Brief Introduction to Domain Modeling

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January 2009

Definition and Purpose

A domain is an area of interest, for example education, healthcare, manufacturing, banking etc. A domain model is a conceptual model containing the concepts of importance to a certain domain as well as the relationships between these concepts. The domain model is a high level logical view of information requirements and structure. It covers all aspects of the operation, across all business units and activities. As such, it represents information that will be shared across the enterprise and which is necessary for the group to carry on normal operations, monitor performance and make strategic decisions.

The domain model is at a fairly high level of abstraction and should not be confused with database models or schemas, which will be at a much greater level of detail. The domain model is not concerned with the way in which data or information is physically held or processed. It may include concepts and data which are not currently computerised or stored electronically. It will include other data that may reside in a variety of physical databases or file systems under the control of various application systems, possibly distributed across several technical environments or geographic locations. It can include concepts that are not currently held explicitly, e.g. data about market conditions, competitors etc.

The primary uses of the domain model include:

- To serve as a consistent logical model and a shared glossary of terminology so that when business and I.T. personnel use nouns in describing requirements, processes, rules or other things, that they are understood in the same way
- To provide a concise and accessible overview of the data and information of interest and concern to the organization – a "map of the forest" - which can support a variety of other activities, including:
  - Mapping ownership of data to responsible parties for enhanced data management
  - Identifying the current state of the data to plan migration and increased electronic storage and availability
  - To support the definition of a sound information security policy
  - To identify retention, archival and privacy concerns surrounding different categories of data
  - To validate I.T. Understanding of the business domain and its concepts, thus enhancing communication between the business and I.T.
  - To facilitate identification of which data is managed within which applications and technical environments, thereby improving migration, integration and synchronisation planning
  - To plan for different types of information (e.g. transactional/structured, master data, textual data (e-mail, documents), graphical information (e.g. Scanned documents), multimedia and the growth expected in these
  - To assist with the scoping of projects and initiatives

- To serve as a starting point for more detailed analysis at the project or data warehouse levels
- Provides a vocabulary for unambiguous discussion, documentation and specification of functional and process requirements, as well as business rules and policies. In this role the domain model performs the same function as a “business ontology”.

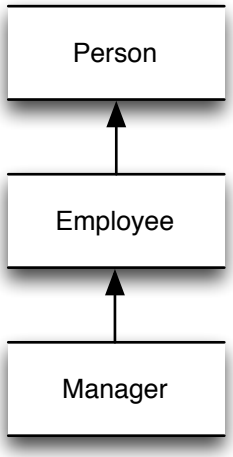
Notation

The notation used for the domain model is derived from a technique published by Inspired, which is, in turn, derived from the industry standard notation for the Unified Modeling Language (UML). Some enhancing concepts are derived from the work of James Odell. A brief explanation follows:

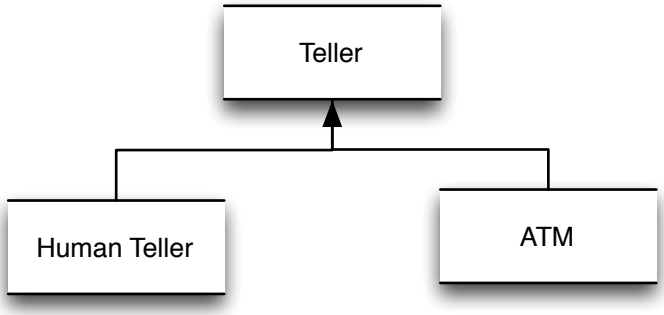
Each unique concept (business object) is placed in a rectangle and uniquely named with a singular noun

Relationships between concepts are shown as lines with the following adornments

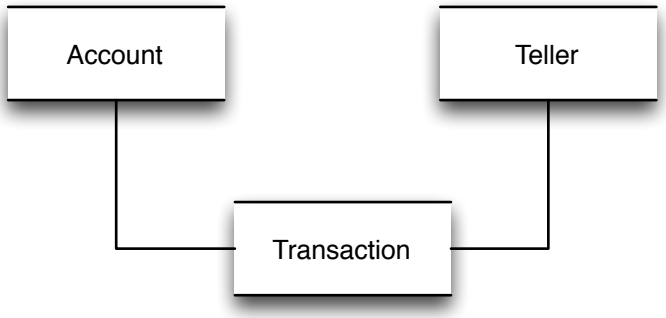
- An arrow indicates that one concept is a subtype of another i.e. It is a more specialised *kind of* the other concept



- Where there are multiple subtypes and the arrows are joined into a single head, this indicates that the subtypes are discreet – i.e. A thing can be only one of the subtypes:

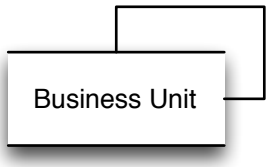


- A simple line indicates that one concept is related to or references another.



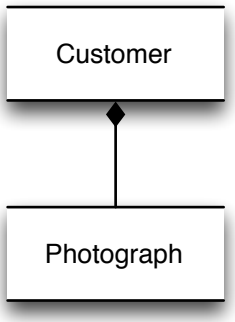
  Sometimes these lines will be enhanced with a description of the relationship or ratios to indicate how many of one item type can be related to the other.

- It is also possible to find this kind of relationship from a concept to itself. This generally indicates that items of this type can have a hierarchical or dependency relationship to items of the same type e.g.

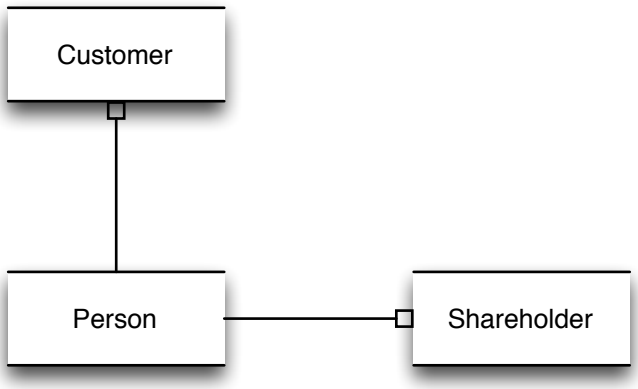


  Note that a relationship shown to a parent item (supertype pointed to by a *kind of* relationship arrow) is assumed to apply to (be inherited by) all the subtypes of that parent item. This saves a lot of links on the diagram and can simplify it greatly

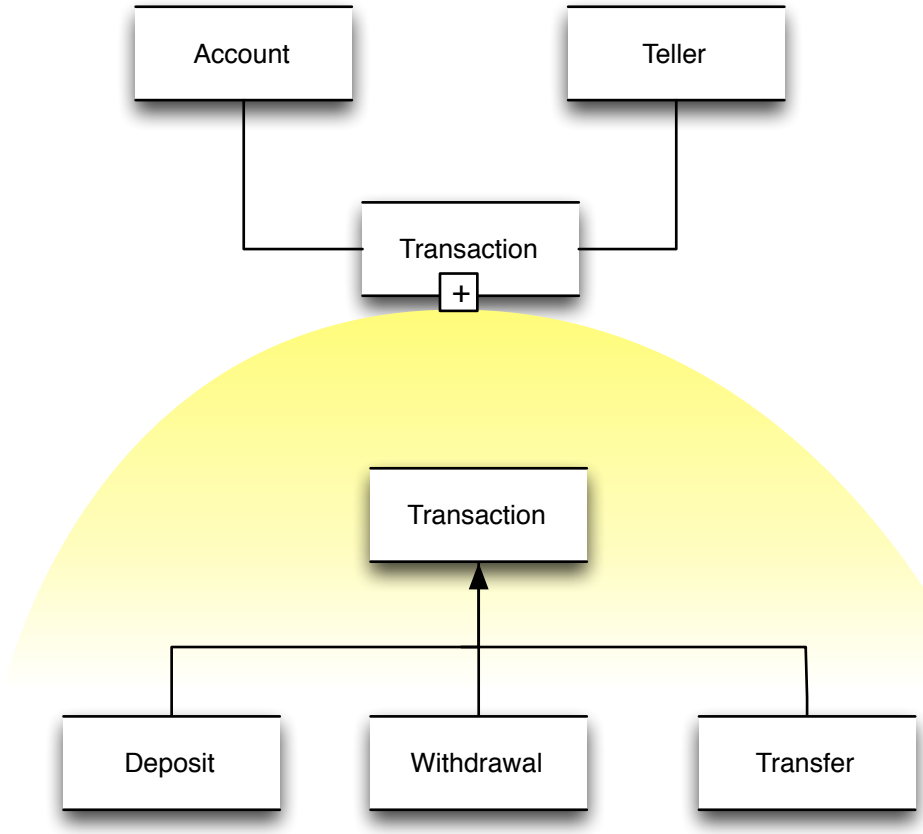
- A line beginning with a diamond shape indicates that one concept is regarded as being *part of* or *contained* within another. The second item would have no meaning (in this model) outside the given context. There is a weak form (open diamond) and a strong form (filled diamond). It is not necessary for now to make the fine distinction between these



- A line beginning with a square indicates that one concept is a *role* of another. See example below. This means that the same object could play several roles simultaneously.



- To keep the size and complexity of each model reasonable, it is useful to sometimes decompose concepts on a separate sub-model. Where this is done, it is indicated on the summary model by showing a + symbol. Where the models are held in a tool, selecting this will expand the concept to the lower level model. If they are on paper, a + indicates that a sub-model exists on a separate sheet. Different levels may be designated by a number, with 0 being the topmost model



Additional Information

- Further information about the business objects can be recorded in tabular or matrix form. This is often referred to as meta data – data describing data. Management of meta data allows organisations to manage data better, just as human resources systems and databases allow better management of personnel and other aspects of the business.

Typical information might include:

- Description
- Business Owner
- User community
- Where stored
- How stored
- Business Processes/Applications using this object type
- Degree of accuracy (current/ required)
- Criticality
- Volumes
- Object Size (how big is one record?)
- Growth
- Kept for duration
- Type (simple, complex, multimedia)
- Security / Privacy Requirements

- While useful matrices would include:
  - Business Objects versus Application Systems use
  - Business Objects versus physical storage used (database, file, paper...)
  - Business Objects versus information type
  - Business Objects versus owners
  - Business Objects versus security level
  - etc.

Example

Here is a somewhat larger example for a fragment of a banking environment: