Software Requirements Specification (SRS)

Project X

Authors:

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1 Introduction

• Provide an overview of the entire SRS subsections
• Indicate the topics that will be covered in this document.

Start of your text.

1.1 Purpose

• What's the purpose of the SRS document?
• Specify the intended audience.

Start of your text.

1.2 Scope

• Identify SW product(s) to be produced by name
• Describe the application of SW being specified, including benefits, objectives, goals. What is the application domain? (e.g., embedded system for automotive systems, graphical modeling utility) This is the domain description of the application.
• Explain what SW product will, and if necessary, will not do. This is the requirement of the application.
• Be consistent with similar statements in higher-level specifications (e.g., the original project specification from customer)

Start of your text.

1.3 Definitions, acronyms, and abbreviations

• Define all terms, acronyms, and abbreviations need to understand the SRS. If this section is extensive, then move to an appendix. It is also possible to provide a link to other resources for extensive terminology explanation.
1.4 Organization

• Describe what the rest of the SRS contains
• Give the organizational structure of the SRS.

2 Overall Description

• Give a brief introduction of what information will be covered in this section.

2.1 Product Perspective

• Describe the context for the product
• Is it one element that is part of a bigger system? If so, then give a pictorial representation or diagram (e.g., data flow diagram – DFD, block diagram) that describes how your product fits.
• Interface Constraints:
  o System interfaces
  o User interfaces
  o HW interfaces
  o SW interfaces
  o Communication interfaces
• Other types of constraints:
  o Memory
  o Operations
  o Site adaptation operations (customization that is done on-site).

2.2 Product Functions

• Summarize the major functions that software will perform (portions may come directly from the customer specification – cite as appropriate).
• These function descriptions should be easily understandable by the customer or to any general reader.

2.3 User Characteristics

• Expectations about the user (e.g., background, skill level, general expertise)
2.4 Constraints and Uncertainty

- Give English descriptions of safety-critical properties (including invariants)
- Describe your sources of uncertainty and how to mitigate them
- Give English descriptions of other properties that if violated, the system will not perform properly.

Start of your text.

2.5 Assumptions and Dependencies

- Assumptions made about the HW, SW, environment, user interactions.

Start of your text.

Start of your text.

3 Specific Requirements

- Give an enumerated list of requirements.
- As appropriate, use a hierarchical numbering scheme.

1. Sample requirement at the top level
   1.1. Level 2 requirement example
   1.2. Another Level 2 requirement
2. Select the "Requirement" Style.
4 Security Requirements

Give some general introductory text about security for automotive systems here.

4.1 Literature Review of Cybersecurity Automotive Systems

Incorporate your literature review results for cybersecurity for V2V and V2I (i.e., Items 1-3 from MiniProject, Part 1). Please be sure to make the revisions marked up by Instructor.

4.2 Security Requirements for PBAS System

Include your security requirements information here, including the corrections marked in MiniProject, Part 1.

5 Modeling Requirements

• This is the specification portion of the requirements document. (Specifying the bridge between the application domain and the machine domain.)
• For each new diagram type introduced, describe the notation.
  o Give and describe a high-level goal diagram for system, including the security threats as obstacles and your corresponding mitigations. All goals and agents should be described in accompanying text.
  o Give and describe use case diagram
  o Use the template provided by the instructor to describe each use case.
    ▪ Each use case should refer to 1 or more requirements (in Section 3)
  o Give and describe a domain model (using the class diagram notation) that depicts the key elements of the system
    ▪ Include a data dictionary to describe each class, its attributes, its operations, and relationships between classes (use the template provided by the Instructor to describe the data dictionary elements).
  o Representative Scenarios of System for each security concern (see MiniProject, Part 2 description:
    ▪ Give English descriptions of representative scenarios for each use case.
    ▪ Check: use instances of the class names from class diagram; refer to the terms used in use case diagram
    ▪ For each scenario, give a corresponding sequence diagram
    ▪ Check: Objects should be instances of classes in class diagram; messages should refer to method names defined in the receiving object lifeline class specification.

Start of your text.

Template based on IEEE Std 830-1998 for SRS. Modifications (content and ordering of information) have been made by Betty H.C. Cheng, Michigan State University (chengb at chengb.cse.msu.edu)
6 Prototype (Extra Credit)

- Describe what your prototype will show in terms of system functionality.

6.1 How to Run Prototype

- Describe what is needed to run your prototype
- What system configuration? (Should be accessible through web.) Are there plugins? Are there any OS or networking constraints. Give the URL for the prototype.
  - Prototype should also be accessible via a webpage. It should be executable and provide an interactive interface.

6.2 Sample Scenarios

- Give a sample scenario of using your system. Use real data and problem scenarios. Include screen captures illustrating what your prototype produces. As always, be sure to describe all figures.

7 References

- Provide list of all documents referenced in the SRS
- Identify each document by title, report number, date, and publishing organization.
- Specify the sources from which the references can be obtained.
- Include an entry for your project website.

Start of your text.


8 Point of Contact

For further information regarding this document and project, please contact Prof. Betty H.C. Cheng at Michigan State University (chengb at cse.msu.edu). All materials in this document have been sanitized for proprietary data. The students and the instructor gratefully acknowledge the participation of our industrial collaborators.