

MEnSA: Résumé of Activities

An Outline

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ALMA MATER STUDIORUM—Università di Bologna a Cesena

3rd MEnSA Meeting
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- 1 Introduction
- 2 Deliverables first year
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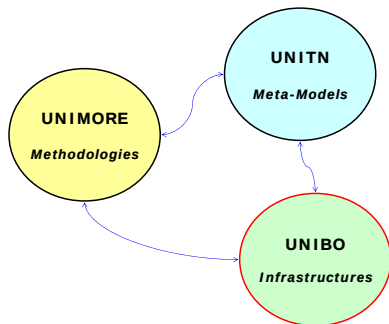


MEnSA: The objective

- The MEnSA project aim at fulfilling the **gap** between
 - agent-oriented development methodologies
 - multi-agent infrastructures
- We intend to draw from the vast literature available to
 - synthesise a new methodological framework for agent-based system
 - build up the infrastructures and development tools that actually support and promote such a framework



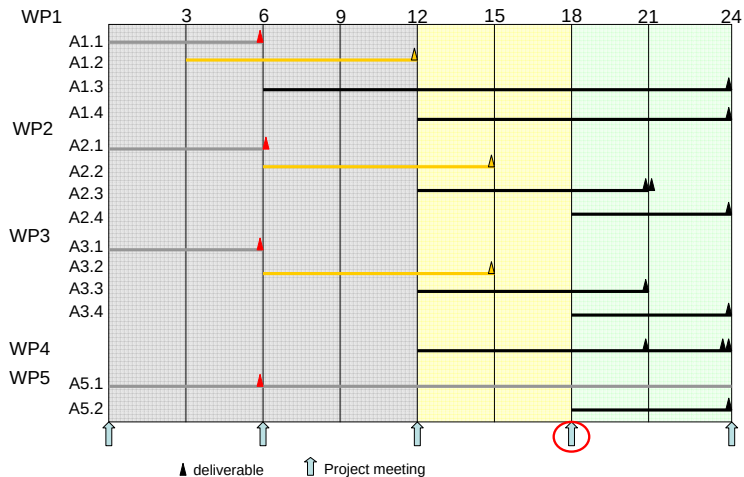
MEnSA Structure & Workpackages



- The activities of MEnSA are articulated along five workpackages
 - WP1 Meta-Models
 - WP2 Methodologies
 - WP3 Infrastructures
 - WP4 Case study
 - WP5 Dissemination



Gantt Diagram



Deliverable D1.1

- AOSE
- MAS infrastructures
- Meta-modelling techniques
- AO methodologies
 - Gaia, PASSI, Prometheus, SODA, Tropos
- AO infrastructures
 - Jade, TuCSoN, MARS, TOTA, RoleX, CARTAGO



Deliverable D5.1



MENSA Methodologies for the Engineering of complex Software Systems:
Agent-based approach
...your Engineering buffet

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Welcome to MENSA Project

MENSA is a research project financed by the Italian Ministry for Education, University, and Research (Ministero dell'Università e della Ricerca), and the project acronym stands for "Methodologies for the Engineering of complex Software systems: Agent-based approach".

The main objective is the creation of agent-oriented software engineering methodologies that support the development of complex software systems. The methodologies will assist the whole development process, from the requirements analysis to the actual implementation of the systems, using a metamodel-based approach. The expected result is a contribute in filling the existing gap between agent-oriented methodologies and multi-agent systems.

MENSA is a joint project among Alma Mater Studiorum - Università di Bologna (Cesena branch), Università degli Studi di Modena e Reggio Emilia, and Università degli Studi di Trento.



Alma Mater Studiorum - Università di Bologna (Cesena)
Dip. Elettronica, Informatica e Sistemistica (DEIS)



Università degli Studi di Modena e Reggio Emilia
Dip. Ingegneria dell'Informazione (DII)



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Deliverable D2.1

- Agent-Oriented methodologies
- Evaluated Features
 - service-oriented agents
 - agents societies
 - tools
- Methodologies & Processes
 - ADELFE, Gaia, MaSE, PASSI, Prometheus, SODA, Tropos
- Discussion about the methodologies



Deliverable D3.1

- Definitions of infrastructure
- Infrastructures for MAS
- Infrastructure's models: static and dynamic models
- Infrastructures and SE
 - infrastructure selection
 - the state of the art of the OO infrastructures
- Infrastructures and AOSE
- Coordination, Organisation and Security
- Agent-oriented infrastructures
 - Jade, TuCSoN, MARS, TOTA, RoleX, CARTAGO



Meta-model & Methodology

- In order to obtain a good meta-model – and a good methodology – we should follow a path similar to that adopted in the engineering of a system
 - we should define the requirements of our product (the methodology),
 - then proceed backward to the identification of the methodologies' fragments that can contribute to satisfy each requirement;
 - this first meta-model usually needs a consistent refinement
 - checking definitions-names consistency and coherence,
 - completing the list of elements by introducing concepts ensuring other methodology features,
 - introducing all the necessary relationships among them.
 - once the meta-model is refined enough it is possible to start the new methodology definition by assembling the selected fragments according to the selected life-cycle.



First-approximation Requirements

- ① Fill the gap between design and implementation
 - transformational approach from requirement capturing to design and implementation
 - support for traceability
 - the abstractions adopted in the design phase should be powerful enough to properly design the system
- ② Good requirements capturing and analysis
 - support for both functional and non-functional requirements
 - support for both goal-oriented analysis and functional-oriented analysis
- ③ Adoption of different kinds of abstractions in the different phases.
- ④ Enable an easy transition towards the new methodology to designers who are fluent with one or more of the input methodologies.



Second-approximation Requirements I

- ① Model-driven engineering paradigm will be therefore adopted; first hypothesis of domains list includes problem, agency, solution domains. Transformations among the elements of each of the domains should be clearly defined.
- ② Layering (SODA-style)
- ③ Goal-oriented analysis should be performed before functional-oriented analysis
- ④ Interaction
 - agent interactions should also include semantic communications
 - ontology should be used to model agent's knowledge
 - FIPA-compliance is advisable at least at the communication level
 - agent interactions with the environment should be explicitly modelled
 - The indirect interactions should be supported
- ⑤ Model social aspects by organisational rules



Second-approximation Requirements II

- ⑥ Model environment topology
- ⑦ Inclusion of the “service” concept
- ⑧ Non functional requirements should be explicitly modeled
- ⑨ The agent's plans should be modelled but they do not constraint the agent architecture to a specific kind of agent



Deliverable D1.2

- Requirements and principles for assembling the meta-model
- MEnSA meta-model: a preliminary version
- The process
- MEnSA glossary
- Linking methodologies: a conceptual map
- MEnSA Meta-model
 - requirements phase
 - design and implementation phases

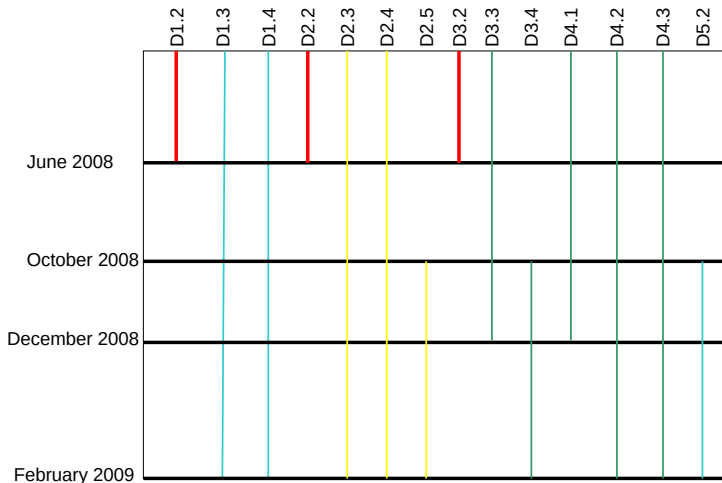


Deliverable D4.1

- First draft of the case study is presented
 - The biological problem: Protein folding
 - Bioinformatics: the application of computational techniques
 - VLab requirements
 - An AOSE perspective
 - Scenario
 - the hydrofobic-hydrophilic model
 - metaheuristic for protein folding prediction



Timetable



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