

# Representing Interaction Protocols in DAML

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## Motivation

- Software agents will operate in an open, heterogeneous and dynamic environment
  - no sense in programming "everything" in the agent code
  - not easy to code simple task-specialist agents for every task
    - this would require complete knowledge about the state and available services of the whole environment at all times
- Instead something in between
- Some of the information useful to the agents could be **distributed across** the environment
- Agents have to be able to **adapt** to this distributed knowledge
- Influence from the theory of distributed cognition

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## What is distributed?

Facts, "know that"

Domain-specific facts

Tasks, "know-how"

Domain-specific tasks

Conversations

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## What is distributed (contd.)?

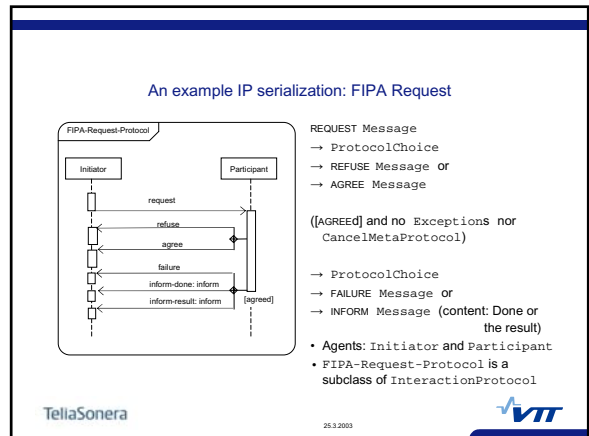
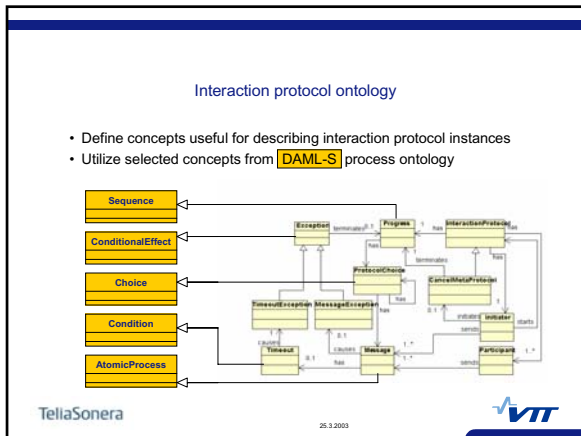
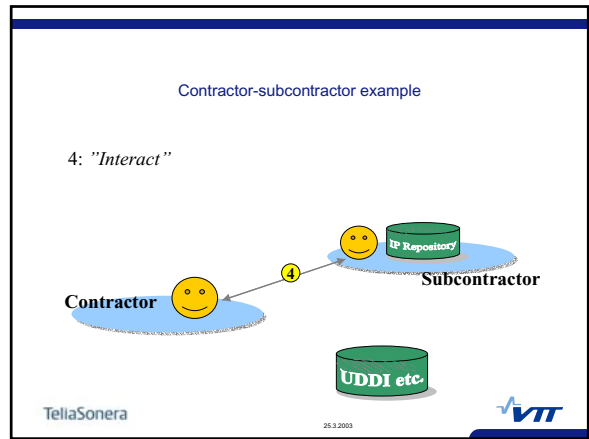
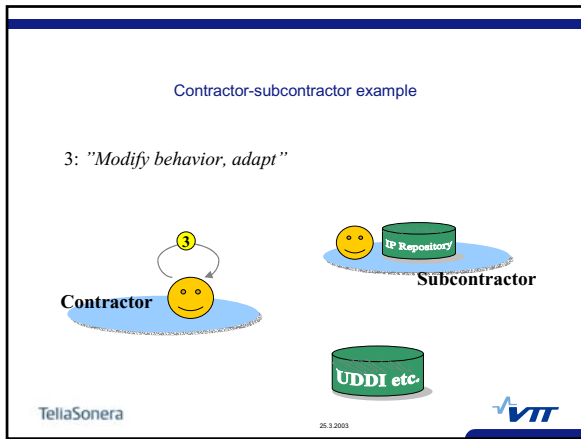
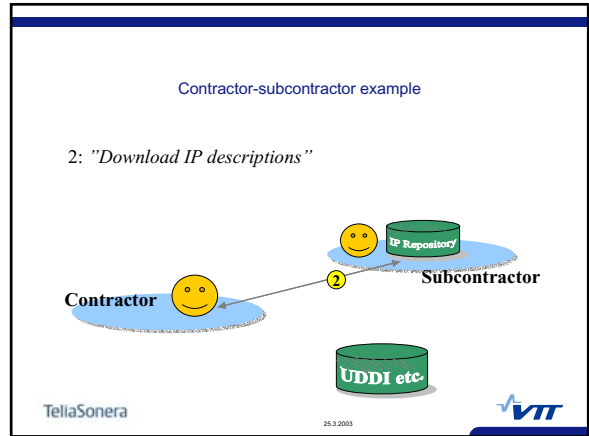
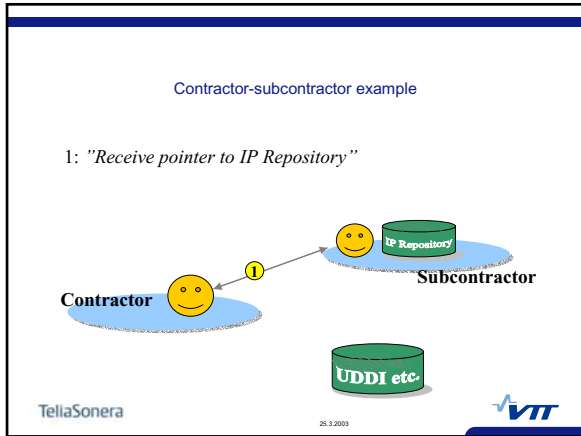
		primitive	composite
type-level	communicative act	interaction protocol	
instance-level	message	entire conversation	

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## Contractor-subcontractor example

0: "Find subcontractor"

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### Conclusions

- Software agents acting in dynamically changing and heterogeneous environment(s) benefit from **adaptability**
- Agents can adapt to task-related information such as conversation descriptions in addition to fact-related information
- **Interaction protocol ontology** specifies useful concepts to be used when serializing individual interaction protocols
- Interaction protocols can be serialized for example using **DAML-S** and stored in a repository external to the agents
  - the agents can download the IP descriptions and modify their behavior (i.e. adapt) based on the descriptions

### Ongoing and future work

- Incorporate more concepts from DAML-S and modify existing ones as new versions of the specification emerge
- Divide the interaction protocol ontology into layers
  - From layers enabling simple descriptions into ones that enable more complex ones
  - IP descriptions conforming with complex IP ontology layers enable better adaptability for the agents
- Consider distributing and serializing other conversation elements



### Thank you!

- Questions?

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