European Component Oriented Architecture (ECOA®) Collaboration Programme: Architecture Specification Part 5: High Level Platform Requirements

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Note: *This specification represents the output of a research programme and contains mature high-level concepts, though low-level mechanisms and interfaces remain under development and are subject to change. This version of documentation is recommended as appropriate for limited lab-based evaluation only. Product development should rely on the DefStan or BNAE publications of the ECOA standard.*

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0 Introduction

This Architecture Specification provides the specification for creating ECOA®-based systems. It describes the standardised programming interfaces and data-model that allow a developer to construct an ECOA®-based system. It uses terms defined in the Definitions (Architecture Specification Part 2). The details of the other documents comprising the rest of this Architecture Specification can be found in Section 3.

This document is Part 5 of the Architecture Specification, and describes the high level requirements for the conformity of platform to ECOA®.

The purpose of this document is providing sets of requirements to help ECOA® Platform or ECOA® Reference Platform providers to build the right product and to help system integrators to check the conformance of their procurements.

The document relies on other Reference Manuals of the ECOA® Architecture Specification and refers to them. The assumption is made that any ECOA® Platform is delivered at least with a Toolset, a Version Description and a User's Manual.

Section 6 describes the generic high level requirements for any ECOA® Platform.

1 Scope

This Architecture Specification specifies a uniform method for design, development and integration of software systems using a component oriented approach.

2 Warning

This specification represents the output of a research programme and contains mature high-level concepts, though low-level mechanisms and interfaces remain under development and are subject to change. This standard of documentation is recommended as appropriate for limited lab-based evaluation only. Product development based on this standard of documentation is not recommended.

3 Normative References

Architecture Specification Part 1	IAWG-ECOA-TR-001 / DGT 144474 Issue 5 Architecture Specification Part 1 – Concepts
Architecture Specification Part 2	IAWG-ECOA-TR-012 / DGT 144487 Issue 5 Architecture Specification Part 2 – Definitions
Architecture Specification Part 3	IAWG-ECOA-TR-007 / DGT 144482 Issue 5 Architecture Specification Part 3 – Mechanisms
Architecture Specification Part 4	IAWG-ECOA-TR-010 / DGT 144485 Issue 5 Architecture Specification Part 4 – Software Interface
Architecture Specification Part 5	IAWG-ECOA-TR-008 / DGT 144483 Issue 5 Architecture Specification Part 5 – High Level Platform Requirements
Architecture Specification Part 6	IAWG-ECOA-TR-006 / DGT 144481 Issue 5 Architecture Specification Part 6 – ECOA® Logical Interface
Architecture Specification Part 7	IAWG-ECOA-TR-011 / DGT 144486 Issue 5 Architecture Specification Part 7 – Metamodel
Architecture Specification Part 8	IAWG-ECOA-TR-004 / DGT 144477 Issue 5 Architecture Specification Part 8 – C Language Binding
Architecture Specification Part 9	IAWG-ECOA-TR-005 / DGT 144478 Issue 5 Architecture Specification Part 9 – C++ Language Binding

Architecture Specification Part 10	IAWG-ECOA-TR-003 / DGT 144476 Issue 5 Architecture Specification Part 10 – Ada Language Binding
Architecture Specification Part 11	IAWG-ECOA-TR-031 / DGT 154934 Issue 5 Architecture Specification Part 11 – High Integrity Ada Language Binding
ISO/IEC 8652:1995(E) with COR.1:2000	Ada95 Reference Manual Issue 1
ISO/IEC 9899:1999(E)	Programming Languages – C
ISO/IEC 14882:2003(E)	Programming Languages C++
SPARK_LRM	The SPADE Ada Kernel (including RavenSPARK) Issue 7.3

4 Definitions

For the purpose of this standard, the definitions given in Architecture Specification Part 2 and those shown below apply.

NOTE The following definitions are taken from RFC 2119

4.1

May

Means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item.

4.2

Must

Means that the definition is an absolute requirement of the specification.

4.3

Optional

Means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item.

4.4

Recommended

Means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

4.5

Required
Means that the definition is an absolute requirement of the specification.

4.6

Shall
Means that the definition is an absolute requirement of the specification.

4.7

Should
Means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

5 Abbreviations

API	Application Programming Interface
ASC	Application Software Component
ECOA	European Component Oriented Architecture. ECOA® is a registered trademark.
ELI	ECOA® Logical Interface
FIFO	First In, First Out
ID	Identifier
IP	Internet Protocol
OS	Operating System
PC	Personal Computer
PINFO	Persistent Information
POSIX	Portable Operating System Interface
RFC	Request For Comments
RTOS	Real-Time Operating System
XML	eXtensible Markup Language

6 High Level Requirements for an ECOA Platform

This section provides generic high level requirements that a platform shall satisfy to claim a conformance to the ECOA Architecture Specification and then be identified as an ECOA Platform.

Table 1 High level requirements for an ECOA Platform

Id.	Requirement
	Implementation
HLR.1	The ECOA Platform **shall** conform to an identified version of this Architecture Specification.
HLR.2	The ECOA Platform **shall** support at least one language binding.
HLR.3	Any supported language binding (of the bindings identified in this Architecture Specification) **shall** be implemented in its entirety.
HLR.4	The platform **shall** be delivered with its logical system description (conformant with the logical-system.xml in [Architecture Specification Part 2, Architecture Specification Part 7]).
HLR.5	The ECOA Platform **shall** schedule ECOA Module/Trigger Instances, using a scheduling policy which complies with the requirement to respect the module priorities set by the System Integrator."
HLR.6	The ECOA Platform **shall** map Protection Domains onto segregated memory spaces.
	Hardware
HLR.7	Each computing element in an ECOA Platform **shall** be synchronized to a single version of a time reference common across the whole ECOA Platform.