



European Component Oriented Architecture (ECO A[®]) Collaboration Programme: Guidance Document: Reconfiguration

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0 Executive Summary

This document defines guidance ECOA system reconfiguration.

The aim of a reconfiguration is to adapt the system to a new operational context. A reconfiguration may occur following a functional decision or following as recovery action a fault handling.

1 Scope

This document is intended to provide guidance on reconfiguration.

The document is structured as follows:

Section 2 gives a brief introduction to the topic.

Section 3 expands abbreviations used in this report.

Section 4 provides definitions for the key terms used in this report.

Section 5 lists key documents referenced by this report.

Section 6 discusses the guidance to reconfiguration.

2 Introduction

This document defines guidance ECOA system reconfiguration.

The aim of a reconfiguration is to adapt the system to a new operational context. A reconfiguration may occur following a functional decision or following as recovery action a fault handling.

With the ECOA Architecture Specifications, it is possible to initiate two types of reconfigurations:

- A functional reconfiguration involving only a change in the behaviour of the application software components,
- The replacing of the current deployment with a new one.

Section 6 details each type of reconfiguration.

3 Abbreviations

API	Application Programming Interface
ASC	Application Software Component
DSTL	Defence Science and Technology Laboratory
ECOA	European Component Oriented Architecture
ELI	ECOA Logical Interface
FR	French
IAWG	Industrial Avionics Working Group
I/O	Inputs-Outputs
OS	Operating System
PF	Platform
QoS	Quality of Service
RR	Request-Response
STD	Standard
TR	Technical Report
TRL	Technology Readiness Level
UDP	User Datagram Protocol
UK	United Kingdom
XML	eXtensible Markup Language

4 Definitions

For the purpose of this document, the definitions given in the ECOA Architecture Specification (*ref. [AS]*) Part 2 and those given below apply.

Term	Definition
(currently none)	

5 References

AS	European Component Oriented Architecture (ECO A) Collaboration Programme: Architecture Specification (Parts 1 to 11) “ECO A” is a registered mark.
SM	European Component Oriented Architecture (ECO A®) Collaboration Programme: Guidance Document: System Management

6 Guidance to Reconfiguration

6.1 Functional reconfiguration

Functional reconfiguration is equivalent to the notion of moding which may have an effect at different scopes:

- at service instance level (a change of functional behaviour is required for one given service),
- at component level (thereby possibly affecting more than one service provided by that component),
- or at system level (thereby possibly affecting more than one component).
- Functional reconfiguration may be triggered:
 - spontaneously by the component itself based upon internal decisions,
 - by receiving an order to do so from another component (e.g. a dedicated manager component requests mode changes of application software components – see [SM]).

Mode change requests can be introduced with the help of a dedicated service operation within a functional service or within a dedicated moding management service. The initial mode can be set with the help of properties.

6.2 Deployment change

On error notification, the ECO A Fault Handler may decide to replace the current deployment with an alternate one statically defined by the system integrator (see recovery action CHANGE_DEPLOYMENT in section 11.6 of [AS – Part 4]).

Furthermore, if the ECO A Fault Handler is being implemented as an ECO A ASC, it could make this decision based on functional information received from other components, using ECO A service links.

The new deployment may instantiate:

- either the same assembly schema but possibly on different computing resources – the same system behaviour is expected.
- or a new assembly schema. In that case, the new system behaviour may be different (e.g. to implement a degraded mode).

The platform supplier may characterize the deployment change on his platform by providing means of estimating the change time value, which depends on the target deployment.