

**Aerospace series - Modular and Open Avionics
Architectures - Part 003: Communications/Network**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 4660-003:2011 sisaldab Euroopa standardi EN 4660-003:2011 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.03.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

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English Version

**Aerospace series - Modular and Open Avionics Architectures -
Part 003: Communications/Network**

Série aérospatiale - Architectures Avioniques Modulaires et
Ouvertes - Partie 003: Communication/Réseau

Luft- und Raumfahrt - Modulare und offene
Avionikarchitekturen - Teil 003: Kommunikation/Netzwerk

This European Standard was approved by CEN on 26 June 2010.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 4660-003:2011) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

0 Introduction

0.1 Purpose

This document was produced under the ASAAC Phase II Contract.

The purpose of the ASAAC Programme is to define and validate a set of open architecture standards, concepts & guidelines for Advanced Avionics Architectures (A3) in order to meet the three main ASAAC drivers. The standards, concepts and guidelines produced by the Programme are to be applicable to both new aircraft and update programmes.

The three main goals for the ASAAC Programme are:

1. Reduced life cycle costs.
2. Improved mission performance.
3. Improved operational performance.

The ASAAC Standards are organised as a set of documents including:

A set of agreed standards that describe, using a top down approach, the Architecture overview to all interfaces required to implement the core within avionics system.

The guidelines for system implementation through application of the standards.

The document hierarchy is given hereafter: *(in this figure the document is highlighted)*

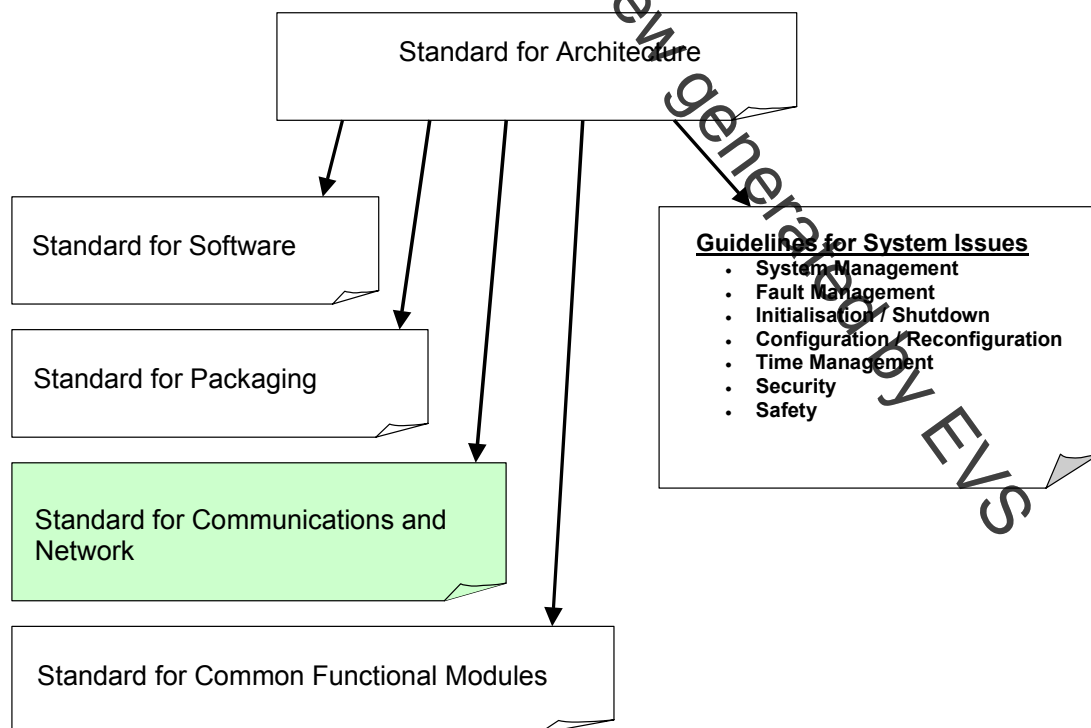


Figure 1 — ASAAC Standards Documentation Hierarchy

0.2 Document structure

The document contains the following clauses:

- Clause 1, Scope of the document
- Clause 2, Normative references
- Clause 3, Terms, definitions and abbreviations,
- Clause 4, Network definition
- Clause 5, Discussion of issues related to the network.

1 Scope

This standard details the functionality and principle interfaces for the ASAAC (Allied Standard Avionics Architecture Council) Network to ensure the interoperability of Common Functional Modules and design guidelines to assist in implementation of such a network. It is one of a set of standards that define an ASAAC Integrated Modular Avionics (IMA) System.

The purpose of this standard is to establish by means of well defined interfaces and functionality, a network design that is technology transparent, that is open to a multi-vendor market and that can make the best use of Commercial Off The Shelf (COTS) technologies. Therefore, the associated data communication network topology, protocols and technologies are not identified in this document. For these items the document identifies the issues that should be considered when defining a specific network implementation to support the ASAAC architecture and provides guidelines to assist.

Although the physical organisation and implementation of the network shall remain the System Designers choice, in accordance with the best use of the current technology, it is necessary to define interfaces and parameter sets in order to achieve a logical definition of the network with a defined functionality. This definition includes:

- The generic functionality applicable to all networks.
- The logical interfaces to the Operating System and Module Support Layers.
- The physical interfaces to the Common Functional Modules (CFM).

The ASAAC Standards are intended to be independent of specific technologies, including network technologies. This document identifies the principle interfaces for the Network, in Clause 4, and where appropriate, provides requirements on network parameters to be defined. The interfaces relevant to the network are the Module Support Layer to Operating System (MOS), Module Physical Interface (MPI) and Module Logical Interface (MLI). The MOS and MPI are generically defined elsewhere (Standards for Software see EN 4660-005 and Packaging see EN 4660-004). The MLI is clearly a function of the selected network. The MOS and MPI definitions are generic and will need to be supported by network specific information. There is no network-dependent information in the Software or Packaging standards. So a future network specification will not only define the particular MLI, but will also need to define the specific aspects of the MPI, topologies, system properties etc.

1.1 Relationship with other ASAAC Standards

The definition of the complete Communications and Network Interfaces is partitioned and is covered by the following ASAAC standards:

- Network physical Interfaces – ASAAC Standards for Packaging.
- Module to Module Communication functions – ASAAC Standards for Software.
- Operating System to Network interface – ASAAC Standards for Software.
- CFM Software Architecture – ASAAC Standards for Software.
- Network physical requirements and properties that define the capability and behaviour required to support CFM to CFM communications – This document.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 7498-1, *Open System Interconnect Basic Reference Model*

EN 4660-001, *Aerospace series — Modular and Open Avionics Architectures — Part 001: Architecture*

EN 4660-002, *Aerospace series — Modular and Open Avionics Architectures — Part 002: Common Functional Modules*

EN 4660-004, *Aerospace series — Modular and Open Avionics Architectures — Part 004: Packaging*

EN 4660-005, *Aerospace series — Modular and Open Avionics Architectures — Part 005: Software*

MIL-STD-1553B, *Multiplex Data Bus*

ASAAC2-GUI-32450-001-CPG Issue 01, *Final Draft of Guidelines for System Issues*. ¹⁾

- Volume 1 — System Management.
- Volume 2 — Fault Management.
- Volume 3 — Initialisation and Shutdown.
- Volume 4 — Configuration / Reconfiguration.
- Volume 5 — Time Management.
- Volume 6 — Security.
- Volume 7 — Safety.

1) In preparation at the date of publication of this standard.