Software Requirements Specification

for

Building Permit Application of Local Authorities

ICTA of Sri Lanka

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1. Introduction

"Clean requirements help development team creates the right product, and a System requirements specification (SRS) helps you lay the groundwork for product development." [1]

An SRS is a document that specifies the requirements of the user as well as what the system will do and how will it perform.

1.1 Purpose

The main purpose of the system is to make the current manual system to an automated web-based solution. Also, to make the system much easier and much faster.

All the Local Authorities can connect and collaborate with each other, so they can build a better future for country and the people in it.

The system aims to eliminate the barrier of communication in between LA and Citizens/ End Users of the system.

It should make the Bid process of Constructions, and the Advertisement for it to be easy and cost effective

The system will be able to make the decision-making lot easier for LA users.

1.2 Document Conventions

- Any standards or typographical conventions are not followed when writing this SRS.

1.3 Intended Audience and Reading Suggestions

- This document is prepared for project managers, developer and tester.
- In remaining part of document will be explained respectively.

1.4 Product Scope

- Building permit web app allow user to access the system easily through internet. As a web application
- A building permit is required before beginning most construction, demolition and repair work, in order to provide more responsive services
- the department of building offers permitting processes tailored for a wide variety of projects.
- It allows construction companies to bid for government projects, get notifications, and ask questions about related stuff

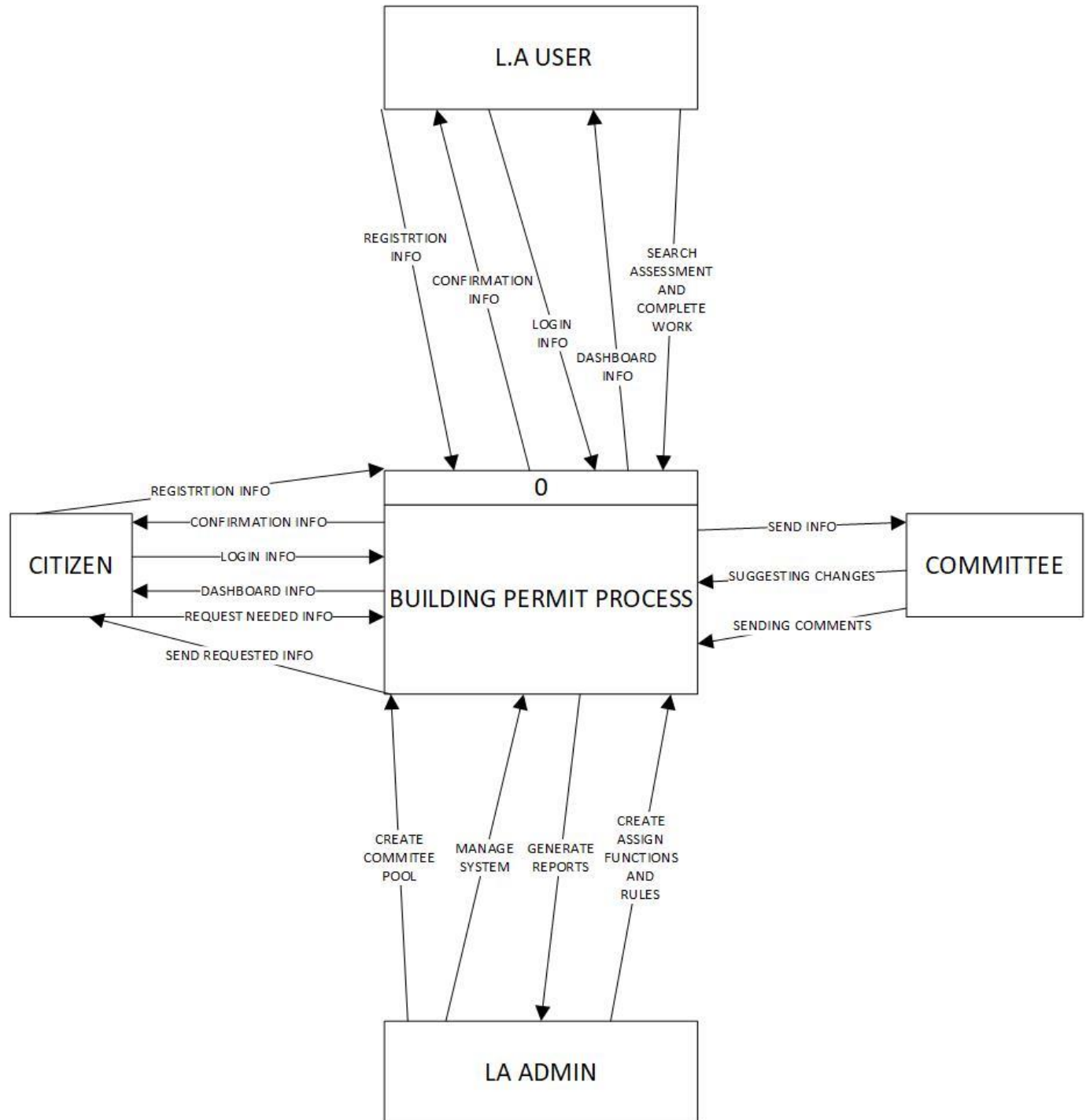# 2. Overall Description

2.1 Product Perspective

Figure 1 - DFD Diagram for Building permit process

2.2 Product Functions

- Citizen /LA users may register to the system, so that they can access the system.
- Citizen /LA users see all their assigned assessments and other application (Link for assessment tax/ building permit/ rental/ license/ tax/ reservation/ certificates) sort/ search according to the requirements.so that their can select and process with required service.
- Citizen see all their assessments or search assessment and pay for arrears amount / see all required basic requirements such as deal/ ownership or the land/minimum number of purchases/ and eligible property type (government can't allow). Display NBRO map, PRDA map, RDA map it available with LA.
- Other instruction like irrigation: Environment department clearance requirement etc. Proceed with the desired assessment number for the building permit. So that citizen can pay due amount and proceed to apply for a building permit.
- Citizen see the application for the building permit with relevant instruction with a clear guide (wizard) with required document validation so that citizen can submit the building permit online.
- Citizen pay relevant fees online for the building permit so that citizen can pay online for an application fee, processing fee and other necessary payment.
- Citizen get notification regarding the status and other information (including schedule site visit) with the ongoing process.
  So that citizen be aware of the current status of the application and other due documents or required information.
- Citizen see the current status of all applied building application. (E.g. current level/completed) /Application cancellation / see/notify the committee meeting date. So that citizen can check the status of the applied application.
- Citizen print copy of approved building permit so that they can get a copy of the building permit whenever copied.
- Citizen list all my completed /rejected applications. Appeal for rejected application, Amendment for existing building. Building permit /Apply new building permit in a land

where another building exists. Land not blocked out .so that citizen can appeal/Apply amendment / Apply new building permit for earlier applied assessment number.

- LA user (level 1) search assessment and check for arrear payment so that they can check for arrears payments needed to be settled to proceed with building permit.

- LA user (level 1) fill the application from with the required information and upload the scanned copies of those documents and submit to next level/see the current status of all applied building applications (eg.current level 1 completed).so that they can check the accuracy of the documents , upload to the system and sent for the verification process.

- LA user (level 1) list all completed /rejected application appeal for rejected application/Amendment for existing building permits / Apply new building permit in a land where another building exist land out blocked out.so that they can appeal /apply Amendment /apply new building permit for earlier applied assessment number.

- LA user (level 2) verify and validate the information entered with original documents/ calculate processing fees/ see the current status of all applied building applications (E.g.: current level /completed/ application cancellation), so that they can verify the documents submitted and charge the relevant process fees and submit to next level.

- LA user (level 3) check whether submitted documents are technically accurate and whether site visits are required/ assign and schedule site visits, change additional fees required / form a committee (based on regulations affects for the location)/ submit to the committee for approval/ notify application about the planned committee meeting date/ application cancellation. So that they can check the documents for their technical accuracy and change additional fees required.

- Committee (level 4) suggest changes /send to level 3 for changes/ approve/ reject/ issues license/ if the application is refused, the committee needs to decide fees and which document are needed to be changed. committee individual comments should be entered to the system by an LA officer with relevant supporting documents/ and should be able to upload a document with a final decision to the system for LA's reference as a supporting document so that they can request for changes to the building plan/ request additional documents/ approve or reject / issues license.

- LA admin can define the fee calculating structure. Amounts will be calculated based on square feet automatically and displayed to the user by the system.so that they can facilitate the automation of the calculation process.

- LA admin create a building application form dynamically so that they can create the formats of   the building application form based on the required information.

- LA Admin create a pool of committee members so that they can maintain a pool of committee members to be used to form committee.

- LA Admin create license formats dynamically so that they can create license format as required.

- LA Admin create process flow for building permit as required using a configuration wizard (even to omit some processes)

  e.g.: The system has the following processes

  Process 1: filling the B.A form

  Process 2: verify the form and upload scan documents

  Process 3: verify the originals

  Process 4: verify the application technically

  Process n: one LA can configure steps as follows

  Step 1

      Process 1, process 2

  Step 2

      Process 3, process 4

  Another LA can configure as follows:

    Step 1

      Process 1, process 2, process 3 and process 4

  So that they can configure process flow dynamically according to the LA required

- LA Admin create and assign user functions create instructions ,rules and regulations , tooltips.so that they can assign user functions for users based on the required task to be performed, give a clear idea to the customer about the steps to be followed.

- Report module generate reports as required.

2.3 User Characteristic

- The user should be familiar with the internet.
- The user should be familiar with construction permit procedures.

2.4 Operating Environment

- Construction/ Building permit is a web application that shall operate in all browsers, for a model we are taking Latest version of Google chrome, Mozilla firebox and internet explorer. Users will be able to use the platform using desktop and laptop computers and mobile devices.

2.5 Design and Implementation Constraints

- There are no designing and Implementation constrains.

2.6 User Documentation

- User guide template is prepared. User can see the applications for the building permit with relevant instructions with a clear guide.
- The system will provide user manual, frequently ask questions and feedback via email.

2.7 Assumptions and Dependencies

- If user want to access the system user must register the system.
- All citizen /LA users have internet connection and internet browsers.
- The security attack will be avoided as soon as possible.
- All governmental regulations will be considered by the system.

3. External interface requirements.

3.1 User Interfaces

- Inputs will be entered via standard web controls such as combo box, check box, text box etc.
- Navigation and acceptance will be handled with buttons.

3.2 Hardware Interfaces

- PC or mobile browsers will be used to access the Web Application through Internet.
- Mouse, keyboard, Scanner and Printer (etc.) will be used as hardware interfaces to input and output data / Information.

3.3 Software Interfaces

- Following are the software used for the construction permit web application.

Software used	Description
Operating system	We have chosen windows operating system For its best support and user friendliness.
Back-end and Front-end	C#.net, JavaScript (Angular framework), html + CSS (Bootstrap)
database	To save the citizen's construction permit information. we have chosen SQL +database

Table 1 - Software used and Description table

3.4 Communications Interfaces

- This project supports all types of web browsers, Google Chrome is recommended.

- Password data will be encrypted.

- The system will be TCP/IP protocol for communication, SMTP protocol for email and HTTPS Protocol for website.

- User form data will be transferred using HTTPS-Post method search data will be transferred using HTTPS-Get method.

4. System Features

System features are system requirements in disguise. System features are the main focus of creating the system. It gives the need to create the system. Following use case diagram will give a better idea about the system features.
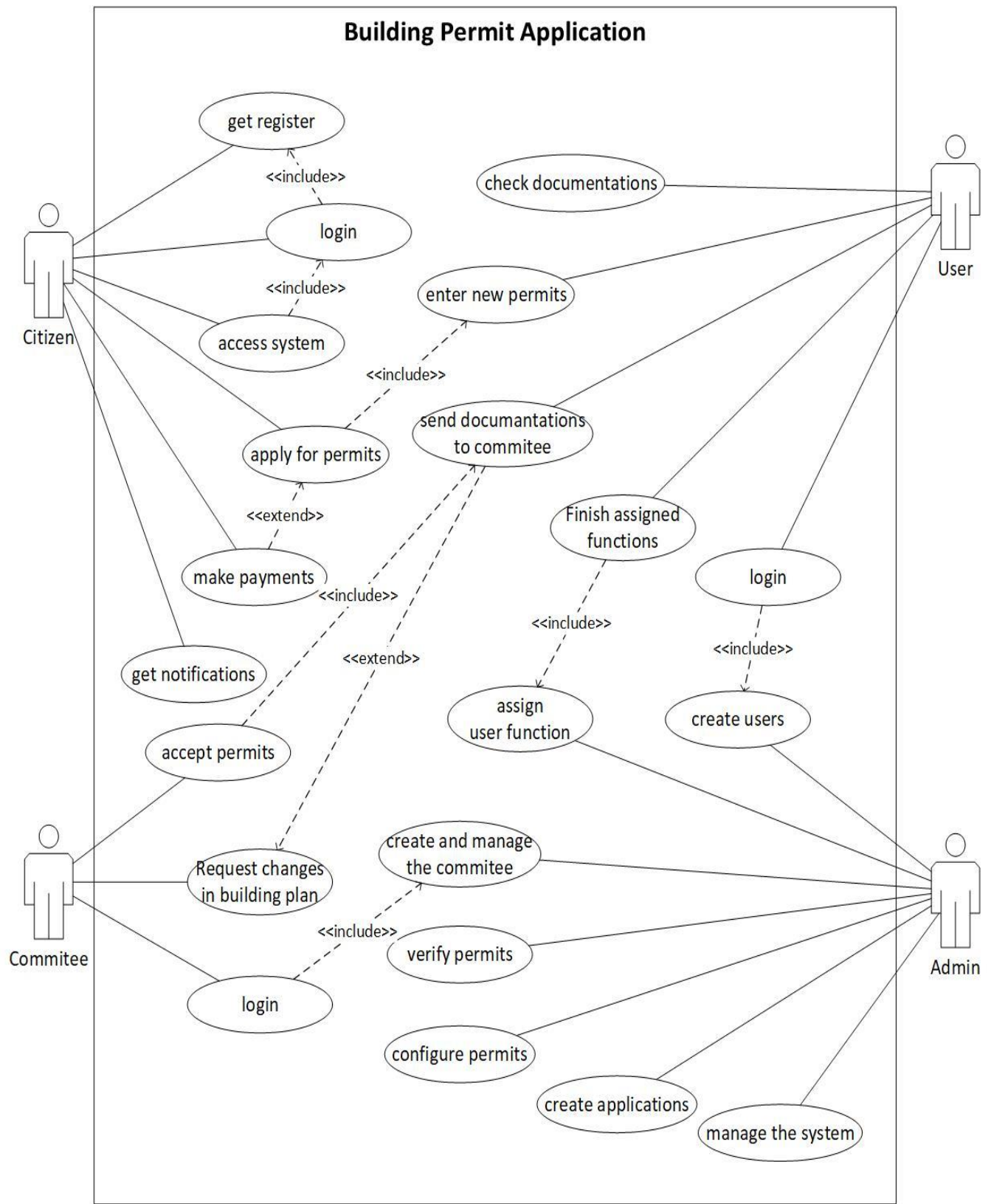
Figure 2 - Use case for building permit process

4.1 Functional Requirements

Function 1	Registration
Input	Name, Address, Age, Telephone No, NIC No, E-mail, Race, Religion
Output	Database Record,Database successfully updated message
Process	Validate the given details and records the information into the db.

Table 2 – Function 1

Function 2	Log-in
Input	Username, Password
Output	Database successfully updated message
process	Validate the given details and records the information into the database

Table 3 - Function 2

Function 3	Dashboard
Input	
Output	Select process with the required service
Process	Show all assigned assessments and other applications

Table 4 - Function 3

Function 4-1	Buildings permit-citizen portal
Input	-
Output	Pay due amounts and proceed to apply for a building permit.
Process	See all assessments or search assessment and pay for arrears amount.

Table 5 - Function 4.1

Function 4-2	Building permit-citizen portal
Input	
Output	Submit the building permit online.
Process	See the application for the building permit with relevant instruction with a clear guide and validate the given details.

Table 6 - Function 4.2

Function 4-3	Building permit-citizen portal
Input	Card no, card holder name. expire date ,security code
Output	Pay online for an application fee, processing fee and other necessary payment.
Process	Saving card details.

Table 7 - Function 4.3

Function 4-4	Building permit-citizen portal
Input	
Output	Be aware of the current status of the application and other due documents or required information.
Process	Give notifications regarding the status and other information (including scheduled site visits) with the ongoing process.

Table 8 - Function 4.4

Function 4-5	Building permit-citizen portal
Input	
Output	Check the status of the applied application.
Process	Show the current status of all applied building applications.

Table 9 - Function 4.5

Function 4-6	Buildings permit-citizen portal
Input	
Output	Get a copy of the building permit whenever required.
Process	

Table 10 - Function 4.6

Function 5-1	Building permit –local Authority
Input	
Output	Check for arrears payments needed to be settled to process with building permit.
Process	Search assessment and check for arrears payments.

Table 11 - Function 5.1

Function 5-2	Building permit –local Authority
Input	Name, Address, Email address, bid payment, Scan copy ID number.
Output	Check the accuracy of the documents, upload to the system and send for the verification process.
Process	Validate the given details and records the information into the database.

Table 12 - Function 5.2

Function 5-3	Building permit –local Authority
Input	Name, Address, Reason, Email, ID number.
Output	Appeal/Apply amendment /apply new building permit for earlier applied assessment number.
Process	Validate the given details and records the information into the database.

Table 13 - Function 5.3

Function 5-4	Building permit –local Authority
Input	
Output	Verify the documents submitted and charge the relevant process fees and submit to next level.
Process	Verify and validate the information entered with original documents calculate processing fees.

Table 14 - Function 5.4

Function 5-5	Building permit –local Authority
Input	Document details.
Output	Check the documents for their technical accuracy and change additional fees required.
Process	Check whether submitted documents are technically accurate and whether site visits are required. Assign and schedule site visits charge additional fees required.

Table 15 - Function 5.5

Function 5-6	Building permit –local Authority
Input	Documents details, community individual comments.
Output	Request for changes to building plan/request additional documents /approve or reject /issue license.
Process	

Table 16 - Function 5.6

Function 6-1	Building permit(Admin)
Input	Fees
Output	Facilitate the automation of the fee calculate process.
Process	Amount will be calculated based on sq. Feet automatically and displayed to the user by the system.

Table 17 - Function 6.1

Function 6-2	Building permit(Admin)
Input	Details to building application.
Output	Database records , database successfully update message.
Process	Validate the given details and records the information into the database.

Table 18 - Function 6.2

Function 6-3	Building permit(Admin)
Input	
Output	Maintain a pool of committee members to be used to form committees.
Process	Create a pool of committee members.

Table 19 - Function 6.3

Function 6-4	Building permit(Admin)
Input	Details of license formats.
Output	Database records, database successfully uploaded message.
Process	Validate the given details and records the information into the database.

Table 20 - Function 6.4

Function 6-5	Building permit(Admin)
Input	Details to B.A from scan documents.
Output	Configure process flow dynamically according to the LA requirement.
Process	Validate the given details and records the information into the database.

Table 21 - Function 6.5

Function 6-6	Building permit(Admin)
Input	
Output	Assign user functions for users based on the required task to be performed.
Process	Create instructions rules and regulations ,tooltips.

Table 22 - Function 6.6

Function 7	Report module
Input	All information of documents.
Output	Reports.
Process	

Table 23 - Function 7

5. Nonfunctional Requirements

"Non-functional requirements, as the name suggest, are those requirements which are not directly concerned with thee specific function delivered by the system" [2]

5.1 Availability

As a web-based solution, the system should be available for the system users at any given time. A small interruption will cause a big trouble in the environment.

5.2 Performance

Acceptable response time is the key feature of the performance requirements. Performance of the system will be highly depending on the performance of hardware and software components of installing compute. When we consider about the load time for user interface screens shall take up longer than two seconds which make fast access to the system .The login information shall be verified within five seconds. Returning query result within five second which makes search function more accurate.

5.3 Safety Requirements

- The failure of safety critical software functions shall be detected, isolated and recovered from such that catastrophic and critical hazardous events are prevented from occurring.
- Software shall provide error handing to support safety critical functions.
- Software shall provide error fault containment mechanism to prevent error propagation.
- Software termination shall result in a safe system stage.
- Keep the database security by maintaining the backup.

5.4 Security requirements.

- **Confidentiality**

User will register to the system with using NIC number will be validated by the NIC number authorization. NIC numbers will be stored in system database. And all those data will be protected by user authorization. Only permitted users can use or view it

- **Accountability**

Any troubles or errors will be taken responsible by the respective person who is responsible and the System Admin shall take care of it.

5.5 Software quality attributes

Software quality requirements for this platform are:

- Availability: Available during normally 24 hours of every day. Availability will be reported by web hosting company.
- Usability: Easy to take benefits from the system and have a user friendly environment.
- Flexibility: Ability to add new features to the system and handle them conveniently.
- Efficiency: Take less number of resources and time to do some task.
- Integrity: Information in the system is secure, because password mechanism is used to login.
- Reliability: Security tests will be performed sufficiently.
- Functionality: functionality will be evaluated via user feedbacks from the system.

6. Appendix A: Glossary

ICTA – Information and Communication technology Agency of Sri Lanka

SRS – System Requirements Specification

LA – Local Authority

NBRO– National Building Research Organization

PRDA – Provincial Road Development Authority

RDA – Road Development Authority

NIC – National Identity Card

TCP – Transmission Control Protocol

IP – Internet Protocol

SMTP – Simple Mail Transfer Protocol

HTTPS – Hyper-Text Transfer Protocol

CSS – Cascading Style Sheet

HTML – Hyper-Text Markup Language

7. References

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[2] L. W. Jeffrey and D. B. Lonnie, in *System Analysis and Design Methods*, Galgotia publication pvt. ltd., 2000.

[3] [Online]. Available: https://www.chicago.gov/city/en/depts/bldgs/provdrs/permits.html.

[4] [Online]. Available: hhtps://personal.utdallas.edu/~chung/RE/Presentations07S/Team_1_Doc/Documents/SRS4.0.doc.

8. Work done

First everyone in the team searched in their network to find a company for a project. Then we discussed and came to a conclusion to pursue the suitable project and to make the SRS for the project.

As per the discussion we choose ICTA of Sri Lanka pvt ltd. Company. The company was planning on developing a system to the Local Authorities. They requested us to make a SRS for the building permit process by investigating several local authorities. As per their request we choose to local authorities and visited them to collect information. They gave as request letters as well.

Then as per the guidance of an assigned person we completed the SRS for the particular process.

M.H.A. Ahmed (16APC2702) – leader

- Gave tasks to team mates, merged and made correction to the document. Created the DFD, and Use Case diagrams. Visited company with team.

W.G.I. Udayanga (16APC2756)

- Made the Introduction part of the documentation. Visited company with team.

N.D. Ruwanpathirana (16APC2786)

- Made the System Features part of document. Visited company with team.

S. Adeeba (16APC2761)

- Made the Overall Description of the Document. Visited company with team.

P. Jathusiya (16APC2771)

- Made the Nonfunctional Requirement section. Visited company with team.

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- Made the External interface requirements section. Visited company with team.