

Four Enterprise Modeling Perspectives and Impact on Enterprise Information Systems

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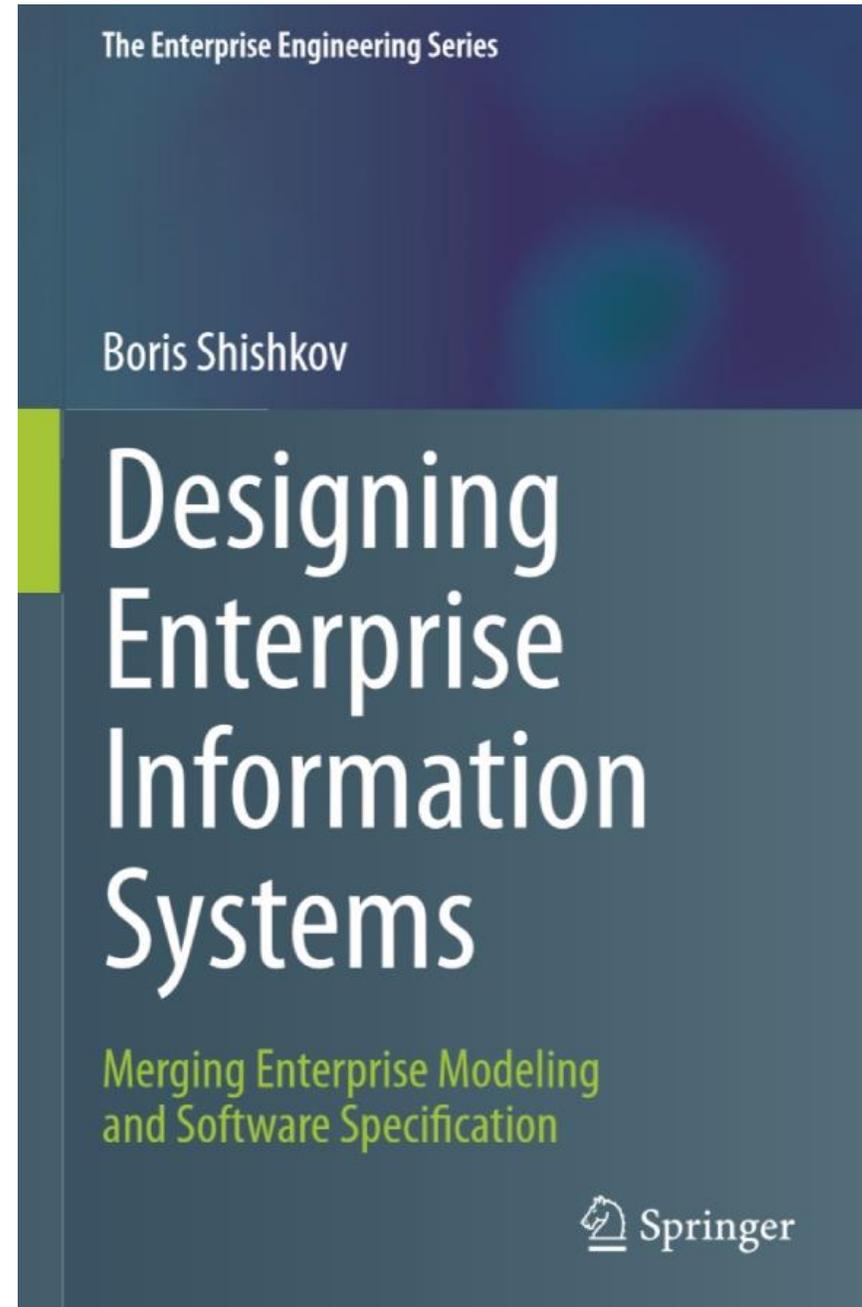
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Agenda

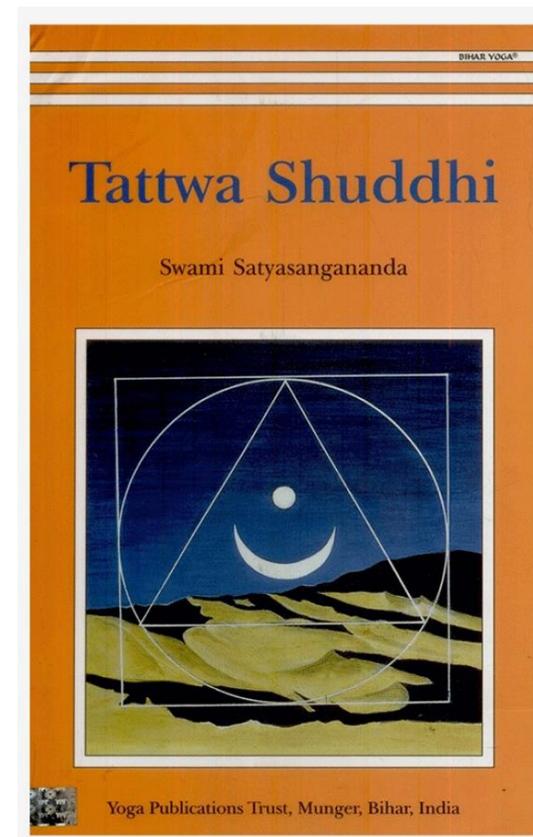
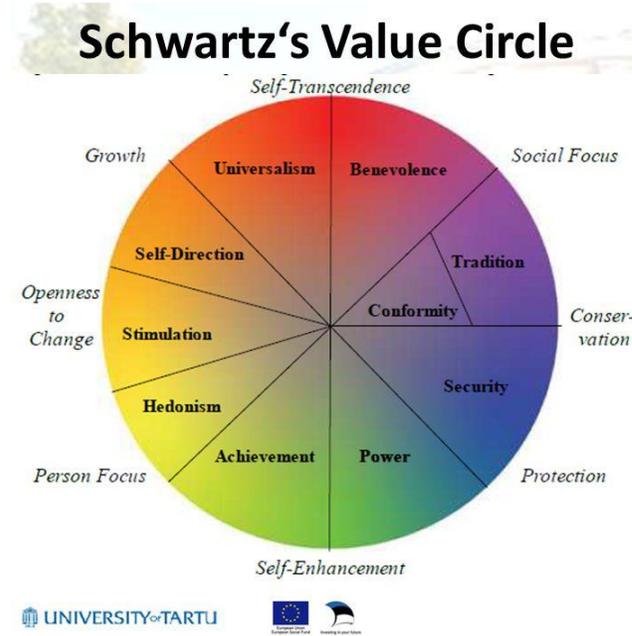
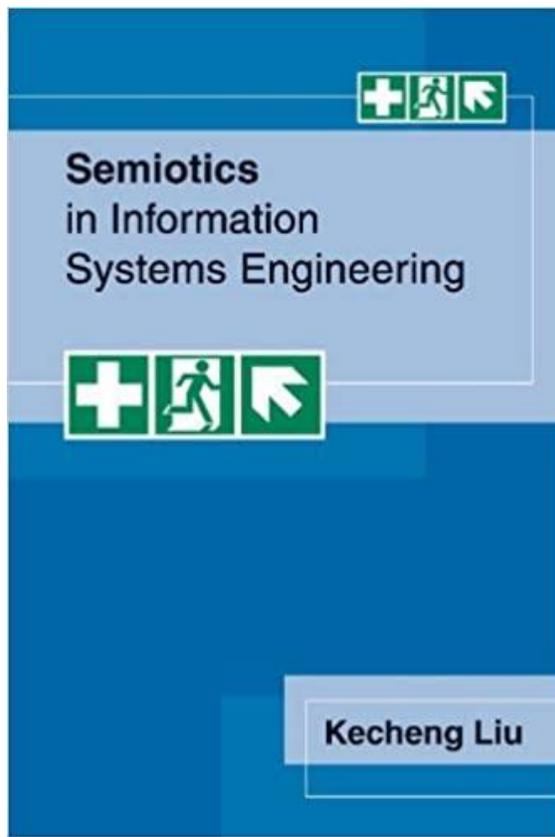
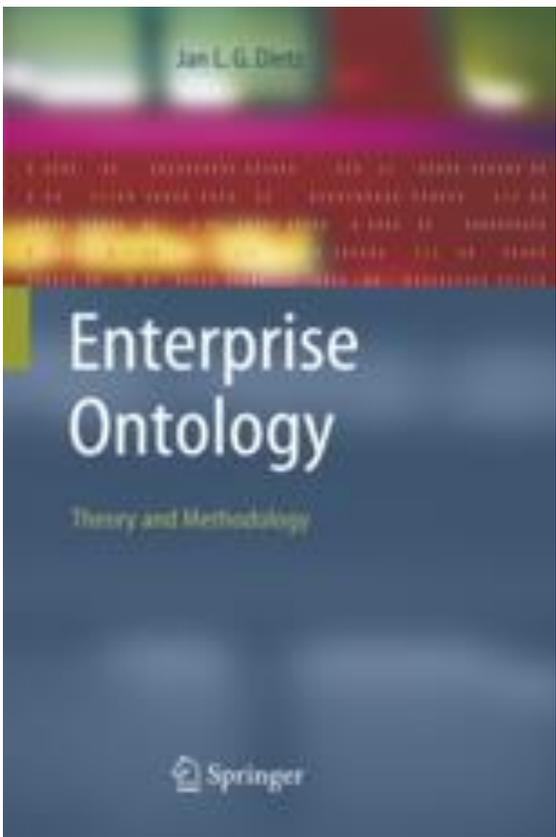
- background work
- introduction and related work
- the SDBC approach
- four enterprise modeling perspectives
 - language acts
 - regulations
 - public values
 - energy
- illustrative example
- conclusions

Background Work



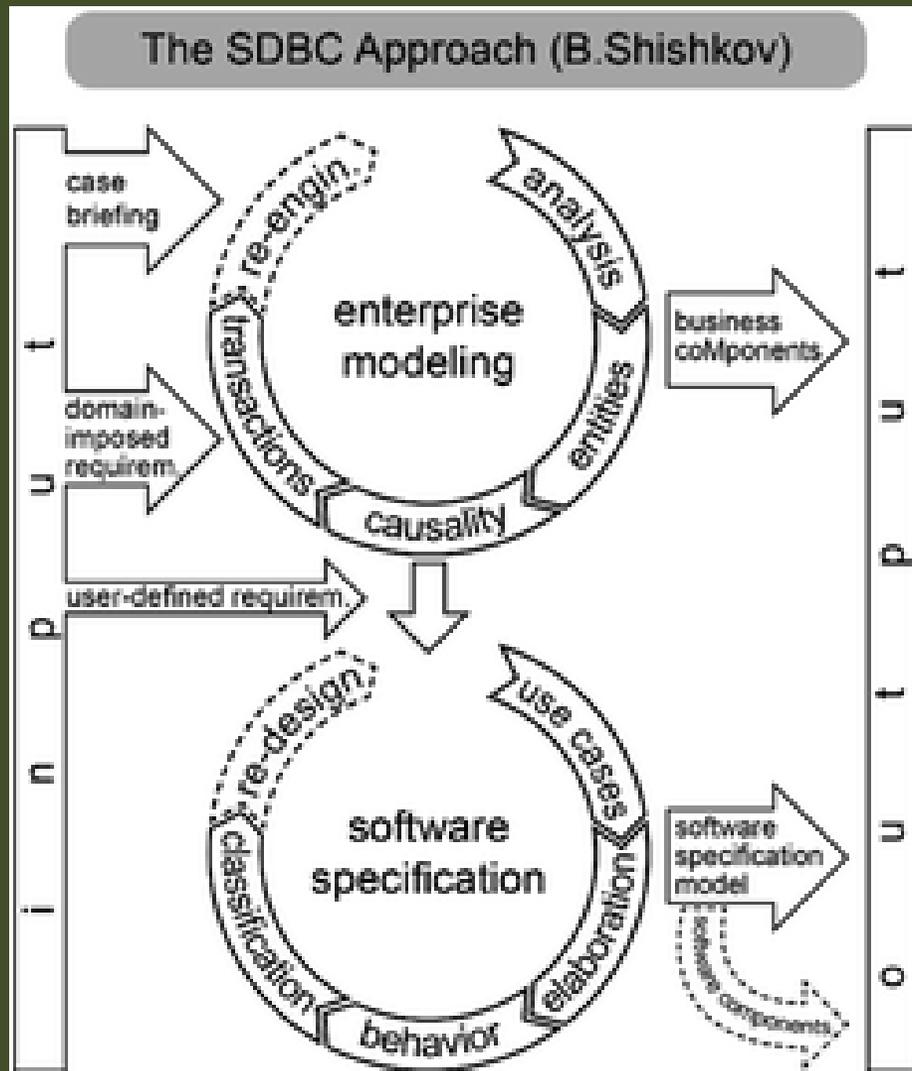
Introduction and Related Work

- we observe mismatch between business requirements and software functionalities
- hence, we need an enterprise-modeling-driven software specification
- for this we refer to the SDBC approach (Software Derived from Business Components) and we argue that:
 - enterprise modeling is to be rooted in social theories (focus of this paper)
 - software specification is to be rooted in computing paradigms
- we observe enterprise modeling that has insufficient theoretical background
- we have identified four enterprise modeling perspectives:
 - language acts
 - regulations
 - public values
 - energy
- we partially illustrate our analysis and claims



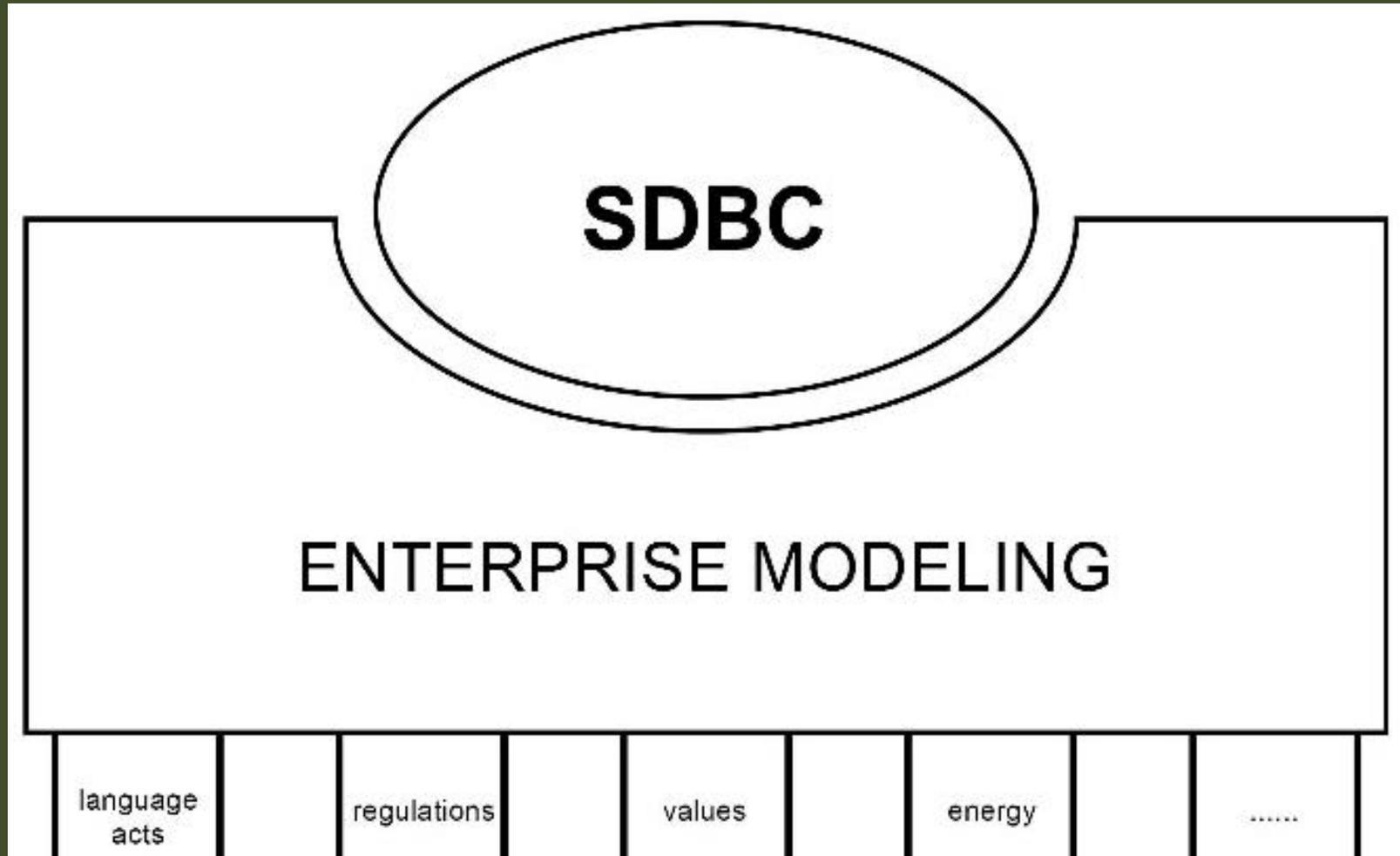
Introduction and Related Work

The SDBC Approach

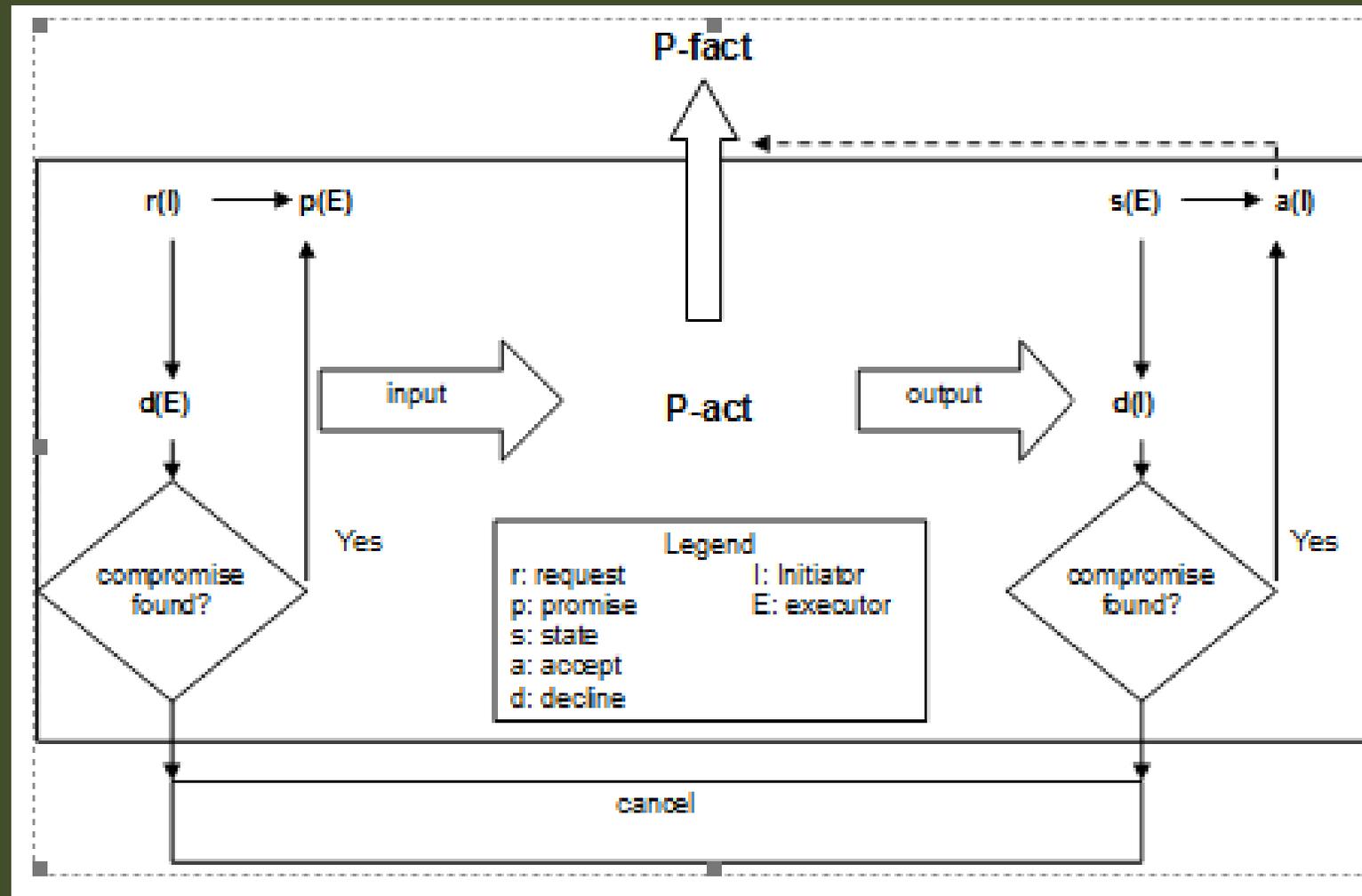


- merging enterprise modeling and software specification
- ... allowing for a component-based alignment between the two
- bringing together social theories and computing paradigms
- consistent with the principles of MDE

... And the Four Enterprise Modeling Perspectives



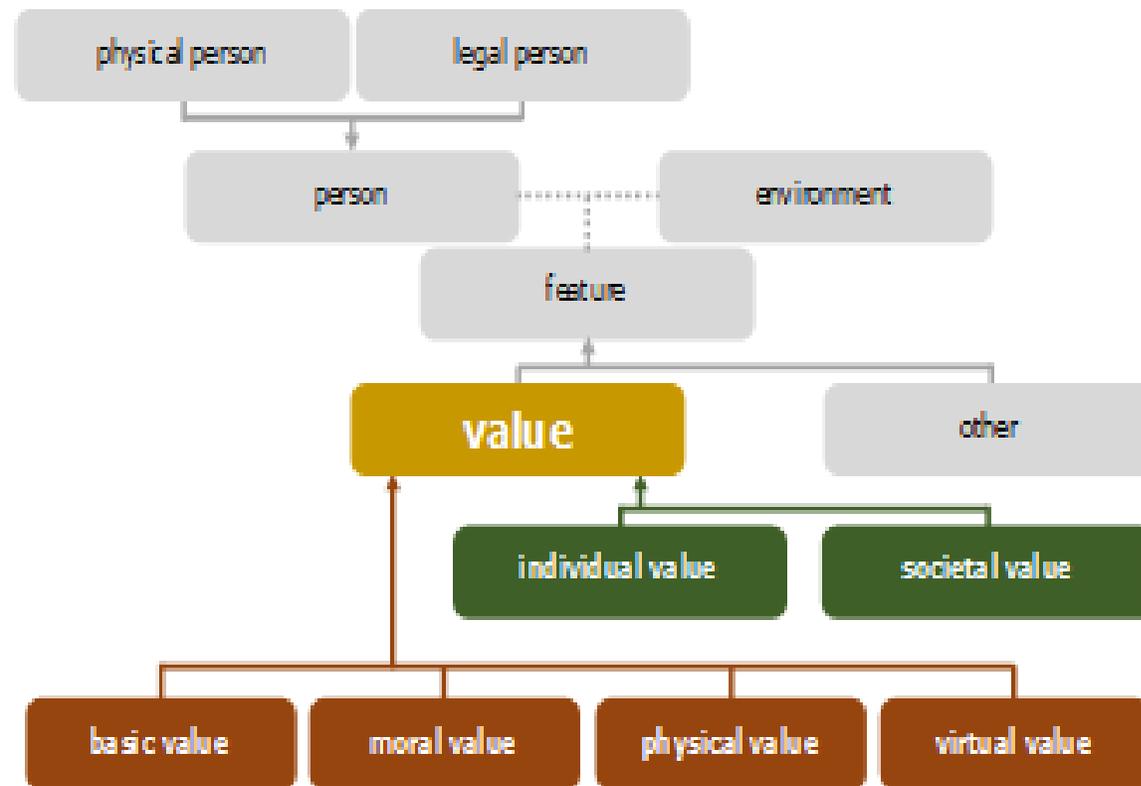
Language Acts and the TRANSACTION Concept



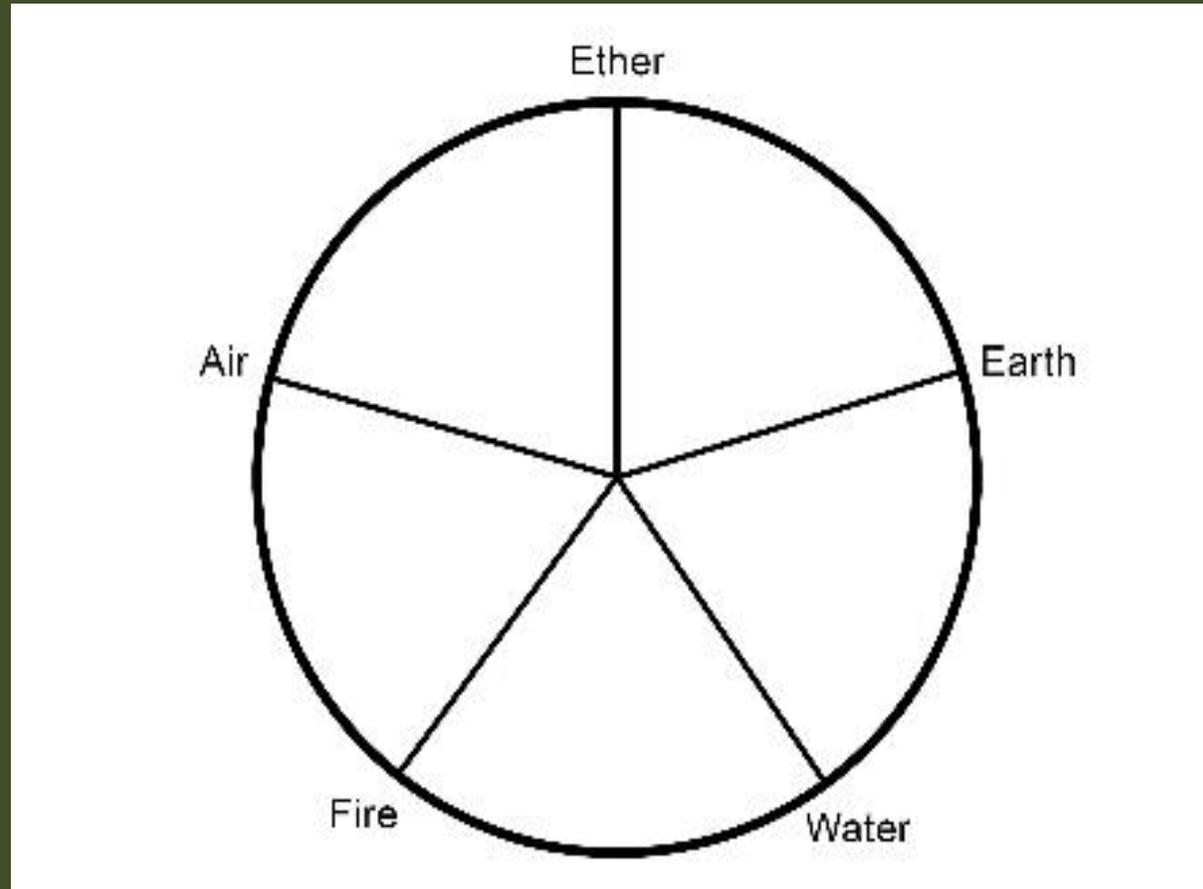
Regulations and Semiotic Behavioral NORMS

whenever <condition>
if <state>
then <agent>
is <deontic operator>
to <action>

Public Values



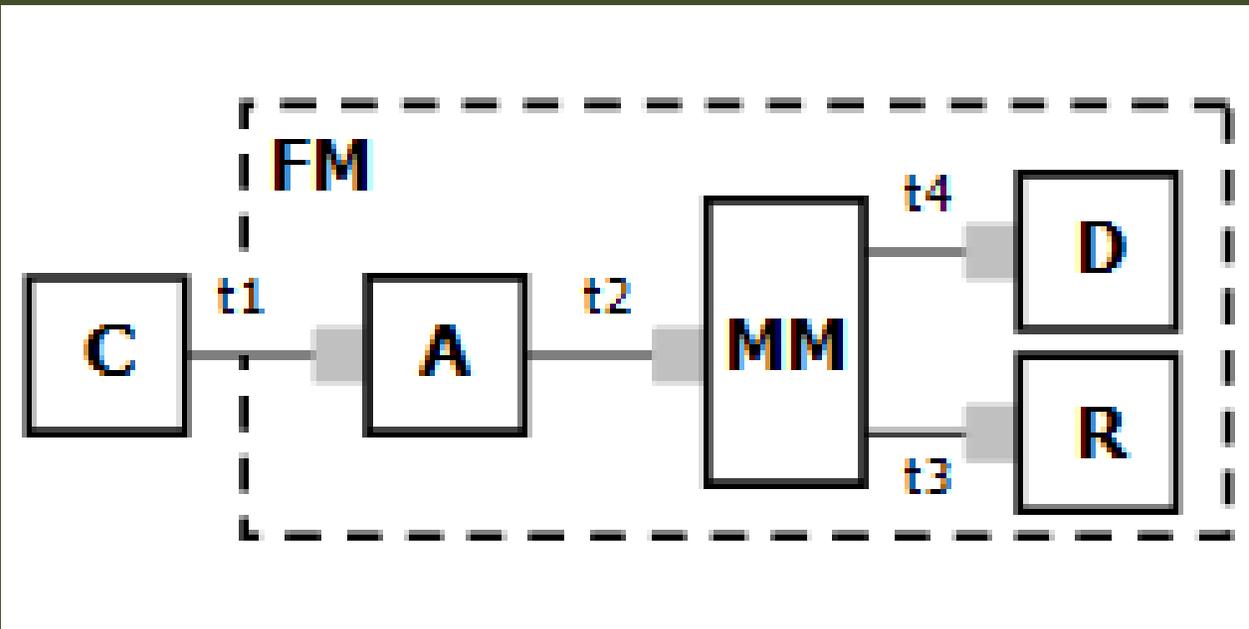
Energy – the 5 Elements Perspective



Example - Briefing

- we are modeling a financial e-Mediator
- the e-Mediator is offering advices
- the advices concern insurance products
- it is needed to realize match-making between what the customer wants and what products are available

Example – Transactions-driven Business Entity Model



The connections indicate the need for *interactions* between *entities*, in order to achieve the business objective of financial mediation; with each connection, we associate a single *transaction* (**t**): C-A (**t1**); A-MM (**t2**); MM-R (**t3**); MM-D (**t4**). Further, C is positioned in the *environment* of the financial mediation system – FM, and A, MM, R and D together form the FM system. Through **t1**, FM is related to its *environment* (represented by C). Thus, from the perspective of C, there is no difference between FM and A.

Example – Identifying Norms

-----**Whenever** C has requested advice

If MM has realized match-making

Then A

Is obliged to formulate and deliver an advice

-----**Whenever** C has requested advice

If R has received submitted customer information

Then R

Is obliged to deliver standardized customer specification

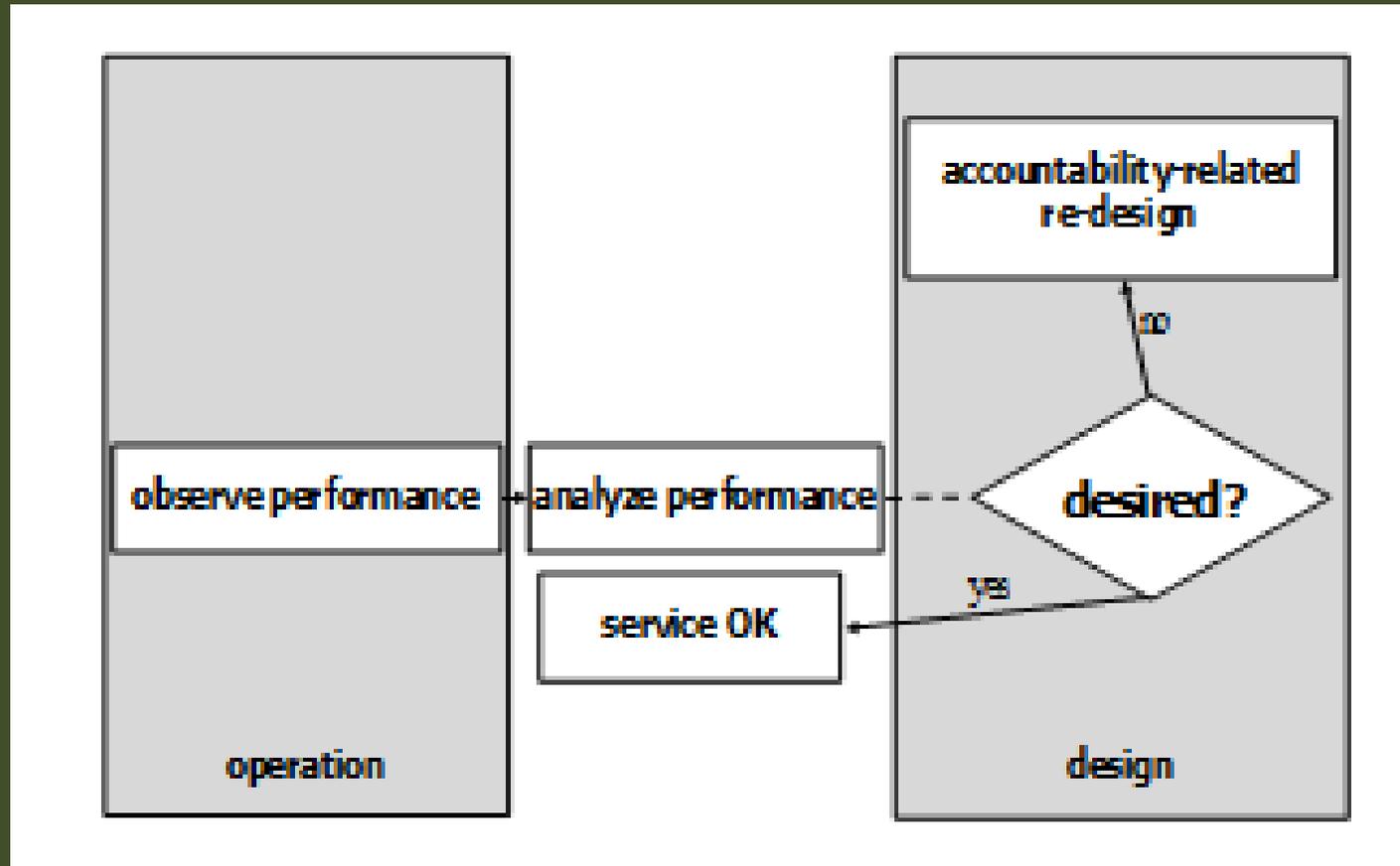
-----**Whenever** C has requested advice

If D has received information about the type of a customer need

Then D

Is obliged to deliver a candidate-matches list

Example – Weaving a Public Value (Accountability) in the FM System Design



Example – Energy-wise, the FM Case is Positioned as WATER-driven, because:

- The business entity model, would look the same no matter if the advising is delivered by a human (who in turn collaborates with other humans for the match-making, request processing, and so on) or by a software component (that in turn collaborates with other software components for the match-making, request processing, and so on) => The business processes are ESSENTIALLY STABLE.
- At the same time, those business processes can be realized through different “channels”, such as human-driven and software-driven (see above) and therefore, the BUSINESS OPERATION IS CHANGEABLE.

Conclusion

- in this paper, we have considered the SDBC Approach that is about the enterprise-modeling-driven specification of software
 - and in particular, we have addressed the SDBC-driven modeling of enterprises
- further, we have considered four enterprise modeling perspectives: (i) language-acts-driven modeling; (ii) regulations-driven modeling; (iii) public-values-driven modeling; (iv) energy-driven modeling
- each of those is rooted in particular underlying theories
- not claiming exhaustiveness, we have studied enterprise modeling in all those four perspectives:
 - in isolation and
 - in combination
- we have justified their importance and illustrated possible modeling activities
- our plans for future research include:
 - better incorporation of those issues in the SDBC Approach
 - realization of bigger case studies, such that a better justification is achieved as it concerns the adequacy of our proposed ways of modeling

A NEW RELEVANT PAPER: Shishkov B., Verbraeck A. (2020) Making Enterprise Information Systems Resilient against Disruptive Events. In: Shishkov B. (eds) Business Modeling and Software Design. BMSD 2020. Lecture Notes in Business Information Processing, vol 391 (ISBN: 978-3-030-52305-3). Springer, Cham

THANK YOU!!!