**Software Detailed Design Specification**

# Introduction

< Give a brief introduction to the project and scope of the detailed design document in terms of the design elements/views that are required/covered as per guidelines along with the audience. Also summary on organization of information will be useful. >

# References

*< This section should provide a complete list of all documents, standards >*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Document ID** | **Document/Standards Name/Title** | **Source** | **Version No. /Release or Publication date** | **Brief Description/Section Reference** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

# Definitions and Acronyms

< Definitions of all the terms, acronyms and abbreviations required to properly interpret the detailed design is to be stated in the table. Remember to use these terms consistently across all sections of the document.>

|  |  |  |
| --- | --- | --- |
| **No** | **Acronyms** | **Definition** |
|  |  |  |
|  |  |  |
|  |  |  |

# Software Architecture

*< Give an overview of the software architecture. Provide supporting information at software Architecture level.*

* *List of modules*
* *Their inter-relationships/call structure and high level functional description of each module along with description of external interfaces exposed to the external world*
* *Memory Map*
* *Timing/Sequence Diagrams*
* *Control/Data Flow Diagrams and Processor Model*
* *Software Partitioning*
* *Etc. as applicable >*

# Module 1

< Chapter of the detailed design document is change depends on target software. ‘Figure 5.1: Software Structure Example A’ illustrate an example of a software structure. Some module structure is nested (e.g. Module 1), or some module structure is not nested (e.g.Module2, Module 3, Module 4). In this case, Module2 is equal to bottom level sub-module.

Top Level

Sub-Module 1

Bottom Level

Sub-Module

1-1

**●**

**●**

**●**

Bottom Level

Sub-Module

1-2

Bottom Level

Sub-Module

1-m

Top Level

Sub-Module 2

Bottom Level

Sub-Module

2-1

**●**

**●**

**●**

Bottom Level

Sub-Module

2-2

Bottom Level

Sub-Module

2-m

Top Level

Sub-Module 1

Bottom Level

Sub-Module

1-1

**●**

**●**

**●**

Bottom Level

Sub-Module

1-2

Bottom Level

Sub-Module

1-m

●●●

**Module 1**

**SOFTWARE**

**Module 2 (= Bottom Level Sub-Module)**

**Module 3 (= Bottom Level Sub-Module)**

**Module 4 (= Bottom Level Sub-Module)**

**Module n**

**●●**

**●**

Figure 5.1: Software Structure Example A

Chapter of this detailed design document template is based on the structure of the software illustrated in 'Figure 5.2: Software Structure Example B'.



Figure 5.2: Software Structure Example B

Chapter of the detailed design document should be change depends on target software. ‘Figure 5.3: Software Structure Example C’ illustrate the relationship between ‘another software structure example’ and ‘detailed design document chapter’.



Figure 5.3: Software Structure Example C

< Meaning of header: >

* :Essential content
* : Optional content

## Module 1 Overview

*< Give an overview of the Module 1. >*

## Module 1 Common Design

*< Provide details of module 1 common design covering:*

* *State transition*
* *Resource (memory, data base, etc. as applicable)*
  + *Usage*
  + *Value*
  + *Size*
* *Hardware control method*
* *Initialize processing*
* *Error Handling & Recovery*
* *Build Procedure/Make File*
* *Header File/Source File Composition*
* *Etc. as applicable >*

## Module 1 Detailed Design

*< Provide details of module 1 covering:*

* *Functional description*
* *List of modules*
* *Diagrams illustrate relationship among modules*
* *Diagrams illustrate call relationship among modules* 
  + *Timing/Sequence Diagrams*
  + *Control/Data Flow Diagrams*
  + *etc. as applicable*
* *Data Model/Data Structures*
  + *Identify and list the various data structures to be used with brief description of function, type definitions and size.*
* *Data Tables*
  + *List and briefly describe the various tables used with details such as table names, size etc.*
* *Describe each of the external interface/function exposed to the other modules.*
  + *Interface/function name*
  + *Overview*
  + *Input(including boundary value)*
  + *Output(including boundary value)*
  + *Description in Details*
  + *Data format*
  + *Constraint*
  + *Remarks*
  + *Etc. as applicable >*

1. **Functional description**
2. **List of modules**
3. **Diagrams illustrate relationship among modules**
4. **Diagrams illustrate call relationship among modules**
5. **Data Model/Data Structures**
6. **Describe each of the external interface/function exposed to the other modules.**

### Top Level Sub-Module 1 - detailed design

*< Provide details of the top level sub-module 1 covering:*

* *Overview*
* *Functional description*
* *List of modules*
* *Diagrams illustrate relationship among top level sub-modules*
* *Diagrams illustrate call relationship among top level sub-modules* 
  + Timing/Sequence Diagrams
  + Control/Data Flow Diagrams
  + Etc. as applicable
* *Data Model/Data Structures*
  + Identify and list the various data structures to be used with brief description of function, type definitions and size.
* *Data Tables*
  + List and briefly describe the various tables used with details such as table names, size etc.
* *Describe each of the external interface/function exposed to the other modules.*
  + *Interface/function name*
  + *Overview*
  + *Input(including boundary value)*
  + *Output(including boundary value)*
  + *Description in details*
  + *Data format*
  + *Constraint*
  + *Remarks*
  + *Etc. as applicable >*

**Functional description**

**List of modules**

**Diagrams illustrate relationship among top level sub-modules**

**Diagrams illustrate call relationship among top level sub-modules**

**Data Model/Data Structures**

**Describe each of the external interface/function exposed to the other modules.**

#### Bottom Level Sub-Module 1 - detailed design

*< Provide details of each of the bottom level sub-module 1 in detail covering:*

* *Overview*
* *Functional description*
* *Data Model/Data Structures*
  + Identify and list the various data structures to be used with brief description of function, type definitions and size.
* *Data Tables*
  + List and briefly describe the various tables used with details such as table names, size etc.
* *Describe each of the internal function.*
  + *Function name*
  + *Overview*
  + *Input(including boundary value)*
  + *Output(including boundary value)*
  + *Description in details*
  + *Data format*
  + *Remarks*
  + *Etc. as applicable*

*This section (5.3.1.1) could be document by using source code documentation generator tool (doxygen).*

*Provide details of each of the bottom level sub-module 1 by processing details as required including any algorithms used. Expand the design using appropriate design views such as timing diagram, flow charts etc. as applicable. Reasons for selecting a particular algorithm if used also needs to be documented. Write pseudo code for each of the bottom level sub-module 1 if required. >*

# Appendix