The OWS-10 Testbed and the AIXM Validator Service

Markus Schneider, 2014/05/03

Introducing m-click.aero

- Airtraffic management
- System-wide information management
- Standards-based aviation solutions (ISO / OGC)
- Efficient AIXM / FIXM Technology / Middleware

Agenda

- The OWS-10 Testbed
- Transactional Web Feature Service 2.0 (WFS-T) for AIXM and FIXM GML
- The AIXM Validation Service

The OWS-10 Testbed

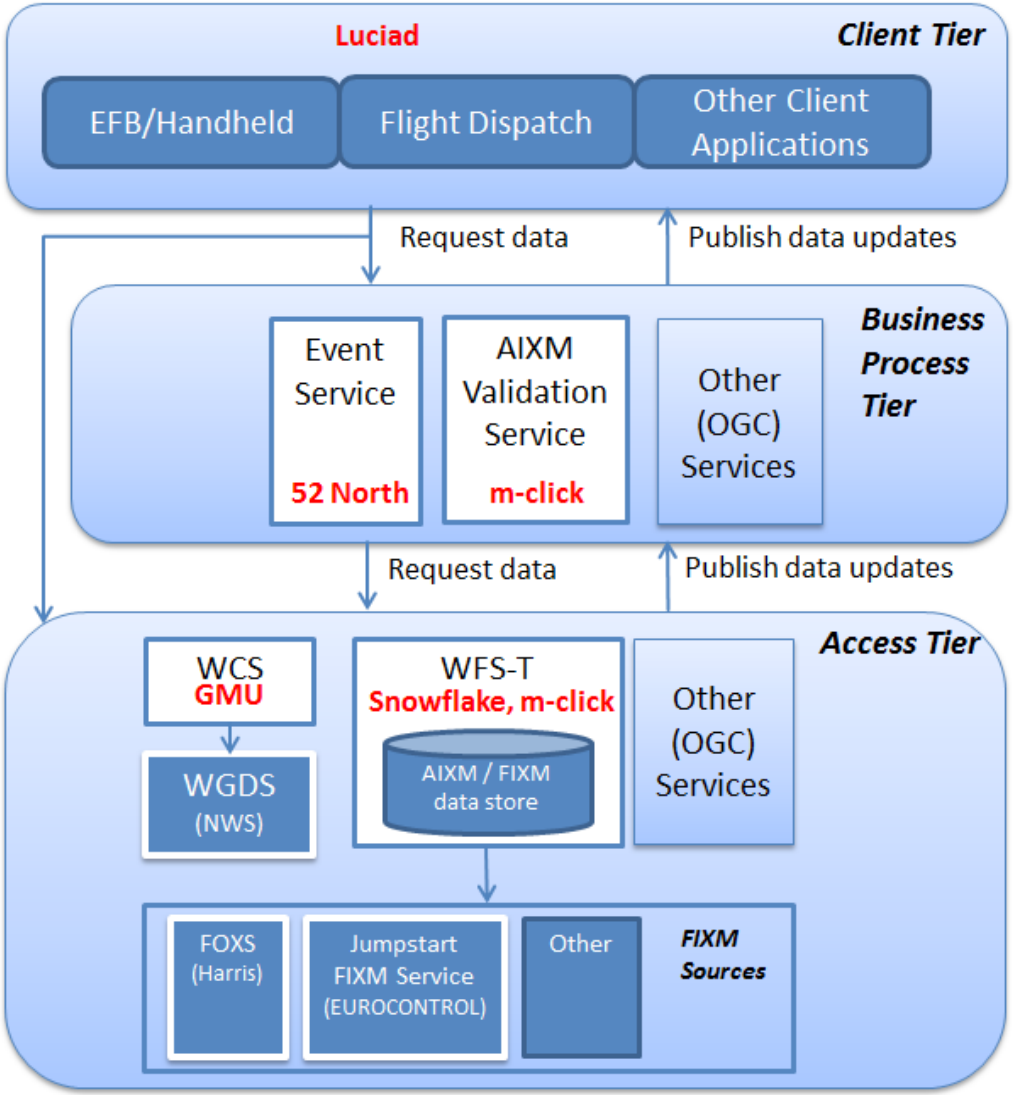
- Collaboration in rapid prototyping between
  - Government
  - Private sector
  - University organizations
- Goals
  - Reduce technology risk
  - Reduce technology lifecycle costs
  - Mobilize new technologies
  - Expand markets and improve customer choice

OGC®
Making location count.

The OWS-10 Testbed

- Working period: September 2013 – May 2014
- Three activity threads
  - **Aviation**
  - Cross-Community Interoperability
  - Open Mobility
- Aviation results will be presented in free webinar
  - 27 May 2014, from 1000 to 1130 EDT
  - http://www.opengeospatial.org/projects/initiatives/ows-10

OWS-10 Aviation Components



Additional / Orthogonal Components

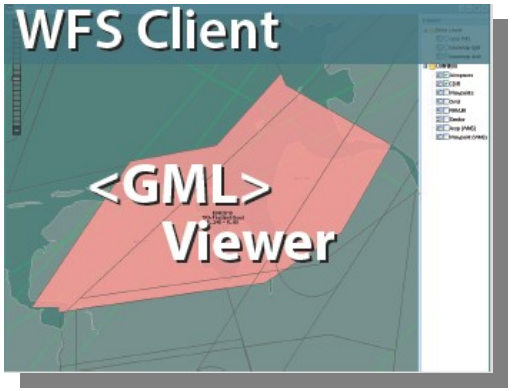
Conformance Test Scripts
Galdos

AIXM Binding(s)
52 North

WFS-T 2.0 for AIXM and FIXM GML

- WFS: Web Feature Service
- OGC standard for accessing Geoobjects over the Web
- Several implementations available from different companies
- Every WFS instance supports queries
- WFS-T: Adds possibility to modify (Insert/Update/Replace/Delete) datasets
- m-click WFS-T instance based on WFS 2.0 reference implementation

Querying data from an AIXM Web Feature Service



Request: GetFeature

Response: AIXM 5.1

```
<aixm:Airspace
  gml:id="urn.uuid.4fd9f4be-8c65-43f6-b083-3ced9a4b2a7f">
  <gml:identifier codeSpace="urn:uuid:">4fd9f4be-8c65-43f6
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    <gmd:MD_Metadata>
      <gmd:characterSet>
        <gmd:MD_CharacterSetCode
          codeList="http://www.aixm.aero/schema/5.1/ISO_19
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      </gmd:characterSet>
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        <gco:DateTime>2013-04-23T12:00:00Z</gco:DateTime>
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      <gmd:identificationInfo>
        <gmd:MD_DataIdentification>
          <gmd:citation xlink:href="#MessageCitation"/>
          <gmd:abstract>
            <gco:CharacterString>
              Donlon sample data, including Digital NOTAM
              Luciad (www.luciad.be); currently maintained
            </gco:CharacterString>
          </gmd:abstract>
          <gmd:pointOfContact xlink:href="#MessagePOC"/>
          <gmd:resourceConstraints xlink:href="#MessageCon
          <gmd:language>
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          </gmd:language>
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          </gmd:topicCategory>
```
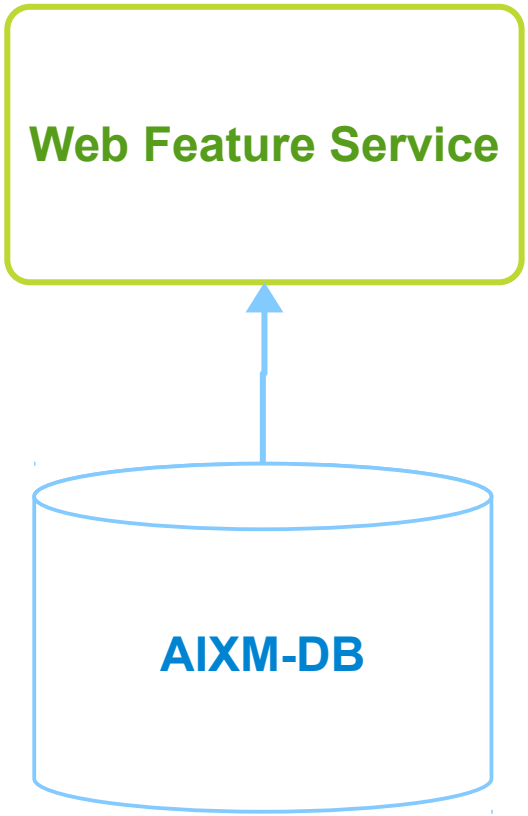
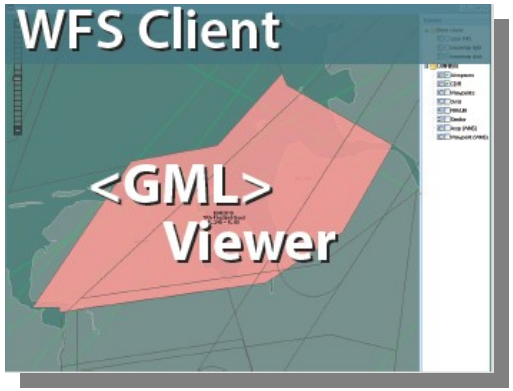



WFS-T: Inverse dataflow: From client to WFS



Response: TransactionSummary

Request: Transaction

Web Feature Service

AIXM-DB

```
<aixm:Airspace
  gml:id="urn.uuid.4fd9f4be-8c65-43f6-b083-3ced9a4b2a7f">
  <gml:identifier codeSpace="urn:uuid:">4fd9f4be-8c65-43f6
  <aixm:featureMetadata>
    <gmd:MD_Metadata>
      <gmd:characterSet>
        <gmd:MD_CharacterSetCode
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          codeListValue="utf8">utf8</gmd:MD_CharacterSetCo
      </gmd:characterSet>
      <gmd:contact xlink:href="#MessageContact"/>
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        <gco:DateTime>2013-04-23T12:00:00Z</gco:DateTime>
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          <gmd:citation xlink:href="#MessageCitation"/>
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          <gmd:pointOfContact xlink:href="#MessagePOC"/>
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          </gmd:language>
          <gmd:topicCategory>
            <gmd:MD_TopicCategoryCode>transportation</gmd:
          </gmd:topicCategory>
```

WFS-T use-case in OWS-10: Data mirroring

AIXM 5.1 datasets

GetFeature

Web Feature Service from OWS-9

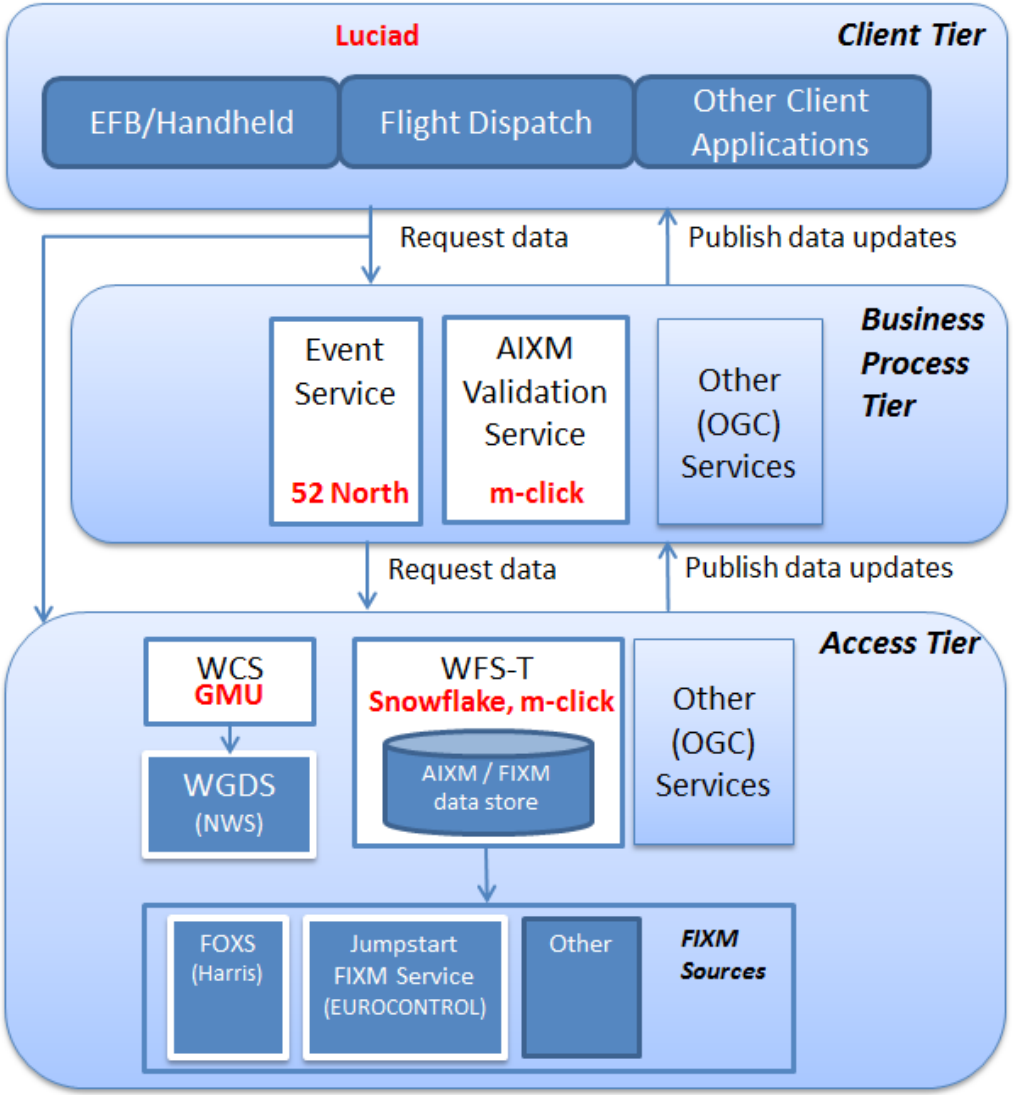
Transaction

WFS-T 2.0

WFS-T 2.0: Achievements / lessons learned

- Verified WFS-T profile for use with AIXM 5.1 and FIXM GML
- Verified interoperability between WFS vendors
- Mirrored AIXM datasets from OWS-9 WFS
- Integrated WFS-T into OWS-10 example scenario: Live FIXM update

OWS-10 Aviation Components



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E. Porosnicu: „Business Rules and Digital NOTAM validation“

Conclusion

EUROCONTROL

- Data verification is a critical aspect for the safe deployment of Digital NOTAM applications
- Using the general AIXM 5.1 Business Rules concept
  - SBVR -> rule definition
  - Schematron -> as coding example
- Event Specification appendix
  - Identify all rules that are relevant for Digital NOTAM verification

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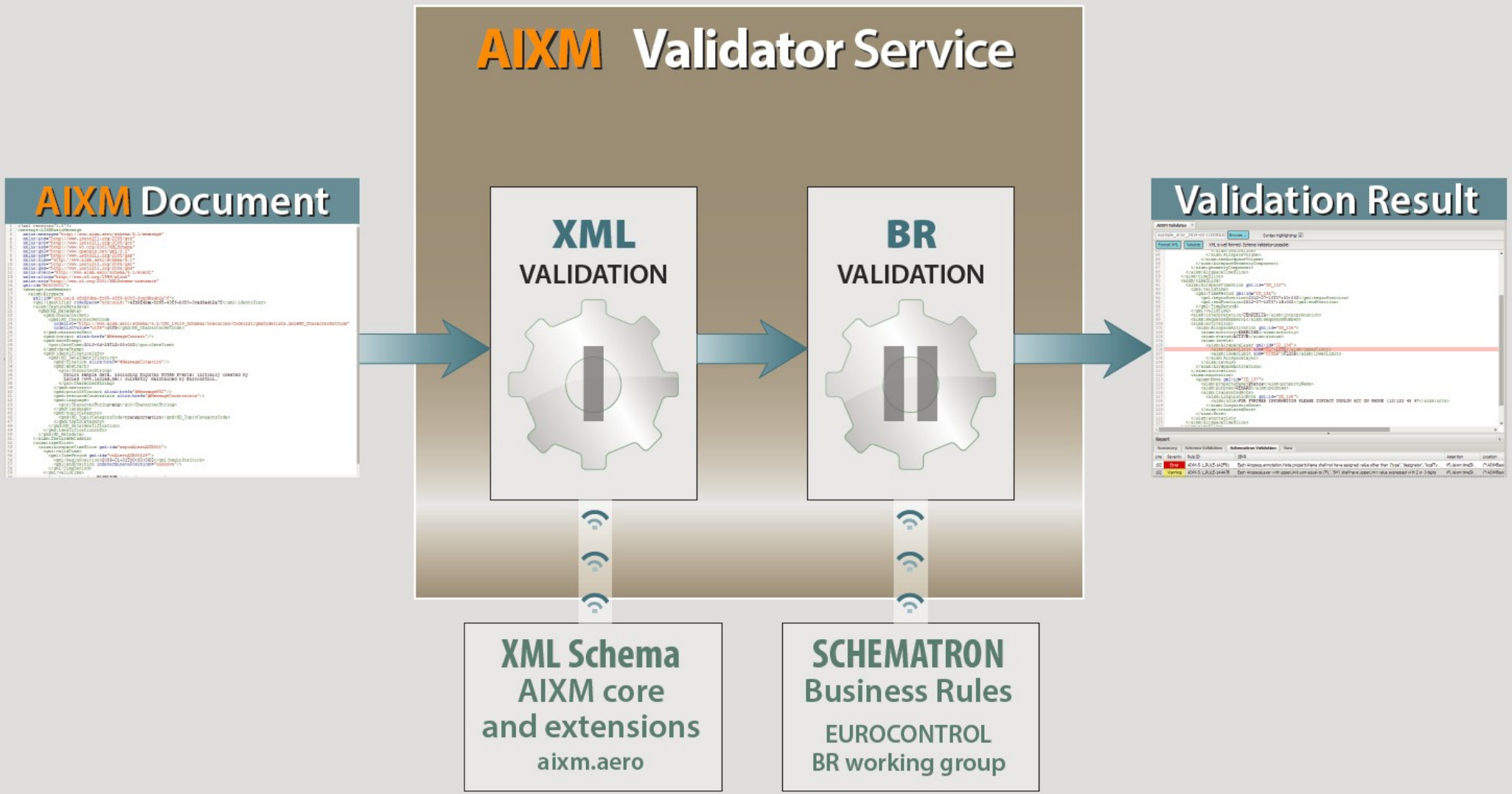
Short AIXM business rules recap

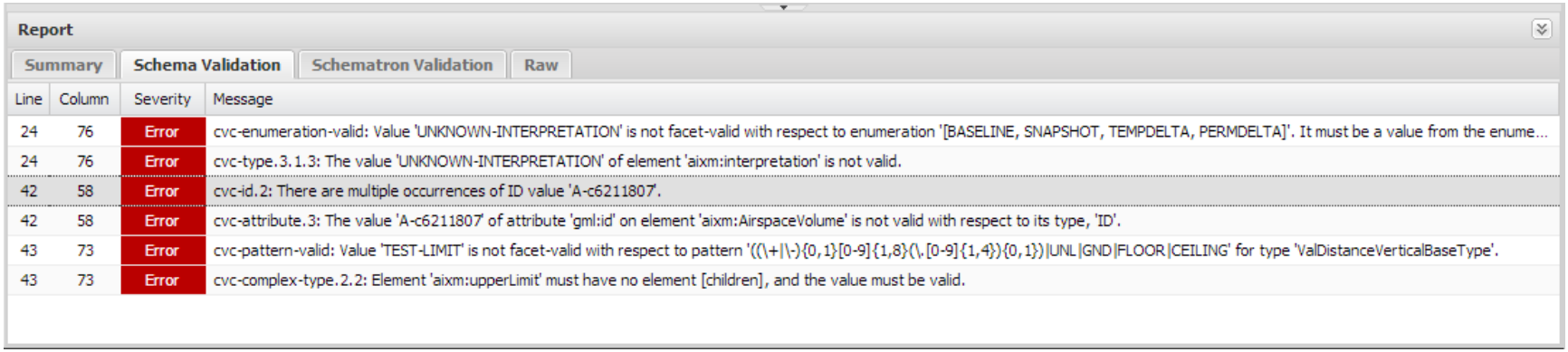
- What are business rules again?
  - Domain-specific requirements
  - Semantic checks
  - Dependencies between values
- Encoded using Schematron (80/20)
  - An ongoing effort
  - Rules defined by AIXM-BR community project
- AIXM Validation Service implements latest rule set

The AIXM Validator Service



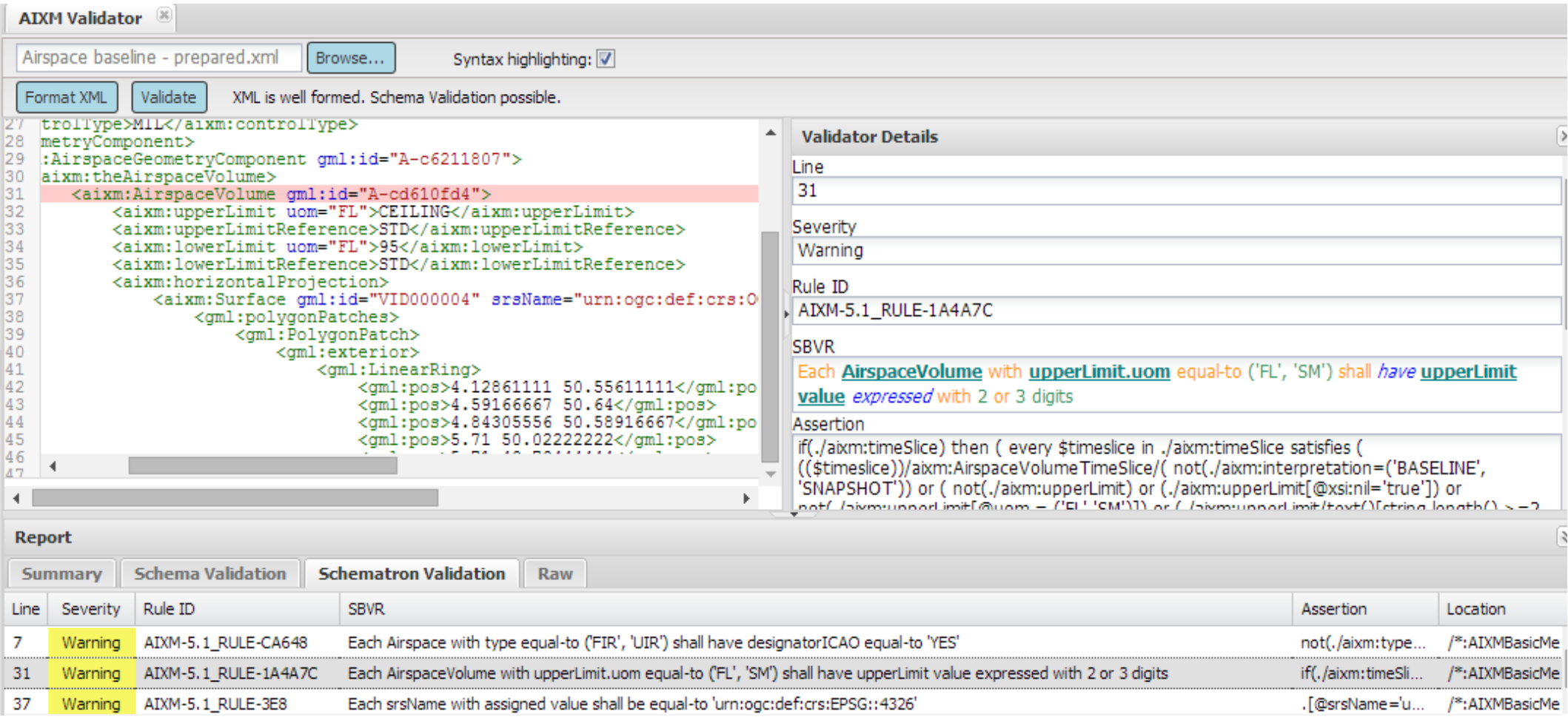
AIXM validator service: How to use it

- Web interface: Ad hoc use for AIXM developers



- OGC Processing Service (WPS): Integrate with ease
  - Standards-based and interoperable
  - Invoke via WPS protocol
  - Designed for easy integration

AIXM Validator Service: Web interface



https://swim.m-click.aero/validator/

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