



AEROSPACE INFORMATION REPORT

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Superseding AIR6516

Unmanned Systems (UxS) Control Segment (UCS) Architecture:
RSA Version of UCS ICD Model

RATIONALE

This document is no longer part of UCS Architecture as of Rev A.

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FOREWORD

The Unmanned Systems (UxS) Control Segment (UCS) Architecture is described in AS6512 UAS Control Segment (UCS) Architecture: Architecture Description.

This User Guide describes the content of the Rational Software Architect (RSA) version of the UCS Architectural ICD Model and how to use this model within the RSA modeling tool environment.

1. SCOPE

This User Guide describes the content of the Rational Software Architect (RSA) version of the UCS Architectural Model and how to use this model within the RSA modeling tool environment.

The purpose of the RSA version of the UCS Architectural Interface ICD model is to provide a model for Rational Software Architect (RSA) users, derived from the Enterprise Architect (EA) ICD model (AIR6515).

The AIR6515 EA Model, and by derivation, the AIR6516 RSA Model, have been validated to contain the same content as the AS6518 model for:

- all UCS ICD interfaces
- all UCS ICD messages
- all UCS ICD data directly or indirectly referenced by ICD messages and interfaces
- the Domain Participant, Information, Service and Non-Functional Properties Models

2. REFERENCES

There are no referenced publications specified herein.

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3. DIFFERENCES COMPARED WITH THE UCS ARCHITECTURE AS6518 MODEL

Compared with AS6518 Model, the AIR6516 RSA Model:

- does not include the full EA Conceptual Data Model, which contains some elements that are only referenced during elaboration of non-UCS message sets.
- does not include the EA Use Case System Model, which is not a normative part of the AIR6514 UCS Interface Control Document (ICD).
- does not include Refinements elements or elements of the ICD that are not directly or indirectly referenced by UCS messages.
- modifies association end role names required for navigable association ends.
- sets navigability correctly for association ends without role names.

The AIR6515 EA Model was produced per the Model Interchange Guide, an internal committee process document, and was validated per those processes so that the AIR6516 RSA Model content is equivalent to the corresponding AS6518 Model content.

In the AS6518 Model there are two sets of interfaces, one set of interfaces in the Domain Participant Model references messages that use Conceptual Data Model elements and the other set of interfaces in the ICD references UCS logical messages and data model elements. When the Conceptual message model is transformed to the Logical message model, the two sets of interfaces are identical, so the AIR6515 EA Model and AIR6516 RSA Models have a single set of interfaces that reference logical messages and data model elements.

Figure 1 shows how AIR6516 relates to other UCS Architecture products.

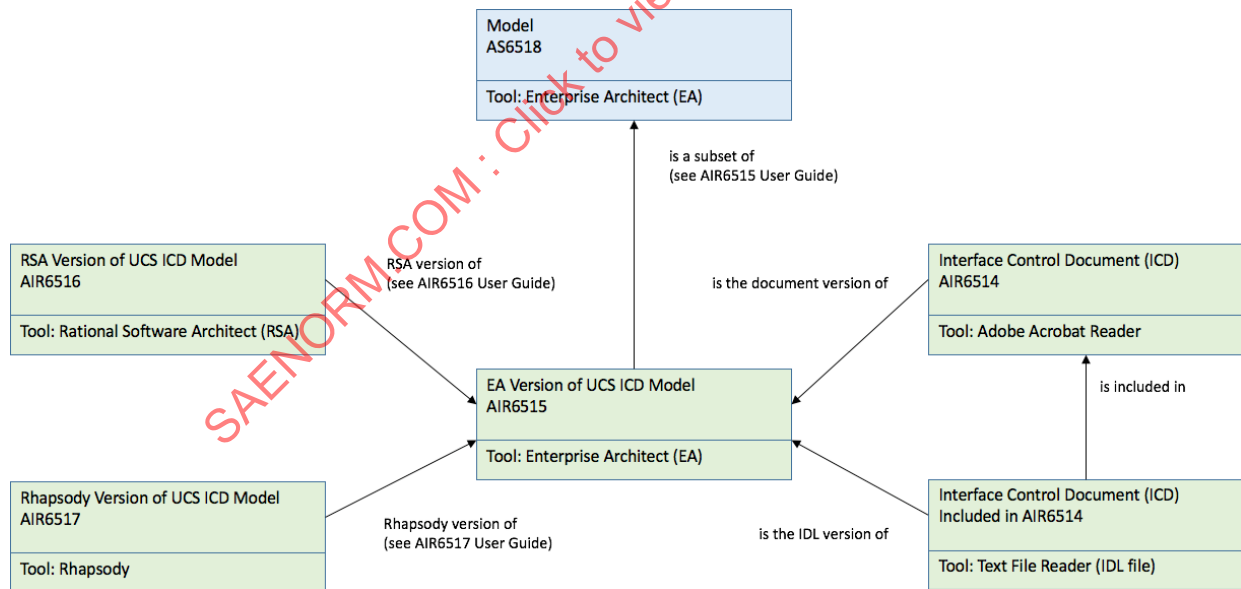


Figure 1 - Relationships between SAE products

4. RELATIONSHIP TO AIR6515 EA AND AIR6517 RHAPSODY MODELS

The AIR6516 RSA Model is the same model as those models provided for Enterprise Architect and Rhapsody. Figure 2, excerpted from the UCS Model Interchange Guide (UCS-G-MIG), shows how AIR6515 is used to produce the AIR6516 and AIR6517 products.

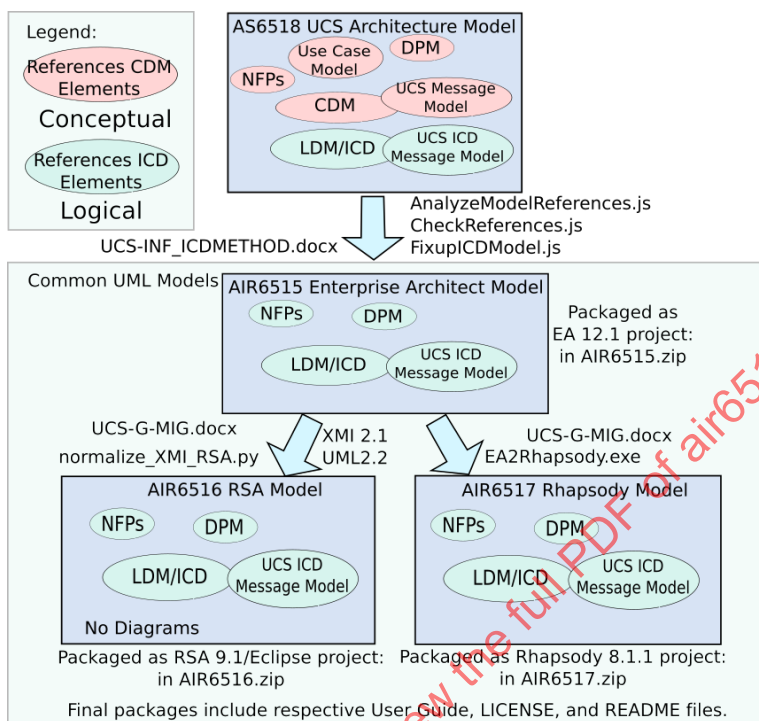


Figure 2 - Workflow for generating model products

5. CONTENT OF THE AIR6516 RSA MODEL

5.1 Upper Level Package Structure

Figure 3 shows the content of the upper level package structure. In RSA, package contents are organized alphabetically, which differs from the custom ordering in AIR6514-MODEL.

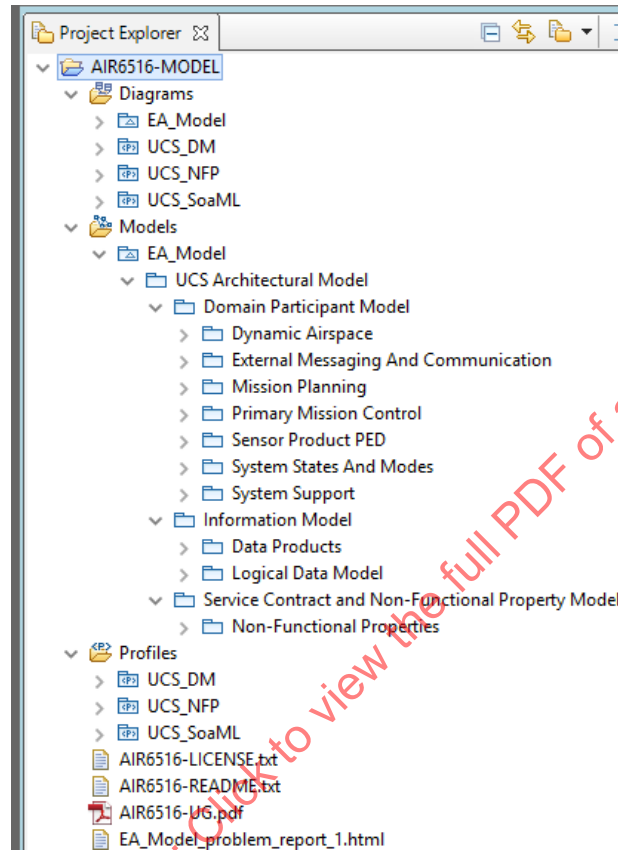


Figure 3 - Upper-level package structure

The **UCS Architectural Model** package contains the AS6515 EA Model Domain Participant, Information, and Service Contract and Non Functional Property Models.

The **Service Contract and Non-Functional Property Model** contains the same information as the AS6515 Model's package, including NFP libraries for Safety, Security, and QoS.

The **Domain Participant Model** package contains the definitions of the UCS ServiceInterfaces and the interfaces that they use and realize to provide services.

The **Information Model** contains the same content as the AS6518 Model's Information Model package. This includes the Data Products and Logical Data Model packages.

NOTE: In this model the UCS Interface ICD/Services package has been renamed MessageModel to reflect that it no longer contains duplicated interfaces and only contains messages.

6. PRECONDITIONS FOR USING THE AIR6516 RSA MODEL

Preconditions for using the AIR6516 RSA Model include:

- access to Rational Software Architect. Version 9.0 or higher should work. This release was checked with version 9.1.1.
- experience with the RSA Modeling Tool Environment versions 9.0 or higher.
- experience with the Unified Modeling Language (UML).
- an understanding of the UCS Architectural Model as originally created in the EA model AS6518 MODEL.

7. FEATURES OF THE AS6518 UCS ARCHITECTURE MODEL NOT EXPORTED

Certain features of the source Enterprise Architect AS6518 model cannot be exported to a Rational Software Architect model:

- The System Use Case Model is not provided in AIR6516. Consult the AS6518 Enterprise Architect model for information on system use cases. A free version of Enterprise Architect available from Sparx Systems allows for reading and navigating the EA model.
- The AS6518 UCS Architecture Model uses an attribute containment property: By Value or By Reference which is not defined in UML2 or in RSA. A future version of the RSA model will capture this property in a tagged value.

8. INSTALLATION AND USE

The AIR6516 product is provided as a .zip archive that contains a Rational Software Architect model. The AIR6516-README.txt in the .zip file lists the contents of the archive. (The screenshots in this section are from the pre-SAE Release 3.4 and reference the UCS-INF-ICD-RSA product, which is now called AIR6516.)

Unpack the .zip file, then create a new RSA workspace and import the project in the project directory you just created.

Launch RSA and when prompted, enter the path to the workspace you wish to create:

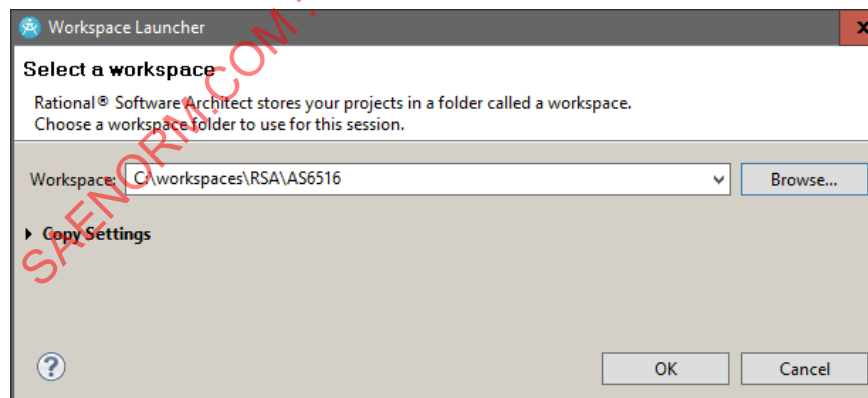


Figure 4

Use File/Import... to import the RSA project you unzipped in the previous step.

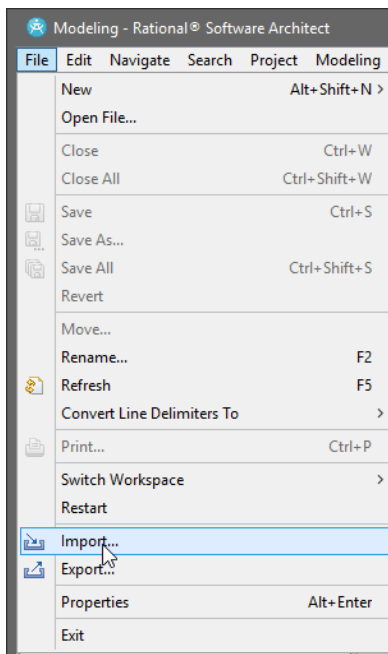


Figure 5

In the Import dialog, select General / Existing Projects into Workspace.

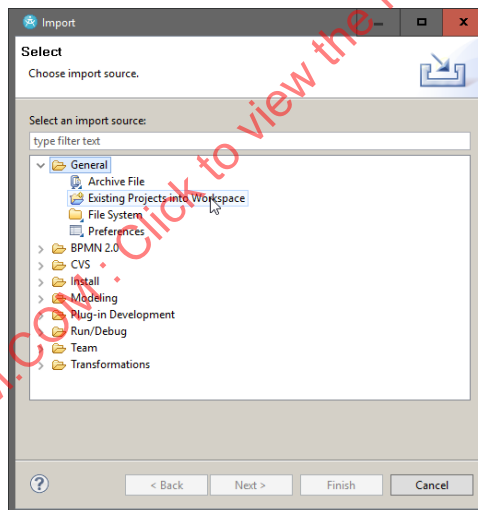


Figure 6

Browse to the directory you unzipped the **AIR6516.zip** file into, select the one available project and click Finish.