Photometric Walkthrough Mobile Application (PWMA)

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PWMA - Agenda

1. Introduction
2. Project Information
3. IES
4. Calculation Points
5. Project Requirements
6. Future Plans
7. Demo
1. Introduction
What is OpticArts?

- Manufacturer of LED products
- Products used for interior design projects
Project Overview - What is PWMA?

- Photometric Walkthrough
- Mobile Application
- A room builder
  - Generate a room
  - Place LED light strips
  - Modification of lighting through IES
  - Computation of calculation points
- Creates a preview of the lit room for customers
2. Project Information
Technologies Used

- **Hardware**
  - Android devices
  - iOS devices

- **Software**
  - Unity Game Engine
    - C#
Team Tools

- GitHub
- Trello
- Slack
Team Challenges

● Original Project Idea
  ○ Light previewing with Augmented Reality
  ○ Had to compromise with liaison's requirements to fit within time and scope

● Learning new Technology
  ○ No experience with Unity and C#

● Liaison has little experience with programming
  ○ No company engineers to seek help from
3. IES
IES Format and Files

- “Illuminating Engineering Society”
- Contains data on light for architectural programs that can simulate light
  - Provides angles and points for how the light bends and works with its surroundings
- Needs to be parsed to be used within program
- Channel, driver, tape
4. Calculation Points
What are calculation points?

- Represents light intensity as a number at a single point in space
- Distributed throughout the room evenly
- Calculate values based on IES files
- Visual aid for the designer
How do we get them?

**Calculation**

\[
i = \frac{1 \cdot \cos \theta}{r^2} \\
1 = \frac{r^2 \cdot i}{\cos \theta}
\]

- \(i\): luminous intensity [candela]
- \(1\): illuminance [lux]
- \(r\): distance [m]
- \(\theta\): angle [°]

**Table**

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5. Project Requirements
Level 0 DFD

Photometric Walkthrough Mobile Application (PWMA)
- Main Control
- Camera
- Build Mode
- View Mode
- Calculation Point Summary
Level 1 DFD
6. Future Plans
Plans for Next Semester

- Implement mobile-friendly controls
- Implement third-person camera controls
- Implement summary page
- Graphics Polish
  - UI
7. Demo