AIXM Business Rules - using SBVR

Executive summary

This documentation defines the AIXM 5.1 "business rules" concept, in particular how the rules are modelled and how they are provided to system developers. Such rules can be used to verify if AIXM XML data sets, which are already syntactically valid (against the AIXM XML Schema), are also semantically correct and can be used in confidence for a particular application.

The objective of the AIXM Business Rules project is to provide, in a standard format, an exhaustive set of operational constraints that may apply to aeronautical data. This includes requirements for *minimal data properties*, *data quality* and any *other operational constraints*, such as the rules for frequency pairing for VHF navaids, etc.A second objective is to capture *structural rules that are specific to the AIXM context* (such as the relation between the type of TimeSlice and its validity period, etc.) and which are not enforced in the AIXM schema.

While the objective is to provide an exhaustive set of rules, only a subset of the rules might be relevant and needs to be enforced/checked for a particular application. For example, a rule that concerns mandatory feature properties might indicate that the frequency of a navaid is a required value. While for a charting or air navigation support application this is a necessary constraint, for a flight planning application this is not necessary. Therefore, *profiles (subsets) of the AIXM Business Rules* will be proposed for particular applications and/or AIXM user communities.
The *Semantics of Business Vocabulary and Rules (SBVR)*[1] standard is applied for writing the AIXM business rules, in relation with the AIXM UML logical data model. This means that the AIXM classes and their properties (attributes and associations), together with their definitions and data types, provide the the "business vocabulary" that is used as the basis for the definition of the AIXM business rules.

This documentation provides an 'SBVR profile', which is tailored to the AIXM needs and which is documented as a number of concepts and conventions applied in the writing of the AIXM business rules. This documentation is not intended as an exhaustive introduction in SBVR; it is mostly a "primer" document, giving the essential elements that need to be understood in order to:

- read and understand the AIXM 5.1 Business Rules by those interested to review and/or implement such rules in a given system;
- contribute to the writing of the AIXM 5.1 Business Rules in compliance with the SBVR methodology

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ⓘ **Version 0.8**

The actual set of AIXM Business Rules is provided in the Library the AIXM Web site.

Note concerning the previous versions and the use of Schematron

Previous versions of the AIXM Business Rules (up to and including version 0.7.2) used to include *Schematron code* for a part of the rules. This was done for two reasons:

- in order to verify that the SBVR description of the rule is sufficiently clear and unambiguous in order permit its actual implementation as software code;
- as proof of concept, to show how an AIXM data set could be verified against the business rules using software readily-available.

However, the Schematron code was missing for many rules and even where it existed it was no always maintained when the rules were modified. The code was also not optimised for large AIXM data sets, which could result in performance issues. Therefore, *starting with version 0.8 there is no Schematron code* included with the AIXM Business Rules set. It might come back in a future release if there is a real need to that and if possible to find resources for properly maintaining it.