Project Plan

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HealthQ

Team 2

Benny Villegas, Eddie Matos, Stuart Tresslar, Zikomo Bullock,

Brian Deguzis, Austin Harris

Prepared for: Dr. Reza Parizi & CDC

Table of Contents

1.   INTRODUCTION

The U.S. Centers for Disease Control and Prevention (CDC) has recognized that a need exists for a free, fast-to-learn, easy-to-use software solution that is designed around epidemiologists and their public health initiatives. Team 2 rises to the challenge with an application using Google's SDK and it's virtual voice intelligence, Google Assistant. The purpose of this project is to improve the quality of research the CDC is conducting while alleviating the hardships of researchers on the field. Through discovery, design, development, and finally quality deployment the team will spend the next 12 weeks producing a working prototype. Our goal for our product is to help the CDC in their efforts to prevent disease, injury, and disability, promote health and well-being, and prepare for and respond to disasters. We will study the current methodologies the CDC uses everyday and improve upon them.

2.   PROJECT OVERVIEW

2.1   Scope

2.1.1   Identification
This document is the Project Plan version 1 for Health Q. This is a live document. In other words, we plan to consistently add updates to this document as information and updates are made available and understood.

2.1.2   System Overview
The purpose of the software is to analyze data and draw conclusions based on the collected data. The system that will be used is Google's virtual assistant and physical hardware like Google Home. Google Home was released in the United States on November 4, 2016.   Google Home allows users to speak voice commands to control interaction with them. We will integrate our software to work with the Google Home hardware and Google compatible devices. The project sponsor is Dr. Rezai Parizi, and he will be our point of contact for any questions regarding the project.

2.1.3   Document Overview
The purpose of this document is to define the project in more detail. Identifying additional objects, fine-tuning requirements, and producing deliverables, success criteria, assumptions, and risks. We also identify the work

general tasks that must be done and how we will accomplish it. We will use this document to manage change, risk, and ensure quality. We will resort to this Project Plan once the project development gets started.This project plan will help our team working on this project keep track of progress, stay within scope, and communicate with our stakeholders.

2.2 Background, Objectives, and Scope

The objective of this project is to be able to build an open source artificial intelligence component that summarizes a given data set on demand and performs the relevant analyses to draw conclusions based on collected data. The user interactions will be conversational and allow the user to ask pointed questions, and follow up questions, to get deep insights into users questions. The user interactions will be facilitated by the Google Assistant voice service and Google Home platform.

2.3 Operational Policies and Constraints

Our team will be conscious of the health and research industry's privacy policies maintaining the security and confidentiality of personal and research records. For good measure, we will follow HIPAA, CIPSEA, GINA guidelines. The three goals of information security, including electronic information security, are confidentiality, integrity, and availability. We will attempt to meet these goals defending information from unauthorized access, use, disclosure, disruption, modification, inspection, recording or destruction. In terms of operational constraints, as students, we are limited in time and funds. Fortunately, most of Google's services are free and open sourced except for their Cloud platform.

2.4 Users or Involved Personnel

Involved Personnel	Contact Information	Role
Dr. Reza Parizi	rparizi1@kennesaw.edu	Project Sponsor
Benny Villegas	villegas.benny@gmail.com	Project Team Leader, Software Programmer
Eddie Matos	ematos@students.kennesaw.edu	Software Design and QA Testing Engineer
Stuart Tresslar	stressla@students.kennesaw.edu	Requirements Engineer, QA Testing Engineer
Zikomo Bullock	zbullock@students.kennesaw.edu	Software Programmer, Software Design
Brian Deguzis	bdeguzis@students.kennesaw.edu	Software Design, QA Testing Engineer
Austin Harris	austin.lavaughn@gmail.com	Software Programmer, Requirements Engineer

3.   DEVELOPMENT BACKGROUND/APPROACH

The development activity will be divided into five phases and take roughly 16 weeks to complete. The team will first gather information to better understand the project. The team will then research the topics related to the project to help get a better understanding about hardware and development environments. The team will then implement and test the software for bugs. The hardware used will be Google Home. A couple of development environments we will use are Dialogflow and Digital Ocean for external display of results. The team will consist of six members.

3.1   High Level Estimates

Phase	Phase Name	Description	Hours Per Week For Whole Group	Est. Time Allocation
Phase 1	Introduction	Gather information and understand project.	50	1-2 week
Phase 2	Research/Design	Research project topic and gather information to use for the project. Design software for product.	50	3-4 week(s)
Phase 3	Implementation/ Development	Take all the research gathered and implement	50	4-5 week(s) (Date TBA)
Phase 4	Testing and Debugging	Test and debug all parts of the software.	50	3-4 week(s) (Date TBA)
Phase 5	Integration and deployment	Integrate all parts of the software and deploy.	50	1 week (Date TBA)

3.2   Key Contacts and Stakeholders

Contact/Stakeholders	Contact E-Mail	Contact Phone Number	Role

Dr. Reza Parizi	rparizi1@kennesaw.edu	470-578-2118	Be a point of contact for any question the team might have.
CDC(Center for Disease Control)	N/A	800-232-4636	Provide data samples for use on project.
Benny Villegas	villegas.benny@gmail.com	770-344-9080	Point of contact for team.

4.   FEATURES, PRIMARY DELIVERABLES, AND EXTERNAL COMMITMENTS

4.1   Feature List

- Compatible across all major smart devices such as phones (Android, iOS), tablets (Android, iOS, Windows), and Smart Home devices (Google Home, Google Mini, and Google Max).
- Open Sourced with proper licenses
- Compatible with Google and approved for Play Store.
- User interaction will be facilitated by the Google Assistant voice service
- Will be able to import and export data in a predetermined format
- Will be able to read, write and execute actions based on user request and data given
- Provide a responsive GUI within devices that have smart screens
- Voice activation
- We will add more features as soon as we learn more about what we're comfortable with promising

4.2   Customer Deliverables

Deliverable	Tentative Details (dates and times are subject to change)
Project Plan	February 9th, 2018
SRS	February 21th, 2018
Design Document	February 28th, 2018
Test Documentation	March 3rd, 2018
Mid-term Demo Presentation	March 5th, 2018 - 6:50-7:05PM
User Documentation	April 25th, 2018
Code/ Executable	April 30th, 2018

5. PROJECT SCHEDULE

5.1 Major Project Milestones

Date (YYYY-MM-DD)	Milestone/ Event	Entry Deliverable & Criteria	Exit / Notes
2018-02-09	Project Plan Baselined	Inspection completed	In progress

5.2 Project Status Tracking

Through Agile development method, we delegate tasks through Discord and assign inter-group member work checks. We conduct weekly reports to be submitted every Friday detailing our thoughts, milestones, plans, and questions for you client. If an issue arises, we will know because our team's work is only as strong as its weakest development.

6. PROJECT WORK AND PRODUCT ESTIMATES

Inputs to estimation include:
1) Deliverables listed in Section 4
2) Major Milestones listed in Section 5
3) Tasks and/or sub-tasks identified in the detailed project Schedule.

6.1 Estimate Summary

*Effort measured in total person hours of the team
The tables below summarize the product size and effort estimates:

Project	Estimate Attributes		
	Size		
WBS areas	Unit of Size	Size	Effort
Total Requirements Effort (includes feature-related **and** "other" (non-feature) Requirements work)			200
Feature Related Requirements Size and Effort Totals	PAGES	55	200
Total Development Effort (includes feature-related **and** "other" (non-feature) Development work)			450
Feature Related Development Coding Size and Effort Totals	LOC	2,000	200
Feature Related Development Documentation Size and Effort	PAGES	70	250
Total Testing Effort (includes feature-related **and** "other" (non-feature) Testing work)			150
Feature Related Testing Size and Effort Totals	TEST CASES	120	150

7.   PROJECT RESOURCE REQUIREMENTS

7.1   Staffing/ Skill Requirements

Role: Team Leader
Critical Skills
> **Task Delegation, Domain Knowledge, Software Engineering Principles Experience**
Skill Gaps: Domain Knowledge, AI Programming Knowledge

Role: Programming Engineers
Critical Skills
> **Programming Knowledge, Agile Experience**
Skill Gaps: Domain Knowledge, AI Programming Knowledge

Role: Testing Engineers
Critical Skills
> **Debugging Skills, Programming Knowledge**
Skill Gaps: Domain Knowledge, AI Programming Knowledge

7.2   Plan to Fill Skill Gaps

- Skill Gap Plan 1: Domain Knowledge - Team members will perform research to better understand the field of Epidemiology. Research shall include looking up useful statistics on various diseases and the correlation between them, standard procedure when identifying an epidemic, and the process used by epidemiologists to parse through info.
- Skill Gap Plan 2: AI Programming Knowledge - As the project is reliant on Google Dialogflow according to Section 8.2, team member lacking in this field of knowledge will research different applications for Google Dialogflow, pre-existing modules to base the project on, and documents provided by Google for developing on the Google Dialogflow platform.

8.   DEPENDENCIES AND CONSTRAINTS

8.1   Constraints

- Constraint 1: Deadlines - The project needs to be completed by April 30th and the project itself needs to be in a presentable state by March 5th.
- Constraint 2: Individual Schedules - Team members have busy schedules outside of project-time that limit the amount of work that can be accomplished by each team member.
- Constraint 3: Domain Knowledge - Team members are not fully knowledgeable in Epidemiology or developing using Google Dialogflow. Plans to remedy this are listed in Section 7.2.

8.2   Dependencies

- Dependency 1: Contact - The team needs to be able to contact stakeholders involved to ensure that the project meets their wants and needs.
- Dependency 2: Dialogflow - The project relies on the Google Dialogflow to interface with Google Home and Google Assistant.

- Dependency 3: Data - The product requires a sizable amount of epidemiological data to parse through in order to provide reliable feedback and results.

9.   RISK MANAGEMENT

9.1   Risk Management Strategy

Whenever a potential risk is found, the team member that has found it must inform the rest of the team. Once everyone is aware of the risk, potential or current, the team should refer to Section 9.2.1 for mitigation strategies. If a risk is found that is not listed in Section 9.2, the risk should be added to the table and the team should discuss possible mitigation strategies to either deal with the current risk or to help prevent the risk from occuring again in the future. Further, this location of a risk should be documented in the weekly report with information detailing how the risk was addressed and any potential consequences the risk occurrence will have on future plans.

9.2   Risk List

Risk number	Risk Priority (H, M, L)	Likelihood of Occurrence	Risk name: brief description
1	M	High	Lack of Domain Knowledge: Inexperience with Epidemiology
2	L	Medium	Lack of AI Programming Knowledge: Inexperience with Google Dialogflow
3	H	Low	Unplanned Schedule Issues: Outside events that impact a team member's schedule
4	H	Medium	Schedule Overrun: Deadlines not being met
5	L	Medium	Inadequate Communication: When miscommunication occurs between team members

9.2.1   Risk Details:

Risk 1: Lack of Domain Knowledge - This risk can arise during any step of the product creation. The earlier this risk can be addressed, the better, as an error in design will affect all subsequent parts of the project. This risk can be mitigated by allowing the team to do further research into Epidemiology and into how to best use that knowledge in making the product. Further plans can be found in Section 7.2.

Risk 2: Lack of AI Programming Knowledge - This risk can arise mainly during the implementation phase. This risk occurs when a team member has been assigned a task that directly relates to interfacing with Google Dialogflow. This lack of knowledge can cause the implementation to be incorrect. This risk can be avoided through extensive research into Google Dialogflow and how to implement modules into it. Further research topics can be found in Section 7.2.

Risk 3: Unplanned Schedule Issues - This risk can arise during any step of the product creation. This risk occurs when a team member has an issue arise in their schedule that will directly impact their contribution to the project. This risk can be mitigated by having the team try to get their tasks completed earlier or having the affected task re-assigned to another team member.

Risk 4: Schedule Overrun - This risk can arise during any step of the creation process. This risk occurs when a deadline has not been met by the team. Smaller deadlines for smaller pieces of the project can help keep track of

the different team members' progress to detect a scheduling problem earlier so it can be addressed. If possible, tasks could be separated to allow for multiple team members to work on the same task to ensure it meets the deadline.

Risk 5: Inadequate Communication - This risk can arise during any step of the creation process. This risk occurs when a team member miscommunicates information to another team member. This can be from the method of communication or a misunderstanding from one of the involved team members. Once detected, the team should come to a consensus on the information miscommunicated to ensure that the entire team correctly understands the information.

10.   PROJECT CONFIGURATION AND DATA MANAGEMENT

10.1   Configuration Management

Tool	Description
GitHub	Used for version control and source code management.
Discord	VoIP application for communication between Scrum team members, file sharing, screen sharing, and video chat for use during team meetings.
Google Drive	Google's file storage and synchronization service. Utilized for sharing and managing software project documentation.

11.   PROJECT QUALITY AND MEASUREMENT PLANS

We aim for accuracy, verification, and validity in all our application's functions. This means we will feed our product sample data and conduct dynamic testing, and mitigate worst case scenarios. We hope to conduct external user and case testing with sample users.

12.   PROJECT PROCESS

12.1   Software Life Cycle Model

This software will be developed using the Scrum Agile process model, utilizing 2 week sprints. Our Scrum structure will consist of five members, including the Scrum Master who will be in direct contact with our key stakeholders and will manage and provide guidance to the remaining team members. Our sprints will consist of iterations of planning, analysis, design, coding, unit testing, and acceptance testing. After each sprint the respective deliverables will be compiled by the Scrum Team and handed off to the Scrum Master for acceptance testing by the Product Owner.

12.2   Development Tools

Development	Description

Tool	
Dialogflow	A development suite for building voice/conversational interfaces for Google Assistant.
Digital Ocean	Programming environment being used for the server-side development of the product.
FTP Clients	Necessary for access into the server repository, including read, write, and execution rights.
Actions On Google	Program run via Google Assistant for developers of "Actions"
Google Cloud Console	Google's online development environment for creating applications for deployment on the Google Cloud Platform.
Brackets/Sublime	Text Editor
Google Home/Mini/Max	Google Assistant compatible hardware with which we will be developing, deploying, and testing our software.

13.   REFERENCED DOCUMENTS

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14.   GLOSSARY

Term	Definition
VoIP	Voice over Internet Protocol - methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol networks, such as the Internet.

Actions	Google Assistants actionable library for programming
SDK	Software Development Kit
UI	User Interface
JSON	JavaScript Object Notation
SSML	Speech Synthesis Markup Language
API	Application Programming Interface
HIPAA	Health Insurance Portability and Accountability Act
GINA	Genetic Information Nondiscrimination Act
CIPSEA	Confidential Information Protection and Statistical Efficiency Act

15.   CHANGE RECORD

Version	Updates	Date
1.0	Baseline	09-Feb-2018