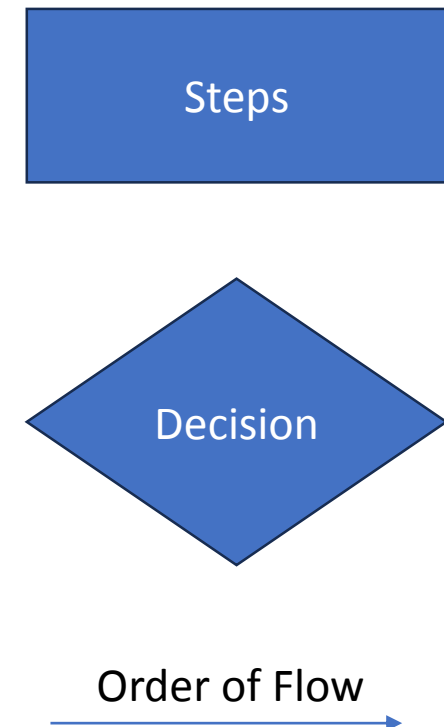


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Process Flow Diagram

- Also called, process maps, process flow charts, process diagrams, or swimlane diagrams
- Describes steps that people or system make.
- Steps are represented as boxes, decision logic as diamond, arrows represent order of flow, swimlanes groups steps performed by a person or group.
- Used to model both As-Is and To-Be processes.
- Valuable in most types of projects whenever there are people performing tasks.
- Helps in facilitating conversations with stakeholders during elicitation
- Used to identify missing features or requirements
- Shows flow of work to provide context and order.

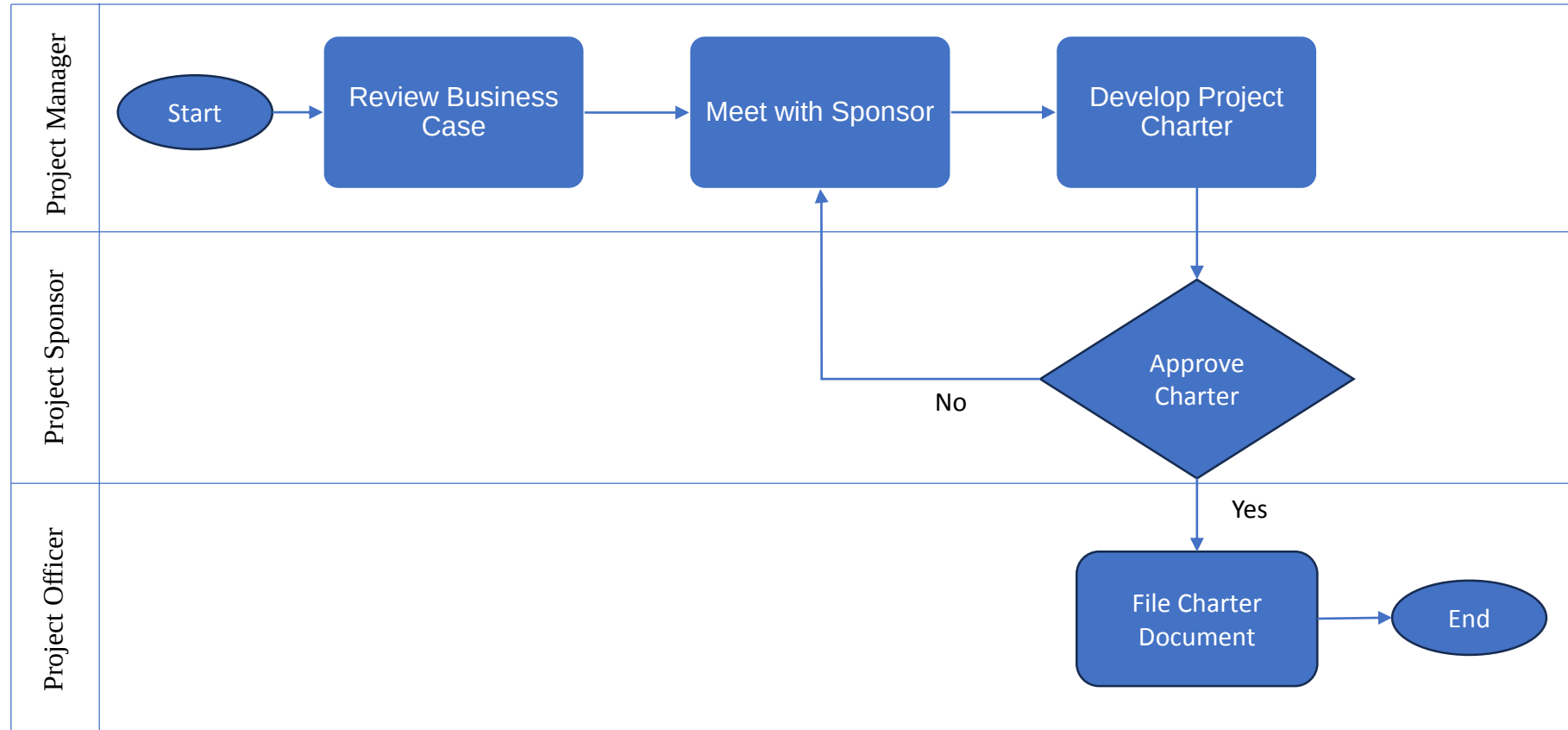


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Process Flow Diagram Sample

Develop project charter

Swimlanes



Use Cases

- Describe a set of scenarios, and is a set of activities, actions, and reactions that take the primary actor from initiation to completion of the goal.
- Are text based, usually presented in a tabular format.
- Represent functional requirements of a system and cannot be used for non-functional requirements (as how fast the product should work).
- Used in complex interactions, and in elicitation sessions to discover and describe interactions
- Helpful in creating tests.

Common Fields

Name

Description

Actors

Benefit

Trigger

Flow or steps

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Use Cases Sample

ID	Name	Description	Actors	Benefits	Trigger	Flow
A01	Find Recipe Items	A daily email with the featured recipe is sent to customers who have opted-in to the program. The customer opens the Recipe Box application directly on their iOS or Android device. The customer can choose a past recipe or use the current one. With a recipe chosen, the customer chooses a store or uses a store already indicated a "My Store." A map of the store is displayed with an overlay showing the locations of the items for the recipe.	User	Customer visits store to make purchases related to the recipe which are high-margin cooking items.	Customer clicks on link in email on mobile device or directly opens application	1. System shows short description of the daily recipe 2. Customer selects current recipe or chooses a past recipe 3. Customer chooses to use their local store ("My Store") 4. System displays map of the store with the recipe items overlaid as icons 5. Customers can select icons to see item aisle and shelf location

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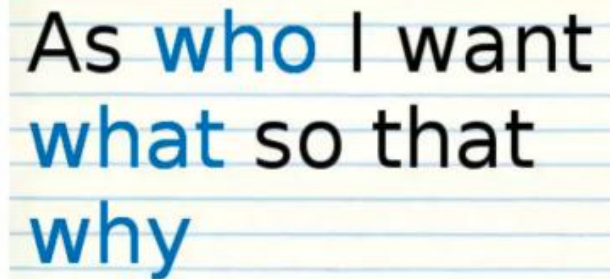
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User Stories

- A statement *written* from the point of view of the user, and describes the functionality needed in a solution.
- Typically used in Agile methodology.
- Follows the format of:

As a <Actor>, I want to be able to <function>, so that I can <business reason>.

- Acceptance criteria for each user story is included.
- Big user stories (called Epics) are broken down into user stories.
- Focus on user, easy for stakeholders to engage with.
- Epics and user stories form functional grouping of requirements.
- User stories are prioritized and can be traced to releases.



As who I want
what so that
why

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User Stories Sample

User Story

As a potential customer

I want to read book reviews

So that I can decide which one to buy

Front →

As a user, I want to be able to cancel my reservation at anytime so that I do not lose all the money if an incident occurs.

Back

- The product owner's conditions of satisfaction can be added to a story
- These are essentially tests

- ☐ Verify that a premium member can cancel the same day without a fee.
- ☐ Verify that a non-premium member is charged 10% for a same-day cancellation.
- ☐ Verify that an email confirmation is sent.
- ☐ Verify that the hotel is notified of any cancellation.

As a credit card holder, I want to view my statement balance, so that I can pay the balance due

- Display statement balance upon authentication
- Display Total Balance
- Show "Payment Due Date" and "Minimum Payment Due"
- Display Error message if service not responding/ timeout

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Rule Models



Business Rules Catalogue

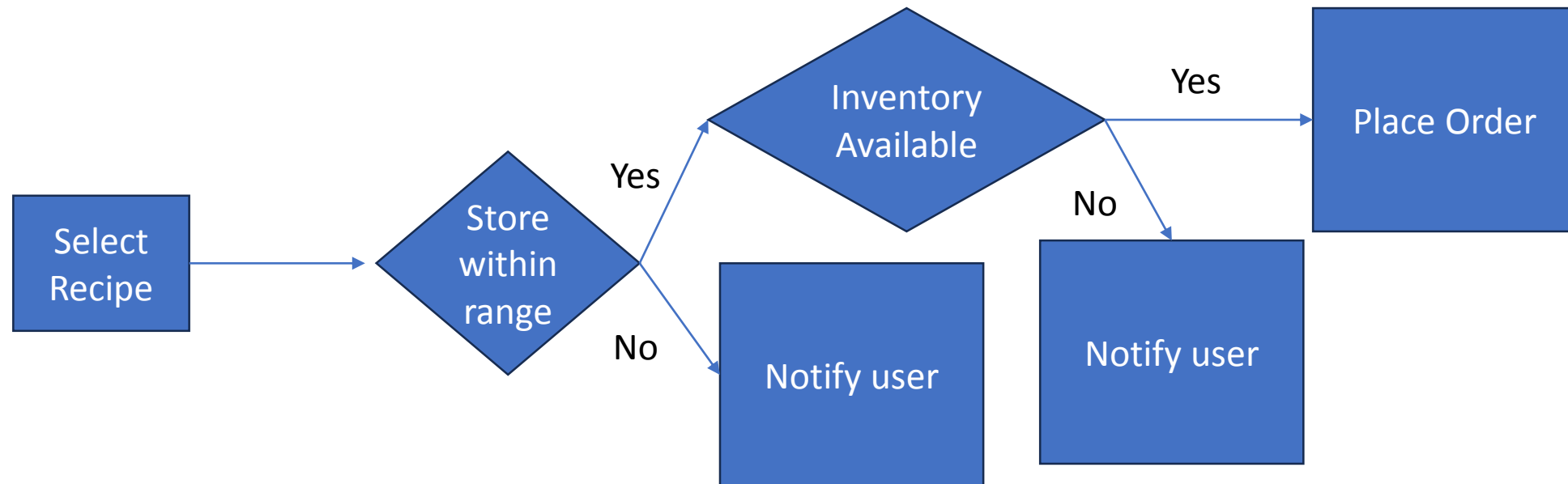
- A table of business rules and related attributes.
- Business rules are not processes, but apply across processes, and describe rules, policies, and constraints.
- Rules need to be correct, verifiable, and consistent.

ID	Title	Description	Type	Reference
BR01	Recipe email opt-in	Recipe emails will only be sent to customers who have opted-in and have a valid e-mail address	Constraint	See corporate email policy

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Decision Trees

- Represent a series of decisions and their outcomes in a tree of decision points where each branch represent the outcomes of a decision.
- Decision points are represented as diamond, outcomes are shown in boxes.
- Decision trees work best with binary choices (yes or no).



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Decision Tables

- Represent a series of decisions and their outcomes.
- Use a tabular format where upper row represents decision points and the other rows represent outcomes.
- Used to model complex decision logic
- Help to identify ways to reduce complex logic and ensure all possible combinations are considered.

Decision Table	Rule 1	Rule 2	Rule 3	Rule 4
Condition: Stores within preference Range	N	Y	Y	Y
Condition: Inventory available	-	Y	N	N
Outcome: Notify User	X	-	-	-
Outcome: Notify User of Lack of Inventory	-	X	-	-

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Data Models



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Entity Relationship Diagrams

- Entity Relationship diagrams (ERD), also called business data Diagrams, shows business data objects or pieces of information in a project and the relationship between them.
- Business data objects represent people, places, things and concepts.
- Business data objects are shown as boxed, relationships as line, and cardinality as labels on lines.
- Used in projects that has data management components.
- Attributes are specified in a data dictionary.

Business Data
object

Relationship →

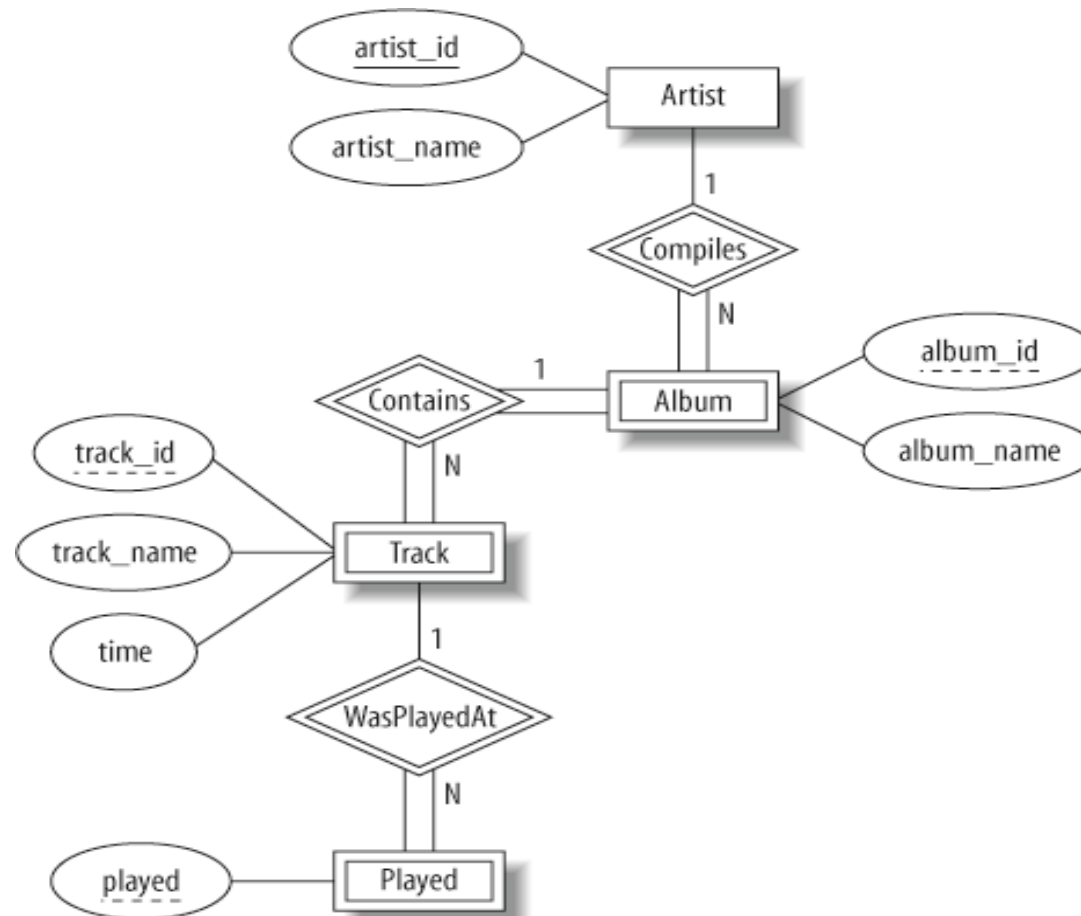
Optional One	—○+
Optional Many	—○←
Mandatory One	— +
Mandatory Many	— ←

Key

1	Single cardinality
0...n	None up to many cardinality
0...1	None or single cardinality
1...n	Single up to many cardinality
—	Relationship
□	Business data object

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Entity Relationship Diagram Sample



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Data Flow Diagrams

- Illustrates relationships between systems, actors, and the data that is exchanged over one or more processes.
- Can be used after Entity Relationship Diagrams, process flows, and ecosystem maps.
- Data stores (parallel lines) show where information is conceptually stored, process steps (circles) indicate functions using the data, and entities (boxes) create or consume data.
- Used to describe movement of data between actors, systems.
- Identify data inputs and outputs of processes.
- DFD do not specify timing or sequence.

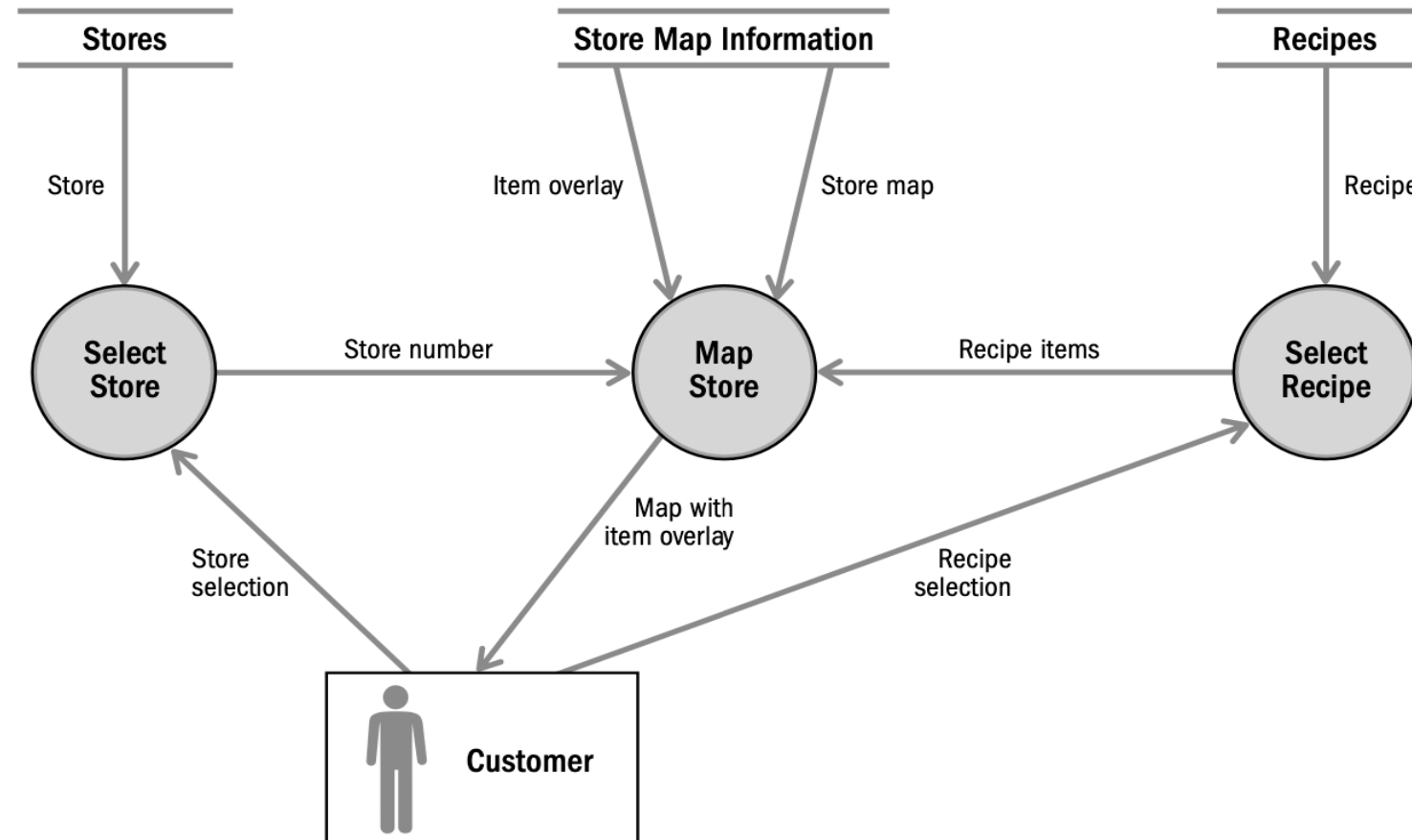
Data Store

Process
Steps

Entities

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Data Flow Diagram Sample



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Data Dictionary

- A tabular format that shows data fields and attributes of these fields.

ID	Business Data object	Field Name	Description	Unique Value	Data Type	Length	Valid values
R01	Recipe	Recipe Text	Recipe in formatted layout	Yes	Alphanumeric	<200 characters	Structured Text

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Key Points

- Models are a visual representation of information and efficiently arrange and convey a lot of information in a concise manner.
- Typically in a project, more than model is used, depending on need, methodology, characteristics, timing, and level of detail.
- Models are categorized as scope, process, data, rules, and interface models.
- Models are done in requirements analysis and documentation, and validated in requirements validation.
- Business analysts should know various types of models and be able to apply them

For Discussion Panel:

Questions:

- Which tools have you used and in which types of projects?
- How do these tools helped you in defining and analyzing requirements?

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**For Discussion Panel and
Next Lecture**



Thank You