Panic Alarm Solution

for North Carolina K-12 Public Schools

North Carolina Department of Public Safety
North Carolina Division of Emergency Management

May 2018

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1 Executive Summary

In 2015, the North Carolina General Assembly established the School Risk and Response Management System (SRRMS) and tasked the North Carolina Emergency Management (NCEM), the NC Center for Safer Schools (CSS), and the Department of Public Instruction (DPI), to implement this framework statewide. The intent of this system is to enable the efficient gathering, communicating, and displaying of valuable data, tools, and applications to assist school officials, law enforcement officers, first responders, and emergency managers in preventing, preparing for, and responding to hazards and threats at all North Carolina educational facilities. The SRRMS is comprised of five key components:

- Digital Building Floorplan Schematics and Asset Identification;
- School Risk Management Planning (SRMP) Application;
- Anonymous Student Safety Tip Application (SPKUP);
- State Emergency Response Application (SERA); and,
- Digital Panic Alarm Application.

The 2017, the North Carolina General Assembly tasked the NCEM to perform a proof of concept pilot on a possible digital panic alarm solution and report back to the 2018 General Assembly. In response to this tasking, NCEM conducted over 30 panic alarm requirements meetings with school administrators, local emergency managers, law enforcement officers, school resource officers, first responders, and 9-1-1 telecommunicators. The purpose of these meetings was to gather operational and technical requirements for a school safety panic alarm application to be deployed statewide. Stakeholders were asked a series of questions about protocols, IT infrastructure needed, notifications from school staff, and other user information. The following broad requirement statements reflect the prevailing comments heard during the stakeholder meetings. These requirements were used in surveying the market and testing solutions.

Digital panic alarm functional requirements:

- Construct the technology to use Wi-Fi and/or cellular data services, which may require significant infrastructure upgrades at schools. The technology will need to remotely contact 9-1-1 centers, school administration staff, teachers and other nearby school resource officers and administrative staff (within a predefined geo-fence);
- Ensure the system developed provides 9-1-1 centers and first responders information about the type of event (e.g. active shooter, building fire, bomb explosion, etc.);
- Develop a system that sends all notifications straight to 9-1-1 centers and manages false alarms and user errors;
- Create a flexible system that can also alert staff in the same building to specific types of events, should a district request this additional notification;
- Determine if a live video camera feed is possible to integrate, as available in certain school buildings;
- Create a process for schools to maintain a list of approved panic alarm devices and provide training and resources to help execute this;
- Obtain detailed location notification accuracy within school buildings, with a refinement to individual school rooms or building floor levels;
- Expand communication to include two-way communication with school(s), staff, and law enforcement and include notifications to the SERA;
- Create a mechanism for changes in school staff and levels of notification based on user type;

- Develop a device system that may include any combination of native applications (iPhone/Android), PC Software, and/or lanyards, with each district having the ability to choose the best device option for their district;
- Assess the appropriate security/log in for the system; and
- Create a regular user training program for all schools to implement.

Based on the defined requirements, NCEM tasked ESP Associates, Inc. (ESP), to: 1) survey, test, and identify a panic alarm solution that best meets the defined requirements; and 2) survey, assess, and calculate the cost of implementing such a solution including any physical, structural, and electrical modifications that must occur to the physical facilities. This resulted in a thorough and rigorous testing process and a recommendation to deploy the solution statewide.

ESP solicited a Request for Information (RFI). The results from the RFI process was the following:

- No single vendor / solution in the school safety industry supports all of the defined requirements that were discussed in the meetings with local schools. Specifically, lanyards can be expensive to deploy and often result in a high number of false alarms;
- Of the solutions presently available in the market, Rave Panic Button provides the best notification for all teaching staff, administrators, School Resource Officers (SROs), and other school staff, as well as notifications to 9-1-1 centers,
- Rave Panic Button has three (3) successful statewide deployments of various technology in Delaware, Arkansas, and Michigan and offers an anonymous tip line that can provide a real-time web-based monitoring console, and
- The horizontal accuracy of the selected solution for pin-pointing where an incident occurs was acceptable; however, the vertical accuracy of the location of an incident is less defined. Possible solutions to ensure vertical accuracy include enhanced Wi-Fi router installations in all schools to allow for more precise vertical accuracy of incident locations. It is anticipated that future technological enhancements will provide altitude information collected by cell phone handsets and operating systems. Once available, this information should be integrated into the SRRMS.
- A recommendation to deploy the Rave Panic Button on a statewide basis in order to support the requirements gathered by key stakeholders and goals of state legislators.

Implementation and Cost: Section 5 of this report provides the implementation activities and estimated schedule for this project. Below is the anticipated summary cost to implement the Rave Panic Button solution statewide for K-12 schools. More detailed costs for the statewide implementation can be found in Appendices B and C to this document.

It is recommended that the implementation of the digital panic alarm solution occur using a phased approach based on the 15 Emergency Management areas. Figure 1 shows the recommended implementation timing based on the NCEM branch and area. Tasks such as training, monitoring and support, will be completed by NCEM area (as shown on Figure 1) to ensure stakeholder groups have adequate resources. Once the application setup is complete, each region can proceed to the rollout phase of the project plan, allowing for an efficient and coordinated live implementation.

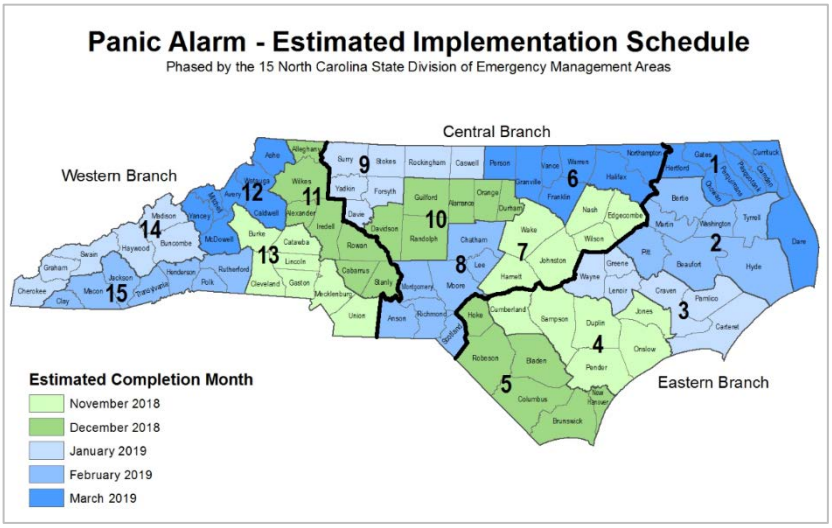


Figure 1. Panic Alarm recommended implementation schedule

Implementation Tasks	Cost
Statewide Implementation of Rave Panic Alarm Solution in all K-12 Schools*	$3,986,475
Statewide Implementation of Rave Panic Alarm Solution in all Charter Schools*	$276,000
Rave Panic Alarm Solution Integration into SERA	$200,000
Project Management	$220,000
	$4,682,475
Estimated Cost per District	**$40,500**
Estimated Cost per School	**$2,017**
Estimated Cost Per Student	**$3.25**

**Cost includes annual license fee and one-time set-up statewide. Costs do not include the Eyewitness Anonymous Tip Solution*

In addition to the software costs shown above, statewide implementation of Wi-Fi/BDA is recommended to improve application connectivity and positional (horizonal and vertical) accuracy. The following table contains planning level estimates for Wi-Fi infrastructure improvements statewide.

Item	Estimated Cost / School
Wi-Fi / BDA improvements (as needed)	$10,000 - $15,000

2 School Risk and Response Management System (SRRMS)

2.1 Concept

The 2015, the General Assembly passed Session Law 2015-241, Section 8.26 establishing the School Risk and Response Management System (SRRMS). Section 8.26 defined the North Carolina Emergency Management (NCEM) as the lead state agency for school risk management and directed it to work in tandem with the Center for Safer Schools, the Department of Public Instruction, and the State 9-1-1-Board to efficiently implement and maintain the School Risk and Response Management System (SRRMS).

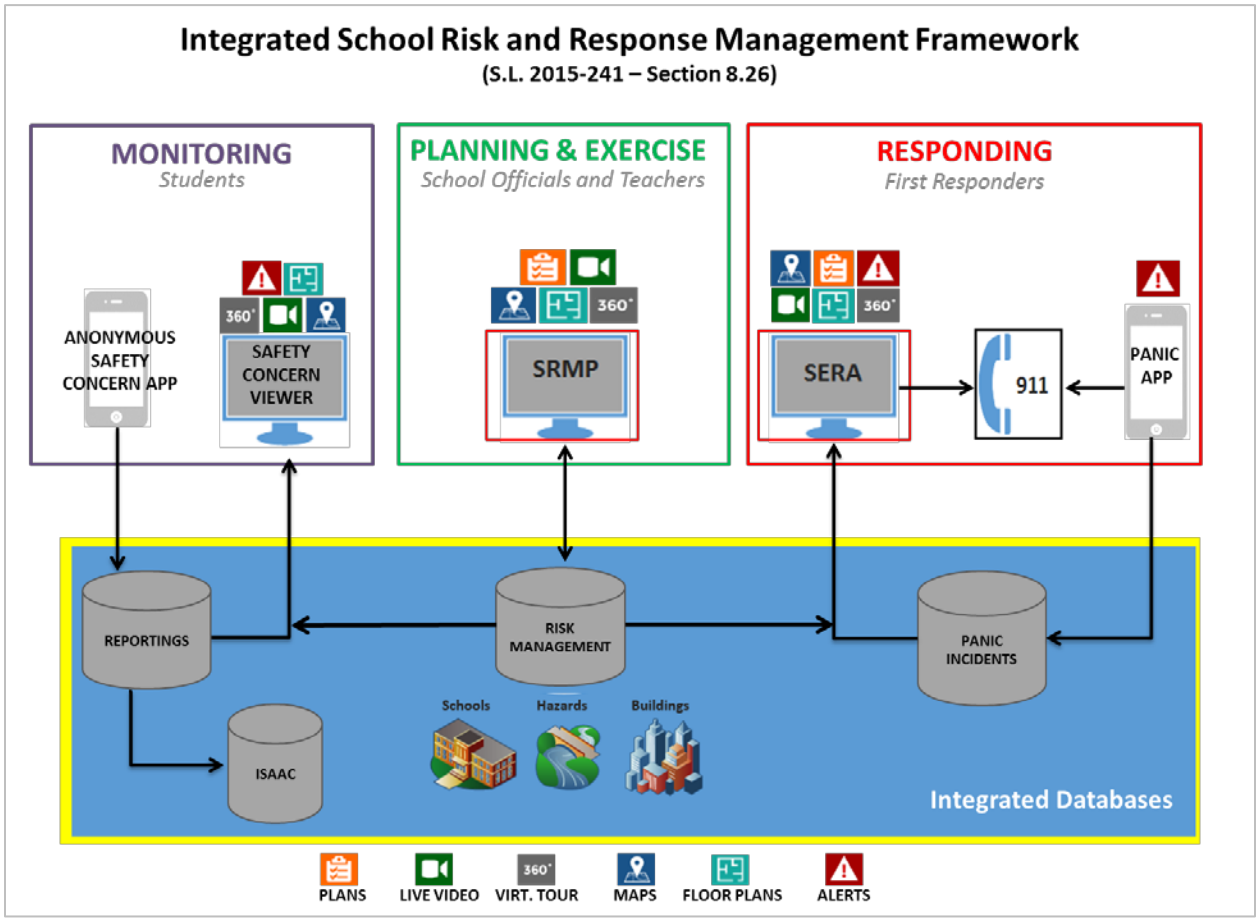


Figure 2. Integrated school risk and response management framework

As discussed in Section 1, the concept of SRRMS is to provide one system that integrates all school risk management monitoring, planning and exercise, and responses to streamline the information and aid in better hazard response and recovery activities. NCEM has progressively implemented this system in coordination with other state and local government partners.

The primary three components of SRRMS (monitoring, planning and exercise, and responding) are supported by the following data, systems, procedures, and products:

- School Facility Schematic Diagrams
- School Risk Management Plan (SRMP) Application
- School Risk Management Plans

- State Emergency Response Application (SERA)
- Anonymous Tip Line / Monitoring Application
- Statewide Panic Alarm System
- School-wide Table Top Exercises / Drills

2.2 Building Floorplan Collection and Digitization

NCEM reached out to all K-12 public schools, community colleges, and public universities to collect the floorplans for all buildings within campuses for these facilities. Once floorplans were collected, a detailed process took place to digitize floorplans using the information provided by the school systems. High resolution imagery was used to place floorplans in the correct geographic location. The following items are collected as assets for each building: main entrance, exterior door, interior door, roof access, attic access, basement access, stairwell, elevator, main office, auditorium, gymnasium, cafeteria, main water valve, natural/propane gas valve, electrical closet, mechanical closet, room numbers, main power, generator/transformer, data/telecommunications, water closet/boiler room, fire hydrant, fire alarm main panel, sprinkler system main, explosive/hazardous materials, and knox box. This information is held in a geospatial database that the SERA application uses in real-time to display assets with the floorplans.

Figure 3. SERA and SRMP leverage critical datasets

Education Type	Floorplan Collection Status as of May 21, 2018
K-12 Public Schools	All 2,295 school buildings are digitized and available in SERA.
Community Colleges	20 Community College systems have submitted floorplans, which is 337 buildings out of a total 1,298 buildings across 58 Community Colleges.
Public Universities	16 out of 17 Public Universities have submitted floorplans, which is 1,854 buildings out of a total 2,979 buildings for all Public Universities.

Table 1. Floorplan collection status as of May 21, 2018

2.3 School Emergency Responses Application (SERA)

2.3.1 Application Purpose

SERA is a web-based application designed to assist emergency responders and public safety officials as they efficiently respond to hazards and threats at K-12 and Higher Education facilities. Leveraging data and information documented in School Risk Management Plan (SRMP) and Higher Education Risk Management Plan (HERMP), SERA efficiently presents profile and process information and spatially displays school floorplans, key assets, and vulnerabilities. Access to SERA is based on the State's NCID system and is administered by NCEM. SERA is a live application and is available to anyone granted access by NCEM.

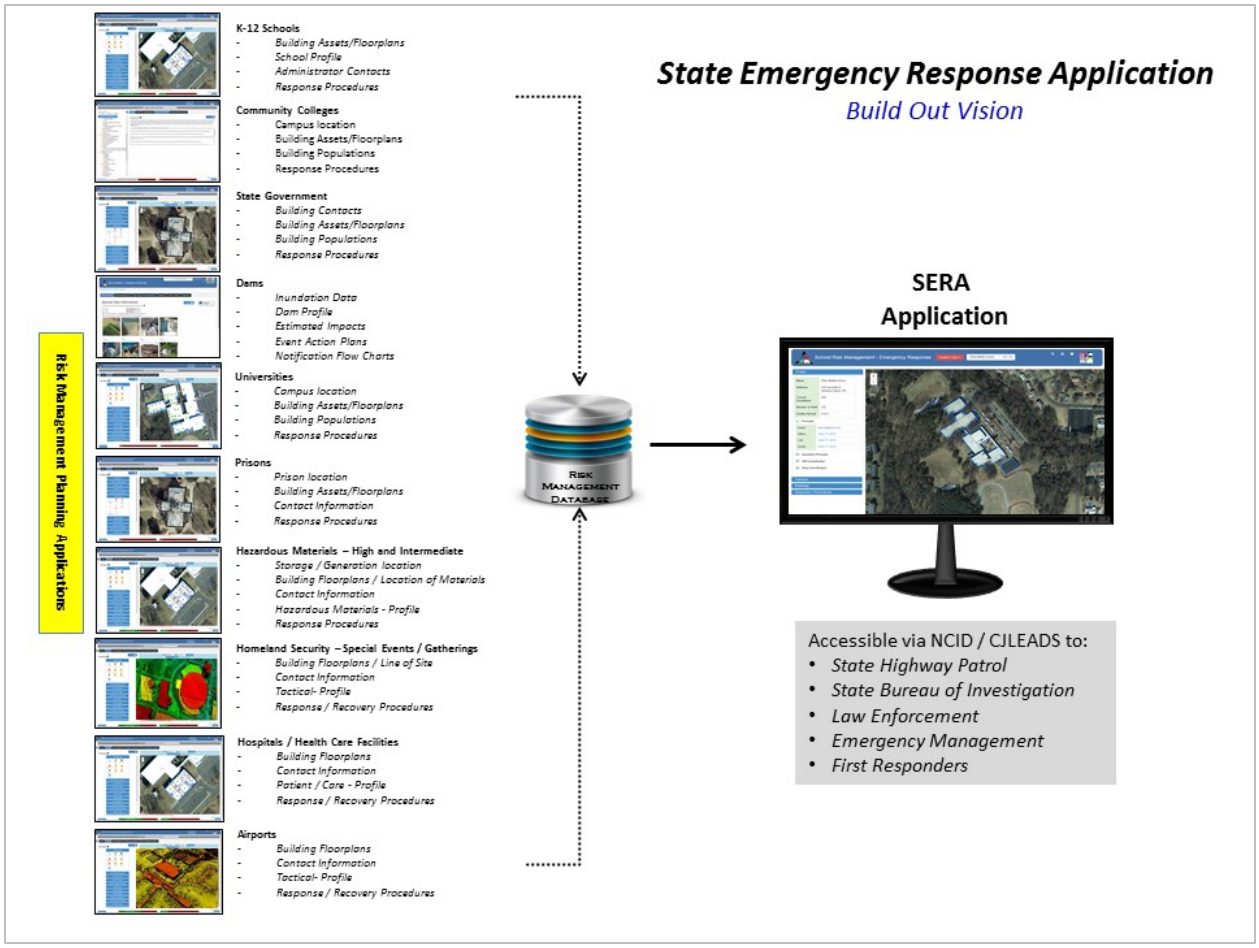


Figure 4. SERA's build-out vision

2.3.2 Functionality

SERA is a secure application that displays campus, buildings, floorplans (including multi-floor buildings), and key asset locations (exit locations, power, fire safety, knox box locations, data/communications, gathering points, etc.). The security uses the State's NCID system and is administrated by NCEM. The objective is to collectively and efficiently prepare for, mitigate against, and respond to hazards and threats on campus property.

Figure 5. Response/procedures presented to first responders in SERA

2.4 School Risk Management Plan (SRMP) and Higher Education Risk Management Plan (HERMP) Applications

2.4.1 Application Purpose

The SRMP and HERMP are online tools that leverage the collected campus, building, and asset data to facilitate the creation of risk management plans in a consistent manner.

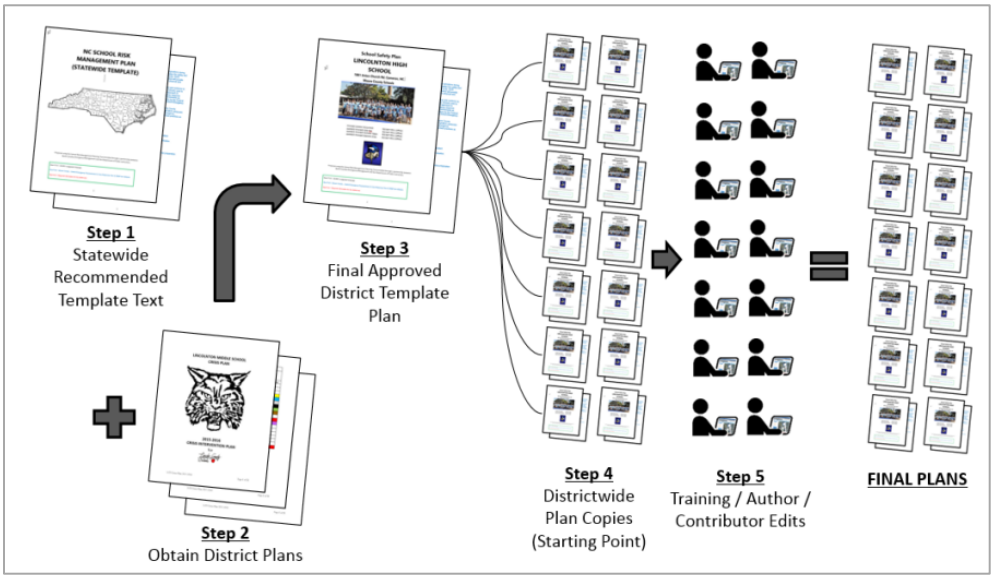


Figure 6. SRMP workflow process of creating consistent school risk management plans

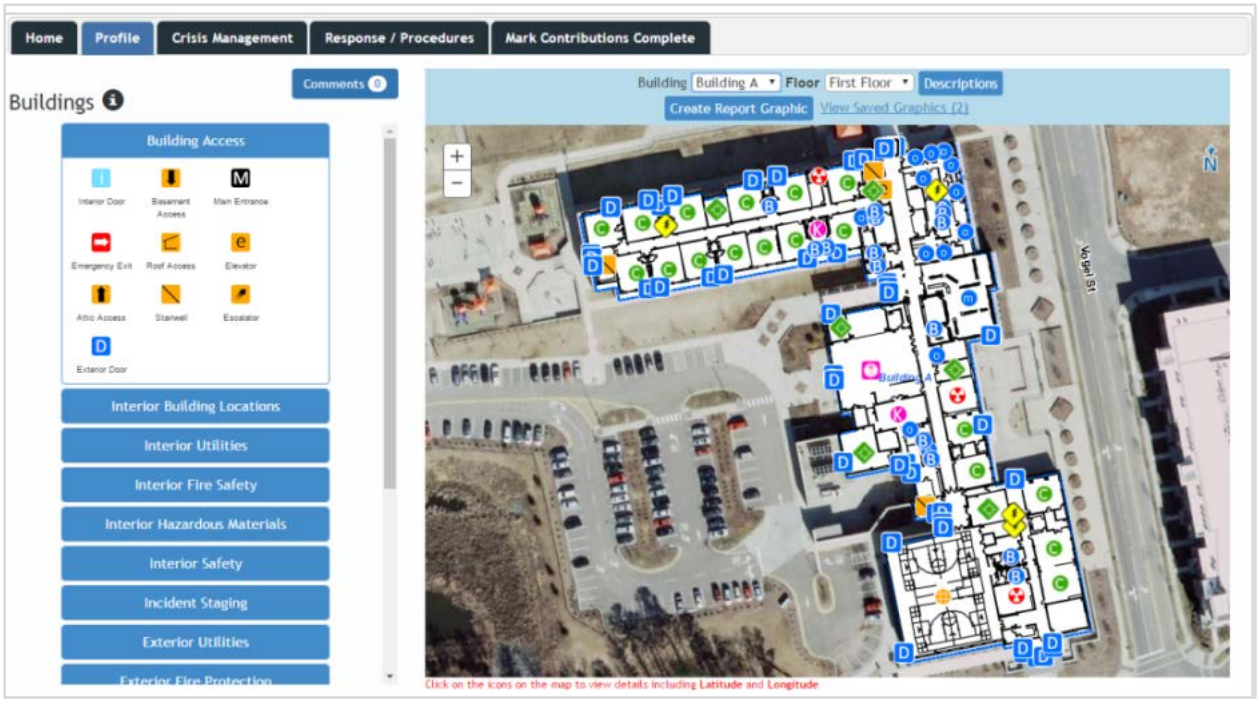


Figure 7. The building view in SERA functionality

These tools facilitate and support the construction of school profiles and planning procedures for various natural hazards and threats (preparedness, prevention, response, recovery and mitigation). These applications allow school administrators to have other staff, such as School Resource Officers or maintenance staff, help in the development of the plans. Additionally, users can view floorplans and building assets in an interactive map, add new asset information, and modify existing assets in order to ensure that the latest information is captured in each Risk Management Plan.

3 Digital Panic Alarm Solution – Requirements

The digital panic alarm application is a key component supporting efficient response. The panic alarm application must provide and enable efficient: notification to 9-1-1 Public Safety Answering Points (PSAPs); communication among teachers, school staff and law enforcement during an incident; and, placement and display of teachers and school staff via SERA to law enforcement, first responders and 9-1-1 telecommunicators. Much of the data and information collected and provided by the panic alarm application will be ingested and displayed within the State Emergency Response Application (SERA). SERA is a secure application developed by NCEM that allows first responders to respond to hazards and threats on K-12 school campus property across the state.

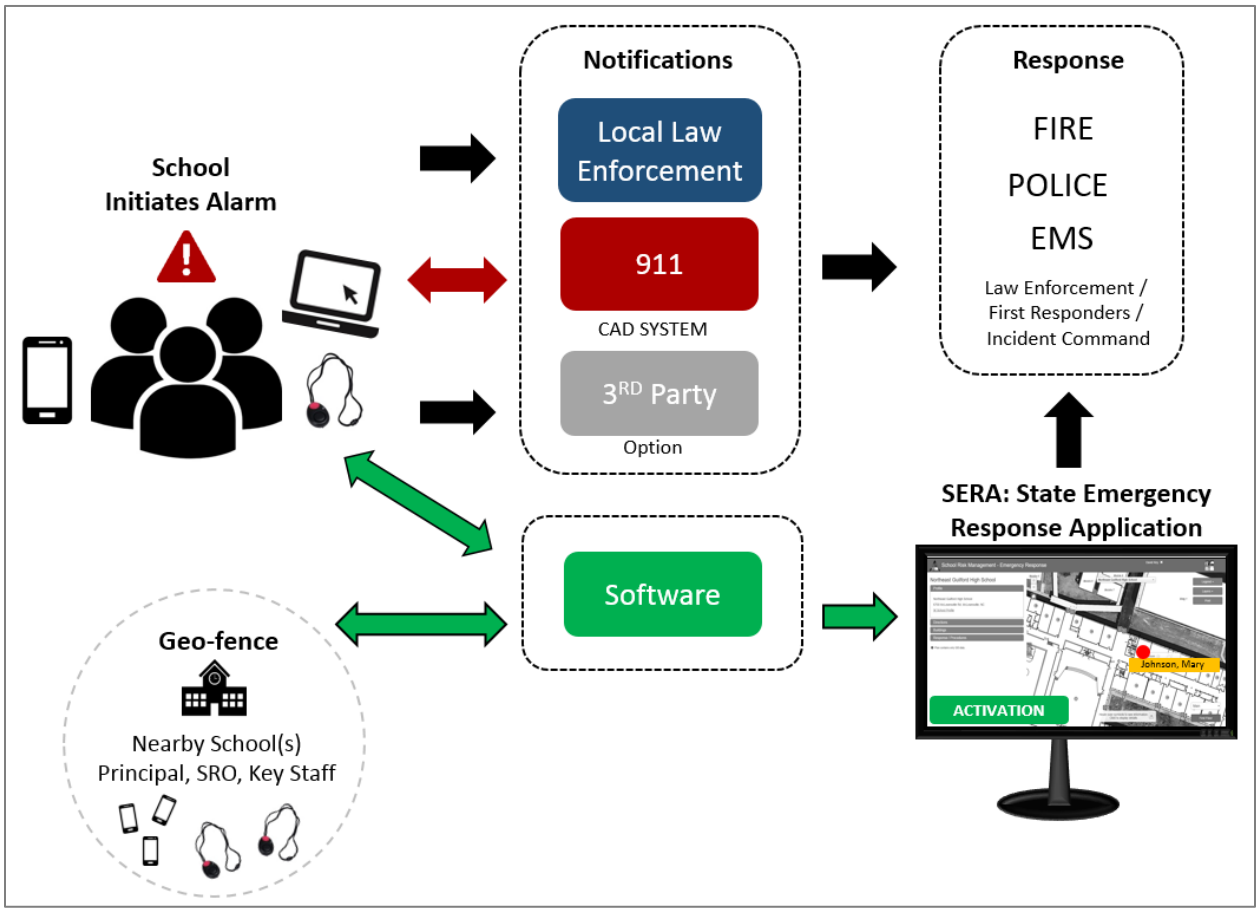


Figure 8. Proposed technology solution for a Panic Alarm

From 2016-2017, requirements meetings were conducted by NCEM – Risk Management with school districts across North Carolina. These meetings coincided with the School Risk Management Application regional and county meetings. Stakeholders included (but were not limited to) representatives from the following:

- North Carolina Emergency Management Staff
- North Carolina Commission for Safer Schools
- Public Safety Answering Points (PSAPs) Committee
- Law Enforcement and First Responders (EMS, Fire)
- School District Administrators

- School Administrators
- School Resource Officers

At each meeting, a series of questions was asked to gather requirements and provide an open forum for discussion on a proposed panic alarm solution. The result was a list of requirements that is provided below.

3.1 Infrastructure and Connectivity

Infrastructure and Connectivity: *Can the solution provide reliable panic alarm functions in schools/buildings with varying qualities of infrastructure and connectivity?*

- The vendor should plan on poor cellular data connections and GPS in the buildings and the solution should consider this. The objective is to provide panic alarm capabilities for facility staff communicating the alarm and the staff person's position in the building (building, room, and floor). The chosen approach will need to demonstrate a strong data connectivity solution and building level positional location. The solution may also consider busses, field trip routes, and other destinations (for K-12 schools).
- If bi-directional amplifiers are available, they should be part of the potential solution.
- The proposed solution must be deployed at no personal costs to the school or employees.

3.2 Notification

Notification: *Can the solution provide robust and flexible mass notifications to 911 and key staff?*

- The chosen approach will need to have a mechanism to eliminate the possibility of false alarms as a result of accidentally engaging the alarm. The solution should not allow for false alarms.
- The solution must consider impacts to the 9-1-1 Public-Safety Answering Point (PSAPs) and the potential increase in calls due to the deployment of a large number of panic alarm systems in teacher's hands.
- As part of the notification process, 9-1-1 PSAPs and Law Enforcement need to know the type of event that is occurring (active shooter, bomb, tornado, etc.).
- The solution must generate a notification that is specifically flagged as an alarm from a school and it must be received as a call or text as a 9-1-1 notification.
- All notifications should go directly to 9-1-1 PSAPs, and not go through 3rd parties.
- The ability to notify the key personnel, i.e. the principal and School Resource Officers (SROs), are key to the notification process.
- The solution must have capability for Administrator teams to configure notifications to key personnel.
- It is desired for the solution to address two (2) options of communication:
    - One-way communication directly to 9-1-1 PSAPs; and
    - Two-way communication (9-1-1 PSAPs back to the user) with the user needing to activate two-way communication in the event that it was safe for the user to do so.
- The following information should be included with each panic alarm activation:
    - School ID, address and other school profile information (e.g. Allen Grove Middle School)
    - Name/role of the person that activated the alarm (e.g. John Doe, 7th grade science, Room 212)
    - Audio feed (if feasible)
    - Video feed (from smartphone or nearby security camera, if feasible)
    - Type of event (active shooter, bomb, tornado, etc.)

  - Notifications should include as relatively accurate a location as possible including room and floor, (e.g. Room 223, 2nd Floor, Main Building).
- Data generated will need to feed directly into other website/applications (API integration).

3.3 Device Requirements

Device: *Can the solution work on multiple devices and hardware platforms?*

If feasible, the solution should address multiple platforms/devices for successful adoption statewide. These multiple devices may include:

3.3.1 Native Applications (iPhone and Android)

- This platform would be a native system that could be installed by Administrators on smart phones such as iPhone, Android or Windows phones, or tablet devices.
- The system should use data provided by the panic alarm hardware solution.
- The system should allow for two-way interaction. This could include follow-up queries to the panic initiator checking if the situation was resolved or cleared. This could be deployed as an interactive question/answer by the user. This could be periodically (such as every five minutes) or be initiated by the incident commander on site as needed.

3.3.2 PC Software

- This platform should be a native application that could be installed by Administrators on organization-issued laptops.
- The system should use data provided by the panic alarm hardware solution.
- If a geo-fence is available, the system should report if the initiator is inside or outside a predefined boundary.

3.3.3 Lanyard

- The device should be able to be easily worn on the body, such as on a lanyard around the user's neck.
- The device should be able to support positional location and data transmission provided by the hardware solution.
- The alarm should be able to have a simple push button but avoid false alarms. This could be a two-step activation process and include a safety mechanism to avoid false alarm activations.
- Devices should have sufficient battery life for effective use.
- Lanyards should support two-way interaction.
- Consideration should be given to the user's ability to reach and activate the alarm without trying to find a device or attracting much attention.

3.4 Location Precision

Location: *Can the solution provide reliable location accuracy commensurate with the application needs for both horizontal and vertical (e.g. floor of building)?*

- The solution should require an approach for determining the feasibility of pinpointing the location within the school building.
- The horizontal position must be accurate enough to assign the room.
- The vertical position must be accurate enough to assign a floor.

- The system should explore the use of Wi-Fi routers triangulation to enhance horizontal and vertical positioning in the building. It should be assumed that satellite positioning (GPS) is not viable and reliable.

3.5 User Access

User Access: *Can the solution provide a secure credentialed access protocol that can be maintained?*

- The solution should be able provide flexibility to allow for changes in:
  - Staff attrition, transfers, role changes or termination
  - Daily staff changes, i.e. substitute teachers
  - Access for all staff or a few key staff
- Each user should be required to log in securely to his/her device.
- The system should include an administration/maintenance console for Administrator users.

3.6 User Training

Training: *Does the solution include training and online support?*

- A training plan and process is required in the solution.

3.7 Implementation

Implementation*: Can the solution be implemented statewide?*

- The development of a statewide implementation plan must be included in the solution, taking into consideration the following:
  - Technical support for the device(s), training, and repair/replacement process.
  - IT strategy for connecting/linking notifications to a related website/application system.

4 Digital Panic Alarm Solution

4.1 RFI Process

Based on the defined requirements and funding provided by the 2017 General Assembly, the NCEM tasked ESP Associates, Inc. (ESP), to 1) survey, test, and identify a solution that best meets the defined requirements; and 2) survey, assess, and calculate the cost of implementing such a solution, including any physical, structural, and electrical modifications that must occur to the physical facilities. ESP determined the best way to collect feedback from technical vendors that operate in school safety technology was to solicit a Request for Information (RFI).

On Wednesday, February 21, 2018, ESP posted an RFI for this initiative to Onvia (and GovWinIQ now), a business solicitation service that reaches over 6,000 Onvia subscription members. The RFI was also emailed to six well-known and respected vendors in the school safety technology industry.

4.2 Vendor Interview Selection

Per the RFI that was released on February 21, 2018, a 10-page general statement of qualifications was requested and due to ESP by Friday, March 9, 2018. These statements of qualification were used to review the general approach of the school safety technology and provide an overview of the vendor.

4.3 Vendor Interviews

These statements of qualification were reviewed by the ESP interview panel and the firms that provided the clearest statements of qualifications were invited to participate in-person interviews, which were held on Thursday, April 5, 2018. Each interview lasted less than two (2) hours. The interviewed vendors were asked to provide presentations that covered the following: company overview, technology used, key staff, and examples of technology and implementation in schools. ESP also developed a series of questions to the vendors ahead of the interviews, which were emailed to the vendors on Wednesday, March 28, 2018.

4.4 Selected Vendor's Solution – Rave Mobile Security

After the vendor interviews concluded on Thursday, April 5, 2018, the ESP interview panel completed the score sheets and made a selection that Rave Mobile Security (Rave) had the best technology solution for statewide implementation. Rave was notified on Monday, April 9, 2018 of the selection results and that they were the selected firm to demonstrate their panic alarm solution in four (4) K-12 public schools.

Rave Panic Button™ is part of a platform of innovative data and communication software that safety agencies trust to help them save lives. In the event of an on-site crisis, an organization member can activate the Rave Panic Button app system by pushing one of the five emergency button types. Rave Panic Button App connects users to both 9-1-1 and on-site emergency responders with one button-push. Rave Panic Button notifies an organization's nearby responders of emergencies while calling 9-1-1, drastically reducing the time it takes for the closest responders on a school campus or building to address a variety of emergencies. Separate buttons communicate different types

Figure 9. Panic Alarm communications

of emergencies, like fire, medical, and active shooter incidents, providing additional information and fine-tuning responses.

Rave Panic Button provides an easy, scalable method for maintenance of facility/site emergency response information, and automatically notifies designated on-site personnel (e.g. principal, security officer, maintenance, supervisors) via text message of the Rave Panic Button activation and when the call is answered at 9-1-1. This activation enables immediate, secure collaboration between responders and on-site personnel. Administrators can manage on-going incidents with real-time messages to staff and personnel by sending and receiving accurate updates as events unfold. Administrators can also react and respond faster with early notification on Rave Panic Button calls, especially during 9-1-1 call overload situations. The primary mission of the Rave Panic Button is to reduce the time it takes to get key responders to the scene. Local school safety and support teams hear about events at the same time that 9-1-1 is informed.

Figure 10. Datasets used in the Rave Panic Alarm Button

4.5 Proof of Concept Demonstrations

In total, 17 schools have been selected for evaluation statewide as part of this project. On-site evaluations of the schools include the following:

- Infrastructure inspections
- Evaluation of cellular/data signal strength
- Evaluation of Wi-Fi capabilities
- Evaluation of any physical, structural or electrical modifications that may be required
- Proof of concept demonstrations summarizing the testing and effectiveness of the panic application

Four of these 17 selected schools are included in this document and serve as a representative statewide cross-section of schools. The schools included in this report are summarized in the table below.

School Name	School Location	Approx. School Age	Student Population	Connectivity Technology Available
Nash Central High School (Nash-Rocky Mount Public Schools)	Urban	16 years	1,030	Poor Wi-Fi connection but strong cellular network
Hawley Middle School (Granville County Public Schools)	Urban	More than 10 years old	553	Poor Wi-Fi connection but strong cellular network
Harnett Central Middle School (Harnett County Public Schools)	Rural	More than 20 years old	1,152	Poor Wi-Fi connection and poor cellular network
Apex Friendship High School (Wake County Public Schools)	Suburban	3 years	942	Strong Wi-Fi connection and cellular network

Table 2. Selected Proof of Concept school's general demographics

Rave's Panic Button enhances onsite and emergency response by providing critical campus information to 9-1-1 and immediate notification to all employees, with the option of adding a message bridge between 9-1-1, first responders, emergency managers, and school officials. Participating campuses establish an account

("facility profile") in the system by entering details such as their geographic boundaries, building information, floorplans, and employee information. Administrators authorize all or specific staff members to download the Panic Button app to their smart phone. Once downloaded, the employee has access to a digital panic button, which, when activated, does the following:

- User's phone dials 9-1-1 directly
- Other employees are notified immediately
- Critical campus information is available to 9-1-1 and first responders
- Provides for real-time messaging

Within the current landscape of mobile devices, there is a lack of consistency with regards to delivery of accurate altitude information that can reliably be used in an emergency response. This inconsistency is due to the large variety of handset manufacturers and operating systems that are commercially available. When altitude information is more accurate and consistent across handsets and operating systems, this will be assessed and integrated into the application as applicable.

During the proof of concept demonstrations at four (4) North Carolina K-12 public schools, the Rave Panic Button tested the following scenarios in Table 3 below. These tests included demonstrations of various school staff roles within the Command View. For these demonstrations, the tests included these types of participants: three (3) of participants were school administrators, two (2) were teachers and one (1) was a School Nurse. Part of the testing of the panic alarm solution included a manual (non-survey grade) comparison of the horizontal locations to the latitude and longitude collected and stored by the Rave software. These horizontal locations were compared to measured estimates of the location (non-surveyed) to provide an overall assessment of the relative positional quality for the horizontal locations. It should be noted that, at best, the phone GPS will return an "autonomous" or non-corrected GPS position. Autonomous GPS positions are generally accurate to within 5-10 meters under open sky. Improvements in GPS and smartphone GPS chips are expected within the next year, which should greatly improve the horizontal positioning of smartphone GPS sensors.

School	Incident Location	Incident Type	Date	Time	Estimated Measured Horizontal Difference (ft)
Apex Friendship High School	Building A	Test # 1: Medical Emergency	5/7/2018	10:00AM	47
Apex Friendship High School	Track and Field/ Building A/ Ball Fields	Test # 2: Medical Emergency	5/7/2018	11:01AM	14
Apex Friendship High School	Track and Field	Test # 53: Active Shooter	5/7/2018	11:03AM	44
Apex Friendship High School	Track and Field	Test # 4: Other 9-1-1	5/7/2018	11:06AM	68
G.C. Hawley Middle School	Ball Fields	Test # 1: Medical Emergency	5/7/2018	3:36PM	57
G.C. Hawley Middle School	Ball Fields	Test # 2: Staff Assist/ Minor Medical Issue	5/7/2018	3:39PM	40

School	Incident Location	Incident Type	Date	Time	Estimated Measured Horizontal Difference (ft)
G.C. Hawley Middle School	Ball Fields	Test # 3: Staff Assist/ Minor Medical Issue	5/7/2018	3:40PM	20
G.C. Hawley Middle School	Ball Fields- Shade Area	Test # 4: Medical Emergency	5/7/2018	4:03PM	49
G.C. Hawley Middle School	Cafeteria	Test # 5: Active Shooter	5/7/2018	4:11PM	27
G.C. Hawley Middle School	Main Building	Test # 6: Fire	5/7/2018	4:23PM	46
G.C. Hawley Middle School	Main Building	Test # 7: Police	5/7/2018	4:39PM	32
G.C. Hawley Middle School	Main Building	Test # 8: Active Shooter	5/7/2018	4:43PM	74
Nash Central High School	Soccer Fields	Test # 1: Medical Emergency	5/8/2018	8:34AM	36
Nash Central High School	Ball Fields	Test # 2: Active Shooting	5/8/2018	8:41AM	20
Nash Central High School	Main Building	Test # 3: Active Shooting	5/8/2018	9:41AM	89
Nash Central High School	Main Building	Test # 4: Staff Assist/Minor Medical Issue	5/8/2018	9:46AM	208
Nash Central High School	Main Building	Test # 5: Medical Emergency	5/8/2018	9:57AM	207
Nash Central High School	Main Building	Test # 6: Other 9-1-1	5/8/2018	9:59AM	78
Nash Central High School	Main Building	Test # 7: Medical Emergency	5/8/2018	10:06AM	54
Harnett Central Middle School	Front Fields	Test # 1: Police	5/8/2018	1:01PM	40
Harnett Central Middle School	Main Building	Test # 2: Active Shooter	5/8/2018	1:32PM	16
Harnett Central Middle School	Main Building	Test # 3: Staff Assist/Minor Medical Issue	5/8/2018	1:44PM	23
Harnett Central Middle School	Main Building	Test # 4: Medical Emergency	5/8/2018	1:54PM	23
Harnett Central Middle School	Main Building	Test # 5: Medical Emergency	5/8/2018	1:54PM	20
Harnett Central Middle School	Main Building	Test # 6: Medical Emergency	5/8/2018	1:54PM	38

Table 3. Summary of Proof of Concept demonstrations and incidents tested

Copies of the Proof of Concept demonstrations test sheets are included as Appendix A to this report.

4.5.1 Testing Roles

Rave's authorization system allows for the seamless addition or subtraction of authorized personnel by a designated administrator. Users, such as substitute teachers, can be added to multiple campus notification lists and receive those notifications based on their location at that time, while static employees who work at a single location can be notified of incidents on their home campus but exempted from those that occur elsewhere in the district. Access lists can also be customized based on the type of emergency, so that only staff with specific medical training are alerted to medical incidents, or only security personnel receive activations relating to a property breach. The system provides a level of customization that allows segments of the staff or leadership to receive all notifications while others are granted authorization to receive messages for specific types of incidents relating to a Panic Button activation.

There are two main roles within the Panic Button application, with a variety of configurations available:

- **Administrator:** The primary role within Rave Facility is an administrator. An administrator has access to the web-based profile management portal to add/edit campuses and add/edit/remove other administrators or users. With Rave Panic Button, an administrator can also configure the notifications that are sent to employees and emergency responders when the system is activated.
- **Contact:** Contacts only exist for those facilities that are licensed Rave Panic Button. A contact has no access to the facility profile management web portal but is authorized to download the Rave Panic Button smart phone app and receive emergency notifications for the campus(es) they are associated with.

The Rave Panic Button system provides an administrator console that can be used to add or remove users from the authorization list, and to provide ongoing reporting as to the number of activations, messages sent, and other key data. This data can be used to create after-action reports and develop sets of best practices. The application is managed and configured via a web interface that allows for the administration of users and geofencing of locations. Once the panic button is activated and a notification is sent out, authorized administrators can send follow-up messages through the secure web-based administrator portal. From a computer, an authorized user can log into Rave's Incident Management and Response Dashboard to see information on panic button activations and leverage the system to send follow-up communications to on-site resources as the incident unfolds.

One of the primary features of Rave Panic Button is the rapid delivery of emergency notifications so that staff can be made immediately aware of an incident on campus. These emergency notifications are generated automatically when a user presses the panic button, or when a 9-1-1 call taker, first responder, or campus administrator manually generates a notification. There are several different emergency notification groups with which a contact can be associated. After associating the user with one or more campuses, there are several options for setting up emergency notifications.

- **All Staff:** People affiliated with a specific campus are automatically added to the campus's All Staff recipient list. This will include the user in any panic button notification sent to the campus's All Staff recipient list.
- **Admin:** Users who are campus or site administrators, or others who need to be aware of all emergency incidents on the selected campus, should be added to this list. By default, all panic button notifications are sent to the Admin list.
- **Responder:** This includes police, fire, or EMS resources who may be called upon to respond to an emergency on this campus. These are first responders who you want to receive panic button

notifications in addition to standard public safety dispatch communications. By default, all panic button notifications are sent to the Responder list.

- **CPR/AED:** A user will receive messages intended for people with CPR and AED training to respond to a possible cardiac arrest or other medical emergency.

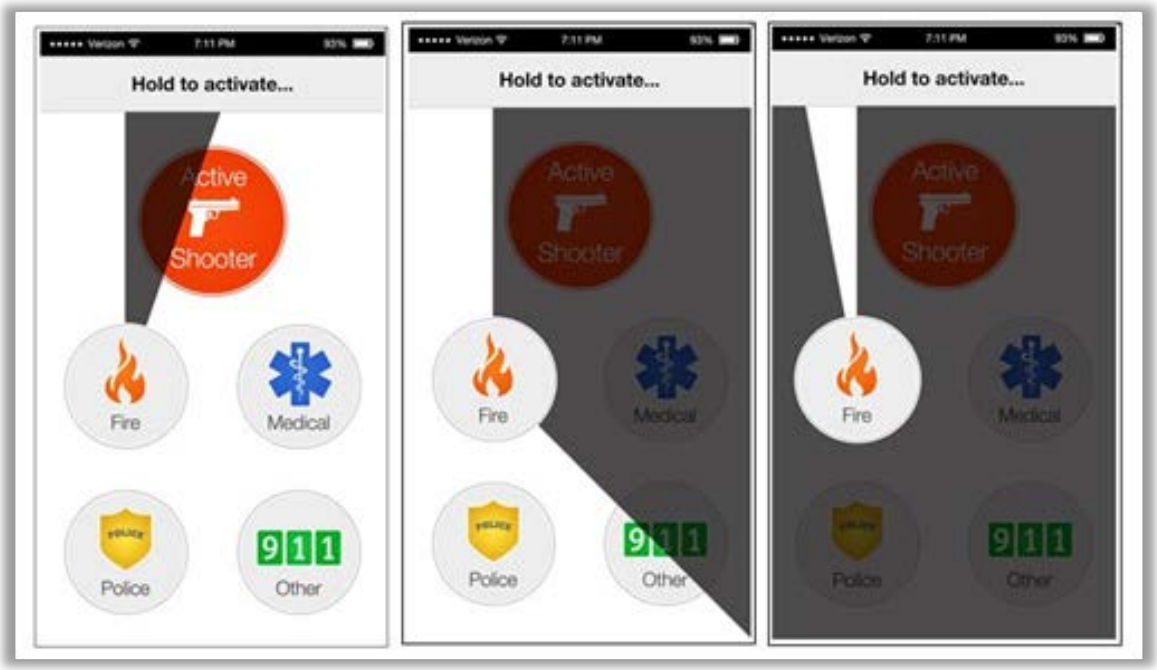


Figure 11. Rave Panic Button Activation Timer feature

Through extensive lab and real-world development and testing, Rave has implemented a safeguard which requires a user to press and hold the panic button for 1.5 seconds in order to initiate. If a user presses the Panic Button for less than 1.5 seconds, the system will not be activated. In addition to the press and hold function, the Rave panic button also restricts use of the system to a predetermined list of authorized users. Users are authorized by a designated administrator who inputs the phone number and email address into the Rave system, granting permission to activate the system during an emergency. Users can be removed from the system by the same administrator if required.

A second safety feature in place to prevent accidental activations can be found in the Rave Panic Button's slide to unlock feature, which is activated when the app has been open for a period of time without being used. This prevents the accidental activation of the panic button, but also keeps the app on the user's phone screen to allow for a quick unlock and activation process should the need arise. A visualization of this feature can be found in Figure 12.

Figure 12. Rave Panic Button "Slide to Unlock" feature

4.5.2 Geofencing Overview

The Rave Panic Button also acts a safeguard against false activations which can be found in the creation of a Facility Profile within the Rave system. Facility Profiles leverage geofencing to identify campus boundaries. Once a boundary is drawn, the Rave panic button app will only trigger the localized notification to

on-site staff if it is pressed within this boundary. If pressed off-campus, the Rave panic button will initiate a call to 9-1-1 but will not trigger the additional data provided by the system, nor will it send notifications to other authorized personnel.

4.5.3 9-1-1 Overview

The role of 9-1-1 is critical for any school safety initiative. With active shooter incidents oftentimes lasting only five or six minutes, in many ways 9-1-1 has become “incident command” for large emergency events. Therefore, 9-1-1 is central to the process for the Rave Panic Button.

If a user activates the Rave Panic Button while at a designated site, they connect directly to 9-1-1 through existing 9-1-1 calling infrastructure and via a web-based console providing additional critical emergency data. The Panic Button console gives administrators, 9-1-1, and first responders immediate access to floorplans, photos, emergency response plans, caller location, emergency exit and knox box locations, emergency contacts, entry access points, AED locations, and more. At the same time, all designated on-site staff members are immediately notified via Rave’s redundant Public Safety infrastructure.

Calling 9-1-1 using a mobile phone set to Wi-Fi calling is different than calling 9-1-1 using the cellular network. The feature for Wi-Fi to call 9-1-1 is widely available across major carriers. Requirements to enable this feature on a phone will differ. Anyone that anticipates using Wi-Fi to dial 9-1-1 will need to set up this service in advance of actually making a 9-1-1 call from that device. Therefore, it is essential that this process be complete in advance of incorporating Wi-Fi calling as an option during a Rave Panic Button activation. This includes registering their location related to the school with their carrier to ensure that the correct 9-1-1 center is routed their emergency calls. Rave Panic Button has no control on where a 9-1-1 call will be routed. That is dependent on the phone carrier.

Further discussion of 9-1-1 integration capabilities are discussed in Section 5.1 below.

4.5.4 Wi-Fi Access and Use Overview

To ensure that the Rave Panic Button can access the Rave network during an activation while inside a campus building and using Wi-Fi, the deployment team will collaborate with the school/office IT to ensure that Rave IP addresses are whitelisted during the deployment of the system. Rave recommends allowing for Wi-Fi connected smartphones to leverage school networks for data connections for purposes of Panic Button use. Wi-Fi access can also improve the location accuracy presented within Rave Command View.

5 Statewide Implementation

Rave's robust public safety grade technology is flexible enough to be leveraged in multiple ways. This section outlines the options available for the deployment of the Panic Button application on a statewide basis.

5.1 Rave's Technology Options

The following section outlines the technology options available for deploying the Rave Panic Button. At its core, there are two broad options available:

1. Panic Button and Rave Command View
2. Panic Button, Rave Command View, and Rave 911 Suite (9-1-1 integration)

5.1.1 Rave Command View (RCV)

Rave Command View (RCV) monitors Rave Panic Button activity across an organization. It shows Rave Panic Button activations on an interactive mapping interface that can be made available to schools, local emergency management personnel, and 9-1-1.

Features and functions include:

- Visual mapping of Rave facility locations
- Immediate awareness of Rave Panic Button activations across the organization via mobile app
- Ability to send messages to all Rave Panic Button app users

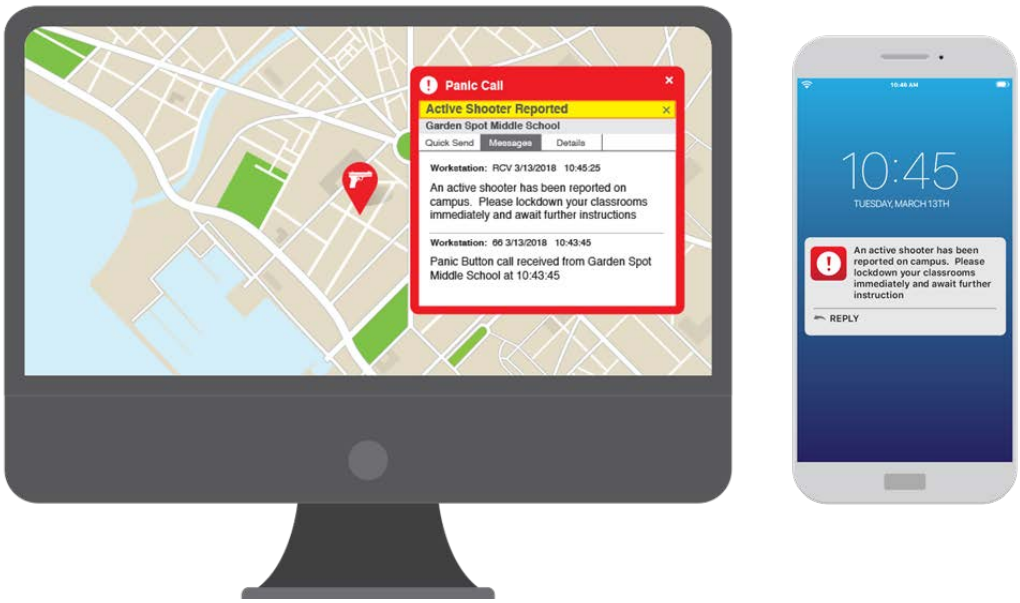


Figure 13. Visual depiction of RCV and Panic Button

Figure 14. Symbols and definitions used in RCV.

5.1.2 Rave 911 Suite Overview

Like RCV, the Rave 911 Suite provides additional information and communication tools for emergency calls; however, the Rave 911 Suite is completely integrated into the 9-1-1 call flow and 9-1-1 call taking equipment, providing 9-1-1 telecommunicators and first responders with capabilities for handling, dispatching, and responding to emergency calls more efficiently and effectively. The Rave 911 Suite is also fully integrated with the Rave Panic Button.

At a high level, the Rave 911 Suite offers all of the Panic Button functions as well as some notable enhancements for 9-1-1, including:

- True 9-1-1 integration for easy call handling
- Landline integrations:
  - The ability to also leverage landline calls to 9-1-1 and trigger notifications to school officials when 9-1-1 is called
  - More detailed call location from unique 10-digit landline and the classroom/office to which they are tied
- Ability to associate a call from any mobile caller to a panic button facility and initiate a Panic Activation from the telecommunicator position to individuals associated with that campus
- Ability to easily add Panic Button information to Computed Aided Dispatch (CAD) systems.
- Ability to easily expand the state's safety solutions beyond the school safety initiative to better protect all members of the community

Regardless of whether a PSAPs has upgraded to a Next Generation 9-1-1 (NG9-1-1) environment, all of the Rave 911 Suite capabilities are available. When a 9-1-1 call is received, Rave compares both the telephone number (ANI) and location information (ALI) to its national database for additional information. If information is associated with either the ANI or ALI of the 9-1-1 call, that information automatically displays to the 9-1-1 telecommunicator handling the call, including Panic Button data.

5.1.3 Rave Technology and WebEOC

Additionally, Rave has a relationship with Juvare (formally Intermedix), the makers of the state's WebEOC platform. Rave has already integrated their Mass Notification solution, Rave Alert, and has the ability to further integrate the Panic Button application should that be a requirement in the future.

5.1.4 Anonymous Safety Tip Line

It was determined that Rave also has an Anonymous Safety Tip application called Rave EyeWitness with which NC law enforcement, school, and social services agencies can quickly and easily collect crowd-sourced student reporting of internal or external risks to school populations, facilities, and related activities. The software includes real-time, web-based monitoring, enabling law enforcement, SROs, schools, and local emergency management personnel to be notified when new tips are provided. Key personnel can respond to any anonymously submitted tips in real-time to collect additional information and details. The conversations are displayed and logged in a threaded discussion.

Figure 15. Rave's EyeWitness Application

5.1.5 Integration Option Comparison

The following table provides a snapshot of the differences between integration options available:

Feature	Rave Command View	Rave 911 Suite
Receive and display panic button app activations	✓	✓
Viewing facility information	✓	✓
Initiate notifications to panic button users	✓	✓
Map centric view of all facilities and panic button activities over a region	✓	✓
Ability to two-way text message with any mobile caller		✓
Landline 9-1-1 call notifications		✓
Initiation of panic button events from landline or standard mobile calls		✓
Integrated with 9-1-1 call taking		✓

Table 4. Panic button integration options

5.2 Panic Alarm Implementation

Based on the RFI process and the proof of concept demonstrations, the following finding and recommendations were identified for consideration in moving to a statewide implementation of the Rave Panic Button:

5.2.1 Findings

- Rave Panic Button provides the best notification for all teaching staff, administrators, School Resource Officers (SROs), and other school staff, as well as notifications to 9-1-1 centers.
- No single vendor in the school safety industry supports all of the requirements that were discussed in the early meetings with local schools. Specifically, lanyards can be expensive to employ and often result in a high number of false alarms.

The horizontal accuracy of the selected solution for pinpointing where an incident occurs was acceptable; however, the vertical accuracy of the location of an incident is less defined. Possible solutions include having enhanced Wi-Fi routers be installed in all schools to allow for better vertical accuracy of incident locations.

At the present time, a phased approach for the solution functionality is recommended.

- **Phase 1:** Rave Panic Button and Command View with SERA Integration providing Command View to each school, Emergency Management, and PSAPs within the state. Cost estimates for this approach are included in this report.
- **Phase 2:** Rave 911 Suite integration to more tightly and seamlessly integrate with the State's 9-1-1 system. *Cost estimates for 9-1-1 integration are not included in this report.*

It is recommended that the implementation of the digital panic alarm solution occur in a phased approach based on the 15 Emergency Management areas. Figure 16 on the following page shows the recommended implementation timing based on the NCEM branch and area. Tasks such as training, monitoring, and support will be completed by the NCEM area (as shown on Figure 16) to ensure stakeholder groups have adequate resources. Once the application setup is complete, each region can proceed to the rollout phase of the project plan, allowing for an efficient and coordinated live implementation.

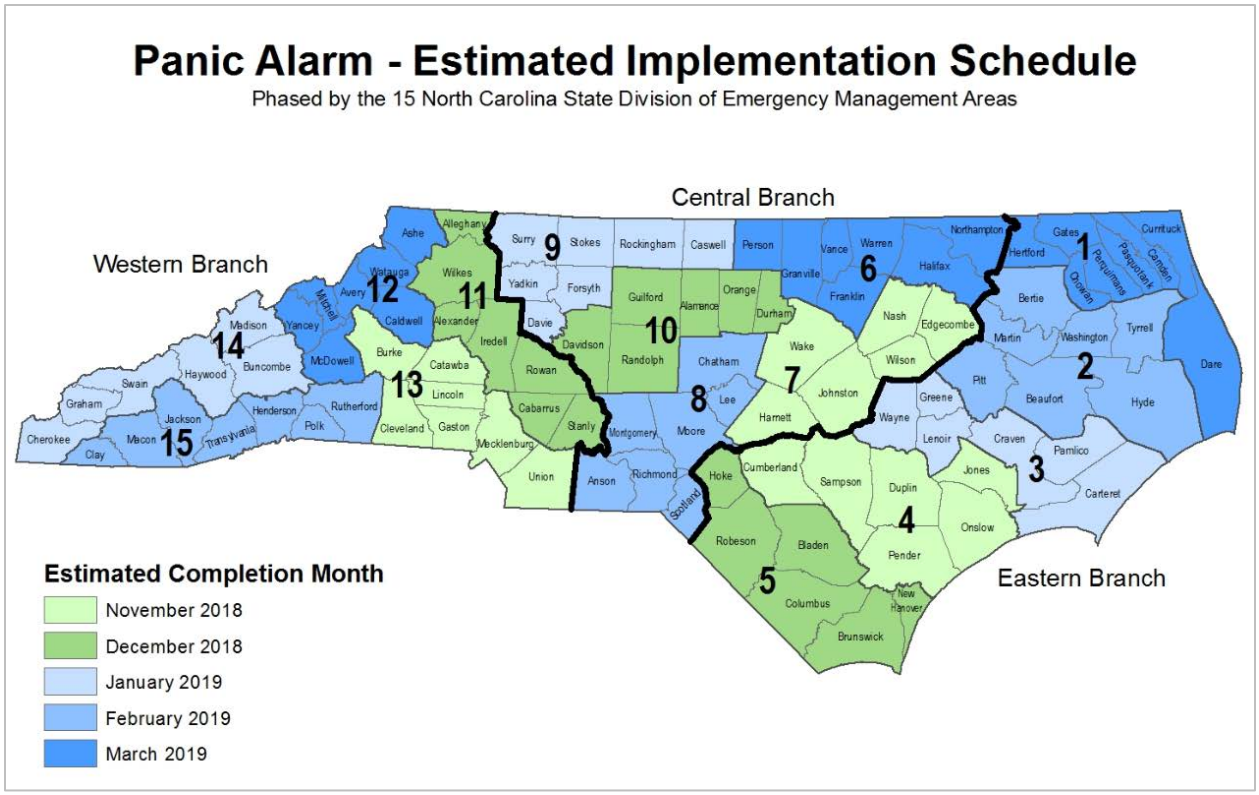


Figure 16. Recommended implementation schedule

A dedicated project team will be the lead for facilitating and supporting the statewide implementation of the system. In addition to these dedicated resources, projects of this scale require participation and collaboration across all key stakeholder groups. Listed below is the recommended core group of training participants.

Role	Agency/Department
Sponsor	NC Department of Emergency Management
Public Safety Answer Points	9-1-1 Centers
First Responder Network	Police, Fire, EMS
Panic Button System Users	Department of Education Charter School School Districts
Community/Public Groups	As needed, for example, PTA groups

Table 5. Implementation team roles and stakeholders

A full training curriculum is provided and additional State-specific content can be created if necessary. Rave also provides training through their Rave Academy portal which includes product overviews, training materials, and videos to ensure that staff can be trained at any time. As new employees are on-boarded, Rave Academy can provide the training necessary to ensure that new employees understand the technology and how to use it in an emergency.

To ensure the success of a program, Rave provides 24/7/365 technical assistance to its users. Because the Rave Panic Button is provided as a mobile phone application, there is no hardware to replace over the course of the project. Through the Rave Panic Button, administrators and authorized personnel can view Panic Button activations through a web-based portal accessible on any device with an internet connection (e.g.

laptop or desktop computer, or a first responder's Mobile Data Terminal), and can view incidents impacting facilities in a state, county, or city.

5.3 Summary of Implementation Estimated Costs

Section 5.2 explained the implementation activities and estimated schedule for this project. Below is the related summarized estimated cost. More detailed costs for the statewide implementation to all K-12 schools can be found in Appendices B and C to this document.

Implementation Tasks	Cost
Statewide Implementation of Rave Panic Alarm Solution in all K-12 Schools*	$3,986,475
Statewide Implementation of Rave Panic Alarm Solution in all Charter Schools*	$276,000
Rave Panic Alarm Solution Integration into SERA	$200,000
Project Management	$220,000
	$4,682,475
Estimated Cost per District	**$40,500**
Estimated Cost per School	**$2,017**
Estimated Cost Per Student	**$3.25**

**Cost includes annual license fee and one-time set-up statewide. Costs do not include the Eyewitness Anonymous Tip Solution*

In addition to the software costs shown above, Statewide implementation of Wi-Fi/BDA is recommended to improve application connectivity and positional (horizontal and vertical) accuracy. The following table contains planning level cost estimates for Wi-Fi infrastructure improvements statewide.

Item	Estimated Cost / School
Wi-Fi / BDA improvements (as needed)	$10,000 - $15,000

Appendix A
Proof of Concept Demonstration Test Sheets

Panic Alarm Application Evaluation

May 7th - 8th 2018 | Thomas Westfall

The purpose of this evaluation is to test the functionality of the Rave panic alarm application at various schools within North Carolina. Between Monday May 7th and Tuesday May 8th, the application was evaluated at four schools. During the tests, the Rave team, Bill and Todd, documented each alert by taking screenshots of the command view on Bill's laptop. In addition, Erin, RJ, and myself documented information on the 'Functional Testing Checklist & Sign-off.'

Overall, the application functioned properly using WiFi or the cellular network. Once the panic button was initiated, other contacts were notified within one to two seconds. The only delay in notifications occurred at Harnett Central Middle School where phones did not have WiFi and cellular service was spotty, but the delay was only five to twenty seconds. After the notifications, the location of the panicked individual would populate the command view on Bill's laptop. For most of the tests, the location on the command view would accurately pinpoint the individuals' location with a 5 or 10-meter radius error threshold. Only once was the projected location not accurate as the panicked individual stood inside the cafeteria (at Nash Central High School) while the projection showed the individual just outside the building. In this scenario, there was a 30-meter radius error threshold, and the individual was on the cellular network. After enabling WiFi and redoing the test, the projection showed the individual inside the cafeteria. Even though these two test had flaws, they can be mitigated with a WiFi connection.

In my observations, the Rave panic application is a great tool for school administrators, teachers, and first responders, but the location information could be improved. In the command view, administrators can easily tag names to locations on the school's campus by creating geofences around the areas of interest (main building, soccer fields, etc.) Each emergency notification automatically sends out the tagged name of the area where the individual initiated the panic button. Ideally, I think each emergency notification should also contain the floor and room number/hallway/stairwell; however, this is more difficult. The floor number attribute is currently not possible with Rave as the elevation data from smart phones is imprecise. The room number attribute is possible, but there must be a geofence around each classroom or location of interest. All in all, the current application still provides useful information to administrators and emergency personnel in a matter of seconds.

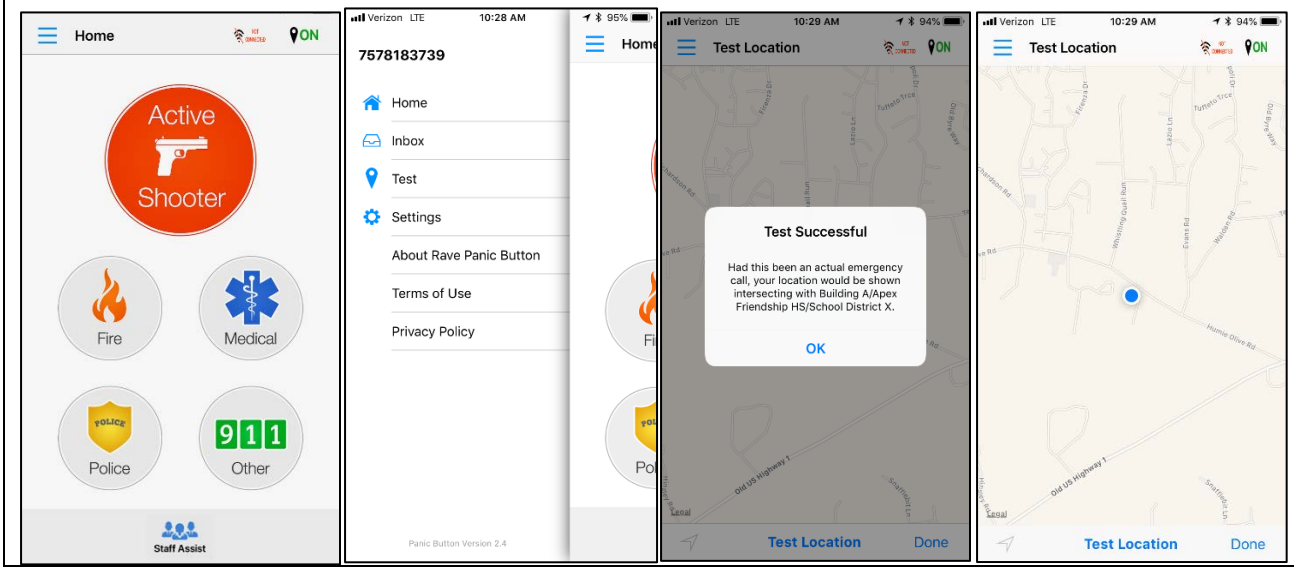
Lastly, the application's multi-point communication platform is valuable. When an alert is initiated, a Rave notification, text message, and email are sent to the respected contacts. The panicked individual is also prompted to call 9-1-1 through the application. After the initial alert, the administrators and emergency personnel have the ability to respond to the initial alert by sending additional messages through the command view. This process worked flawlessly throughout the evaluations at each school. The following 'Functional Testing Checklist & Sign-off' sheets provide more information about the evaluation at each school.

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Apex Friendship High School (Wake County)

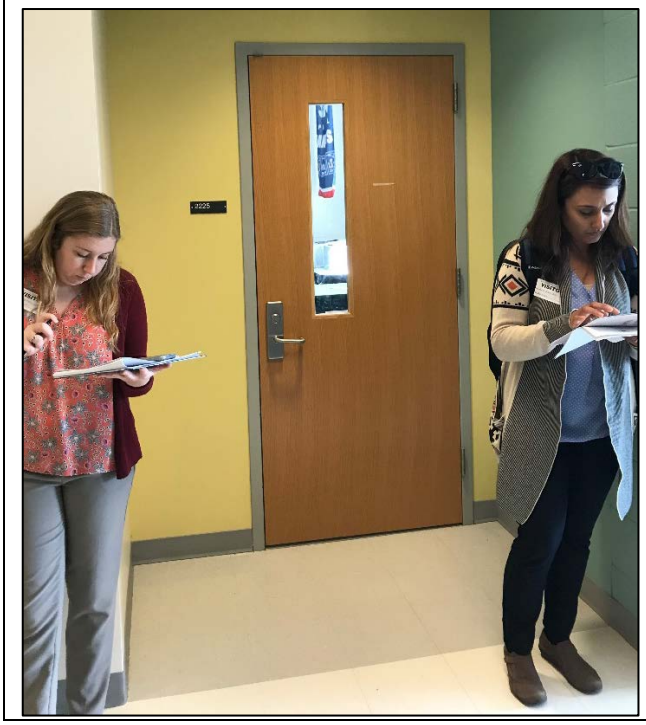
On Monday, May 7th at 10:10am RJ, Erin, and Thomas from ESP met with Bill and Todd from Rave at Apex Friendship High School to evaluate the Rave panic alarm application. RJ connected to the school's WiFi while Erin and Thomas relied on the cellular network. To test the panic alarm, "test" was selected in the app's menu. The test location was successful due to the Rave team inputting a 'geo-fence' around several buildings on the campus prior to the meeting.

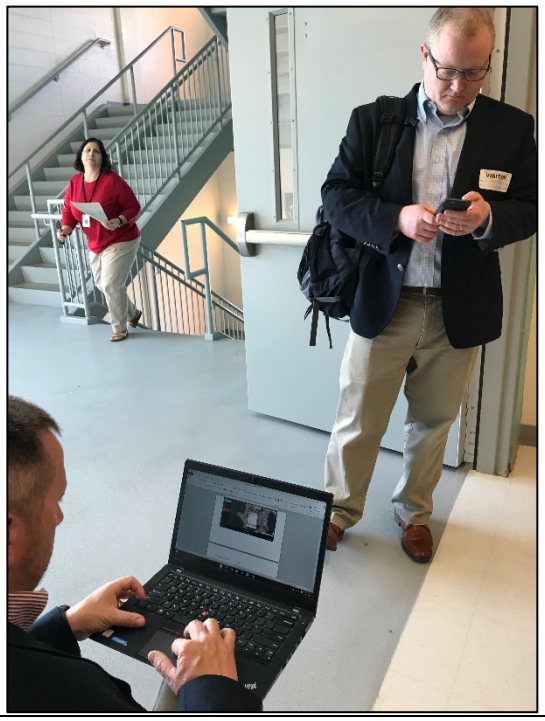


Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	5/7/18
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	5/7/18
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	5/7/18

Test activation of system – Active Shooter Scenario

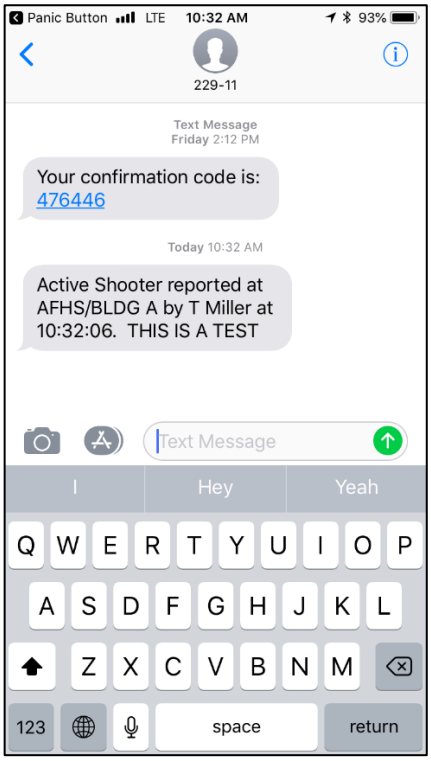
Two Active Shooter Scenarios occurred at the south stair well on the second floor in the hallway (in front of room 2225). The alerts were initiated by Todd. The app called 9-1-1; Todd answered explaining this is a test. Alerts in forms of texts/emails were sent to Erin, RJ, and Thomas. The command view on Bill's laptop showed the location of the incident with more details.

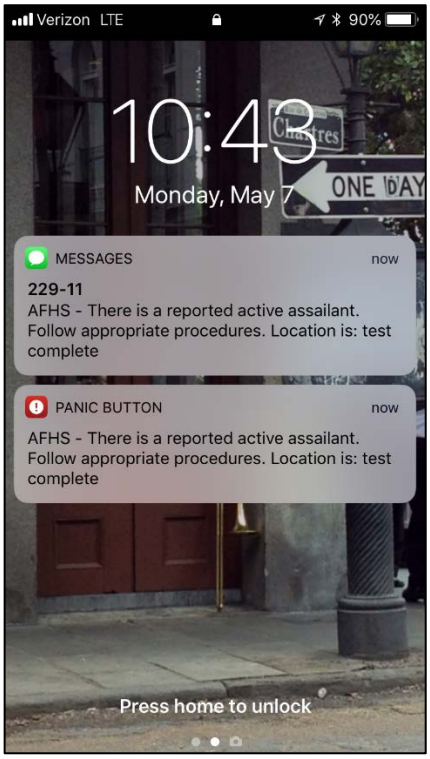




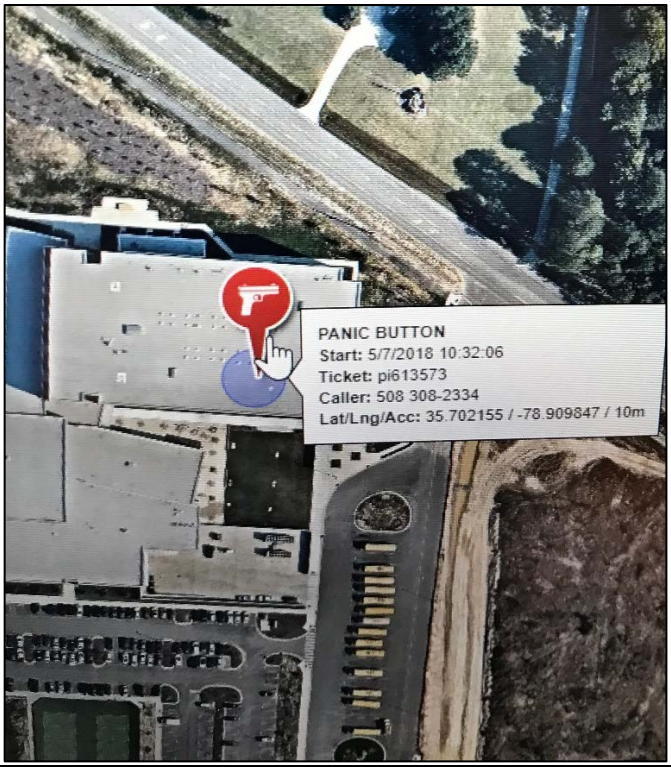
Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time

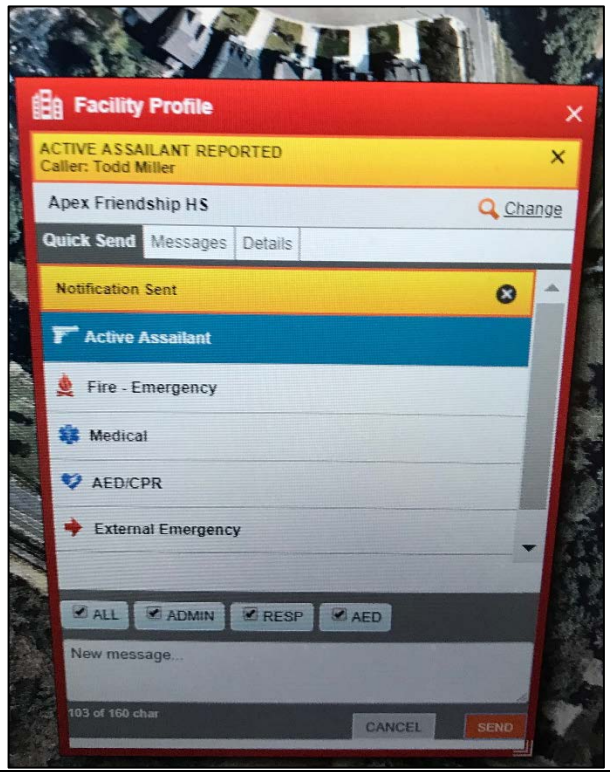
Alerts on Thomas' phone:

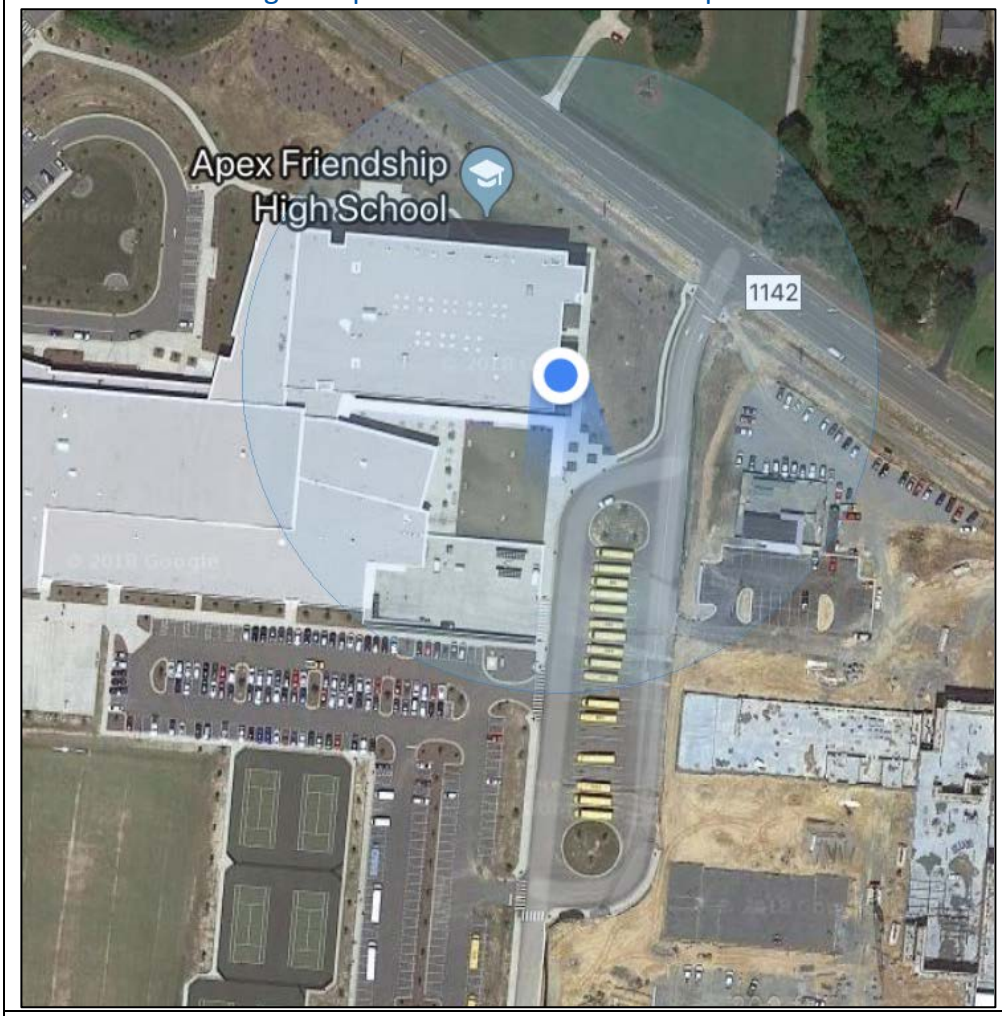




Command view on Bill's laptop: (distance accurate to 10m)





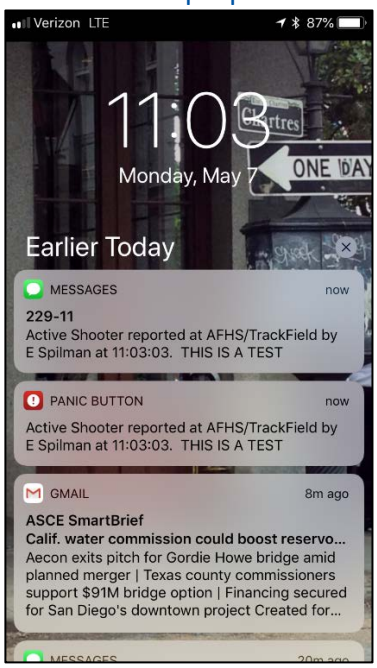
Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
For reference: Google Maps screen shot on Thomas' phone: 				
Test activation of system – Active Shooter Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/7/18
		Device dials 9-1-1	Y	5/7/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/7/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/7/18 Floorplans or floor level are not on RCV or notifications. Administrators have the ability to create more areas with unique geofences and overlap geofences. Ideally, I think when the teacher initiates the alert, building/floor/classroom# should be in the notification.
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	5/7/18 (would like to see more of this communication)

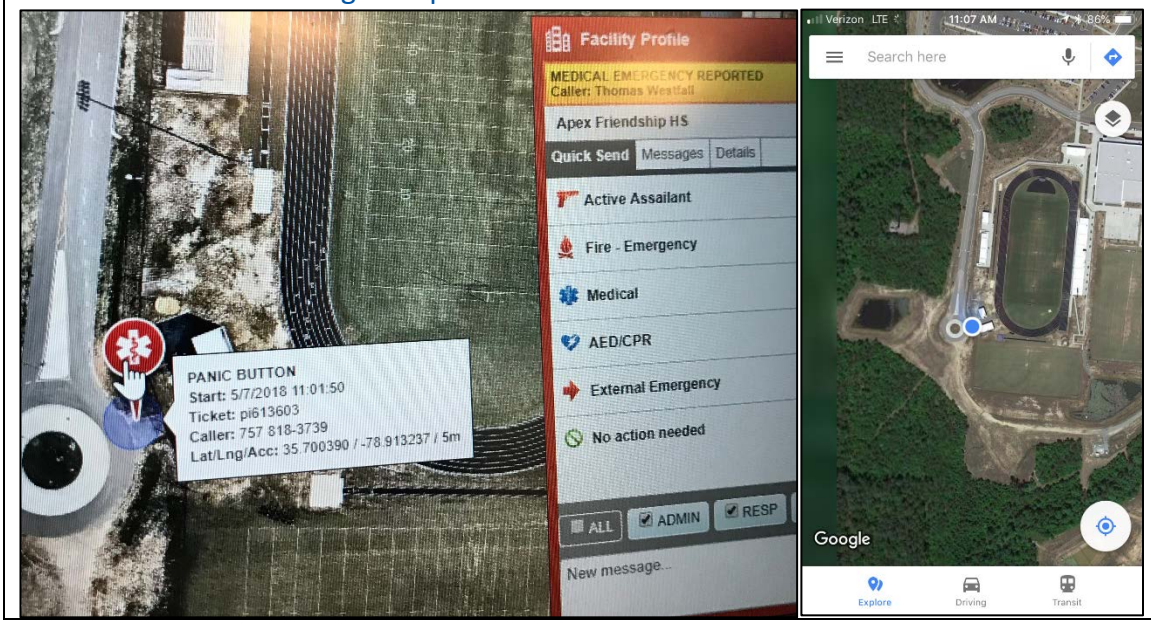
Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time

Test activation of system – Medical/Active Shooter Scenario

A medical and active shooter scenario occurred at the southwest gates of the football field. Bill and RJ stayed at the high school's lobby. Thomas' initiated the medical scenario; the app asked to call 9-1-1, but Thomas declined. The alert was sent to Erin (the nurse) and select administration. Erin initiated the active shooter scenario and the alert was sent to everyone. 9-1-1 was called on Erin's phone; Todd answered explaining this is a test. RJ received the alert through the command view on her laptop.



Command View and Google Maps screen shot for reference:



Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test activation of system – Medical Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **2.** ALL predesignated users are notified regarding medical incident. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/7/18
		Device dials 9-1-1	Y	5/7/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/7/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/7/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	5/7/18 (would like to see more of this)

Test Verified by:

Thomas Westfall
Name

ESP Water Resources Engineer
Title

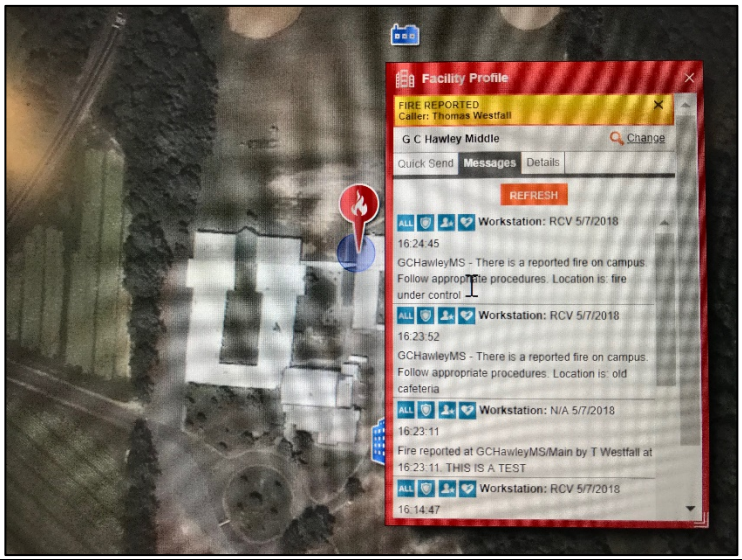
Thomas Westfall *5/7/2018*
Signature Date

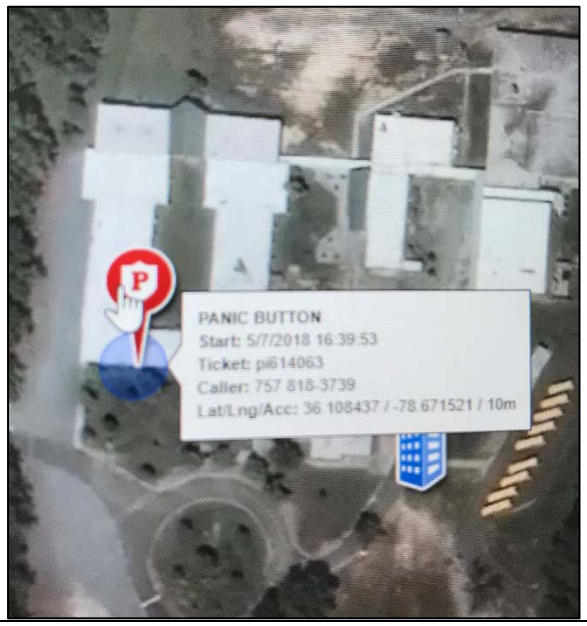
G.C. Hawley Middle School (Granville County)

On Monday, May 7th at 3:50pm RJ, Erin, and Thomas from ESP met with Bill and Todd from Rave at G.C. Hawley Middle School to evaluate the Rave panic alarm application. The county's emergency management official was in attendance. The medical and staff assist tests occurred at the baseball field in the back of campus. The active shooter along with other tests occurred inside various buildings.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	5/7/18
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	5/7/18
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	5/7/18

Test activation of system – Fire/Police Scenario

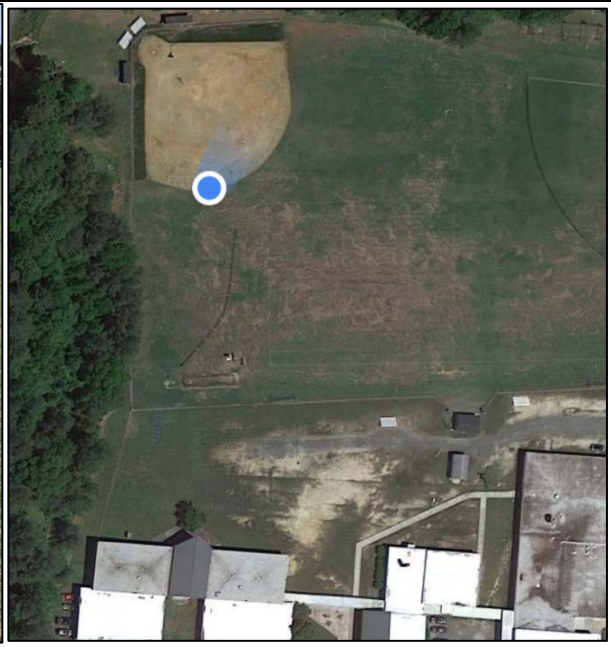




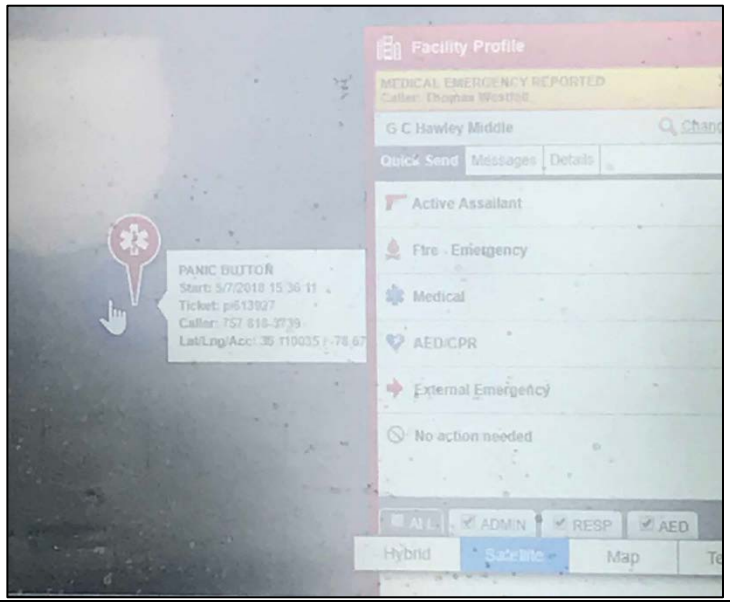
Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Test activation of system – Active Shooter Scenario Scenario: **4.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **5.** ALL predesignated users are notified to go into a lockdown. **6.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/7/18
		Device dials 9-1-1	Y	5/7/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/7/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/7/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	5/7/18

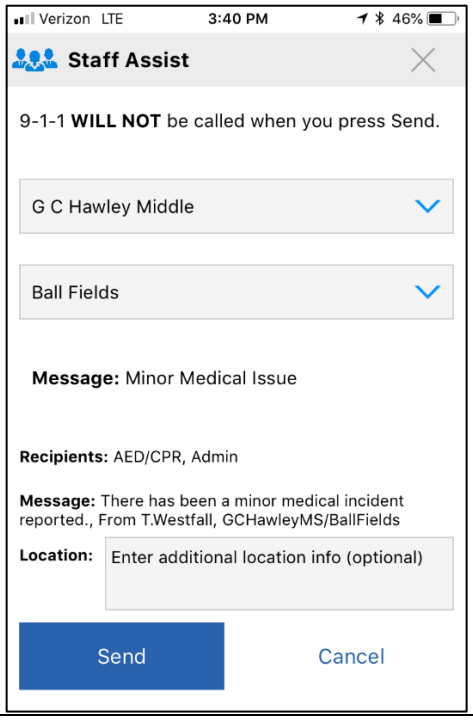
Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
	place while police search building"			

Test activation of system – Medical/Staff Assist



Command View and Staff Assist on application:





Test activation of system – Medical Scenario

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Scenario: **4.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **5.** ALL predesignated users are notified regarding medical incident. **6.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/7/18
		Device dials 9-1-1	Y	5/7/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/7/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/7/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	5/7/18

Test Verified by:

Thomas Westfall
Name

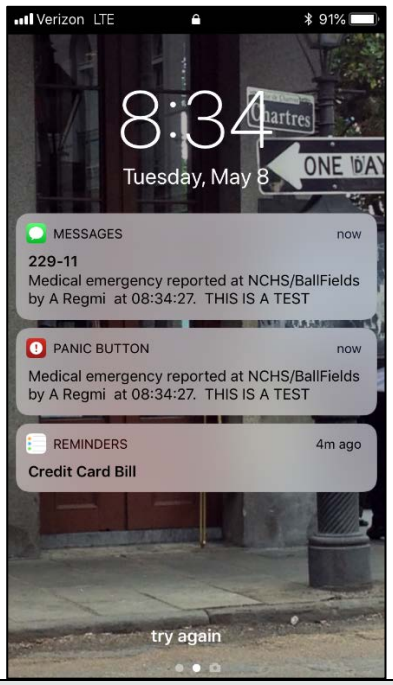
ESP Water Resources Engineer
Title

Thomas Westfall
Signature

5/7/2018
Date

Nash Central High School (Nash-Rocky Mount Schools)

On Tuesday, May 8th at 9:00am RJ, Erin, and Thomas from ESP met with Bill and Todd from Rave at Nash Central High School to evaluate the Rave panic alarm application. In addition, several emergency management personnel were in attendance including a representative from 9-1-1 and the county's director of emergency management. The principal and office administrator also attended the brief introduction meeting. Before meeting the emergency management personnel, a few tests were performed out side near the athletic fields and tennis courts. Several other tests were then performed within the school.



Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	5/8/18
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	5/8/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	5/8/18
Test activation of system – Active Shooter Scenario Scenario: **7.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **8.** ALL predesignated users are notified to go into a lockdown. **9.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/8/18
		Device dials 9-1-1	Y	5/8/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/8/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/8/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable,	Y	5/8/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
	follow on communications to staff at school such as "continue to shelter in place while police search building"	in-app emergency communications from police		
Test activation of system – Medical Scenario Scenario: **7.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **8.** ALL predesignated users are notified regarding medical incident. **9.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/8/18
		Device dials 9-1-1	Y	5/8/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/8/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/8/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable,	Y	5/8/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
	follow on communications to staff at school such as "continue to shelter in place while police search building"	in-app emergency communications from police		

Test Verified by:

Thomas Westfall
Name

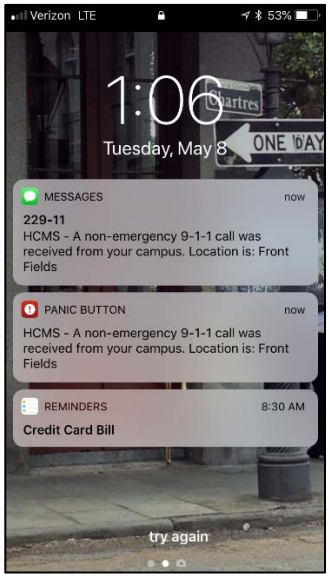
ESP Water Resources Engineer
Title

Thomas Westfall *5/7/2018*
Signature Date

Harnett Central Middle School (Harnett County)

On Tuesday, May 8th at 1:30pm RJ, Erin, and Thomas from ESP met with Bill and Todd from Rave at Harnett Central Middle School to evaluate the Rave panic alarm application. In addition, several emergency management personnel were in attendance including a fire marshal, IT personnel, and the county's director of emergency management. The principal and office administrator also attended the brief introduction meeting. Before the meeting, a test was performed on the front athletic fields. A test was performed within the meeting, and several other tests were performed throughout the main building.

Front fields:



Back fields with emergency management personnel:

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	5/8/18
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	5/8/18
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	5/8/18

Test activation of system – Active Shooter Scenario
Scenario:

10. Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building.

11. ALL predesignated users are notified to go into a lockdown.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
12. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/8/18
		Device dials 9-1-1	Y	5/8/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/8/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/8/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency	Y	5/8/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
	place while police search building"	communications from police		
Test activation of system – Medical Scenario Scenario: **10.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **11.** ALL predesignated users are notified regarding medical incident. **12.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	5/8/18
		Device dials 9-1-1	Y	5/8/18
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	5/8/18
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	5/8/18
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on	RCV user is able to send messages and authorized users of system for the affected campus receive email,	Y	5/8/18

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
	communications to staff at school such as "continue to shelter in place while police search building"	text and where applicable, in-app emergency communications from police		

Test Verified by:

Thomas Westfall
Name

ESP Water Resources Engineer
Title

Thomas Westfall
Signature

5/8/2018
Date

Panic Alarm Application Evaluation

May 7th - 8th 2018 | Arjavi Regmi

The main purpose of this summary report is to test the basic functionality of the RAVE Mobile Safety Application which is currently known as "Rave Panic Alarm Application." Basic functionality tests were performed at 4 (four) different schools within the state of North Carolina: 1. Apex Friendship High School 2. Hawley Middle School 3. Nash Central High School 4. Harnett Central Middle School. While performing the tests, different roles were assigned to individuals. Erin Spilman, ESP- Nurse, Thomas Westfall, ESP- Teacher, Arjavi Regmi, ESP- Teacher, Todd Miller-Admin and Bill Homer- Admin.

Overall, The Panic Alarm Application was very similar to State Emergency Response Application (SERA) K-12, and School Risk Management Plan (SRMP). Functionality and the look in field were very similar which is why this application meets the standards. The only negative aspect of this web-based application is being dependent on cellular/ network connections. The notification process within the application seemed to work as expected but there was a slight delay by seconds, in receiving text notifications (because it was hugely depended on cellular network).

The following 'Functional Testing Checklist & Sign-off' tables provide specific information to where these test cases passed the functional tests.

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Institution: APEX FRIENDSHIP HIGH SCHOOL (WAKE COUNTY)

*Note: All the testers were given different roles: Erin Spilman-Nurse, Thomas Westfall-Teacher, Arjavi Regmi- Teacher, Todd Miller- Administrator, Bill Homer-Administrator

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	05/04/2018 2:06PM
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	05/04/2018 2:06PM
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location-based services	Yes, Can only view Geo-fencing locations that are specific and / have pre-determined floor plans	05/04/2018 2:06PM
Test activation of system – Active Shooter Scenario: Reported at AFHS/BLD A by T. Miller at 10:32:06AM **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., “Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries”)				
Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate “Active Shooter” Button on app	ALL Campus contacts are notified via text	Y	05/07/2018 10:32AM

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
	to place 911 call while on campus.	and in-app notifications		
		Device dials 9-1-1	Y	05/07/2018 10:32AM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/07/2018 10:32AM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/07/2018 10:32AM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/07/2018 10:32PM

Test activation of system – Medical Scenario

Scenario: Reported at AFHS by E.Spilman at 11:03:03AM

1. Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.
2. ALL predesignated users are notified regarding medical incident.
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	05/07/2018 10:32PM
		Device dials 9-1-1	Y	05/07/2018 10:32PM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/07/2018 10:32AM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/07/2018 10:32AM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/07/2018 10:32AM

Additional Notes:

Overall,
The basic functionality passed the test however, some of the panic button options: Fire and Police were not tested.
On the side note:

- What if teachers do not have their cell phones with them.
- What if the School's Policy does not allow to use their phone during class sessions.
- What if the phone is set on a "Silent"/ "Vibration"/ "Do not disturb" Mode?

How would teachers receive notifications?

Test Verified by:

Arjavi Regmi, ESP
Name

Applications Business Analyst
Title

Arjavi Regmi
Signature

05-07-18
Date

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Institution: HAWLEY MIDDLE SCHOOL (GRANVILLE COUNTY)

*Note: All the testers were given different roles: Erin Spilman-Nurse, Thomas Westfall-Teacher, Arjavi Regmi-Teacher, Todd Miller- Administrator, Bill Homer-Administrator

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	05/07/2018 3:44PM
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	05/07/2018 3:44PM
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location-based services	Y	05/07/2018 3:44PM

Test activation of system – Active Shooter

Scenario: Reported at HCMS/Main by T. Miller @ 4:23 pm

1. Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building.
2. ALL predesignated users are notified to go into a lockdown.
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., “Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries”)

Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of		ALL Campus contacts are notified via text	Pass	05/07/2018 4:23PM

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	and in-app notifications		
		Device dials 9-1-1	Y	05/07/2018 4:23PM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/07/2018 4:23PM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/07/2018 4:23PM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/07/2018 4:23PM

Test activation of system – Medical Scenario

Scenario:

1. Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.
2. ALL predesignated users are notified regarding medical incident.
4. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	05/08/2018 1:54PM
		Device dials 9-1-1	Y	05/08/2018 1:54PM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/08/2018 1:54PM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/08/2018 1:54PM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/08/2018 1:54PM

Additional Notes:

Overall,
The functionality passed all the test cases and the overall notification process.

Test Verified by:

Arjavi Regmi, ESP
Name

Applications Business Analyst
Title

Arjavi Regmi
Signature

05-07-18
Date

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Institution: NASH CENTRAL HIGH SCHOOL

*Note: All the testers were given Admin Roles

Emergency Management Present: Brent Fisher, Bryant Fisher, Robin Dail

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	05/08/2018 8:30AM
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	05/08/2018 8:30AM
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	05/08/2018 8:30AM

Test activation of system – Active Shooter

Scenario: Reported at NCHS/Ball Fields by T. Miller @ 8:41am

1. Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building.
2. ALL predesignated users are notified to go into a lockdown.
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., “Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries”)

Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	05/08/2018 8:41AM
		Device dials 9-1-1	Y	05/08/2018 8:41AM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/08/2018 8:41AM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/08/2018 8:44AM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/08/2018 8:44AM

Test activation of system – Medical Scenario

Scenario: Reported at NCHS/Soccer Fields by T. Miller @ 8:36AM

1. Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.
2. ALL predesignated users are notified regarding medical incident.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	05/08/2018 8:36AM
		Device dials 9-1-1	Y	05/08/2018 8:36AM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/08/2018 8:37AM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/08/2018 8:37AM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/08/2018 8:37AM

Additional Notes:

Overall,
The functionality passed all the test cases and the overall notification process. There were a few other drills performed such as: **Staff Assist Option Drill**: Report at 7:36AM from B. Homer (Received Notification outside the campus parameter) **Fire Drill**: Reported at 10:06AM from T. Westfall (Outside the day care).
A question was asked by Brent Fisher (EM): 1) What happens during school field trips? (i.e, Vising the Zoo) Answer: Authorized personal will get the notification, and that will strictly will be based on Institution's Policy and Procedures. 2) Some schools are also concerned during Sporting Events (football, team meets).
On the side note, one of the common concern that most of Harnett, and Nash County discussed was, " When is this option going on a full effect?"

Test Verified by:
Arjavi Regmi, ESP
Name

Applications Business Analyst
Title

Arjavi Regmi
Signature

05-07-18
Date

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Institution: HARNETT CENTRAL MIDDLE SCHOOL

*Note: All the testers were given Admin Roles

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	05/08/2018 1:01PM
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	05/08/2018 1:01PM
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location-based services	Y	05/08/2018 1:01PM
Test activation of system – Active Shooter Scenario: Reported at HCMS/Main by T. Miller @ 1:32 pm **4.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **5.** ALL predesignated users are notified to go into a lockdown. **6.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., “Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries”)				
Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
		ALL Campus contacts are notified via text	Pass	05/08/2018 1:32PM

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	and in-app notifications		
		Device dials 9-1-1	Y	05/08/2018 1:32PM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/08/2018 1:32PM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/08/2018 1:32PM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/08/2018 1:32PM

Test activation of system – Medical Scenario

Scenario: Reported at HCMS/Main by T. Westfall at 1:54pm

1. Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.
2. ALL predesignated users are notified regarding medical incident.
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	05/08/2018 1:54PM
		Device dials 9-1-1	Y	05/08/2018 1:54PM
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	05/08/2018 1:54PM
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	05/08/2018 1:54PM
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	05/08/2018 1:54PM

Additional Notes:

Overall,
The functionality passed all the test cases and the overall notification process. There were a few other drills performed such as: **911:** Reported as A non-emergency, Location: Front Fiends; Bank Robbery reported at 1:37pm.
Staff Assist Option Drill: "Minor Medical Incident" Report at 1:44pm from B. Homer at HCMS/Main, Front Conf. Room. **Fire Drill**: Reported at 1:59AM
Panic button such as Fire Drill, and Active Shooter (second time) were performed and under spotty network connection. The notification process did pass, but there was a slight delay in receiving "Text Alerts" (by seconds, or minutes-depending on the network connectivity). As stated by Todd and Bill, this is co- dependent on ones' individual network connectivity.

Test Verified by:

Arjavi Regmi, ESP
Name

Applications Business Analyst
Title

Arjavi Regmi
Signature

05-07-18
Date

Harnett Middle School May 8th, 2018

Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	5/4/18
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	5/4/18
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	5/4/18
Test activation of system – Active Shooter Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
Location/Involved role players	STEPS	Criteria for Pass	Pass?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Pass	1:33pm

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
		Device dials 9-1-1	Y	
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	1:33 Point appears in the correct location, listing the incident type and who sent the alert.
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	1:37 RCV user sends out Staff Assist memo: "Nearby Incident" with custom memo "Bank Robbery in Area"

Test activation of system – Medical Scenario
Scenario:

1. Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.
2. ALL predesignated users are notified regarding medical incident.
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., “Medical response in progress”)				
At TEST SCHOOL of choice/authorized app user	Activate “Medical” Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	1:55 We had 4 users hit the button at the same time to test results. All four notifications came through simultaneously.
		Device dials 9-1-1	Y	
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	1:55
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	1:55 RCV receives information, 3 out of the 4 alerts are dropped right on top of each other. One is close by but slightly above the others.
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where	Y	1:56 Control Center sends out a “Test Complete”

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
	"continue to shelter in place while police search building"	applicable, in-app emergency communications from police		

***This school had very bad service in many parts of the building. Some of the alerts I received as in-app notifications and the text version of the notification came through later. We were not able to connect to their WiFi because they have it blocked for all cellular devices. Everything still worked very well even in these conditions. Also if the Rave Panic Button was put in place, the school could whitelist all teachers' cell phones so the WiFi would always be a back up to 911 phone calls.

Test Verified by:

Erin Spilman
Name

ESP GIS Technician
Title

Erin Spilman — May 9th, 2018
Signature — Date

Hawley Middle School May 7th, 2018
Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	RJ had someone perform this test and they could download the application but not activate it.
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	
Test activation of system – Active Shooter Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app	Y	4:11 Tested in Cafeteria

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
		notifications		
		Device dials 9-1-1	Y	
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	Did not go through with all calls, clicked "Cancel" on phone instead of putting the call through to 911
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	4:12 Control Center received alerts
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	4:15 Response sent out "All Clear in Cafeteria"
Test activation of system – Medical Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident.				

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
2. ALL predesignated users are notified regarding medical incident. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	4:04 Medical Emergency reported, location is "Ball Fields"
		Device dials 9-1-1	Y	
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	Did not put the call through, hit cancel instead of call on the phone
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	4:04 Alert hit the control center
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	4:06 Alert is sent out for more information to Medical Staff and Admin "Broken leg ball field"

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time

Test Verified by:

Erin Spilman
Name

ESP GIS Technician
Title

Erin Spilman
Signature

May 9, 2018
Date

Nash Central High School May 8th, 2018
Functional Testing Checklist & Sign-off

Ensuring the proper functioning of each component of Rave Panic Button is a critical step in the deployment process. Doing so ensures that when it comes time to exercise or using the app for an actual incident that the system functions as expected.

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	
Test activation of system – Active Shooter Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	9:42
		Device dials 9-1-1	Y	
At TEST SCHOOL, School	Confirm call to 9-1-1 on	Call reaches 9-1-1	Y	9:42

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
actor is able to reach 9-1-1	device	center for emergency help		Shows exact location on Satellite view
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	9:44 Alert is sent out "Location: training room" 9:45 Alert is sent out "Test Complete"
Test activation of system – Medical Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **2.** ALL predesignated users are notified regarding medical incident. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	8:35 Performed this Medical Emergency test outside on the sports

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N) ?	Completed Date/Time
				fields.
		Device dials 9-1-1	Y	
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	8:35 Alert received on RCV locating the incident to the fields
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	8:37 Exact location of the incident is provided through RCV response. "Location is: Soccer Field"

Test Verified by:

Erin Spilman
Name

ESP GIS Technician
Title

*Erin Spilman*_____ May 9, 2018_____
Signature Date

Apex Friendship High School May 7th, 2018
Functional Testing Checklist & Sign-off

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
Test Ability to download and activate app	After organization has been established and contacts authorized, attempt to download app with authorized users	Authorized users can download and activate while on approved campus	Y	
Confirm only authorized user can download	Have a non-authorized user attempt to download and activate app	Should receive notification that they are not listed as an authorized user	Y	
Test location function of app in TEST MODE	Use the test feature on the app while at an authorized building	App to display location at building via location based services	Y	
Test activation of system – Active Shooter Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report active shooter and tells 9-1-1 that individual is believed to be in the building. **2.** ALL predesignated users are notified to go into a lockdown. **3.** 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Police are on scene, continue to shelter in place. Call 9-1-1 if you have any students with special needs or injuries")				
Location/Involved role players	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
At TEST SCHOOL of choice/authorized app user	Activate "Active Shooter" Button on app to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	10:32:06 **Does not collect floor number info**
		Device dials 9-1-1	Y	10:32:06
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	10:32
At RCV desk (9-1-1	RCV operator views	Alert received on	Y	10:34

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
supervisor or police watch commander)	Panic/Alert Button Incident	RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc		Response was sent out from Admin locating incident, Responses can only be sent by Admin or First Responders
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	RCV user is able to send messages and authorized users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police	Y	10:43 Admin sent out "Test Complete" response which would be equivalent to all clear once the incident has been controlled, Admin can see location on satellite image, and lat-long are displayed on the control center screen
Test activation of system – Medical Scenario Scenario: **1.** Caller Activates Panic/alert Button app to report medical incident and tells 9-1-1 that there is a medical incident. **2.** ALL predesignated users are notified regarding medical incident.				

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
3. 9-1-1 and/or incident commander engages Rave Command View for earlier awareness of activation, uses system to access campus information and to send additional notifications out to users on site about the response (e.g., "Medical response in progress")				
At TEST SCHOOL of choice/authorized app user	Activate "Medical" Button on pp to place 911 call while on campus.	ALL Campus contacts are notified via text and in-app notifications	Y	11:01:50 Only Medical Staff and Admin are notified (this can be adjusted based on the school's preferences)
		Device dials 9-1-1	Y	11:01:50
At TEST SCHOOL, School actor is able to reach 9-1-1	Confirm call to 9-1-1 on device	Call reaches 9-1-1 center for emergency help	Y	11:02
At RCV desk (9-1-1 supervisor or police watch commander)	RCV operator views Panic/Alert Button Incident	Alert received on RCV of incoming critical incident providing details to type of activation, location, campus information, floor plans, etc	Y	Only Admin's computer got notification, Arjavi did not receive the alert on her computer control center. (This is due to the fact she was not listed as an "Admin")
At RCV user desk/MDT	Police arrive on Campus and wish to send additional instructions to	RCV user is able to send messages and authorized	Y	11:03 "Test Complete"

Testing of basic functionality				
ACTIVITY	STEPS	Criteria for Pass	Pass (Y/N)?	Completed Date/Time
	school staff using the Rave Panic Button system - Use the Quick Send notification feature in RCV to send emergency follow on communications to staff at school such as "continue to shelter in place while police search building"	users of system for the affected campus receive email, text and where applicable, in-app emergency communications from police		sent out, alert received by only Medical and Admin staff
		Notes	Y	"911 Other" Alerts only go to Administrative staff

Test Verified by:

Erin Spilman
Name

ESP GIS Technician
Title

May 7th, 2018
Date

Appendix B
Statewide Implementation of Panic Alarm Solution in all K-12 Schools

County	Public K-12 School District	NCEM Branch	NCEM Area	School Count	Estimated Month of Initial Training	Average Daily School Membership (2016-2017 Academic Yr)	Approx. Number of Classroom Teachers (2016-2017 Academic Yr)	Annual Panic Button License Per District	One Time Set-up Per District
Burke	Burke County Schools	Western	13	27	November-18	12,113	794	$40,500	$6,075
Catawba	Catawba County Schools	Western	13	41	November-18	16,302	1,037	$61,500	$9,225
Catawba	Newton-Conover City Schools	Western	13	6	November-18	2,996	200	$9,000	$1,350
Catawba	Hickory City Schools	Western	13	9	November-18	4,211	293	$13,500	$2,025
Cleveland	Cleveland County Schools	Western	13	28	November-18	14,662	1,057	$42,000	$6,300
Cumberland	Cumberland County Schools	Eastern	4	82	November-18	49,928	3,378	$123,000	$18,450
Duplin	Duplin County Schools	Eastern	4	16	November-18	9,542	647	$24,000	$3,600
Edgecombe	Edgecombe County Schools	Central	7	13	November-18	5,944	386	$19,500	$2,925
Gaston	Gaston County Schools	Western	13	55	November-18	31,266	1,948	$82,500	$12,375
Harnett	Harnett County Schools	Central	7	28	November-18	20,357	1,255	$42,000	$6,300
Johnston	Johnston County Schools	Central	7	44	November-18	34,964	2,280	$66,000	$9,900
Jones	Jones County Schools	Eastern	4	6	November-18	1,103	97	$9,000	$1,350
Lincoln	Lincoln County Schools	Western	13	24	November-18	11,340	773	$36,000	$5,400
Mecklenburg	Charlotte Mecklenburg Schools	Western	13	161	November-18	146,571	8,857	$241,500	$36,225
Nash	Nash Rocky Mount Sch Adm Unit	Central	7	28	November-18	15,145	951	$42,000	$6,300
Onslow	Onslow County Schools	Eastern	4	37	November-18	25,903	1,555	$55,500	$8,325
Pender	Pender County Schools	Eastern	4	16	November-18	9,219	584	$24,000	$3,600
Sampson	Sampson County Schools	Eastern	4	17	November-18	8,276	559	$25,500	$3,825
Sampson	Clinton City Schools	Eastern	4	5	November-18	2,984	205	$7,500	$1,125
Union	Union County Public Schools	Western	13	52	November-18	41,349	2,538	$78,000	$11,700
Wake	Wake County Schools	Central	7	151	November-18	158,394	10,327	$226,500	$33,975
Wilson	Wilson County Schools	Central	7	23	November-18	11,963	738	$34,500	$5,175
Alamance	Alamance - Burlington Schools	Central	10	35	December-18	22,571	1,571	$52,500	$7,875
Alexander	Alexander County Schools	Western	11	10	December-18	4,879	327	$15,000	$2,250
Alleghany	Alleghany County Schools	Western	11	4	December-18	1,342	121	$6,000	$900
Bladen	Bladen County Schools	Eastern	5	13	December-18	4,508	309	$19,500	$2,925
Brunswick	Brunswick County Schools	Eastern	5	16	December-18	12,409	807	$24,000	$3,600
Cabarrus	Cabarrus County Schools	Western	11	34	December-18	31,876	1,957	$51,000	$7,650
Cabarrus	Kannapolis City Schools	Western	11	9	December-18	5,256	377	$13,500	$2,025
Columbus	Columbus County Schools	Eastern	5	17	December-18	5,685	406	$25,500	$3,825
Columbus	Whiteville City Schools	Eastern	5	4	December-18	2,203	162	$6,000	$900
Davidson	Thomasville City Schools	Central	10	4	December-18	2,294	172	$6,000	$900
Davidson	Lexington City Schools	Central	10	7	December-18	2,996	209	$10,500	$1,575
Davidson	Davidson County Schools	Central	10	29	December-18	18,956	1,230	$43,500	$6,525
Durham	Durham Public Schools	Central	10	47	December-18	32,907	2,429	$70,500	$10,575
Guilford	Guilford County Public Schools	Central	10	112	December-18	71,396	4,791	$168,000	$25,200
Hoke	Hoke County Schools	Eastern	5	13	December-18	8,363	556	$19,500	$2,925
Iredell	Mooresville City Schools	Western	11	7	December-18	6,016	372	$10,500	$1,575
Iredell	Iredell Statesville Schools	Western	11	30	December-18	20,300	1,239	$45,000	$6,750
New Hanover	New Hanover County Schools	Eastern	5	42	December-18	26,096	1,682	$63,000	$9,450
Orange	Chapel Hill Carrboro Schools	Central	10	16	December-18	12,113	919	$24,000	$3,600
Orange	Orange County Schools	Central	10	13	December-18	7,413	550	$19,500	$2,925
Randolph	Asheboro City Schools	Central	10	9	December-18	4,594	327	$13,500	$2,025
Randolph	Randolph County Schools	Central	10	29	December-18	17,074	1,138	$43,500	$6,525
Robeson	Public Schools of Robeson Co	Eastern	5	45	December-18	22,799	1,448	$67,500	$10,125
Rowan	Rowan Salisbury Schools	Western	11	34	December-18	19,135	1,280	$51,000	$7,650
Stanly	Stanly County Schools	Western	11	21	December-18	8,373	584	$31,500	$4,725
Wilkes	Wilkes County Schools	Western	11	21	December-18	9,435	641	$31,500	$4,725
Buncombe	Asheville City Schools	Western	14	7	January-19	4,421	324	$10,500	$1,575
Buncombe	Buncombe County Schools	Western	14	37	January-19	24,148	1,653	$55,500	$8,325
Carteret	Carteret County Schools	Eastern	3	18	January-19	8,125	627	$27,000	$4,050
Caswell	Caswell County Schools	Central	9	6	January-19	2,618	190	$9,000	$1,350
Cherokee	Cherokee County Schools	Western	14	15	January-19	3,263	263	$22,500	$3,375
Craven	Craven County Schools	Eastern	3	23	January-19	13,860	940	$34,500	$5,175
Davie	Davie County Schools	Central	9	11	January-19	6,183	434	$16,500	$2,475
Forsyth	Forsyth County Schools	Central	9	79	January-19	54,192	3,795	$118,500	$17,775
Graham	Graham County Schools	Western	14	3	January-19	1,169	90	$4,500	$675
Greene	Greene County Schools	Eastern	3	4	January-19	3,091	208	$6,000	$900
Haywood	Haywood County Schools	Western	14	15	January-19	7,083	523	$22,500	$3,375
Lenoir	Lenoir County Public Schools	Eastern	3	16	January-19	8,646	585	$24,000	$3,600
Madison	Madison County Schools	Western	14	6	January-19	2,295	184	$9,000	$1,350
Pamlico	Pamlico County Schools	Eastern	3	4	January-19	1,251	105	$6,000	$900
Rockingham	Rockingham County Schools	Central	9	24	January-19	12,296	822	$36,000	$5,400
Stokes	Stokes County Schools	Central	9	18	January-19	5,957	458	$27,000	$4,050
Surry	Elkin City Schools	Central	9	2	January-19	1,169	90	$3,000	$450
Surry	Mount Airy City Schools	Central	9	3	January-19	1,572	115	$4,500	$675
Surry	Surry County Schools	Central	9	16	January-19	7,949	541	$24,000	$3,600
Swain	Swain County Schools	Western	14	4	January-19	1,928	141	$6,000	$900
Wayne	Wayne County Public Schools	Eastern	3	30	January-19	18,321	1,229	$45,000	$6,750
Yadkin	Yadkin County Schools	Central	9	13	January-19	5,232	375	$19,500	$2,925
Anson	Anson County Schools	Central	8	8	February-19	3,318	232	$12,000	$1,800
Beaufort	Beaufort County Schools	Eastern	2	12	February-19	6,673	490	$18,000	$2,700
Bertie	Bertie County Schools	Eastern	2	6	February-19	2,170	161	$9,000	$1,350
Chatham	Chatham County Schools	Central	8	17	February-19	8,636	609	$25,500	$3,825
Clay	Clay County Schools	Western	15	3	February-19	1,307	94	$4,500	$675
Henderson	Henderson Co Public Schools	Western	15	21	February-19	13,320	920	$31,500	$4,725
Hyde	Hyde County Schools	Eastern	2	4	February-19	580	62	$6,000	$900
Jackson	Jackson County Schools	Western	15	7	February-19	3,743	244	$10,500	$1,575
Lee	Lee County Schools	Central	8	14	February-19	9,948	663	$21,000	$3,150

County	Public K-12 School District	NCEM Branch	NCEM Area	School Count	Estimated Month of Initial Training	Average Daily School Membership (2016-2017 Academic Yr)	Approx. Number of Classroom Teachers (2016-2017 Academic Yr)	Annual Panic Button License Per District	One Time Set-up Per District
Macon	Macon County Schools	Western	15	11	February-19	4,303	318	$16,500	$2,475
Martin	Martin County Schools	Eastern	2	10	February-19	3,149	240	$15,000	$2,250
Montgomery	Montgomery County Schools	Central	8	11	February-19	3,857	281	$16,500	$2,475
Moore	Moore County Schools	Central	8	21	February-19	12,578	840	$31,500	$4,725
Pitt	Pitt County Schools	Eastern	2	36	February-19	23,224	1,582	$54,000	$8,100
Polk	Polk County Schools	Western	15	6	February-19	2,154	188	$9,000	$1,350
Richmond	Richmond County Schools	Central	8	16	February-19	7,265	490	$24,000	$3,600
Rutherford	Rutherford County Schools	Western	15	18	February-19	8,014	550	$27,000	$4,050
Scotland	Scotland County Schools	Central	8	14	February-19	5,767	242	$21,000	$3,150
Transylvania	Transylvania County Schools	Western	15	9	February-19	3,374	279	$13,500	$2,025
Tyrrell	Tyrrell County Schools	Eastern	2	3	February-19	596	49	$4,500	$675
Washington	Washington County Schools	Eastern	2	5	February-19	1,456	117	$7,500	$1,125
Ashe	Ashe County Schools	Western	12	5	March-19	2,981	235	$7,500	$1,125
Avery	Avery County Schools	Western	12	8	March-19	2,011	170	$12,000	$1,800
Caldwell	Caldwell County Schools	Western	12	23	March-19	11,666	840	$34,500	$5,175
Camden	Camden County Schools	Eastern	1	4	March-19	1,835	129	$6,000	$900
Chowan	Chowan County Schools	Eastern	1	4	March-19	2,023	146	$6,000	$900
Currituck	Currituck County Schools	Eastern	1	9	March-19	3,969	253	$13,500	$2,025
Dare	Dare County Schools	Eastern	1	10	March-19	4,989	382	$15,000	$2,250
Franklin	Franklin County Schools	Central	6	15	March-19	8,281	586	$22,500	$3,375
Gates	Gates County Schools	Eastern	1	5	March-19	1,590	126	$7,500	$1,125
Granville	Granville County Schools	Central	6	16	March-19	7,667	500	$24,000	$3,600
Halifax	Roanoke Rapids City Schools	Central	6	4	March-19	2,884	193	$6,000	$900
Halifax	Weldon City Schools	Central	6	4	March-19	864	76	$6,000	$900
Halifax	Halifax County Schools	Central	6	10	March-19	2,566	183	$15,000	$2,250
Hertford	Hertford County Schools	Eastern	1	6	March-19	2,852	195	$9,000	$1,350
McDowell	McDowell County Schools	Western	12	11	March-19	6,135	427	$16,500	$2,475
Mitchell	Mitchell County Schools	Western	12	6	March-19	1,829	145	$9,000	$1,350
Northampton	Northampton County Schools	Central	6	8	March-19	1,730	139	$12,000	$1,800
Pasquotank	Elizabeth City/Pasquotank Schools	Eastern	1	12	March-19	5,606	395	$18,000	$2,700
Perquimans	Perquimans County Schools	Eastern	1	4	March-19	1,626	122	$6,000	$900
Person	Person County Schools	Central	6	11	March-19	4,511	301	$16,500	$2,475
Vance	Vance County Schools	Central	6	15	March-19	6,027	498	$22,500	$3,375
Warren	Warren County Schools	Central	6	7	March-19	2,126	159	$10,500	$1,575
Watauga	Watauga County Schools	Western	12	9	March-19	4,403	361	$13,500	$2,025
Yancey	Yancey County Schools	Western	12	9	March-19	2,158	175	$13,500	$2,025
TOTALS						**1,428,051**	**95,142**	**$3,466,500**	**$519,975**

Appendix C:
Statewide Implementation Panic Alarm Solution in all Charter Schools

County	Statewide Charter Schools	NCEM Branch	NCEM Area	School Count	Estimated Month of Initial Training	Average Daily School Membership (2016-2017 Academic Yr)	Approx. Number of Classroom Teachers (2016-2017 Academic Yr)	Annual Panic Button License Charter Schools	One Time Set-up Per District
All	All	All	All	160	March-19	90,393	5,015	$240,000	$36,000