

MICHIGAN STATE

U N I V E R S I T Y

Status Report Presentation

DRIVEN-4 Web Application

The Capstone Experience

Team DRIVEN-4

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

Project Sponsor Overview

- St. Joseph, MI
- IT Services and Consulting
- Product Lifecycle Management, Internet of Things, Connected Product Development



DRIVEN-4



Project Functional Specifications

- DRIVEN-4 creates custom PCB's that allow for easier PLM and more specific data collection.
- The website we are creating will allow users to easily access and organize the data that is being collected without having to use external systems.
- The website will be easy enough for users with little technical experience to get the most out of the solution that DRIVEN-4 provides.

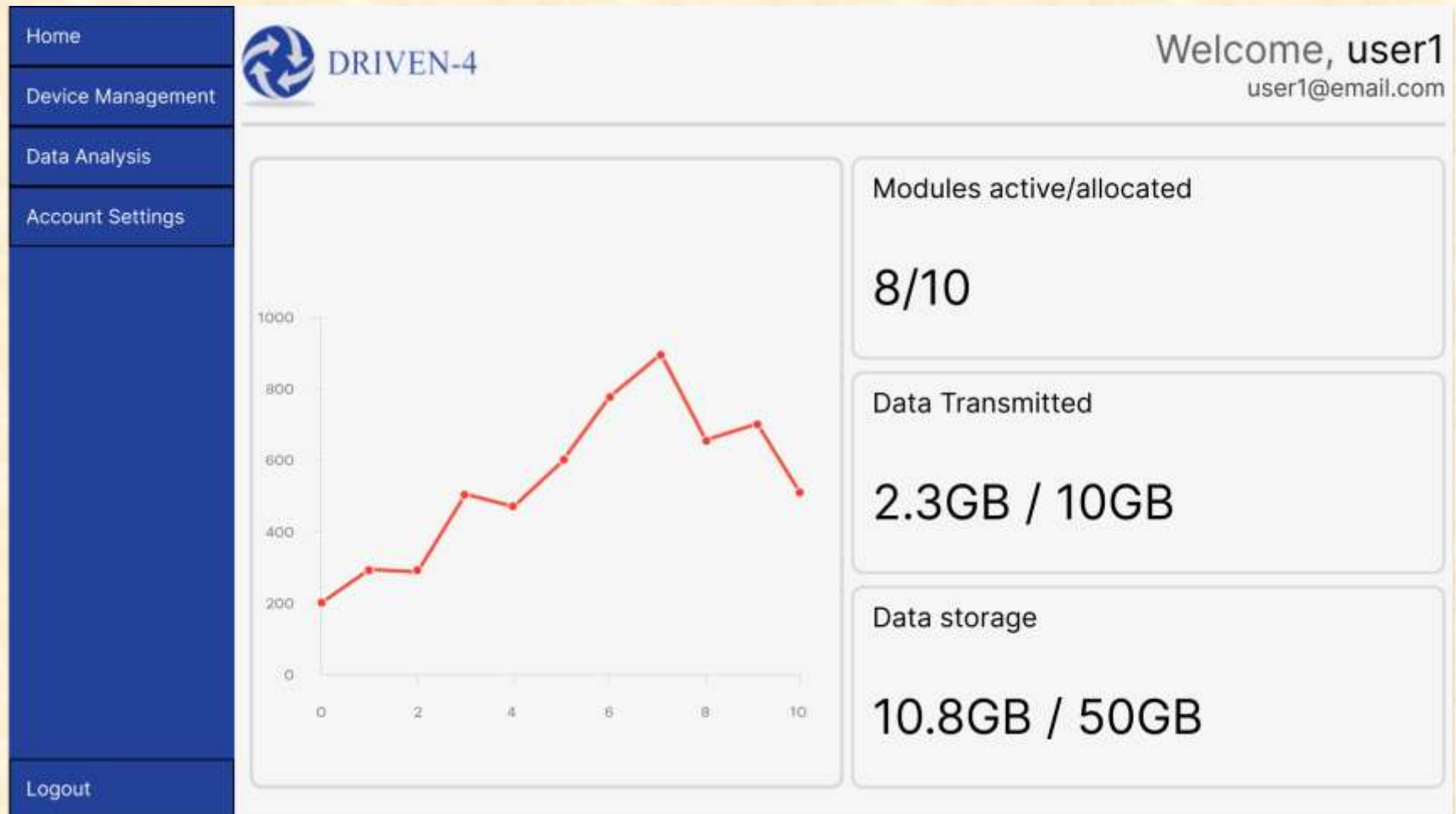


Project Design Specifications

- User homepage displays users' devices' status, data transmitted, and storage used.
- A device management page allows users to register/delete devices and download any firmware updates to their devices.
- A data analysis page allows users to create new datasets from existing datasets and analyze these data in the form of charts.
- A scripting page allows technical users to query from their databases using SQL queries.



Screen Mockup: Custom Dashboard



Screen Mockup: Data Analysis Page


Home

Device Management

Data Analysis

Account Settings

Logout



DRIVEN-4

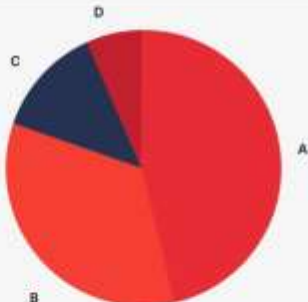
Welcome, user1
user1@email.com

Query Database

Table SS2:	X
column: idModule	X
column: temperature	X
Table Users:	X
column: idUser	X

[Add Table](#) [Add Column](#) [Run Query](#)

Chart



Results

A1	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Screen Mockup: Database Altering


Home

Device Management

Data Analysis

Account Settings

Logout



DRIVEN-4

Welcome, user1
user1@email.com

Data Modification

Data Set Modification

SS ↓

idEntry	Edit
idModule	Edit
IMEI	Edit
idEndpoints	Edit
time	Edit
dBs	Edit
ModemTemp	Edit

Remove Column Add Column

Available Data Sets

<u>End Points:</u>	<u>SS:</u>	<u>SS2:</u>
endpointString: VARCHAR(255)	idEntry: INTEGER	idEntry: INTEGER
method: VARCHAR(255)	idModule: INTEGER	idModule: INTEGER
time: DATETIME	IMEI: VARCHAR(255)	idEndpoints: INTEGER
	idEndpoints: INTEGER	time: DATETIME
	time: DATETIME	temperature: DECIMAL(10,2)
	dBs: INTEGER	
	ModemTemp: DECIMAL(10,2)	

Screen Mockup: Device Management Page

Devices

Search:

Search by: Name ID Status

Name: facility ID: 1 Firmware Name: BinTest.bin	Inactive <input type="button" value="Download"/> <input type="button" value="Settings"/>
Name: IT_office ID: 8 Firmware Name: None	Inactive <input type="button" value="Download"/> <input type="button" value="Settings"/>
Name: Device Test ID: 11 Firmware Name: Test Firmware	Active <input type="button" value="Download"/> <input type="button" value="Settings"/>
Name: Device Test ID: 12 Firmware Name: None	Active <input type="button" value="Download"/> <input type="button" value="Settings"/>
Name: Samsung Galaxy S21 ID: 13 Firmware Name: None	Active <input type="button" value="Download"/> <input type="button" value="Settings"/>

No file chosen

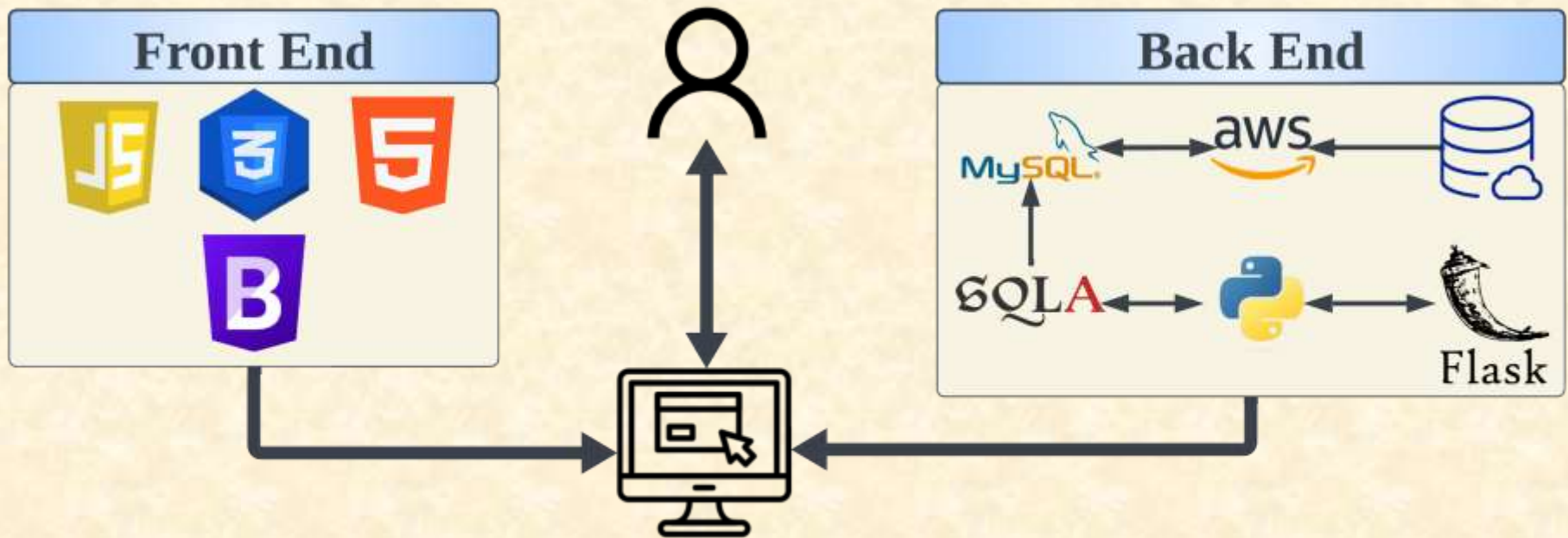


Project Technical Specifications

- Front End
 - User Friendly Interface
 - Querying from database
 - Custom dashboard creation
 - Enhance current Page layout(Bootstrap)
 - More responsive
- Back End
 - Connecting to IoT board
 - Optimize resource utilization
 - Spread sheet Engine
 - Migrating Database using SQLAlchemy



Project System Architecture



Project System Components

- Hardware Platforms
 - IoT Board
- Software Platforms / Technologies
 - MySQL
 - SQLAlchemy
 - HTML/CSS/JS
 - Python
 - Bootstrap
 - Flask Framework



Project Risks

User configurable APIs

- Dynamic data payloads should be allowed for users based on their needs.
- A prototype for creation of user-defined endpoints.

Dynamic dashboard creation

- Users should be able to create custom dashboards to access their module information.
- A prototype using an XML based data structure to store user information for retrieval and display.

Data analysis enhancement

- User should be able to visualize queried data using their custom functions
- Researching the use of spreadsheet engines for integration into the application.



Questions?

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