



Business Rules Manager

User Manual

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DOCUMENT IDENTIFICATION SHEET

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<p style="text-align: center;">Abstract</p> <p>This document contains user information for using Business Rules Manager application based upon Business Rules Documentation (version 0.7).</p> <p>Using the application it is possible to check the compliance of AIXM 5.1 data to the requirements of Business Rules mentioned in above document or created by the user. The reports can be saved as web page after the validation is completed.</p>			
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The following table identifies all management authorities that have successively approved the present issue of this document.

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REFERENCE DOCUMENTS

The architecture and design of Business Rules Manager is fulfilled in compliance with the following documents:

- 1 AIXM 5.1 – Business Rules version 0.7.2
- 2 AIXM 5.1 - Business Rules (data verification) – Using SBVR and Schematron.
Publication date: 08 November 2016, version 0.7

THE LIST OF ABBREVIATIONS

AIXM	Aeronautical Information Exchange Model
SBVR	Semantics Of Business Vocabulary And Rules
UID	Unical ID of the Business Rule
XML	Extensible Markup Language

OVERVIEW

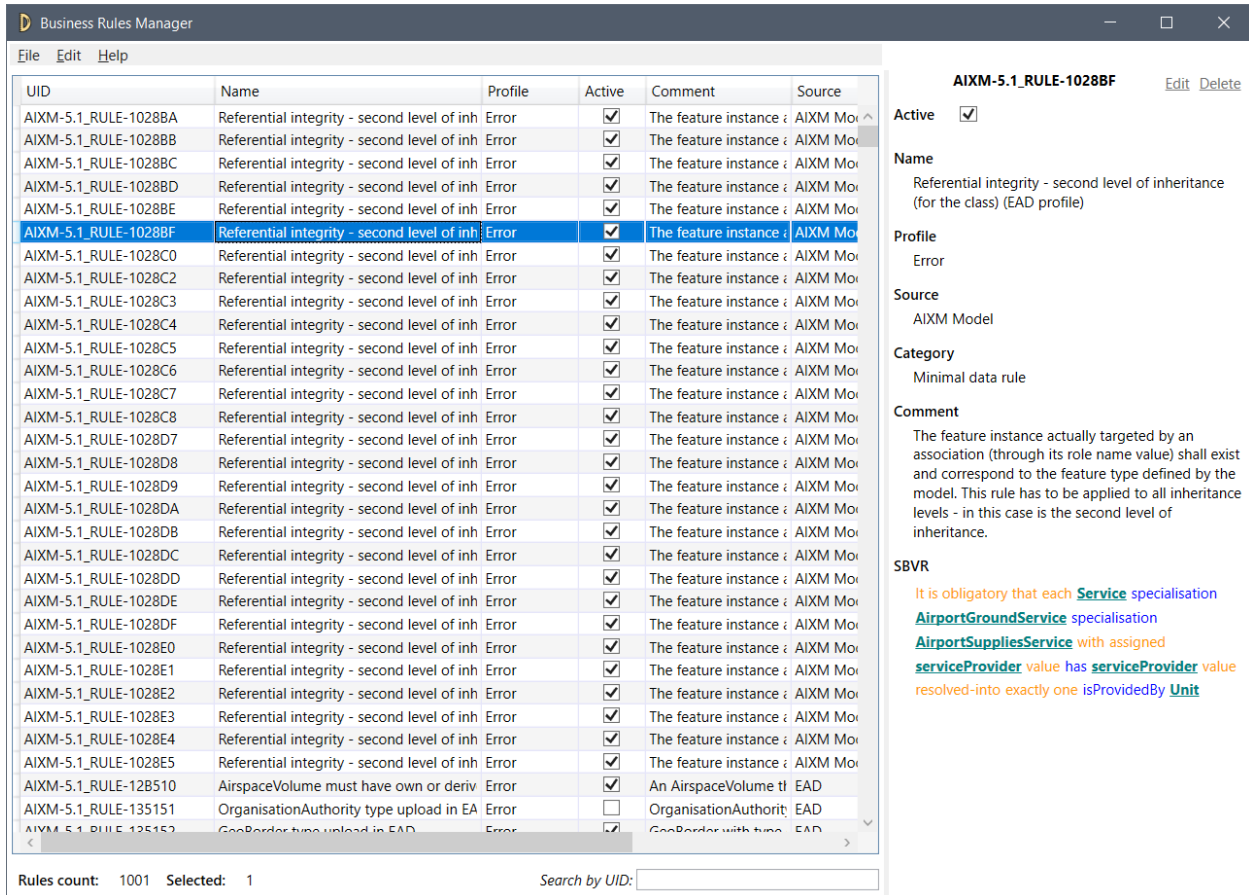
Why Business Rules are so important? AIXM official site says: “The AIXM UML model includes basic constraints expressed as lists of values, range of values, patterns. These are enforced in the AIXM XML Schema. More complex constraints, such as dependencies between the values of different attributes (sometimes in different classes), detection of out of range values, mandatory properties for specific data usage, data quality requirements (resolution, accuracy), etc. are not included in the UML model and do not appear in the XML Schema. Thus the need to document such more complex constraints as ‘business rules’ ”

Business Rule Manager (BRuleManager) application operates based upon Business Rules Documentation (version 0.7). Using this application it is possible to check the compliance of AIXM 5.1 data to the requirements of Business Rules mentioned in above document or created by the user. The reports can be saved as web page after the validation is completed.

The requirements of Business Rules in mentioned document are described as SBVR - *Semantics Of Business Vocabulary And Rules*.

BUSINESS RULES

After launching the application we see the list of realized Business Rules in accordance with above mentioned document.



UID	Name	Profile	Active	Comment	Source
AIXM-5.1_RULE-1028BA	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028BB	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028BC	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028BD	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028BE	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028BF	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C0	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C2	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C3	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C4	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C5	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C6	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C7	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028C8	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028D7	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028D8	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028D9	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DA	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DB	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DC	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DD	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DE	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028DF	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E0	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E1	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E2	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E3	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E4	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-1028E5	Referential integrity - second level of inh	Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Mo	
AIXM-5.1_RULE-12B510	AirspaceVolume must have own or deriv	Error	<input checked="" type="checkbox"/>	An AirspaceVolume tl	EAD
AIXM-5.1_RULE-135151	OrganisationAuthority type upload in EA	Error	<input type="checkbox"/>	OrganisationAuthorit	EAD
AIXM-5.1_RULE-135152	GeoBorder type upload in EAD	Error	<input checked="" type="checkbox"/>	GeoBorder with type	EAD

Rules count: 1001 Selected: 1 Search by UID:

AIXM-5.1_RULE-1028BF [Edit](#) [Delete](#)

Active ☒

Name
Referential integrity - second level of inheritance (for the class) (EAD profile)

Profile
Error

Source
AIXM Model

Category
Minimal data rule

Comment
The feature instance actually targeted by an association (through its role name value) shall exist and correspond to the feature type defined by the model. This rule has to be applied to all inheritance levels - in this case is the second level of inheritance.

SBVR
It is obligatory that each **Service** specialisation **AirportGroundService** specialisation **AirportSuppliesService** with assigned **serviceProvider** value has **serviceProvider** value resolved-into exactly one **isProvidedBy** **Unit**

The table consists of the following columns:

UID column consists of the Unical ID of the Business Rule.

Name column consists of name of the Business rule.

Profile column shows Business Rules type. Error or Warning value available.

Active column shows if the Business rule is active or not.

Comment column consists of comments for each Business rule.

Source column consists of sources where the Business rule was taken.

Category column consists of the categories of Business rule.

Custom column shows whether Business Rule is created by user.

To change the record ordering of the column press on the column title.

To see details about some Business Rule press on it and information will appear in the right side of the main window.

To activate or deactivate the single selected Business Rule press “Activate” checkbox in the detail view panel.

To activate or deactivate several selected Rules click “Edit” menu item in main main and press “*Activate Selected Rules*” or “*Deactivate Selected Rules*” respectively.

“*Rules count*” consists of the number of the Business rule. “*Selected*” label shows the number of rules currently selected.

To search for some Business Rule write the UID of that Business Rule in the “*Search by UID*” textbox and press Enter. To return previous view clear the textbox and press Enter.

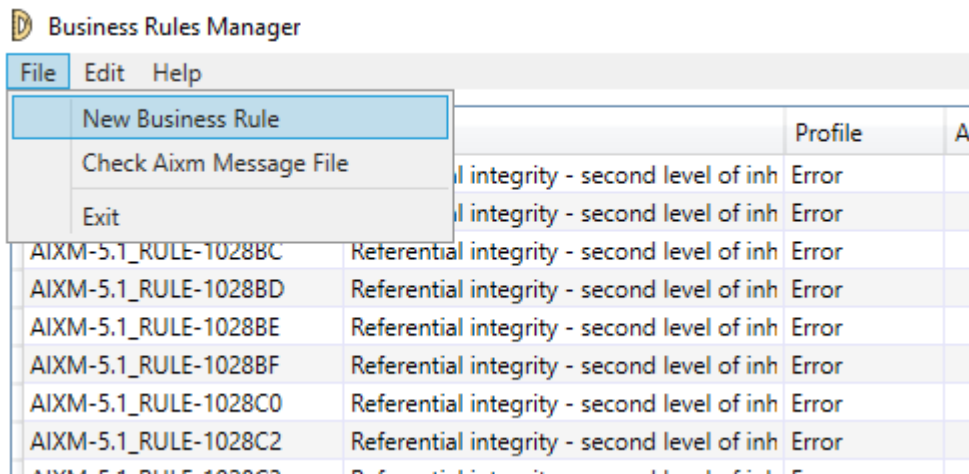
AIXM-5.1_RULE-10001A	Referential integrity - towards Procedure Error	<input type="checkbox"/>	The feature instance : AIXM Model	Minimal data rule	<input type="checkbox"/>
AIXM-5.1_RULE-150C61	Referential integrity towards SegmentLE Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Model	Minimal data rule	<input type="checkbox"/>
AIXM-5.1_RULE-150C62	Referential integrity towards SegmentLE Error	<input checked="" type="checkbox"/>	The feature instance : AIXM Model	Minimal data rule	<input type="checkbox"/>
AIXM-5.1_RULE-19F488	Airspace aggregation - sequence manda Error	<input checked="" type="checkbox"/>	If Airspace has more 1 AIXM Model	Data consistency rule	<input type="checkbox"/>
AIXM-5.1_RULE-19F870	Airspace aggregation - operation manda Error	<input checked="" type="checkbox"/>	If Airspace has more 1 AIXM Model	Data consistency rule	<input type="checkbox"/>

Rules count: 1001 Selected: 0

Search by UID:

CUSTOM BUSINESS RULES

To create Custom Business Rule click “*File*” in the main menu then “*New Business Rule*”




The dialogue **Rule Properties** will activate that consists of two tab pages.

General tab page is for entering the data about the Business Rule.

Uid	<input type="text"/>
Name	<input type="text"/>
Profile	<input type="text" value="Error"/>
Active	<input checked="" type="checkbox"/>
Comment	<input type="text"/>
Category	<input type="text"/>
Source	<input type="text"/>

SBVR tab page:

 Rule Properties

General

SBVR

Each AirspaceVolume with assigned centerline value shall have width value

Keyword

a an and assigned at least at least one
at most Each equal-to exactly one
higher-or-equal-to higher-than
It is obligatory that It is prohibited that
lower-or-equal-to lower-than more than
more than one not or other-than
resolved-into shall value with

Add

Verb

has have specialisation

Add

Noun

Features
Add

Objects
Add

Add

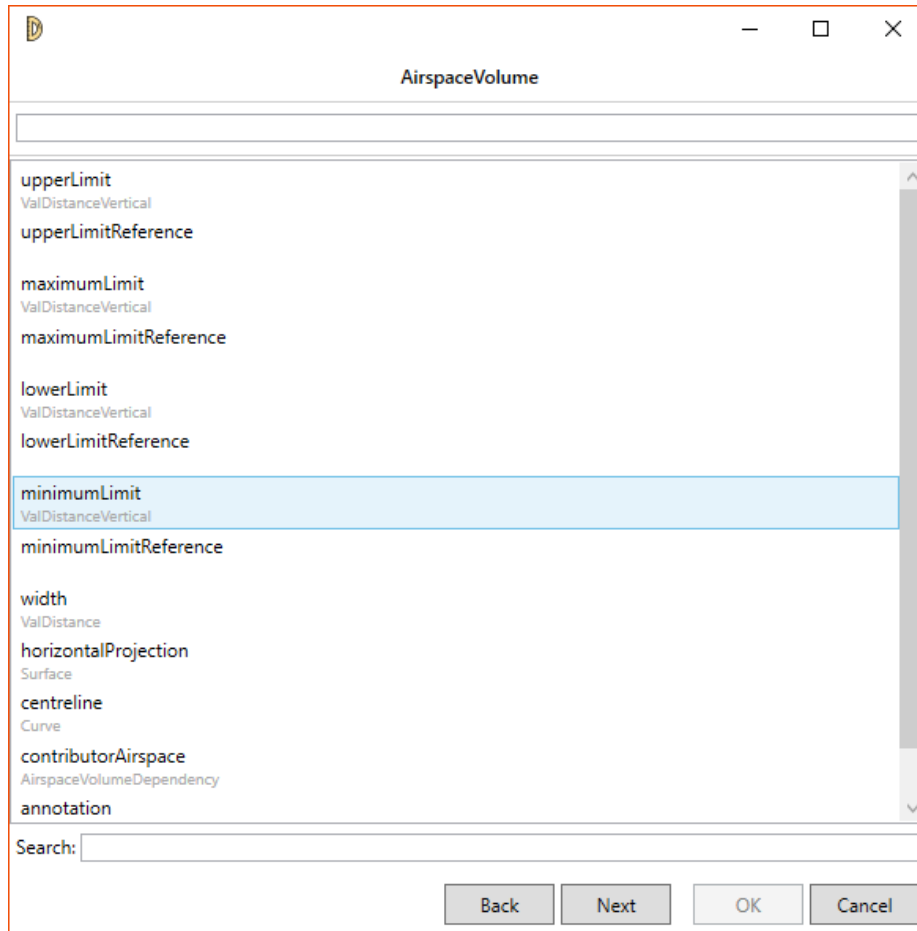
Add Property

Save

Cancel

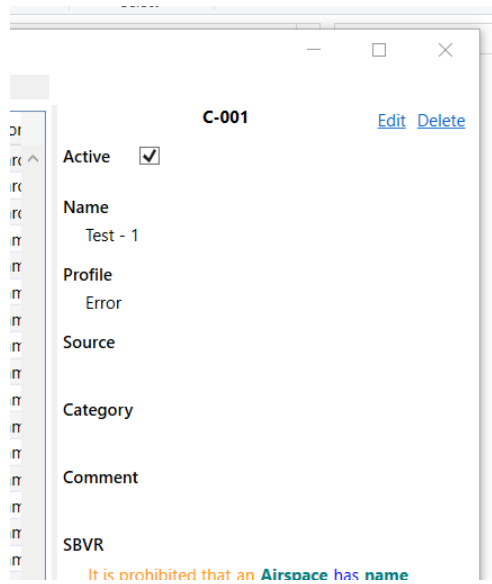
Using the toolbar on the right side enter SVBR text. Select the parts of speech from corresponding sections (Noun, Verb, etc.). If you do not find necessary words you can add it to corresponding sections by adding to TextBox and clicking Add button next to TextBox. When adding Noun word

it is selected from the comboboxes *Features* and *Objects* correspondingly. By clicking *Add Property* in noun section it is possible to add property type noun.



After filling in all necessary information in these two tabs we create a new rule by clicking Save button.

For editing created Custom Business Rules select the Rule in the main dialogue window and click **Edit** on the right upper side of the window, for deleting it click **Delete**. The buttons Edit and Delete are located on upper right side of the Rule details view window.



VALIDATE AIXM DATA

For validating AIXM Data, click "File" → "Check Aixm Message" and select AIXM Message XML file. In this case you will be able to validate only Active Business Rules.

Activated Report window shows the list of violated Rules and violating AIXM Features. By clicking on each line it is possible to see details of the Rule.

Report

Type	Identifier
<div> <div>^</div> <div>AIXM-5.1_RULE-135151</div> <div>Feature count: 2</div> </div>	
OrganisationAuthori	a477c30e-d530-42ab-b8d9-a2a91fdb6466
OrganisationAuthori	d77f8130-2239-4ff7-a683-3b1eae199d8a
<div> <div>^</div> <div>AIXM-5.1_RULE-135153</div> <div>Feature count: 2</div> </div>	
Airspace	aac2813b-81dd-4f44-8969-45f602bf6dea
Airspace	af833061-6a42-4342-9798-1ed2e0e39795
<div> <div>^</div> <div>AIXM-5.1_RULE-1A3371</div> <div>Feature count: 20</div> </div>	
DesignatedPoint	e45d8e30-8e1c-401b-ad8d-212633a07b05
DesignatedPoint	8eba2517-a169-46d3-b3c4-ae7b12464f92
DesignatedPoint	9ffa7bf0-1884-45b9-ae4b-b41ab33ae1f1
DesignatedPoint	24bdbd0f-5006-498c-9c7b-c6955695d663
DesignatedPoint	28f7ec4f-2fda-4d4e-b4aa-585a46dc61e6
DesignatedPoint	38852f9a-3192-40cc-a272-53aa3df9d91e
DesignatedPoint	3c13d0cc-542b-4fc9-93dc-35d1723753d9
DesignatedPoint	64d5855b-6b3d-4a80-aeaf-086f46c17d27
DesignatedPoint	689b4513-234a-4f7d-9173-612525634e5a
DesignatedPoint	79b5ae15-29ba-480c-a1de-923893114d0c
DesignatedPoint	7bf46df6-d5c8-4e44-8308-f76670e3f12f
DesignatedPoint	82517974-900e-4ec5-95cf-55981cfa6703
DesignatedPoint	a7fea01c-2120-4314-acc2-8ec0c08b1713
DesignatedPoint	aad75820-92b9-47c5-8c7a-0f1dc8e0b048
DesignatedPoint	bd9398af-d521-4205-b63a-72be9de42597
DesignatedPoint	bee356e3-f525-4cfe-aebf-b789e145c243
DesignatedPoint	dab0d129-b0f1-4964-83c9-8ee48bdcf0a6

...

Search Feature Identifier:

<

>

AIXM-5.1_RULE-1A3371

Active ☒

Name

Minimal feature properties for AIXM 4.5 backwards compatibility

Profile

Error

Source

AIXM 4.5

Category

Minimal data rule

Comment

For each instance of a feature/object, some properties are mandatory for backwards compatibility reasons with the previous AIXM 4.5 version.

SBVR

Each DesignatedPoint shall have assigned type value

“Search Feature Identifier” field is for finding required Feature.

For saving this report as a web page click **Save Report** button on the right of the window.

Business Rules Report

Error

AIXM-5.1_RULE-135151

It is prohibited that a OrganisationAuthority has assigned type value equal-to ('STATE', 'STATE_GROUP', 'INTL_ORG')

OrganisationAuthority	a477c30e-d530-42ab-b8d9-a2a91fdb6466
OrganisationAuthority	d77f8130-2239-4ff7-a683-3b1cae199d8a

AIXM-5.1_RULE-135153

It is prohibited that a Airspace has assigned type value equal-to ('NAS', 'FIR', 'UIR')

Airspace	aac2813b-81dd-4f44-8969-45f602bf6dea
Airspace	af833061-6a42-4342-9798-1ed2e0e39795

AIXM-5.1_RULE-1A3371

Each DesignatedPoint shall have assigned type value

DesignatedPoint	e45d8e30-8e1c-401b-ad8d-212633a07b05
DesignatedPoint	8eba2517-a169-46d3-b3c4-ae7b12464f92
DesignatedPoint	9ffa7bf0-1884-45b9-ae4b-b41ab33ae1f1
DesignatedPoint	24bdbd0f-5006-498c-9c7b-c6955695d663
DesignatedPoint	28f7ec4f-2fda-4d4e-b4aa-585a46dc61e6
DesignatedPoint	38852f9a-3192-40cc-a272-53aa3df9d91e