

Vision Document
Organizational Alert System

For
CS 895 MSE Project
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1. Overview

1.1 Motivation

In 2017 a non-profit long-term care facility I worked with started using a web-based service designed to silently alert all employees to an active shooter event. They quickly realized that their need to communicate information silently and immediately went beyond just active shooter events, such as messages about surprise state inspections, roaming dementia patients, inclement weather, and other warnings. These were all messages that weren't appropriate to be announced over an intercom, but too urgent to rely on email. Unfortunately, the service they used wasn't flexible enough to accommodate these additional messages. Other alternatives were too expensive for non-profits, or too complex for a company with no IT staff to implement. I am motivated to fill a need for safety communication software for companies with minimal budget and limited I.T. staff.

1.2 Purpose

The purpose of this project is to create a software that allows companies to pop up an immediate notification on the desktop of all users within an organization. The software will be primarily an active-shooter notification software, but will be able to be customized for other types of messages tailored to a company's needs. The program will be simple to deploy and incorporate features that allow companies to customize the alerts they can send. The program and source code will be released for free under the GNU General Public License, so that any company, regardless of budget, can use it.

1.3 Users/Market Demographics

This software will be useful to small companies, schools, hospitals, and nursing facilities. It differs from similar programs in that it will not require any knowledge of server administration to deploy, and will not require a monthly or annual subscription, so companies with small budgets and no full time IT staff will find it particularly useful.

1.4 Key User Needs

The primary purpose of this software is to serve as an alert system for an active shooter event, and with that in mind, I will make the active-shooter functionality prominent and easily available. In addition, the customizable alerts that a business might want to employ are staff communications, wandering patients, suspicious person sighted, surprise inspection, severe weather alert, disruptive patient, employee needing assistance, bomb threat, shelter-in-place, hazmat incident, or any other message that should be communicated instantly and silently to all employees.

1.5 Goals

The project will consist of a small server application and a client application written in Java. The server will handle registering each client and will have a GUI interface with buttons that send customizable alerts to the clients. The client will sit in the Windows system tray and if it receives an alert from the server, will pop up a small alert notice to the user running the client.

The program should be sufficiently robust and error-free to be used in a commercial environment, including being able to alert users about connection problems.

1.6 Essential Qualities

- QA1. Client will function without errors
- QA2. Clients will acknowledge state changes within 10 seconds.
- QA3. Web Application will function without errors.
- QA4. SendAlarms.php will load within 120 seconds.
- QA5. The steps to trigger alarm from client will take no more than 4 clicks.
- QA6. The server and client will be easy to deploy with no skill required

1.7 Assumptions

- Java is already installed on most computers, or users have the skill to install Java.
- Users will be running some version of Windows OS.

1.8 Scope

The scope of this project, for the purpose of the MSE will be limited to one server image that includes a pre-configured apache 2 web server, Rest API, and Web GUI, and one client that runs in Windows. The server will have an active shooter button, 4 or 5 customizable buttons, and a text box for custom text alerts. Each client will have only settings window, and a window that remains hidden unless there is an active alert.

1.9 Not in Scope

The possibilities for future expansion on this project should include a mobile client, support for Linux, automatic re-establishing of lost connections, and secure messaging. But, because of time constraints they are outside of the current scope. Ultimately I'd like to see customizable picture messages, integrated hardware alarm buttons, alarms that can be triggered by wearable tech, such as wandering dementia patient bracelets, and APIs for weather alert services. But these features are all outside the scope of the initial iteration of this project.

1.10 Risks

- Open source licensing - there is a risk that I could inadvertently use libraries that are not licensed for free public use.
- Java uncertainty - the Java standard and JRE are continually updated and it's not feasible to test every version of Java in use today for compatibility issues. Issues could

arise where users can't run the program because of mismatched versions of Java, or non-standard Java settings.

- Schedule - at this time I'm working 10 hour days as a hospital IT Director, in addition to simultaneously working on 2 large freelance programming projects for 2 other companies, with programming projects queued up through next year. I estimate I can spend 6 to 9 hours a week on this project, and anticipate that deadlines in other projects could force delays in this project in the coming months.

1.11 Constraints

Timeframe - This project needs to be done within one or two semesters.

2. Requirements

2.1 Critical Requirements

Web API Requirements

- CR1. Each alarm button will trigger an alarm state
- CR2. One button will stop all alarms
- CR3. Users can customize alarm messages
- CR4. Users can see a log of all alarm activity
- CR5. Rest API provides one active alarm (most recent)

Client Requirements

- CR6. Client retrieves active alarm
- CR7. Client displays most-recent active alarm
- CR8. Users can change and store setting

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