Global HIV Epidemic Control Decision Support – Final Submission

Term: Spring 2020

Team 30

Project #2

Section I: Team Details

Team Members: Timothy Kohrumel, Sergiy Palguyev, Manbir Randhawa, Mitchell Tufford

TA Mentor: Abhishek Khowala

Industry Advisor: CDC Team - Mayer Antoine, James M. Kariuki, Eric-Jan Manders, Lisa Muri, Sridevi Wilmore

Quick Description of Application: The application is a FHIR based technology, created to support HIV retention in care across the globe. The application must map a JSON/XML file with HIV specific data elements to FHIR resources and present the information within a SMART on FHIR mobile application with offline capabilities. The application also utilizes an available microservice to convert the FHIR file for consumption by an open source EMR system in a limited resource setting. Further, the FHIR data will inform a SMART on FHIR public health dashboard for epidemic control within a health information exchange (HIE) environment.

Team Member Roles & Responsibilities

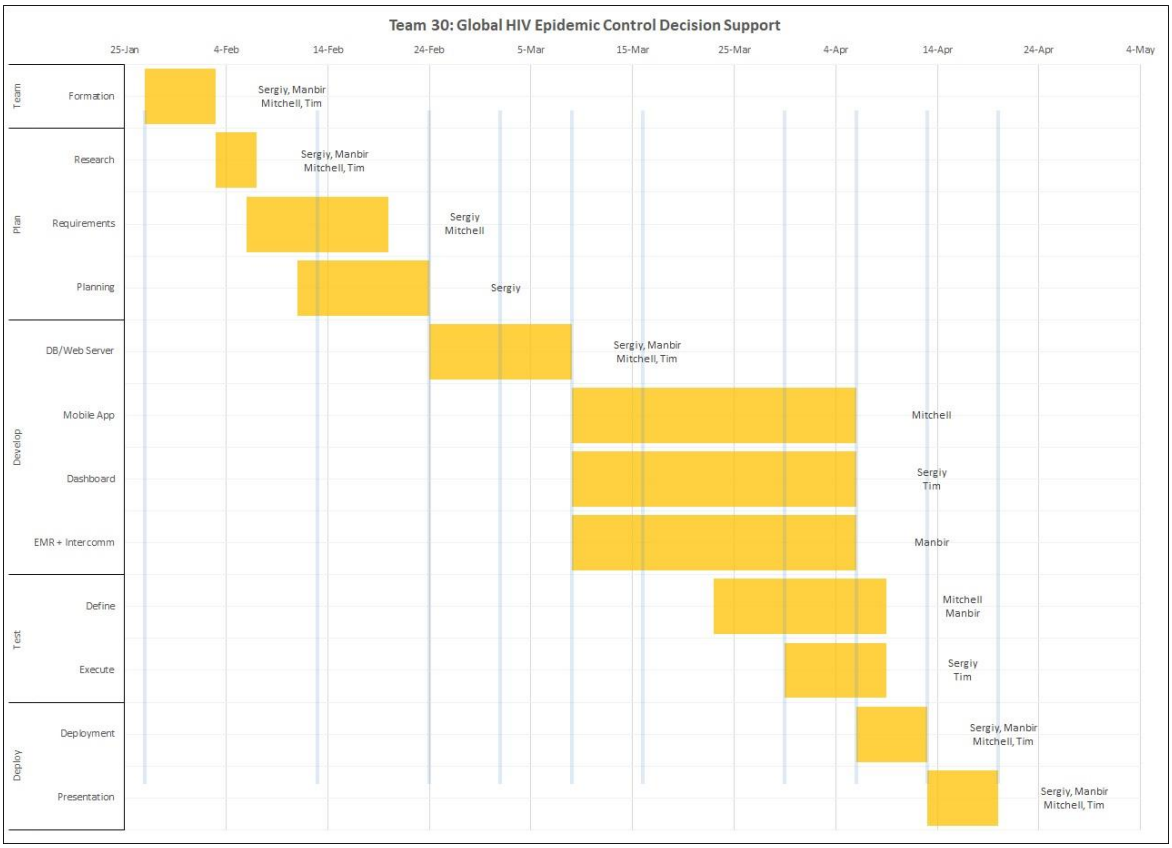
Sergiy Palguyev – Project Manager / Developer

Timothy Kohrumel – Quality Assurance / Developer

Manbir Randhawa – Developer

Mitchell Tufford - Developer

Final Gantt Chart



Section II – Application

Github Repository: All of your code must be in this repository.

Final Git Commit: `d74502ad55f5752a023e387eb6385a5947dacd5d` (commit URL)

Github Link: https://github.gatech.edu/gt-cs6440-hit-spring2020/Global-HIV-Epidemic-Cntrl-DS

Branch: web (branch URL)

Application Details

App Name: Global HIV Epidemic Control Decision Support

App URL: http://apps.hdap.gatech.edu/ghivt30frontend/

App Description: The application is a FHIR based technology, created to support HIV retention in care across the globe. The application must map a JSON/XML file with HIV specific data elements to FHIR resources and present the information within a SMART on FHIR mobile application with offline capabilities. The application also utilizes an available microservice to convert the FHIR file for consumption by an open source EMR system in a limited resource setting. Further, the FHIR data will inform a SMART on FHIR public health dashboard for epidemic control within a health.

Section III – Project Presentation

Presentation Requirements: No greater than 10 mins

- Project Goals & Requirements
- Team Roles & Contributions
- Research based on Industry Problem
- Research based on Gaps in Domain
- Research – End User Interviews (or something similar)
- Demonstration of Application which includes running the application and reviewing its key features.
- Project Status & Gantt Chart
- Discussion of Future Plans and Opportunities

Link to Presentation Video: (Final Presentation)

Note: Convert Slides to PDF and Merge with this single submission. You could add the contents of this deliverable to the final slide deck and convert the whole thing to a PDF to submit. Just make sure all links are clickable and do not include the submission information in the video presentation.

Section IV – Project Documentation

Create a directory in your repo called "Final Delivery." Within this directory provide the following:

- Final Gantt Chart
- Application Manual
- Special Instructions – containing instructions ["navigate to this URL…type in the following…click on this...etc."] for the instructing team to follow in order to successfully deploy and run your application (in the event it is necessary, trust us it happens every semester). Definitely include any special build or launch instructions.
- Research Directory – containing research material.
- Documentation Directory – containing Use Case Model, Design Doc, Project Plan, Test Plan
- All start up files (ie. docker-compose.yml, .drone.yml, and so on…)

Provide direct links to the following:

Final Gantt Chart: Gantt Chart

Application Manual: Application Manual

Special Instructions: Special Instructions

Research Directory: Research Directory

Documentation Directory: Documentation Directory

Project Plan: Project Plan

Use Case Model: N/A

Design Document: Design Document

Test Plan: N/A

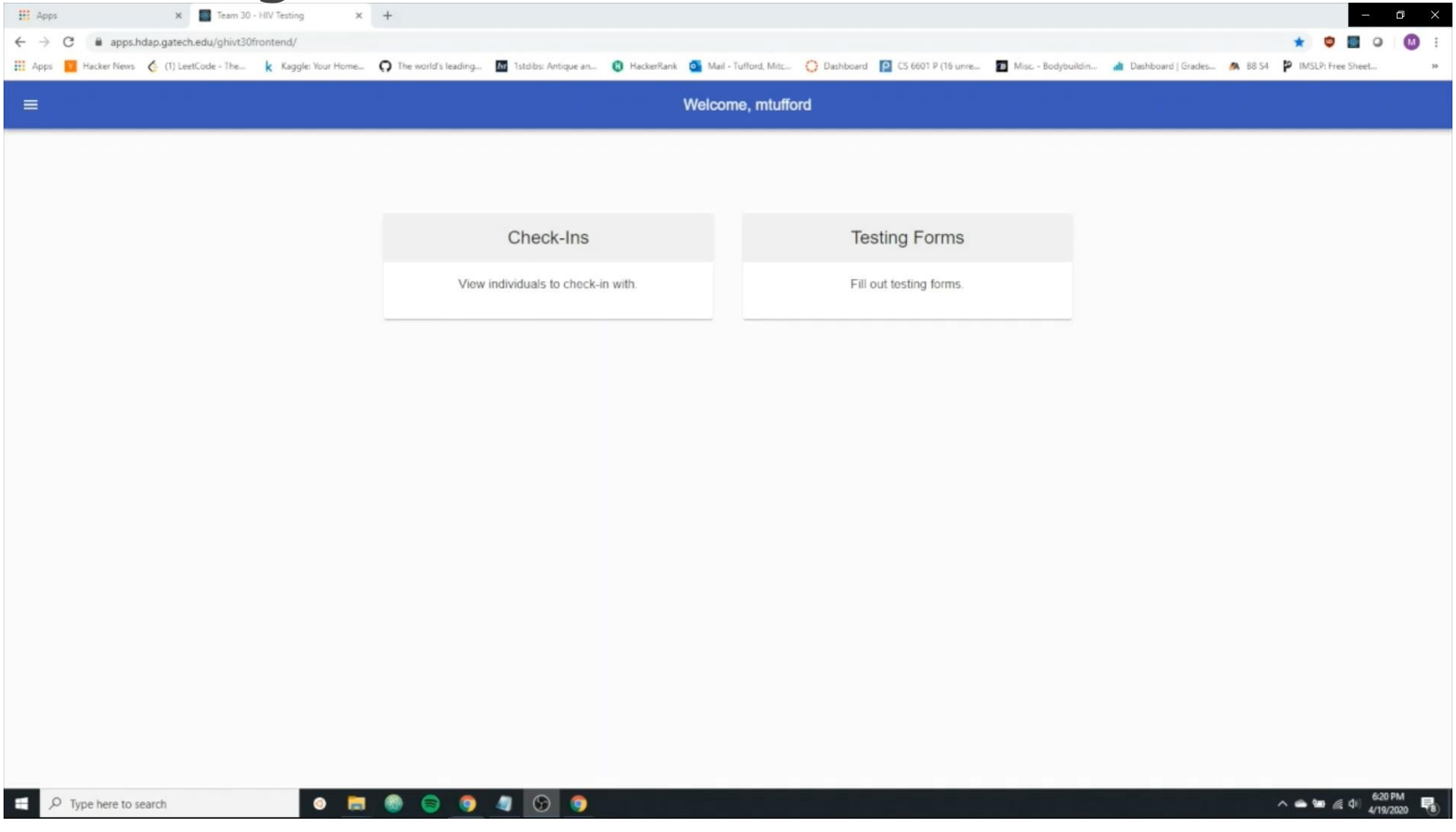
All of the documentation that you submit with your final project should be treated as an official document – this includes the manual. Therefore, any manual that is not carefully structured or clearly written will result in significant point loss. Additionally, your Team Name, Team Members, Project Name and GitHub link should be included in this file. It shall be called "Manual – <Team Name>.pdf." Similar names for the other documents.

Team 30: Global HIV Epidemic Control Decision Support

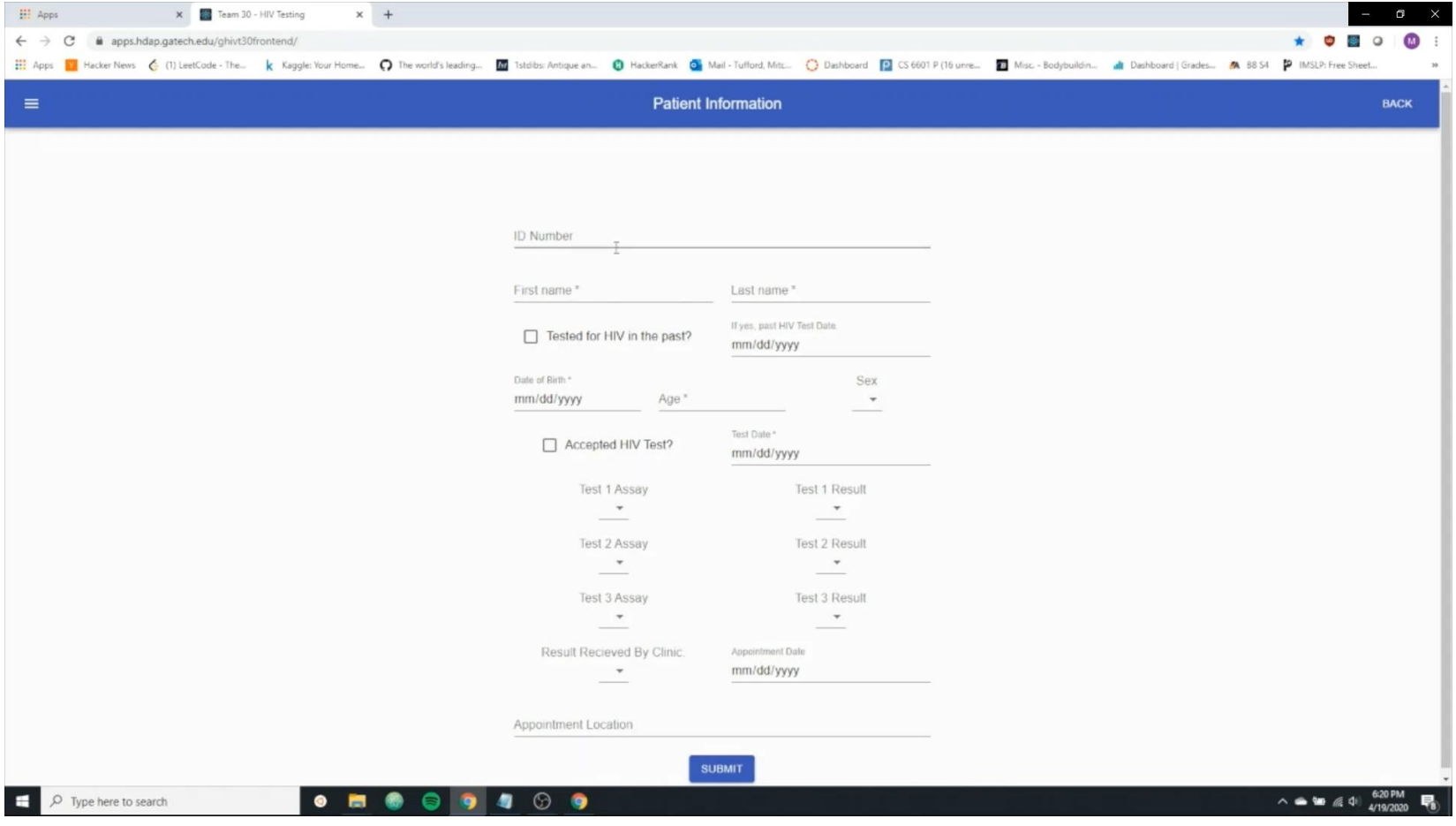
Team:
Sergiy Palguyev
Timothy Kohrumel
Mitchell Tufford
Manbir Randhawa

Mentors:
Abhishek Khowala
Sridevi Wilmore
Lisa Murie
James Kariuki

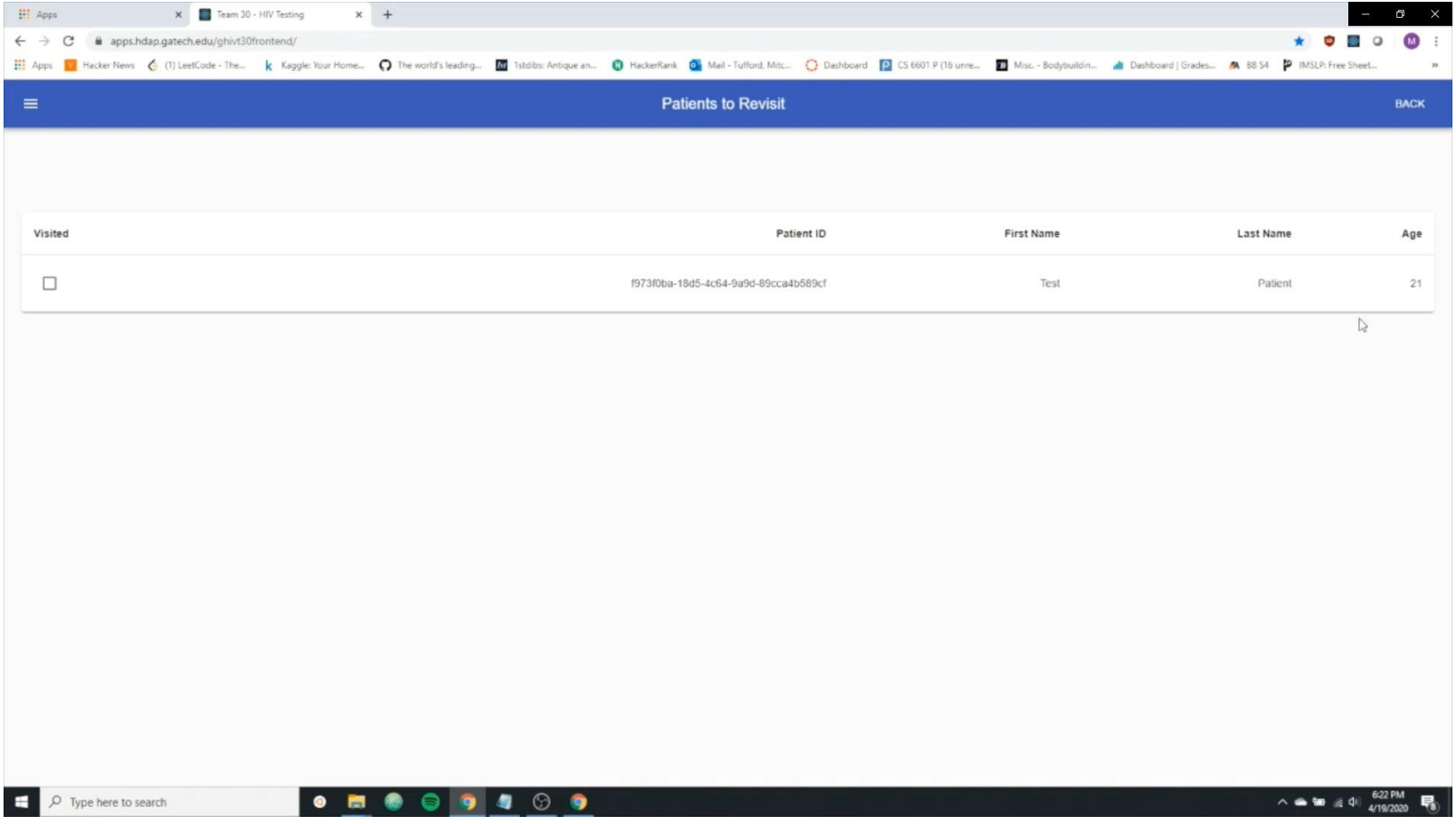
Main Page


Apps
Team 30 - HIV Testing
apps.hdap.gatech.edu/ghivt30frontend/
Welcome, mtufford
Check-Ins
View individuals to check-in with.
Testing Forms
Fill out testing forms.
Type here to search
6:20 PM
4/19/2020

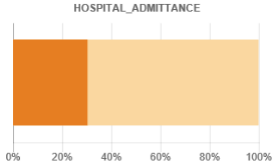
Patient Information

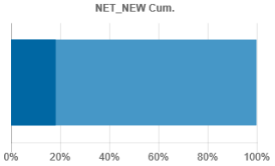


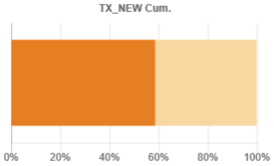
Patients to Revisit

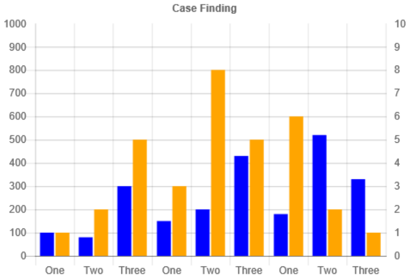


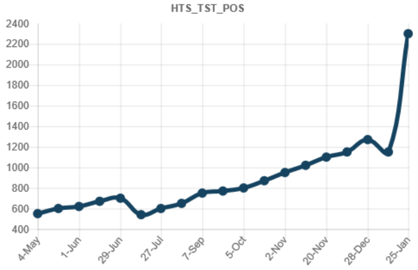
Dashboard

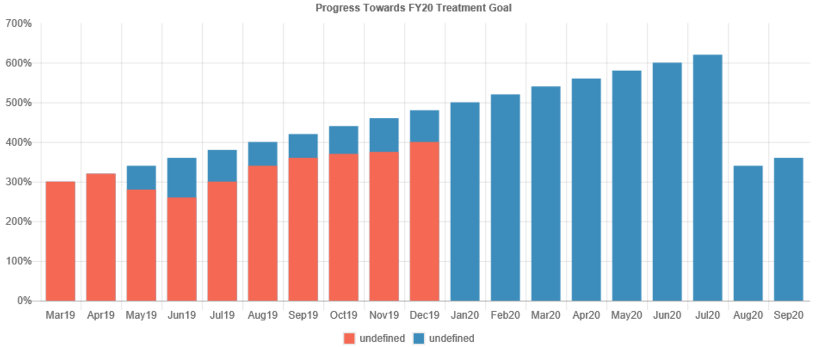


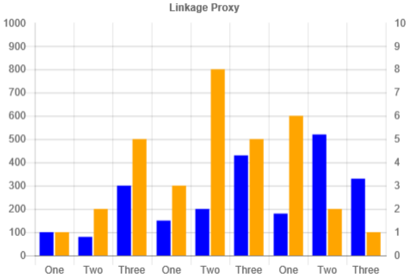


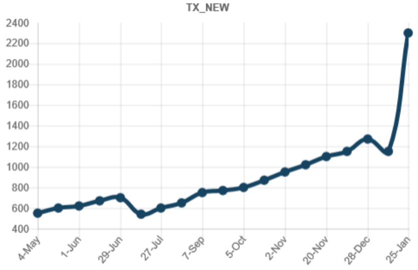




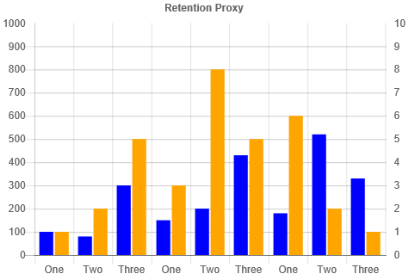


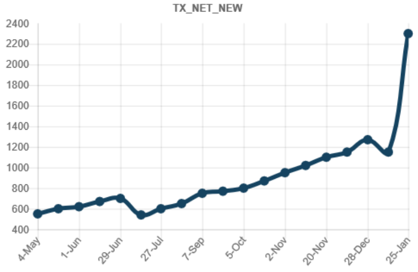




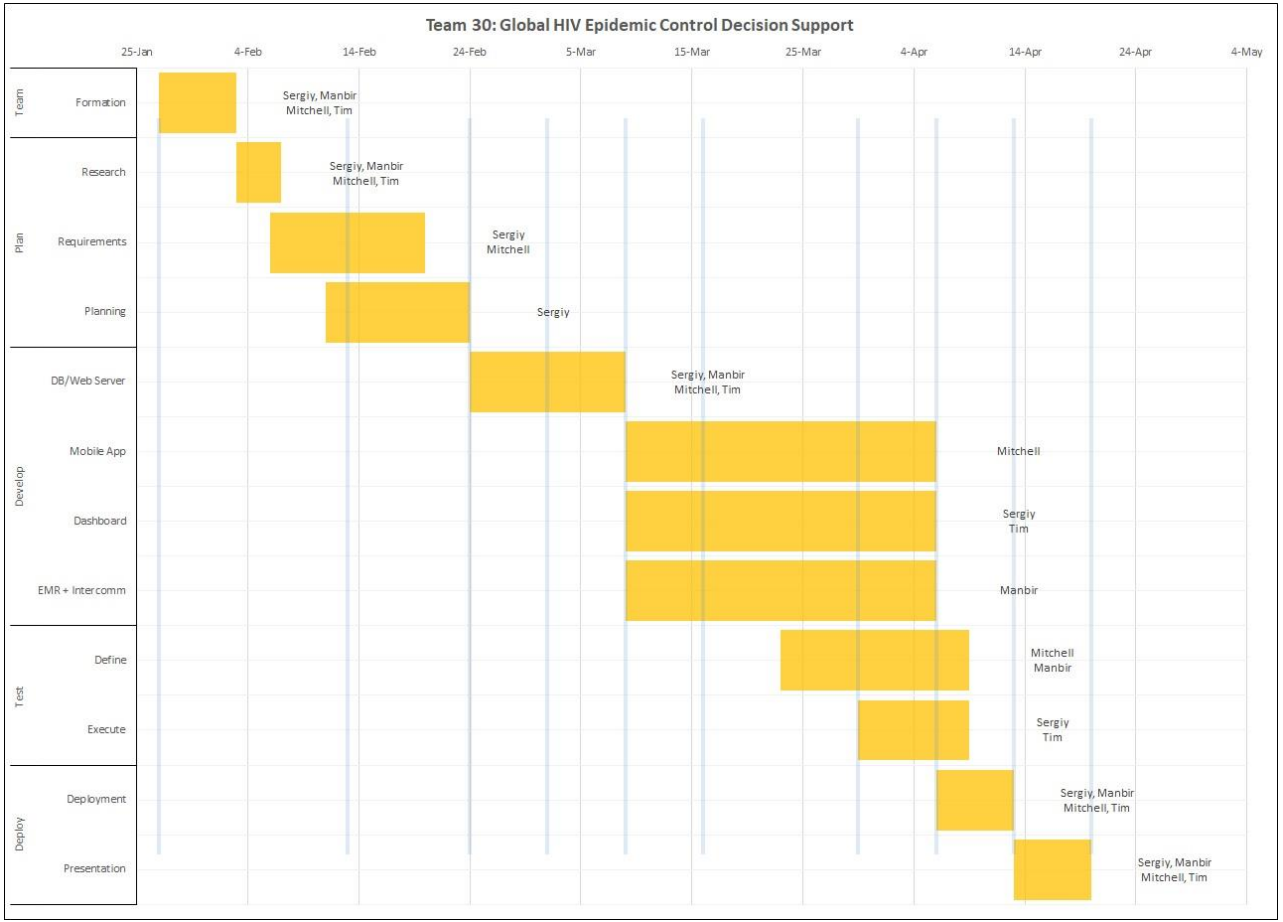


TX_CURR		TX_NET_NEW Cum.			HTS_TST_POS			TX_NEW Cum.			Retention Proxy	
FY19Q2	Current	Result	Targ	Yiel	Result	Targ	Yiel	Result	Targ	Link	Loss/IG	Ret
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%
110,878	123,880	8,892	19%	8.8%	8,892	19%	8.8%	8,892	19%	119%	4,480	104%

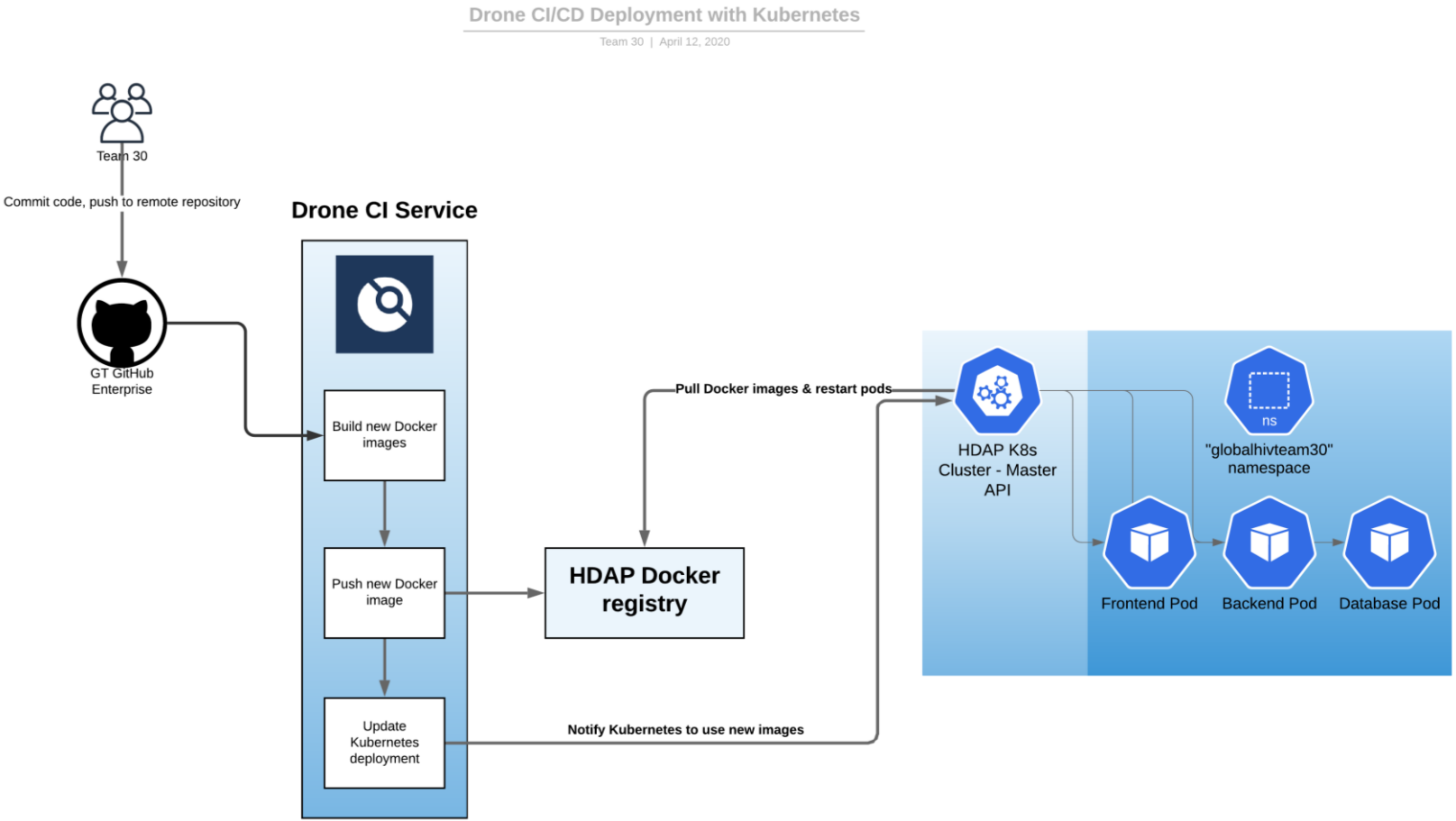




Gantt Chart


Team 30: Global HIV Epidemic Control Decision Support
25-Jan
4-Feb
14-Feb
24-Feb
5-Mar
15-Mar
25-Mar
4-Apr
14-Apr
24-Apr
4-May
Team
Formation
Sergiy, Manbir Mitchell, Tim
Plan
Research
Sergiy, Manbir Mitchell, Tim
Requirements
Sergiy Mitchell
Planning
Sergiy
Develop
DB/Web Server
Sergiy, Manbir Mitchell, Tim
Mobile App
Mitchell
Dashboard
Sergiy Tim
EMR + Intercomm
Manbir
Test
Define
Mitchell Manbir
Execute
Sergiy Tim
Deploy
Deployment
Sergiy, Manbir Mitchell, Tim
Presentation
Sergiy, Manbir Mitchell, Tim

Deployment Pipeline



Further Research

1. Devasahay, S. R., Karpagam, S., & Ma, N. L. (2017, April 17). **Predicting appointment misses in hospitals using data analytics.** Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5427184/
2. Devlin, H. (2019, April 12). **Hospital develops AI to identify patients likely to skip appointments.** Retrieved from https://www.theguardian.com/society/2019/apr/12/hospital-develops-ai-to-identify-patients-likely-to-skip-appointments
3. Nelson, A., Herron, D., Rees, G., & Nachev, P. (2019, April 12). **Predicting scheduled hospital attendance with artificial intelligence.** Retrieved from https://www.nature.com/articles/s41746-019-0103-3
4. Qu, X., & Rardin, R. L. (n.d.). **A Statistical Model for the Prediction of Patient Non-Attendance in a Primary Care Clinic.** Retrieved from https://docs.lib.purdue.edu/rche_rp/10/

Front-End Limitations

- Community workers may be without network access for up to 14 days
- Webkit, Apple's Browser framework, announced a 7-day limit for storing data in the browser cache
- This renders the mobile application inoperable on Apple devices after 7 days without network access
- Proposal: Port frontend app to React Native (https://reactnative.dev/) in the future to work around this limitation.

WebKit

https://webkit.org/blog/10218/full-third-party-cookie-blocking-and-more/