

**IEEE FOUNDATION FOR INTELLIGENT PHYSICAL AGENTS  
STANDARDS COMMITTEE (FIPA SC)  
Design Process Documentation and Fragmentation Working Group**

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**CALL FOR PROPOSALS**

**Problem Statement:**

Complex software system development with the agent-oriented approach requires suitable agent oriented modeling techniques and processes providing explicit support for the key abstractions of the agent paradigm.

Several design processes supporting analysis, design and implementation of Multi-Agent Systems (MAS) have been to date proposed in the context of Agent Oriented Software Engineering (AOSE).

Each of them presents different advantages when applied to specific problems. A unique design process cannot be general enough to be useful to everyone without some kind of customisation; when developing a new design process, several MAS developers/designers prefer to use phases or models or elements coming from existing design processes in order to build up a personalised approach for their own problem.

This problem can be faced by adopting the method engineering paradigm (more precisely the situational method engineering paradigm). Situational method engineering paradigm provides means for constructing ad-hoc software engineering processes following an approach based on the reuse of portions of existing design processes, the so called *method fragments* stored in a repository, called *method base*.

Method fragment or simply fragment is the building block of ad-hoc design processes; several well known approaches in literature present different definitions and descriptions of method fragment but all of them share the same assumption: each existing design process can be considered as composed of self contained components, the fragments. The definition of method fragment in every kind of situational method engineering approach constitutes the base for the extraction of fragments from existing design processes, for their retrieval from the method base and for their assembly in the new design process. Today it does not exist (yet) a unique, standard, definition of method fragment besides when looking at existing design processes, usually designers have to cope with an additional difficulty consisting in the lack of uniformity in their documentation.

We think that in the FIPA context, the adoption of a standardised way for representing design aimed at developing multi-agent systems is very advisable. This would facilitate the comparison of different processes, their evaluation and an easier transition to the next step of our proposal: the fragmentation of such processes in a set of fragments abiding to the same structure. The definition of a standard way for documenting design processes and the definition of a standard structure of the fragments that compose these processes are therefore the aims of this working group.

**Objective of this working group:**

This working group aims to propose a definition of method fragment to be used during a situational method engineering process, the fundamental elements it is composed of and the metamodel it is based on.

The first step will be the identification of the most suitable process metamodel and notation: (i) for the representation of the existing design processes from which the fragments have to be extracted, and (ii) for the representation of fragments themselves. An important contribution about that might come from an OMG specification, the Software Process Engineering Metamodel 2.0 (SPEM), or from the ISO 24744 specification.

The second step will consist in the definition of a proper template for the description of agent-oriented design processes. Such a template will, obviously, refer to the selected process metamodel and suggest the adoption of good practices in documenting existing processes as well as defining new ones.

The third step will be the definition of the Method Fragment Structure and Documentation Template. This work will start from the results obtained by the FIPA Methodology Technical Committee (years 2003-2005).

The documentation and fragmentation of some existing design processes (members already committed for: ADELFE, ASEME, ASPECS, INGENIAS, GORMAS, PASSI, SODA) will be

performed with the aim of defining guidelines and best practices for process fragmentation according to the specification provided in the Method Fragment Structure and Documentation Template.

The proposed work aims at providing the possibility of representing design processes and method fragments through the use of a standardized structure thus allowing the creation of sharable repositories and enabling an easier composition of new design processes.

In the future this standardized way of representing method fragments could be used for the implementation of fragments in a CAPE (Computer Aided Process Engineering) tool supporting the designer during the construction phases.

#### **Objective of this call for proposal:**

The first step of this WG activity consists in identifying the proper approach to the documentation of agent-oriented design processes. This approach should include:

- A description of a design process metamodel.
- A notation (coherent with the above listed design process metamodel).
- A template of document to be used for describing existing design processes

The second step is devoted to the adoption of a method fragment metamodel (obviously coherent with adopted process description approach) and the description of process fragmentation guidelines/procedures.

With this call for proposal, WG members ask for the contribution of scientists, practitioners and experts in the area in order to receive proposals suitable for satisfying the above described requirements.

#### **How to contribute:**

Initial proposal can also be partial or they can even address only a portion of the overall problem. It is in the policy of this group to discuss and consider all contributions.

Contributions can be submitted by using the WG mailing list (if the submitter is already subscribed to that) or they can be submitted contacting the chair.

#### **Deadline:**

Although new interesting ideas are always welcome, it has to be considered that starting from the beginning of July 2009, this working group will deal with the definition of the process metamodel and the specification of the related notation.

#### **List of members (in adhesion chronological order):**

##### **Submitters:**

- M. Cossentino (National Research Council, IT),
- A. Molesini (Univ. Bologna, IT)
- A. Omicini (Univ. Bologna, IT)
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##### **Supporters:**

- S. DeLoach (Kansas State Univ., USA)
- G. Fortino (Univ. Calabria, IT)
- S. Galland (Univ. Belfort, UTBM, FR)
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- N. Gaud (Univ. Belfort, UTBM, FR)
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