

# Agreement Technologies

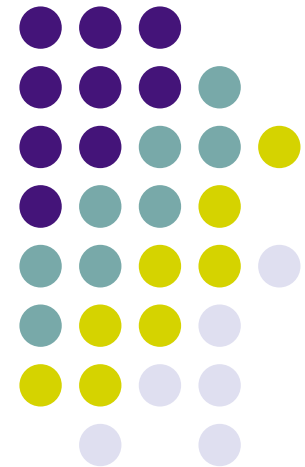
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 **Cost Action IC0801**

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<http://www.agreement-technologies.eu>

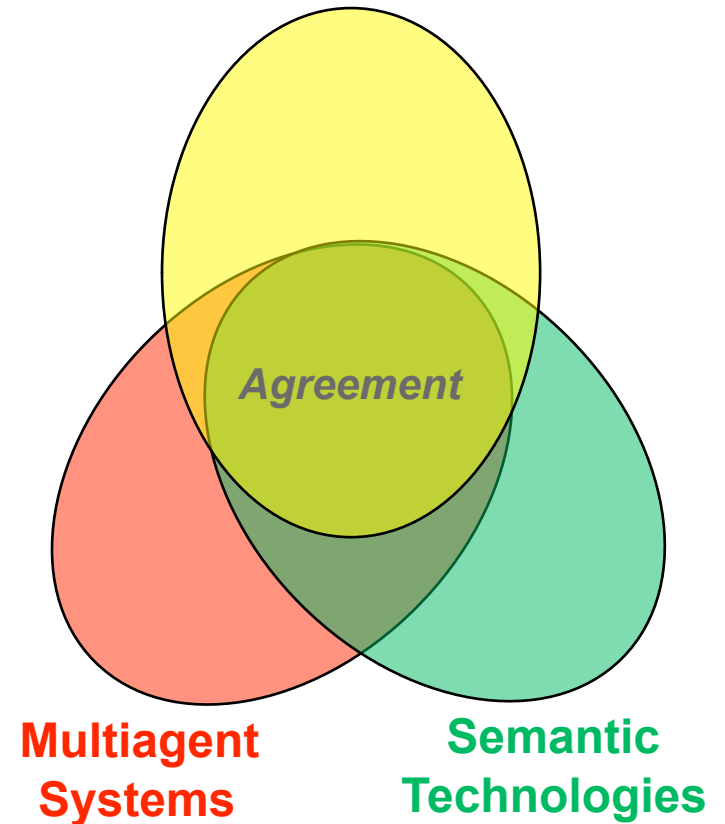




# Agreement Technologies

- Large-scale open distributed systems
  - Area of enormous **social and economic potential**
  - **Paradigm Shift**: beyond the client-server architectures...
- Vision:
  - A paradigm for next-generation open distributed systems, based on the concept of **agreement** between computational **agents**.
    - **normative context**: rules of the game
    - “call-by agreement” interaction method: first **establishment**, then **enactment** of agreements

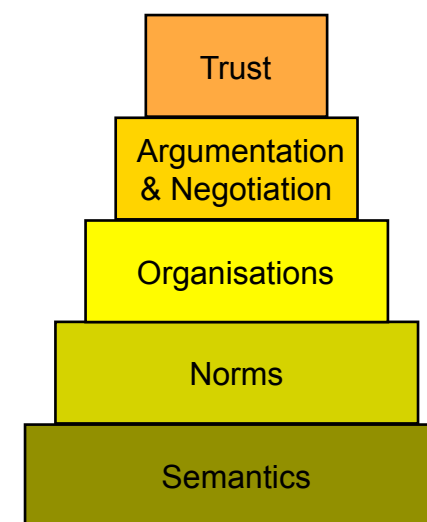
Social Science





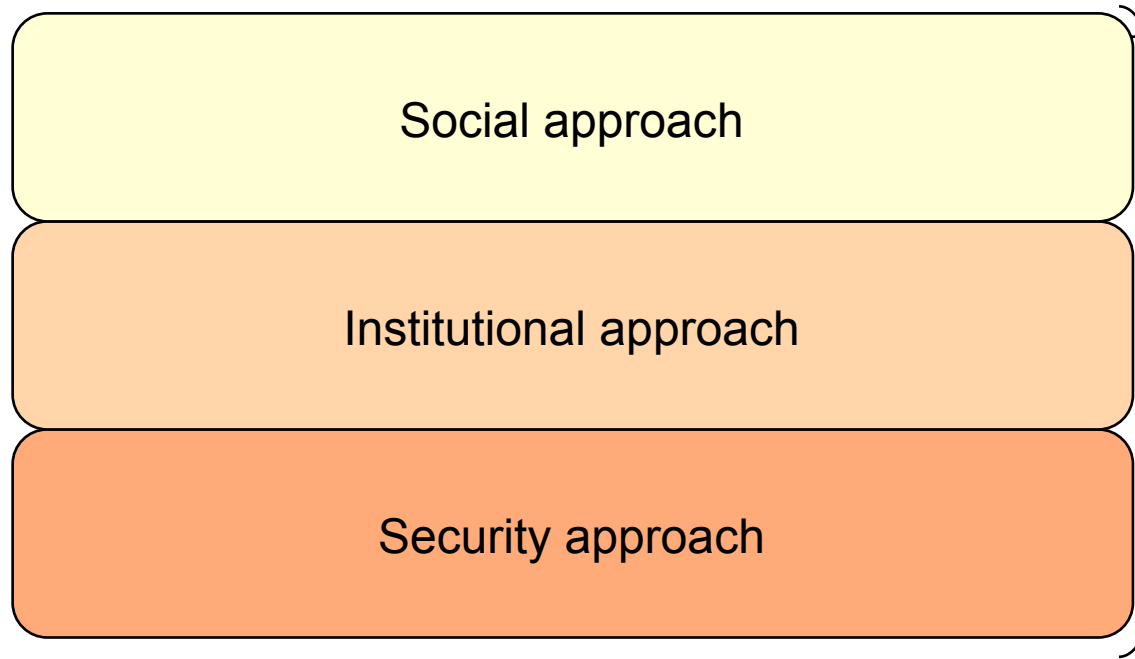
# Strands of research

- Fundamental and applied research:
  - **Semantics:** Semantic mismatches & alignment of ontologies
  - **Norms:** Specify and verify constraints on agreement
  - **Organisations:** Structure the processes of reaching agreements
  - **Argumentation & Negotiation:** Reach agreements that respect the constraints imposed by norms and organisations
  - **Trust:** Summarise the history of agreements and agreement executions in order to build long-term relation
- Interdisciplinary research:
  - Solid **conceptual foundations:** robust understanding of the notion of agreement and agreement processes



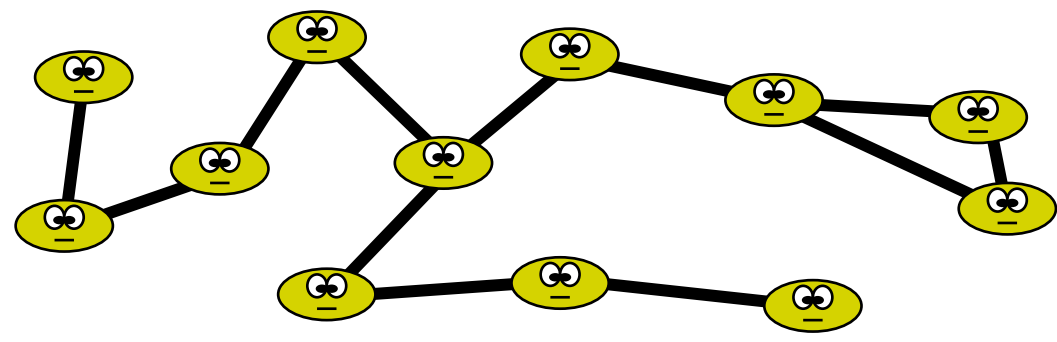


## Different approaches to control the interaction



**Trust and reputation mechanisms are situated at this level.**

They are complementary and cover different aspects of interaction.



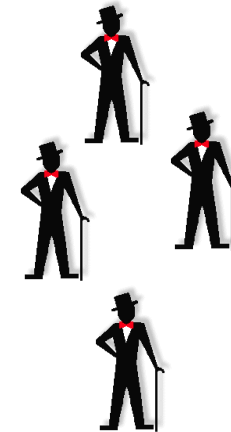


■ At an individual level, computational trust and reputation models are used by software agents:

- As a mechanism for partner selection
- As an incentive in the decision making process to honour a contract.

■ At a collective level:

They act as control mechanisms to avoid frauds and isolate individuals with a non desirable behaviour.



# Objectives

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- Networking
- Definition of common activities
- Planning for the three years of the action



## WG5 Morning session

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- Babak talked about maintenance-based trust. Introduces a model with Different roles (referee, trustworthy) direct and indirect interactions. Trust model based on error minimisation. Shows experimental results on service provider analysis.
- Chung. Talks on selection of services. Trust on service oriented environments. Trust on composition of services. It has a discount factor. Trust is based on the preferences of the agents.
- Isaac talks about a BDI architecture for the modelling of preferences where no explicit representation of trust is made.
- Reid Talks about attacks to trust and reputation. The effects of trust on the agent's behaviour are important. Vulnerability of the trust values by certain types of actions.
- Martin Warns about the importance of assumptions on the structure of the environment. Identity has to be guaranteed as well as certain similarity between transactions.



## WG5 discussions

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- Àngels tries to convince everybody that Diplomacy is the best game for trust and in fact for agreement technologies.
- Oly is proposing a method for propagating values in sensor networks where trust is associated to the notion of reliability of sensors.
- Alessandra presents her way of specifying policies using preferences. Healthcare policies that take into account the context and patient answers.
- Axel puts challenges from the semantics perspective. Difficult ones. Trust on ontologies, on data, ...



## Problems found and ideas proposed

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- Connection between agent *goals* and trust model has to be made more clear than in current models.
- Give semantics to *preferences* of agents in relation to trust models.
- Integrate the agent *cognitive* model with its trust model.
- *Emotions* might be good to avoid predictability.
- *Vulnerability* analysis is important. If there is a slim incentive to violate an agreement this will happen.
- Assumptions are unclear in several models. They should be made explicit.
- We should aim at processing of large quantities of data and messages to better assess trust models.
- The trust on a group seems essential for complex problem solving.
- Trust on data and trust on groups are unsolved challenges.



## Actions and Meeting @ EUMAS09

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Keep the WG growing

- 1) Meeting on ‘trust on groups’
- 2) Meeting on ‘Trust on data (ontology)’