Type-based Service Ontology: A Simple Service Description Method for Pervasive Computing

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Abstract. Service description is the base of the service discovery in pervasive computing. It should be able to describe functional and non-functional information of services and represent inherent relationship between services. It should provide abundant data types and powerful service matching and be able to work in ubiquitous devices. Existing service description methods fail to meet all of the needs. This paper presents a method called TSO (Type-based Service Ontology) to find a solution to the challenges. TSO combines ontology and type system to represent service ontology by the elements of type system. With ontology representing service semantic, all the information and inherent relationship can be described. And the semantic and reasoning matching can be provided. With type system representing the ontology, the extra and complex ontology languages which overburden resource-constraint devices, are removed. And the abundant data types in type system are available. There are two contributions in this paper: expressing ontologies in type system and matching services in TSO.

Keywords: pervasive computing, service description, ontology.

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