

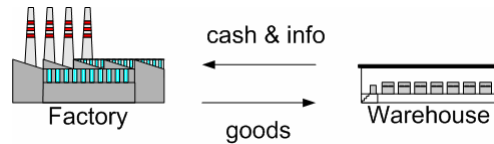
# Modeling Issues in REA

Anders Hessellund  
Software Development Group  
IT University of Copenhagen, Denmark

## Agenda

1. Myself
2. Vendor Managed Inventory
3. Prototype experiment
4. Underspecification
5. Example: Events and commitments
6. Future work
7. Summary

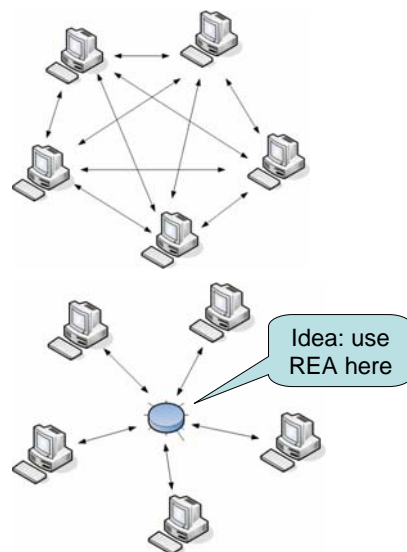
# Vendor Managed Inventory



- My initial interest in REA stems from an experiment with a prototype for Vendor Managed Inventory (VMI).
- Business problem: in order to be able to properly respond to changes in demand, suppliers establish large safety stocks.
- Idea: if different companies in a supply chain agree to share order information, then safety stock can be reduced, e.g., the vendor receives order info and takes responsibility of the retailer's warehouse (VMI).
- Implementation problem: each partner in a supply chain use a different system and data format. Interoperability becomes a central issue.

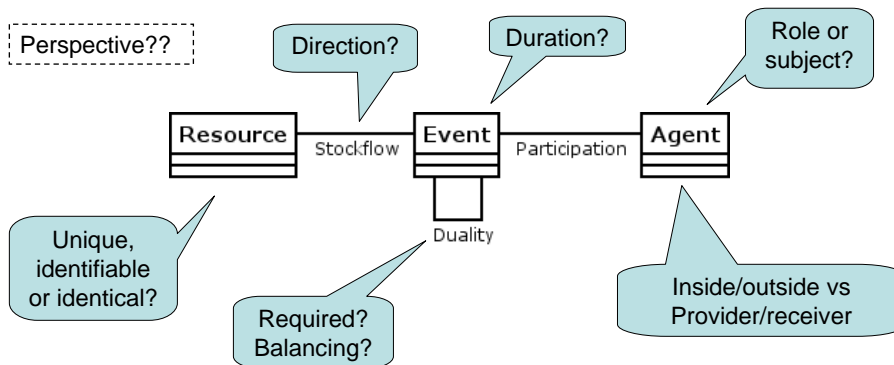
# Interoperability

- Hohpe and Woolf suggests two different solutions in "Enterprise Integration Patterns".
  1. P2P Message Translators
  2. Canonical Data Model

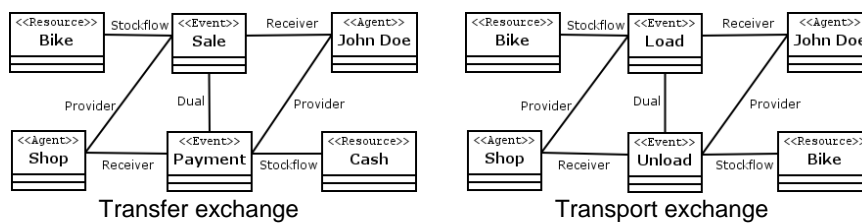


# Underspecification

- In order for REA to be operational as a Canonical Data Model, we need to determine the exact semantics of each part of the metamodel.



## Example: Events/Commitments



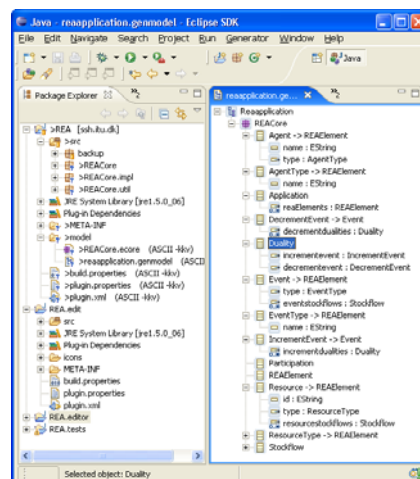
	Changes ownership	Changes liability	Changes location	Stockflow direction	...
Sale	Yes	Yes	No	Two-ways	...
Payment	Yes	Yes	No	Two-ways	...
Load	No	No/yes (?)	Yes	One-way	...
Unload	No	Yes	Yes	One-way	...
...	...	...	...	...	...

## Future work

- A similar analysis should be performed on other basic entities of REA such as Resource, Agent, Location, Commitment, Agreement and the corresponding types.
- *REA Compliance* criteria should be specified such that business models can be evaluated from a REA perspective. This would also facilitate validation of large business models.
- A common REA modeling tool should be developed. This would allow domain experts to construct and evaluate business models as well as generating executable code from these models, i.e., MDD.

## REA modeling in action

- Preliminary ideas
  - Formalize REA as a generic *ecore*-model using the Eclipse Modeling Framework.
  - Generate REA-specific modeling tools based on this generic model.
  - Visualize concrete REA models as UML Class diagrams by relying on the XML representation of such models.
  - Validate models using the OCL support in the EMFT project.
  - Last step: Generate applications based on concrete models.
- Advantages
  - Open source which makes it well-suited for academic purposes.
  - Research perspectives for both domain analysts and software developers.
- Showstoppers
  - No established community to develop and provide feedback on the prototype.



# Summary

- Background: VMI and prototype work
  - Underspecification problem
  - Example: Events and commitments
  - Directions for future work
- 
- Reference:  
"Supply Chain Modeling in REA", TR-2006-80, Technical Report Series of the IT University of Copenhagen, DK.