

Domain Modelling

CSIT883 System Analysis and Project Management



UNIVERSITY
OF WOLLONGONG
AUSTRALIA



Outline

Problem Domain and Things

The Brainstorming Technique

The Noun Technique

Classes, Attributions and Associations

Domain Model Class Diagram

This video



Problem Domain and Things

- **Problem domain** — the specific area (or domain) of the users' business need that is within the scope of an information system.
- **Things** are those items users work with when accomplishing tasks. They need to be remembered by the system in this process.
- Examples of Things are products, sales, shippers, customers, invoices, payments, etc.
- These Things are modeled as domain classes (in system analysis) or data entities (in database design)



A Short Case

Recall that Waiters on Call has been working with Sam Wells on the requirements for its meal-delivery system. Sue and Tom Bickford want a new system that will automate and improve their specialty business of providing customer-ordered, home-delivered meals prepared by a variety of local restaurants. Sam did a great job of identifying the use cases required for the delivery service, which impressed the Bickfords. And while working on the use cases, he continued to note all the business terms and concepts that the Bickfords used as they described their operations. He followed up with questions about the types of things they work with each day, which they answered.

“Based on what you’ve told me,” Sam said, “I assume you will need the system to store information about the following types of things, which we call data entities or domain classes: restaurants, menu items, customers, and orders. I also think you’re

going to need to store information about the following types of things: drivers, addresses, routes, and order payments.”

The Bickfords readily agreed and added that it was important to know what route a restaurant was on and how far it might be to the customer’s address. They wanted drivers to be assigned to a route based on the distances from place to place.

“Yes, we need to decide how things need to be associated in the system,” Sam agreed. “Can you tell me if drivers pick up orders from several restaurants when they go out? Can you tell me how many items are usually included in one order? Do you note pickup times and delivery times? Do you need to plan the route so that hot dishes are delivered first?”

The Bickfords were further reassured that they had picked an analyst who was aware of the needs of their business.



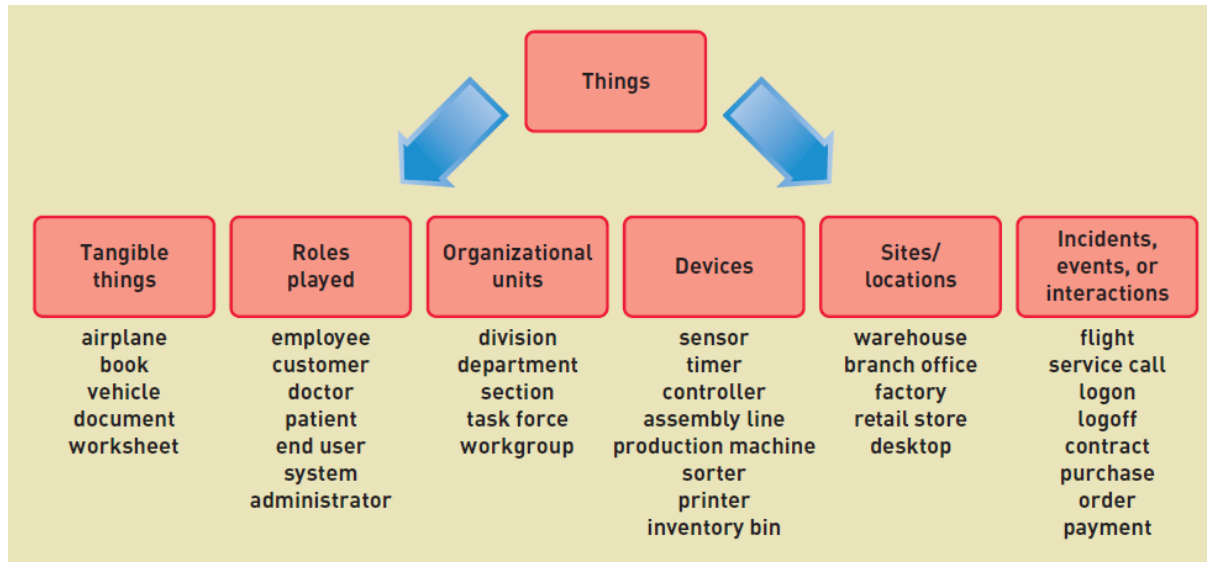
Identifying Things in the Problem Domain

- **Two main techniques:** the brainstorm technique and the noun technique
- **Brainstorming Technique**
 - Use a checklist of all of the usual types of things typically found and brainstorm to identify domain classes of each type



Brainstorming Technique

- Are there any tangible things? Are there any organizational units? Sites/locations? Are there incidents or events that need to be recorded?





Brainstorming Technique: Steps

1. Identify a user and a set of use cases
2. Brainstorm with the user to identify things involved when carrying out the use case—that is, things about which information should be captured by the system.
3. Use the types of things (categories) to systematically ask questions about potential things, such as the following:
 - Are there any tangible things you store information about? Are there any locations involved? Are there roles played by people that you need to remember?
4. Continue to work with all types of users and stakeholders to expand the brainstorming list
5. Merge the results, eliminate any duplicates, and compile an initial list



Identifying Things in the Problem Domain

- **Noun Technique**

- Identify all of the nouns that come up when the system is described and determine if each is a domain class, an attribute, or not something we need to remember
- A technique to identify problem **domain classes** by finding, classifying, and refining a list of nouns that come up in discussions or documents
- Popular technique, systematic.
- Does end up with long lists and many nouns that are not things that need to be stored by the system
- Difficulty in identifying synonyms and things that are really attributes
- Good place to start when there are no users available to help brainstorm



An example of
noun list
produced by the
Noun Technique
(for the RMO
CSMS system)

Identified noun	Notes on including noun as a thing to store
Accounting	We know who they are. No need to store it.
Back order	A special type of order? Or a value of order status? Research.
Back-order information	An output that can be produced from other information.
Bank	Only one of them. No need to store.
Catalog	Yes, need to recall them, for different seasons and years. Include.
Catalog activity reports	An output that can be produced from other information. Not stored.
Catalog details	Same as catalog? Or the same as product items in the catalog? Research.
Change request	An input resulting in remembering changes to an order.
Charge adjustment	An input resulting in a transaction.
Color	One piece of information about a product item.
Confirmation	An output produced from other information. Not stored.
Credit card information	Part of an order? Or part of customer information? Research.
Customer	Yes, a key thing with lots of details required. Include.
Customer account	Possibly required if an RMO payment plan is included. Research.
Fulfillment reports	An output produced from information about shipments. Not stored.
Inventory quantity	One piece of information about a product item. Research.
Management	We know who they are. No need to store.
Marketing	We know who they are. No need to store.
Merchandising	We know who they are. No need to store.



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Noun Technique: Steps

1. Using the use cases, actors, and other information about the system—including inputs and outputs—identify all nouns.
2. Using other information from existing systems, current procedures, and current reports or forms, add items or categories of information needed.
3. As this list of nouns builds, refine it. Ask these questions about each noun to help you decide whether you should include it:
 - Is it a unique thing the system needs to know about?
 - Is it inside the scope of the system I am working on?
 - Does the system need to remember more than one of these items?



Noun Technique: Steps

4. Ask these questions to decide to exclude it:
 - Is it really a synonym for some other thing I have identified?
 - Is it really just an output of the system produced from other information I have identified?
 - Is it really just an input that results in recording some other information I have identified?
5. Ask these questions to research it:
 - Is it likely to be a specific piece of information (attribute) about some other thing I have identified?
 - Is it something I might need if assumptions change?



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5. Ask these questions to research it:
 - Is it likely to be a specific piece of information (attribute) about some other thing I have identified?
 - Is it something I might need if assumptions change?
6. Create a master list of all nouns identified and then note whether each one should be included, excluded, or researched further.
7. Review the list with users, stakeholders, and team members and then define the list of things in the problem domain.