

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



**SIUMI 2005**

**WEB MINDS**

Columbus, Ohio,  
USA, June 6<sup>th</sup>, 2005

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

Paper Number: #04

Paper Title: "Integrating Web Services and Mobile Agent Systems"

Authors: Paolo Bellavista, Antonio Corradi, Stefano Monti

**Reviewer1:**

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

**Contributions**

It is a clear application of Web Services architecture to support Mobile Agent systems interacting in a distributed way. The authors understand the benefits of applying Web Services to the pain points with Mobile Agent systems as they exist today. The costs of adoption are very well described.

**Strengths and weaknesses**

The paper is well written and provides a novel approach to solving issues with mobile agents. The discussion on QoS measurement could be deeper and more rigorous. It would also help to provide more details on the applications and discrete verticals that can benefit from this spec/solution.

**Detailed public comments**

Need to describe further what an MA system is for the reader to better understand the application. What sorts of services/applications (ex: telco service) do the MA systems provide, and how do they interact. For example, is it an infrastructure to manage mobile devices, is it a mobile agent target at managing mobile devices? Etc.

What does "software entities that can migrate across system nodes" mean here? Run-time co-location? Dev/deploy-time facility? Async-tracing and discovering of MA agents across the network?

The discussion in section 3.2 about having coarse-grained services to solve the problem of communication costs is good. It would be valuable to add an example about a coarse-grained service and a fine-grained service here to clarify the difference.

For push and pull models of WS communications with MA systems, how is QoS is measured, and in fact, enforced? What are the semantics of policies associated with QoS requirements, how are they calibrated, and in case a particular QoS or performance requirement is not met, what are the actions taken - perhaps use a different WS route for the MA client? Etc.. These need to be addressed. If they are already addressed in WSMI, then they need to be called out here.

Security for the content being exchanged is not addressed in the paper. If its not part of WSMI spec, then what external mechanisms are used (SSL/HTTP, SSL/SOAP, etc.) to ensure content security for MA clients? The last paragraph in section 2.1 states that there are some weaknesses in the security and workflow proposals in WS to address MA issues (If I am reading this correctly). The authors do not further clarify what these weaknesses are either here or in the rest of the paper. Further, after reading the rest of the paper, the authors have just adopted the WS security mechanisms (without any further extensions) and have not mentioned anything about the workflow mechanisms.

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## **Reviewer2:**

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

## **Contributions**

The paper addresses the problem of integrating different MA systems and Web Services modules, by proposing an infrastructure, named WSMW, which enables application developers to use standardized synchronized access functions provided by MA platforms. The adopted approach is quite interesting even though the proposed infrastructure has only been described at an high level of abstraction. However, the technical content is acceptable for this workshop.

## **Strengths and weaknesses**

The proposed infrastructure, along with issues which are outlined in the paper, are quite interesting. The main weakness of the paper is that the presented prototype is based only on SOMA system. As stated in the introduction, authors are addressing the issue of integrating different MA systems by gluing together via a Web Services infrastructure. For this reason, the problem of the integration (even though for a simple case study) has been addressed (and implemented) only partially.

## Detailed public comments

The paper is well written. The proposed approach is presented clearly.

As for the MA2WS, instead of describing QoS negotiation superficially (I think that is useless talking about qoS negotiation without i) specifying which QoS parameters are authors achieving; ii) how does these parameters can be provided by applications; and iii) how does the infrastructure process and guaranteed these parameters) it should be more useful to describe how (and if) interactions between MA and proxy are then mapped into WSDL invocations.

The proposed implementation is referred only to one MA platform (SOMA). It should be interesting to evaluate different MA systems .

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## Reviewer3:

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

## Contributions

The paper proposes a solution to the problem of exposing the management and functionality of a mobile agent system (MA) to non-agent based application (clients) and the complementary aspect of allowing MAs to access functionality available on non-MA systems. The problem has been addressed in the recent years; previous studies have elaborated on how to address the processing model mismatch and the paper does not bring a novel approach to it.

At my knowledge, it is in the realm of bringing external system access to mobile agents that the paper can claim its most original contribution.

Technical aspects are well layout but clarity can be improved; good presentation of the considered MA communication models but more emphasis should be put how to deal with the mobility aspects.

## Strengths and weaknesses

Web Services based exposure of MA environments has been already presented in far more detail in the literature.

The paper replicates the main architectural aspects of MASIF in terms of management functionality, security and access control and follows the on the trend of replacing CORBA based integration with a WS based one. The paper does not discuss the problem of inter-MA integration.

The performance evaluation and experimental parts are weak; as performance deterioration resulting from the use of web services is a well documented issue a more detailed integration capability of the framework would've been welcomed.

Consistency checks of exposed functionality through profiles are a good idea but more capable/expressive metadata frameworks for agents exist. Structured approach for mapping interaction/communication models in MA systems with the model required for supporting for web services is good; more expressive diagrams pointing to the mobility aspects would enhance the presentation.

### **Detailed public comments**

As part of the rejuvenation of MA systems, the paper attacks the problematic of exposing such systems through SOA architectures. Web services based access to MA networks, management and services, is presented. It is not clear where the original contribution has been made: the management functionalities are not new and their exposure through web services is hardly a new topic. More noticeably, the authors present a solution for allowing MA to access web services while preserving the 'mobility' attribute in what seems to be the main contribution of the paper.

The more interesting subject of service aggregation/coordination is left as future work.