METU Department of Computer Engineering
CENG 350 Software Engineering
Spring 2011-2012

IEEE 830 (scaled down version for CENG 350)

1. Introduction

The introduction of the SRS should provide an overview of the entire SRS. It should contain the following subsections:

1.1 Problem Definition

This subsection should include the clear identification of the problem you are working on.

1.2 Purpose

This subsection should

a) Define the purpose of the SRS;

b) Specify the intended audience for the SRS.

1.3 Scope

This subsection should

a) Identify the software product(s) to be produced by name (e.g., Host DBMS, Report etc.);

b) Explain what the software product(s) will, and, if necessary, will not do;

c) Describe the application of the software being specified, including relevant benefits, objectives, and goals;

d) Be consistent with similar statements in higher-level specifications (e.g., the system requirements specification), if they exist.

1.4 Definitions, acronyms, and abbreviations

This subsection should provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS. This information may be provided by reference to one or more appendixes in the SRS of by reference to other documents.

1.5 References

This subsection should

a) Provide a complete list of all documents referenced elsewhere in the SRS;

b) Identify each document by title, report number (if applicable), date, and publishing organization;

c) Specify the sources from which the references can be obtained.

This information may be provided by reference to an appendix or to another document.

1.6 Overview

This subsection should

a) Describe what the rest of the SRS contains;

b) Explain how the SRS is organized.

2. Overall description

This section of the SRS should describe the general factors that affect the product and its requirements.

This section usually consists of six subsections, as follows:

a) Product perspective;
b) Product functions;
c) Constraints;
d) Assumptions and dependencies;

2.1 **Product perspective**

This subsection of the SRS should put the product into perspective with other related products. If the product is independent and totally self-contained, it should be so stated here. If the SRS defines a product that is a component of a larger system, as frequently occurs, then this subsection should relate the requirements of that larger system to functionality of the software and should identify interfaces between that system and the software. A block diagram showing the major components of the larger system, interconnections, and external interfaces can be helpful.

This subsection should also describe how the software operates inside various constraints. For example, these constraints could include

a) System interfaces;
b) User interfaces;
c) Hardware interfaces;
d) Software interfaces;
e) Communications interfaces;
f) Memory;
g) Operations;
h) Site adaptation requirements.

2.1.1 **System interfaces**

This should list each system interface and identify the functionality of the software to accomplish the system requirement and the interface description to match the system.

2.1.2 **User interfaces**

This should specify the following:

a) *The logical characteristics of each interface between the software product and its users.* This includes those configuration characteristics (e.g., required screen formats, page or window layouts, content of any reports or menus, or availability of programmable function keys) necessary to accomplish the software requirements.

b) *All the aspects of optimizing the interface with the person who must use the system.* This may simply comprise a list of do’s and don’ts on how the system will appear to the user. One example may be a requirement for the option of long or short error messages. Like all others, these requirements should be verifiable, e.g., “a clerk typist grade 4 can do function *X* in *Z* min after 1 h of training” rather than “a typist can do function *X.”* (This may also be specified in the Software System Attributes under a section titled Ease of Use.)

2.1.3 **Hardware interfaces**

This should specify the logical characteristics of each interface between the software product and the hardware components of the system. This includes configuration characteristics (number of ports, instruction sets, etc.). It also covers such matters as what devices are to be supported, how they are to be supported, and protocols. For example, terminal support may specify full-screen support as opposed to line-by-line support.

2.1.4 **Software interfaces**

This should specify the use of other required software products (e.g., a data management system, an operating system, or a mathematical package), and interfaces with other application systems (e.g., the linkage between an accounts receivable system and a general ledger system). For each required software product, the following should be provided:

- Name;
- Mnemonic;
- Specification number;
- Version number;
- Source.

For each interface, the following should be provided:

- Discussion of the purpose of the interfacing software as related to this software product.
- Definition of the interface in terms of message content and format. It is not necessary to detail any well-documented interface, but a reference to the document defining the interface is required.

2.1.5 **Communication interfaces**

This should specify the various interfaces to communications such as local network protocols, etc.

2.1.6 **Memory**

This should specify any applicable characteristics and limits on primary and secondary memory.

2.1.7 **Operations**

This should specify the normal and special operations required by the user such as

a) The various modes of operations in the user organization (e.g., user-initiated operations);
b) Periods of interactive operations and periods of unattended operations;
c) Data processing support functions;
d) Backup and recovery operations.

NOTE This is sometimes specified as part of the User Interfaces section.

2.1.8 **Site adaptation requirements**

This should

a) Define the requirements for any data or initialization sequences that are specific to a given site, mission, or operational mode (e.g., grid values, safety limits, etc.);

b) Specify the site or mission-related features that should be modified to adapt the software to a particular installation.

2.2 **Product functions**

This subsection of the SRS should provide a summary of the major functions that the software will perform. For example, an SRS for an accounting program may use this part to address customer account maintenance, customer statement, and invoice preparation without mentioning the vast amount of detail that each of those functions requires.

Show the use case and actors of the system by using **use case diagrams**. And explain these use cases and actors.

2.3 **Constraints**

This subsection of the SRS should provide a general description of any other items that will limit the developer’s options. These include

a) Regulatory policies;
b) Hardware limitations (e.g., signal timing requirements);
c) Interfaces to other applications;
d) Parallel operation;
e) Audit functions;
f) Control functions;
g) Higher-order language requirements;
h) Signal handshake protocols (e.g., XON-XOFF, ACK-NACK);
i) Reliability requirements;
j) Criticality of the application;
k) Safety and security considerations.

2.4 **Assumptions and dependencies**

This subsection of the SRS should list each of the factors that affect the requirements stated in the SRS. These factors are not design constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS. For example, an assumption may be that a specific operating system will be available on the hardware designated for the software product. If, in fact, the operating system is not available, the SRS would then have to change accordingly.

3. **Specific requirements**

This section of the SRS should contain all of the software requirements to a level of detail sufficient to enable designers to design a system to satisfy those requirements, and testers to test that the system satisfies those requirements.

3.1 Interface Requirements

This subsection specifies the user interfaces. Define the interfaces between the external systems and product components with describing all inputs into and outputs from the software system. Associate these interfaces with use cases that you show in the 2.2. Product Functions section. Don't repeat information there.

3.2 Functional Requirements

This subsection is a description of each major software function, along with data flow and requirements of the function.

3.2.1 Functional requirement 1..n

3.3 Non-functional Requirements

3.3.1 Performance requirements

This subsubsection specifies both the static and the dynamic numerical requirements placed on the software or on human interaction with the software as a whole. For instance; the number of simultaneous users to be supported or amount and type of information to be handled.

3.3.2 Design constraints

This subsubsection specifies the design constraints of the product like standards, programming languages, hardware constraints, software system attributes (reliability, portability, security, etc) etc.

4 Data Model and Description

This section describes information domain for the software

4.1 Data Description

Data objects that will be managed/manipulated by the software are described in this section.

4.1.1 Data objects

Data objects and their major attributes are described. Show the **class diagrams**.

4.1.2 Data dictionary

A reference to the data dictionary is provided. The dictionary is maintained in electronic form.

5 Behavioral Model and Description

This section presents a description of the behavior of the software.

5.1 Description for software behavior

This subsection describes the major events and states.

5.2 State Transition Diagrams

This subsection depicts the overall behavior of the system.

6 Planning

6.1 Team Structure
6.2 Estimation (Basic Schedule)
6.3 Process Model

7 Conclusion

8 Supporting information

The supporting information makes the SRS easier to use. It includes the following:

a) Table of contents;
b) Index;
c) Appendixes.