Software Requirements Specification

for

<Project>

Version 1.?

Prepared by <*name of team*>

<Date Created>

Revision History

Name	Date	Reasons for Change	Version

1. Introduction

1.1. Purpose

<Identify the product whose software requirements are specified in this document. Describe the scope of the product that is covered by this SRS, particularly if this SRS describes only part of the system or a single subsystem.>

1.2. Document Conventions

<Describe any standards or typographical conventions that were followed when writing this SRS, such as fonts or highlighting that have special significance. For example, state whether priorities for higher-level requirements are assumed to be inherited by detailed requirements, or whether every requirement statement is to have its own priority.>

1.3. Intended Audience and Reading Suggestions

<Describe the different types of reader that the document is intended for, such as developers, project managers, marketing staff, users, testers and document writers. Describer what the rest of this SRS contains and how it is organised. Suggest a sequence for reading the document, beginning with the overview sections and proceeding through the sections that most suit each reader type.>

1.4. Project Scope

<Provide a short description of the software being specified and its purpose, including relevant benefits, objectives, and goals. Relate the software to corporate goals or business strategies. If a separate vision and scope document is available, refer to it rather than duplicating its contents here. An SRS that specified the next release of an evolving product should contain its own scope statement as a subset of the long-term strategic product vision.>

1.5. References

<List any other document or web addresses to which this SRS refers. These may include user interface style guides, contracts, standards, system requirements specifications, use case documents, or a vision and scope document. Provide enough information so that the reader could access a copy of each reference, including title, author, version number, date and source or location.>

2. Overall Description

2.1. Product Perspective

<Describe the context and origin of the product being specified in this SRS. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product. If the SRS defines a component of a larger system, relate the requirements of the larger system to the functionality of this software and identify interfaces between the two. A simple diagram that shows the major components of the overall system, subsystem interconnections, and external interfaces can be helpful.>

2.2. Product Features

<Summarize the major features the product contains or the significant functions that it performs or lets the user perform. Details will be provided in Section 2, so only a high level summary is needed here. Organize the functions to make them understandable to any reader of the SRS. A picture of the major groups of related requirements and how they relate, such as a top level data flow diagram or a class diagram, is often effective.>

Refer to the file 'Example of UML for Video Store. Doc'

2.3. User Classes and Characteristics

<Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, education level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes.>

2.4. Operating Environment

<Describe the environment in which the software will operate, including the hardware platform, operating system and versions, and any other software components or applications with which it must peacefully coexist.>

2.5. Design and Implementation Constraints

<Describe any items or issues that will limit the options available to the developers. These might include: corporate or regulatory policies; hardware limitations; interfaces to other applications; specific technologies, tools and databases to be used; parallel operations; language requirements; communications protocols; security considertaions; design conventions or programming standards (for example, if the customer's organisation will be responsible for maintaining the software after delivery.>

2.6. User Documentation

<List the user documentation components (such as user manuals, online help, and tutorials) that will be delivered along with the software. Identify any known user documentation delivery formats or standards.>

2.7. Assumptions and Dependencies

<List any assumed factors (as opposed to known facts) that could affect the requirements stated in the SRS. These could include third-party or commercial components that you plan to use, issues around the development or operating environment, or constraints. The project could be affected if these assumptions are incorrect, are not shared, or change. Also identify any dependencies the project has on external factors, such as software components that you intend to reuse from another project, unless they are already documented elsewhere (for example, in the vision and scope document).>

3 Functional Requirements

<The functional requirements for the product could be organised in order of the major services to be provided by the product, by use case, by object class, by functional hierarchy or by any other logical method. The example below shows the functional requirements organised by use case.>

3.1 Example from a Hospital Information System

Patient Registration

UC-001 Search Patient

Description:
This use case details the way in which a user searches and selects a patient. The user may supply a valid combination of search parameters to assist in identifying and selecting patient.

Actors:

1. A-01 User
2. A-09 Patient
3. A-10 Patient Master Index (PMI)
4. A-07 Patient Administration System (PAS)

Preconditions:

1. The PMI system interface is implemented and available.

Postconditions:

None.

Use Case Text:

1. The User indicates to the PAS to search for a patient.
2. The PAS prompts the User to provide search parameters (see business rules for parameter list).
3. The User responds by providing search parameters (see business rules for valid parameter combinations and rules).
4. The PAS responds by displaying the patient required or a list of patient's that match the user supplied search parameters and the number of patients who match the criteria. The list will contain the URN, Family Name, Given Names, DOB, Sex, Suburb, Deceased Indicator, Alias Indicator, Consolidated Record Indicator, Current Patient Indicator, Past Patient Indicator and Alert Indicator.
5. The User selects the required patient.

Alternative Courses:

A. Confirm Patient Identity by Viewing Additional Details (Inserts after step 4)

The user requests to view the Patients current residential address and current name to verify that this is the patient they wish to select.

The PAS responds by displaying the patient's current residential address and current name.

The user indicates to the PAS to select a patient.

B. Patient Search Returns Values but No Match (Insert after Step 4)

The PAS responds by displaying a number of patient's that match the search criteria, however none of these are the patient that the user requires.

The user indicates to PAS not to select a patient.

C. Patient Search Returns No Matching Patient on the PAS (Insert after Step 3)

The PAS responds by indicating to the user that no patients match the search values entered to the PAS. The user indicates to the PAS to search the ACT PMI using the same search values.

The ACT PMI responds by displaying the patient required or a list of patient's that match the user supplied search parameters and the number of patients who match the criteria.

The user indicates to the PAS to select a patient. The PAS responds by downloading the selected patient details from the ACT PMI to the PAS.

D. Patient Search to Perform Patient Admission or Change in Patient Registration Details

When user is conducting Search Patient function for the purpose of amending existing patient registration details or admitting patient or booking an outpatient appointment the search will be conducted on the ACT PMI. User will indicate to PAS to search ACT PMI for specified patient. PAS sends a search patient message to ACT PMI. ACT PMI responds by sending a Patient Details message to the PAS. PAS displays patient registration details to the user. User indicates to the PAS to download patient details from the ACT PMI. PAS responds by committing the ACT PMI patient registration details to the PAS database and updates specified patient record.

E. ACT PMI is Unavailable

User indicates to PAS to search patient on the ACT PMI. PAS sends search patient message to ACT PMI. ACT PMI either does not respond or sends an error message to the PAS that the ACT PMI is currently unavailable. PAS indicates to user that ACT PMI is currently unavailable. User indicates to PAS to search patient locally on PAS.

Business Rules:

1. The results should be sorted by Family Name and First Given Name. Date of Birth will be used as a secondary sort key in the event of multiple patients with the same surname and first name.
2. If the Unit Record Number for the person is known a unique search can be conducted to locate the required patient. The search will be based solely on the Unit Record Number and will ignore all other parameters.
3. If a unique search is not conducted, the search will first select individuals based on the Family Name criteria (which is mandatory) and then include or exclude them from the search results based on the other search criteria, shown below:
    - Given Names
    - Date of birth [range]
    - Age [range]
    - Sex
4. The search defaults to exact search values supplied unless one of the following are activated:

Search Method	Description
Phonetic	Applies the phonetic search to Family Name.
Partial	Is implied by placing a wild card (*) at the end of the search value, which will return records beginning with the search value. See full description in the following business rule.
Exact	Search is based on the exact search value entered.

5. Wild cards may be used with Family Name and Given Names, however "*", "?" and " " (space) are invalid entries in the first character position of the name parameters. See a summary of wildcard usage in the table below:

Character	Results	Examples
*	All subsequent characters are included	Ch* will return: Christie

		Christophers.
?	Any character in this character position will be included but subsequent characters must be entered, unless an asterisk (*) is used.	Chr?stie will return: Christie Chrostie.

6. Search Rule Summary:

Field/Field Group	Search	Search Method	Name [1]	Search Rules
Unit Record Number	YES	Exact	N/A	Conducts a unique search. Takes priority over all search fields and ignores them.
Patient Name				The patient aliases will automatically be searched through Search Patient.
Family Name	YES	Exact Partial Phonetic	N/A	Partial field value but must have at least first character. Phonetic searches are applied only to Family Name.
Given Names	YES	Exact Partial	N/A	Partial field search must have at least first character.
Date of Birth / Age	YES	Exact	YES	Either a Date of Birth or Age may be supplied.
Date of Birth	YES	Exact	YES	Allow both a specific DOB or a DOB range.
Age	YES	Exact	YES	Allow both a specific Age or an Age with a number of years within the age to allow a range.
Sex	YES	Exact	YES	Will return all values of the parameter selected (ie male) and all records with Undefined or Unknown stored in the Sex field.
Race	YES	Exact	YES	

7. The URN must be a valid URN format (either 6 or 8 characters) before the search can be conducted.
8. Date of Birth must be a valid date in format ddmmccyy.
9. Sex must be a valid code provided by a list.
10. Race must be a valid code provided by a list.
11. Hyphens, apostrophies, full stops and other name related punctuation are to be ignored by the PAS when conducting a search.
12. When conducting a search, the PAS must return the most current name in patient name history.

[1] This column indicates that the search attribute must be in conjunction with at least a *name search*. A name search is where a search value is supplied for either Family Name of First Given Name.

13. The Current Patient Indicator field must consist of one the following options:- (a) Inpatient (b) Outpatient (c) Emergency Dept.
14. The Past Patient Indicator field must consist of one of the following options or any combination of:- (a) Inpatient (b) Outpatient (c) Emergency Dept.
15. If the search is conducted on an alias name (ie maiden name), the PAS will return the alias name and indicator stating 'Not Current Name'.
16. A search for a new born baby is conducted on mothers surname and first name is registered as NBF (New Born Female) or NBM (New Born Male).
17. The PAS will ignore the character 'a' when searching for a patient with a name commencing with MaC. The system will recognise any name commencing with Mac as Mc.
18. The Search Patient will be conducted on the locally stored copy of the PMI which resides in the PAS. The broadcast model to be utilised to synchronise the external ACT PMI with the locally stored copy on the PAS will ensure that the locally stored copy will always be up to date and synchronised with the external PMI.

Assumptions:

1. The PMI interface to the PAS will be assumed to be based on a broadcast model whereby amendments to existing patients or new registrations performed on the PMI will be broadcast to the PAS and updated within the PAS dependant on the business rules regarding which patient messages will be processed by the PAS.
2. The PAS will contain a subset of patient registrations that reside on the ACT PMI that will be determined by a series of internally designed business rules that will operate from the receiving PAS messaging API.
3. Patient searches for the purpose of amending patient registration details, inpatient admissions and outpatient appointment bookings will be conducted on the ACT PMI. All other browse access searches will be conducted on the PAS.

4 External Interface Requirements

4.1 User Interfaces

<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g. help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed.>

4.2 Hardware Interfaces

<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include

the supported device types, the nature of the data and control interactions between the software and the hardware, and the communication protocols to be used.>

4.3 Software Interfaces

<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint. >

4.4 Communications Interfaces

<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communication protocols, electronic forms, and so on. Define message formatting for any messages used. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>

5 Nonfunctional Requirements

5.1 Performance Requirements

<If there are performance requirements for the product under various circumstances, state them here and explain their rationale, to help the developers understand the intent and make suitable design choices. Specify the timing relationships for real time systems. Make such requirements as specific as possible. You may need to state performance requirements for individual functional requirements or features.>

5.1.2 Example

Performance

Response Time

The PAS must be highly responsive in providing users with information directly related to the administration of patients within TCH. A slow response time would impede the acceptance of the PAS by clerical and clinician staff and the overall success of the solution. The vendor must be able to demonstrate that the system can support the current level of transactions (15,000 per day), episodes created per annum (350,000), volume of users and provide for additional future capacity.

Throughput

The PAS processes a high number of transactions per second. It is preferable that the solution accommodate, without performance degradation, the following transaction types:

- Menu selection;
- Data retrieval from existing tables;
- Data queries that require search and compilation effort; and
- Communication with third party applications.

A significant increase in throughput is expected over the lifecycle of the PAS.

Capacity

The initial expected number of users is 700, with 200 concurrent users. The number of users and concurrent users will expand significantly over the lifecycle of the PAS dependant on the ability of the PAS to support functions that are currently supported by additional applications.

The response to Performance of the prospective PAS must detail typical response times, throughput and capacity. Where possible this information must be supported by reference sites.

5.2 Safety Requirements

<Specify those requirements that are concerned with possible loss, damage or harm that could result from the use of the product. Define any safeguards or actions that must be taken, as well as actions that must be prevented. Refer to any external policies or regulations that state safety issues that affect the product's design or use. Define any safety certificates that must be satisfied.>

5.3 Security Requirements

<Specify any requirements regarding security or privacy issues surrounding use of the product or protection of the data used or created by the product. Define any user identity authentication requirements. Refer to any external policies or regulations containing security issues that affect the product. Define any security or privacy certifications that must be satisfied.>

5.3.2 Example

Security

Administration and Management

User access to the PAS will be strictly controlled by the PAS System Administrator to ensure that only authorised users are granted access rights to the PAS and that their data access profile is consistent with their operational needs.

Access Control

TCH places a strong emphasis on the security and confidentiality of patient information. A timely method of authenticating users while maintaining rigorous and tightly controlled access is mandatory.

Access to information within the PAS by authorised users will be strictly controlled by a number of criteria including but not limited to the following:

- ►Episode Type
- ►Designated patients
- ►Clinical or clerical position
- ►Ward / Clinical Unit

Audit Trails

It is mandatory for the PAS system to automatically log all write access to patient information and if required all browse access. The log file must contain as a minimum, detail of the user, nature of the operation, patient record/s accessed and a time date stamp of when the transaction was performed. Access to the audit trail log will be read only and strictly limited to a small number of authorised staff.

The audit trail will record details of any unsuccessful logon attempts. It will also provide tools to interrogate audit log files and allow system administrators to flag particularly sensitive patient files for access control monitoring.

Network Access

Access to the PAS and its underlying data resources shall be provided through the ACT Government network at The Canberra Hospital which is administered by our network service provider, Intact.

Emergency Access

A facility shall be in place that will permit System Administrators or selected authorised users to override restrictions of access in the case of an emergency situation. All such access will only be provided for a defined period of time and all patients records accessed and new information entered are to be logged in the audit trail.

5.4 Software Quality Attributes

<Specify any additional quality characteristics for the product that will be important to either the customers or the developers. Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability. Write these to be as specific, quantitative and verifiable as possible. At the least, clarify the relative preferences for various attributes, such as ease of use over ease of learning.>

5.4.2 Example

The following are examples of the 'usability' and 'reliability' software quality attribute specifications in the Hospital Information System example used throughout this document.

Usability

The PAS is intended to support the business processes associated with the efficient and effective delivery of a high quality health care service in a major public hospital. The PAS will be utilised by a wide range of both clinical and administrative staff to assist in administering and supporting the provision of healthcare services. It is therefore important that the PAS can be demonstrated to provide operational efficiencies and assist in reducing the administrative burden on clinical staff. Additionally, there are considerable contractual reporting requirements for the Purchaser / Provider agreement between TCH and ACT Health Housing and Community Care and statutory reporting requirements to various levels of government.

User Interface

It is important for the solution to integrate into the current desktop environment at TCH with an easy and intuitive interface. A "Windows Standard" Graphical User Interface (GUI) or Web Interface utilising a combination of point and click selection for drop down lists and keyboard entry would be preferred. The user interface should be easy to navigate and be logically structured around the elements of functionality described in the Functional Requirements document.

The solution for the user interface should include various options to enable fast, efficient and accurate data entry and data presentation technologies.

The PAS should provide the ability for users to customise their screen layout to provide specific views of the PAS functionality. User profiles should be stored by the system and presented to the user on logon.

Reliability

The reliability of the PAS is a critical factor in its acceptance by clerical and clinical staff. It is a key requirement that operational staff must have confidence that the

system will be available to meet their business support requirements.

Availability

The PAS will be a mission critical system and as such, vendors must demonstrate that their PAS can be operational 24 hours per day, seven days per week. TCH requires a system that can deliver, as near as possible within maintenance and resource constraints, one hundred per-cent availability.

Downtime

System downtime will be managed on the basis of scheduled and unscheduled downtime. Scheduled maintenance shall be planned in line with the regular scheduled outage times for the hospital.

The vendor must provide information on how the hardware and software configuration for the PAS will minimise downtime both scheduled and unscheduled.

6 Other Requirements

<Define any other requirements not covered elsewhere in the SRS. This might include database requirements, internationalization requirements, legal requirements, reuse objectives for the project and so on. Add any new sections that are pertinent to the project.>

7 Appendix A: Glossary

<Define all the terms necessary to properly interpret the SRS, including acronyms and abbreviations. You may wish to build a separate glossary that spans multiple project or the entire organization, and just include terms specific to a single project in each SRS. >

8 Appendix B: Analysis Models

<Optionally, include any pertinent analysis models, such as data flow diagrams, class diagrams, scenarios, or entity-relationship diagrams.>

9 Appendix C: Issues List

<This is the dynamic list of the open requirements issues that remain to be resolved, including TBDs, pending decisions, information that is needed, conflicts awaiting resolution, etc.>