A Semantic Registry to Support Brazilian Aeronautical Web Services Operations

Authors : Luís Antonio de Almeida Rodriguez, José Maria Parente de Oliveira, Ednelson Oliveira

Abstract : In the last two decades, the world's aviation authorities have made several attempts to create consensus about a global and accepted approach for applying semantics to web services registry descriptions. This problem has led communities to face a fat and disorganized infrastructure to describe aeronautical web services. It is usual for developers to implement ad-hoc connections among consumers and providers and manually create non-standardized service compositions, which need some particular approach to compose and semantically discover a desired web service. Current practices are not precise and tend to focus on lightweight specifications of some parts of the OWL-S and embed them into syntactic descriptions (SOAP artifacts and OWL language). It is necessary to have the ability to manage the use of both technologies. This paper presents an implementation of the ontology OWL-S that describes a Brazilian Aeronautical Web Service Registry, which makes it able to publish, advertise, make multi-criteria semantic discovery aligned with the ideas of the System Wide Information Management (SWIM) Program, and invoke web services within the Air Traffic Management context. The proposal's best finding is a generic approach to describe semantic web services. The paper also presents a set of functional requirements to guide the ontology development and to compare them to the results to validate the implementation of the OWL-S Ontology.

Keywords : aeronautical web services, OWL-S, semantic web services discovery, ontologies

Conference Title : ICSOC 2023 : International Conference on Service-Oriented Computing

Conference Location : Vancouver, Canada

Conference Dates : September 25-26, 2023