Transactions in Business Process Modeling

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Motivation

- *Transaction* – a notion capturing a set of individual operations that have to be completely fulfilled.
- *Generic perceiving of transaction –* Design Engineering Methodology for Organizations.
- *Domain specific perceiving of transaction –* Resource Event Agent (REA) transaction. REA has its origin in accountancy systems.
- *Can these different ontologies (approaches) collaborate utilizing a different form of transactions?*

Outline

1. Introduction – business process modeling.
2. DEMO methodology.
3. REA methodology.
4. Demonstrating Example (Electrical Energy Supply)
   - elaborated in DEMO,
   - elaborated using REA.
5. Conclusion

1 Business Process Modeling

- Inseparable part of software development.
- Process models depict human beings in the form of *actors* or *agents* and the way they interact with the system (social system).
- Process models depict also activities and the information flowing between them.
- The main problem is to cope with the diversity and complexity of the created systems.

1 Business Process Modeling

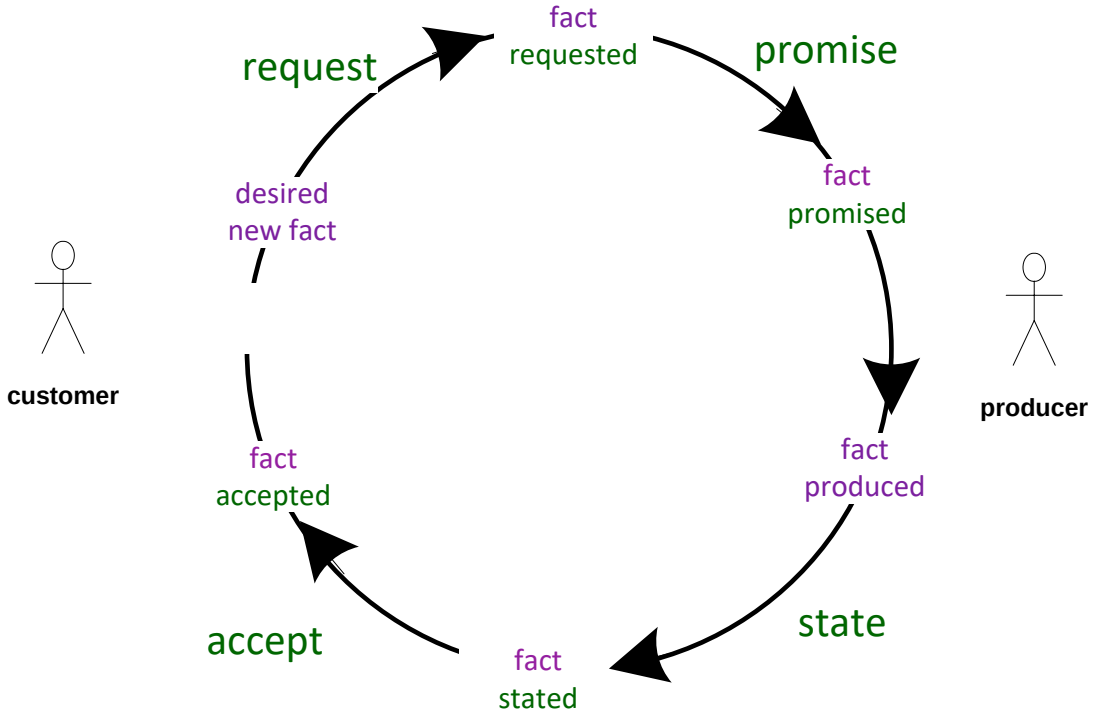
- There is a need for precisely defined theory and methodology to manage this topic.
- "Best practice approach" on which most methodologies is based on, proved to be insufficient in many cases.
- Most methodologies follows only functional aspect of the developed IT systems.

2 DEMO Methodology

Operation axiom, Transaction axiom

- Organization is composed of people who perform two kinds of acts, production acts and coordination acts.
- By performing coordination acts human beings enter into and comply with commitments. Coordination acts initiate and coordinate *production acts*.
- The result of successfully performing a production act is a production fact.
- The result of successfully performing a coordination act is a coordination fact.

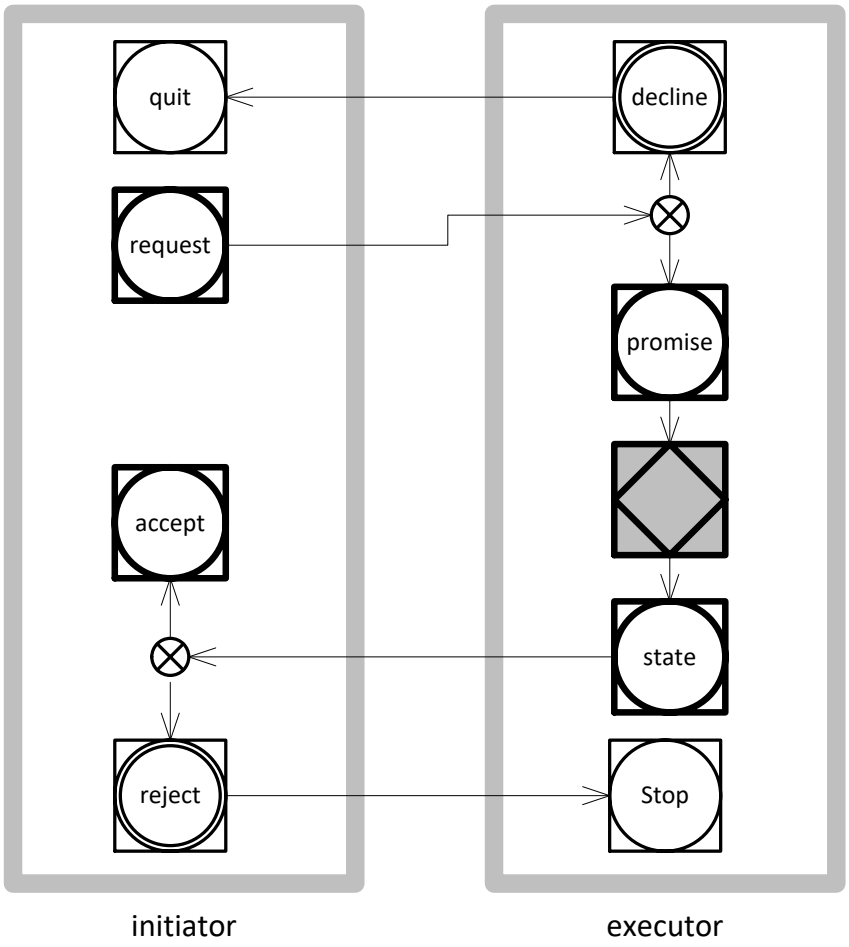
Transaction axiom



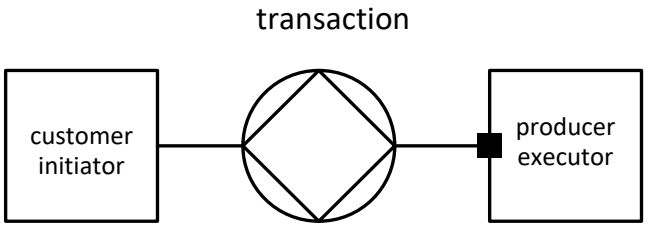
- Any transaction follows a precisely specified pattern; there are certain state transitions and rules that specify allowed and exclude forbidden state transitions.

2 DEMO Methodology

Operation axiom, Transaction axiom

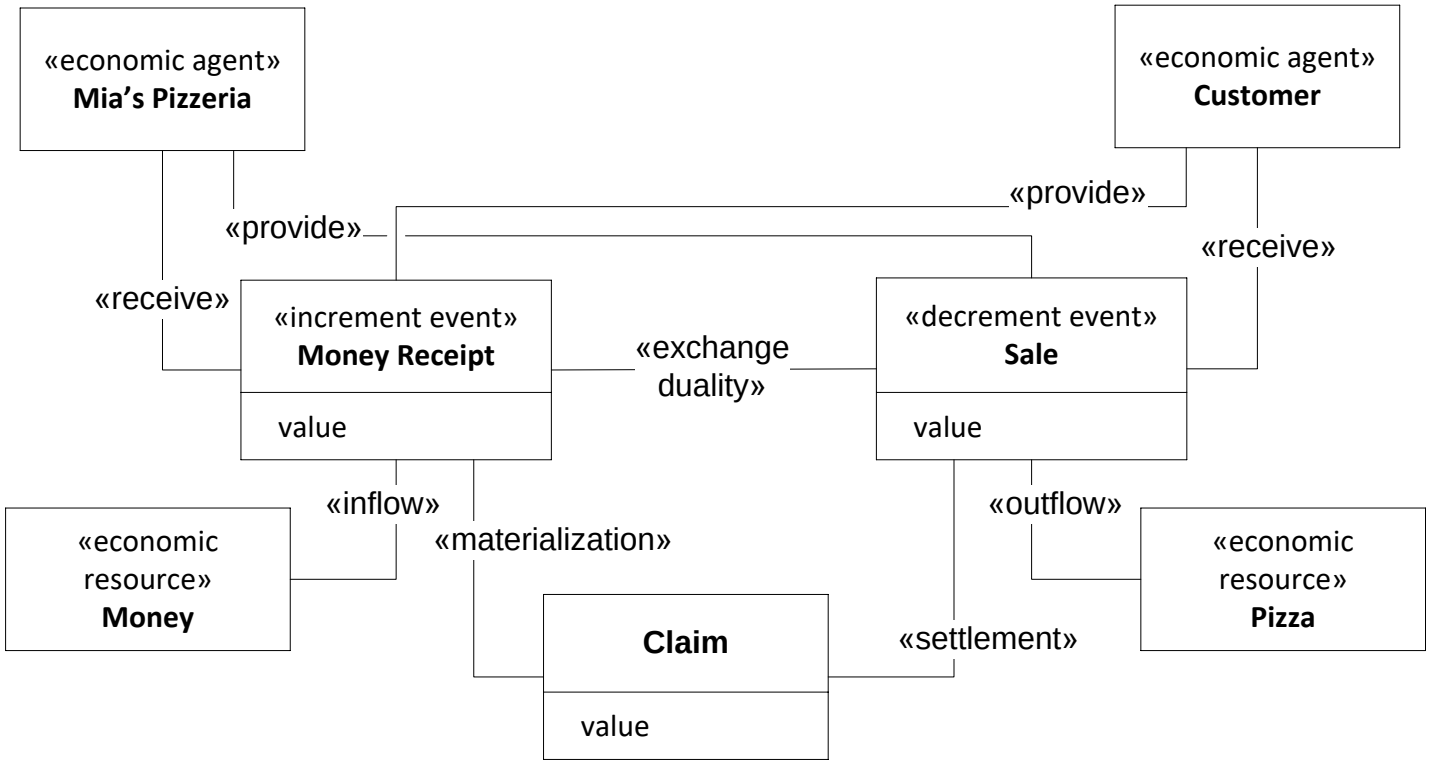


- Standard transaction pattern.
- Business process is expressed as a casual related tree of DEMO transactions.



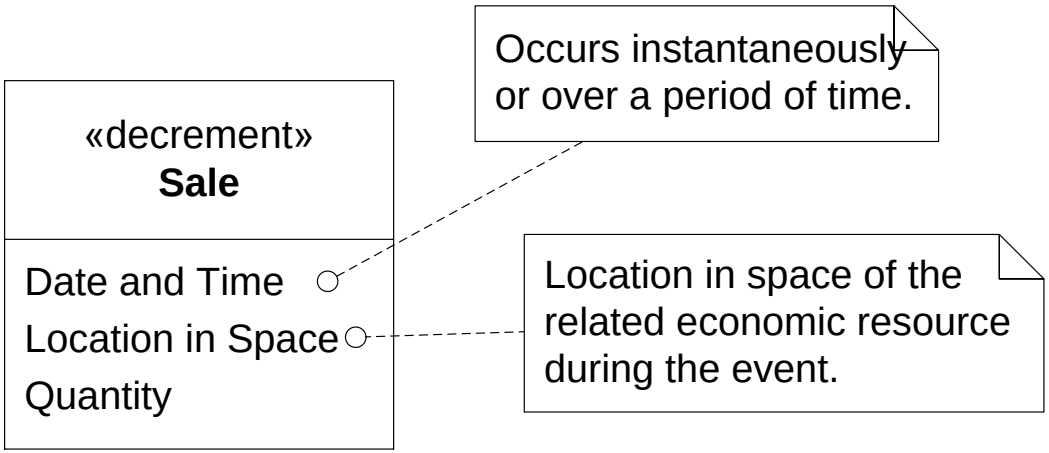
3 REA Methodology

REA Core Pattern



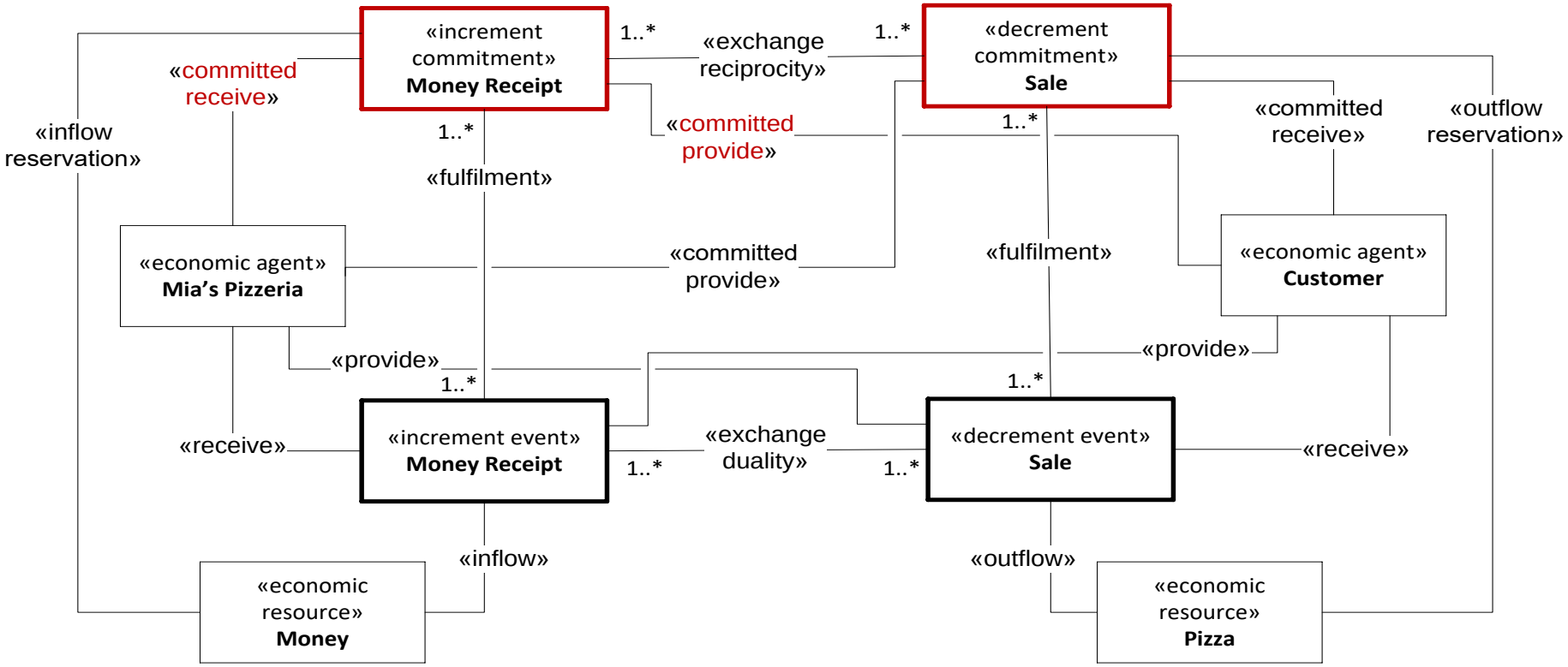
- Two mutually bound transactions.
- *Event* represents an increment or a decrement in the value of economic resources (*transferring rights* from one economic agent to another.

Economic Event



- By its character, *economic event* represents *production act and fact* – similar to the DEMO standard transaction pattern - *execution phase*.

Future activities in REA value model

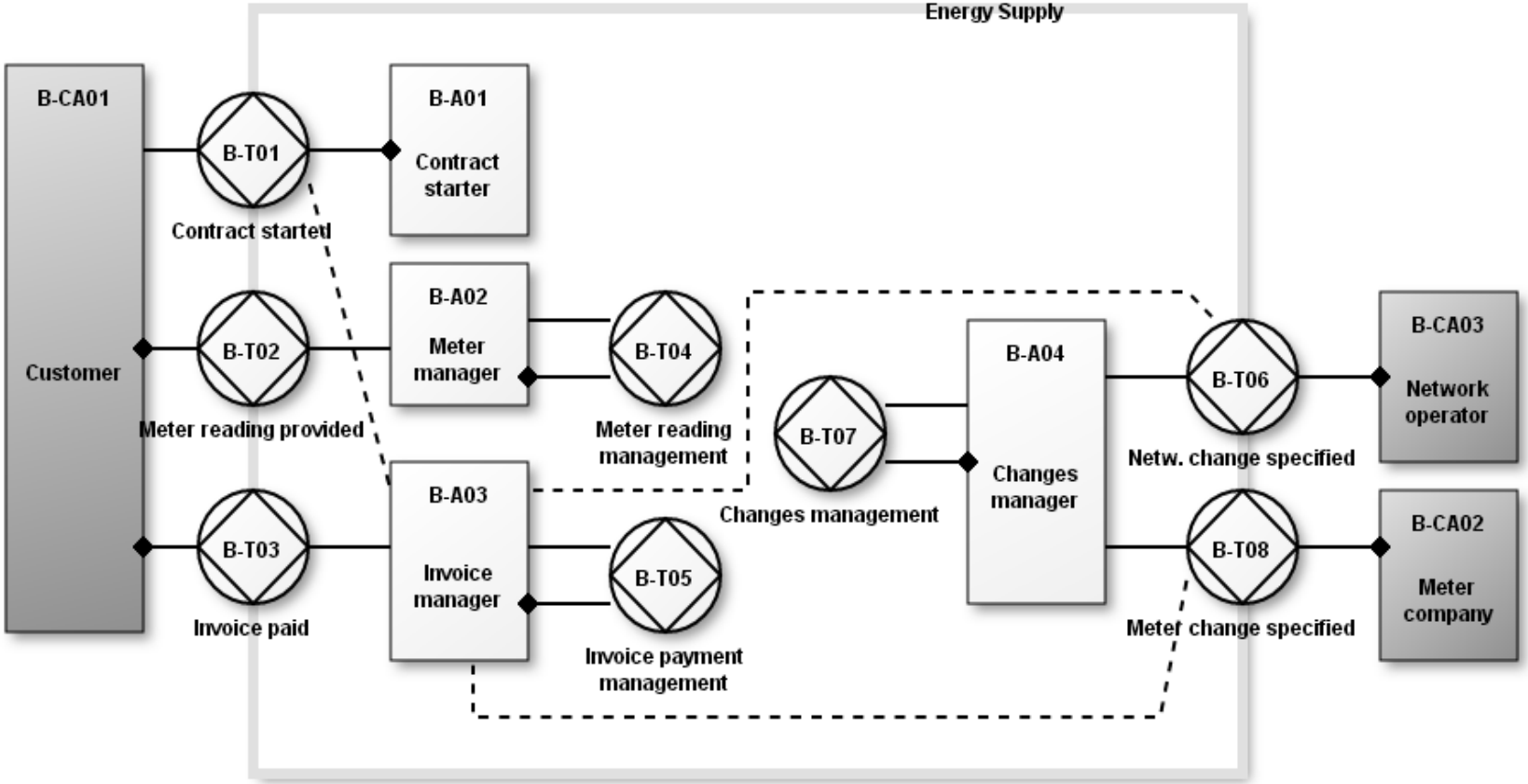


- *Commitment* is a promise or obligation of economic agents to perform an economic event in the future.

4 Electrical Energy Supply

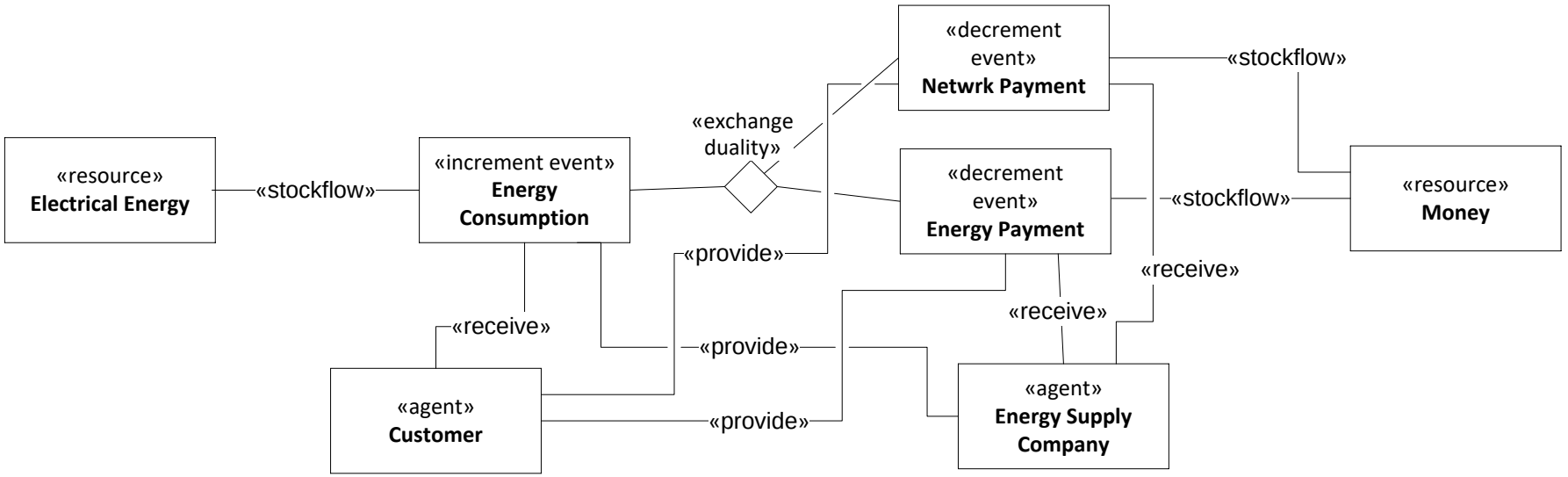
- Client *signs a contract* about electrical energy supply.
- Consumed electrical energy has to be paid by the customer in the form of invoices
- Usually once a year, the real electrical energy consumption is ensured by reading the meter.
- The electrical energy payment is composed of the network charge and real energy charge.

4 Electrical Energy Supply - DEMO



- Construction model – actor roles and transactions

Electrical Energy Supply - REA



- REA model – exchange process: events express value change of resources,
- Conversion process: use, consume or produce of resources

5 Discussion

- This results in the fact that DEMO has greater capabilities for capturing events in the real world with good empirical evidence.
- Business process is structured as a tree of transactions contrary to standard methodologies.
- REA approach addresses only production activities in a *sequential order*.
- REA events are connected with resources and capture exchange of the property rights of resources and activities of using, consuming and producing.

6 Conclusion

- How to mutually utilized both ontologies (approaches):
- Both ontologies utilize notion of transaction.
- In DEMO each event is captured as a fact or a group of facts.
- Facts are composed of objects and roles they play.
- DEMO as a generic ontology can deliver necessary facts in a REA model.

6 Conclusion

- DEMO transaction is much strict in fulfilling the role of state machine.
- REA transaction is derived from ER model expressing relationships between entities.

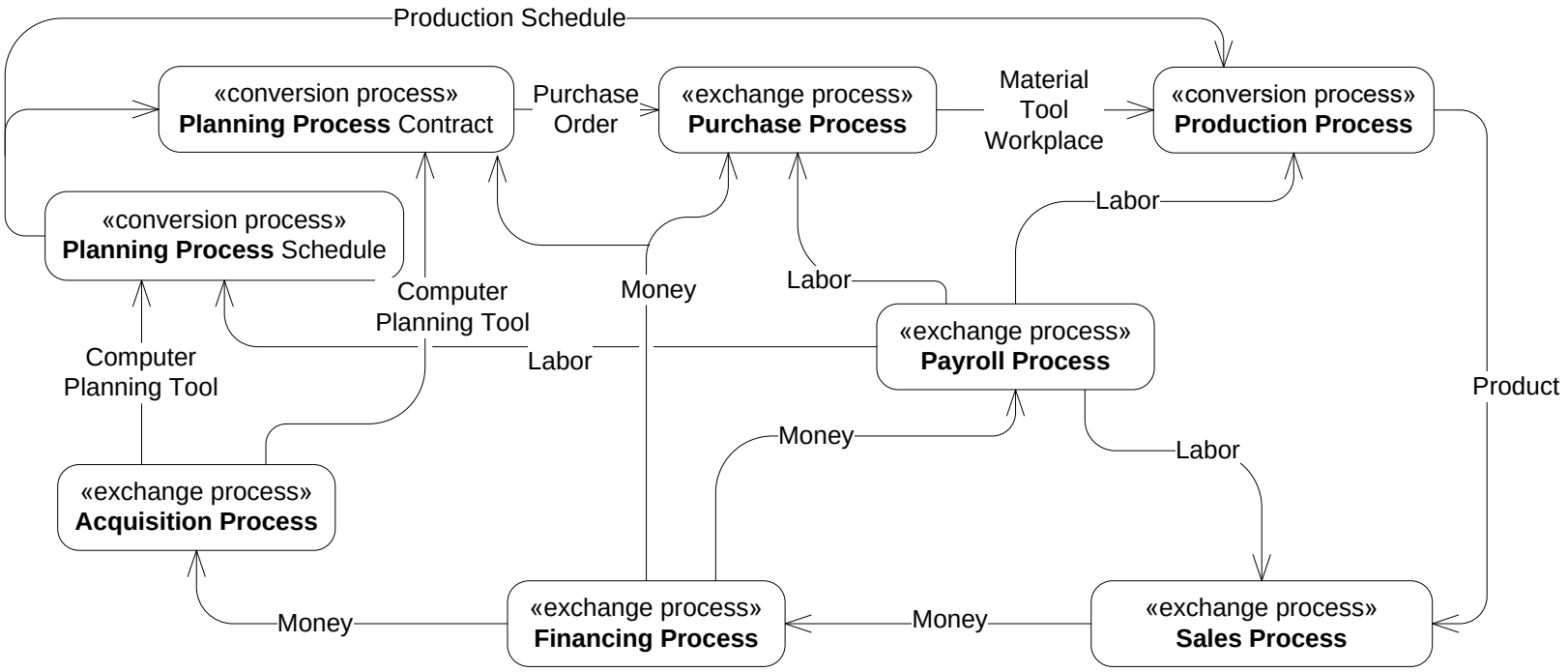
Thank you for your attention.

Primary REA Benefits

- REA operates on *primary and raw* economic data and therefore it offers a *wider*, *more precise*, and *more up-to-date range of reports.*
- Models based on the traditional double entry accounting system operates on derived accounting data.

- The purpose of an economic event in the REA exchange process is to transfer some of the rights associated with the resource from one economic agent to another.
- The economic events address *when* economic agents *had* the rights to the resources, and consequently *when* economic resources *changed* value.

REA Value Chain



- Value modeling – only a resource flow is possible.