# Augmented Reality System with 3D Modeling for Assisting Low Vision Users with Their Surroundings

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## PROBLEM STATEMENT

- Develop an augmented reality system to assist users with Retinitis Pigmentosa (RP) with their surroundings.

## METHODS

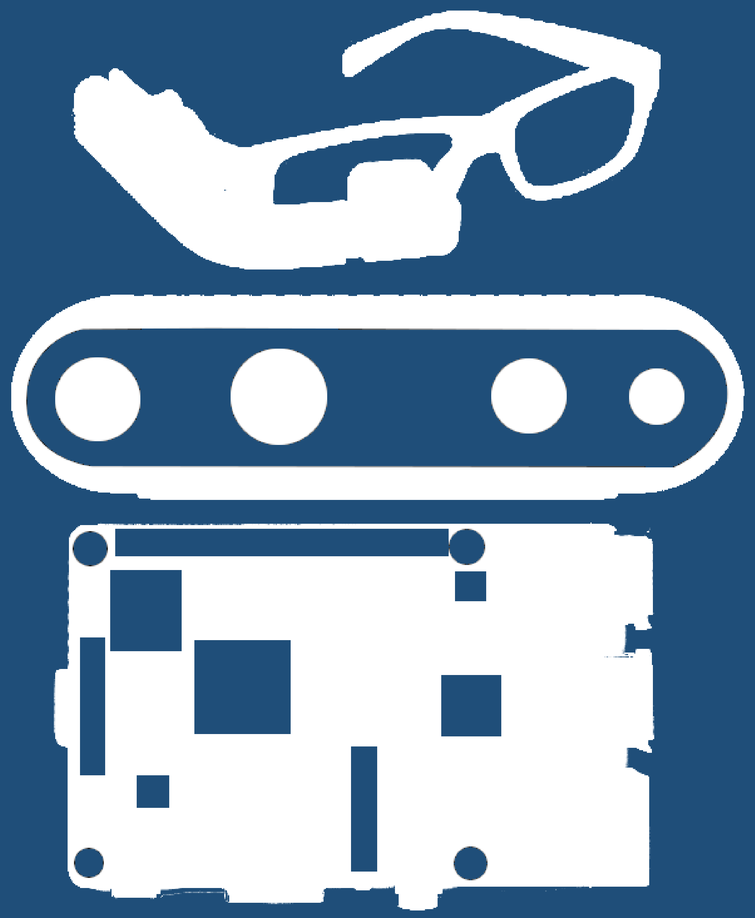
- Existing products were compared when searching for prototype components.
- Hardware and software functionality were iteratively tested throughout the process.
- The system was tested multiple times by sponsor and an end-user with RP.
- Feedback was used to improve design and implementation.

## TESTING AND ANALYSIS

Table 1: Essential Results

| Testing | Results |
|---|---|
| Preliminary Research | Existing products were an inadequate platform. Liaison suggested Vufine+ |
| Mobile Application | Simple User interface improves usability. |
| Hardware | Streamlined wiring and protected components are essential. |
| Video Stream | Night Mode is primary. |

**Augmented Reality device** to assist users with **Retinitis Pigmentosa** in **navigating their environment.**



*QR code with link to SharePoint website*

## PROTOTYPE

- The prototype features a depth camera, on-board processing unit, battery pack, and wearable display.

Figure 1: Beta Prototype

Table 2 – Business Case

| Customers | 21,000 |
|---|---|
| Total Revenue | $25.2 million |
| Total Cost | $13.88 million |
| Potential Profit | $11.32 million |
| Marginal Revenue | $1200 |
| Marginal Cost | $661 |
| Marginal Profit | $839 |
| Gross Profit Margin | 0.45 |
| Markup | 0.82 |

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