

MICHIGAN STATE

UNIVERSITY

Alpha Presentation

Time Cube

The Capstone Experience

Team Vectorform

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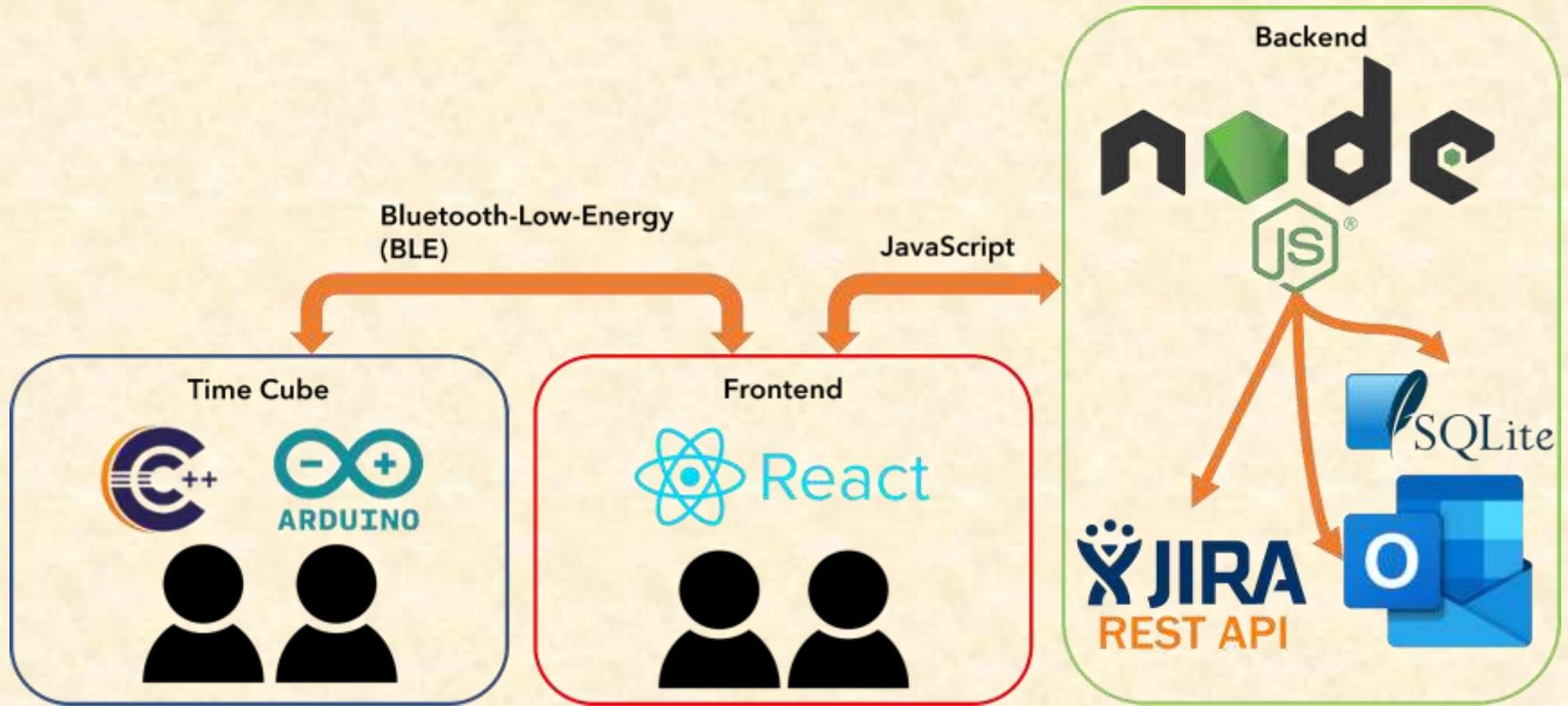
*From Students...
...to Professionals*

Project Overview

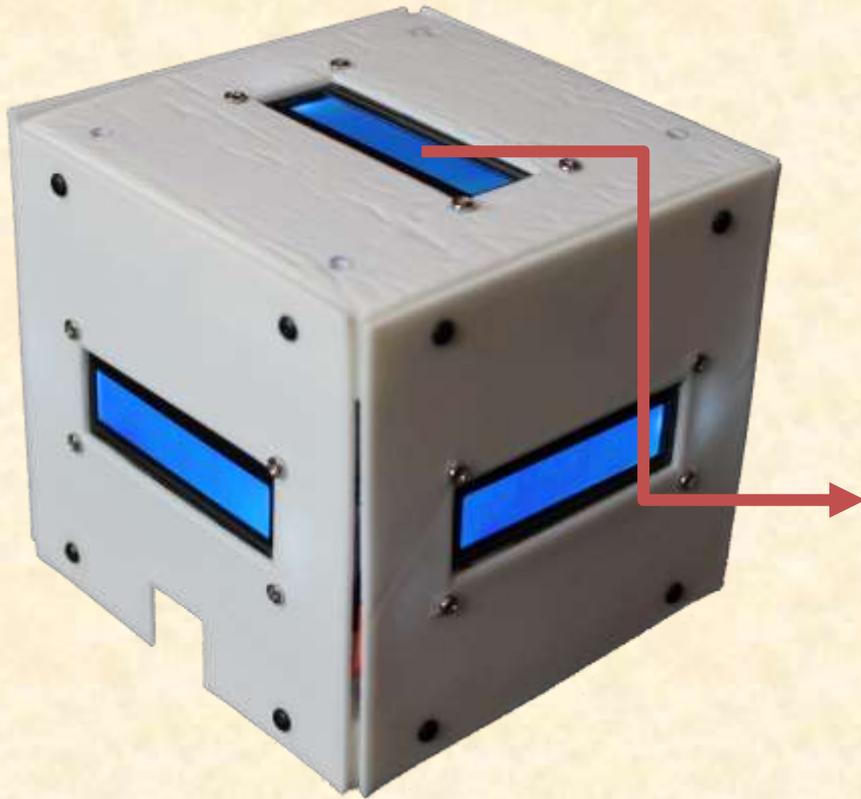
- Time Cube
 - Web application that tracks time spent on billable projects
 - Using a physical device
 - To provide accurate, automatic time tracking
 - Electronically without intruding on employee privacy
 - Ability to add, change, and remove time entries



System Architecture



Time Cube Populated



Time - Cube - 03

4195 - HMI - WIDGET
ACTIVE 100%

Web Application

The screenshot shows the Vectorform Time Cube web application. The browser address bar displays <https://vectorform-timecube.com/>. The page title is "Time Cube powered by Vectorform".

On the left sidebar, there are three main sections:

- Connect Device**: Includes a "Start Timing" button and a text input field for "DEVICE NAME".
- Time Cube Display**: Contains five text input fields labeled "CODE 1" through "CODE 5".
- Swap Codes**: Includes a "Swap Codes" button with plus, minus, and refresh icons.

The main content area features a control bar with the following elements:

- Manual Update**: A button.
- Compact Table**: A toggle switch.
- Hide Confirmed**: A toggle switch.
- Date Navigation**: Navigation arrows, a date input field showing "10/06/2022", and a "Today" button.
- Confirm Entries**: A button.

Below the control bar is a table with the following columns:

Project Code	Start Time	End Time	Time(mins)	Actions
+				



Web Application: During Use

The screenshot shows the Vectorform Time Cube web application. The browser address bar displays <https://vectorform-timecube.com/>. The application header includes the logo and the text "Time Cube powered by Vectorform".

On the left sidebar, there are three sections:

- Start Timing**: A button to initiate timing.
- Connect Device**: A list of connected devices, including "Time-Cube-03".
- Time Cube Display**: A list of displays, including "41954-HMI-Widget", "32134-HoloLens-2", "92714-Smart-Home", "28734-Home-Energy", and "87624-HB-Connect".
- Swap Codes**: A list of codes, including "17564-Fleet-Diagnostics" (marked as suggested), "87546-Augmenting-SmartCity", and "44323-BLE-Sport".

The main content area features a table with the following columns: Project Code, Start Time, End Time, Time(mins), and Actions. The table is filtered for the date "10/06/2022" and "Today". The "Compact Table" and "Hide Confirmed" options are visible. A "Confirm Entries" button is located in the top right of the table area.

Project Code	Start Time	End Time	Time(mins)	Actions
28734-Home-Energy	8:00AM	9:00AM	60	[Edit] [Delete]
41954-HMI-Widget	9:00AM	10:20AM	80	[Edit] [Delete]
17564-Fleet-Diagnostics	10:20AM	11:15AM	55	[Edit] [Delete]
87624-HB-Connect	8:00AM	9:00AM	60	[Edit] [Delete]
41954-HMI-Widget	9:00AM	10:20AM	80	[Edit] [Delete]
32134-HoloLens-2	10:20AM	11:15AM	55	[Edit] [Delete]
92714-Smart-Home	11:15AM	11:30AM	15	[Edit] [Delete]



Confirming Entries

The screenshot shows the Vectorform Time Cube web application interface. The browser address bar displays <https://vectorform-timecube.com/>. The page header includes the logo "Time Cube powered by Vectorform" and navigation elements like "Start Timing", "Compact Table", "Hide Confirmed", a date selector for "10/06/2022", and a "Confirm Entries" button.

The main content area features a table with the following columns: Project Code, Start Time, End Time, Time(mins), and Actions. The table contains one entry:

Project Code	Start Time	End Time	Time(mins)	Actions
28734-Home-Energy	8:00AM	9:00AM	60	[Edit] [Delete]

A modal dialog box is open in the center, titled "405 minutes have been recorded". It contains a summary table of recorded time:

Project Name	Total (min)
28734-Home-Energy	60
41954-HMI-Widget	80
17564-Fleet-Diagnostics	55
87624-HB-Connect	60
41954-HMI-Widget	80
32134-HoloLens-2	55
92714-Smart-Home	15

The dialog box also includes a "Done" button at the bottom.



What's left to do?

- Battery display
- Cube state machine
- Table toggles
- Date widget
- Edit entries
- Confirm entries
- Calendar API integration



Questions?

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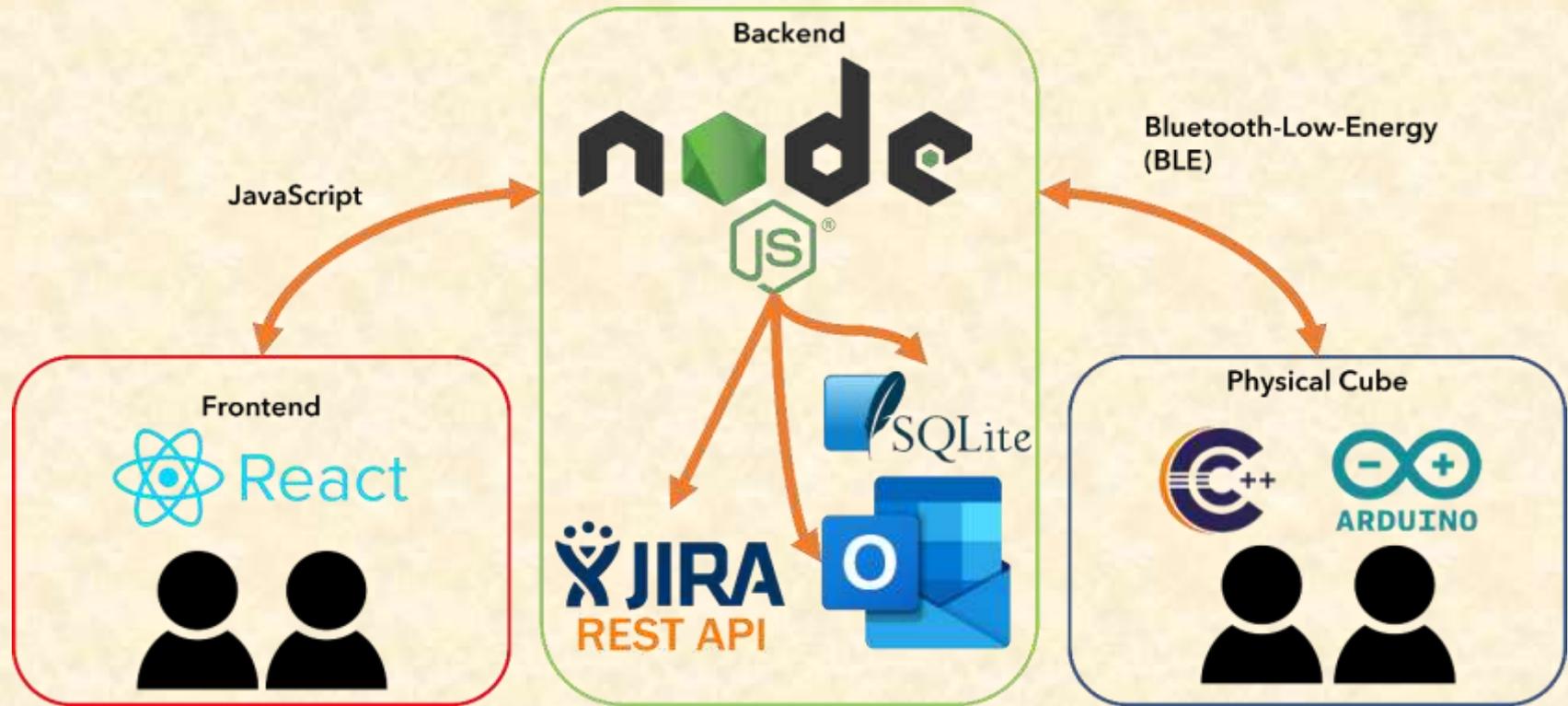
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End of slide show, click to exit.

Project System Architecture



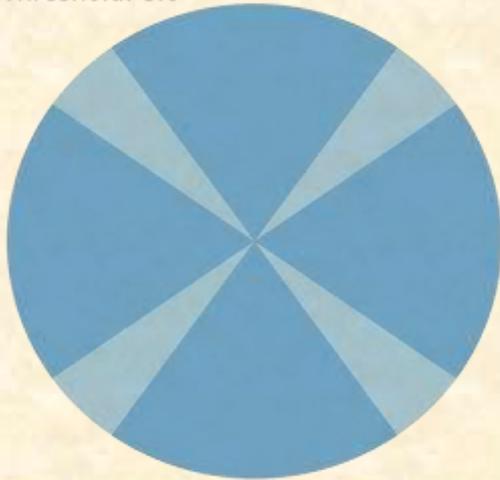
Project Risks

- Bluetooth Communication
 - The web application needs to communicate with the Arduino via Bluetooth. The data needs to be accurately sent in a timely manner
 - Research BLE and get the web application and Arduino communicating as soon as possible
- Tracking Accelerometer and Time Data
 - The orientation needs to be accurately tracked so the Time Cube does not record wrong entries
 - Test multiple time implementations to determine the most stable and efficient method for transitioning between project codes
- Deriving Project Code from API Data
 - The web Application needs to derive and suggest project code from the user's calendar and project management board
 - Research and determine received from APIs. Build mock data for determining the best data point to concentrate on

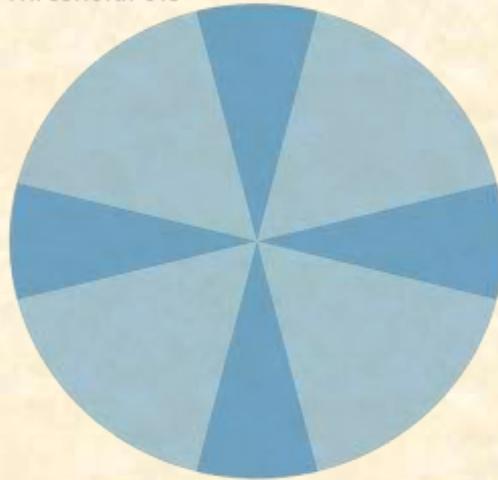


Orientation Mitigation

Threshold: 8.0



Threshold: 9.5



Threshold: 9.0

