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# RPR v2 - Object Class - Aircraft - Provider

## Test Purpose

The test shall verify that the System under Test (SuT) has implemented the GRIM RPR v2 requirements for the RPR v2 object class BaseEntity.PhysicalEntity.Platform.Aircraft as a provider. The requirements in GRIM is found in [Ref 1], chapter 7.6.1, Object Classes. The test shall verify that attributes (required and optional) stated in the Conformance Statement are managed correct.

The test case also includes requirements for the three levels of capability at the RPR v2 Aircraft Provider Badge.

## Overview

[Ref 1], chapter 7.6.1.3: “This object class provides an attributeless subclass of Platform used to support DM filtering. It is equivalent to the DIS Air domain in that it represents platform entities such as airplanes, balloons, etc. that operate mainly in the air, but that include some limited land operations. This object class is publishable because it qualifies as a leaf node of the RPR FOM.”

## Conformance Statement

The owner of the SuT shall submit a Conformance Statement for the SuT, it will identify the required scope of correct managed attributes in the Test Protocol column for provided class attributes.

## Test Environment

The SuT shall execute in the IVCT framework. The framework will listen to provided data from the SuT and analyse the data according to the Conformance Statement.

## The Scope of the Tests

The tests are not designed for checking that e.g. realistic motion models are used by the SuT.

### Declaration Tests

A provider of a class attribute shall publish the class attribute.

### Syntax Tests

The tests checks that correct encoding are used when sending instance attribute updates.

### Semantic Tests

The semantic correctness of the attribute values is checked when applicable, e.g. an Aircraft shall have a position that is within the scenario boundary. A destroyed aircraft shall not be flying. A normally flying aircraft shall have the instance attribute PowerPlantOn set to *True*.

## Provider Requirements

To verify that provided attributes are used in a correct manner shall the SuT owner provide a scenario that verifies:

* That GRIM RPR v2 required attributes are listed in the conformance statement, are published, used with correct encoding and that attribute values are correct in a semantic aspect. The Spatial attribute shall either when the entity is moving be updated with a time interval or using dead-reckoning and update the attribute when a field value in the Spatial attribute has exceeded a specified threshold.
* That RPR2 GRIM optional attributes listed in the conformance statement are published, used with correct encoding and that attribute values are correct in a semantic aspect.

# RPR v2 Aircraft Provider Badge Requirements

## Bronze Badge:

The listed attributes for this badge are the normally required attributes in a federation to get a basic level of interoperability. All required attributes shall be correct managed by a provider.

When an entity is moving, a provider shall for the attribute Spatial provide updates at a specified rate or use dead-reckoning when updating the attribute.

## Silver Badge:

The listed attributes for this badge are required to manage the viewing of the platform. All required attributes shall be correct managed by a provider.

A provider shall for the attribute Spatial manage Dead-Reckoning algorithm Static, and at least one of the two algorithms that uses position, orientation and velocity when the entity is moving, threshold values shall be used to reduce the number of updates.

## Gold Badge:

The listed attributes for this badge are required for manage extended viewing and sensor computation of the platform. All required attributes shall be correct managed by a provider.

A provider shall manage the attribute Spatial Dead-Reckoning algorithm Static, andfor a moving entity the algorithms that uses position, orientation, velocity, acceleration, and angular velocity when these parameters are changed, threshold values shall be used to reduce the number of updates.

# References

[Ref 1] SISO-STD-001-2015, Standard for Guidance, Rationale, and Interoperability Modalities for the Real-time Platform Reference Federation Object Model, Version 2.0, 10 August 2015.