

**Review Form: 1st International Workshop on
Services and Infrastructure for the Ubiquitous and Mobile Internet (SIUMI'05)**



SIUMI 2005

WEB MINDS

Columbus, Ohio,
USA, June 6th, 2005

In conjunction with the 25th Int. Conference on Distributed Computing Systems (**ICDCS'05**)

Paper Number:15

Paper Title: An Adaptive Middleware to Support context-Aware Knowledge
Sharing

Authors: R. Boselli, F. Cabitza, F. De Paoli and M. Loregian

Reviewer1:

Familiarity Rate your familiarity with the topic	1	2	3	(X)4	
	Novice	Some knowledge	Familiar	Expert	
Significance Technical relevance and practicality of ideas in the paper	1	X(2)		3	
	Not significant	Somewhat significant		Highly significant	
Novelty How original the problem and/or solution method is	1	(X)2		3	
	Not novel	Somewhat novel		Highly novel	
Quality of Presentation Writing and presentation style/accuracy	1	(X)2		3	
	Poorly written	Could be improved		Well written	
Overall Recommendation	1	2	(X)3	4	5
	Strong reject	Weak reject	Weak accept	Accept	Strong accept

Contributions

The paper proposes an adaptive middleware architecture capable of providing support for context-aware applications in mobile environments.

Context information is gathered through reflection using an ontology-driven approach. The reflective architecture allows for dynamic self-adaptation.

Strengths and weaknesses

The paper has a nice background section, but a (very!!) long scenario without much value (besides motivating the work). While the work has been nicely motivated, it is not clear what is novel from a research perspective. This needs to be highlighted.

There is a listing of high level architectural components (property manager, event manager) with no details on the challenges involved in implementing any of these and the solutions developed therein. A more detailed explanation of the basic concepts proposed is required.

- (1) How are reactions modeled in this specific context? The authors provide a handwavy sentence that these are modeled as pre and post conditions. Are there conflicts? How are these conditions specified?
- (2) How does the property manager gather information from the reflective platform?
What information is collected, how often? How is this information represented? What are the concerns in this collection given the hospital domain?

On the whole, it reads more like a high level description of what could be done without much concrete material. I am sure there are interesting technical portions that could be explained in more detail. For instance, there is mention of algorithms and strategies for ontology reconciliation and interpretation given “distributed” ontologies. There are again portions of the implementation that would be interesting to know in more detail (e.g. use of the inference engine). I would cut down on the introductory motivational material and focus on the techniques implemented within each module (at least some).

In its current state, I am inclined to think that this might make a more interesting demo than a research paper. On the whole, my rating can be described as neutral since I feel that it will stimulate interesting discussion in the workshop.

Detailed public comments

Reviewer2:

Familiarity Rate your familiarity with the topic	1	2	<u>3</u>	4	
	Novice	Some knowledge	<u>Familiar</u>	Expert	
Significance Technical relevance and practicality of ideas in the paper	1	<u>2</u>	3		
	Not significant	<u>Somewhat significant</u>	Highly significant		
Novelty How original the problem and/or solution method is	1	<u>2</u>	3		
	Not novel	<u>Somewhat novel</u>	Highly novel		
Quality of Presentation Writing and presentation style/accuracy	1	<u>2</u>	3		
	Poorly written	<u>Could be improved</u>	Well written		
Overall Recommendation	1	2	<u>3</u>	4	5
	Strong reject	Weak reject	<u>Weak accept</u>	Accept	Strong accept

Contributions

The paper presents the a middleware that is currently being realized (MILK and MAIS) and a testbed application (SWIRLS) that is currently being developed within an hospital setting.

The issues tackled are important: the role and the characteristics of middleware within a project of knowledge sharing that is being applied in a real context.

The paper novelty is, indeed, only about the requirements of the SWIRLS application, since the two projects it is based on (MILK, MAIS) are well documented and published in the literature.

The authors describe the requirements in SWIRLS (but, later, in the Implementation issues, say that they are collecting the “precise” requirements) and a high-level architecture.

Strengths and weaknesses

Strength: the architecture of an application (SWIRLS) that has an interesting and novel combination of an ontology management system and a “true” ubiquitous system.

Weaknesses: it is not clear how the requirements and the architecture are “definite” or not, since the authors are still “leading field studies in an Italian hospital to collect precise requirements to support the application development” (Implementation Issues, pag. 7). It is not clear how much the novelty comes totally from the two platform used (MILK, MAIS).

Detailed public comments

The paper describes an interesting architecture of a real application based on two (connected) infrastructure projects (MILK and MAIS). The paper is well written.

The SWIRL project has been briefly described in another paper (referenced in [8]) and this paper seems a step forward toward the realization of the system. A main concern is that it is not clear how the requirements and the architecture (here described) are “definite” or not, since the authors are still “leading field studies in an Italian hospital to collect precise requirements to support the application development” (Implementation Issues, pag. 7).

In a way, while the paper’s main differences with the work presented in [8] are the architecture and the use-case study, the reader is puzzled by the fact that these are based on “not yet precise” requirements.

The feeling is that the work is highly intertwined with the work on related projects (such as MILK and MAIS) and other tools (such as distributed Jess) and that the authors should put more effort in trying to underline exactly what they are describing here, for SIUMI.

One is under the impression that the novelty is guaranteed by the usage of MAIS and MILK and nothing really new and interesting is added by the application described. The paper does not provide a convincing answer to this question... If well argued, I would change my “weak accept” to an “accept”

Reviewer3:

Familiarity Rate your familiarity with the topic 3	1	2	3	4	
	Novice	Some knowledge	Familiar	Expert	
Significance Technical relevance and practicality of ideas in the paper 2	1	2	3		
	Not significant	Somewhat significant	Highly significant		
Novelty How original the problem and/or solution method is 2	1	2	3		
	Not novel	Somewhat novel	Highly novel		
Quality of Presentation Writing and presentation style/accuracy 3	1	2	3		
	Poorly written	Could be improved	Well written		
Overall Recommendation 3	1	2	3	4	5
	Strong reject	Weak reject	Weak accept	Accept	Strong accept

Contributions

The paper describes a middleware architecture for ubiquitous applications. The implementation of one such application on top of the middleware infrastructure is described. The key features of the middleware architecture are adaptation and ontology-based knowledge management. Context information can be gathered through reflection.

Strengths and weaknesses

The paper addresses an important topic, but it is a bit too abstract to give real insights in a field that has already been widely investigated. For example, the “application scenario” is the only part of the paper where the reader can really understand the aim of the SWIRLS application. Also the description of the SWIRLS component is too generic.

I think that the technical depth of the paper is the main weakness: maybe the work described is still in its early stages, and the relevant problems and solutions are not so sharply defined.

To the contrary, the overall architecture is interesting even if not tremendously original, and it probably deserves publication if there is not too much competition.

Detailed public comments

Many of the issues addressed in the paper have been the object of previous works and/or projects. The Background section should compare the authors' proposal with relevant work on the subject: it just introduces conceptual background.

Only a few lines are devoted to implementation issues. It is not clear which parts of the MAIS / MILK subsystems have been implemented.