

A Study of Collaboration on a Community Framework between Web Services and Intelligent Agents

鍾鎔祥、楊豐兆

E-mail: 9314383@mail.dyu.edu.tw

ABSTRACT

It is more and more important to promote Web Services architecture which is based on XML technology. The objective of this paper is to combine collaborative mechanism of agent society into Web Services architecture and then increases the rate of reuse services. This architecture is composed of the register center agent, the service provider agent and the service requester agent to help requesters to retrieve services. When a new service is deployed, the register center agent will send the suitable information to the requesters in which are interested. The requester can find services quickly from the website of book store through the system. The contributions of the paper are (1)combine web services and intelligent agent society;(2)since the agent's assistance, register center deal with most process automatically;(3)provide and register services had became easily;(4)service requester can establish the connection with the service provider directly after obtain the WSDL file from register center.

Keywords : Web Services, Agent, agent society, WSDL

Table of Contents

封面內頁 簽名頁 授權書.....	iii	中文摘要.....	v	英文摘要.....	viii	
要.....	vi	誌謝.....	vii	目錄.....	viii	
圖目錄.....	xi	表目錄.....	xiii	第一章 緒論.....		
論.....	1	1.1 研究背景.....	1	1.2 研究動機.....	3	
機.....	2	1.3 研究目的.....	3	1.4 研究範圍與限制.....	4	
制.....	3	1.5 研究方法與步驟.....	4	第二章 文獻探討.....	6	
討.....	6	2.1 網絡服務相關技術探討.....	6	2.1.1 網絡服務.....	6	
務.....	6	2.1.2 通用描述探索與整合.....	8	2.1.3 網絡服務描述語言.....	9	
言.....	9	2.1.4 簡易物件存取協定.....	10	2.2 智慧型代理人技術探討.....	11	
討.....	11	2.2.1 代理人導向程式設計AOP.....	11	2.2.2 智慧型代理人.....	12	
人.....	12	2.2.3 FIPA.....	13	2.2.4 JADE.....	15	
2.3 代理人社群.....	16	2.4 物件導向分析與UML.....	17	第三章 需求分析.....	20	
析.....	20	3.1 使用需求分析.....	20	3.1.1 使用案例.....	21	
例.....	21	3.1.2 使用者需求.....	22	3.1.3 硬體需求分析.....	25	
析.....	25	3.2 網絡服務需求定義.....	26	3.3 代理人需求定義.....	27	
義.....	27	3.4 系統概念.....	27	3.5 系統流程.....	31	
31	3.5.1 索取服務流程說明.....	32	3.5.2 服務提供者端對於註冊中心流程說明.....	34	3.5.3 索取服務者端對於註冊中心流程說明.....	35
取服務者端對於註冊中心流程說明.....	35	3.5.4 服務提供者端對於服務提供者端流程說明.....	36	3.6 系統範例說明.....	37	
型.....	41	4.2 代理人社群模型.....	50	4.3 代理人實作模型.....	55	
型.....	55	4.4 程式編碼模型.....	57	4.5 部署模型.....	58	
型.....	58	第五章 系統實作.....	59	5.1 系統建置工具與運作流程.....	59	
程.....	59	5.2 系統實作.....	61	5.3 系統操作畫面.....	67	
第六章 結論.....	74	6.1 研究貢獻.....	74	6.2 未來研究方向.....	75	
向.....	75	參考文獻.....	76			

REFERENCES

1. 蕭淳豐，網路教學平台下的訊息代理人實作，高雄師範大學 資訊教育研究所碩士論文，(2001)。
2. 伍石能，運用智慧型代理人編製網路教案初探-國中生活科技 為例，中山大學資訊管理研究所碩士論文，(2001)。
3. E. Newcomer, Understanding Web Services: XML, WSDL, SOAP, and UDDI, HK: Pearson, 2002.
4. F. Curbera et al., " Unraveling the Web services web: an introduction to SOAP, WSDL, and

UDDI, " Internet Computing IEEE, Vol. 6, No. 2, pp. 86-93, Mar/Apr 2002. 5. G. Steve, S. Simeon and B. Toufic, Building Web Services with Java Making Sense of XML, SOAP, WSDL, and UDDI, USA: SAMS, 2001. 6. T. Jepsen, " SOAP cleans up interoperability problems on the Web, " IT Professional, Vol. 3, No. 1 , pp. 52-55, Jan/Feb 2001. 7. R. Perrey and M. Lycett, " Service-Oriented Architecture, " in Proceedings Applications and the Internet Workshops 2003, pp. 116-119, Jan. 2003. 8. B. Benatallah, Q. Z. Sheng and M. Dumas, " The Self-Serv environment for Web services composition, " Internet Computing, IEEE, Vol. 7, No. 1, pp. 40-48, Jan. 2003. 9. T. M. Chester, " Cross-platform integration with XML and SOAP, " IT Professional, Vol. 3, No. 5, pp. 26-34, Sep. 2001. 10. R. V. Engelen, G. Gupta and S. Pant, " Developing Web services for C and C++, " Internet Computing IEEE, Vol. 7, No. 2, pp. 53-61, Mar. 2003. 11. M. Ouzzani and A. Bouguettaya, " Efficient access to web services, " Internet Computing IEEE, Vol. 8, No. 2, pp. 34-44, 2004. 12. M. Pierce and G. Fox, " Computing, Making scientific applications as web services, " in Science & Engineering, Vol. 6, No. 1, pp.93-96, Jan/Feb 2004. 13. B. Benatallah, F. Casati and F. Toumani, " Web service conversation modeling~a cornerstone for e-business automation, " Internet Computing IEEE, Vol. 8, No. 1, pp.46-54, Jan/Feb 2004. 14. B. Chaib-Draa and F. Dignum, " Trends in Agent Communication Language, " Computational Intelligence, Vol. 2, No. 5, pp. 89-101, May 2002. 15. S. A. DeLoach, M. F. Wood and C. H. Sparkman, " Multiagent System Engineering, " International Journal on Software Engineering and Knowledge Engineering, Vol. 11, No. 3, pp. 231-258, Mar. 2001. 16. H. Laukkanen, H. Helin and M. Lamanen, " Supporting Nomadic Agent-based Applications in the FIPA Agent Architecture, " in Proceedings of the first international joint conference on Autonomous agents and multi-agent system, Bologna, Italy, pp.1348-1355, 2002. 17. C. James, R. W. Shawn and D. W. Stephen, " A Distributed Multi-Agent System for Collaborative Information Management and Sharing, " Proceedings of the ninth international conference on Information and knowledge management, United States Virginia : McLean, pp. 382-388, Nov. 2000. 18. J. Hendler, " Agents and Semantic Web, " IEEE Intelligent systems, Vol. 16, No. 2, pp. 30-37, Mar/Apr 2001. 19. W. H. Turkett, J. R. Rose and M. N. Huhns, " Massive deliberation [Web agents], " Internet Computing, IEEE, Vol. 7, No. 1, pp.72-751 Jan/Feb 2003. 20. Y. Yunwen, " Programming with an intelligent agent. Intelligent Systems, " IEEE [see also IEEE Expert], Vol. 18, No. 3, pp. 43 -47, May 2003. 21. S. Russell and P. Norvig, " Artificial Intelligence A Modern Approach, " New Jersey : Prentice Hall, Upper Saddle River, 1995. 22. D. B. Fogel, " Evolutionary entertainment with intelligent agents Computer, " IEEE, Vol. 36, No. 6, pp. 106 -108, Jun. 2003. 23. K. Sycara et al., " Dynamic discovery and coordination of agent-based semantic Web services, " Internet Computing, IEEE, Vol. 8, No. 3, pp. 66-73, May/June 2004. 24. E. K. Mugisa, " A reuse triplet view of UML, SoutheastCon, " in Proceedings IEEE, pp. 126 – 133, Apr. 2003. 25. R. B. France et al., " A UML-based pattern specification technique, " Software Engineering, IEEE Transactions on, Vol. 30, No. 3, pp. 193-206, Mar. 2004. 26. M. Bjerkander and C. Kobryn, " Architecting systems with UML 2.0 Software, " IEEE, Vol. 20, No. 4, pp. 57-61. Jul/Aug 2003. 27. P. Green and S. Essa, " Integrating the synchronous dataflow model with UML, Design, " Automation and Test in Europe Conference and Exhibition, 2004. Proceedings, Vol. 1, pp. 736-737, Feb. 2004. 28. W. Liu, Z. T. Liu and K. Shao, " UML-based domain ontology modeling for multi-agent system, " Machine Learning and Cybernetics, 2003 International Conference on, Vol. 1, pp 407-412. Nov. 2003. 29. M. N. Huhns, " Agent societies. Magnitude and duration, " Internet Computing IEEE, Vol. 6, No. 1, pp79-81, Jan/Feb 2002. 30. D. Geer, " Taking steps to secure Web services Computer, " Internet Computing IEEE, Vol. 36, No. 10, pp14-16, Oct. 2003. 31. C. WebFarkas and M. N. Huhns, " Making agents secure on the semantic, " Internet Computing IEEE, Vol. 6, No. 6, pp. 76-79, Nov/Dec 2002. 32. M. Luck, R. Ashri and M. D ' inverno, Agent-based Software Development, USA: Artech House, Feb. 2004. 33. J. Davies, D. Fensel and F. V. Harmelen, Towards The Semantic Web: ontology-driven knowledge management, England : Wiley, Aug. 2003. 34. Michael Wooldridge, An Introduction to MultiAgent Systems, England : John Wiley & Sons Ltd " Agent Technology Green Paper. 35. Object Services and Consulting, Inc, " Agents for the Masses, " <http://www.objs.com/agility/tech-reports/9902-agents-for-the-masses.doc> 36. P. A. Huhns et al., " Inside an agent, " Internet Computing, IEEE, Vol. 5, NO. 1, pp. 82-86, Jan/Feb 2001. 37. H. Suguri, " A standardization effort for agent technologies: The Foundation for Intelligent Physical Agents and its activities, " in Proceedings of the 32nd Annual Hawaii International Conference, pp. 10, 1999. 38. Feng-Chao Yang and Yu-Kuen Ho, " Cooperative Distributed Problem-Solving Management Framework for Office Automation Systems, " Concurrent Engineering: Research and Applications, Vol. 5, No. 1, Mar. 1997. 39 . Feng-Chao Yang and Yu-Kuen Ho, " An Object-oriented Cooperative Distributed Problem Solving Shell with Groupware Management Ability, " Software-Practice and Experience, Vol. 27(11), pp. 1307-1334, Nov. 1997. 40. Cooperative distributed problem solving, (2004). <http://dis.cs.umass.edu/research/cdps/>