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## **ANSA Phase III**

# **Document Writing Guide**

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### **Abstract**

This document provides guidelines for the production of documents. It suggests a document preparation scheme, it recommends a structure for documents, and contains a set of style guidelines.

Team members are expected to take this guide into account when preparing documents.

This document (together with APM1023 Document Archive, APM1024 Document Classification, and APM1026 Document Support Tools) is part of the Quality Plan for Phase III.

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# 1 Document Writing Guide

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## 1.1 Introduction

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We should strive to write documents that can compete with the best journal articles we have ever seen.

Many of our products are documents. Like all organisations we should make sure that these products achieve the highest quality standards. That is the only way in which we can sustain our credibility, and extend our reputation as a centre of excellence.

From time to time we are accused of writing documents that are hard to read and perhaps even harder to understand. The reasons for this are varied and will not be elaborated here. What we seek to do is to provide some guidelines that should help all document writers. Apart from this introduction, this document consists of three chapters:

- a document preparation scheme,
- a recommendation on document structure
- a set of stylistic guidelines.

This document writing guide applies to the preparation of all documents.

### 1.1.1 Other documents

Related documents are:

- APM1023 Document Archive (describes what the archive looks like for Phase III)
- APM1024 Document Classification (helps you find the right document class once you know what you are going to write and for whom)
- APM1026 Document Support Tools (identifies the requirements for tool support for document handling, e.g. version control).

This and the documents cited above are part of the Quality Plan for Phase III.

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## 1.2 Document preparation scheme

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### 1.2.1 Before you start

Before attempting to write any document three things should be done:

1. find out about
  - your audience
  - your aims
  - the required style
  - the required structure
  - the suggested contents
2. consult this document to prepare a documentation plan, following the scheme outlined here
3. use the appropriate document templates to create the documents

### 1.2.2 Document production

For reviewed and approved documents (everything but Request for Comment documents) we use the document production scheme adopted by the Open University, and which has proven to be capable of supporting the production of excellent texts.

Each document to be produced must pass through five stages, as follows:

1. Aims, objectives, prerequisites, and sources.
  - The aims are what the writer wants to achieve. For instance, what topics are to be covered, and to what detail.
  - The objectives are what the writer expects the reader to achieve after studying the work. For instance, do we expect the reader to be able to program in a new programming language? Do we expect the reader to design or build a conformant system? Do we expect the reader to use or design a new set of tools?
  - Prerequisites are what the writer assumes about his readership. For instance, is the readership mathematically inclined and at what level?
  - Sources should identify what the document is based on, references to other papers (internal and external), other technologies, and related areas of work.
2. Draft 1: A document that outlines the scope of the material to be included. The document may contain editorial comments to indicate areas that are to be covered in greater detail.
3. Draft 2: A document that contains texts on all subjects within the intended scope. The document acts as a proposal for the structure of the eventual text. Reviewers should concentrate on this aspect.
4. Draft 3: The document has been adjusted and is expected to have a stable structure and contents. Reviewers should concentrate on the clarity and correctness of the text and the general appearance of the document.
5. Draft 4: The text that is to form the basis for hand-over to the publishing entity. Draft 4 is the document that will be spell-checked, for which a table

of contents will be generated and so on. When this is done, the document will be handed over for final quality control and “signing off”.

### 1.2.3 Planning

The scheme outlined above suggests that it should now be easy to derive a document production plan. A template for such a plan has been included in the appendix.

#### 1.2.3.1 Reviews

The planning template in the appendix suggests that a review is to be inserted at every stage.

Simple peer reviews are sufficient for documents at Draft 1 or 2 stage.

For Draft 3 documents, the review process developed thus far has worked extremely well. Three lead reviewers are invited to draw up a set of recommendations and discuss these with the author(s). The recommendations are based on the comments of the lead reviewers themselves and on the written comments they have received from others. All comments and the recommendations are kept for quality control purposes. (It is believed that this process complies with ISO 9000, BS 5750.)

It is proposed that for each document to be reviewed two lead reviewers are to be sought from the Cambridge Team and one from amongst the Technical Committee members. All members of the Cambridge Team and the Technical Committee (or their appointed representatives) may submit comments for consideration.

Draft 4 is passed on for final quality control to the Chief Architect and the Project Director. There should be no comments on the content or the presentation at this stage.

If the document is to contribute to a Deliverable at some stage, and if any changes to it should be necessary, then the original author(s) must be given the opportunity to check that any changes are agreeable to them. In addition a further review is at the discretion of the Chief Architect.

#### 1.2.3.2 Timing of reviews and delivery

The time between reviews cannot be defined. It depends on the nature of the document, the maturity of its proposed content, its size, etc. The following general rules do however appear sensible (elapsed time):

From start of work to Aims and Objectives:	3 weeks
Allow for each review stage:	3 weeks (min.)
Preparation of Draft 4:	1 week (approx.)
Allow time before delivery to TC:	3 weeks (min.)

There is a planning chart in the appendix, which can be used to plan and track the progress of a document.

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## 1.3 Document structure

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The document structure suggested in this section relates to the content, not the lay out in terms of chapters, sections, subsections etc. Document templates are provided when documents are started via the document tools.

The document structure will in most cases be determined by the purpose and scope of the document. The structure of a single document may also differ from the structure of a document which is part of a document set.

### 1.3.1 Single documents

In general, all documents should adhere to the following structure:

1. *Introduction*  
This should include motivating material, and a preview of the material that is to be presented. It also includes the aims, objectives and prerequisites (see section 2.2).
2. *General issues*  
This should provide an overview of the subject area, state the problem that is being solved, and discuss the various options that are open to the solution of that problem
3. *ANSA choices*  
Here is where the chosen solution is presented in all its technical detail.
4. *Rules and guidelines*  
Here is where the “design freedom” is defined
5. *Summary*  
This should bring together all the main points of the work.
6. *Outstanding issues*  
Here is where all editorial comments are collected. We want to make a clear distinction between what has been done and what are areas for further research.

### 1.3.2 document sets

Note: The text below has been proposed by ajh (25/7/92).

In some cases, a single document would be inappropriate as a report for a significant piece of work. In such cases a set of documents is to be prepared. The set should be structured as follows:

1. *Introduction*  
A short introductory document (2-4 pages) which describes:
  - the work being reported
  - the key messages to be absorbed by the sponsors
  - descriptions of other documents in the set and their intended audience
2. *Problem statement*  
A short (5-8 pages) high level explanation of the problem solved, the architectural principles used and the consequences (benefits and penalties) which justify the principles. This overview should be targeted at a Management Committee audience and written to motivate and sell. It can take a combative tone. It should enable Management Committee

members to ask “tekkies” questions like: “why is this a good idea” and “why don’t our systems support this principle”.

3. *Technical description*

This is to describe the work itself in as much technical detail as is deemed appropriate. The audience consists of those who want to use the results of the technical work directly, or who want to recreate the results for themselves. The description should be such that a reader can stop at a level of detail that is sufficient for his or her needs, whilst obtaining a good feel for all the relevant aspects of the work. Depth first descriptions should be avoided.

4. *Consolidated Architectural results*

These are documents that can be used as standards contributions and as input to the creation of architectural reports.

## 1.4 Style guide

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This is a list of points, under several headings, which should help to guard against some common infelicities found in documents. All the points below are abstractions from comments made by team members during the reviews of a number of documents.

### 1.4.1 Structure

#### 1.4.1.1 General points

- The main points of the document should be presented in the summary. It serves as a useful checklist for the reader.
- Use plenty of multi-level headings right from the start to split up the text - structure can easily be taken out if there appears to be too much, but it is difficult to insert after the document is written.
- Text which is useful or interesting, but non-essential, should not appear in the main body. It should be factored out as footnotes, sidebars or appendices, technology permitting.
- Place holders and editorials should not appear in the body of a finished document (i.e. Draft 3 or above). These should be in a separate section on unfinished work, unsolved problems, etc.
- Requirements, definitions, rules, problems, solutions, ANSA choices and examples should be clearly identified for what they are and not merged together.
- Identify initially the key concepts to be explored in the document and show (in the document) how the structure of the document reflects the exposition of these concepts and how they relate to each other.
- The text should make sense with editorials, footnotes, bracketed phrases and examples removed.
- Terms should be defined before using them. If the definitions of key words have already appeared previously, then make a back reference if the definitions are too long to repeat simply.
- Terms which have their first definition in the document (i.e. are not repeated) should be defined properly and completely, in one place only; multiple partial definitions cause confusion.

### 1.4.1.2 *Examples and Diagrams*

- Diagrams should be used to present an additional pictorial view of a section of text at the same level of generality, where this aids understanding. Examples should be used to illustrate a particular point made in the text and they will be more specific.
- Diagrams and examples should not be open to more than one interpretation.
- Diagrams should be clearly labelled to show what they represent.
- The conventions used for nodes, arcs and different line styles should be explained.
- Examples should be no more complex than is necessary.
- Examples should be clearly marked as such.
- It should be clear to which part of the general discussion an example applies.
- Examples should not use previously undefined words or ideas; they should not increase the scope of the discussion
- Examples should be appropriate, meaningful, and relevant to most readers.
- Specific examples should not be used in place of general definitions. Examples should not be offered as proofs or justifications.

### 1.4.1.3 *References*

- Forward references to other places within the document should not be used if possible (these include using words before they are defined, and presenting arguments in a strange order); they increase the time needed to read the document, and single pass documents are ideal.
- Forward references to other documents (later chapters) are acceptable providing they are clearly marked.
- Backward references to other documents (earlier chapters), and to other places within the same document, are acceptable.
- Sideways references (citations) to other documents (not related to ANSA) are acceptable, given the above point on what should go in footnotes.
- Citations should be limited to documents to which the readership has access.
- Citations should be unambiguously defined and be collected in a separate section.

## 1.4.2 **Style**

### 1.4.2.1 *Grammar*

- Be consistent in the use of verb tenses and voices, especially when a sentence runs over a set of bullets.
- Don't write in the first or second person.
- Use short and well phrased sentences to aid clarity.
- Use punctuation carefully; this can make documents much easier to read.
- Keep sentences short.



#### 1.4.2.2 *Vocabulary*

- Don't use words like “type” in a general sense, if they also have a specific meaning within the document.
- Be careful of using other heavily overloaded words like “standard” or “architecture”.
- Try to avoid purple prose and obfuscatory sesquipedalianism (the use of unnecessarily long words to obscure meaning). Plain English is easier to read.
- Avoid using multiple names for the same thing as the reader may not be sure they refer to the same concept.
- Don't use terms and acronyms that are only familiar to readers with the same expertise as the writer, without introducing them first.
- Don't use acronyms without introducing them first.

#### 1.4.2.3 *Repetition*

- Documents should be as short as is reasonably possible.
- The restatement of a concept in alternative terms may allow an alternative (and incorrect) interpretation to be made - the more restatement, the more confused the reader will get.
- Ensure that summaries are consistent with former expositions.
- Don't labour the important points; a single clear statement should suffice.

#### 1.4.2.4 *Honesty*

- Don't make references to unsolved problems unless they are described as such; readers may incorrectly assume we have a solution.

#### 1.4.2.5 *Miscellaneous*

- Be careful not to use arguments which can be misinterpreted.
- If concepts are related, it is a good idea to explicitly relate them; this removes the chance that readers will dream up their own associations.
- Readers should not have to deduce the answer from the rest of the document. If the document raises a question, then either
  - the answer should be stated, or
  - it should be stated that there is no answer, or
  - it should be stated that the question is not answered (e.g. out of scope), or
  - it should be stated what issues are involved in trying to find an answer to the question.
- Don't philosophise unnecessarily.
- Never rely on emotive wording, subjective speculation or shared disapproval to carry an argument.
- Always assume the reader is intelligent enough to spot the slightest ambiguity.

## 1.5 Appendix: Planning chart

The following table may be used for the document planning activity.

**Table 1.1: Planning chart**

Milestone	Date planned	Who <sup>a</sup>	Estimated size (pages)	Date achieved
Aims and Objectives written and circulated				
Aims and Objectives read and annotated				
Review meeting		CA, PD, peers		
Draft 1 completed and circulated				
Draft 1 read and annotated				
Review meeting		CA, peers		
Draft 2 completed and circulated				
Draft 2 read and annotated				
Review meeting		CA, peers		
Draft 3 completed and circulated				
Draft 3 read and annotated				
Review meeting		PD, CA, RT		
Hand-over completed and circulated				
Hand-over checked and corrected (Final QA)		PD, CA		
Delivery				

- a. CA: Chief Architect  
 PD: Project Director  
 Peers: other team members and TC reviewer  
 RT: Formal review by Review Team