Guide to the software engineering standards

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ESA Board for Software
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(BSSC)

DOCUMENT STATUS SHEET

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CHAPTER 1
INTRODUCTION

1.1   PURPOSE

ESA PSS-05-0 describes the software engineering standards to be applied for all deliverable software implemented for the European Space Agency, either in house or by industry.

ESA PSS-05-0 is the top-level software engineering standard and is the root of a document tree. Lower level standards that branch from this root contain advisory and optional material. The purpose of this document is to define and explain the principles and conventions of the document tree.

1.2   OVERVIEW

Chapter 2 explains the document identification scheme and the structure of the document tree.

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CHAPTER 2
THE DOCUMENT TREE

2.1   INTRODUCTION

The document tree currently planned is shown in figure 1. Further documents may be added in the future.
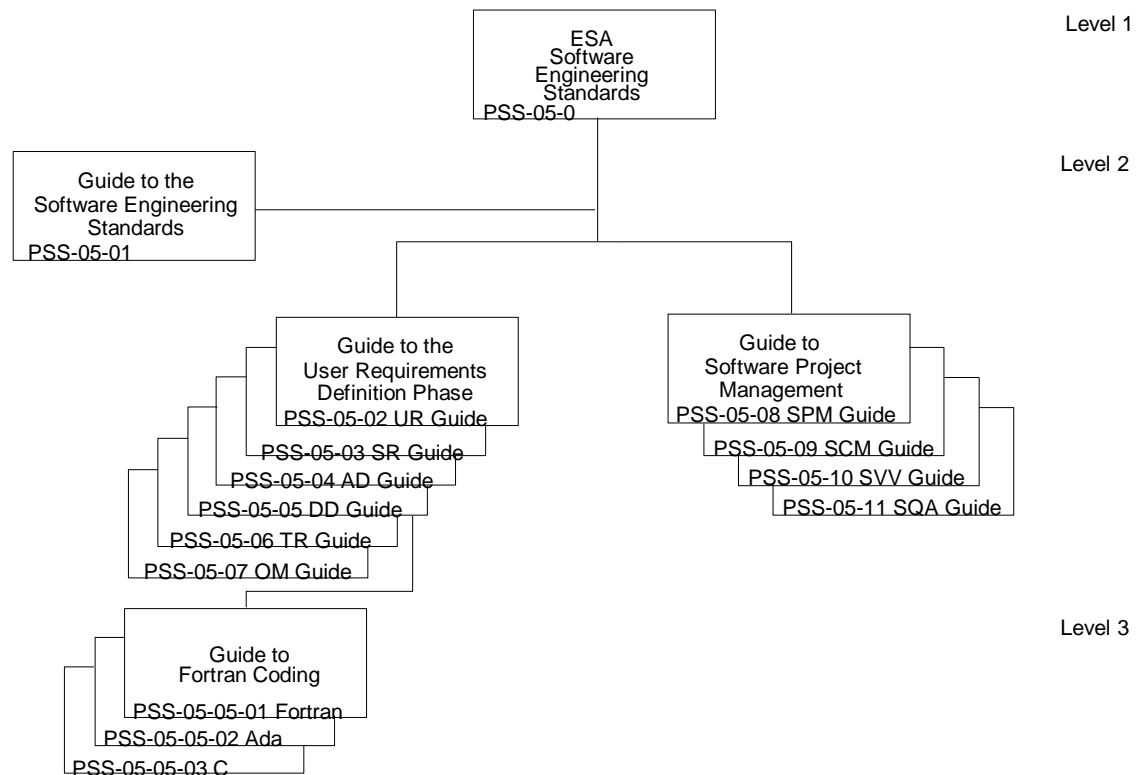

Figure 1: The ESA PSS-05-0 Document Tree

2.1   THE DOCUMENT IDENTIFIER

Each document is given an identifier that follows the protocol:

ESA PSS-05[-level 2 number][-level 3 number]

PSS stands for 'Procedures, Specifications and Standards'. The first field, '05', defines the subject area as 'software engineering'.

The number of numeric fields in the identifier defines the level (e.g. ESA PSS-05-05-02 is a level 3 document). A leading zero is added to numbers in the range 1 to 9 to allow even tabulation of document lists. Numbers are allocated sequentially from 1.

The exception to this protocol is the identifier for the level 1 document ESA PSS-05-0. The second numeric field '-0' exists to retain compatibility with earlier PSS numbering schemes.

2.2   THE STRUCTURE OF THE DOCUMENT TREE

2.2.1   The Level 1 Document

Level 1 contains one and only one document, ESA PSS-05-0, which is a mandatory standard for all ESA projects.

2.2.2   The Level 2 Documents

Level 2 documents offer guidance in carrying out the standard practices described in ESA PSS-05-0. They repeat mandatory practices stated in ESA PSS-05-0 (with cross-references) and do not define any new mandatory practices.

The first level 2 document, ESA PSS-05-01 (this document) exists to define and explain the document tree.

ESA PSS-05-0 divides the software engineering activity into two parts: the products themselves and the procedures used to make them.

The process of production is partitioned into six phases:

- User Requirements Definition;
- Software Requirements Definition;
- Architectural Design;
- Detailed Design and Production;
- Transfer;
- Operations and Maintenance.

The related level 2 documents are:

Identifier	Title
ESA PSS-05-02	Guide to the User Requirements Definition Phase
ESA PSS-05-03	Guide to the Software Requirements Definition Phase
ESA PSS-05-04	Guide to the Architectural Design Phase
ESA PSS-05-05	Guide to the Detailed Design and Production Phase
ESA PSS-05-06	Guide to the Transfer Phase
ESA PSS-05-07	Guide to the Operations and Maintenance Phase

Each document contains:

- an overview of the phase;

- guidelines on methods that can be used in the phase;

- guidelines on tools that can be used in the phase;

- instructions for documentation.

The procedures to be followed in the life cycle are governed by plans. The various types of planning envisaged are:

- project management;

- configuration management;

- verification and validation;

- quality assurance.

The related level 2 documents are:

Identifier	Title
ESA PSS-05-08	Guide to Software Project Management
ESA PSS-05-09	Guide to Software Configuration Management
ESA PSS-05-10	Guide to Software Verification and Validation
ESA PSS-05-11	Guide to Software Quality Assurance

2.2.3   The Level 3 Documents

Level 3 documents exist to:

- contain optional material;

- partition material in a higher level document into more manageable quantities.

The level 3 documents that have been defined to date are:

Identifier	Title
ESA PSS-05-05-01	Guide to Fortran coding
ESA PSS-05-05-02	Guide to Ada coding
ESA PSS-05-05-03	Guide to C coding

Level 3 documents can be made applicable. If Ada is selected as the programming language to be used for a system, for example, the project's management may choose to make ESA PSS-05-05-02, 'Guide to Ada Coding', applicable.

APPENDIX A
GLOSSARY

AD   Architectural Design
BSSC   Board for Software Standardisation and Control
DD   Detailed Design and production
ESA   European Space Agency
OM   Operations and Maintenance
PSS   Procedures, Specifications and Standards
SA   Structured Analysis
SCM   Software Configuration Management
SPM   Software Project Management
SQA   Software Quality Assurance
SR   Software Requirements
SVV   Software Verification and Validation
TR   Transfer
UR   User Requirements