

# NAMING CONVENTIONS IN ARCHITECTURE MODELING

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# MEANINGFUL NAMING IN ARCHITECTURE MODELING



Peter has worked with modeling standards and techniques throughout his 20 years in IT, in a career that has covered software development, solutions architecture and international consulting.

Peter's particular areas of interest are opportunities arising from interdisciplinary touchpoints, how to balance practicality and rigor when modeling, and the importance of viewpoints in addressing different stakeholder perspectives.

*I've been asked for best practices on naming conventions (nomenclature) for modeling elements in several initiatives, but it turns out that there's very little work that exists on the subject. The ArchiMate specification does at least have some suggestions (e.g., "The name of an application function should preferably be a verb ending with '-ing'; e.g., 'accounting' "), but even these are rather high-level.*

*Now, establishing a naming convention is something that most architects can make a decent stab at – but it makes sense to ask if there are any best practices that exist. In this paper I look at relevant literature on naming, and derive some best practices and recommendations for naming conventions in shared architecture modeling.*

*The assumption is that the models in question are in some kind of repository-based tool, such as Orbus Software's iServer.*

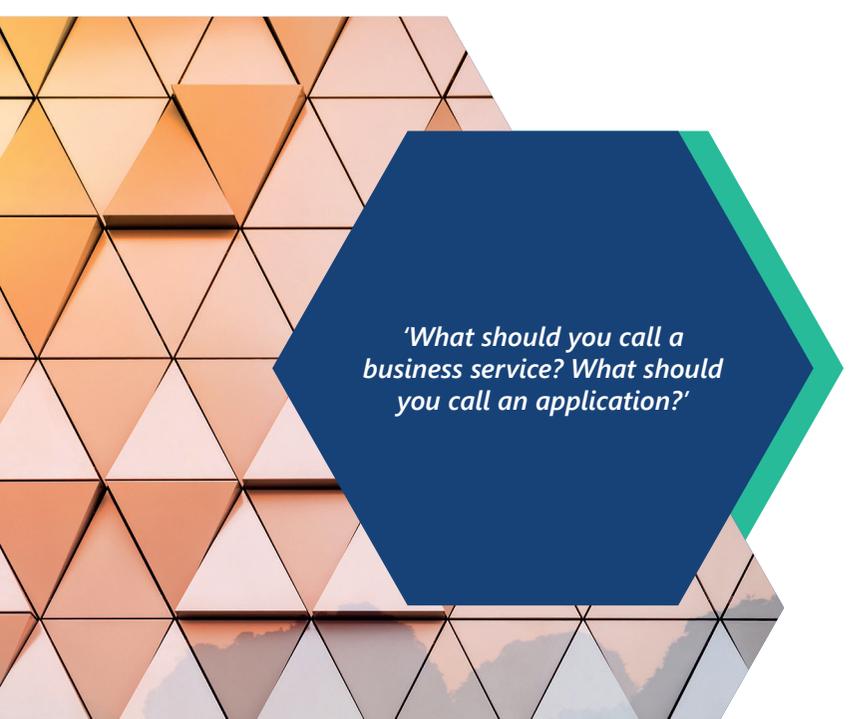
*'In this paper I look at relevant literature on naming, and derive some best practices and recommendations for naming conventions in shared architecture modeling.'*

## THE NEED FOR NAMING CONVENTIONS IN SHARED MODELS

Models are a way for people to understand a complex situation, and to communicate it. They are good for achieving this purpose. However, one of the decisions that any effort to establish a shared modeling effort faces is that of naming conventions – what should you call a business service? What should you call an application?

Now, it's possible to create models without any kind of naming convention whatsoever. This is true whether the models are standalone, or in a shared repository, but in both cases doing so runs into the same pitfall – one of miscommunication.

Here's an example...



*'What should you call a business service? What should you call an application?'*

Several years ago I worked on an SAP project where, as always, the first step was to define the processes. The process maps were defined without any naming conventions, which is why the procurement system had many different names in different places - "Ariba", "eTrax", "Ariba Procurement", "eTrax Procurement System", and so on. The problem with this was that the outside consultants from a big 4 consultancy had no way of knowing that these were the same system – and the subject matter experts from the different areas with their different names for the same piece of software had no way of knowing that others were using a different name (until the issue was identified, much later on, at the design stage). Confusion was the result, which cost the project time and money.

A second issue is in finding whether a given item exists, to be able to reuse it, examine its properties, and report on it – any of the activities that a modeling tool enables. To use the example above, if you search on 'Ariba' and the element in question is called 'eTrax', then you won't find it. Naming conventions enable you to search on the terms that will find the information that you need. A third issue is ensuring that one item is enabling analysis. An argument for adopting modeling tools is to facilitate things such as impact analysis; but if an item is called different things in different places, most tools will treat it as a different item – making model-wide analytics all but impossible.

So, naming conventions are indispensable activity in modeling complex situations, especially in a multi-person environment (which is the majority of cases).

# THE STATE OF ART

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The natural instinct when diving into an unfamiliar area should always be to check if others have addressed the same problem before, or even done work that could be reused for this problem.

The topic of naming conventions, or nomenclature, is tied in with several topics:

- Controlled Vocabularies
- Translation
- Ontologies
- Metamodels

Not all of these have relevance to solving our immediate problem – nor are they meant to. After a review of the literature in this space, there are two main sources that offer help in naming our modeling elements.

Controlled vocabularies are discussed in ANSI/NISO Z39.19-2005, from the National Information Standards Organization – “Guidelines for the Construction, Format and Management of Monolingual Controlled Vocabularies”. In particular, I will reference chapter 6 – Term Choice, Scope and Form.

The second standard that offers us help is ISO 704 – “Terminology work – Principles and methods”, which provides guidelines for use by ISO committees in defining ISO standards. This actually includes a section on formation of terms and appellations. A related standard is ISO 860, which talks about mechanisms to harmonize existing terms and naming.

To enable full use of these sources, we need to briefly survey the core language that they use. Those familiar with work such as SVBR (Semantics of Business Vocabulary and Business Rules), from the OMG, will recognize these.

- **Object** – an object is “anything perceived or conceived”. We can map this to an item being modeled for our discussion
- **Concept** – a concept is a grouping of objects; either a specific concept, which represents an object, or a generic concept, which represents a class of object
- **Term** – a term is a designation consisting of one or more words representing a concept
- **Appellation** – an appellation is a term, which is a unique term designated to an individual concept

So, to use the language of the field, we are looking for best practices in forming our appellations. This is explicitly confirmed by the ISO standard – “A nomenclature comprises appellations compiled in classified order according to pre-established naming rules”.

There is one other insight that occurs from the existing literature. That is that concepts are generally hierarchical. That is, it is possible to group them together. The general way to do this is by identifying the core characteristics

# GUIDELINES

Reviewing ISO 704 and NISO Z39, we can identify the following principles for naming our modeling elements (drawn from sections 7.4 and 6 of the two documents respectively)

- **Clarity** – a given name should make it possible to infer what it represents. In our example earlier, “Ariba Procurement” is better than “Ariba”, as it makes it obvious that this is a procurement system.
- **Consistency** – names should keep the same format whenever possible.
- **Everyday language** – consider how wording could be misinterpreted. The ISO standard notes that ‘install wizard’ is a noun but looks like an imperative. However, in this particular example, the phrase is commonly used in manuals, giving it literary warrant.
- **Economy** – a given name should be as short as possible. This enables display in lists and is doubly important for modeling elements that are displayed graphically. This tends to conflict with the transparency requirement; a balance needs to be found.
- **Extensibility** – use words that can be derived and compounded over those that cannot.



*‘Consider how wording could be misinterpreted’*

- **Use compound terms, not qualifiers** – e.g. “Financial Reporting” reads more naturally than “Reporting (Finance)”.
- **Avoid using initial articles such as ‘the’ unless this is part of a legally recognized name** – e.g. “TheFacebook”, back before it became “Facebook”.
- **If different spellings are possible, use the most widely adopted one** – e.g. Romania rather than Roumania.

## SOURCES OF NAMING

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ANSI/NISO Z39.19-2005 identifies three sources (called warrant) of terms that you can use:

- **Literary Warrant** – the terms used in the literature of the field
- **Organizational Warrant** – the terms used in the organization
- **User Warrant** – the terms commonly used by the community that uses the information

What this means in naming items is that we should look to one of the following:

- Published literature such as reference models
- Common practices in the organization
- The habits of the modeling team themselves or accepted industry practice

These are the sources that we will look at in deriving our example naming convention.

## CONCLUSIONS

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- Naming conventions exist to remove ambiguity in describing concepts; this enables indexing and retrieval of information, both individually and in bulk (i.e., reporting).
- Naming conventions need to support hierarchies of information; this supports navigation and reporting.
- When struggling to derive groupings and hierarchies, identify core characteristics of the elements and group according to these characteristics. The further up in the hierarchy, the fewer characteristics in common.
- Naming conventions can be derived from three sources: existing literature, existing organizational policy and common usage.
- The principles of good naming are; Clarity, Consistency, Everyday language, Economy; Extensibility; Use compound terms, not qualifiers; Avoid initial articles; Use the most widely adopted spelling of words.

# REFERENCES

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ANSI/NISO Z39.19-2005 - Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies

Controlled Vocabulary and Thesaurus Design Trainees Manual – Library of Congress

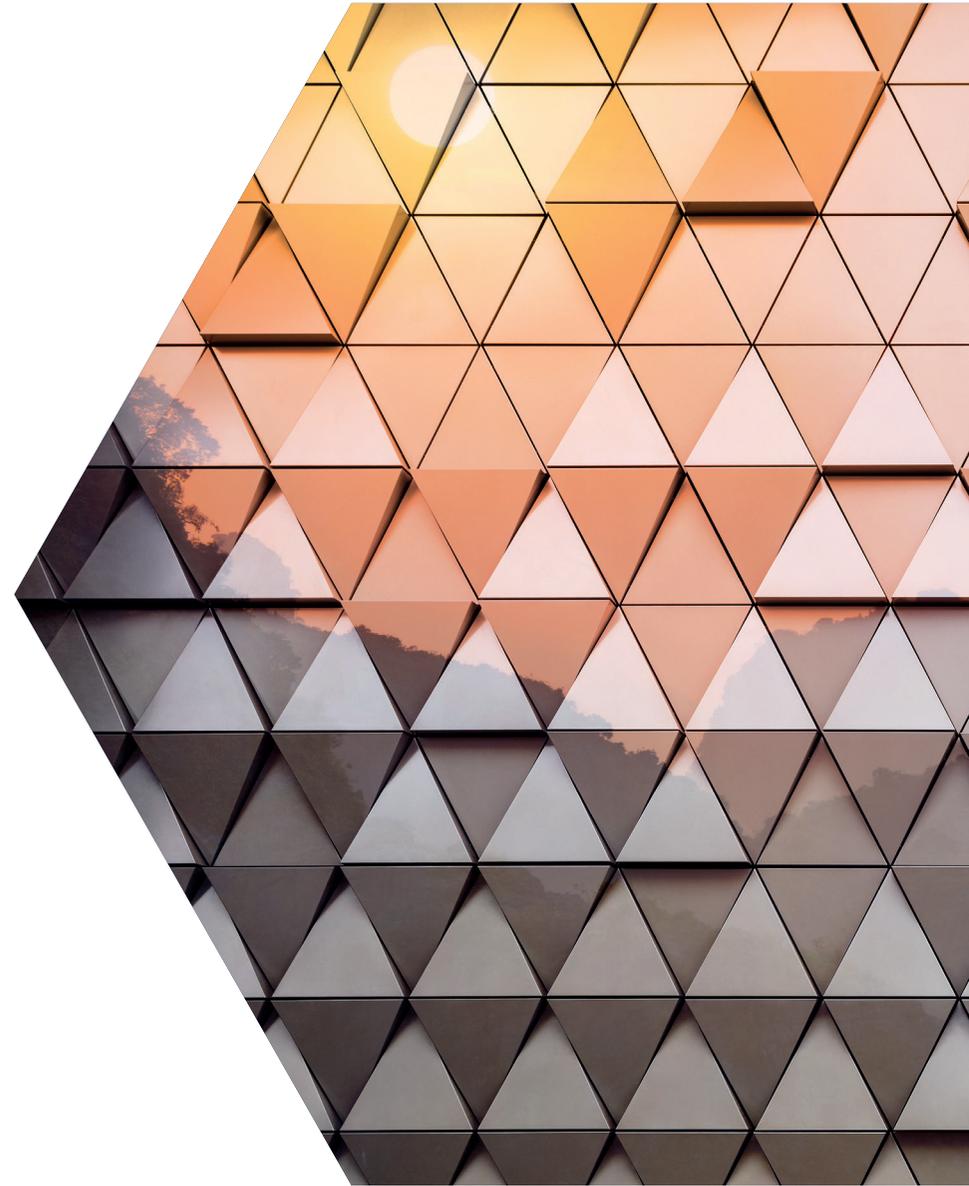
ISO 704 – “Terminology work – Principles and methods”

ISO 860 – “Terminology work -- Harmonization of concepts and terms”

Semantics of Business Vocabulary and Business Rules – The Object Management Group

CRM – business and technical services

TOGAF chapter 43 – Technical Reference Model



# APPENDIX : NAMING CONVENTIONS EXAMPLE

In this section, I will suggest possible naming conventions for each item in the business layer of ArchiMate using the concepts above.

## BUSINESS ACTOR

The ArchiMate specification states that 'the name of a business actor should preferably be a noun'. To improve this we can consider the organizational warrant: actors internal to the organization should be named by their job title or departmental name within the organization's email directory or org chart; actors external to the organization should be named according to the user warrant: how are they generally referred to within the organization?

**FORMAT:** {noun}

**EXAMPLE:** Finance manager

## BUSINESS ROLE

The ArchiMate specification states that 'the name of a business role should preferably be a noun'. Applying user warrant, we can advise that a business role should be named according to the primary activity that the role performs. The name should have be a compound noun to qualify it if it could have multiple meanings.

**FORMAT:** {noun qualifier}{noun}

**EXAMPLE:** {claim form completer}

## BUSINESS COLLABORATION

The ArchiMate specification states that 'the name of a business collaboration should preferably be a noun'. We will use user warrant to state that the noun should be the noun form of whatever verb describes the primary activity of the collaboration.

**FORMAT:** {noun qualifier}{noun}

**EXAMPLE:** Contract negotiation

## BUSINESS INTERFACE

The ArchiMate specification states that 'the name of a business interface should preferably be a noun'. Here I'm going to argue that user warrant would imply that you name a business interface according to the man activity that you

**FORMAT:** {action}{noun qualifier}{noun}

**EXAMPLE:** Mailing claim form

# APPENDIX : NAMING CONVENTIONS EXAMPLE

## LOCATION

The ArchiMate specification is silent on the subject of Location objects. Using organizational warrant, we can state that locations internal to the organization should be given the name used in the corporate email directory; external locations should be nouns identifying the type of location coupled with enough of an address to uniquely identify the location.

**FORMAT:** {qualifier}{noun}

**EXAMPLE:** Manchester Depot, Customer Premises

## BUSINESS PROCESS

The ArchiMate specification states that 'the name of a business process should preferably be a verb in the simple present tense; e.g., "handle claim"'. This is effectively literary warrant as it derives from the existing literature, and this seems OK. However, I will add that it should be a verb plus subject of the verb. I would also suggest, using clarity, that it should be a compound noun.

**FORMAT:** {verb}{type of noun}{noun - subject}

**EXAMPLE:** Handle insurance claim

## BUSINESS FUNCTION

The ArchiMate specification states that 'the name of a business function should preferably be a verb ending with "-ing"; e.g., "claims processing", or a noun ending in "-ion" or "-ment"; e.g., "administration". I will add to this =, applying the principle of clarity, that the subject of the verb or the noun name should be compounded with a qualifier.

**FORMAT:** {type of noun}{noun - subject}{verb} OR {type of noun}{noun}

**EXAMPLE:** Insurance claims processing or general administration

## BUSINESS INTERACTION

The ArchiMate specification states that 'the name of a business interaction should preferably be a verb in the simple present tense.' To this we can suggest user warrant: the business interaction should be the verb that describes the primary activity of the interaction. Again, applying the clarity principle, the subject should be a compound noun to qualify it.

**FORMAT:** {verb}{subject}{subject}

**EXAMPLE:** Take out combined travel/luggage insurance

# APPENDIX : NAMING CONVENTIONS EXAMPLE

## BUSINESS EVENT

The ArchiMate specification states that ‘the name of a business event should preferably be a verb in the perfect tense; e.g., “claim received”’. Surveying the existing literature in BPMN (literary warrant) we can add that is it usually in the format of subject-verb or object-verb. The subject should be a compound noun if there is the possibility of misinterpretation.

**FORMAT:** {subject qualifier}{subject}{verb} OR {object qualifier}{object}{verb}

**EXAMPLE:** Traffic accident happens OR Claims form submitted

## BUSINESS SERVICE

The ArchiMate specification states that ‘the name of a business service should preferably be a verb ending with “-ing”; e.g., “transaction processing”. Also, a name explicitly containing the word “service” may be used’. As in a few other cases so far, we can go further and apply the principles of user warrant and clarity to advise that it should be the verb that describes the primary activity of the service, and it the subject be a compound verb if the subject by itself could have multiple meanings.

**FORMAT:** {subject qualifier}{subject}{verb}

**EXAMPLE:** Insurance claim processing

## BUSINESS OBJECT

The ArchiMate specification states that ‘the name of a business object should preferably be a noun.’ The wide range of possible business objects makes it hard to offer much more guidance than this – except that the standard principle of qualifying the noun to ensure clarity still applies.

**FORMAT:** {noun qualifier}{noun}

**EXAMPLE:** Life Insurance Policy Invoice

## REPRESENTATION

The ArchiMate specification states that ‘the name of a representation is preferably a noun.’ Applying the principle of transparency I will add that the name should start with the medium used and include a compound qualifier.

**FORMAT:** {medium}{type of object}{object}

**EXAMPLE:** Paper insurance invoice

# APPENDIX : NAMING CONVENTIONS EXAMPLE

## MEANING

The ArchiMate specification states that ‘the name of a meaning should preferably be a noun or noun phrase. To this I will add that since a meaning is “how it informs the external user.” (as per the specification), you can form the noun phrase as the object that is affected plus the -tion form of the verb that describes how it is affected

**FORMAT:** {qualifier}{noun}{past participle}

**EXAMPLE:** Coverage Description

## VALUE

The ArchiMate specification states that ‘Although the name of a value can be expressed in many different ways (including amounts, objects), where the “functional” value of a service is concerned it is recommended to try and express it as an action or state that can be performed or reached as a result of the corresponding service being available.

I will add that we can use the clarity principle to guide the choice of name: the value is an outcome that affects something, so we can name values as the past participle of a verb, plus the noun that is affected.

**FORMAT:** {past participle}{qualifier}{noun}

**EXAMPLE:** Protected from loss

## PRODUCT

The ArchiMate specification states that ‘the name of a product is usually the name which is used in the communication with customers, or possibly a more generic noun (e.g., “travel insurance”). This seems adequate.

**FORMAT:** {proper name} OR {name of class of products}

**EXAMPLE:** Microsoft Word, Word processing software

## CONTRACT

The ArchiMate specification states that ‘the name of a contract is preferably a noun.’ To apply the clarity principle, I will go further and propose that it includes the names of the parties to the contract and the primary subject of the contract.

**FORMAT:** {actor name}{actor name}{contract subject}

**EXAMPLE:** Dept. of Labor-Deloitte:consulting



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