



# Dealing with Interoperability: An Agent-Oriented Perspective

**Klaus Fischer**

German Research Center for Artificial Intelligence

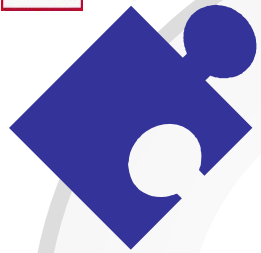
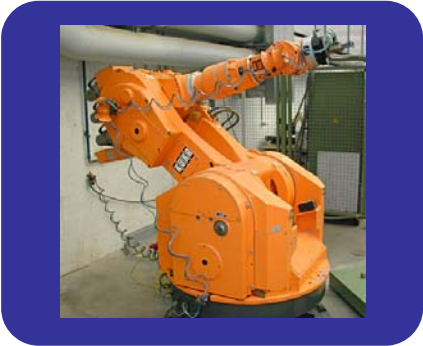
DFKI GmbH

Saarbrücken, Germany

# Designing Service-Oriented Architectures



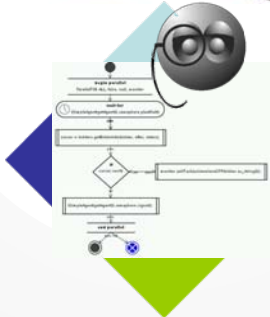
## Production



## Taxes



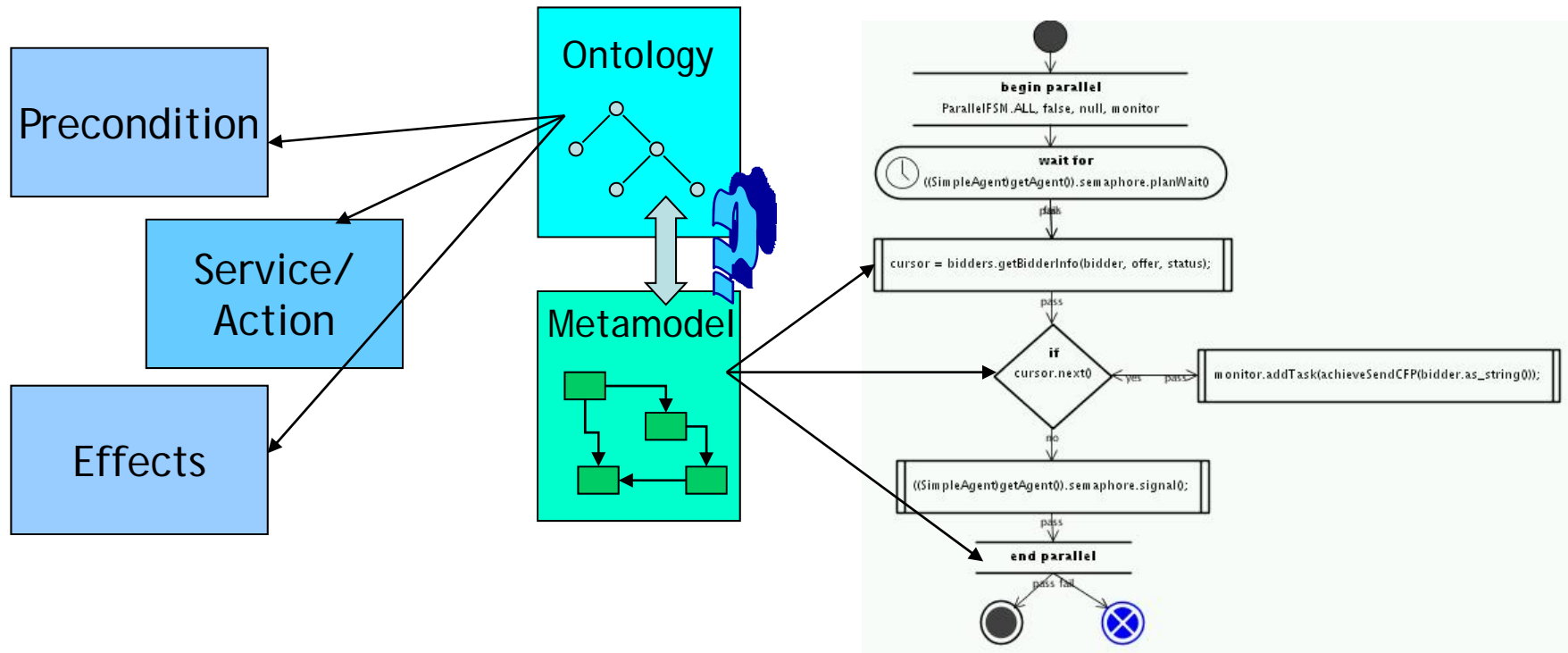
## Retail



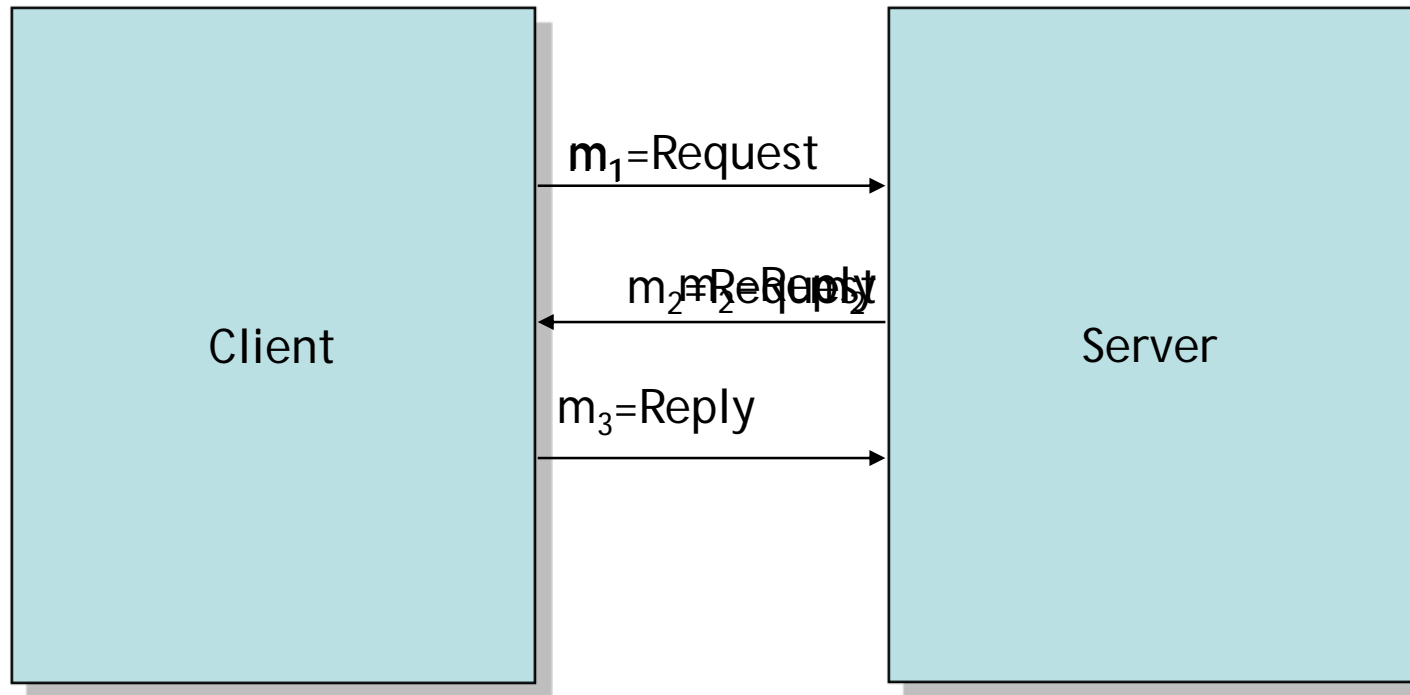
## Logistics



# Semantic Services vs. MDA/MDD



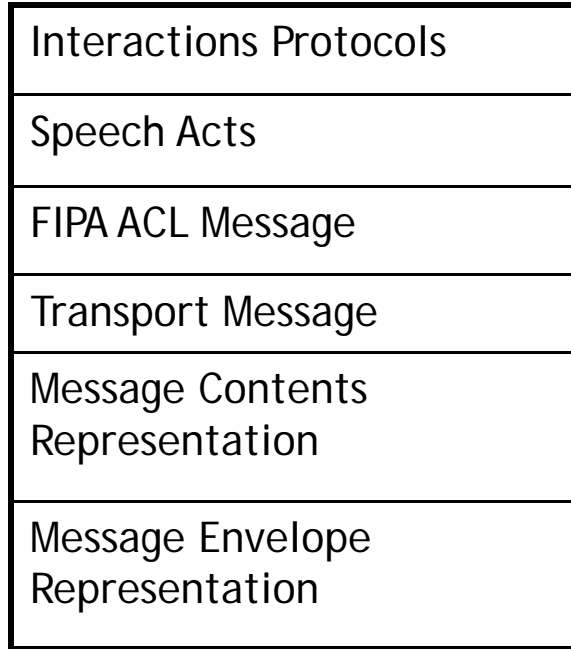
# Interactions in SOA



# FIPA Specifications for Agent Communication



## FIPA Communication Specification Stack:



One of the most relevant specifications for agent

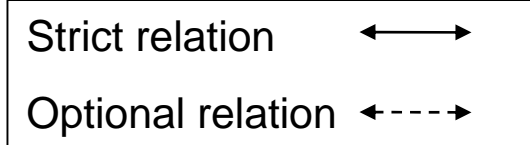
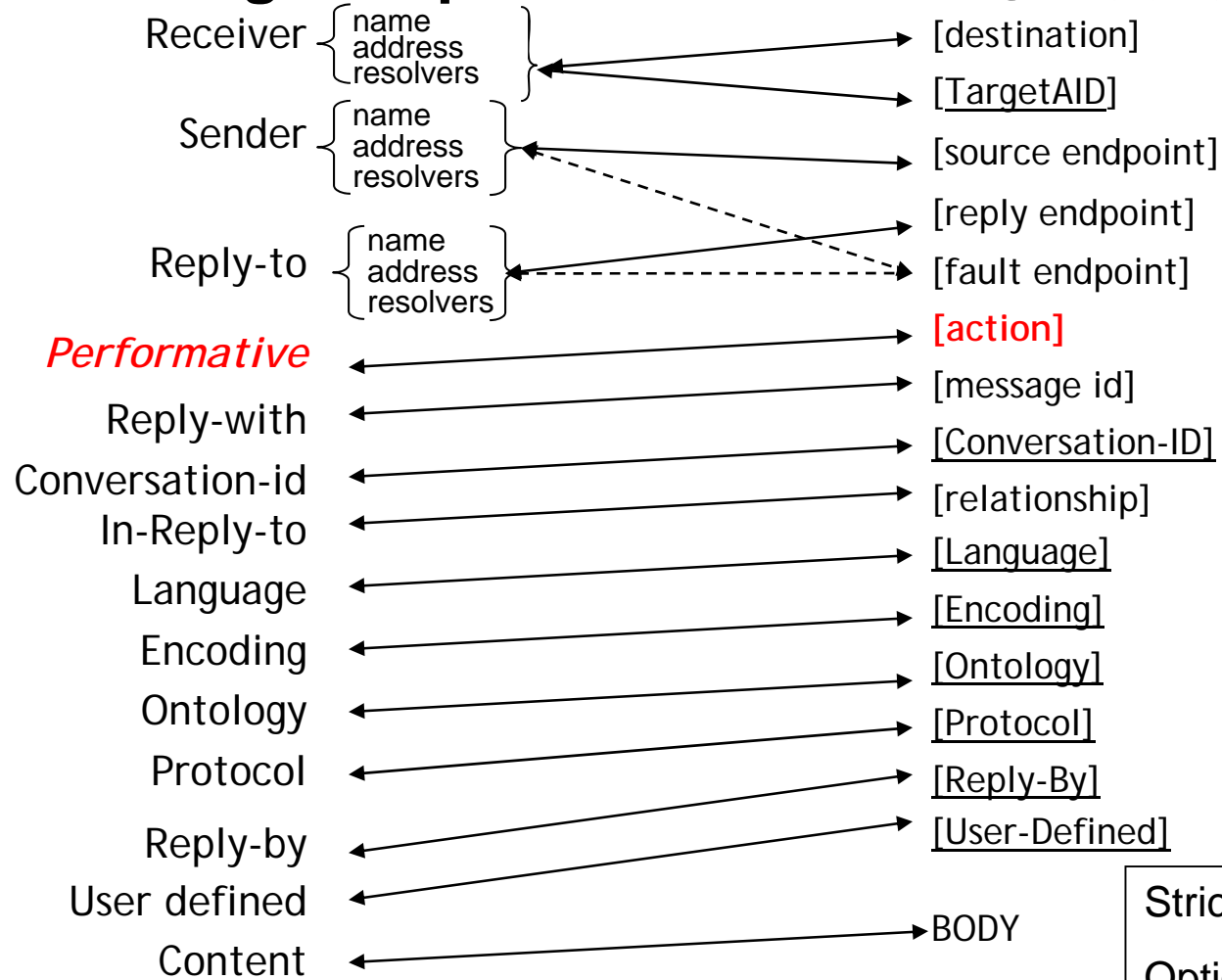
- Message-exchange sequences
- Set of basic actions (structure + semantic)
- Message definition:
  - Structure
  - Representation
  - Transportation details

# A FIPA and WS-Addressing Mapping



## FIPA Message Properties

## WS-Addressing EPR



# Transformation of SOA into a Message-Oriented Architecture



## FIPA Interaction Protocols

### Collaboration Description (WS-CDL)

#### Service Description

Semantic Description (OWL-S, etc)

Interface Description (WSDL)

#### Contents

FIPA- Speech act library (XML+Sem.desc.)

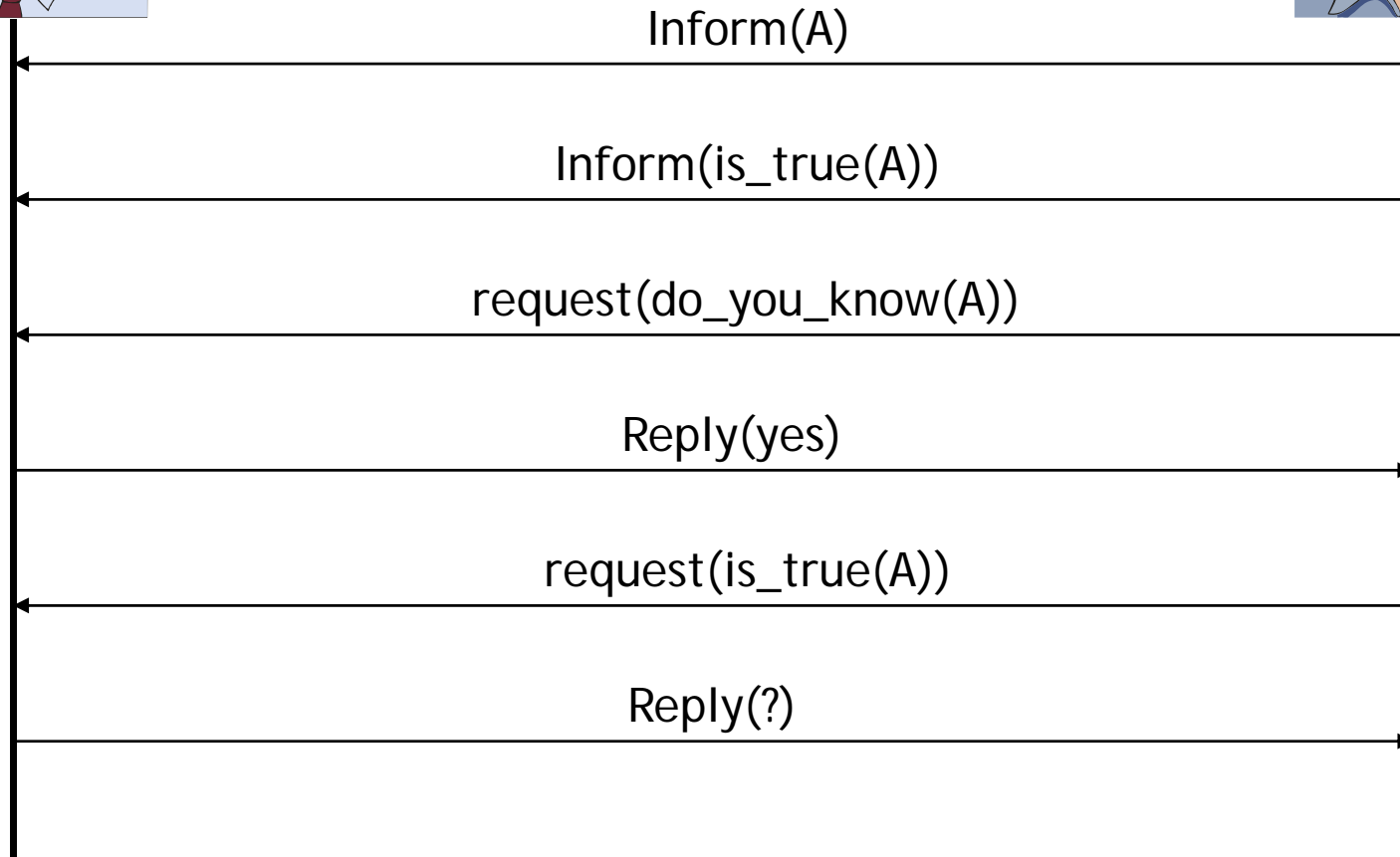
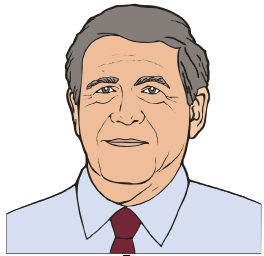
FIPA- Message Envelope Specification

WS- Envelope (WS-Addressing)

### Messaging (SOAP)

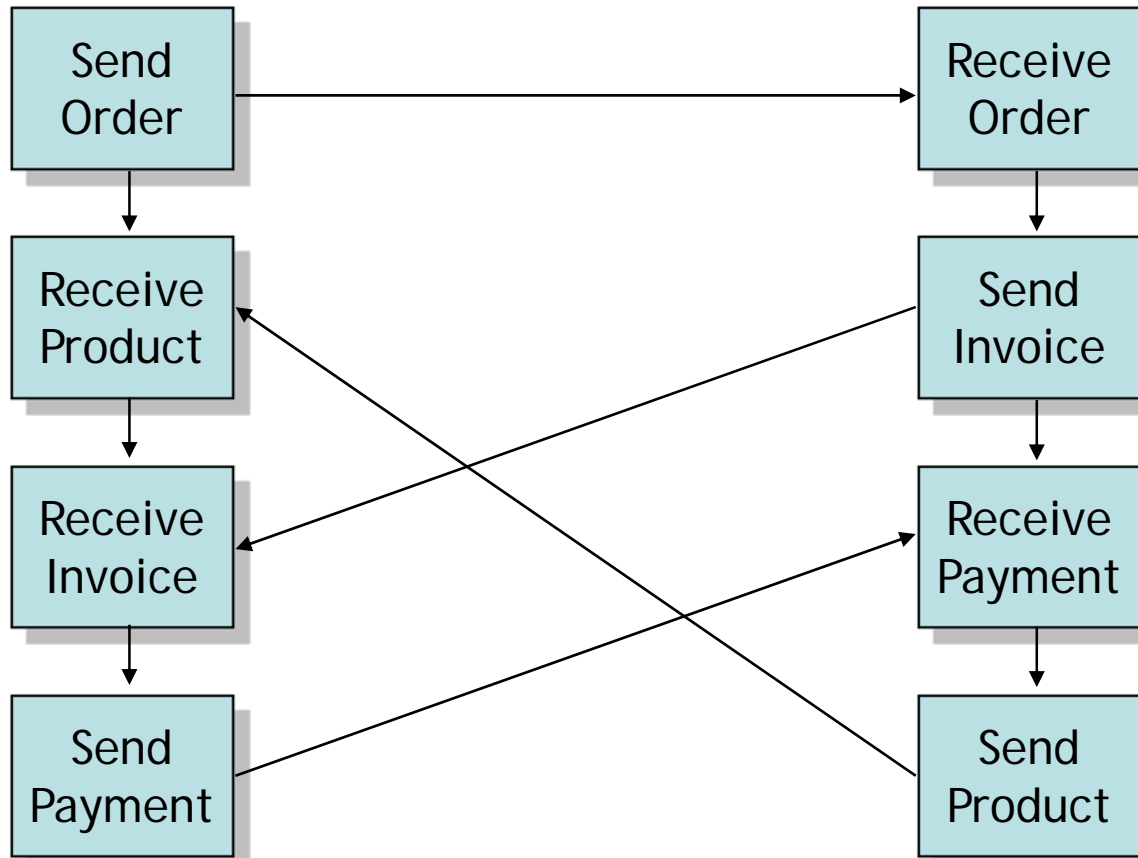
Communication (HTTP, SMTP, FTP,...)

# Semantics of Basic Communicative Acts





# Process Alignment





- Integration of semantic service descriptions with model-driven development of service-oriented architectures
- Definition of an appropriate communication ontology and envelope language
- Representation of models and metamodels as well as formalisms to describe the semantics of models
- Automated test environments for checking model compliance and model compatibility
- Improve the implementation of tool chains for model-driven system development