

How To Read And Understand A Web Service Description Document (WSDD)

Presented to: SOA Brown Bag #8

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Federal Aviation
Administration



Agenda

- What is a Web Service Description Document (WSDD)?
- WSDD as an FAA Document
- Service Description: Why is it needed?
- WSDD as a Service Description
- How a WSDD is used
- Flight Plan Service - Example of a WSDD
- Structure of a WSDD
- Three Pillars of WSDD
 - Service Profile
 - Service Interface
 - Service Implementation
- Appendixes
- Building FPS WSDD step by step



What is a WSDD?

A Web Service Description Document (WSDD) is a **Web service description**, as it is defined and understood in Service-Oriented Architecture (SOA), which is rendered as a human-readable **document** in a way consistent with FAA acquisition process standards and practices.



WSDD is an FAA Document

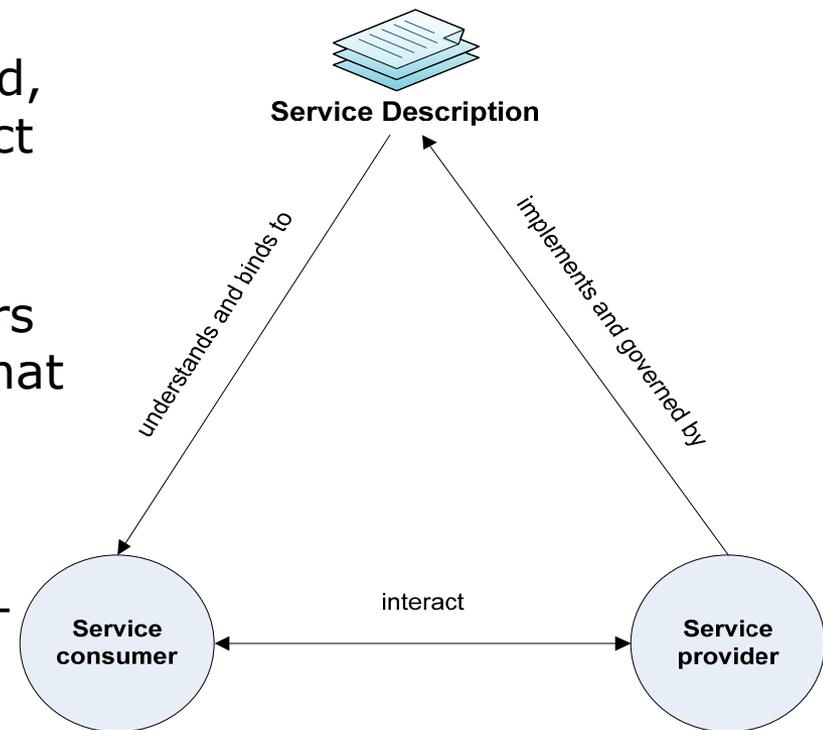
- WSDDs are developed in accordance with FAA-STD-065.
- WSDD has become de facto “Interface Control Document (ICD) for Web services.”
- WSDDs are processed by National Airspace System (NAS) and/or other configuration boards in accordance with established configuration management policies.



Service Description: Why is it needed?

SOA is an architecture style that builds on loosely coupled, interoperable and reusable software components commonly referred as services.

- Because services are loosely-coupled, “an entity that a service may interact with, may not exist at the point of time the service is developed.”
- To interact a provider and consumers need to “get to know” each other, that is, produce and/or obtain a *service description*.
- To sustain interactions, SOA components must adhere to agreed-upon *service description*.



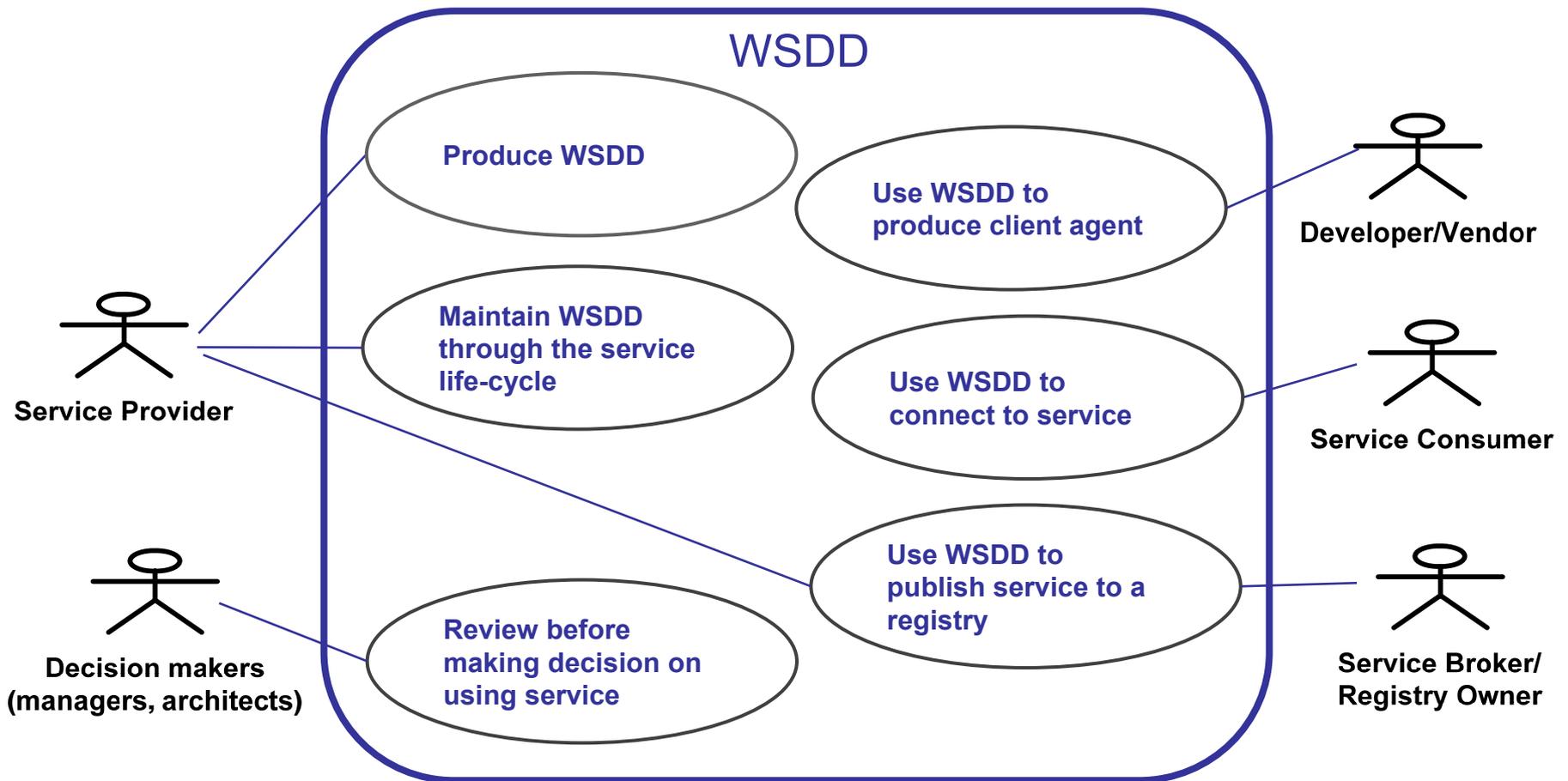
WSDD is a service description

Service description is the “information needed in order to use, or consider using, a service.”

- What the service does, i.e., what is accomplished when the service is invoked, who provides the service and what are the limitations on service applicability.
- How the service does it, i.e., information about interface, content of requests, message formats, data types, etc.
- How the service can be accessed, i.e., information about transports and messaging protocols and network address.

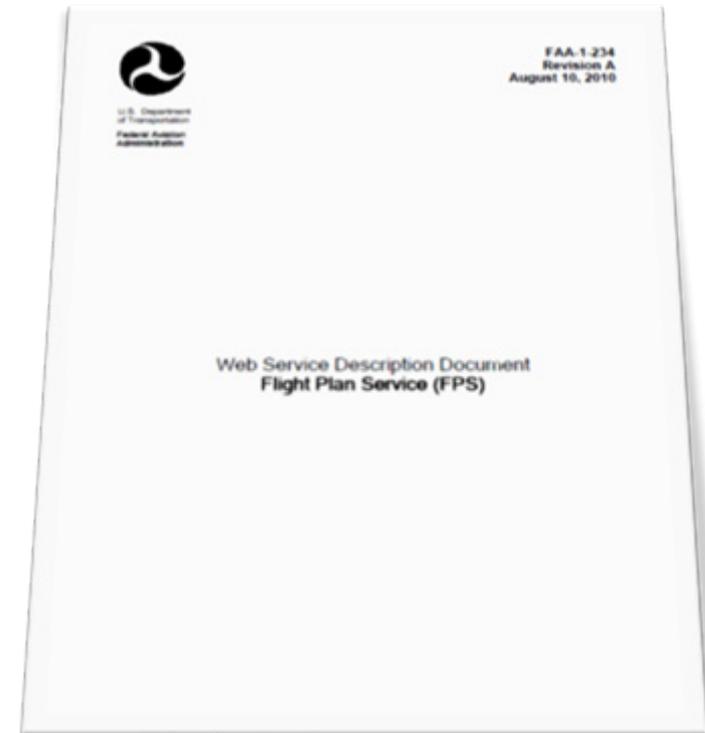


How a WSDD is used



Example of a WSDD – Flight Plan Service

- The example WSDD is an instructional document for describing a web service the way it is prescribed in FAA-STD-065.
- The example WSDD simulates a scenario wherein a fictitious “Flight Plan Service” is used to file and modify a flight plan by using a Web service.



Flight Plan Service - Data

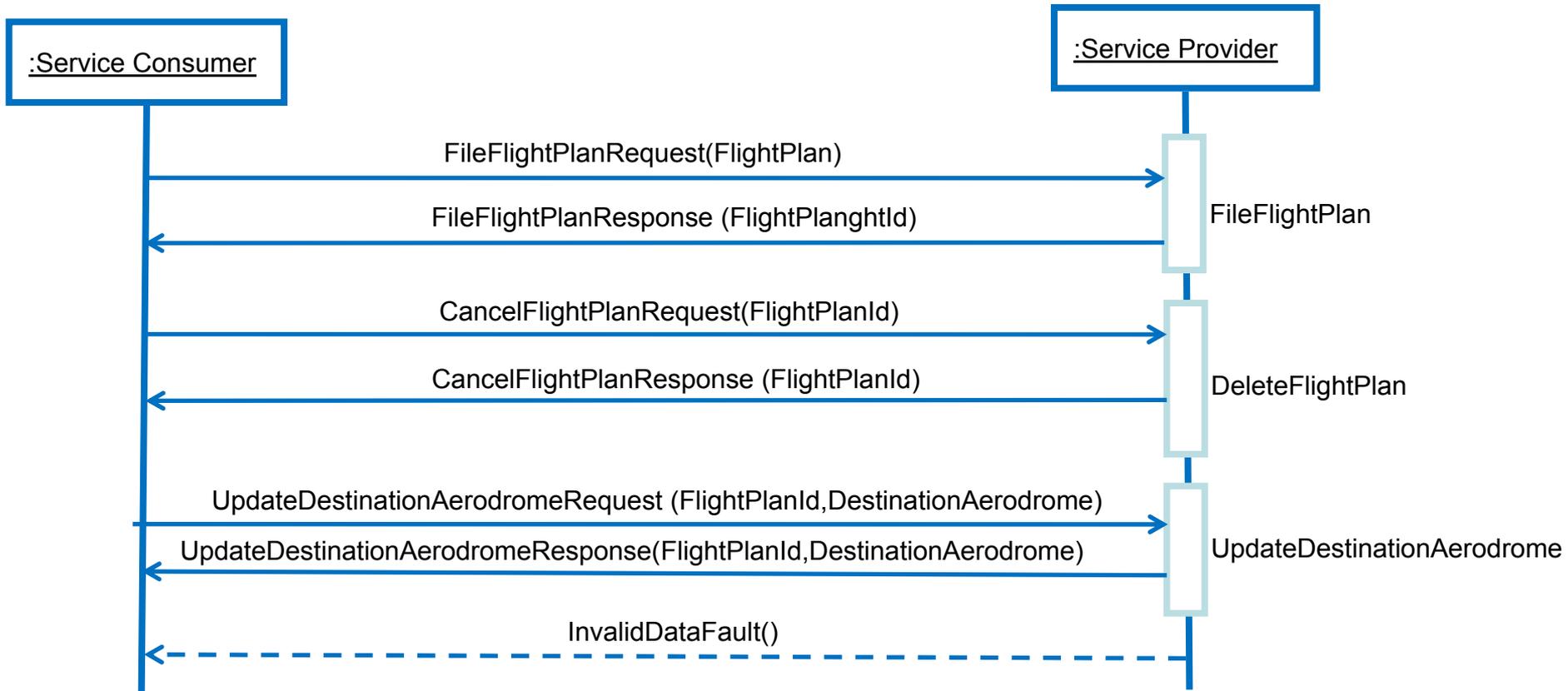
The image shows a handwritten flight plan form with the following visible information:

- Priority:** FF
- Address:** MMNDZRYX MHTGZRZX MKJKZRYX, MUEHJZRYX KDEATFYX MWCRYFYX, MKJPFYX ZCH
- Time:** 181730-KDR1FYX
- FAA Form:** 7230-1
- Origin:** KMSY
- Destination:** F350 L, DCT HRV A321 FRISH N044F320, UAS21 DANUL UR640 MANSI DCT GCM DCT
- Aircraft:** PA-32R
- Operator:** JHB426E
- Altitude:** 7000
- Estimated Time:** 14:20:00.0Z
- Signature:** GRIMES

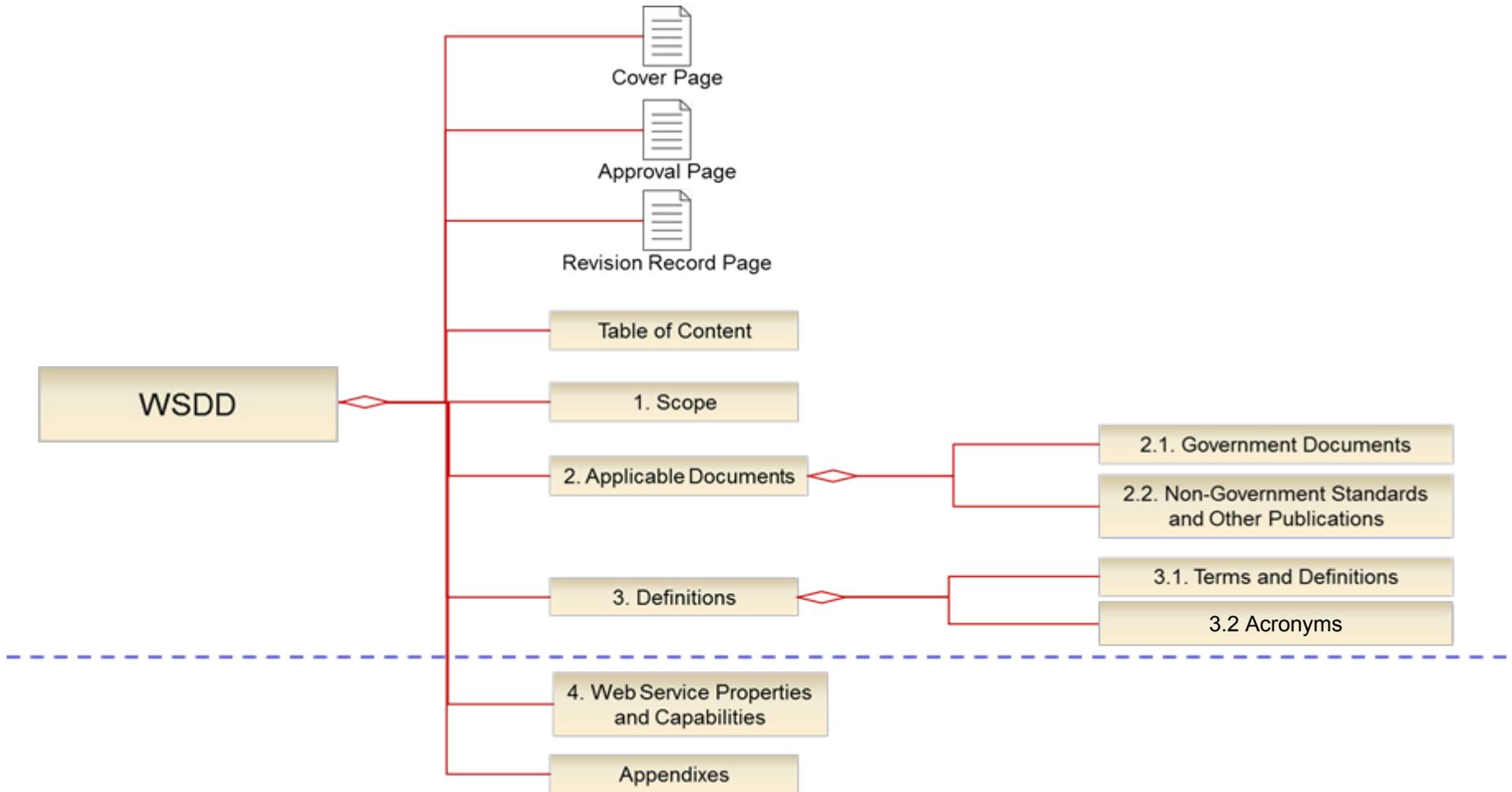
```
<FlightPlan xmlns="urn:us:gov:dot:faa:example:atm:enroute:fps:entities"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="./FlightPlan.xsd"
flightRule="I"
numberOfAircraft="1"
filingTime="2001-12-17T09:30:47Z" >
  <FlightPlanId xsi:nil="true" />
  <Originator airmanId="215336745">
    <Name>John Doe</Name>
  </Originator>
  <Aircraft aircraftType="PA-32R" aircraftId="JHB426E">
    <Equipage>
      <Communication>V</Communication>
      <Navigation>C</Navigation>
      <Surveillance>OL</Surveillance>
    </Equipage>
    <WakeTurbulenceCategory>LIGHT</WakeTurbulenceCategory>
  </Aircraft>
  <Route>
    <Altitude referenceDatum="local" uom="foot">7000</Altitude>
    <EstimatedTime>
      <EstimatedDepartureTime>14:20:00.0Z</EstimatedDepartureTime>
    </EstimatedTime>
  </Route>
</FlightPlan>
```



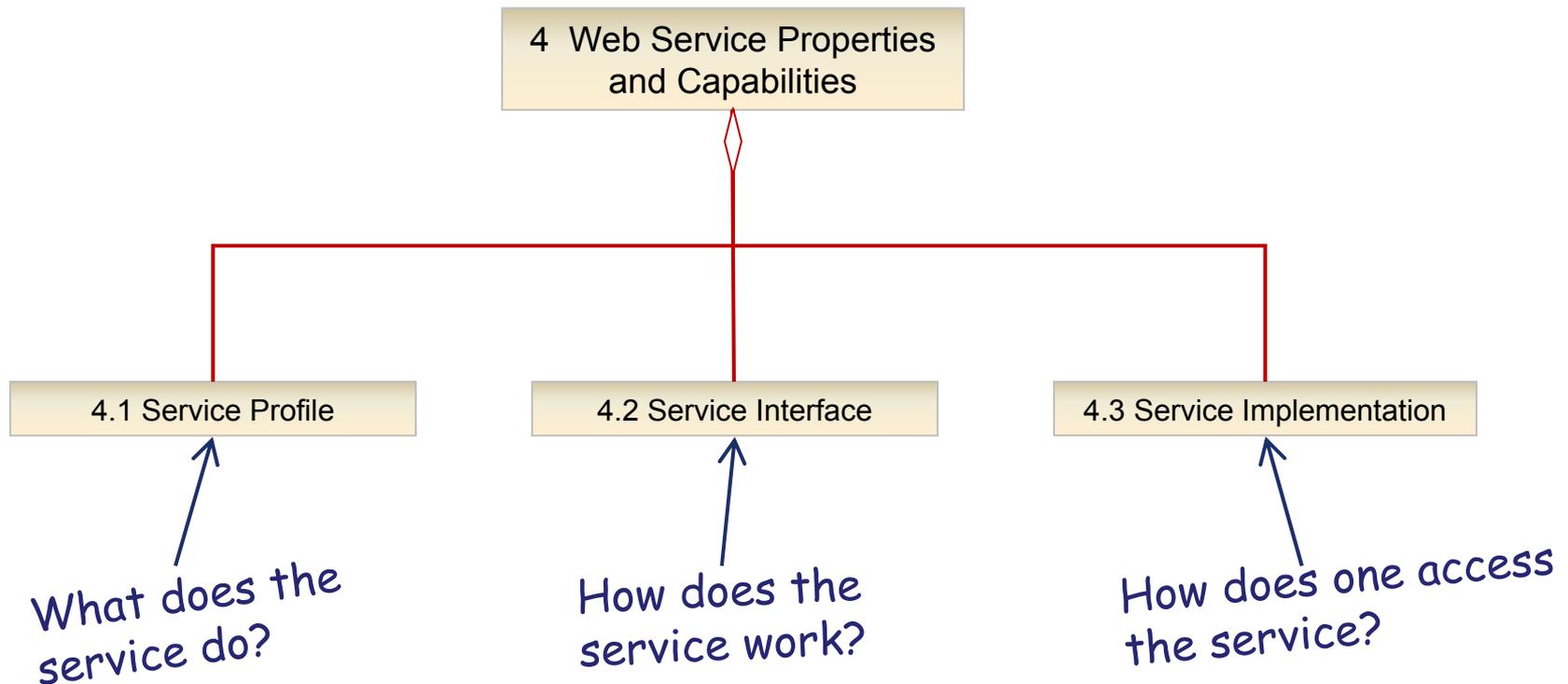
Flight Plan Service- Interface



Structure of a WSDD

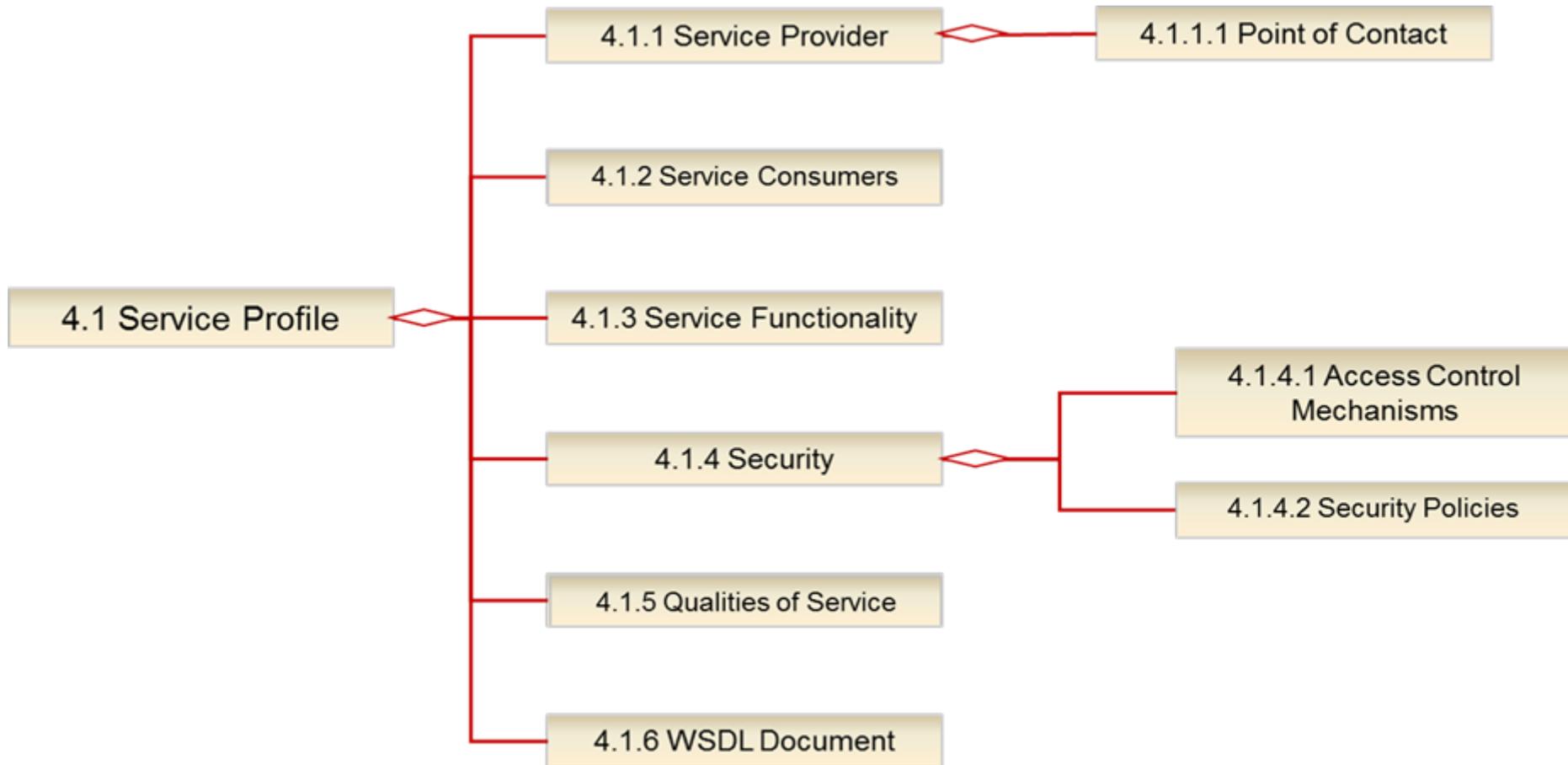


Section 4 or the Three Pillars of WSDD

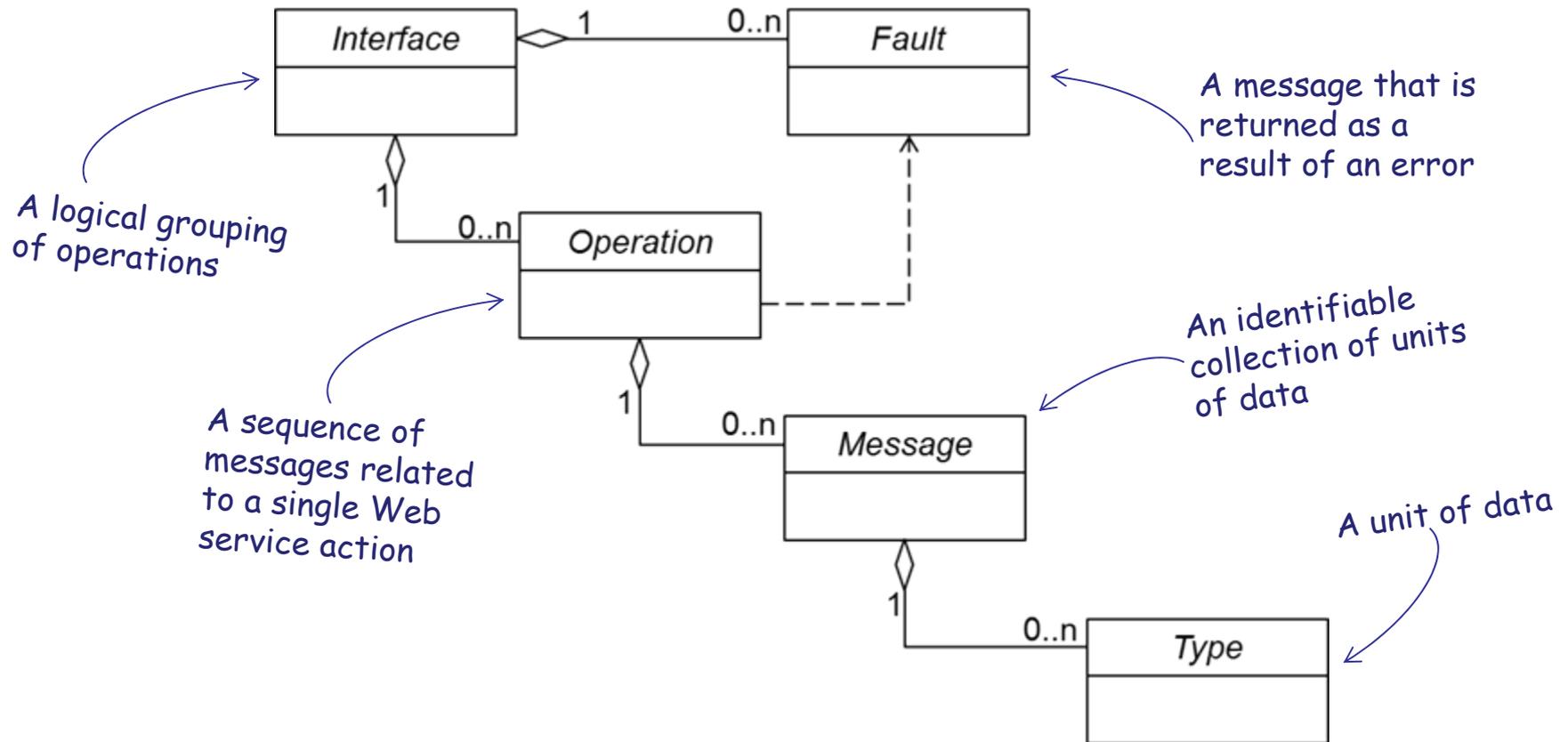


Section 4.1

Service Profile

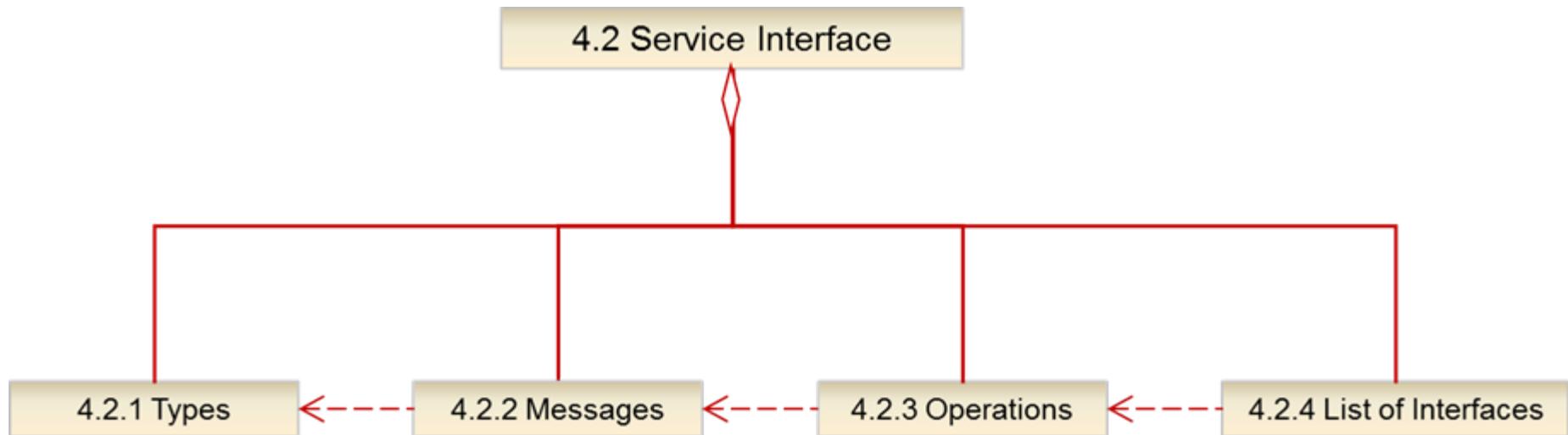


Web Service Interface Abstract Component Model

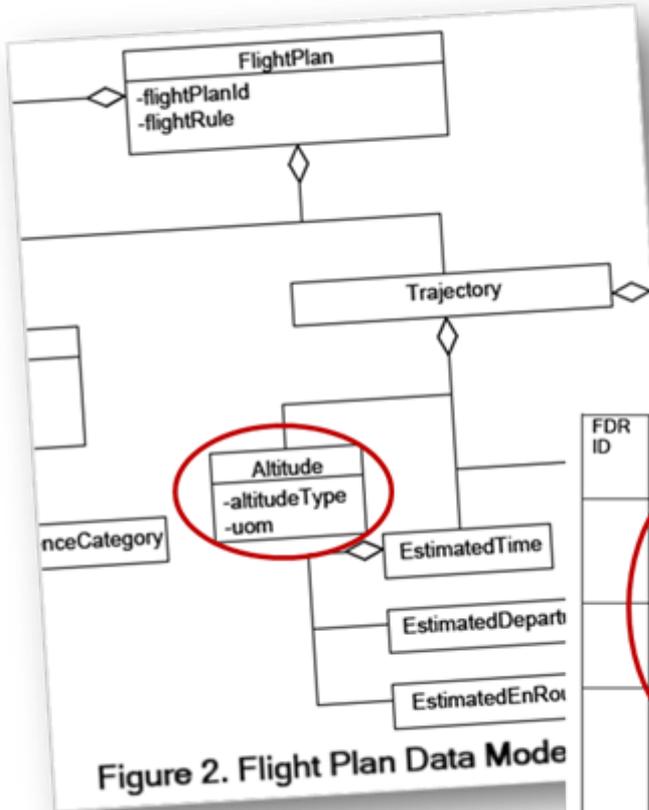


Section 4.2

Service Interface



Three faces of data



Appendix B. FlightPlan.xsd

```

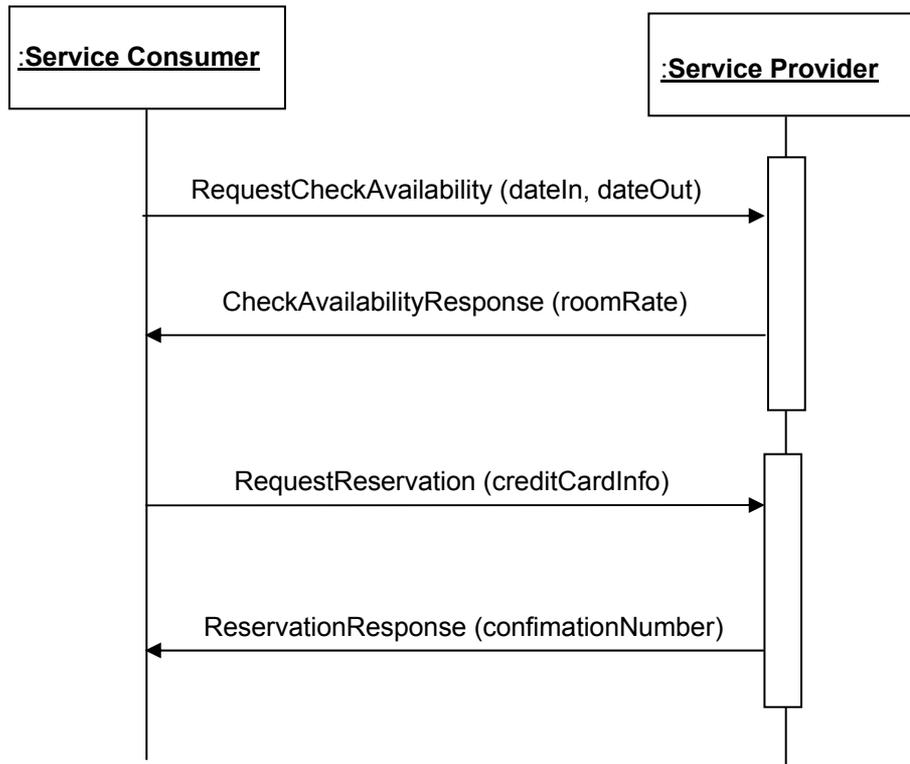
<xs:complexType name="AltitudeType">
  <xs:simpleContent>
    <xs:extension base="AltitudeBase">
      <xs:attribute name="uom" type="UnitOfAltitudeType"
        default="foot"/>
      <xs:attribute name="referenceDatum" type="ReferenceDatumType"
        use="required"/>
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
  
```

FDR ID	Name	Definition	Unit of Measure	Permissible Values	Data Type	Format	Obligation	Maximum Occurrence
	Altitude	An element that indicates the pressure altitude above mean sea level (MSL) at which the aircraft is flying or is intended to be flown.	NA	N/A	Complex		Required	1
	Altitude.uom	A code representing the units of measure of the aircraft's altitude.	NA	"m", "meter" - altitude in meters "foot" - altitude in feet	String		Required	1
	Altitude.referenceDatum	A code representing the atmospheric pressure reference used to adjust a pressure altimeter.	NA	"Local" - local pressure extrapolated to zero MSL. "Standard" - pressure with respect to the	String		Required	1

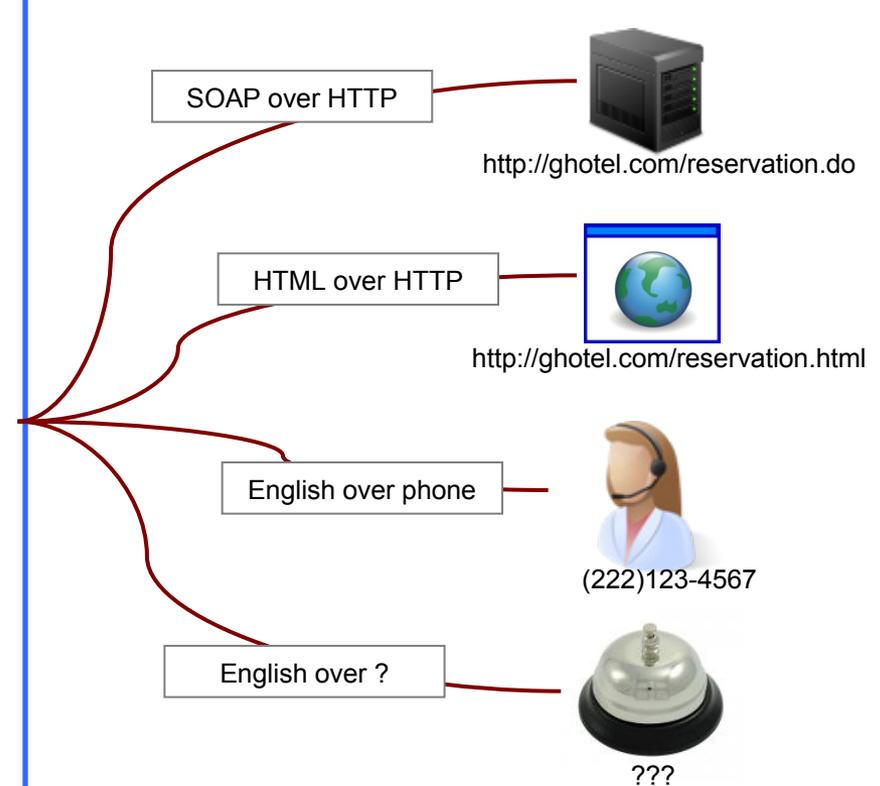
Table 1. Selected Flight Plan Data Elements

Web Service End Points (simplified example)

Interface

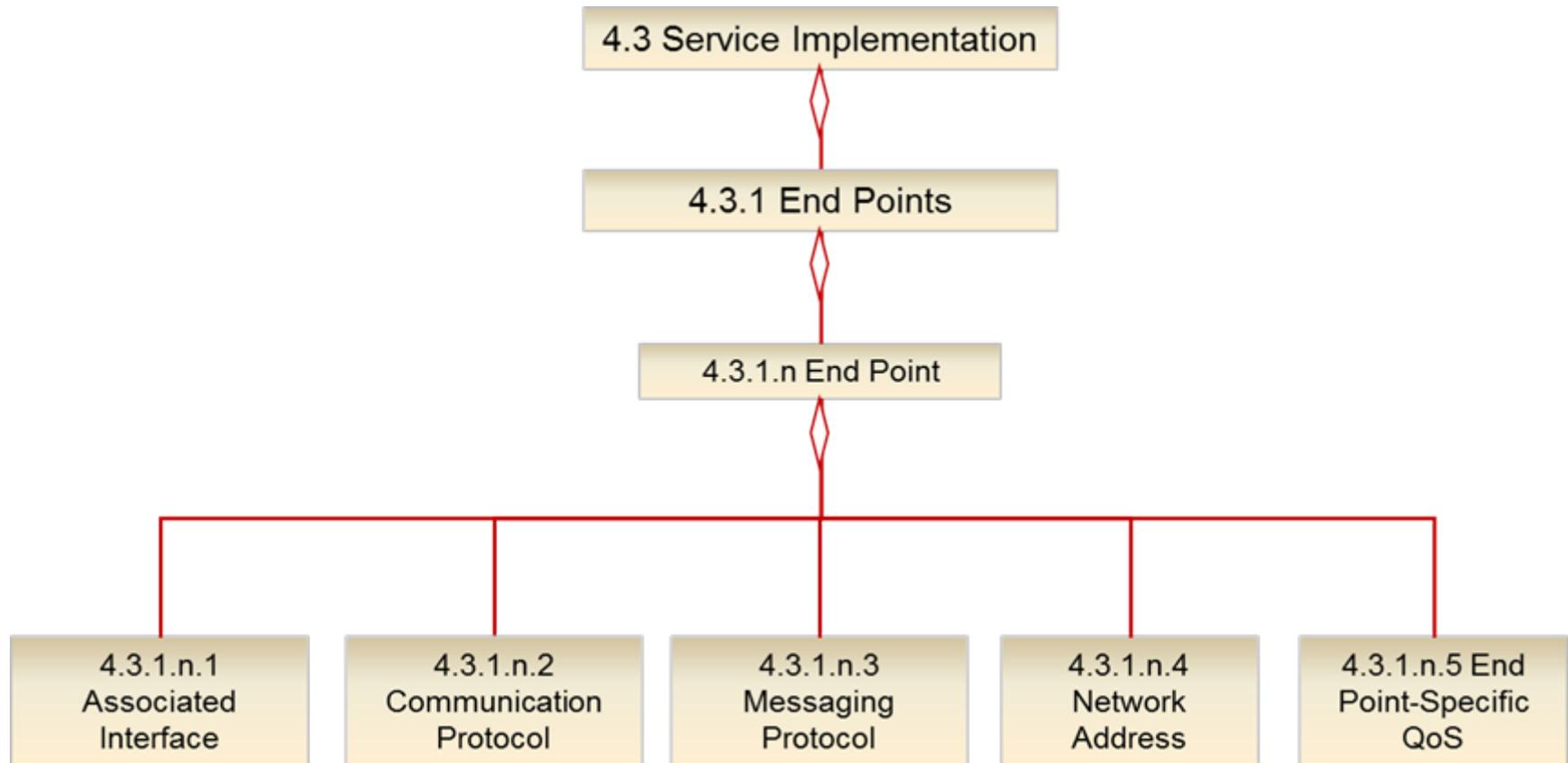


End Points

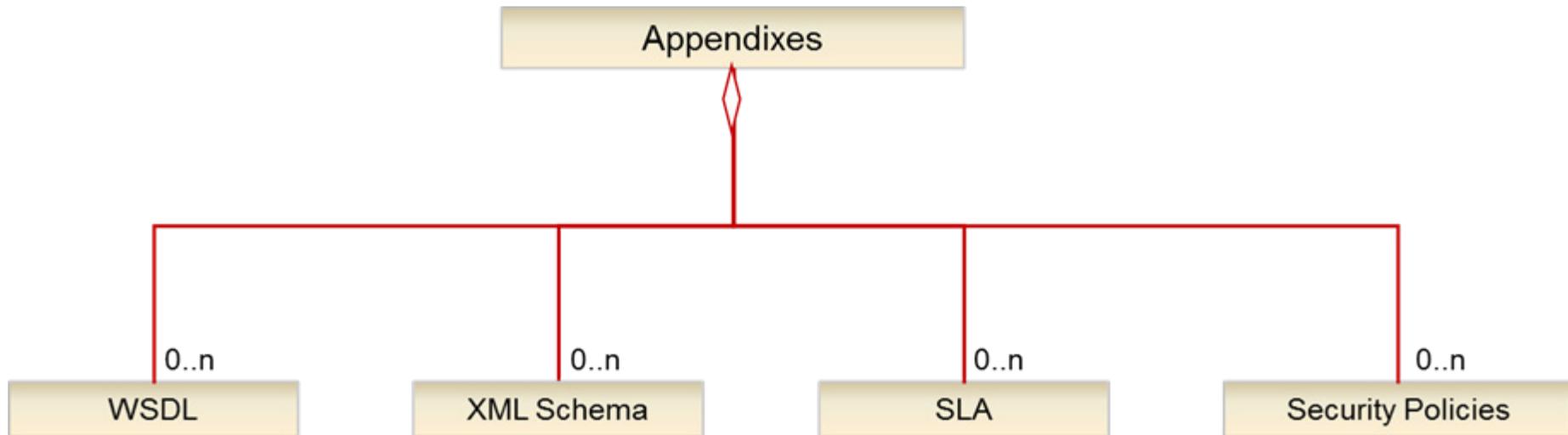


Section 4.3

Service Implementation



Appendixes



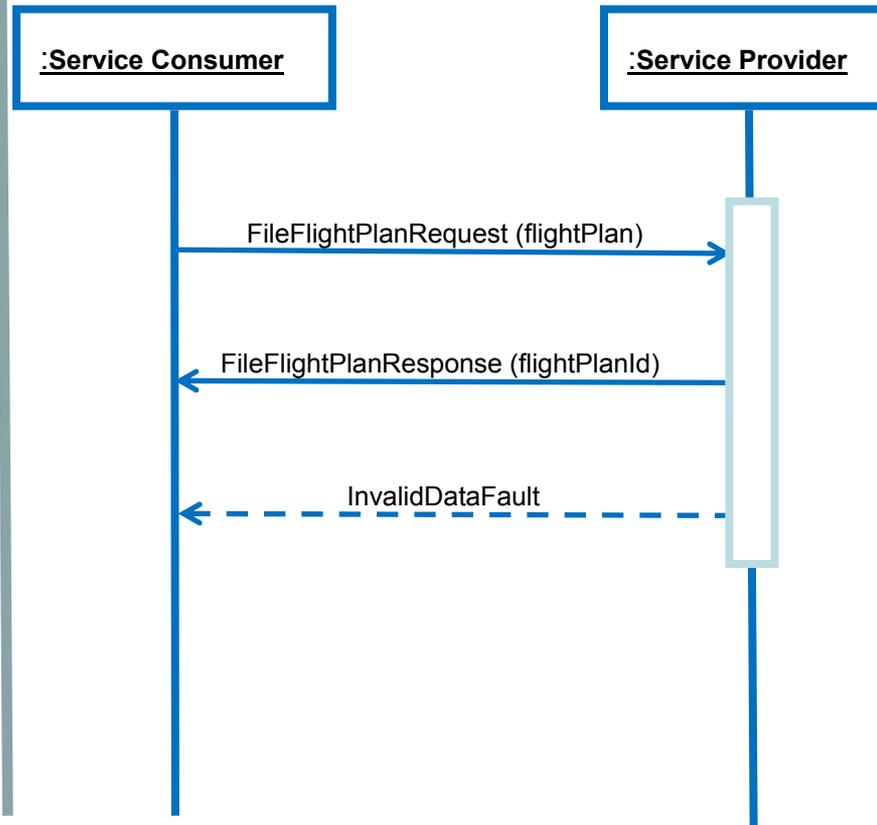
Building FPS WSDD step by step

Service Profile

The Flight Plan Service (FPS) allows a service consumer to file and modify a proposed flight plan operating under Instrument Flight Rules (IFR). The service is developed, supported and monitored by FAA En Route Services Modernization Group (ESMG)

...

Service Interface



Service Implementation

<http://esmg.faa.gov/dev/flight-plan.do>

SOAP

HTTP

QUESTIONS?

