

MICHIGAN STATE  
UNIVERSITY

# The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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

# Course Goals

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- Build a Significant Software System
- Work in a Team Environment
- Learn New Tools and Environments
- Build and Administer Systems
- Develop Communication Skills
- Develop Interview Talking Points
- Consider Issues of Ethics and Professionalism





# Course Goals

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- Teams of Students
- Build Significant Software System
  - Design
  - Develop
  - Debug
  - Document
  - Deliver
- For Corporate Clients
- In 15 (Short) Weeks



# Project Deliverables

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- Project Plan Document & Presentation
- Alpha Presentation
- Beta Presentation
- Project Software & Documentation
- Project Video
- Design Day

See [Major Milestones](#).



# All-Hands Meetings

- MW, 3:00-4:20 p.m., 1279 Anthony Hall
- Presentations By
  - Professor
  - Teams
    - Status Report Presentations
    - Formal Presentations
      - Project Plan
      - Alpha
      - Beta
    - Project Videos
  - Guest Speakers



# All-Hands Meetings

- 08/29: Capstone Overview
- 09/03: (Labor Day, No Meeting)
- 09/05: Project Plan
- 09/10: Team [Status Report Presentations](#)
- 09/12: Risks and Prototypes
- 09/17: Schedule and Teamwork
- 09/19: Resume Writing and Interviewing
- 09/24 : Team [Project Plan Presentations](#)
- 09/26: Team [Project Plan Presentations](#)
- 10/01 Team [Project Plan Presentations](#)
- 10/03: Team [Project Plan Presentations](#)
- 10/08: Creating and Giving Presentations
- 10/10: Team Status Report Presentations
- 10/15: Team [Alpha Presentations](#)
- 10/17: Team [Alpha Presentations](#)
- 10/22 Team [Alpha Presentations](#)
- 10/24: Team [Alpha Presentations](#)
- 10/29: [Design Day](#) and the [Project Videos](#)
- 10/31: Camtasia Demo
- 11/05: Intellectual Property
- 11/07: Ethics and Professionalism
- 11/12: Team [Beta Presentations](#)
- 11/14: Team [Beta Presentations](#)
- 11/19 : Team [Beta Presentations](#)
- 11/21: Team Status Reports
- 11/26: Team [Beta Presentations](#)
- 11/28: Team Status Reports
- 12/03: [Project Videos](#)
- 12/05: [Project Videos](#) and [All Deliverables](#)
- 12/06: [Design Day Setup](#)
- 12/07: [Design Day](#)
- 12/11: [Project Videos](#)



MICHIGAN STATE  
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# *The Capstone Experience*

Team Amazon

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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

**amazon**





All ▾



Shop Off to College deals

📍 Deliver to Eastlansing 48823

Departments ▾

Your Amazon.com

Today's Deals

Gift Cards

EN  
🌐 ▾

Hello. Sign in  
Account & Lists ▾

Orders

Try Prime ▾



# INTERESTING FINDS UPDATED DAILY

YOUR MIX

EXPLORE



YOUR ❤️

## FUN





# Team Amazon

## Project Overview

### AVAST: Amazon Video And Shopping Technology

- Functionalities
  - Leverage Growing Internet Video Watching
  - Market Amazon Products in Contextual and Personalized Ways
- Features
  - Identify Items of Interest in Videos Automatically
    - People
    - Places
    - Things
  - Search for Relevant Amazon Products
  - Display Links to Amazon Product Pages
  - Provide Front-End JavaScript Framework
- Technologies
  - Amazon Web Services (AWS)
    - Rekognition / Komprehend
    - API Gateway
    - Lambda
    - Elastic Compute Cloud (EC2)
    - Command Line Interface (CLI)
    - Product Advertising API
  - JavaScript / React or Angular or Vue
  - Restful Web Services



**amazon**

Seattle, Washington  
Detroit, Michigan





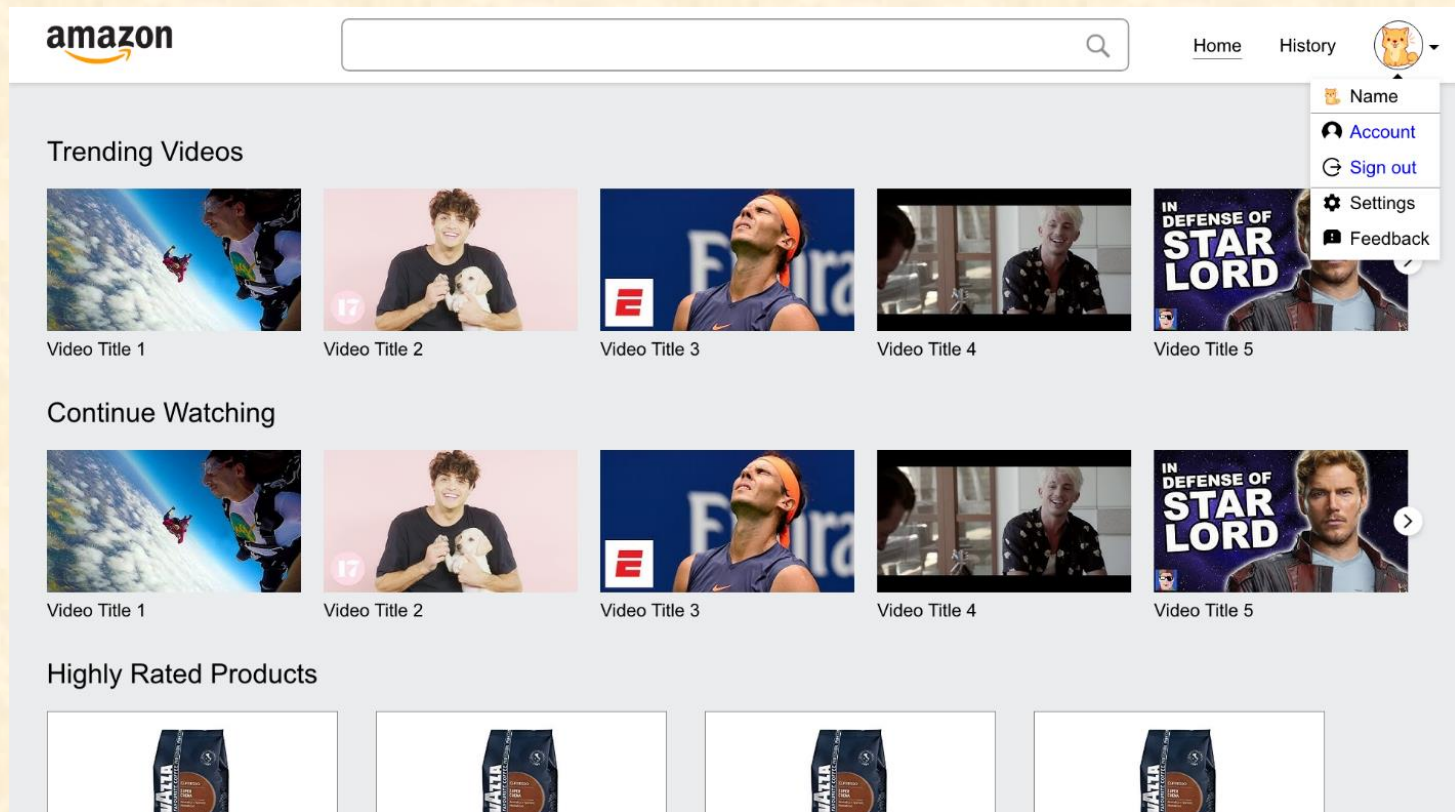


## Team Amazon

Linshawn Fang, Ben Nwachukwu, Patrick McCormick, Ian McGregor, Han Wang

# Team Amazon Project Plan Presentation

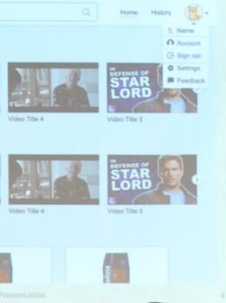
Screen Mockup



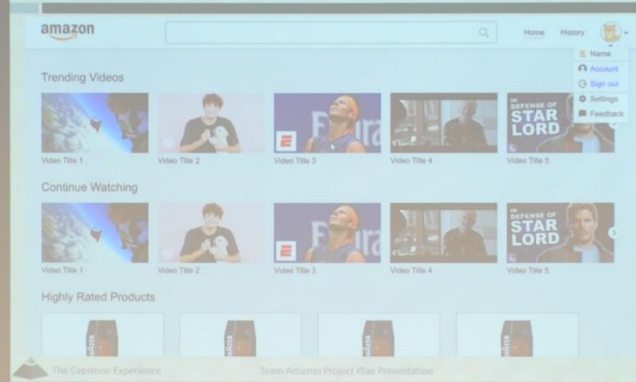
The Capstone Experience



## Home Page



## Screen Mockup: User Home Page



## Screen

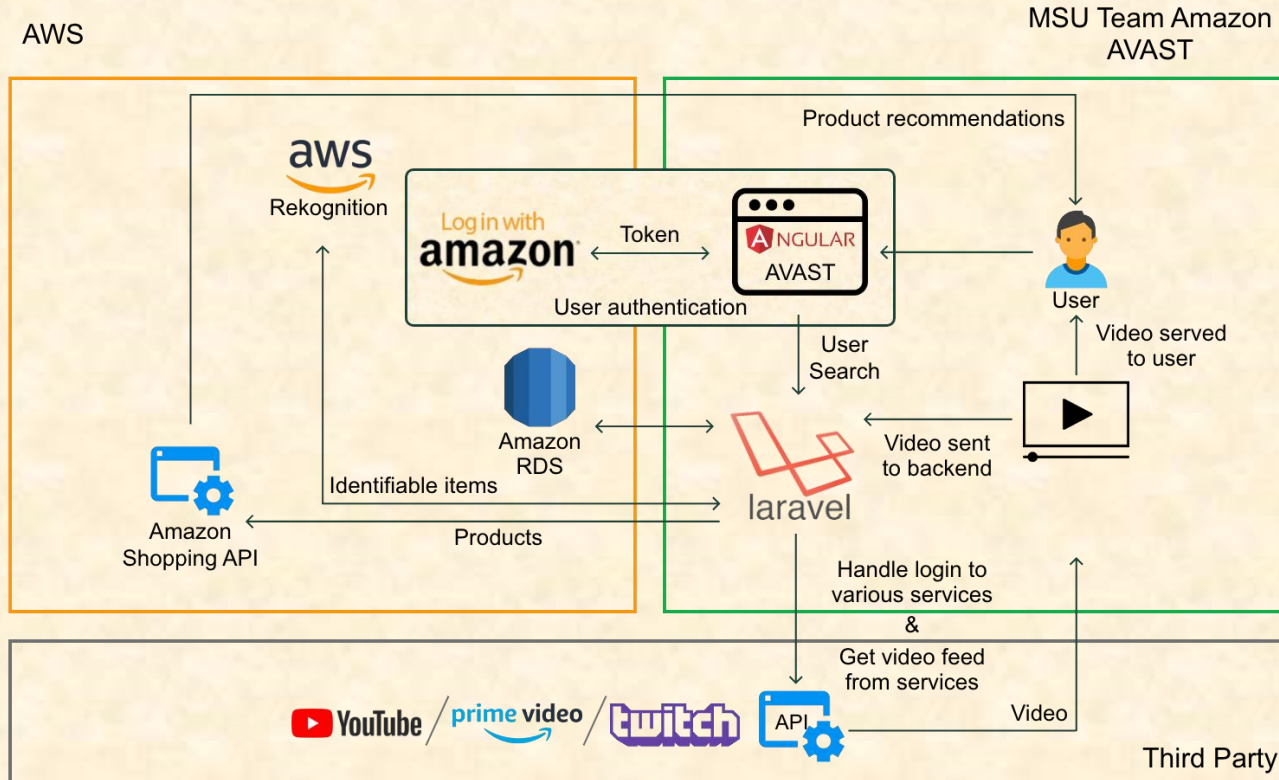


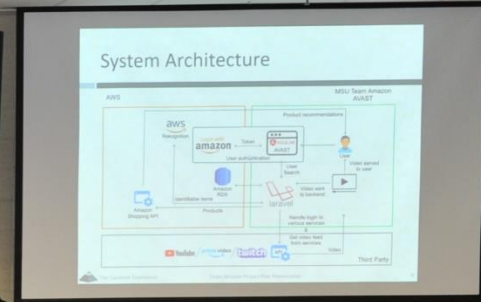
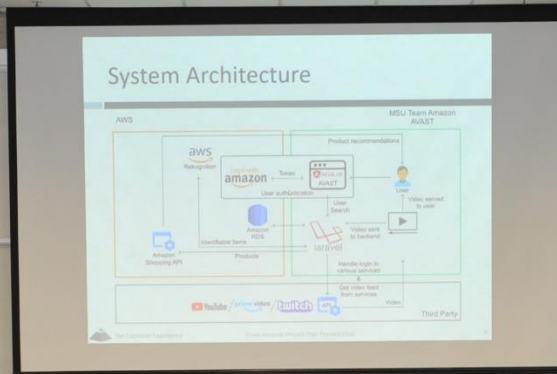
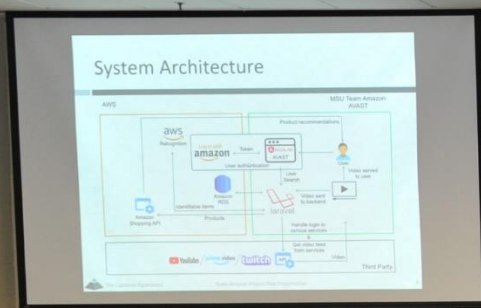
Team Amazon  
Project Plan Presentation



# Team Amazon Project Plan Presentation

## Architecture Diagram

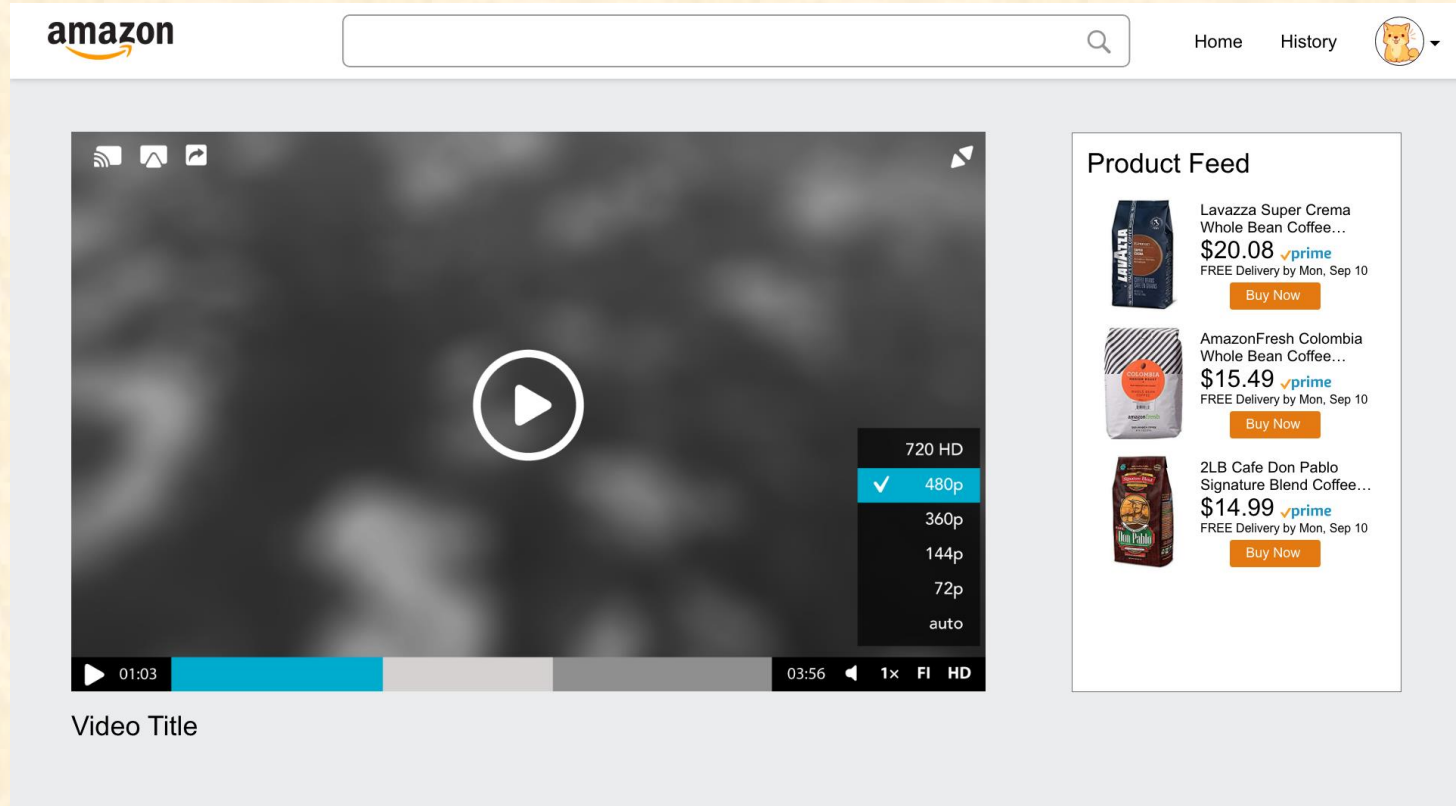


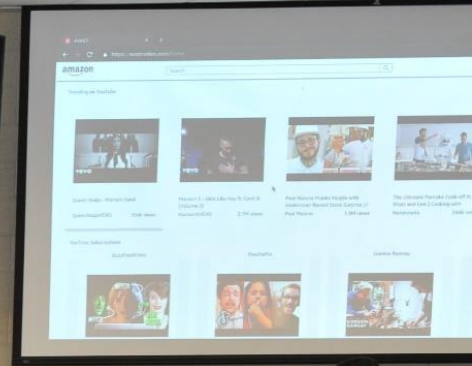
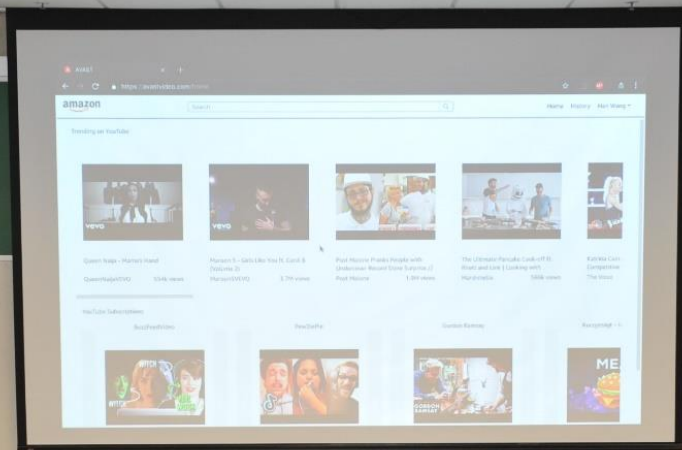
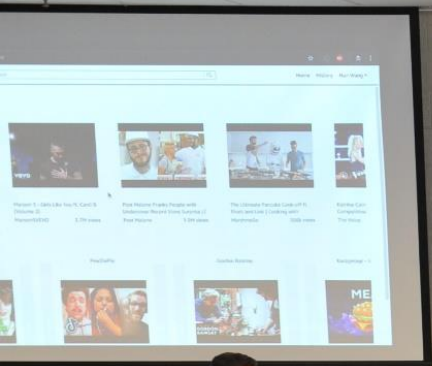


Team Amazon  
Project Plan Presentation

# Team Amazon Project Plan Presentation

Screen Mockup





# Team Amazon Alpha Presentation



# Team Amazon Alpha Presentation

Home Page


AVAST

https://avastvideo.com/home

Search


Home History Han Wang

### Trending on YouTube




THIS VIDEO IS MADE BY:  
**MAGENTA GANG**

This video was made by MAGENTA GANG  
PewDiePie - 1.7M views




ABANDONED - FOR AUCTION

Unboxing 10 MYSTERY Products From an ABANDONED Storage Unit!  
DOPE or NOPE - 780k views




Everything Wrong With Moana  
CinemaSins - 571k views



DAY #3


Last To Leave Circle Wins \$10,000 - Challenge  
MrBeast - 3.3M views




JOHN CENA

John Cena - "Elbow Grease" & Bringing the WWE to China | The Daily Show with Trevor Noah -


### Trending TV Shows




The Flash - Nora




Supernatural - Stranger in a Strange



Supergirl - Battles Lost and Won



Arrow - Life Sentence



Riverdale - Chapter Thirty-Six: Labor



# Team Amazon Alpha Presentation

## Search Result Page

The screenshot shows a web browser window with the address bar displaying `https://avastvideo.com/results?query=amazon echo`. The page features the Amazon logo and a search bar containing the text "amazon echo". Below the search bar, there is a "Filter" button and a list of search results. Each result includes a YouTube video thumbnail, a title, view count, date, and a brief description.

Video Thumbnail	Title	Views	Date	Description
	Amazon Echo Dot 3 review: Bigger, better, still 50 bucks	CNET • 34.8k views	October 10, 2018	With a new fabric-bodied design and noticeably better sound, Amazon's latest Echo Dot is its best yet -- but can it blunt Google's momentum?
	Amazon Echo Speakers 2018 hands-on	The Verge • 222k views	September 20, 2018	Amazon just announced the new versions of the Echo Show, Echo Dot, and Echo Plus. Dan Seifert spent some time using the new speakers -- all of them are improvements on their predecessors with nicer designs, more features, and most noticeably, better sound.
	Introducing Amazon Echo	BrandonYT • 301k views	January 10, 2017	Go buy from - <a href="http://amzn.to/2ie3UHM">http://amzn.to/2ie3UHM</a>
	Amazon Echo Dot 3 Unboxing, Setup, erster Eindruck, Vergleich	Technikfaultier • 9.4k views	October 13, 2018	Amazon Echo Dot 3 Unboxing, Setup, erster Eindruck, Vergleich



# Team Amazon Alpha Presentation

Video Page

AVAST


https://avastvideo.com/watch?source=youtube&v=zmhcPKK17gw

Search

amazon

amazon echo

Home History Richard Carter




Introducing Amazon Echo

298,241 views


BrandonYT  
Published on January 10, 2017

Go buy from - <http://amzn.to/2ie3UHM>


Amazon Product Feed




Joopin Classic Fashion Polarized Sunglasses Men Women Colorful Reflective Coating Lens Eyewear Sun Glasses(Green Blue) - \$11.00  
100% UV400 Protection Lens.Blocks 100% Harmful UVA,UVB & UVC Rays  
Seen at 3:37



Seiko QHE083SLH Bedside Alarm Clock - \$15.00  
Quartz movement - Quiet sweep second hand  
Seen at 2:19



Rustic Salt and Pepper Mason Jar Double Can Caddy - \$14.07  
Brand: Colonial Tinworks 4-1/2" Wide x 2-1/4" Deep x 4" Tall  
Seen at 1:44



Echo (2nd Generation) - Smart speaker with Alexa - Charcoal Fabric - \$99.99  
Echo connects to Alexa to play music, make calls, set music alarms and timers, ask questions, control smart home devices, and more—instantly.  
Seen at 0:11





# Team Amazon Beta Presentation

# Team Amazon Beta Presentation

Search Result Page

The screenshot shows a web browser window with the address bar displaying 'https://avastvideo.com/results?query=amazon%20echo'. The page features a search bar with 'amazon echo' and a 'Filter' button. Below the search bar, there are five video results listed in a grid. Each result includes a thumbnail image, a title, view count, date, and a brief description.

Video Title	Channel	Views	Date	Description
Introducing Amazon Echo	BrandonYT	323k	January 10, 2017	Go buy from - <a href="http://amzn.to/2ie3UHm">http://amzn.to/2ie3UHm</a>
Alexa en français (Amazon Echo)	Mac4Ever	19.4k	February 17, 2018	
Amazon Echo Dot 3 review: Bigger, better, still 50 bucks	CNET	81.7k	October 10, 2018	With a new fabric-bodied design and noticeably better sound, Amazon's latest Echo Dot is its best yet -- but can it blunt Google's momentum?
Amazon Echo Spot - Un appareil Echo élégant, compact, doté d'un écran - Amazon.fr	Mac4Ever	13.7k	June 5, 2018	Présentation Amazon Echo Spot
Amazon Echo & Alexa 10 Everyday Uses	Craig's Tech Talk	605k	November 11, 2017	

# Team Amazon Beta Presentation

Video Page

AVAST x +

https://avastvideo.com/watch?source=YouTube&v=zmhcPKK17gw

amazon echo

Home History

Introducing Amazon Echo

Watch later Share

INFORMATION

3:37 / 3:54

Introducing Amazon Echo

323,398 views

BrandonYT  
Published on January 10, 2017

Amazon Product Feed

- Echo Dot (3rd Gen) bundle with Amazon Smart Plug - Charcoal  
\$74.98 Prime
- Panasonic KX-TGD532W Expandable Cordless Phone with Call Block and  
\$59.95 Prime
- Honor 7X GSM Unlocked Smartphone 5.93" FullView Display, 16MP + 2MP  
\$199.99 Prime
- Nintendo Joy-Con (L/R) - Neon Pink / Neon Green  
\$79.99 Prime
- Dell OptiPlex Desktop Complete Computer Package with Windows 10  
\$124.34 Prime
- Huawei Mate SE Factory Unlocked 5.93" - 4GB/64GB Octa-core Processor| 16MP +  
\$259.99 Prime
- Lifetime 4428 Height Adjustable Folding Utility Table, 48 by 24 inches, White  
\$37.07 Prime
- Oster Extra Large Digital Countertop Convection Oven, Stainless Steel  
\$119.99 Prime
- BESTEK USB Power Strip 8-Outlet Surge Protector 1500 Joules with 40W/8A 6

The Capstone Experience

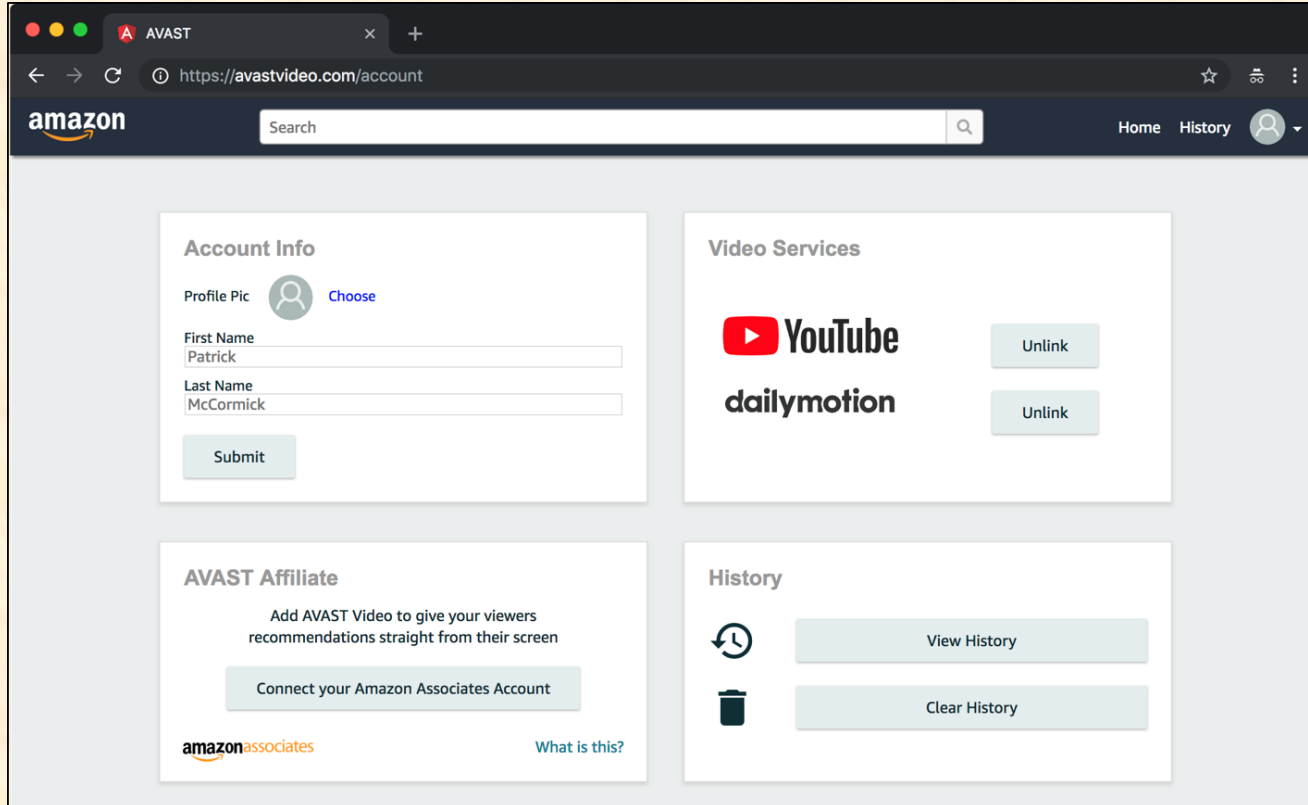




# Team Amazon Beta Presentation

# Team Amazon Beta Presentation

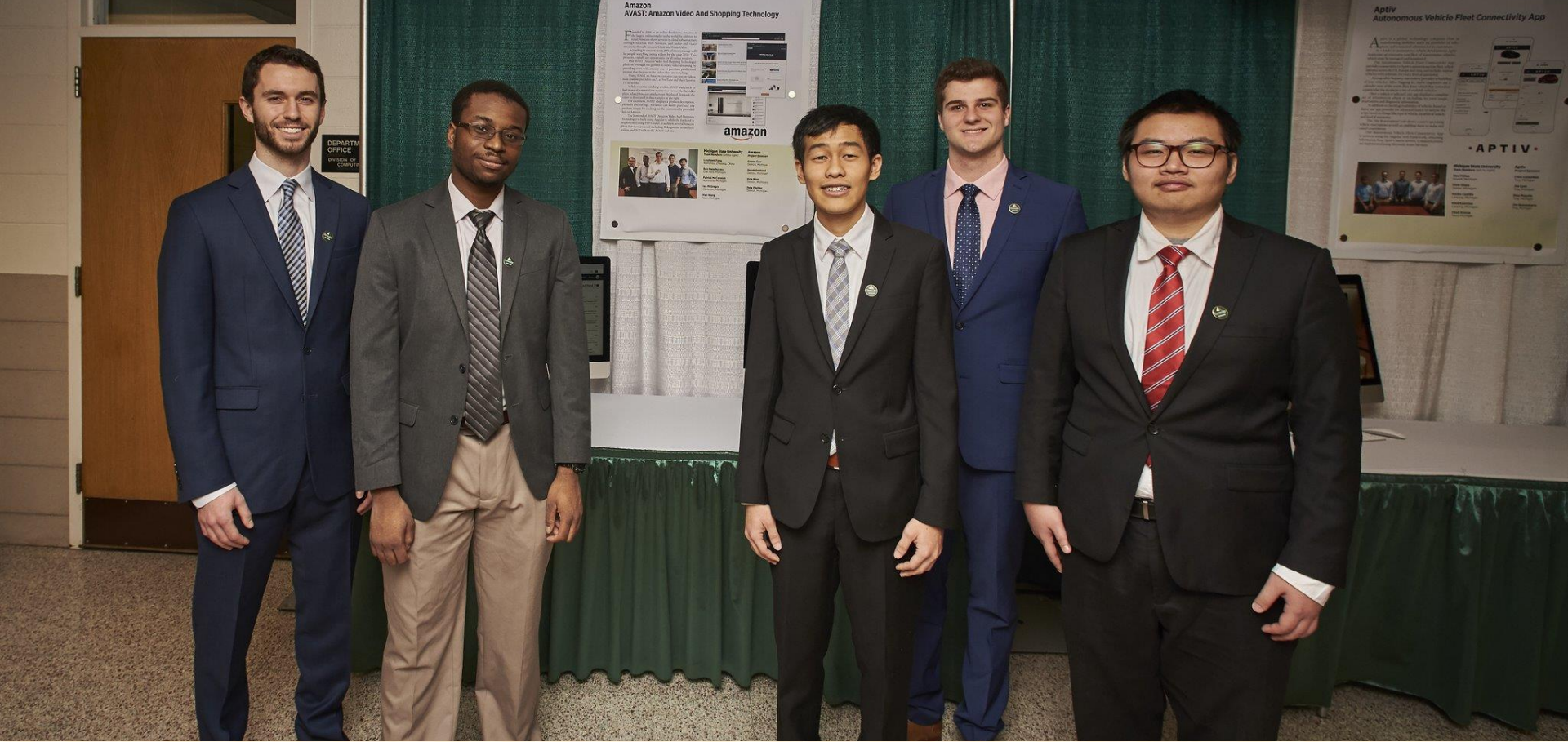
Account Page



The screenshot shows a web browser window with the address bar displaying `https://avastvideo.com/account`. The page features the Amazon logo and a search bar at the top. The main content is organized into four panels:

- Account Info:** Includes a profile picture placeholder with a "Choose" link, input fields for "First Name" (containing "Patrick") and "Last Name" (containing "McCormick"), and a "Submit" button.
- Video Services:** Displays "YouTube" and "dailymotion" with "Unlink" buttons next to each.
- AVAST Affiliate:** Contains the text "Add AVAST Video to give your viewers recommendations straight from their screen", a button to "Connect your Amazon Associates Account", the "amazon associates" logo, and a "What is this?" link.
- History:** Features a clock icon, a trash can icon, and buttons for "View History" and "Clear History".





Team Amazon  
Design Day

MICHIGAN STATE  
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# *The Capstone Experience*

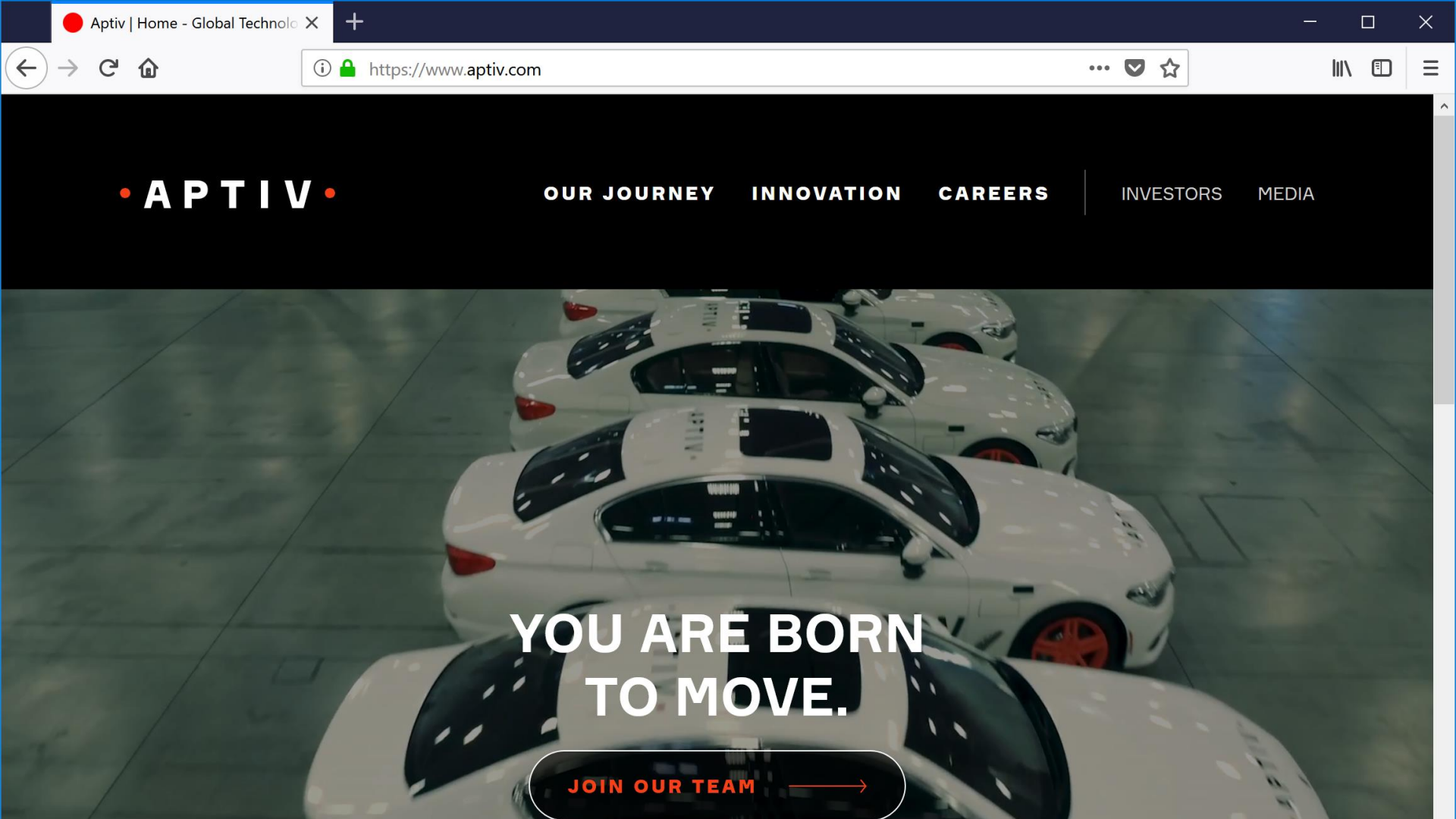
Team Aptiv

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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

• **A P T I V** •



• **APTIV** •

**OUR JOURNEY**

**INNOVATION**

**CAREERS**

**INVESTORS**

**MEDIA**

**YOU ARE BORN  
TO MOVE.**

**JOIN OUR TEAM**



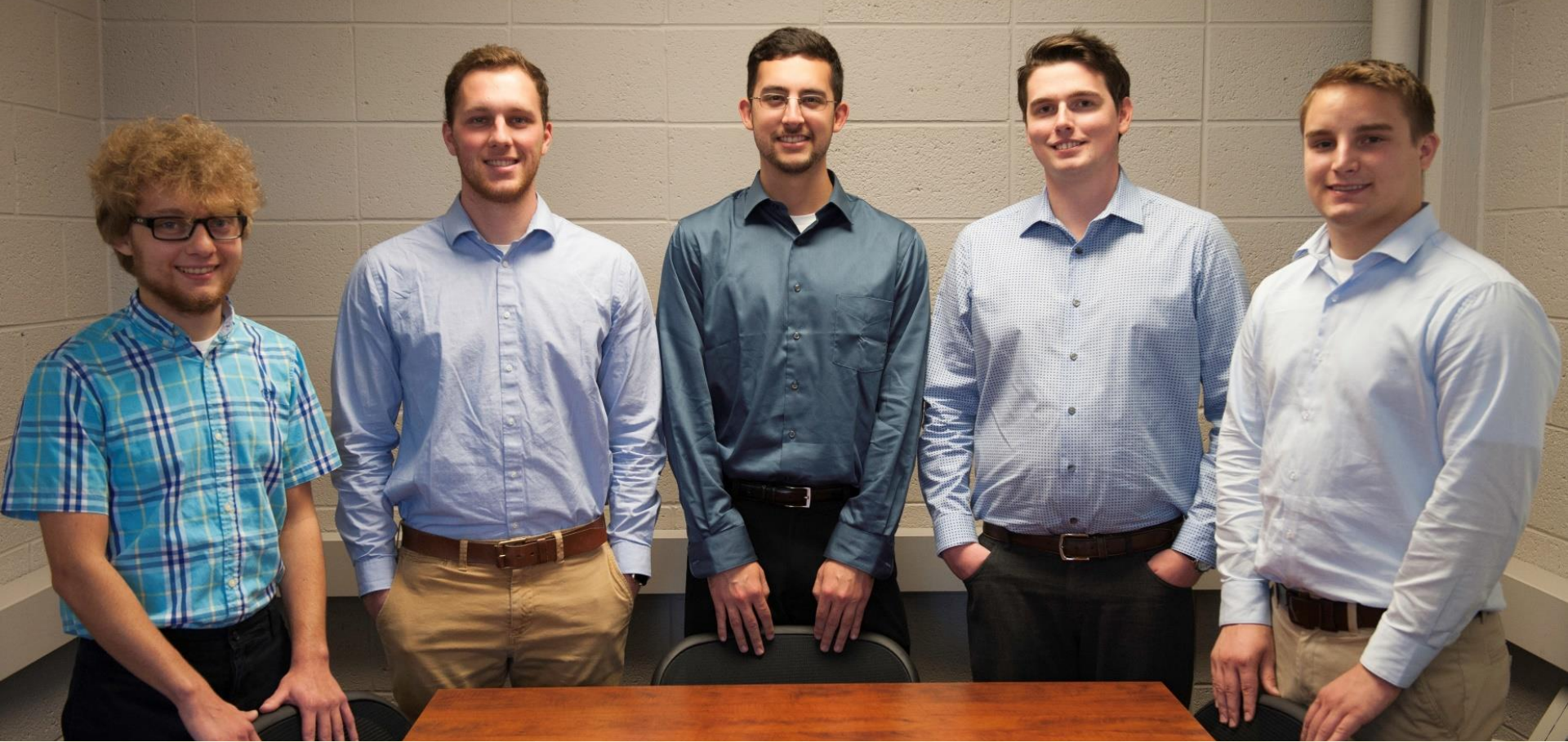


# Team Aptiv Project Overview

## Autonomous Vehicle Fleet Connectivity Apps

- Functionalities
  - Provide Connectivity to Autonomous Vehicle Test Fleet
  - Via Mobile and Web Apps
- Features
  - Enable Scheduling Vehicles for Use
  - Provide Real-Time Access to Vehicle Data (Location, Speed, Current User, Etc.)
  - Handle Various Roles (Drive, Engineer and Manager)
  - Support Web, Android and Apple iOS
  - Integrate Apps Into Existing Aptiv Tool
  - Create Complete Documentation
- Technologies
  - Autonomous Vehicle Technologies
  - Aptiv AMDAS
  - CSS / HTML / PHP / JavaScript
  - Apple iOS / Swift
  - Google Android / Java



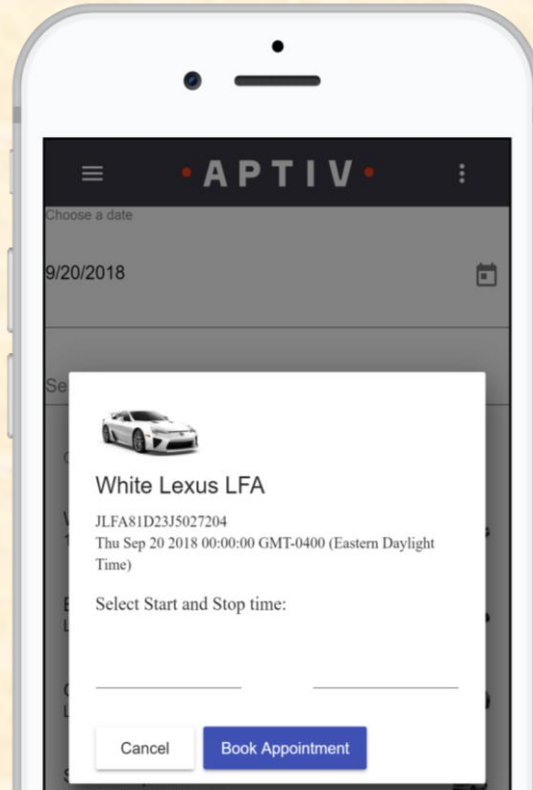


## Team Aptiv

Alex Patton, Drew Glapa, Emilio Castillo, Klint Kaercher, Chad Krause

# Team Aptiv Project Plan Presentation

Screen Mockup



The Capstone Experience





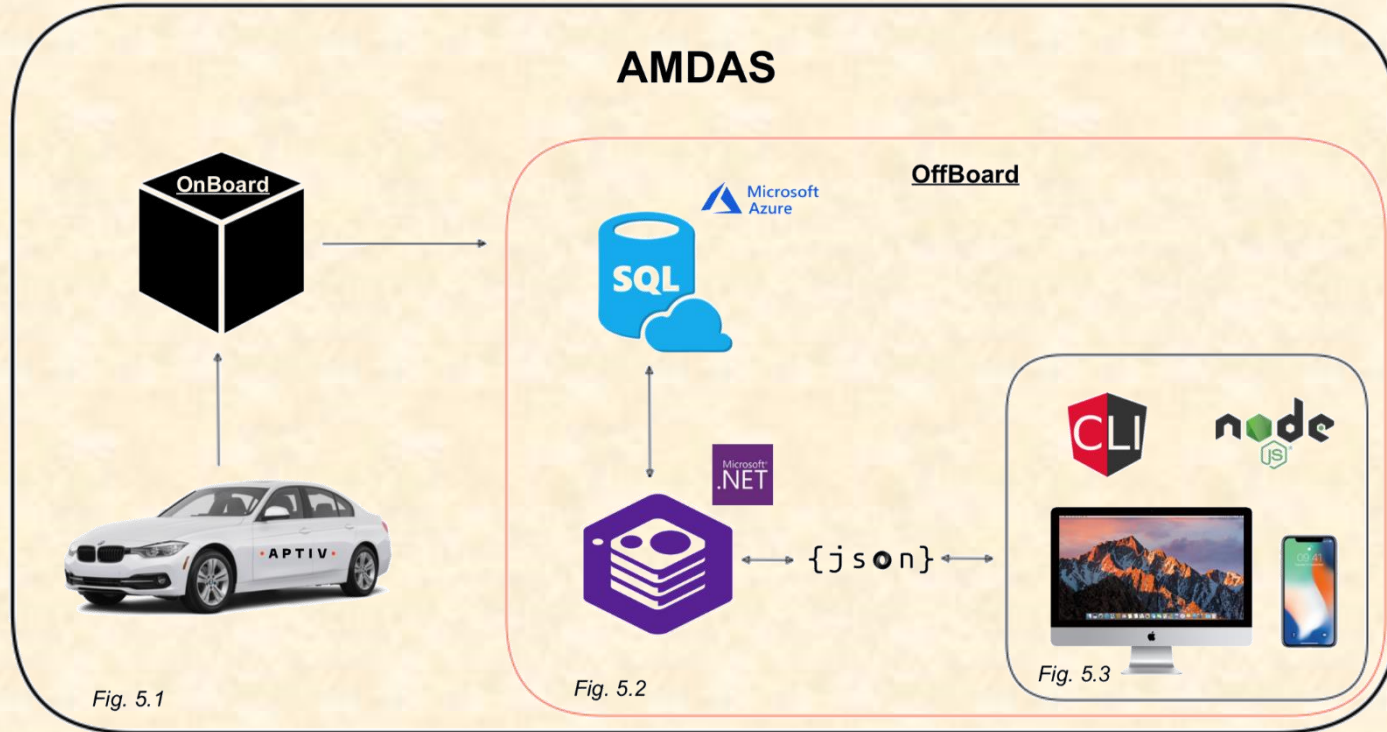


# Team Aptiv Project Plan Presentation

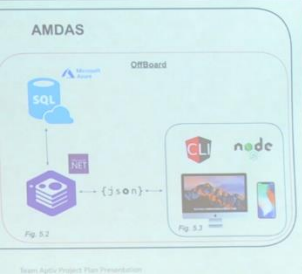


# Team Aptiv Project Plan Presentation

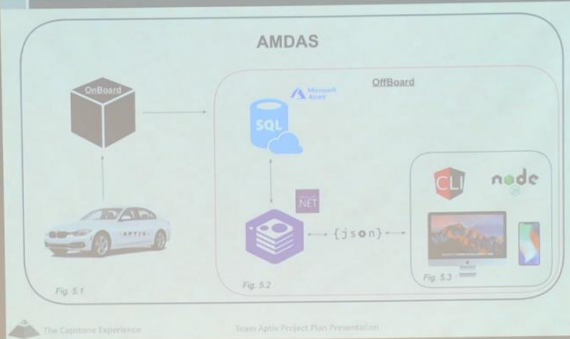
## Architecture Diagram



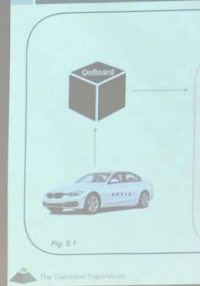
## Architecture



## System Architecture



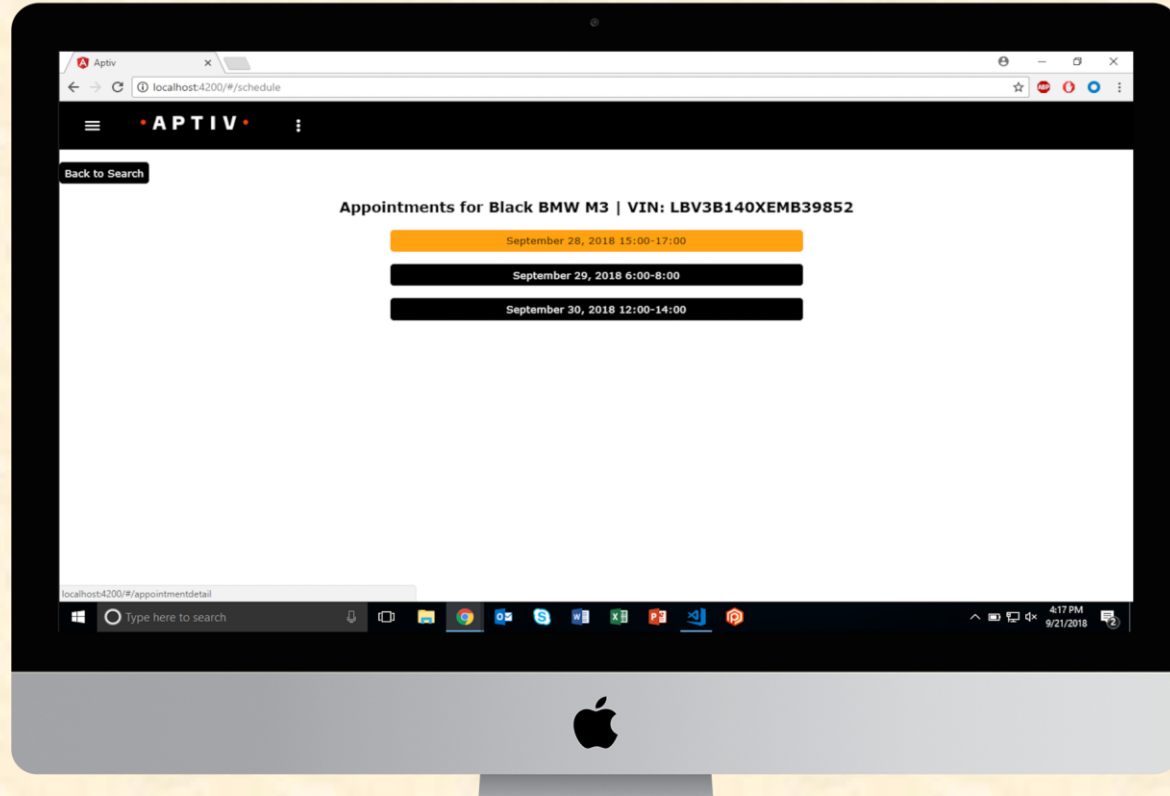
## System Archi

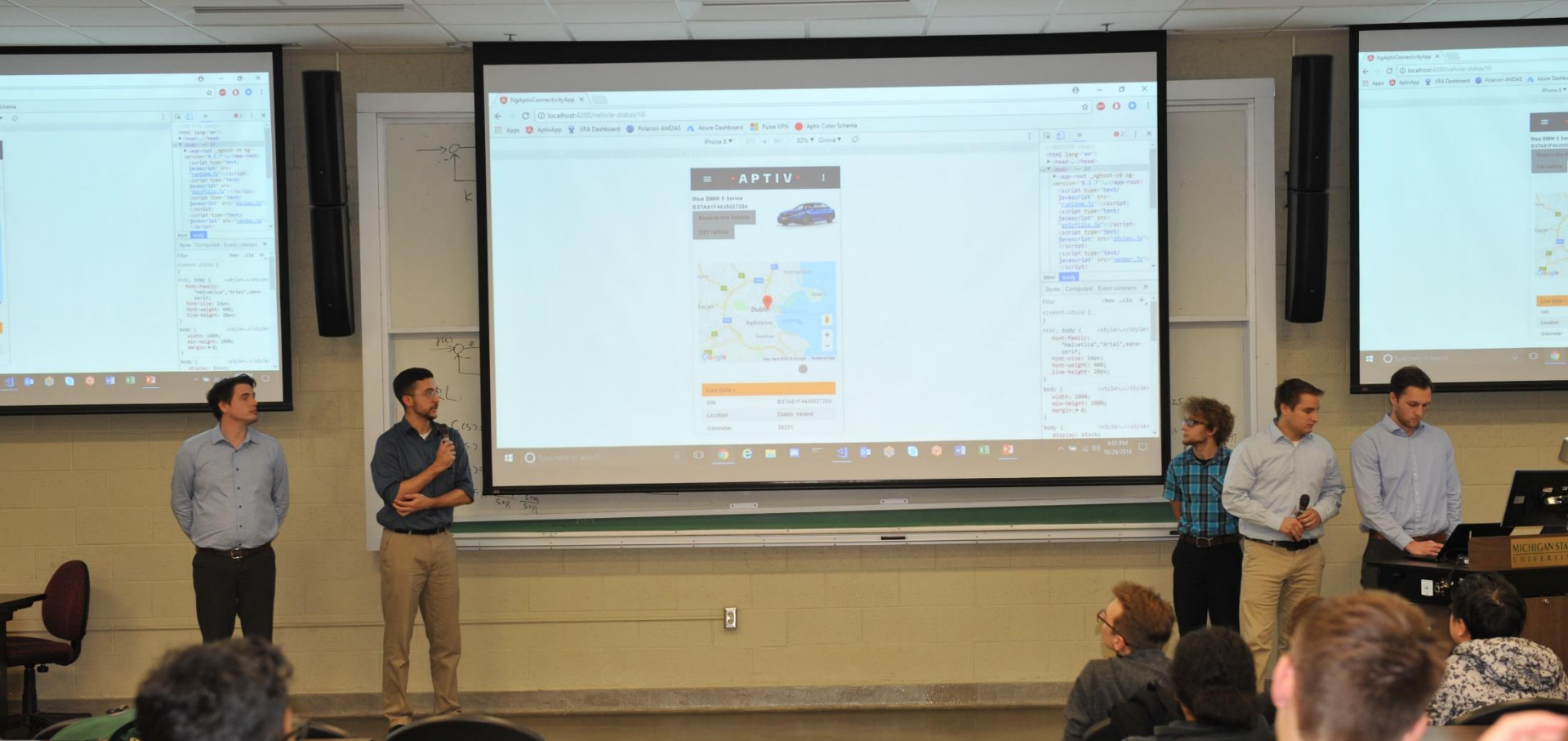


Team Aptiv  
Project Plan Presentation

# Team Aptiv Project Plan Presentation

Screen Mockup

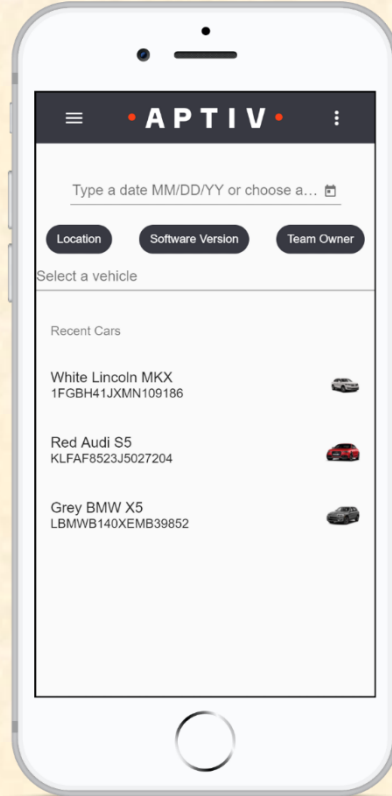




# Team Aptiv Alpha Presentation

# Team Aptiv Alpha Presentation

Search Interface



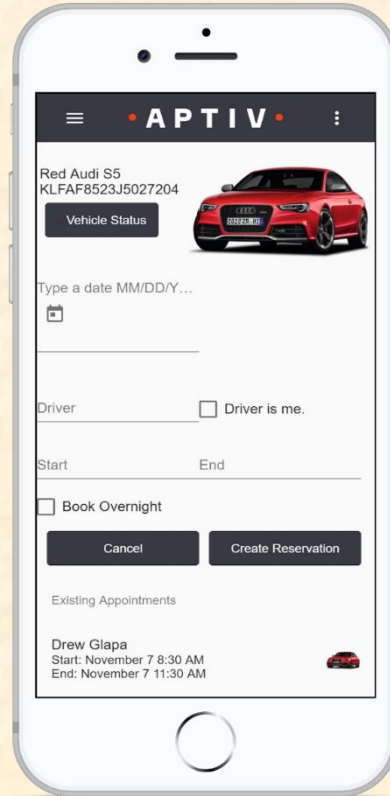
The Capstone Experience





# Team Aptiv Alpha Presentation

## Reservation Creation



The image shows a white smartphone with a black bezel, displaying the Aptiv mobile application. The app's interface is as follows:

- Header:** A dark blue bar with a hamburger menu icon on the left, the word "APTIV" in white capital letters in the center, and a vertical ellipsis icon on the right.
- Vehicle Information:** Below the header, the text "Red Audi S5" and "KLFAF8523J5027204" is displayed. To the right of this text is a small image of a red Audi S5. Below the vehicle name is a dark blue button labeled "Vehicle Status".
- Date Selection:** A text input field with the placeholder "Type a date MM/DD/Y..." and a calendar icon to its left.
- Driver Information:** A text input field labeled "Driver" followed by a checkbox and the text "Driver is me."
- Time Selection:** Two text input fields labeled "Start" and "End" side-by-side.
- Overnight Option:** A checkbox labeled "Book Overnight".
- Buttons:** Two dark blue buttons at the bottom of the form: "Cancel" and "Create Reservation".
- Existing Appointments:** A section titled "Existing Appointments" showing a reservation for "Drew Glapa" with a "Start: November 7 8:30 AM" and "End: November 7 11:30 AM". A small red car icon is to the right of the text.

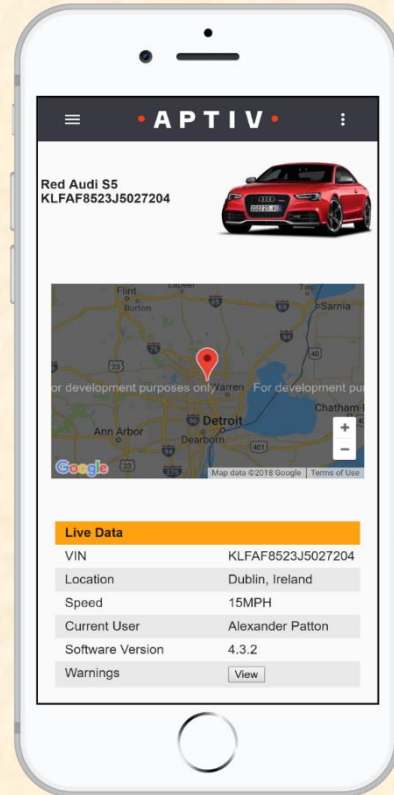




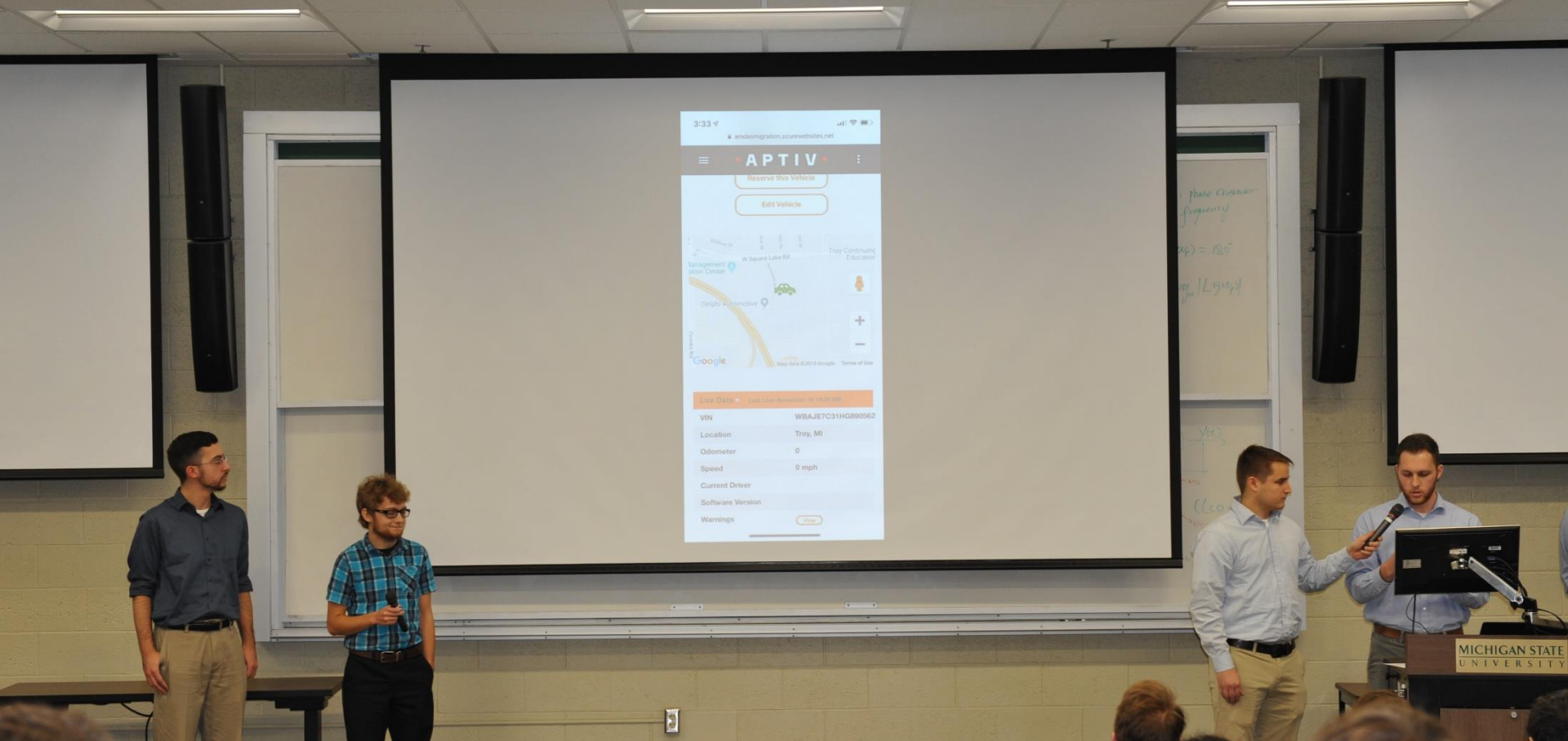
# Team Aptiv Alpha Presentation

# Team Aptiv Alpha Presentation

## Vehicle Status Page







# Team Aptiv Beta Presentation

# Team Aptiv Beta Presentation

## Vehicle Status Page

The screenshot shows a web browser window displaying the Aptiv Vehicle Status Page. The browser's address bar shows a search prompt. The page header features the Aptiv logo. The main content area is divided into two columns. The left column displays a red Audi S5 with the VIN KLFAF8523J5027204 and buttons for 'Reserve this Vehicle' and 'Edit Vehicle'. The right column shows a map of Dublin, Ireland, with a location pin for the Red Audi S5 at coordinates 53.344, -6.236. Below the map, a 'Live Data' section provides real-time information for the vehicle, including VIN, Location, Odometer, Speed, Current Driver, and Software Version. A 'Warnings' section with a 'View' button is also present. At the bottom, an 'Upcoming Reservations' section states that there are no upcoming reservations for the Red Audi S5.

Red Audi S5  
KLFAF8523J5027204

Reserve this Vehicle Edit Vehicle

Coordinates of: Red Audi S5  
53.344, -6.236

**Live Data**

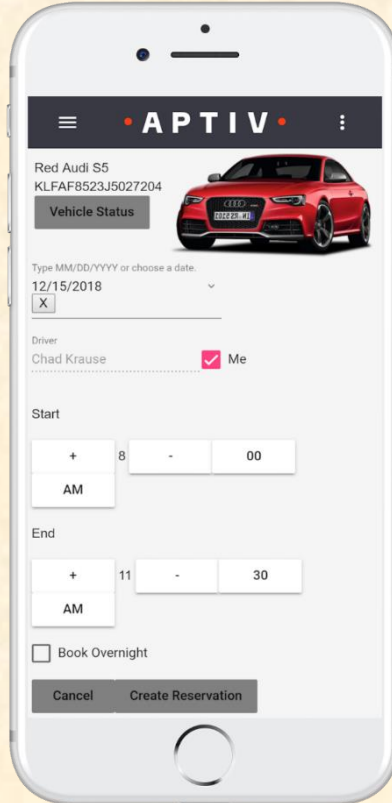
VIN	KLFAF8523J5027204
Location	Dublin, Ireland
Odometer	44586
Speed	65 mph
Current Driver	Chad Krause
Software Version	4.3.2
Warnings	<a href="#">View</a>

Upcoming Reservations

There are no upcoming reservations for the Red Audi S5.

# Team Aptiv Beta Presentation

## Reservation Creation Page



The image shows a smartphone screen displaying the Aptiv reservation creation interface. The app has a dark header with the 'APTIV' logo. The main content area is white and contains the following elements:

- Vehicle Information:** 'Red Audi S5' and 'KLFAF8523J5027204'. Below this is a 'Vehicle Status' button and a photo of a red Audi S5.
- Date Selection:** A prompt 'Type MM/DD/YYYY or choose a date.' followed by a date picker showing '12/15/2018' and a calendar icon.
- Driver Selection:** A section labeled 'Driver' with 'Chad Krause' selected, indicated by a red checkmark and the text 'Me'.
- Time Selection:** Two time pickers. The 'Start' time is set to 8:00 AM, and the 'End' time is set to 11:30 AM. Each picker has buttons for '+', '-', and 'AM'.
- Overnight Option:** A checkbox labeled 'Book Overnight' which is currently unchecked.
- Action Buttons:** At the bottom, there are two buttons: 'Cancel' and 'Create Reservation'.




# Team Aptiv Beta Presentation




# Team Aptiv Beta Presentation

## My Reservations Page



• APTIV •



### My Reservations

Upcoming

Past


November 1 10:30 AM

Blue BMW 5 Series

BSTA81F44J5027204

Location: Troy, MI

Driver: Ross Maguire




October 28 7:30 AM

Red Chevrolet Tahoe

CTFA81D2B85027339

Location: Dublin, Ireland

Driver: Joe Lyon




October 25 6:00 PM

Red Audi S5

KLFAF8523J5027204

Location: Kokomo, IN

Driver: Klint Kaercher




October 25 4:00 PM

White Lexus LFA

JLFA81D23J5027204

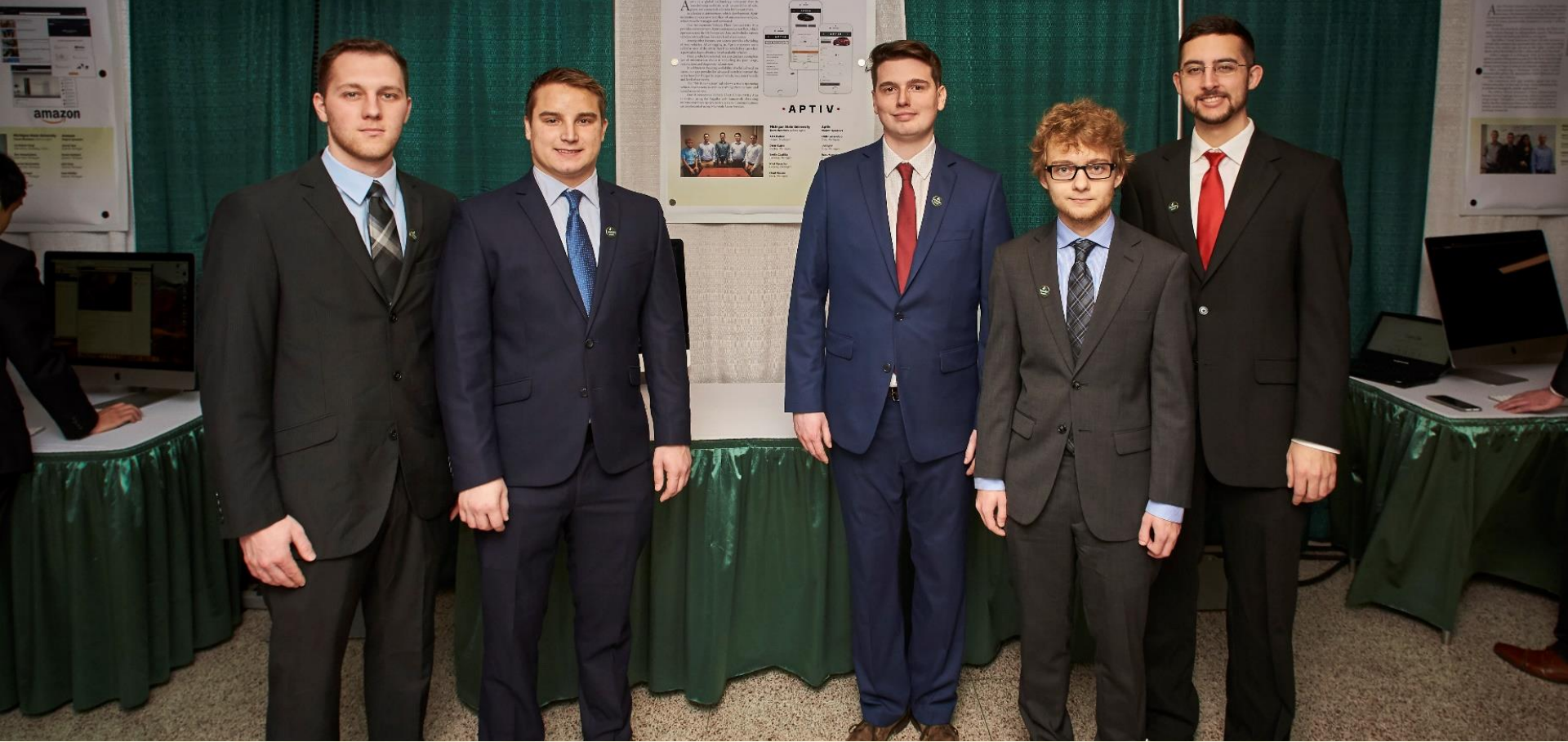
Location: Kokomo, IN

Driver: Chad Krause



October 23 11:00 AM





Team Aptiv  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

## Team Auto-Owners

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018

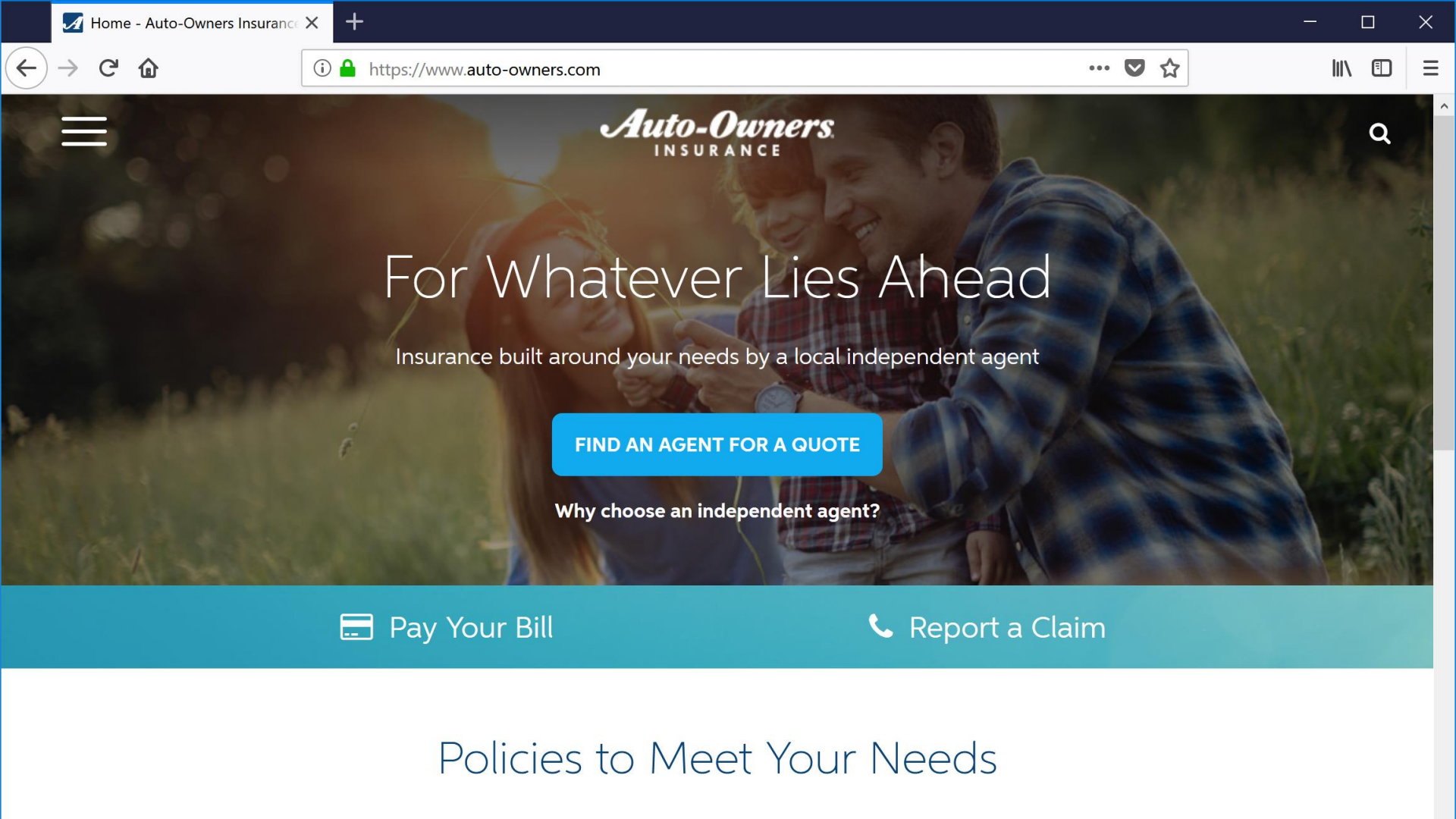


*From Students...  
...to Professionals*

# ***Auto-Owners*** **INSURANCE**

**LIFE • HOME • CAR • BUSINESS**





# For Whatever Lies Ahead

Insurance built around your needs by a local independent agent

FIND AN AGENT FOR A QUOTE

Why choose an independent agent?

📄 Pay Your Bill

☎ Report a Claim

## Policies to Meet Your Needs

# Team Auto-Owners Project Overview

## Jeffrey: Virtual Insurance Claim Advisor

- Functionalities
  - Simplify Insurance Claim Submission
  - Use Voice Recognition and Natural Language Processing
- Features
  - Provide Easy-To-Use Voice Interaction
  - Handle Various Roles (Policyholder, Agent, Auto-Owners Associate)
  - Handle Various Claims (Home and Auto)
  - Build
    - Mobile Interface for Policyholders
    - Web Interface for Agents and Auto-Owners Associates
  - Utilize GPS for Detecting Location
  - Enable Uploading of Images and Video
  - Format and Submit to Claim System
  - Send Confirmation Messages
- Technologies
  - Natural Language Processing (NLP)
  - Image and Video Processing
  - Global Positioning System (GPS)
  - CSS / HTML / PHP / JavaScript
  - Apple iOS / Swift
  - Google Android / Java



***Auto-Owners***  
**INSURANCE**

LIFE • HOME • CAR • BUSINESS

Lansing, Michigan



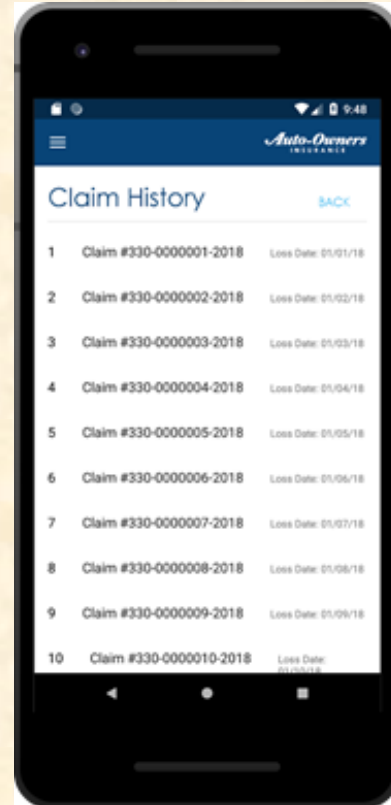
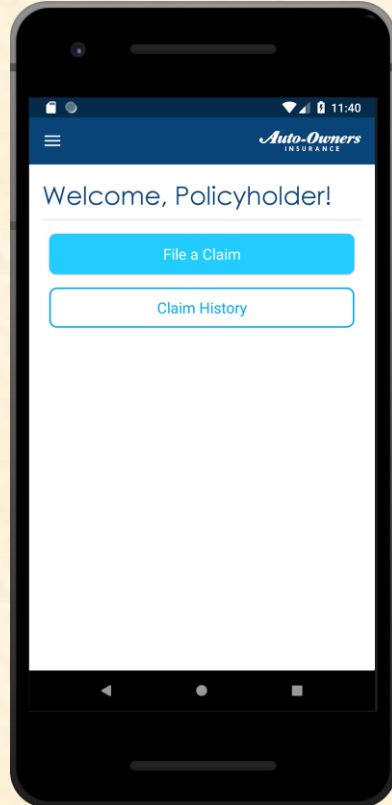


## Team Auto-Owners

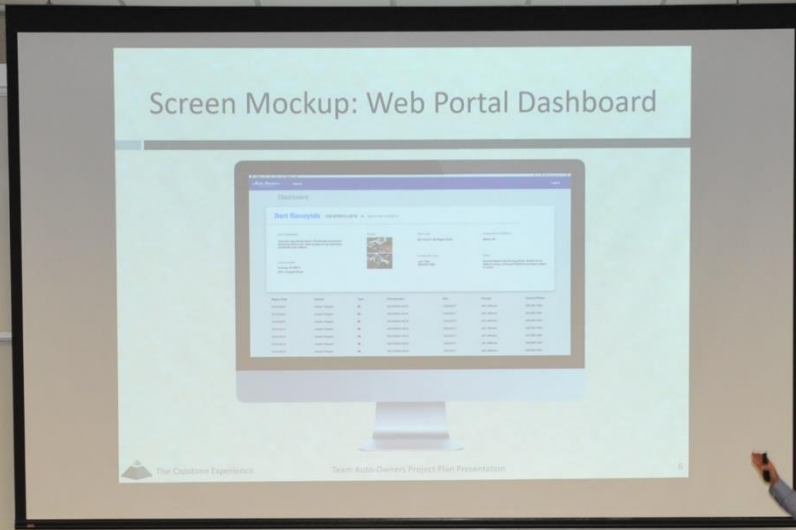
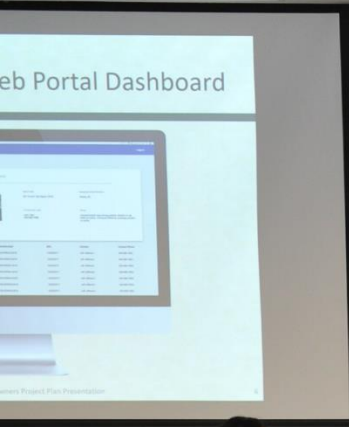
Alex Klingel, Connor Stabnick, Nabiha Biviji, Michael Dickmann

# Team Auto-Owners Project Plan Presentation

Screen Mockup



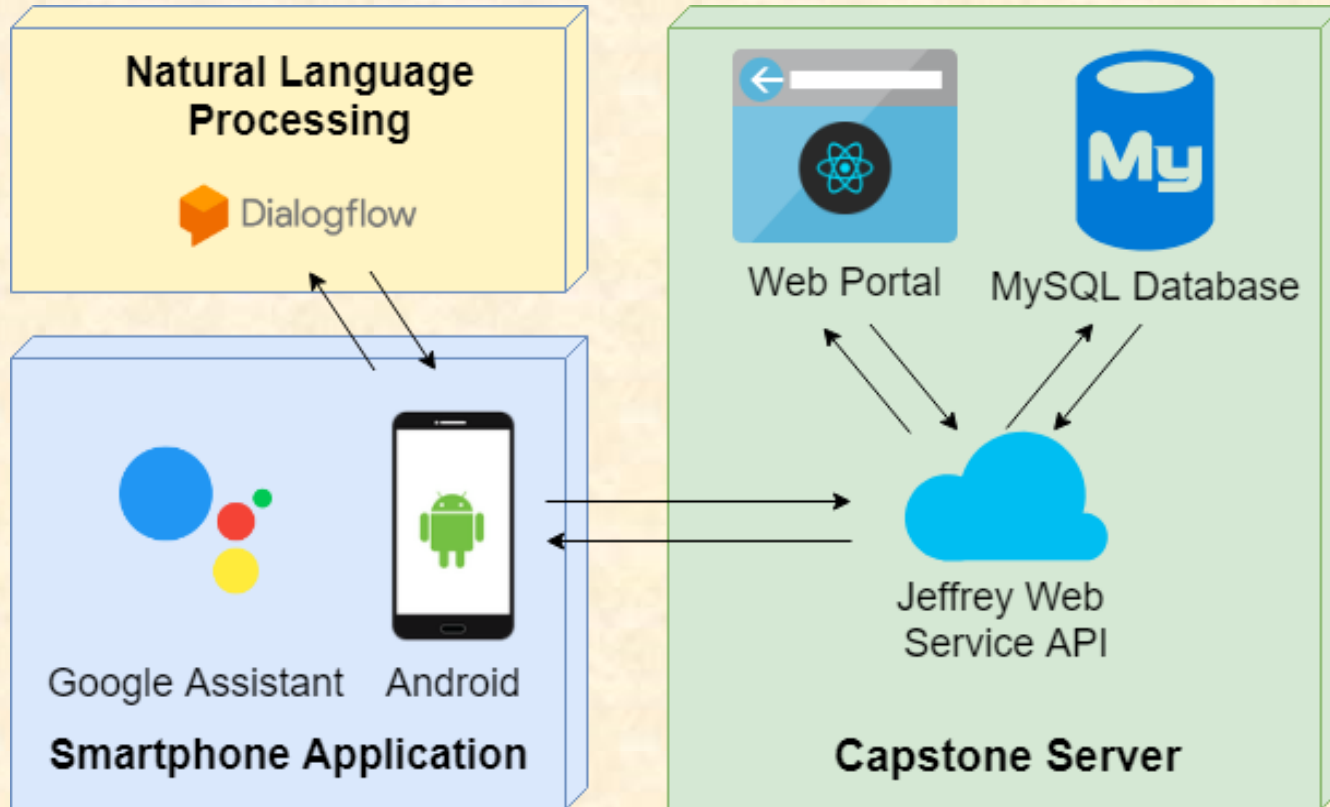


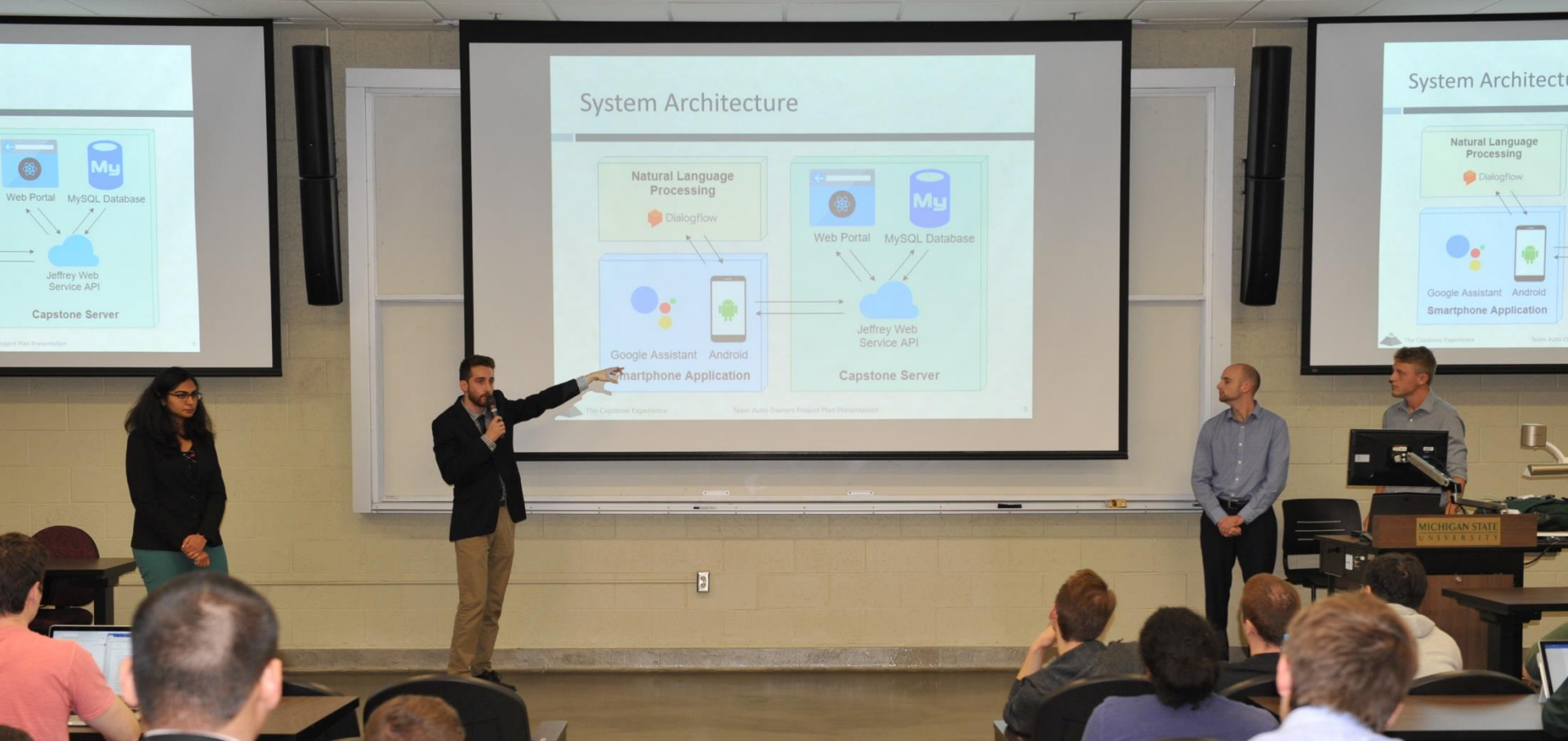


# Team Auto-Owners Project Plan Presentation

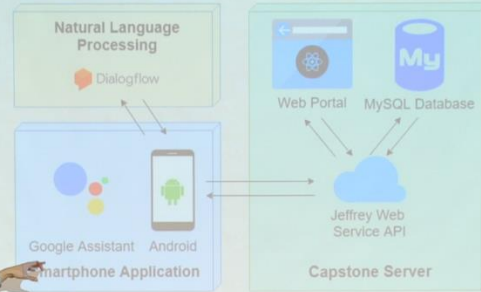
# Team Auto-Owners Project Plan Presentation

## Architecture Diagram



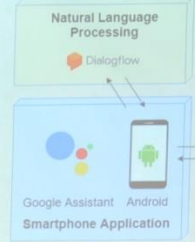


## System Architecture



The Capstone Experience Team Auto-Owners Project Plan Presentation

## System Architecture

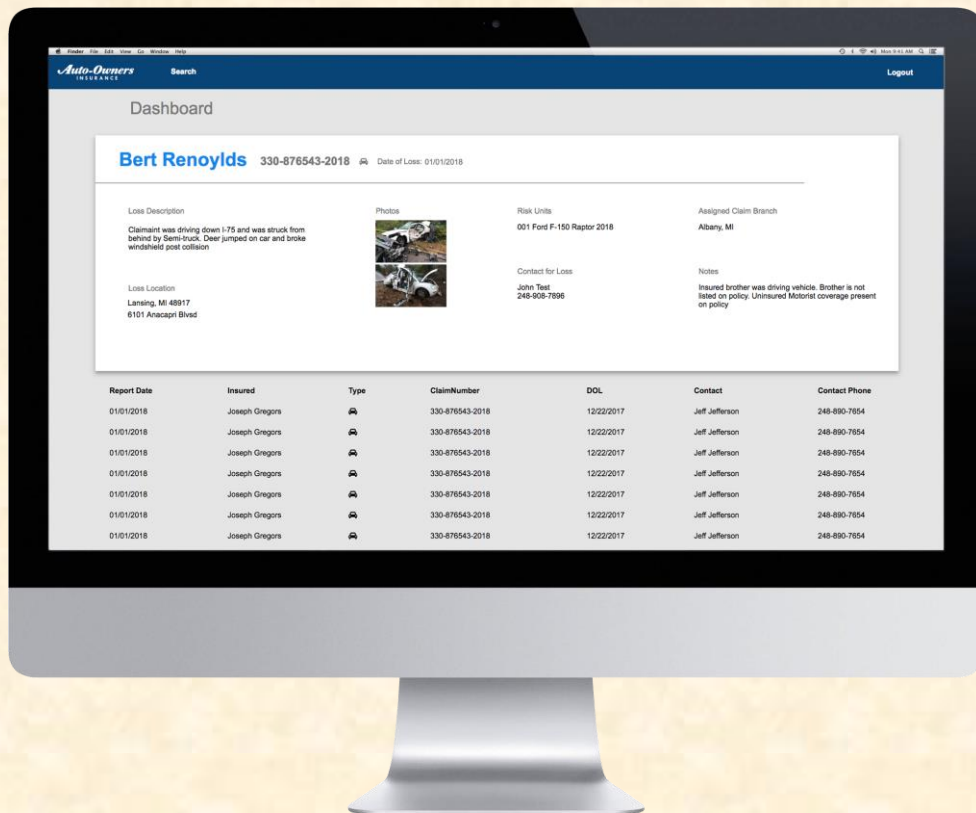


The Capstone Experience Team Auto-Owners Project Plan Presentation

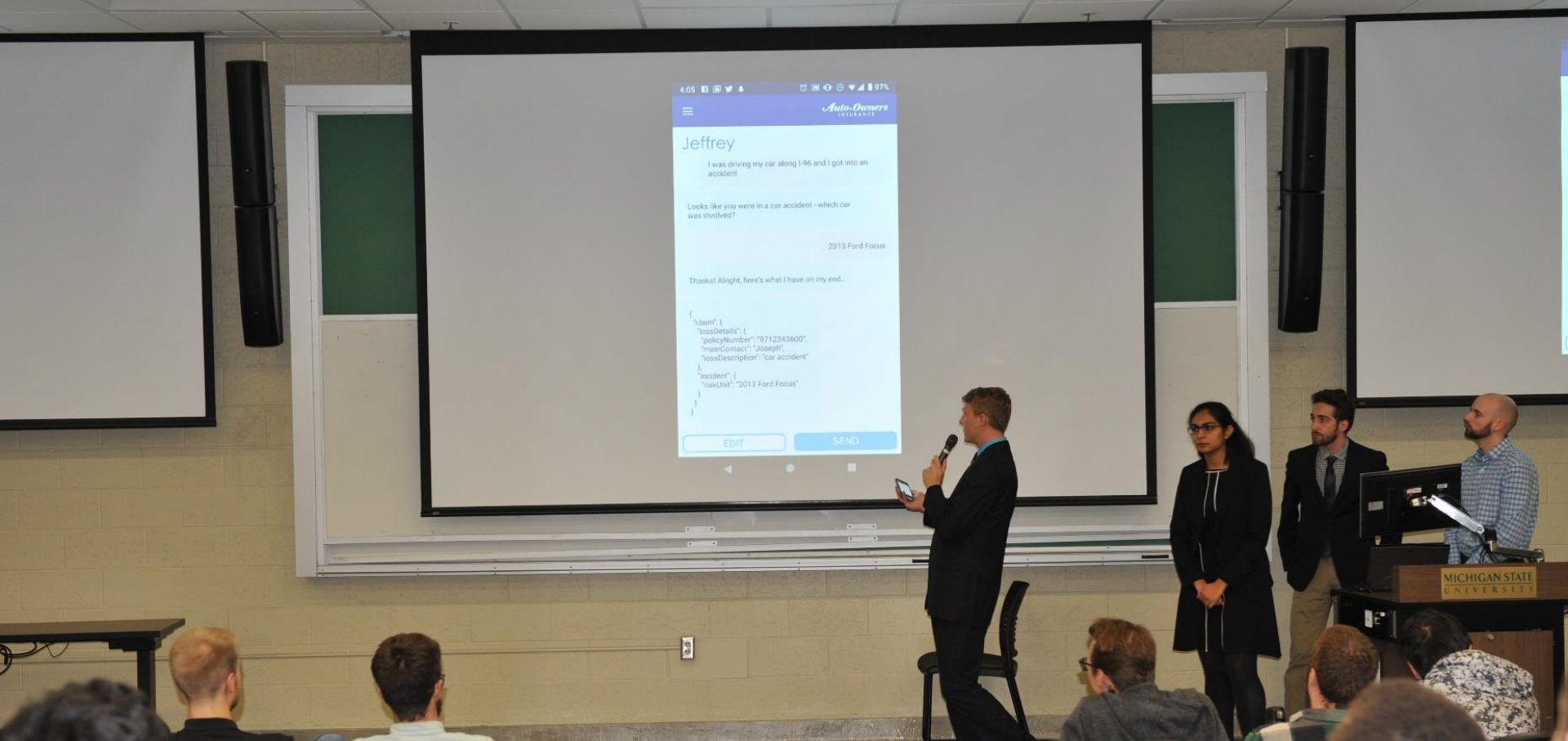
# Team Auto-Owners Project Plan Presentation

# Team Auto-Owners Project Plan Presentation

Screen Mockup







4:05 97%

**Auto-Owners**  
INSURANCE

Jeffrey

I was driving my car along I-96 and I got into an accident.

Looks like you were in a car accident - which car was involved?

2013 Ford Focus

Thank! Alright, here's what I have on my end.

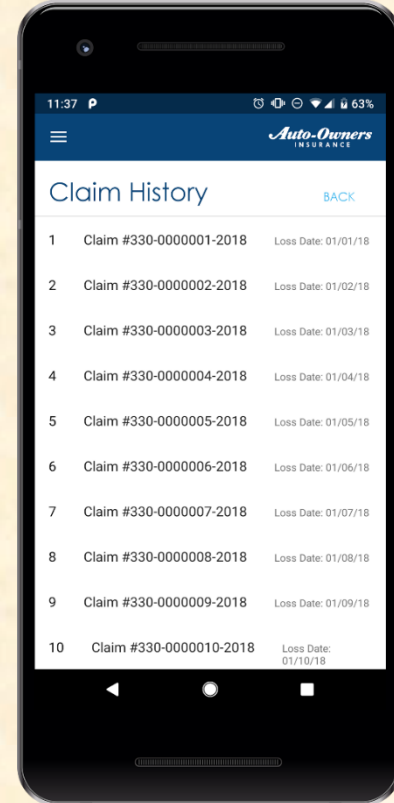
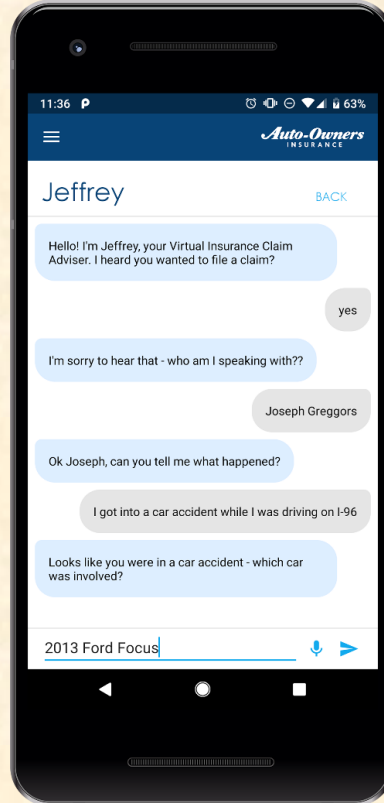
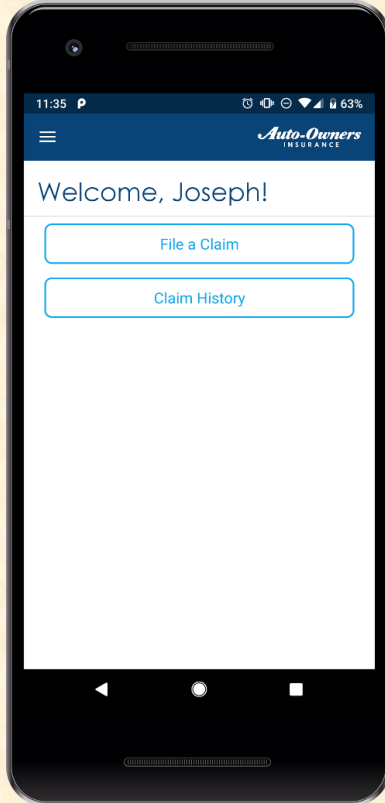
```
{
  "claim": {
    "lossDetails": {
      "policyNumber": "9712345600",
      "mainContact": "Joseph",
      "lossDescription": "car accident"
    },
    "incident": {
      "riskUnit": "2013 Ford Focus"
    }
  }
}
```

EDIT SEND

# Team Auto-Owners Alpha Presentation

# Team Auto-Owners Alpha Presentation

Jeffrey Android Application




# Team Auto-Owners Alpha Presentation

## Web Portal - Dashboard

React App


← → ↻ 🏠 ⓘ Not secure | 35.9.22.102:5000/search 🔍 ☆ 👤 ⋮

 **Dashboard** Logout

**Joseph Gregors** 330-876543-2018 🚗 Date of Loss: 12/22/2017

**Loss Description**  
Claimant was driving down I-75 and was struck from behind by Semi-truck. Deer jumped on car and broke windshield post collision

**Loss Location**  
Lansing, MI 48917  
6101 Anacapi Blvd

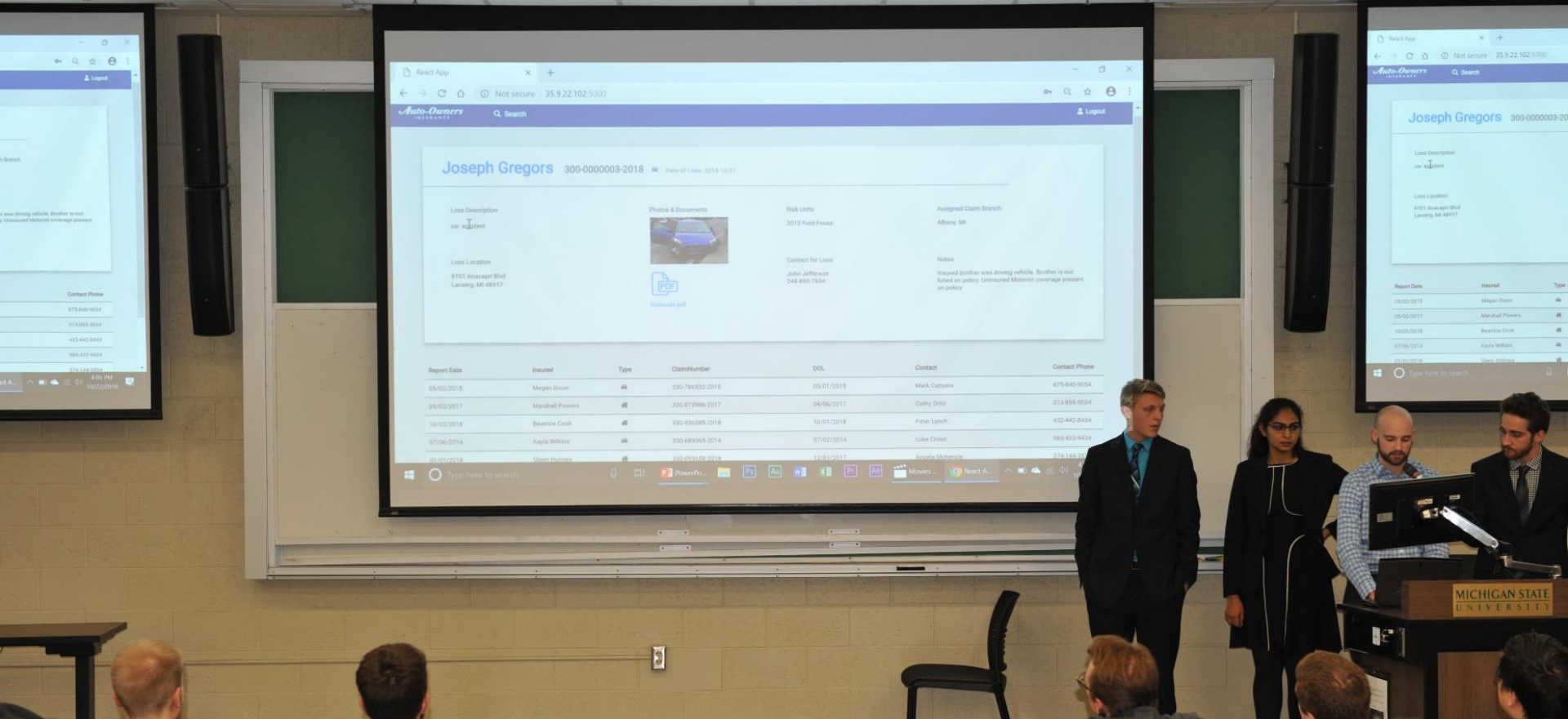
**Photos**  


**Risk Units**  
2017 Chevy Equinox  
  
**Contact for Loss**  
Jeff Jefferson  
248-890-7654

**Assigned Claim Branch**  
Albany, MI  
  
**Notes**  
Insured brother was driving vehicle. Brother is not listed on policy. Uninsured Motorist coverage present on policy

[Return to Search](#)

Report Date	Insured	Type	ClaimNumber	DOL	Contact	Contact Phone
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654



# Team Auto-Owners Alpha Presentation



# Team Auto-Owners Alpha Presentation

Web Portal - Search

React App


Not secure | 35.9.22.102:5000/search

Search

Star

Profile

Menu

 Dashboard

Logout

Claim Number

XXX-XXXXXX-XXXX

Policy Type

Auto

Home

LossCause

Select...

Policy Number

XX-XXXXXX-XX

Main Contact

First Name

Last Name

Date of Loss

mm/dd/yyyy

mm/dd/yyyy

Search

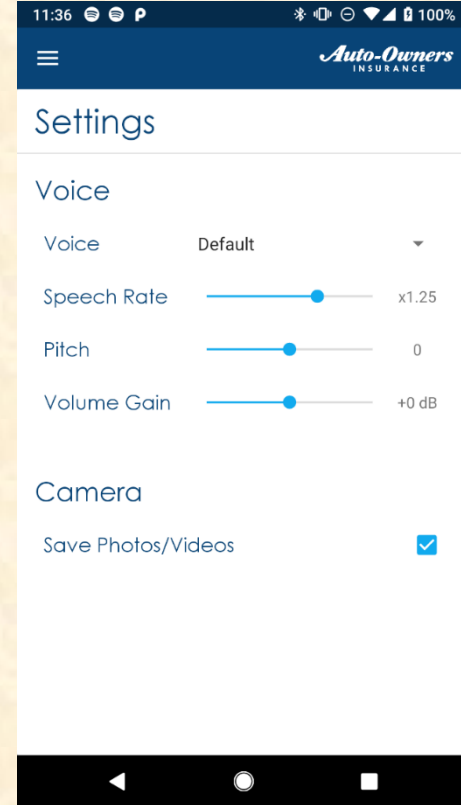
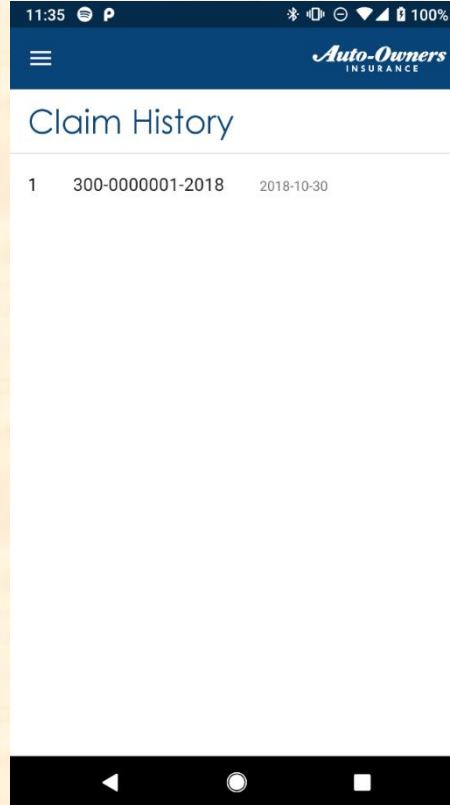
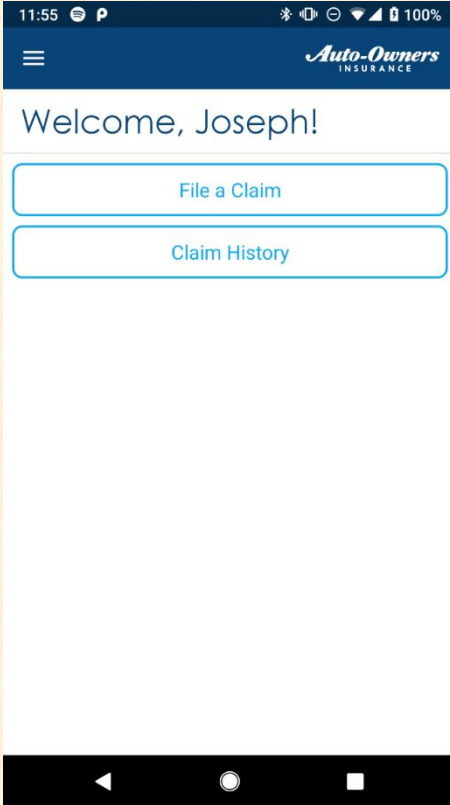
Report Date	Insured	Type	ClaimNumber	DOL	Contact	Contact Phone
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654
01/01/2018	Joseph Gregors	🚗	330-876543-2018	12/22/2017	Jeff Jefferson	248-890-7654



# Team Auto-Owners Beta Presentation

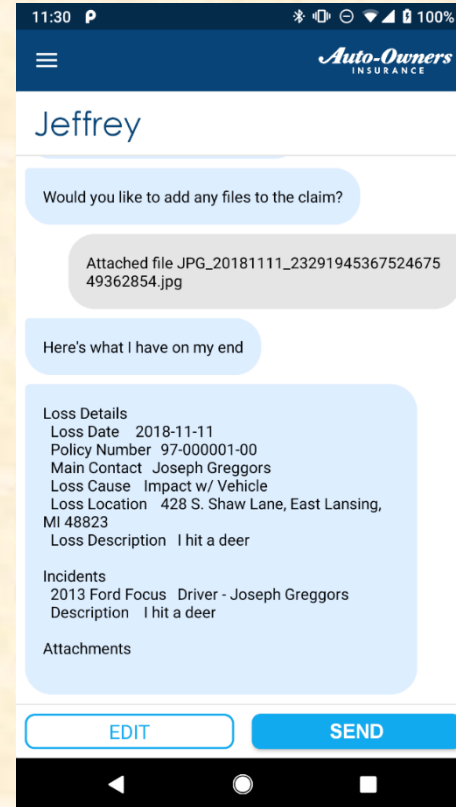
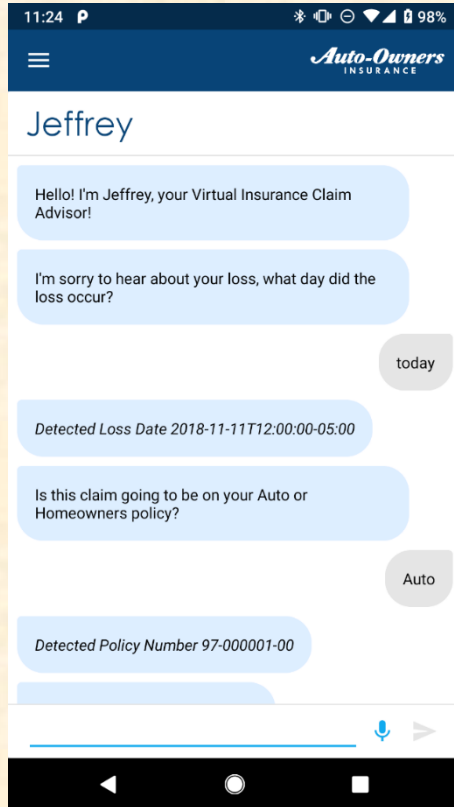
# Team Auto-Owners Beta Presentation

Android App



# Team Auto-Owners Beta Presentation

Android App







# Team Auto-Owners Beta Presentation

# Team Auto-Owners Beta Presentation

Web Portal

Auto-Owners  
INSURANCE

Q Search


Logout

Joseph Greggors300-0000058-2018🚗Date of Loss: 2018-11-09

Loss Description

I was driving my car on i-96 and another car and pushed me into oncoming traffic

Photos & Documents



JPG\_20181109\_1524453180855152359198111.jpg

Loss Cause

Other

Risk Units

2013 Ford Focus

Main Contact

Joseph Greggors

Location

220 Trowbridge Rd  
East Lansing, MI 48824

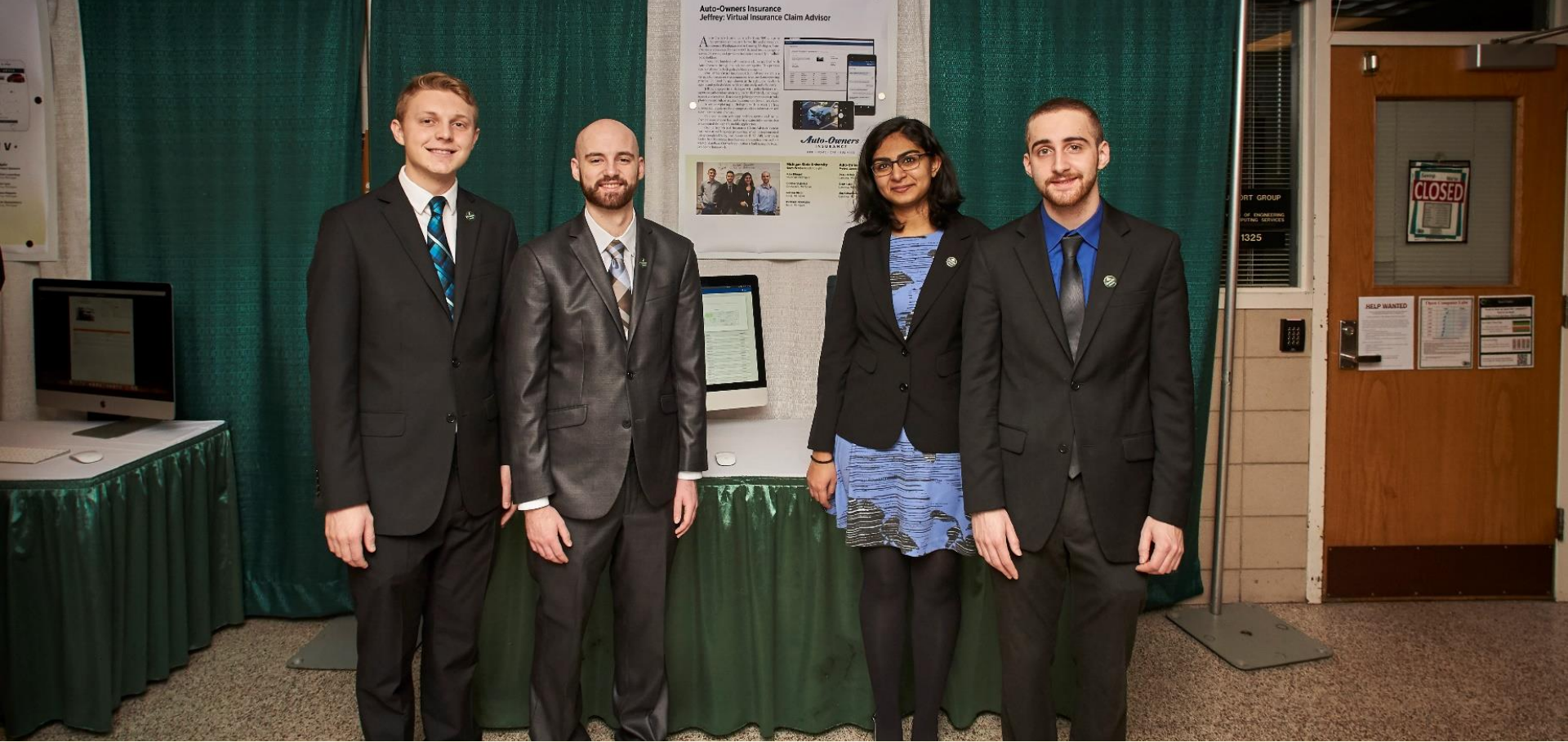
Report Date	Insured	Type	ClaimNumber	DOL	Contact	Contact Phone
2018-10-30	Glenn Baker	🚗	300-0000001-2018	2018-10-30	Joseph Greggors	248-987-2345

Auto-Owners  
INSURANCE

LIFE • HOME • CAR • BUSINESS

The Capstone Experience





Team Auto-Owners  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

Team Dow

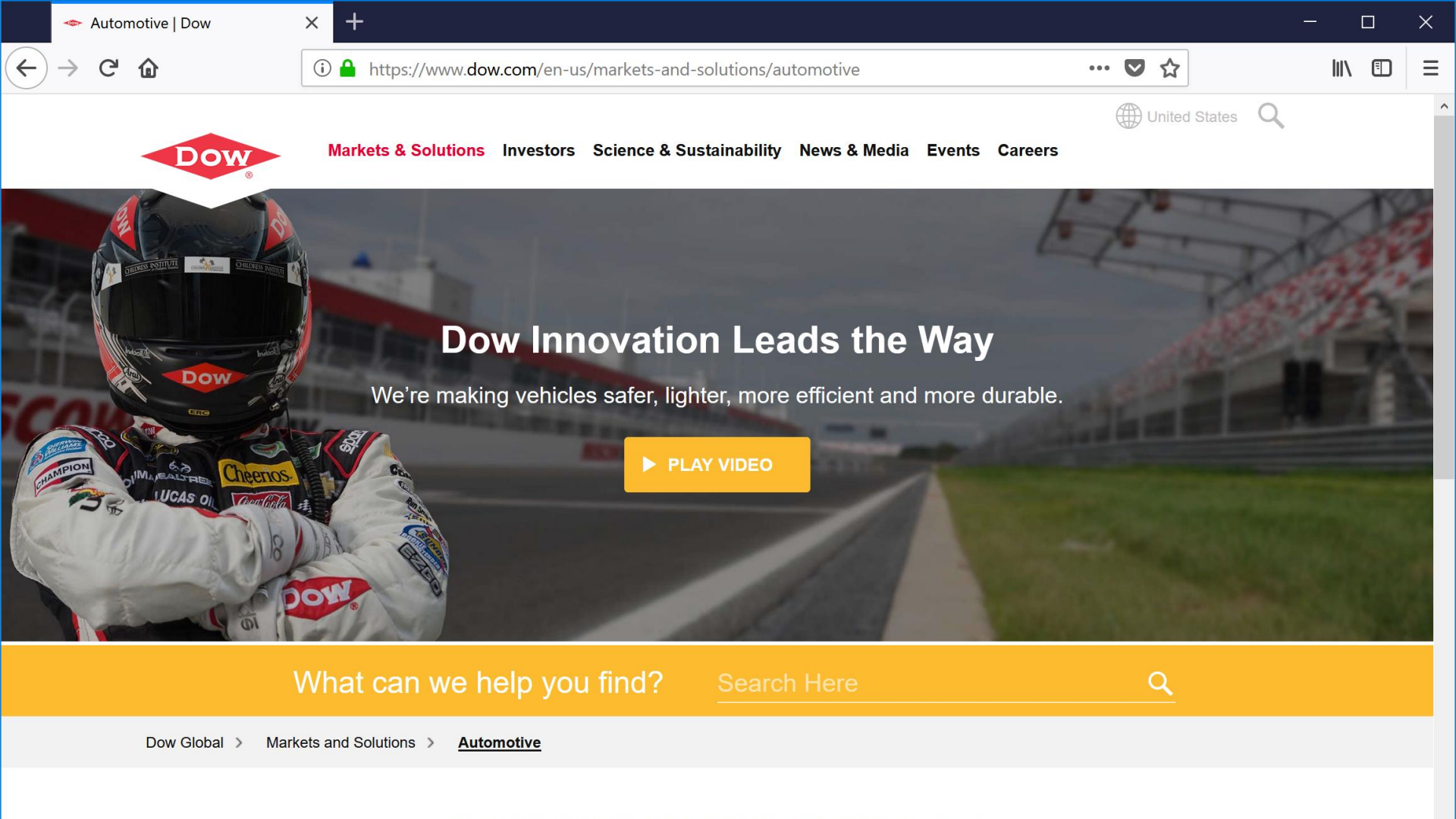
Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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







# Dow Innovation Leads the Way

We're making vehicles safer, lighter, more efficient and more durable.

▶ [PLAY VIDEO](#)

What can we help you find?

[Search Here](#)



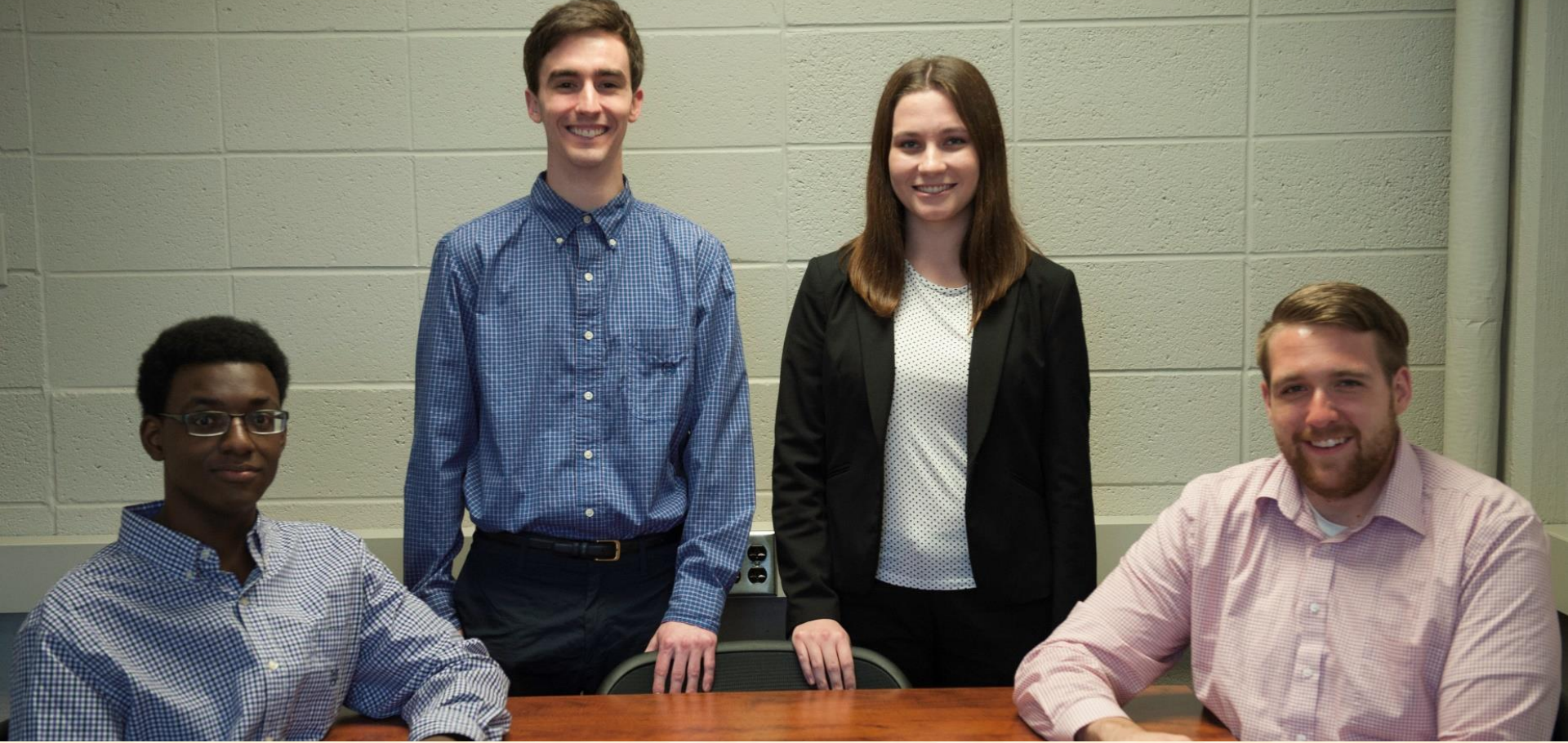
# Team Dow Project Overview

## IT Assistant

- Functionalities
  - Provide IT Assistance to Dow Employees
  - Adjust Dynamically Around Conversation
  - Via Mobile and Web Apps
- Features
  - Provide Natural Language Interface
  - Adjust Content to Maximize Accuracy
    - Apply Machine Learning (ML)
    - Leverage Crowdsourcing
  - Leverage Dow's Existing Knowledge Base
  - Scale to 80,000 Employees Worldwide
  - Support Web, Google Android and Apple iOS
- Technologies
  - Microsoft Azure
    - Language Understanding Intelligence Service (LUIS)
    - Machine Learning Services (ML)
    - Voice Assistants
  - CSS / HTML / PHP / JavaScript
  - Apple iOS / Swift
  - Google Android / Java







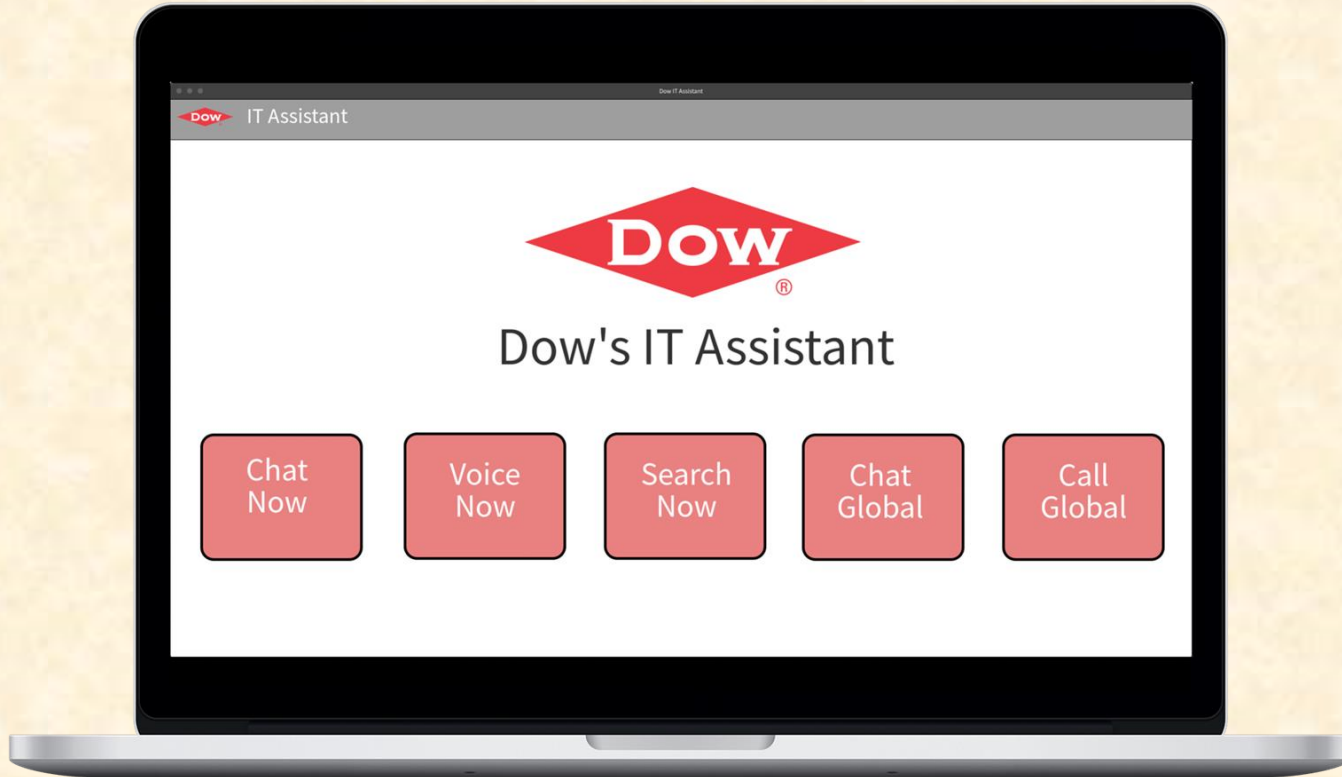
## Team Dow

Brandon Brooks, Keaton Coffman, Cassie Thompson, Charlie Benson



# Team Dow Project Plan Presentation

Screen Mockup



The Capstone Experience

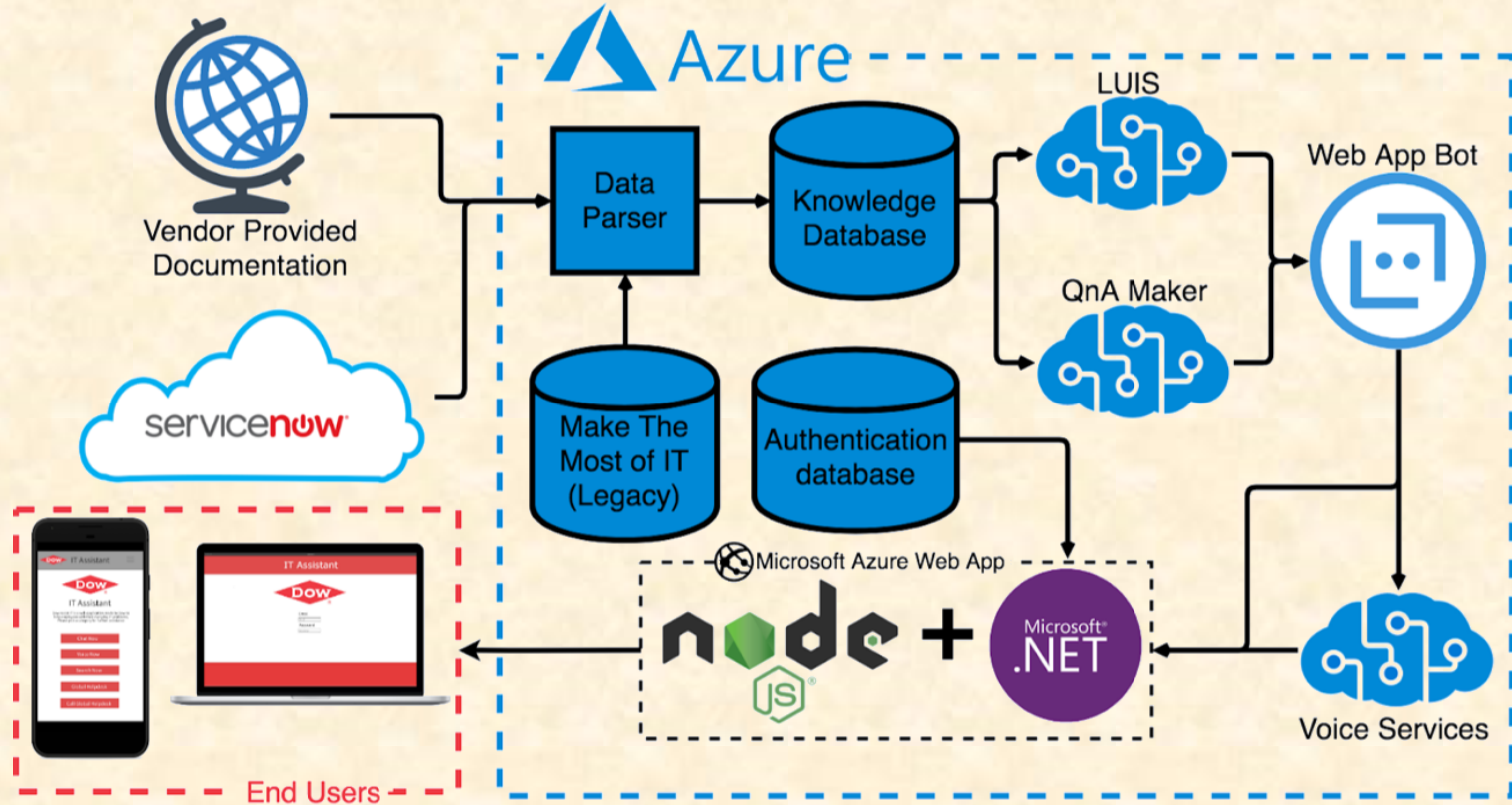




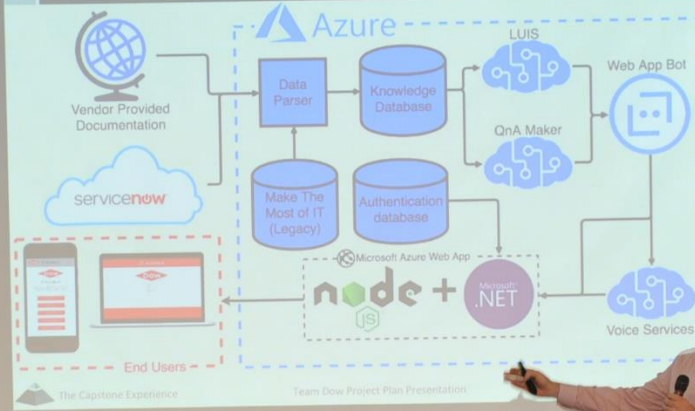
# Team Dow Project Plan Presentation

# Team Dow Project Plan Presentation

## Architecture Diagram



## System Architecture

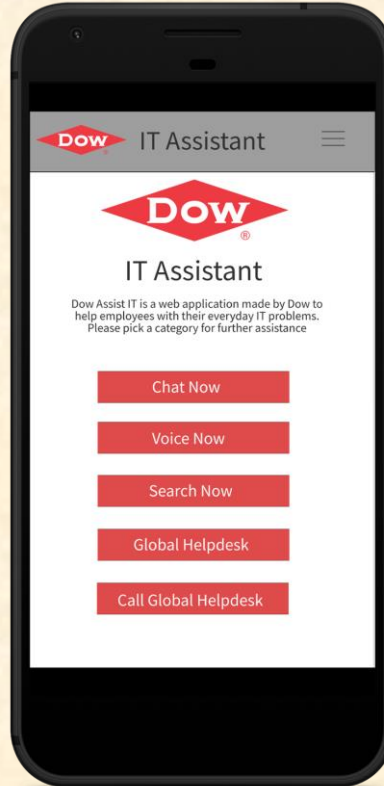


Team Dow  
Project Plan Presentation



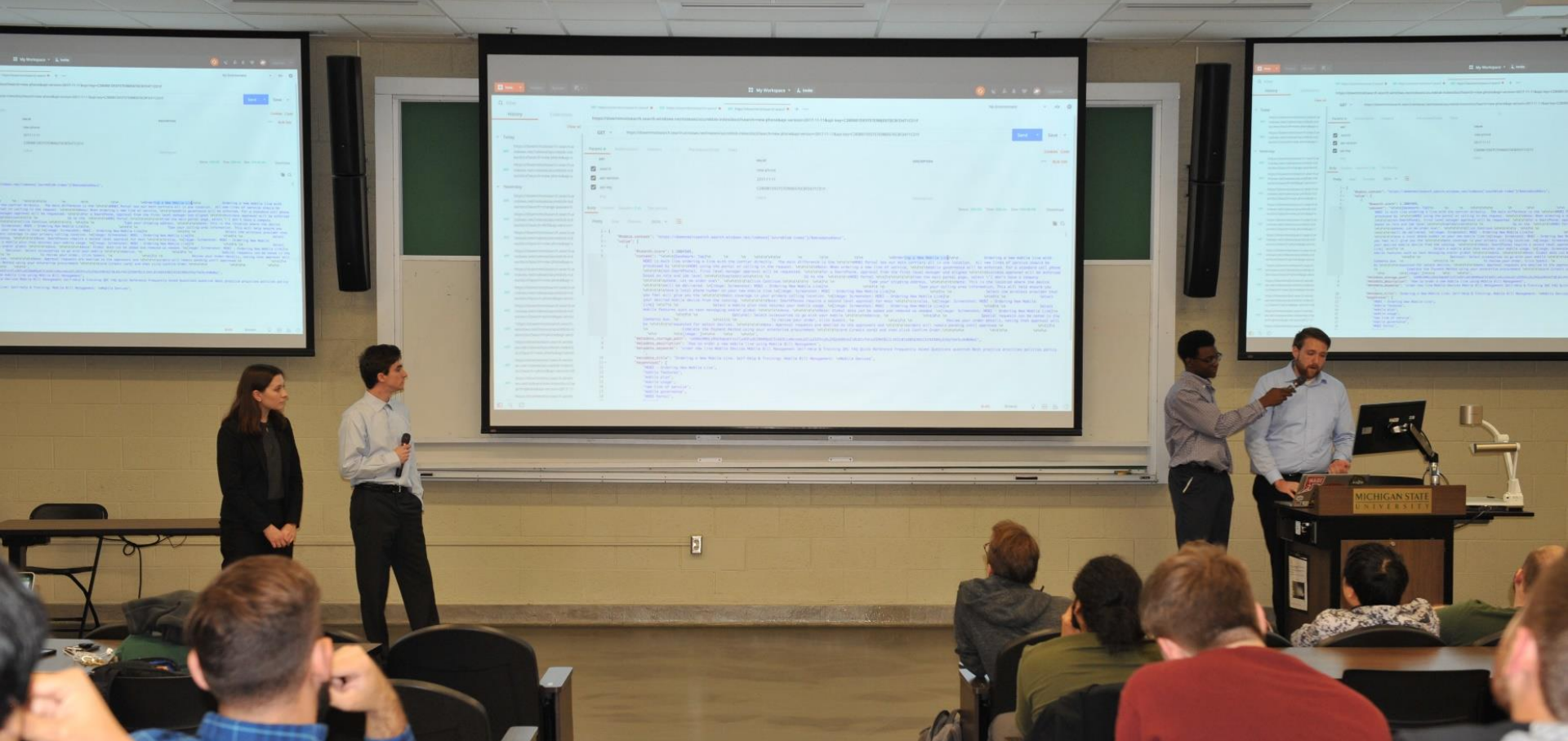
# Team Dow Project Plan Presentation

Screen Mockup



The Capstone Experience

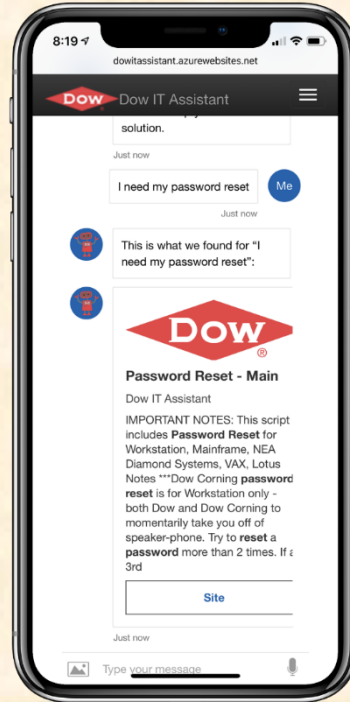




# Team Dow Alpha Presentation

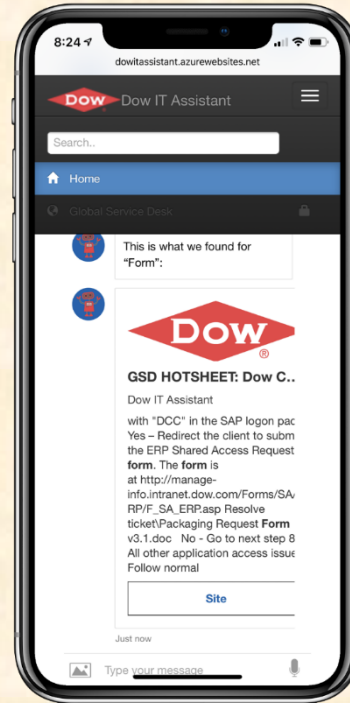
# Team Dow Alpha Presentation

Password Reset via Mobile Device



# Team Dow Alpha Presentation

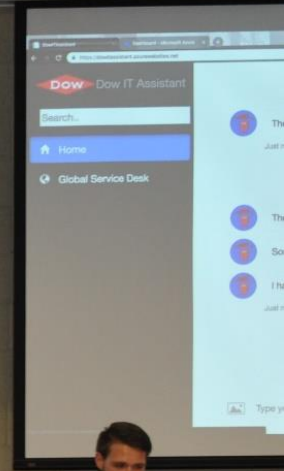
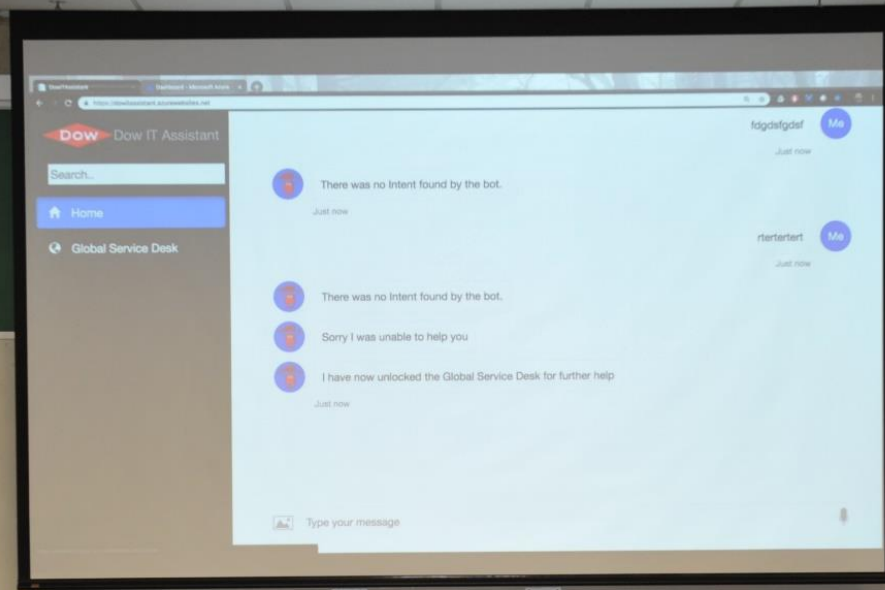
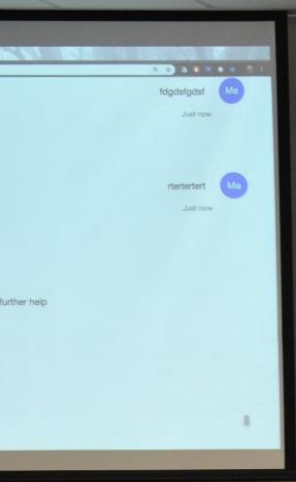
Form via Mobile Device



The Capstone Experience



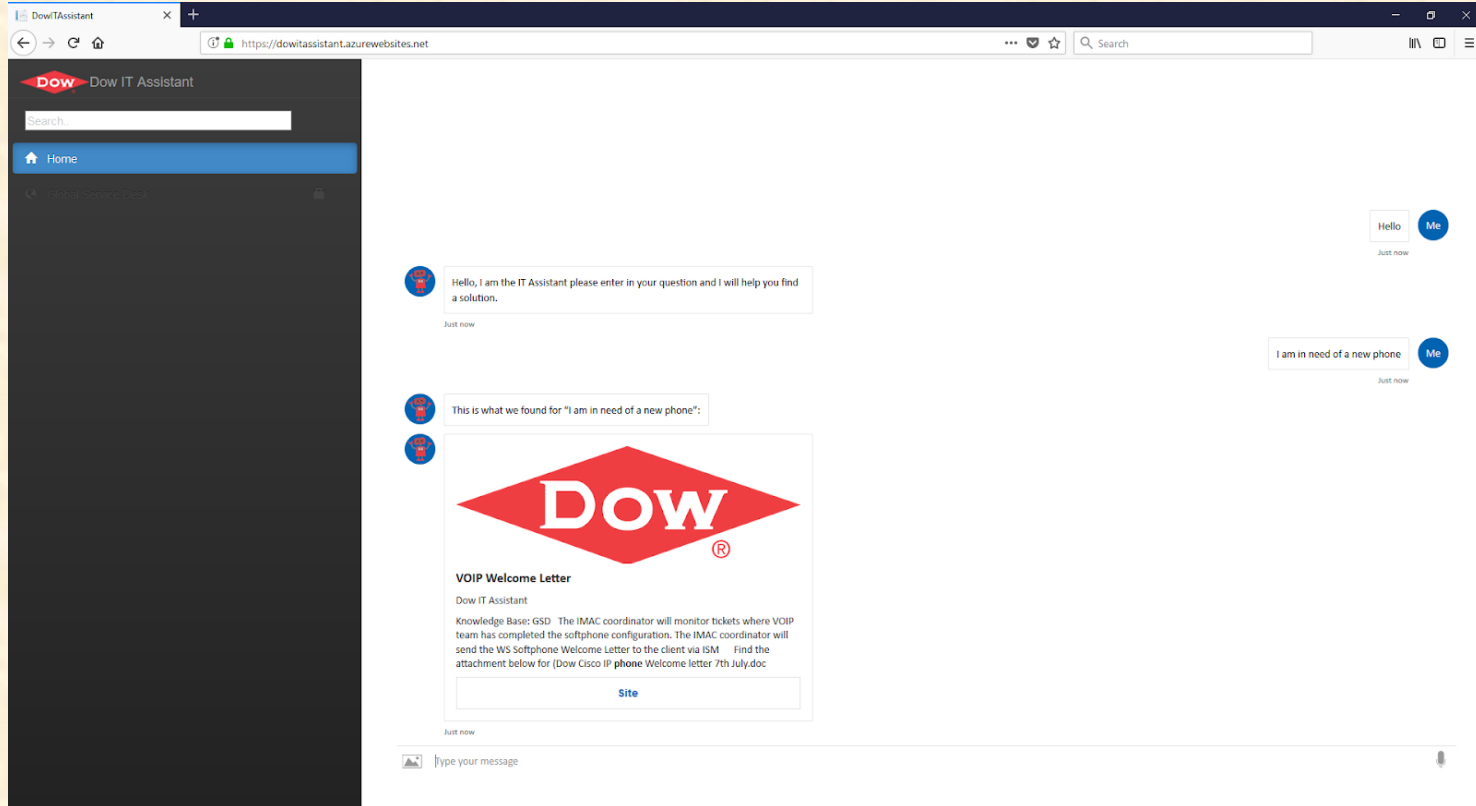




# Team Dow Alpha Presentation

# Team Dow Alpha Presentation

New Phone via Web



The screenshot displays a web browser window with the URL <https://dowitassistant.azurewebsites.net>. The interface features a dark sidebar on the left with the "Dow IT Assistant" logo and a search bar. The main chat area shows a conversation with a Dow IT Assistant bot. The bot's first message is: "Hello, I am the IT Assistant please enter in your question and I will help you find a solution." The user's response is: "I am in need of a new phone". The bot's second message is: "This is what we found for 'I am in need of a new phone':". Below this is a large red diamond logo with the word "DOW" in white. Under the logo, the text reads: "VOIP Welcome Letter", "Dow IT Assistant", "Knowledge Base: GSD The IMAC coordinator will monitor tickets where VOIP team has completed the softphone configuration. The IMAC coordinator will send the WS Softphone Welcome Letter to the client via ISM Find the attachment below for (Dow Cisco IP phone Welcome letter 7th July.doc)", and a "Site" button. The chat input field at the bottom contains the text "Type your message".

The Capstone Experience



# Team Dow Beta Presentation

# Team Dow Beta Presentation

## Password Reset via Web

The screenshot displays a web browser window with the URL <http://dowitassistant.azurewebsites.net>. The interface features a dark sidebar on the left with a search bar and a 'Home' button. The main content area shows a chat conversation with a bot (DowITAssistant) and a user (Me).

**Chat History:**

- Me:** I need to reset my password (7 minutes ago)
- DowITAssistant:** What type of password are you trying to reset?  
Please enter one of the following:  
Workstation  
Email  
hDCC (7 minutes ago)
- Me:** workstation (7 minutes ago)
- DowITAssistant:** Is the password you are trying to reset [DowCorning.net](#) or [Dow.com](#)?  
Dow  
Dow Corning (A minute ago)
- Me:** dow (A minute ago)
- DowITAssistant:** Are you remoting in to this computer or at a desk?  
Desk  
Remote (A minute ago)
- Me:** Desk (A minute ago)
- DowITAssistant:** Change your Dow domain password on your workstation by doing the following steps:

**Input Field:** Type your message



# Team Dow Beta Presentation

## Phone Search via Web

The screenshot displays the DowITAssistant web application interface. The browser address bar shows the URL <http://dowitassistant.azurewebsites.net>. The application header features the Dow logo and a navigation menu with a home icon and the text 'Home'. A search bar contains the text 'phone'. Below the search bar, a list of search results is displayed, including links to 'Procedure to turn in your Dow-provided cell phone', 'How to switch between computer and phone audio in WebEx', 'How to update profile phone numbers in WebEx', 'Answers to cellular phone frequently asked questions', 'Cell Phone Services on', 'Facts about the rising costs of Dow-provided cell phones and managing those issues', 'Dow's cellular device and pager policy', 'Phone information', 'Ergonomic guidelines when using cell phones', 'Workstation Software', and 'Phone information'. The right sidebar shows a chat history with messages from 'Me' and 'dow', including 'I need to reset my password', 'workstation', and 'Change your Dow domain password on your workstation by doing the following steps:'. The bottom of the interface includes a 'Type your message' input field and a microphone icon.

phone

- Procedure to turn in your Dow-provided cell phone. <%= Application(
- How to switch between computer and phone audio in WebEx
- How to update profile phone numbers in WebEx
- Answers to cellular phone frequently asked questions.
- Cell Phone Services on
- Facts about the rising costs of Dow-provided cell phones and managing those issues. <%= Application(
- Dow's cellular device and pager policy.
- Phone information
- Phone information
- Phone information
- Ergonomic guidelines when using cell phones
- Phone information
- Workstation Software
- Phone information

Are you remoting in to this computer or at a desk?

Desk  
Remote

Change your Dow domain password on your workstation by doing the following steps:

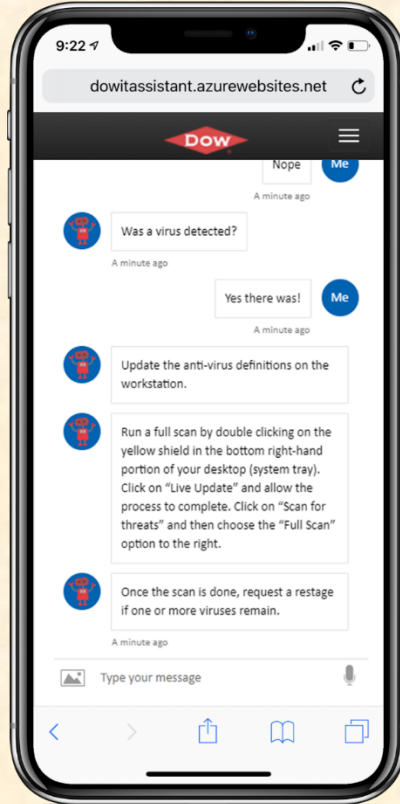
Type your message



# Team Dow Beta Presentation

# Team Dow Beta Presentation

Email Virus via Phone





Team Dow  
Design Day



MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

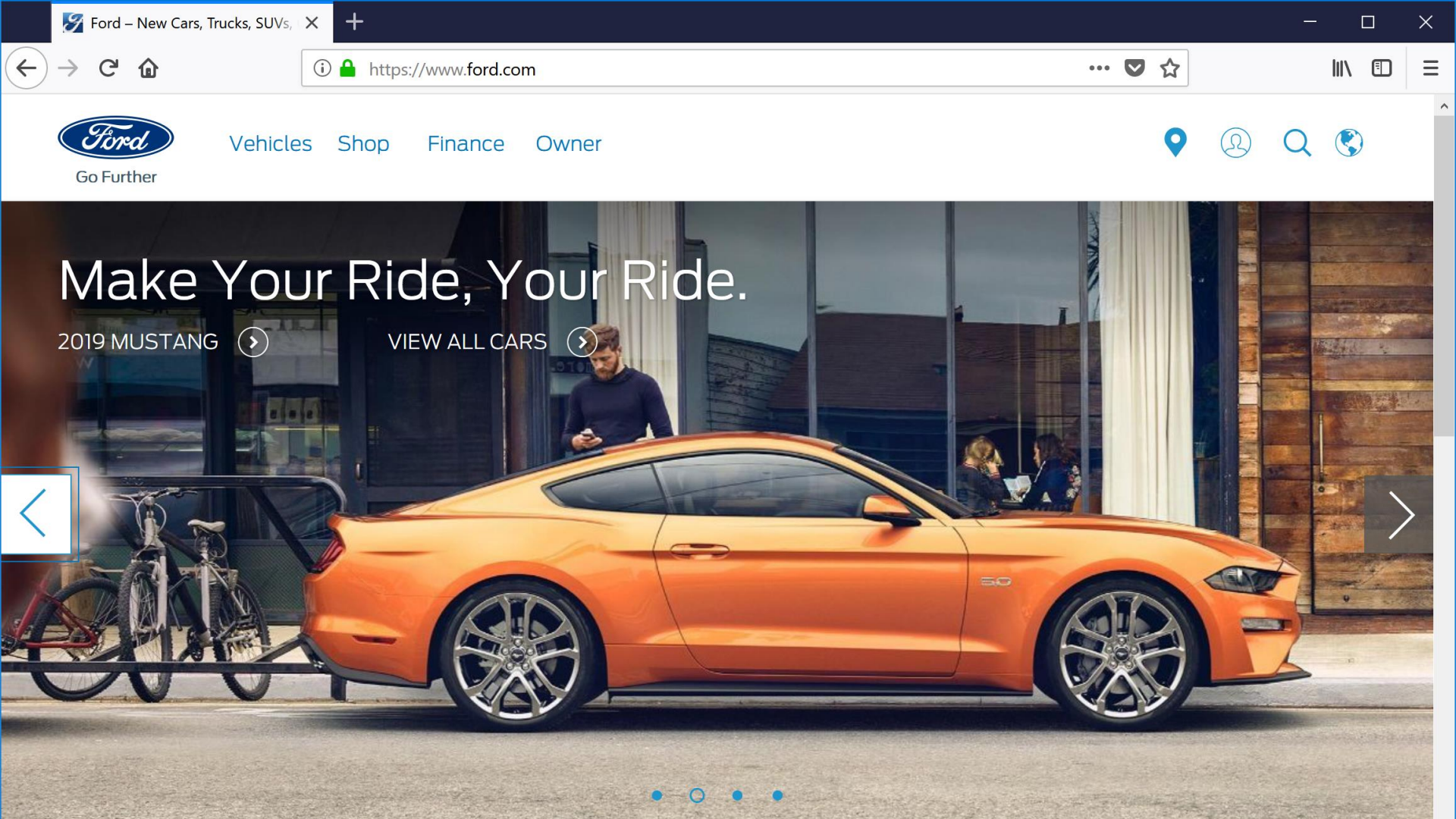
Team Ford

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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





Vehicles Shop Finance Owner



# Make Your Ride, Your Ride.

2019 MUSTANG ➡

VIEW ALL CARS ➡



# Team Ford Project Overview

## Ford Customer App Review Dashboard

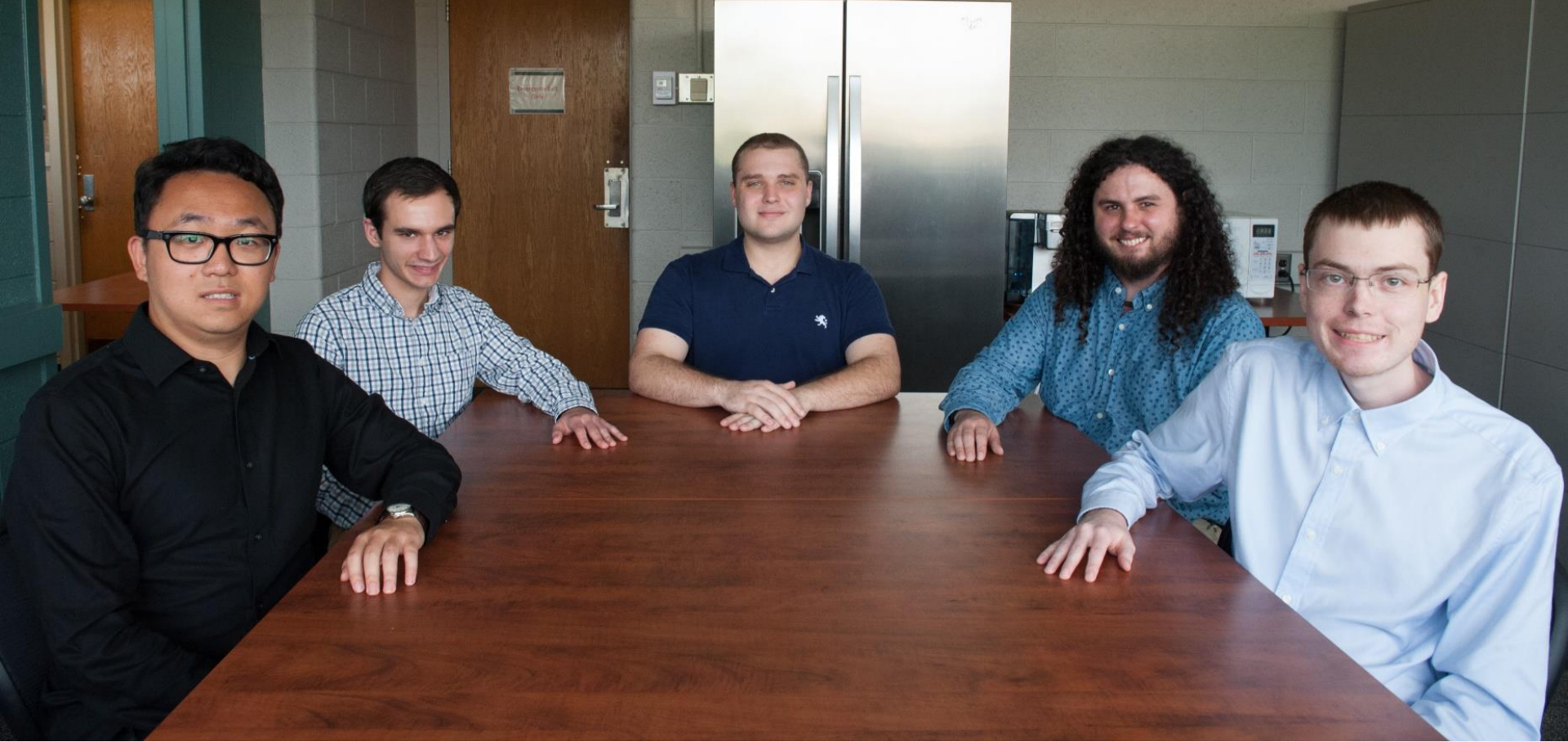
- Functionalities
  - Summarize Customer Reviews of Ford Apps
  - Generate Sentiment Analysis Dashboard
- Features
  - Fetch Reviews from Google Play Store and iTunes
  - Categorize Reviews Using Sentiment Analysis (From Very Negative to Very Positive)
  - Visualize Sentiment Analysis via Dashboard
  - Cascade Review Summaries to Slack Channel
  - Provide Administrative Portal
  - Create Full Stack of Microservices
- Technologies
  - Java / Spring Framework
  - Python Natural Language Toolkit
  - Slack
  - HTML5
  - RESTful Web Services



Dearborn, Michigan





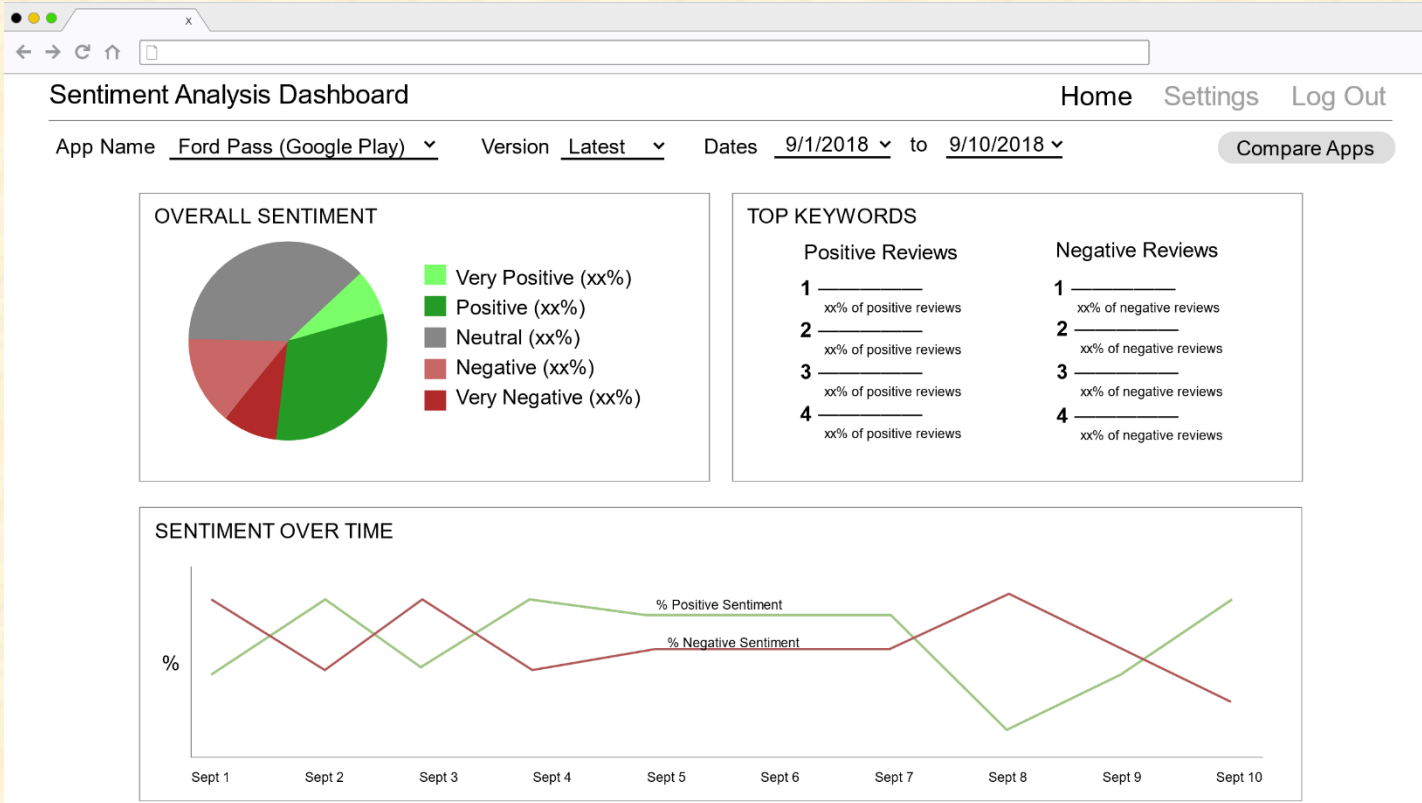


## Team Ford

Mingkai Yang, Noah Keppers, Paul Friesen, Drew Morgan, Jordan Schroeder

# Team Ford Project Plan Presentation

Screen Mockup



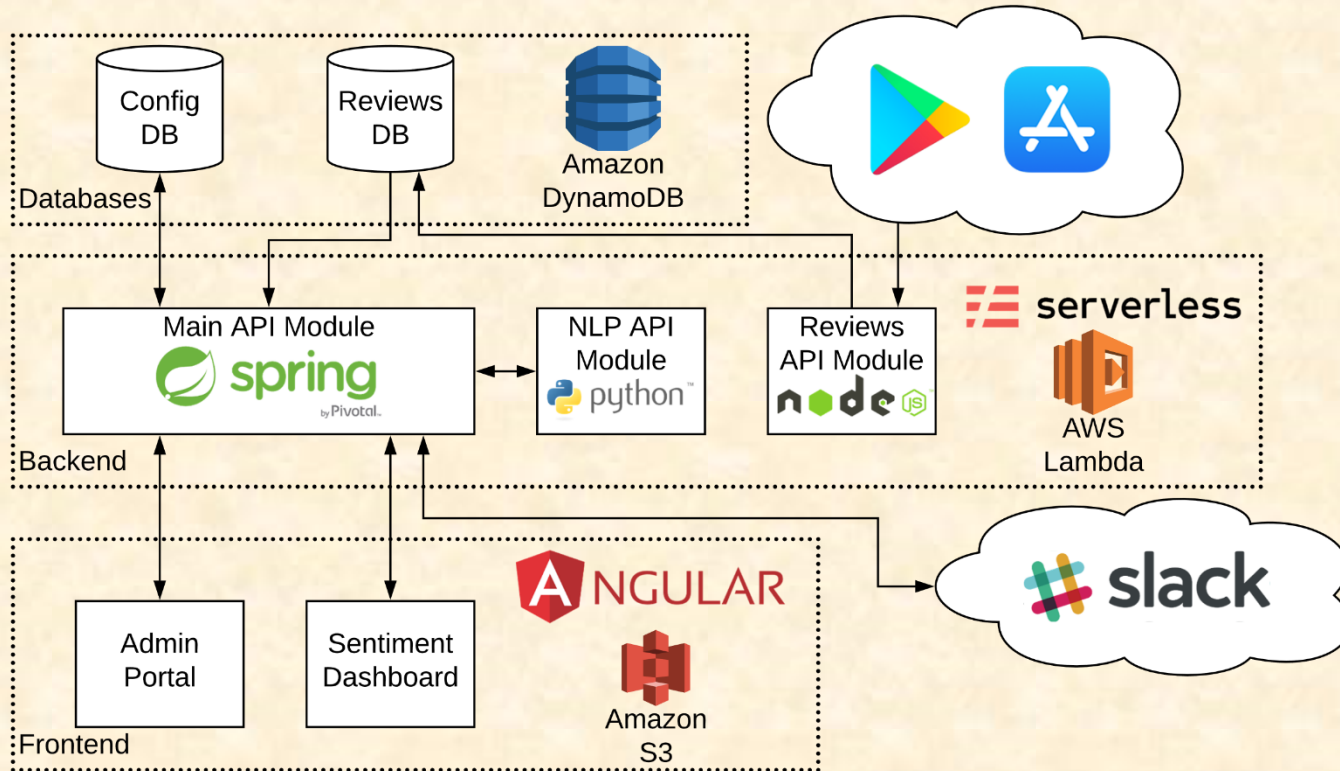


# Team Ford Project Plan Presentation



# Team Ford Project Plan Presentation

## Architecture Diagram



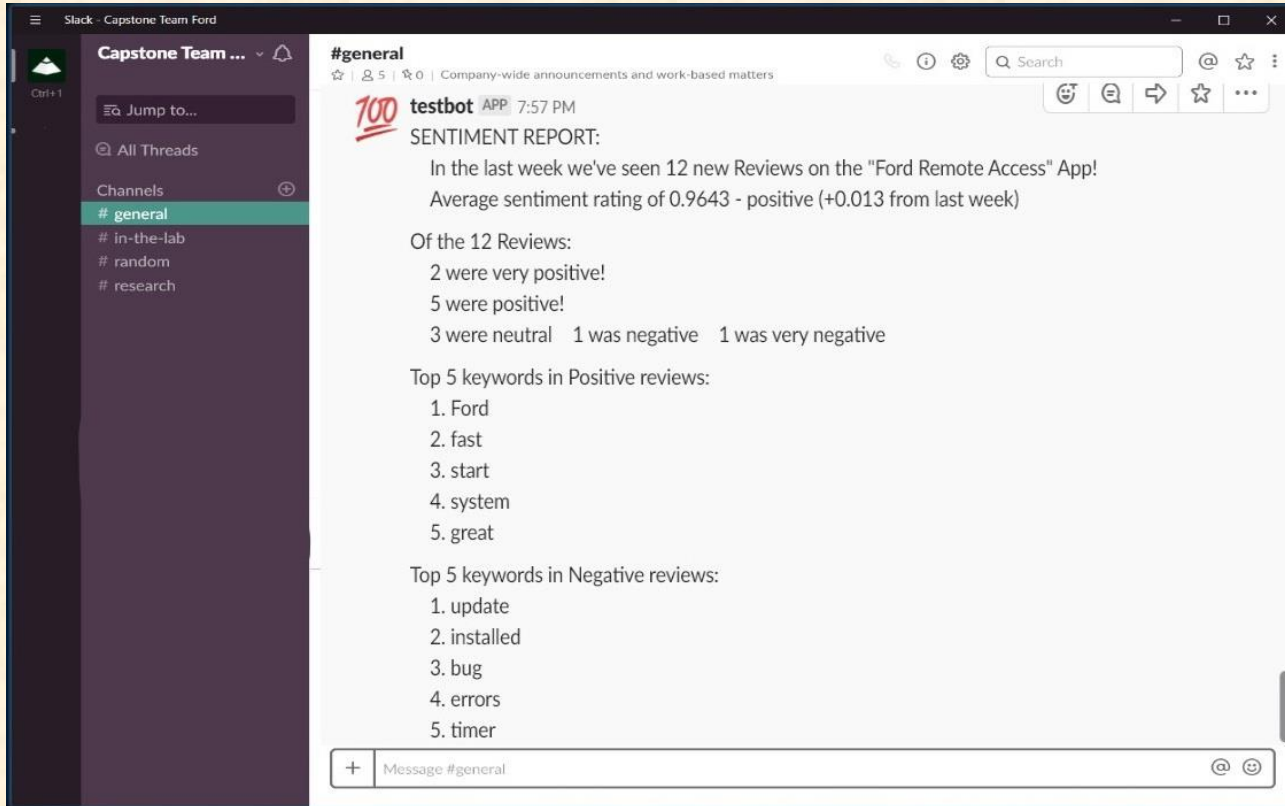


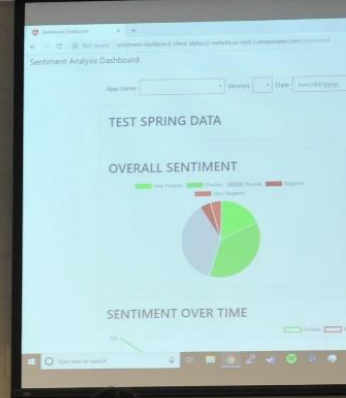
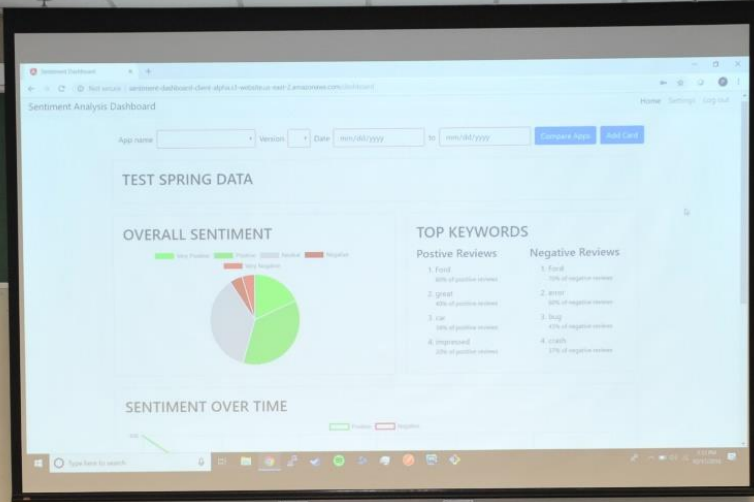
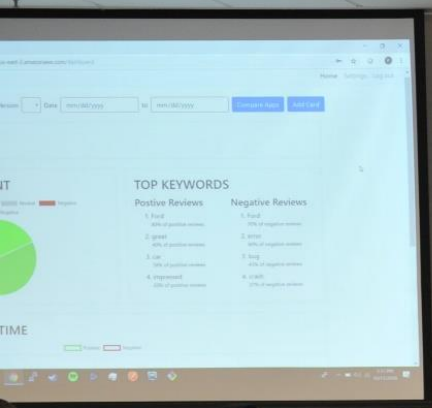


# Team Ford Project Plan Presentation

# Team Ford Project Plan Presentation

Screen Mockup

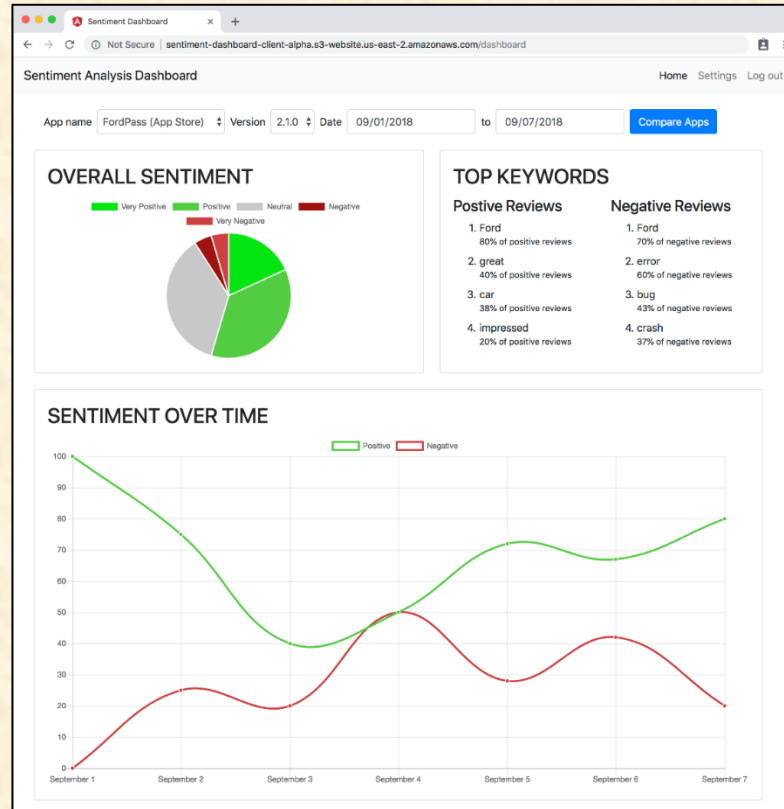




Team Ford  
Alpha Presentation

# Team Ford Alpha Presentation

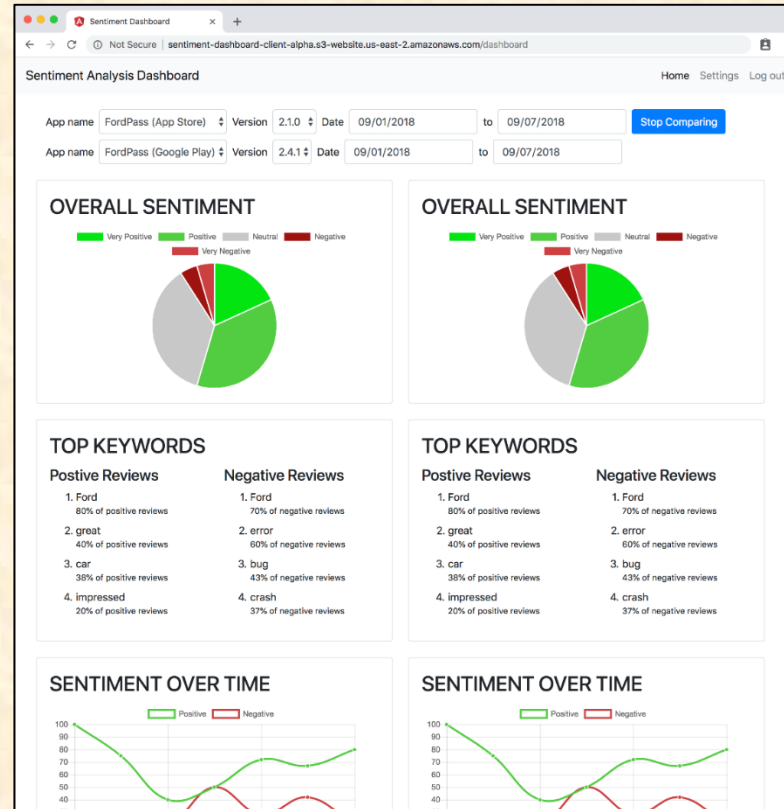
## Web Dashboard





# Team Ford Alpha Presentation

## Web Dashboard (Comparing Apps)





# Team Ford Alpha Presentation

# Team Ford Alpha Presentation

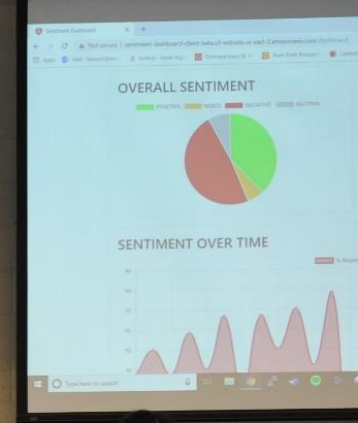
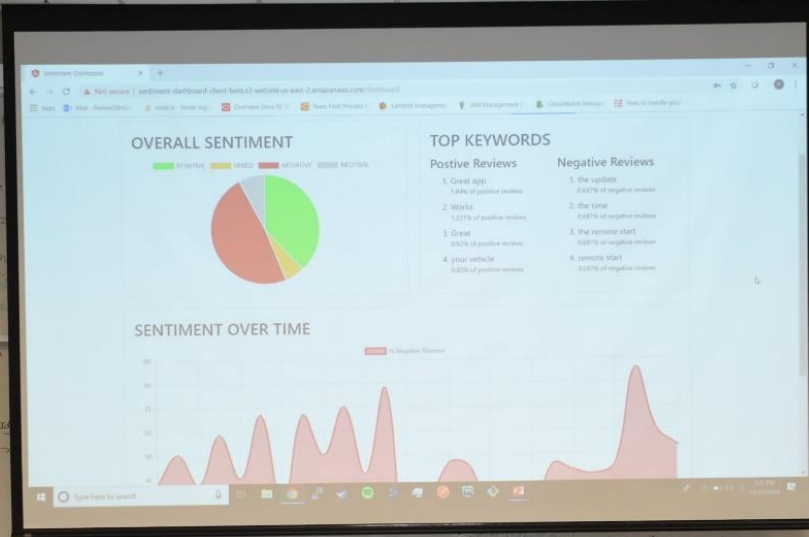
## Slackbot Report

The screenshot shows a Slack interface for a channel named "#general". The left sidebar shows the "Capstone Team ..." workspace with a list of channels including "# general" and "# random", and direct messages with "slackbot" and "Ford Analyst (you)". The main area shows a message from "SentimentBot" (labeled as an app) at 4:19 PM. The message contains a "Review" section with the following data:

- appldStore: com.ford.fordpass\*App Store
- version: 2.4.1
- date: 2018-10-09T21:23:23.000Z
- neutral sent: 61
- compound sent: 44
- pos sent: 25
- neg sent: 12

Below this, another "Review" section is partially visible with the same app store and version information.

On the right side of the image, there is a vertical text label: "The Capstone Experience".

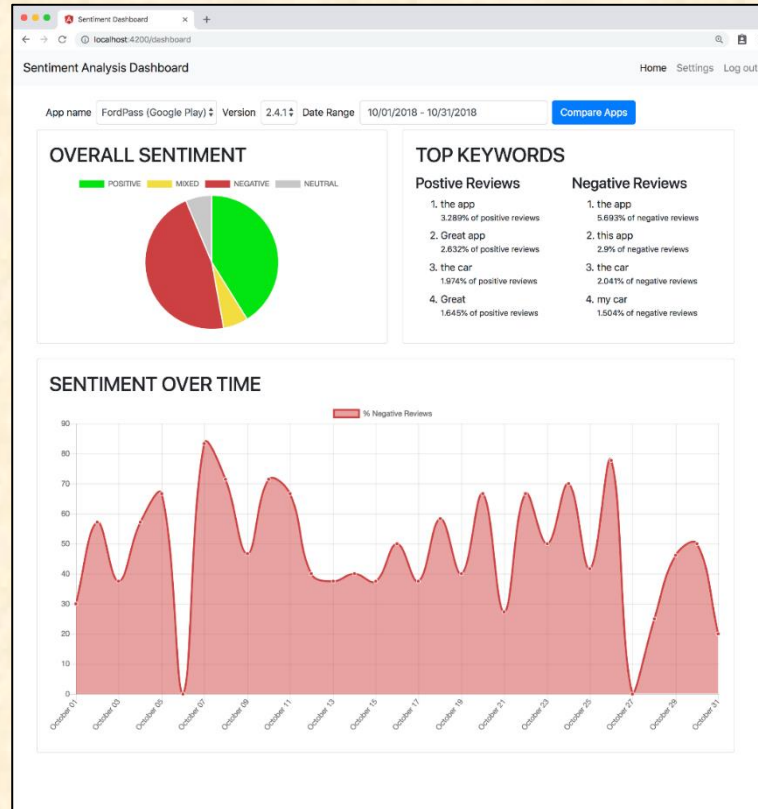


Team Ford  
Beta Presentation



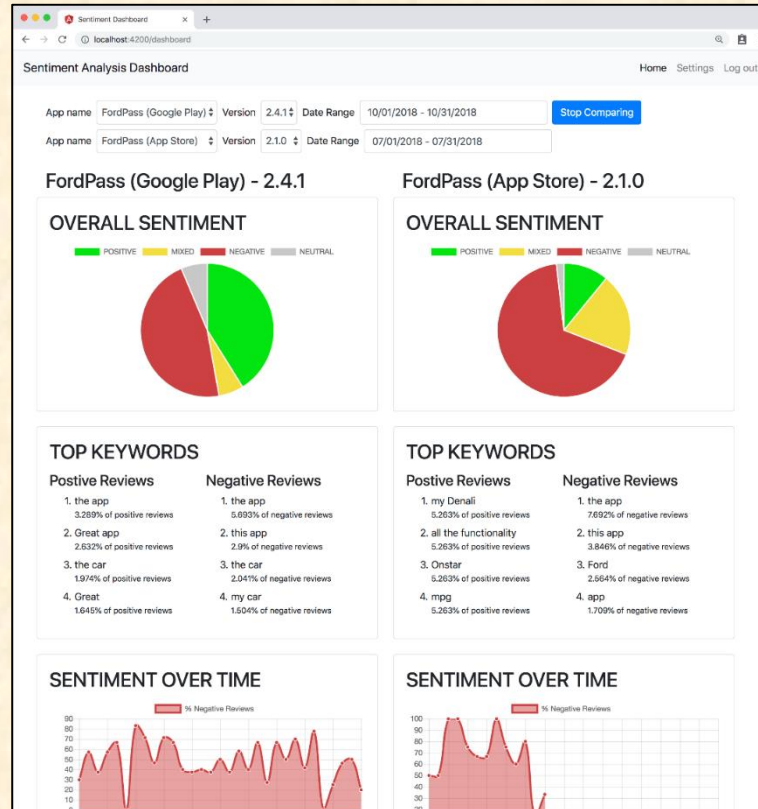
# Team Ford Beta Presentation

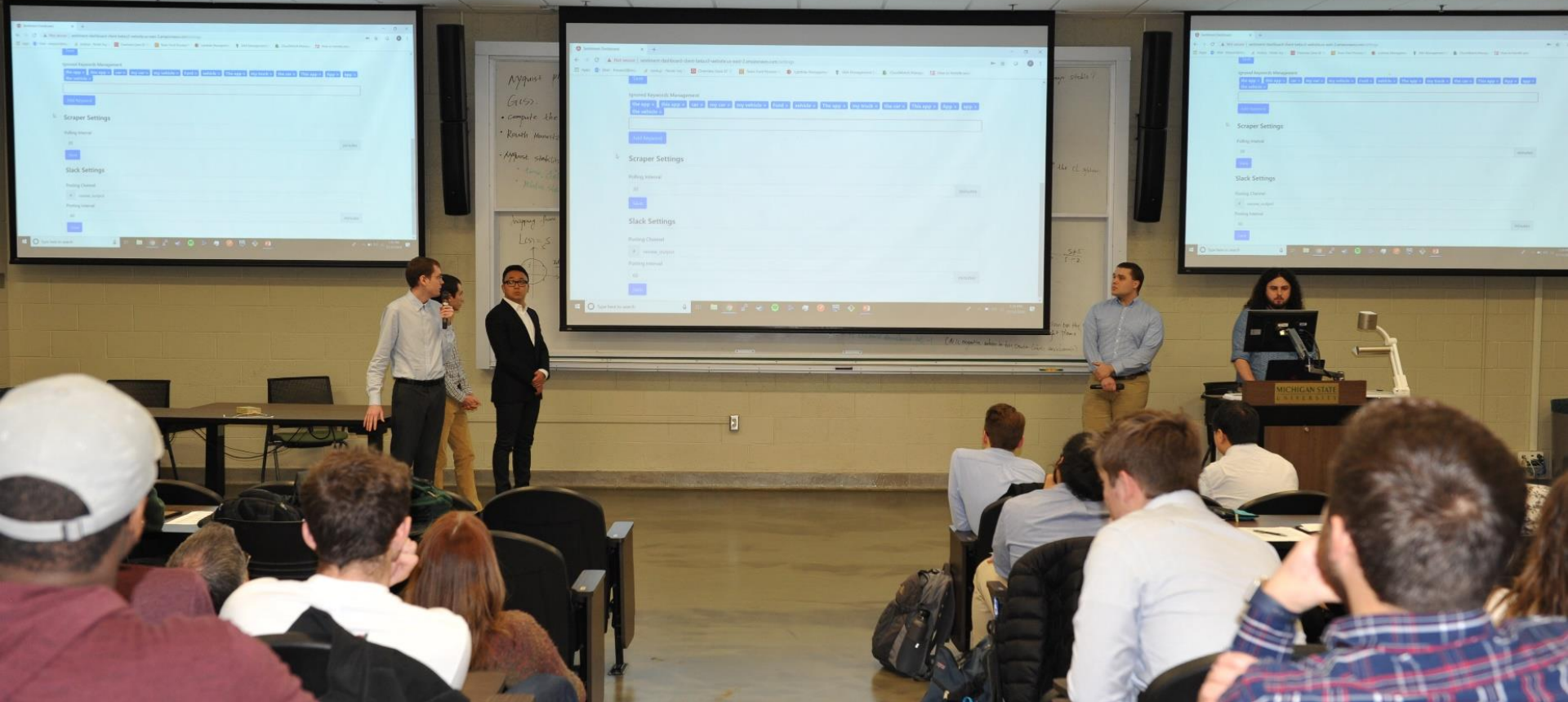
Web Dashboard



# Team Ford Beta Presentation

## Web Dashboard (Comparing Apps)





# Team Ford Beta Presentation

# Team Ford Beta Presentation

## Slackbot Report

Slack - Team Ford

Team Ford

- Ford Analyst
- All Threads
- Channels
- # general
- # random
- Direct Messages
- slackbot
- Ford Analyst (you)
- Ford Analyst
- + Invite People
- Apps
- SentimentBot
- SentimentBot

#general

☆ | 👤 4 | 🔒 0 | Company-wide announcements and work-based matters

Monday, November 5th

**Sentiment Bot** APP 8:45 AM

Report for:  
App: FordPass (Google Play)  
Version: 2.4.1  
Between October 29 and November 05, sentiment has been mostly Negative for 67 reviews

**Overall Sentiment**

- Positive: 37%
- Negative: 39%
- Neutral: 7%
- Mixed: 16%

**Keywords in Positive Reviews**

- the app: 2.6%
- Love: 2.6%
- miles: 2.6%
- example screens: 1.3%

**Keywords in Negative Reviews**

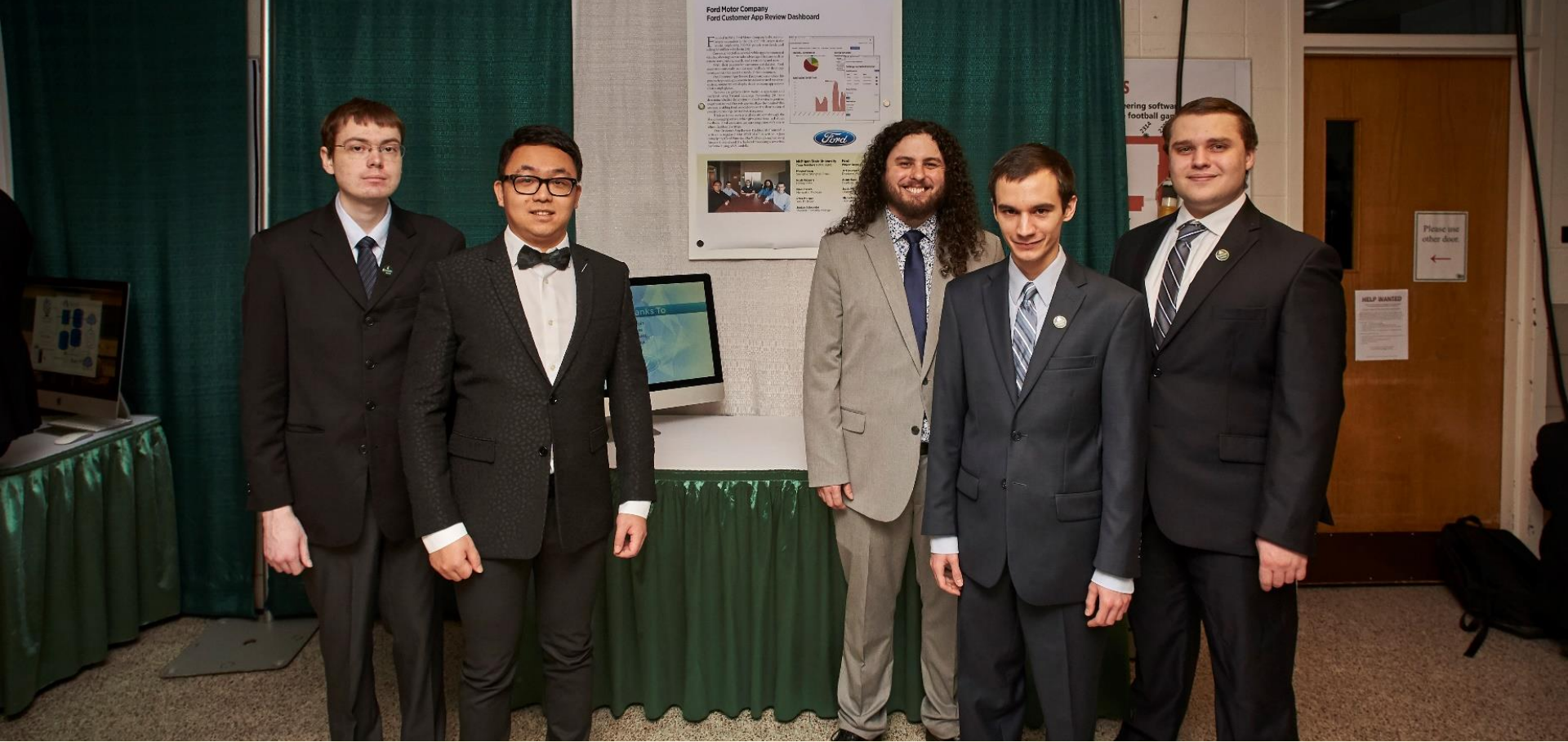
- the app: 4.55%
- my car: 3.64%
- this app: 2.73%
- the car: 2.73%

Report for:  
App: Fordpass (App Store)  
Version: 2.4.1  
Between October 29 and November 05, sentiment has been mostly Negative for 18 reviews

**Overall Sentiment**

+ Message #general





Team Ford  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

Team Herman Miller

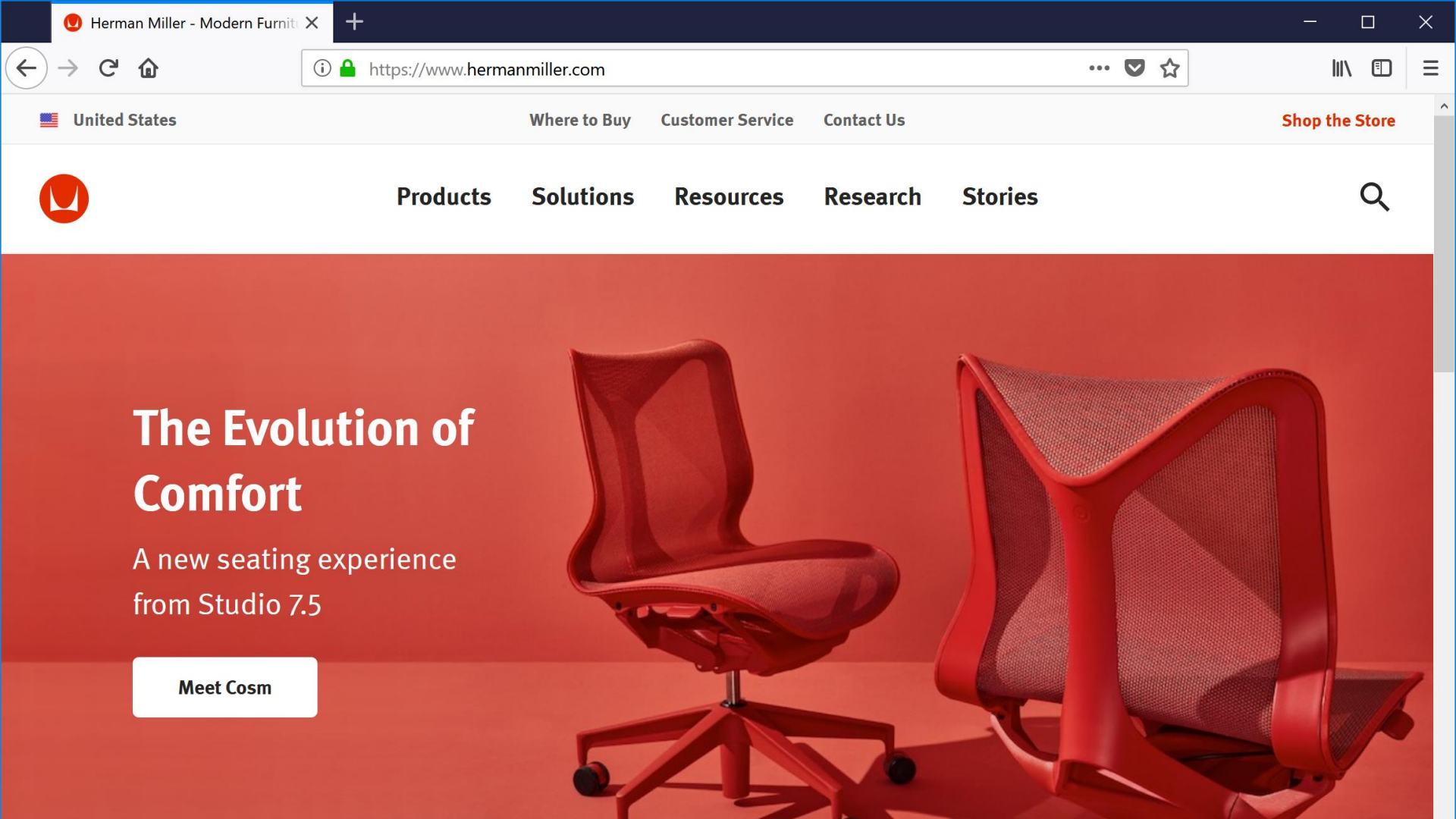
Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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



**HermanMiller**



# The Evolution of Comfort

A new seating experience  
from Studio 7.5

Meet Cosm





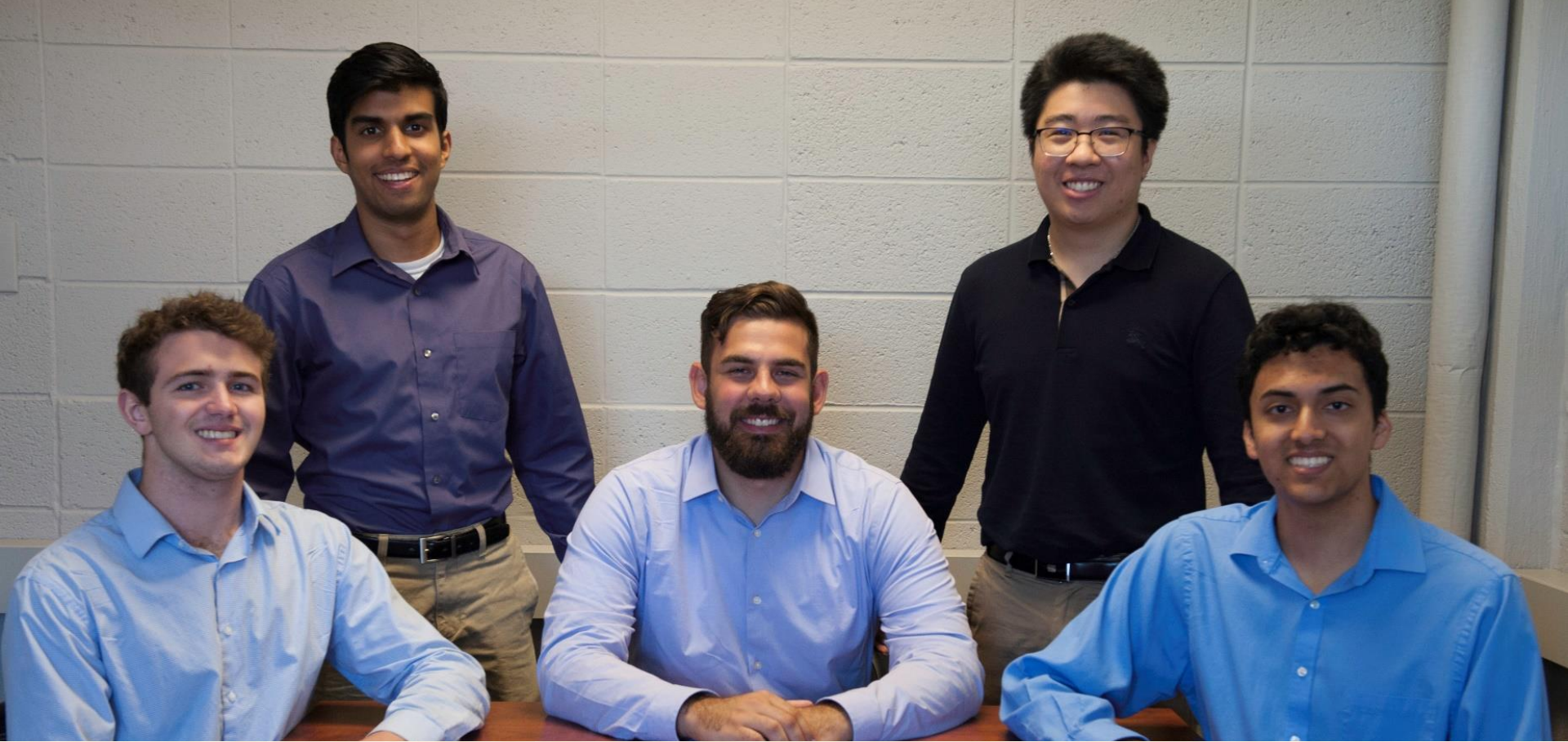
# Team Herman Miller Project Overview

## FIBRE: Fabric Identification Based Recommendation Engine

- Functionalities
  - Simplify Office Furniture Ordering
  - Standardize (Normalize) Order Material Data
  - Reduce Customer Requests
  - Offer Alternative Recommendations
- Features
  - Ingest New Materials Requests From Customer Orders
  - Apply Computer Vision
    - Inspect
    - Categorize
    - Tag
    - Approve Or Decline
  - Recommend Nearest Approved Alternative When Declined
  - Support Various Herman Miller Systems via Open Framework
  - Be Trainable, Scalable and Flexible
- Technologies
  - Machine Learning / Deep Learning
  - Python
  - TensorFlow (Image Recognition)



**HermanMiller**  
Zeeland, Michigan

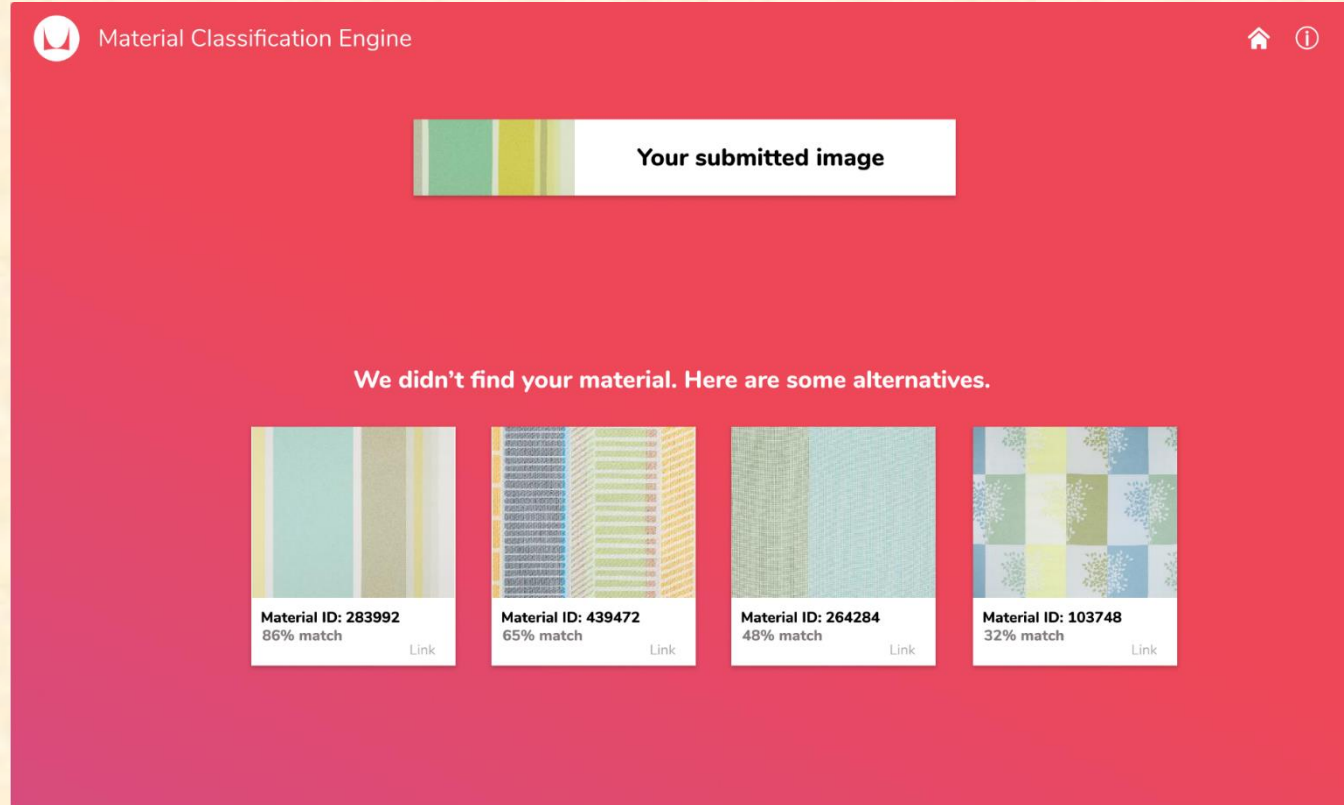


## Team Herman Miller

Ted Stacy, Ritwik Biswas, Joe Smith, David Xuan, Josh Bhattarai

# Team Herman Miller Project Plan Presentation

Screen Mockup





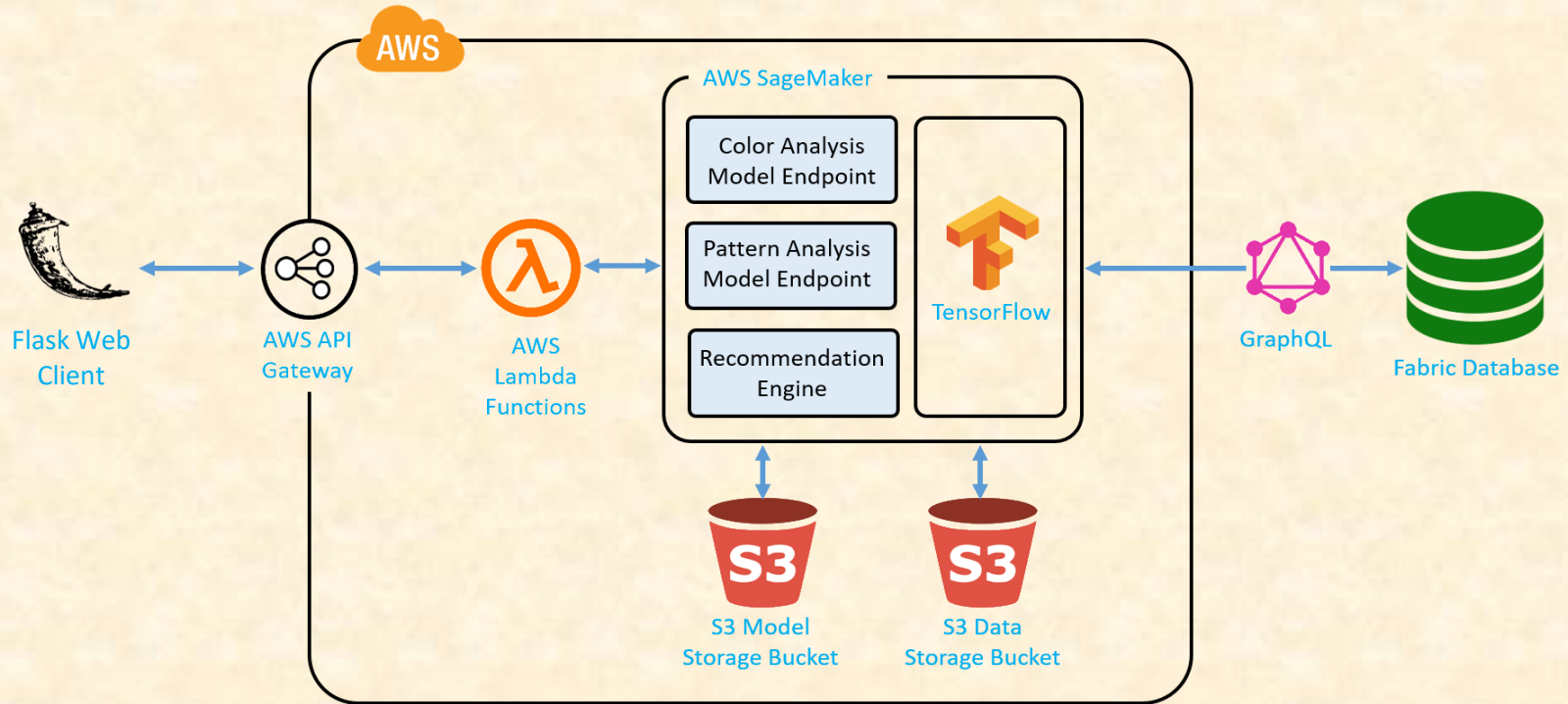


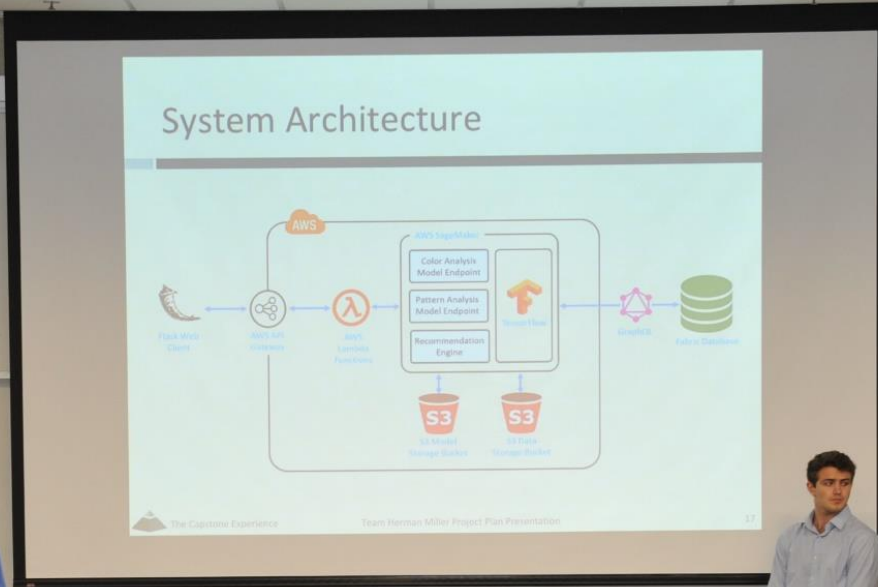
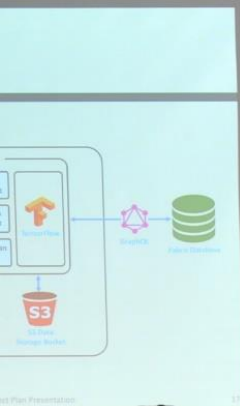
# Team Herman Miller Project Plan Presentation



# Team Herman Miller Project Plan Presentation

## Architecture Diagram

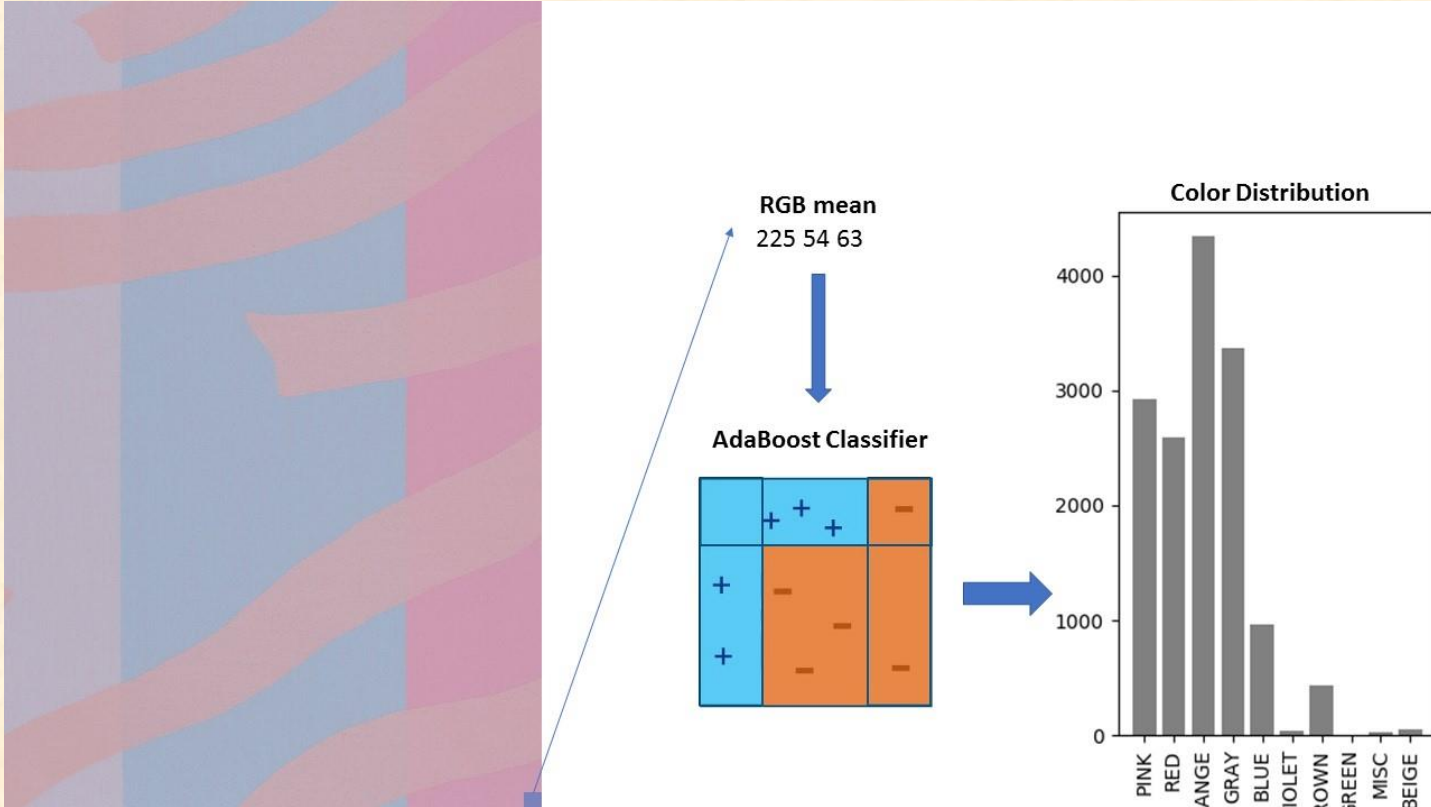




Team Herman Miller  
Project Plan Presentation

# Team Herman Miller Project Plan Presentation

Screen Mockup



## Classification Result for 1 Fabric



Color: green

Pattern: solid texture

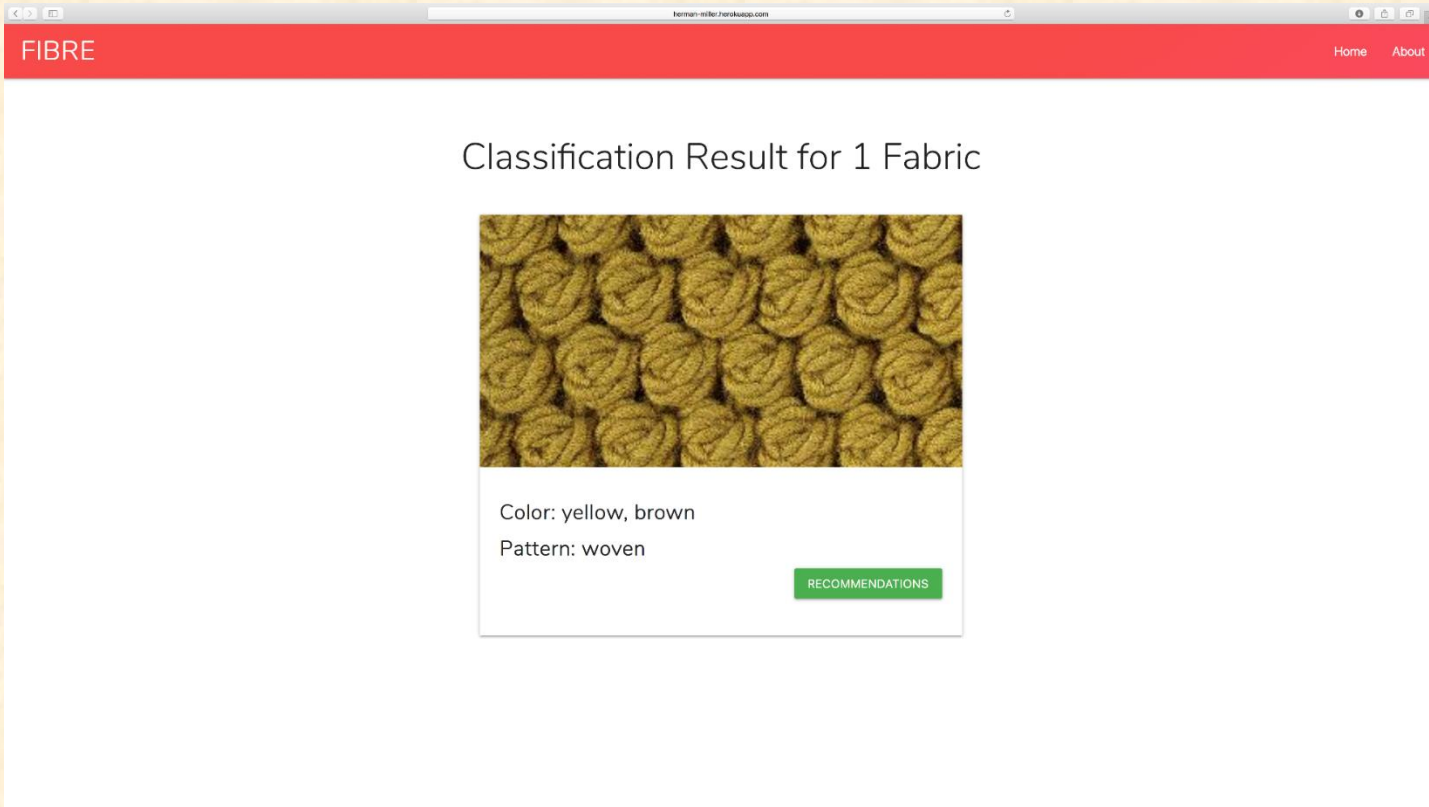
RECOMMENDATIONS

Team Herman Miller  
Alpha Presentation



# Team Herman Miller Alpha Presentation

FIBRE Fabric Classification (Single)









# Team Herman Miller Alpha Presentation

## FIBRE Fabric Classification (Multiple)

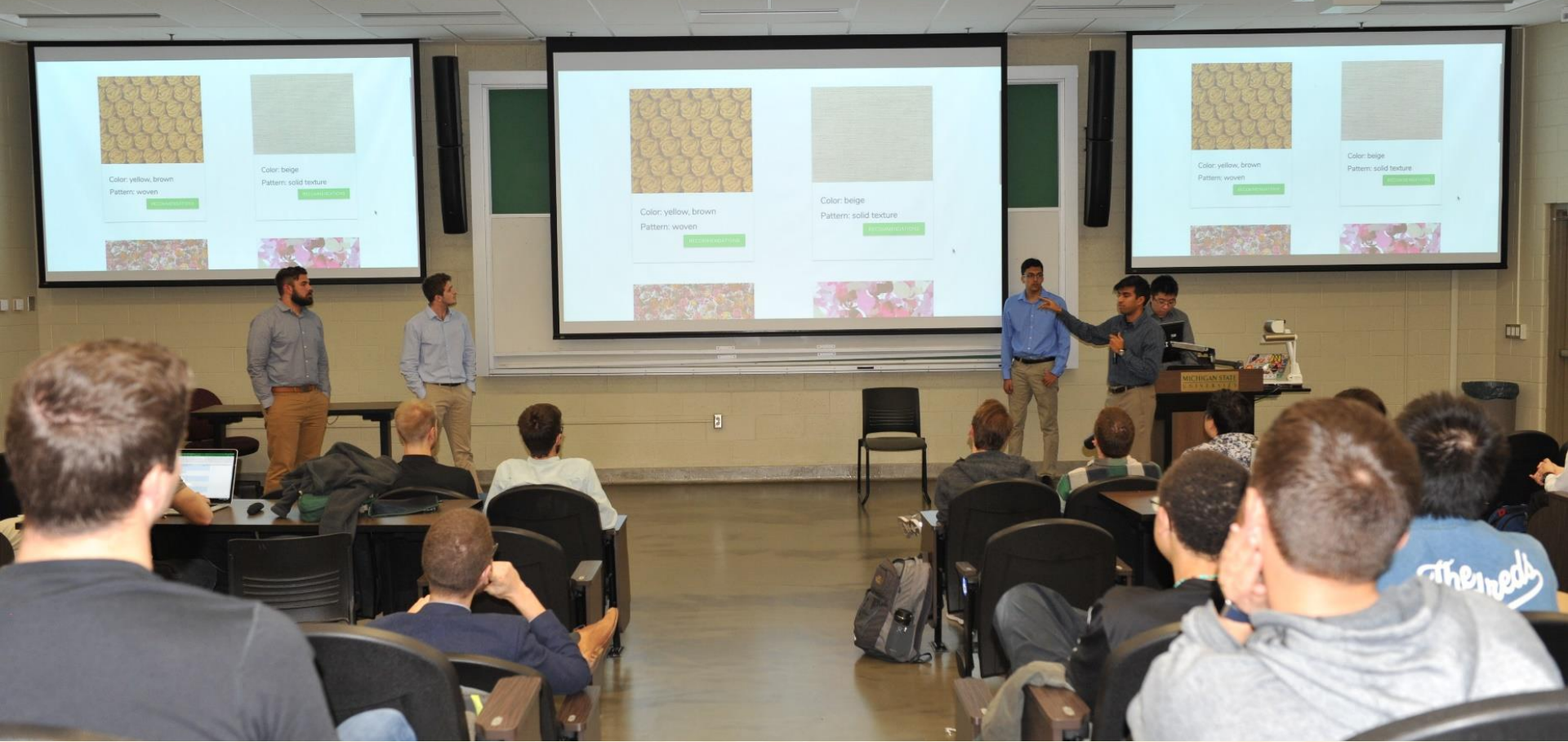
FIBRE

Home About

### Classification Results for 6 Fabrics

 <p>Color: beige Pattern: solid texture</p> <p>RECOMMENDATIONS</p>	 <p>Color: brown, gray, red, beige Pattern: botanical</p> <p>RECOMMENDATIONS</p>
 <p>Color: pink, white, beige, red, gray, violet Pattern: abstract</p> <p>RECOMMENDATIONS</p>	 <p>Color: orange, red Pattern: solid texture</p> <p>RECOMMENDATIONS</p>
	





# Team Herman Miller Alpha Presentation


# Team Herman Miller Alpha Presentation

## FIBRE Recommendation

h Herman Miller: herokuapp.com









FIBRE Home About

### Customer's Requested Fabric



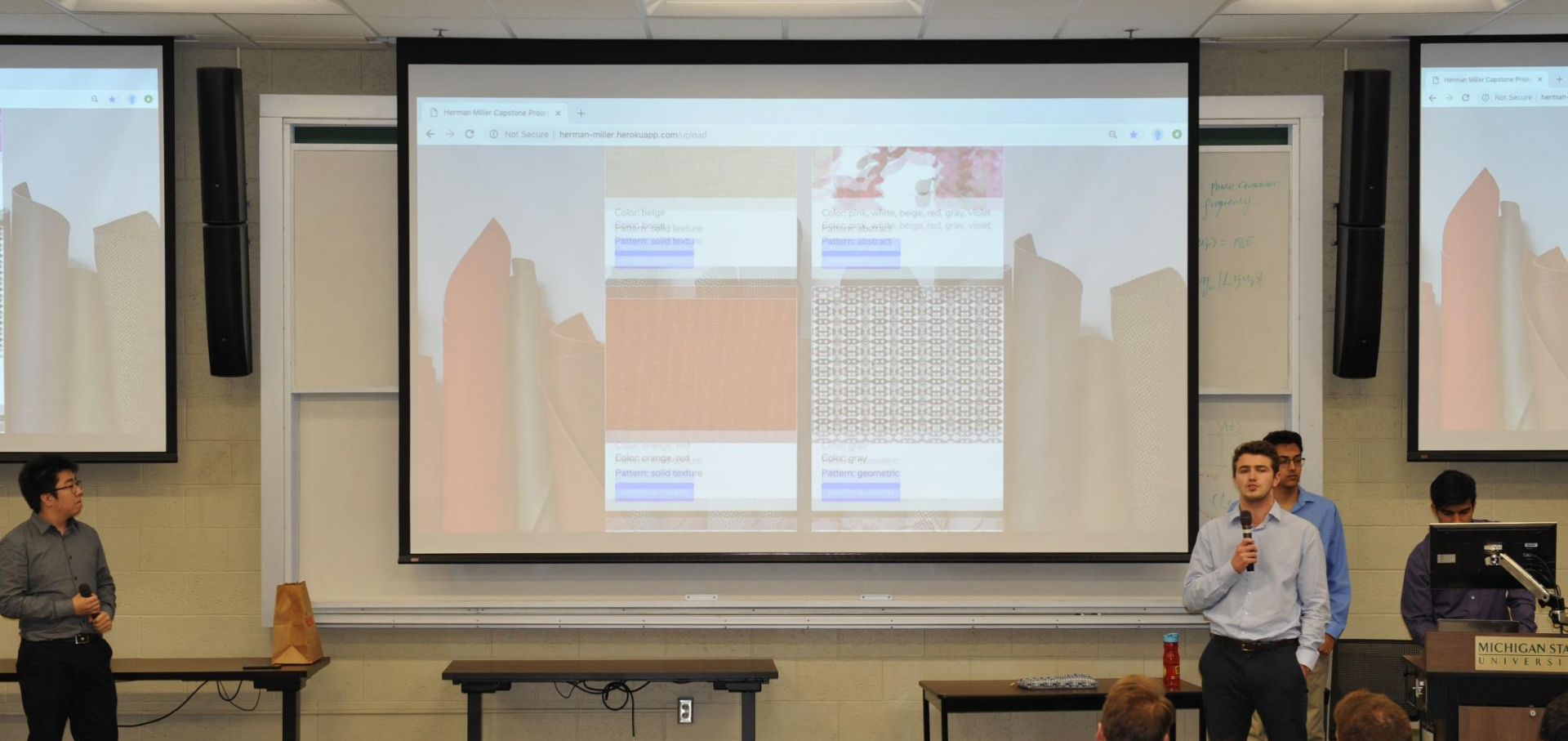
Color: brown, gray, red, beige  
Pattern: botanical

### Fabric Recommendations

 <p>Hand Tinted Rose</p> 	 <p>Whirl Breeze</p> 	 <p>Kicksilver</p> 	 <p>Scape Nighthawk</p> 
---	---	--	--



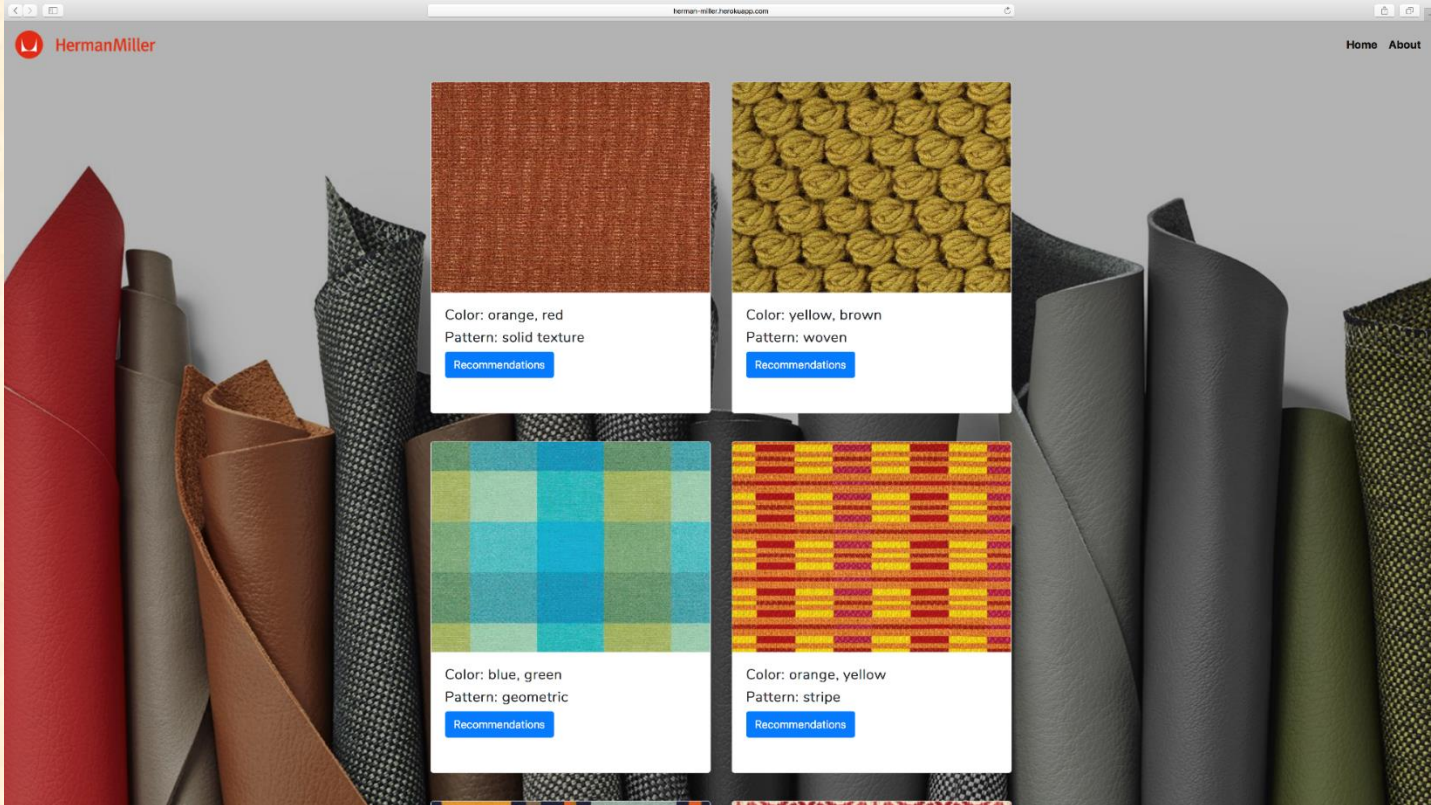




# Team Herman Miller Beta Presentation

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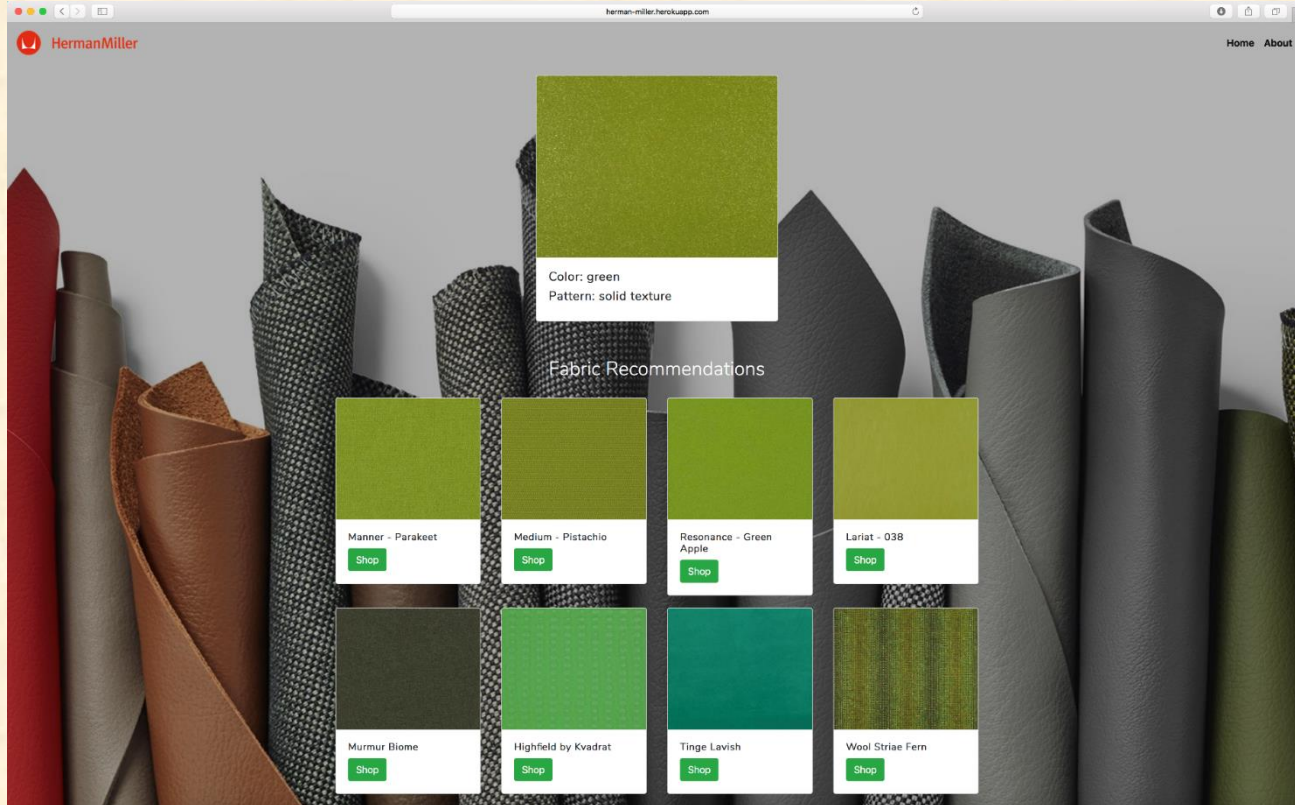
Web-App Multiple Classifications



The Capstone Experience

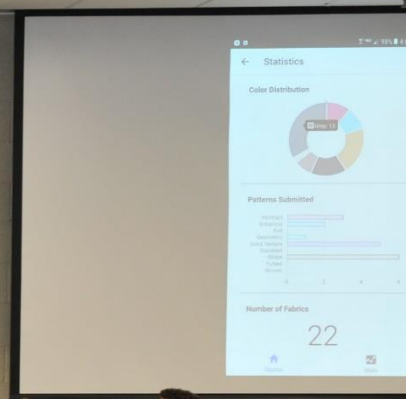
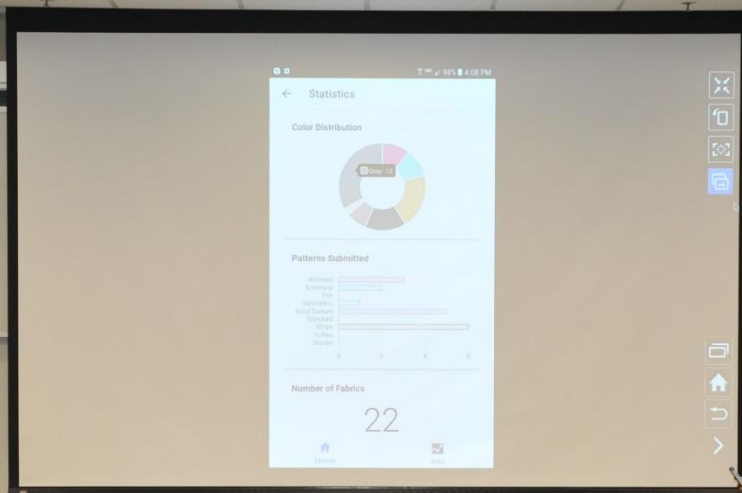
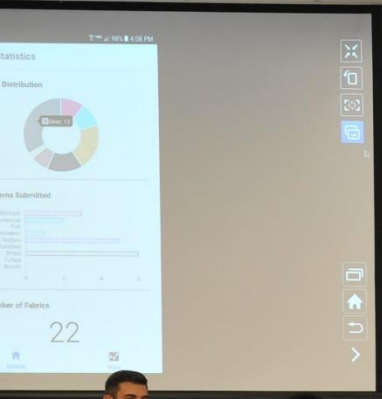
# Team Herman Miller Beta Presentation

Web-App Recommendation



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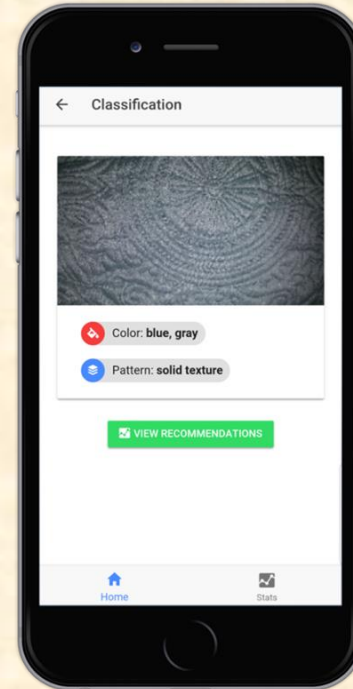
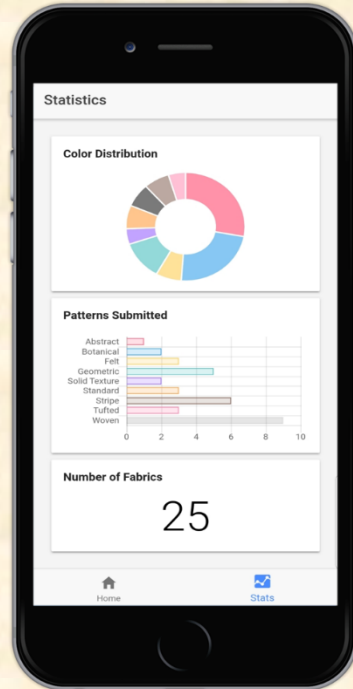


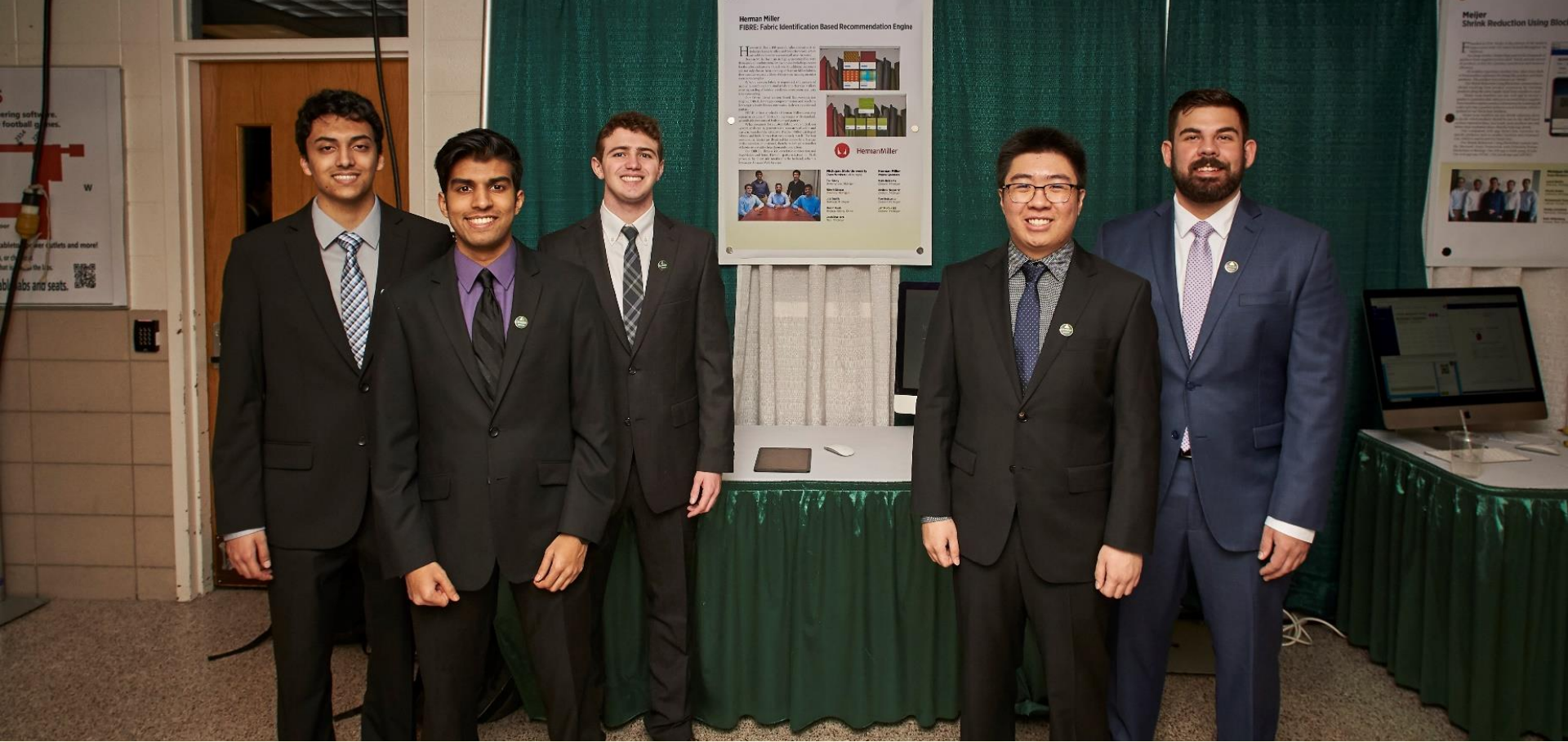
Team Herman Miller  
Beta Presentation



# Team Herman Miller Beta Presentation

FIBRE Mobile App





Team Herman Miller  
Design Day

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# *The Capstone Experience*

Team Meijer

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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# Team Meijer

## Project Overview

### Meijer Shrink Reduction Using Blockchain

- Functionalities
  - Reduce Product Waste and Loss
  - Track and Control High Waste and Loss Items
- Features
  - Capture Essential Product Data
  - Select and Implement Tracking Mechanism
  - Establish Trigger/Alert Mechanisms
  - Ensure Proper Movement of Products
  - Get Close-Dated Products For Sale Quickly
  - Identify Recalled Products
  - Store Data in Blockchain
- Technologies
  - Microsoft
    - .NET Framework (C#, ASP.NET)
    - Azure
      - Notification Services
      - Mobile Services (Both iOS and Windows)
    - Application Insights
    - Visual Studio Team Server
  - Microsoft Azure or IBM Blockchain Tools
  - Meijer Web Services
  - Bluebird Android Devices
  - SQL Server / MongoDB



**meijer**<sup>®</sup>

Grand Rapids, Michigan





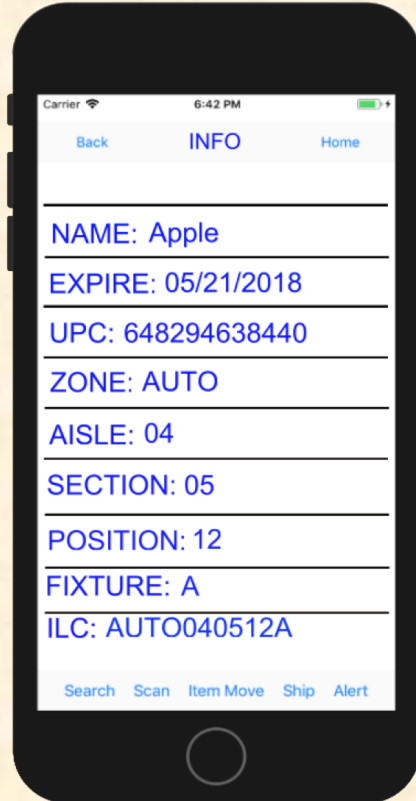
## Team Meijer

Lucas Banks, Moritz Greiss, Mohammad Yousafzai, Phillip Litchfield, Matt Wilimberg



# Team Meijer Project Plan Presentation

Screen Mockup







## Screen Mockup: Future Arrivals

Arriving

Future Arrival

Location: [Lansing](#)

Time Frame: [4-8 hours](#)

NAME	EXPIRE
Apples	05/21/2018
Bananas	05/21/2018
Meat	05/21/2018

Search Stop Refresh Stop Add

The Capstone Experience

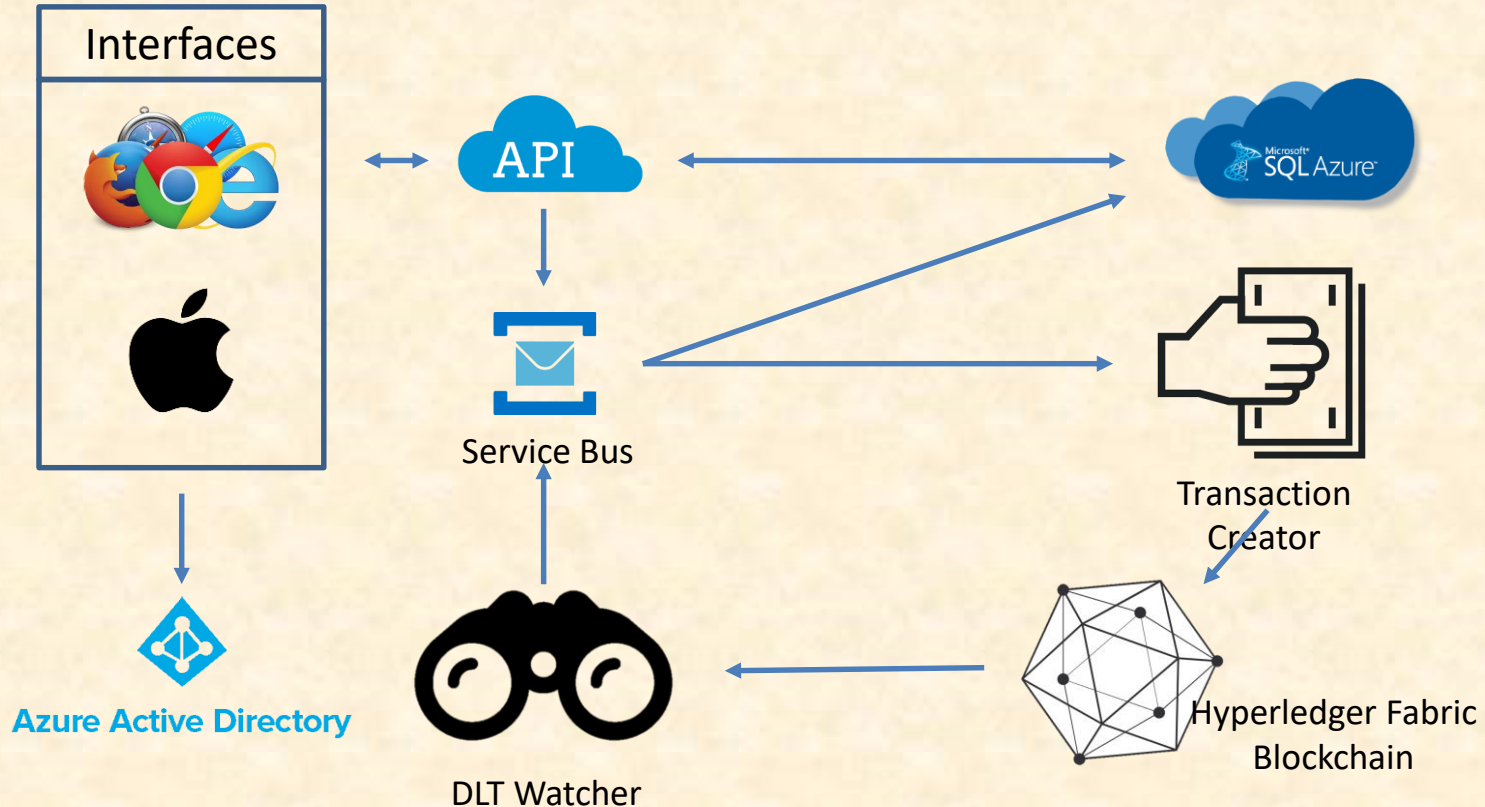
Team Meijer Project Plan Presentation

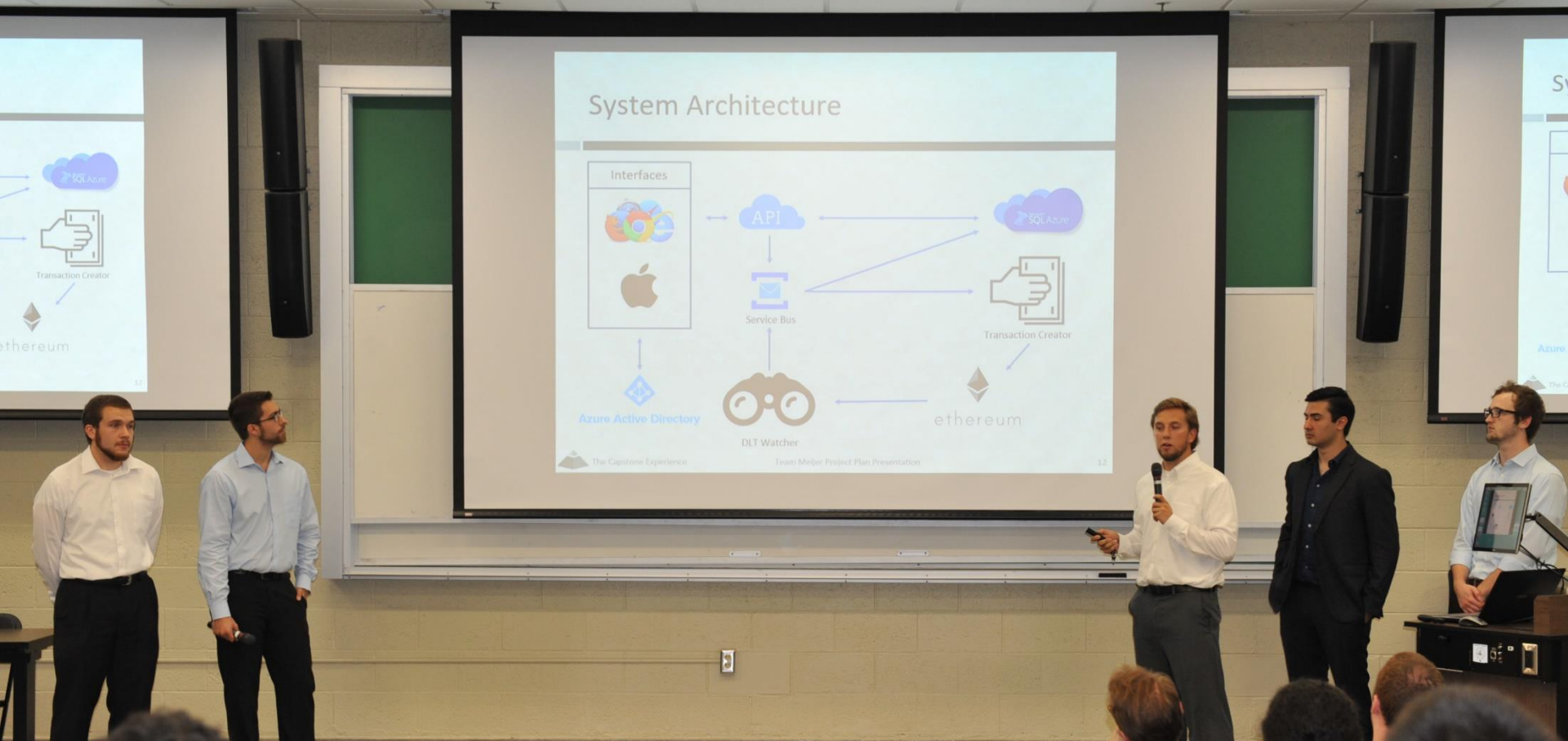
## Screen Mockup

Team Meijer  
Project Plan Presentation

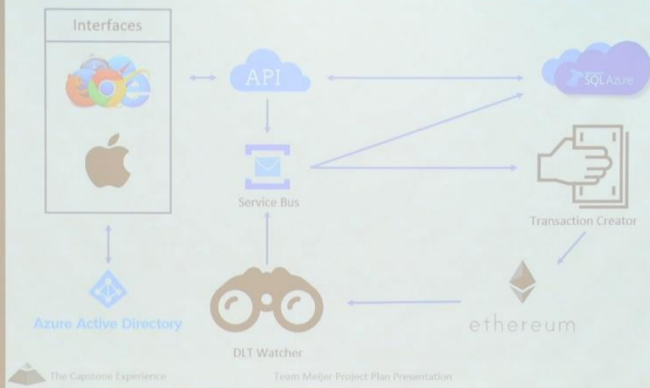
# Team Meijer Project Plan Presentation

## Architecture Diagram





## System Architecture



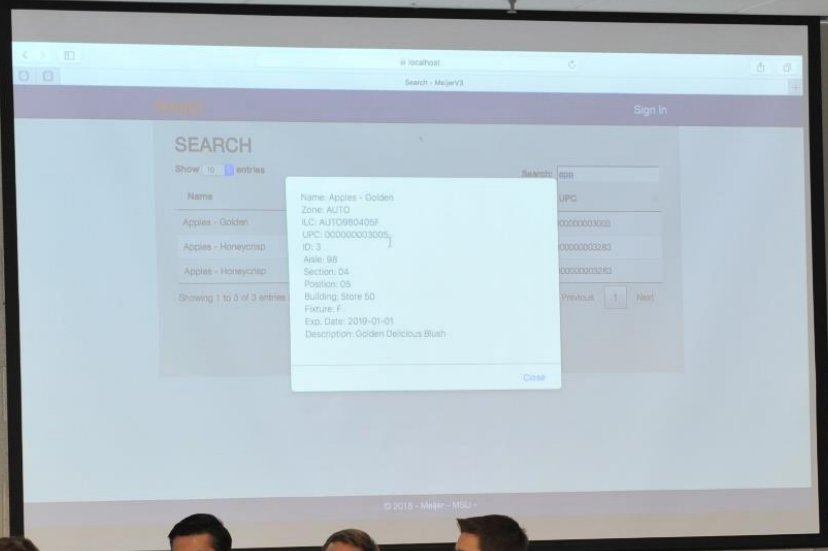
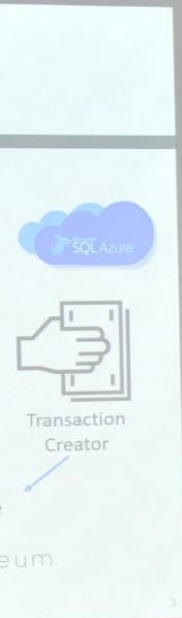
Team Meijer  
Project Plan Presentation

# Team Meijer Project Plan Presentation

Screen Mockup










Team Meijer  
Alpha Presentation

# Team Meijer Alpha Presentation


## Blockchain Application

Blockchain Workbench




Applications

Applications > Shrink Reduction Using Blockchain > Details

2 members

### Shrink Reduction Using Blockchain Contract 27

#### Status



4. In Transit to Meijer Store	10/14/18	3:13 PM
3. At Distribution	10/14/18	3:12 PM
2. In Transit to Distribution Center	10/14/18	3:12 PM

#### Details

Distribution Center	Wilimberg, Matthew Krzysztof
Meijer Store	-
Product	Apples
Current Location	In Transit
Expire Month	11
Expire Day	25
Expire Year	2018
Check	true

#### Actions

There's nothing for you to do right now.

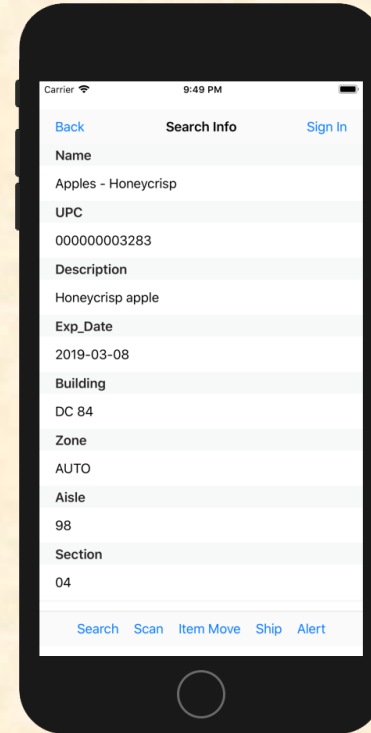
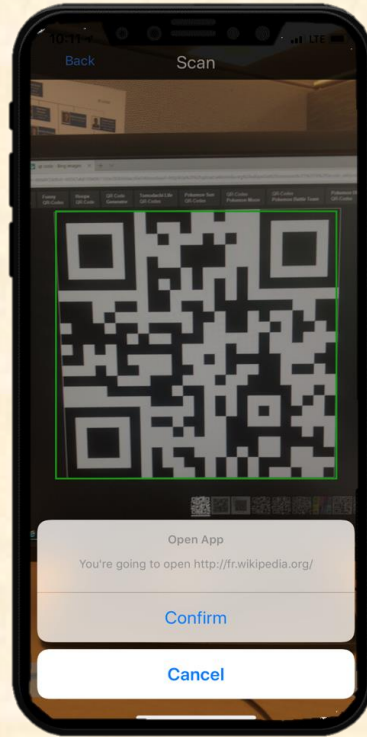
#### Activity

Today

- Wilimberg, Matthew Krzysztof recorded action Ship Product 3:13 PM
- Wilimberg, Matthew Krzysztof recorded action Receiving at 3:12 PM
- MSU Capstone recorded action Ship Product 3:12 PM
- MSU Capstone recorded action Create 3:11 PM

# Team Meijer Alpha Presentation

## iOS QR Scanning and Product Info



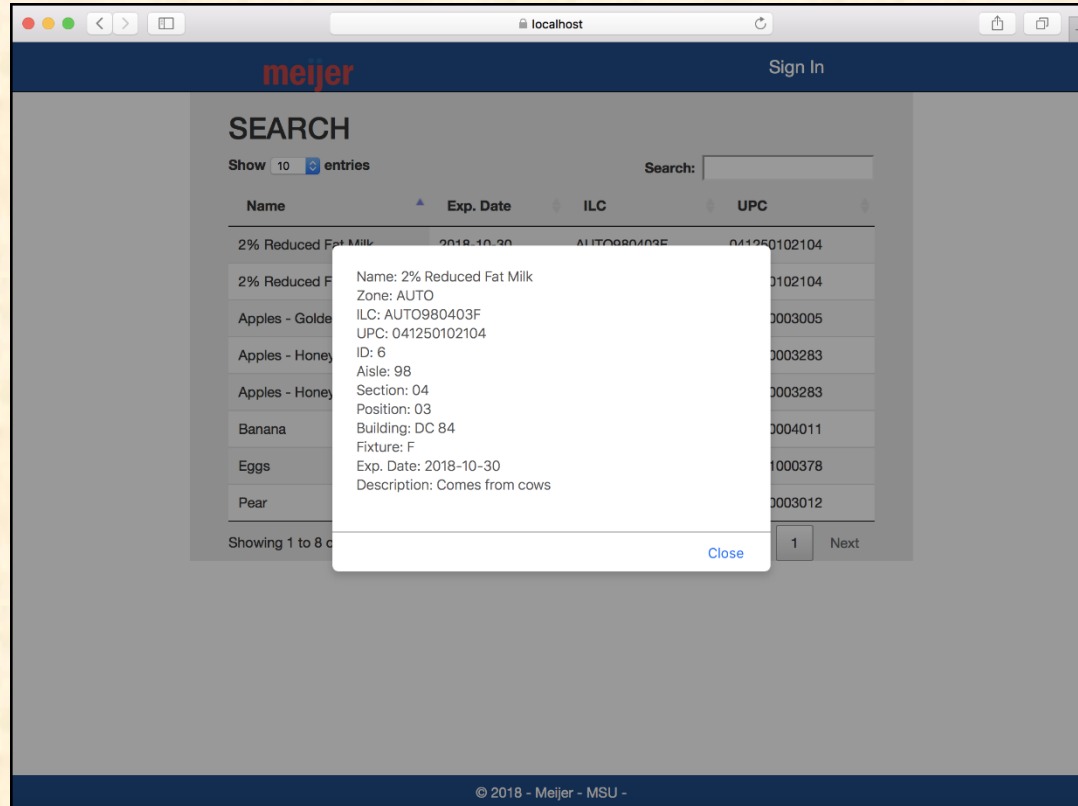


Team Meijer  
Alpha Presentation



# Team Meijer Alpha Presentation

Web Screenshot: Search Page



The screenshot shows a web browser window with the URL 'localhost'. The page is the Meijer search interface. At the top, there's a 'meijer' logo and a 'Sign In' link. Below the logo is a 'SEARCH' heading. A search bar is present with the placeholder text 'Search:'. Below the search bar, there's a table of search results. The table has columns: Name, Exp. Date, ILC, and UPC. The first row shows '2% Reduced Fat Milk' with an expiration date of '2018-10-30', ILC 'AUTO980403F', and UPC '041250102104'. A modal window is open over the first row, displaying detailed information for the selected item: Name: 2% Reduced Fat Milk, Zone: AUTO, ILC: AUTO980403F, UPC: 041250102104, ID: 6, Aisle: 98, Section: 04, Position: 03, Building: DC B4, Fixture: F, Exp. Date: 2018-10-30, and Description: Comes from cows. The modal has a 'Close' button at the bottom right. The table shows 8 entries, and the first 8 are visible. The footer of the page says '© 2018 - Meijer - MSU -'.

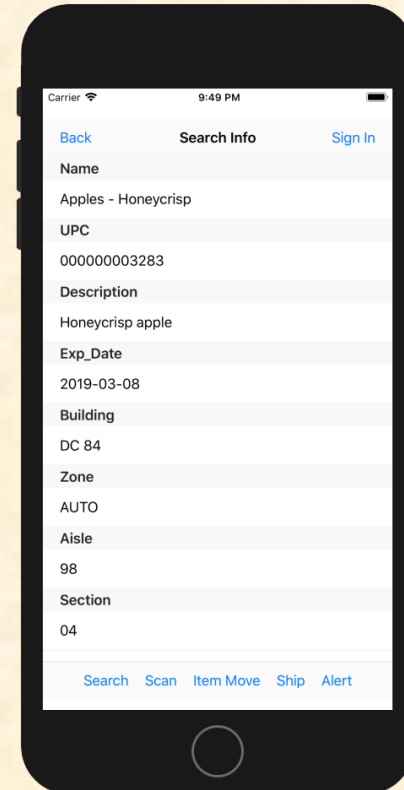
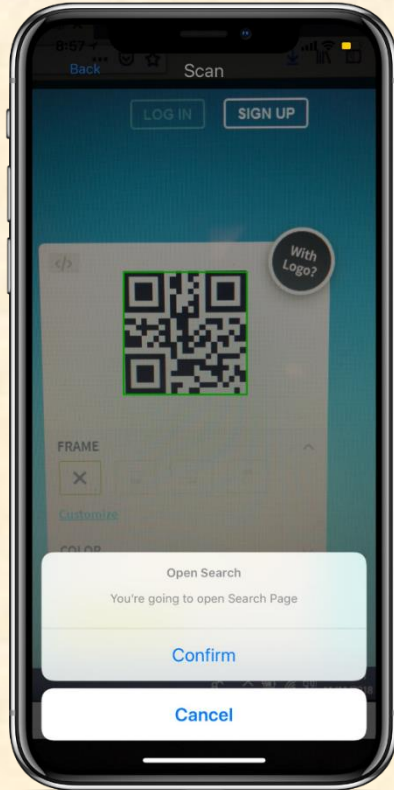
Name	Exp. Date	ILC	UPC
2% Reduced Fat Milk	2018-10-30	AUTO980403F	041250102104
2% Reduced Fat Milk			0102104
Apples - Golden Delicious			0003005
Apples - Honeycrisp			0003283
Apples - Honeycrisp			0003283
Banana			0004011
Eggs			1000378
Pear			0003012



# Team Meijer Beta Presentation

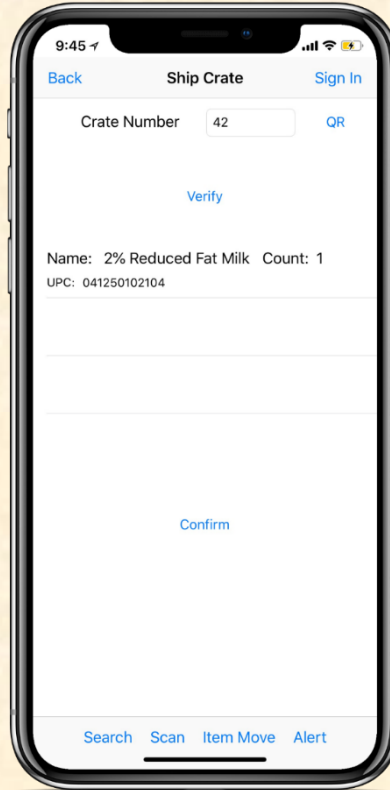
# Team Meijer Beta Presentation

## iOS QR Scanning and Product Info



# Team Meijer Beta Presentation

iOS Shipping Screen



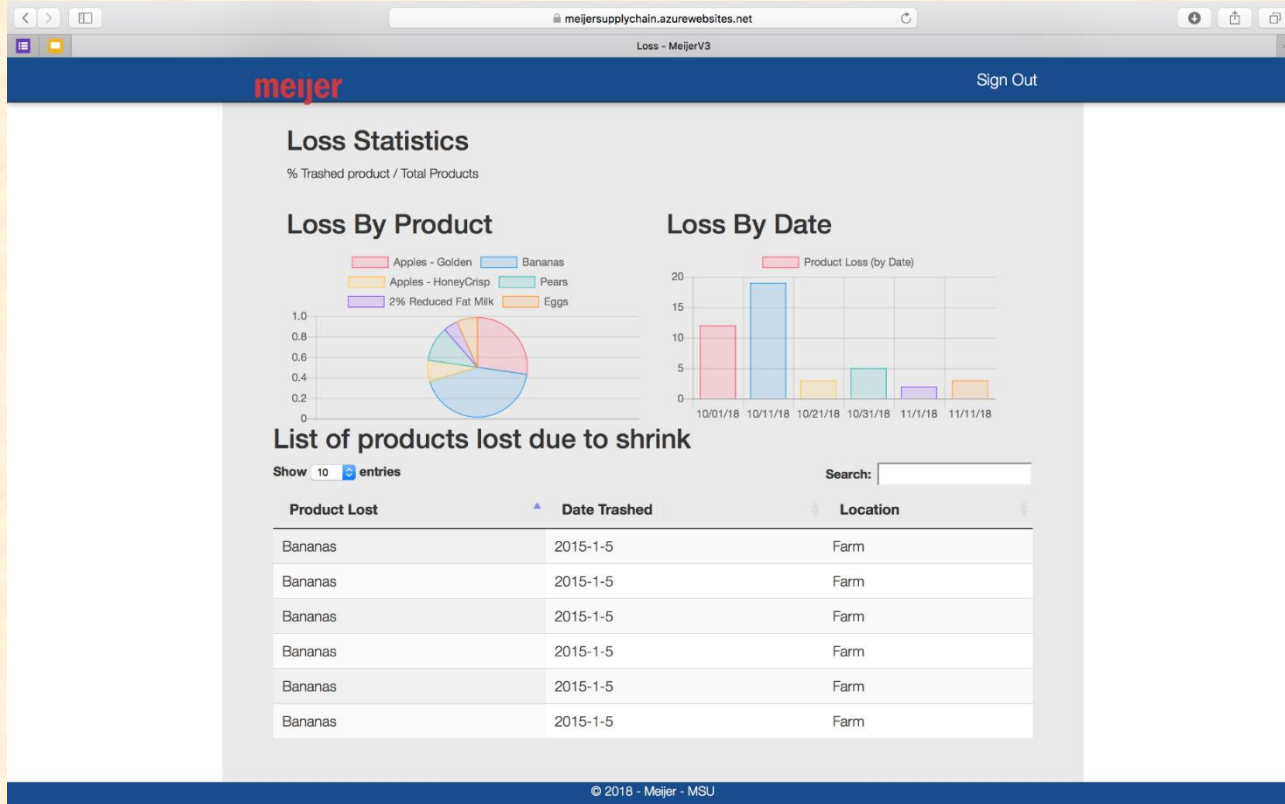


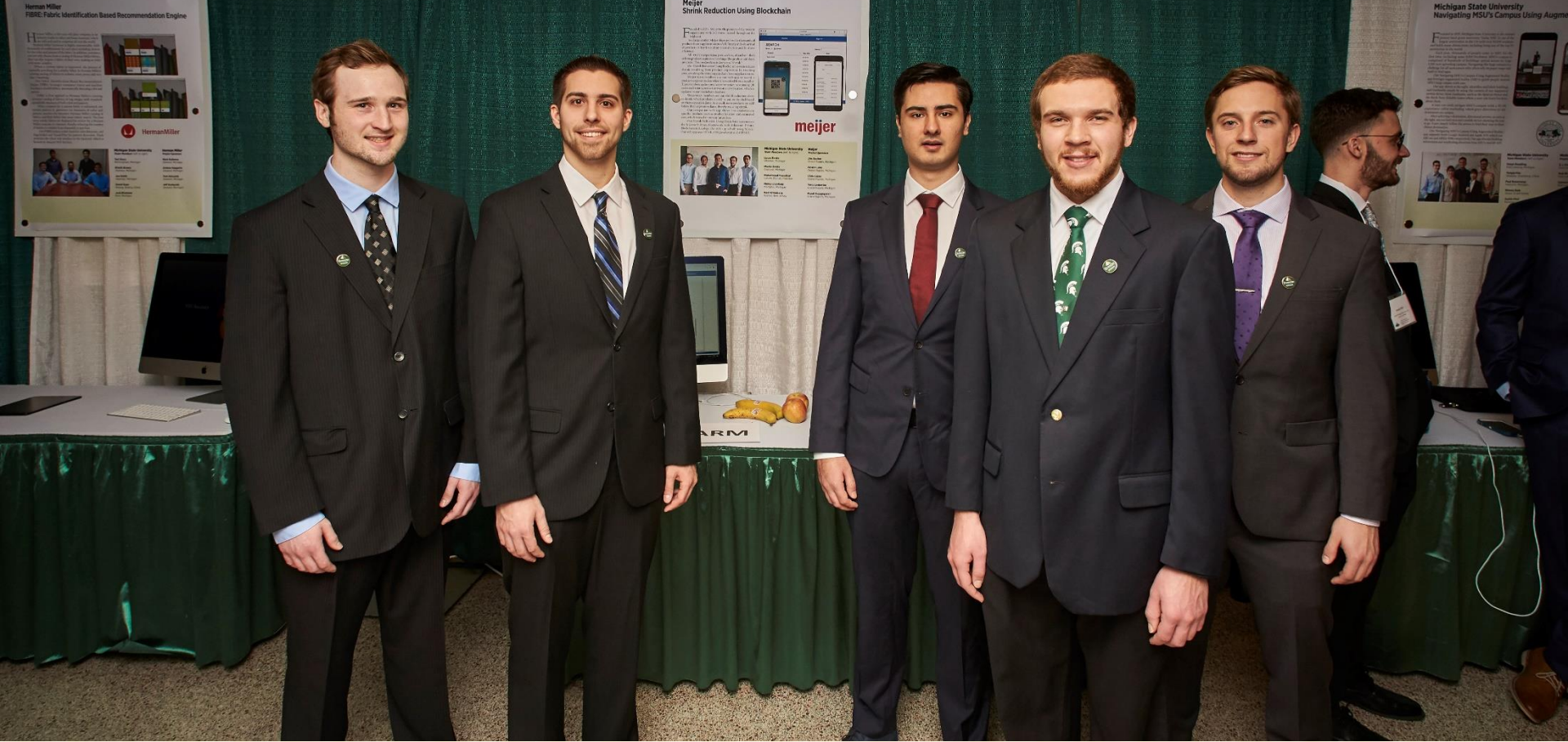


Team Meijer  
Beta Presentation

# Team Meijer Beta Presentation

## Web Application Loss Page





Team Meijer  
Design Day



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# *The Capstone Experience*

Team Michigan State University

Department of Computer Science and Engineering  
Michigan State University  
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# DISCOVERING THE GOLD STANDARD OF CANCER DRUGS

MORE



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HIGHLIGHTS



MSUTODAY

How artificial intelligence can detect

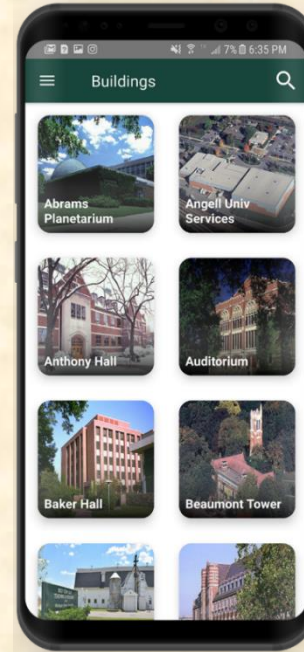
EVENTS

AUGUST 3

# Team Michigan State University Project Overview

## Navigating MSU's Campus Using Augmented Reality

- Functionalities
  - Provide Assistance Navigating MSU's Campus
  - Leverage Augmented Reality (AR) on Mobile Devices
- Features
  - Use Mobile Device Camera
  - Overlay Information About Surroundings
    - Building Name (Engineering, Wilson Hall)
    - Points-of-Interest (Sparty, The Rock)
  - Provide 3D Wayfinding Instructions
  - Give Self-Guided Tours
  - Utilize MSU's Campus ArcGIS Instance
  - Support Google Android and Apple iOS
- Technologies
  - Apple iOS / Swift / ARKit
  - Google Android / Kotlin / ARCore
  - ArcGIS



Information Technology Services  
East Lansing, Michigan





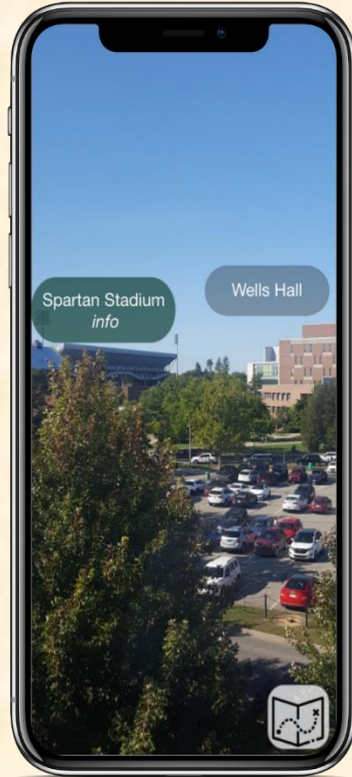
## Team Michigan State University

Shaye Beadling, Yongqi Han, Paul Rosemurgy, Minseo Baik, Austin Pfeil

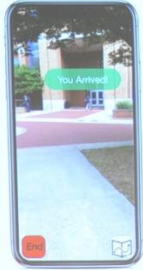


# Team Michigan State University Project Plan Presentation

Screen Mockup

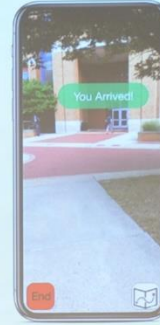


## Wayfinding AR



University Project Plan Presentation

## Screen Mockup: Wayfinding AR



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Team Michigan State University Project Plan Presentation

6

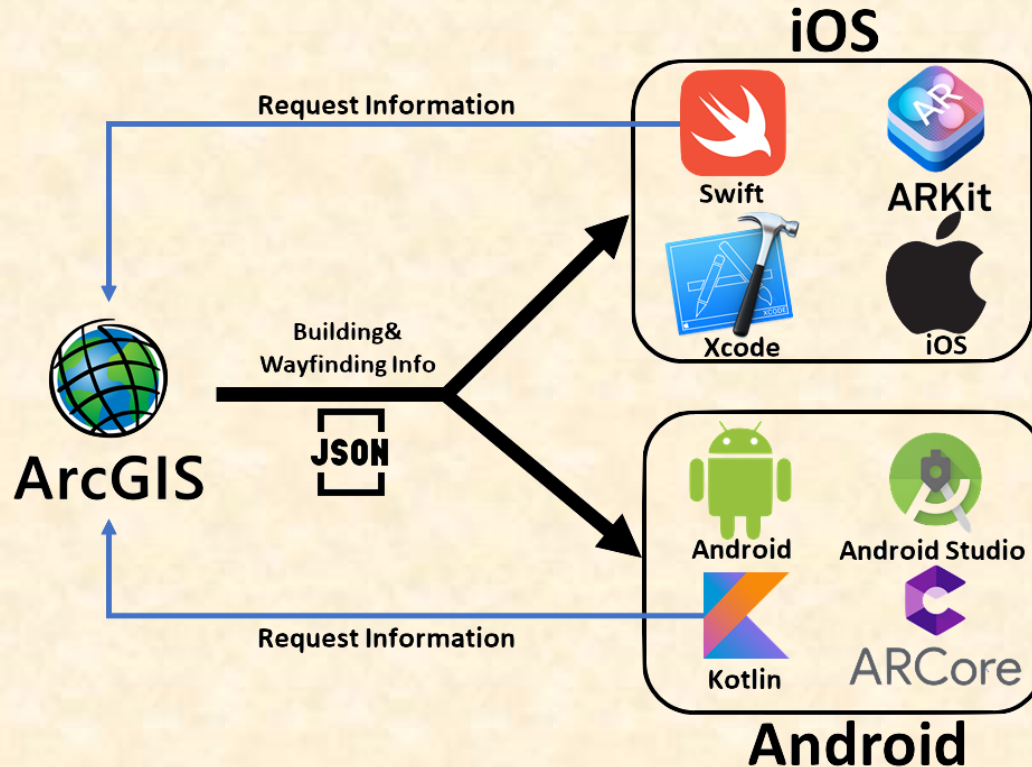
Screen

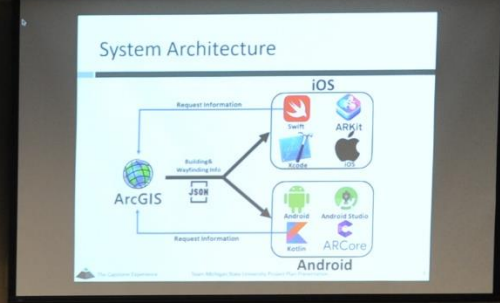
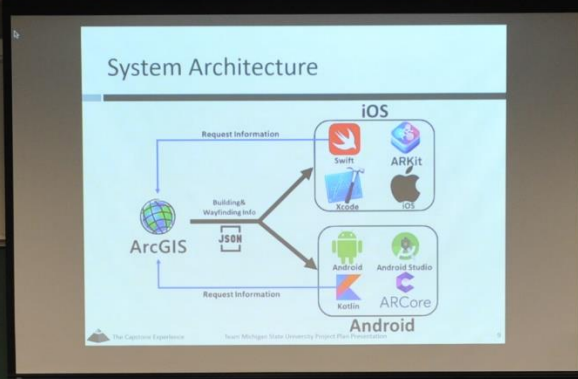
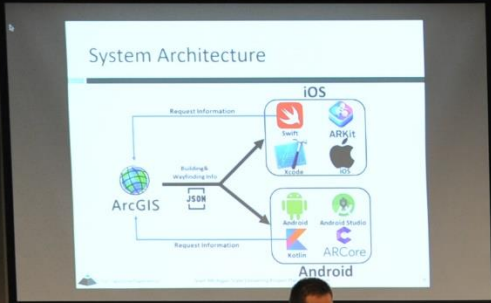
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Team Michigan State University  
Project Plan Presentation

# Team Michigan State University Project Plan Presentation

## Architecture Diagram



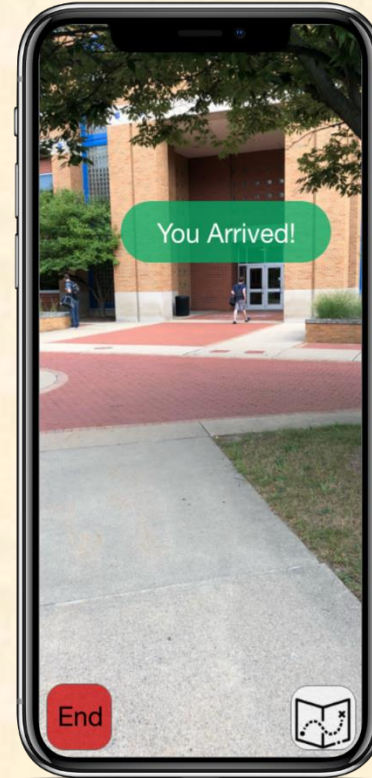
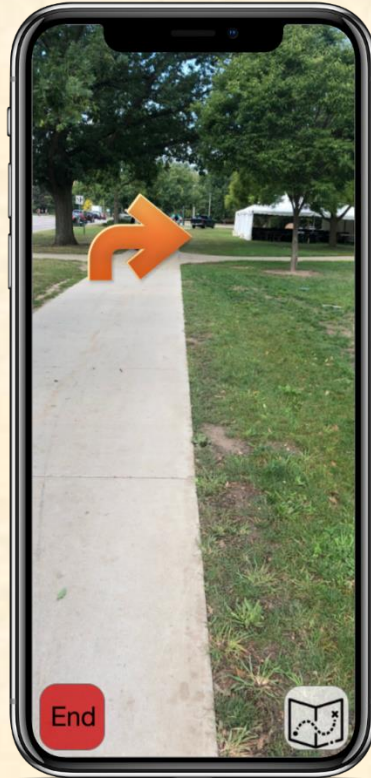


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# Team Michigan State University Project Plan Presentation

Screen Mockup





Team Michigan State University  
Alpha Presentation

# Team Michigan State University Alpha Presentation

iOS Touring



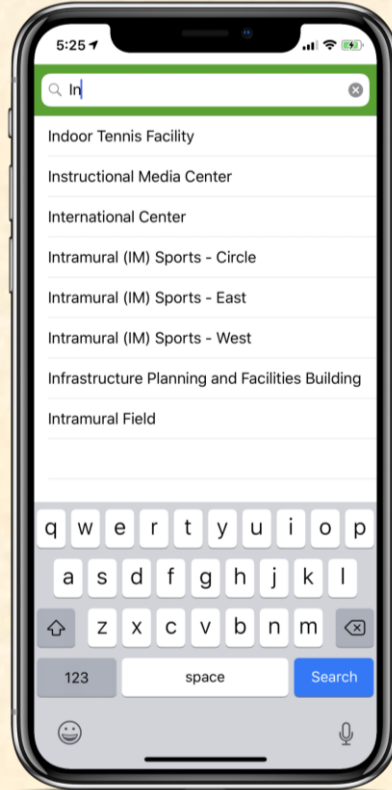
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iOS Searching



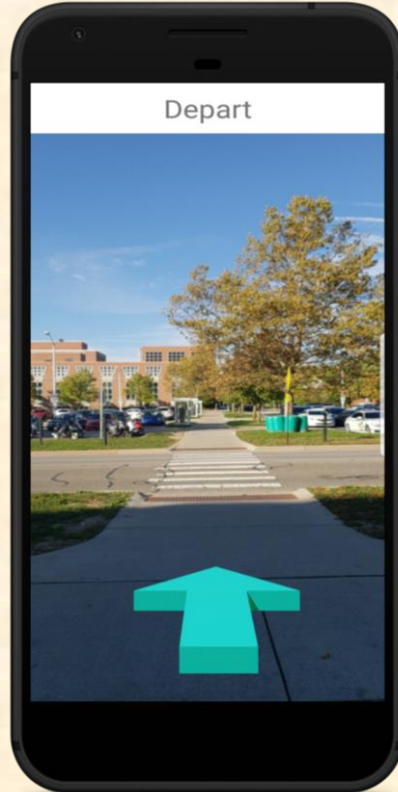




# Team Michigan State University Alpha Presentation

# Team Michigan State University Alpha Presentation

Android Wayfinding



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# Team Michigan State University Beta Presentation

iOS Touring



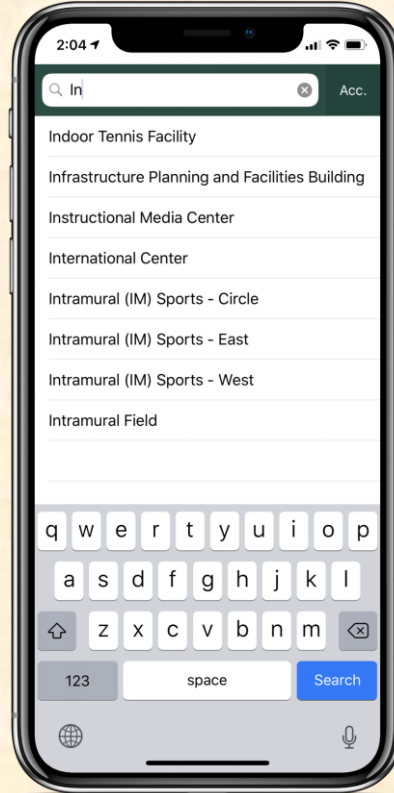
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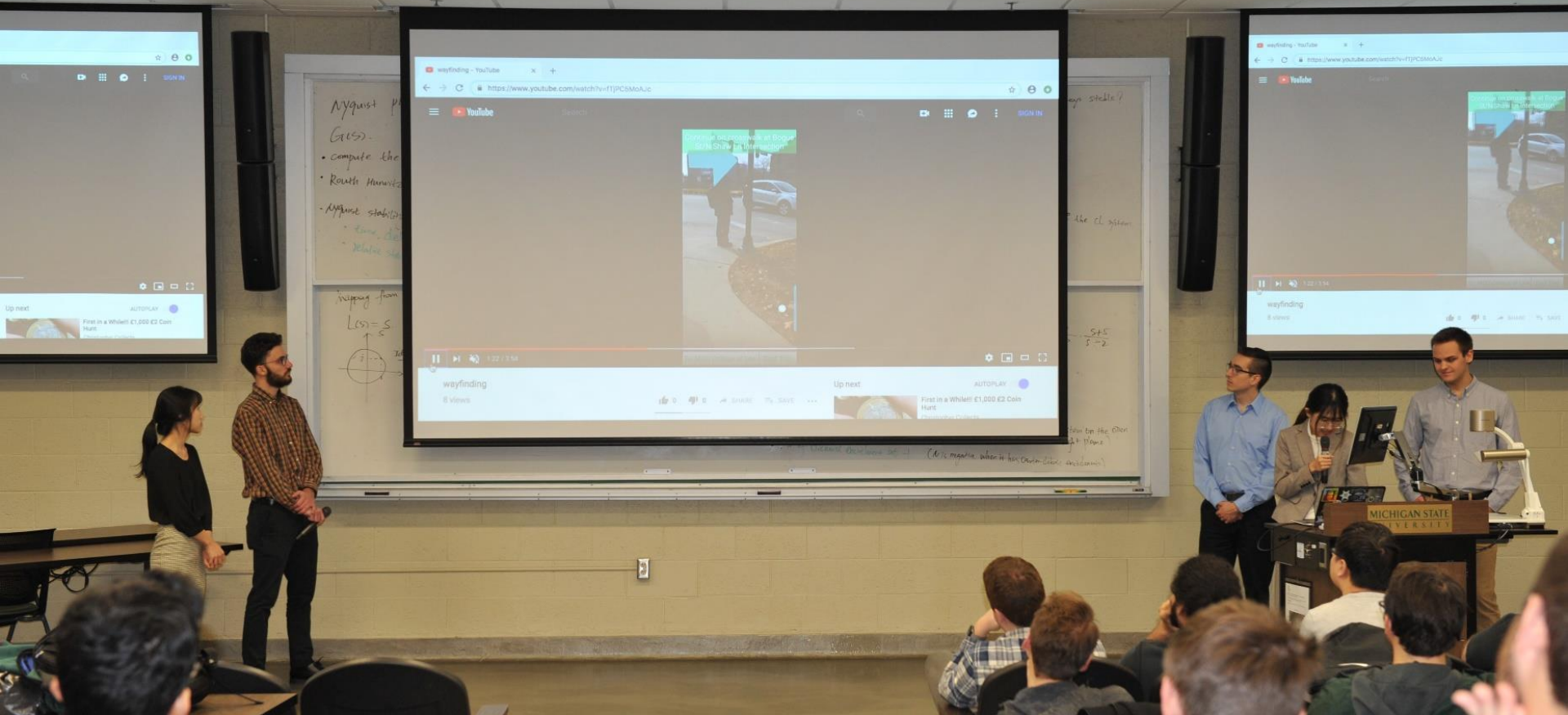




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iOS Searching and Wayfinding

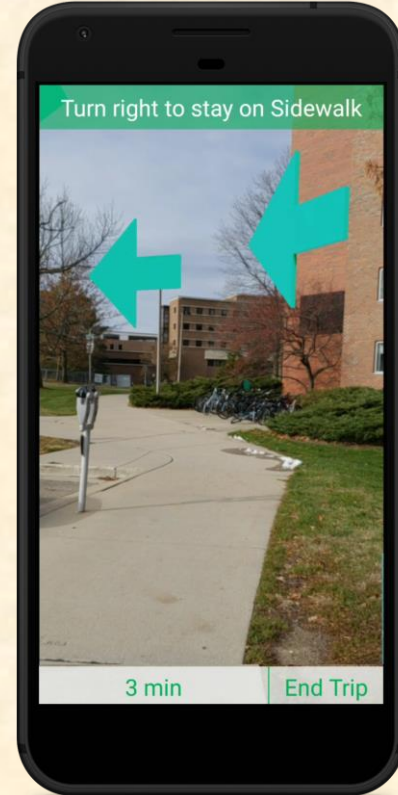
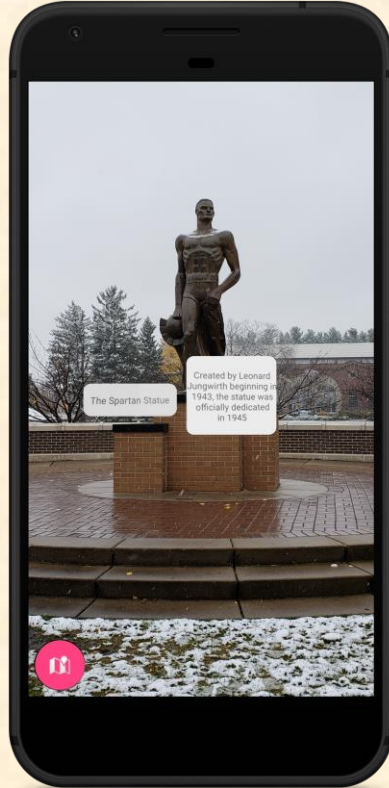




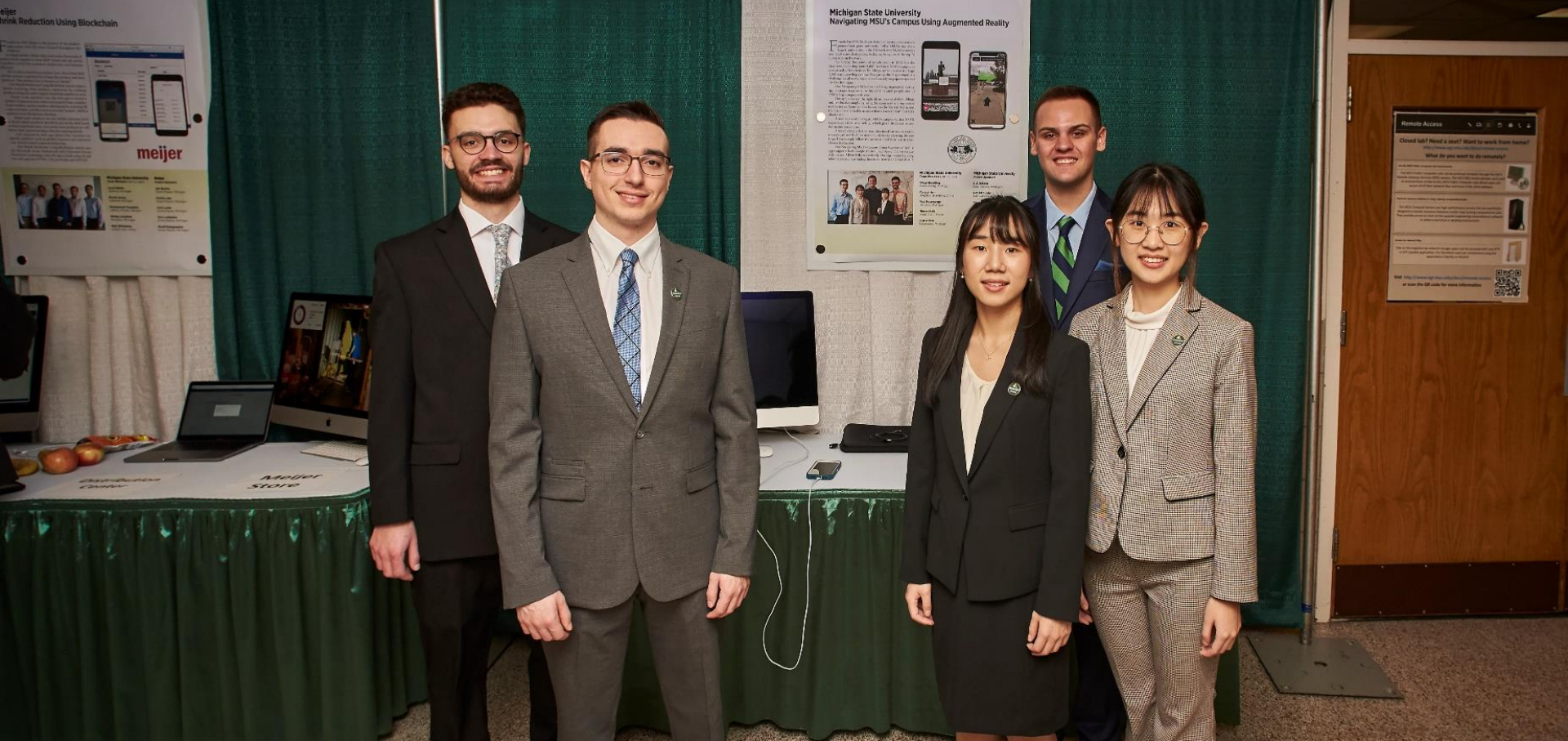
# Team Michigan State University Beta Presentation

# Team Michigan State University Beta Presentation

Android Touring and Wayfinding







Team Michigan State University  
Design Day



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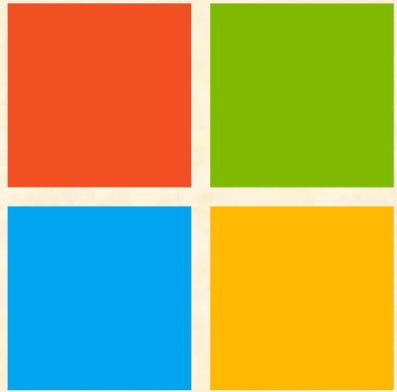
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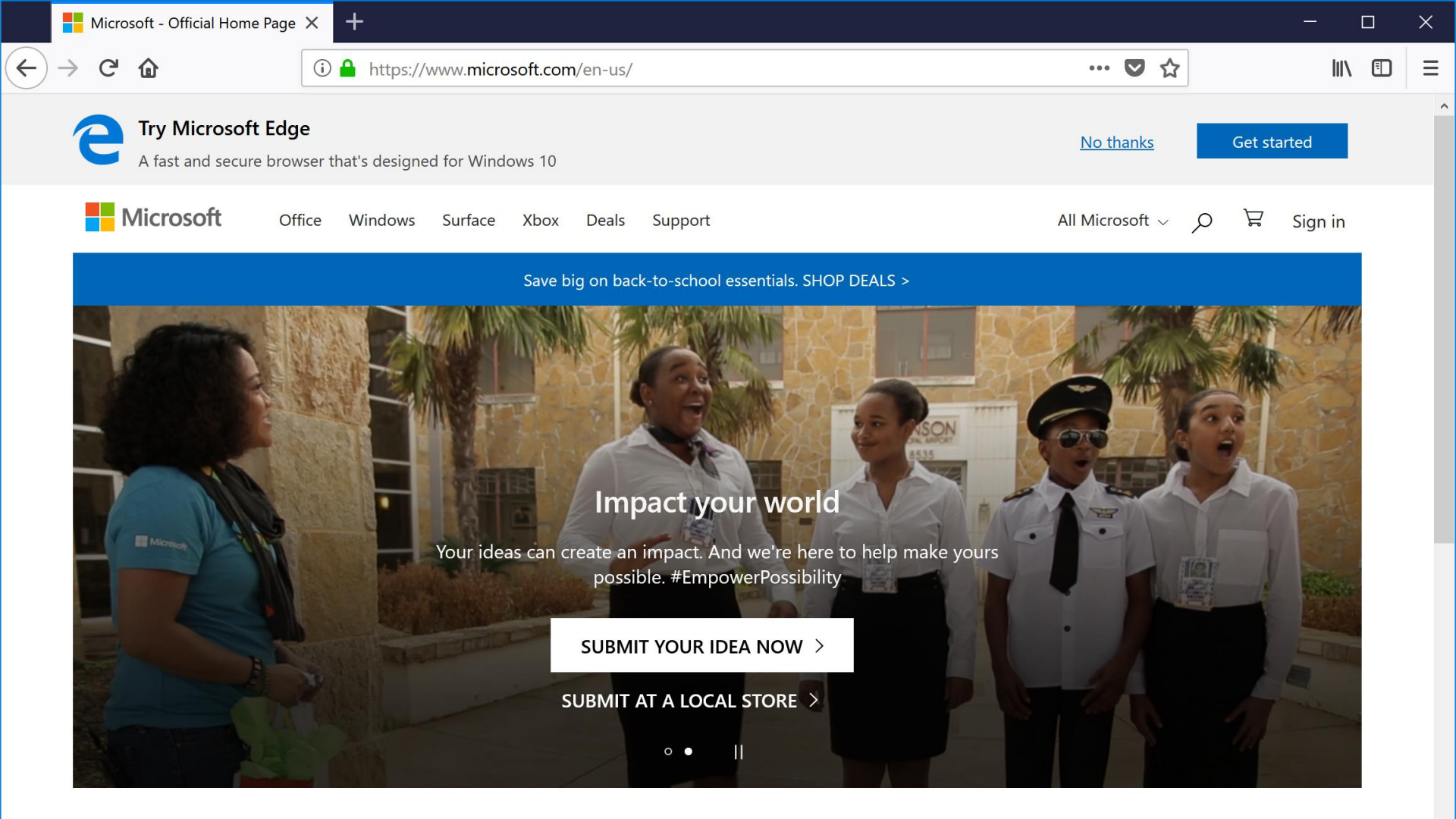
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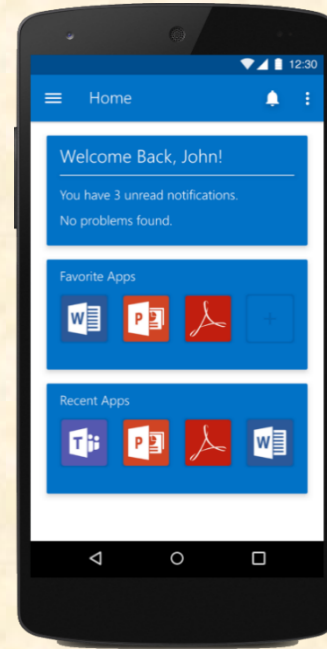
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# Team Microsoft Project Overview

## ITPro Company Portal

- Functionalities
  - Expand Functionality of Microsoft's Intune Portal
  - Enable IT Professionals (ITPros) to Use Intune
    - Directly
    - From Mobile Devices
- Features
  - Extend Fall 2017 Capstone Project
  - Get/Set Intune Settings by ITPros
  - Leverage Microsoft Graph
  - Apply Google Jetpack Standards
  - Scale to Support Millions of Users Worldwide
- Technologies
  - Microsoft Graph
  - Google Android
  - Java
  - RESTful Web Services





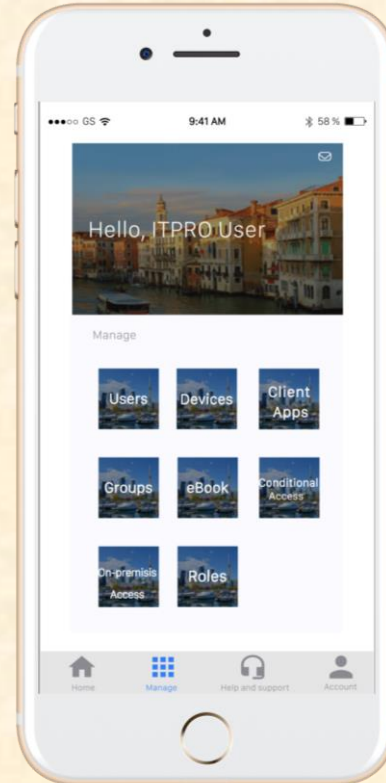
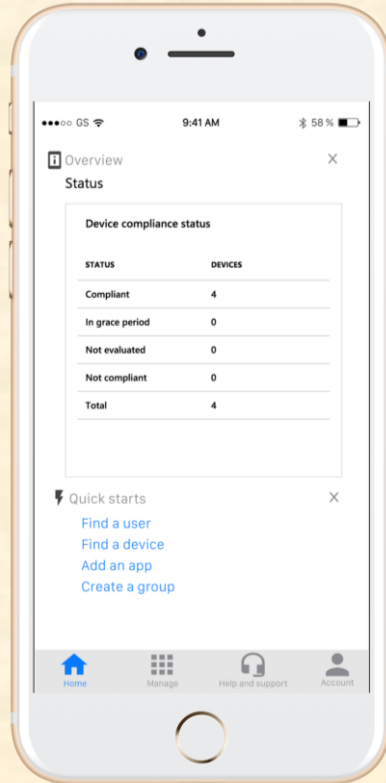


## Team Microsoft

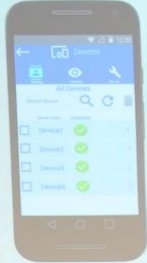
Zhanming Bai, Zoe Fu, Jason Brownell, Ayaka Okamoto

# Team Microsoft Project Plan Presentation

Screen Mockup



: Devices- Android



Screen Mockup: Devices- Android



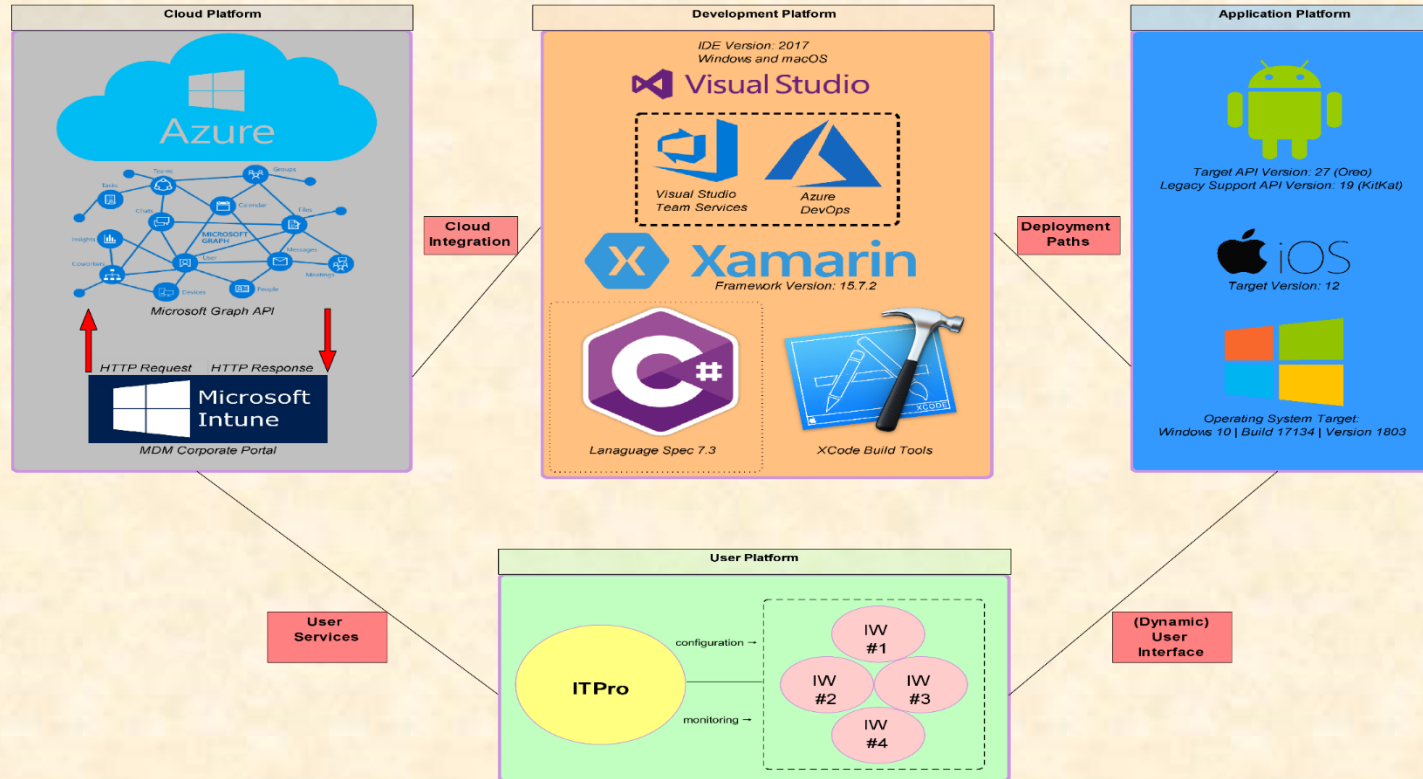
Screen Mock



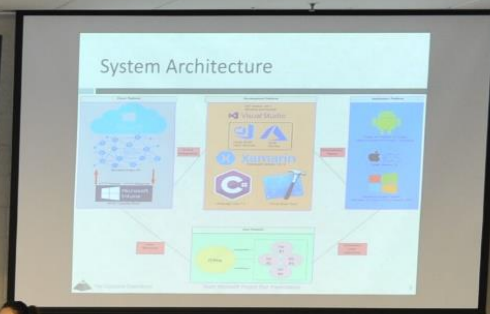
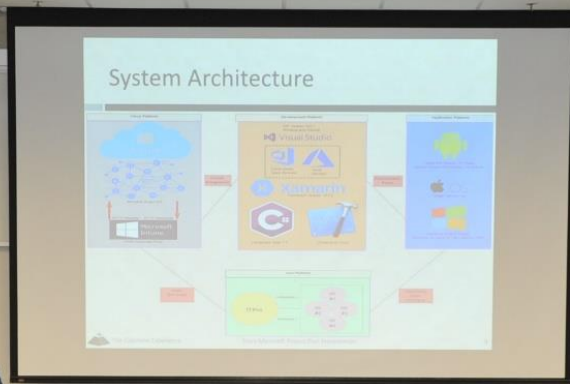
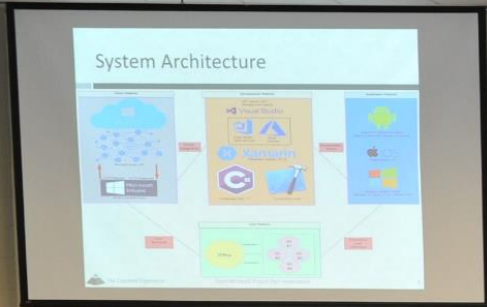
Team Microsoft  
Project Plan Presentation

# Team Microsoft Project Plan Presentation

## Architecture Diagram



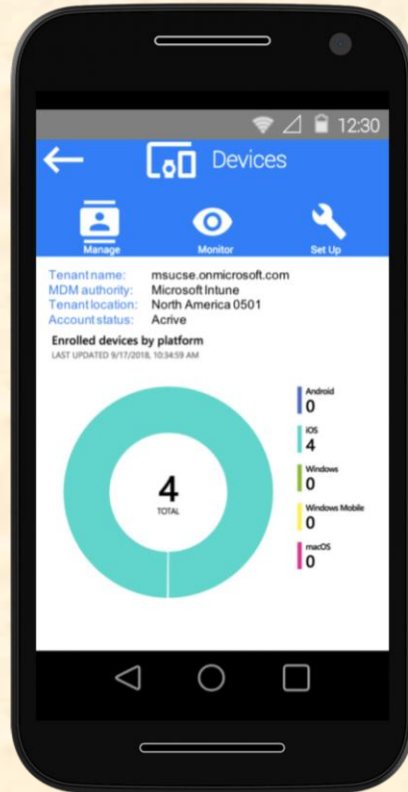




Team Microsoft  
Project Plan Presentation

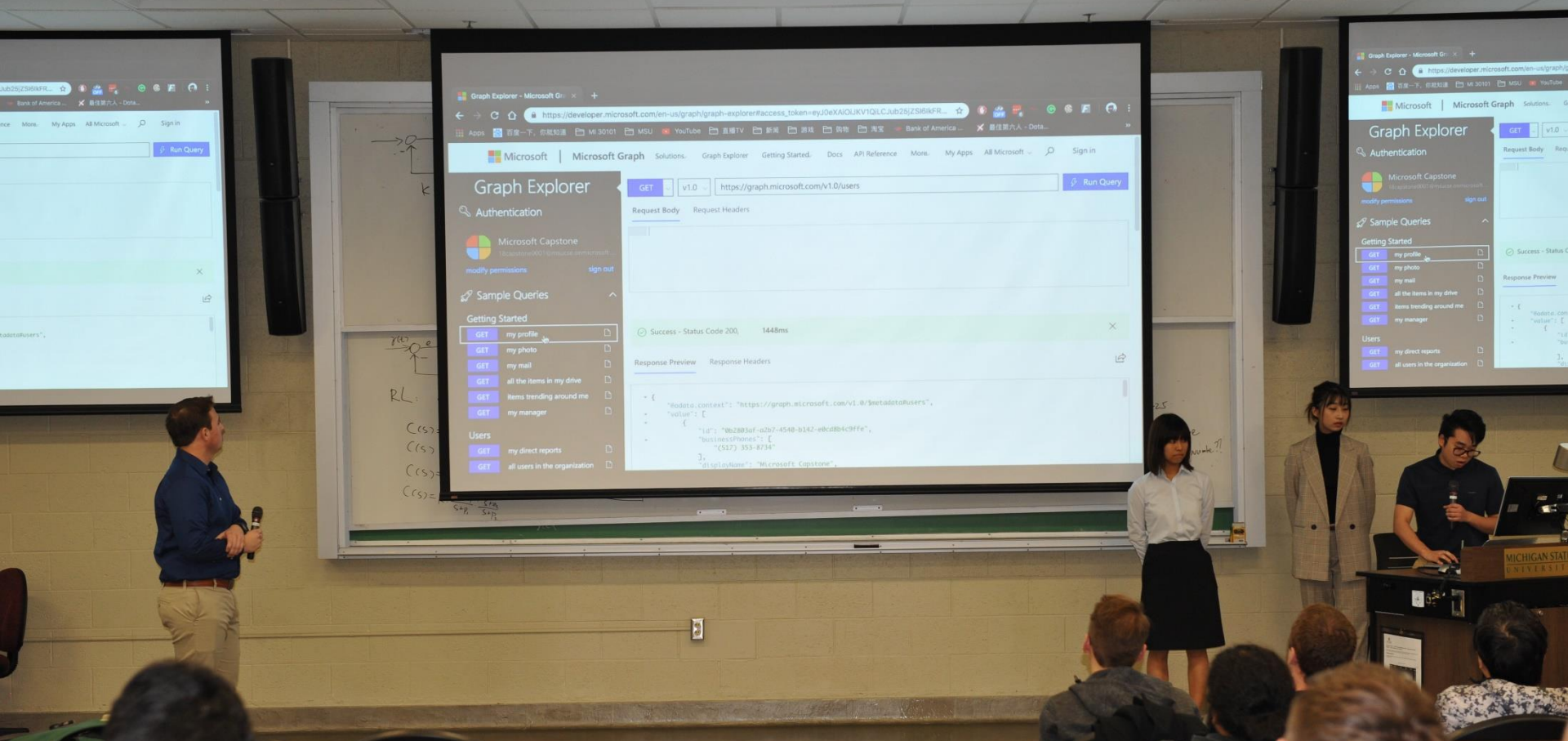
# Team Microsoft Project Plan Presentation

Screen Mockup



Mobile app screen mockup showing the 'All Devices' list. The screen displays a table of devices with their names and compliance status.

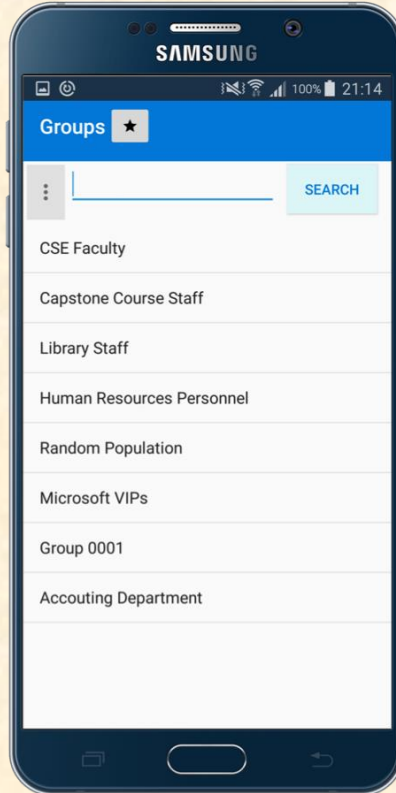
Device name	Compliance
Device1	✓
Device2	✓
Device3	✓
Device4	✓



# Team Microsoft Alpha Presentation

# Team Microsoft Alpha Presentation

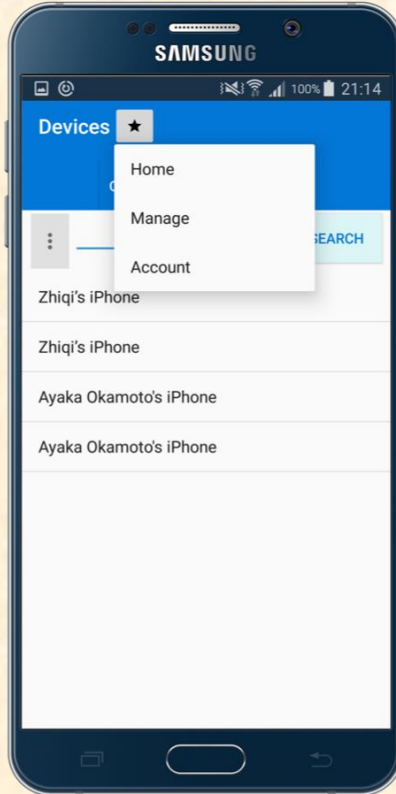
Android: Groups





# Team Microsoft Alpha Presentation

Android: All Devices

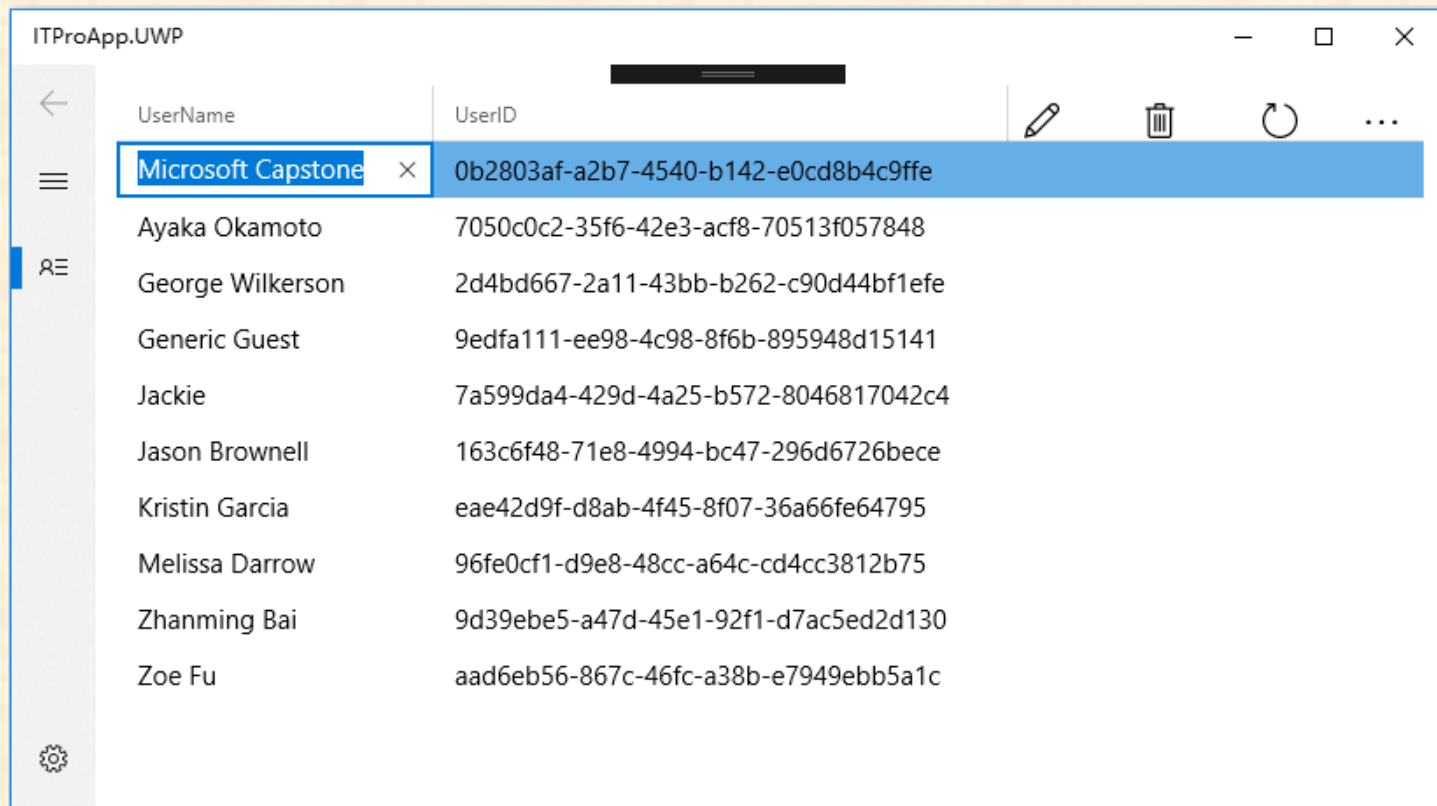




# Team Microsoft Alpha Presentation

# Team Microsoft Alpha Presentation

UWP: All Users



The screenshot shows a Windows Universal Windows Platform (UWP) application window titled "ITProApp.UWP". The window has a standard Windows title bar with minimize, maximize, and close buttons. On the left side, there is a navigation pane with a back arrow, a hamburger menu icon, and a settings gear icon at the bottom. The main content area displays a table of users. The first row, "Microsoft Capstone", is highlighted in blue and has a close button (X) next to it. The table has two columns: "UserName" and "UserID". To the right of the table, there are icons for edit (pencil), delete (trash), refresh (circular arrow), and a more options menu (three dots).

UserName	UserID
Microsoft Capstone	0b2803af-a2b7-4540-b142-e0cd8b4c9ffe
Ayaka Okamoto	7050c0c2-35f6-42e3-acf8-70513f057848
George Wilkerson	2d4bd667-2a11-43bb-b262-c90d44bf1efe
Generic Guest	9edfa111-ee98-4c98-8f6b-895948d15141
Jackie	7a599da4-429d-4a25-b572-8046817042c4
Jason Brownell	163c6f48-71e8-4994-bc47-296d6726bece
Kristin Garcia	eae42d9f-d8ab-4f45-8f07-36a66fe64795
Melissa Darrow	96fe0cf1-d9e8-48cc-a64c-cd4cc3812b75
Zhanming Bai	9d39ebe5-a47d-45e1-92f1-d7ac5ed2d130
Zoe Fu	aad6eb56-867c-46fc-a38b-e7949ebb5a1c

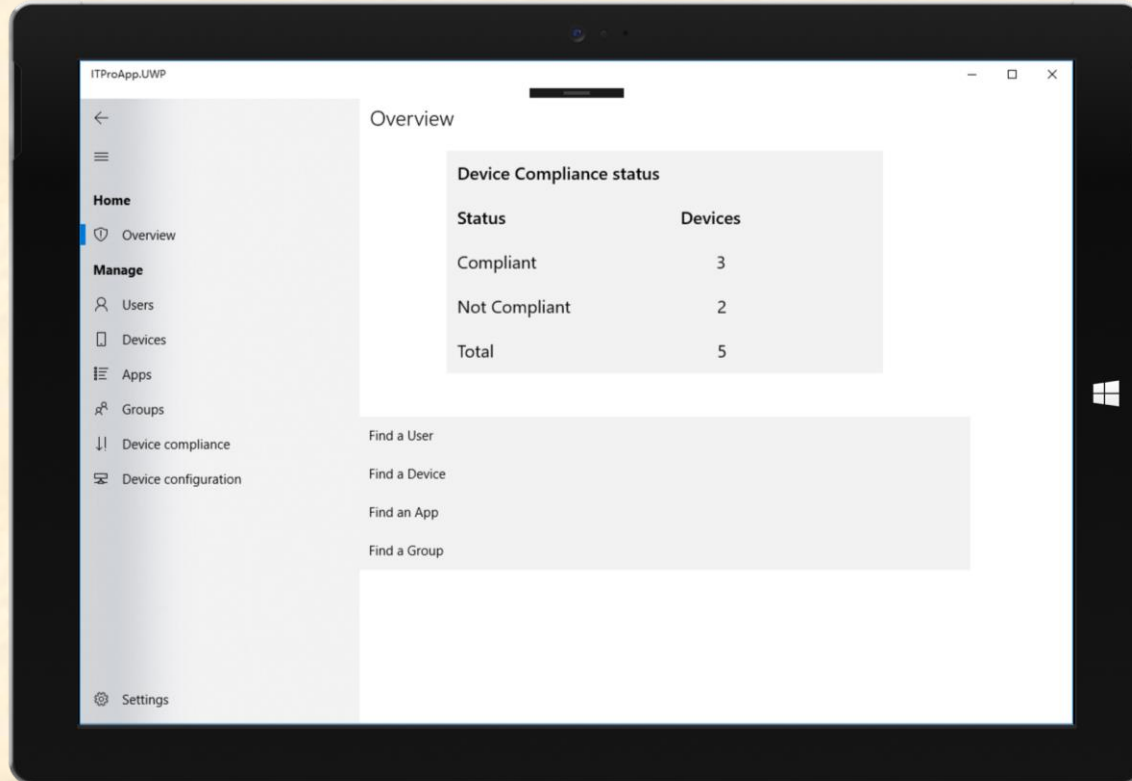


# Team Microsoft Beta Presentation



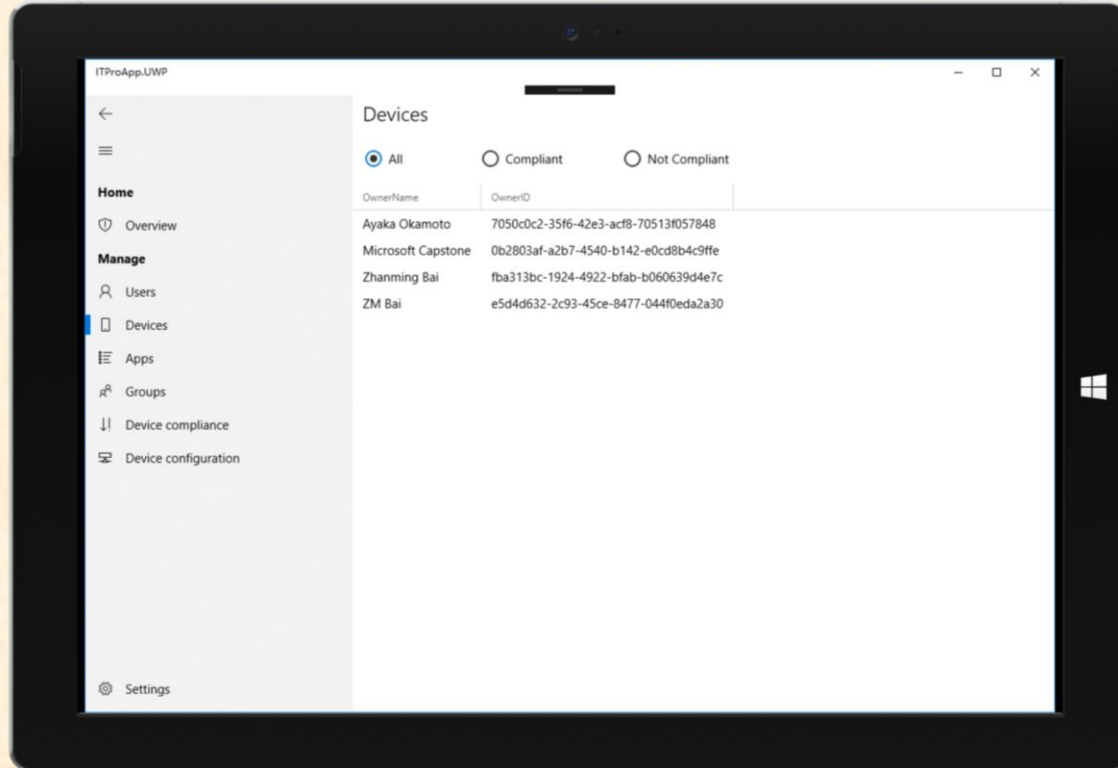
# Team Microsoft Beta Presentation

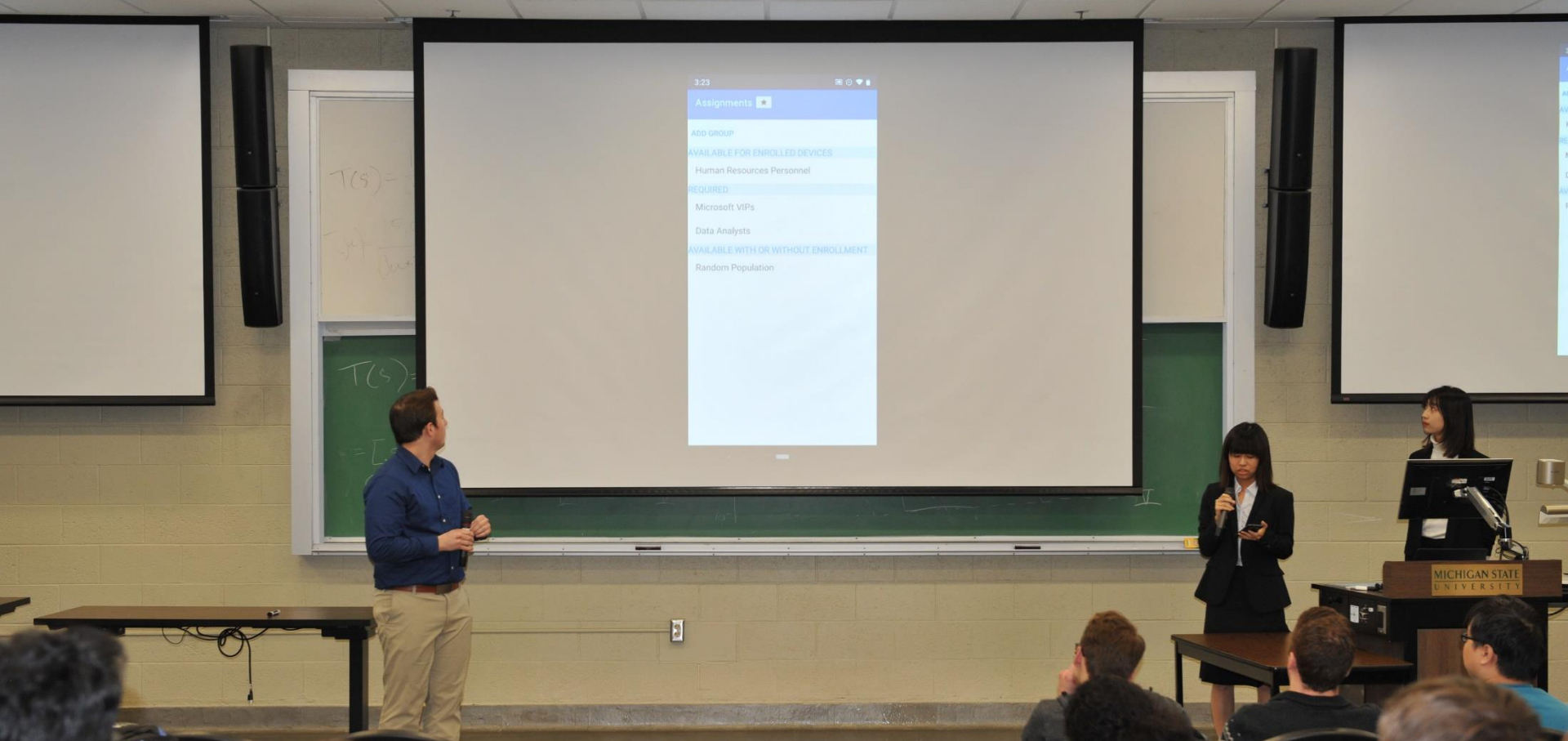
New UWP Overview Page



# Team Microsoft Beta Presentation

## New UWP Device's Information Page

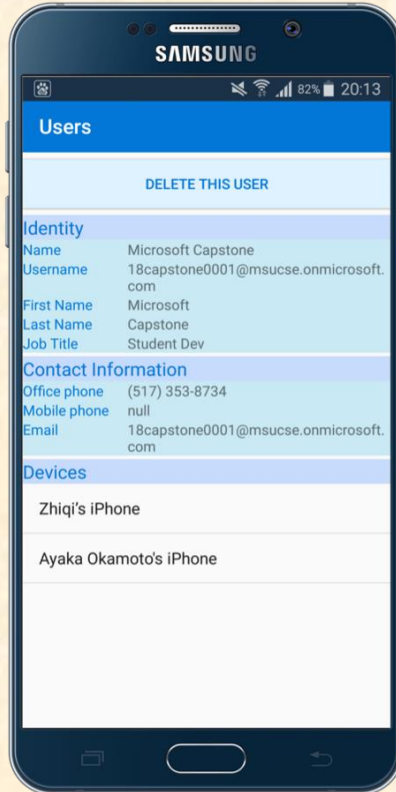




# Team Microsoft Beta Presentation

# Team Microsoft Beta Presentation

## New Android User's Information Page







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# *The Capstone Experience*

Team Mozilla

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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Firefox<sup>®</sup>



Download Firefox

[Firefox Privacy Notice](#)

# Fast for good.

2x the speed. Built-in privacy protection. Powered by Mozilla.  
There's a better way to browse.





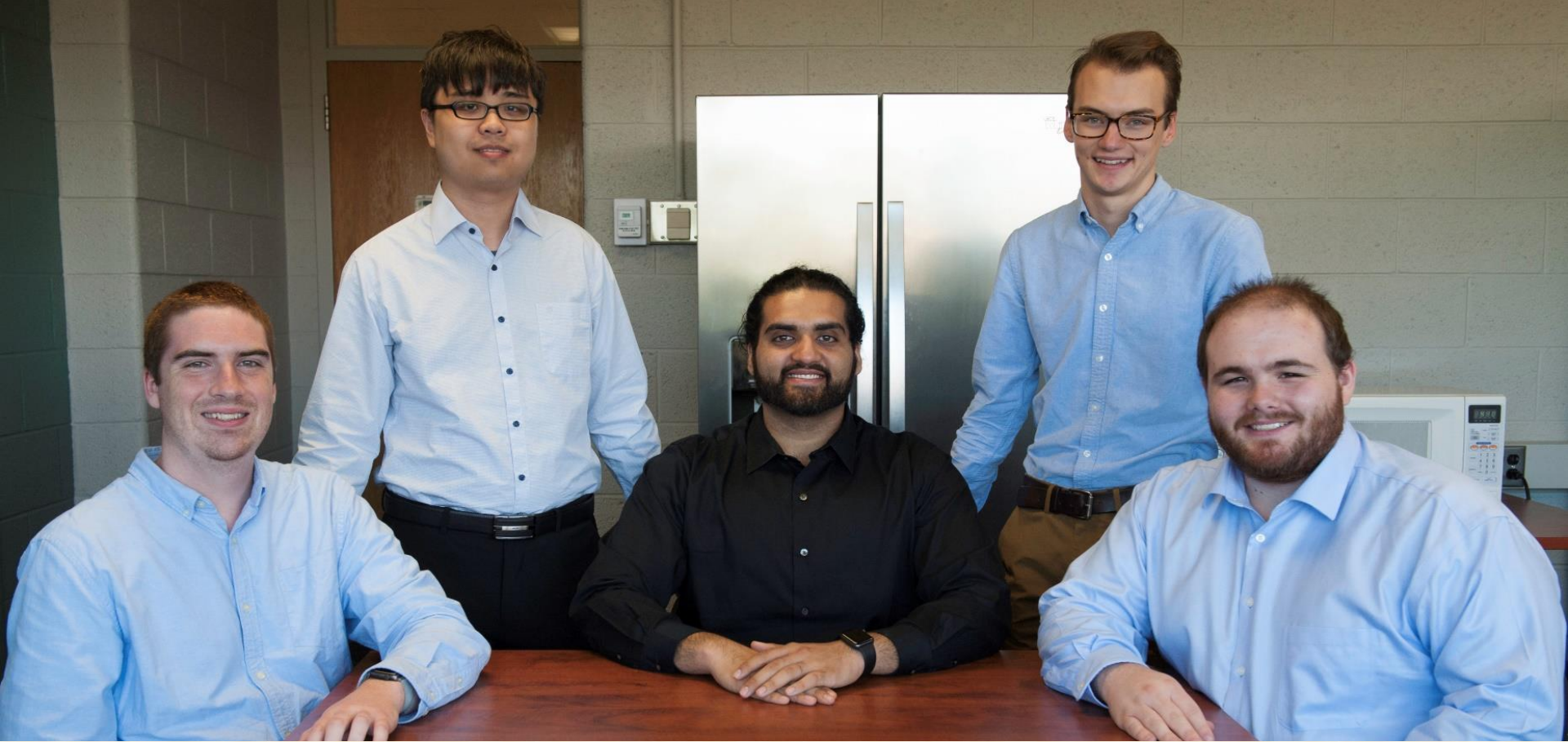
# Team Mozilla Project Overview

## Asynchronize All the (Localization) Things!

- Functionalities
  - Present Messages to Firefox Users (e.g. “You are about to close 10 tabs.”)
  - “Localize” Messages to Support
    - Multiple Operating Systems
    - 98 Languages
    - Hundreds of Millions of Users Worldwide
- Features
  - Integrate into Single Firefox Download
  - Eliminate Need for Special Builds of Firefox
  - Support Restartless “Localization” (Restartless Language Switching)
  - Convert Synchronous Code to Asynchronous Code
  - Leverage Mozilla’s New Fluent System
  - Deliver Code Ready to Ship with Firefox
- Technologies
  - Firefox Code Base (~ 51M Lines)
  - CSS
  - C++ / JavaScript
  - XUL / XBL / HTML
  - Fluent
  - Document Type Definition (DTD)
  - Mercurial
  - IRCCloud
  - Bugzilla
  - Phabricator
  - Microsoft Windows, Apple macOS and Linux



Mountain View, California



## Team Mozilla

Jim Lennon, Jack Song, Raza Haider, Jack Smith, Collin Wing

# Team Mozilla Project Plan Presentation

Screen Mockup

```
openDir = Open Directory
# LOCALIZATION NOTE (macOpenDir): This is the Mac-specific variant of openDir.
# This allows us to use the preferred "Finder" terminology on Mac.
macOpenDir = Show in Finder
# LOCALIZATION NOTE (winOpenDir2): This is the Windows-specific variant of
# openDir.
winOpenDir2 = Open Folder

profiles-opendir =
    { PLATFORM() ->
        [macos] Show in Finder
        [windows] Open Folder
        *[other] Open Directory
    }
```





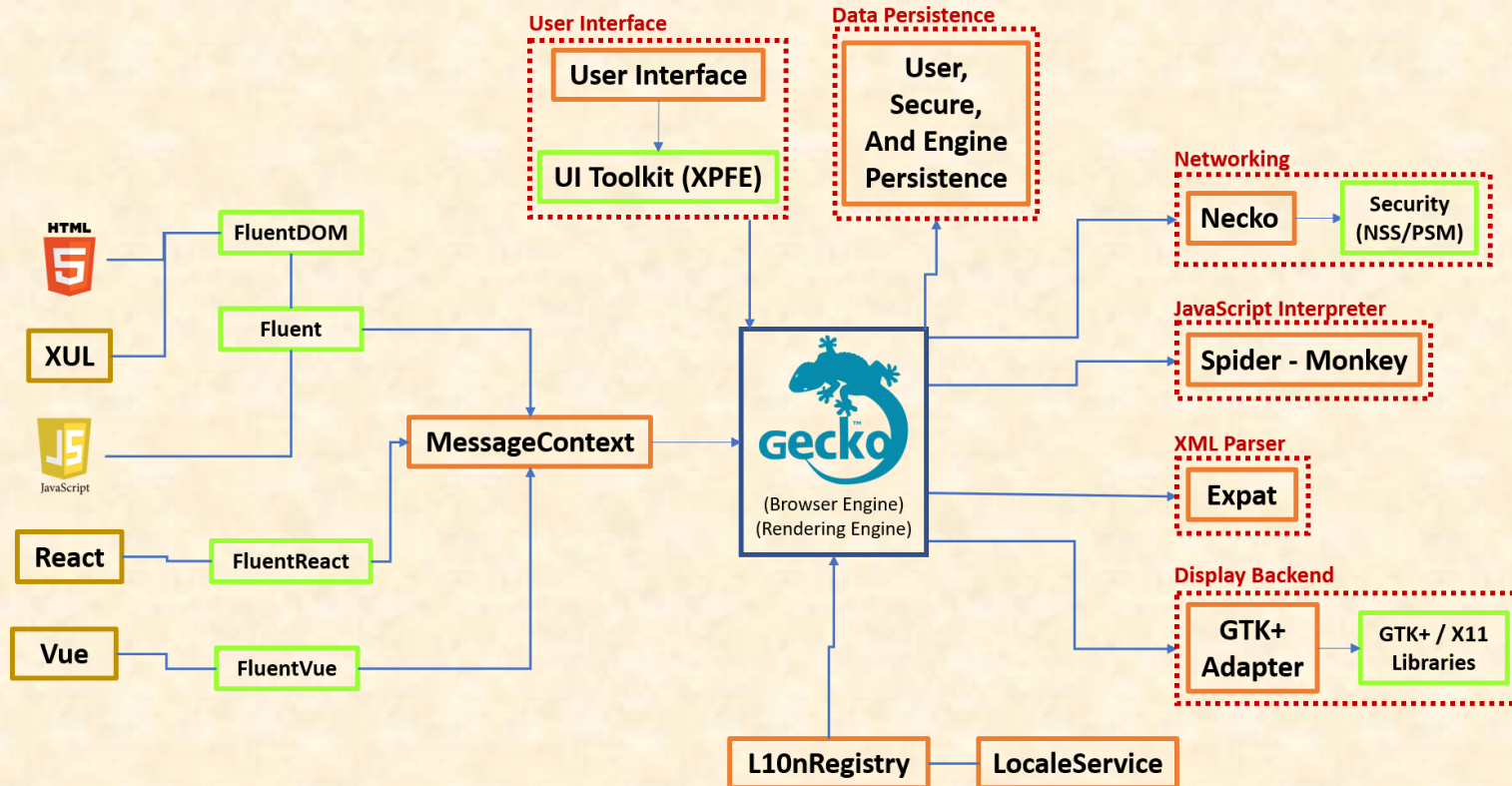


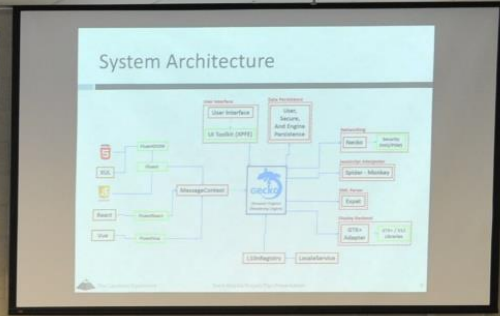
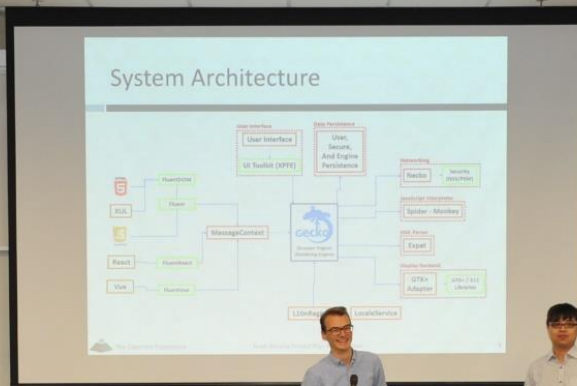
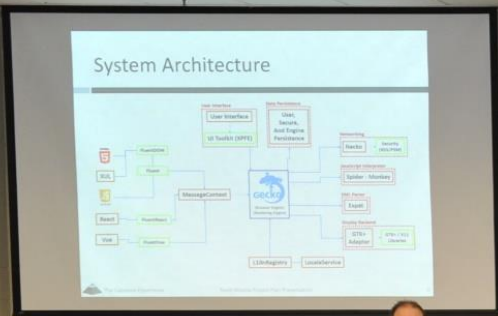
# Team Mozilla Project Plan Presentation



# Team Mozilla Project Plan Presentation

## Architecture Diagram

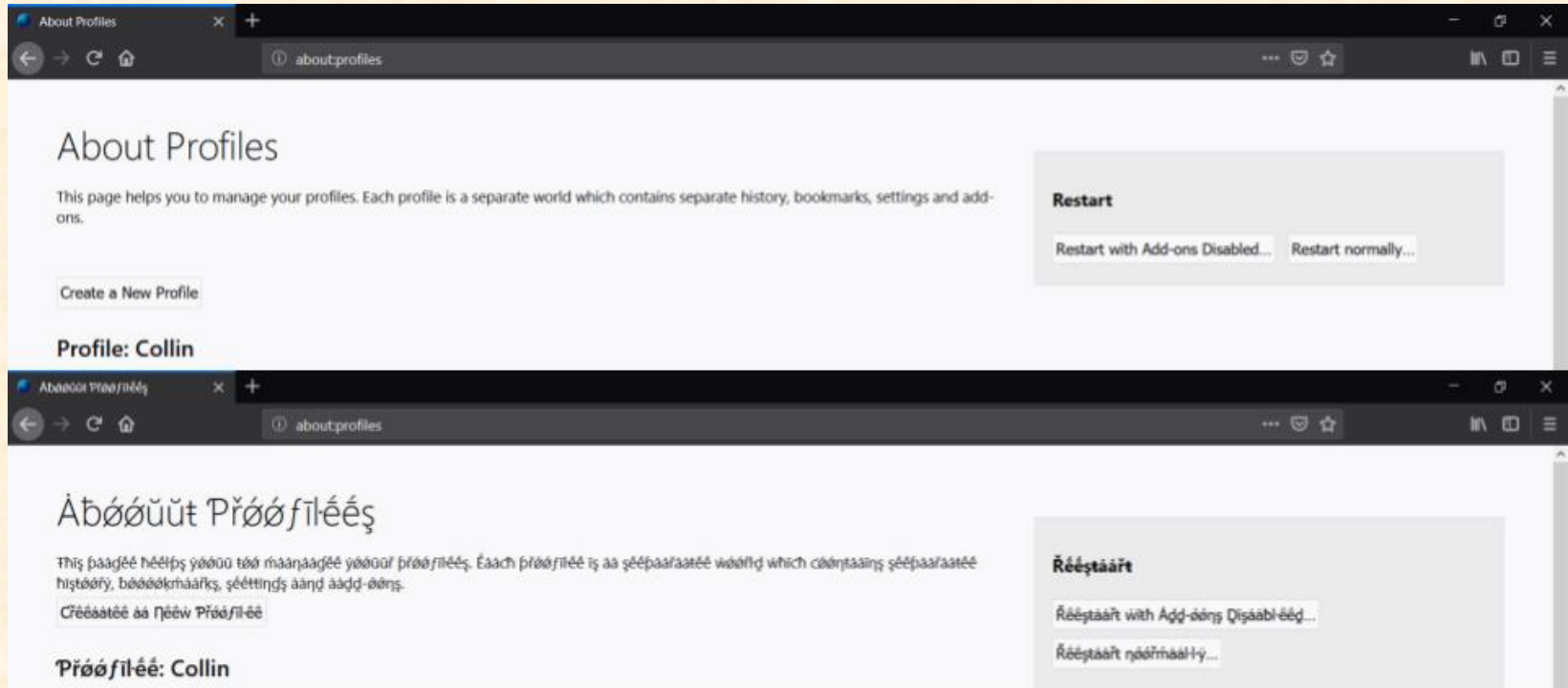


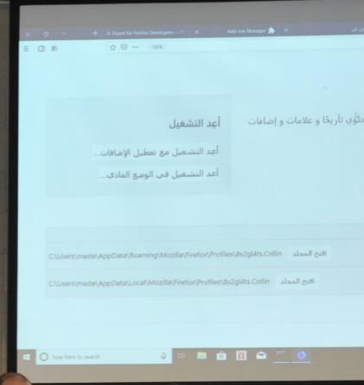
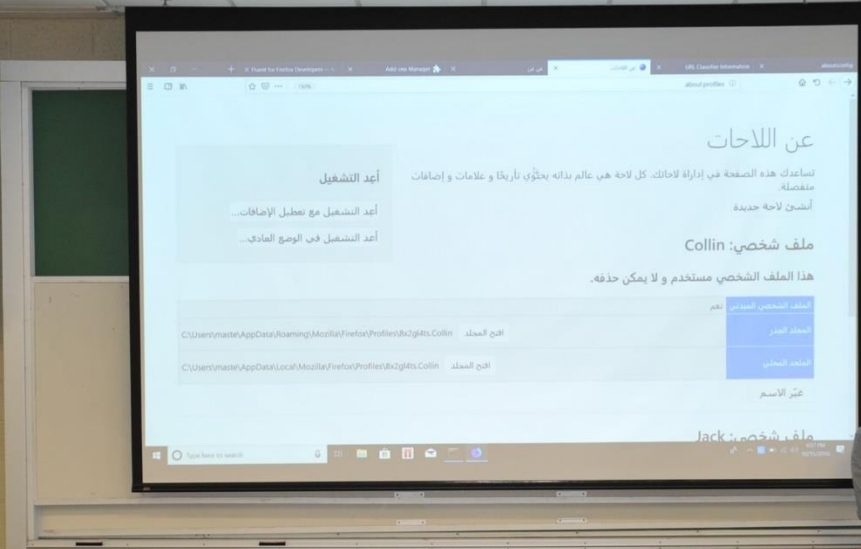


# Team Mozilla Project Plan Presentation

# Team Mozilla Project Plan Presentation

Screen Mockup



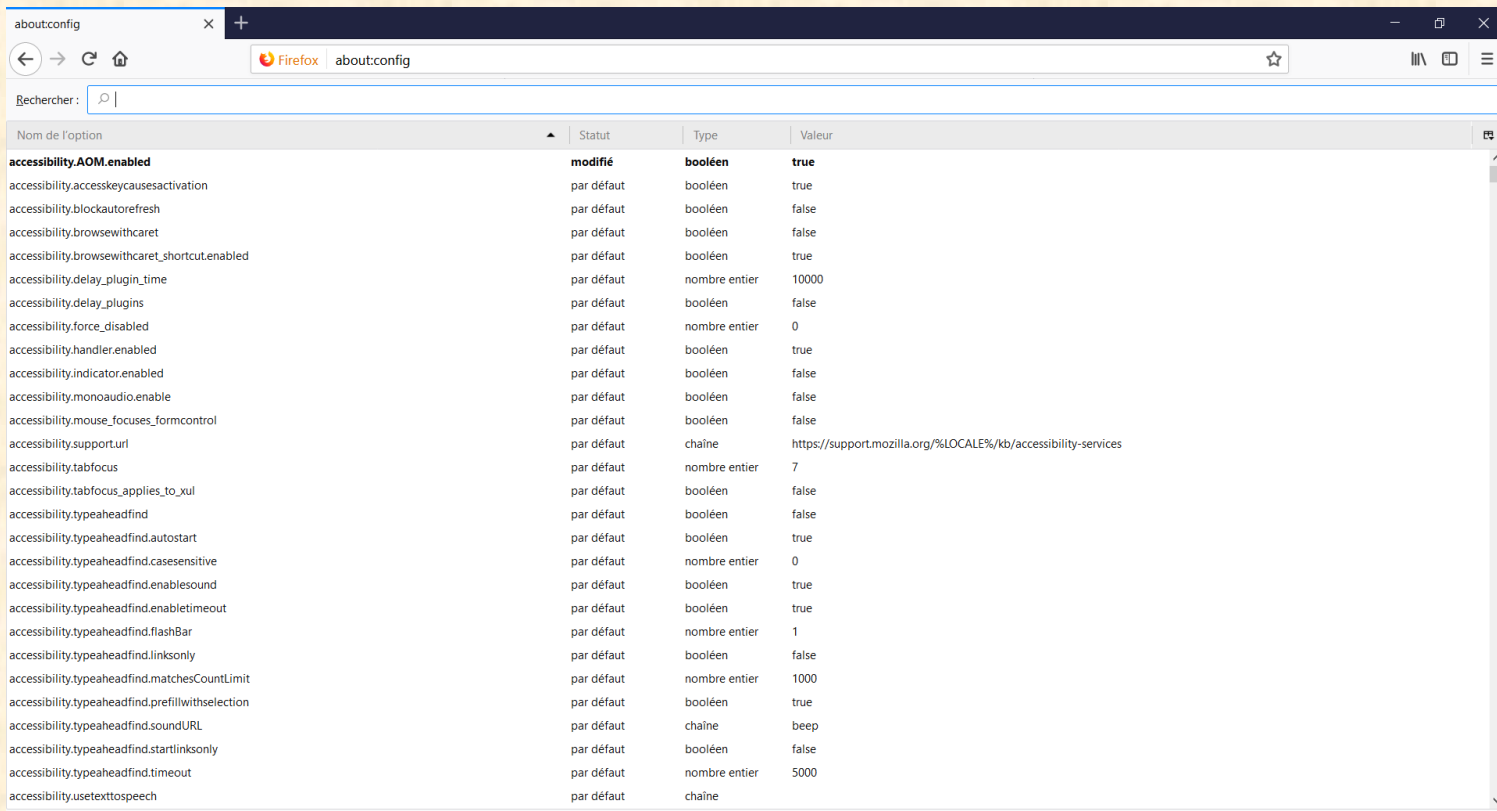


# Team Mozilla Alpha Presentation



# Team Mozilla Alpha Presentation


about:config page in French



Nom de l'option	Statut	Type	Valeur
<b>accessibility.AOM.enabled</b>	<b>modifié</b>	<b>booléen</b>	<b>true</b>
accessibility.accesskeycausesactivation	par défaut	booléen	true
accessibility.blockautorefresh	par défaut	booléen	false
accessibility.browsewithcaret	par défaut	booléen	false
accessibility.browsewithcaret_shortcut.enabled	par défaut	booléen	true
accessibility.delay_plugin_time	par défaut	nombre entier	10000
accessibility.delay_plugins	par défaut	booléen	false
accessibility.force_disabled	par défaut	nombre entier	0
accessibility.handler.enabled	par défaut	booléen	true
accessibility.indicator.enabled	par défaut	booléen	false
accessibility.monospeech.enabled	par défaut	booléen	false
accessibility.mouse_focuses_formcontrol	par défaut	booléen	false
accessibility.support.url	par défaut	chaîne	<a href="https://support.mozilla.org/%{LOCALE%}/kb/accessibility-services">https://support.mozilla.org/%{LOCALE%}/kb/accessibility-services</a>
accessibility.tabfocus	par défaut	nombre entier	7
accessibility.tabfocus_applies_to_xul	par défaut	booléen	false
accessibility.typeaheadfind	par défaut	booléen	false
accessibility.typeaheadfind.autostart	par défaut	booléen	true
accessibility.typeaheadfind.casesensitive	par défaut	nombre entier	0
accessibility.typeaheadfind.enablesound	par défaut	booléen	true
accessibility.typeaheadfind.enabletimeout	par défaut	booléen	true
accessibility.typeaheadfind.flashBar	par défaut	nombre entier	1
accessibility.typeaheadfind.linksonly	par défaut	booléen	false
accessibility.typeaheadfind.matchesCountLimit	par défaut	nombre entier	1000
accessibility.typeaheadfind.prefillwithselection	par défaut	booléen	true
accessibility.typeaheadfind.soundURL	par défaut	chaîne	beep
accessibility.typeaheadfind.startlinksonly	par défaut	booléen	false
accessibility.typeaheadfind.timeout	par défaut	nombre entier	5000
accessibility.usetexttospeech	par défaut	chaîne	

# Team Mozilla Alpha Presentation

about:profiles page in Arabic



عن اللاحات

تساعدك هذه الصفحة في إدارة لاحتك. كل لاحة هي عالم بذاته يحتوي تاريخًا و علامات و إضافات منفصلة.

أنشئ لاحة جديدة

أعد التشغيل

أعد التشغيل مع تعطيل الإضافات...

أعد التشغيل في الوضع العادي...

ملف شخصي: Collin

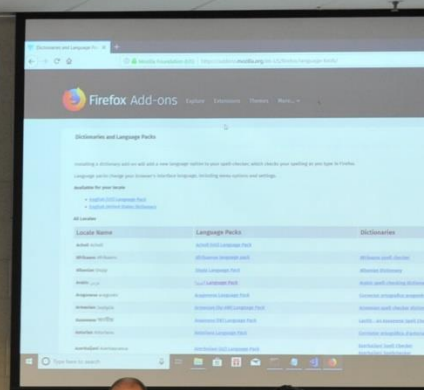
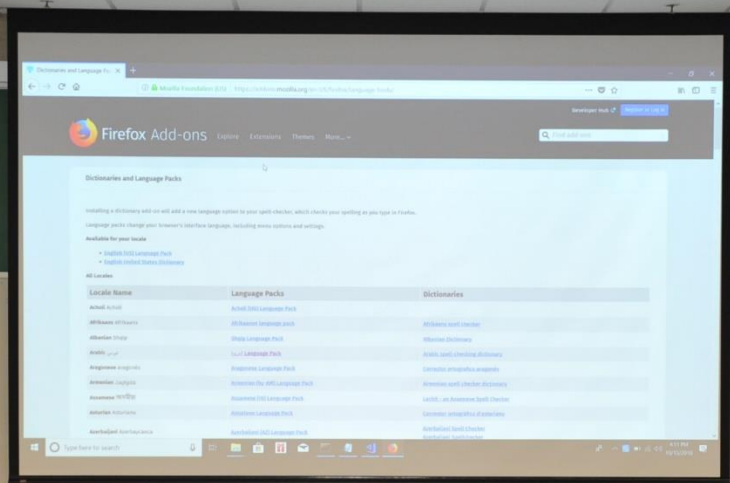
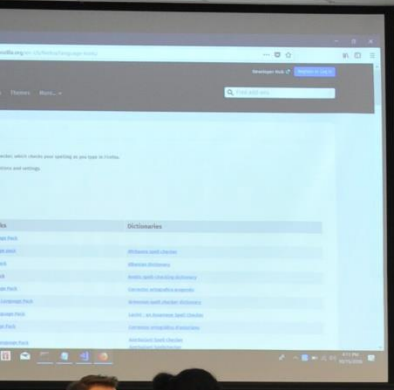
هذا الملف الشخصي مستخدم و لا يمكن حذفه.

الملف الشخصي المبدئي	نعم
المجلد الجذر	افتح المجلد
المجلد المحلي	افتح المجلد

غير الاسم

ملف شخصي: Jack

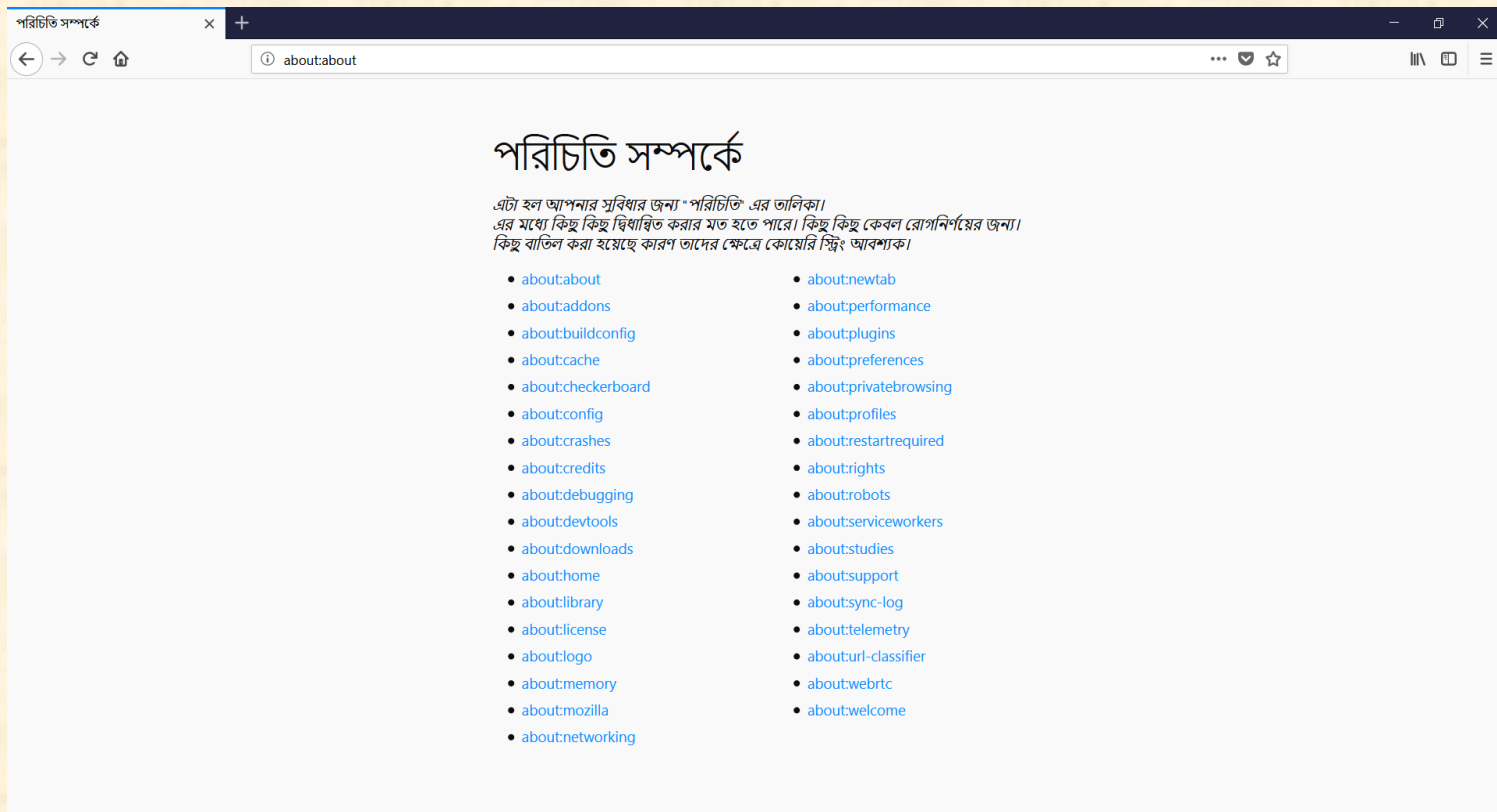
الملف الشخصي المبدئي لا



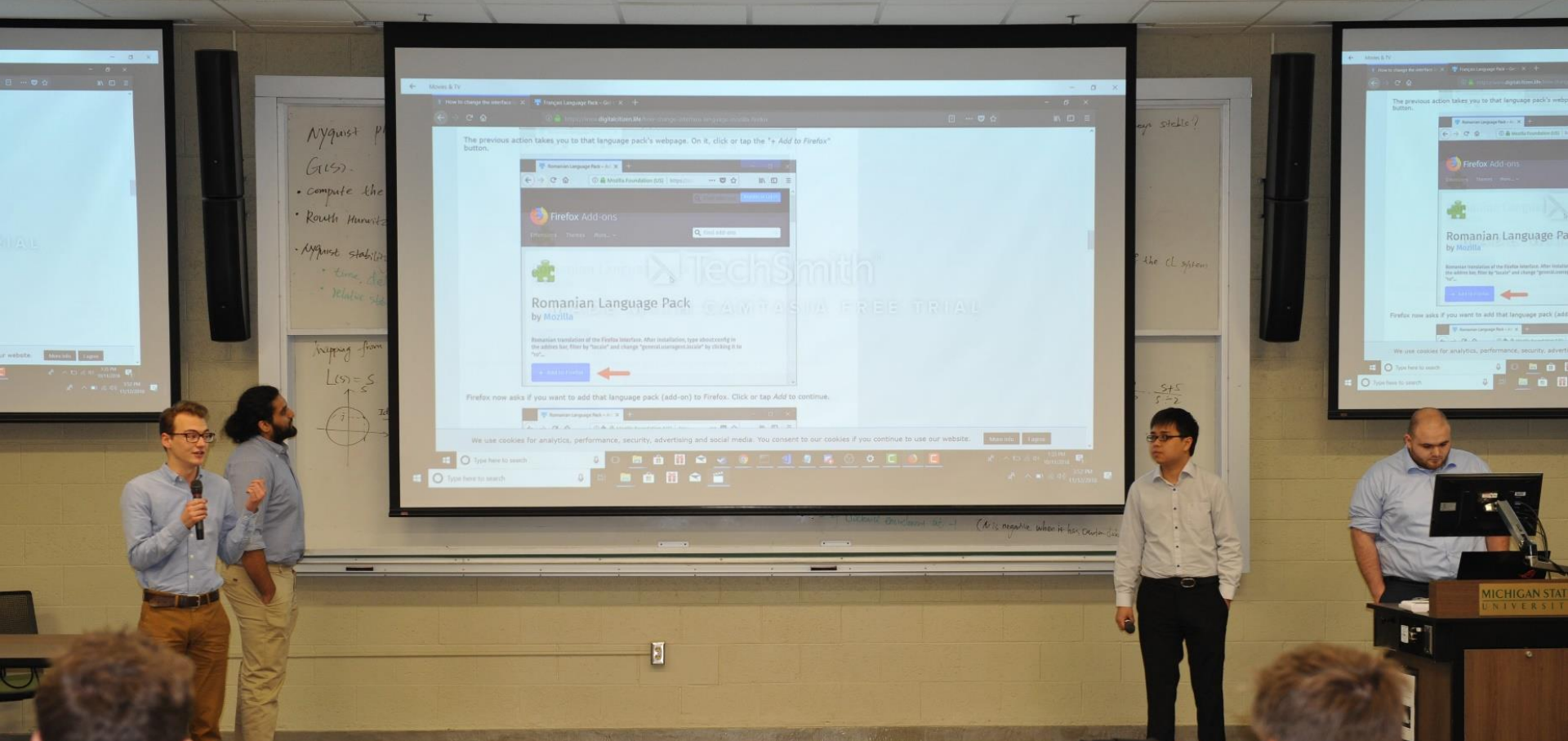
Team Mozilla  
Alpha Presentation

# Team Mozilla Alpha Presentation

about:about page in Bengali







Nyquist P  
Gloss -  
• compute the  
• Roughly Harnitz  
• Nyquist stability  
• time, etc  
• Relative size

Mapping from  
 $L(s) = S$   
 $\begin{matrix} \uparrow \\ \downarrow \end{matrix}$   
 $\begin{matrix} \uparrow \\ \downarrow \end{matrix}$   
 $\begin{matrix} \uparrow \\ \downarrow \end{matrix}$

any stable?

the CL system

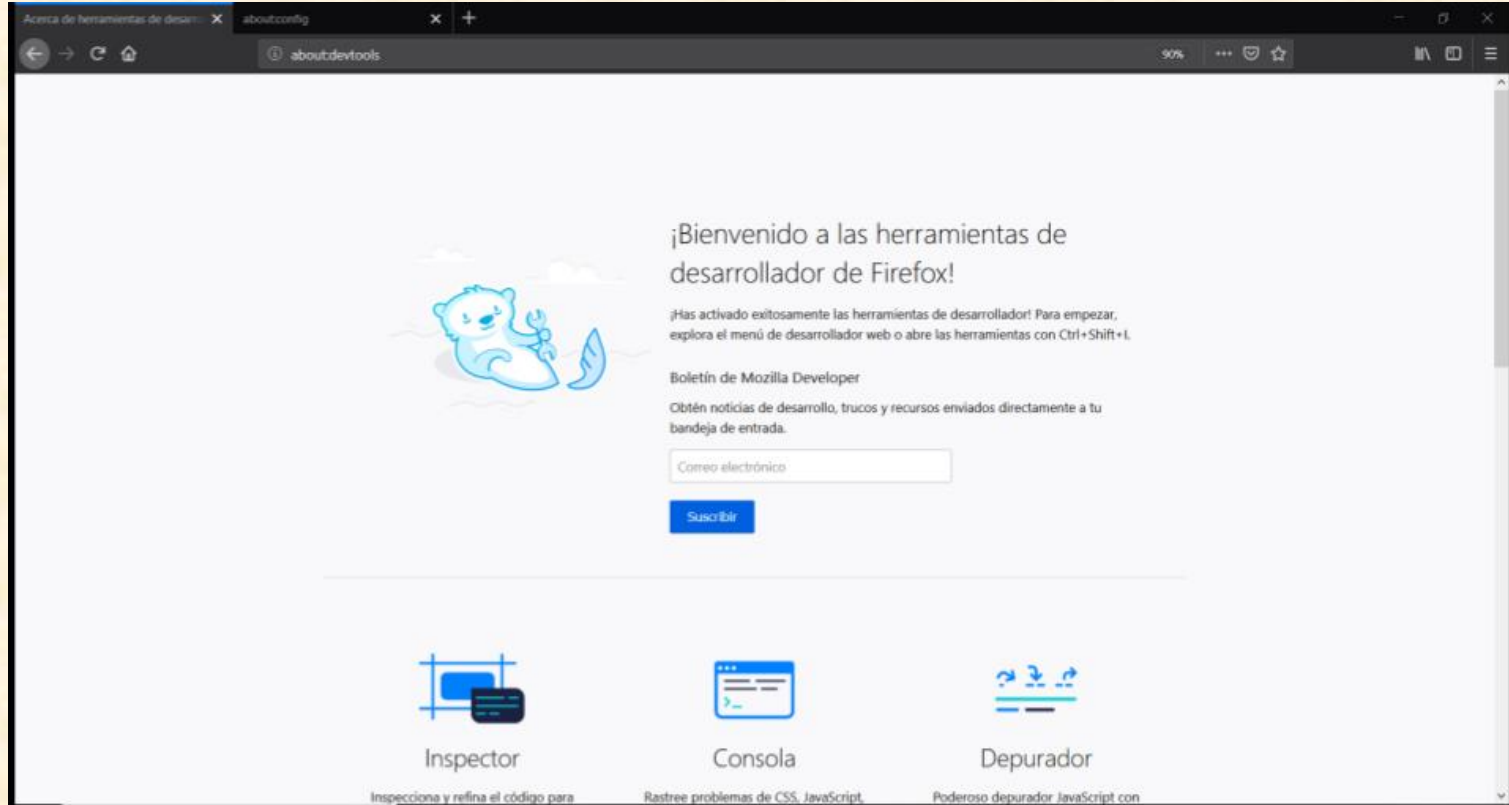
$S+5$   
 $S-2$

Unstable characteristic at -1 (it's negative when it has characteristic)

# Team Mozilla Beta Presentation

# Team Mozilla Beta Presentation

about:devtools



# Team Mozilla Beta Presentation

About Dialog of about:preferences



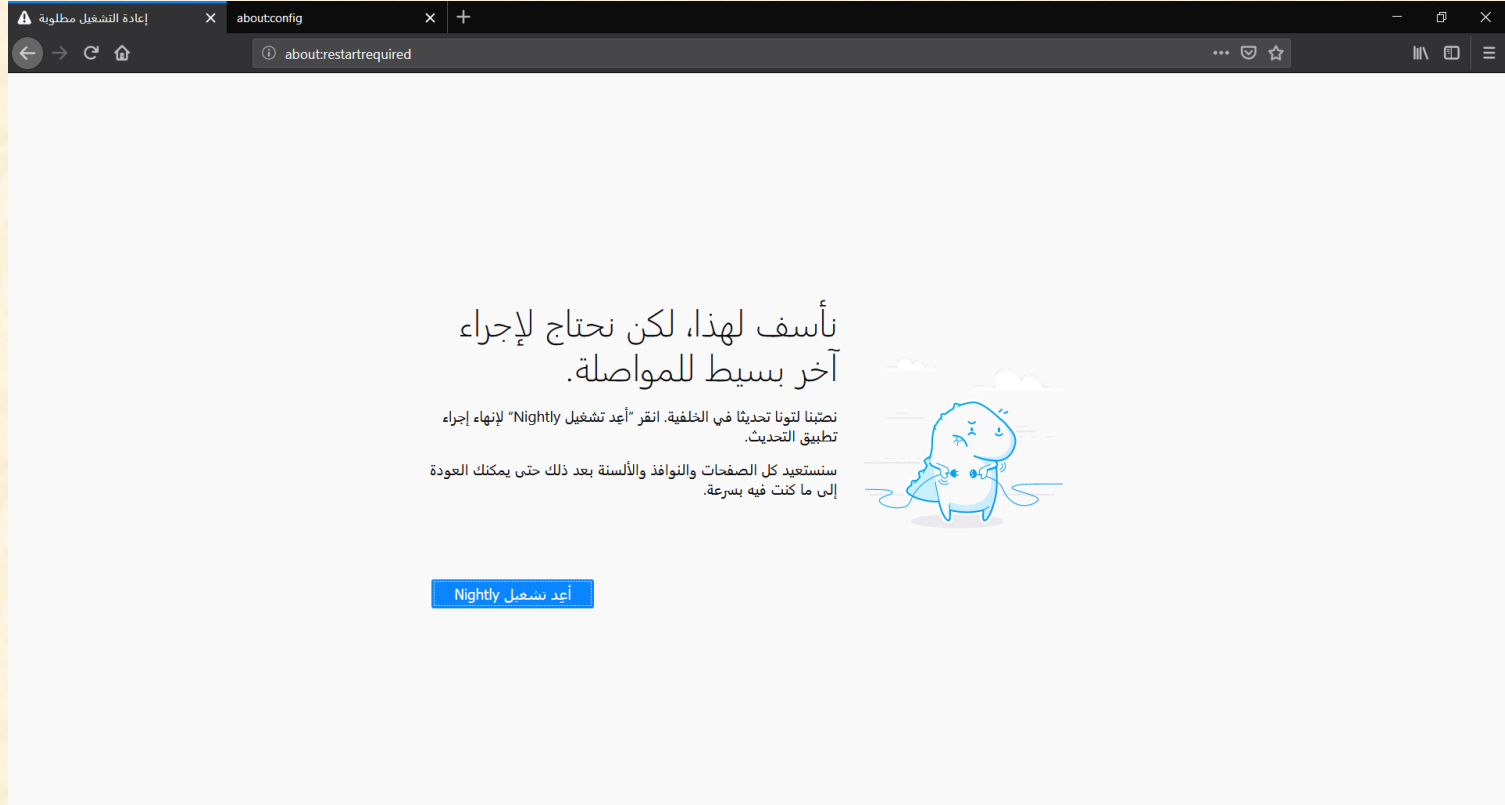


# Team Mozilla Beta Presentation



# Team Mozilla Beta Presentation

about:restartrequired





Team Mozilla  
Design Day

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# *The Capstone Experience*

Team MSUFCU

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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Swift Code: MSUCUS44[LOANS](#)[ACCOUNTS](#)[SERVICES](#)[BUSINESS](#)[RESOURCES](#)[RATES](#)

# Sign Up for MSUFCU Kids' Day!

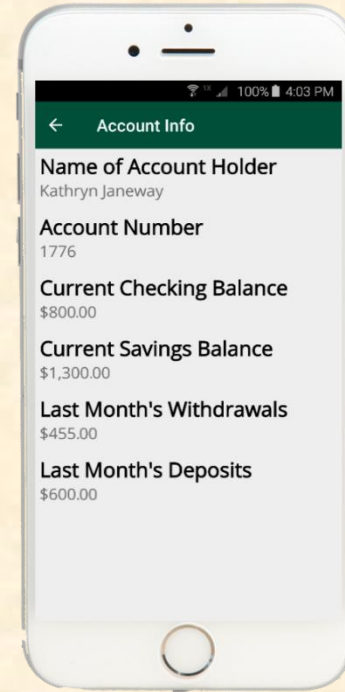
[Sign Up](#)

# Team MSUFCU

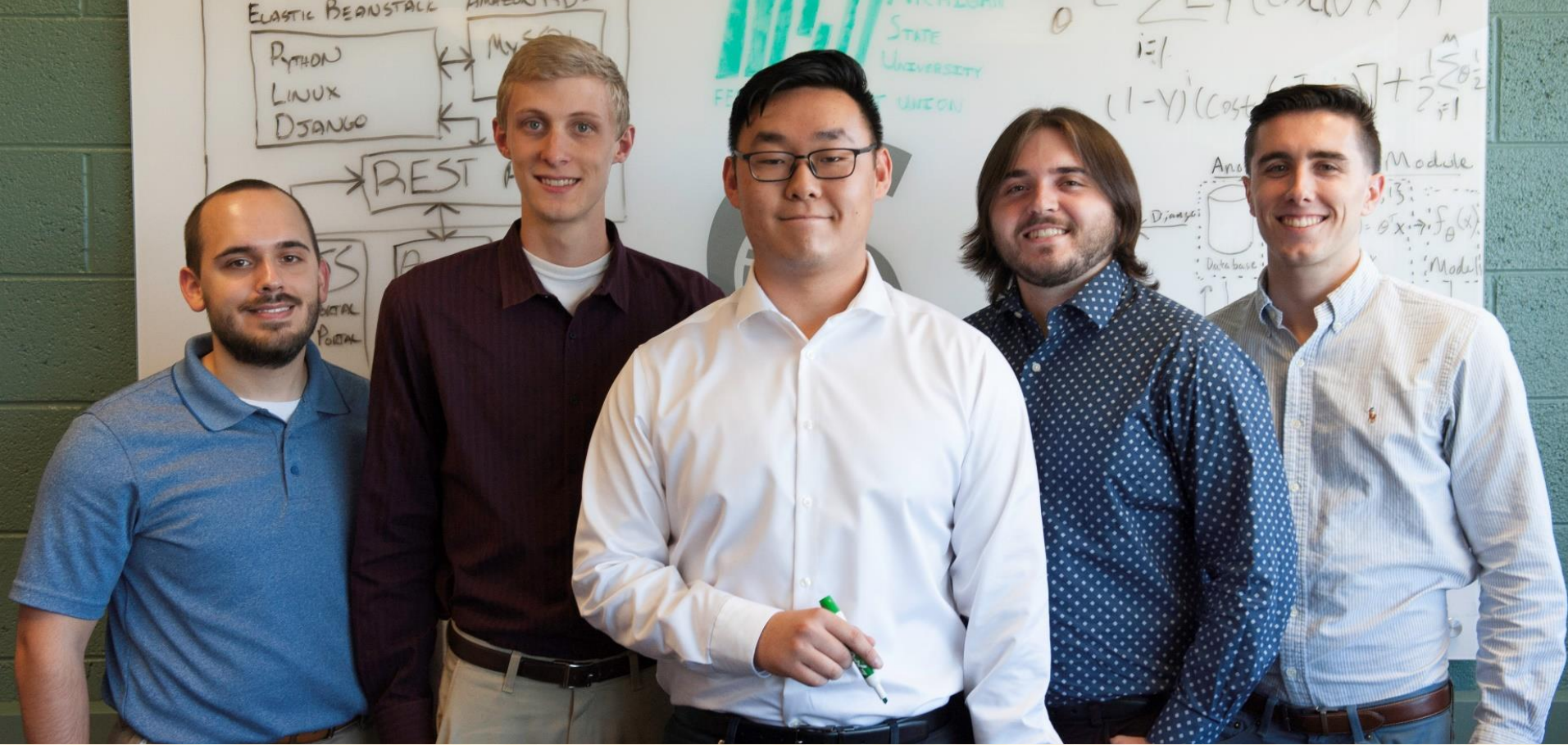
## Project Overview

### Transaction Anomaly Detection

- Functionalities
  - Visualize MSUFCU Members' Spending Habits
  - Send Alerts About Unusual Account Activity
- Features
  - Identify Member Account Anomalies
  - Apply User-Created and MSUFCU-Created Rules
  - Leverage Machine Learning and Data Science
  - Send Alerts Via SMS, Push Notifications or Email
  - Build Card-Based Member-Facing Module
  - Support Web, Google Android and Apple iOS
  - Integrate with MSUFCU's Existing Systems
  - Apply Anti Money Laundering (AML) Rules
  - Provide Companion Administrative Web Portal
- Technologies
  - CSS / HTML / PHP / JavaScript
  - JSON
  - Apple iOS / Swift
  - Google Android / Java
  - SQL Database



East Lansing, Michigan

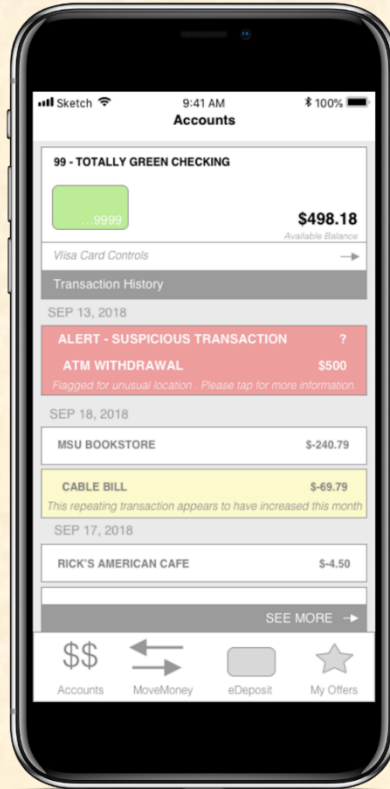


## Team MSUFCU

Caleb Sherman, Andrew Schmidt, Jim Xu, Austin Roberts, Paul Soma

# Team MSUFCU Project Plan Presentation

Screen Mockup



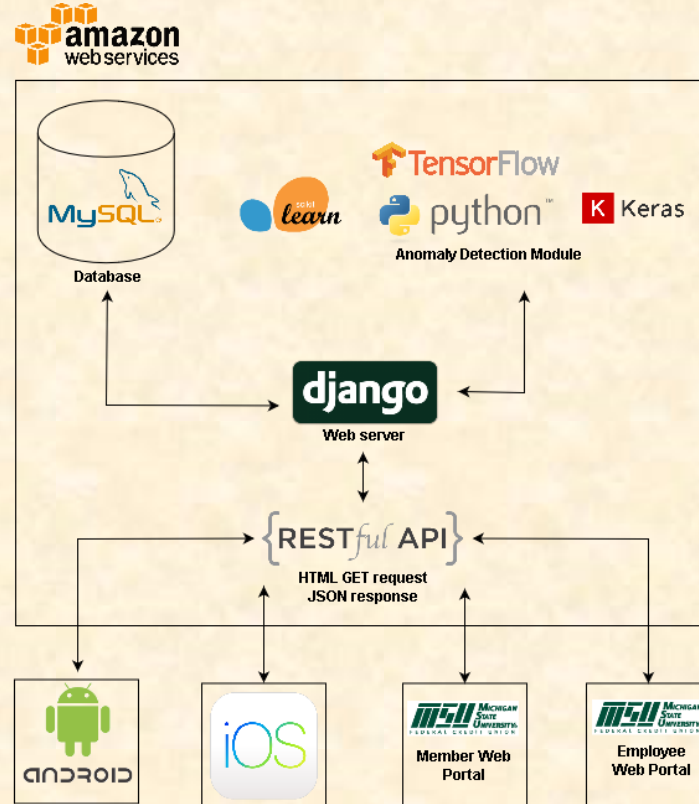




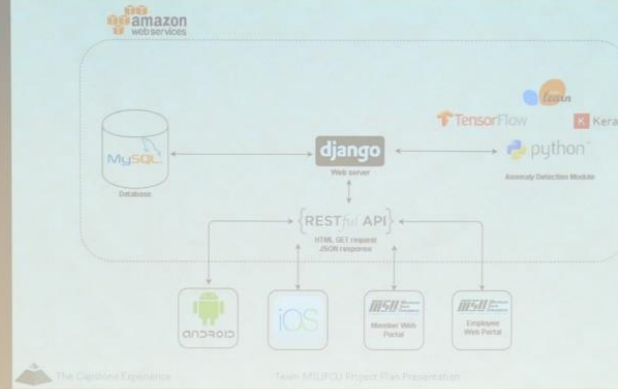
# Team MSUFCU Project Plan Presentation

# Team MSUFCU Project Plan Presentation

## Architecture Diagram



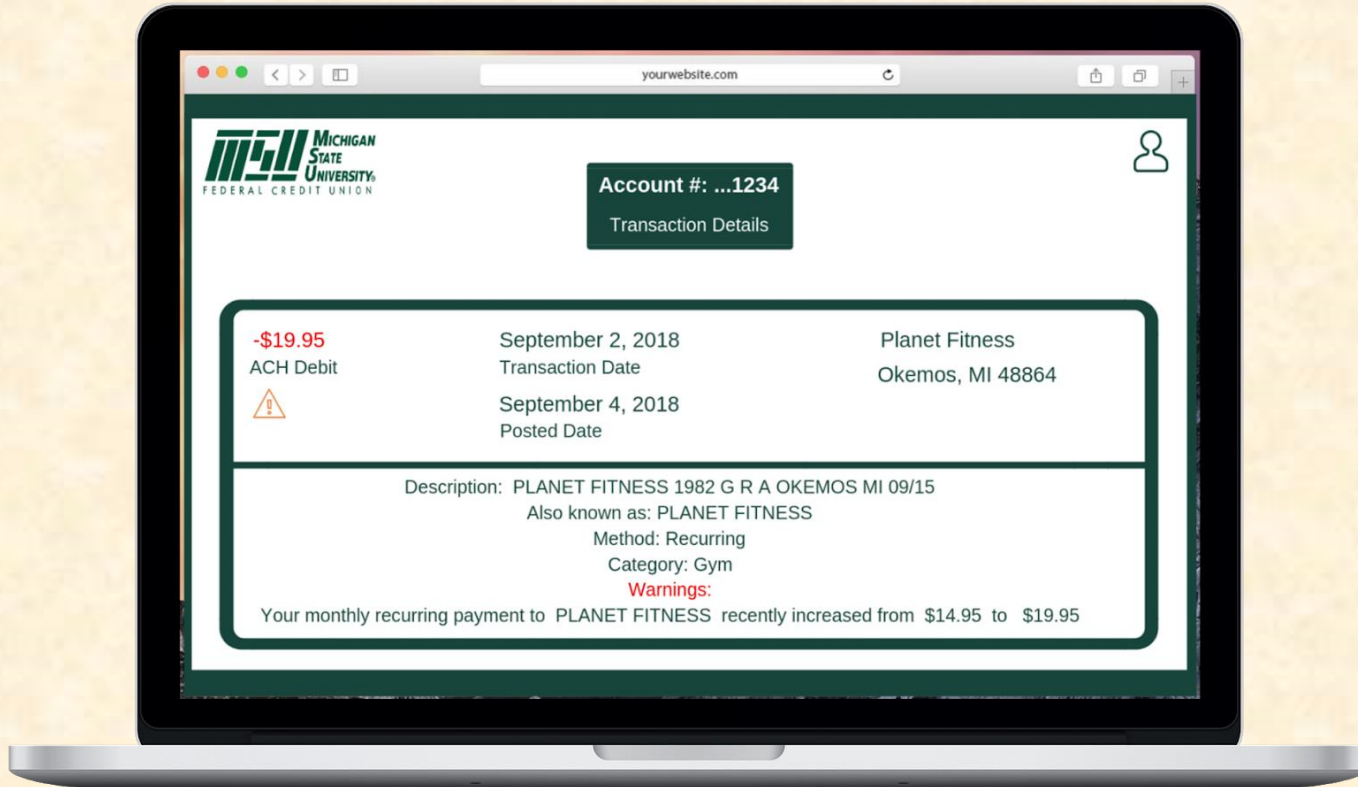
## System Architecture



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Project Plan Presentation

# Team MSUFCU Project Plan Presentation

Screen Mockup



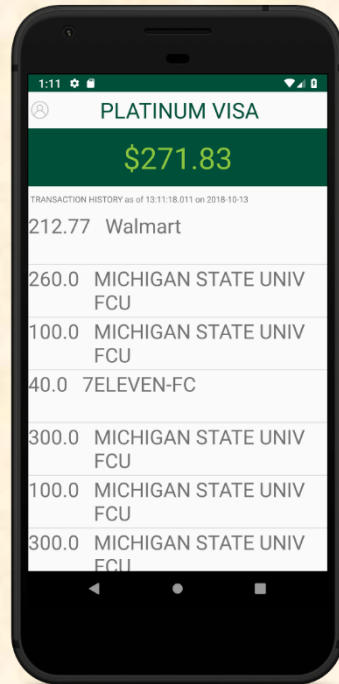




# Team MSUFCU Alpha Presentation

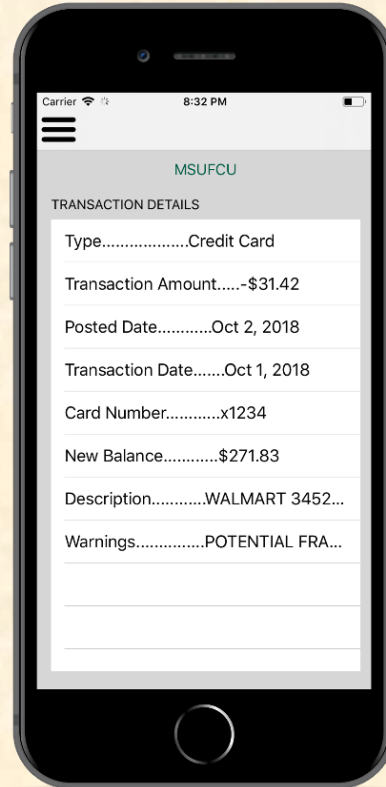
# Team MSUFCU Alpha Presentation

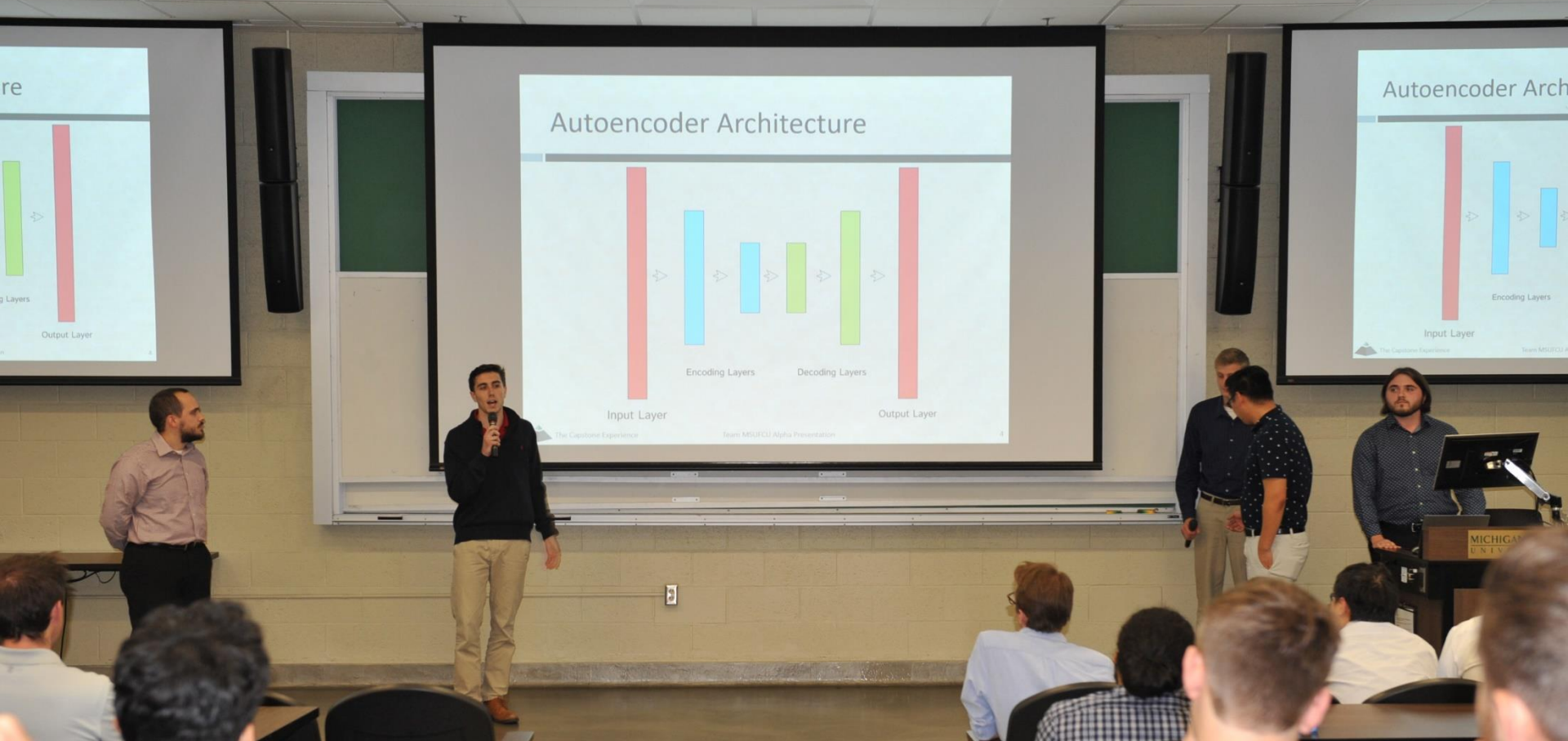
Android Member Account View



# Team MSUFCU Alpha Presentation

iOS Member Transaction View



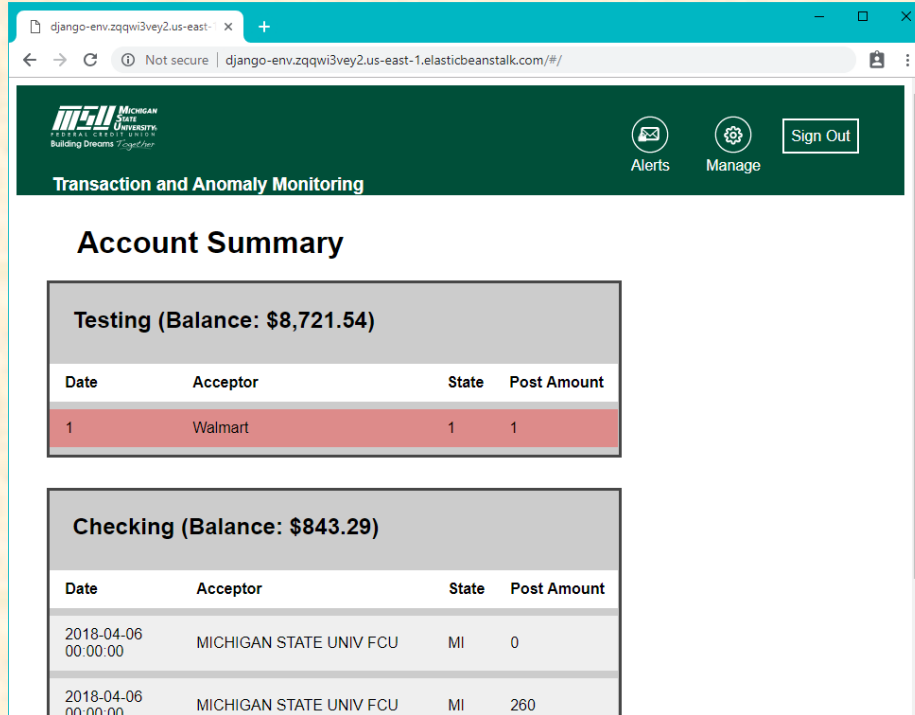


Team MSUFCU  
Alpha Presentation



# Team MSUFCU Alpha Presentation

Member Facing Web Portal



The screenshot displays a web browser window with the URL `django-env.zqqwi3vey2.us-east-1.elasticbeanstalk.com/#/`. The page features a dark green header with the MSUFCU logo, navigation links for Alerts and Manage, and a Sign Out button. The main content area is titled "Transaction and Anomaly Monitoring" and includes two account summary sections: "Testing (Balance: \$8,721.54)" and "Checking (Balance: \$843.29)". Each section contains a table with transaction details.

**Transaction and Anomaly Monitoring**

**Account Summary**

**Testing (Balance: \$8,721.54)**

Date	Acceptor	State	Post Amount
1	Walmart	1	1

**Checking (Balance: \$843.29)**

Date	Acceptor	State	Post Amount
2018-04-06 00:00:00	MICHIGAN STATE UNIV FCU	MI	0
2018-04-06 00:00:00	MICHIGAN STATE UNIV FCU	MI	260

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Normal Transaction	Normal Recurring Transaction	Increasing Recurring Payment
Transaction Account: <input type="text"/> Add Normal Transaction	Transaction Account: <input type="text"/> Add Normal Recurring Transaction	Transaction Account: <input type="text"/> Add Increasing Recurring Transaction
Out of State Purchase	Too many pin entries	Not 85% Confident of Fraud (sent to admin)
Transaction Account: <input type="text"/> Add Out of State Transaction	Transaction Account: <input type="text"/> Add Too many pin entries Transaction	Transaction Account: <input type="text"/> Add Not 85% Confident of Fraud Transaction

MSUFCU

Transaction and Anomaly Monitoring

Account Summary

Debit Card (Balance: \$843.29)

Date	Account	State	Post Amount
01/10/2018	SAFARI.COM	MI	112.07
01/10/2018	CHIPOTLE 0931	MI	11.42
01/10/2018	MAJIMA.COM	MI	10.00
01/10/2018	MAJIMA.COM	MI	10.00
01/10/2018	GO (ARMED) MARKET INC	MI	10.00

Show more

Credit Card (Balance: \$2,423)

Date	Account	State	Post Amount
01/10/2018	MICHIGAN STATE UNIVERSITY	MI	10.00
01/10/2018	AMERICAN EXPRESS PLANE	MI	10.00
01/10/2018	CHIPOTLE 0931	MI	10.00

my stable?

The CL given

SFS  
T-2

How can they filter  
it? Please

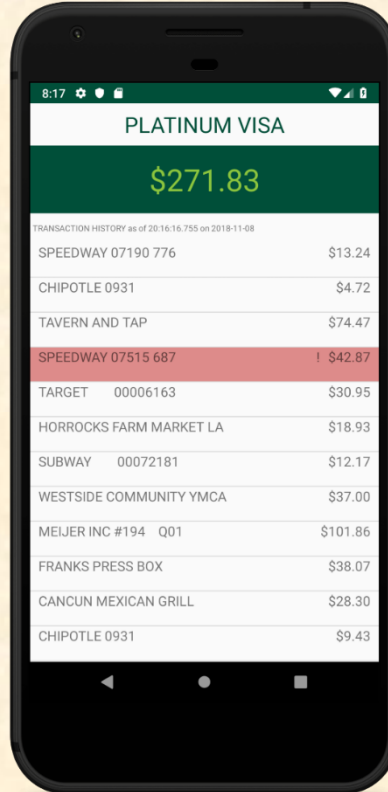
OK to negative value as long as credit score decreases

Platinum Visa	
\$227.63	
Safaricom Tanzania	\$112.07
CHIPOTLE 0931	\$11.42
Transaction Details	
Description: Safaricom Tanzania	
Merchant: MA. Kanyo	\$112.07
Date: 1/10/2018	
Card Number: 4886887802090705	
Warnings: Theft Payment ID LARLEY	
FRANGLANT	
Transaction Details	
Description: Safaricom Tanzania	
Merchant: MA. Kanyo	\$112.07
Date: 1/10/2018	
Card Number: 4886887802090705	
Warnings: Theft Payment ID LARLEY	
FRANGLANT	

Team MSUFCU  
Beta Presentation

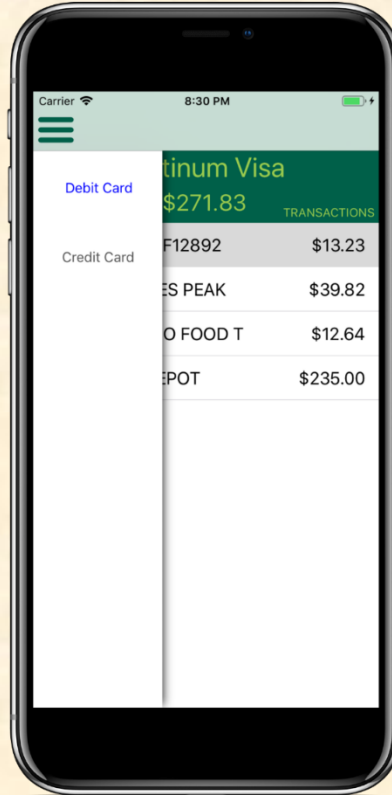
# Team MSUFCU Beta Presentation

Android Member Account View



# Team MSUFCU Beta Presentation

iOS Member Transaction View



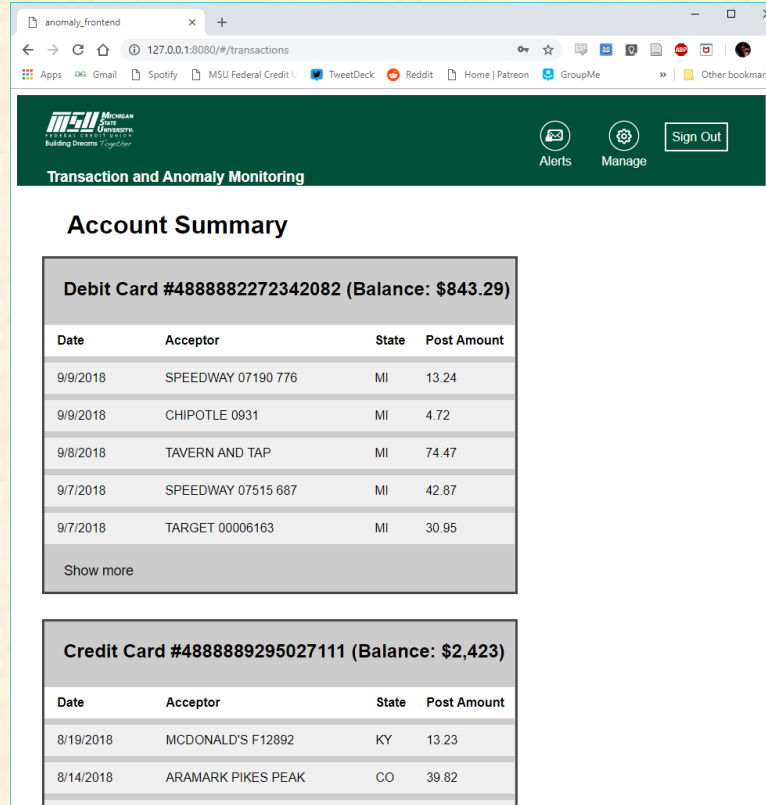




Team MSUFCU  
Beta Presentation

# Team MSUFCU Beta Presentation

Member Facing Web Portal



The screenshot displays a web browser window with the URL 127.0.0.1:8080/#/transactions. The page features a dark green header with the MSUFCU logo, navigation links for Alerts and Manage, and a Sign Out button. Below the header, the section is titled "Transaction and Anomaly Monitoring".

### Account Summary

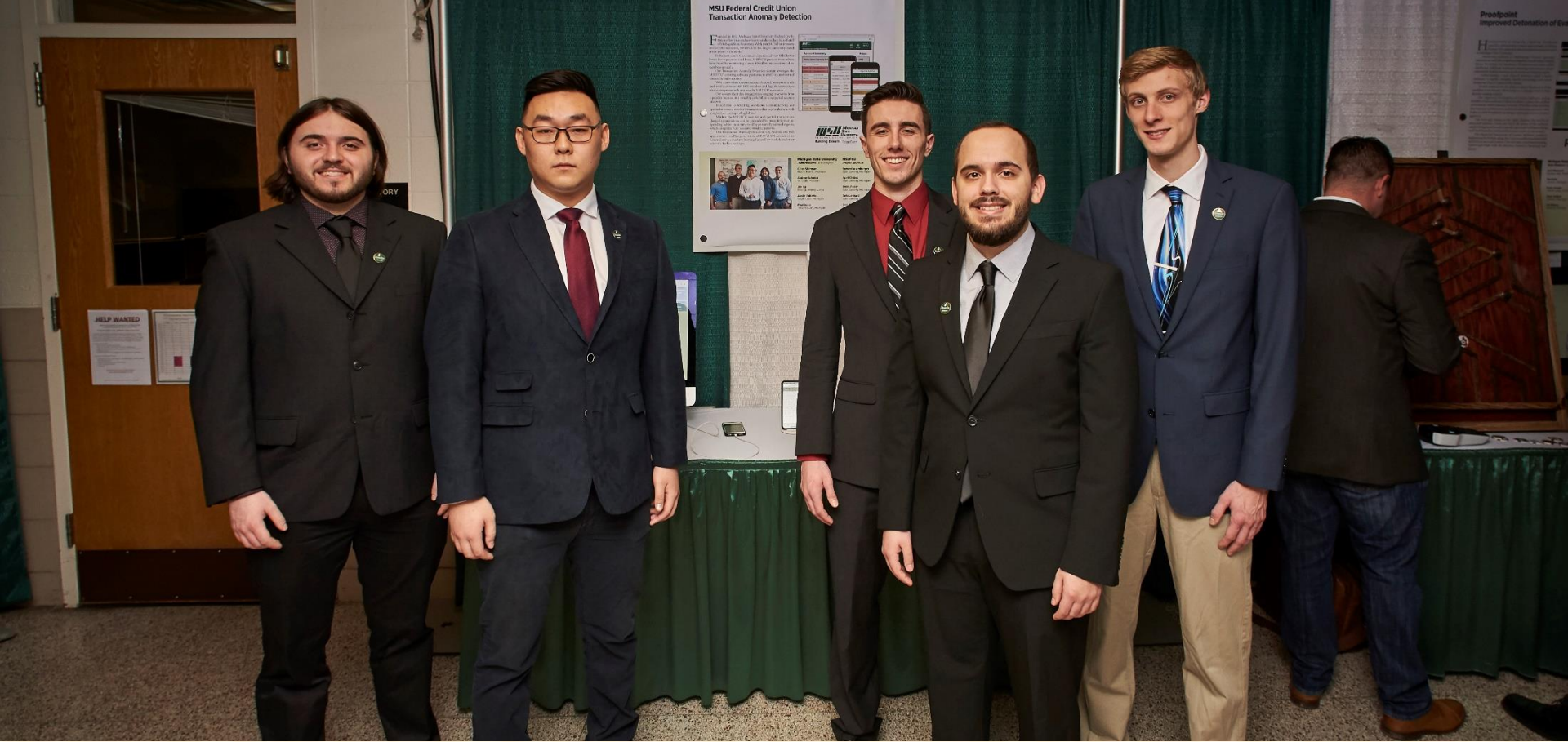
**Debit Card #4888882272342082 (Balance: \$843.29)**

Date	Acceptor	State	Post Amount
9/9/2018	SPEEDWAY 07190 776	MI	13.24
9/9/2018	CHIPOTLE 0931	MI	4.72
9/8/2018	TAVERN AND TAP	MI	74.47
9/7/2018	SPEEDWAY 07515 687	MI	42.87
9/7/2018	TARGET 00006163	MI	30.95

Show more

**Credit Card #4888889295027111 (Balance: \$2,423)**

Date	Acceptor	State	Post Amount
8/19/2018	MCDONALD'S F12892	KY	13.23
8/14/2018	ARAMARK PIKES PEAK	CO	39.82



Team MSUFCU  
Design Day

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Team Proofpoint

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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THREAT CENTER ▾

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CONTACT



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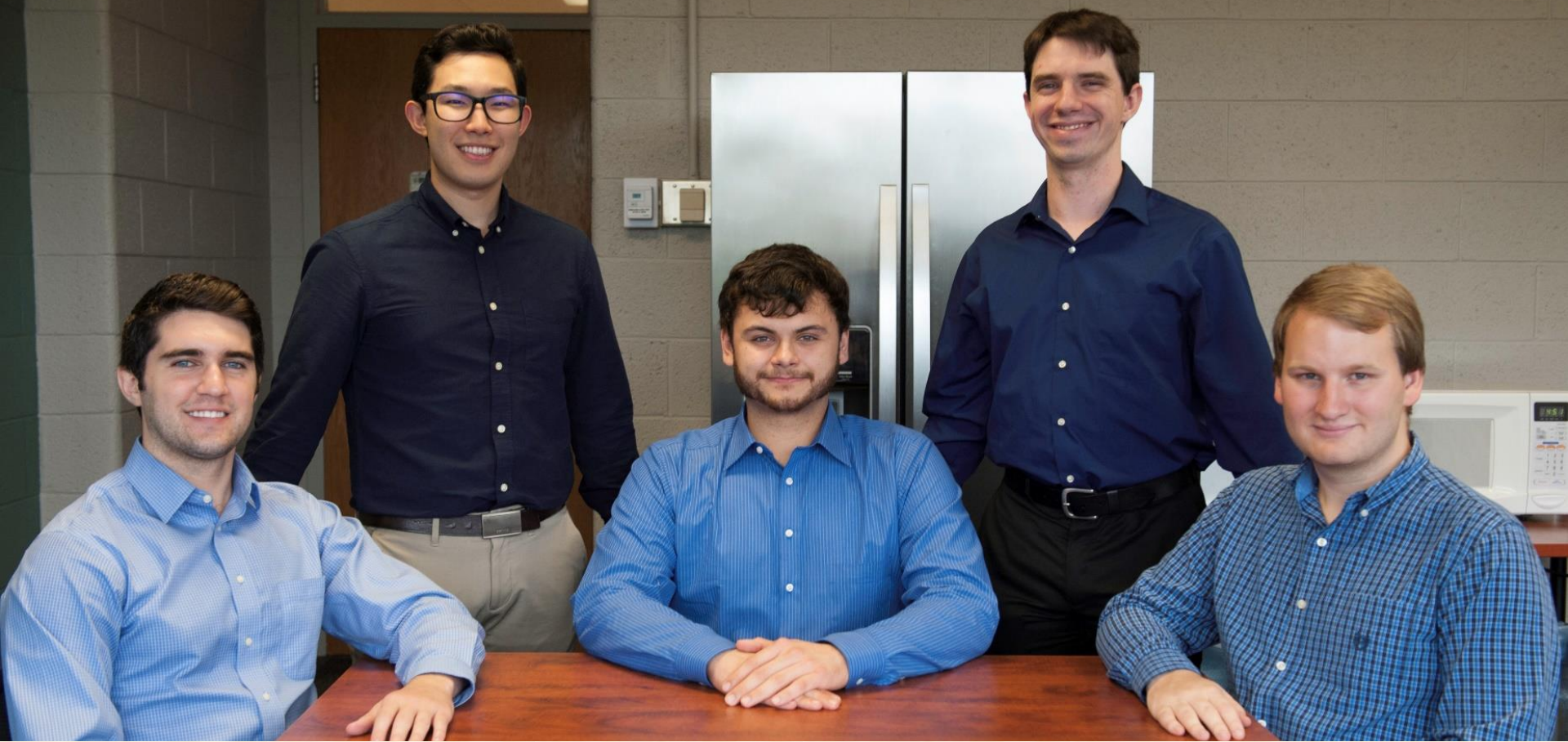
TALK TO SALES

# Team Proofpoint Project Overview

## Improved Detonation of Evasive Malware

- Functionalities
  - Protect Users from Malware Threats
  - Counter Evasive Malware Techniques
- Features
  - Enhance Existing Malware Technologies
  - Identify and Block Malware Evasive Behavior
  - Modify Malware Execution
  - Extract Valuable Attributes
- Technologies
  - Cuckoo (Malware Sandboxing)
  - Suricata (Intrusion Detection System)
  - Operating Systems and Compilers
  - Reverse Engineering
  - Python / JavaScript
  - MySQL





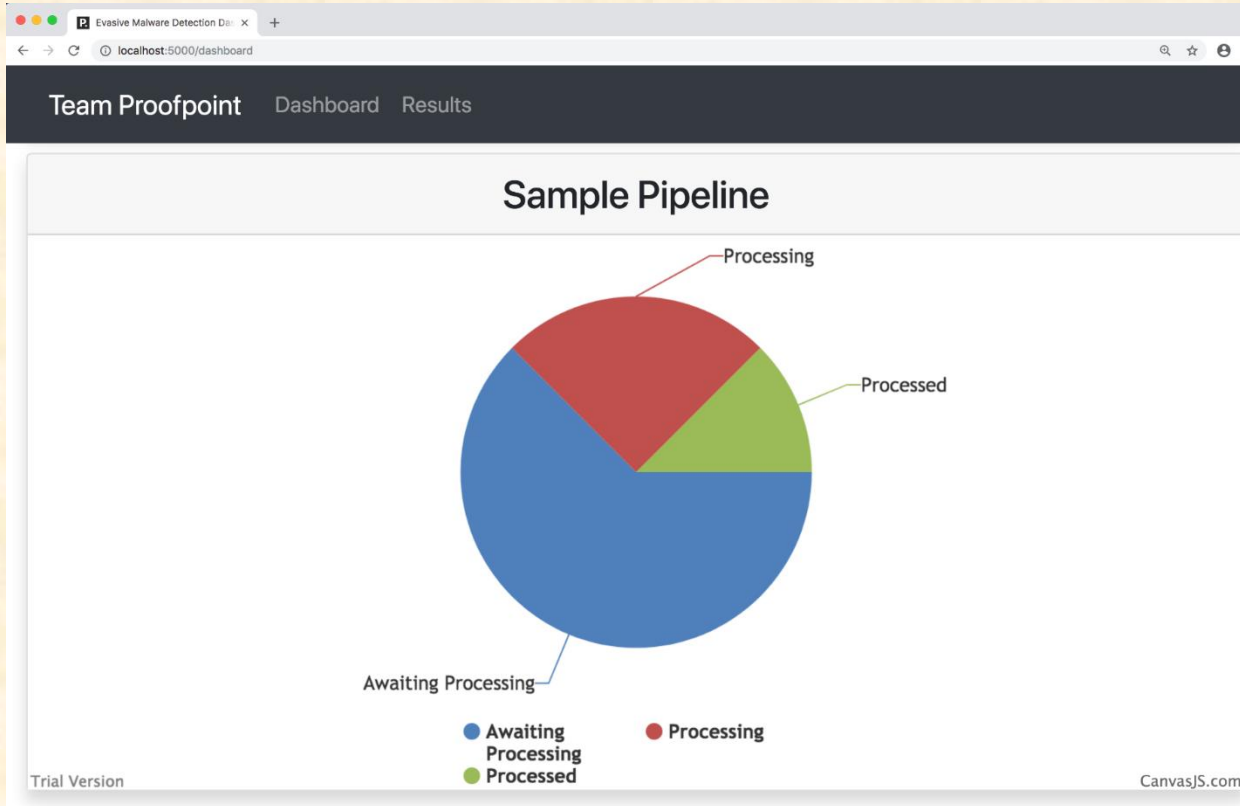
## Team Proofpoint

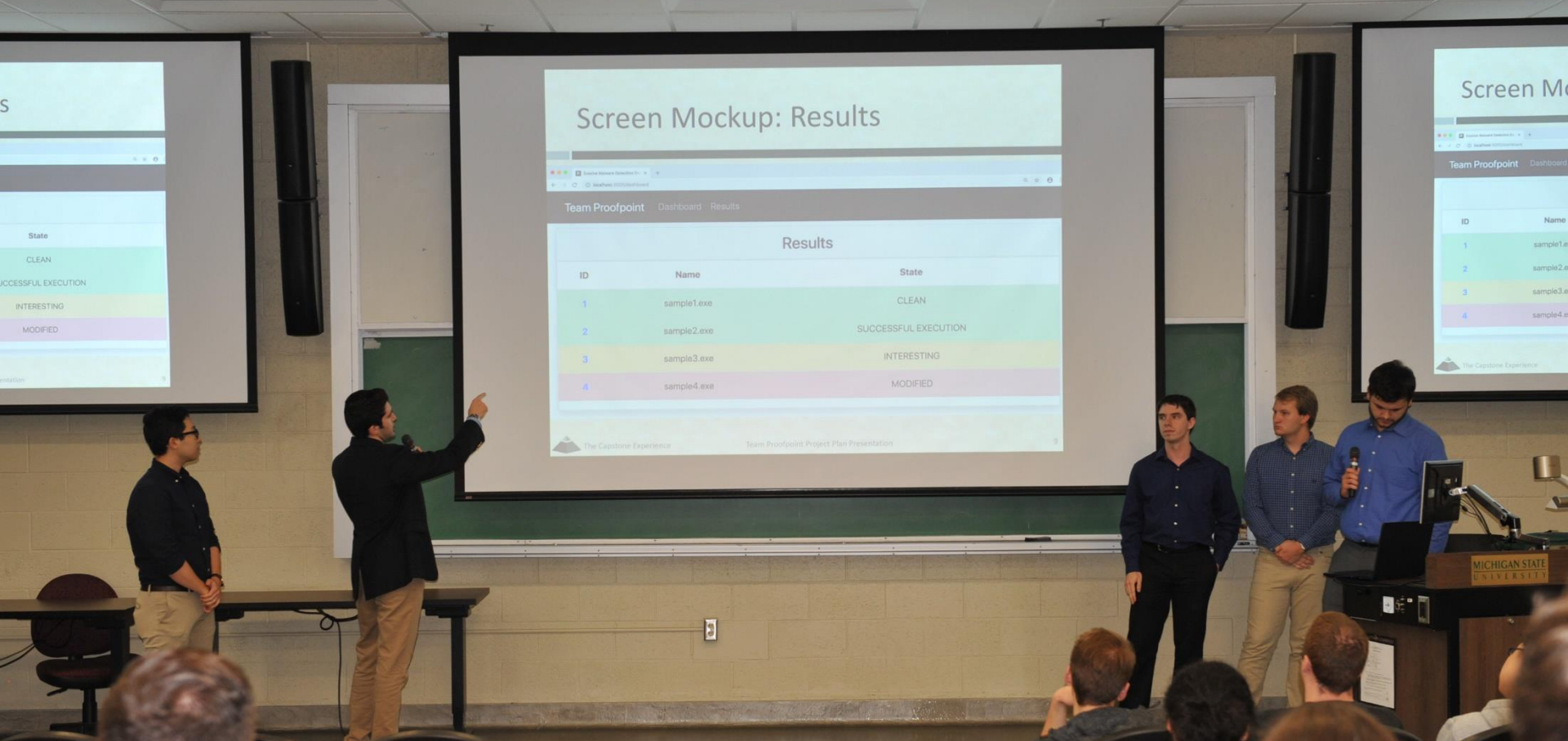
Jack Mansueti, Tae Park, Sean Joseph, Ryan Gallant, Ian Murray



# Team Proofpoint Project Plan Presentation

Screen Mockup





## Screen Mockup: Results

Team Proofpoint Dashboard Results		
Results		
ID	Name	State
1	sample1.exe	CLEAN
2	sample2.exe	SUCCESSFUL EXECUTION
3	sample3.exe	INTERESTING
4	sample4.exe	MODIFIED

The Capstone Experience

Team Proofpoint Project Plan Presentation

## Screen Mockup: Team Proofpoint

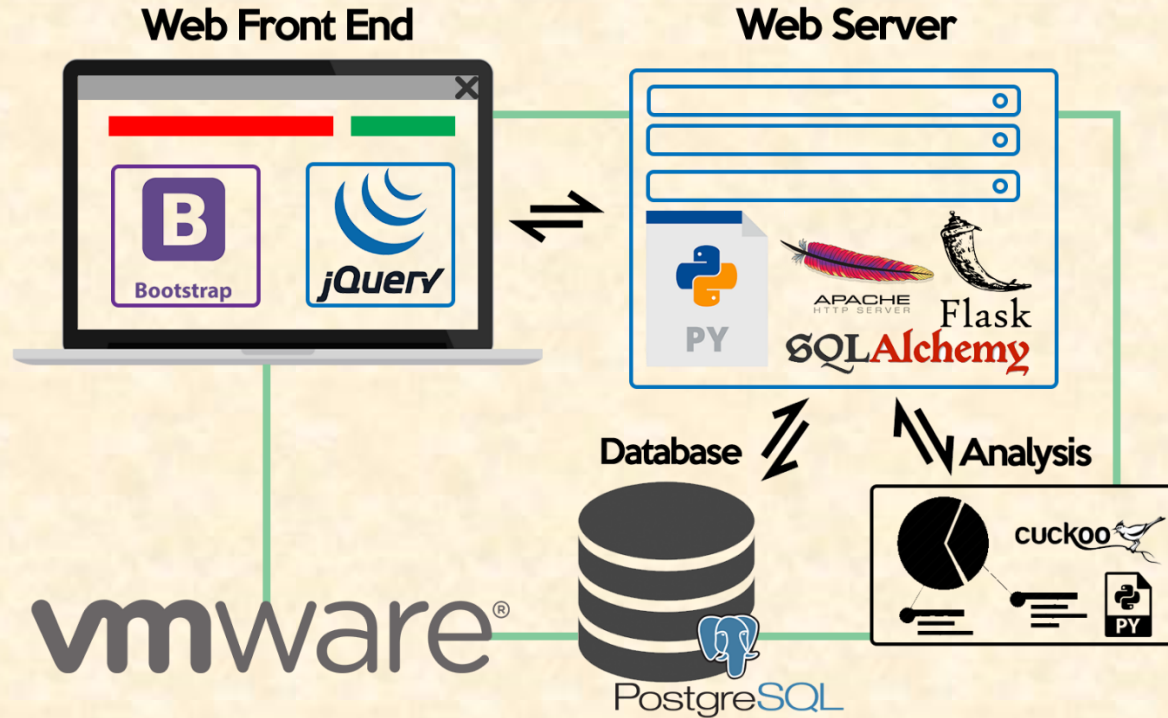
ID	Name
1	sample1.exe
2	sample2.exe
3	sample3.exe
4	sample4.exe

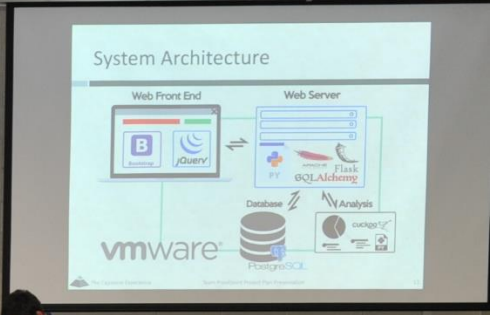
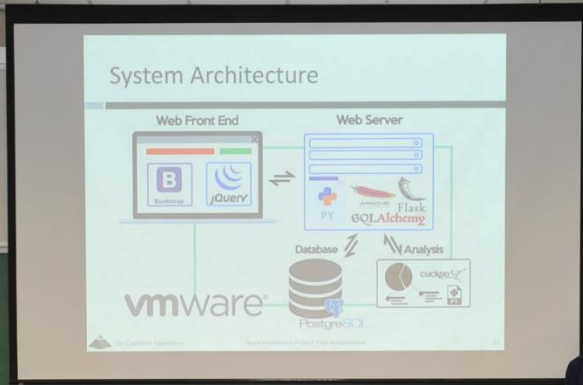
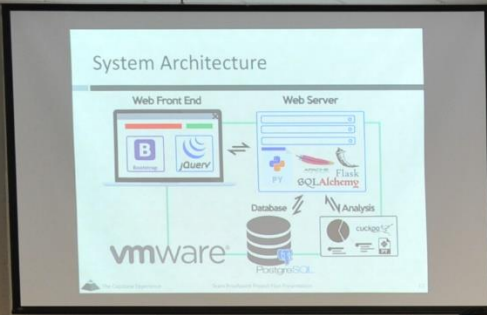
The Capstone Experience

# Team Proofpoint Project Plan Presentation

# Team Proofpoint Project Plan Presentation

Architecture Diagram



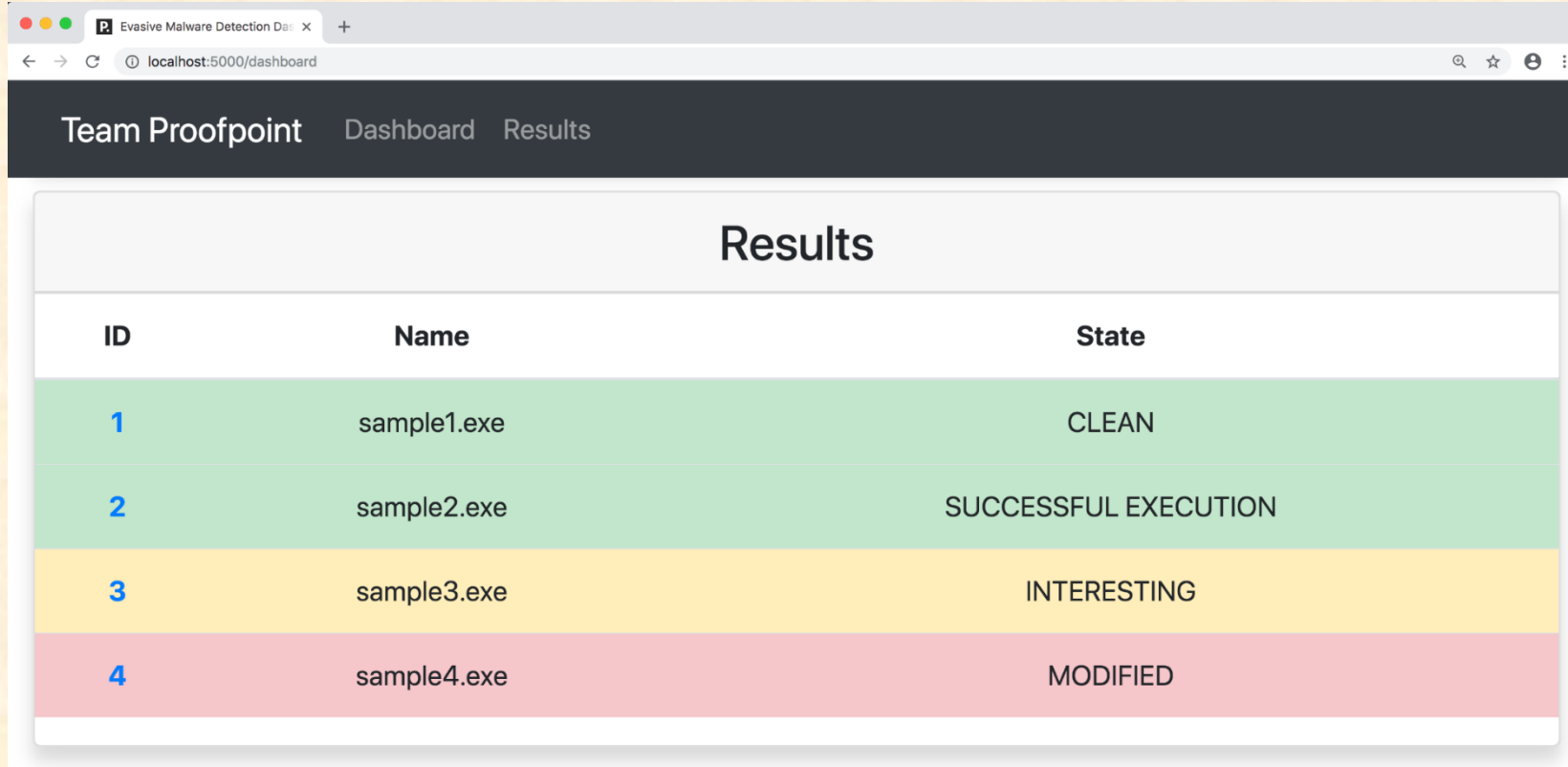


Team Proofpoint  
Project Plan Presentation

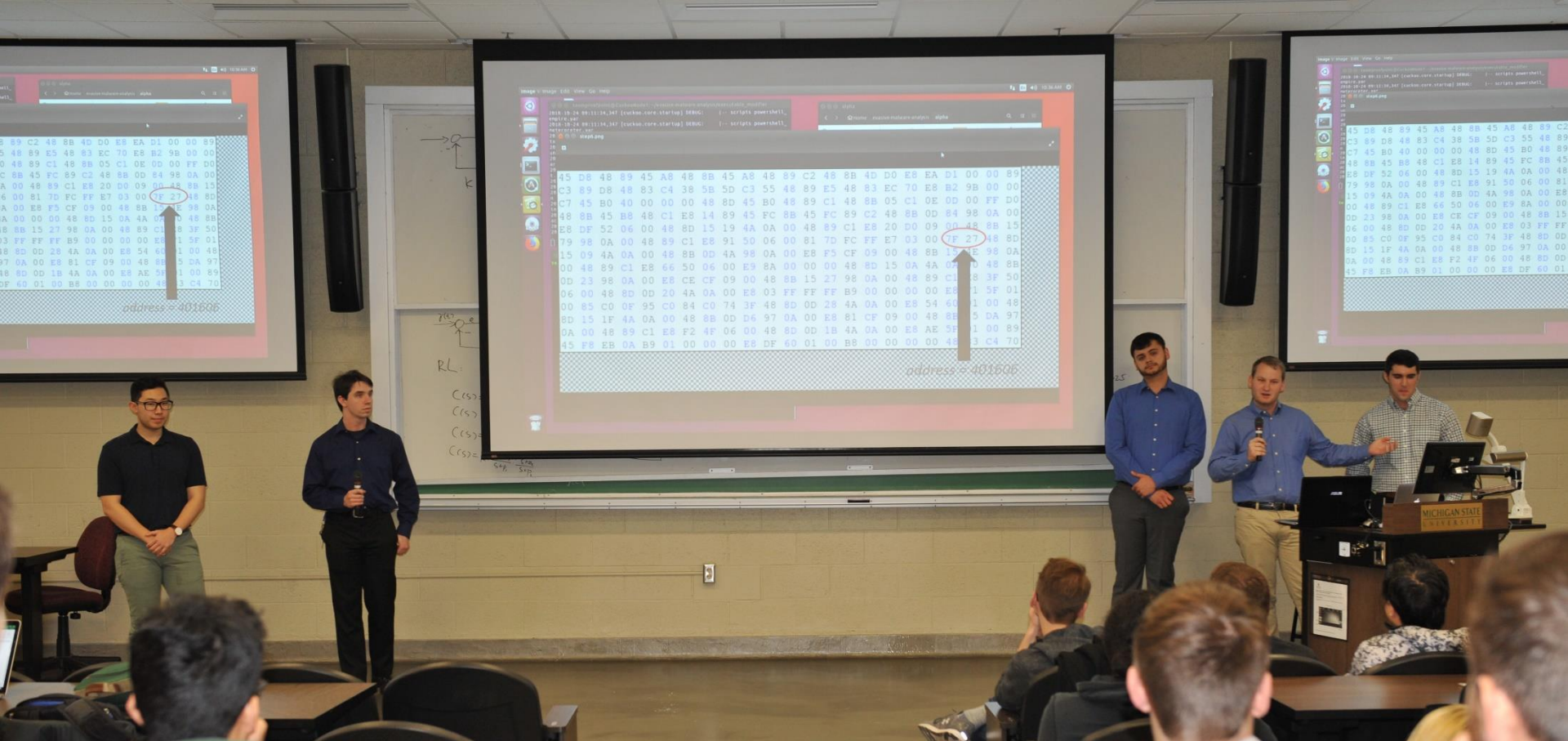


# Team Proofpoint Project Plan Presentation

Screen Mockup



Results		
ID	Name	State
1	sample1.exe	CLEAN
2	sample2.exe	SUCCESSFUL EXECUTION
3	sample3.exe	INTERESTING
4	sample4.exe	MODIFIED



# Team Proofpoint Alpha Presentation

# Team Proofpoint Alpha Presentation

## Locating Relevant Instructions

```
00000000004015a1 <main>:
4015a1: 55                push    %rbp
4015a2: 48 89 e5          mov     %rsp,%rbp
4015a5: 48 83 ec 70       sub     $0x70,%rsp
4015a9: e8 b2 9b 00 00    callq  40b160 <__main>
4015ae: c7 45 b0 40 00 00 movl    $0x40,-0x50(%rbp)
4015b5: 48 8d 45 b0       lea     -0x50(%rbp),%rax
4015b9: 48 89 c1          mov     %rax,%rcx
4015bc: 48 8b 05 c1 0e 0d 00 mov     0xd0ec1(%rip),%rax      # 4d2484 <__imp_GlobalMemoryStatusEx>
4015c3: ff d0            callq  %%rax
4015c5: 48 8b 45 b8       mov     -0x48(%rbp),%rax
4015c9: 48 c1 e8 14       shr     $0x14,%rax
4015cd: 89 45 fc          mov     %eax,-0x4(%rbp)
4015d0: 8b 45 fc          mov     -0x4(%rbp),%eax
4015d3: 89 c2            mov     %eax,%edx
4015d5: 48 8b 0d 84 98 0a 00 mov     0xa9884(%rip),%rcx      # 4aae60 <.refptr._ZSt4cout>
4015dc: e8 df 52 06 00    callq  4668c0 <_ZNSolsEi>
4015e1: 48 8d 15 19 4a 0a 00 lea     0xa4a19(%rip),%rdx      # 4a6001 <_ZStL19piecewise_construct+0>
4015e8: 48 89 c1          mov     %rax,%rcx
4015eb: e8 20 d0 09 00    callq  49e610 <_ZStlsISt11char_traitsIcEERSt13basic_ostreamIcT_ES5_PKc>
4015f0: 48 8b 15 79 98 0a 00 mov     0xa9879(%rip),%rdx      # 4aae70 <.refptr._ZSt4endlIcSt11char+0>
4015f7: 48 89 c1          mov     %rax,%rcx
4015fa: e8 91 50 06 00    callq  466690 <_ZNSolsEPFRSoS_E>
4015ff: 81 7d fc ff e7 03 00 cmpl    $0x3e7ff,-0x4(%rbp)
401606: 7f 27            jg      40162f <main+0x8e>
401608: 48 8d 15 09 4a 0a 00 lea     0xa4a09(%rip),%rdx      # 4a6018 <_ZStL19piecewise_construct+0>
40160f: 48 8b 0d 4a 98 0a 00 mov     0xa984a(%rip),%rcx      # 4aae60 <.refptr._ZSt4cout>
401616: e8 f5 cf 09 00    callq  49e610 <_ZStlsISt11char_traitsIcEERSt13basic_ostreamIcT_ES5_PKc>
40161b: 48 8b 15 4e 98 0a 00 mov     0xa984e(%rip),%rdx      # 4aae70 <.refptr._ZSt4endlIcSt11char+0>
401622: 48 89 c1          mov     %rax,%rcx
```



# Team Proofpoint Alpha Presentation

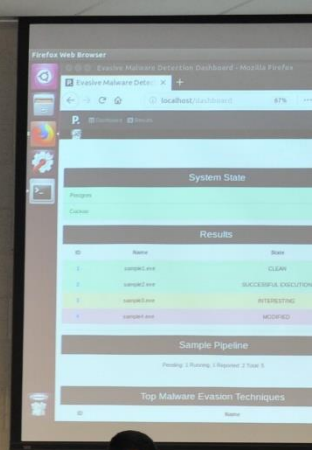
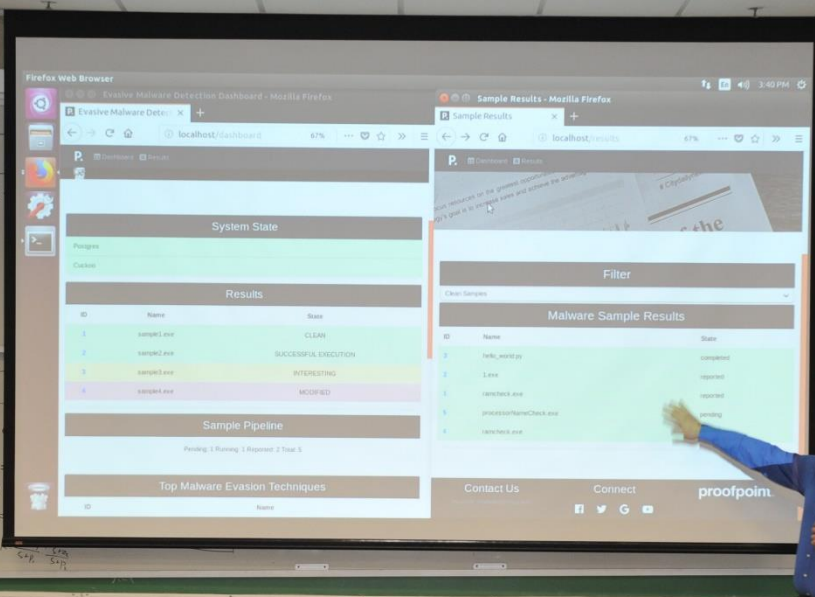
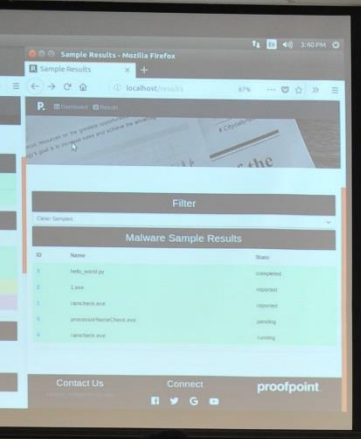
Apply Byte Patching

45	D8	48	89	45	A8	48	8B	45	A8	48	89	C2	48	8B	4D	D0	E8	EA	D1	00	00	89
C3	89	D8	48	83	C4	38	5B	5D	C3	55	48	89	E5	48	83	EC	70	E8	B2	9B	00	00
C7	45	B0	40	00	00	00	48	8D	45	B0	48	89	C1	48	8B	05	C1	0E	0D	00	FF	D0
48	8B	45	B8	48	C1	E8	14	89	45	FC	8B	45	FC	89	C2	48	8B	0D	84	98	0A	00
E8	DF	52	06	00	48	8D	15	19	4A	0A	00	48	89	C1	E8	20	D0	09	00	48	8B	15
79	98	0A	00	48	89	C1	E8	91	50	06	00	81	7D	FC	FF	E7	03	00	7E	27	48	8D
15	09	4A	0A	00	48	8B	0D	4A	98	0A	00	E8	F5	CF	09	00	48	89	C1	E8	3F	50
00	48	89	C1	E8	66	50	06	00	E9	8A	00	00	00	48	8D	0D	20	4A	0A	00	48	8B
0D	23	98	0A	00	E8	CE	CF	09	00	48	8B	15	27	98	0A	00	48	89	C1	E8	3F	50
06	00	48	8D	0D	20	4A	0A	00	E8	03	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	01
00	85	C0	0F	95	C0	84	C0	74	3F	48	8D	0D	20	4A	0A	00	E8	54	60	01	00	48
8D	15	1F	4A	0A	00	48	8B	0D	D6	98	0A	00	E8	81	CF	09	00	48	8B	15	DA	97
0A	00	48	89	C1	E8	F2	4F	06	00	48	8D	0D	1B	4A	0A	00	E8	AE	5F	01	00	89
45	F8	EB	0A	B9	01	00	00	E8	DF	60	01	00	B8	00	00	00	00	48	83	C4	70	

```
GlobalMemoryPlus  
jl,jle,jg,jge  
7D,7F,7E,7C|
```

*RAMrules.txt*





Team Proofpoint  
Alpha Presentation

# Team Proofpoint Alpha Presentation

## Screen Shot: Dashboard

The screenshot displays the Evasive Malware Detection Dashboard in a web browser. The dashboard is divided into several sections:

- System State:** Shows the status of the database (Postgres) and the Cuckoo engine.
- Results:** A table listing detected samples with their IDs, names, and states.
- Sample Pipeline:** A section indicating the number of samples reported and running.
- Top Malware Evasion Techniques:** A table listing common evasion techniques used by malware.
- Top Malware Samples Processed:** A table listing the top malware samples processed.

**Results Table:**

ID	Name	State
1	sample1.exe	CLEAN
2	sample2.exe	SUCCESSFUL EXECUTION
3	sample3.exe	INTERESTING
4	sample4.exe	MODIFIED

**Top Malware Evasion Techniques Table:**

ID	Name
1	Starts listening on a high TCP port
2	Checks the local time
3	Performs a whatismyip.com lookup
4	Writes files to disk
5	Gets a list of running processes
6	Modifies Registry
7	Installs itself as autorun
8	Checks processor information
9	Creates a hidden file
10	Executes a separate process

**Top Malware Samples Processed Table:**

ID	Name
1	Wannacry
2	Yahoo! toolbar
3	Hotmail toolbar
4	Harddrive encryption
3	Performs a whatismyip.com lookup

**Contact Us:** evasive\_malware@msu.edu

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# Team Proofpoint Beta Presentation

# Team Proofpoint Beta Presentation

Dashboard

P. Evasive Malware Detection Dashboard

localhost:5000/dashboard

P. Dashboard Results

System State

Postgres

Cuckoo

Recently Submitted

ID	Name	State
172	171.exe	reported
171	malware.exe	reported
170	169.exe	reported
169	malware.exe	reported
168	167.exe	reported

Sample Pipeline

Running: 0 tasks (0%)

Reported: 172 tasks (100%)

Top Signatures

Description	Count
Checks amount of memory in system, this can be used to detect virtual machines that have a low amount of memory available	17
This executable has a PDB path	16
The binary likely contains encrypted or compressed data indicative of a packer	16
Checks the CPU name from registry, possibly for anti-virtualization	15
Allocates read-write-execute memory (usually to unpack itself)	11

Recently Modified

ID	Name	Children
1	1	2
5	5	7
4	4	6
9	9	11
10	10	12

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Results

P. Sample Results

localhost:5000/results

P. Dashboard Results

Malware Sample Results					
Clean Samples					
ID	Name	Modified Resubmissions	State	Severity (Max:10)	Expand
1	ramcheck.exe	1	reported	0.2	
3	hello_world.py	0	reported	0	
4	ramcheck.exe	1	reported	0.2	
5	processorNameCheck.exe	1	reported	0.6	
8	hello_world.py	0	reported	0	
9	ramcheck.exe	1	reported	0.2	
10	processorNameCheck.exe	1	reported	0.6	
13	binary	0	reported	N/A	
14	binary-edit1	0	reported	3.6	
15	binary-edit2	0	reported	3.6	
16	binary-edit3	1	reported	0.6	
17	binary-edit4	0	reported	4.4	
18	binary-edit5	0	reported	N/A	

Sample Resubmissions				
ID	Name	Modified Resubmissions	State	Severity (Max:10)
22	sample1-mod-22.exe	0	reported	3
23	sample1-mod-23.exe	0	reported	3
24	sample1-mod-24.exe	0	reported	3
25	sample1-mod-25.exe	0	reported	3
26	sample1-mod-26.exe	0	reported	3
27	sample1-mod-27.exe	0	reported	3
28	sample1-mod-28.exe	0	reported	3
29	sample1-mod-29.exe	0	reported	3
30	sample1-mod-30.exe	0	reported	3
31	sample1-mod-31.exe	0	reported	3
32	sample1-mod-32.exe	0	reported	3
33	sample1-mod-33.exe	0	reported	3

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# Team Proofpoint Beta Presentation

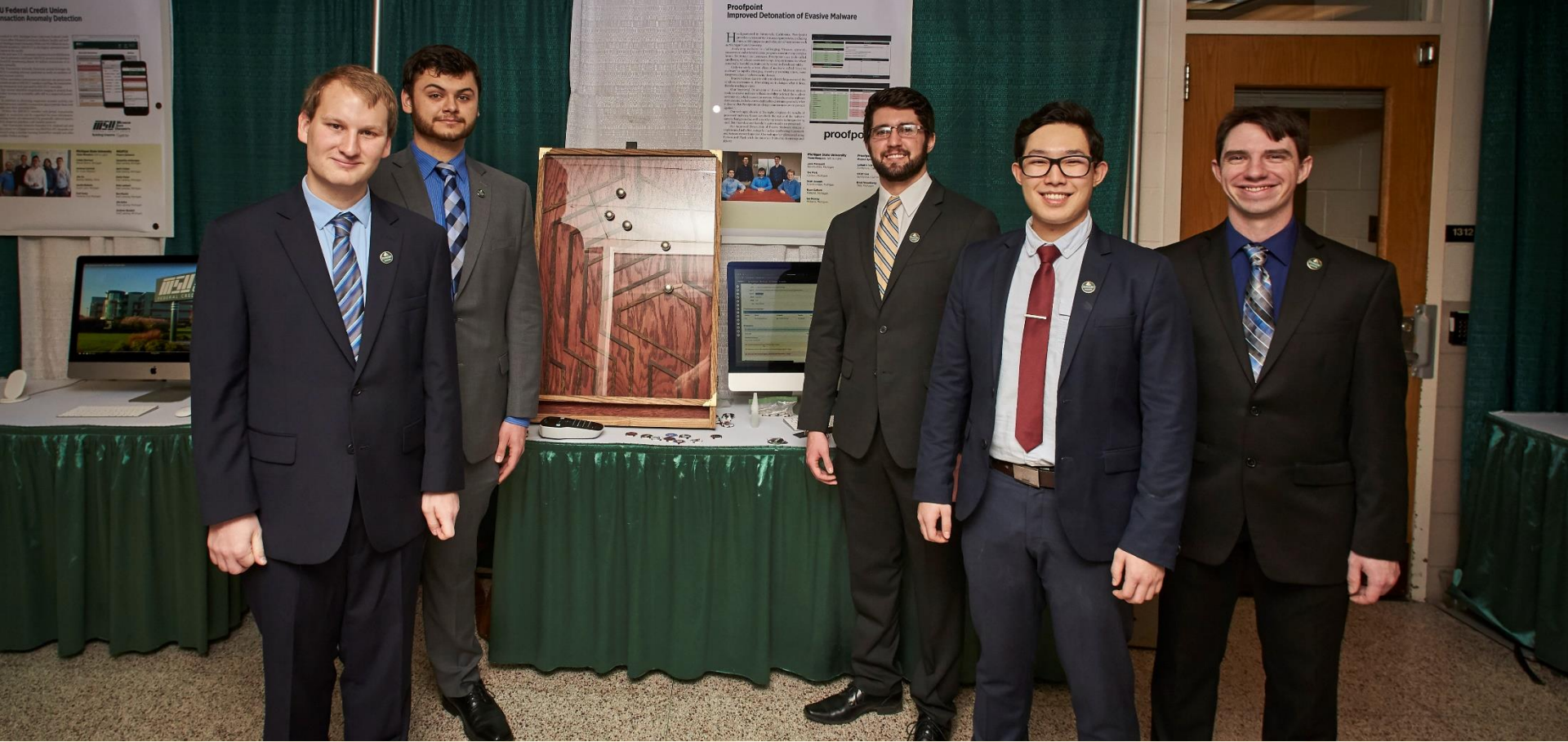
# Team Proofpoint Beta Presentation

Modification in Progress

```
teamproofpoint@cuckooNode1:~/evasive-malware-analysis/executable_modifier$ python detonator.py 205
['detonator.py', '205']
*****!!!!!!*****Working on Sample 205*****
---Creating Assembly File---
---Compiling Behaviors---
****Working on Behavior GetDiskFreeSpaceExW: 1 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior GetComputerNameExW: 2 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior EnumServicesStatusW: 3 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior ProcessSleepNTTime: 4 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior GetPhysicallyInstalledSystemMemory: 5 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior RegQueryValue: 6 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior NTWAllocateVirtualMemory: 7 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior GetAdaptersAddress: 8 of 11****
---Locating Memory Addresses to Change---
***Modifying Code***
****Working on Behavior NtQuerySystemInformation: 9 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
****Working on Behavior GetSystemFirmwareTable: 10 of 11****
---Locating Memory Addresses to Change---
***Modifying Code***
****Working on Behavior GlobalMemoryStatusEx: 11 of 11****
---Locating Memory Addresses to Change---
---Evasive Behavior not Found---
*****Done*****
/home/teamproofpoint/.cuckoo/storage/modifiedExes/205.exe
```







Team Proofpoint  
Design Day



MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

## Team Quicken Loans

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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# Team Quicken Loans Project Overview

## Walter, You Gotta Go

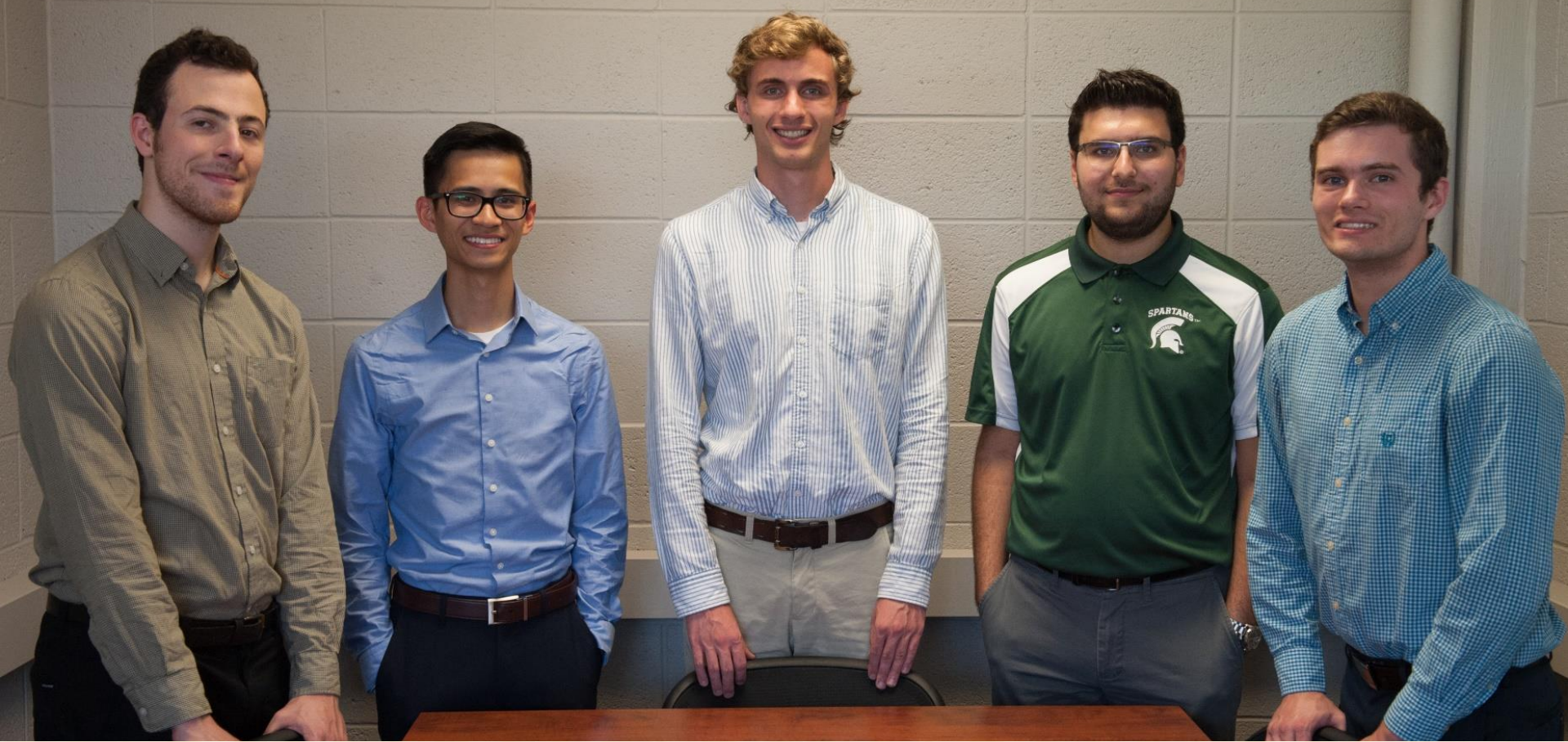
- Functionalities
  - Integrate Legacy Apps With Modern Versions
  - Automate Legacy Apps Processes With Virtual Worker
- Features
  - Leverage Robotic Process Automation
    - Screen Scraping
    - Machine Learning / Artificial Intelligence
  - Create “Legacy” App (Walter)
    - Used for Loan Application Process
    - Receives Information and Documents
  - Write Modern Replacement App (Lindsey)
  - Implement Centralized Database (Leroy)
  - Provide Web Service (Roger)
  - Create Virtual RPA Worker (Debra)
- Technologies
  - Robotic Process Automation (RPA)
  - Microsoft
    - Azure / Azure SQL
    - C# / Visual Studio
    - .NET WinForms
    - ASP .NET Core
  - GraphQL
  - CSS / HTML / PHP / JavaScript



**Quicken®Loans®**  
Engineered to **Amaze™**  
Detroit, Michigan







## Team Quicken Loans

Gabe Martino, James Nguyen, Austin Robbins, David Flores, Dustin Eastway

# Team Quicken Loans Project Plan Presentation

Screen Mockup

Walter

Social Security Number	123456789
Employer Identification Number	123
Employer Name and Address	Test Company and Test Address
Control Number	123
Employee Name and Address	Test Employee and Test Address
Wages, tips, other compensation	50,000
Federal income tax withheld	1,000
Social Security Wages	10,000
Social security tax withheld	1,000
Medicare wages and tips	15,000
Medicare tax withheld	5,000
Social security tips	0
Allocated Tips	1,000
State	MI
Employers State ID	1234
State Wages	50,000
State Income Tax	1,535
Local Wages	50,000

Get Next Document

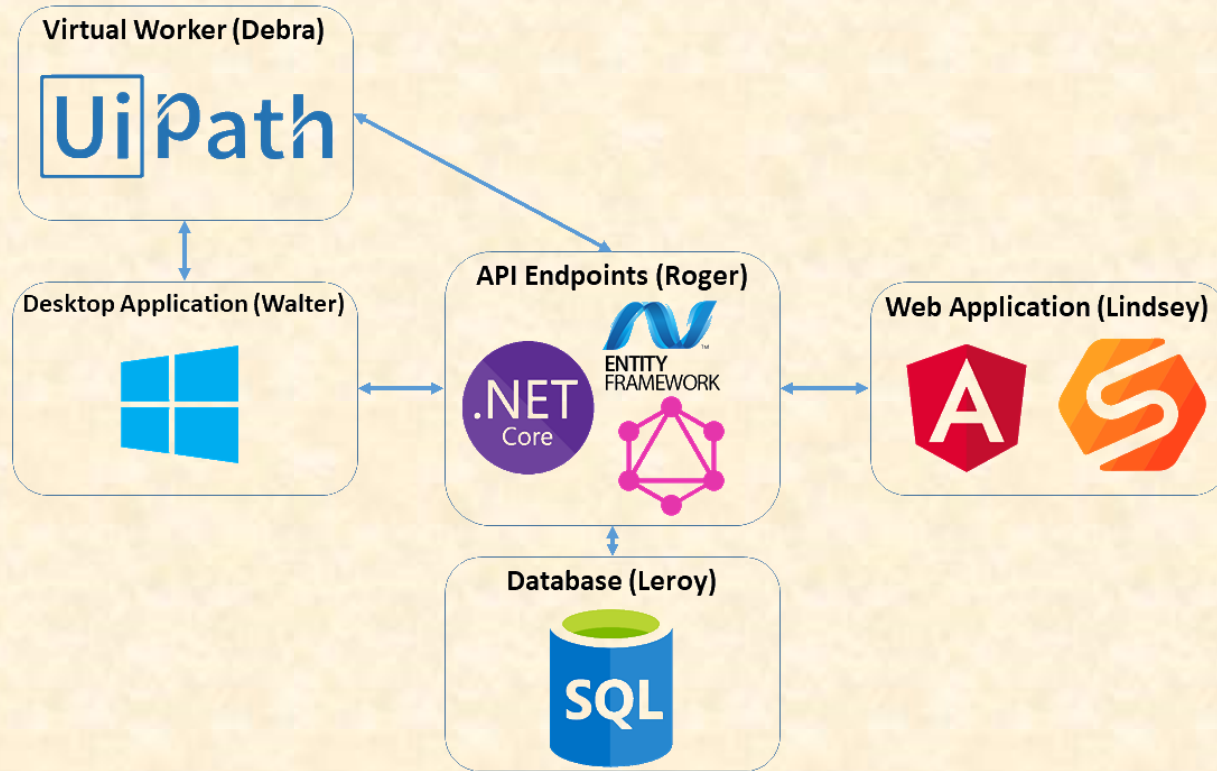


# Team Quicken Loans Project Plan Presentation



# Team Quicken Loans Project Plan Presentation

## Architecture Diagram







# Team Quicken Loans Project Plan Presentation

# Team Quicken Loans Project Plan Presentation

Screen Mockup

The screen mockup shows a web browser window with the URL <http://lindsay.quickenloans.com/>. The page has a dark theme. On the left is a sidebar with a user profile for 'Gabe', a menu icon, and a list of W2 Forms including 'RobertJohnsonW2.pdf' (which is highlighted), 'PaulWilsonW2.pdf', 'JackSmithW2.pdf', 'StefanKarlW2.pdf', 'JohnSmithW2.pdf', 'LaurenTellerW2.pdf', and 'JamesMichaelW2.pdf'. Below the list are links for 'Pay Stubs >' and 'Bank Statements >'. The main content area has a blue header with 'W2 Form Submission' and 'RobertJohnsonW2.form'. Below this is a form with six sections: a. SSN, b. Employer ID, c. Employer's name, address and ZIP code, d. Control Number, e. Employee's first, Last name, and Suff., and f. Employee's address and ZIP code. Each section has a corresponding input field.

lindsay.quickenloans.com X

← → ↻ http://lindsay.quickenloans.com/ ☆ ⋮

For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

Gabe

W2 Forms ▾

- RobertJohnsonW2.pdf
- PaulWilsonW2.pdf
- JackSmithW2.pdf
- StefanKarlW2.pdf
- JohnSmithW2.pdf
- LaurenTellerW2.pdf
- JamesMichaelW2.pdf

Pay Stubs >

Bank Statements >

## W2 Form Submission RobertJohnsonW2.form

a.

b.

c.

d.

e.

f.



# Team Quicken Loans Alpha Presentation

# Team Quicken Loans Alpha Presentation

Legacy Application

Walter

MichaelDavisW2  
DonaldHarrisW2  
LindaClarkW2  
JasonKingW2  
HelenBakerW2

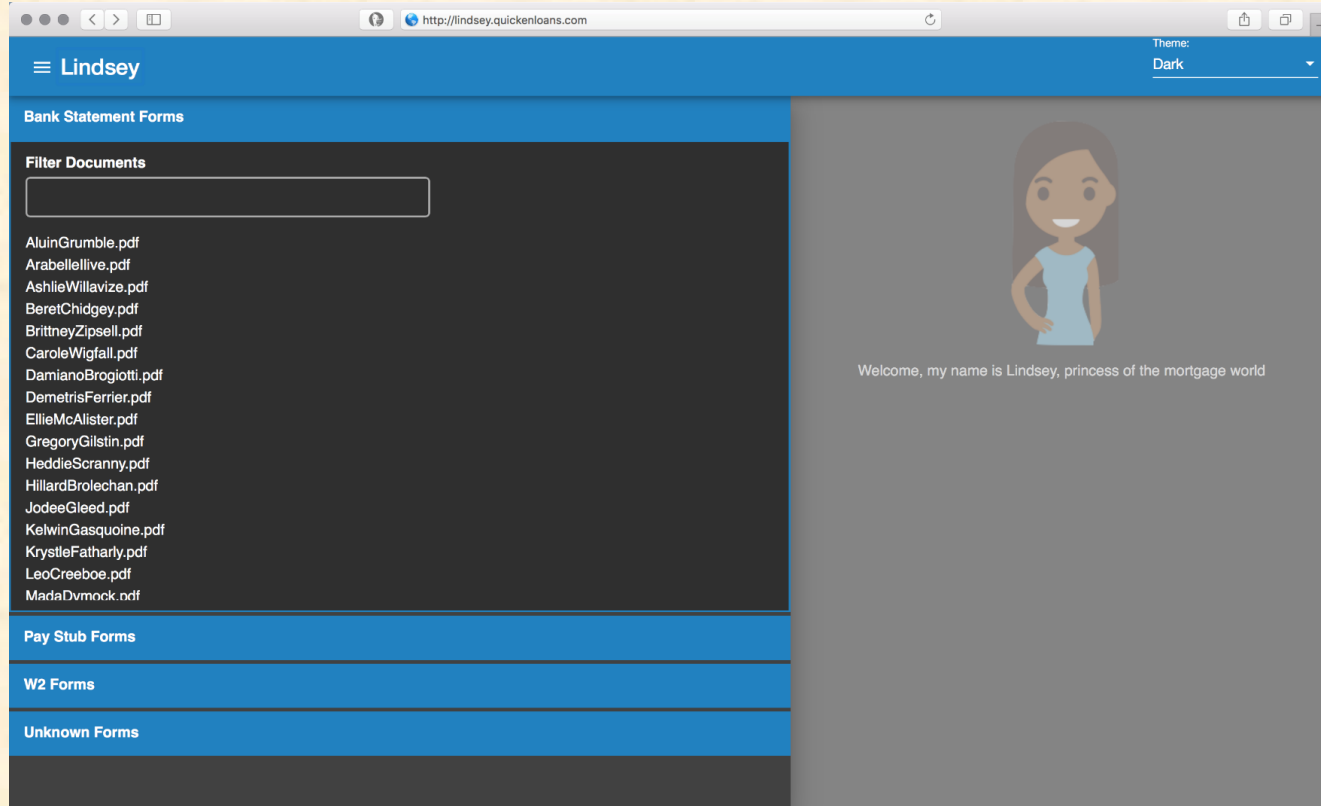
Social Security Number	832345559
Employer Identification Number	38-6005984
Employer Name and Address	Michigan State University, 220 Trowbridge Rd, East Lansing, MI 48824
Control Number	478
Employee Name and Address	Michael Davis, 62035 Mt. Vernon Rd, Washington, MI 48094
Wages, tips, other compensation	50,000
Federal income tax withheld	1,000
Social Security Wages	10,000
Social security tax withheld	1,000
Medicare wages and tips	15,000
Medicare tax withheld	5,000
Social security tips	0
Allocated Tips	1,000
State	MI
Employers State ID	9856
State Wages	50,000
State Income Tax	1,535

Input Form



# Team Quicken Loans Alpha Presentation

Web-App Side Nav



The Capstone Experience

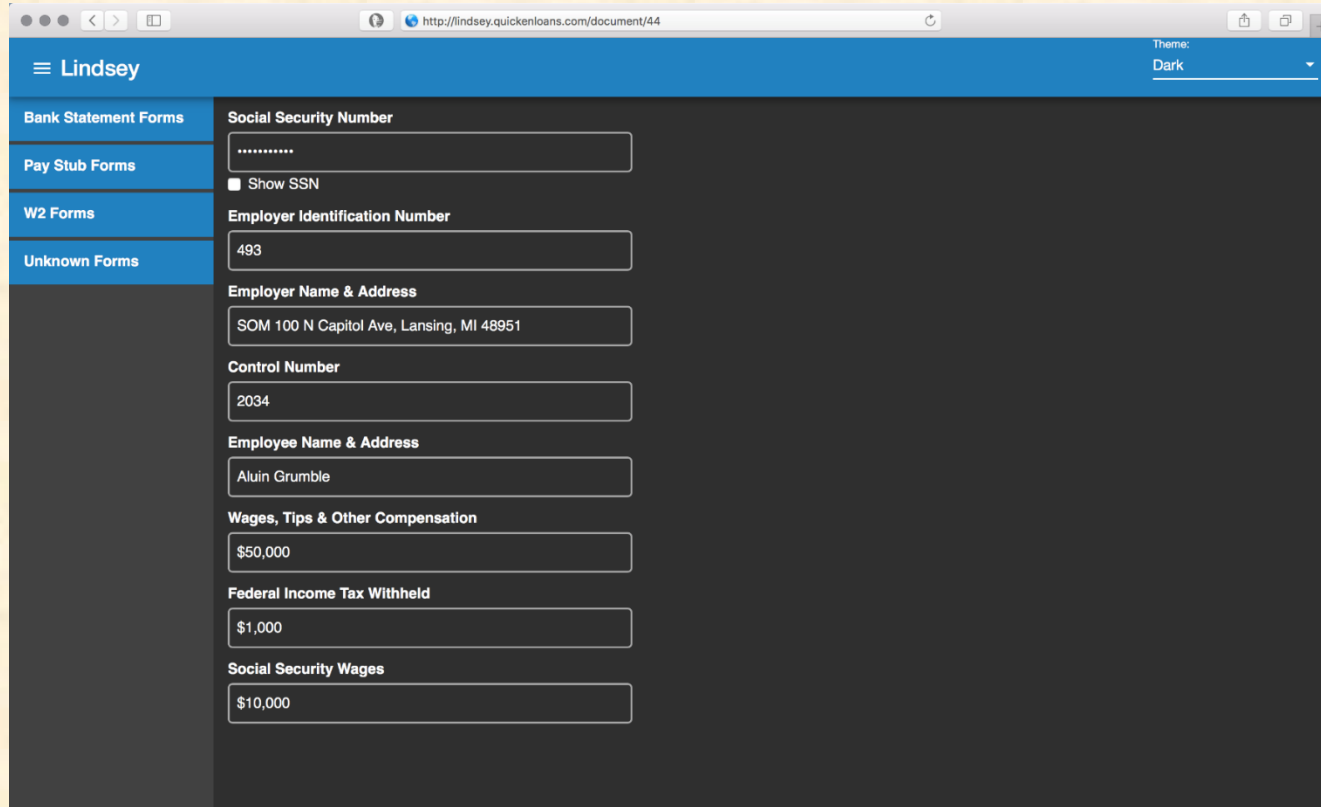




# Team Quicken Loans Alpha Presentation

# Team Quicken Loans Alpha Presentation

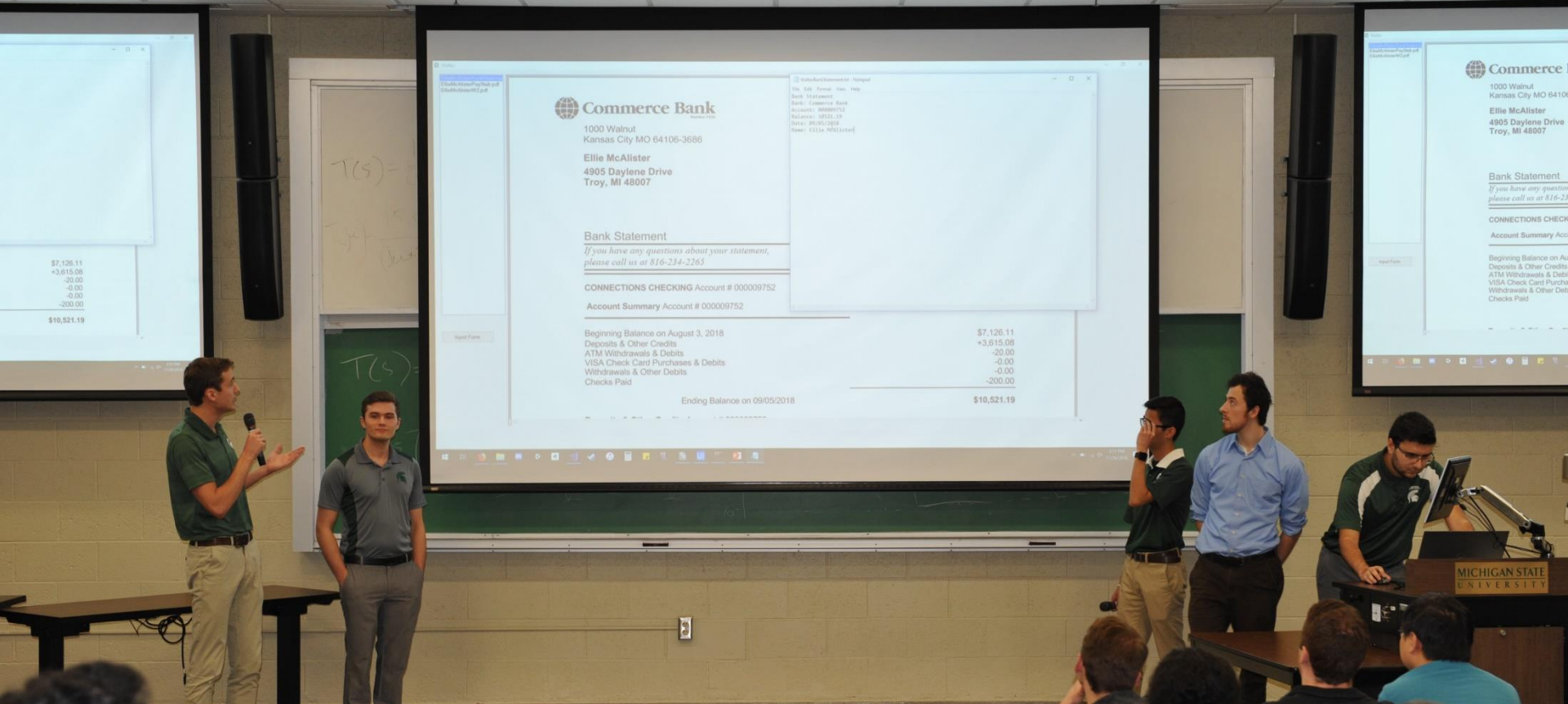
Web-App Data Entry



The screenshot shows a web browser window with the URL <http://lindsey.quickenloans.com/document/44>. The application has a blue header bar with the name "Lindsey" and a "Theme: Dark" dropdown menu. On the left, there is a sidebar with four menu items: "Bank Statement Forms", "Pay Stub Forms", "W2 Forms", and "Unknown Forms". The main content area is dark gray and contains several form fields for data entry:

- Social Security Number**: A text input field containing "\*\*\*\*\*". Below it is a checkbox labeled "Show SSN".
- Employer Identification Number**: A text input field containing "493".
- Employer Name & Address**: A text input field containing "SOM 100 N Capitol Ave, Lansing, MI 48951".
- Control Number**: A text input field containing "2034".
- Employee Name & Address**: A text input field containing "Aluin Grumble".
- Wages, Tips & Other Compensation**: A text input field containing "\$50,000".
- Federal Income Tax Withheld**: A text input field containing "\$1,000".
- Social Security Wages**: A text input field containing "\$10,000".





# Team Quicken Loans Beta Presentation



# Team Quicken Loans Beta Presentation

Walter Document View

Walter

FarandMatthews.pdf  
GavBercher.pdf  
GenevraAbson.pdf  
HalmedaHuebner.pdf  
JammieManueli.pdf  
JohannesGopsill.pdf  
JosyElliston.pdf  
MalorieGlaister.pdf  
MarchelleNuttley.pdf  
MicalCrummie.pdf  
MudockFreatby.pdf  
NadinePurviss.pdf  
NanaDreng.pdf  
OlinBramall.pdf  
SandyPettler.pdf  
SaxeBrand.pdf

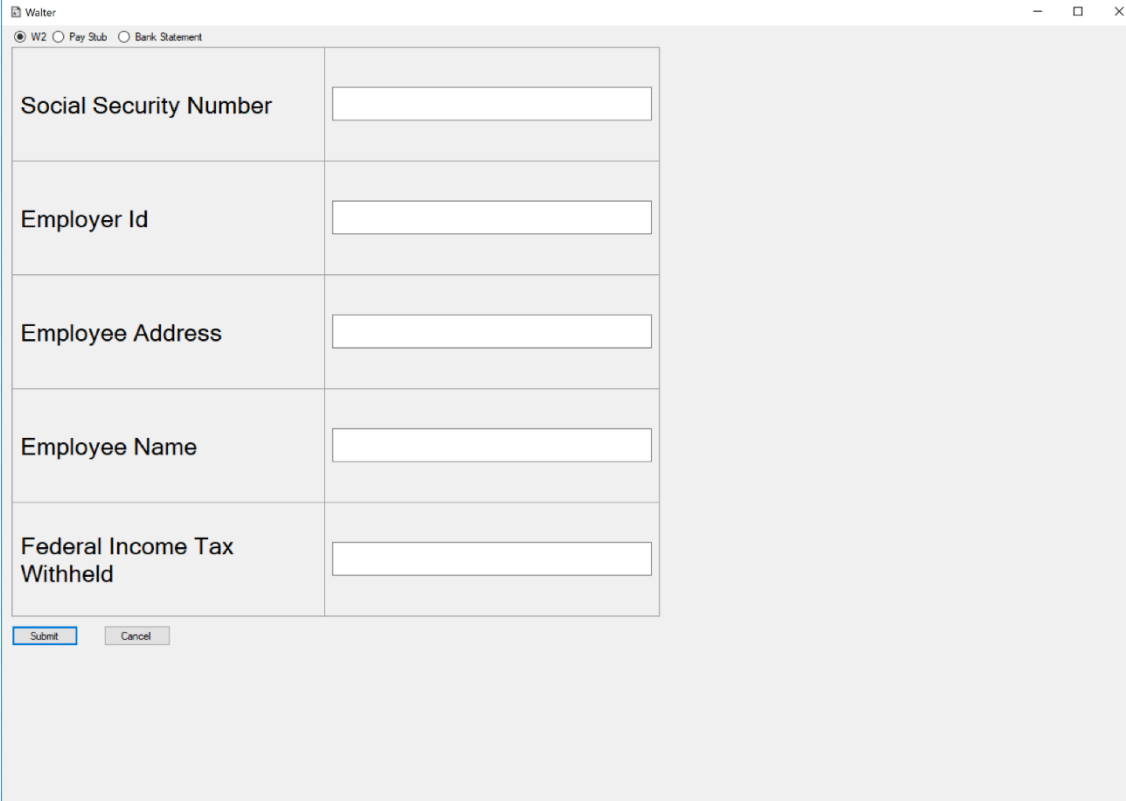
Input Form

22222	a Employee's social security number <b>367-68-6664</b>	OMB No. 1545-0008				
b Employer identification number (EIN) <b>03-9192032</b>	1 Wages, tips, other compensation <b>48,500.00</b>	2 Federal income tax withheld <b>6,835.00</b>				
c Employer's name, address, and ZIP code <b>The PGA of America 100 Avenue of the Champions Palm Beach Gardens, FL 33418</b>	3 Social security wages <b>50,000.00</b>	4 Social security tax withheld <b>3,100.00</b>				
	5 Medicare wages and tips <b>50,000.00</b>	6 Medicare tax withheld <b>725.00</b>				
	7 Social security tips	8 Allocated tips				
d Control number <b>A1B4</b>	9 Verification code	10 Dependent care benefits				
e Employee's first name and initial Last name <b>Justin Thomas 3093 Karen Lane Louisville, KY 40202</b>	Suff. 11 Nonqualified plans	12a <b>D</b>   <b>1,500.00</b>				
	13 Statutory employee <input type="checkbox"/> Retirement plan <input checked="" type="checkbox"/> Third-party sick pay <input type="checkbox"/>	12b <b>DD</b>   <b>1,000.00</b>				
	14 Other	12c <b>P</b>   <b>4,800.00</b>				
		12d				
f Employee's address and ZIP code	15 State <b>KY</b>	16 State wages, tips, etc. <b>50,000.00</b>	17 State income tax <b>1,535</b>	18 Local wages, tips, etc. <b>50,000</b>	19 Local income tax <b>750</b>	20 Locality name <b>MU</b>

Form **W-2** Wage and Tax Statement **2018** Department of the Treasury—Internal Revenue Service  
Copy 1—For State, City, or Local Tax Department

# Team Quicken Loans Beta Presentation

Walter Input Screen

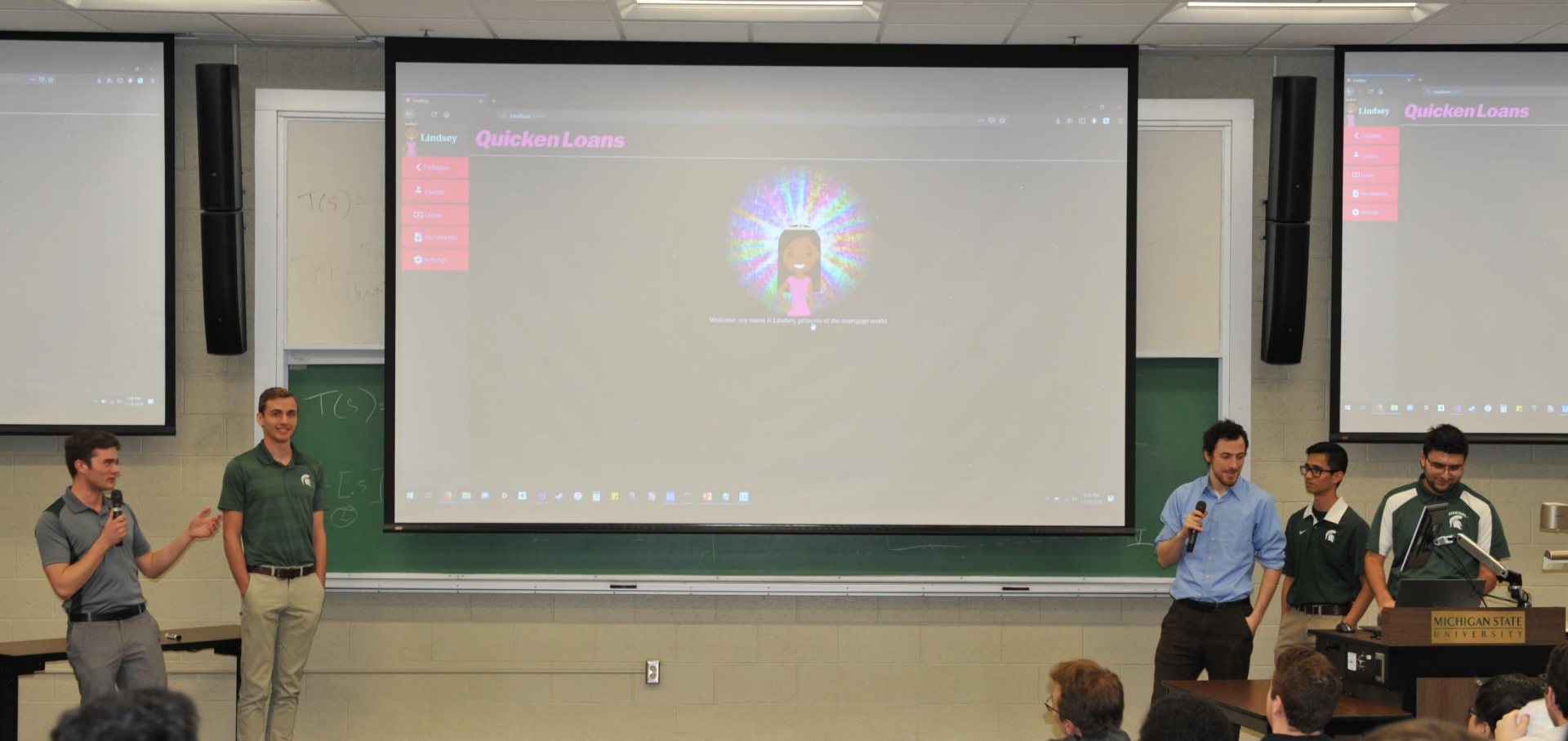


The image shows a software window titled "Walter" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there are three radio buttons at the top: "W2" (selected), "Pay Stub", and "Bank Statement". Below these are five input fields, each with a label to its left and a text box to its right. The labels are "Social Security Number", "Employer Id", "Employee Address", "Employee Name", and "Federal Income Tax Withheld". At the bottom left of the window, there are two buttons: "Submit" and "Cancel".

Field Label	Input Type
Social Security Number	Text Box
Employer Id	Text Box
Employee Address	Text Box
Employee Name	Text Box
Federal Income Tax Withheld	Text Box

Buttons: Submit, Cancel






# Team Quicken Loans Beta Presentation

# Team Quicken Loans Beta Presentation

Lindsey Document View



## Quicken Loans

Search:

>

JustinThomas.pdf

Person icon

Social Security Number

\*\*\*\*\*

Show SSN

Document icon

Employer Identification Number

03-9192032

Settings icon

Employer Name & Address

The PGA of America 100 Avenue of the Champions Palm

Control Number

A1B4

Employee Name & Address

Justin Thomas 3093 Karen Lane Louisville, KY 40202

Wages, Tips & Other Compensation

48,500.00

Federal Income Tax Withheld

6,835.00

Social Security Wages

3,100.00

2222	Employee's social security number 367-68-6664	OMB No. 1545-0008
b Employer identification number (EIN) 03-9192032	1 Wages, tips, other compensation 48,500.00	2 Federal income tax withheld 6,835.00
c Employer's name, address, and ZIP code The PGA of America 100 Avenue of the Champions Palm Beach Gardens, FL 33418	3 Social security wages 50,000.00	4 Social security tax withheld 3,100.00
d Control number A1B4	5 Medicare wages and tips 50,000.00	6 Medicare tax withheld 725.00
e Employee's first name and initial Justin Thomas	7 Social security tips	8 Allocated tips
f Employee's last name and initial 3093 Karen Lane Louisville, KY 40202	9 Verification code	10 Dependent care benefits
g Employee's address and ZIP code	11 Nonqualified plans	12a D 1,500.00
15 New Employee's state ID number KY 497	13a <input type="checkbox"/> Retirement <input checked="" type="checkbox"/> Health <input type="checkbox"/> Life <input type="checkbox"/> Other	12b DD 1,000.00
16 State wages, tips, etc. 50,000.00	14 Other	12c P 4,800.00
17 State income tax 1,535	15a <input type="checkbox"/> State <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other	12d
18 Local wages, tips, etc. 50,000	16	12e
19 Local income tax 750	17	12f
20 Unemployment MU	18	12g

**W-2 Wage and Tax Statement** 2018  
Form 941  
Copy 1—For State, City, or Local Tax Department  
Department of the Treasury—Internal Revenue Service





Team Quicken Loans  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

## Team Spectrum Health

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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

**SPECTRUM HEALTH**





Search Spectrum Health



 MyHealth

## Find a Doctor

## Patient Care

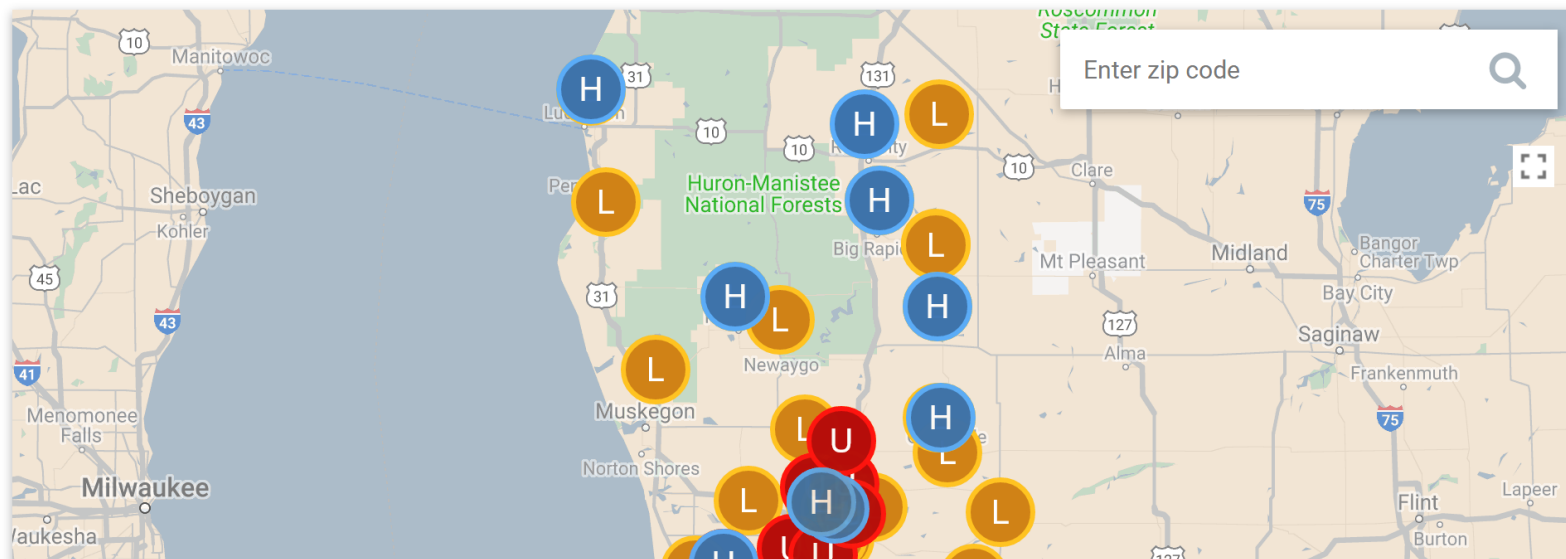
## Locations

For Health Professionals 

## For Visitors & Families

## Careers

## Giving

Home > **Locations**



# Team Spectrum Health Project Overview

## Spectrum Health Virtual Reality Experience

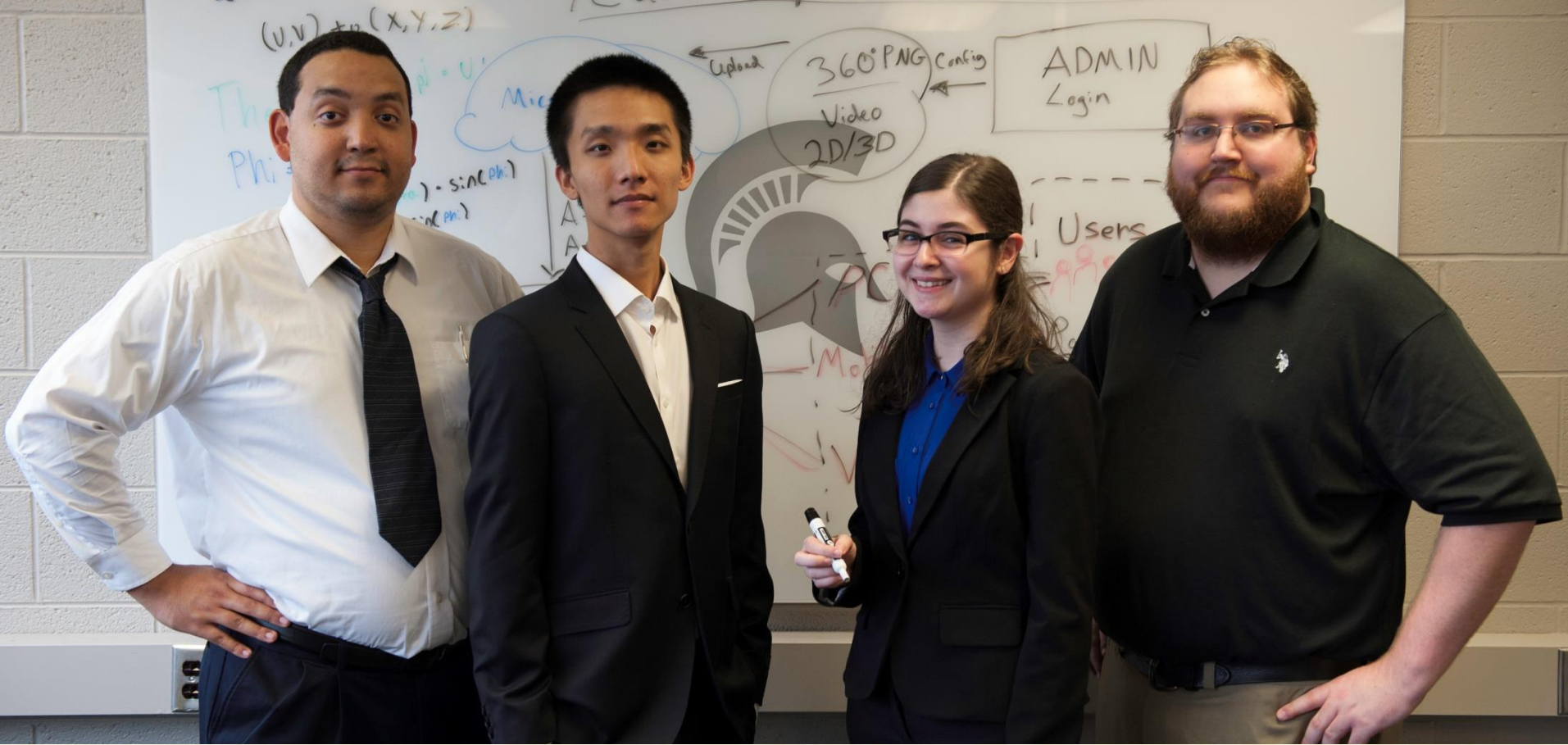
- Functionalities
  - Visualize and Annotate Spectrum Health Facilities
  - Answer Questions for Patients and Family Members
  - Use Virtual Reality (VR)
- Features
  - Build Web-Based Virtual Reality App
  - View 360-Degree Media Using VR Googles
  - Provide Explanations via Annotations
    - Cafeterias
    - Visitor Elevators
    - Aspects of a Hospital Room
    - Tools in a Procedure Room
  - Configure Media Based on User Interaction
  - Provide Companion Administrative Web Portal
- Technologies
  - CSS / HTML / PHP / JavaScript
  - A-Frame
  - ASP.NET Core (C#)
  - Entity Framework Core
  - Microsoft Azure
  - Microsoft SQL Server



**SPECTRUM HEALTH**

Grand Rapids, Michigan



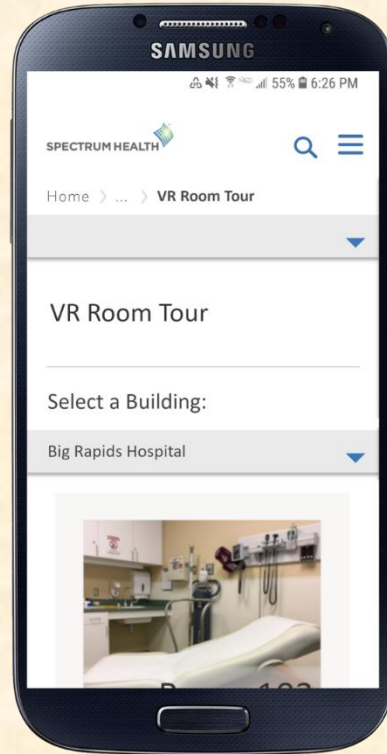


## Team Spectrum Health

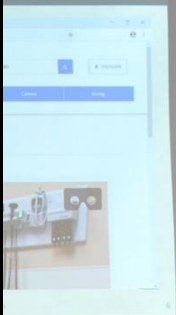
Jordan Hill, Jeremy Du, Stefani Taskas, Anthony Flatter

# Team Spectrum Health Project Plan Presentation

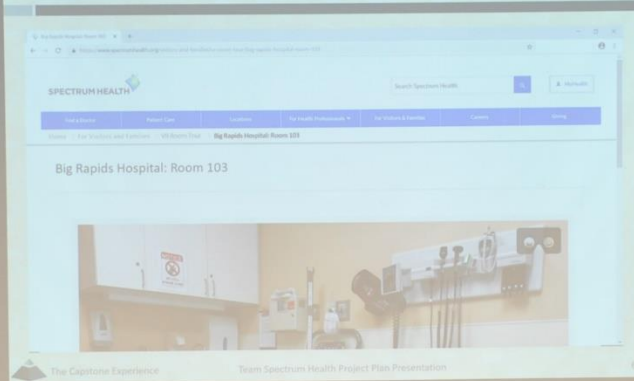
Screen Mockup



Page



## Screen Mockup: Web VR Page



Screen Mo

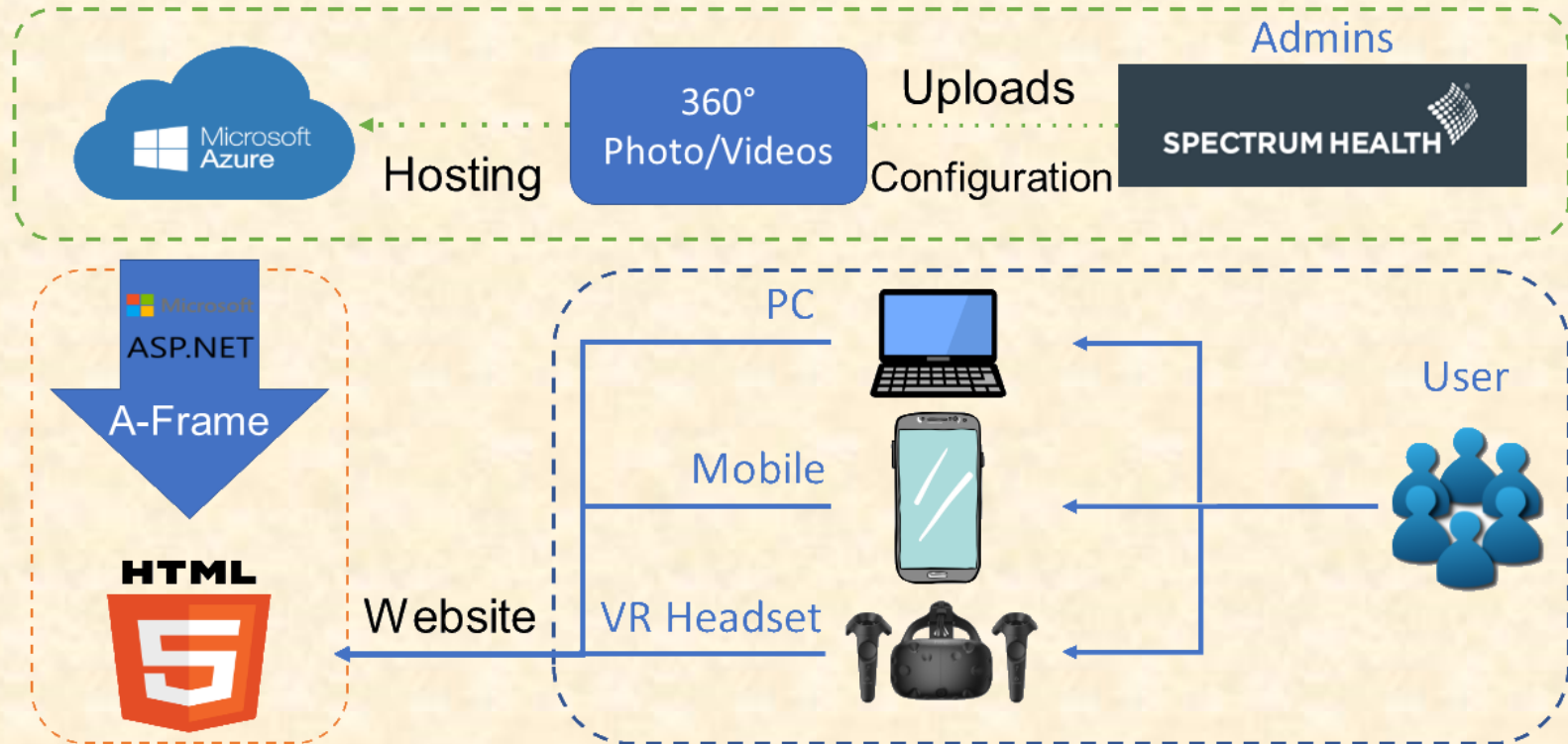


Team Spectrum Health  
Project Plan Presentation



# Team Spectrum Health Project Plan Presentation

Architecture Diagram

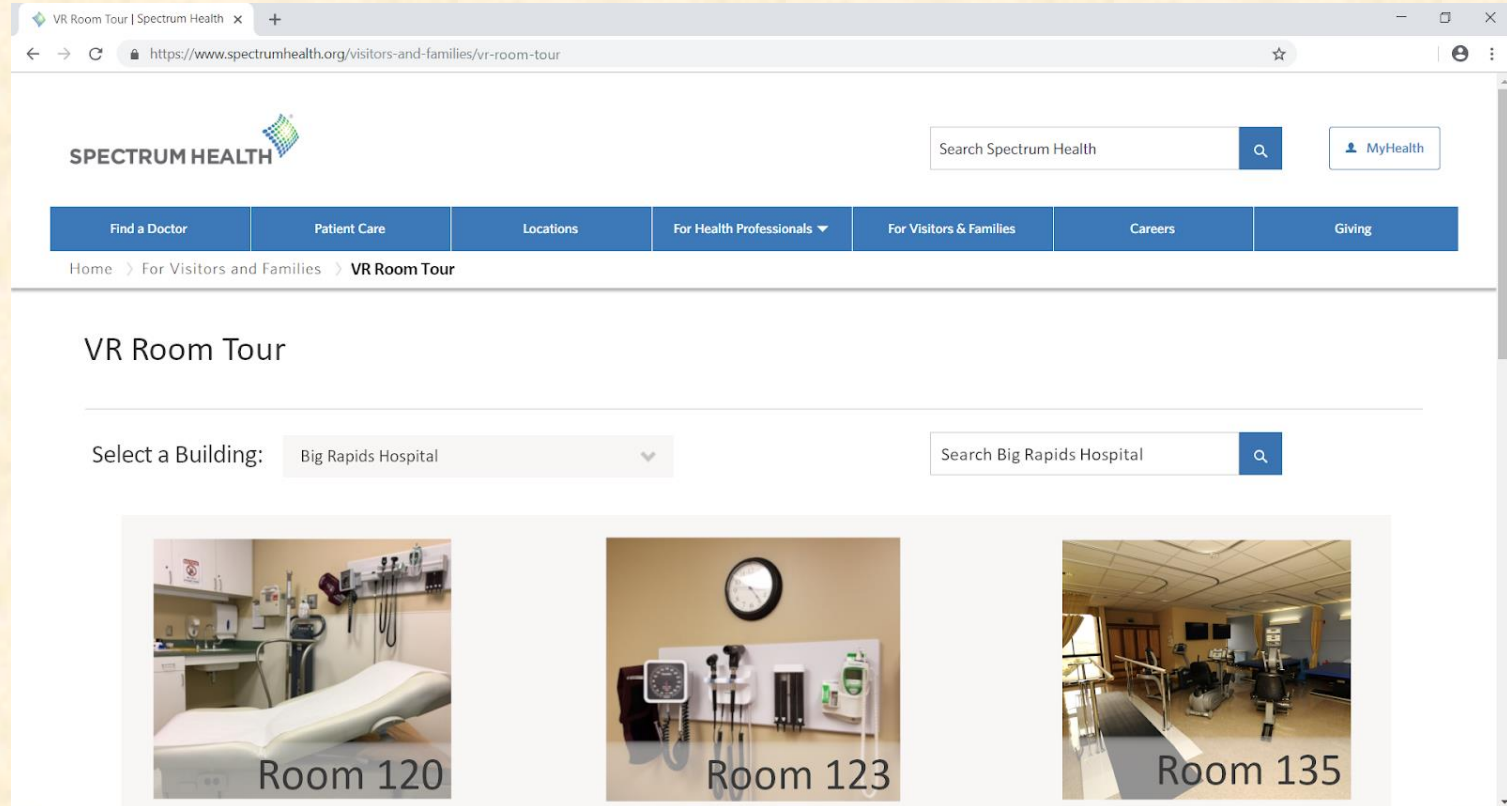




Team Spectrum Health  
Project Plan Presentation

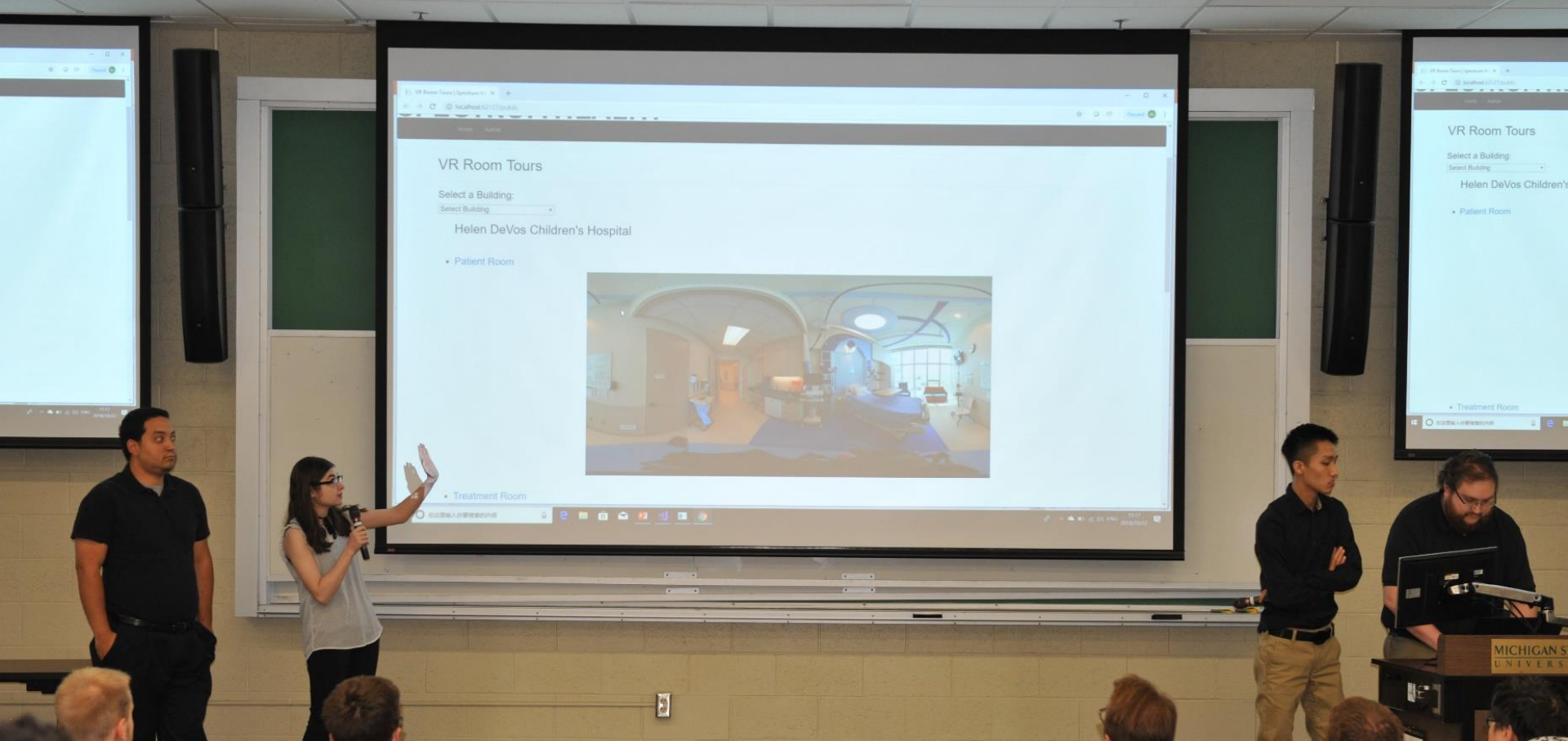
# Team Spectrum Health Project Plan Presentation

Screen Mockup



The Capstone Experience



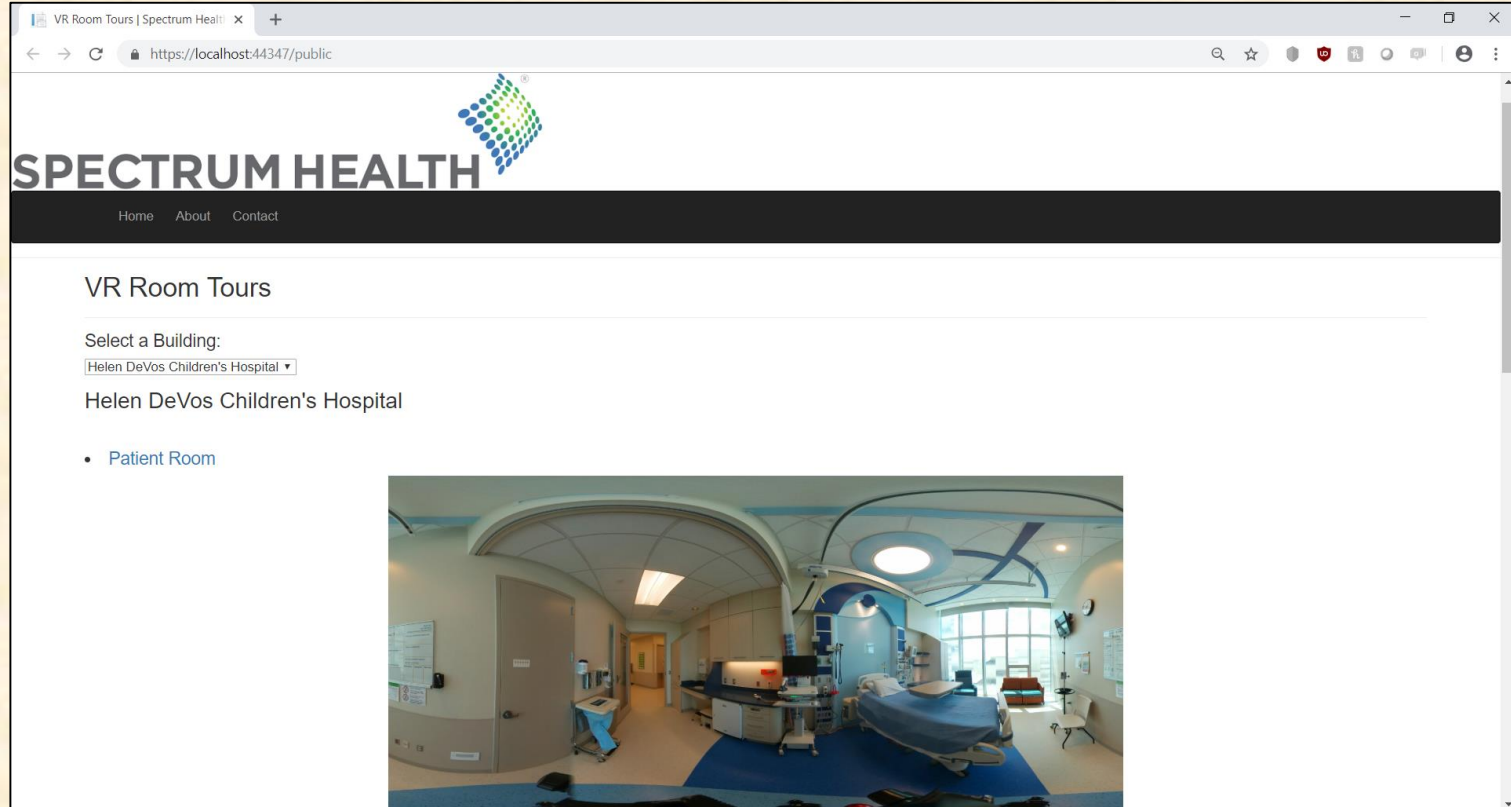


Team Spectrum Health  
Alpha Presentation



# Team Spectrum Health Alpha Presentation

Home Page

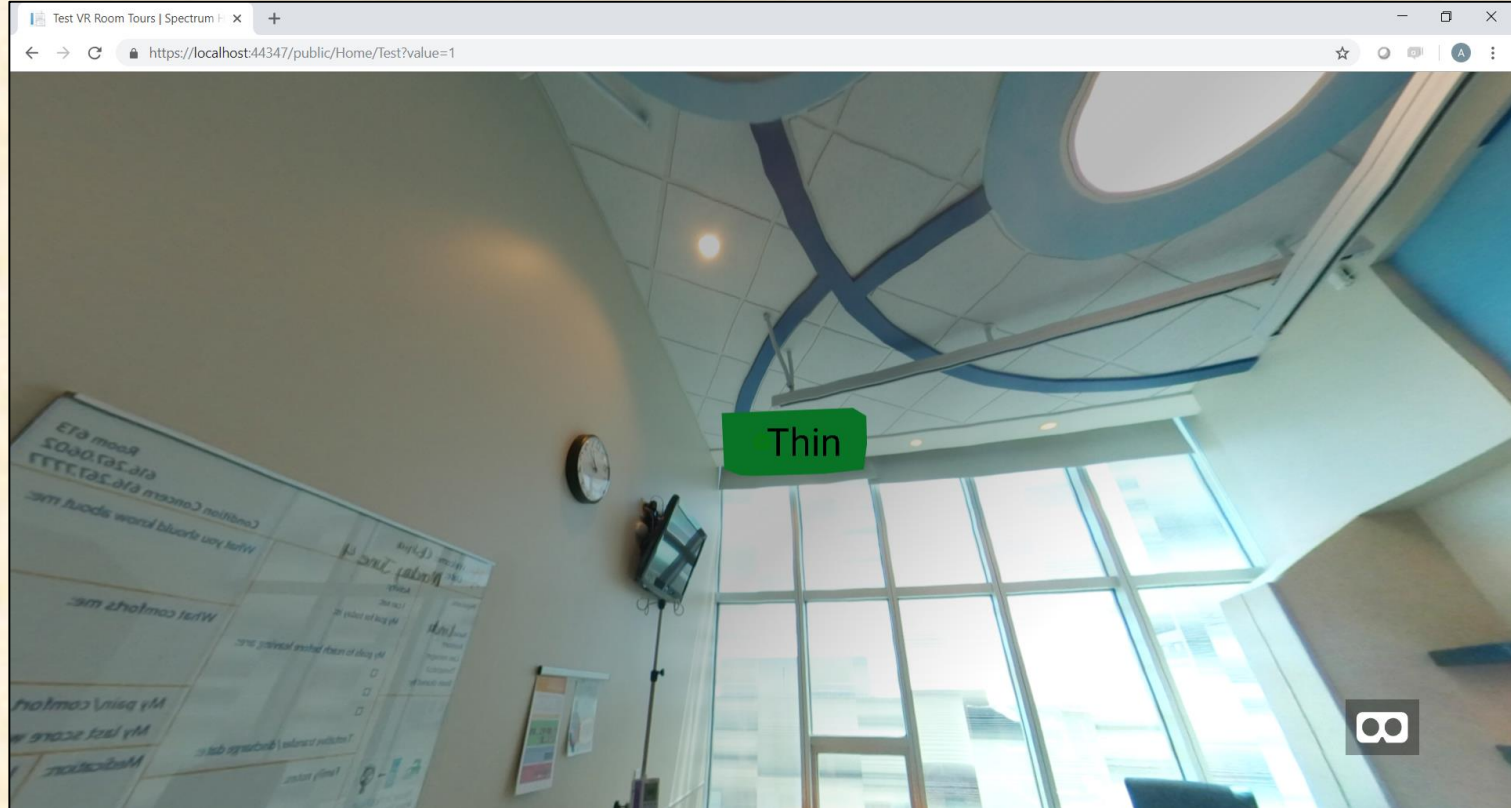


The Capstone Experience



# Team Spectrum Health Alpha Presentation

VR Page



The Capstone Experience





# Team Spectrum Health Alpha Presentation

# Team Spectrum Health Alpha Presentation

Admin Page

VR Administrator Access log out

Hit Box Target

Coordinate  
s in 2D

Labeling and  
Tagging  
information

top left: 166,26  
bottom right: 222,72  
top left: 222,26  
bottom left: 166,72

Upload one or more files using this form:

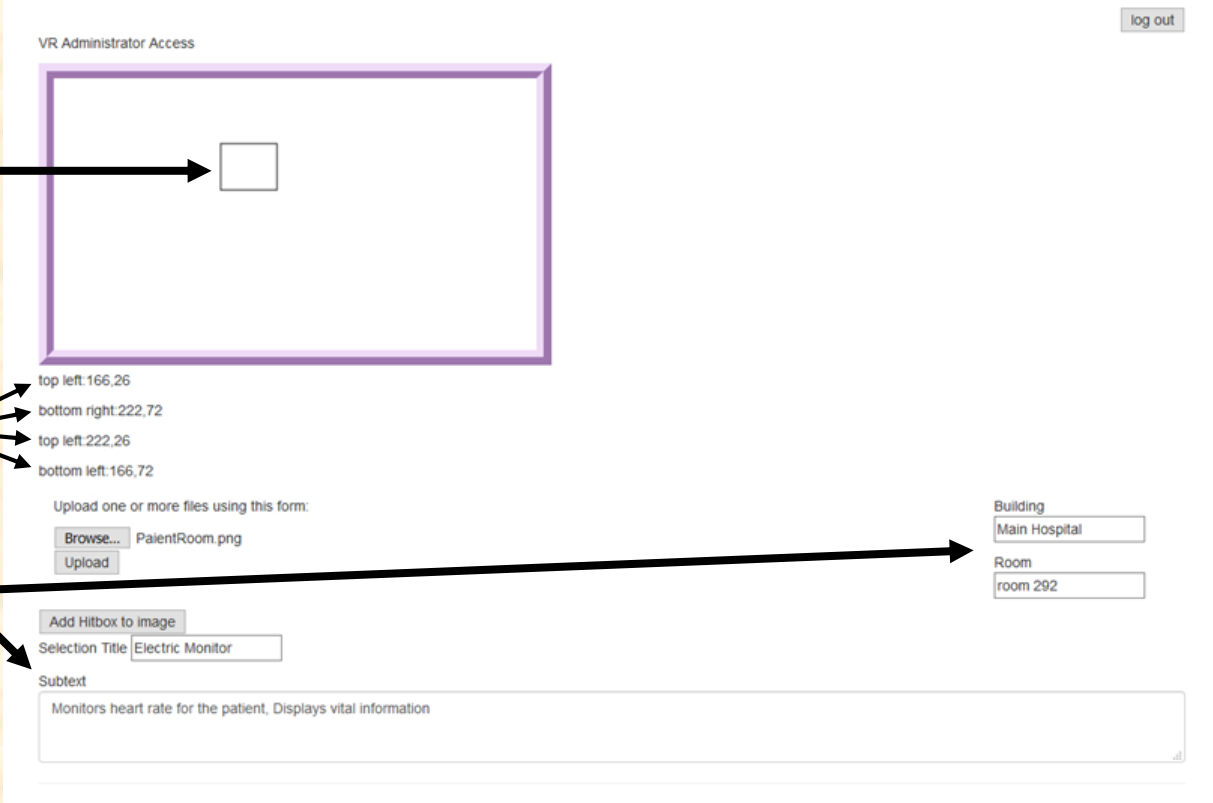
PatientRoom.png

Selection Title

Subtext

Building

Room

The image is a screenshot of a web application titled "VR Administrator Access" with a "log out" button in the top right. The main area contains a large purple rectangular frame. Inside this frame, on the right side, is a smaller white square labeled "Hit Box Target" with an arrow pointing to it. Below the purple frame, there are four lines of text with arrows pointing to the corners of the frame: "top left: 166,26", "bottom right: 222,72", "top left: 222,26", and "bottom left: 166,72". Below these coordinates is a section for file uploads titled "Upload one or more files using this form:". It includes a "Browse..." button followed by the text "PatientRoom.png" and an "Upload" button. Further down is a section for labeling with a button "Add Hitbox to image". Below this are two text input fields: "Selection Title" with the value "Electric Monitor" and "Subtext" with the value "Monitors heart rate for the patient, Displays vital information". On the right side of the interface, there are two more text input fields: "Building" with the value "Main Hospital" and "Room" with the value "room 292".

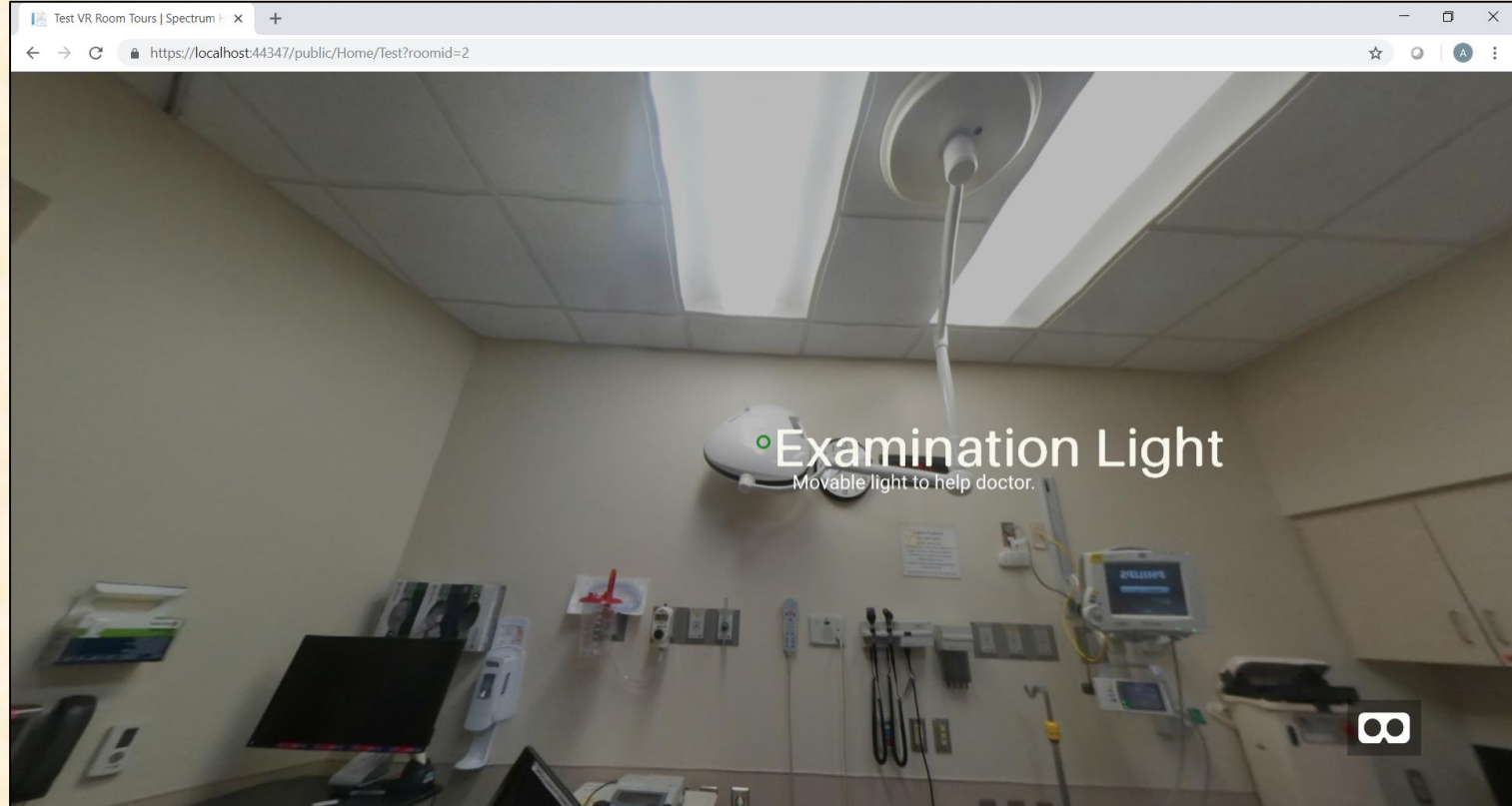




# Team Spectrum Health Beta Presentation

# Team Spectrum Health Beta Presentation

VR Page 1

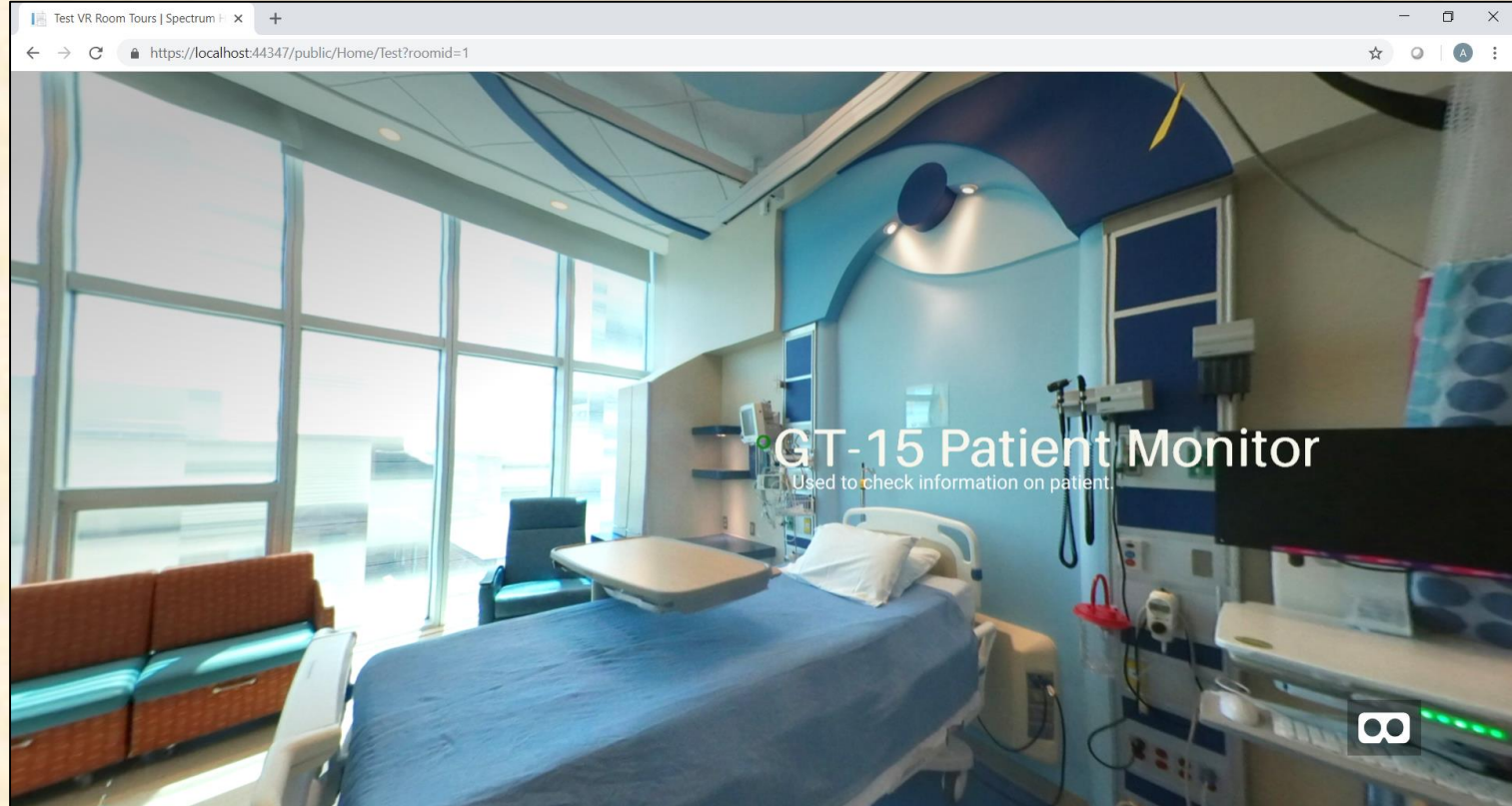


The Capstone Experience



# Team Spectrum Health Beta Presentation

VR Page 2



The Capstone Experience





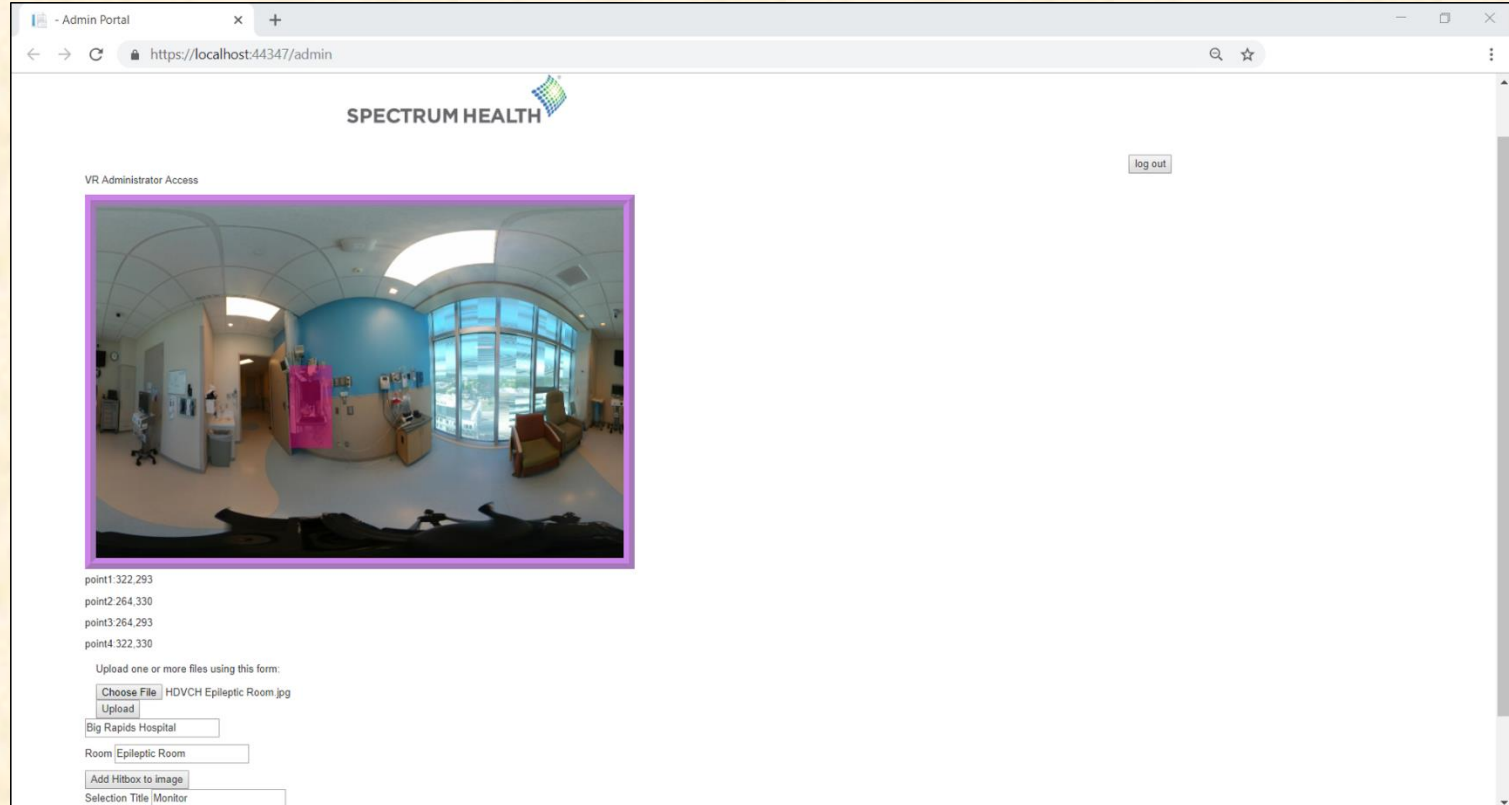


# Team Spectrum Health Beta Presentation



# Team Spectrum Health Beta Presentation

Admin Page



The Capstone Experience





Team Spectrum Health  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

Team TechSmith

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018

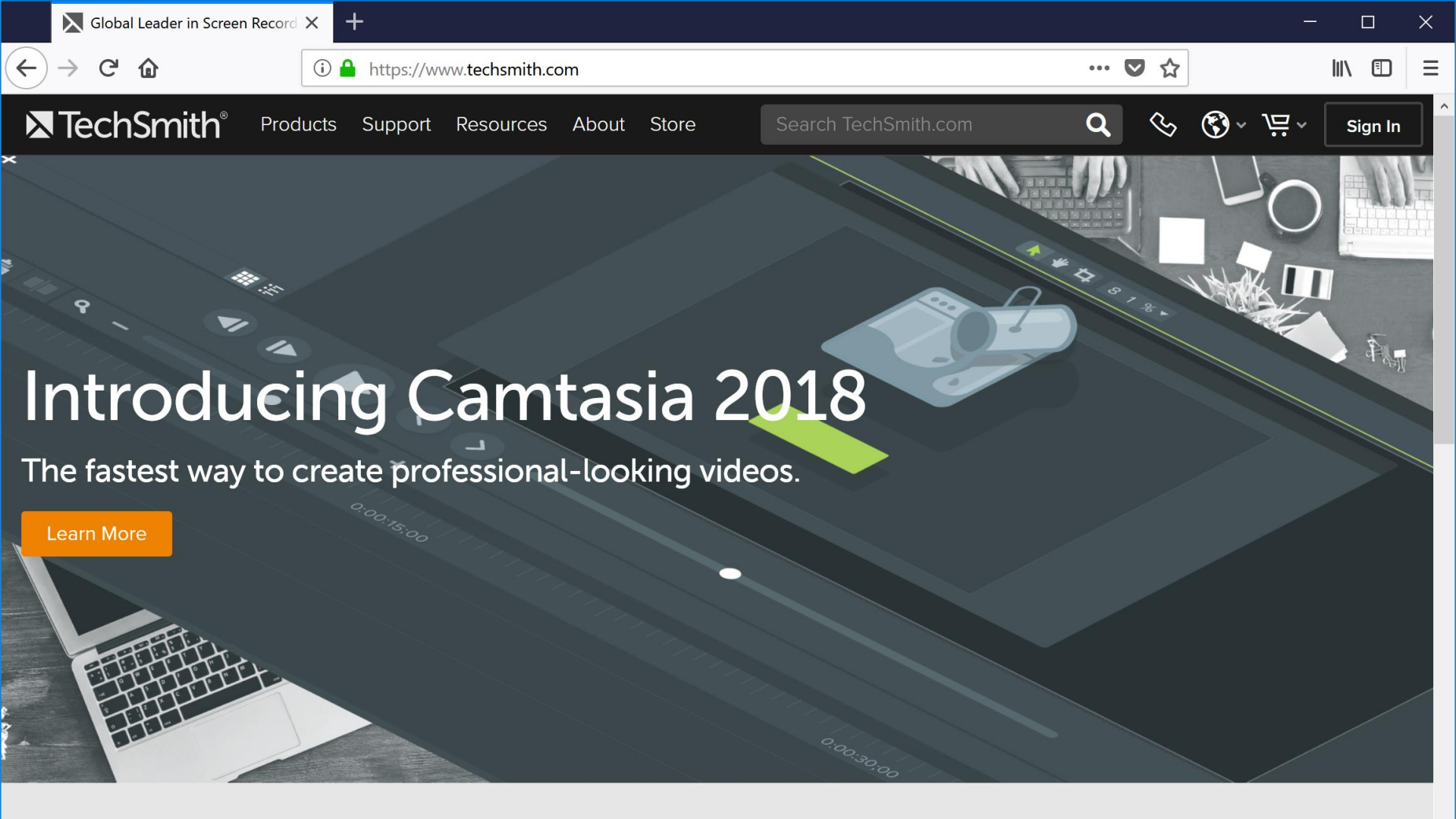


*From Students...  
...to Professionals*



TechSmith®





# Introducing Camtasia 2018

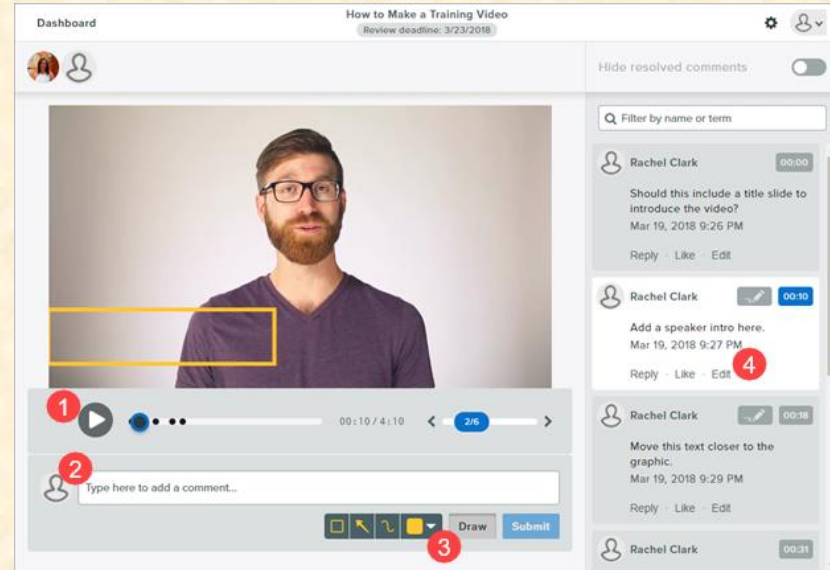
The fastest way to create professional-looking videos.

[Learn More](#)

# Team TechSmith Project Overview

## TechSmith Video Review and Slack Integration

- Functionalities
  - Connect Video Authors with Video Reviewers
  - Use Team Messaging Systems
- Features
  - Integrate TechSmith's Video Review with Slack
  - Provide Interface for Video Author
    - Receive Notification of New Slack Comments
    - Read Slack Comments on Video Review Site
    - Manage Reviews
      - See Existing Reviews
      - Create New Reviews
      - Assign New Slack Users to Reviews
  - Provide Interface for Video Reviewer
    - See Existing Reviews
    - Launch Video Review Site
    - Playback Video with Slack Interface
    - Provide Annotation within Slack
  - Support Other Team Messaging Systems
- Technologies
  - CSS / HTML / PHP / JavaScript
  - TechSmith Video Review API Proxy
  - Microsoft C#/.Net Core
  - Slack App / Slack SDK
  - RESTful Web Services Using Swagger



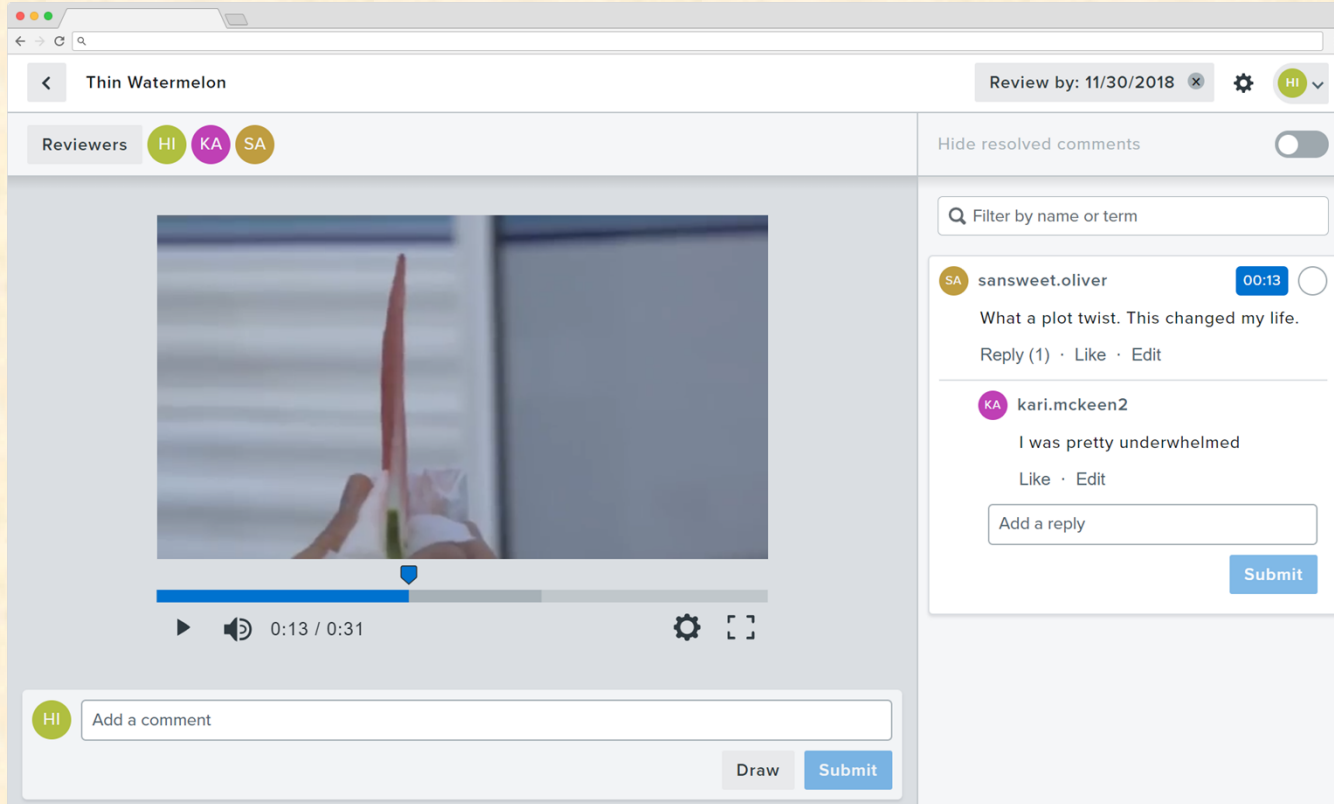


## Team TechSmith

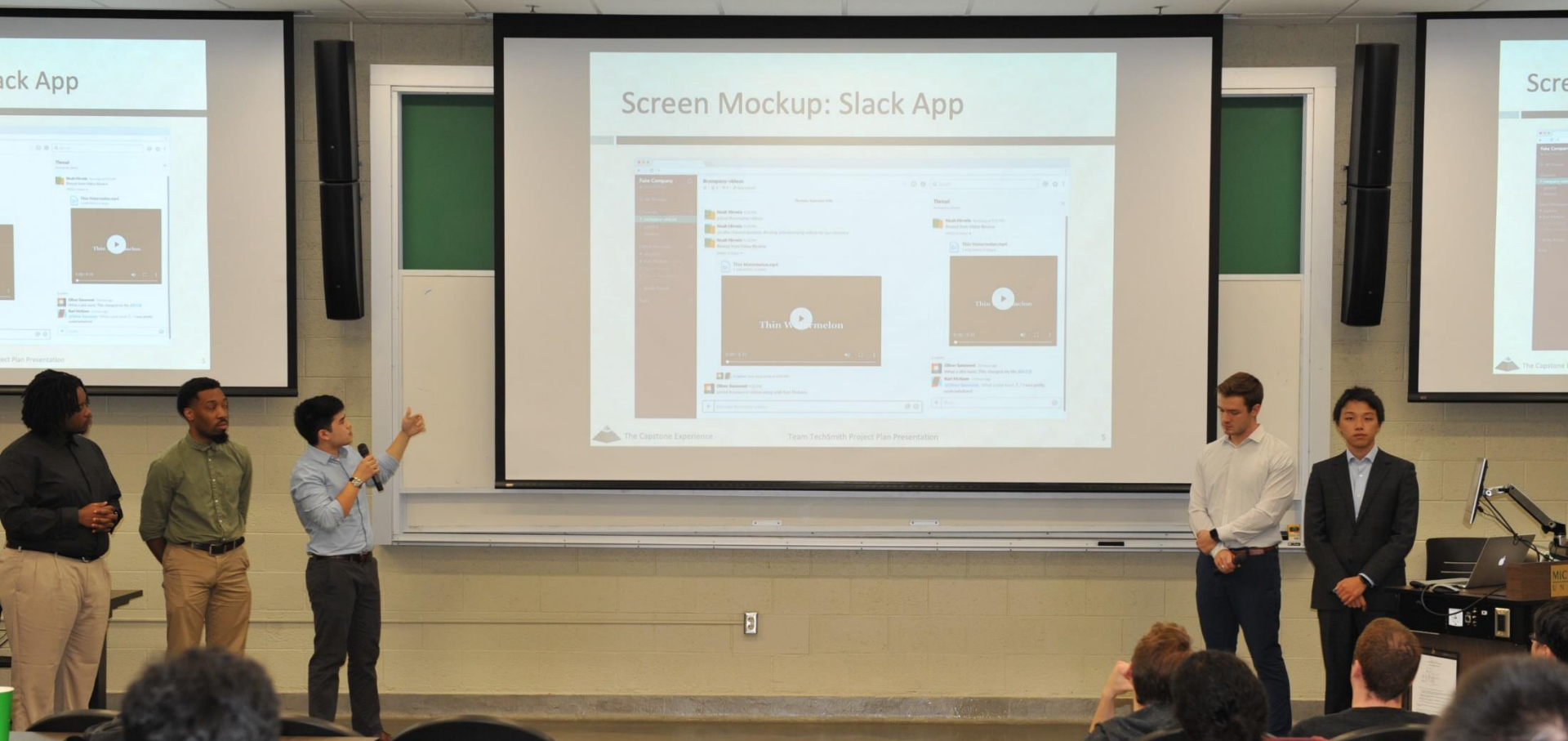
Noah Hirvela, Nick Gilreath, Conner Bean, Tommie Henderson, Neil Xu

# Team TechSmith Project Plan Presentation

Screen Mockup



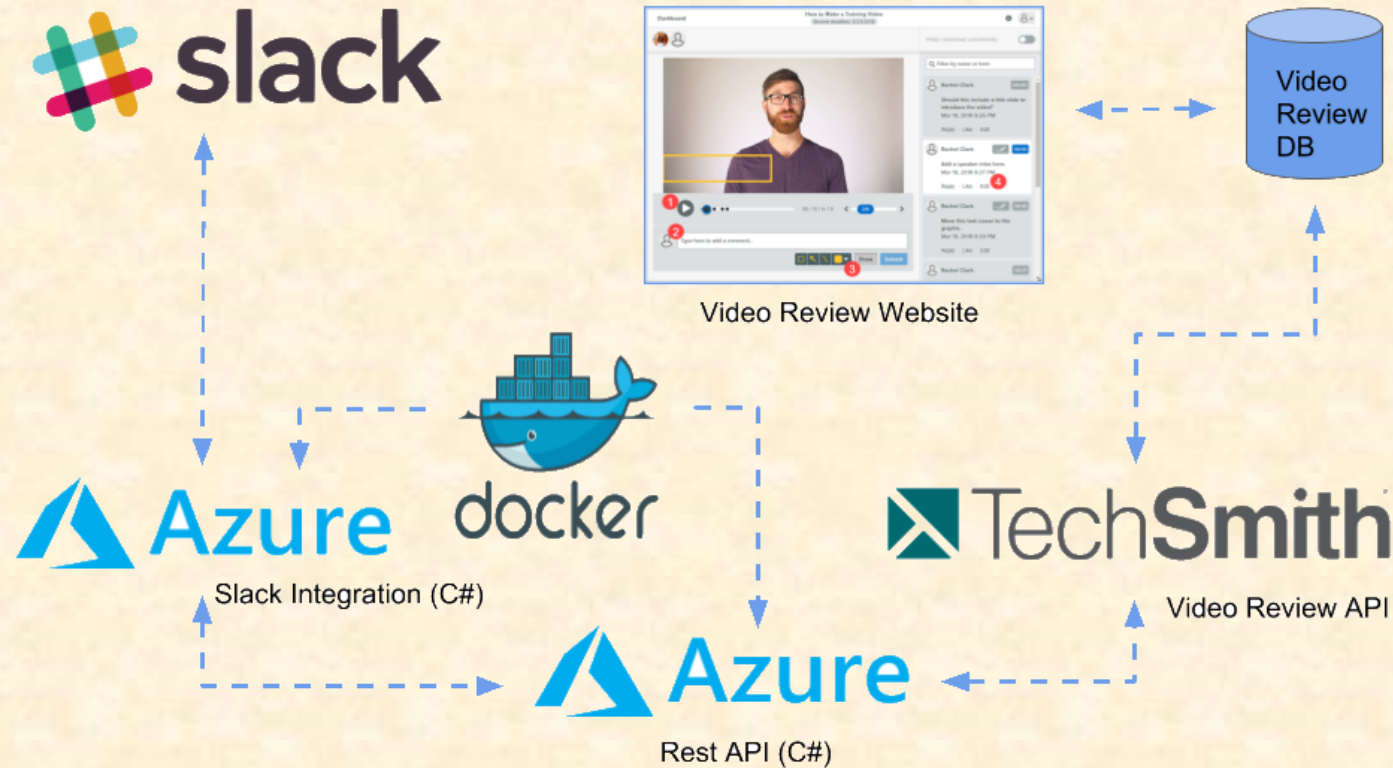




# Team TechSmith Project Plan Presentation

# Team TechSmith Project Plan Presentation

## Architecture Diagram

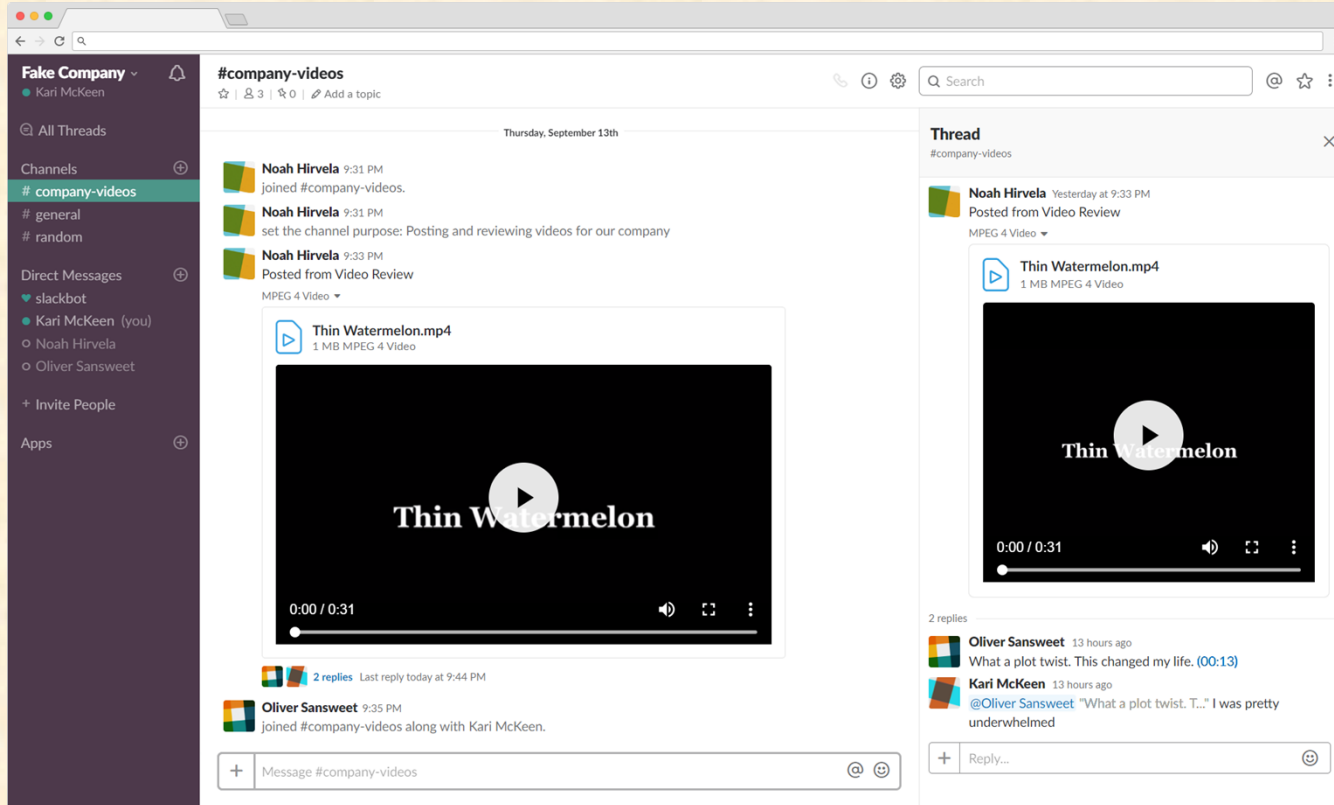




# Team TechSmith Project Plan Presentation

# Team TechSmith Project Plan Presentation

Screen Mockup



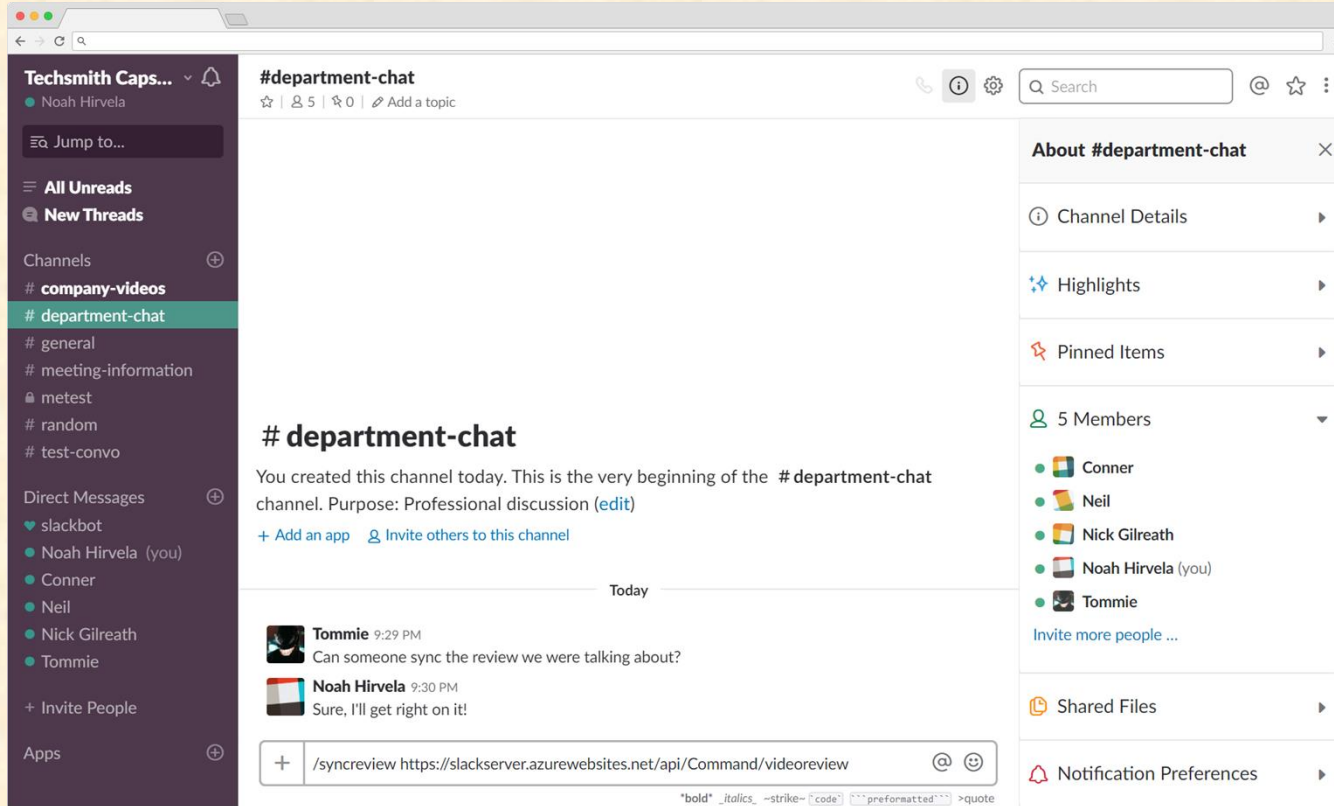




# Team TechSmith Alpha Presentation

# Team TechSmith Alpha Presentation

## Sync Review Command



The screenshot shows a Slack web interface for a channel named **#department-chat**. The left sidebar displays the channel list with **# department-chat** selected. The main content area shows the channel's purpose: "You created this channel today. This is the very beginning of the #department-chat channel. Purpose: Professional discussion (edit)". Below this, a message from Tommie at 9:29 PM asks, "Can someone sync the review we were talking about?". Noah Hirvela responds at 9:30 PM, "Sure, I'll get right on it!". The input field at the bottom contains the command `/syncreview https://slackserver.azurewebsites.net/api/Command/videoreview`. The right sidebar shows channel details, including 5 members: Conner, Neil, Nick Gilreath, Noah Hirvela (you), and Tommie.

**Techsmith Caps...** Noah Hirvela

Jump to...

**All Unreads**

**New Threads**

Channels

- # company-videos
- # department-chat
- # general
- # meeting-information
- # metest
- # random
- # test-convo

Direct Messages

- slackbot
- Noah Hirvela (you)
- Conner
- Neil
- Nick Gilreath
- Tommie

+ Invite People

Apps

**#department-chat**

5 | 0 | Add a topic

**About #department-chat**

- Channel Details
- Highlights
- Pinned Items
- 5 Members
  - Conner
  - Neil
  - Nick Gilreath
  - Noah Hirvela (you)
  - Tommie
- Shared Files
- Notification Preferences

**# department-chat**

You created this channel today. This is the very beginning of the **#department-chat** channel. Purpose: Professional discussion ([edit](#))

+ Add an app [Invite others to this channel](#)

Today

**Tommie** 9:29 PM

Can someone sync the review we were talking about?

**Noah Hirvela** 9:30 PM

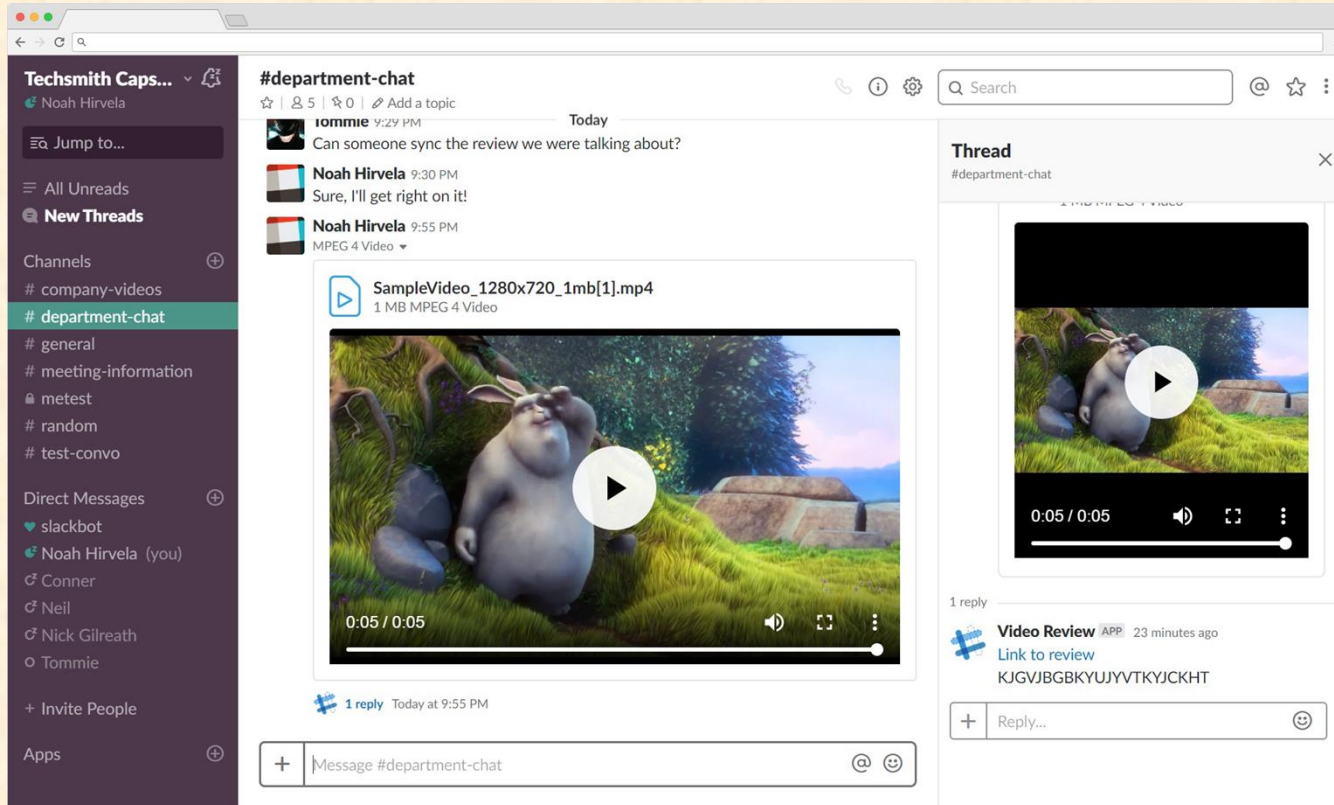
Sure, I'll get right on it!

`/syncreview https://slackserver.azurewebsites.net/api/Command/videoreview`

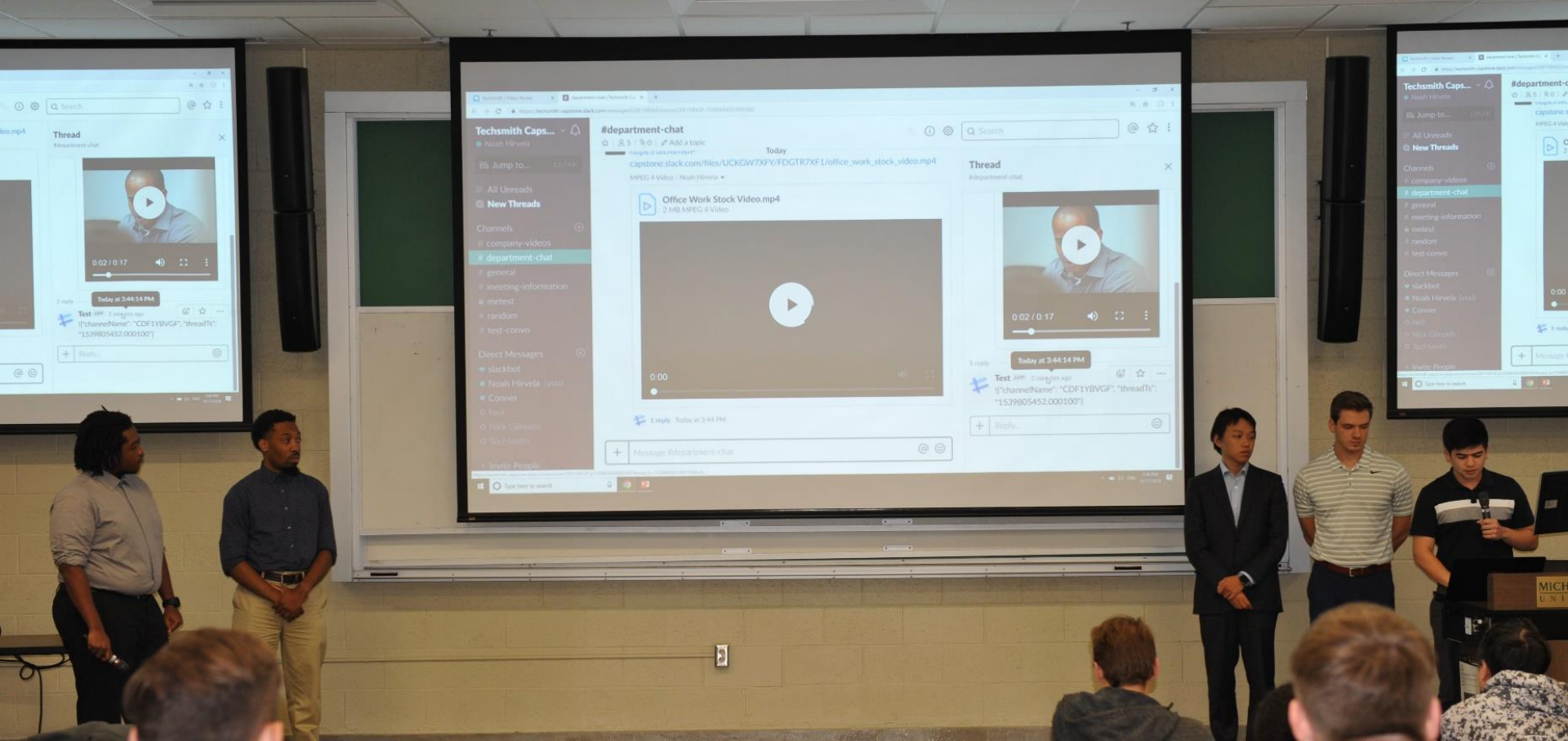
\*bold\* \_italics\_ -strike- [code] [preformatted] >quote

# Team TechSmith Alpha Presentation

## Thread Creation in Slack



The screenshot displays the Slack interface for a workspace named "Techsmith Caps...". The left sidebar shows a list of channels, with "# department-chat" selected. The main chat area shows a conversation in the "#department-chat" channel. A user named "rommie" asks, "Can someone sync the review we were talking about?". Noah Hirvela responds at 9:30 PM, "Sure, I'll get right on it!". At 9:55 PM, Noah uploads a video file named "SampleVideo\_1280x720\_1mb[1].mp4" (1 MB MPEG 4 Video). The video player shows a cartoon rabbit in a field. A thread view is open on the right, titled "Thread" and "#department-chat". It shows the video and a reply from "Video Review" (APP) posted 23 minutes ago, with the text "Link to review KJGVJBGBKYUJYVTKYJCKHT". The bottom of the interface shows a message input field with a plus icon and a "Message #department-chat" button.

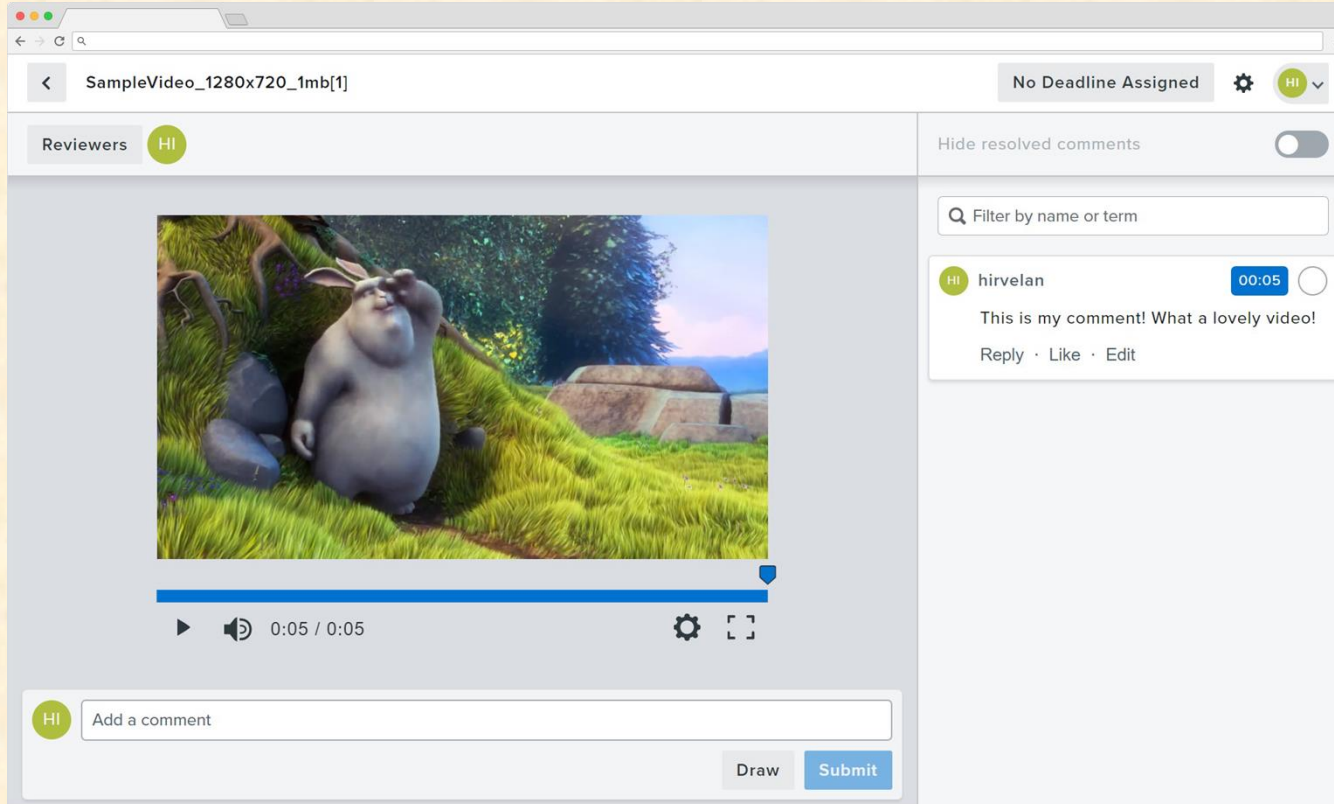


# Team TechSmith Alpha Presentation



# Team TechSmith Alpha Presentation

Comments Appear in Video Review



The screenshot displays a web-based video review interface. At the top, a browser window shows the address bar with the text "SampleVideo\_1280x720\_1mb[1]". Below the address bar, there's a navigation bar with a back arrow, the video title, and a "No Deadline Assigned" status. A "Reviewers" section shows a user profile with the initials "HI".

The main content area is split into two columns. The left column features a video player with a 3D animated rabbit character in a grassy field. The video progress bar shows "0:05 / 0:05". The right column contains a "Hide resolved comments" toggle switch and a search bar labeled "Filter by name or term". Below the search bar, a comment from user "hirvelan" is displayed, stating "This is my comment! What a lovely video!". The comment includes a timestamp "00:05" and options to "Reply", "Like", or "Edit".

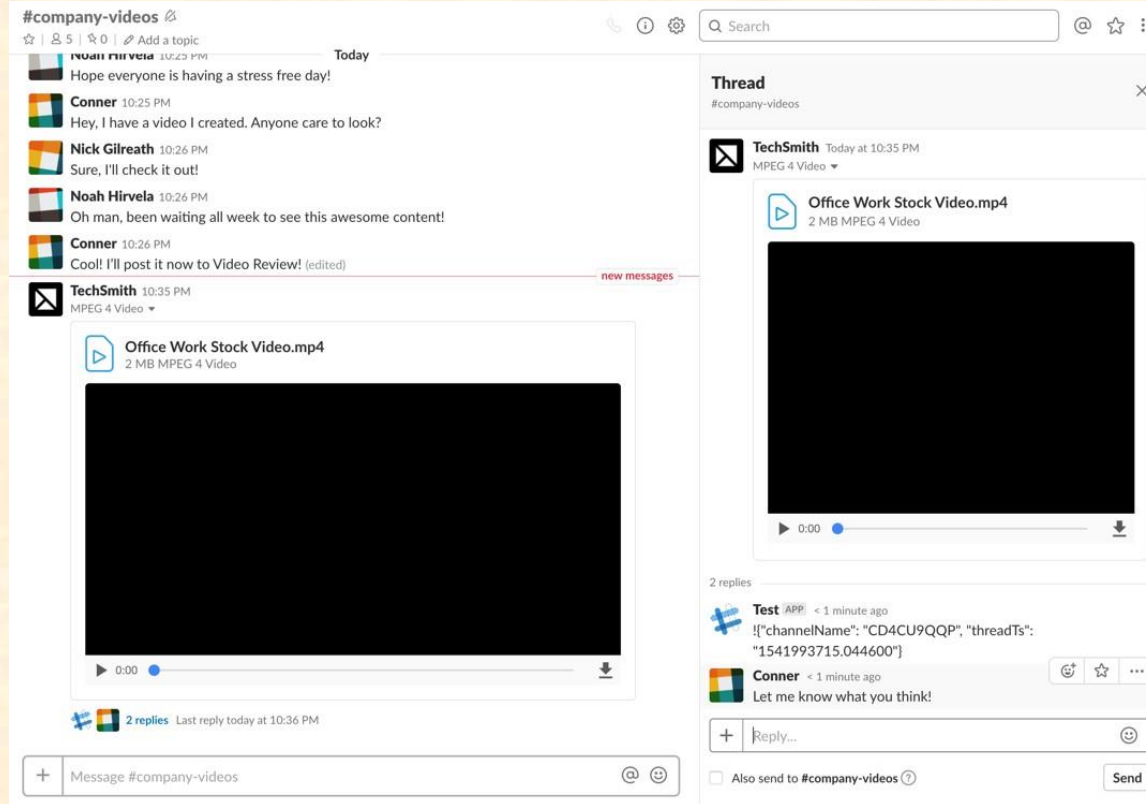
At the bottom of the interface, there is a comment input field with a placeholder "Add a comment" and a "Submit" button. A "Draw" button is also visible next to the input field.



# Team TechSmith Beta Presentation

# Team TechSmith Beta Presentation

## Creating Review Within Slack



The screenshot displays a Slack interface for a channel named **#company-videos**. The channel header includes a search bar and icons for search, mentions, and favorites. The message history shows a conversation where team members discuss a video. The most recent message is from **TechSmith**, posted at 10:35 PM, which is a video file named **Office Work Stock Video.mp4** (2 MB MPEG 4 Video). Below the video player, there are 2 replies. The first reply is from **Test APP**, posted less than a minute ago, with a JSON payload: `{"channelName": "CD4CU9QQP", "threadTs": "1541993715.044600"}`. The second reply is from **Conner**, also posted less than a minute ago, saying "Let me know what you think!". At the bottom of the channel view, there is a text input field with the placeholder "Message #company-videos" and a "Send" button. To the right of the main channel view, a "Thread" sidebar is open, showing the details of the selected message, including the video player and the replies.

**#company-videos** ☆ | 👤 5 | 🔍 0 | ➕ Add a topic

**Today**

**Noah Hirvela** 10:23 PM  
Hope everyone is having a stress free day!

**Conner** 10:25 PM  
Hey, I have a video I created. Anyone care to look?

**Nick Gilreath** 10:26 PM  
Sure, I'll check it out!

**Noah Hirvela** 10:26 PM  
Oh man, been waiting all week to see this awesome content!

**Conner** 10:26 PM  
Cool! I'll post it now to Video Review! (edited)

**TechSmith** 10:35 PM  
MPEG 4 Video

**Office Work Stock Video.mp4**  
2 MB MPEG 4 Video

0:00

2 replies

**Test APP** < 1 minute ago  
{"channelName": "CD4CU9QQP", "threadTs": "1541993715.044600"}

**Conner** < 1 minute ago  
Let me know what you think!

Reply...

Also send to #company-videos ?

Send

# Team TechSmith Beta Presentation

## Sync Existing Review To Slack

#company-videos

5 | 0 | Add a topic

Today

**Noah Hirvela** 10:25 PM  
Hope everyone is having a stress free day!

**Conner** 10:25 PM  
Hey, I have a video I created. Anyone care to look?

**Nick Gilreath** 10:26 PM  
Sure, I'll check it out!

**Noah Hirvela** 10:26 PM  
Oh man, been waiting all week to see this awesome content!

**Conner** 10:26 PM  
Cool! I'll sync it now from Video Review! (edited)

**Conner** 10:48 PM  
MPEG 4 Video

Office Work Stock Video.mp4  
2 MB MPEG 4 Video

0:00 / 0:17

Thread

#company-videos

**Conner** Today at 10:48 PM  
MPEG 4 Video

Office Work Stock Video.mp4  
2 MB MPEG 4 Video

0:00 / 0:17

1 reply

**Test** APP 1 minute ago  
{"channelName": "CD4CU9QQP", "threadTs": "1541994511.052300"}

Reply...

/syncreview https://videoreview.tsc-stage.co/review/4g6Qy1jXbudCY6QsbyUTo

\*bold\* \*italic\* ~strike~ `<code>` `<code>` >quote





# Team TechSmith Beta Presentation

# Team TechSmith Beta Presentation

Comments To Slack

#company-videos

☆ | 5 | 0 | Add a topic

Today  
stage.co/review/gTFEPYrYNAM80X1efK...dGYIamGGSzj1YU0DTh5""response\_url:null]

**Noah Hirvela** 10:25 PM  
Hope everyone is having a stress free day!

**Conner** 10:25 PM  
Hey, I have a video I created. Anyone care to look?

**Nick Gilreath** 10:26 PM  
Sure, I'll check it out!

**Noah Hirvela** 10:26 PM  
Oh man, been waiting all week to see this awesome content!

**Conner** 10:26 PM  
Cool! I'll post it now to Video Review! (edited)

**Conner** 10:48 PM  
MPEG 4 Video

**Office Work Stock Video.mp4**  
2 MB — Click to download

0:00 / 0:17

Thread  
#company-videos

**Office Work Stock Video.mp4**  
2 MB MPEG 4 Video

0:00 / 0:17

39 replies

**Test** APP: 3 hours ago  
{"channelName": "CD4CU9QQP", "threadTs": "1541982899.009300"}

**TechSmith** 3 hours ago  
!{"channelName": "CD4CU9QQP", "threadTs": "1541982899.009300"}

**Test** APP: 3 hours ago  
\$Last Update:11/12/2018 12:36:37 AM

**Test** APP: 3 hours ago  
Wow, 3 post-its and a tac. Bold strategy!

**Test** APP: 3 hours ago  
Nice chairs





Team TechSmith  
Design Day

**MICHIGAN STATE**  
**UNIVERSITY**

# *The Capstone Experience*

Team Union Pacific

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018

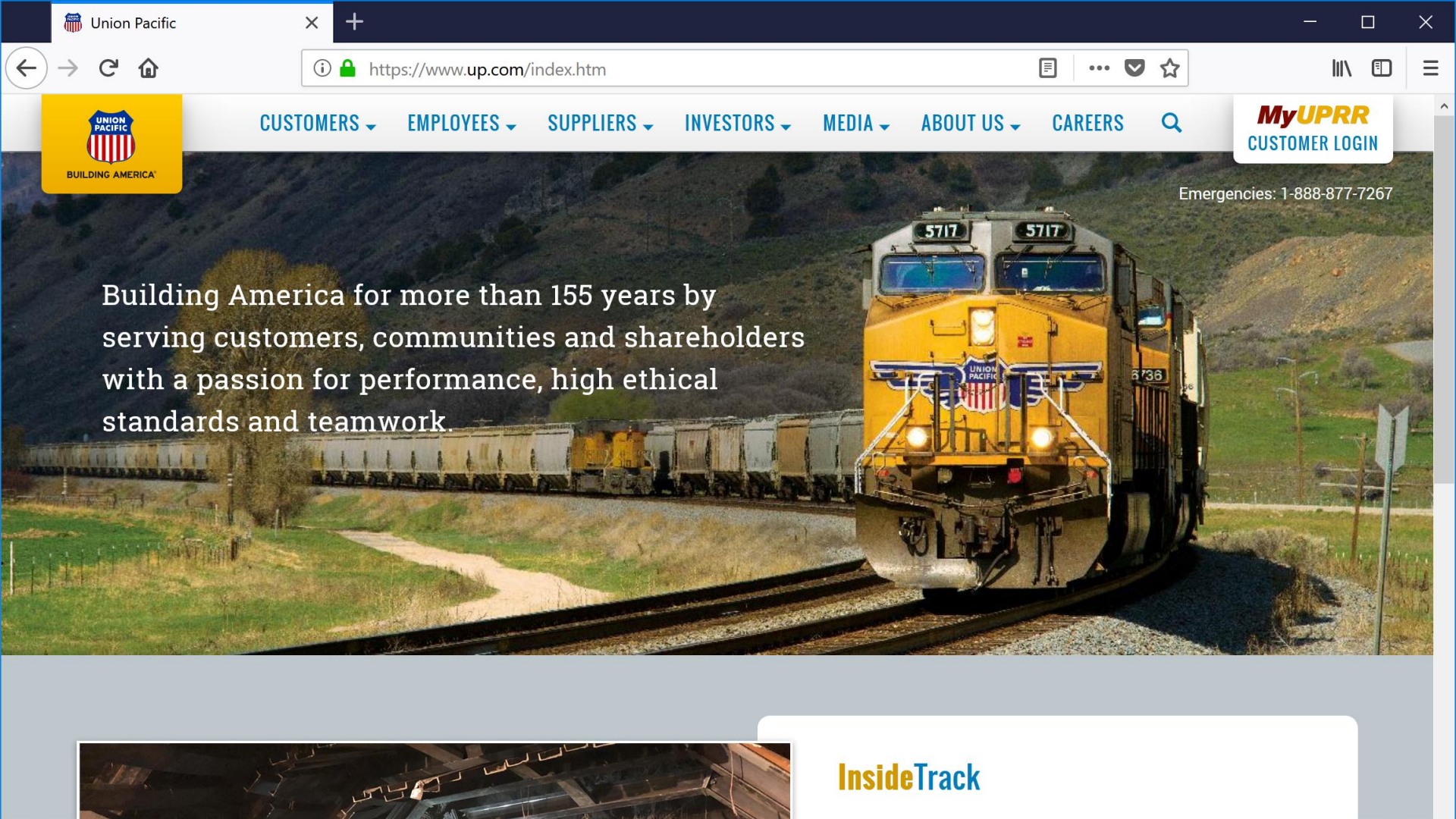


*From Students...*  
*...to Professionals*





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EMPLOYEES ▾

SUPPLIERS ▾

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ABOUT US ▾

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with a passion for performance, high ethical  
standards and teamwork.



**InsideTrack**



# Team Union Pacific Project Overview

## Augmented Reality Mechanic Training

- Functionalities
  - Train Union Pacific Mechanics Safely
  - Use Augmented Reality (AR)
- Features
  - Show Holographic Images of Railroad Equipment
  - Demonstrate Standard Repair Operations
  - “Match” Holograms with Physical Objects
  - Use Microsoft Hololens
  - Generate Accurate Holograms from CAD Data
- Technologies
  - Microsoft Hololens
  - Unity Game Engine
  - PiXYZ Plugin
  - Vuforia Plugin



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Omaha, Nebraska  
Okemos, Michigan







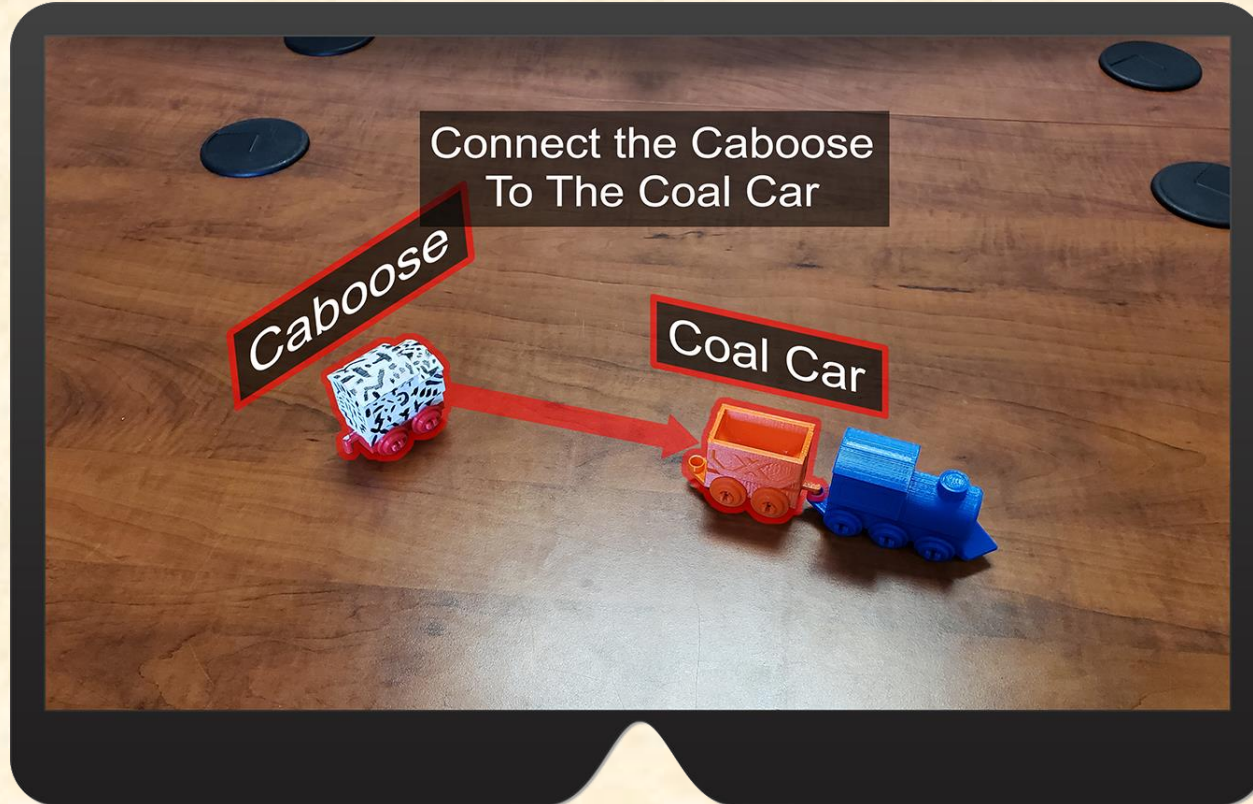
## Team Union Pacific

Luke Sperling, Nick MacDonald, Justin Barber, Colleen Little, Jake Cousineau

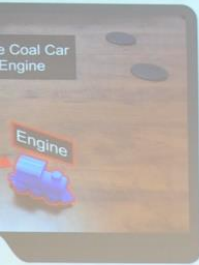


# Team Union Pacific Project Plan Presentation

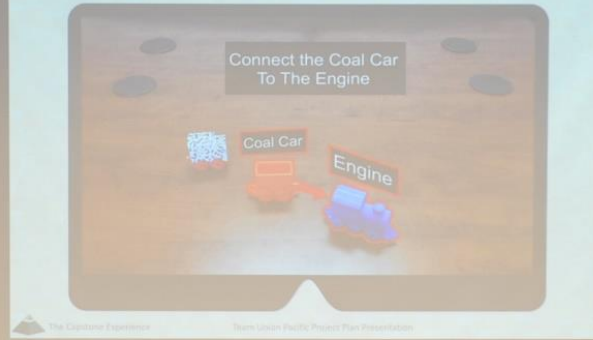
Screen Mockup



Build a Train Step 1



Screen Mockup: Build a Train Step 1



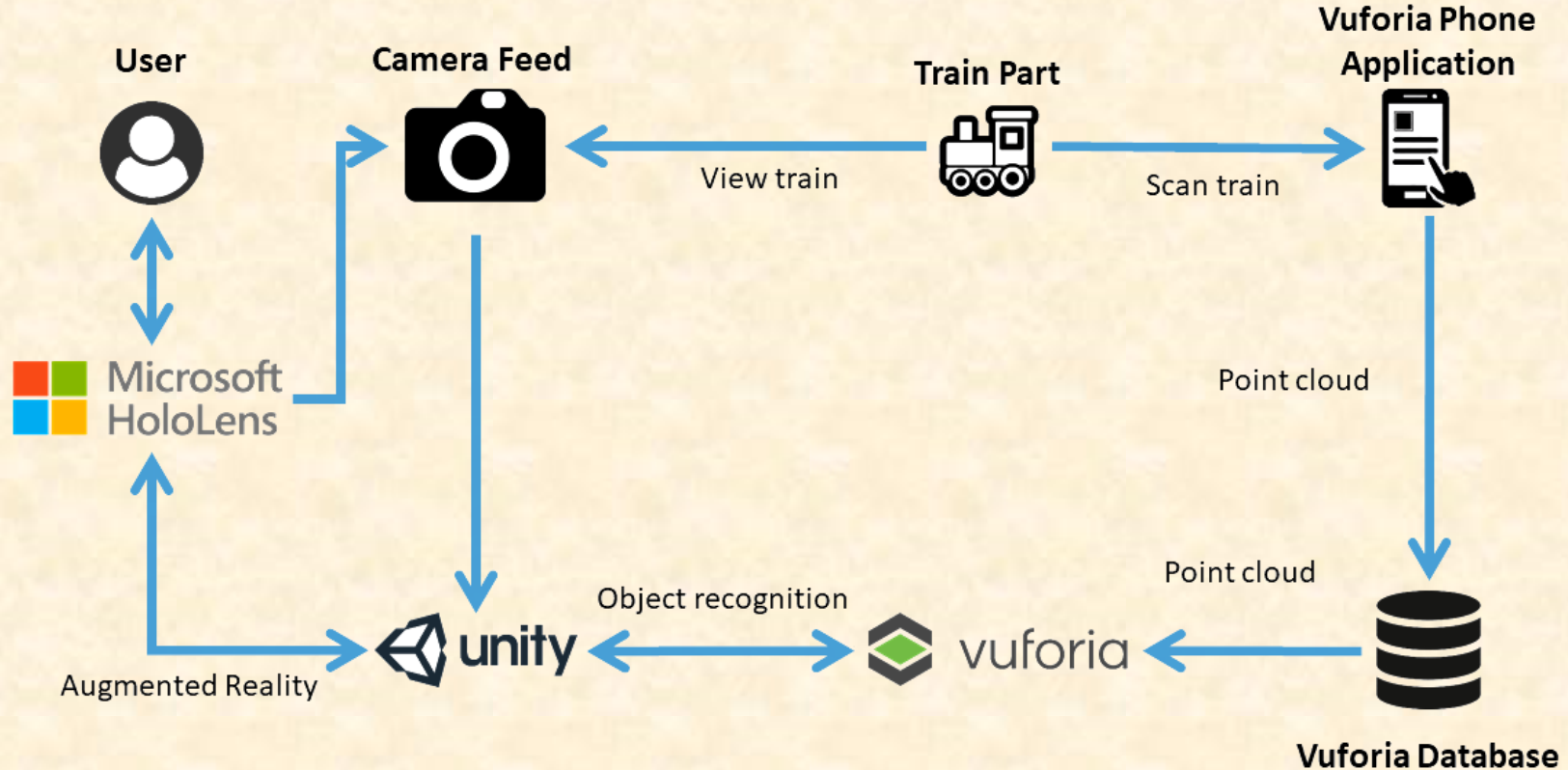
Screen Mockup



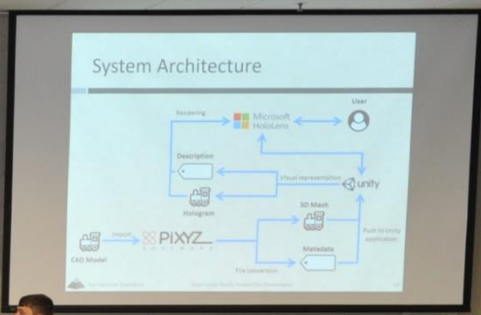
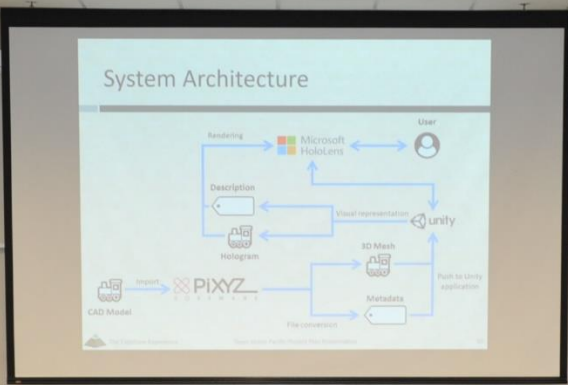
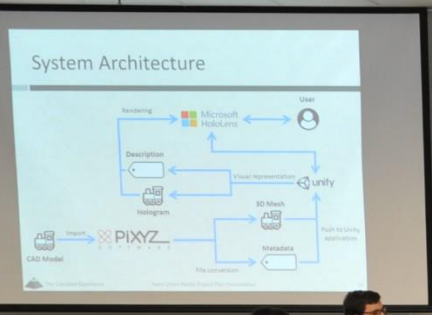
Team Union Pacific  
Project Plan Presentation

# Team Union Pacific Project Plan Presentation

## Architecture Diagram





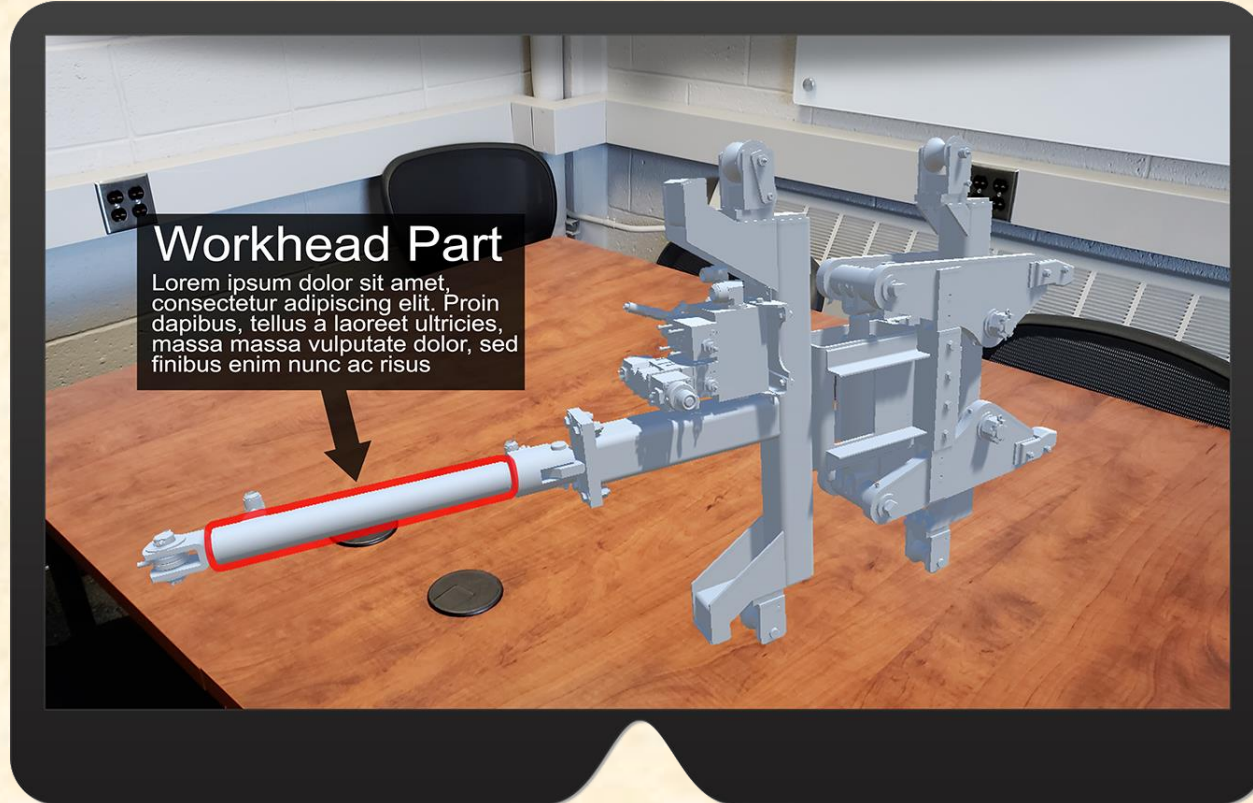


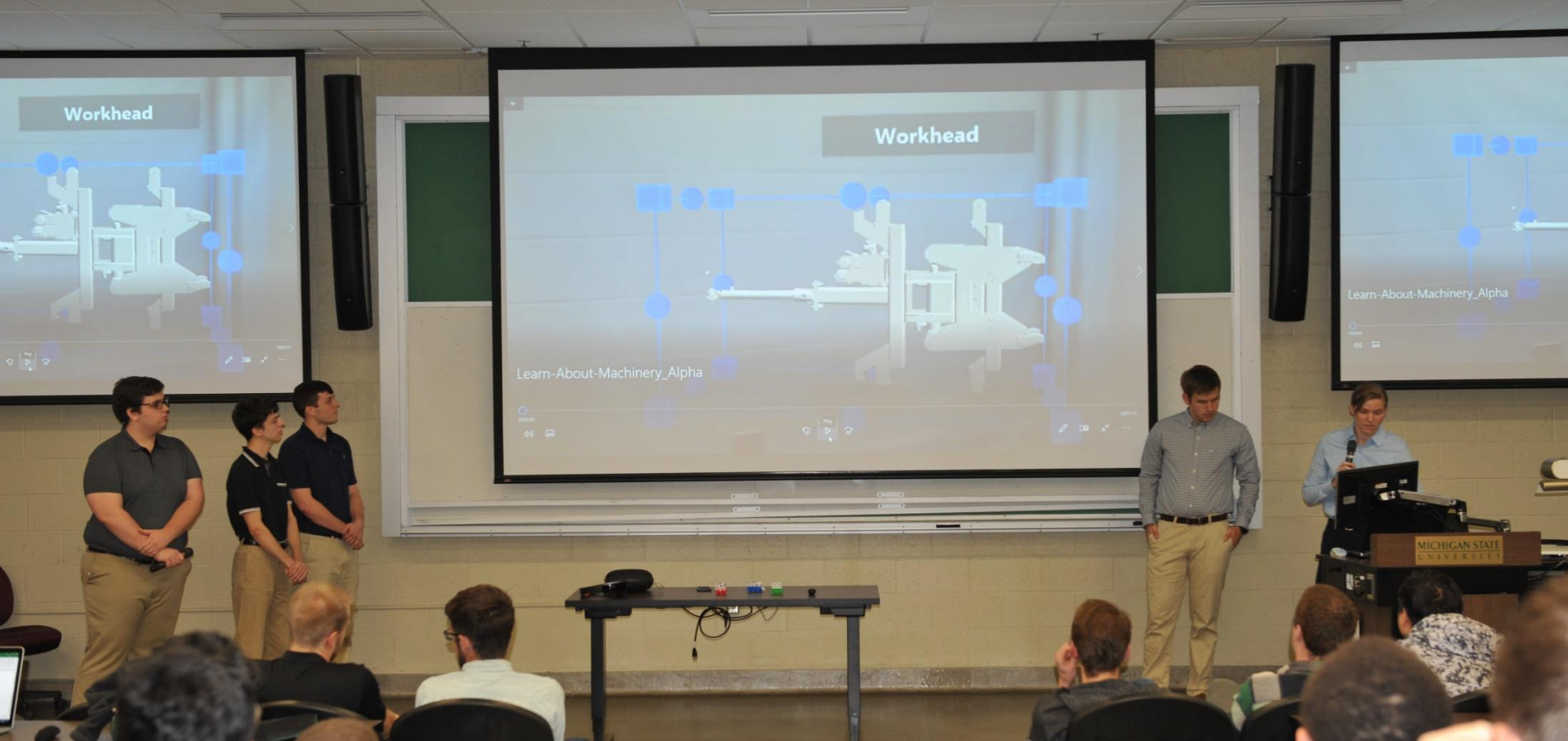
Team Union Pacific  
Project Plan Presentation



# Team Union Pacific Project Plan Presentation

Screen Mockup

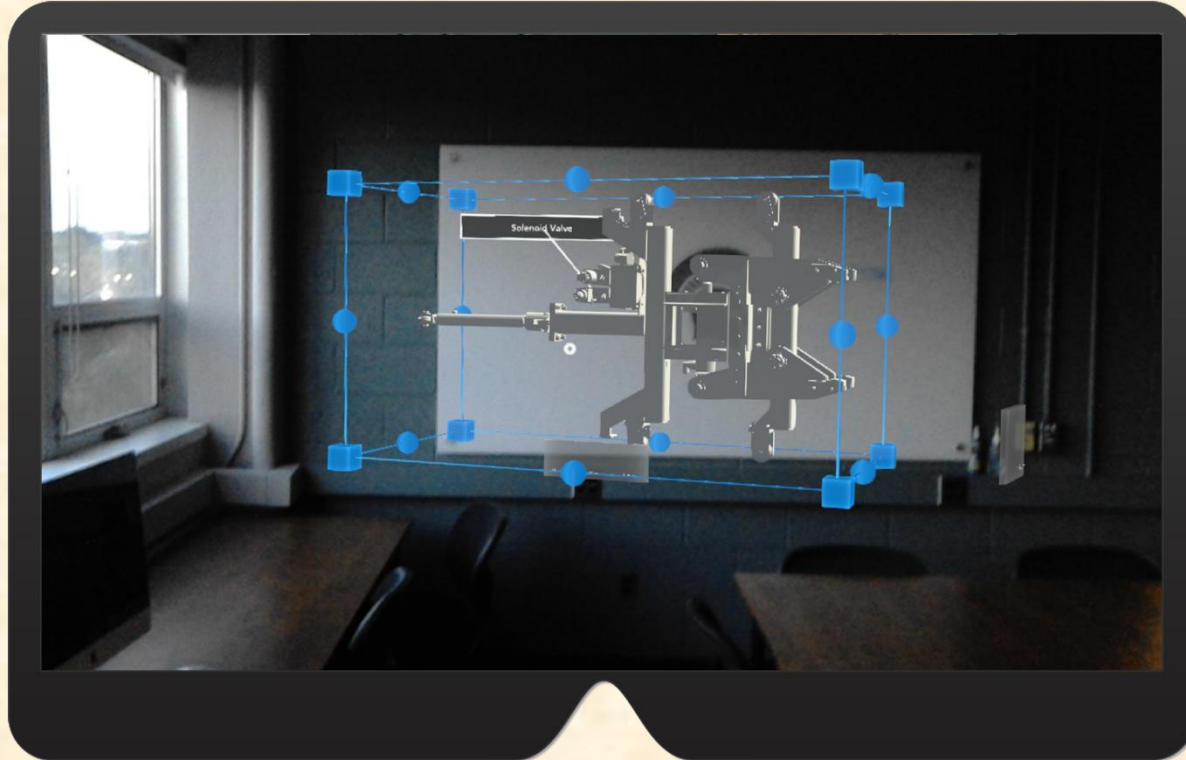




# Team Union Pacific Alpha Presentation

# Team Union Pacific Alpha Presentation

Learn About Machinery – Bounding Box

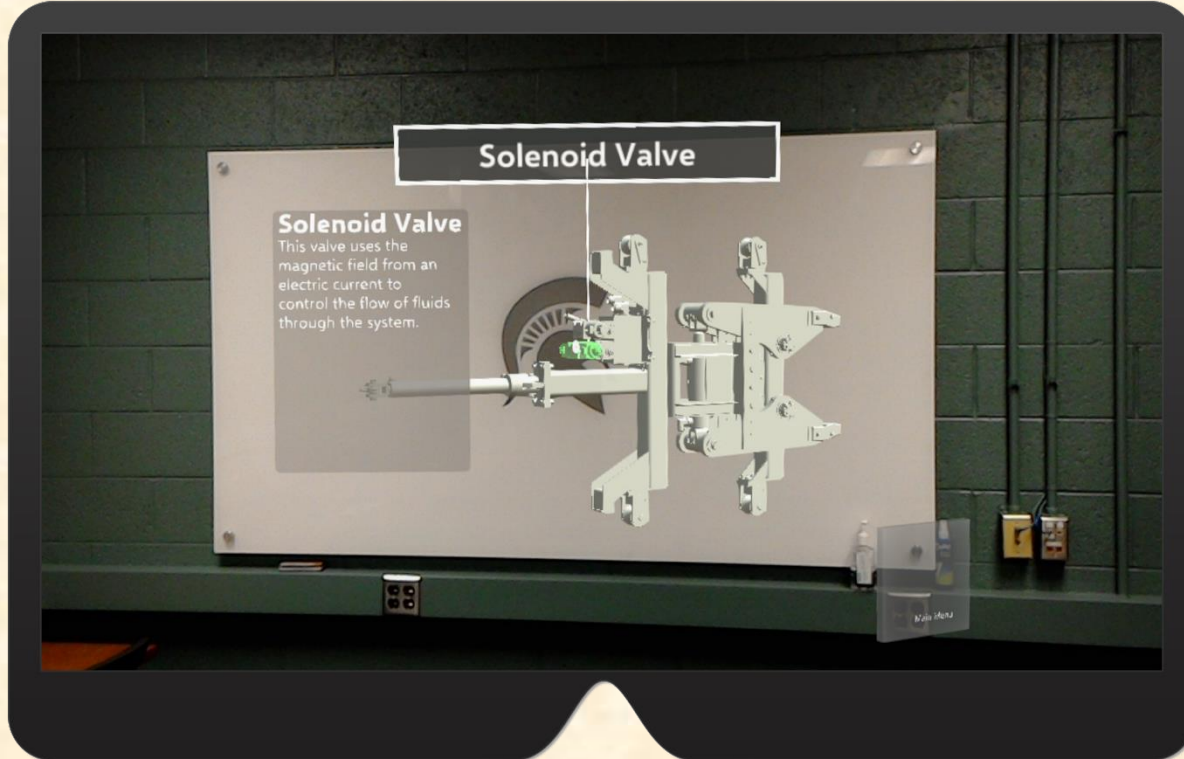


The Capstone Experience



# Team Union Pacific Alpha Presentation

Learn About Machinery - Tooltip

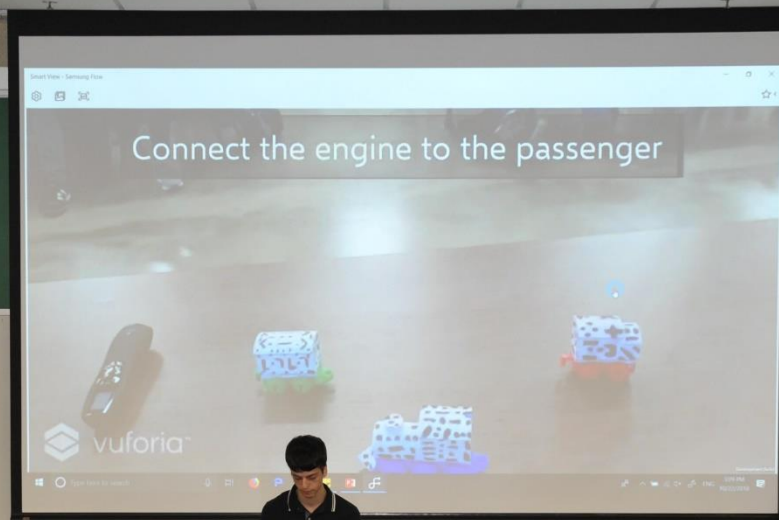
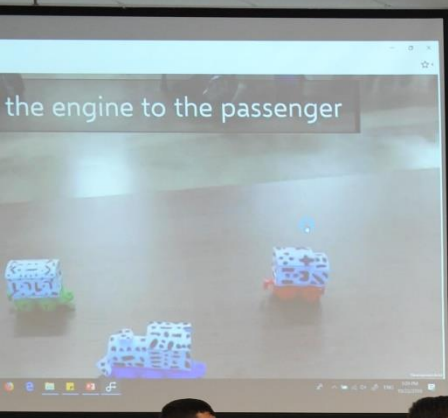


## Solenoid Valve

This valve uses the magnetic field from an electric current to control the flow of fluids through the system.







Team Union Pacific  
Alpha Presentation

# Team Union Pacific Alpha Presentation

Completion of Build a Train



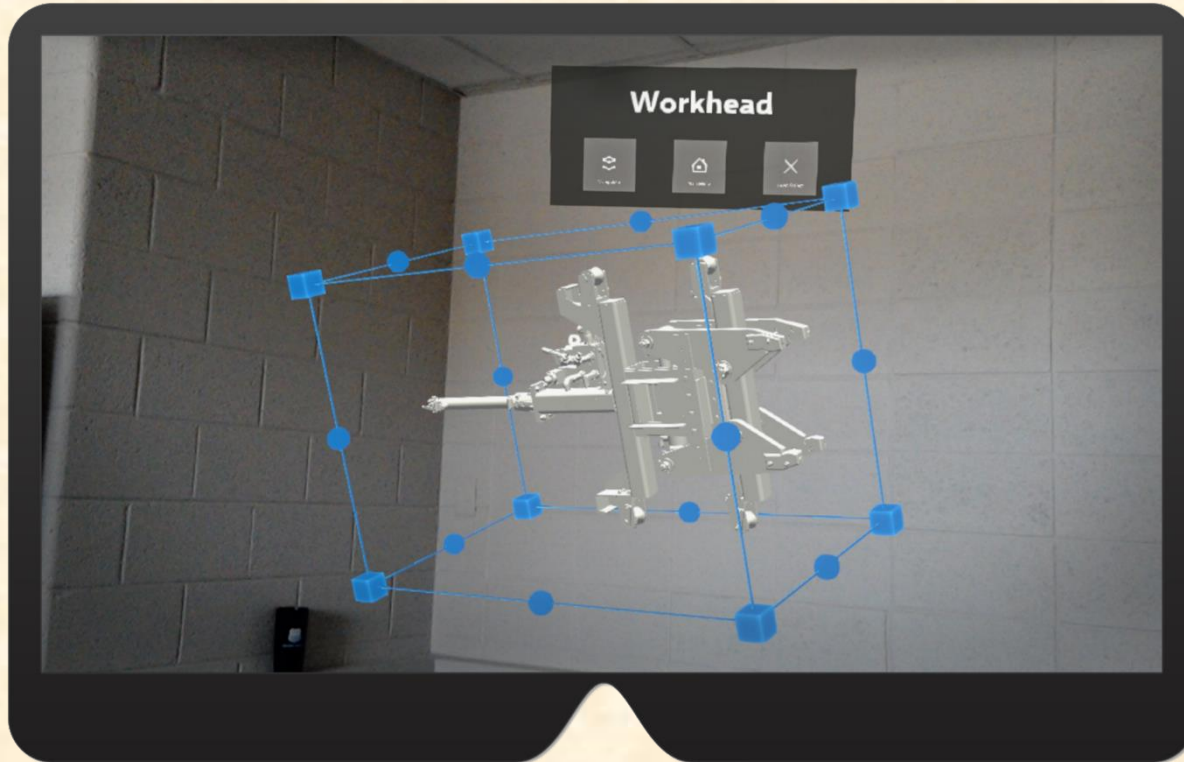




# Team Union Pacific Beta Presentation

# Team Union Pacific Beta Presentation

Learn About Machinery: Model Manipulation



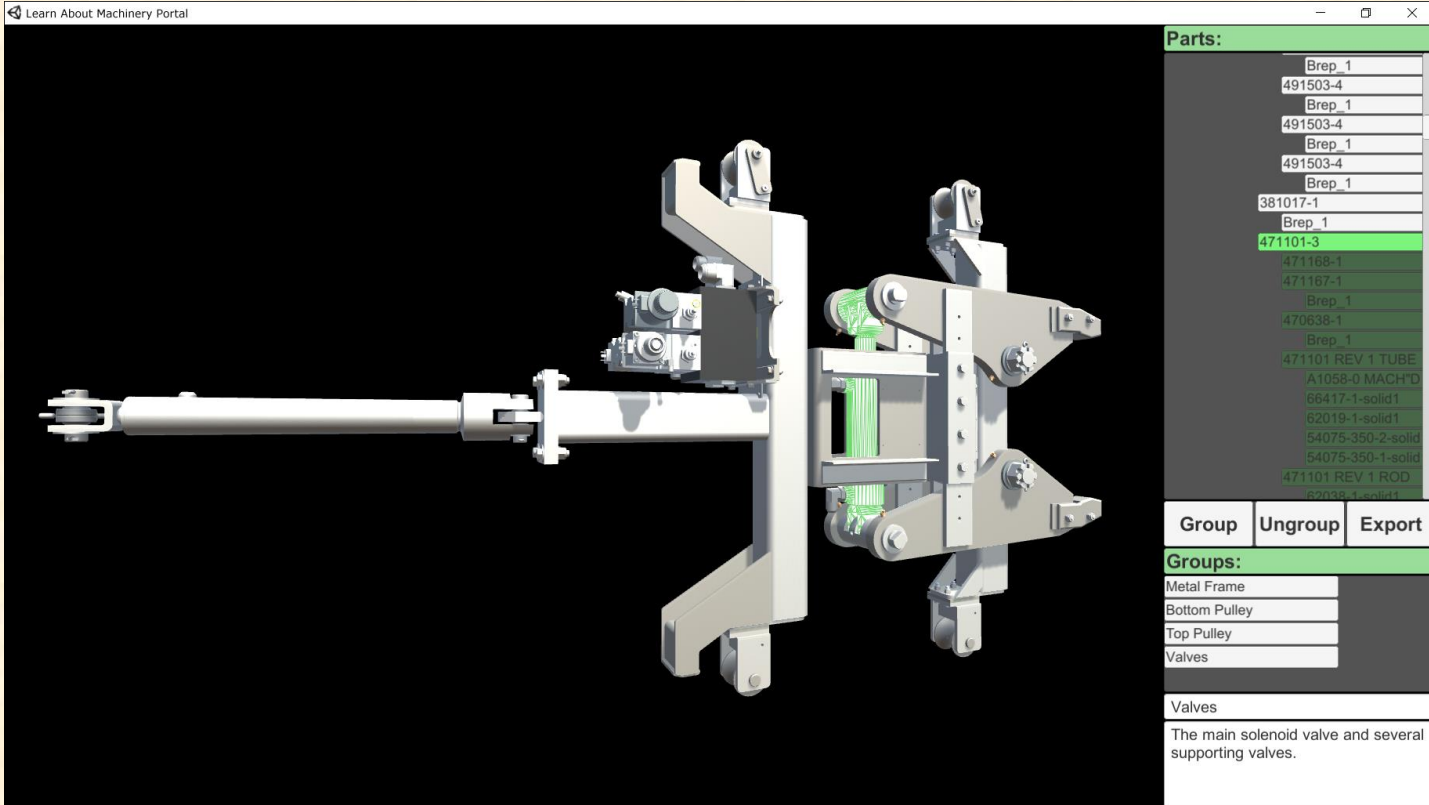
The Capstone Experience





# Team Union Pacific Beta Presentation

Learn About Machinery Portal

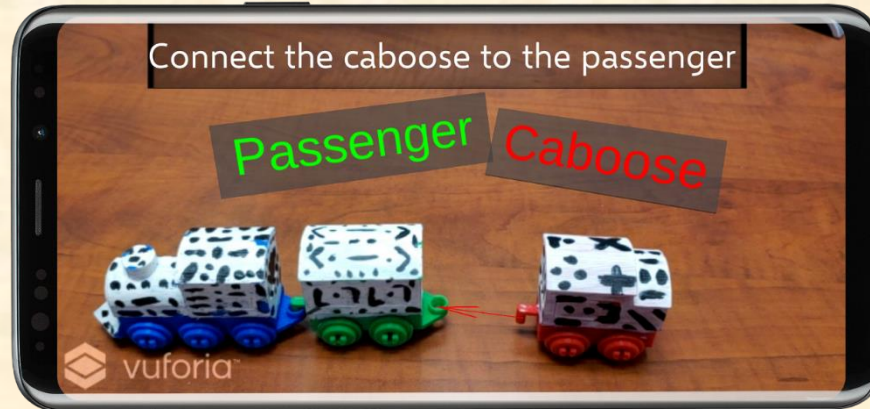
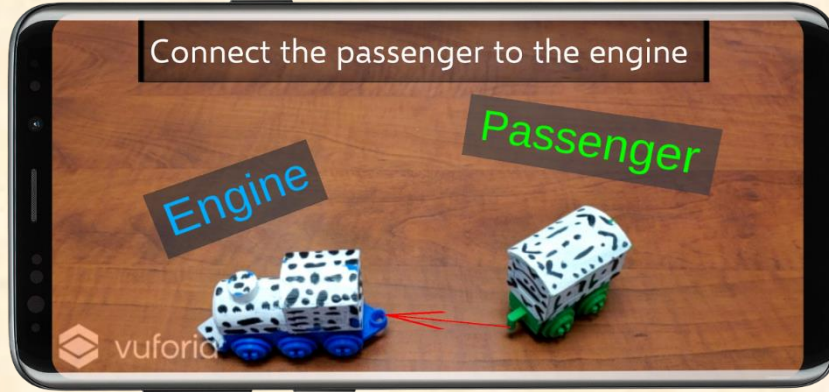




# Team Union Pacific Beta Presentation

# Team Union Pacific Beta Presentation

Build a Train: Instructions







Team Union Pacific  
Design Day



MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

## Team United Airlines

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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

**UNITED**





# Team United Airlines Project Overview

## Toolkit Content Verification System

- Functionalities
  - Verify Aircraft Toolkit Contents
  - Use Mobile Device Camera
- Features
  - Build Database of Complete Kits
    - List of Contents
    - Images of Contents
    - Barcodes and RFID Tags
  - Support Mobile Device Cameras
  - Apply Computer Vision
    - Compare Image Taken to Image Stored
    - Determine Kit Completeness
  - Send Notifications
    - Incomplete Kits
    - Missing Tools
  - Provide Companion Administrative Web Portal
- Technologies
  - Computer Vision
  - CSS / HTML / PHP / JavaScript
  - Apple iOS / Swift
  - Google Android / Java
  - SQL Database

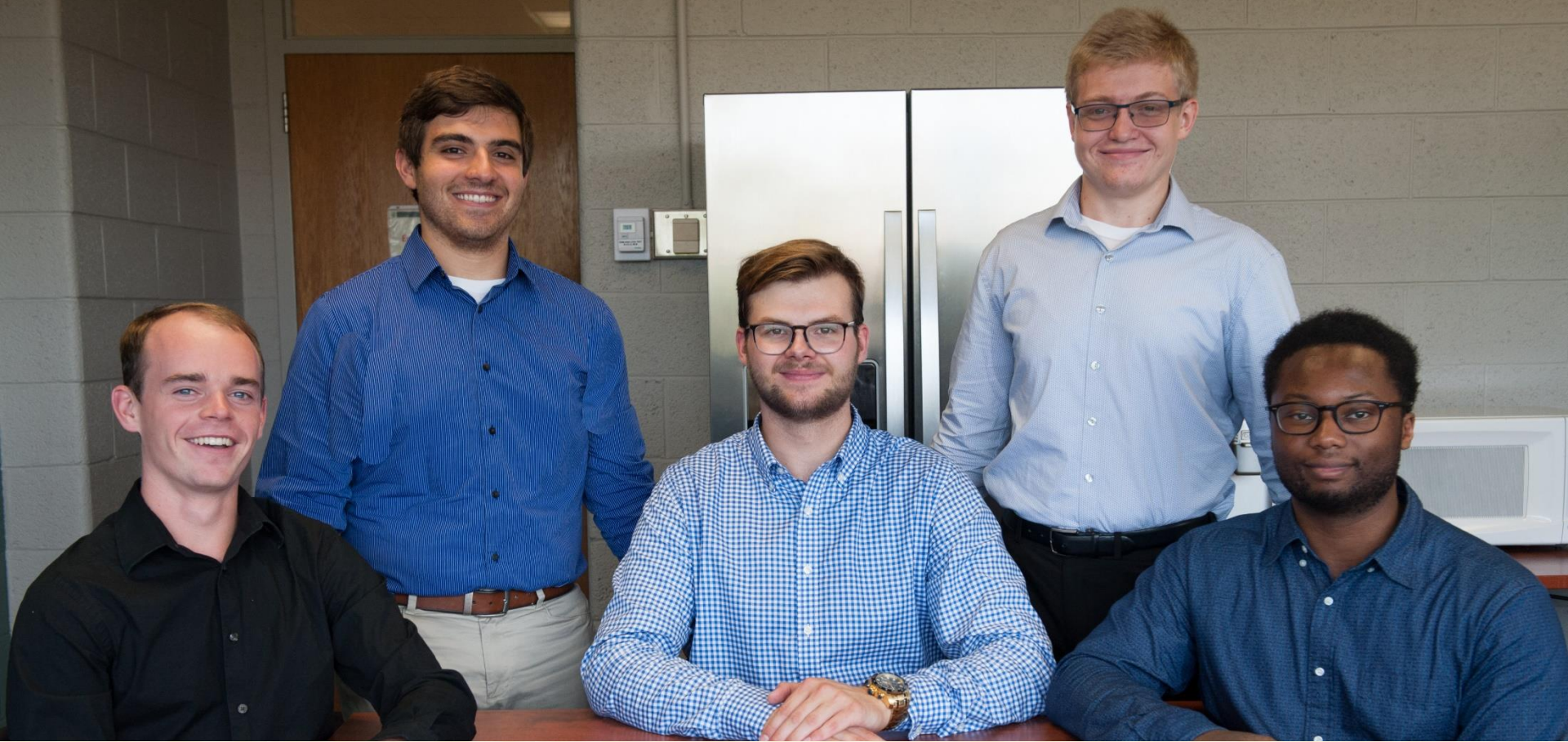


**UNITED**

Chicago, Illinois





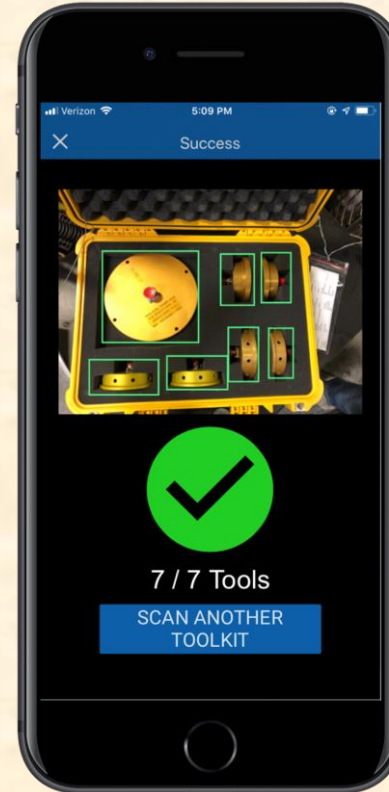


## Team United Airlines

Evan Childs, Scott Campbell, Bill Geshwender, Andy Ashton, Vladimir Otchere

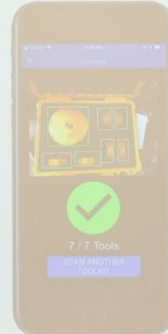
# Team United Airlines Project Plan Presentation

Screen Mockup





## Screen Mockup: All Tools Found in Kit



The Capstone Experience

Team United Airlines Project Plan Presentation

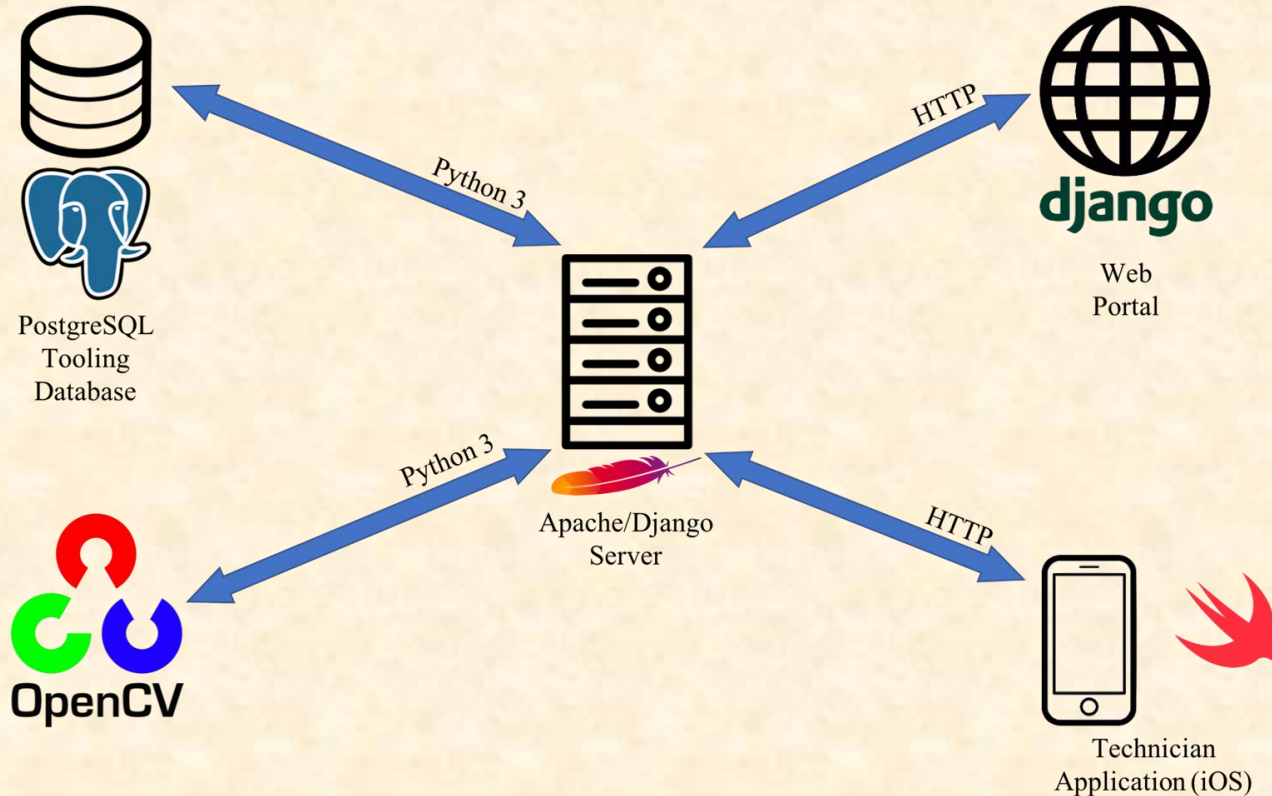
Screen M  
All Tools

The Capstone Experience

# Team United Airlines Project Plan Presentation

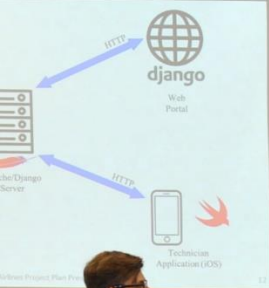
# Team United Airlines Project Plan Presentation

## Architecture Diagram

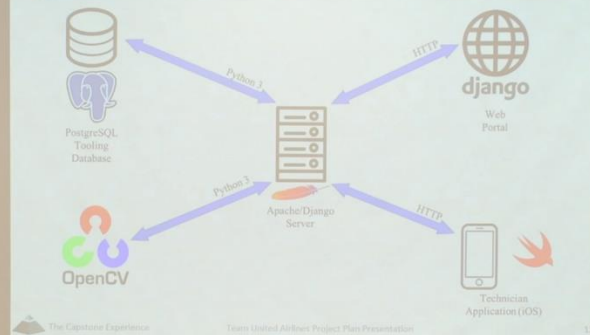




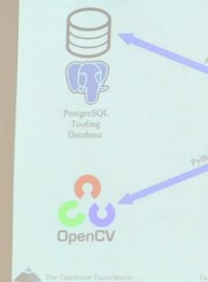
ure



## System Architecture



## System Arch



Team United Airlines  
Project Plan Presentation

# Team United Airlines Project Plan Presentation

Screen Mockup

United Airlines portal

United Airlines

Home

Inventory

Help

Settings

## Inventory

tracking_number	mme_number	mme_an	description	mfg_part_number
9101537	99-2034-O-6031	930	KIT, TCAS/XPNDR/DME/ADS-B, TEL-INST (IMQ)	
9101537	null		TESTER, CABLE ASSY, DIRECT CONNECT	75010186
9101537	null		TESTER, CABLE ASSY, DIRECTIONAL ANT	
9101537	null		TESTER, DIRECTIONAL ANTENNA ASSY	
9101537	null		TESTER, EXTENDER CABLE ASSY, DIRECTIONAL ANT	75010078
9101537	null		TESTER, TEST SET, TR220, SOFTWARE REV. 5.30	90000088
9101537	null		TOOL, CABLE ASSY, POWER CORD	75010025
9101537	null		TOOL, HANDLE ASSY, DIRECTIONAL ANT	88001002
9101538	99-2034-O-6031	931	KIT, TCAS/XPNDR/DME/ADS-B, TEL-INST (IMQ)	
9101538	null		TESTER, CABLE ASSY, DIRECT CONNECT	75010186
9101538	null		TESTER, CABLE ASSY, DIRECTIONAL ANT	
9101538	null		TESTER, DIRECTIONAL ANTENNA ASSY	
9101538	null		TESTER, EXTENDER CABLE ASSY, DIRECTIONAL ANT	75010078
9101538	null		TESTER, TEST SET, TR220, SOFTWARE REV. 5.30	90000088
9101538	null		TOOL, CABLE ASSY, POWER CORD	75010025
9101538	null		TOOL, HANDLE ASSY, DIRECTIONAL ANT	88001002
9101539	99-2034-O-6031	934	KIT, TCAS/XPNDR/DME/ADS-B, TEL-INST (IMQ)	
9101539	null		TESTER, CABLE ASSY, DIRECT CONNECT	75010186
9101539	null		TESTER, CABLE ASSY, DIRECTIONAL ANT	
9101539	null		TESTER, DIRECTIONAL ANTENNA ASSY	
9101539	null		TESTER, EXTENDER CABLE ASSY, DIRECTIONAL ANT	75010078

+ Add a tool

+ Add a kit



# Team United Airlines Alpha Presentation

# Team United Airlines Alpha Presentation

Check In / Check Out Toolkit

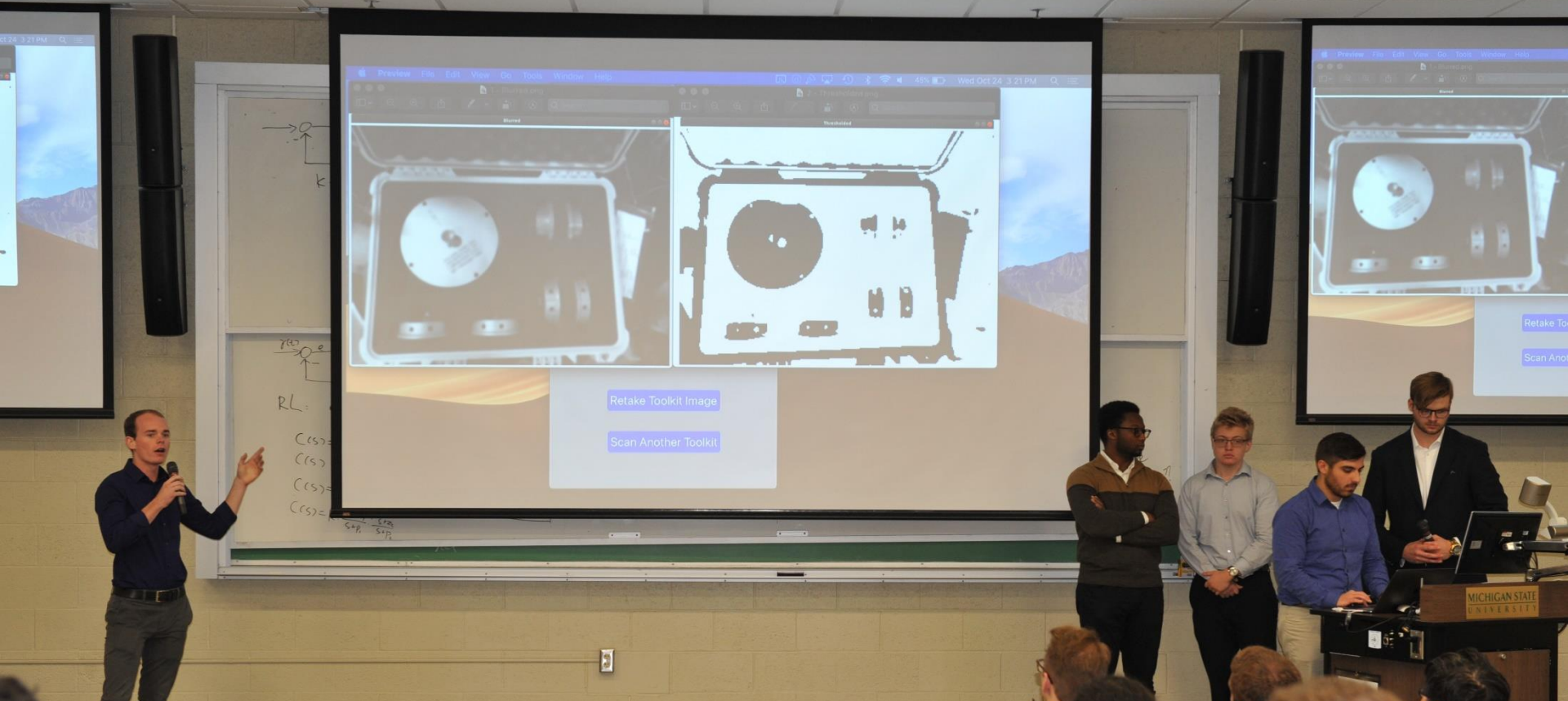




# Team United Airlines Alpha Presentation

Toolkit Found With Captured Image

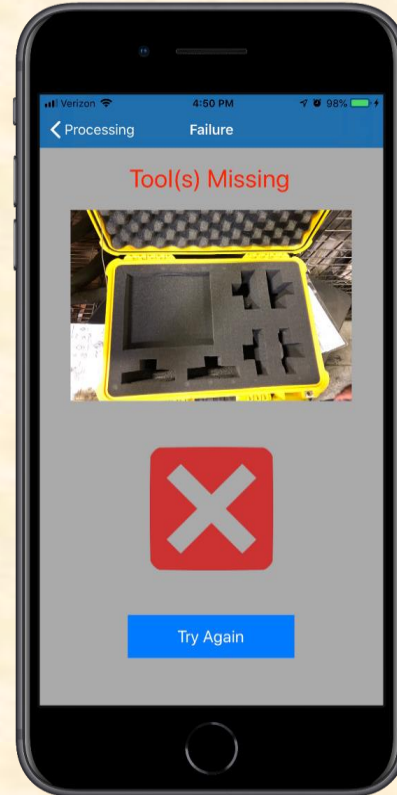
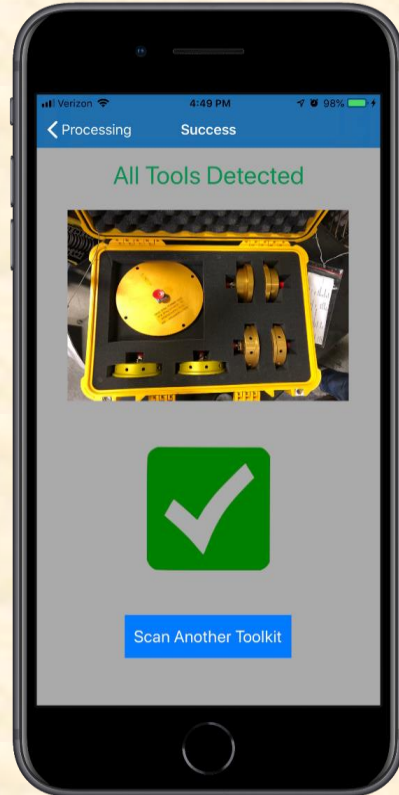




# Team United Airlines Alpha Presentation

# Team United Airlines Alpha Presentation

All Tools Detected / Tools Missing



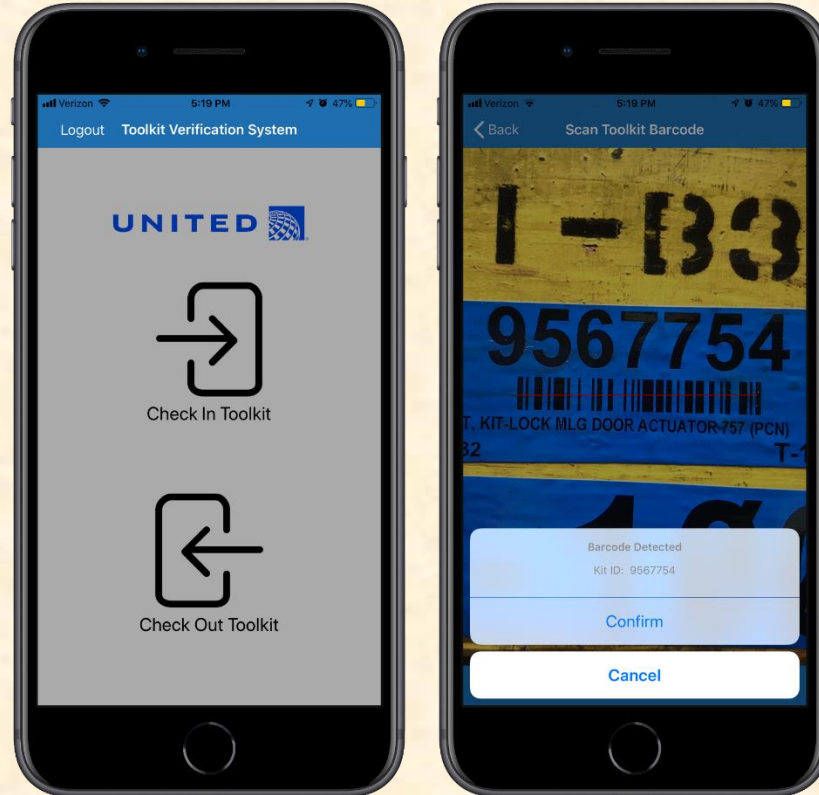


# Team United Airlines Beta Presentation



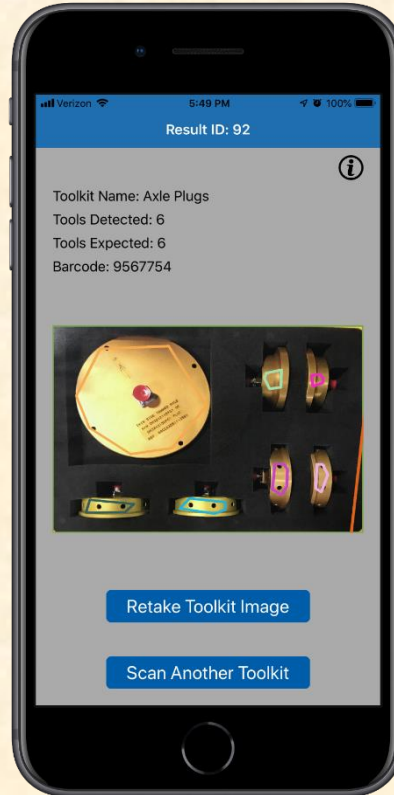
# Team United Airlines Beta Presentation

Check In / Check Out Toolkit



# Team United Airlines Beta Presentation

Result of Captured Image





# Team United Airlines Beta Presentation

# Team United Airlines Beta Presentation

## Administrative Web Portal

The screenshot shows a web browser window displaying the 'Toolkit Content Verification System Administration' interface. The browser's address bar shows the URL 'https://35.9.22.102/admin/'. The page has a blue header with the 'UNITED' logo and the title 'Toolkit Content Verification System Administration'. On the right side of the header, it says 'WELCOME, EVAN / [CHANGE PASSWORD](#) / [LOG OUT](#)'. The main content area is titled 'Toolkit Content Verification System' and is divided into three columns. The left column, titled 'Welcome, Evan', contains 'User info' for 'childsev@msu.edu' (Email Address), 'Evan Childs' (Full Name), and 'Active Status' (indicated by a green checkmark). It also includes links for 'Change Password' and 'Logout'. The middle column contains a list of navigation links: 'AUTHENTICATION AND AUTHORIZATION', 'Groups', 'TOOL IMAGE VERIFIER', 'Process results', 'Tool kits', 'Tool regions', and 'Users'. The right column, titled 'Recent actions', lists 'My actions' including: '+ Kit, light meter, white & black, see info 9124314' (Tool kit), '+ Axle plug covers 9567754' (Tool kit), '+ Kit, test equip, eng fire ext sys, b787 9126651' (Tool kit), and two users: 'unelevated@msu.edu' and 'unelevated@msu.edu' (both Users).

Toolkit Content Verification System Administration

WELCOME, EVAN / [CHANGE PASSWORD](#) / [LOG OUT](#)

### Toolkit Content Verification System

#### Welcome, Evan

**User info**

childsev@msu.edu  
Email Address

Evan Childs  
Full Name

✓  
Active Status

✓  
Admin Status

[Change Password](#)

[Logout](#)

**AUTHENTICATION AND AUTHORIZATION**

[Groups](#)

**TOOL IMAGE VERIFIER**

[Process results](#)

[Tool kits](#)

[Tool regions](#)

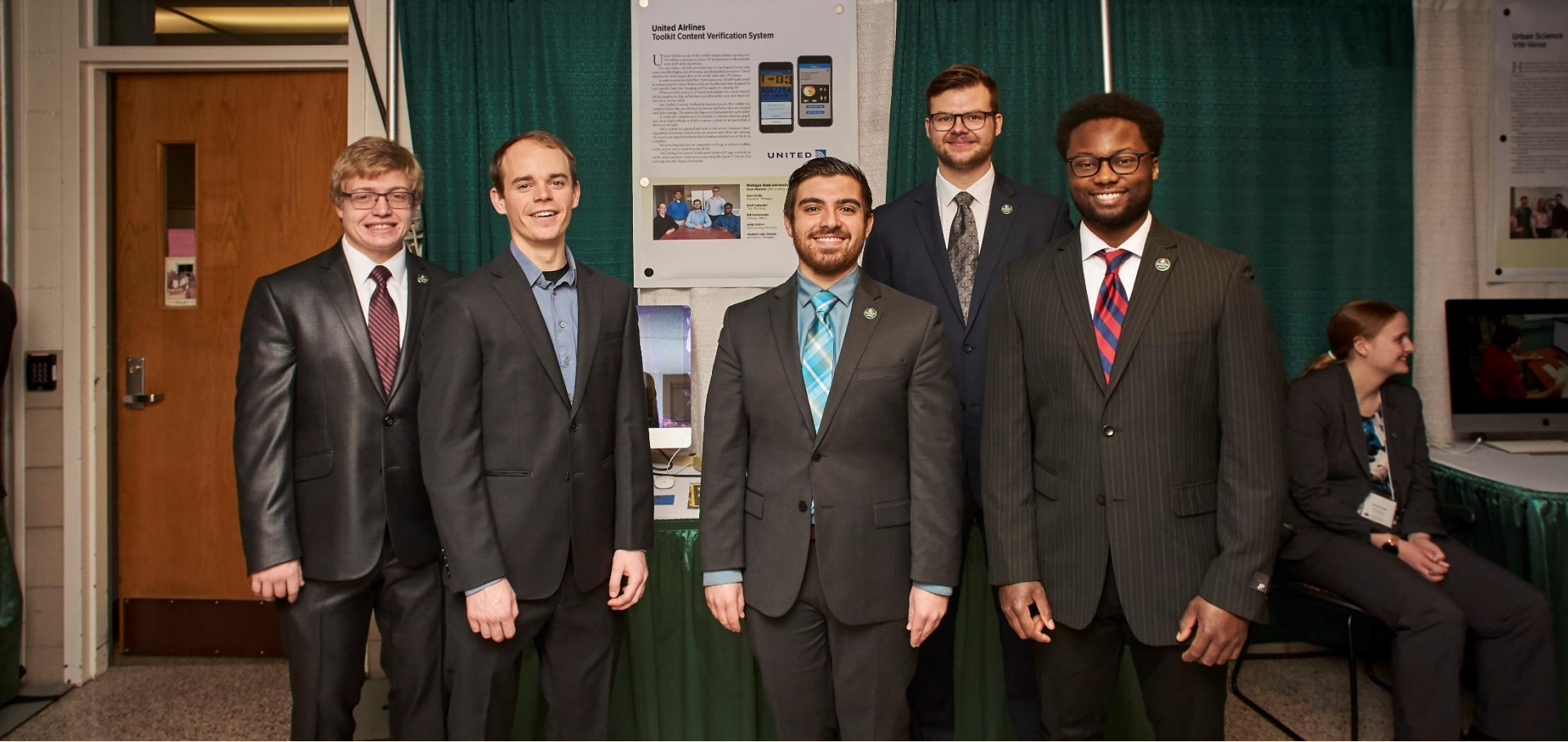
[Users](#)

#### Recent actions

**My actions**

- + Kit, light meter, white & black, see info 9124314  
Tool kit
- + Axle plug covers 9567754  
Tool kit
- + Kit, test equip, eng fire ext sys, b787 9126651  
Tool kit
- ✏ unelevated@msu.edu  
User
- + unelevated@msu.edu  
User





Team United Airlines  
Design Day

MICHIGAN STATE  
UNIVERSITY

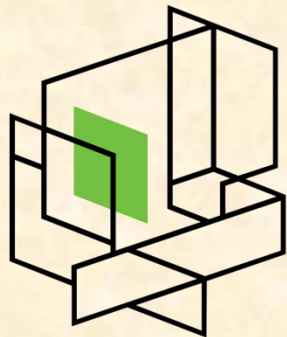
# *The Capstone Experience*

## Team Urban Science

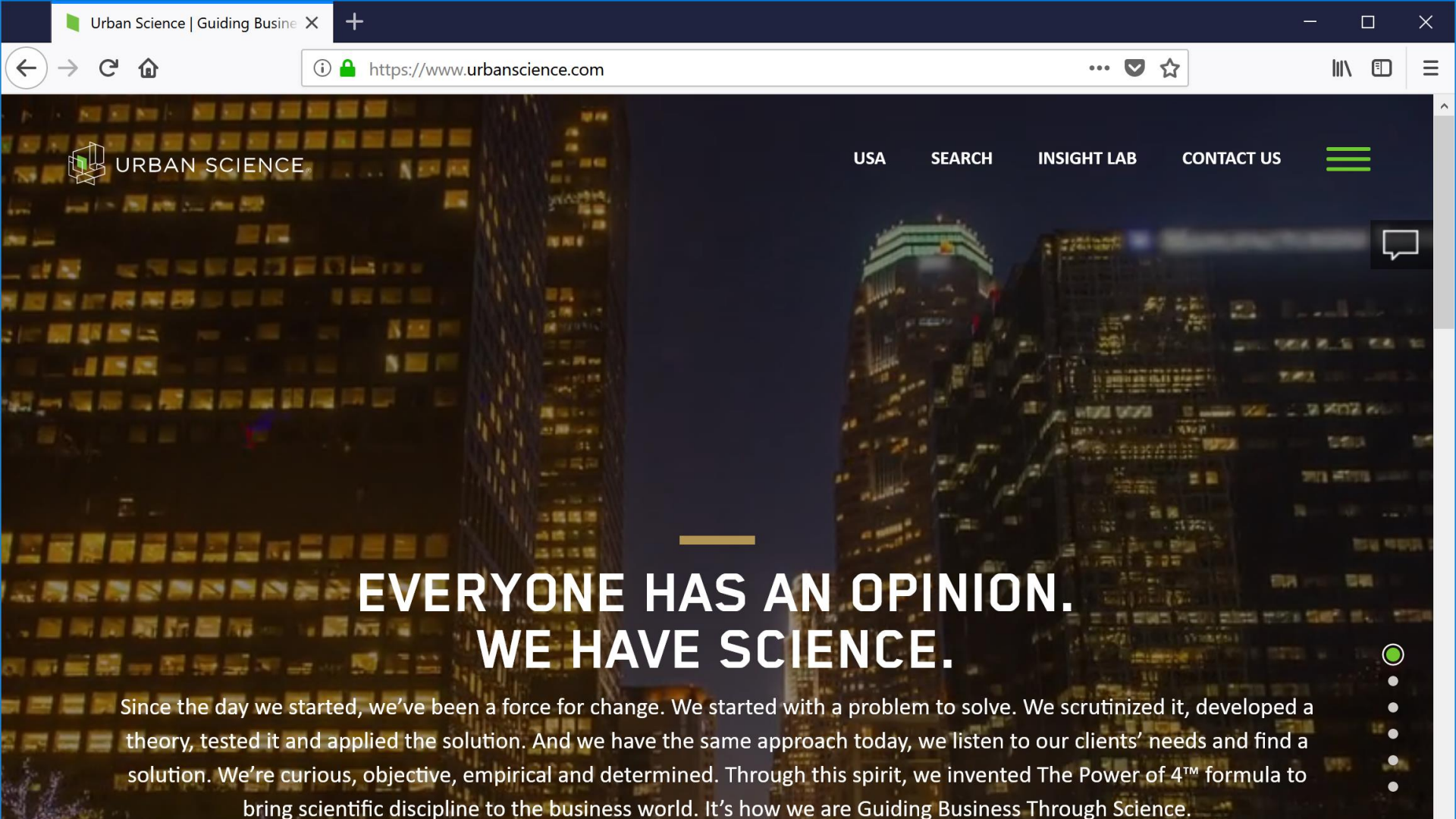
Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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



URBAN SCIENCE™

[USA](#)[SEARCH](#)[INSIGHT LAB](#)[CONTACT US](#)

# EVERYONE HAS AN OPINION. WE HAVE SCIENCE.

Since the day we started, we've been a force for change. We started with a problem to solve. We scrutinized it, developed a theory, tested it and applied the solution. And we have the same approach today, we listen to our clients' needs and find a solution. We're curious, objective, empirical and determined. Through this spirit, we invented The Power of 4™ formula to bring scientific discipline to the business world. It's how we are Guiding Business Through Science.

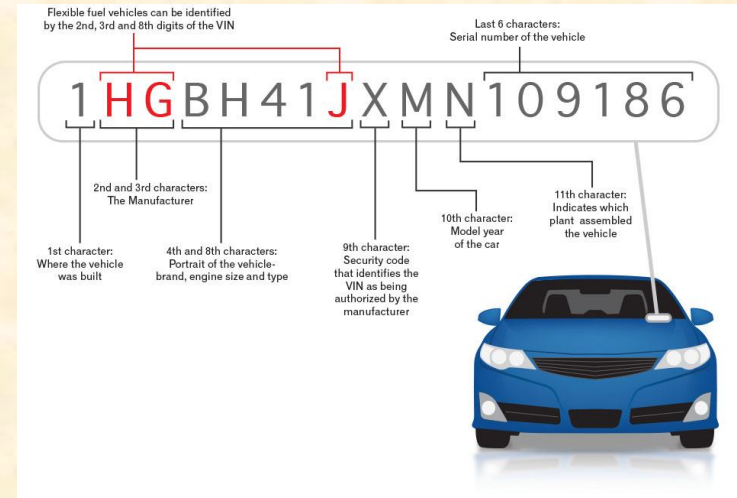




# Team Urban Science Project Overview

## VIN-Verse

- Functionalities
  - Display Information About Specific Vehicle Identification Number (VIN)
  - Aggregate Data About a Class of VINs
- Features
  - Provide Web and Mobile Apps
  - Enter VIN Using Keyboard or Mobile Device Camera
  - Give Detailed History of VIN's Life
  - Build Real-Time Authorization Mechanisms
    - Dealers
    - Independent Repair Facilities (IRFs)
    - Owners
  - Protect Vehicle Owner's Privacy
  - Crawl Google Reviews or Yelp
- Technologies
  - CSS / HTML / PHP / JavaScript
  - Angular JS
  - Microsoft
    - C# / ASP.NET Core
    - SQL Server
  - Apple iOS / Swift
  - Google Android / Java
  - Firebase



URBAN SCIENCE.

Detroit, Michigan

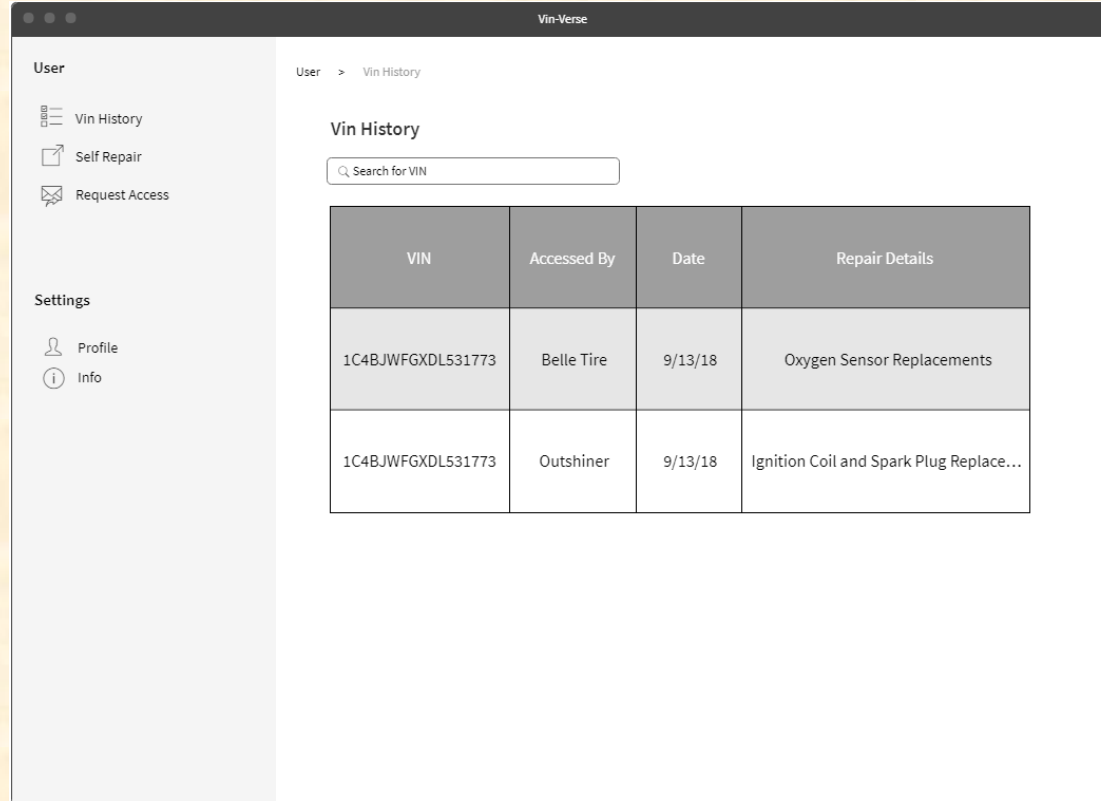


## Team Urban Science

Jacob Lawler, Rachel Grunder, Gabe Heikes, Aakash Bhargava

# Team Urban Science Project Plan Presentation

Screen Mockup





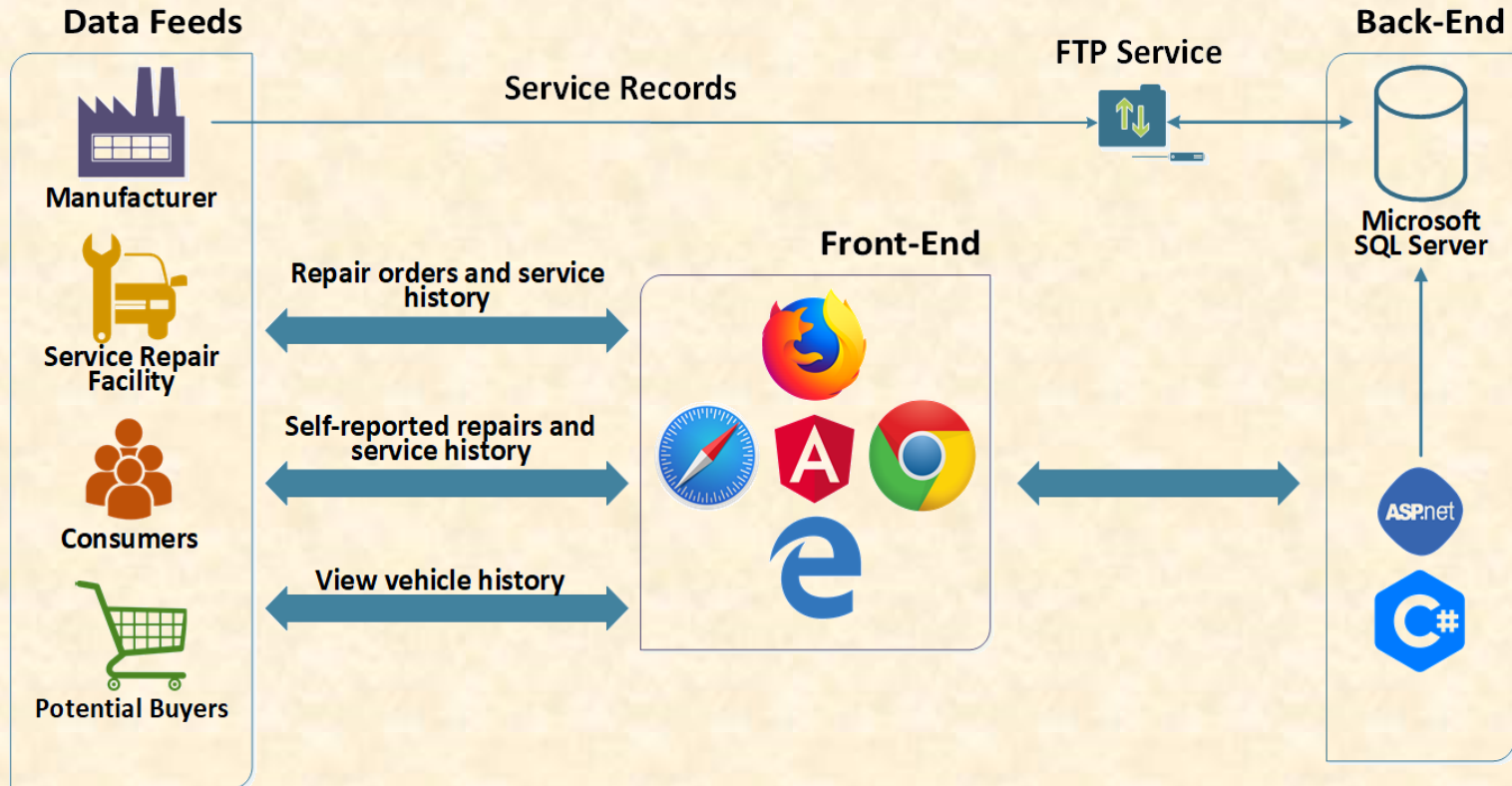


# Team Urban Science Project Plan Presentation



# Team Urban Science Project Plan Presentation

## Architecture Diagram

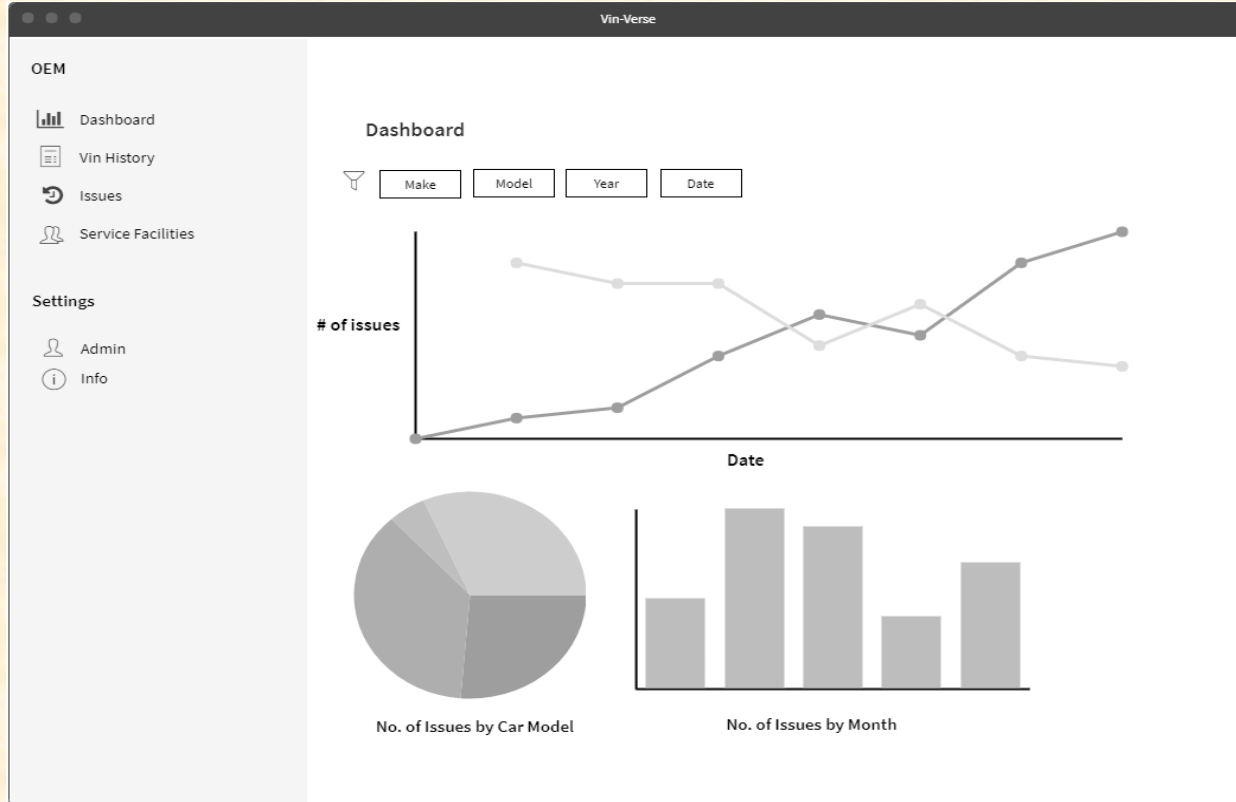


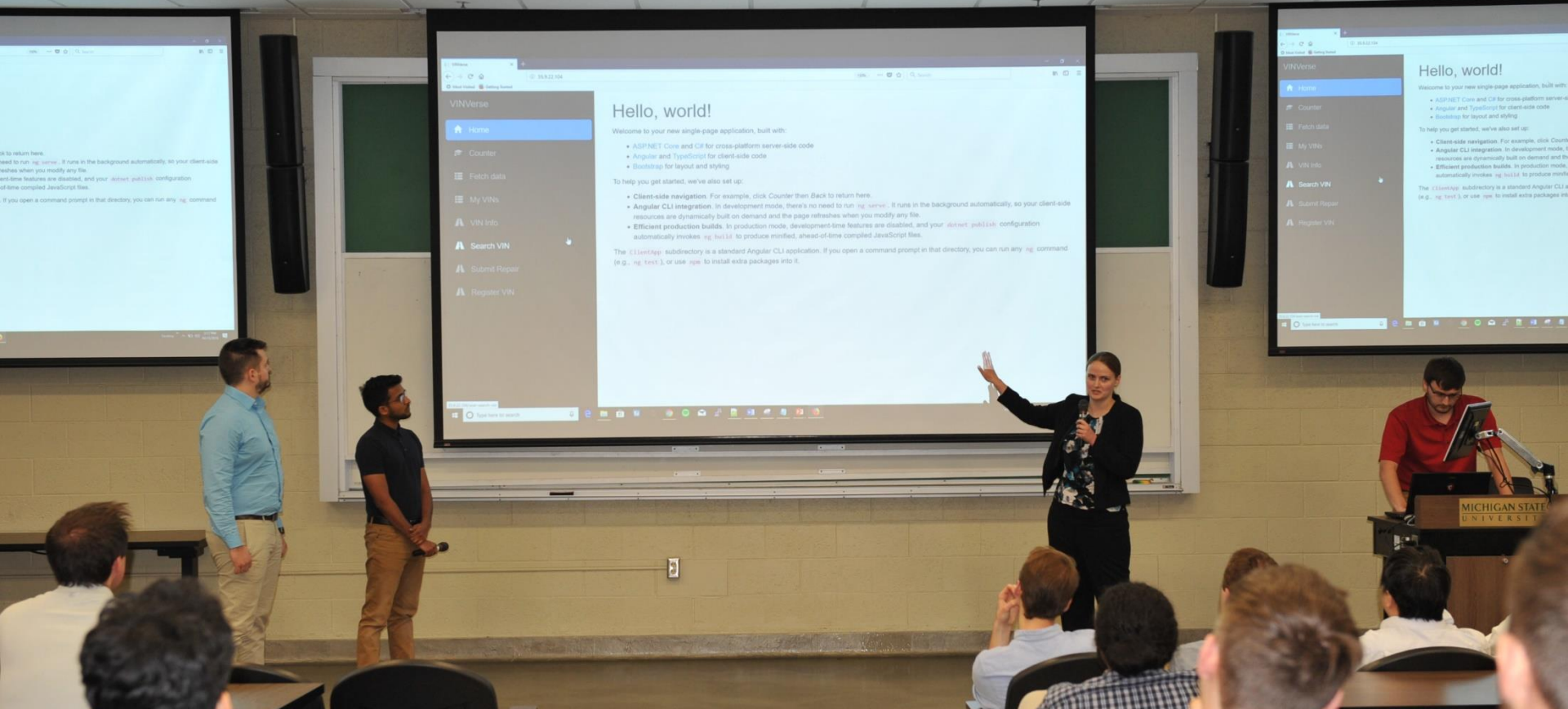


# Team Urban Science Project Plan Presentation

# Team Urban Science Project Plan Presentation

Screen Mockup



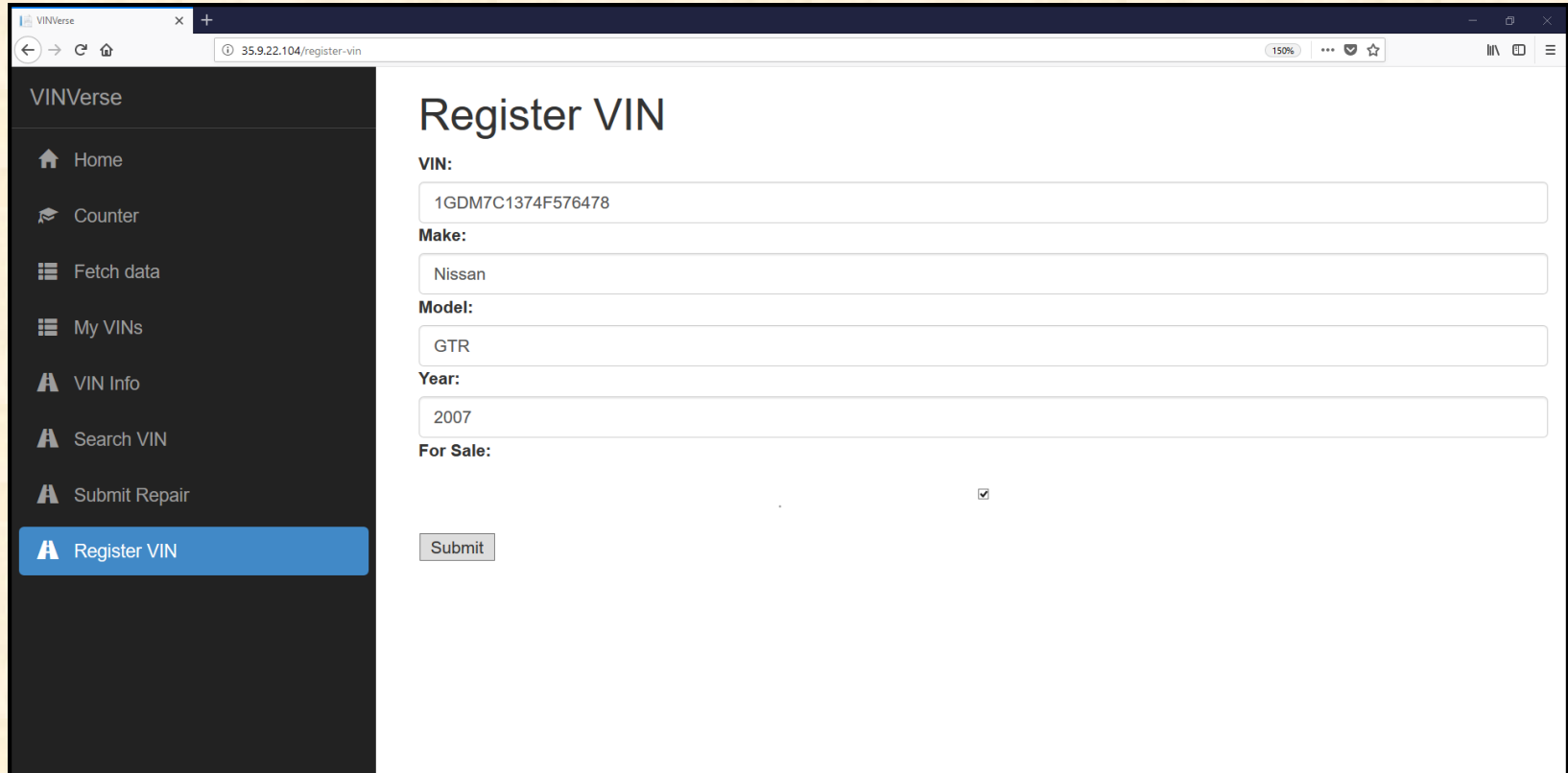


# Team Urban Science Alpha Presentation



# Team Urban Science Alpha Presentation

Registering a VIN

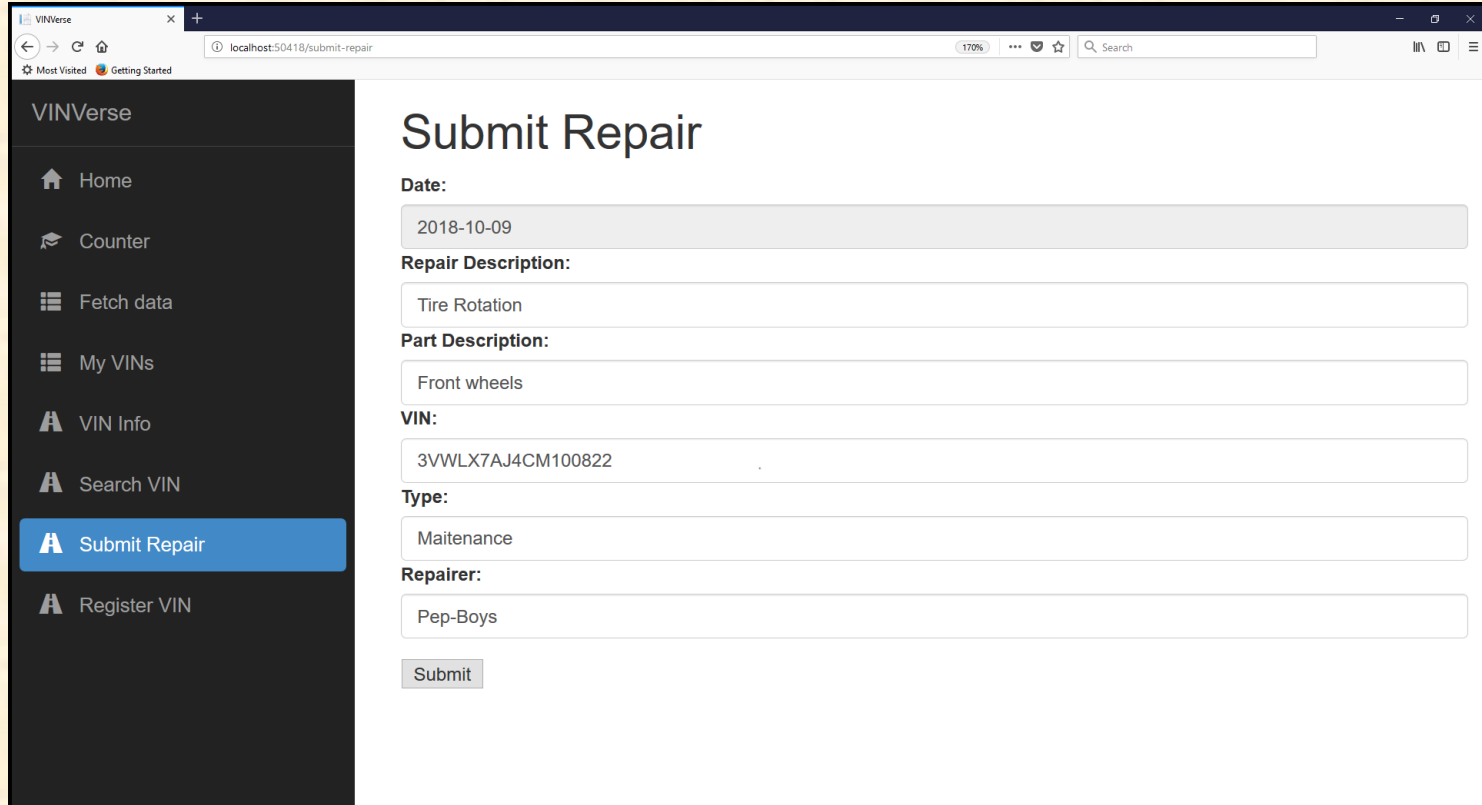


The screenshot shows a web browser window with the address bar displaying '35.9.22.104/register-vin'. The page title is 'VINVerse'. The left sidebar contains a navigation menu with the following items: Home, Counter, Fetch data, My VINs, VIN Info, Search VIN, Submit Repair, and Register VIN (highlighted in blue). The main content area is titled 'Register VIN' and contains the following form fields:

- VIN:** A text input field containing '1GDM7C1374F576478'.
- Make:** A text input field containing 'Nissan'.
- Model:** A text input field containing 'GTR'.
- Year:** A text input field containing '2007'.
- For Sale:** A checkbox that is checked.
- Submit:** A button at the bottom of the form.

# Team Urban Science Alpha Presentation

Submitting a Repair



The screenshot shows a web browser window with the address bar displaying 'localhost:50418/submit-repair'. The page title is 'VINVerse'. The left sidebar contains a navigation menu with the following items: Home, Counter, Fetch data, My VINs, VIN Info, Search VIN, Submit Repair (highlighted in blue), and Register VIN. The main content area is titled 'Submit Repair' and contains the following form fields:

- Date:** 2018-10-09
- Repair Description:** Tire Rotation
- Part Description:** Front wheels
- VIN:** 3VWLX7AJ4CM100822
- Type:** Maintenance
- Repairer:** Pep-Boys
- Submit** button

### What's left to do?

- Role-based functionality
- Role-based UI
- Analytics Dashboard
- Flesh out Integration Engine

### What's left to do?

- Role-based functionality
- Role-based UI
- Analytics Dashboard
- Flesh out Integration Engine

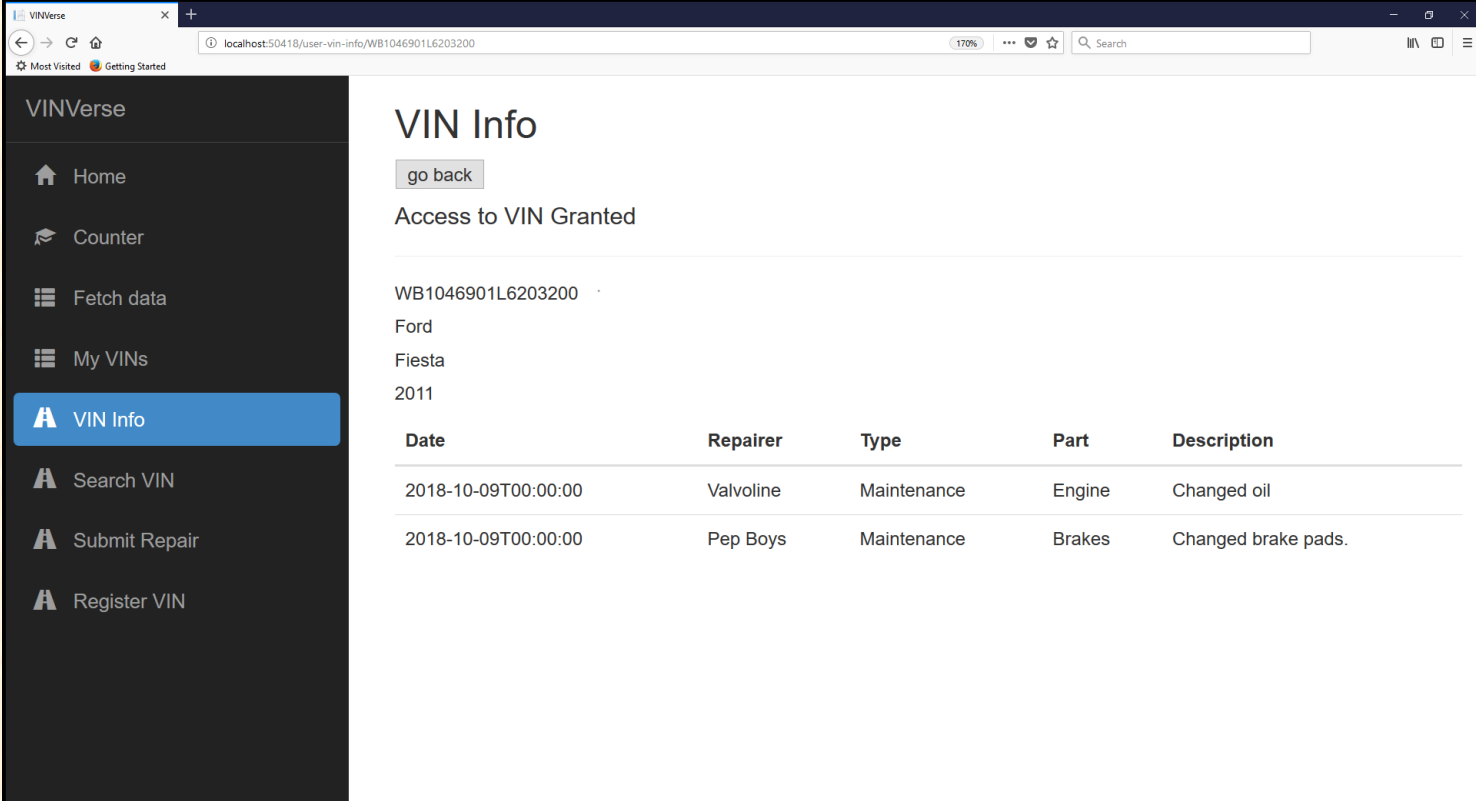
### What's left to do?

- Role-based functionality
- Role-based UI
- Analytics Dashboard
- Flesh out Integration Engine

Team Urban Science  
Alpha Presentation

# Team Urban Science Alpha Presentation

Service History

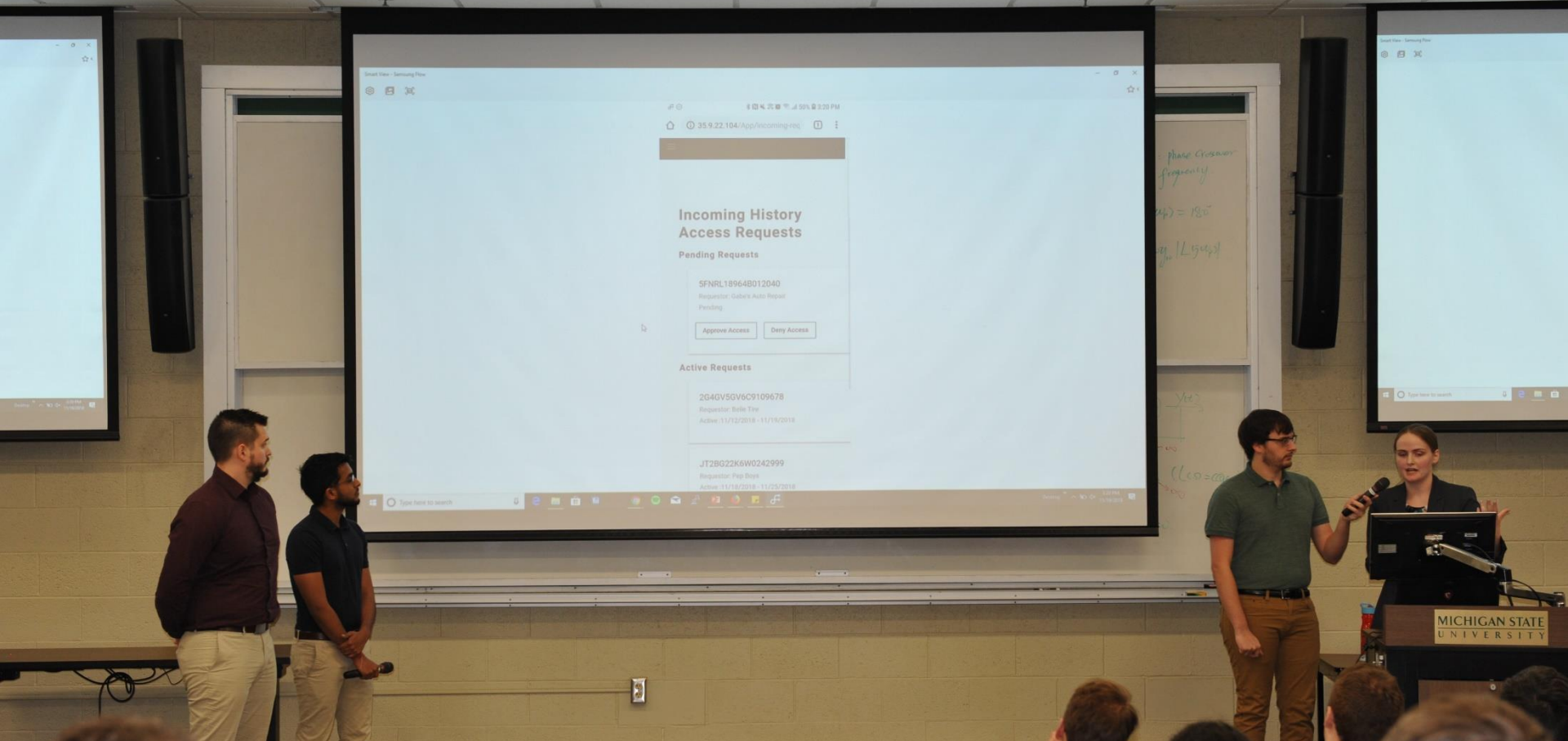


The screenshot shows a web browser window with the URL `localhost:50418/user-vin-info/WB1046901L6203200`. The application has a dark sidebar with the following menu items: Home, Counter, Fetch data, My VINs, VIN Info (selected), Search VIN, Submit Repair, and Register VIN. The main content area is titled "VIN Info" and includes a "go back" button. Below the title, it states "Access to VIN Granted" and displays the VIN `WB1046901L6203200`, the car model "Ford Fiesta", and the year "2011". A table below shows the service history with columns for Date, Repairer, Type, Part, and Description.

Date	Repairer	Type	Part	Description
2018-10-09T00:00:00	Valvoline	Maintenance	Engine	Changed oil
2018-10-09T00:00:00	Pep Boys	Maintenance	Brakes	Changed brake pads.







# Team Urban Science Beta Presentation

# Team Urban Science Beta Presentation

## Vehicle Information

My Vehicles

Submit Repair

Register Vehicle


Search for Vehicle

Incoming Access Requests

Outgoing Access Requests

Back

### Vehicle Information



**Make**

FORD

**Model**

F-350

**Year**

2005

**VIN**

1FDWF37585EA89821

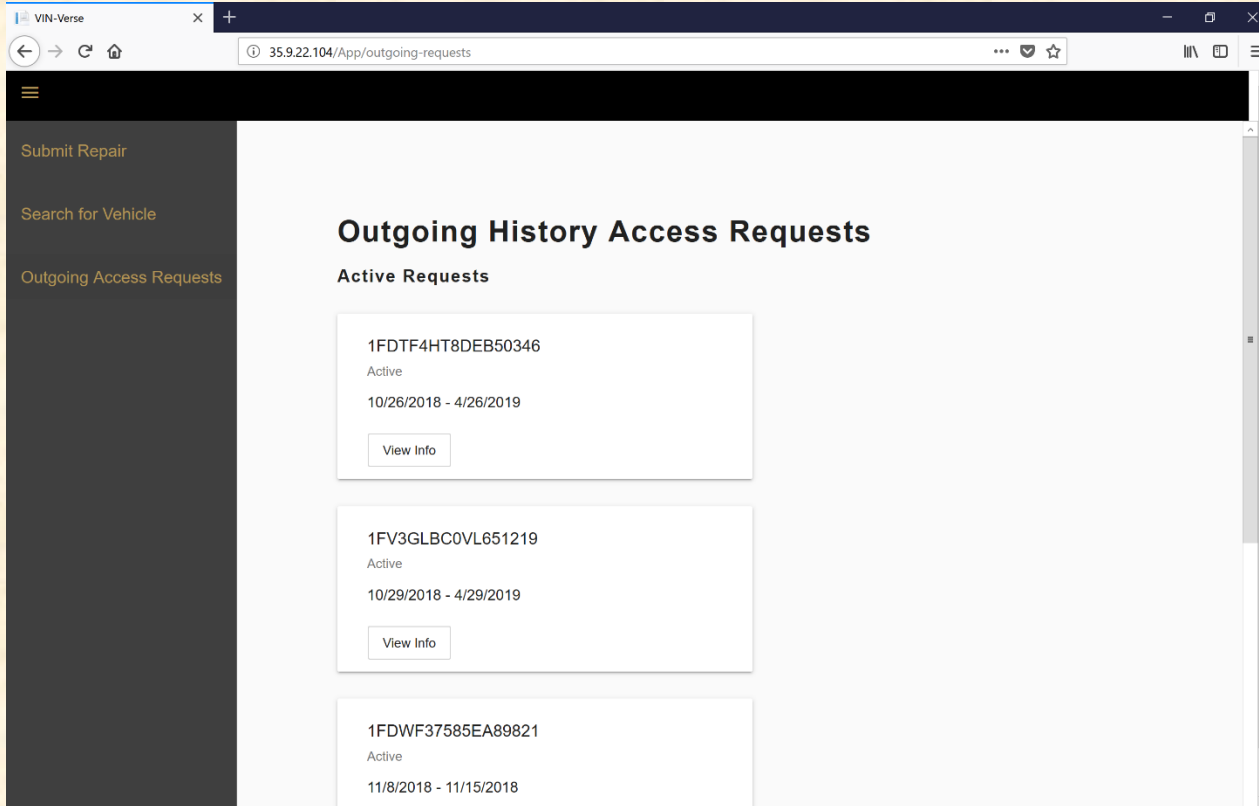
### All Repairs

Date	Repairer	Type	Part
9/20/2018	Belle Tire	Maintenance	Hub Cap
9/22/2018	Belle Tire	Maintenance	Tires



# Team Urban Science Beta Presentation

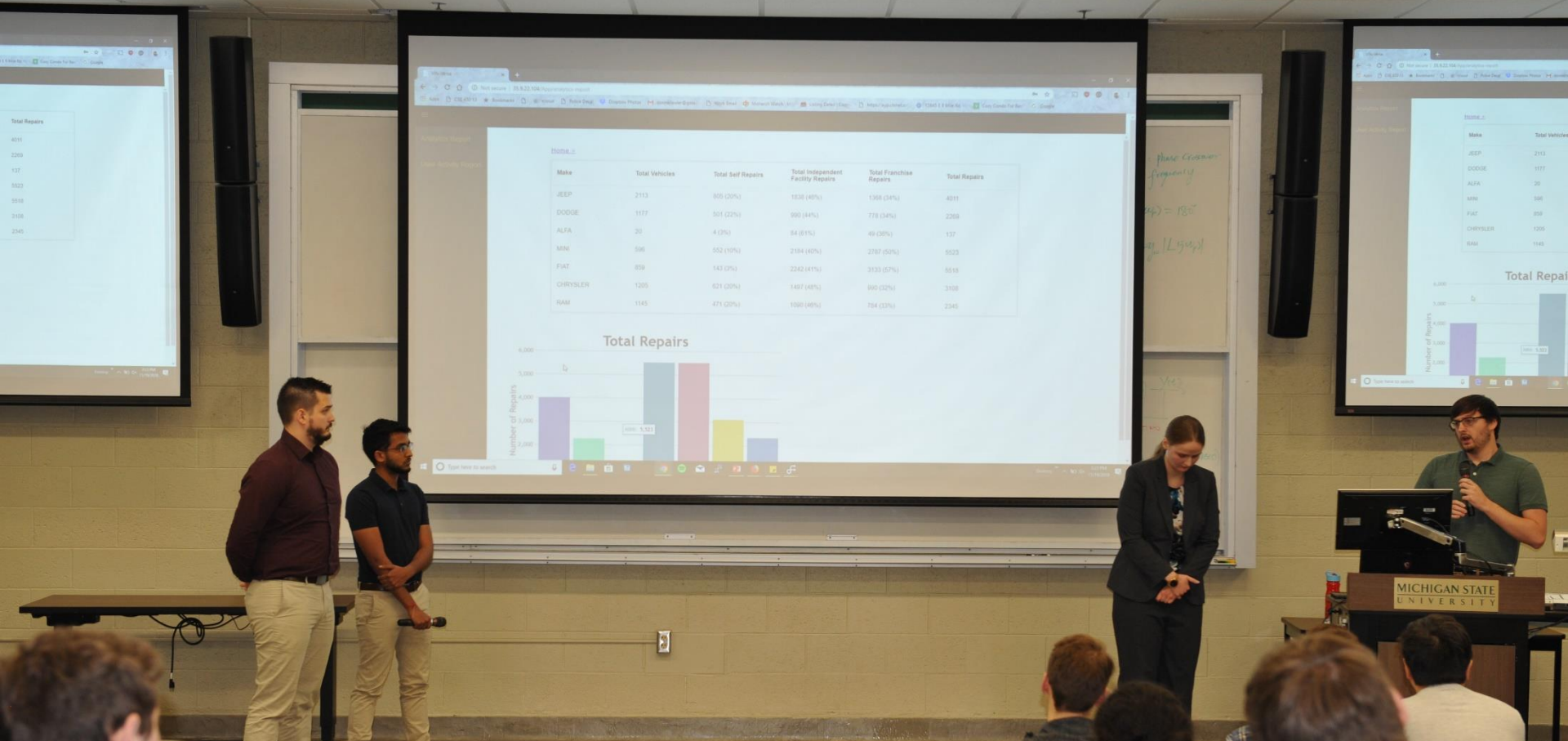
## Outgoing History Access Request



The screenshot shows a web browser window with the address bar displaying "35.9.22.104/App/outgoing-requests". The application has a dark sidebar on the left with three menu items: "Submit Repair", "Search for Vehicle", and "Outgoing Access Requests". The main content area is titled "Outgoing History Access Requests" and features a sub-header "Active Requests". Below this, there are three white cards, each representing an active request. Each card displays a VIN, the status "Active", a date range, and a "View Info" button.

VIN	Status	Period	Action
1FDTF4HT8DEB50346	Active	10/26/2018 - 4/26/2019	<a href="#">View Info</a>
1FV3GLBC0VL651219	Active	10/29/2018 - 4/29/2019	<a href="#">View Info</a>
1FDWF37585EA89821	Active	11/8/2018 - 11/15/2018	



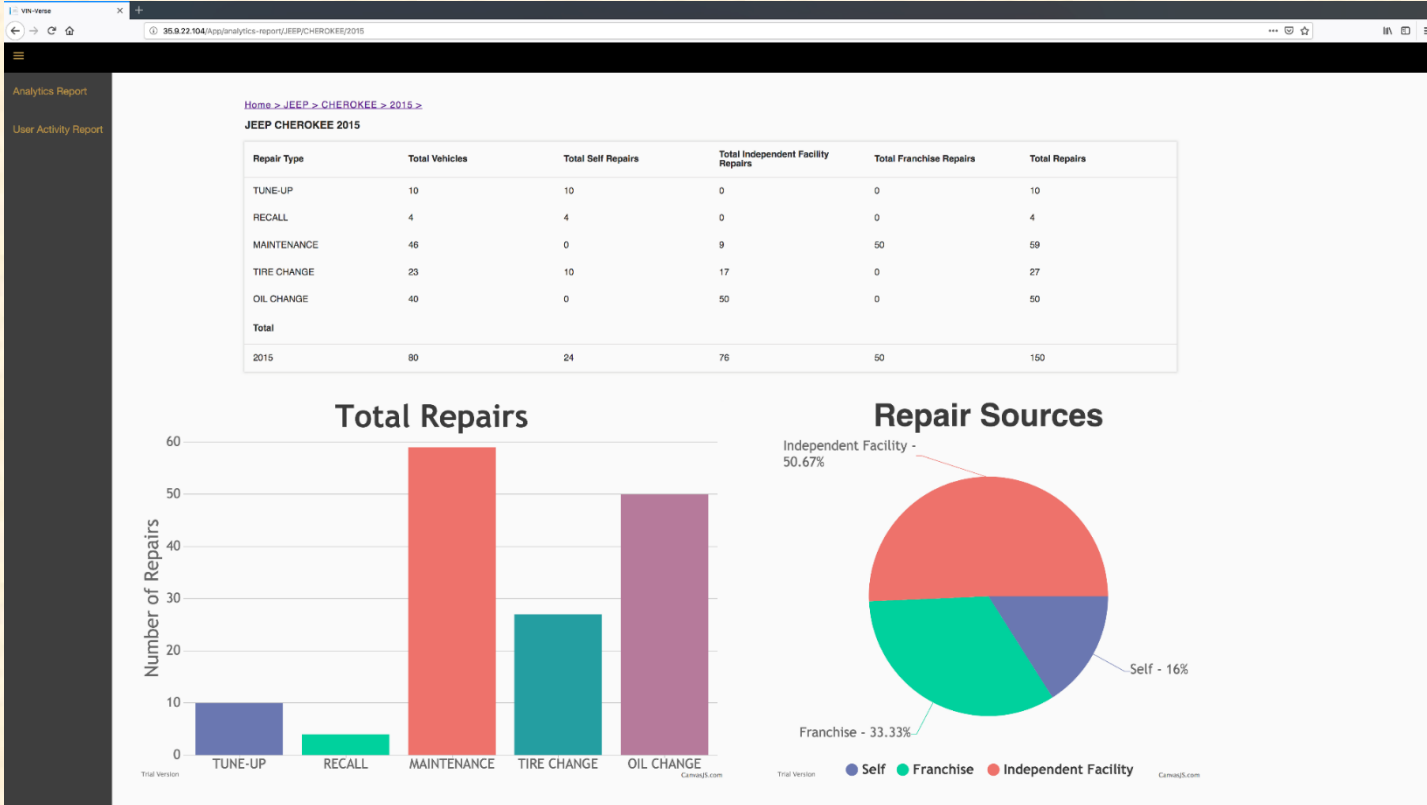


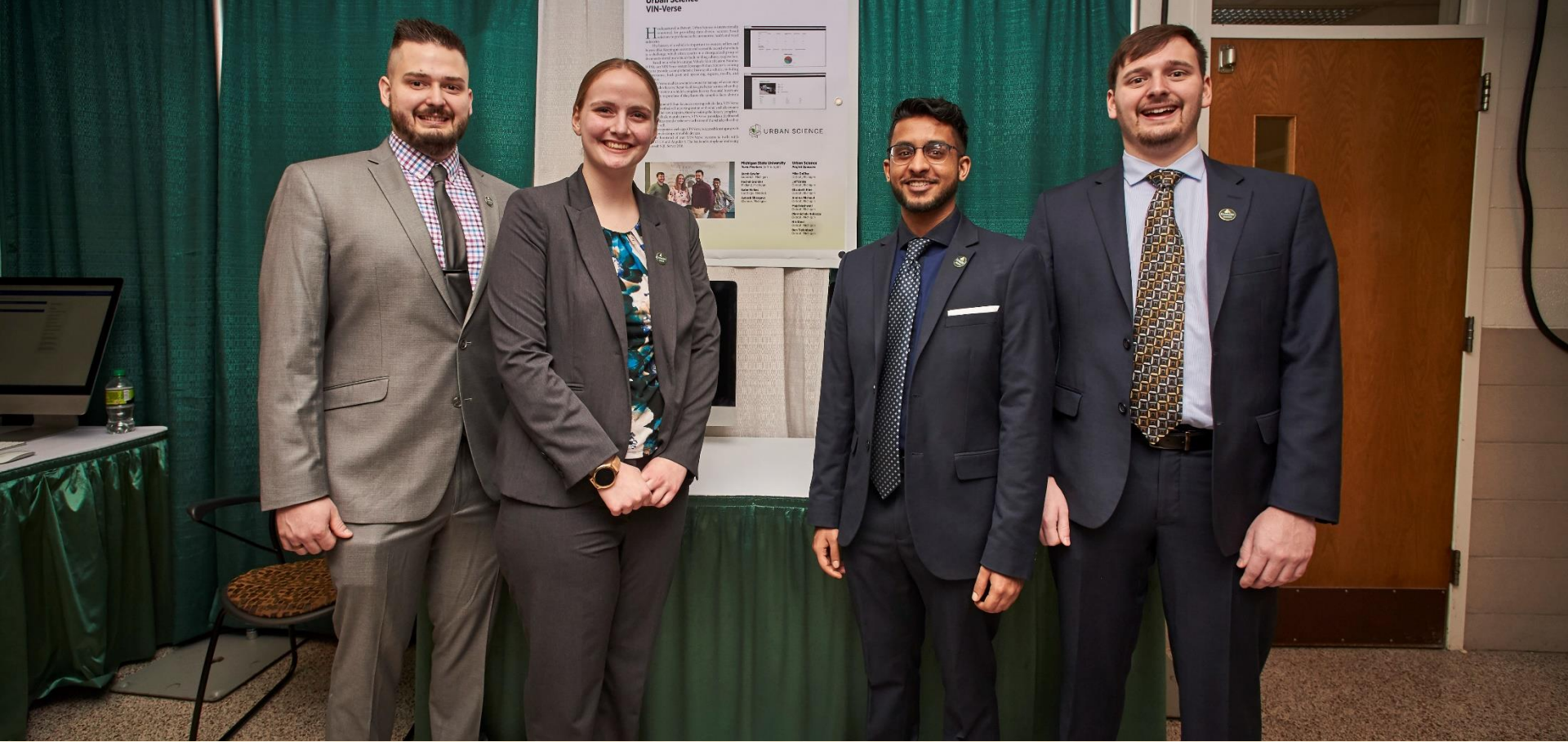
# Team Urban Science Beta Presentation



# Team Urban Science Beta Presentation

## Analytics Report





Team Urban Science  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

Team Volkswagen

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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







## MEET ARTEON

[WARRANTY](#) | [OFFERS](#) | [TDI SETTLEMENT](#) | [RECALLS](#) | [ESPAÑOL](#)

**THE ALL-NEW JETTA | PIKES PEAK RECORD | ARTEON**

# Team Volkswagen Project Overview

## VW Car-Net Demo App

- Functionalities
  - Change the Habits of Car Dealers
  - Communicate the Value of Car-Net
- Features
  - Target VW Dealers and Customers
  - Create Car-Net Demo / Guided Tour
  - Be Easy and Fun to Use
  - Demonstrate End-to-End User Experience
  - Support Google Android and Apple iOS
  - Support Integration of Video and Product Content
- Technologies
  - Car-Net
  - Apple iOS / Swift
    - AVAudioSession and AVPlayer
    - URLSession and Codable
    - NSNotifications
  - Google Android / Java or Kotlin
    - MediaPlayer and MediaController
    - OKHttp and Retrofit
    - Event Bus



Auburn Hills, Michigan



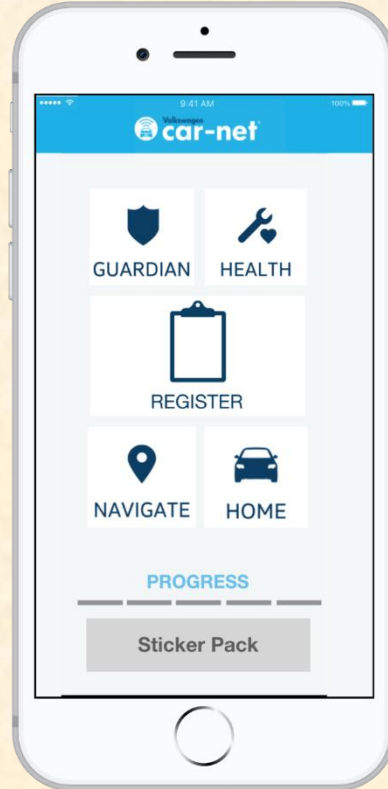


## Team Volkswagen

Zebin Liang, Tim Guertin, Emily Brent, Cyprian Blunt, Kira Chan

# Team Volkswagen Project Plan Presentation

Screen Mockup



The Capstone Experience



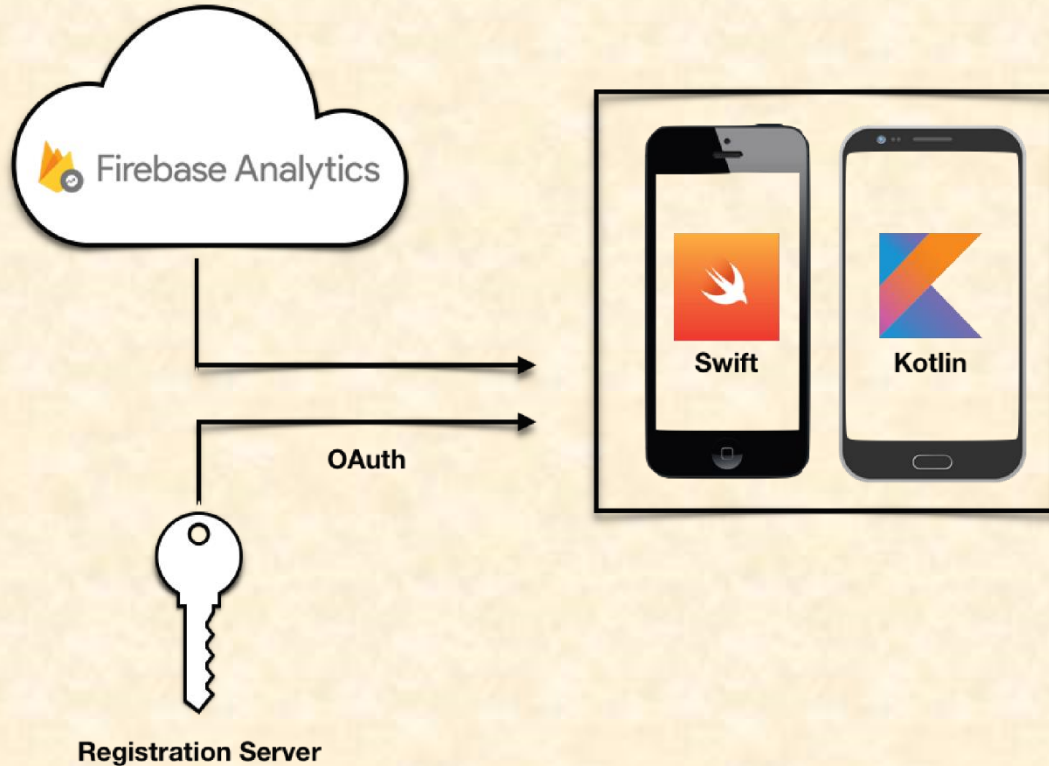




# Team Volkswagen Project Plan Presentation

# Team Volkswagen Project Plan Presentation

Architecture Diagram



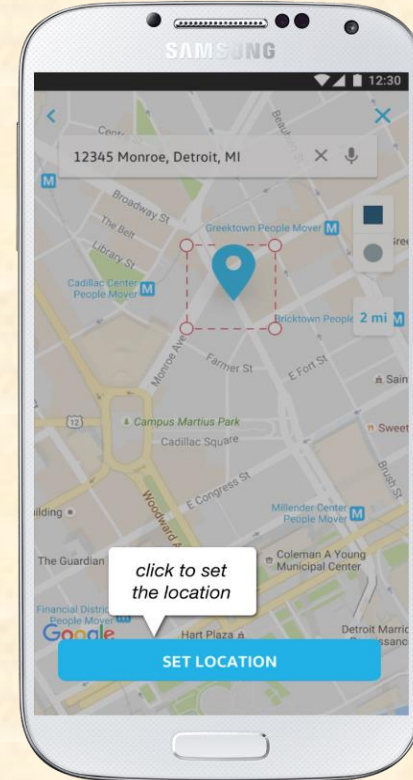
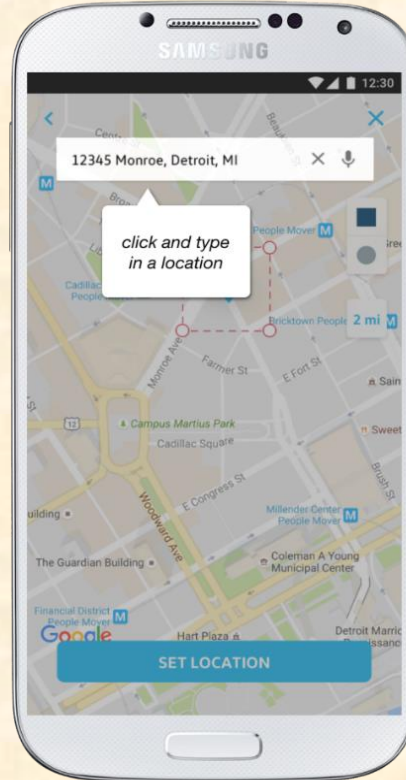
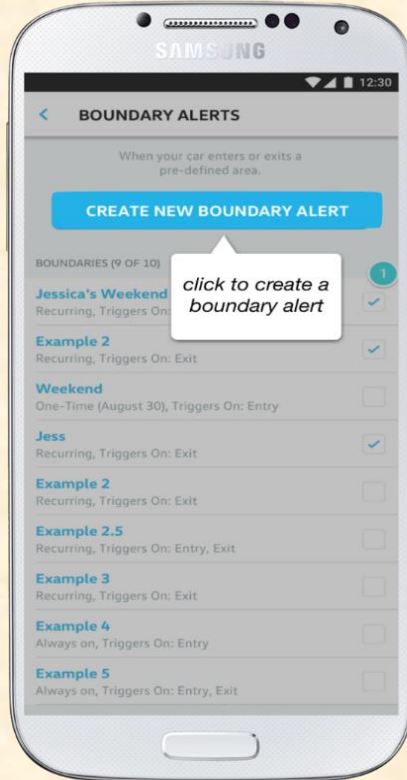


# Team Volkswagen Project Plan Presentation

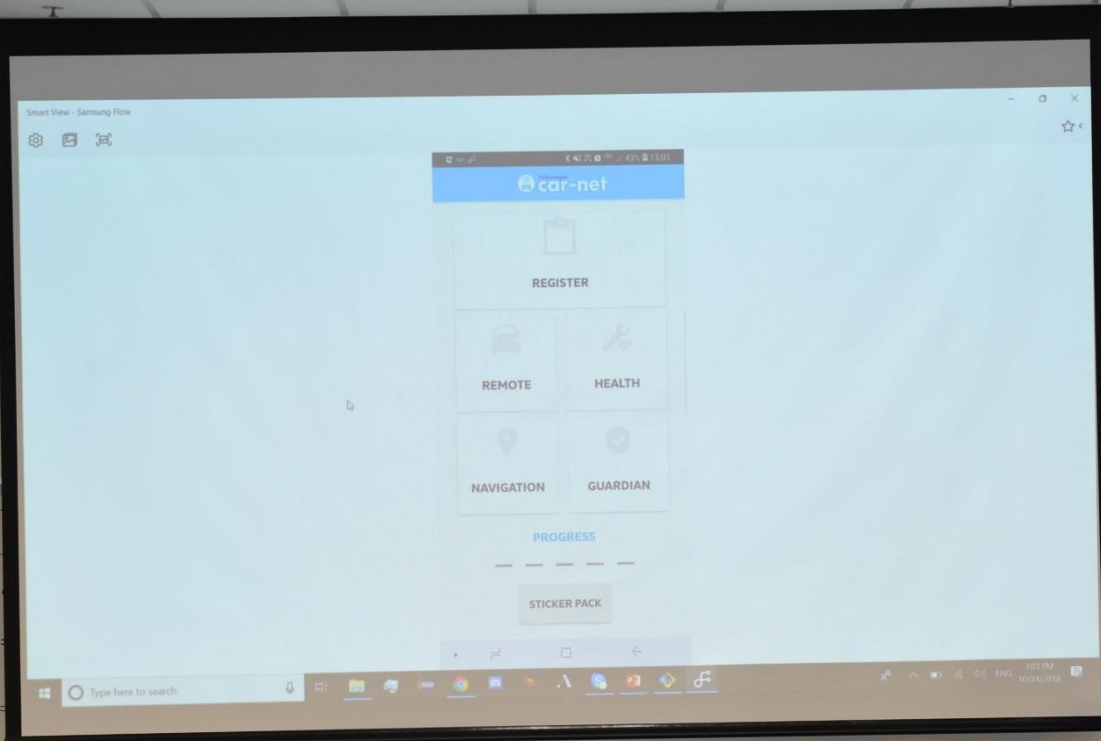


# Team Volkswagen Project Plan Presentation

Screen Mockup



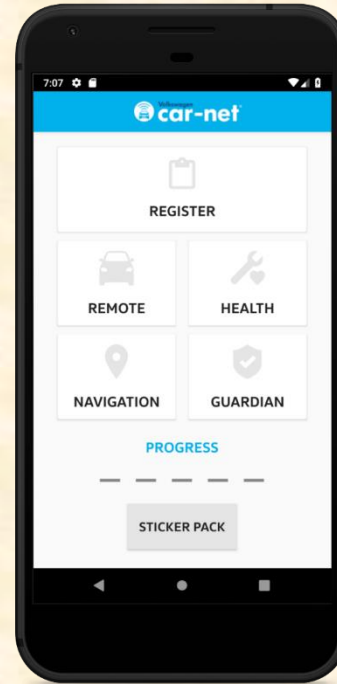




Team Volkswagen  
Alpha Presentation

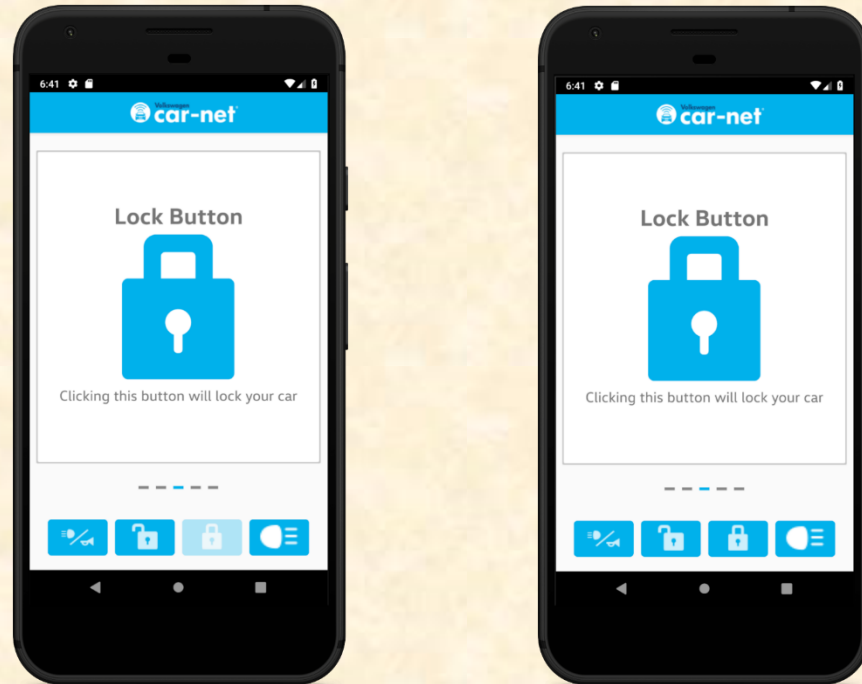
# Team Volkswagen Alpha Presentation

Home Screen



# Team Volkswagen Alpha Presentation

Validation Game



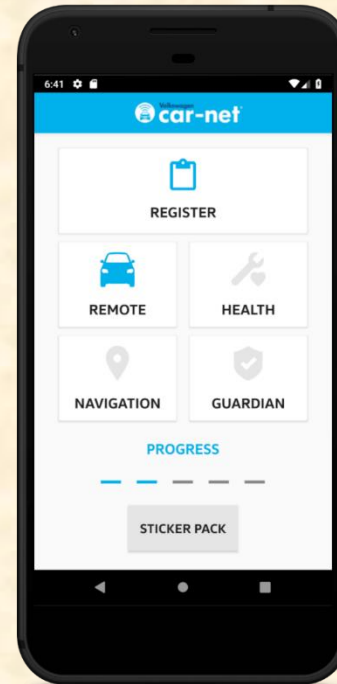
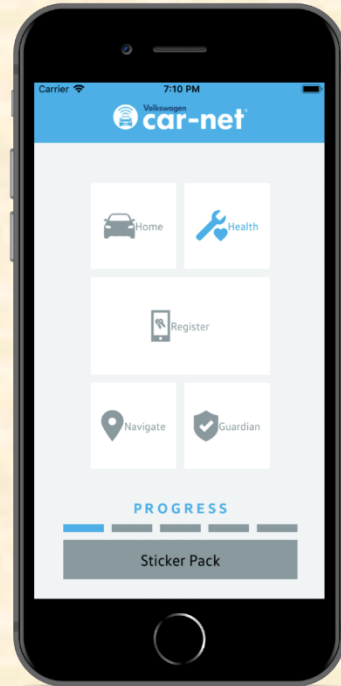


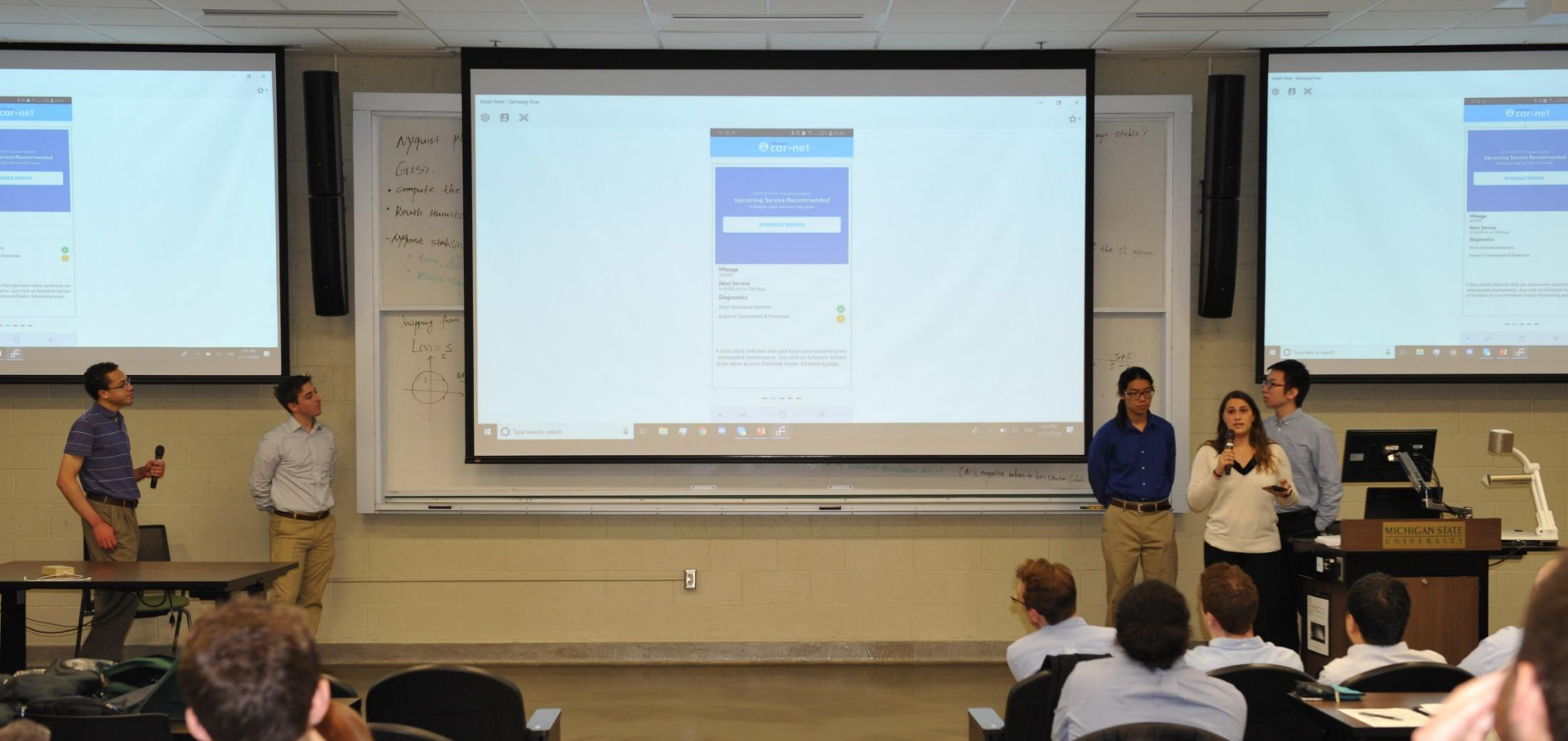
# Team Volkswagen Alpha Presentation



# Team Volkswagen Alpha Presentation

Home Screen (Progress Updated)

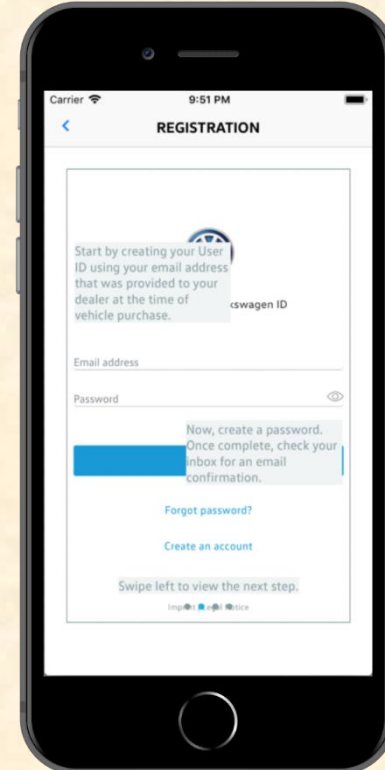
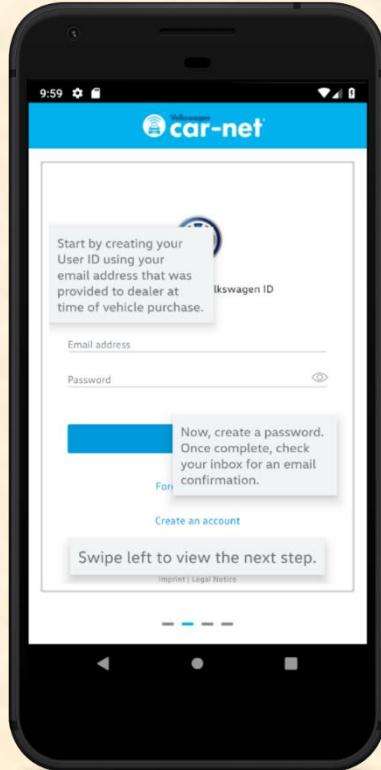




# Team Volkswagen Beta Presentation

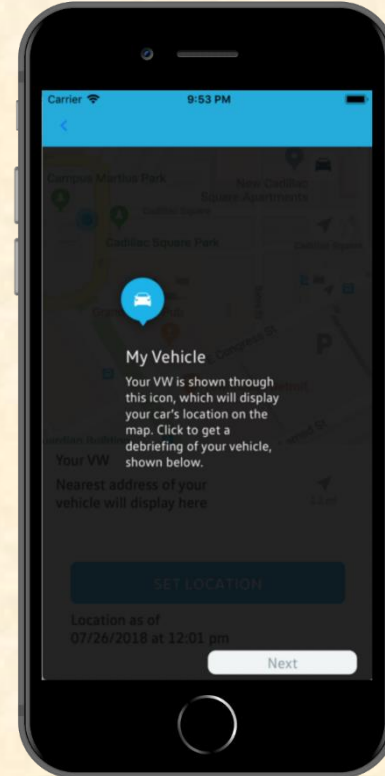
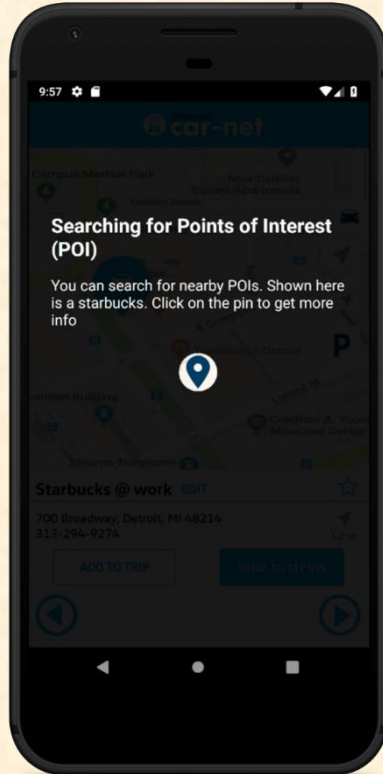
# Team Volkswagen Beta Presentation

## Registration Module



# Team Volkswagen Beta Presentation

## Navigation Module



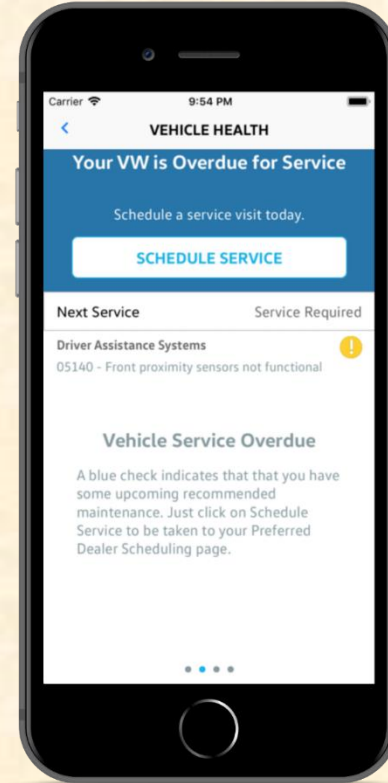
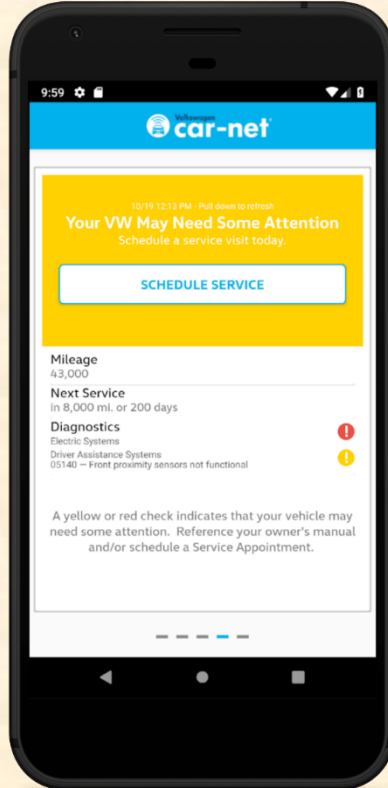


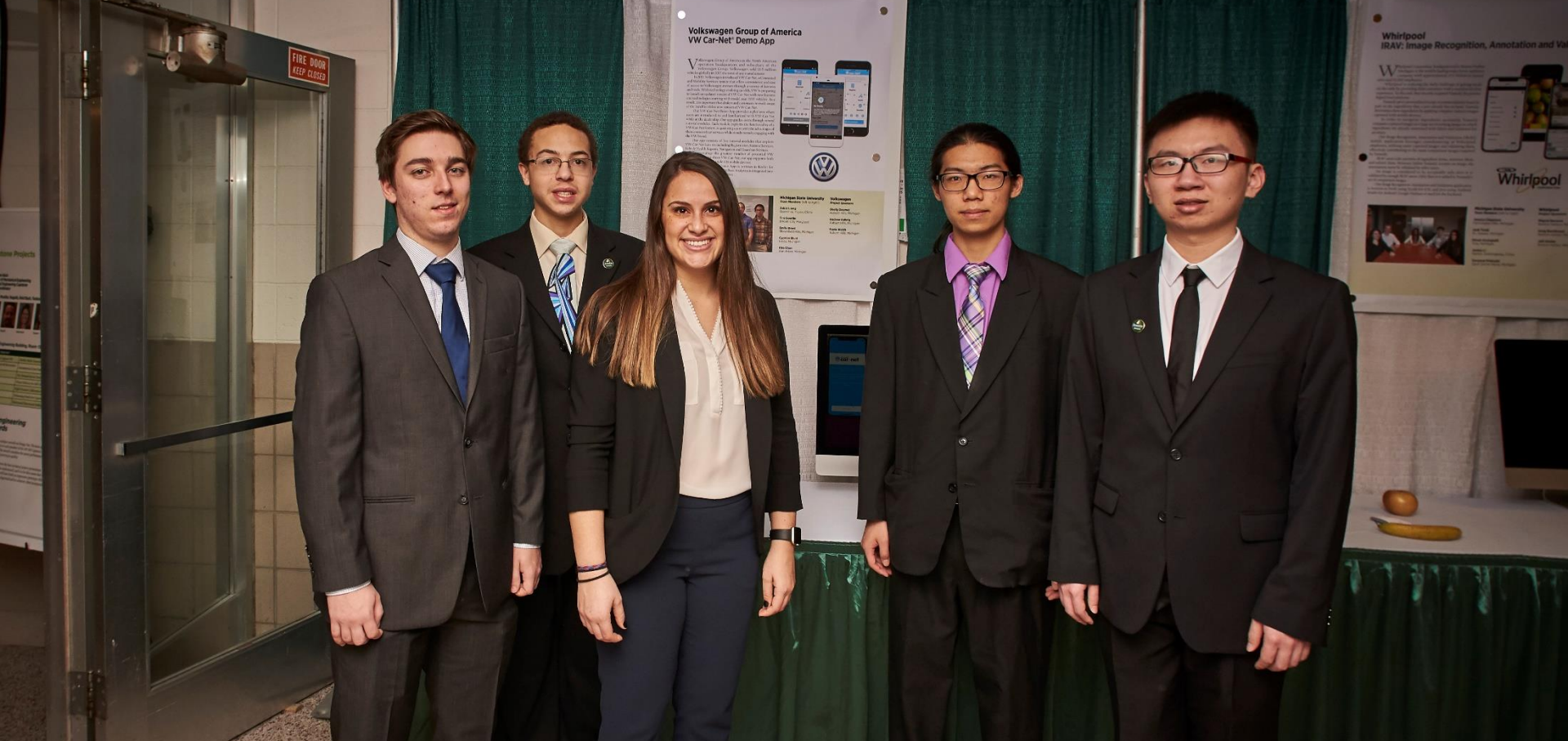


# Team Volkswagen Beta Presentation

# Team Volkswagen Beta Presentation

## Vehicle Health Reports Module





Team Volkswagen  
Design Day

MICHIGAN STATE  
UNIVERSITY

# *The Capstone Experience*

Team Whirlpool

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



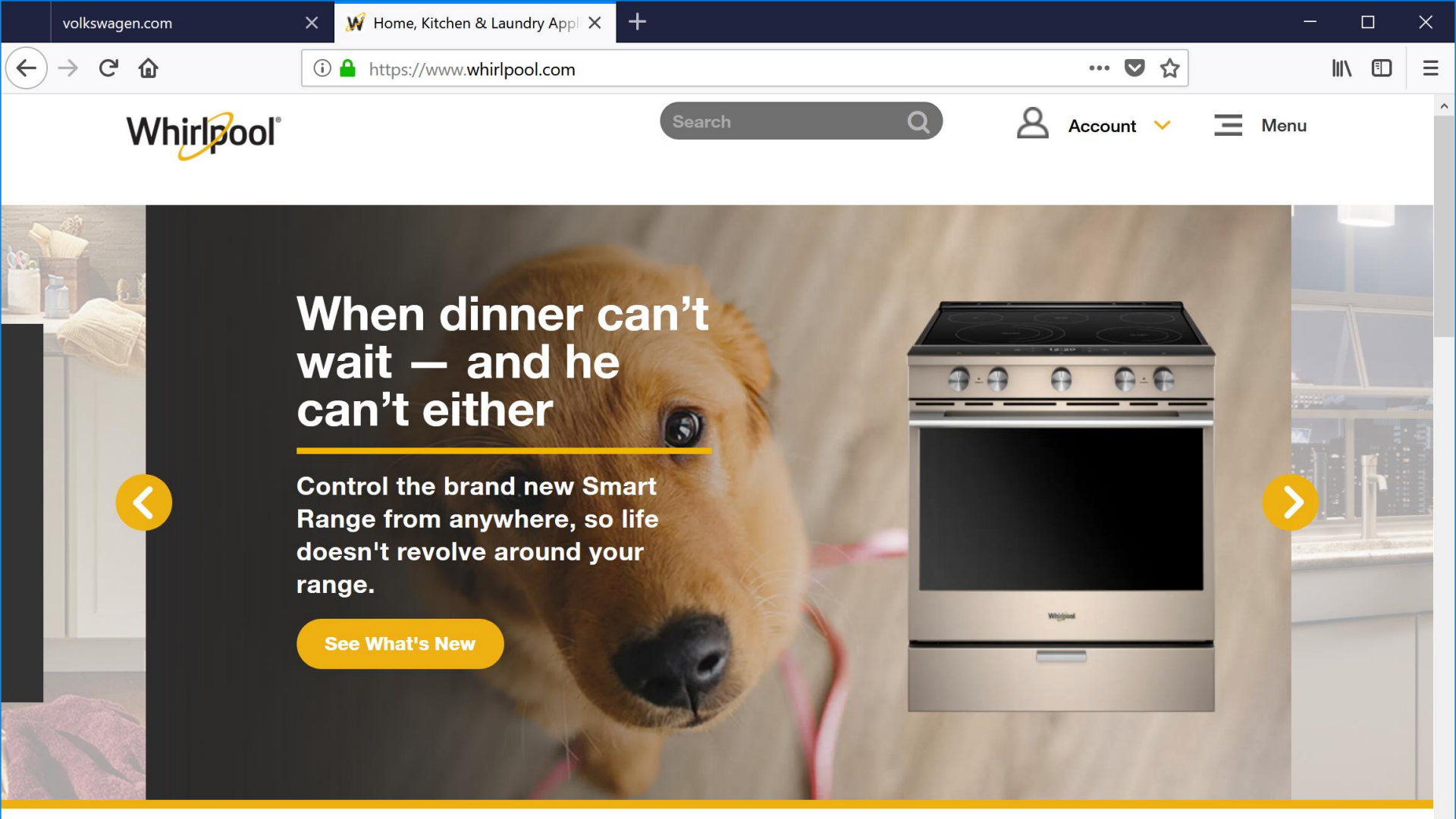
*From Students...  
...to Professionals*





**Whirlpool**

**CORPORATION**



Search



Account ▼



Menu

When dinner can't  
wait — and he  
can't either

Control the brand new Smart  
Range from anywhere, so life  
doesn't revolve around your  
range.

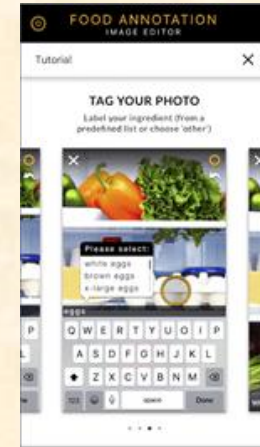
See What's New



# Team Whirlpool Project Overview

## IRAV: Image Recognition Annotation and Validation

- Functionalities
  - Annotate and Validate Images of Recipe Ingredients
  - Apply Crowdsourcing and Gamification
  - Target Whirlpool's Yummly App
- Features
  - Ingest and Annotate Images
    - Via Mobile Apps
    - Validate Annotations as Actual Ingredients
    - Identify Bounding Boxes
    - Detect and Report Poor Lighting
  - Create Image Validation Game
    - Via Mobile Apps
    - Validate Annotations via Crowdsourcing
    - Track User Participation and Accuracy
    - Create Variety of User Experiences
    - Show Leaderboard
  - Support Google Android and Apple iOS
  - Provide Companion Administrative Dashboard
- Technologies
  - CSS / HTML / PHP / JavaScript
  - Apple iOS / Swift
  - Google Android / Java
  - TensorFlow (Image Recognition)
  - Amazon S3 or Google Cloud Datastore



Benton Harbor, Michigan



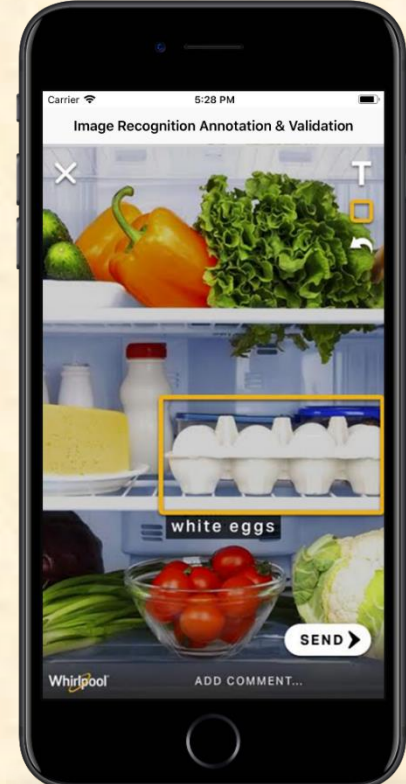
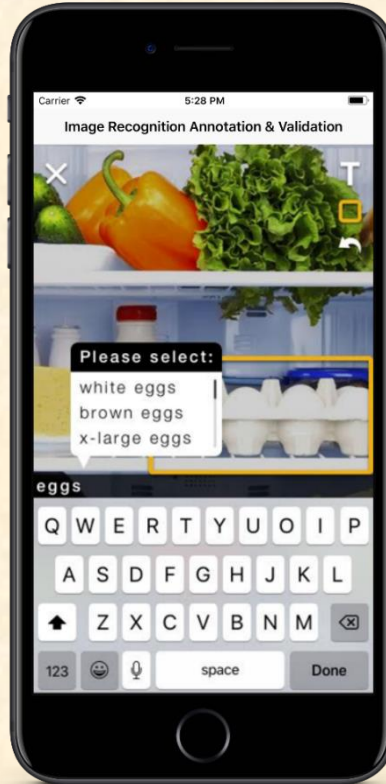
## Team Whirlpool

Jessica Clappison, Jack Turak, Shruti Avutapalli, Jackie Li, Savanna Pinkoski

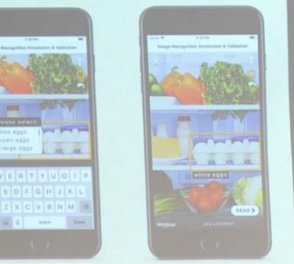


# Team Whirlpool Project Plan Presentation

Screen Mockup



## Image Recognition & Annotation Interface (iOS)



Whirlpool Project Plan Presentation

## Screen Mockup: Image Recognition & Annotation Interface (iOS)



The Captains Experience

Team Whirlpool Project Plan Presentation

## Screen Mockup: Image Recognition & Annotation Interface (iOS)



The Captains Experience

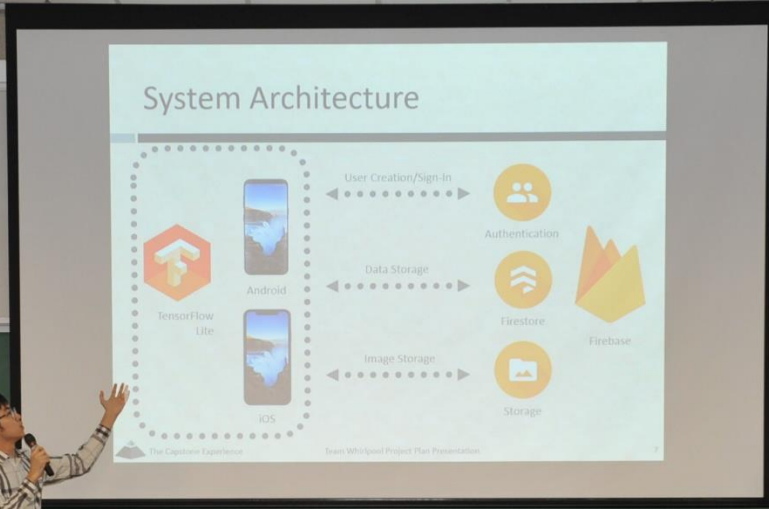
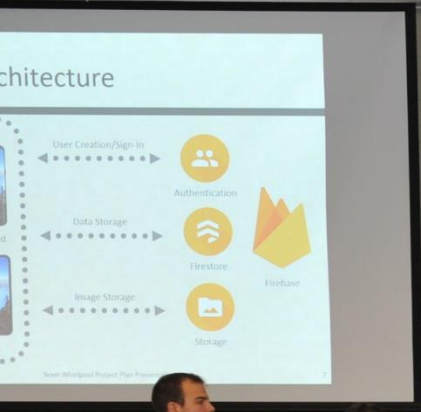
Team Whirlpool  
Project Plan Presentation

# Team Whirlpool Project Plan Presentation

## Architecture Diagram





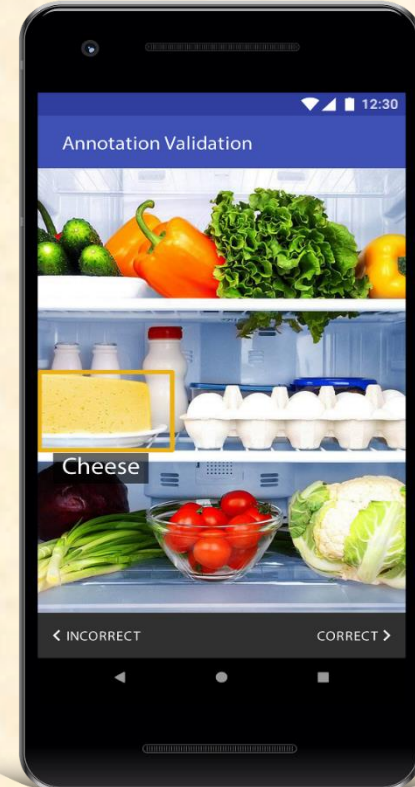
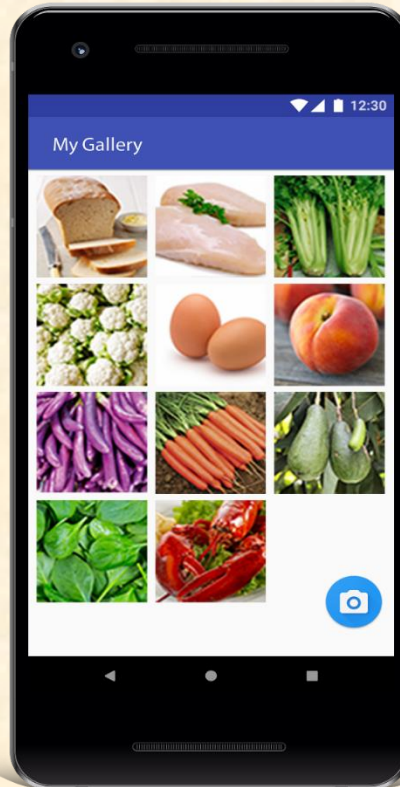
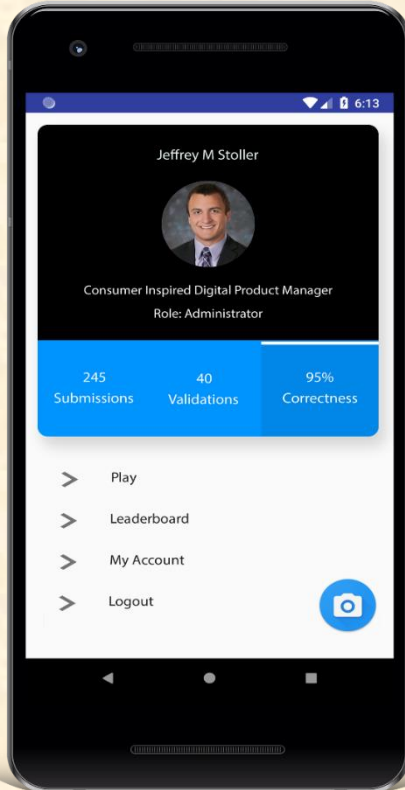


Team Whirlpool  
Project Plan Presentation



# Team Whirlpool Project Plan Presentation

Screen Mockup

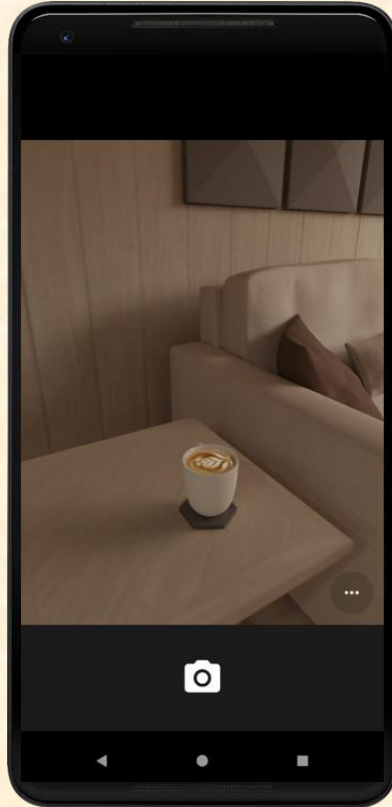




# Team Whirlpool Alpha Presentation

# Team Whirlpool Alpha Presentation

Camera Functionality

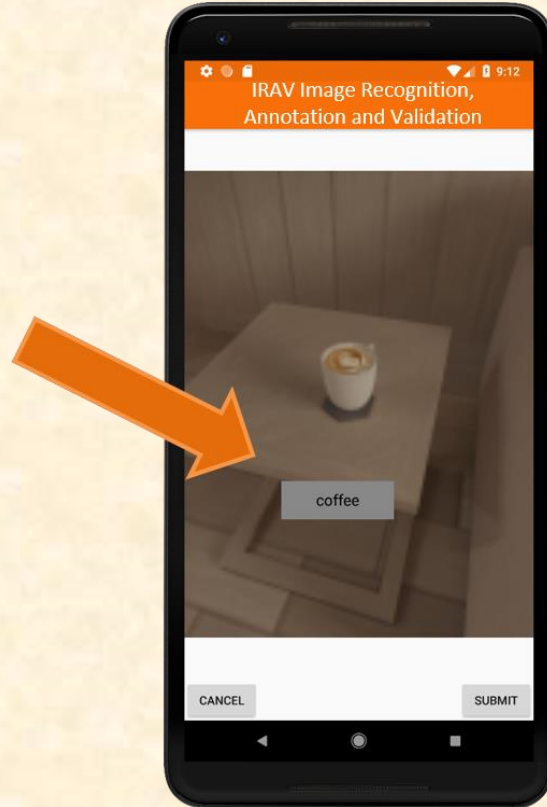


The Capstone Experience

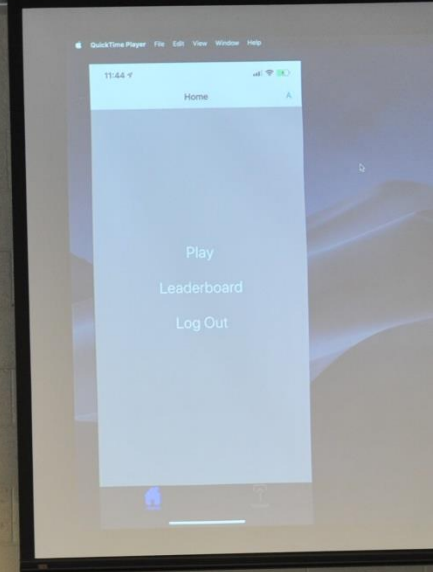
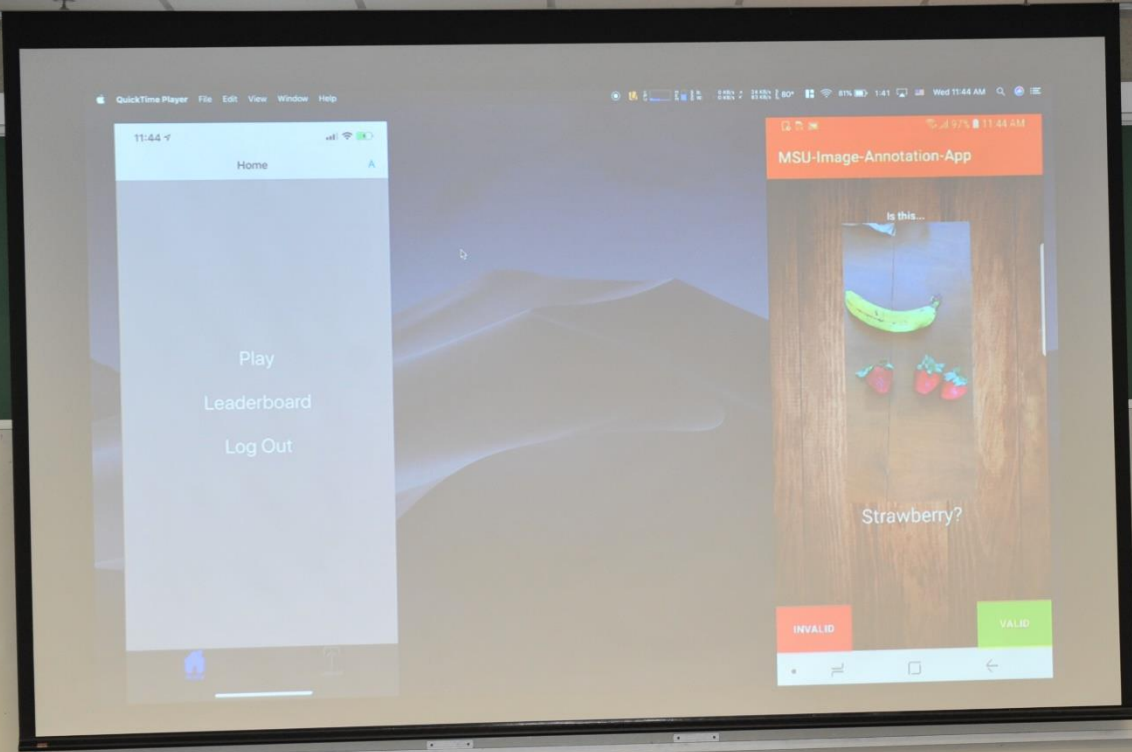


# Team Whirlpool Alpha Presentation

Annotation Capabilities



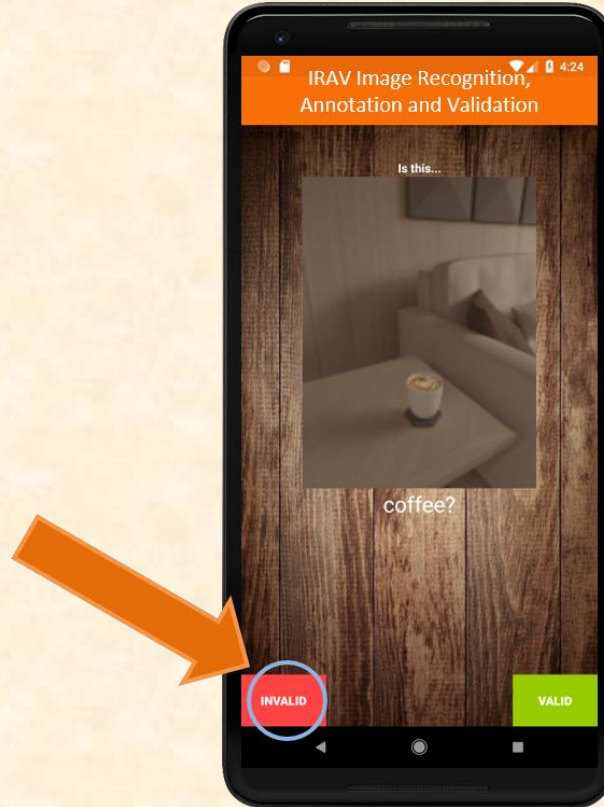




Team Whirlpool  
Alpha Presentation

# Team Whirlpool Alpha Presentation

Validation Game





# Team Whirlpool Beta Presentation

# Team Whirlpool Beta Presentation

Image Capture Interface



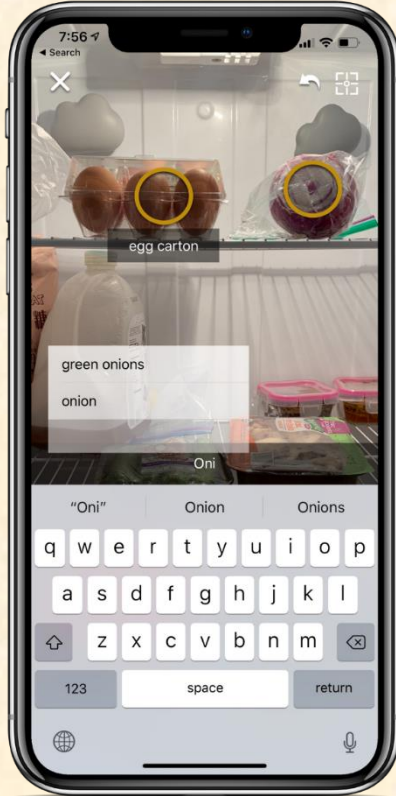
The Capstone Experience

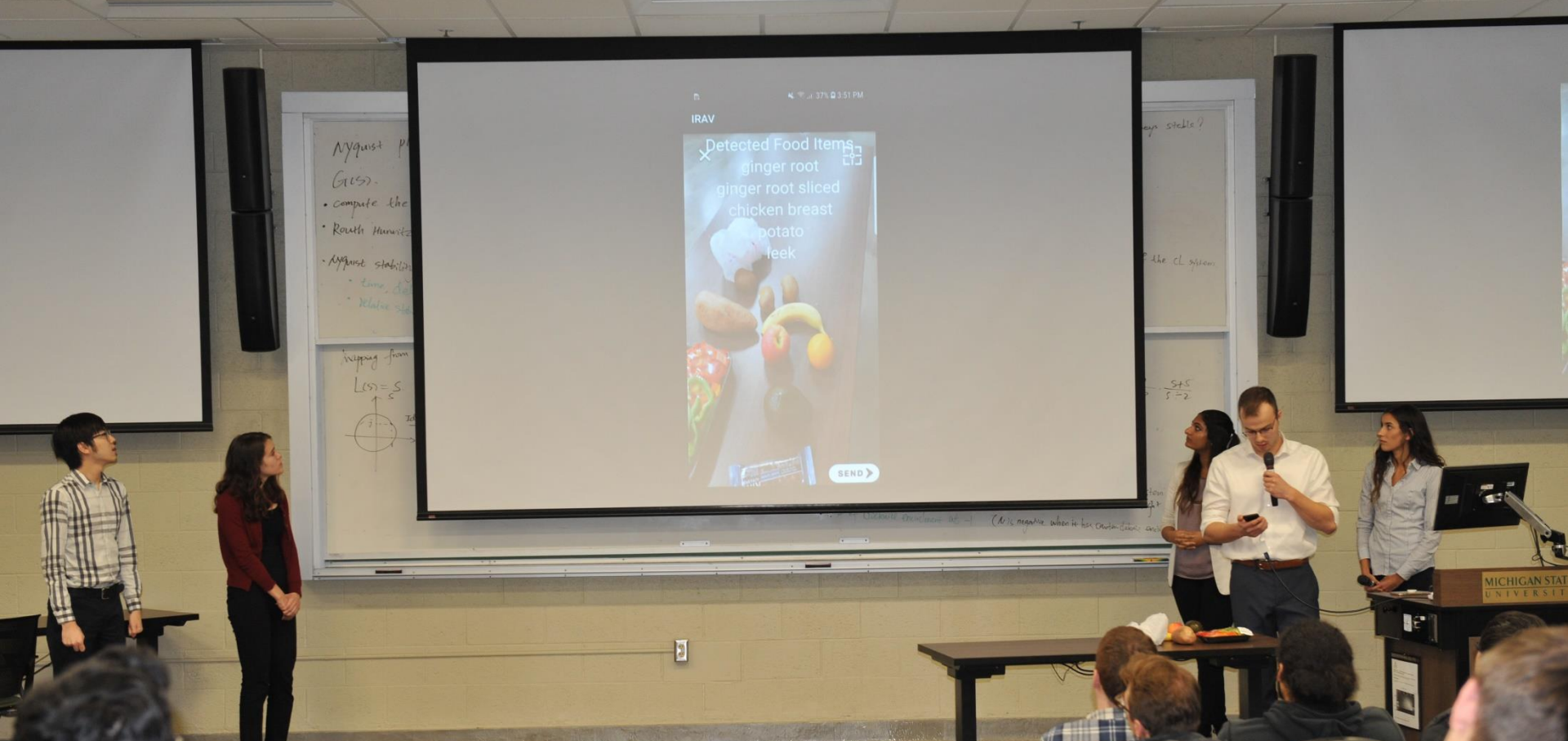




# Team Whirlpool Beta Presentation

Annotation Interface

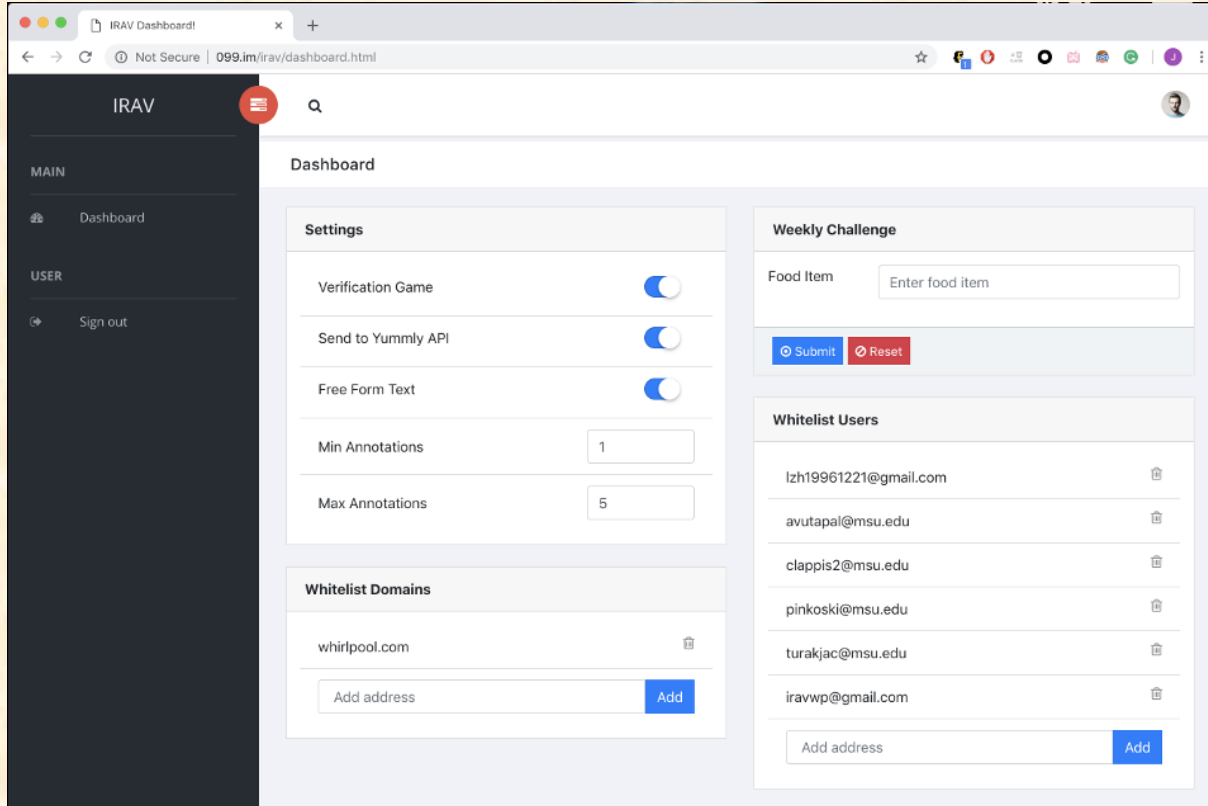




# Team Whirlpool Beta Presentation

# Team Whirlpool Beta Presentation

Admin Dashboard




The screenshot shows the IRAYV Admin Dashboard in a web browser. The browser's address bar shows the URL "099.im/irav/dashboard.html". The dashboard has a dark sidebar on the left with the "IRAYV" logo and a search icon. The sidebar menu includes "MAIN" (with a "Dashboard" link) and "USER" (with a "Sign out" link). The main content area is titled "Dashboard" and contains three sections: "Settings", "Whitelist Domains", and "Weekly Challenge".

**Settings**

- Verification Game: ☒
- Send to Yummly API: ☒
- Free Form Text: ☒
- Min Annotations:
- Max Annotations:







**Whitelist Domains**

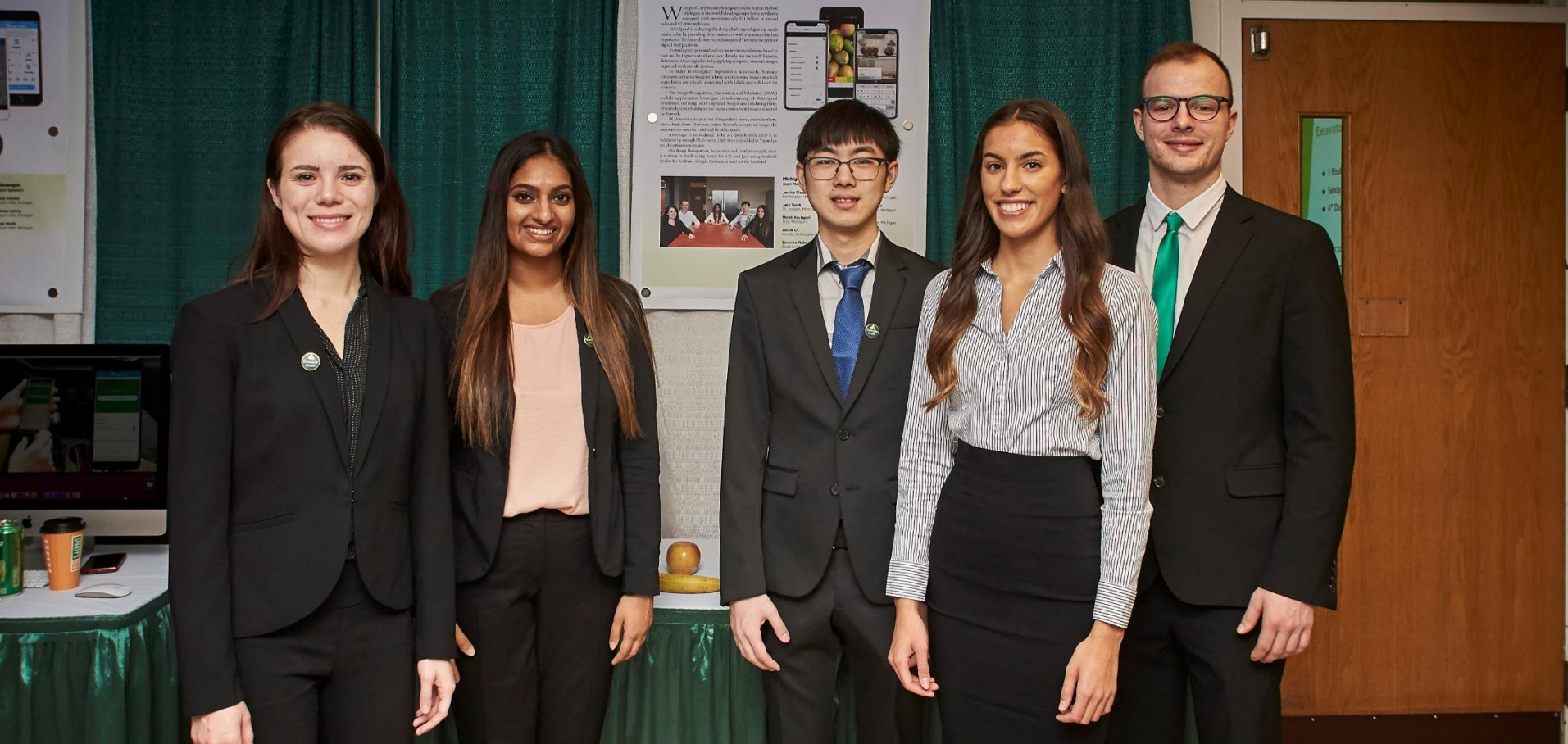
whirlpool.com 

**Weekly Challenge**

Food Item

**Whitelist Users**

lzh19961221@gmail.com	
avutapal@msu.edu	
clappis2@msu.edu	
pinkoski@msu.edu	
turakjac@msu.edu	
iravwp@gmail.com	
<input type="text" value="Add address"/>	<input type="button" value="Add"/>



Team Whirlpool  
Design Day



# The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering  
Michigan State University  
Fall 2018



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



The Capstone Experience Lab



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The Capstone Experience Lab  
View of Spartan Stadium

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UNIVERSITY

# The Capstone Experience

Design Day Award Winners

December 8, 2017



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All-Hands  
Design Day, April 28, 2017



# Auto-Owners Exhibition Award

Team TechSmith, Spring 2017

Teacher's Virtual Toolbelt

Alex Crimin, Zeke Zandbergen, Yang He, Ryan Cornillie

Presented by Scott Lake of Auto-Owners Insurance





# MSU Federal Credit Union Praxis Award

Team Union Pacific, Spring 2017

Learning New Train Routes

Matthew Schleusener, Kangjie Mi, Nick Summers, Jon Wild

Presented by Liam Petraska of MSU Federal Credit Union



# TechSmith Screencast Award

Team Amazon, Spring 2017

ACRA: Amazon Customer Review Analyzer

Jie Wan, Jason Liu, Ian Whalen, Ankit Luthra, Tess Huelskamp

Presented by Wendy Hamilton of TechSmith





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# The Capstone Experience

## Design Day Award Winners

April 27, 2018



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ENGINEERING



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MICHIGAN STATE UNIVERSITY



# Auto-Owners Exhibition Award

Team Phoenix Group, Spring 2018

Customer Service System with Chatbot

Aman Goshu, James Finch, Sarah Fillwock, Dan Shumaker, Fatema Alsaleh

Presented by Ross Hacker and Scott Lake of Auto-Owners Insurance

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STATE UNIVERSITY

ENGINEERING



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MICHIGAN STAT

# MSU Federal Credit Union Praxis Award

## Team Amazon, Spring 2018

AMPED: Amazon Marketplace Podcast Earnings Detection

Zach Whitener, Cam Korzecke, Chess Luo, Dillon Stock, Hansheng Zhao, Hanzhong

Presented by Ben Maxim of MSU Federal Credit Union



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MICHIGAN STATE



# TechSmith Screencast Award

Team Quicken Loans, Spring 2018

Fundamenta: Trust in New Home Construction

Riley Annis, Jaiwant Bhushan, Vishal Adusumilli, Turner Anderson, Erin O'Hara

Presented by Wendy Hamilton of TechSmith



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# Urban Science Sigma Award

## Team Herman Miller, Spring 2018

Adjust: Augmented Reality Chair Adjustment Assistant

Kyle Kinsey, Han Huang, Jacob Weber, Kevin Gaban, Mike Bremiller

Presented by Elizabeth Klee, Nik Steel and Andrea Michaud of Urban Science



# The Capstone Experience

Dr. Wayne Dyksen

Department of Computer Science and Engineering  
Michigan State University  
Spring 2018



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...to Professionals*

**amazon**







• **A P T I V** •

# ***Auto-Owners*** **INSURANCE**

**LIFE • HOME • CAR • BUSINESS**





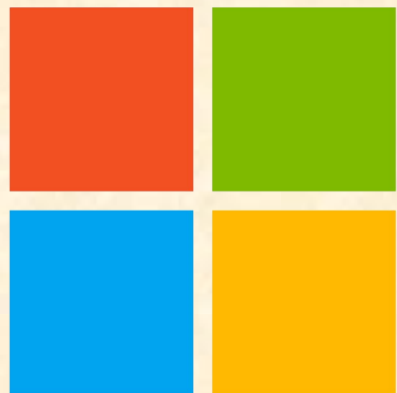




**HermanMiller**

**meijer**®





Microsoft





Firefox<sup>®</sup>



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Building Dreams *Together*

**proofpoint™**

***Quicken® Loans®***

Engineered to **Amaze<sup>SM</sup>**



**SPECTRUM HEALTH**





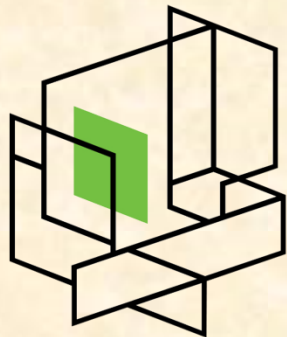


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