
Atacama
Large
Millimeter
Array

# ALMA
# Interface Management Plan

ALMA-80.07.00.00.001-D-PLA

Version: D

Status: *Released*

2004-06-29

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# Change Record

| Version | Date | Affected Section(s) | Change Request # | Reason/Initiation/Remarks |
|---|---|---|---|---|
| A | 2003-03-26 | All | | First Issue |
| B | 2003-04-29 | All | | Comments from the DAR process were incorporated. |
| C | 2003-12-15 | Applicable docs table and header | | S. Oliver changed:<br>Put new logo in the header<br>Replaced AD1 with ALMA Document Control Plan, and deleated AD 2 ALMA-80.02.00.00-005-E-PRO and AD3,both made obsolete by the ALMA Document Control Plan.<br>Renumbered AD3 ALMA Product Tree, ALMA-80.03.00.00.001-K-LIS,as AD2 and updated to current version L. |
| D | 2004-06-28 | Applicable docs table | ALMA-80.03.00.00-0060A-CRE | Remove the ALMA Product Tree as an applicable document and make it a reference document. Include a statement indicating that the most recent version is valid. Update the version letter for the Documentation Control Plan in the applicable documents table. |

# Table of contents

# 1 Introduction

## 1.1 Definition

Whenever two pieces of hardware or software are joined together to mutually perform a function, an interface exists.
The interface must be defined such that the designers of each piece of hardware or software understand the physical, electrical and logical connections they must provide and those they must accept.
A seemingly minor miscommunication or misinterpretation can result in two pieces of perfectly designed equipment being unusable as a joint system.
Therefore the interface must be described in the design documents in a complete and unambiguous manner, including both hardware and software items, while the performance of it must match the top-level requirements.
All required information about the interface is embodied in an interface control document (ICD). The ICD is complementary to the requirements and design documentation of the two connected configuration items.

## 1.2 Objectives

This document, the ALMA interface management plan provides a methodology for the creation and control of ICDs between different ALMA sub-systems.
The objective of this ALMA interface management plan is to ensure the overall integrity of ALMA during design, construction and operation phases.

## 1.3 Scope

To achieve this objective, this document presents information applicable to ALMA ICDs in the following areas:

- Purpose;
- Contents of ICD;
- Guidelines for ICD preparation;
- ICD format;
- Responsibilities;
- Review and Approval procedures;
- Change Procedures.

## 1.4 Range of applicability

This document is applicable to all ALMA configuration items that have interfaces to different sub-systems.

The ICD described here may be used for the interfaces internal to a subsystem. Alternatively, the defining documents for this lower level hardware and software may be used to control the interfaces.

## 1.5 Applicable and Reference documents

The following documents are applicable to, or referenced by, this ALMA interface requirements management plan. Applicable documents are valid in the version cited. Reference documents are valid in the most recent version available (if indicated).

- **AD1** ALMA Document Control Plan, ALMA-80.02.00.00-011-C-PLA
- **RD1** ALMA Product Tree, ALMA-80.03.00.00.001-M-LIS (*most recent version is valid)

### 1.6 Glossary

Configuration item: An aggregation of hardware, software, or both, that is designated for configuration management and treated as a single entity in the configuration management process. (from EIA/IS-731.1)

### 1.7 Acronyms

| | |
|---|---|
| ALMA: | Atacama Large Millimetre Array |
| CCB: | Configuration Control Board |
| CI: | Configuration Item |
| EDM: | Electronic Document Management |
| EIA: | Electronic Industries Alliance |
| ICD: | Interface Control Document |
| IPT: | Integrated Product Team |
| IEC: | International Electrotechnical Commission |
| ISO: | International Standardisation Organisation |
| N/A: | Not Applicable |
| OSI: | Open Systems Interconnection |
| PDF: | Portable Document Format |
| SE&I: | System Engineering and Integration |

## 2 ICD Definition

### 2.1 Purpose

The purpose of an ICD is to completely and unambiguously define the physical, electrical and logical connections between two CIs.
An ICD shall be considered a defacto requirement upon each of the CIs that are defined within.
The ICD shall describe those aspects of the hardware and software design of each CI which are necessary to ensure the correct interfacing of the two CIs. The ICD shall also delimit the boundaries of responsibility of the parties involved with each CI.

### 2.2 Layout

An ICD consists of a written text with relevant tables and drawings, which completely defines each interface between two CIs.

The ICD template provided on the ALMAEDM shall be used for all inter–subsystem ICDs and is strongly recommended for all subsystem internal ICDs. The format of the ICD shall not be changed from the template version down to the third level; below that, the entries are optional.

Not every ICD requires all the information identified in the ICD template. If there are items or sections that are not applicable, those sections should be marked N/A.

### 2.3 Format

Microsoft Word shall be used as the application to create the electronic form of the ICD. Adobe PDF file format shall be used to create ICD versions intended for distribution via ALMAEDM or other electronic means.

### 2.4 Standards

Whenever possible well accepted international standards (ISO, IEC, OSI, etc.), as specified in AD1, shall be required for an interface. The use of standards reduces the variance between different interfaces, simplifies the design of an interface and improves the flexibility and interchangeability of the products.

## 3 ICD creation

### 3.1 Creation process

Normally an ICD will be created jointly by the persons responsible for designing each CI under the direction of the IPT leads. To assist them in this process and to provide a consistent format across various ICDs, the ICD template mentioned in section 2.2 shall be used.

### 3.2 Responsibilities

The IPT leads are responsible for ensuring accuracy of their ICDs and guiding them through the ALMA review, approval and change processes defined in section 4.

The ALMA SE&I is responsible for verifying the completeness of inter–subsystem ICDs and their compliance with the system level design.

## 4 ICD Approval procedure

Before being distributed and entering into force as a valid document, the ICD must be formally approved as defined in the Documentation Control Plan [AD1].

## 5 ICD maintenance

An **ICD change** is defined as a modification of any of the interface details described in the ICD.

As for any ALMA approved document, an inter-IPT ICD change must go through the ALMA change request procedures outlined in the Documentation Control Plan [AD1].
The maintenance of the ICD is under the responsibility of the concerned IPT leads.
ALMA SE&I IPT is responsible for verifying the completeness of inter–subsystem ICDs.

## 6 Distribution and availability of ICDs

Each approved and released inter-IPT ICD shall be available via ALMAEDM, in the Project Level, “Approved Interface Control Documents” forum.

It is strongly recommended that intra-ICDs are available on ALMA EDM as well.
At the discretion of the ALMA project management it can be decided to limit access to an ICD.