

TUTORIAL

INTRODUCTION AND OVERVIEW

MODEL DEFINITIONS

- **Model as mappings of reality**
...models as mappings of parts of reality for a particular purpose...
- **Model as a construction**
...the result of a construction of a modeler who declares for model users a representation of an original as significant at a given time using a language...

MODEL WITH DIFFERENT VALUES

Representation Characteristic

"Models as a representation of natural or artificial originals, that again can be models." [1] (translated)

Abstraction Characteristic

"Models in general do not capture all attributes of the represented original, but only those that seem relevant to the modeller or model user." [1] (translated)

Pragmatic Characteristic

Models meet their substitution function for specific subjects, within a pre-determined time interval and with limitations on defined intellectual and/or real operations. [1] (translated)

Source: Stachowiak 1973

INTRODUCTION OF TERMS

- **Modelling Language:**
Modelling constructs (object types) and their relations (relation types) to each other to declare a model.
- **Metamodel:**
The model of the syntax of the modelling language
- **Meta² Model:**
Model of abstract syntax of a language to describe meta models.
- **Modelling Technique:**
A modelling language and proceeding instructions for creation of a model in this modelling language.
- **Mechanisms und Algorithms:**
Provision of functionalities to process models such as manipulation, visualisation, query, transformation or simulation depending on the modelling language and modelling procedure.

Cf. (Karagiannis and Kühn, 2002; Karagiannis and Höfferer, 2006; Kühn 2004; Karagiannis and Visic, 2011)

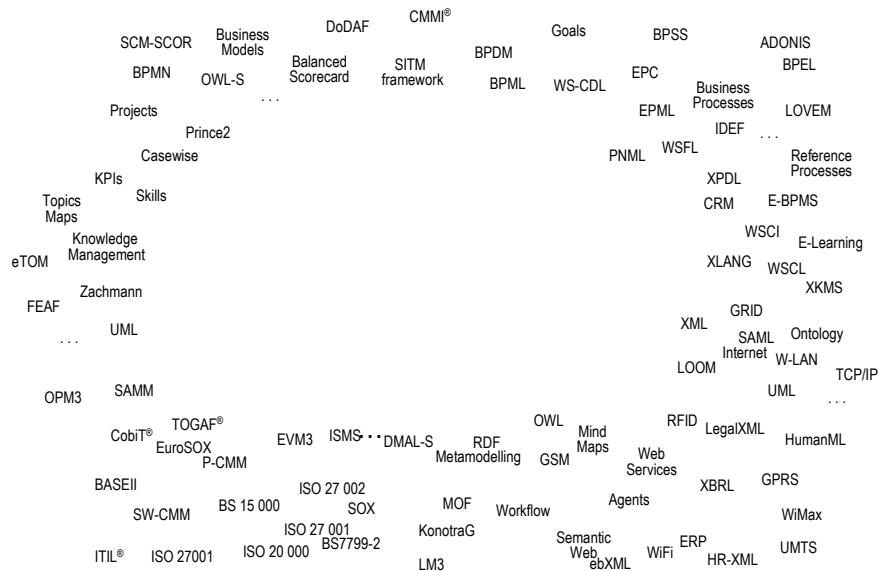
MODEL VALUES: AN EXAMPLE

**THE RESULTS OF MODELLING
CAN BE USED
FOR GENERATING SOFTWARE,
BUT ALSO ACT AS A BASIS OF
ENTERPRISE KNOWLEDGE
PLATFORMS**

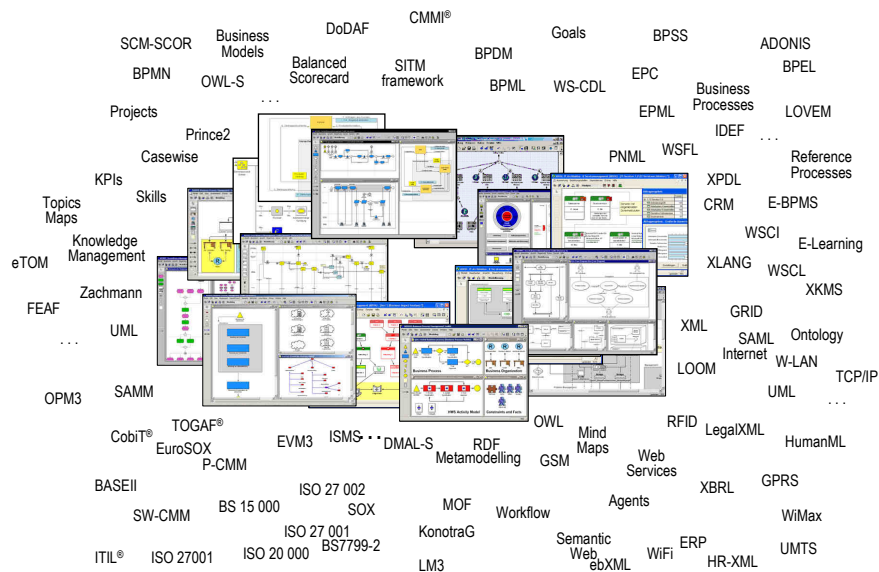
MACHINE PROCESSABLE

Cf. (Karagiannis, 2012 – Presentation at FinES – “Translating Knowledge Into Growth: Views from ICT Research to Support Future Business Innovation”)

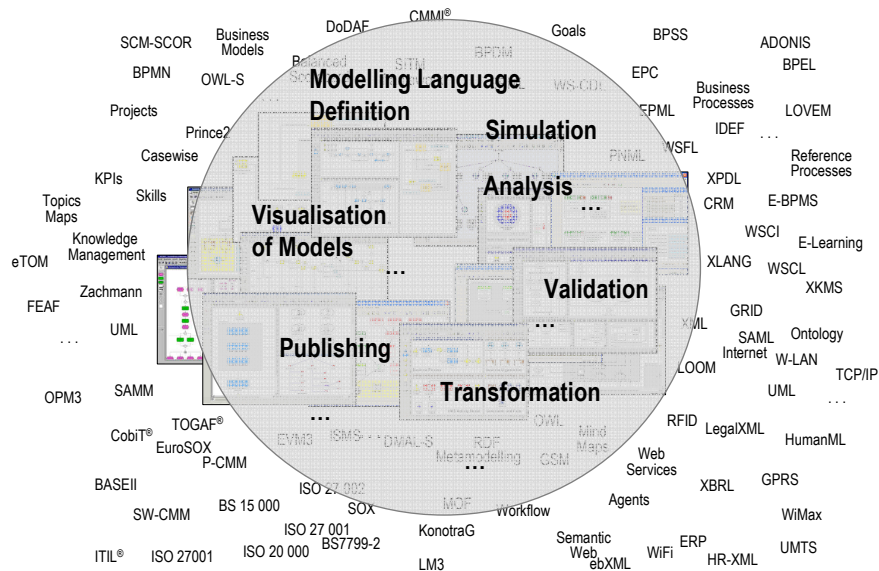
SOME MACHINE-PROCESSABLE FORMATS ...



... FROM AN EDITOR IMPLEMENTATION, TO ...

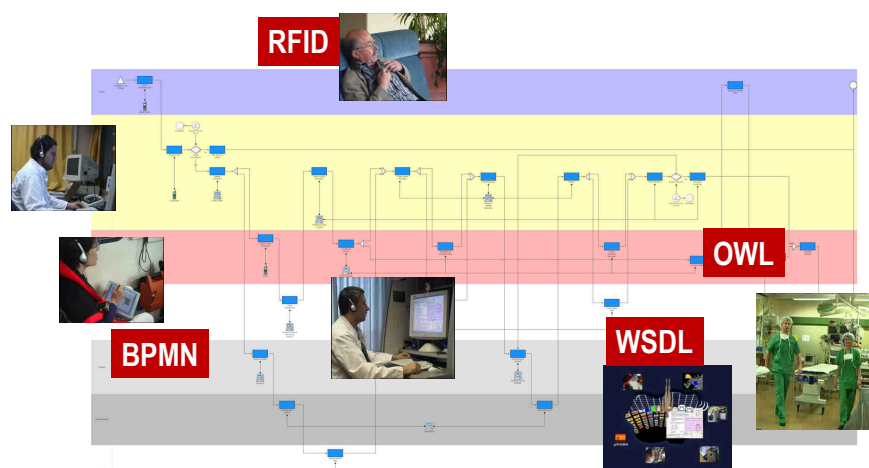


... TO FULL-FLEDGED MODELLING TOOL SUPPORT.



Scenario: Mobile eHealth Analysis and Simulation

AKOGRIMO Project



E-health scenario, for more information see video on <http://www.mobilegrid.org>

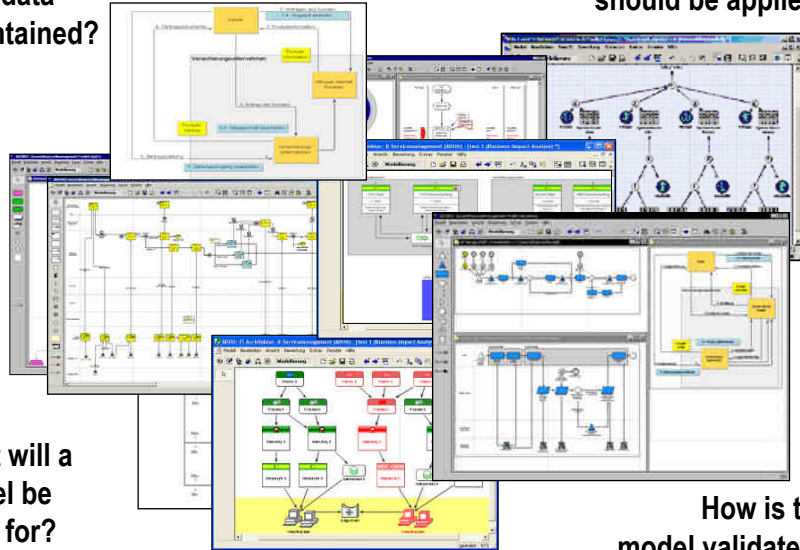
The necessary information for model processing

What data
is contained?

Which algorithms
should be applied?

What will a
model be
used for?

How is the
model validated?



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Some functionalities of modelling tools

Visualisation of
models

User interaction like: drag and
drop, zoom, grid snap, print,
etc.

Simulation of
models

Modelling language
definition

Publishing in
multiple formats

Transformation of
models

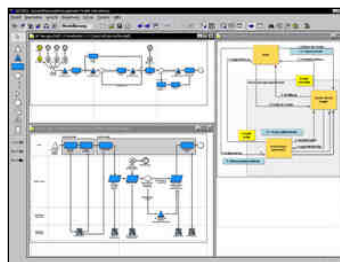
Exchange of
models

Analyse models
and evaluate the
results

User access
rights

Storage and
Manipulation of
Models

Security and Safety



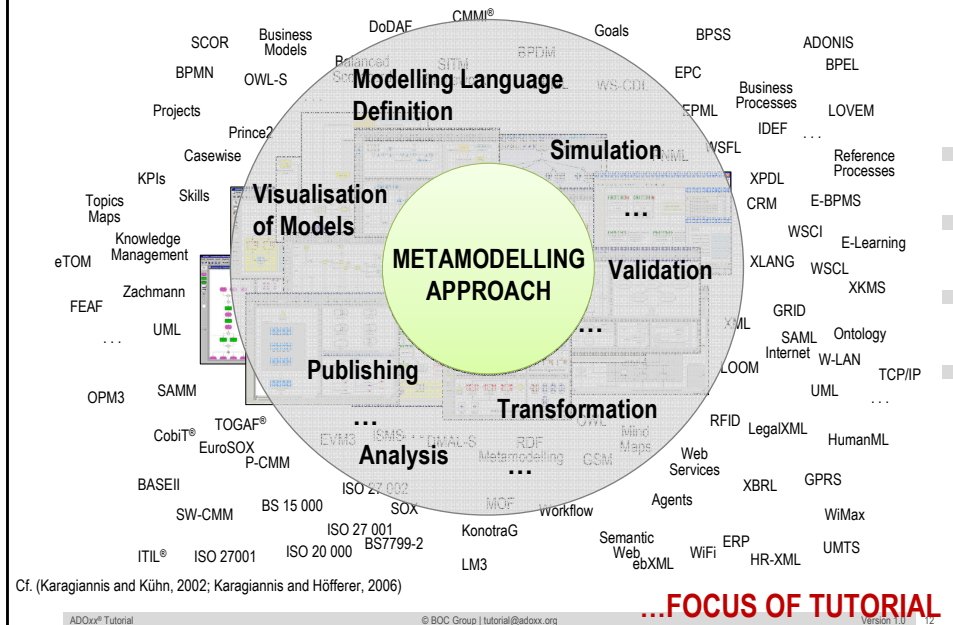
Cf. (Karagiannis and Kühn, 2002; Karagiannis and Höfferer, 2006; Fill, 2009)

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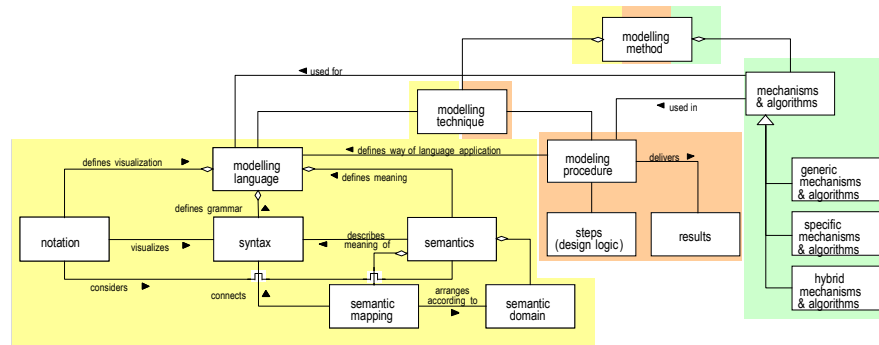
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A METAMODEL-BASED REALISATION APPROACH



**“REQUIREMENT ANALYSIS NEEDS
A FRAMEWORK AND A PROCEDURE
TO IDENTIFY REQUIREMENTS FOR
MODELLING METHODS IN A
SYSTEMATIC AND TRANSPARENT
WAY.”**

GENERIC MODELLING METHOD FRAMEWORK



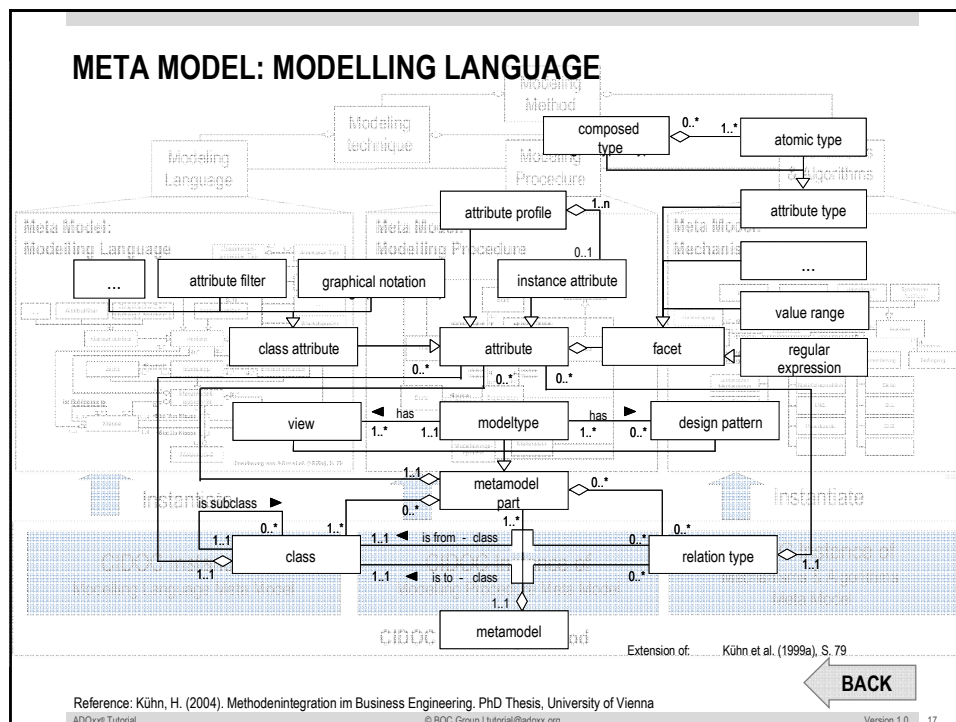
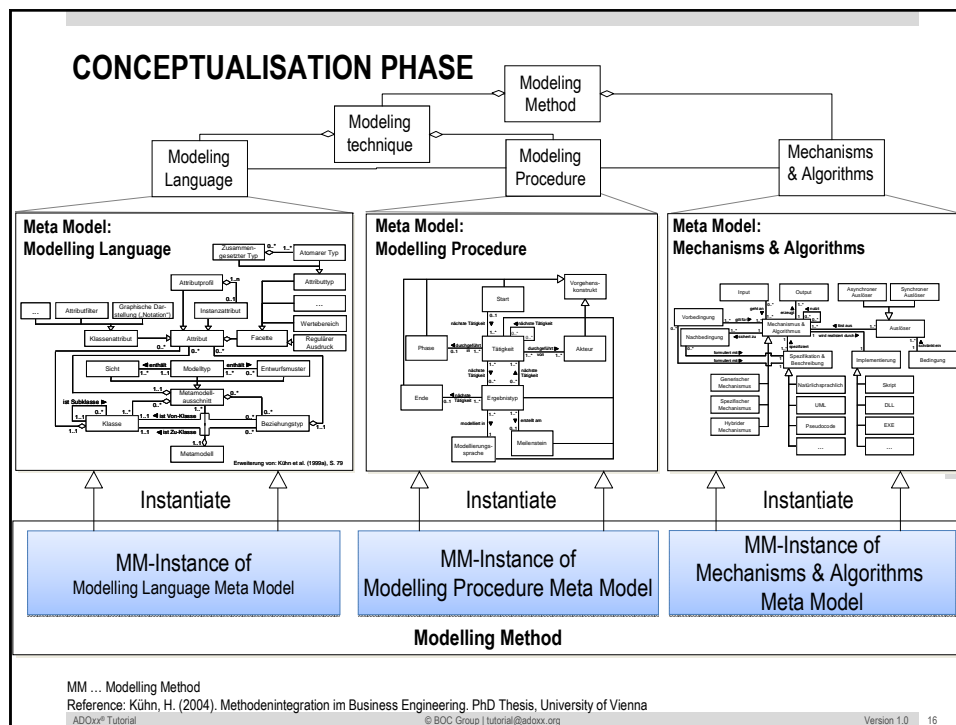
Reference: Karagiannis, D., Kühn, H.: „Metamodelling Platforms“. In Bauknecht, K., Min Tjoa, A., Quirchmayer, G. (Eds.): Proceedings of the Third International Conference EC-Web 2002 – Dexa 2002, Aix-en-Provence, France, September 2002, LNCS 2455, Springer, Berlin/Heidelberg, p. 182 ff.

FROM BOOK TO MOVIE: A METAPHOR

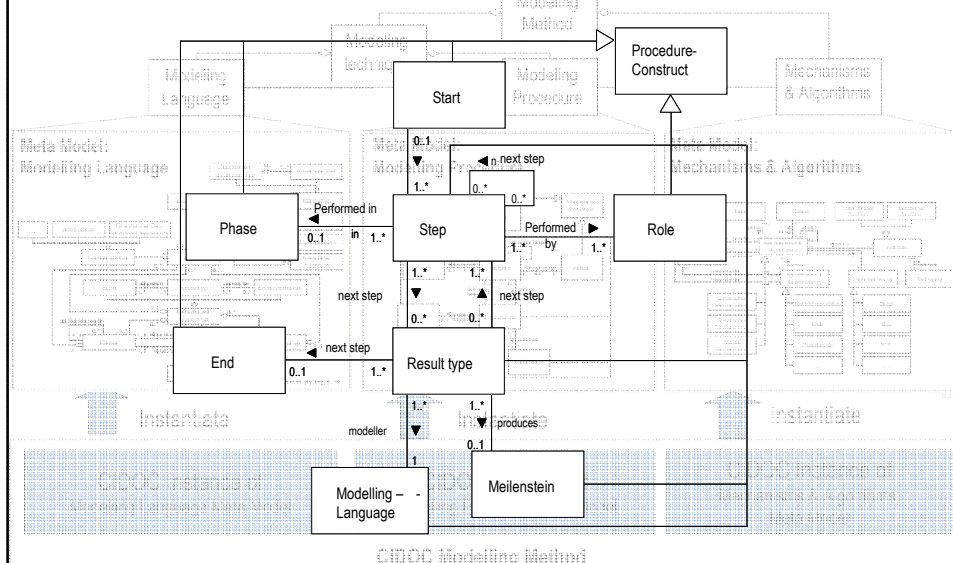


**WHAT IS THE ANALOGUE FOR
MODELLING METHODS ?**





META MODEL: MODELLING PROCEDURE



Reference: Kühn, H. (2004). Methodenintegration im Business Engineering. PhD Thesis, University of Vienna

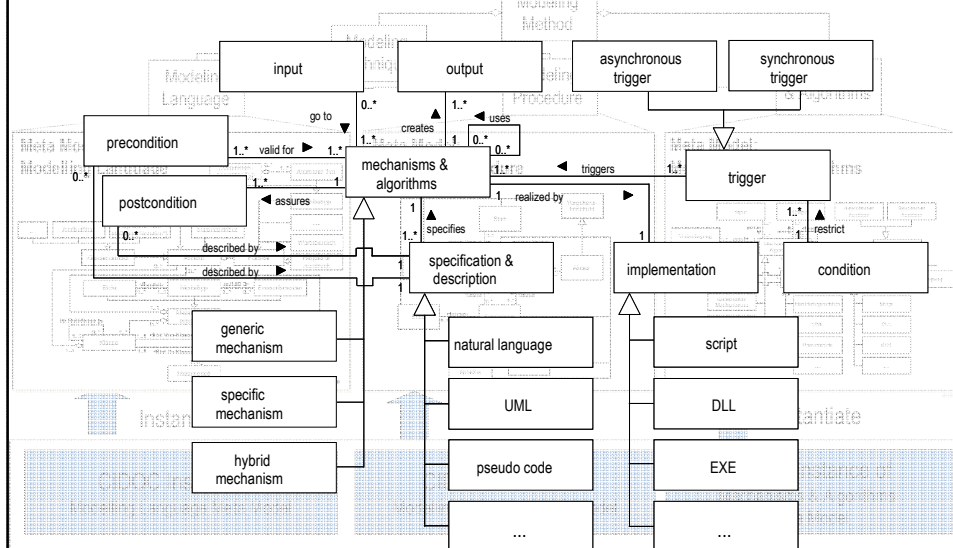
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META MODEL: MECHANISMS & ALGORITHMS



Reference: Kühn, H. (2004). Methodenintegration im Business Engineering. PhD Thesis, University of Vienna

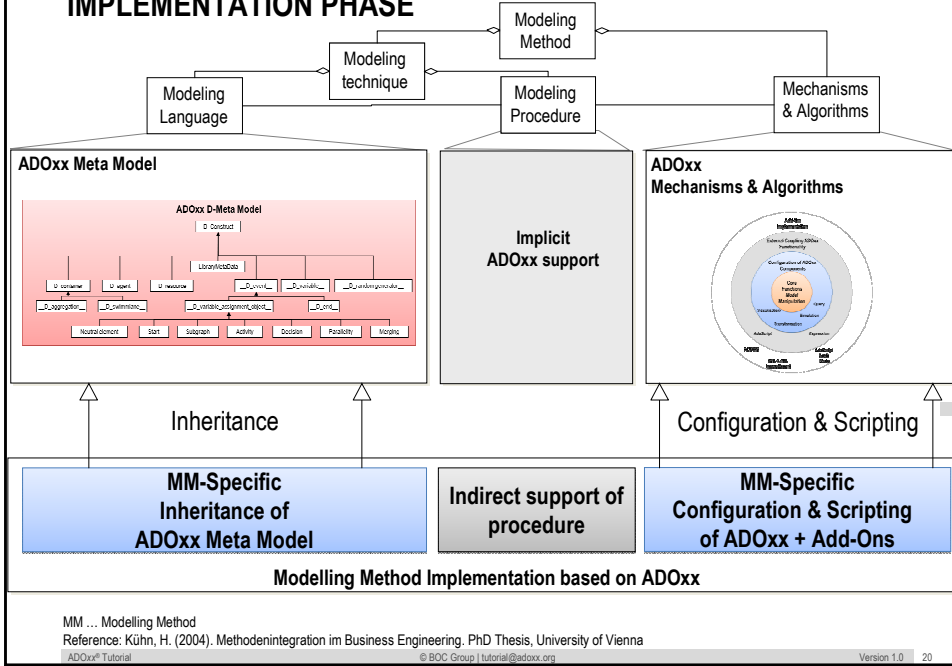
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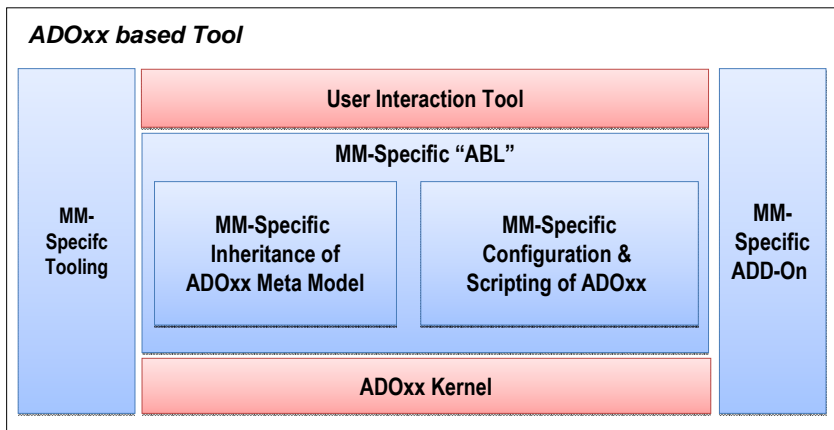
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IMPLEMENTATION PHASE



DEPLOYMENT AND TOOLING PHASE



In case of any questions, please contact

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