PatientAid

CS 6365: Introduction to Enterprise Computing
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Motivation

- It is human tendency to let something slip from memory and this tendency progressively increases with age.
- The repercussions of forgetting medications can be severe in many cases especially for people suffering from long term illnesses.
- The ill and the aged require assistance in being reminded about medications multiple times a day and the drugs that need to be taken at those times as specified in the doctor’s prescription

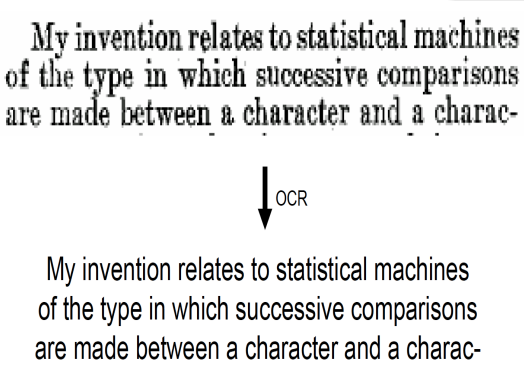
User archetype

Shilpa, Age 62, Homemaker

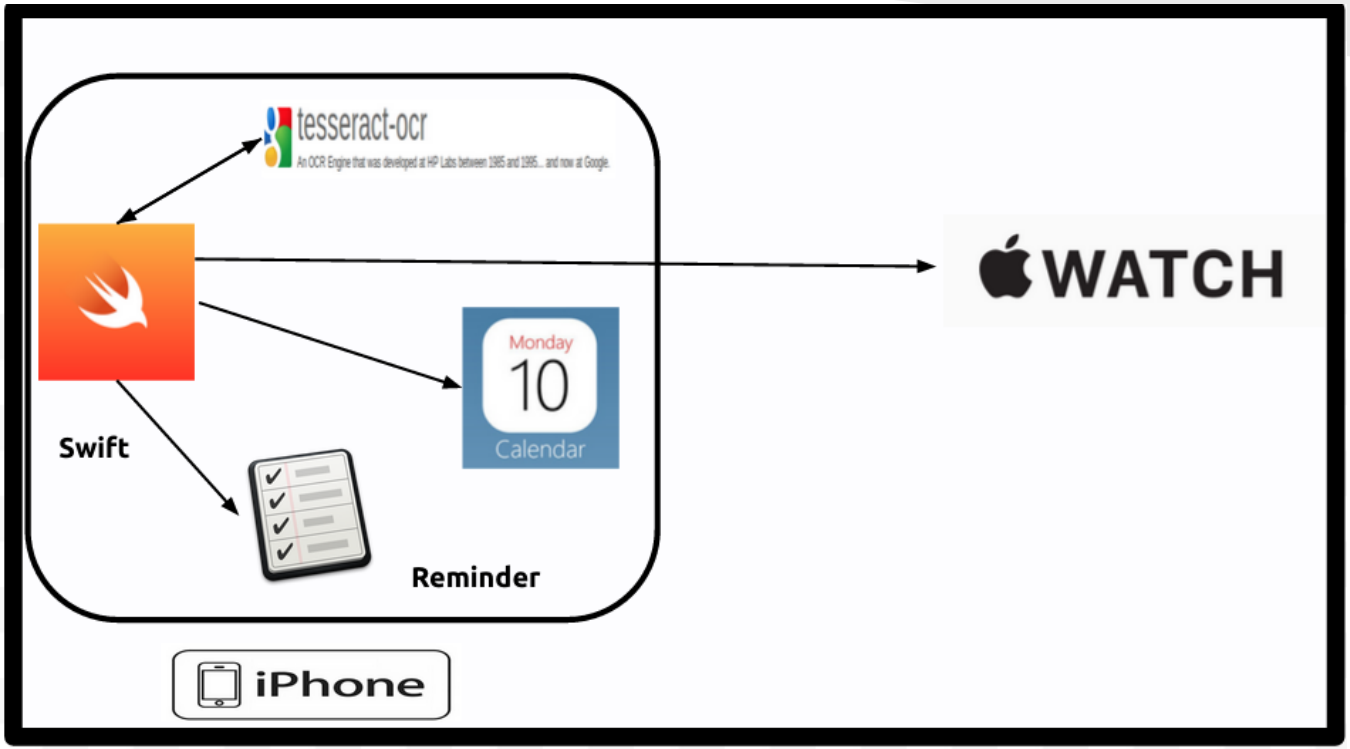
“I have so many chores to do and errands to run everyday. It gets hard to remember everything that needs to be done. To keep track of important tasks, I habitually write things down but more often than not, I forget to check the list! I have diabetes and high blood pressure which means that I have a lot of tablets to take several times in a day. I frequently forget to take my morning medication due to a lot of work that has to be done at that time of day. My doctors warn about the consequences this would have on my health in the long run. To add to my woes, I tend to lose my prescriptions as they increase in number after every visit to the doctor’s and it is hard to look at it everytime to see what tablets to take when! I like to believe that I’m capable of taking care of myself and do not require assistance.”

Tesseract

- Tesseract is an Optical Character Recognition engine.
- Developed by HP between 1985 and 1995
- Tesseract development is currently being led by Google
- It can read a wide variety of image formats and convert them to text in over 60 languages.
- It is open source and licensed under Apache.
- Tesseract is highly accurate when recognizing texts from languages that are currently supported



System Architecture



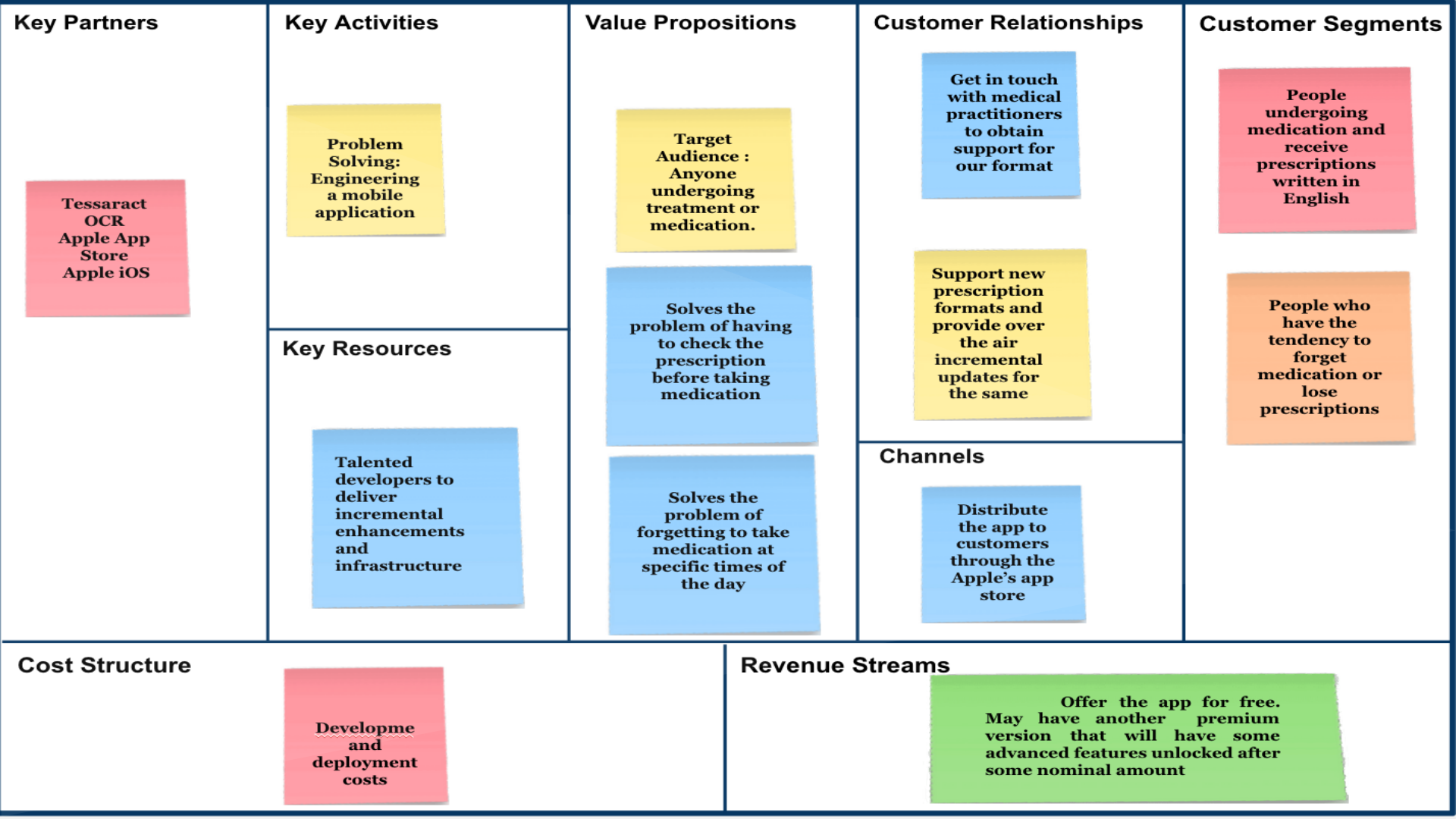
Features of the app

- Our iOS mobile application enables users to take a picture of a medical prescription (in a supported format).
- Image processing using the Tesseract OCR engine is used to convert the photographed prescription into raw text.
- The prescription text is parsed to obtain a list of medicines and the frequency (number of times in a day and when) and duration (number of days) of the same.
- Reminders are set using the medicine name and dosage as the title. Multiple reminders are set in accordance with the frequency and duration of each medicine.
- Reminders are set to the native **Calendar App and Reminders App** present on the iPhone.
- The user is now reminded of which medicine to take when.
- Medication information is communicated to Apple Watch.

Demo

Patient Aid

Business Model


Key Partners
Tessaract OCR
Apple App Store
Apple iOS
Key Activities
Problem Solving: Engineering a mobile application
Key Resources
Talented developers to deliver incremental enhancements and infrastructure
Value Propositions
Target Audience : Anyone undergoing treatment or medication.
Solves the problem of having to check the prescription before taking medication
Solves the problem of forgetting to take medication at specific times of the day
Customer Relationships
Get in touch with medical practitioners to obtain support for our format
Support new prescription formats and provide over the air incremental updates for the same
Channels
Distribute the app to customers through the Apple's app store
Customer Segments
People undergoing medication and receive prescriptions written in English
People who have the tendency to forget medication or lose prescriptions
Cost Structure
Developme and deployment costs
Revenue Streams
Offer the app for free. May have another premium version that will have some advanced features unlocked after some nominal amount

Challenges faced

- This application was written using Swift, a new language introduced by Apple in WWDC 2014. Thus, support and resources available for the application are minimal.
- No support for Swift in Tesseract. Had to use the Objective C wrapper provided and had to include a bridging header in our application for the framework to function correctly.
- Integration with Apple Watch which is scheduled to release in April ‘15: Less resources and support as well as inability to test with an actual device. Not all features are available on the simulator.
- The Apple watch simulator doesn’t support the native calendar app and reminders app in it currently, hence we couldn’t show the events set on the calendar on the apple watch simulator.
- The one way interaction currently supported: the Watch can wake up the iPhone, and not the other way round.
- Arriving on a supported prescription format for OCR to work correctly.

Future work

- More efficient integration with the Apple Watch utilizing all the available features provided by Apple once it is launched.
- Improving patient support with features such as details regarding the drugs prescribed and expected side-effects, reminders for appointments etc.
- Integrating many more prescription formats.

Questions?