Concept-Based Readability Measurement and Adjustment for Web Services Descriptions

Pananya Sripairojthikoon, Twittie Senivongse

Department of Computer Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand

pananya.s@student.chula.ac.th, twittie.s@chula.ac.th

Abstract— **Web Services is a technology for building distributed software applications that are built upon a set of information and communication standards. Among those standards is the Web Services Description Language (WSDL) which is an XML-based language for describing service descriptions. Service providers will publish WSDL documents of their Web services so that service consumers can learn about service capability and how to interface with the services. Since WSDL documents are the primary source of service information, readability of WSDL documents is of concern to service providers, i.e., service descriptions should be understood with ease by service consumers. Providing highly readable service descriptions can then be used as a strategy to attract service consumers. However, given highly readable information in the WSDL documents, competitors are able to learn know-how and can copy the design to offer competing services. Security attacks such as information espionage, client impersonation, command injection, and denial of service are also possible since attackers can learn about exchanged data and invocation patterns from WSDL documents. While readability of service descriptions makes Web services discoverable, it contributes to service vulnerability too. Service designers therefore should consider this trade-off when designing service descriptions. Currently there is no readability measurement for WSDL documents. We propose an approach to such measurement so that service designers can determine if readability is too low or too high with regard to service discoverability, service imitation, and service attack issues, and then can consider increasing or lowering service description readability accordingly. Our readability measurement is based on the concepts or terms in service domain knowledge. Given a WSDL document as a service description, readability is defined in terms of the use of difficult words in the description and the use of words that are key concepts in the service domain. As an example, we measure readability of the WSDL document of E-commerce Web services, and experiment on redesigning of WSDL terms to adjust readability.**

Keyword— **Concept Hierarchy, Ontology, Readability, Web Services**

Pananya Sripairojthikoon has been working as a software engineer for Accenture Thailand since June 2012. She received B.Eng. in Computer Engineering from King Mongkut University of Technology Thonburi, Thailand in 2010, and M.Sc. in Software Engineering from Chulalongkorn University, Thailand in 2013. Her research interest includes service computing and application of semantic technology. This research was conducted while she pursued a Master degree.

Twittie Senivongse is an associate professor at the Department of Computer Engineering, Faculty of Engineering, Chulalongkorn University, Thailand. She received B.Sc. in Statistics from Chulalongkorn University in 1989, M.Sc. in Computing Science from Imperial College, UK in 1992, and Ph.D. in Computer Science from University of Kent, UK in 1997. Her research interest includes service computing and application of semantic technology.