

MICHIGAN STATE

UNIVERSITY

Project Plan

3D Product Showcase Application

The Capstone Experience

Team Dow

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

Functional Specifications

Problem: Difficult to market Dow chemicals

- Visualizing chemical intermediaries on products
- Providing information on the chemicals that makeup the final consumer product
- Making the information easy to access and traverse

Solution: 3D Product Showcase using AR

- Mobile application for consumers
- Product catalog across various markets
- Visualize Dow materials on product models
- Learn about products in Augmented Reality



Design Specifications

Market Category Selection

- Search bar
- Drop down menu

Product Catalog

- Preview of model
- Small description of makeup

Model Editor

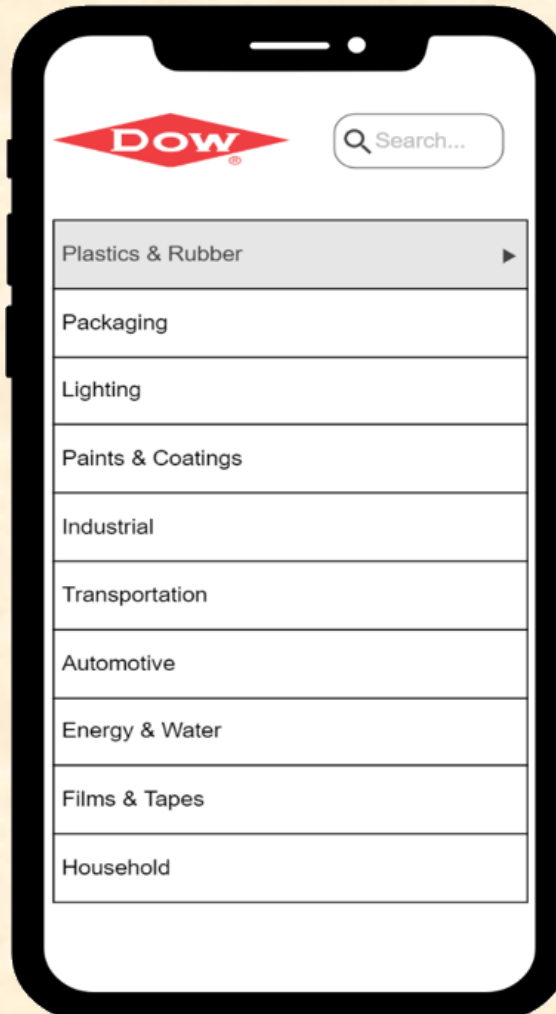
- Edit the material, rotate and zoom in on the model

AR view

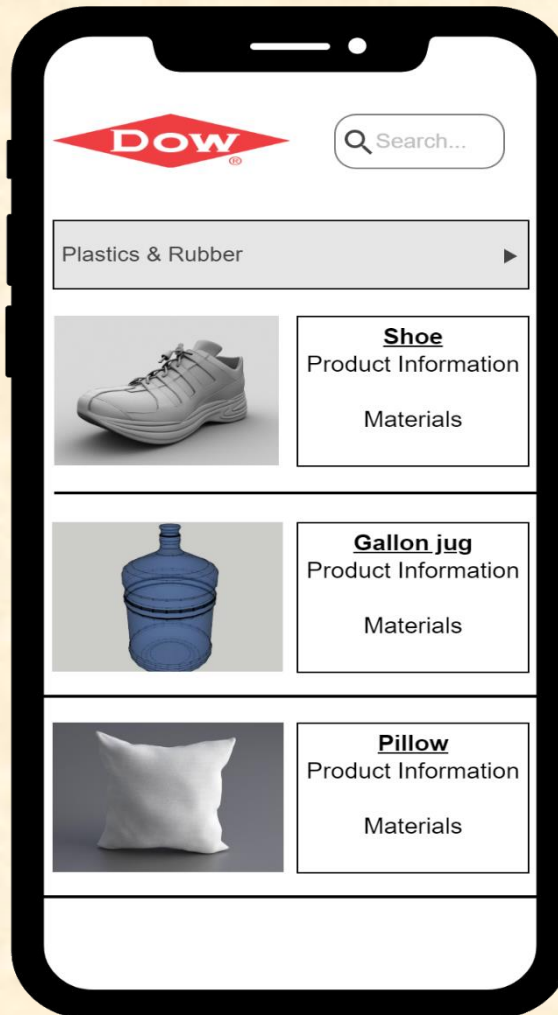
- Plane recognition
- Highlighted regions
- Finger gesture suggestions for move/rotate
- Camera button for screenshots



Screen Mockup: Category Select



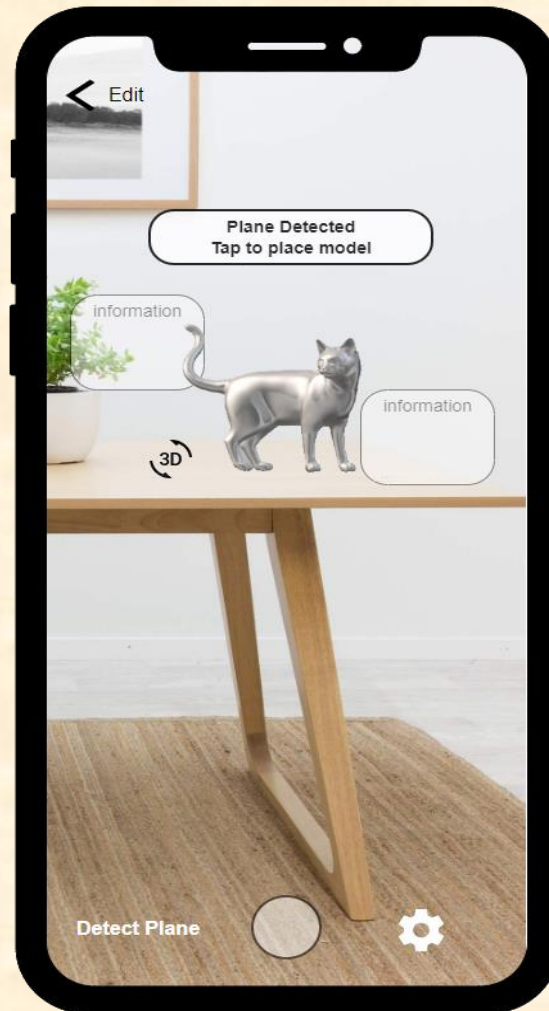
Screen Mockup: Product Catalog



Screen Mockup: Model Editor



Screen Mockup: Augmented Reality



Technical Specifications

Unity AR Foundation

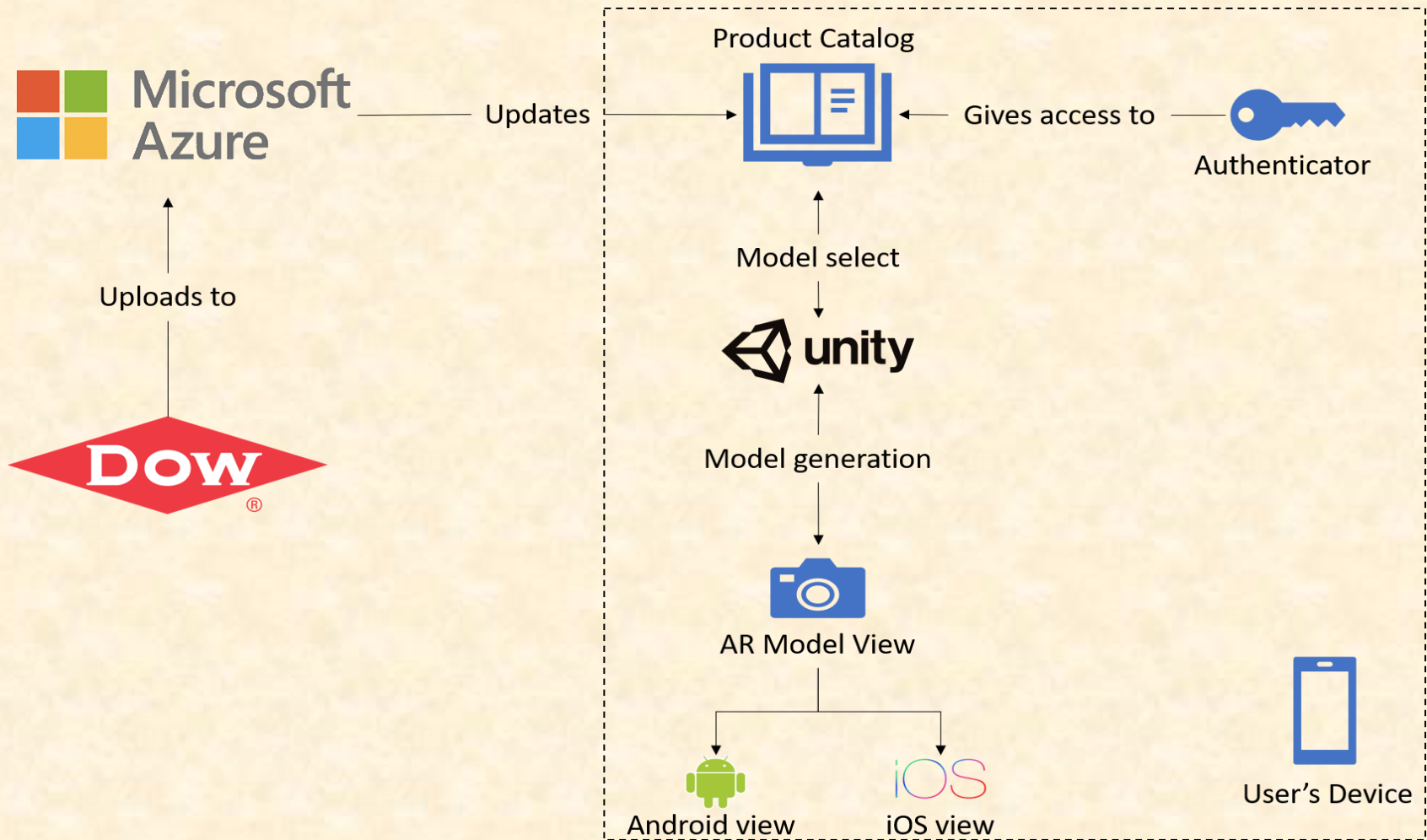
- Provide core functionality required for mobile augmented reality applications
- Needed for plane detection and location tracking

MySQL with Microsoft Azure

- Relates consumer products to corresponding markets
- Relates consumer products with Dow materials
- Stores information about Dow materials, consumer products, and markets



System Architecture



System Components

Software Platforms / Technologies

- Unity 2019.2.4f1
 - Software engine for developing the mobile application
- MySQL with Microsoft Azure
 - Stores information on consumer products and Dow materials
- Unity AR Foundation
 - Tool kit for Augmented Reality support on mobile devices
- Xcode
 - Used to deploy application to iOS
- Android SDK
 - Used to deploy application to Android



Risks

Interactive models in Unity AR Foundation

- **Difficulty** – Medium | **Importance** - Medium
- **Description:** Current AR model viewer built with third-party library Vuforia
- **Mitigation:** Build simple app with AR foundation.

Undocumented Legacy Project

- **Difficulty** – Low | **Importance** - Medium
- **Description:** Legacy project has little to no documentation
- **Mitigation:** Test and incorporate only code that would be difficult to implement

Relational Data Stored in Non-relational Database

- **Difficulty** - Hard | **Importance** - High
- **Description:** Legacy application uses SharePoint to store models
- **Mitigation:** Use Microsoft Azure to store the models and relational data

Deploying Application to IOS

- **Difficulty** - Medium | **Importance** - High
- **Description:** Application must work on both IOS and Android devices
- **Mitigation:** Deploy “Hello World” application to IOS



Questions?

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