CS 413 - Software Engineering Project Management
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“Patient Tracking System”

Project Scope & Time Management Document

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1. Software Requirements Engineering

1.1 Software Requirements Specification (SRS)

1.1.1 Functional Requirements

1.1.1.1 Displaying Personal and Background Information of Patient

1.1.1.1.1 Introduction/Purpose

This feature provides an informative display for doctor to remind or keep him/her informed about the basic information of patient. This display will include data like name, surname, age, location, date of birth, past diseases, chronic diseases and documented allergies.

1.1.1.1.2 Stimulus/Response Sequence

Doctor clicks on “Patient List” button in main menu and selects the patient that he/she wants to screen by patient’s name and surname. Patient list is ordered in ascending alphabetical order by surname. Then, he/she clicks “Background Information” icon. This is just a displaying screen and doctor is not able to add new information or edit existing information of the patient.

1.1.1.1.3 Associated Functional Requirements

- When the entrance of a patient has done by the information desk, the name and surname of the patient will be added to “Examination List” and doctor will be able to display information of the patient by selecting patient’s name from “Examination List”.

1.1.1.2 Displaying Old/New Reports and Test Results of Patient

1.1.1.2.1 Introduction/Purpose

This feature enables doctor to obtain and review test results and documented reports of the patient for a healthier examination process.

1.1.1.2.2 Stimulus/Response Sequence

Doctor clicks on “Patient List” button in main menu and selects the patient that he/she wants to screen by patient’s name and surname. Then, he/she selects “Test & Results” button and all documentation will be listed in descending

order by their date. Also categorization will be provided for the test results. Doctor can select a report or test result according to its title or date.

1.1.1.2.3 Associated Functional Requirements

- When the entrance of a patient has done by the information desk, the name and surname of the patient will be added to “Examination List” and doctor will be able to display documented reports and test results of the patient by selecting patient’s name from “Examination List”.
- Doctor will be able to compare results of the particular parameters with a parameter-date graph.

1.1.1.3 Providing Comment For Patient

1.1.1.3.1 Introduction/Purpose

This feature helps doctor to increase traceability of a patient for long-term treatment by their own written comments about patient. This feature can be considered as a note taking for reminders and treatment process.

1.1.1.3.2 Stimulus/Response Sequence

Doctor clicks on “Patient List” button in main menu and selects the patient that he/she wants to screen by patient’s name and surname. Then, he/she selects “Comments” button. The written comments will be listed according to their last edited date and time. Also comment title, creation time and edit time will be provided. To add a new comment, doctor clicks “Add Comment” icon, writes his/her comment and clicks check icon to end the process.

1.1.1.4 Comparing Test Results of the Patient

1.1.1.4.1 Introduction/Purpose

This feature provides comparison of particular parameters of old values with new ones in test results for specifying the changes by date. This comparison will help doctor to increase traceability of patient and understanding of doctor for response of patient to the treatment.

1.1.1.4.2 Stimulus/Response Sequence

Doctor clicks on “Patient List” button in main menu and selects the patient that he/she wants to screen by patient’s name and surname. Then, he/she selects “Test & Results” button and all documentation will be listed in descending

order by their date. Then, he/she selects the reports that will be compared. As a next step, he/she can select exact parameters to be compared. If doctor doesn't choose any parameter, then all values will be compared and for the missing values full outer join will be used. Also doctor will be able to choose graph type that he/she wants to use. Provided graph types are line chart and column chart.

1.1.1.4.3 Associated Functional Requirements

- Displaying Old/New Reports and Test Results of Patient
- When the entrance of a patient has done by the information desk, the name and surname of the patient will be added to "Examination List" and doctor will be able to display documented reports and test results of the patient by selecting patient's name from "Examination List".

1.1.1.5 Adding Comments to Test Results

1.1.1.5.1 Introduction/ Purpose

This feature allows doctor to add comments on particular report or test result to make him/her able to take note the inferences about the patient.

1.1.1.5.2 Stimulus/Response Sequence

Doctor clicks on "Patient List" button in main menu and selects the patient that he/she wants to screen by patient's name and surname. Then, he/she selects "Test & Results" button and all documentation will be listed in descending order by their date. Comment icon will be provided for all test results next to title. Doctor clicks "Comment Icon" and enters his/her customized comments about the test result.

1.1.1.5.3 Associated Functional Requirements

- Displaying Old/New Reports and Test Results of Patient
- When the entrance of a patient has done by the information desk, the name and surname of the patient will be added to "Examination List" and doctor will be able to display documented reports and test results of the patient by selecting patient's name from "Examination List".

1.1.1.6 Marking Next Appointment Time of Patient

1.1.1.6.1 Introduction/ Purpose

This feature enables doctor to mark next appointment(s) that he/she tells the patient. The patient will be informed by SMS or e-mail about the planned appointment, so patient can be reminded and take appointment from hospital/clinic if he/she wants.

1.1.1.6.2 Stimulus/Response Sequence

Doctor clicks “Arrange Appointment” button on the patient screen. Then, he/she selects date from the provided calendar and enters the time information. This appointment is not a certain meeting, it just for reminding the patient for the needed appointment and tentative schedule of the doctor. Schedule of the doctor is not feeded by this marking process.

1.1.1.7 Writing Prescription

1.1.1.7.1 Introduction/Purpose

This feature enables doctor to create prescription for the patient in electronic environment.

1.1.1.7.2 Stimulus/Response Sequence

Doctor clicks “Create Prescription” button on the patient screen. Then, he/she enters name of medicine, duration of treatment and usage process.

1.1.1.7.3 Associated Functional Requirements

- If patient e-mail address is provided, created prescription will be sent to email address of patient.

1.1.1.8 Creating Test Request For a Patient

1.1.1.8.1 Introduction/Purpose

This feature enables doctor to create a test request for his patient so that patient has nothing to do when he/she arrives the place where the test to be hold on. The call of a personnel will be enough. This can be visualization, radiological or a pathological test.

1.1.1.8.2 Stimulus/Response Sequence

Doctor clicks “Test Request” button on the patient screen. Then, he/she selects the test type from the “Tests” list.

1.1.1.8.3 Associated Functional Requirements

- Current patient list of the test personnel be feeded after the request of doctor.

1.1.1.9 Sharing the Test Results

1.1.1.9.1 Introduction/Purpose

This feature enables doctor to share the test results of his/her patient with the other doctors when he/she needs advise.

1.1.1.9.2 Stimulus/Response Sequence

Doctor clicks on "Patient List" button in main menu and selects the patient that he/she wants to screen by patient's name and surname. Then, he/she selects "Test & Results" button and all documentation will be listed in descending order by their date. Finally, doctor select the test result(s) and the doctors who he/she wants to share the results.

1.1.1.9.3 Associated Functional Requirements

- The doctor who received the shared test results be notified and the shard test will be displayed on "Shared Test Results" screen which can be entered from the main menu.

1.1.1.10 Other Functional Requirements

- The patient will be informed by SMS or e-mail about the planned appointment and so patient can be reminded and take appointment from hospital/clinic if he/she wants. This feature will be triggered when doctor marks an appointment for the patient.
- Some test results can not be obtained immediately. For these sort of tests, the patient will be notified by SMS or/and e-mail when the test results are ready.
- The prescriptions that doctor created on the system will be sent to patient by SMS or/and e-mail.
- Doctor-patient screen will be feeded when a test result or graphic of a patient is ready.
- Test results, presicriptons and the diagnosis of the patients will be shared with needed governent systems.

1.1.2 Non-Functional (Quality) Requirements

1.1.2.1 Security

- All users should be log in to use facilities of the system
- System will provide passwords for the accounts, account owners can change and customize the given passwords.
- Passwords should include minimum ten characters which include at least one upper case letter, lower case letter, number and special sign.

1.1.2.2 Accessibility

- The system should be accessible by doctors and clinic/hospital personnel.
- Mobile or tablet access is not allowed.

1.1.2.3 Availability

- The system will be available locally on hospital/clinic computers 7/24 for the users.

1.1.2.4 Confidentiality

- Patient information can be just seen by doctor accounts.
- Patient information can just be shared with doctors and needed government systems.

1.1.2.5 Efficiency

- The system should be able to send a notification in just a second or less.
- A ready test result or graphic should reach the doctor in just a second.

1.1.2.6 Usability

- The system should have simple interface and it should be easy to use for doctors.
- The system should include just necessary buttons and icons on the pages without causing confusion.
- A doctor with no training should be able to use system in his/her first time

1.1.2.7 Interoperability

- The system should work harmoniously with DataMed Angora PACS System which will be used for medical imaging and image archiving.

1.2 Software Requirements Management

Software requirements management is the process which provides a management plan for changing requirements during both requirements engineering and project development. Because of the dependencies between requirements, there should be a formal plan which manages the analysis and impacts of changing requirements by considering the possible solutions for integrating the differences in the most efficient way. Requirements management plan consists of four important points: Requirements identification, change management process, traceability policies and tool support. It is a continuous process throughout the lifecycle of a product. PTS is a small-sized hospital software which become prominent by its simplicity, so harsh changes in requirements is not expected thorough out requirements engineering and project development. However for the possible reqiurement changes, requirements change management principles will be applied. These principles are mainly problem analysis and changing specification, changing analysis and costing and changing implementation. Also for providing traceable and accurate process, requirements management tools will be used.

The software development process model of PTS is waterfall which is a plan-driven process based on a strong documentation because of the accreditation needs of government. So a requirement management tool which considers and presents flexibility in documentation should be used to keep track of changing requirements and increase traceability. According to project development needs of PTS, *Visual Trace Spec* will be used as th requirements management tool. *Visual Trace Spec* includes it's own document generation interface for the possible changes in documents and it is equally effective for the other aspects of software requirements management like traceability, change management and requirements identification[1]. Also user-friendly interface and easy use of *Visual Trace Spec* will save the training time for the project contributors.

2. References

[1] Requirements Specification & Requirements Management Tool. (n.d.). Retrieved from http://visualtracespec.com/