

**MICHIGAN STATE**  

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**U N I V E R S I T Y**

09/16: Team Status Reports

**The Capstone Experience**

Dr. Wayne Dyksen

James Mariani

Luke Sperling

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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

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**U N I V E R S I T Y**

**Status Report  
Maestro**

**The Capstone Experience**

**Team Amazon**

Ruchika Gupta

Mo Almoamen

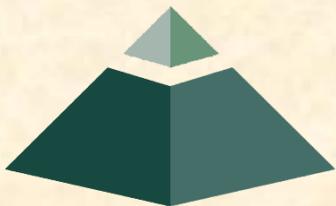
Kasidet Meteeputthi

Scott Macpherson

Sawyer Ruben

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Fall 2020



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# Team Amazon

## Status Report

[1 of 4]

### Maestro

- Project Overview
  - Identify product description and product specification inaccuracies
  - Crawl competitor websites for alternate descriptions
  - Use Natural Language Processing to generate difference quotient
  - Compare quotient to threshold to flag inaccurate descriptions
- Project Plan Document
  - Project plan distributed with team
  - Table of Contents created
  - Executive Summary drafted
  - Functional and Design Specifications outlined



# Team Amazon

## Status Report

[2 of 4]

### Maestro

- Server Systems / Software
  - AWS Lambda being researched
  - Python Flask API server set up and tested POST/GET endpoints
  - DynamoDB/S3 Bucket being set up by client
- Development Systems / Software
  - Amazon Comprehend and SageMaker being researched
  - React Project initialized and tested POST/GET requests to local python server
  - Set up Jira task management board



# Team Amazon

## Status Report

[3 of 4]

### Maestro

- Client Contact
  - Held initial meeting regarding project requirements and expectations
  - Scheduled weekly check-in meetings and pipeline for communication on Chime (Tuesdays)
- Team Meetings
  - Set up weekly meetings with TA and with team (Tuesdays)
  - Assessed strengths and weaknesses of team members and assigned foci during project
- Team Organization
  - Scott maintains client contact and main POC
  - Flat team – all roles are shared and collaborative



# Team Amazon

## Status Report

[4 of 4]

### Maestro

#### Risks

- Permission Access issues when crawling competitor websites
  - Some websites are blocking programmatic crawling, need to add headers and api keys to access alternate websites
  - Look into other web crawling packages
- Dynamically searching for products across websites
  - Ensure that crawled product is the EXACT same to Amazon offered product
  - Find Universal Product Code to use as comparator
- Data Quality and Quantity from Amazon
  - Proper fields to be used in crawling and comparing products across web, enough data is provided to throw out bad samples
  - Reaching out to client tech lead to ensure proper data is included
- Small window of error for difference quotient to be impactful
  - Identifying metrics and quality of metrics when comparing descriptions and specs of products
  - Hyperparameter tuning of NLP, use AUC-ROC curves



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**U N I V E R S I T Y**

**Status Report**  
**Insider Threat Detection**  
**The Capstone Experience**

**Team AppDynamics**

Chris Kulpa  
Sumanth Rudraraju  
Ari Kohl  
Andy Zhang  
Andrew Jalbert

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Michigan State University

Fall 2020



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# Team AppDynamics

## Status Report

[1 of 4]

### Insider Threat Detection

- Project Overview
  - Use analytics gathered by AppDynamics services to identify potential insider threat
  - Identifies accounts that could be compromised
  - Action against potentially compromised accounts
- Project Plan Document
  - The project plan document has been started
  - We have the title page, a table of contents to show the outline and the executive summary
  - ~5% complete



# Team AppDynamics

## Status Report

[2 of 4]

### Insider Threat Detection

- Server Systems / Software
  - AppDynamics Controller
  - Database
  - Web Server
- Development Systems / Software
  - Postman
  - Python
  - GitHub



# Team AppDynamics

## Status Report

[3 of 4]

### Insider Threat Detection

- Client Contact
  - 15-minute meeting every weekday morning
  - Slack channel with our contacts at AppDynamics
- Team Meetings
  - Once a week on Monday Nights
  - Daily Quick Recap after meeting with AppDynamics
- Team Organization
  - Chris Kulpa – Back-End/ Database
  - Andy Zhang – Back-End
  - Andrew Jalbert – Web/Backend Developer
  - Sumanth Rudraraju – Back-End Developer/ Client Contact
  - Ari Kohl – Back-End Developer



# Team AppDynamics

## Status Report

[4 of 4]

### Insider Threat Detection Risks

- Data in the AppDynamics Controller
  - Limited data supplied by client
  - Request more data be provided with more fields filled in
- Generation of the Test Data
  - The supplied data is randomly generated, not full representation of real-life data
  - Be supplied with real data
- Potentially computationally intensive algorithm
  - Algorithm may require more resources than we currently have
  - Acquire necessary resources or keep algorithm lightweight



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**U N I V E R S I T Y**

**Status Report**  
**PlanIt – Capacity Planning Tool**  
**The Capstone Experience**

**Team Atomic Object**

Alec Gillis  
Zach Skrobot  
Shengtong Jin  
Simi Dias  
Alex McLaughlin

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Fall 2020



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# Team Atomic Object

## Status Report

[1 of 4]

### PlanIt – Capacity Planning Tool

- Project Overview
  - Capacity Planning
  - Gantt Chart (Timeline View)
  - Click-and-Drag functionality
  - Scheduling
- Project Plan Document
  - Recently started
  - Bare bones structure, includes placeholder content
  - 10% complete



# Team Atomic Object

## Status Report

[2 of 4]

### PlanIt – Capacity Planning Tool

- Server Systems / Software
  - PostgreSQL – Up & running
  - Node & Express(tested "Hello World")
  - Apollo Server\*
- Development Systems / Software
  - JS React (Gantt Chart framework)
  - MSU CSE GitLab(repo created & shared)



# Team Atomic Object

## Status Report

[3 of 4]

### PlanIt – Capacity Planning Tool

- Client Contact
  - We have met and discussed technologies
  - We have set up weekly meetings
- Team Meetings
  - We have met five times
  - Using Trello to set up Sprints
- Team Organization
  - Front End(React/HTML/CSS): Shengtong, Alex, Simi
  - Back End(Express/SQL): Alec, Zach



# Team Atomic Object

## Status Report

[4 of 4]

### PlanIt – Capacity Planning Tool

#### Risks

- Risk 1
  - Different Time Zones & Remote Teamwork
  - Proactive about planning meetings
- Risk 2
  - JS React elements are immutable
  - Write code with immutability in mind, consider REDUX
- Risk 3
  - Integrating third-party API's, how much extra work is needed to add the desired integrations?
  - Early research on possible integration solutions
- Risk 4
  - Single Page Web Application (dense code)
  - Write code with performance in mind (memory, time complexity)



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**U N I V E R S I T Y**

**Status Report**  
**Coverage Crisis: Covering Your Assets**  
**The Capstone Experience**

**Team Auto-Owners**

Colin Duyck

Joe Hayes

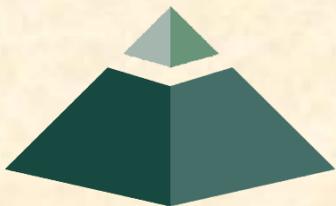
Xander Quiton

Nik Sumnik

Andy Wilson

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# Team Auto-Owners

## Status Report

[1 of 4]

### Coverage Crisis: Protect Your Assets

- Project Overview

- GameManager framework laid out
- Specifics of what to store in Database received from client
- Basic GUI overlay created

### Project Plan Document

- Created a skeleton using provided project plans as reference
- Executive summary draft complete



# Team Auto-Owners

## Status Report

[2 of 4]

### Coverage Crisis: Protect Your Assets

- Server Systems / Software
  - SQL based server
    - Currently researching
- Development Systems / Software
  - Unity game engine
    - Unity Teams and Unity Collab
  - C# Language



# Team Auto-Owners

## Status Report

[3 of 4]

### Coverage Crisis: Protect Your Assets

- Client Contact
  - Met 2 times with client
  - Weekly meetings set for Friday morning 10:30
- Team Meetings
  - Held team meetings 5 times
  - Weekly meetings set for Thursday 2:00
- Team Organization
  - Database manager – Colin
  - Current game developers – Nik, Joe, Xander, Andy



# Team Auto-Owners

## Status Report

[4 of 4]

### Coverage Crisis: Protect Your Assets Risks

- Game balance
  - Deciding on how smooth the game should play on varying difficulties
  - Spend ample time working with beginning framework to ensure a balanced game experience
- SQL server integration
  - Interfacing Unity scripts with SQL logging
  - Make a sample SQL database for Unity to log to
- User authentication
  - Admin user will need to view game logs
  - Create a simple website to test log in process
  - Research authentication security issues



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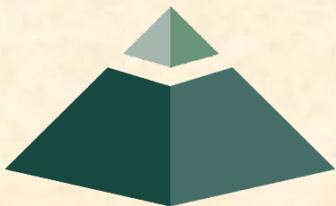
**Status Report**  
**Shared Parking Access**  
**The Capstone Experience**

**Team Bedrock Detroit**

Will Lennon  
Ritu Ahluwalia  
Jude Jang  
Eric Podolsky  
Michelle Mao

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Michigan State University

Fall 2020



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# Team Bedrock Detroit

## Status Report

[1 of 4]

### Shared Parking Access

- Project Overview
  - Create application to manage parking space assignment
  - Calculate the most optimal parking based on each individual's working location and characteristics
  - Dynamically change parking when employees calling in sick
  - Build a front-end website & mobile app to use it
- Project Plan Document
  - Examined previous Capstone groups' proposals
  - Started writing Summary and Overview sections
  - Preliminary UMLs being designed



# Team Bedrock Detroit

## Status Report

[2 of 4]

### Shared Parking Access

- Server Systems / Software
  - Temporarily running on MSU CSE servers
  - Database currently hosted on MySQL/SQLite
  - Looking into transferring to AWS/Azure
- Development Systems / Software
  - Front-end built in PHP
  - Back-end and API built in Python
  - Using IntelliJ IDEs: PyCharm and PhpStorm
  - Apps build in Android Studio & XCode



# Team Bedrock Detroit

## Status Report

[3 of 4]

### Shared Parking Access

- Client Contact
  - Met with Client twice
  - Scheduled meetings every Friday 2-3pm
- Team Meetings
  - Weekly meeting every Tuesday 5-6pm
  - Other meetings scheduled as needed
  - Met total of 8 times so far
- Team Organization
  - Back-end – Eric, Will, Jude
  - Front-end – Ritu, Michelle



# Team Bedrock Detroit

## Status Report

[4 of 4]

### Shared Parking Access Risks

- API Security
  - Any connection between the front and back end is at risk of being compromised
  - Integrating either Auth0 or Okta
- Run Time
  - Client has specified that upwards of 25,000 users
  - Compare our final algorithm to a quick greedy-algorithm
- No assigned server location
  - The client has given us the opportunity to choose where to host the app
  - Try running on both AWS and Azure to discover the most effective



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**U N I V E R S I T Y**

Status Report  
Automated Retrieval of ADAS Environments  
The Capstone Experience

Team Bosch

Adam Gongol

Alex Norris

Sam Richardson

Hannah Striebel

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Fall 2020



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# Team Bosch

## Status Report

[1 of 4]

### Automated Retrieval of ADAS Environments

- Project Overview
  - Process ADAS video to classify driving environments
    - Status – Coding environment complete (libs downloaded, software installed & ready, video data distributed & ready)
  - Web Interface
    - Status – React/Flask proof of concept app complete
  - Backend
    - Status – OpenCV / YOLO v3 with COCO db tests run & working.
- Project Plan Document
  - Skeleton outline - complete
  - Executive summary – in progress



# Team Bosch

## Status Report

[2 of 4]

### Automated Retrieval of ADAS Environments

- Server Systems / Software
  - No server necessary; end product runs locally
- Development Systems / Software
  - YOLOv3 w/ COCO – object detection algorithm and db
    - Status – in progress and testing w/ client data
  - OpenCV 4.4.0 – Open Source computer vision lib
    - Status – in progress and testing w/ client data
  - React.js – web app front end
    - Status – test web page up and running
  - Flask – web app python backend
    - Status – test backend up and running, connected to front end



# Team Bosch

## Status Report

[3 of 4]

### Automated Retrieval of ADAS Environments

- Client Contact
  - Scheduled weekly meeting – Fridays at 9am
  - Have met twice, clarified project requirements and use case
- Team Meetings
  - Scheduled weekly meeting – Thursday at 11am
  - Teams channel – main communication method
- Team Organization
  - Web interface: Lead – Sam, Support – Alex, Hannah
  - ML / backend: Lead – Adam, Support – Alex, Hannah



# Team Bosch

## Status Report

[4 of 4]

### Automated Retrieval of ADAS Environments Risks

- Meeting client's accuracy requirement
  - Minimize the number of results to be manually reviewed
  - Implement easy manual tagging system
- Identifying objects not in COCO library
  - Clients want to identify bridges/tunnels
  - Training on simpler objects (hotdog) before more difficult objects
- No experience with web app frameworks
  - Unsure if we could connect the ML libraries to a web app
  - Built web app with React/Flask to show you can use python for backend



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**U N I V E R S I T Y**

**Status Report**  
**AI Project Matcher**

**The Capstone Experience**

**Team Dow**

Liam Bok

Jon Gorman

Ana Kim

D'errah Richardson

Department of Computer Science and Engineering

Michigan State University

Fall 2020



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# Team Dow

## Status Report

[1 of 4]

### AI Project Matcher

- Project Overview
  - Match people to projects
  - Match projects to people
  - Match based on Individual's skillset/project requirements
  - Mobile application (Android & iOS)
- Project Plan Document
  - Created initial draft of Project Plan document
  - Document is 25% complete
  - Summary, Functional Specifications, Design Overview, and Risks sections completed



# Team Dow

## Status Report

[2 of 4]

### AI Project Matcher

- Server Systems / Software
  - GIT repository setup - working on push functionality
  - Access to Azure - in progress
- Development Systems / Software
  - iMac's setup successfully
  - React native/Node.js environments setup locally and tested successfully
  - VS Code & android/iOS emulators setup locally and tested successfully



# Team Dow

## Status Report

[3 of 4]

### AI Project Matcher

- Client Contact
  - Have met and talked with client regarding general project specifics
  - Weekly conference calls scheduled on Thursdays at 2 pm EDT
- Team Meetings
  - ~6 meetings, constant communication via Teams chat
  - Weekly team meetings on Wednesdays at 9:50 am and Mondays as needed
- Team Organization
  - Ana – Front-end development
  - D'errah – Front-end development
  - Jon – Back-end development
  - Liam – Back-end development



# Team Dow

## Status Report

[4 of 4]

### AI Project Matcher

#### Risks

- Connect to Dow's Azure Platform
  - Connect application to Dow's Azure platform for development
  - Seek guidance from project sponsors early and often
- Unexpected Behavior
  - Training data and development may cause AI to behave unpredictably
  - Use data provided by Dow and monitor behavior early and often
- Wide Variety of Projects Can be Created
  - Creating an AI that will be able to suggest user submitted projects
  - Start with keeping projects simple and adding more detail
- Implement React into our application
  - None of the team members have used react before in development
  - Each team member has developed a single page in react and tested it



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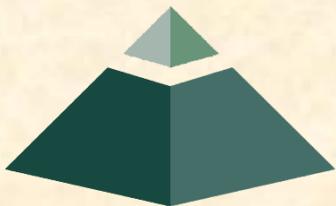
**Status Report**  
**#BIKES4ERP Tracking Initiative**  
**The Capstone Experience**

**Team Evolutio**

Caleb Duchan  
Phillip Nguyen-Phan  
Sam Peterson  
Yash Sharma

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Michigan State University

Fall 2020



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# Team Evolutio

## Status Report

[1 of 4]

### #BIKES4ERP Tracking Initiative

- Project Overview
  - Evolutio supports Elephants, Rhinos & People (ERP) in philanthropy.
  - ERP provides and maintains bicycles for students in Southern Africa, getting them to school faster and energized!
  - ERP requests an application to streamline bicycle maintenance.
  - Application should predict bike breakdowns and needed parts.
- Project Plan Document
  - Document has been started.
  - The plan must consider limited internet connectivity for users.
  - ERP has given the team general control over features.
  - Produce a set of working and easily maintainable applications



# Team Evolutio

## Status Report

[2 of 4]

### #BIKES4ERP Tracking Initiative

- Server Systems / Software
  - Android development server
  - Hello World API and API repository, started and set up
  - Looked into Message Queue, GraphQL
- Development Systems / Software
  - Miro task board and timeline, started and organized
  - GitLab source control, started and organized
  - Looked into NFC and Android Devices



# Team Evolutio

## Status Report

[3 of 4]

### #BIKES4ERP Tracking Initiative

- Client Contact
  - Evolutio contacts: Jordan Cobe, Devin Stonecypher, Bob Dyksen weekly meetings on Fridays, technical planning meetings as needed, slack channel
  - ERP contacts: Nicolai van de Merwe, Gert Vermeulen weekly meetings on Fridays, slack channel
- Team Meetings
  - Weekly meetings on Tuesdays
  - Weekly meetings with James Mariani on Tuesdays
- Team Organization
  - Caleb Duchan, Phillip Nguyen-Phan, Sam Peterson, Yash Sharma



# Team Evolutio

## Status Report

[4 of 4]

### #BIKES4ERP Tracking Initiative

#### Risks

- Risk 1
  - No data about bikes has been recorded to date to help with predictions.
    - Build application to learn as database grows, find data about current bike models.
- Risk 2
  - Limited internet reception for end users.
    - Use of message queues to send up to data when internet is available.
- Risk 3
  - Unforgiving environment for bicycles and technology.
    - Use of NFC tags and robust mobile devices.
- Risk 4
  - Student privacy.
    - Separate applications for teachers, mechanics and ERP.



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**U N I V E R S I T Y**

**Status Report**  
**9/16**

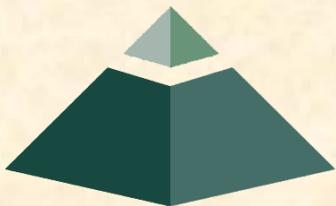
## **The Capstone Experience**

**Team Ford**

Anoop Khera  
Chen Qin  
Elena Komesu  
Parker Goodrich  
Kyle White

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Ford

## Status Report

[1 of 4]

### Ford Accelerate Monitor

- Project Overview
  - Web Portal -  
A website to allow users to register their team name and products leveraged for registering commit, deployment, incident and rollback events
  - Smart Home Device Skill – A skill and/or action to run on an Amazon Echo or Google Assistant to provide notifications and to answer structured questions
  - Deployment Endpoint – An API to receive updates from Jenkins Pipeline
  - Incident Endpoint – An API to receive updates on Incidents created
  - [Stretch] Code Quality Endpoint – An API to receive updates on the latest software statistics
- Project Plan Document
  - 10% complete
  - Outline for project plan document created
  - Schedule and portions of design specification filled in
  - Remaining work divided among team members



# Team Ford

## Status Report

[2 of 4]

### Ford Accelerate Monitor

- Server Systems / Software

- All of our software is downloaded on the iMacs
- Project database created through Firebase
- Jenkins server is running in a Docker container on an iMac
- Application will be running through IntelliJ on an iMac

- Development Systems / Software

- Springboot is downloaded on our capstone machines
- Hello World applications created to learn development systems
- Website prototype using VueJS is operating locally
- Local development environments set up (VSCode for front-end, IntelliJ for back-end)
- GitHub repositories for front-end and back-end created



# Team Ford

## Status Report

[3 of 4]

### Ford Accelerate Monitor

- Client Contact
  - We have met with our client twice now. Our weekly conference call is on Fridays at 3pm.
  - We communicate primarily through a Discord server and email
- Team Meetings
  - Our team has met 5 times now
  - Our weekly meetings are Thursday at 4:30pm, and we also sometimes meet after our conference call with Ford.
  - We communicate primarily through the Teams channel
- Team Organization
  - Chen and Anoop are focusing on the front-end portion. Anoop is doing general layout and Chen is styling the website
  - Elena, Kyle, and Parker are focusing on the back-end. Kyle is working on implementing the database, Elena is working on Jenkins pipeline, and Parker is working on Google Assistant. We are all going to combine to code the back end.



# Team Ford

## Status Report

[4 of 4]

### Ford Accelerate Monitor

#### Risks

- Risk 1
  - Description: Insufficient planning of architecture/software design leading to complications later
  - Mitigation: We created a UML of overall design as well as the back-end design, and we will continue to update it as we discover new issues through our testing.
- Risk 2
  - Description: Duplicated work/overlapping of work causes conflicts
  - Mitigation: Constant communication with team members along with assigning specific roles to team members will prevent this.
- Risk 3
  - Description: Falling behind too much to the point where we cannot unit test our software
  - Mitigation: Encourage Test Driven Development for all our team members.
- Risk 4
  - Description: Trouble connecting all the different sections of our project together
  - Mitigation: Doing research to make sure our front end, back end, and database are all compatible and testing small programs at the beginning of our project.



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**U N I V E R S I T Y**

**Status Report**  
**Automotive Specific Dark Web Threat Intelligence**  
**The Capstone Experience**

**Team GM**

Anthony Ajlouny

Ben Kelenski

Kevin Kimmel

Yushin Li

Mitch Neelis

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Fall 2020



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# Team GM

## Status Report

[1 of 4]

### Automotive Specific Dark Web Threat Intelligence

- Project Overview
  - Develop a web application that crawls through “dark web” sites searching for threats to GM and the automotive industry
  - Have begun to work with web crawling code by scanning through public sited for basic information, like searching for simple terms on msu.edu
  - A web application that houses different web pages to keep data neatly organized once collected
  - A SQL server to hold scanned website data – holds raw and parsed data to be used in the web app
  - Ranking system to distinguish small threats from large ones based off how many “hits” are found
- Project Plan Document
  - We have started the project plan document and presentation
  - About 15-20% of the document and presentation are completed
  - First two slides, and first three pages of the document



# Team GM

## Status Report

[2 of 4]

### Automotive Specific Dark Web Threat Intelligence

- Server Systems / Software
  - Hosting the project on an MSU Linux server so we have connection to a database and separate web pages
    - We plan to use a SQL database on a Linux server
- Development Systems / Software
  - Pycharm will be used for python web crawling scripts
    - It will also be used for HTML, CSS, and JavaScript to help keep everything in one place
  - JupyterHub will be used for data analysis and visualization



# Team GM

## Status Report

[3 of 4]

### Automotive Specific Dark Web Threat Intelligence

- Client Contact
  - We have met with our client two times so far, and have scheduled a weekly meeting with them for every Friday
  - Each week we plan to update them with our current progress and make changes or continue forward based off their expectations
- Team Meetings
  - We have met at least 6 times so far for individual meetings. That does not include sponsor and triage meetings each week
  - We have weekly meetings on Tuesday evenings, but will meet for short calls to keep each other updated on current progress or questions
- Team Organization
  - We have two people focusing on the web app UI and functionality
  - Two people are focusing on the python scripts for web crawling and checking for important data
  - One person is focusing on storing the data on a SQL server and parsing it to be numbered on importance



# Team GM

## Status Report

[4 of 4]

### Automotive Specific Dark Web Threat Intelligence

- Risks
  - Risk 1
    - Using a server that will store the information we collect safely from unauthorized users
    - We want to either host it through MSU or through a method specified by sponsors
  - Risk 2
    - Collecting too much information from the crawled sites to a point that it becomes unreadable and difficult to organize
    - We plan to implement a ranking system that parses the scanned data and ranks them by threat levels where higher threats are given priority
  - Risk 3
    - Some websites may not be safe to access or have an anti-crawling mechanism
    - Use a virtual machine and dynamic IP allocation to ensure safety and wide data crawling coverage
  - Risk 4
    - Trying to get a connection from the virtual machine SQL server
    - We have plan to contact either our TA or a previous professor for help on getting a connection



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## Status Report

# Self-Service Support Chatbot for Google Cloud The Capstone Experience

### Team Google

Keerthana Byreddy

Emma Hettinger

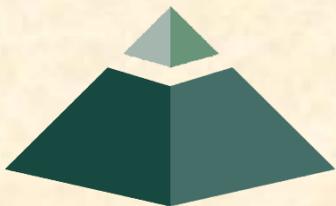
Brandon Hu

Kyle Kraski

Tyler Weisner

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Michigan State University

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# Team Google

## Status Report

[1 of 4]

### Self-Service Support Chatbot for Google Cloud

- Project Overview
  - Create a chatbot to suggest solutions from documentation
  - If the problem cannot be solved by the bot, gather important information to send to human support
  - Create a dashboard of statistics analyzing chatbot performance
- Project Plan Document
  - Working on outline



# Team Google

## Status Report

[2 of 4]

### Self-Service Support Chatbot for Google Cloud

- Server Systems / Software
  - Google Cloud Platform
- Development Systems / Software
  - Dialogflow: chatbot program on GCP, have completed a tutorial
  - Datastore: GCP database



# Team Google

## Status Report

[3 of 4]

### Self-Service Support Chatbot for Google Cloud

- Client Contact
  - Weekly meetings at 6:30 PM on Wednesdays
  - Have met once so far
- Team Meetings
  - Team meetings weekly on Mondays, more as necessary
  - Have met 3 times, excluding sponsor and TA meetings
- Team Organization
  - Keerthana: Executive Machine Learning Technician
  - Emma: Machine Linguistics Expert
  - Tyler: Fullstack Communications Lead
  - Kyle: Fullstack Engineer
  - Brandon: Workflow Automation Engineer, devops



# Team Google

## Status Report

[4 of 4]

### Self-Service Support Chatbot for Google Cloud

#### Risks

- Working on GCP simultaneously
  - Could break things if multiple people try to use something at once
  - Mitigation: discuss when doing any GCP deployments, assign one person to handle DevOps
- Might miss stuff in support documents
  - GCP has extensive support documents, might not access important information
  - Mitigation: find a comprehensive way to scrape vast data, extensive testing with a variety of samples
- Doing decision trees by hand
  - We need to make a lot of decision trees
  - Mitigation: either find a way to automate or limit the number that we create
- Running code within client's GCP environment for security
  - Have no idea how to do this
  - Mitigation: check with Michael for suggestions



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**U N I V E R S I T Y**

**Status Report**  
**Live Platform Real-Time Occupancy Status**  
**The Capstone Experience**

**Team Herman Miller**

Pooja Ippalapelli

Emma Taylor

David Cho

Chris Chen

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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

# Team Herman Miller

## Status Report

[1 of 4]

### Live Platform Real-Time Occupancy Status

- Project Overview
  - Utilize an IOT mesh network to report workstation occupancy and availability
  - Create a data ingestion mechanism to collect IoT data
  - Use API Gateway to expose processed data
  - Visualize data on a floor map using front-end web component
- Project Plan Document
  - Project Plan Document has been started
  - We currently have a rough skeleton as well as work on the following sections: Title Page, Table of Contents, Executive Summary, Functional Specifications, and Schedule



# Team Herman Miller

## Status Report

[2 of 4]

### Live Platform Real-Time Occupancy Status

- Server Systems / Software
  - Utilizing AWS Serverless Technologies
  - Currently system is running
  - Waiting on clients to give Herman Miller access
- Development Systems / Software
  - All dev systems use AWS: IoT Core, DynamoDB, Lambda, API Gateway
  - IoT Core and DynamoDB have been mostly implemented before project.
  - Basic "Hello World" tests in Node.js using Lambda function



# Team Herman Miller

## Status Report

[3 of 4]

### Live Platform Real-Time Occupancy Status

- Client Contact
  - Completed three meetings with clients
  - Meetings at least 2-3 times a week (times will vary)
- Team Meetings
  - Four team meetings so far
  - Meetings at least twice a week (Tuesdays and Fridays)
- Team Organization
  - Client Contact and web development: Pooja Ippalapelli
  - Lambda function development: David Cho
  - DynamoDB development: Emma Taylor
  - API Gateway development: Chris Chen



# Team Herman Miller

## Status Report

[4 of 4]

### Live Platform Real-Time Occupancy Status

#### Risks

- **No Easy access to hardware**
  - Description: The Herman Miller Team has allowed us to use of desk sensors and gateway hardware, but these are located at their facilities in Zeeland.
  - Mitigation: Create many test cases for each of our functions and communicate with the Herman Miller team.
- **Disjoint communications stall workflow**
  - Description: We meet with the Herman Miller Team twice per week but require their attention when we need assistance.
  - Mitigation: We can coordinate with the Herman Miller team to know what times are expected where we can work and have their assistance.
- **Difficulty finding users to test application**
  - Description: COVID-19 has made it difficult to access people to test our application.
  - Mitigation: We will use remote control software to let them access our machines to test the application.
- **Unavailable Team Members**
  - Description: If a team member becomes sick or is otherwise stuck with an emergency, we will be short one member.
  - Mitigation: We will communicate with the unavailable team member to redistribute the workload.



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**U N I V E R S I T Y**

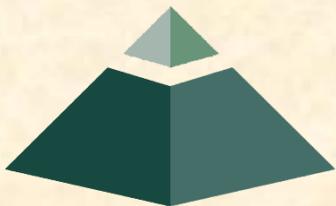
**Status Report**  
**Internship Success App**  
**The Capstone Experience**

**Team Humana**

Nick Escote  
Tia Fowlkes  
Sayem Lincoln  
Sara Seryani

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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*...to Professionals*

# Team Humana

## Status Report

[1 of 4]

### Internship Success App

- Project Overview
  - Meeting took place with client on 9/10.
  - Establishing and assigning app features each member will work on.
  - Started work on wireframes for UI after receiving company branding standards from client.
  - Created GitHub Repository.
- Project Plan Document
  - Created an outline.
  - 10% complete.
  - Needs table of contents and technical specifications.



# Team Humana

## Status Report

[2 of 4]

### Internship Success App

- Server Systems / Software
  - May use Firebase to store data but need to confirm with client first.
- Development Systems / Software
  - GitHub repository has been created for hosting.
  - React Native for development.
    - Development has not started yet.
  - Work on wireframes have started for log-in UI.



# Team Humana

## Status Report

[3 of 4]

### Internship Success App

- Client Contact
  - First meeting was completed on 9/10.
  - Scheduled weekly meetings on Thursdays at 3 PM EST, conducted on Zoom.
- Team Meetings
  - Weekly meetings on Mondays after weekly Triage meetings at 3 PM EST, conducted on Zoom.
  - Daily discussions and updates takes place on WhatsApp.
- Team Organization
  - Sara Seryani takes lead on team meetings.
  - Tia Fowlkes takes notes and sends action items to the team.



# Team Humana

## Status Report

[4 of 4]

### Internship Success App

#### Risks

- Risk 1
  - Restricted from connecting employee database to app.
  - Mitigation: Using fake names to ensure proper log-in.
- Risk 2
  - Prevent sensitive data leak – authentication credentials, location, tokens.
  - Mitigation: Simulation with fake credentials and data to ensure no vital data leaks occur.
- Risk 3
  - Lack of accessibility for visual impaired users.
  - Mitigation: Use of third-party resources to verify app meets the needs of all types of users, regardless of their disability.



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**Status Report**

**09/16: Status Report Presentation**

**The Capstone Experience**

**Team Learning A-Z**

Peter Liu

Ian Thompson

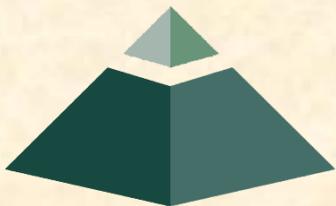
Brenden Hein

Shawn Wang

Maaz Khan

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Learning A-Z

## Status Report

[1 of 4]

### Vocab Slinger Word Definition Game

- Project Overview
- Vocabulary Game
- Web-based
- Interactive UI to match words with definition
- Pulls words & definitions from database
- Project Plan Document
- Project plan document has been started
- Plan has been outlined
- Risks and mitigation techniques have been discussed
- 10% complete, currently



# Team Learning A-Z

## Status Report

[2 of 4]

### Vocab Slinger Word Definition Game

- Server Systems / Software
  - PhpMyAdmin (MySQL)
- Development Systems / Software
  - PhpStorm
  - php
  - AngularJS
  - HTML/CSS
  - GitHub



# Team Learning A-Z

## Status Report

[3 of 4]

### Vocab Slinger Word Definition Game

- Client Contact
  - We contacted our client last week to get us started
  - Weekly meetings are every Tuesdays
- Team Meetings
  - Meetings after triage and client meetings
  - Aim for twice a week
- Team Organization
  - Front End (UI, UX): Peter Liu, Ian Thompson, Brenden Hein
  - Back End (Database): Shawn Wang, Maaz Khan



# Team Learning A-Z

## Status Report

[4 of 4]

### Vocab Slinger Word Definition Game

- Risks
  - Integrating UI with MySQL database
  - Figuring out how to pull data from database
  - Test pulling data with smaller database
- Designing UI Elements
  - Making clean UI elements
  - Building by components and assembling
- Scalable UI Elements
  - UI elements should be responsive to device sizes
  - Making responsive components
- Integrating with client website
  - Integrate our app with the client
  - Contacting client to discuss integrations



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**U N I V E R S I T Y**

Status Report  
SmartSat™ Heterogenous Computing in  
The Capstone Experience **Space**

Team Lockheed Martin Space

Nolan Baldwin  
Joseph Stafford  
Shivang Patel  
Alex Taylor  
Austin Declark

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Lockheed Martin Space

## Status Report

[1 of 4]

### SmartSat™ Heterogenous Computing in Space

- Project Overview
  - SmartSat Accelerator Manager Application
  - Process data directly on satellite
  - Use extra unused satellite hardware (FPGA/GPU)
  - Use SYCL/Vitis and application manager to allocate programs to the hardware
- Project Plan Document
  - Documented created and shared to team
  - Completed basic layout and titles
  - Filled in team roles/dynamics information
  - Started writing project overview information (early stage)



# Team Lockheed Martin Space

## Status Report

[2 of 4]

### SmartSat™ Heterogenous Computing in Space

- Server Systems / Software
  - LM secure email/file server – connected/tested
  - Git repo for public files – connected/tested
- Development Systems / Software
  - SYCL development systems - AWS/V-Box Ubuntu VM (Tested)
  - Vitis development systems – Windows/V-Box Ubuntu VM (Awaiting Access to SDK)
  - App manager development systems – AWS Ubuntu VM (Tested)



# Team Lockheed Martin Space

## Status Report

[3 of 4]

### SmartSat™ Heterogenous Computing in Space

- Client Contact
  - Scheduled alternating weekly conference calls (Thurs/Fri)
  - Conducted two conference calls with team and client
- Team Meetings
  - Scheduled two weekly update meetings (Weds/Client Day)
  - Conducted eight team update meetings
- Team Organization
  - Team SYCL – Alex, Shivang
  - Team Vitis – Austin, Joseph
  - Team Manager Application - Nolan



# Team Lockheed Martin Space

## Status Report

[4 of 4]

### SmartSat™ Heterogenous Computing in Space

#### Risks

- Distance Between Teammates
  - Teammates located in Kalamazoo/Metro Detroit/East Lansing
  - Can be mitigated by travel as needed for crunch sessions
- Limited Hardware Availability
  - Only 1 FPGA and 1 TX2 available (needed for VITIS/SYCL testing)
  - Can request more hardware from LM or travel if needed
- Hardware Integration
  - SmartSat SDK requires ubuntu, meaning a Linux VM is likely needed
  - Since VMs may have difficulty connecting with hardware, getting a true Linux device would be a prudent solution to ensure no issues
- Security
  - SmartSat code is not allowed to be put over the internet, meaning difficulty transferring code between team members and that other safety measures need to be taken
  - While the pandemic makes this more difficult, testing can be done individually, and group testing can be done in crunch time/group sessions



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## Status Report

# Review Aggregator for Educational Programs

## The Capstone Experience

### Team Malleable Minds

Brian Martin

Jerry Cortez

Becky Henning

Cody Carter

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Malleable Minds

## Status Report

[1 of 4]

### Review Aggregator for Educational Programs

- Project Overview
  - Provided user authentication via Okta September 9th
  - Created initial React frontend and Flask app September 11th
  - Will combine React frontend and Flask app and host on AWS Elastic Beanstalk
  - Will design and manage PostgreSQL database
  - Will provide distinct user experience based on user group defined in Okta
- Project Plan Document
  - Created skeleton outline based off previous project plan examples
  - Prepared a schedule for the semester that outlines important deadlines
  - Defined project specifications
  - Discussed the project scope with the CEO and CTO to prepare for the executive summary



# Team Malleable Minds

## Status Report

[2 of 4]

### Review Aggregator for Educational Programs

- Server Systems / Software
  - AWS Elastic Beanstalk environment set up by Client
  - PostgreSQL database deployed by Client
  - First iteration of database architecture designed
- Development Systems / Software
  - Flask framework initial implementation is running on AWS Elastic Beanstalk, further features yet to be added
  - Okta login feature manually tested locally
  - AWS Elasticsearch has yet to be implemented



# Team Malleable Minds

## Status Report

[3 of 4]

### Review Aggregator for Educational Programs

- Client Contact
  - Set up weekly stand-up meetings - MW 10:00AM-10:15AM
  - Set up weekly team sync meetings - F 11:00AM-12:00PM
- Team Meetings
  - Weekly stand-up meetings Tuesday at 12:00PM-12:20PM
  - The team meets informally daily and at designated sync and stand-up times, in total 10 times thus far
- Team Organization
  - Becky and Jerry working Frontend (React/JS) development
  - Brian and Cody working Backend (Python/SQL) development



# Team Malleable Minds

## Status Report

[4 of 4]

### Review Aggregator for Educational Programs

#### Risks

- Feature Creep
  - Layout for application is still a work in progress
  - Create a set scope during next hour-long planning session
- Story Point Estimation/Specification
  - Lack of experience with technologies means we lack insight into how long each story will take and what subtasks comprise the task. This could disrupt scheduling and productivity
  - Contact CTO through slack with questions, constant communication with team through Teams when blocked, peer programming utilized with difficult or ambiguous stories
- Remote Workflow
  - Team must adjust to working remotely
  - Communication through Slack/Teams/email/Zoom and utilize peer programming and stand-ups to retain contact daily



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**U N I V E R S I T Y**

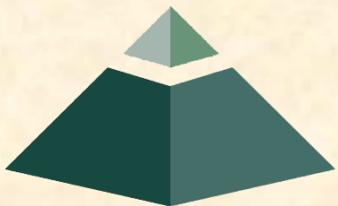
**Status Report**  
**Meijer Support Chatbot**  
**The Capstone Experience**

**Team Meijer**

Will Dixon  
Jacob Atisha  
Dean Dawson  
Mengjun Su  
Shreyas Talamakki

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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*...to Professionals*

# Team Meijer

## Status Report

[1 of 4]

### Meijer Support Chatbot

- Project Overview
  - Build a chatbot that leverages Meijer's knowledge base to automate the resolution of technical issues.
  - Mine incident data tickets from Meijer Support to add to this knowledge base.
  - Utilize Machine Learning to surface solutions that most frequently result in the resolution of an issue.
  - Supports text and speech
    - For Meijer employees
- Project Plan Document
  - Setup a skeleton version of the document that is ready to be populated.
  - Reviewing past year team's project plan to get a template.
  - Table of contents.



# Team Meijer

## Status Report

[2 of 4]

### Meijer Support Chatbot

- Server Systems / Software
  - Azure DevOps for version control.
  - Azure portal for maintaining the bot.
- Development Systems / Software
  - VSCode & Visual Studio for development/debugging.
  - Microsoft Bot Emulator for testing.
  - Git for version control management.



# Team Meijer

## Status Report

[3 of 4]

### Meijer Support Chatbot

- Client Contact
  - Weekly contact scheduled for Fridays at 10:30 AM
  - Main contact: Chris Laske, Data contact: Todd Castor
  - Awaiting incident ticket data to be sent from Todd
- Team Meetings
  - Team has met ~5 times individually ( $\geq 2$  times a week)
- Team Organization
  - Data mining --> Jacob, Shreyas, and Will
  - Knowledge Base Management --> Su, Dean
  - Front-end Microsoft Teams Integration --> ALL



# Team Meijer

## Status Report

[4 of 4]

### Meijer Support Chatbot

#### Risks

- Incident Ticket Data not received
  - In order to start adding useful functionality to bot, we need data from support team
  - Made contact with Todd Lastor, waiting to hear back
- Redirection of unknown questions
  - How will we address questions the bot is unsure of how to answer?
  - Reference support team members for further assistance
- Voice Chat Integration
  - Voice-to-text features have not been implemented/researched
  - Search for software packages that support text-to-speech
- Ticket Data not in supported
  - Native file format of ticket data for importing to QnA Maker may not be supported (.csv)
  - Conversion code that styles from native format to another, supported format (.tsv/.xlsx)



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**U N I V E R S I T Y**

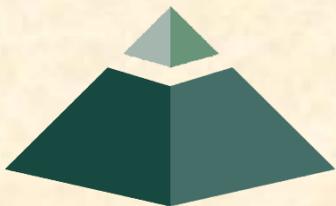
**Status Report**  
**Explore: Discover Events and Experiences**  
**The Capstone Experience**

**Team Michigan State University ITS**

Will Huynh  
Sai Chava  
Tanner Debien  
Bill Tekip

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Michigan State University ITS

## Status Report

[1 of 4]

### Explore: Discover Events and Experiences

- Project Overview
  - The goal of this project is to alleviate some of the headaches and problems that come with trying to discover the events that are happening on campus
  - Users can find all the information they need to get in and enjoy what the event has to offer
  - A student pocket guide that keeps them up to date on all the activities happening
- Project Plan Document
  - Started (Functional Specifications, Design Specifications, Risks)
  - 10% done



# Team Michigan State University ITS

## Status Report

[2 of 4]

### Explore: Discover Events and Experiences

- Server Systems / Software
  - Amazon Web Services
    - Database system
- Development Systems / Software
  - Git & Gitlab
  - Android Studio
  - Xcode
  - Visual Studio Code
  - All are installed, tested, and working



# Team Michigan State University ITS

## Status Report

[3 of 4]

### Explore: Discover Events and Experiences

- Client Contact
  - We have met with our client
  - Weekly meeting Thursday at 1PM
- Team Meetings
  - Scheduled Teams meetings every Thursday at 12PM
  - We have met three times so far
- Team Organization
  - Bill Tekip, Frontend Web    Tanner Debien, Backend Web
  - Sai Chava, Android        Will Huynh, iOS



# Team Michigan State University ITS

## Status Report

[4 of 4]

### Explore: Discover Events and Experiences Risks

- Feature Scope
  - Many possible features, we could try to take on too many
  - Prioritize most popular features from survey & discuss with client
- User Feedback
  - User feedback is important to our design process, we need users to give us feedback
  - Ask for feedback from existing friends and social groups compared to strangers, as they are more likely to respond
- Feature Parity
  - All features need to have equivalent functionality across platforms
  - Ensure all platforms have capabilities needed for supporting chosen feature implementations



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**U N I V E R S I T Y**

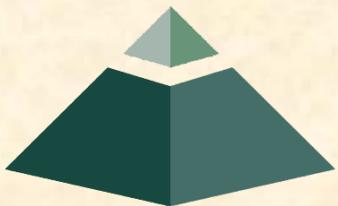
**Status Report**  
**Feedback Analysis Hub for Microsoft Intune**  
**The Capstone Experience**

**Team Microsoft**

Avani Shrivastava  
Jake Bouelle  
Ruchika Joshi  
Reid Oboyle  
Tan Tao

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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*...to Professionals*

# Team Microsoft

## Status Report

[1 of 4]

### Feedback Analysis Hub for Microsoft Intune

- Project Overview
  - Gather data into a central hub for analysis
  - Compile data from internal/external reviews
  - Analyze the data to provide meaningful output
  - Visualize the output
- Project Plan Document
  - Worked with Microsoft to establish project goals
  - 30% completion
  - In progress



# Team Microsoft

## Status Report

[2 of 4]

### Feedback Analysis Hub for Microsoft Intune

- Server Systems / Software
  - Azure App Service – set up/tested
  - Microsoft Text Analytics API – set up/tested
  - Microsoft Power BI – set up/tested
- Development Systems / Software
  - Microsoft Azure – set up/tested
  - Azure DevOps – set up/tested
  - Visual Studio Code – set up/tested



# Team Microsoft

## Status Report

[3 of 4]

### Feedback Analysis Hub for Microsoft Intune

- Client Contact
  - Have met with Katie Fairbrother, and Chad Seippel 3 times
  - 2 weekly meetings on Tuesday and Thursday 11:45 am
- Team Meetings
  - We have met 6 times so far.
  - Usually meet before/after lectures
- Team Organization
  - Client Contact/Data Processing: Jake Bourelle
  - Project Manager/Data Visualization: Ruchika Joshi
  - Power BI: Avani Shrivastava
  - Web/Database: Tan Tao
  - Web/API Development: Reid Oboyle



# Team Microsoft

## Status Report

[4 of 4]

### Feedback Analysis Hub for Microsoft Intune Risks

- Risk 1
  - Internal Microsoft security walls
  - Work with our clients to get permissions granted ahead of time
- Risk 2
  - Bad data
  - Filter out or flag bad reviews
- Risk 3
  - Our initial design fails
  - Need to start early and allow for revision of design
- Risk 4
  - We don't work directly with the IT department
  - We must do our best to follow UI principals



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**Status Report**

**Making Firefox's Picture-in-Picture Even More  
Awesome  
The Capstone Experience**

**Team Mozilla**

Niklas Baumgardner

Chris Jackson

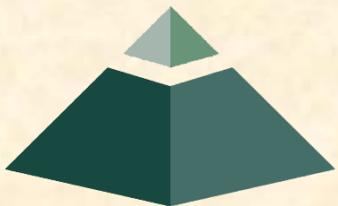
Hunter Jones

Manish Rajendran

Reid Shinabarker

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team Mozilla

## Status Report

[1 of 4]

### Making Firefox's Picture-in-Picture Even More Awesome

- Project Overview

- Had hackathon weekend with Mozilla
- Everyone has local Firefox build working
- Everyone has completed 1 or 2 bug fixes
- Everyone is currently working on more substantial "bugs"

- Project Plan Document

- ~10% completed
- We have started collecting diagrams and materials
- Every section is assigned to someone
- Started to get feedback from Clients about the plan

# Team Mozilla

## Status Report

[2 of 4]

### Making Firefox's Picture-in-Picture Even More Awesome

- Server Systems / Software
  - None
- Development Systems / Software
  - Bugzilla (Bug tracking, effectively an internal issue board)
  - Mercurial (Internal distributed source control tool)
  - Local build environment
  - Phabricator (Internal code review tool)
  - All development systems have been set up and used by each team member.



# Team Mozilla

## Status Report

[3 of 4]

### Making Firefox's Picture-in-Picture Even More Awesome

- Client Contact
  - Have had a meeting and weekend 'hackathon'
  - Meetings Thursdays @ 10:00 am
- Team Meetings
  - Have met three times on our own not counting hackathon
  - Meetings are Tuesdays at 10:40 am after Triage
- Team Organization
  - Everyone is assigned individual bugs within Picture-in-Picture
  - Bugs are assigned by Mozilla



# Team Mozilla

## Status Report

[4 of 4]

### Making Firefox's Picture-in-Picture Even More Awesome

#### Risks

- Web Compatibility
  - Since Firefox's Picture-in-Picture relies on the usage of common web elements, some websites may be unsupported "out of the box"
  - Discussing common compatibility issues with sponsors, testing a wide variety of websites to locate/develop for common compatibility issues
- Merge conflicts
  - Since Firefox is open-source and a large project, many other engineers apart from us are working on the code at any given time. We will run into issues regarding this and will need to spend time to maneuver around the issues.
  - Consulting clients for changes in code base, watching Bugzilla for bugs related to Picture-in-Picture
- Development for multiple environments
  - Our solutions need to work appropriately for Windows, Mac, and Linux users. Additionally, some users may have a single or multiple displays.
  - Iterative prototyping. First develop for one platform, and then incrementally add others while avoiding code regression



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**U N I V E R S I T Y**

Status Report  
Member Digital Help Center  
The Capstone Experience

Team MSUFCU

Daniel Tan

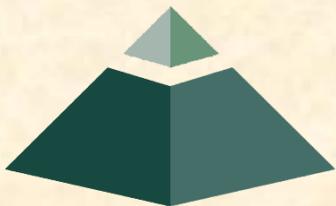
James Im

Andrew Kim

Scott Shumway

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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# Team MSUFCU

## Status Report

[1 of 4]

### Member Digital Help Center

- Project Overview
  - Mostly in brainstorming/ideas phase, finished getting majority of information from client
  - Started with creating git repository and initial files needed
  - Started coding aspect with starter codes (such as Hello World!)
  - Within the first 5-10% of the project phase, probably highly accelerated next checkpoint
- Project Plan Document
  - Started project plan document
  - Will most likely be adding majority of things this next week or so
  - Have information needed to complete first portion, organizing
  - Figuring out parent vs child for project



# Team MSUFCU

## Status Report

[2 of 4]

### Member Digital Help Center

- Server Systems / Software
  - Git: Set up git repository; everyone has access to git files.
  - MySQL: Using phpMyAdmin as our temporary data base; using our own schemas to best fit our application.
- Development Systems / Software
  - PhpStorm / Visual Studio Code: Everyone has access to PhpStorm or Visual Studio Code; Will be used for web development; everyone is connected through Git and can open/make changes.
  - Android Studio: Mobile developers have access to Android Studio; will be used for Android development; however mobile development has low priority and will be used after web development.
  - Xcode: Mobile developers have access to Xcode; will be used for iOS development; however mobile development has low priority and will be used after web development.



# Team MSUFCU

## Status Report

[3 of 4]

### Member Digital Help Center

- Client Contact
  - We have met with our client twice as of now.
  - Our weekly client conference call/meeting is scheduled for Fridays from 10:00-11:00 AM.
- Team Meetings
  - Due to the COVID-19 pandemic, there will not be any in-person meetings.
  - Our team has met a total of about 6 times so far and we have been meeting regularly each week to work on tasks that need to be completed.
- Team Organization
  - Andrew Kim and Scott Shumway will be web developers.
  - James Im and Daniel Tan will be mobile developers for Android and iOS.



# Team MSUFCU

## Status Report

[4 of 4]

### Member Digital Help Center

#### Risks

- Redoing search function to be more effective
  - Search does not always work as expected (e.g. "password" returns nothing).
  - We will research and try to implement a "smarter" search functionality.
- Unexpected complexity when integrating existing features
  - We aren't yet sure what integrating some features will involve (e.g. chatbot).
  - We will develop the site in small pieces and have a working system ASAP.
- Uncertainty about user acceptance
  - Everyone will have their own idea about how to navigate site.
  - We will seek frequent feedback and possibly survey end users.
- Ensuring compliance with brand standards
  - The Help Center needs to be integrated with the existing site.
  - We have reached out to our client about standards, templates, etc.



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## Status Report

# Leveraging SPAM to Make Bold Societal Predictions The Capstone Experience

## Team Proofpoint

Scott Newhard  
Connor Southwell  
Matthew Xu  
Ben Kandel  
Cameron Smith

Department of Computer Science and Engineering  
Michigan State University

Fall 2020



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...to Professionals*

# Team Proofpoint

## Status Report

[1 of 4]

### Leveraging SPAM to Make Bold Societal Predictions

- Project Overview
  - Parse through large collection of SPAM
  - Classify SPAM in a machine learning model
  - Use data from model to make an educated prediction
  - Present data and prediction in a stylish web app
- Project Plan Document
  - In Progress
  - 10-15%
  - Screen mockups need to be fleshed out
  - Fill in missing pieces of Architecture (server, model)



# Team Proofpoint

## Status Report

[2 of 4]

### Leveraging SPAM to Make Bold Societal Predictions

- Django Backend + ReactJS Frontend
  - We can use react to create a nice UI, but we need to populate it with data
  - Django lets our python scripts talk to our server
  - We've been learning how to use each on their own. Now we have to integrate them into one application
- Development Systems / Software
  - Natural Language Processing
  - Sentiment Classification
  - Description &/or Status Point 3



# Team Proofpoint

## Status Report

[3 of 4]

### Leveraging SPAM to Make Bold Societal Predictions

- Client Contact
  - Weekly meetings Friday (subject to change)
  - Met twice with our client
- Team Meetings
  - Weekly meetings on Tuesday
  - Using GroupMe and Teams for communication
- Team Organization
  - Full stack – frontend and backend...
  - Model training, data gathering



# Team Proofpoint

## Status Report

[4 of 4]

### Leveraging SPAM to Make Bold Societal Predictions

#### Risks

- What does our UI look like?
  - Our perception of a UI that allows end users to properly understand the insights drawn from the data may vary from a less technical end user perspective or from internal company practices, especially taking into the account the open-endedness of the project specifications regarding UI experience.
  - We will look at how other data analytic projects structure their UI to make a clean and easy-to-understand presentation. We will consider the different layouts and formats we found to produce our front end.
- Data does not reveal clear trend or correlation
  - There is always a risk in machine learning and data science in general that there is not a clear trend that the data represents. There are several different techniques to measure trends, but data is not always correlated.
  - Training the model in several different ways will help to combat this issue. It will allow us to search for several different methods of correlation instead of focusing on a single solution that may or may not provide insights to the end user.
- Availability of Data
  - It has not been made very clear, up to this point, exactly what kind of data will be made available to us. Whether or not it includes meta data, user classification of the email, or it is simply just email files that we are able to extract text from.
  - We will be working closely with the Proofpoint team in the next week to determine the exact kind of data we will have available to us. Once this process is complete, we will work with their team to determine the insights they want to gather from that set of available data.



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**U N I V E R S I T Y**

**Status Report**  
**Rally OKR (Objectives and Key Results)**  
**The Capstone Experience**

**Team Quicken Loans**

Megan McCarty

Tony Sulfaro

Abi Venkat

Nick Katarzynski

Shicheng Wen

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Fall 2020



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*...to Professionals*

# Team Quicken Loans

## Status Report

[1 of 4]

### Rally OKR (Objectives and Key Results)

- Project Overview
  - Allow teams to create and track OKRs
  - Create an accessible web app for employees
  - Integrate with employee database
  - Interface with mobile application
- Project Plan Document
  - ~25% complete
  - In the process of creating timeline
  - Creating mockups for project documents



# Team Quicken Loans

## Status Report

[2 of 4]

### Rally OKR (Objectives and Key Results)

- Server Systems / Software
  - Hosting database through AWS
  - Application currently hosted through Netlify
  - API hosted through Azure
- Development Systems / Software
  - Front end using React
  - Back end using .NET Core
  - Active GitHub repository with client visibility



# Team Quicken Loans

## Status Report

[3 of 4]

### Rally OKR (Objectives and Key Results)

- Client Contact
  - Weekly meeting with our client, Chris, 9AM Fridays
  - Email communication
- Team Meetings
  - Weekly scheduled meetings, 11:40AM Mondays
  - Group communication (Slack, Teams, etc.)
- Team Organization
  - Front end (Megan, Abi, Shicheng)
  - Back end (Tony, Nick, Shicheng)



# Team Quicken Loans

## Status Report

[4 of 4]

### Rally OKR (Objectives and Key Results)

#### Risks

- Mobile app
  - Unsure of best implementation for stretch goal
  - Research platforms and communicate with client
- Chat feature
  - Unsure of specifics for chat
  - Obtain more detailed description of functionality
- Database schema
  - No exact schema for OKR layout
  - Consistently communicate with client as we develop custom schema



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**U N I V E R S I T Y**

**Status Report  
Video Summarizer**

**The Capstone Experience**

**Team TechSmith**

Collin Bleech

Alex Deneau

Chad Quinlan

Justin Tu

Jacob Willinger

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# Team TechSmith

## Status Report

[1 of 4]

### Video Summarizer

- Project Overview
  - Skeleton of web app created and builds successfully
  - Using Azure for Speech-to-Text APIs and storage
  - Mock version of UI designed
- Project Plan Document
  - Outline complete
  - Approximately 15% has been written, and layout is finalized
  - Sections will likely expand and shrink as further work is done on the project



# Team TechSmith

## Status Report

[2 of 4]

### Video Summarizer

- Server Systems / Software
  - Created SQL database hosted on Azure
  - Using Azure BLOB storage for multimedia files
- Development Systems / Software
  - Azure Speech-to-Text API: tested Azure, need to implement in project
  - Summarization API: tested 3, need to implement in project
  - Subtitles and Timestamps API: not tested



# Team TechSmith

## Status Report

[3 of 4]

### Video Summarizer

- Client Contact
  - Scheduled weekly Teams meetings for Fridays at 10am
  - Met twice, no in person meetings scheduled
- Team Meetings
  - Capstone team meetings twice per week on Tuesdays/Thursdays
  - Met five times, team member tasks have been assigned
- Team Organization
  - Front End: Justin and Jacob
  - Backend: Alex, Jacob and Chad
  - Database: Collin



# Team TechSmith

## Status Report

[4 of 4]

### Video Summarizer

#### Risks

- Video Segmentation / Summarization
  - Risk Level: High
  - Split text into useful and meaningful segments
  - Started work on a basic segmentation program to split pre-summarized text into meaningful segments, and spent some time with the top 6 summarization APIs and Azure's abilities
- Speech To Text
  - Risk level: High
  - Azure's Speech-to-Text API does not allow for videos, so we will need to convert videos into audio files and then use speech to text on those
  - Will create a small program to take the videos and convert them into audio files
- User Accounts
  - Risk Level: Medium (stretch-goal)
  - The addition of user accounts to safely save and store videos could result in complications if not planned for early on
  - Working on making a simple website that uses Google Sign-In, that way we are not responsible for keeping passwords and other confidential information secure



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**U N I V E R S I T Y**

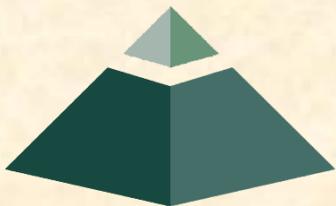
**Status Report**  
**Mobile GSAP and QC Audit Center v2.0**  
**The Capstone Experience**

**Team United Airlines Airport Operations**

Hani Habhab  
Jacob Macbrien  
Austin Evans  
Tu Le

Department of Computer Science and Engineering  
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# Team United Airlines Airport Operations

## Status Report

[1 of 4]

### Mobile GSAP and QC Audit Center v2.0

- Project Overview
  - Connect to Existing Database for reporting
  - Add three more features: LOSA, MOCHA, ERS reporting/audits
  - Fix and redesign User Interface (Android & IOS)
  - Fix and tune up GSAP, Audits, etc
- Project Plan Document
  - Started the project plan documentation, using the old one as a reference
  - We have written a few sections based of what we know from business requirements, as we are still getting questions answered
  - Status: 20%



# Team United Airlines Airport Operations

## Status Report

[2 of 4]

### Mobile GSAP and QC Audit Center v2.0

- Server Systems / Software
  - Django – created, continuation from last year, need to create APIs (REST)
  - MS SQL Server – waiting on access, going through walkthrough with United soon.
- Development Systems / Software
  - Android studio- made some “Hello world” applications, as well as starting to build out the UI
  - XCode-Looked over IOS code from last project, decided to start-over using old code as reference, building out the UI. . (using Swift)



# Team United Airlines Airport Operations

## Status Report

[3 of 4]

### Mobile GSAP and QC Audit Center v2.0

- Client Contact
  - Met with Program Manager, understood and discussed Business aspect.
  - Still waiting for main IT contact, and UX team meetings
  - Scheduled weekly client meetings for Thursday mornings
  - Got access to United Office apps (teams, outlook, etc.)
  - Got our VPN, waiting to connect to their database
- Team Meetings
  - Meeting twice weekly, Monday and Thursday mornings
- Team Organization
  - Hani Habhab – Point of Contact/project manager, Support Android developer
  - Jacob Macbrien –Support IOS Developer and main MS SQL
  - Austin Evans – Main IOS developer
  - Tu Le- Main Android Developer



# Team United Airlines Airport Operations

## Status Report

[4 of 4]

### Mobile GSAP and QC Audit Center v2.0

#### Risks

- Risk 1
  - No “main” IT contact yet, still in process
  - Mitigation – work with our contact to at least have an IT person answer our questions.
- Risk 2
  - ETQ access
  - Mitigation – just got VPN, waiting for explanations and walkthrough on ETQ.
- Risk 3
  - Our UI designs not approved yet, United’s UX team has not met yet
  - Mitigation- keep creating designs and work through, updating documentations and send them updates as we go so they are aware of our works.



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**U N I V E R S I T Y**

Status Report  
Airport Lounge Management System  
The Capstone Experience

Team United Airlines Digital Technology

Evan Lihou  
Deven Patel  
Jon Spiwak  
Katrina Zhu

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# Team United Airlines Digital Technology

## Status Report

[1 of 4]

### Airport Lounge Management System

- Project Overview
  - VPN access has been set up for two team members
  - TFS has been set up
  - Project features have been discussed and confirmed with the client through interview and design thinking meeting
- Project Plan Document
  - The outline of the project plan document has been created
  - Project Plan Document has been started
  - Risk Analysis and Design Specifications have been discussed



# Team United Airlines Digital Technology

## Status Report

[2 of 4]

### Airport Lounge Management System

- Server Systems / Software
  - 2 of 4 have access to VPN
  - Waiting on access to AWS via VDI
  - Infrastructure not yet architected; we know it will all be in the UAL AWS tenant
- Development Systems / Software
  - TFS Git Repository has been created w/ skeleton
  - Basic ASP.NET Core Web API running with Swagger for docs
  - All team members have local development environments for their part of the project set up



# Team United Airlines Digital Technology

## Status Report

[3 of 4]

### Airport Lounge Management System

- Client Contact – Thomas Johnson
  - Weekly meeting every Friday
  - Had our interview with the business side of the team last Wednesday (9/9)
  - Had our design thinking meeting this Tuesday (9/15)
- Team Meetings
  - Our team meets at least once a week every Friday
  - We regularly communicate every day through Teams messaging
- Team Organization
  - Currently all team members are taking part in working with the client to come up with the design of our project
  - 2 team members (Jon and Katrina) are still working to get United VPN access



# Team United Airlines Digital Technology

## Status Report

[4 of 4]

### Airport Lounge Management System

#### Risks

- Barcode scanning
  - Use ticket barcodes to pull customer information
  - Integrate current barcode reader into the project
- Incomplete customer data
  - Track customer data to create a more personalized experience
  - Prompt customers to enter in data themselves
- Notify customers when amenities are ready
  - Let customers know when amenities are ready to be more efficient
  - Track use of amenities



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Status Report

Tech Ops Training

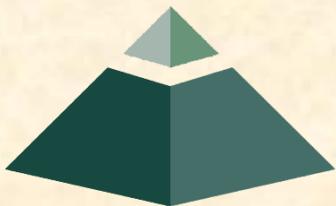
Content Management System  
The Capstone Experience

Team United Airlines Training

Brendan Walsh  
Chris Nosowsky  
Jeremy Zhu  
Shawn Pryde

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Michigan State University

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# Team United Airlines Training

## Status Report

[1 of 4]

### Tech Ops Training Content Management System

- Project Overview
  - Media hosting website for training media
  - Dynamically recommends media content
  - Supports user feedback and comments
  - Supports scheduled tech talks, videos and PDFs
- Project Plan Document
  - ER UML created for database
  - Created private repository and ASP.NET project skeleton
  - Created project plan document rough draft
  - Created class diagram rough draft



# Team United Airlines Training

## Status Report

[2 of 4]

### Tech Ops Training Content Management System

- Server Systems / Software
  - Azure SQL server has been provided by client
  - Production app will be hosted on an IIS server.
- Development Systems / Software
  - Angular 10.1.1 for client-side components
  - ASP.NET Core 3.1 for server-side components
  - PDFjs & HTML5 for media displays



# Team United Airlines Training

## Status Report

[3 of 4]

### Tech Ops Training Content Management System

- Client Contact
  - Two meetings with clients so far
  - Weekly meetings on Wednesdays at 2pm EST
- Team Meetings
  - Scheduled meetings on Wednesdays at 7:30pm EST
  - Impromptu meetings as needed (four so far)
- Team Organization
  - **Chris** - Back End / Algorithms / Program Manager
  - **Shawn** - Back End / DB Integration / Tester / Systems Admin.
  - **Brendan** - Front End / Media to UI / Client Contact
  - **Jeremy** - Front End Web Developer



# Team United Airlines Training

## Status Report

[4 of 4]

### Tech Ops Training Content Management System Risks

- Un-familiarity with technologies and frameworks
  - Lack of experience with Angular / IIS / ASP.NET framework
  - Create "Hello World" Demos for each technology
- .NET Core web server is not able to access IIS virtual directories
  - Static content on server no longer can be served at current static file directory
  - Reconfigure where the static content is served from
- Integrating technologies with each other
  - Once we have our demos in place, we will need to figure out how to connect their functionalities
  - Start connecting technologies within our repository, addressing and resolving conflicts early



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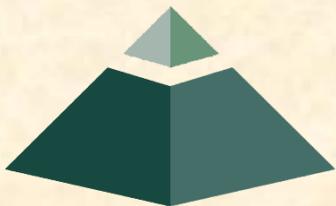
**Status Report**  
**Purchase Score Application**  
**The Capstone Experience**

**Team Urban Science**

Marcus Minardi  
Kyle Schmitz  
Jay Kim  
Isaac Mayers

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# Team Urban Science

## Status Report

[1 of 4]

### Purchase Score Application

- Project Overview
  - Develop a sales lead ranking platform
  - Design intuitive dashboard to view lead information
  - Direct way of adding lead information
  - Provide metrics on lead quality
- Project Plan Document
  - Started outline for project plan document
  - Created tasks and objectives for each team member
  - Documented scheduling of meetings



# Team Urban Science

## Status Report

[2 of 4]

### Purchase Score Application

- Server Systems / Software
  - Currently have VM running on iMac
  - Gotten IP address from for VM
- Development Systems / Software
  - Downloaded VS and VS Code
  - Github repository for project is created
  - Initial software prototypes made



# Team Urban Science

## Status Report

[3 of 4]

### Purchase Score Application

- Client Contact
  - Met with client and signed NDA's and IPA's.
  - Scheduled weekly meetings with client Wednesday afternoons.
- Team Meetings
  - Three-weekly scheduled meetings for work
  - Primarily work done through group meetings on zoom
- Team Organization
  - Isaac - Login, Help Reports, Liaison
  - Jay - Help Login, Design, Help Reports
  - Kyle - Reporting
  - Marcus - Help Reporting, Input Leads



# Team Urban Science

## Status Report

[4 of 4]

### Purchase Score Application

#### Risks

- Quality of Data
  - Quality of the data given to us by Urban Science isn't sufficient to calculate a prediction
  - Parse through the usable data
- API Issues
  - Not being able to access their APIs for some reason (Updating API)
  - Restricting usage of certain functionalities based on available APIs
- Field Testing
  - Not being able to field test with such a UI focused project on car dealers
  - Show to relatives/non-technologically advanced individuals



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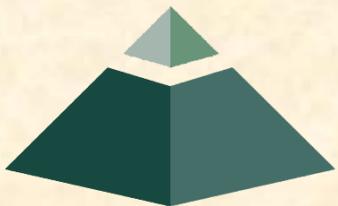
Status Report  
Self-Improving Assistant  
The Capstone Experience

Team Vectorform

Chairin Paik  
Zachary Lanzon  
Matthew Landcaster  
Matthew Lane

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Fall 2020



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# Team Vectorform

## Status Report

[1 of 4]

### Self-Improving Assistant

- Project Overview
  - Domain-Independent chatbot
  - Available within Microsoft Teams
  - Voice interaction (stretch goal)
  
- Project Plan Document
  - Setup Microsoft Azure (QnA Maker)
  - Learn about QnA Maker
  - Start parsing data
  - 1% or barely complete



# Team Vectorform

## Status Report

[2 of 4]

### Self-Improving Assistant

- Server Systems / Software
  - Microsoft Azure Cloud Services
    - Subscription through Vectorform in progress. Basic services in Azure already freely available for testing purposes
  - O365 Subscription for Teams App development
    - Developers through Vectorform's subscription
- Development Systems / Software
  - Microsoft Azure Cognitive Services
  - QnA Maker SDK



# Team Vectorform

## Status Report

[3 of 4]

### Self-Improving Assistant

- Client Contact
  - Jeff Meador: Engineering Director @ Vectorform
    - Two Teams meetings so far with a weekly meeting setup
- Team Meetings
  - Two Team exclusive meetings.
    - Setup iMacs and VMs. Meeting to plan future and report status
  - Weekly Meetings Scheduled
- Team Organization
  - Basic "Hello World" Bot
  - Parsing/Loading JSON
  - Downloading FAQ doc from Github



# Team Vectorform

## Status Report

[4 of 4]

### Self-Improving Assistant

#### Risks

- Risk 1
  - Linking the bot into Microsoft Teams
  - Get Started early on both aspects in a unified development environment (MS Suite) so they can be integrated later
- Risk 2
  - Applying ML to train a bot
  - Categorize how high level to low level the learning tools available are, picking the highest level framework that can complete the task in the timeframe
- Risk 3
  - Difficulty in gathering relevant training / testing data
  - Prototype with well-defined training sets to learn the fundamentals
- Risk 4
  - Implementing voice interaction
  - May rely on the previous functionality being completed, so the implementation may fall to the final stages of development.



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**U N I V E R S I T Y**

**Status Report  
EV Route Planner**

**The Capstone Experience**

**Team Volkswagen**

Andrew Smigielski

Erich Hairston

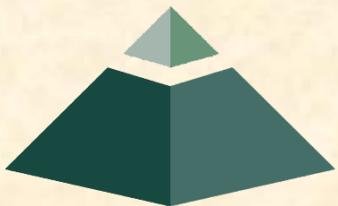
Joey Kelly

Michael Lin

Zosha Korzecke

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# Team Volkswagen

## Status Report

[1 of 4]

### EV Route Planner

- Project Overview
  - EV Performance Android Application
  - Routes locations with performance considerations
  - Compares specs for different vehicles
  - Will be used on dealership kiosk to help sell EV
- Project Plan Document
  - Outline of tentative plans
  - Overview of schedule
  - First stage of UI Mocks
  - 15% complete



# Team Volkswagen

## Status Report

[2 of 4]

### EV Route Planner

- Server Systems / Software
  - Google EV Charging Stations API
  - Google Maps API
  - Google Places API
  - Currently in prototyping phase to integrate APIs
- Development Systems / Software
  - Android Studio / Kotlin – installed and made "Hello World"
  - Git / BitBucket – Created repo and connected with client



# Team Volkswagen

## Status Report

[3 of 4]

### EV Route Planner

- Client Contact
  - Met with client twice – Igor VW Mobile Architect
  - Weekly meetings Tuesdays 2-3pm EST
- Team Meetings
  - Met 4 times
  - Weekly meetings Thursday 1:15pm EST
- Team Organization
  - Zosha is Client Contact
  - Zosha & Erich are developing first UI/UX design iteration
  - Andrew, Joey, & Michael are developing a basic route prototype



# Team Volkswagen

## Status Report

[4 of 4]

### EV Route Planner

#### Risks

- Risk 1
  - Google Maps API may not have updated charging station data.
  - Use the API of Volkswagen's subsidiary Electrify America.
- Risk 2
  - Integration of performance UI with Google Maps UI.
  - Google Maps offers various customization functionalities.
- Risk 3
  - Using weather/road condition data to predict accurate routing.
  - Meet with Client to better understand performance effects on EV.

