

BravoAir Web Service and RDF Triples Analysis

CS690 – Week 6 Slides

Jordan Osecki

WSDL/OWL-S Example - BravoAir

- BravoAir is an example of a WSDL/OWL-S web services for an airline
- It is a fictional airline website service (i.e. Southwest)
- There is one form of the service: BravoAirProcess, which is a composite process composed of GetDesiredFlightDetails, SelectAvailableFlights, and BookFlight (also composite)

WSDL/OWL-S Example - BravoAir

- There are five different files needed to define the web service:
 - BravoAirService.owl – The Service Instance
 - BravoAirProfile.owl – The Profile
 - BravoAirProcess.owl – The Process Model (Main)
 - BravoAirGrounding.owl – Grounding Instances
 - BravoAirGrounding.wsdl – WSDL Definitions

BravoAirService.owl

- Defines the following:
 - Imports (rdf, rdfs, owl, xsd, service, and other BravoAir files)
 - Owl:Ontology information (version info, comments, and imports of BravoAir)
 - Service:Service which labels the process as “BravoAir_ReservationAgent” and defines the three pieces needed for an OWL-S definition:
 - Service:presents – BravoAir Profile
 - Service:describedBy – BravoAir Process
 - Service:supports – BravoAir Grounding

BravoAirProfile.owl

- Defines the following:
 - Imports (rdf, rdfs, owl, xsd, service, profile, actor, addParam, profileHierarchy, process, country, concepts, and other BravoAir files)
 - Owl:Ontology information (version information, comments, and more imports)
 - ProfileHierarchy: AirlineTicketing which has the following information:
 - BravoAir imports
 - Service name and description
 - Contact information
 - Classifications such as geographic radius, quality rating, and category
 - Inputs and outputs of the entire process

BravoAirProcess.owl

- Defines the following:
 - Imports (rdf, rdfs, shadow-rdf, expr, owl, xsd, service, process, profile, swrl, swrl-onto, and other BravoAir files)
 - Owl:Ontology – version information, comments, and imports
 - Process:CompositeProcess – BravoAir_Process, which is the top level function which defines its inputs, outputs, and then a sequence of processes
 - GetDesiredFlightDetails (Atomic)
 - SelectAvailableFlight (Atomic)
 - BookFlight (Composite)

BravoAirProcess.owl

- Defines the following:
 - Process:CompositeProcess – BookFlight, which is a lower level function which defines its inputs, outputs, and then a sequence of two processes:
 - Login (Atomic)
 - ConfirmReservation (Atomic)
 - Process:CompositeProcess – CompleteReservation, which is used to determine with an if-then-else if Login was successful or not
 - Process:AtomicProcess – GetDesiredFlightDetails, which defines its inputs and outputs
 - Process:AtomicProcess – SelectAvailableFlight, which defines its inputs and outputs

BravoAirProcess.owl

- Defines the following:
 - Owl:ObjectProperties – hasPassword and hasFlightItinerary
 - Owl:Class – LoggedIn and NotLoggedIn
 - Process:AtomicProcess – LogIn, which defines its inputs and outputs and using a condition defines whether the login succeeded or not
 - Process:AtomicProcess – ConfirmReservation, which defines its inputs and outputs

BravoAirGrounding.owl

- Defines the following:
 - Imports (rdf, rdfs, owl, xsd, service, grounding, and other BravoAir files)
 - Owl:Ontology – version information, comments, and imports
 - Grounding:WsdIGrounding – instance definition of BravoAir Reservation Agent Grounding
 - Defines atomic processes involved and where to find them
 - Mapping of OWL-S inputs, port type, and operation to WSDL message parts for each process

BravoAirGrounding.wsdl

- Defines the following:
 - Namespaces
 - Message Definitions
 - Messages for GetDesiredFlightDetails, SelectAvailableFlight, ConfirmReservation, and LogIn
 - Port Definitions
 - Port specifications for GetDesiredFlightDetails, SelectAvailableFlight, ConfirmReservation, and LogIn
 - Binding Definitions
 - Binding specifications for GetDesiredFlightDetails, SelectAvailableFlight, ConfirmReservation, and LogIn
 - Service Definition
 - Documentation and the ports for each of the four processes

RDF Triples Analysis

- W3C RDF Powered Validation Service
 - Provides the triples and a graph
- Was able to generate triples, but not the graph, for BravoAirProcess.owl
- Source: <http://www.w3.org/RDF/Validator/>

RDF Triples Analysis

- License Validation Service
- Was unable to generate anything, received the following error:
 - An error has occurred
 - `<type 'exceptions.AttributeError'> 'NoneType' object has no attribute 'strip'`
- Source: <http://validator.creativecommons.org/>

RDF Triples Analysis

- Rdf:about – RDF Validator and Converter
- Was unable to generate anything, received the following error:
 - Validation failed: Element is not allowed within a property with property attributes
- Source:
<http://www.rdfabout.com/demo/validator/>

Asserted Triples versus Inferred Triples

- Asserted triples are the triples that were asserted in the original RDF store.
- Inferred triples are the additional triples that are inferred by one of the inference rules that govern a particular inference engine.
- If a triple is inferred that has already been asserted, it is an asserted triple.
- The distinction between inferred and asserted triples is a distinction for rhetorical purposes only.
- Source:
http://books.google.com/books?id=RnFjZTfPILcC&pg=PT103&lpg=PT103&dq=rdf+inferred+triples&source=bl&ots=IAuwfaRYku&sig=c8B2_ulwYBhdwHqXzzK76Kw46c0&hl=en&ei=MmVvSv6bM46EtgfP14zQCA&sa=X&oi=book_result&ct=result&resnum=3