Sprint #3 - Status Check #1

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***Abstract*—This is our team's status check for the practicum project for Sprint #3 for CS 6440 - Intro to Health Informatics. The purpose of this status check is to go over what we have accomplished this week, challenges we have encountered, and our plans moving forward.**

1 WHAT WE HAVE ACCOMPLISHED THIS WEEK

1.1 Vamsi

Vamsi Gadireddy is tasked to acquire patient data. He investigated available datasets online and options to generate patient data which can be used as the dataset for this project. He explored Synthea and was able to generate a variety of synthetic patient data as required for our project. This dataset was exported to Daniel's repo for Proof of Concept evaluation.

1.2 George

George Singhal investigated various application architectures, Cloud architectures and various possible MedCard application solutions. George also researched various SmartApps solutions and architectures for Healthcare. He also researched the different mobile app architectures and frameworks from Xamarin, Flutter, PhoneGap and the native architectures and frameworks provided by the public cloud solutions. He experimented with the viability of Mobile and Web applications on AWS, Azure, and GCP using the native frameworks. George proposed to the team a Scrum style meeting cadence to iterate over the requirements, design and implementation. George created recurring meeting invites for the team and mentors for discussions and iterating over the requirements, and solution. George worked on the mockup and POC demo solution.

1.3 David

David Strube investigated how best to implement the user interface for the practicum using Xamarin to generate mobile applications. He also participated in the team discussion with our internal mentor Abhishek Khowala on Sunday evening. After the meeting was cut short due to

the 40 minute time limit on free Zoom chats, David proposed using Google Meet as it provides 60 minutes of video chatting for free. David also provided the template for this document based off of the original JDF example document.

1.4 Daniel

Daniel Tuttle completed some wireframe mockups utilizing the Balsamiq UX tool. These designs will aid in discussing the MVP for the project so that Julien and Abhishek have an idea of what we are working towards as well as the other team members. A video of this mockup can be seen here: https://daniels-misc.s3.eu-central-1.amazonaws.com/fhirUI.mov. In addition to this, Daniel researched the feasibility of utilizing the SmartHealthIT website for patient searching capabilities. Daniel spent many hours trying to get the FHIR integration to work with this website. He was not able to get it to work and became concerned with the timeframe for the project given this challenge. He spoke with Abhishek and there was a miscommunication / misunderstanding regarding the requirement to use a FHIR server. Daniel understood wrongly that it would be ok to serve patient data in FHIR format from json files and implemented a SpringBoot app that does this with a FHIR data set provided by Vamsi. The SpringBoot application is here: https://github.com/danielptm/fhir_patient_backend.

2 CHALLENGES WE HAVE ENCOUNTERED

Some of the challenges we've encountered include getting the Xamarin functionality to closely match what was talked about in the team's meeting with our external mentor Dr Julien Thomas and what was demonstrated in the mock up for the Sprint #2 submission.

Also, integrating with the FHIR server has been challenging. We've been unable to get the FHIR server in the Georgia Tech Azure account working for project 4. In order to solve this issue, we set up a FHIR server in Daniel's Azure account for project4. Because it is quite cumbersome and expensive to do this, it is infeasible to stand up a FHIR server for this project and let it sit here for a month while we do this project. It would cost 300$. For this reason we investigated the feasibility to utilize search for patient data on the SmartHealthIT website. However it did not seem feasible to utilize a search capability without the backend integration. We spent several hours trying to get the Node JS application to work for search but were not able to.

We investigated the AWS, Azure, and GCP web app and mobile app solutions (SAAS, PAAS, IAAS). There is no solution offered by any of them to host our project for a couple of months free of charge.

We have also encountered the challenge of finding a good time for everyone on the team to meet with our mentors. Another challenge that we had was miscommunication / misunderstanding regarding the requirement to integrate with a real FHIR server opposed to using the JSON files of FHIR data this resulted in unneeded work that will be corrected in coming sprints.

3 OUR PLANS MOVING FORWARD

Moving forward, we will continue meeting with our internal mentor Abhishek Khowala and our external mentor Dr Julien Thomas to make sure that we are on the right track. We plan to continue investigating various web and mobile application architectures including Xamarin and others to generate a UI that provides an interface matching what the team's external mentor is requesting. Once we are sure of the platform - whether it is web or Xamarin - then we will implement the application flow according to the wireframe mockup. Another thing that we will do is make an integration with a FHIR server from a backend server either with Node JS or Java.