Software Requirements Specification

for

Rx Interact

Version 1.0 approved

Prepared by Joshua Jonte

Indiana University

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version
Josh Jonte	5/6/2011	Init	1.0
Josh Jonte	5/29/2011	Updated Hosting Preferences	1.1

Introduction

Purpose

Rx Interact v1.0 is a new application being developed. This document covers the entire application.

Project Scope

Rx Interact is designed to provide clinicians information regarding drug-to-drug interaction and the potential side effects of a drug or combination of drugs on a patient. The application is designed to run on a tablet device that is carried on the clinician at the point of care.

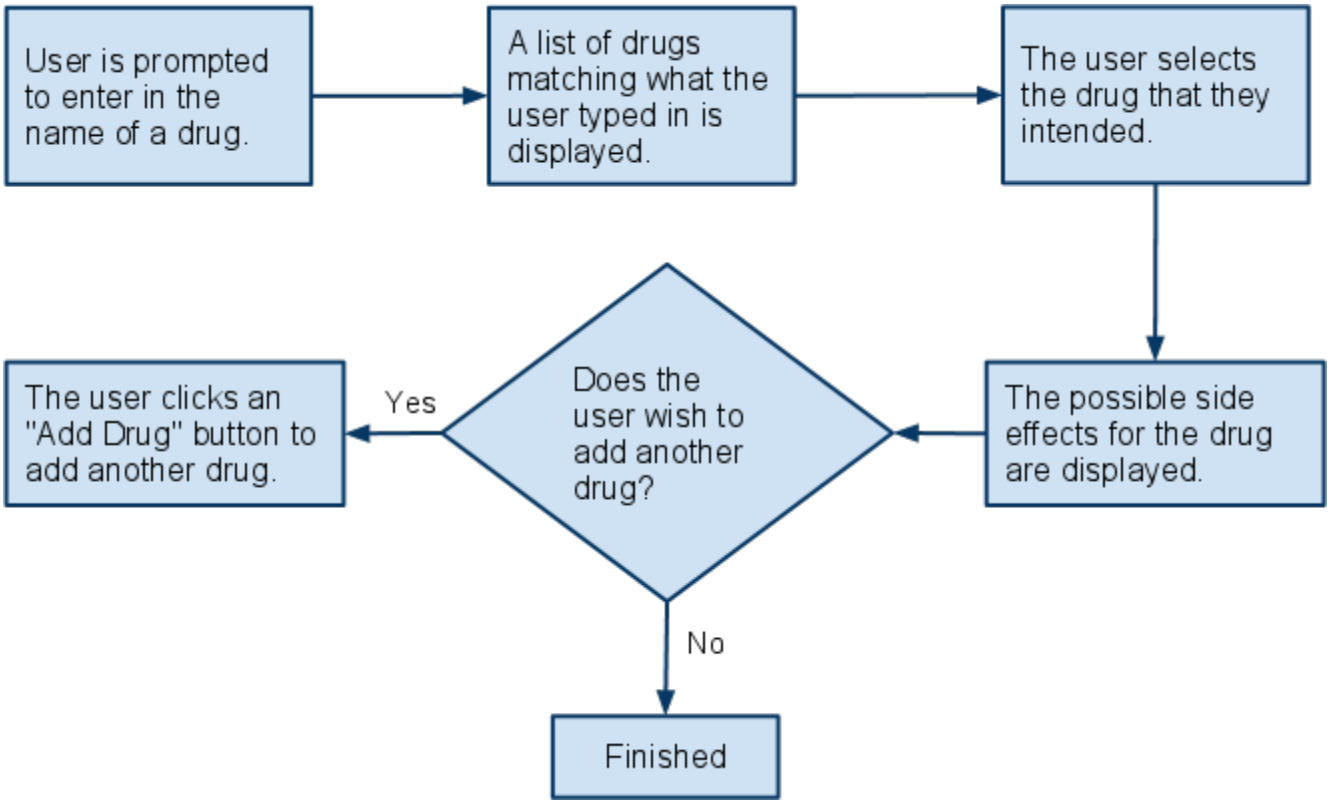
Overall Description

Product Perspective

Clinicians are typically familiar with the single human-to-drug interactions, however, drugs can interact with other drugs and create even more side effects than just a single drug individually. Because of this, the clinician needs an easy to enter in and visualize all the possible side effects of a cocktail of drugs creates along with the likelihood and severity of interaction.

Product Features & Work Flow

Rx Interact lets the user enter in a drug name and see all the side effects of that drug as bubbles around a patient core. The closer the bubble is to the center, the increased likelihood of that side effect is. The user can enter in more than one drug and the side effects of that drug interacting with other listed drugs are displayed in bubbles as well.



User Classes and Characteristics

Clinicians

The application is designed to be used mainly by clinicians at the point of care. The will likely use it as part of the work-flow of prescribing medications to patients.

Operating Environment

Rx Interact will operate within a web browser. The web browser needs to support HTML5 and the associated *Canvas* element. The platform could potentially be any tablet device from any manufacturer running any operating system, so long as it supports HTML5 and *Canvas*. However, due to hardware availability at the time of writing the most likely device OS will be iOS 4.3 greater or Android 3.1 or greater.

Browser Support

Rx Interact supports modern web browsers that support HTML5 CSS3 and Canvas. Examples of this type of browser is Google Chrome, FireFox 3.5+, Internet Explorer 9+, and Safari 5+.

Design and Implementation Constraints

The application will have to be ran from a device with a 7" screen or larger. The device must support accessing public URLs using a web browser. The web browser must support HTML5 with

specific support for the *Canvas* element and the supporting DOM methods that make the *Canvas* element functional.

Rx Interact will be hosted on a web platform utilizing the Ruby on Rails 3.1 technology framework. The operating system will be Linux and will use the Ubuntu 10.11 distribution. The database will be relational and use SQLite, and will use structured query language to query the data. The application will be hosted on the Rackspace Cloud.

Assumptions and Dependencies

It is assumed the database provided will have the necessary information to display the required information such as drug names, drug interactions and the severity or likelihood of an interaction. The data for the application will be supplied with most major drugs and the interactions that occur with those drugs. It is also assumed that there will be no updates to the data done by the application; the data will be read-only.

Use Cases

Clinician of a cancer patient

Description

A patient is meeting with a doctor and the doctor is prescribing chemotherapy medications. The chemotherapy drugs themselves have negative side effects which the doctor then prescribes additional drugs to negate the effects of. The patient is on additional medications that mitigate the effects of their cancer.

Stimulus/Response Sequences

The doctor types in the first few letters of the first medication the patient is already taking. A list of matching drugs is displayed to the doctor and they touch the name of the exact drug. Touching the drug name adds the drug to the current working set of drugs. The doctor adds each additional medication the patient is currently taking.

As the doctor is adding medications, the side effects of each drug and the drug-to-drug interactions of the new medication is added to the bubble diagram in real-time.

The doctor is now ready to prescribe the chemotherapy medications. The doctor types in the first few letters of the chemotherapy medication the doctor believes is best suited for the patient's type of cancer. The doctor chooses the exact medication from the list of matching medications. He touches the drug's name and it is added the current working set of drugs.

The doctor is now able to visualize all the potential side effects of each drug and their associated likelihood and severity.

Now understanding the potential side effects and their likelihood, the doctor starts to prescribe additional drugs that mitigate the side effects and the process continues until the patient and doctor reach a harmonious point in which the patient and doctor feel comfortable with the known side effects and their likelihood.

External Interface Requirements

User Interfaces

The application will be designed to run on a 1024-by-768-pixel resolution. The application will most likely be ran in portrait mode as the clinician will be holding the tablet like a book or clipboard.

Hardware Interfaces

The supported devices could potentially be made by any hardware manufacturer. However, realistically the supported devices will initially be the Apple iPad, Apple iPad 2, and the Motorola Xoom.

Testing will mainly be done on an Apple iPad 2.

Software Interfaces

The application will be written to utilize the Ruby on Rails 3.1 RC1 framework running on Linux 2.6. The database will be SQLite.

The application will interact with the back-end system to query drug names and interactions using asynchronous browser calls. The presentation layer language will be a combination of HTML, JavaScript and CSS. The application will use jQuery, jQuery UI, and jQuery Mobile as the presentation layer's manipulation library.

Communications Interfaces

The application will be sent to the user's web browser using HTTP. The application will then interact with the back-end application using JavaScript Object Notation (JSON) over HTTP.

Other Nonfunctional Requirements

Safety Requirements

Rx Interact is a tool that a clinician is using to prescribe medications to a patient, there are potentially a lot of safety concerns.

The clinician needs to understand that the data presented to them is only as good as the data in the database. There are unknown and/or undocumented drug interactions which could potentially kill a patient. The clinician needs to understand the list is not exhaustive and is only an additional tool in their repertoire.

Glossary of Terms

Git	Git is a source control system, otherwise known as a version control system.