BravoAir Web Service and RDF Triples Analysis

CS690 – Week 6 Slides

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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:WsdlGrounding – 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=RnFjZTfPLcC&pg=PT103&lpg=PT103&dq=rdf+inferred+triples&source=bl&ots=IAuwfaRYku&sig=c8B2_u1wYBh dwHqXzzK76Kw46c0&hl=en&ei=MmVvSv6bM46EtgfP14zQCA&sa=X&oi=book_result&ct=result&resnum=3