Seer Optics

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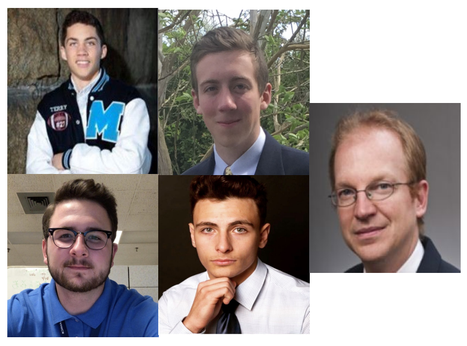
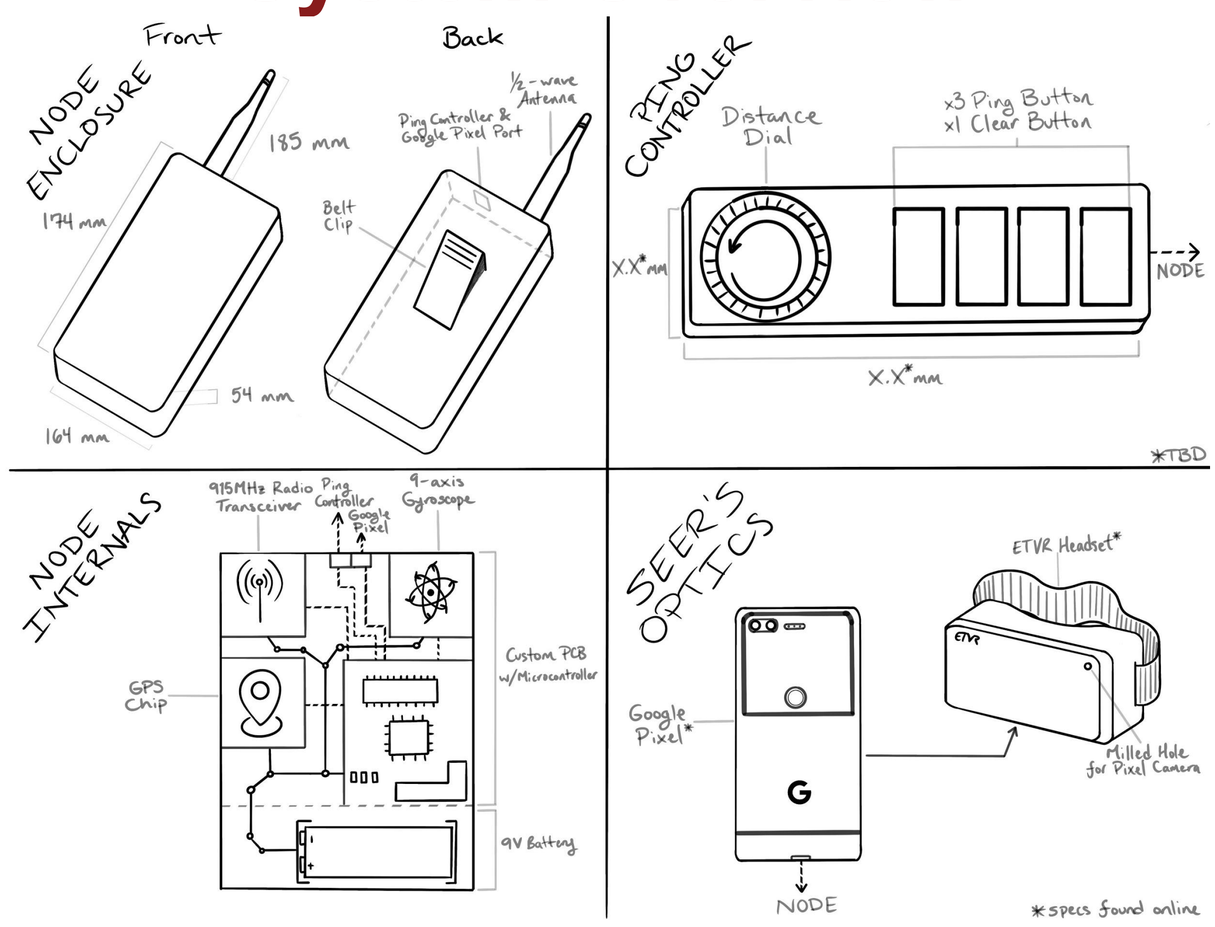


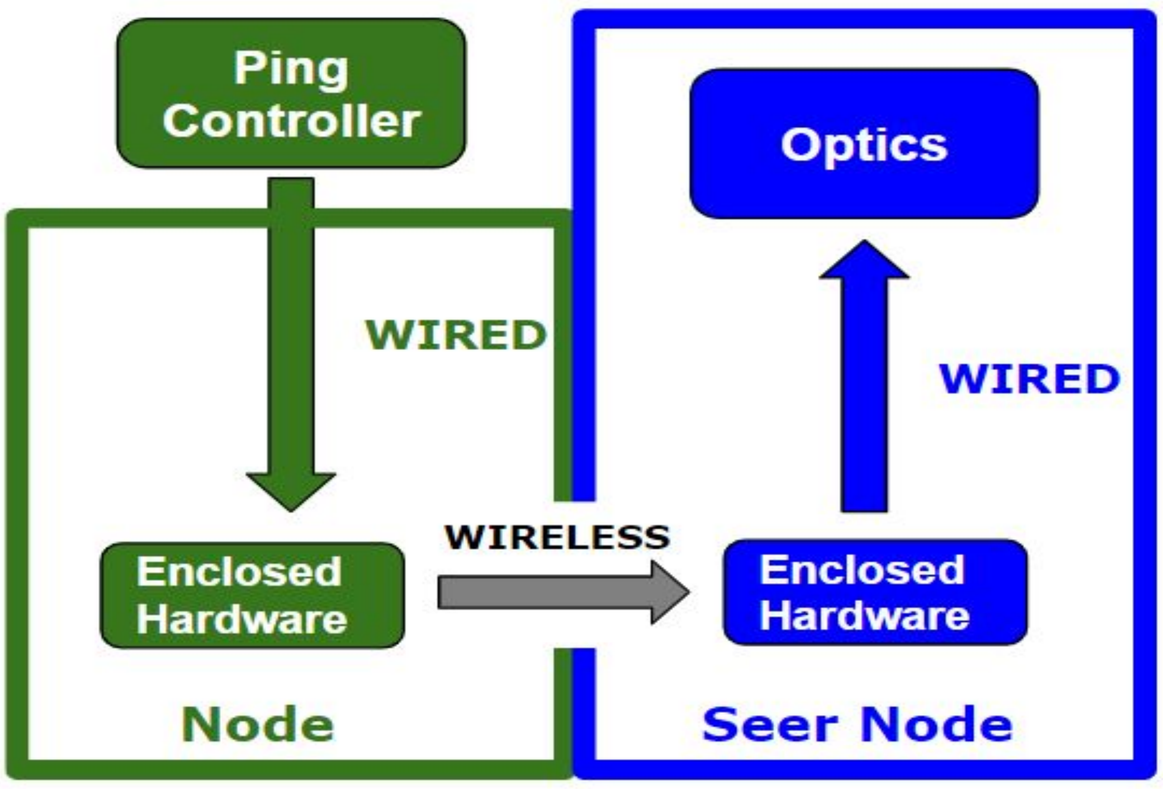
Abstract

Civil servants (i.e. firefighters, policemen, search & rescue) suffer from a lack of situational awareness when conducting their missions. This creates a fog of war that leads to friendly fire, team members missing in action, delays in missions and other unnecessary issues. Our product, Seer Optics, will be designed to provide a visual aid that takes in teammates' GPS data through radio and displays where they are. In addition, the product allows users to share a marked location using GPS data in conjunction with an input controller.

System Overview



Block Diagram

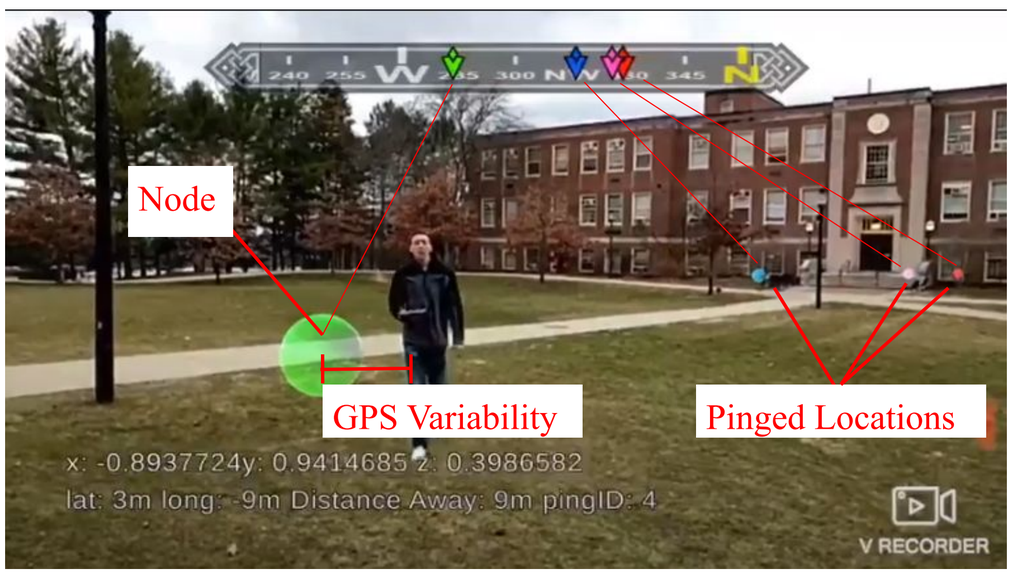


The system consists of two nodes. A person attaches a node to their waist. The node contains sensors like a GPS, a Gyroscope, and our custom Ping controller. The sensors inside are used to track the user with the node attached via GPS coordinates. The Ping Controller is utilized by the user to mark or 'ping' locations via the Distance Dial and Ping Buttons. All of the information getting calculated at the node gets transferred to the 'Seer' node via radio at 915MHz. The Seer node does a computation using its own GPS and Gyroscope data and transfers this data to Optics via serial communication. An application on the Google Pixel is then utilized to showcase the node as a green dot in real time.

Specifications

User
1. Seer Node sees live location of teammates (with or without obstacles)
2. Seer Node sees locations pinged by the Node
3. Node can ping locations and objects in the environment via a ping controller
4. Seer Node and Node have a long battery life
Technical
1. Pinging range will be at least 50m
2. Only displays teammates that are ≥25 meters away
3. Displayed Node on optics will be within +/-5 degrees of Node's actual location 95% of the time
4. Node's battery life at least as long as Hololens' battery life
5. Teammates GPS data updates every 500 milliseconds, 95% of the time

Results



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