



# An evaluation framework for agent-oriented methodologies

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## Agentlink III AOSE TFG

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# An evaluation framework for AOSEM

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- Context
  - Diverse scope of application of methodologies
    - Several aspects: analysis, design, implementation, deployment, validation, verification, etc.
    - Several application domains: from closed systems to open systems, web support, etc.
  - Tool support
    - Tools for modelling and code generation
    - Some methodologies have no tool support at all
  - Development process not always defined
  - Different notations
  - Different agent concepts
  - Standardization efforts
  - Several approaches for integration:
    - A common standard notation: which one?
    - Fragments

# An evaluation framework for AOSEM

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- Evaluation of AOSEM can help towards the success of AOSE
  - Clarification of concepts => towards a standard notation
  - Integration of fragments
  - Definition of AOSE processes: heavy to light approaches
  - Promotion of tools

## Inputs for AOSEM evaluation

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- A. Sturm, O. Shehory, D. Dori (2004). Evaluation of Agent-Oriented Methodologies. In AL3 TF1-AOSE TFG
- Q.N. Tran, G. Low (2005). Comparison of ten agent-oriented methodologies. To appear.
- C. Bernon, et al. (2004). A Study of some Multi-Agent Meta-Models. Proc. AOSE 2004.
- L. Cernuzzi, G. Rossi (2004). On the evaluation of agent oriented methodologies.
- L. Cernuzzi, M. Cossentino, F. Zambonelli (2005). Process Models for Agent-Based Development. International Journal on Engineering Applications of Artificial Intelligence (EAAI). Elsevier. (in edition?)

# Criteria for AOSEM evaluation

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- Process
  - Process definition: agile vs. heavy
  - Scope of activities: whole or partial life-cycle, from requirements to implementation, validation, verification, testing, etc.
  - Documentation and guidelines. Examples
  - Tool support
  - Metrics, quality assurance
  - Teamwork/enterprise support
- Concepts/Modeling elements
  - Individual aspects: agent modelling, behaviour, mental notions
  - Social aspects: organization, communication, coordination, user interface
  - Environment: perception and actuation, mobility, application domain, interworking with legacy systems

# Criteria for AOSEM evaluation

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- Features
- Complexity
- Application domain
- Pragmatics
- Others ???

# Criteria for AOSEM evaluation

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	Concepts		Process	
Features	Agent, Goal, Interaction...		Deliverables Activities	
Complexity	Abstraction Modularity		Team work	
Domain	Domain specific concepts		<i>Domain specific methods</i>	
Pragmatics	Knowledge skills Scalability		<i>Tools</i>	

# Towards an AOSEM evaluation framework

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- The evaluation framework should allow:
  - Criteria refinement and extensions
  - Criteria metrics depending on the domain
    - E.g. agents in a web service or in robotics
  - Definition of standard case studies for evaluation
    - Evaluation of documentation is not enough
  - ...

# Towards an AOSEM evaluation framework

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- The framework can be based on the definition and use of *evaluation models*
  - Case studies for putting the methodologies to work
  - Organized by criteria
    - For each criteria, define metrics
    - Criteria can be refined to get more insight or being more specific
      - For instance, agent behaviour, depending on whether BDI, neural network, CBR, reactive, or whatever model is used
    - New criteria can be added
    - Some criteria may be considered non applicable
    - Associate criteria to case studies

# Proposed activities

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- What to do from now on
  - Collaborative work area: phpCollab (UCM)
    - Send email to [jpavon@sip.ucm.es](mailto:jpavon@sip.ucm.es) for being included
  - Contribute to forum by discussing on
    - Criteria structure
    - Criteria identification definition
    - Case studies
    - What else?
  - Contribute by adding material
    - References
    - Proposals
- Next AOSE TFG meeting
  - Confirm structure of evaluation framework
- And finally
  - Establish an open web site for including case studies developed with methodologies and evaluations derived from these