Towards key principles for teaching enterprise modelling

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Towards key principles for ~~teaching~~ learning ~~enterprise~~ domain modelling

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Discussing

~~Towards~~ key principles for ~~teaching~~ learning ~~enterprise~~ domain modelling

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A CM perspective

(Conceptual) domain modelling applied in the context of change in enterprises

EE/EA: Models used to enable informed operation, development and regulation of enterprises

Agenda

- Why key principles?
- DM, CM, and EM
- Possible principles

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Why key principles?

Helps to prioritise and focus the key competencies, which learners need to acquire when learning CM / DM / EM

What is, beyond specific modelling languages and notation, core to modelling?

Could help us better shape training (teaching & learning)

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Domain model

An artefact that is acknowledged by an observer as being a representation of an abstraction of a domain for a specific purpose

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(Some) dimensions to define a model's purpose:

- the *domain* that the model (should) pertain to,
- the intended *usage* of the model by its *audience*,
- the expected *competences* of the (human) actors involved in the creation and use of the model

Domain model

An artefact that is acknowledged by an observer as being a representation of an abstraction of a domain for a specific purpose

A spectrum of model usage:

understand, assess, diagnose, design, realise, operate, regulate

Conceptual (domain) models

A domain model, where:

- *its purpose is dominated by a need to*
  - *as true-fully as possible*
- *represent:*
  - *the concepts of the domain,*
  - *their relationships, and*
  - *associated properties*

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The latter three provide the conceptualisation of the domain

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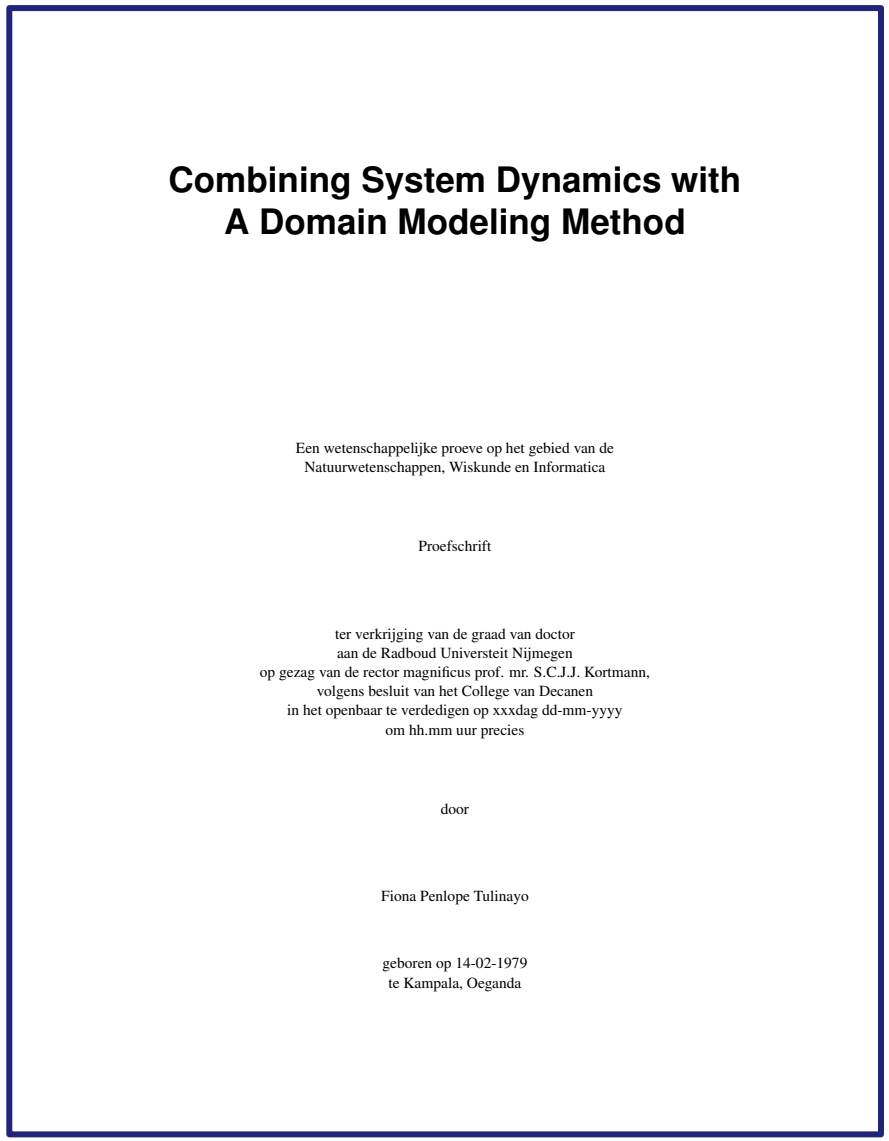
ISO/IEC JTC 1/SC 32 Technical Committee on Data management and interchange. Information processing systems - Concepts and Terminology for the Conceptual Schema and the Information Base. Technical Report ISO/TR 9007:1987, ISO, 1987.

Conceptual (domain) models

Logic: brings discipline to the question of how to reason

CM: brings discipline to the question of what one reasons about …

Conceptual (domain) models



Combining System Dynamics with A Domain Modeling Method

Een wetenschappelijke proeve op het gebied van de
Natuurwetenschappen, Wiskunde en Informatica

Proefschrift

ter verkrijging van de graad van doctor
aan de Radboud Universteit Nijmegen
op gezag van de rector magnificus prof. mr. S.C.J.J. Kortmann,
volgens besluit van het College van Decanen
in het openbaar te verdedigen op xxxdag dd-mm-yyyy
om hh.mm uur precies

door

Fiona Penlope Tulinayo

geboren op 14-02-1979
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Non-conceptual domain models …?

Models whereby the “true-fullness” to the domain may be “sacrificed” in line with a purpose to e.g.:

- Be actionable in / to a specific digital / human actors
- Be more in line with the background of a specific audience
- ..

(Conceptual) enterprise model

A (conceptual) domain model of (aspects of) (a part of) an enterprise

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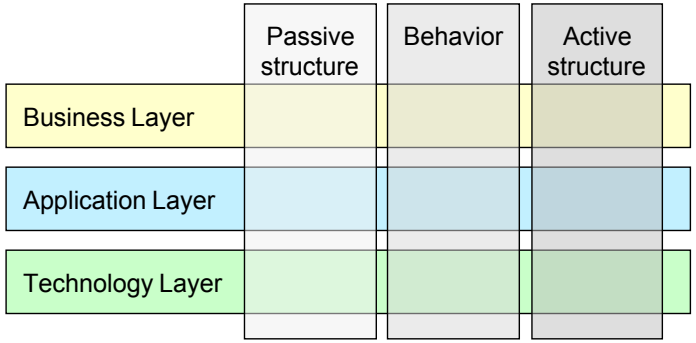

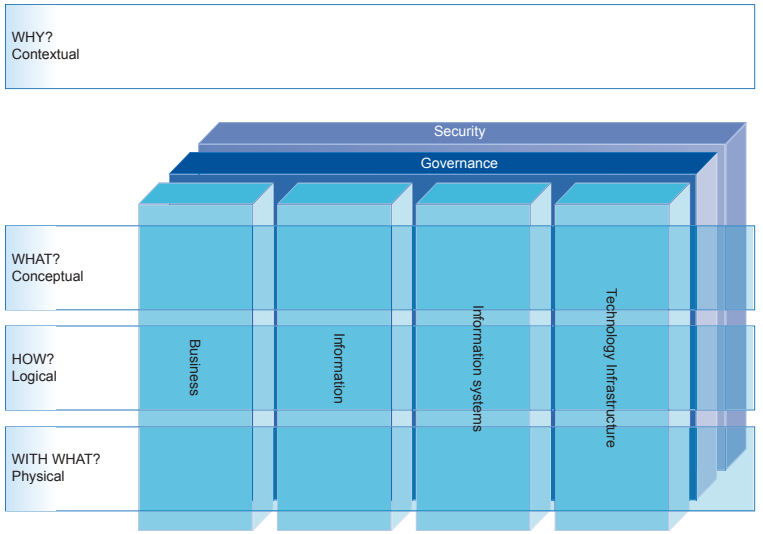

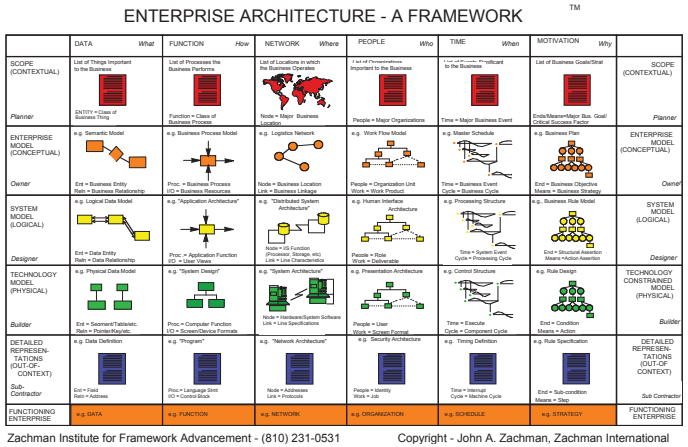

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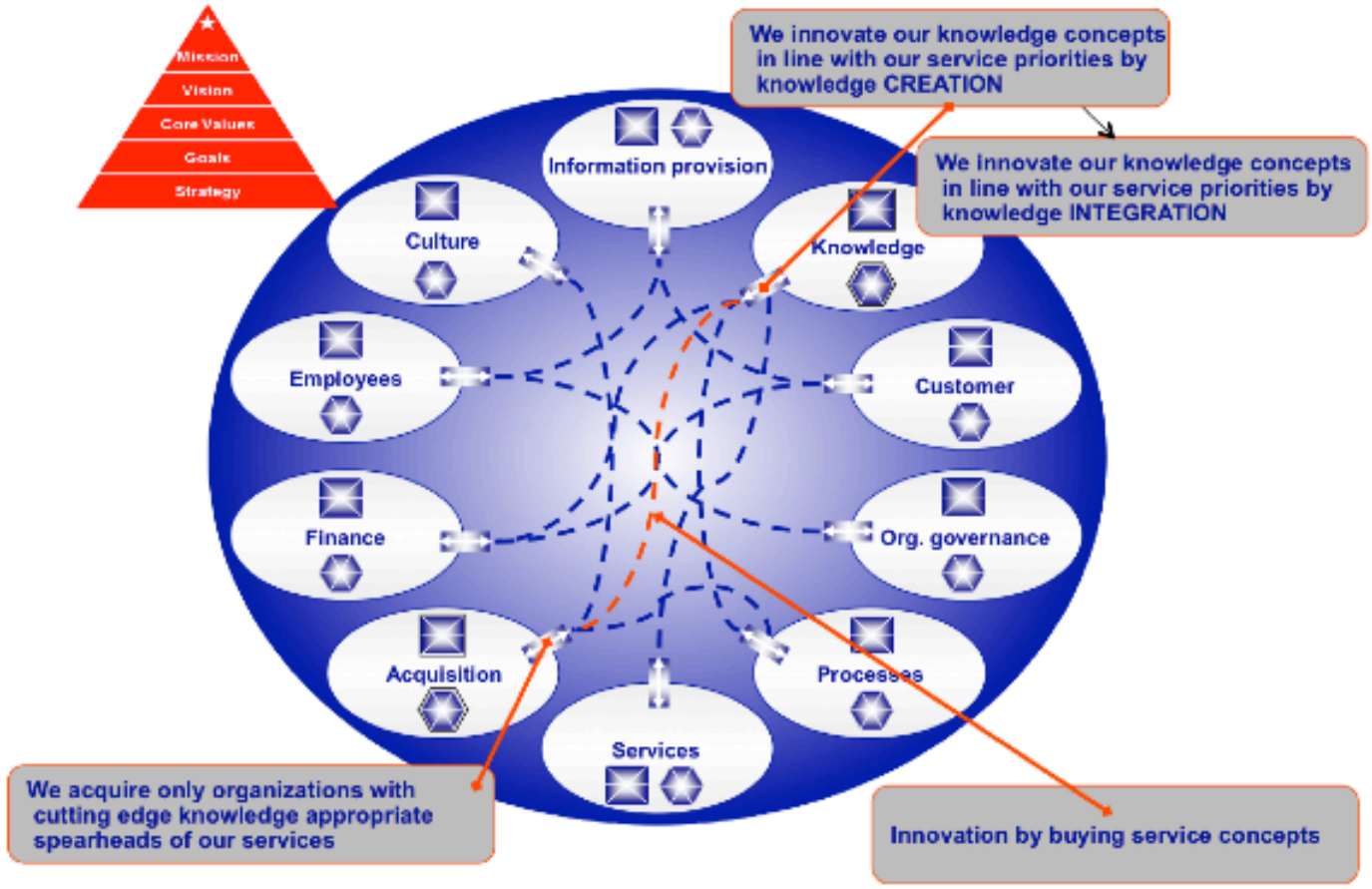

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Philosophical grounding

Learners need to learn about the philosophical backgrounds of modelling

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Okay, not kilometres deep, but at least …

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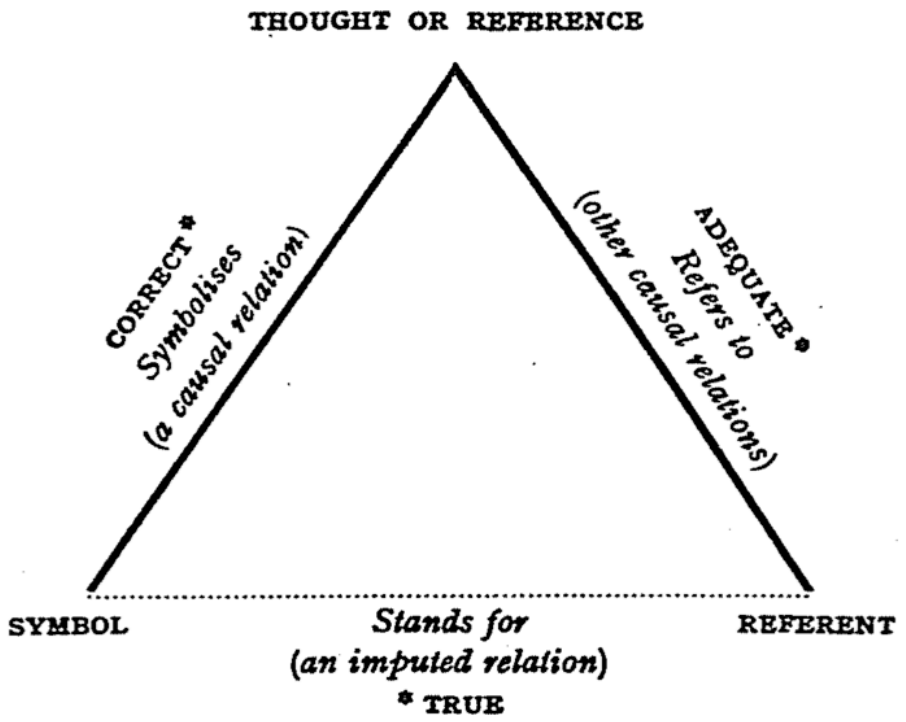
Ogden and Richards, 1923



Purposeful conceptualisation at the core

Learners should, first, and foremost, be able to identify the key concepts and relations, as well as associated properties in a domain

In doing so, they should also learn to use the purpose (domain, audience, usage, etc) of the model as a scoping / focussing mechanism

Know your models …

“All models are wrong, but some are useful“, George Box

Learners should know about the limitations of models …

Sometimes usefull. Mostly wrong.

Aware of one’s normative frames

Normative frame:

- That what, consciously or subconsciously, influences us when creating a model
- Could be beneficial: focus, scoping, semantics, …
- Could be harmful: framing, black swans, tunnel vision, …

Aware of one’s normative frames

Example (sources of) normative frames:

- Modelling languages: UML, ArchiMate, BPMN, …
- Design frameworks: Zachman, ArchiMate, EO, UML, …
- Foundational ontologies: B(WW), UFO, …
- Cognitive biases, due to upbringing, training, ...
- Philosophical stance: objectivist, subjectivist, …

Aware of one’s normative frames

Modellers need to be aware of their normative frameworks and their positive / negative influences

Notation supports model communication

Learners should become aware of the role of notation to support the communication of a (conceptual) domain model, in line with its purpose

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Eternal RoME

Learners should be able to reason about the (needed) Return on Modelling Effort (RoME) in relation to the purpose of a model

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