

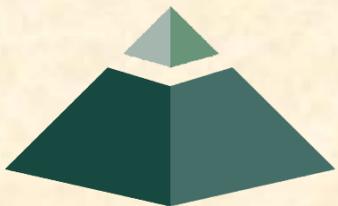
01/18: Team Status Reports

The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering
Michigan State University

Spring 2018



*From Students...
...to Professionals*

Team Accenture

Status Report

[1 of 4]

AMAP: Automated Malware Analysis Platform

- Project Overview
 - Having 268 million malware samples and growing at 300k per day.
 - Categorize based on types, detection signatures byte patterns etc.
 - Storing relevant information of samples in database.
 - Results could be more samples of IP addresses and domains targeted.
- Project Plan Document
 - Getting forward on technical specifications with client this week.
 - Have a general outline.
 - Most of the functional specifications just figured out.
 - Overall progress: ~10%.



Team Accenture

Status Report

[2 of 4]

AMAP: Automated Malware Analysis Platform

- Server Systems / Software
 - Windows 10 VM
 - Ubuntu VM (Waiting to receive from client)
 - Amazon AWS (Waiting to receive from client)
- Development Systems / Software
 - iDefence IntelGraph (API access)
 - iDefence Malware repository.
 - Database (MongoDB, MySQL)



Team Accenture

Status Report

[3 of 4]

AMAP: Automated Malware Analysis Platform

- Client Contact
 - Contacted with client last Thursday (in person).
 - Daily communication on Slack.
- Team Meetings
 - Had 4 team meetings
 - Plan to meet twice a week.
- Team Organization
 - Client contact Andrew.
 - Rotate team lead.
 - Every team member is considered a developer.



Team Accenture

Status Report

[4 of 4]

AMAP: Automated Malware Analysis Platform

Risks

- Risk 1
 - Can we actually identify malware?
 - Looking up how malware stored in the different file types.
- Risk 2
 - Can we actually find how one malware sample connected to another?
 - Learning how the iDefence tools can help detect patterns and malware samples.
- Risk 3
 - Can we properly use iDefence tools?
 - Using documentation from client.
- Risk 4
 - How to process in multi-threaded environment?
 - Looking tutorials on multi-thread programs.



Team Amazon

Status Report

[1 of 4]

AMPED

- Project Overview
 - Loyal, well-educated listeners
 - Episode sponsors provide the main source of revenue
 - Primary goal: recommend relevant amazon products based on podcast audio content
 - Content producers will receive commission on recommended item revenue
 - Machine learning model and robust API are top priority
 - Front end and UI are secondary
- Project Plan Document
 - Functional specifications well defined by client
 - Primary features identified
 - System components identified
 - System architecture diagram outlined
 - Risks/mitigation identified
 - \approx 40% Complete



Team Amazon

Status Report

[2 of 4]

AMPED

- Server Systems / Software
 - AWS EC2, RDS, Elasticache, S3, Beanstalk (Infrastructure)
 - AWS Lambda, API Gateway, Route 53 (Front-end facility)
 - AWS Transcribe, Comprehend, SQS, SNS (Middle-ware)
- Development Systems / Software
 - Ubuntu Server, GitLab.MSU, Google Drive, Slack, Trello
 - JavaScript, Python, AWS Services and APIs
 - Web application first, with portability in mind



Team Amazon

Status Report

[3 of 4]

AMPED

- Client Contact
 - Remote conference call, 9:00 AM every Friday
 - In-person meetings are planned
- Team Meetings
 - Three set meeting times per week
 - 1 Hour meetings
- Team Organization
 - Front-end focused workgroup
 - Back-end focused, and research workgroup



Team Amazon

Status Report

[4 of 4]

AMPED

Risks

- Risk 1
 - Recommending an item which has been negatively described
 - Machine learning and sentiment analysis (feature of AWS Comprehend)
- Risk 2
 - Controversial or inappropriate subjects
 - Blacklist specific terms, utilize 'IsAdultProduct' attribute included in API
- Risk 3
 - Portability, deployment, scalability
 - Separation between back-end (APIs) and front-end (UIs)
- Risk 4
 - Statistics and revenue reports for podcasters (stretch goal)
 - Utilize Amazon affiliate program for purchase tracking



Team Aptiv

Status Report

[1 of 4]

Cyber Security Management System

- Project Overview
 - Interdepartmental communications/information sharing suite
 - Information sharing between developer and security teams
 - Automation of the entire cybersecurity process
 - Assessment request
 - Threat Analysis & Risk Assessment (TARA)
 - Vulnerability/Penetration Assessment
 - Vulnerability Remediation
 - Final Report
- Project Plan Document
 - Not started
 - Client changed the full project proposal several times



Team Aptiv

Status Report

[2 of 4]

Cyber Security Management System

- Server Systems / Software
 - WebApp
 - Javascript
 - HTML,CSS
 - PHP
 - Database
 - MySQL
 - Vmware ESXi – Hypervisor (VM Platform)
- Development Systems / Software
 - WebStorm/PHPStorm
 - Git repo



Team Aptiv

Status Report

[3 of 4]

Cyber Security Management System

- Client Contact
 - Weekly Conference Calls (x2)
 - ❖ Tuesdays 2:00-2:45pm
- Team Meetings (x2)
 - Reviewed client proposal
 - Change project proposal
 - Met with Dr. Enbody/Pranshu Bajpai
 - Weekly Team Meetings
 - ❖ Monday 4:30-6pm
- Team Organization
 - Developing the Cyber Security Management System



Team Aptiv

Status Report

[4 of 4]

Cyber Security Management System

Risks

- Application security
 - Software/Database will hold all of Aptiv's data (schematics, software, vulnerabilities, etc.) for all of their products
 - Project advisors (Pranshu/Enbody) have commercial web app pen-testing experience, and we will be implementing best practice security measures as we develop the system
- Database Implementation
 - Best way to design a database to accommodate fast retrieval, and manage information for user-base with a wide range of specific permissions
 - Focus initial development on strong database design instead of focusing on other things like the UI
- Knowledge of client procedure
 - No knowledge of client complex process from start to finish vulnerability testing
 - Reviewing documentation, close contact with client while constant prototyping
- Scalability issues with users
 - How well the database will handle multiple users doing the same operations
 - Aptiv has 147,000 employees
 - Use a cloud service (Amazon) instead of in-house servers to handle workload



Team Auto-Owners

Status Report

[1 of 4]

IMAGINE: IMAGE Intake Experience

- Project Overview
 - Object recognition and classification of physical environments for insurance purposes
 - Users load 360^o images into web application
 - Web-viewable database for inventory of identified objects
 - Unity VR application to fully experience the environment
- Project Plan Document
 - Have begun rough draft of Project Plan Document
 - Currently reviewing project requirements, calculating risks and mitigation strategies, and designing overall system architecture
 - Confirming overall plan with client on 1/19
 - 20% Complete



Team Auto-Owners

Status Report

[2 of 4]

IMAGINE: IMAGE Intake Experience

- Server Systems / Software
 - Capstone Server with Ubuntu Server – Up but Firewall Issues
 - Apache Web Server with PHP – Up and Configured
 - MariaDB – Up and Configured but potential Firewall Issues
- Development Systems / Software
 - Unity Game Development Studio- Configuring
 - Windows Machine with Oculus Rift and Controllers – Acquiring (Oculus Rift and Controllers have been acquired)
 - OpenCV and TensorFlow - Configuring



Team Auto-Owners

Status Report

[3 of 4]

IMAGINE: IMAGE INTake Experience

- Client Contact
 - Met with client at their headquarters in Lansing, MI on Monday 1/15/2018 from 11:30am to 1:30pm.
 - Plan to have weekly conference calls on Fridays at 11:30am
- Team Meetings
 - Have had three team meetings thus far
 - Official team meetings are planned for Thursday after class
- Team Organization
 - Tasks will be specialized between members
 - 3 groups – Classifier Systems, Virtual Reality, Web Interface



Team Auto-Owners

Status Report

[4 of 4]

IMAGINE: IMAGE Intake Experience

Risks

- Object recognition in spherical images
 - 3D images have distorted pixel densities and will make classifying difficult
 - Normalize 3D images to 2D or include warped images when training our classifier
- Inability to classify an environment
 - Environments should be classified based on types of objects found (i.e. bedroom, office, etc.)
 - Train negative classifiers to drop incompatible environments
- Multiple concurrent users
 - Multiple separate workflows will need to be able to be accessed by all users
 - Manage interactions with a user system using transactions to enforce ACID
- Server Access Limited by MSU Firewall
 - MSU has unknown firewall rules that prevent some outside communications
 - Determine what is prohibited and pipeline traffic through approved channels



Team Dow

Status Report

[1 of 4]

Virtual Reality Simulation for Railcar Loading

- Project Overview
 - Teach How to Load a Railcar Safely
 - Achieved Through First Person Virtual Reality
- Project Plan Document
 - Table of Contents Finished
 - Executive Summary Started
 - Risk Analysis Finished
 - Schedule Drafted
 - 20% Complete



Team Dow

Status Report

[2 of 4]

Virtual Reality Simulation for Railcar Loading

- Server Systems / Software
 - No Servers
- Development Systems / Software
 - Computer with GTX 1060 or better (obtained)
 - HTC Vive Headset (obtained)
 - Unity Game Engine (installed)
 - Maya 3D (installed)
 - Photoshop CS6 (installed)
 - Audacity (installed)



Team Dow

Status Report

[3 of 4]

Virtual Reality Simulation for Railcar Loading

- Client Contact
 - Emailed twice and had conference call
 - Weekly conference calls Friday at 12:30pm
- Team Meetings
 - Weekly meetings on Tuesdays at 4:30pm
 - Weekly meetings with Johnny on Thursdays at 4:40pm
- Team Organization
 - Using GroupMe group chat for instant communication
 - Using Trello for project role/tasks organization



Team Dow

Status Report

[4 of 4]

Virtual Reality Simulation for Railcar Loading

Risks

- Unity Game Engine
 - Description: Understand development with Unity
 - Mitigation: Follow online tutorials through Unity, websites, YouTube, etc.
- Vive VR Development
 - Description: Understand how HTC Vive works with Unity and what works in a VR environment
 - Mitigation: Follow online tutorials, build test scenes for basic VR interaction
- Project Assets
 - Description: Acquiring realistic models and sounds for development
 - Mitigation: Search Unity Asset store and royalty free websites for assets
- Accurate Simulation
 - Description: Accurately replicating scenario of loading railcars
 - Mitigation: Watch/analyze videos of proper railcar loading/filling



Team DRIVEN-4

Status Report

[1 of 4]

2020 Business in a Box

- Project Overview
 - Base on Internet of Things (IoT) architecture
 - Showcase future business environment with 2020 as target
 - Model a connected product utilizing Wi-Fi for connectivity
 - Develop manufacturing processes and artifacts
 - Demonstrate capabilities for collaboration and integration
- Project Plan Document
 - Have not started



Team DRIVEN-4

Status Report

[2 of 4]

2020 Business in a Box

- Server Systems / Software
 - No server needed
- Development Systems / Software
 - CAD – Siemens NX, PTC Creo
 - PLM – Siemens Teamcenter, PTC Windchill
 - IoT Platform – PTC Thingworx, Siemens MindSphere
 - AR/VR – PTC Thingworx Studio
 - Factory Floor Simulation – Siemens Tecnomatrix
 - Waiting on access



Team DRIVEN-4

Status Report

[3 of 4]

2020 Business in a Box

- Client Contact
 - Conference calls scheduled for Fridays at 1pm
 - One so far
 - In-person meeting scheduled for Thursday 11/18
- Team Meetings
 - Two so far
 - Weekly meetings on Wednesdays
- Team Organization
 - Client Contact – Sam Coffey
 - Technical roles not defined at this time



Team DRIVEN-4

Status Report

[4 of 4]

2020 Business in a Box

Risks

- Embedded Software Design Experience
 - No team members have experience with embedded software design
 - Individual research and training from DRIVEN-4
- Product Use Visualization
 - No team members have experience with visualization design
 - View examples provided by DRIVEN-4 and research visualization design fundamentals and samples
- Hardware Familiarization
 - Can't get familiarized with hardware until received
 - Meeting scheduled to receive hardware
- Hardware-Software Interaction
 - Need to determine how to get devices interacting
 - Get training from DRIVEN-4 once devices received



Team GM

Status Report

[1 of 4]

Plato

- Project Overview
 - Artificially Intelligent Dev Bot for Microsoft Teams
 - Create and Manage Virtual Machines via Bot and Web App
 - Manage and Run Test Cases
 - Provide Single Unified Environment for Developers
- Project Plan Document
 - 20% complete
 - Outline done, schedule done
 - Working on database schema, system diagram, architecture
 - Working on functional and design specifications



Team GM

Status Report

[2 of 4]

Plato

- Server Systems / Software
 - Obtained Microsoft Teams Account from GM
 - Setup Microsoft Team for testing
 - SQLServer Standard 2017 getting set up
- Development Systems / Software
 - VMWare and Windows 10 installed on both iMacs
 - Visual Studio, Azure, and Microsoft Teams installed
 - Hello World Bot written with MBF



Team GM

Status Report

[3 of 4]

Plato

- Client Contact
 - Established Weekly meeting (Tuesday 9 - 10AM)
 - Requirement specification meeting tomorrow 1-2PM
 - Have had 2 total client meetings
- Team Meetings
 - First Triage meeting before class at 2:20PM
 - 3 total team meetings
 - Team meetings scheduled for 4:30-5:00PM Tuesday/Thursday – more to come.
- Team Organization
 - Client Contact/Project Manager: Colin Coppersmith
 - Web Application Development: Tao Tao/Colin Coppersmith
 - Backend and Bot Developer: Matthew Eaton/Simeon Goolsby/Alex Lepird



Team GM

Status Report

[4 of 4]

Plato

Risks

- Controlling and managing Virtual Machines programatically
 - Description: No experience with CRUD using a programming language.
 - Mitigation: Use C# backend to communicate with Azure.
- Implementing acceptable language processing to ensure bot can understand commands effectively
 - Description: Thousands of ways to execute each command.
 - Mitigation: Use grammars and NLP to fill in the blanks.
- Integrating Microsoft TFS to automate Test case creation and testing
 - Description: GM uses TFS to test applications, no experience using it.
 - Mitigation: Gather unit tests from GM, try to emulate style.
- Customizing bot interaction based off team/ individual user
 - Description: Need to tailor to the needs of each team/user.
 - Mitigation: Using emails/IDs to determine which user against records.



Team Herman Miller

Status Report

[1 of 4]

AR Adjust App

- Project Overview
 - Native iOS app for customers using Herman Miller adjustable office chairs
 - Augmented Reality detects and identifies model of chair from camera
 - AR technology highlights adjustable parts and shows tooltip descriptions of adjustments for that model
- Project Plan Document
 - Writing the rough draft
 - Overall ~10% complete
 - Basic points on the design, functional and technical specifications
 - Early screen mockups



Team Herman Miller

Status Report

[2 of 4]

AR Adjust App

- Server Systems / Software
 - Windows Server – Setting up currently
 - Git for source control
- Development Systems / Software
 - Unity3d – Up and running
 - Vuforia (for AR) – Testing, awaiting on approval for pro license
 - Xcode – Up and running



Team Herman Miller

Status Report

[3 of 4]

AR Adjust App

- Client Contact
 - Team visited office in Zeeland, Michigan and met with team / toured chair facility
 - Weekly conference meetings scheduled with Herman Miller team members, planning second and final on-sites
- Team Meetings
 - Tuesdays before class
 - Client meetings Wednesday afternoon
- Team Organization
 - Client Contact / UI Developer – Kyle Kinsey
 - AR Developer – Mike Bremiller, Kevin Gaban
 - UI Developer – Jacob Weber, Han Huang



Team Herman Miller

Status Report

[4 of 4]

AR Adjust App

Risks

- Risk 1
 - Integrating Augmented Reality into the app
 - Testing different software solutions (Vuforia, Arkit)
- Risk 2
 - Ability to recognize chair model via camera
 - Obtaining physical chairs and pictures to train models
- Risk 3
 - Learning to develop for iOS devices
 - Developing application with Unity3d in C#, making basic Swift applications
- Risk 4
 - Cross platform app development
 - Using Unity and Vuforia (vs. Apple Arkit), which can create both native Android and iOS apps



Team Meijer

Status Report

[1 of 4]

Personal Shopping Assistant

- Project Overview
 - Simplify shopping experience (at home and in store)
 - Ask app instead of a team member
 - Item locations, availability, coupons, etc.
 - Create bot to answer natural language questions
 - Ensure API is universal, can be consumed for other projects
- Project Plan Document
 - Outline/Table of Contents finished
 - Shared via OneDrive for collaboration
 - 10% Complete



Team Meijer

Status Report

[2 of 4]

Personal Shopping Assistant

- Server Systems / Software
 - Microsoft Azure – have access
 - Meijer Web Services – do not have access yet, pending
 - SQL/Mongo Server(s) – not created/accessible yet
- Development Systems / Software
 - Android Studio – installed and running
 - Xcode – installed and running
 - Version Control – access pending



Team Meijer

Status Report

[3 of 4]

Personal Shopping Assistant

- Client Contact
 - Had 3 Conference Calls
 - Weekly 45 min. call scheduled (2:15-3 Thursdays)
- Team Meetings
 - Tuesdays 2-3
 - Met twice to get iMacs/VMs setup
- Team Organization
 - Corporate Contact – Zach
 - Android/Java – Emerson and Aaron
 - iOS/Swift – Megan and Jake
 - Bot Backend/C# Lead – Zach



Team Meijer

Status Report

[4 of 4]

Personal Shopping Assistant

Risks

- Bot
 - Need to implement a Natural Language bot
 - Zach will be dedicated lead for this section of the project but every team member will research and contribute
- Item location in each store
 - We'll need to determine where the item is in the store at which the customer is shopping.
 - Testing the app at several Meijer locations in the Lansing area to make sure the information is accurate.
- UI
 - Meijer has not settled on an app design (pure chatbot vs menus vs ?) and will require a large variety of screen mocks to make a decision
 - Will create lots of screen mockups and get feedback as often as possible
- Bluebird Integration
 - A stretch goal of this project is to incorporate team member assistance via bluebird devices.
 - Work with Meijer to get a device and communicate with team at Meijer who work with or develop for the devices. May be able to contact the vendor directly.



Team Michigan State University

Status Report

[1 of 4]

Student Engagement App

- Project Overview
 - Expand learning inside and outside of the classroom
 - Create a universal classroom response tool
 - Allow students to use mobile devices to engage
 - Streamline and simplify attendance
- Project Plan Document
 - Outline of document in place
 - Risks have been identified
 - Initial UI mockups have been created
 - Created development process



Team Michigan State University

Status Report

[2 of 4]

Student Engagement App

- Server Systems / Software
 - Set up Amazon Web Services with Flask and Python
 - Explored database and storage options (Dynamo, SQL, etc.)
 - Prototyped entity relationship diagram
- Development Systems / Software
 - Set up Android Development Environment and initial project
 - Set up iOS foundation and initial project
 - Started VUE project for web application



Team Michigan State University

Status Report

[3 of 4]

Student Engagement App

- Client Contact
 - Met in person at MSU, set up reoccurring meetings
 - Gathered initial requirements and resources
- Team Meetings
 - Plan to meet Tuesdays and Fridays to work together
 - Paired programming development
- Team Organization
 - Set up Slack for communication
 - Created Git group, and using Trello for progress tracking



Team Michigan State University

Status Report

[4 of 4]

Student Engagement

Risks

- iBeacon compatibility with Android
 - iBeacon technology was developed by Apple for iOS
 - Research existing Android libraries and create a basic app that can connect
- Create a positive experience for students AND faculty
 - Students and faculty have different priorities in classroom involvement
 - Conduct iterative user testing with both groups throughout development
- Align Amazon Web Services with required technology
 - Technology recommended by Amazon does not fulfill requirements of the app
 - Create a basic lab that utilizes all software
- Data input has to be scalable
 - Interaction from students will come in large portions at a time
 - Develop with scalability in mind and conduct rigorous testing with high volume.



Team Mozilla

Status Report

[1 of 4]

Mozilla

- Project Overview

- Expand Firefox Theming API to allow for theming of previously unthemable browser aspects, like bookmarks and scroll bars.
- Expand theming API to allow for Google Chrome extensions to be easily transitioned over as Firefox extensions
- Create new themes for the Firefox browser
- Resolve existing bugs and issues with the theming API

- Project Plan Document

- Divided up work between team members
- Started writing schedule of project milestones
- Expect to have a first draft 1/26
- 5% done



Team Mozilla

Status Report

[2 of 4]

Mozilla

- Server Systems / Software
 - All team members have the Firefox build environment downloaded and compiling on their systems.
 - All team members have received level 1 access to the Firefox codebase
 - All team members have created Bugzilla accounts and set up IRC chat.
- Development Systems / Software
 - Both iMacs have the Firefox codebase downloaded and compiling
 - Both iMacs have a Windows virtual machine running
 - Both iMacs have a Ubuntu Linux virtual machine running



Team Mozilla

Status Report

[3 of 4]

Mozilla

- Client Contact
 - We have emailed and met with our client
 - Weekly video conference call scheduled for 3:00 P.M. on Fridays
 - Hacking weekend with Mozilla on February 10 - 11
- Team Meetings
 - Tues/Thurs: 4:30pm; Mon: 5:30pm
 - Triage: Monday 2:20pm
 - Our team has met 6 times so far
- Team Organization
 - Vivek Dhingra is the client contact
 - Assigned tasks to each team member through Bugzilla ticketing system
 - Weekly team code review on Thursdays



Team Mozilla

Status Report

[4 of 4]

Mozilla

Risks

- Large Codebase
 - Firefox codebase is over 35 million lines code, finding a place to start is challenging
 - Using the searchfox.com web tool to locate files of interest, rather than grep.
- Platform Testing
 - Need to efficiently code for all platform without breaking compatibility. Limited team experience with testing suites
 - Research and write basic tests in Mozilla's testing suite.
- API Experience
 - Unsure of the type of API (REST, SOAP, RPC). Limited team experience with API development.
 - Building a basic API once Mozilla's Theme API type is determined
- Theme Transitions
 - Need to ensure compatibility when transitioning themes from Google Chrome
 - Review resources to get a comprehensive understanding of Google Chrome themes. Additionally, build themes to further understanding



Team MSUFCU

Status Report

[1 of 4]

Digital Assistant and Personal Financial Coach

- Project Overview
 - Digital assistant and financial coach for MSUFCU members
 - Answers questions about member's financial situation
 - Gives members the ability to compare spending habits in same demographic
 - Members can take action on their account to request/transfer funds
- Project Plan Document
 - Created basic outline
 - Completed system architecture mockup
 - Started executive summary



Team MSUFCU

Status Report

[2 of 4]

Digital Assistant and Personal Financial Coach

- Server Systems / Software
 - Will receive necessary hardware from MSUFCU
 - Will receive access to database containing dummy accounts from MSUFCU
 - This database is for testing only, and is not connected to their main database
- Development Systems / Software
 - Installed necessary software on iMacs
 - Will receive previous source code from MSUFCU
 - Tested each program installed to verify they are working correctly



Team MSUFCU

Status Report

[3 of 4]

Digital Assistant and Personal Financial Coach

- Client Contact
 - Met with client and signed an IP agreement and Non-Disclosure Agreement
 - Discussed the resources that we will be using and the devices the client will be providing
- Team Meetings
 - Installed Android Studio, Xcode, PHPStorm, and VMWare on iMac
 - Planned weekly meetings at 5 PM on Tuesday and Thursday
- Team Organization
 - Client Contact and Project Manager (Rachel)
 - Machine Learning (Patrick)
 - Database (Dallas)
 - Web (Dane)
 - Mobile Apps (Michael)



Team MSUFCU

Status Report

[4 of 4]

Digital Assistant and Personal Financial Coach

Risks

- Building off of Previous Code
 - This project is building off of work done by 2 previous capstone teams
 - We will work with clients to ensure our code works well with previous code; we will also contact old team members if necessary
- Working with Voice Recognition Software
 - No experience with voice recognition or speech-to-text
 - We will research best practices and use previous code to develop our knowledge
- Using Machine Learning to Make Predictions
 - Making comparisons between members of similar demographics requires machine learning techniques
 - We will research best methods for this type of data analysis and we will rely on clients to assist us.
- Integration of Android, Alexa, iOS, and Administrative Web App
 - Making these systems communicate with each other may prove to be difficult
 - We plan to use centralized database to maintain consistency between all different platforms



Team Phoenix Group

Status Report

[1 of 4]

Customer Service System with Chatbot

- Project Overview
 - Customer service team references paper manuals
 - Digitize manuals using tablet camera
 - Browse and manage manuals in ebook format
 - Chatbot to answer customer questions
- Project Plan Document
 - 10% of final plan complete
 - Functional specification first draft
 - System architecture first draft
 - Identified major risks



Team Phoenix Group

Status Report

[2 of 4]

Customer Service System with Chatbot

- Server Systems / Software
 - Linux installed on server
 - Built toy client/server application on local machine
 - Remote server access pending
- Development Systems / Software
 - Installed Windows and Visual Studio 2017
 - Tested C# hello world application
 - Created toy chat bot with Microsoft Bot Framework



Team Phoenix Group

Status Report

[3 of 4]

Customer Service System with Chatbot

- Client Contact
 - Weekly meetings on Fridays
 - Upcoming functional specification draft review
- Team Meetings
 - Weekly meetings on Tuesdays
- Team Organization
 - Server application: Fatema, Amanuel
 - Client application: Sarah, James
 - Web chat bot: Dan



Team Phoenix Group

Status Report

[4 of 4]

Customer Service System with Chatbot Risks

- Use of Docker when shipping application
 - Lack of experience and compatibility issues
 - Mitigation: Containerize a toy application
- Image quality when composing eBook and running OCR
 - OCR system may require high image quality
 - Mitigation: test OCR performance on images taken with tablet
- Dataset size and system scaling
 - eBook size may be large, impacting performance
 - Mitigation: OCR speed tests, client-server data transfer speed tests
- Chat bot embedding in client website
 - Lack of experience
 - Mitigation: Embed prototype chat bot on WordPress site



Team ProofPoint

Status Report

[1 of 4]

Next Generation Malware Detection

- Project Overview
 - Reduce number of malware an analyst has to examine manually
 - Provide malware analysis dashboard for analysts
 - Produce real time signatures for malware undergoing dynamic analysis
 - Schedule malware analysis efficiently
- Project Plan Document
 - Estimated all but schedule and some technical specifications, under review by client
 - Project Plan outline is 75% done.
 - Wireframe for front end sketched
 - System architecture sketched



Team ProofPoint

Status Report

[2 of 4]

Next Generation Malware Detection

- Server Systems / Software
 - Web server – not set up awaiting client confirmation
 - SQL Server – not set up awaiting client confirmation
- Development Systems / Software
 - YARA, Cuckoo, Python – configured and tested
 - Suricata, ClamAV – Not yet
 - Linux, Windows, MAC OS – installed and configured



Team ProofPoint

Status Report

[3 of 4]

Next Generation Malware Detection

- Client Contact
 - Video conference call on Fridays starting January 12th
 - In person meeting scheduled on January 19th
- Team Meetings
 - Met 4 times so far
 - Weekly meetings – Wednesdays
- Team Organization
 - Brad is the client contact
 - Crystal is the project manager



Team ProofPoint

Status Report

[4 of 4]

Next Generation Malware Detection

Risks

- Clustering Malware
 - What metric(s) do we use to cluster similar malware.
 - Talk with analysts and/or client and research how malware can be clustered
- Scalability and Speed
 - How our program can efficiently analyze malware provided
 - Test speed of software and determine probability of dynamic analysis
- Processing Output of Software
 - Analyzing the output of the detection software that we are using
 - Prototype output parsing tools
- Constructing an API
 - Give a way for the Web App to interact with the analysis tool via an API
 - Research common ways to make an API and create a simple prototype API



Team Quicken Loans

Status Report

[1 of 4]

Fundamenta

- Project Overview
 - Web Application for construction of a house
 - Blockchain-based
 - Allows interactivity between builder, buyer, and contractors
 - Visual of workflow and transactions stored in the blockchain
- Project Plan Document
 - Sections assigned to each team member
 - Initial screen mock-ups completed and given to client
 - Functional specifications have been discussed with the client
 - Outlined and sections 20% complete



Team Quicken Loans

Status Report

[2 of 4]

Fundamenta

- Server Systems / Software
 - Azure
 - .NET (C#) backend
 - Private Ethereum blockchain initialized
- Development Systems / Software
 - React
 - Python (for blockchain)
 - Multiple “hello world” applications have been created



Team Quicken Loans

Status Report

[3 of 4]

Fundamenta

- Client Contact
 - Scheduled weekly meetings on Wednesday afternoons
 - On-site meeting scheduled January 31st
- Team Meetings
 - 6 team meetings so far
 - Scheduled weekly team meetings on Monday at 1 PM
- Team Organization
 - Frontend / UX (Erin and Turner)
 - Backend / Blockchain (Riley, Jaiwant, Vishal)



Team Quicken Loans

Status Report

[4 of 4]

Fundamenta

Risks

- Blockchain
 - Applicability of proof-of-work and mining
 - Create own blockchain and utilize in-house experts at Quicken Loans
- Ethereum-specific Challenges
 - Usage of smart contracts for this project
 - Have questions prepared for Friday call with client
- Setting Up Development Workflow
 - Getting all of the technologies up and running cohesively will be a challenge
 - Starting early, doing research, and asking questions
- Interaction with Database
 - Setting up the blockchain to interact with SQL Server
 - Small-scale testing with simple queries



Team Rook

Status Report

[1 of 4]

Endpoint Data Monitoring and Analysis Agent

- Project Overview
 - Agent captures event logs on end point hosts
 - Create web interface to configure agent
 - Analyze health metrics based on logs
 - Cross-platform compatible
- Project Plan Document
 - 20% Completed
 - Skeleton File Created
 - Sections split up among team members
 - Rough draft of system architecture created
 - Initial mock user interface created



Team Rook

Status Report

[2 of 4]

Endpoint Data Monitoring and Analysis Agent

- Server Systems / Software
 - Amazon S3 (access pending)
 - RESTful Endpoint
 - Ubuntu 16.04 Back-End API Server
- Development Systems / Software
 - Go
 - Django + Python
 - React/Redux JS



Team Rook

Status Report

[3 of 4]

Endpoint Data Monitoring and Analysis Agent

- Client Contact
 - Weekly meeting set up for 2PM on Mondays
 - Constant Communication via Company HipChat Channel
- Team Meetings
 - Weekly Conference Call: Monday 2pm
 - Weekly Triage Meeting: Thursday 4:50pm
 - Weekly Group Meeting: Wednesday 6pm
- Team Organization
 - Client Contact: Drew Gilbertson
 - Team Structure: Web App group, Agent group, Database group



Team Rook

Status Report

[4 of 4]

Endpoint Data Monitoring and Analysis Agent

Risks

- Develop agent software that is cross-compatible
 - Creating background process that captures event logs for all OS
 - Understanding different OS event logs and how to capture them
- Developing health metrics to analyze captured logs
 - Determining the thresholds for analyzing event logs in real time
 - Research event log details and priorities, and conform to Rook standards
- Integration with existing Force Platform
 - Create a web app which extends the existing platform. We need to maintain the Force Platform's integrity.
 - Develop using iterative process while working closely with Rook's developers
- How to handle testing
 - How to gain realistic data. How to evaluate security thresholds.
 - Work with experts at Rook to fully understand realistic information flow



Team SpartanNash

Status Report

[1 of 4]

SpartanTrack

- Project Overview
 - Track Volunteer hours
 - Gamify the app, using badges/leaderboards
 - Messaging from captain to the platoon
 - Integrate Social media features
- Project Plan Document
 - Began initial draft of the plan – 10%
 - Began drafting our UML – 25%
 - Began sketching out GUI – 50%



Team SpartanNash

Status Report

[2 of 4]

SpartanTrack

- Server Systems / Software
 - MySQL is used to transfer app data from clients to server
 - Using SpartanNash proprietary API's for security
- Development Systems / Software
 - React Native for dual development (Android + IOS)
 - HTML/CSS/JAVASCRIPT/PHP (Web)



Team SpartanNash

Status Report

[3 of 4]

SpartanTrack

- Client Contact
 - Traveled to SpartanNash HQ and met with IT leaders
 - Weekly meetings - Tuesday and Friday @ 10:00 a.m.
- Team Meetings
 - Team meetings – Tuesday @ 11:30 a.m., Friday @ 1:00 p.m.
 - Triage meetings Friday @ 11:40 a.m.
- Team Organization
 - Pair Programming
 - Application Interface – Aleks + Denis
 - Web Development – Tianyi + Abbott
 - Data Transfer – Antonino + Abbott



Team SpartanNash

Status Report

[4 of 4]

SpartanTrack

Risks

- Scalable connection with SpartanNash DB
 - May not perform well in real time
 - Lots of testing, good planning
- Gold-plating
 - Adding too many features may make the app difficult to use
 - Constantly check with the client to make sure the features implemented are needed
- Client satisfaction with User Interface
 - Interface may not be acceptable to user base
 - Redesign the interface for simplicity



Team Spectrum Health

Status Report

[1 of 4]

Spectrum GO

- Project Overview
 - Applications for hospital visitors to navigate
 - Web interface for staff to configure paths
 - Real-Time use of waypoints
- Project Plan Document
 - Outlined
 - Rudimentary Functional and Design Specifications Complete
 - 15% complete



Team Spectrum Health

Status Report

[2 of 4]

Spectrum GO

- Server Systems / Software
 - Microsoft SQL Server – TBD Friday
 - Identity Server – TBD Friday
 - GitHub/Repository – TBD Friday
- Development Systems / Software
 - Xcode – Up and Running
 - Android Studio – Up and Running
 - PHP Storm – Awaiting Client Approval



Team Spectrum Health

Status Report

[3 of 4]

Spectrum GO

- Client Contact
 - Spoken with client once, weekly conference call time to come
 - Site meeting scheduled for Friday, 01/19
- Team Meetings
 - Team has met 4 times
 - Weekly meetings scheduled two/three times a week, as needed
- Team Organization
 - Mobile & Web Development
 - Database Management
 - Customer Liaison



Team Spectrum Health

Status Report

[4 of 4]

Spectrum GO

Risks

- Spectrum Health Repository
 - Obtaining sample code and repository from Spectrum on Friday
 - Familiarize with the code as quickly as possible
- Route Data
 - Can route data be compact enough for a reasonable phone download?
 - If not, create options for downloading specific site data
- Real-time OCR
 - Using Google Optical Character Recognition
 - Follow tutorials and read documentation on the API
- Managing Waypoint and Routes
 - How to add/delete waypoints and update routes
 - Get everyone familiar with databases (SQL server)



Team Symantec

Status Report

[1 of 4]

Detecting Security Threats from User Authentication Patterns

- Project Overview
 - Build an application for analyzing VIP login data
 - Use the data to detect security threats in near real-time
 - Make dashboards to visualize the login data
- Project Plan Document
 - We started working on the outline
 - Table of contents is laid out
 - Started dividing up the work and discussing it at a meeting
 - 10% is complete



Team Symantec

Status Report

[2 of 4]

Detecting Security Threats from User Authentication Patterns

- Server Systems / Software
 - Amazon Web Services: Need to get it up and running
 - VIP Reporting Service Client: Waiting to get it from the client
- Development Systems / Software
 - Splunk: Installed on iMacs and became familiar with it
 - Elastic Search, Logstash, Kibana (ELK): Learning stack, doing basic tutorials



Team Symantec

Status Report

[3 of 4]

Detecting Security Threats from User Authentication Patterns

- Client Contact
 - Had a conference call with client and met with local contact
 - Weekly conference call scheduled Wednesday at 5:00 PM
- Team Meetings
 - Our team has met 5 times
 - Weekly team meetings Tuesday/Thursday at 4:20
- Team Organization
 - Assign 2 people for Splunk and 3 people for ELK/AWS
 - Re-distribute responsibilities halfway for pattern recognition and data analytics



Team Symantec

Status Report

[4 of 4]

Detecting Security Threats from User Authentication Patterns Risks

- Ability to Detect suspicious patterns
 - There is a wide range of threats to detect and want to avoid false flags
 - Consult with experienced security advisor and identify possible threats
- Test Data
 - Real VIP data is necessary to identify accurate threat patterns
 - Get MSU's VIP data
- Consistency between Splunk and ELK
 - Making sure that functionality is consistent between both platforms
 - Develop both applications concurrently
- AWS Servers
 - The possibility of deploying the ELK applications on the AWS server
 - Use AWS documentation and use online resources



Team TechSmith

Status Report

[1 of 4]

Snagit and Camtasia Output Extensibility

- Project Overview
 - Simplify Sharing of Media Produced by TechSmith Products
 - Extend Output Capabilities of Snagit and Camtasia
 - TechSmith Video Review
 - Wistia
 - Student Choice: Imgur
- Project Plan Document
 - Outline complete
 - Overall document is ~10% written



Team TechSmith

Status Report

[2 of 4]

Snagit and Camtasia Output Extensibility

- Development Systems / Software
 - Windows 10 virtual machine set up in Capstone lab
 - Installed and tested Visual Studio 2017 with C# .NET
 - Access to relevant TechSmith GitHub repositories established, along with communication through Flowdock and Slack
 - Currently examining documentation of various APIs needed to accomplish our output extensibility features



Team TechSmith

Status Report

[3 of 4]

Snagit and Camtasia Output Extensibility

- Client Contact
 - Met with client in-person Friday 1/12 (Free Lunch!)
 - Weekly Google Hangouts call on Fridays at 1 PM
- Team Meetings
 - Team has met 3 times excluding All-Hands Meetings
 - Weekly meetings on Mondays at noon
- Team Organization
 - Quality Assurance: Logan Arent
 - Client Liaison: Carter Chamberlain
 - Technical Lead: Collin Dillinger
 - Project Manager: Ryan Schiller



Team TechSmith

Status Report

[4 of 4]

Snagit and Camtasia Output Extensibility

Risks

- Risk 1: Reduced Team Size
 - Description: Our team started with one fewer member than was originally intended
 - Mitigation: More rigid team organization and adherence to deadlines
- Risk 2: API Credential Management
 - Description: Our team requires APIs from three different applications
 - Mitigation: Coordination with TechSmith and establishing a timeline to have all credentials in place
- Risk 3: API Uniformity
 - Description: APIs used in this project may not present information uniformly
 - Mitigation: Use abstraction provided by the TechSmith Extensibility Framework
- Risk 4: UI Design
 - Description: GUI design is not a major skillset of our team
 - Mitigation: Using WPF will reduce the difficulty of making a unified design for our plugin interfaces



Team Union Pacific

Status Report

[1 of 4]

“ALEXA – what’s my work schedule look like?”

- Project Overview
 - Trainmen, Yardmen and Enginemen (TY&E) employees operate trains for Union Pacific.
 - TY&E employees are on-call 24/7 and have constantly changing schedules.
 - Schedules are currently viewable online or in mobile app.
 - Integrate employees schedules’ into voice assistants such as Amazon Alexa, Google Home, or Siri.
- Project Plan Document
 - Skeleton created and uploaded to Google Team Drive.
 - Early database schema plans created.
 - Different use cases discussed but not added yet.
 - Next team meeting plan to divide sections to each member.



Team Union Pacific

Status Report

[2 of 4]

“ALEXA – what’s my work schedule look like?”

- Server Systems / Software
 - Server assigned and early set up began, not finished.
 - MySQL downloaded but not installed.
 - Early database schema created.
- Development Systems / Software
 - X-Code downloaded on Mac to begin iOS development.
 - Alexa Skills Kit development online.
 - Windows10 VM installed if needed.



Team Union Pacific

Status Report

[3 of 4]

“ALEXA – what’s my work schedule look like?”

- Team Meetings
 - January 10th 6PM-7PM
 - First meeting with teammates
 - Introduce each other and share each people’s schedule
 - Talked about project briefly
 - January 11th 2PM-3PM
 - Overview about Client meeting
 - Talked about how we can approach the project
 - January 16th 1:30PM-2PM & 4PM-5PM
 - Ready for client meeting
 - Shared technical idea for project
 - Re-summarized client meeting
 - Planed for each week detail schedule
- Team Organization
 - Client contact: Jared McMillan
 - Scheduling: M Kim
 - IOS & Siri & Alexa: M Kim, Daniel Agbay, Austin McGee
 - Database & Server: Jared McMillan, Daniel Agbay, David Hubble
- Client Contact
 - January 11th 1PM-2PM
 - First Client meeting with conference call
 - Overview for project tasks
 - Talked about Client request detail
 - January 16th 2PM-3PM
 - Second meeting with Client
 - Talked about the plan for project
 - Talked about risk and difficulties
 - Shared UX mock up design
 - Talked brief schedule for each week



Team Union Pacific

Status Report

[4 of 4]

“ALEXA – what’s my work schedule look like?”

Risks

- Risk 1 : Verification
 - We will be handling sensitive information to the company and want to make sure this data is secured and not a security threat.
 - We are exploring authentication channels through Google and Apple to minimize this risk.
- Risk 2 : Scalability
 - Worried that a database focused information flow for the app will be difficult to scale to many users.
 - Attempting to minimize database communication by storing preferences locally on app and requiring verification only once.
- Risk 3 : Schedule Format
 - Union Pacific has many child companies that will use this app and each may have a different schedule format.
 - Working with client to develop a standardized schedule format such as CSV or XML.
- Risk 4 : Assistant Development
 - Unsure how to develop verification and settings options on voice assistants that do not have a mobile app such as Alexa and Google Home.
 - Looking through Alexa documentation and working to set up very basic Alexa function – a Hello World program. Also exploring other Alexa apps to see how their verification systems work.



Team Urban Science

Status Report

[1 of 4]

Mobile Maestro

- Project Overview
 - Control Maestro Exoskeletal Arm
 - Use Mobile App with Voice Input
 - Auto-Leveler
 - Additional Safety Features
- Project Plan Document
 - Outline created
 - Question list for client in progress
 - 20% complete



Team Urban Science

Status Report

[2 of 4]

Mobile Maestro

- Server Systems / Software
 - Azure server
 - .NET API Endpoint
 - SQL Server
- Development Systems / Software
 - Cordova / Ionic setup
 - SDK's installed
 - GIT Setup
 - VM Setup



Team Urban Science

Status Report

[3 of 4]

Mobile Maestro

- Client Contact
 - In-Person meeting
 - Weekly meetings scheduled
- Team Meetings
 - Multiple held so far
 - Bi-Weekly meetings scheduled
- Team Organization
 - Rotating project manager
 - Roles assigned



Team Urban Science

Status Report

[4 of 4]

Mobile Maestro

Risks

- Bluetooth
 - Setting up BLE connection to Arms
 - Cordova BLE plugins
- Auto-Balancing
 - Automatically balancing the Arms when on an incline
 - Using phones Accelerometer / Gyroscope to level the system
- Voice activation
 - Using vocal commands to control arms at all times
 - Using Siri and Google Assistant
- User Experience
 - UI needs to be simple and accessible
 - Follow accessibility guidelines



Team USAA

Status Report

[1 of 4]

LIMElight: Life Insurance Made Easy

- Project Overview
 - Generate accurate life insurance quote using machine learning
 - Improve experience of receiving a insurance quote by creating a responsive mobile-friendly web application
 - Utilize Ethereum blockchain to maintain and secure health records
- Project Plan Document
 - System architecture diagram mockup is complete
 - Screen mockups drafted



Team USAA

Status Report

[2 of 4]

LIMElight: Life Insurance Made Easy

- Server Systems / Software
 - Deployed an Ethereum blockchain consortium on a Microsoft Azure server
 - Deployed additional Azure server to host web application
 - Hosting “Hello, world” applications for testing
- Development Systems / Software
 - Installed Homebrew for package management
 - Set up Windows virtual machines
 - Configured Gitlab, Dropbox, Trello, and Slack services
 - Installed Anaconda Python distribution



Team USAA

Status Report

[3 of 4]

LIMElight: Life Insurance Made Easy

- Client Contact
 - Conference call project kickoff (introductions, project overview, expectations)
 - Scheduled recurring weekly conference call Fridays at 4:00PM EST
- Team Meetings
 - The team has met four times thus far
 - USAA employees will be visiting from San Antonio at least once during the semester
- Team Organization
 - Mike: Machine learning
 - Xingchi, Dong, Nate: Web application (front and back-end)
 - Abe: Project manager, utility player



Team USAA

Status Report

[4 of 4]

LIMElight: Life Insurance Made Easy

Risks

- Blockchain Implementation
 - Inexperience with the technology, difficult to see its use case
 - Enrolled in Ethereum Udemy course, discussing relevance with client
- Accurate Life Insurance Quotes
 - Model may struggle to produce an accurate life insurance quote with minimal applicant input
 - Review academic research about most significant factors affecting an applicant's riskiness
- Poor Dataset
 - Possibility of too few samples, inaccurate metrics, and irrelevant features
 - Utilize third party datasets and generate our own data (e.g. location-based)
- Lack of Subject Matter Expertise
 - Group does not have any experience with life insurance industry
 - Connect with underwriters and actuaries at USAA



Team Yello

Status Report

[1 of 4]

Sentiment and Emotional Analysis of Video Interviews

- Project Overview
 - Build web app to facilitate recording and playback of pre-recorded and live video interviews
 - Sentiment Analysis and Emotion Detection on audio/ video
 - Storing and querying of video interviews and sentiment/emotion results
- Project Plan Document
 - Drafted cover page and table of contents
 - Functional specs and mockup in progress
 - Approximately 10% complete



Team Yello

Status Report

[2 of 4]

Sentiment and Emotional Analysis of Video Interviews

- Server Systems / Software
 - Heroku Server
 - Ruby on Rails
 - PostgreSQL
- Development Systems / Software
 - Scikit for sentiment analysis
 - Azure Emotion API for emotion detection
 - GitLab set-up



Team Yello

Status Report

[3 of 4]

Sentiment and Emotional Analysis of Video Interviews

- Client Contact
 - Slack chat, e-mail, Google Hangouts
 - Weekly conference calls on Fridays, 11:00 a.m.
- Team Meetings
 - 4 meetings thus far
 - Weekly meetings on Tuesdays, 2:00 p.m.
- Team Organization
 - Trello for task organization
 - Slack for quick communication
 - GitLab for code collaboration



Team Yello

Status Report

[4 of 4]

Sentiment and Emotional Analysis of Video Interviews

Risks

- Risk 1
 - Functionality and integration of APIs with Ruby on Rails
 - Use our own input videos on the APIs
- Risk 2
 - Managing Candidate vs. Staff privileges and views
 - Design user model to identify user status
- Risk 3
 - Capturing live video
 - Inquire into TechSmith's similar 2016 capstone project and contact team members for advice
- Risk 4
 - Transcribing audio for sentiment analysis
 - Research speech recognition methods/ APIs and use our sample input

