

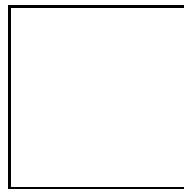
Functional Specification

Product X

Revision 1.0

(Template version 2.3, 6/20/97)

Confidential



© Copyright Rogue Wave Software, Inc. 1997.

[illegible]

Authorization**Date**

Xxxx Yyyy
Program Manager

Xxxx Yyyy
Product Manager

Xxxx Yyyy
Development
Manager

Xxxx Yyyy
Quality Engineering
Manager

Xxxx Yyyy
Technical Writing
Manager

Xxxx Yyyy
Technical Support
Manager

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

1. INTRODUCTION	6
2. OVERVIEW	6
3. ENVIRONMENT	7
4. ARCHITECTURE	7
4.1 Module 1	8
4.2 Module 2	8
4.3 Module x	8
5. FEATURES	8
5.1 Feature 1 - short description that fits on one line	9
5.1.1 sub-feature 1 short description, one line	9
5.2 Feature 2 - short description that fits on one line	9
5.2.1 sub-feature 1 short description, one line	9
5.2.2 sub-feature 2 short description, one line	9
6. INTERFACES	9
6.1 Command Line Interface	10
6.2 Graphical User Interface	10
6.3 Programmer Interface	10
6.4 Data Interfaces	10
7. DEFECTS (IF APPLICABLE)	10
8. INSTALLATION	10
9. CONSTRAINTS	10
9.1 Design and Implementation Constraints	10
9.2 Time and Cost Constraints	10

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

10. RISKS	11
11. APPENDIX A - SUPPORT MATRIX	12
12. APPENDIX B - GLOSSARY	13
13. APPENDIX C - FEATURE CHECKLIST	14

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

INSTRUCTIONS: HOW TO USE THIS DOCUMENT

This document is a content template from which a final functional spec is created. All text in “red” is provided to describe the information required for a section. (For convenience all red text has the Word character style “notes” applied to it.) All red text must be deleted from the final document. In addition to some sentences describing the required contents for a section, a list of pertinent questions may accompany the sentences to help obtain the desired information.

A style template is attached to this document (t:\wendi\newtmpl\funcspec.dot) that controls the available styles. Print the style template out. Read it. Keep it handy, so you know when to use which styles for various situations. Use the “normal” style when entering text for new paragraphs (not the “notes” style since it is red).

When creating a content template document, start with this one. Rename it to the respective template you are creating, and have at it.

THE MAIN GOALS OF A FUNCTIONAL SPECIFICATION ARE TO:

- Contain enough information such that one may implement the desired product from the functional spec. The functional spec contains the architectural requirements and a description of the product feature set. The architectural requirements may be in a separate document.
- Precisely describe precisely *what* will be developed in order to meet the requirements specified in the Market Requirements Document (MRD). You can think of the FS as an agreement between development and the rest of the company that specifies precisely what is to be developed.
- Represent a consensus among all people involved in the product definition.
- Be clear to all people who have to read it, which means that special care must be taken with the technical terms and the language used.
- Provide sufficient description of features to enable the creation of test specifications to be written for the feature.
- The FS describes the product from the customer’s view, things that are not important to the customer such as implementation details should be left out of this document. Implementation will be covered in the product’s Detailed Design (DD) document.
- Define the support matrix the product will be built against.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

1. Introduction

In the Introduction section you should provide a brief introduction to the product, the technical challenges involved in designing the product and the organization of the FS.

2. Overview

The Overview section should describe the main product characteristics. A person reading only this section should learn the main ideas behind the product: what the product is, who is going to use the product, and where it is going to be used.

Because the FS describes what will be developed in order to meet the requirements specified in the MRD, it is helpful to provide a table that lists the MRD requirements and for each requirement lists the product features that address that requirement. An example of such a table, from the SPM 1.2 product, is included below. All features described in this section should be detailed later in this document.

The Overview section should also describe the structure of the rest of the document, explaining its main sections. This helps a person who is trying to find some specific information in the document.

Table 1. List of Features, Changes and Enhancements for SPM 1.2

Feature	Change or Enhancement
Product-specific build mechanism	
1	Question file, answer file, and makefile modification script conventions
1.1	• file names
1.2	• file locations
1.3	• question file format
1.4	• answer file format
2	Required changes to the core library:
2.1	• Define question and answer classes
2.2	• Find and read question files
2.3	• Write answer files
3	Required changes to the API layer:
3.1	API layer must be able to recognize when to search for question files, and how to handle anomalies.
4	Required changes to the GUI
4.1	• Augment UIUtilities interface
4.2	• Implement augmented interface

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

Feature	Change or Enhancement
Support for Multiple Repositories	
5	Working repository
5.1	Contains installed parts, examples, libraries, documentation, build profiles, environment profiles, configurations. Similar to Build Info Tab in SPM 1.0. One per SPM installation.
6	Distribution repository
6.1	Repository that contains information about products that can be purchased and/or installed. Similar to the Products Tab in SPM 1.0. A given SPM installation can access one or more distribution repositories.
7	Support for repository installation
7.1	Installing the working repository means adding new information to the installed working repository.
7.2	Installing the distribution repository means copying the entire repository to the user's disk.
8	Verification of installation media
8.1	SPM will verify that the right disk or CD is in place when the user attempts to install a part.
9	GUI changes needed to support multiple repositories:
9.1	<ul style="list-style-type: none"> Change the label on the "Products" tab
9.2	<ul style="list-style-type: none"> Add option for changing the active distribution repository

3. Environment

The environment section should describes the hardware and software system environment in which the product is to exist. You can speak in somewhat general terms in this section and you can reference the support matrix in appendix A of this document.

If the product is a class library or set of components then describe what types of compilers, development environments and operating systems will it support. If the product involves databases or other products, then describe what types of databases or other products will it support. If the product is an application, then describe what hardware platforms, operating systems and other products it will work with.

Note: The support matrix in this document is a refinement of the support matrix specified in the MRD. The support matrix in appendix A is what development will use to deliver the product on.

4. Architecture

This section should describe at a high level the architecture of the product. Remember that you are addressing the requirements specified in the MRD and the end-customer's view of the product. So, you should not specify architectural details that are not important to the MRD or to the customer.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

If the MRD specifies a specific architecture, or if a specific architecture will ensure that the product meets the requirements of the MRD, then specify it here. However, if the underlying product architecture is not important to the MRD or to the end-customer then leave it for the DD.

Use of diagrams or other graphics such as a layer diagram are very useful.

4.1 Module 1

Verbiage on design of this component and its relationship to the others.

4.2 Module 2

Verbiage on design of this component and its relationship to the others.

4.3 Module x

Verbiage on design of this component and its relationship to the others.

5. Features

Describe each product feature with at least a paragraph or two of text. Some features will have sub-features and you may also wish to include design and implementation issues for some features, but only if necessary to explain the feature.

For existing products, it is not necessary to specify all the product features, but only the ones that will be changed or improved, provided that the referenced features are documented somewhere. It is also a good idea, in this case, to add a references section in the document.

If you are introducing new technical terms or abbreviations (which is very common when describing new technologies), it is useful to add an entry in the Glossary in Appendix A.

There are some things to keep in mind when specifying a product feature. The first, and perhaps the most important one, is to specify things that can be verified when the product is done. The other ones are:

- You should be as specific as possible. Generic terms are good in the introductory sections, but they tend to cause misunderstandings if not explained in detail later.
- Try to avoid the use of subjective qualifications such as “good”, “bad”, “reasonable”. Try to replace them by objective terms.
- Define a product feature in only one place. If you describe the same thing in more than one place, you might forget to update all the feature descriptions when you have to introduce modifications.
- Numbers are always better than any qualification like “fast” or “efficient”, although it is very difficult to predict performance. You can always refer to an existing product, and use relative comparison.
- Do not specify features that are conflicting or mutually exclusive.
- Clearly specifying what a product will NOT do is also an important issue.
- Do not forget that what is obvious for you may not be obvious to other people.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

- The words “et cetera” can hold virtually anything. Try to avoid it.
- Whenever you have been subjective in some feature specification, ask yourself: “what did I really want to mean with ‘xyz’”? Do not forget that, if you cannot write clearly what you want, then you probably cannot code it, and it will be even worse for someone to check it.

5.1 Feature 1 - short description that fits on one line

You can add some more verbiage to describe the background, set the stage, describe the functionality in detail.

5.1.1 sub-feature 1 short description, one line

You can add some more verbiage to describe the background, set the stage, describe the functionality in detail.

5.2 Feature 2 - short description that fits on one line

You can add some more verbiage to describe the background, set the stage, describe the functionality in detail.

5.2.1 sub-feature 1 short description, one line

You can add some more verbiage to describe the background, set the stage, describe the functionality in detail.

5.2.2 sub-feature 2 short description, one line

You can add some more verbiage to describe the background, set the stage, describe the functionality in detail.

5.2.2.1 *Design Issues for Feature 2*

5.2.2.2 *Implementation Issues for Feature 2*

***** NOTE *****

If you have to add design or implementation issues to the functional spec you must clearly delineate those issues by adding appropriately numbered sub-sections with title, so it is readily apparent which feature you are referencing.

6. Interfaces

If the product is a class library or a set of components, then you should describe the API for the product. If the product is not a class library or a set of components, then you should describe how the user will interact with the system.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

6.1 Command Line Interface

List the commands and their arguments.

6.2 Graphical User Interface

Describe the GUI in full: the menus, the dialogs, graphical views and representations, provide screen-shots, etc.

6.3 Programmer Interface

List and describe the classes and member functions of each class, control, bean or component in the API.

6.4 Data Interfaces

Describe the type of data files the product will be able to read and write

Describe the network interfaces and protocols that the product will support.

7. Defects (if applicable)

List all defects that are to be fixed for this release. Defects must be assigned a priority.

Priorities:

- “A” -> must be fixed
- “B” -> should be fixed
- “C” -> fix if time permits

8. Installation

Describe the installation process that is required for the product. Will the product be part of product suite. Will the product require compilation or integration into an IDE?

9. Constraints

9.1 Design and Implementation Constraints

If there are any constraints on how the system should be designed or implemented then discuss them here.

9.2 Time and Cost Constraints

If there are any constraints on the cost of the system or the development time then describe them here.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

10. Risks

Identify any risks involved in designing, implementing, testing and delivering the system. If there are any significant factors that may make it difficult to delivery a quality product in a timely fashion then discuss them here. For each risk, state the probability that the risk will occur and, if possible, the impact upon resources and schedule.

Risks can take on different forms. There are risks in deciding which features should go into a product and which features need to left out due to a variety of reasons. There are technical risks, scheduling risks, and many other types. Any potential hazard that can have negative impact on the project should be identified and analyzed to determine its impact and a new plan of attack.

Any feature defined in the requirements spec is assumed to be apart of the program. But, some features are more important than others. The features that must be included, the features that should be include, and those features that it would be nice to have should all be identified, so appropriate tradeoffs can be made.

The technical risks should be identified. Is the implementation technology mature enough to support the project. What are alternative technologies? What would happen if this feature cannot be implemented? These questions should be addressed.

Scheduling risks should be identified. Is a milestone dependent upon another milestone? Was an estimation overly optimistic? What is the critical path for this project? Are all the resources available when needed? Are they enough people or qualified people to perform each task?

11. Appendix A - Support Matrix

Note: This support matrix is a refinement of the support matrix specified in the MRD. This is what development will deliver the product on.

The support matrix defines the level of support for this product on various platform configurations. A platform configuration consists of a operating system, compiler combination along with any other dependencies required by the Rogue Wave product. Exact versions for each item listed in the support matrix must be provided.

Any platform listed in the support matrix will be supported by the company which means the company will sell support for that platform and technical support will provide support for it. Each product has their own format for a support matrix.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

12. Appendix B - Glossary

Definition of terms in alphabetical order.

Term1: a term that is just an example. Put the term is bold letters with the definition in normal text.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.

13. Appendix C - Feature Checklist

Clearly identify all the features in a numbered list, so they can be easily identified and cross-referenced within this document and by subsequent documents such as the test plan, detailed design spec. Provide a numbered list of one sentence descriptions for each product feature.

This document contains trade secret data which are the property of Rogue Wave Software, Inc. This document is submitted to recipient in confidence, for Rogue Wave internal business purposes only. Information contained herein may not be otherwise used, copied, or disclosed in whole or in part except as permitted by written agreement signed by an officer of Rogue Wave Software, Inc. This material is protected by copyright as an unpublished work under Section 104 of Title 17, United States Code. Unauthorized use, copying or other reproduction is prohibited by law, and may give rise to civil and criminal liabilities.