Access Solutions Software

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Background

Access Solutions is a TeleCom and Foreign Material Exclusion company based in Molalla, Oregon. Foreign Material Exclusion is the tracking of items that enter and exit a job site. Currently Access Solutions has manned stations on site for checking tools in and out. This works well for larger critical zones, however, for smaller and more remote sites, this method is not cost efficient. Our team was hired to develop software for on site computers that the employees can use to check their own tools in. This will reduce staffing costs, allowing Access to service smaller sites.


Figure 1. Research and Development
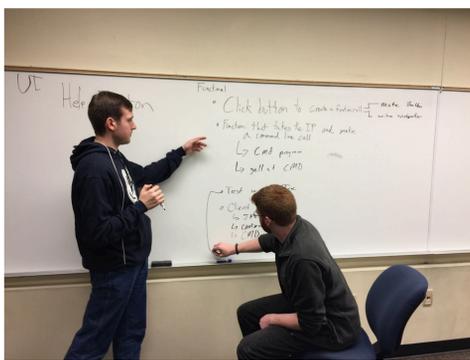
Figure 2. Initial Project Brainstorming

Objectives

Implement a kiosk help system. The system should:

- Initiate a call between a kiosk and a help center.
- Initiate a remote desktop session between a kiosk and a help center machine.
- Monitor the kiosk systems from the help center, including: Temperature monitoring, timing, and system alerts.
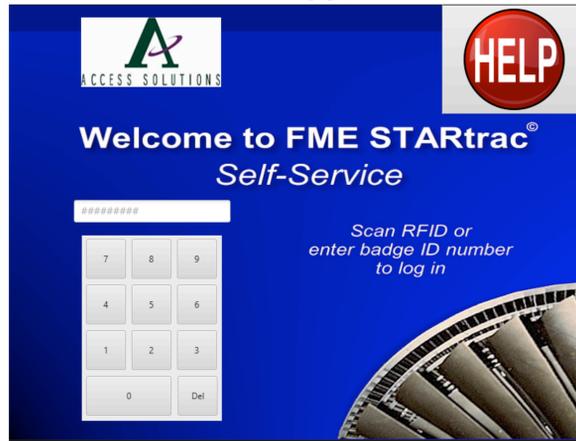
Figure 3. STARtrac System Interface

Final Design

We are using the commercial software Pulseway™ for system monitoring and Remote Desktop. The STARtrac interface is the system by which the on site workers check their tools in. STARtrac uses an RFID (radio-frequency identification) reader to check in employees and their tools on site. This allows them to self monitor and record the tool check-in process for foreign material exclusion. A SIP (Session Initiation Protocol) server is utilized to facilitate a voice over IP call between the on site computer and the main call center. We connected Pulseway™ and calling functionality to the STARtrac system which runs entirely behind the scenes. These features were integrated into the help button to limit the need for user interaction. "Figure 4" maps out our final functionality and structure design for the remote support and monitoring program.
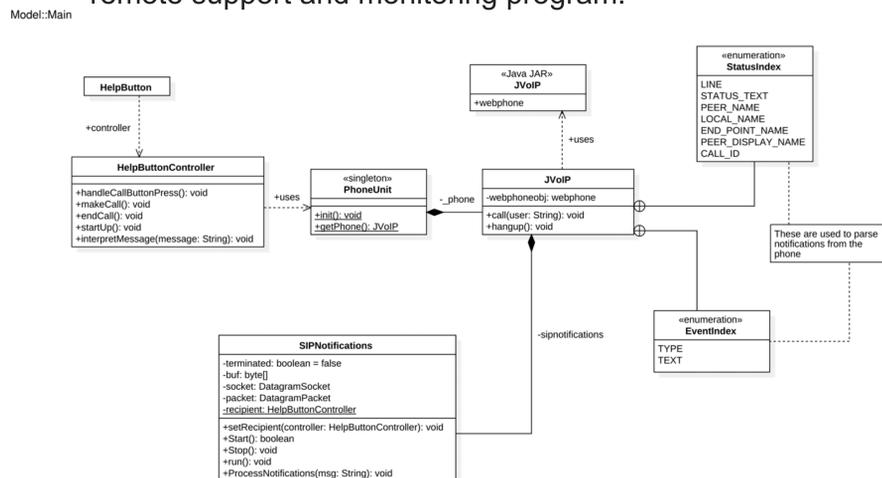

Figure 4. Remote Support UML

The call will be initiated from the job site kiosk to the call center. The call center will also be connected to the kiosk at all times via Pulseway™.

Figure 5. Turbine, to Kiosk, to Operator Diagram.

Research & Integration

We researched many commercial solutions to solve our VoIP, remote desktop, and system monitoring objectives. VoIP or, Voice over IP, is a voice to voice computer connection over the internet via internet protocols. After finding a promising commercial program we would test to see if it fit our needs and how it compared to other solutions. If it met all of our needs we would then see how well each piece could be integrated into our system. All these functions had to be implemented behind the scenes in such a way that the applications could be run entirely from the help center or through the on site employee's interface.

Figure 6. Pulseway™

Steps to Deployment

In order to deploy this project, the Java source code must be integrated within the STARtrac system. A SIP service provider must be paired with the Java application to properly facilitate VoIP communication. Additionally, commercial monitoring and remote desktop software must be utilized. Finalized deployment steps include:

- Integration of Java VoIP source code paired with a reliable SIP server provider.
- Secure enterprise version of Pulseway for system monitoring and remote desktop.
- Configure Pulseway and SIP server for network infrastructure compatibility.

Left to right: Jack Tillotson, Nathan Smith, Nicholas Jensen, Alex Christensen, Nik Tripp, Chase Atkinson.

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