An evaluation framework for agent-oriented methodologies

Agentlink III
AOSE TFG
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An evaluation framework for AOSEM

- **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

- 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

Criteria for AOSEM evaluation

- **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

- Features
- Complexity
- Application domain
- Pragmatics
- Others ???
## Criteria for AOSEM evaluation

<table>
<thead>
<tr>
<th>Features</th>
<th>Concepts</th>
<th>Process</th>
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<tr>
<td>Agent, Goal, Interaction...</td>
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<td>Deliverables Activities</td>
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<td>Abstraction</td>
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<td>Team work</td>
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<td>Modularity</td>
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<td>Scalability</td>
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### Pragmatics
- Tools
Towards an AOSEM evaluation framework

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

- 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 criterion, 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

- **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