

Decentralized Access Permission Control using Resource-oriented Architecture for the Web of Things

Se Won OH^{ab}, Hyeon Soo KIM^a

^aDepartment of Computer Science & Engineering, Chungnam University, Yuseong, Daejeon, 305-764, Korea

^bElectronics and Telecommunications Research Institute, Yuseong, Daejeon, 305-700, Korea

sewonoh@etri.re.kr, hskim401@cnu.ac.kr

Abstract—As the today's Web provides open communication environment for a variety of web resources, the Web of Things (WoT) offers new opportunity and challenges about the interoperation among the smart things. The well-known Web technologies can leverage the Web-enabled things to publish and exchange their resource information over the Web, then the Web-enabled thing should cope with the security threat regarding the information exposures over the Web, particularly, access permissions to the thing's resource information. Thus, in this paper we analyze access permission control mechanism considering both the WoT characteristics and the REST-compliant resource-oriented Web architecture. In contrast to existing access control logics, the proposed mechanism utilizes not only the requester information such as the typical identity and the internet addresses, but also the context of the thing itself. Based on this mechanism, we present web-resource structure for access permission control, and describe an exemplary procedure in detail. This research contributes to the flexible and decentralized access permission control for WoT.

Keyword—Access Control, Permission, Resource Management, Web of Things



Se Won OH is a senior member of engineering and research staff working for ETRI, and also under a PhD course at Chungnam National University (CNU), Korea. He received He received the BS (1999) and the MS degree (2001) from Pohang University of Science and Technology (POSTECH), Korea. Since 2001, he has been involved in several large research projects on software platform (such as RFID Event Management System, USN Middleware Platform, Software System Infrastructure) which integrates legacy applications with various data resources including RFID tags and Sensor Node. His recent research interests are Internet of Things (IoT) and Web of Things (WoT), particularly about interfacing Web-enabled devices. He has also participated standardization activities on automatic identification and data capture(AIDC) techniques as a member of JTC 1/SC 31, and as a secretary for JTC 1/SC 31/WG 6 (Mobile Item Identification and Management). He is a member of KICS.



Hyeon Soo Kim is a professor at Chungnam National University (CNU), Korea. He works for Department of Computer Science and Engineering at CNU. His current research areas include Software Engineering (Software Testing, Software Architecture, Software Maintenance, and Software Reengineering) and Applications (Nuclear Engineering) as well as Distributed Computing (J2EE/EJB, .NET, Web service, SOA, Internet of Things, and Large Scale Data Processing). He received the BS degree (1988) from Seoul National University (SNU), Korea, and the MS (1991) and the PhD degree (1995) from Korea Advanced Institute of Science and Technology (KAIST), Korea. He is a member of KIISE and KIPS.