MARINE MAMMAL STRANDING RESPONSE & DATA TRACKING - REQUIREMENTS

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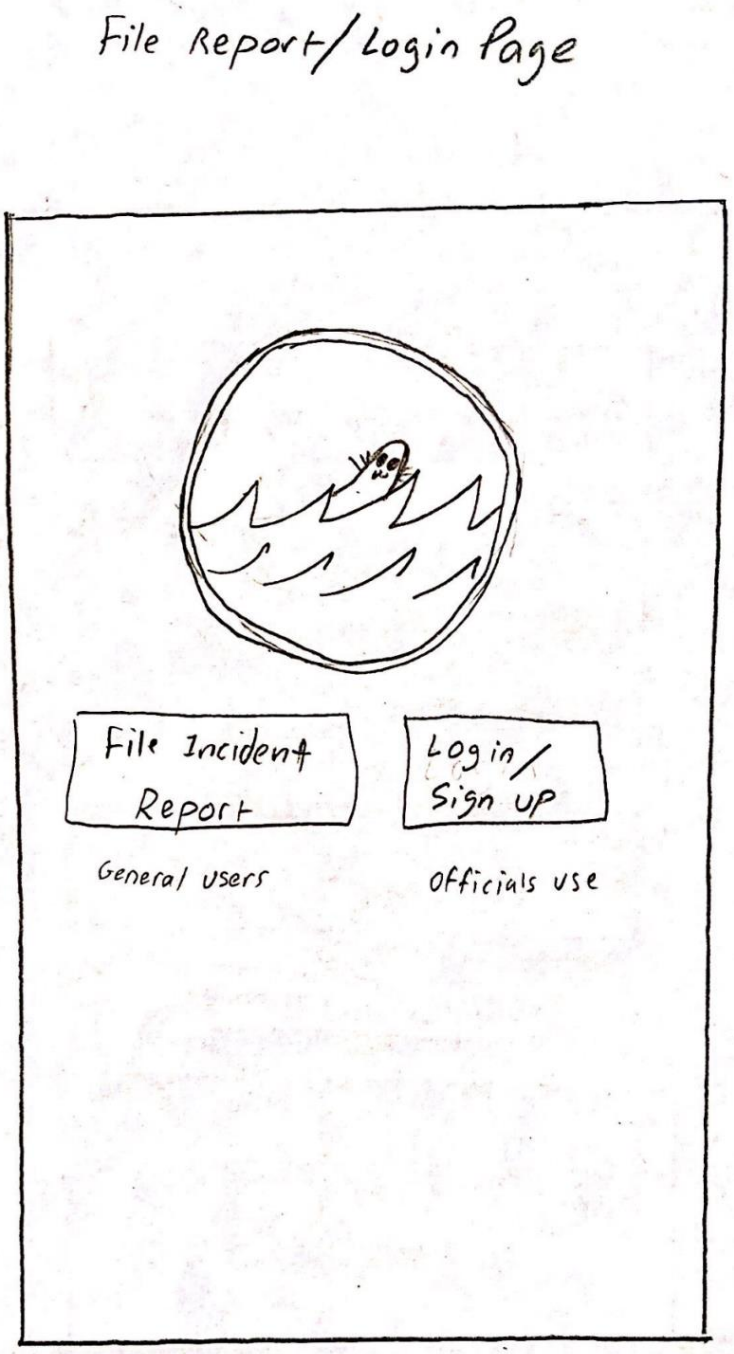
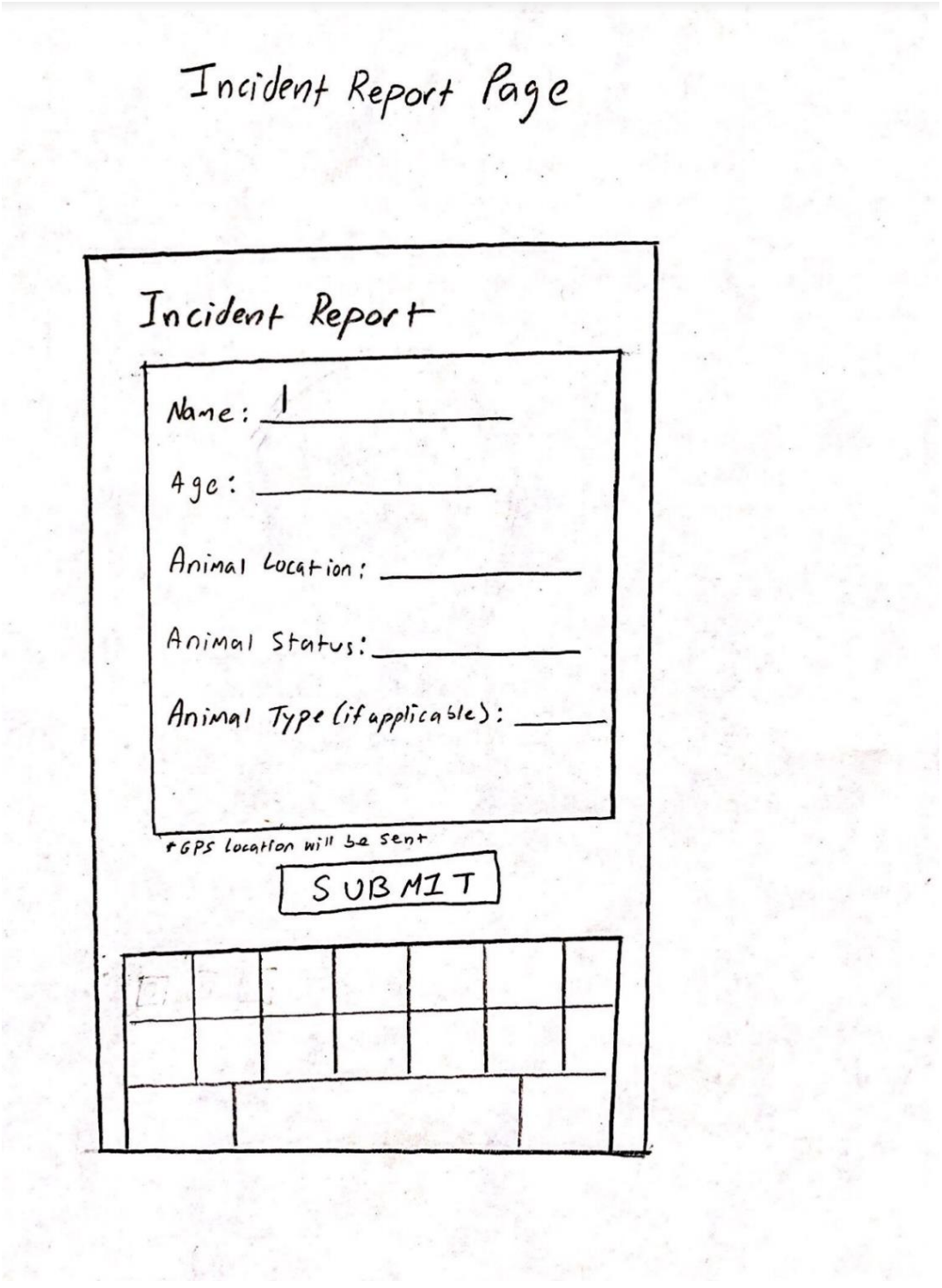
Paper Prototypes

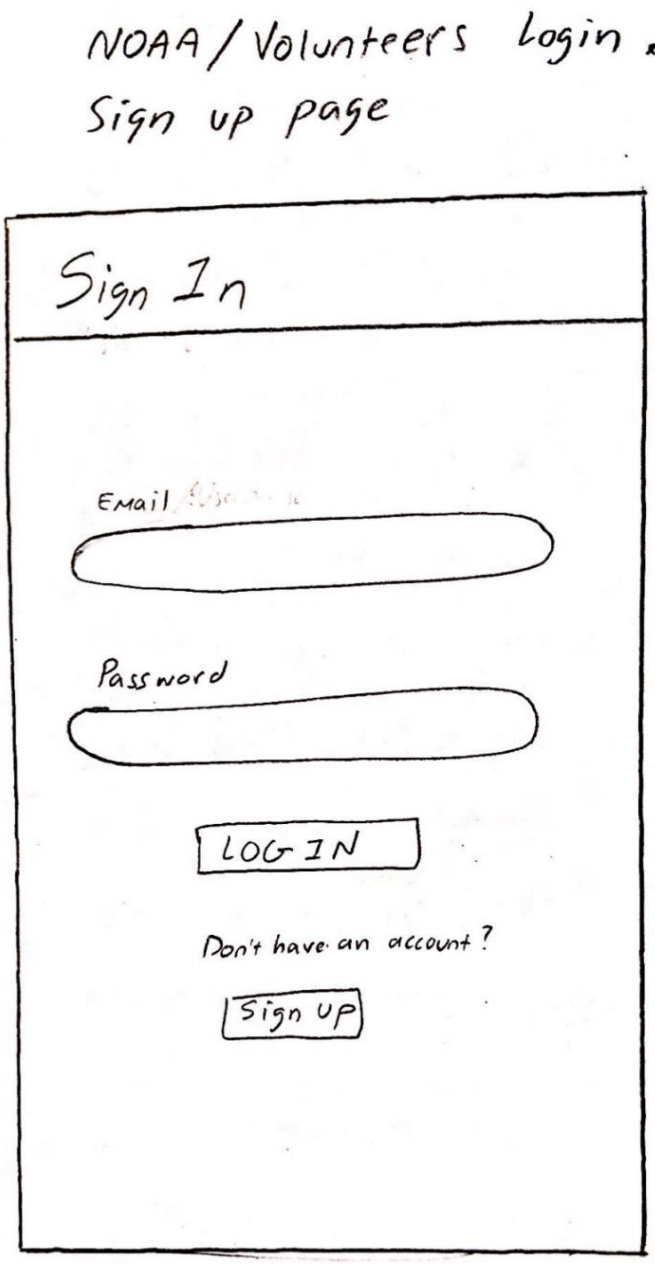
App startup Page/Login Page



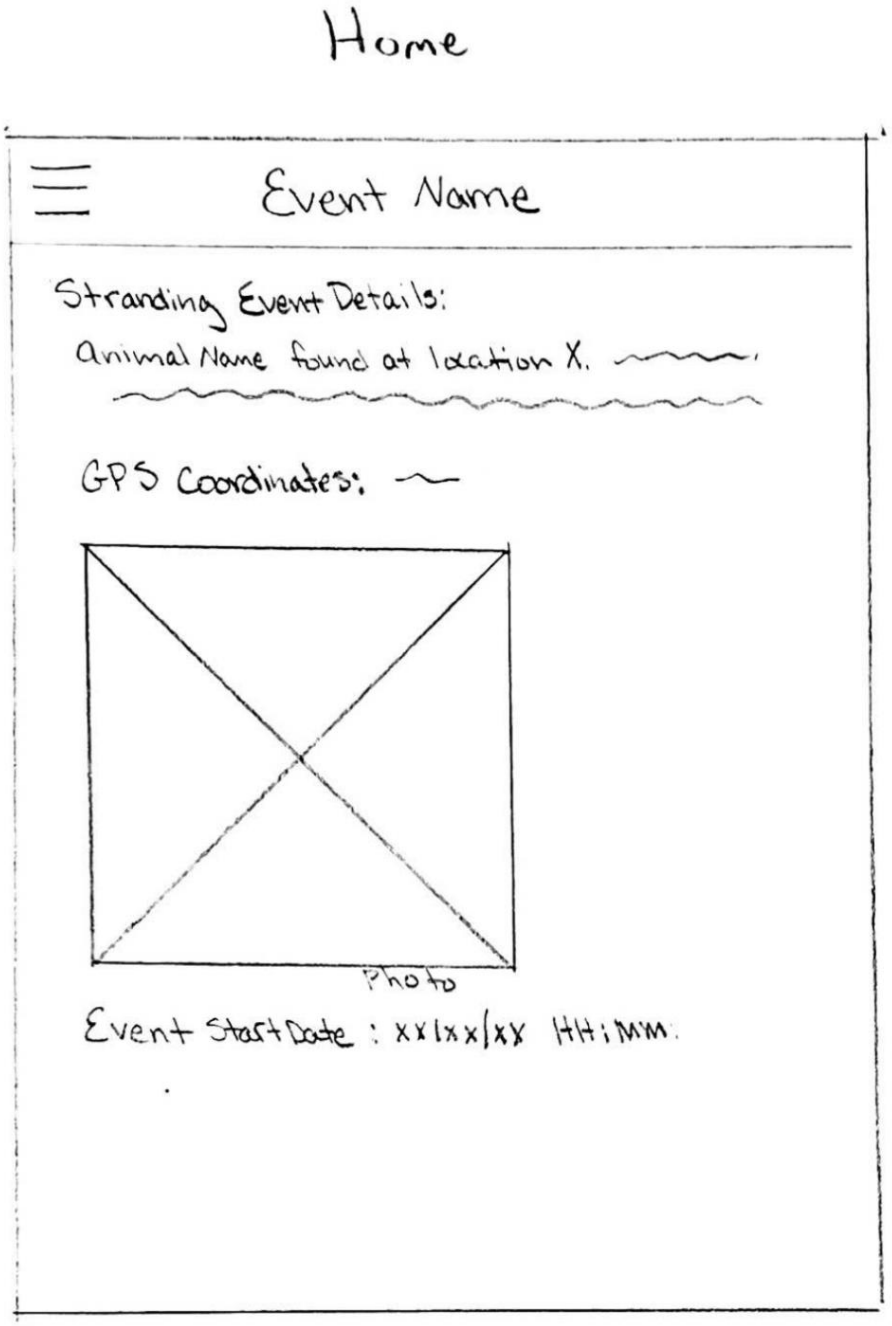
Incident Report Page



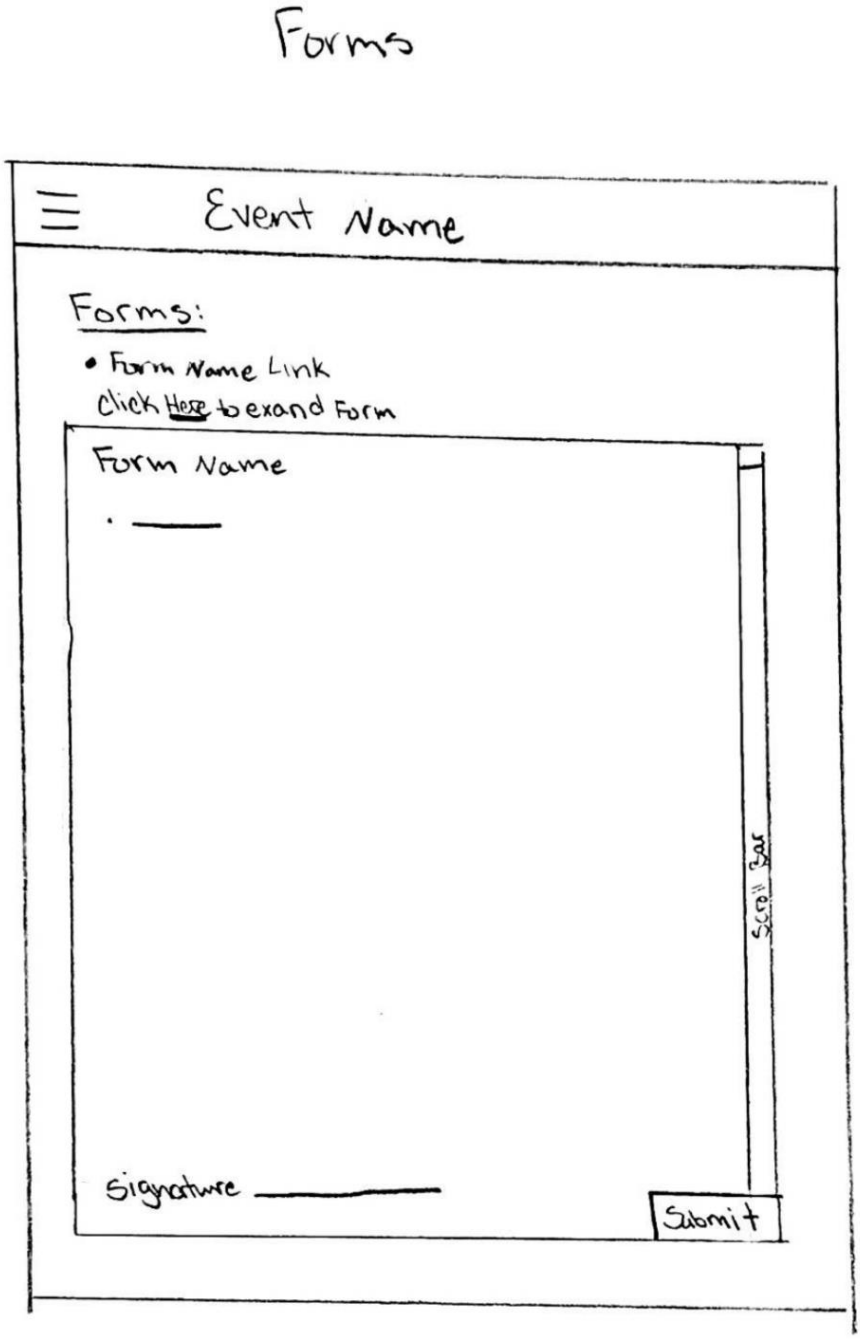
NOAA/Volunteers Login/Sign Up Page



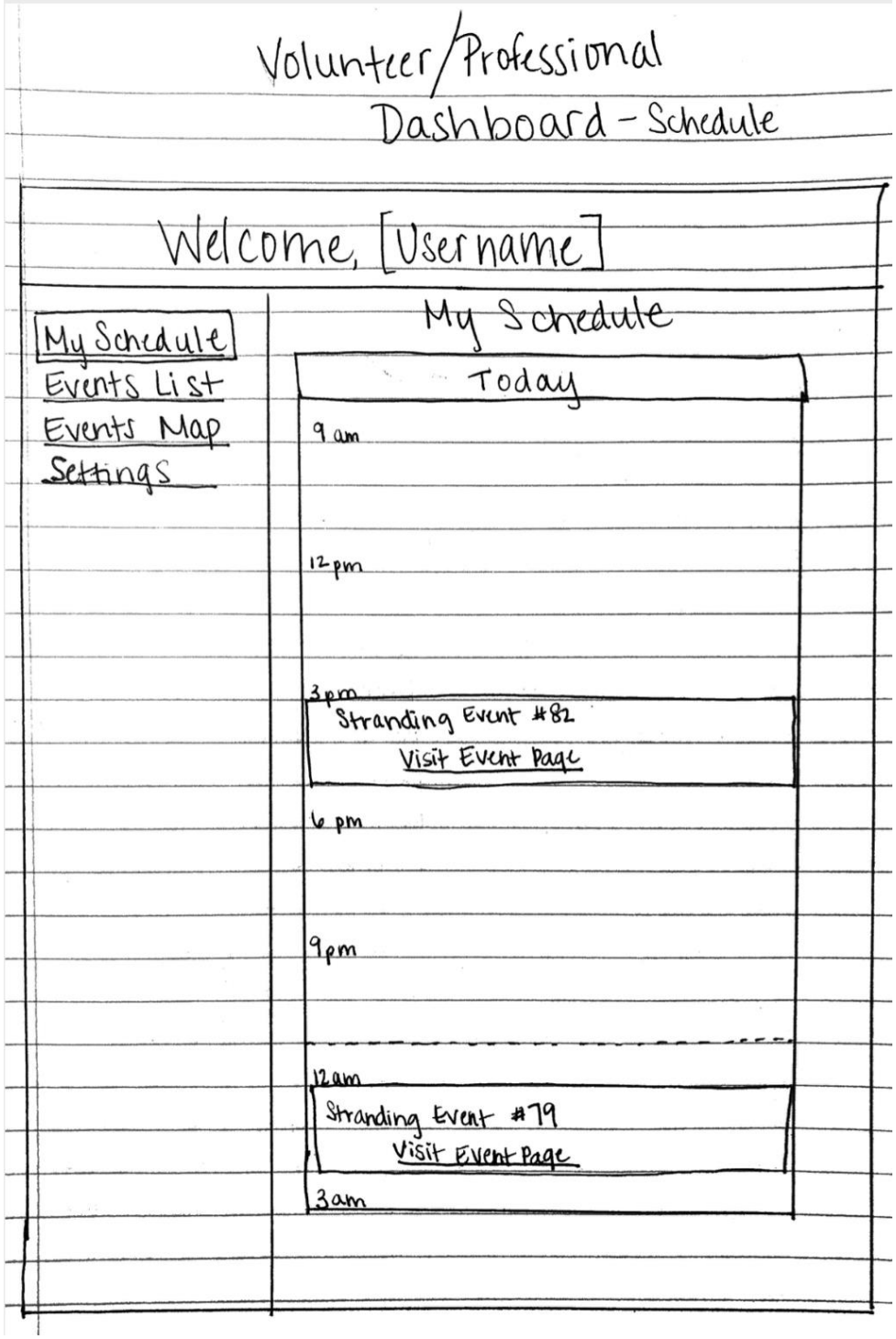
Event Page


Home
Event Name
Stranding Event Details:
Animal Name found at location X.
GPS Coordinates:
Photo
Event Start Date : XX/XX/XX HH:MM.

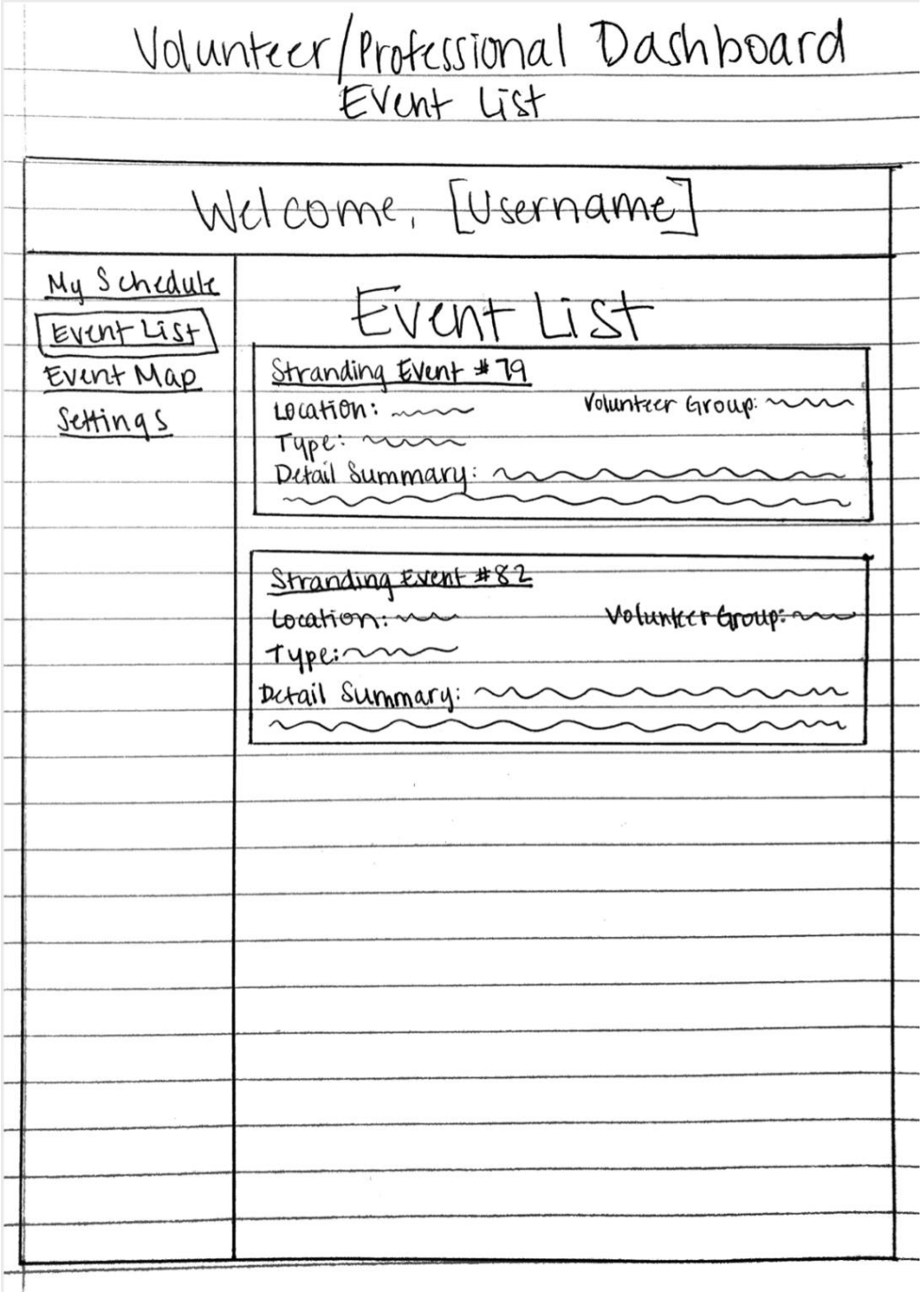
Event Forms Page



Scheduler Page

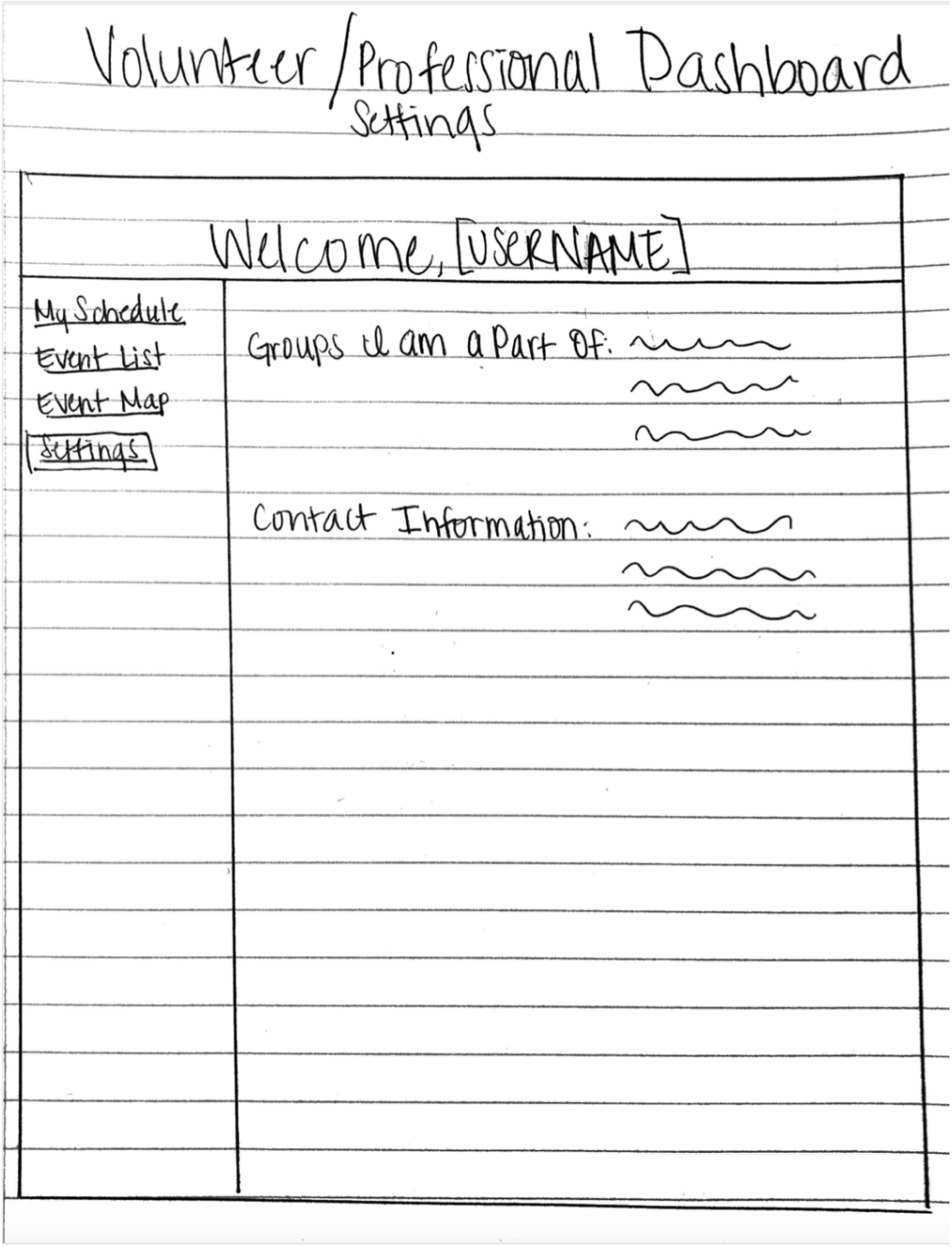


Event List Page

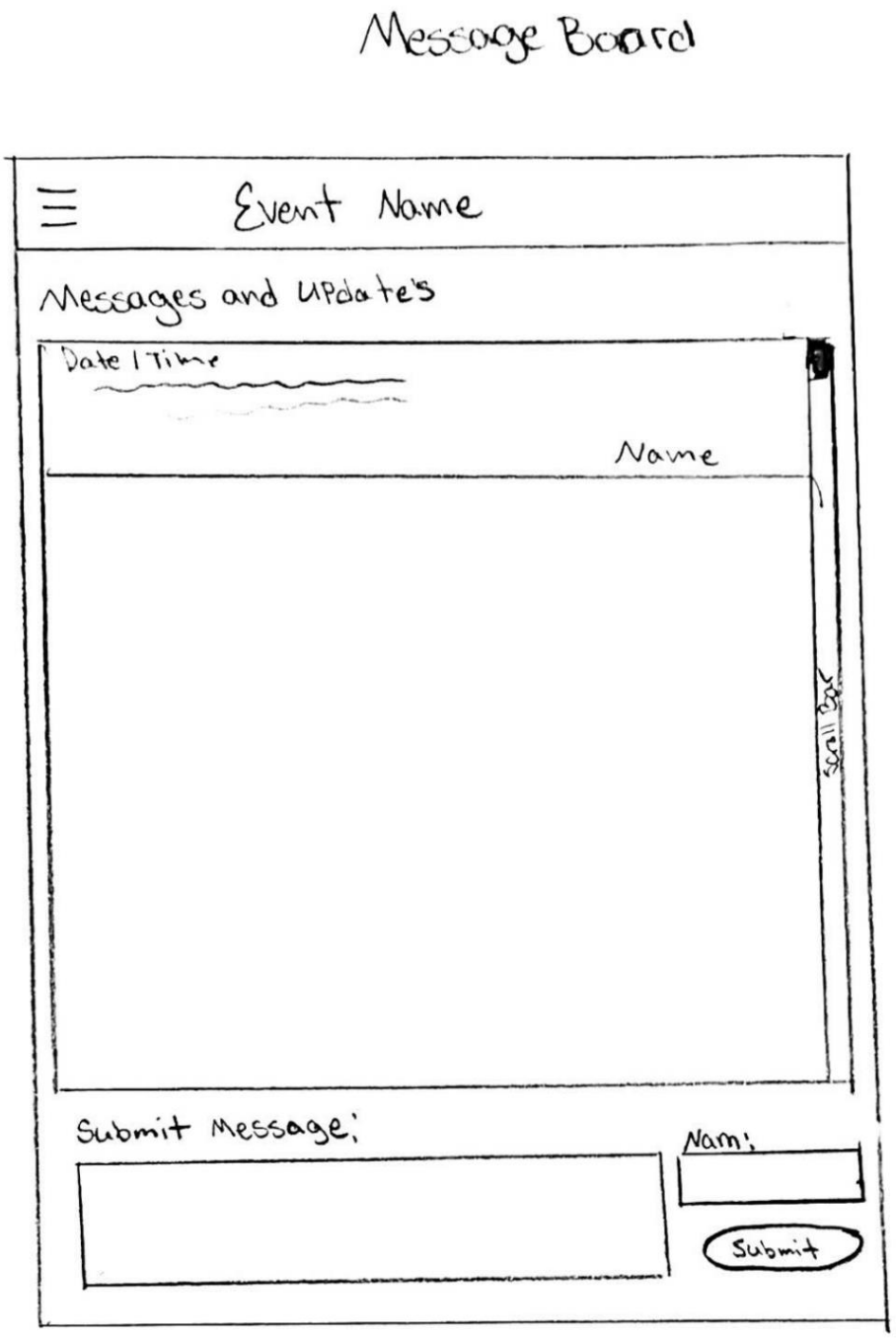


Event Map Page

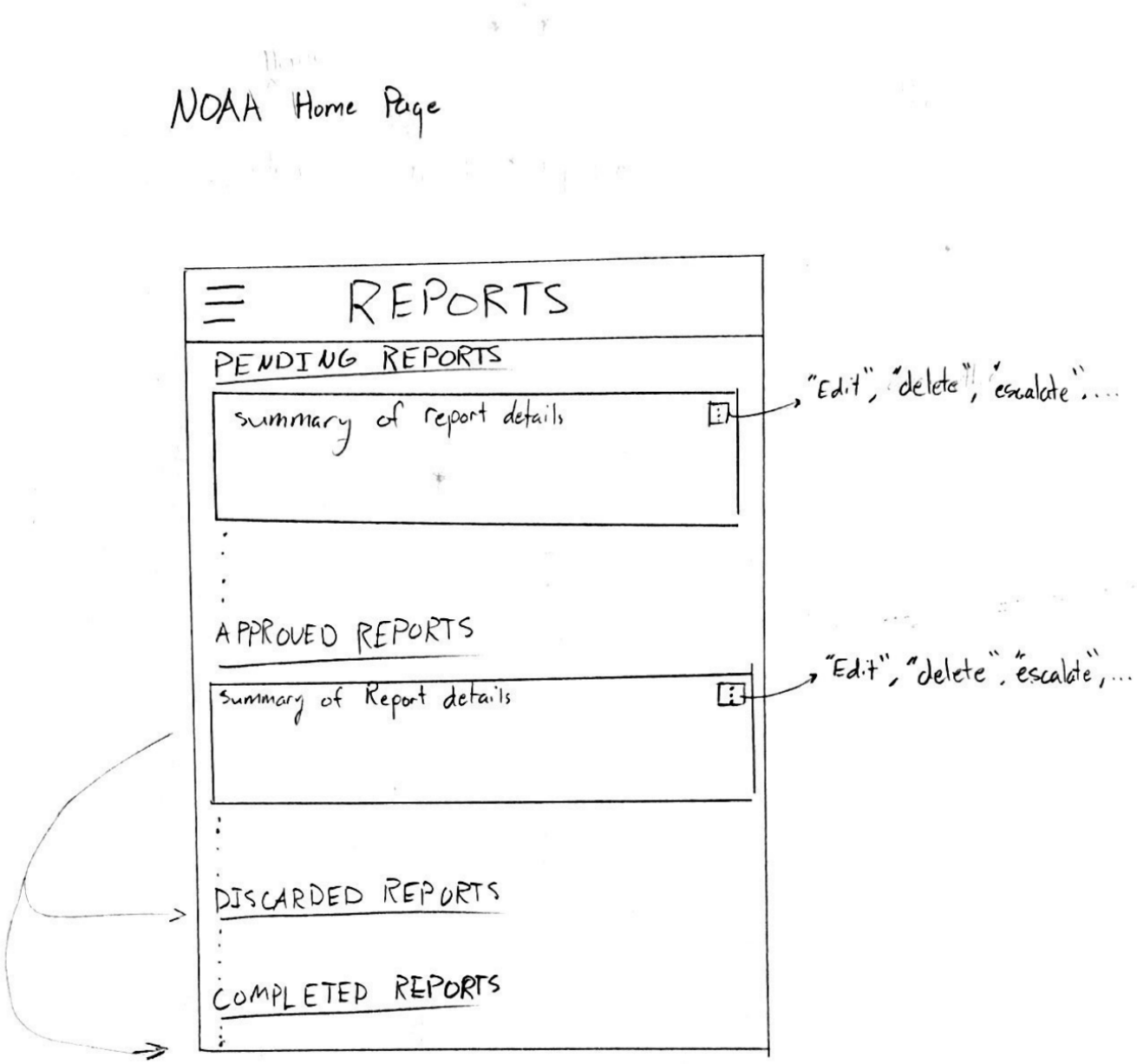
Settings Page



Message Board Page



NOAA Home Page



REQUIREMENTS DEFINITION

FUNCTIONAL REQUIREMENTS

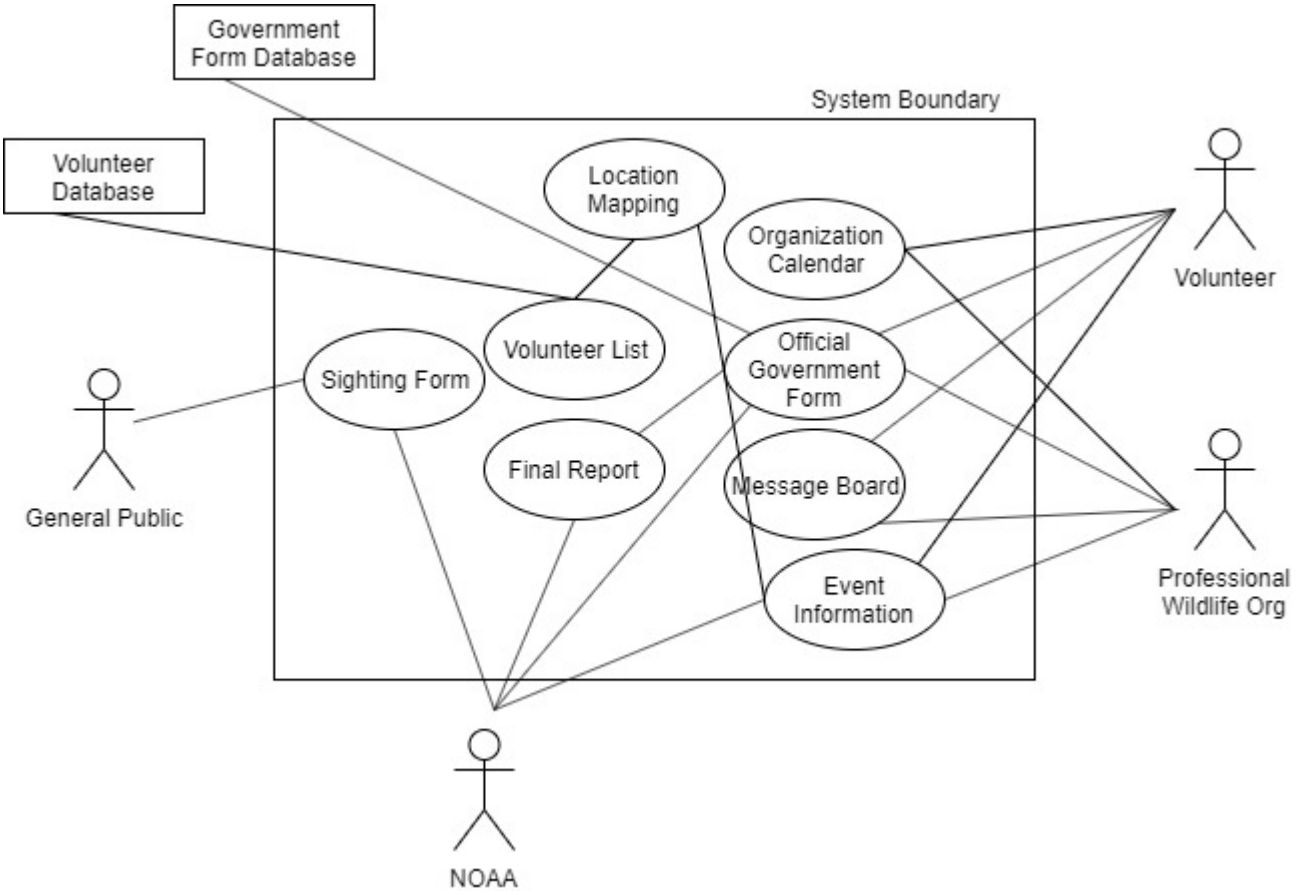
- Public users should only be able to file incident reports
- Volunteer/professional responders/NOAA employees will be able to log into the system.
- Responders and NOAA employees will have different menu options
- The menu shall dynamically change in size depending on the amount of option and Responders/NOAA employees may have several options they share
- Volunteer/professional responders/NOAA employees will be able to create an account in the system if they do not have one already
- The system shall display all active events within the responders' (volunteers/professionals) jurisdiction via map view and list view
- Volunteer/professional responders should be able to select an event to view specifics (event details, photos, GPS coordinates)
- The system shall allow volunteer/professional group leaders to fill out the form selected by NOAA directly on the app/site or select their own form
- The system shall allow group/organization leaders to search for a form
- The system shall display events that volunteer/professional responders have signed up for on a calendar, list view, and map view
- The system shall allow NOAA employees to view all reports (pending, approved, etc.) via list and map view
- Map view for NOAA employees will be filterable and color coded based on report status
- The system shall allow NOAA employees to modify/delete/escalate reports
- NOAA employees can validate a report through the listing/map view of reports
- The system shall tag each stranding incident reported by the public with the GPS location, date, and time
- The system shall create a new coordination site instance for validated instances of stranded animal reportings
- The system shall send notifications to NOAA for each incident reported by public
- The system shall deploy a text/notification to all volunteers in the corresponding area for a validated instance of stranded animal report
- Volunteers within each event should be able to utilize a message board/messaging system to contact each other
- The system shall send notifications for event updates to the volunteers
- Group leaders, whether in a volunteer organization or professional one can end events by pressing a button
- The system shall deploy a text/push notification to all volunteers when the stranding event is completed
- The system shall keep up to date versions of government forms
- Users of the system shall be able to choose how notifications are delivered, whether by text or by push notification in the settings tab
- The system shall allow NOAA employees to switch between list view or map view of events
- The map view shall show color coordinated events that indicate their event status

NON-FUNCTIONAL REQUIREMENTS

- The system shall update responders' map page within 30 seconds of NOAA verifying a public report
- The system shall update NOAA's pending events and report maps pages with a public entered stranded animal report within 20 seconds of the report being submitted
- The system shall deploy texts to volunteers in the area within 5 minutes of a validated instance of a stranded animal reporting
- The system shall deploy a push notification to volunteer phones within 5 minutes of a validated instance of a stranded animal reporting
- The system shall create a coordination site within 5 minutes of a validated instance of stranded animal reporting
- The system shall update formal government form completed by volunteer/professional responders within 20 seconds of the report
- The system shall update a completed event within 30 seconds of user (volunteer/professional) interaction
- The system shall send final text to all volunteers who responded to a stranded animal report within 10 minutes of the end of the event
- The system shall ping the login server to ensure a connection before allowing account creation (server ping occurs during account creation).
- The system shall verify the user email to be a NOAA email address or not within 5 seconds of user entering it.
- The system shall store reports to the database within 30 seconds of being created and update these reports in the database as they are approved or edited.
- The system will have responsive buttons that respond to touch within 0.25 seconds of user pressing the button
- The system shall switch pages upon user pressing "modify report", "view details", "menu", etc. within 2 seconds of the user having pressed the button
- The system shall notify the user of errors connecting to any databases within 30 seconds of not connecting to them
- The system shall change the status of a report in the system upon the user "approving" or "deleting" it within 30 seconds of the user changing the status
- The system shall update the color of an event on the event map within 30 seconds of the user changing the status of a report in the system

USE CASES

USE CASES DIAGRAM



USE CASE 1

- General public reports stranding

Actors

- General public/User
- Mammal

Preconditions

- User is at the location of the stranded mammal.

- The user reports the incident by filling out an incident report indicating the type of mammal that is stranded.
- The report is submitted to NOAA and the user's location is also reported via GPS.
- The stranded marine mammal is reported, and the information is sent to the system.

Postconditions

- NOAA is notified about the incident from the user.
- The user waits, if able, to keep an eye on the animal's whereabouts.
- Once the responders arrive the user can point out the direction of the mammal to the volunteer responders for an accurate location.
- The user cannot continue to help further because of safety issues.
- The volunteer responders continue on to attend the mammal.
- If the mammal is alive, the responders can help it get back into the ocean and document their report.

Flow of Events

- The user sees that there is a stranded mammal, whether it's directly on the beach or near coastal rocks, as well as if it is either dead or alive, and starts the incident report via mobile app.
- User writes the incident report that is provided by the app and identifies the type of mammal they think is stranded and describes the location or scene of the mammal.
- A picture is taken of the animal, if applicable, and is added to the incident report.
- The incident report also notifies the user that their GPS location will be sent to NOAA, where appropriate measures can be taken to dispatch volunteers to the correct location.
- Incident is filed and sent to the system where NOAA will be able to retrieve this report as well as the user's location that is pinned on the map.
- The system records the incident and notifies NOAA to contact local stranding groups dedicated to help stranded mammals and to deploy certified responders.
- The user can wait around the area at a safe location, distant from the mammal, until the volunteers arrive to help.

USE CASE 2

- NOAA Response to Stranded Marine Mammal

Actors

- NOAA employee

Preconditions

- Stranded Marine Mammal event has been reported by someone in the general public.
- The event contains details such as GPS location, animal condition, and photographs.
- NOAA employees are trained on how to escalate the event based on given event information
- **NOAA sends out an alert via an application, email and/or text to qualified trained volunteer response teams within the area**.
- **NOAA directs Volunteer Responders' group leaders to the correct form**

Postconditions

- The event has been documented by volunteer responders using the correct forms that NOAA has indicated.
- **After the mammal has been observed and the event has closed all NOAA is notified of the event ending.**
- NOAA initiates an application or web page with event details and calendar.
- The data that the volunteer responders provide via the forms is put into NOAA's database.
- The data is analyzed to find patterns that cause marine mammals to become stranded.

Flow of Events

- NOAA receives a notification of a stranded marine mammal and an event is created.
- The event contains GPS location, photographs, and details of the mammal.
- NOAA employee escalates the event to the according level based on given event information.
- **NOAA sends out an alert via an application, email and/or text to qualified trained volunteer response teams in the area**.
- **NOAA directs Volunteer Responders' group leaders to the correct form**
- The most up to date form is pulled from the database and included in the stranding site for volunteers to fill out.
- NOAA sends out any updates and alerts via the application until the event has ended.
- The data the volunteers collected is put into a database and NOAA is responsible for analyzing it in order to help prevent future strandings.

USE CASE 3

- Volunteer Response to Stranded Marine Mammal

Actors

- Volunteer Responder

Preconditions

- Stranded marine mammal has been identified and recorded in the system by someone in the general public utilizing GPS information for location
- NOAA has deemed the notification from the general public real and has kicked off the response on the system
- The volunteer responder is registered in the database as a responder in the area that the stranded marine mammal has been identified in
- The volunteer responder is trained in how to respond to a stranded marine mammal
- User is trained to use the application to designate times they will respond to the marine mammal

Postconditions

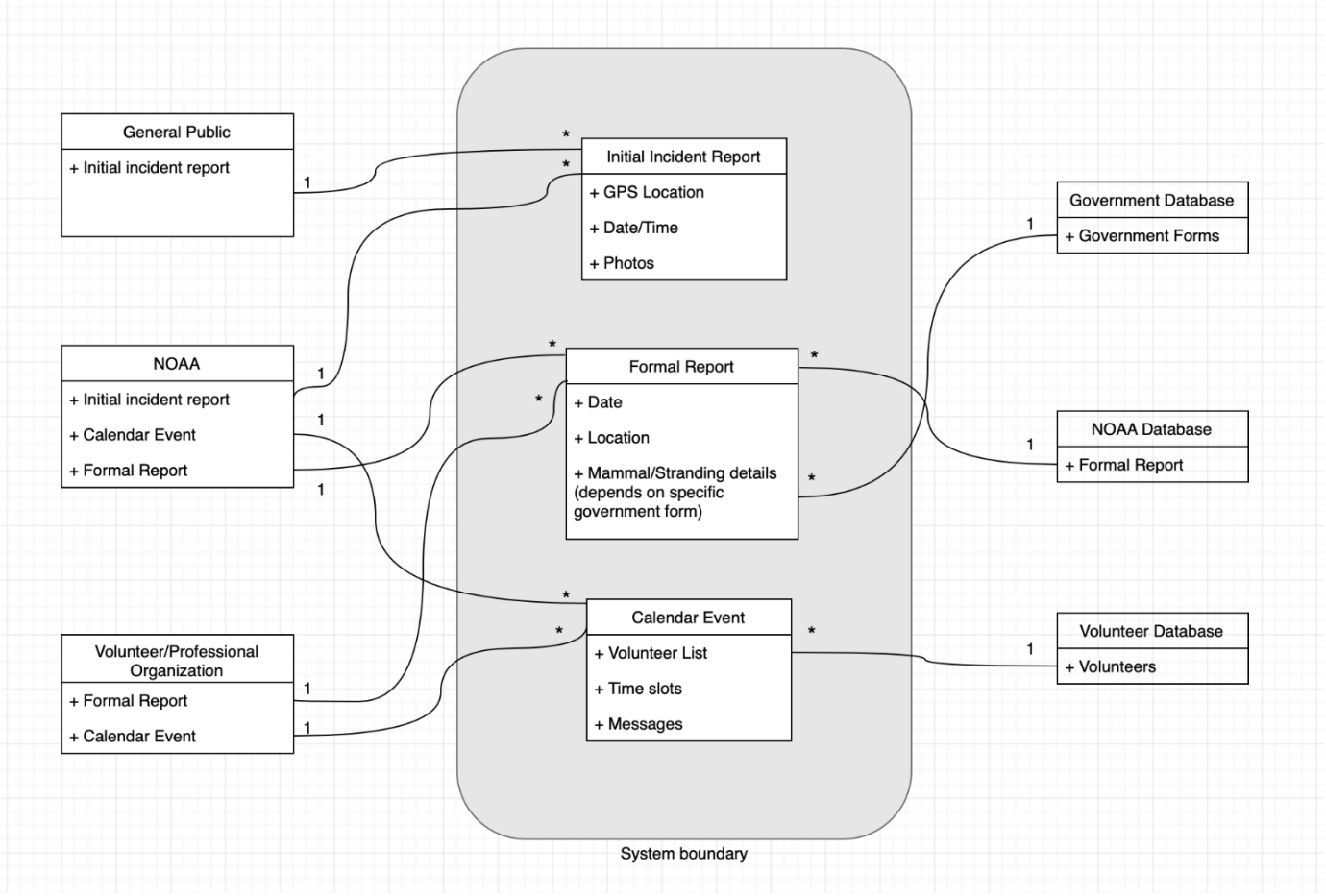
- Mammal has been observed until it has returned to the marine habitat
- Mammal has had minimal interaction with humans during the stranding event
- Mammal was watched from the point of the first responder showing up to protect it, to the time it returned to its habitat
- All volunteer responders in the area of the stranded marine mammal have access to the information that the mammal has returned to its marine habitat
- All professionals and organizations have access to the information that the mammal has returned to its marine habitat
- The event of the stranding has been documented with time of stranding reported, time of return reported, location, and any additional information required by the correct governmental forms

Flow of Events

- Volunteer is notified of the stranded marine mammal in their area via a text
- Location of animal and time of sighting are included in text to the volunteer
- Volunteer is sent a link via text to the stranding event site
- Stranding event site includes a calendar of the event where volunteers can sign up to assist with the stranded marine mammal, a bank of question and input fields to fulfill the information required by the most up-to-date government form that applies for this scenario and a message board where notes are added on the stranding event (if the animal moves locations, additional animals, humans attempting to approach animal)
- Volunteer signs up for a slot to monitor the marine mammal

- Volunteer shows up for designated time slot to monitor the animal, volunteer adds any information required by the government in the question/answer input fields on the stranding event site and adds any notes to the message board based on their experience at the stranding site
- Volunteer repeats signing up for a slot to monitor and showing up at the designated time for as many times as they are able
- Animal returns to marine habitat during monitoring period, volunteer ends the event on the stranding event site with the time that the animal returned and the status of the area
- All volunteers who have been added to the site receive a text notifying them that the stranding event has ended and thanking them for their contribution to the event
- All information about the stranding event is saved to the database of stranding events and professionals and organizations have access to this information
- The event is historized in the volunteer's profile as an event they have responded to

UML CLASS DIAGRAM



REQUIREMENTS SPECIFICATION

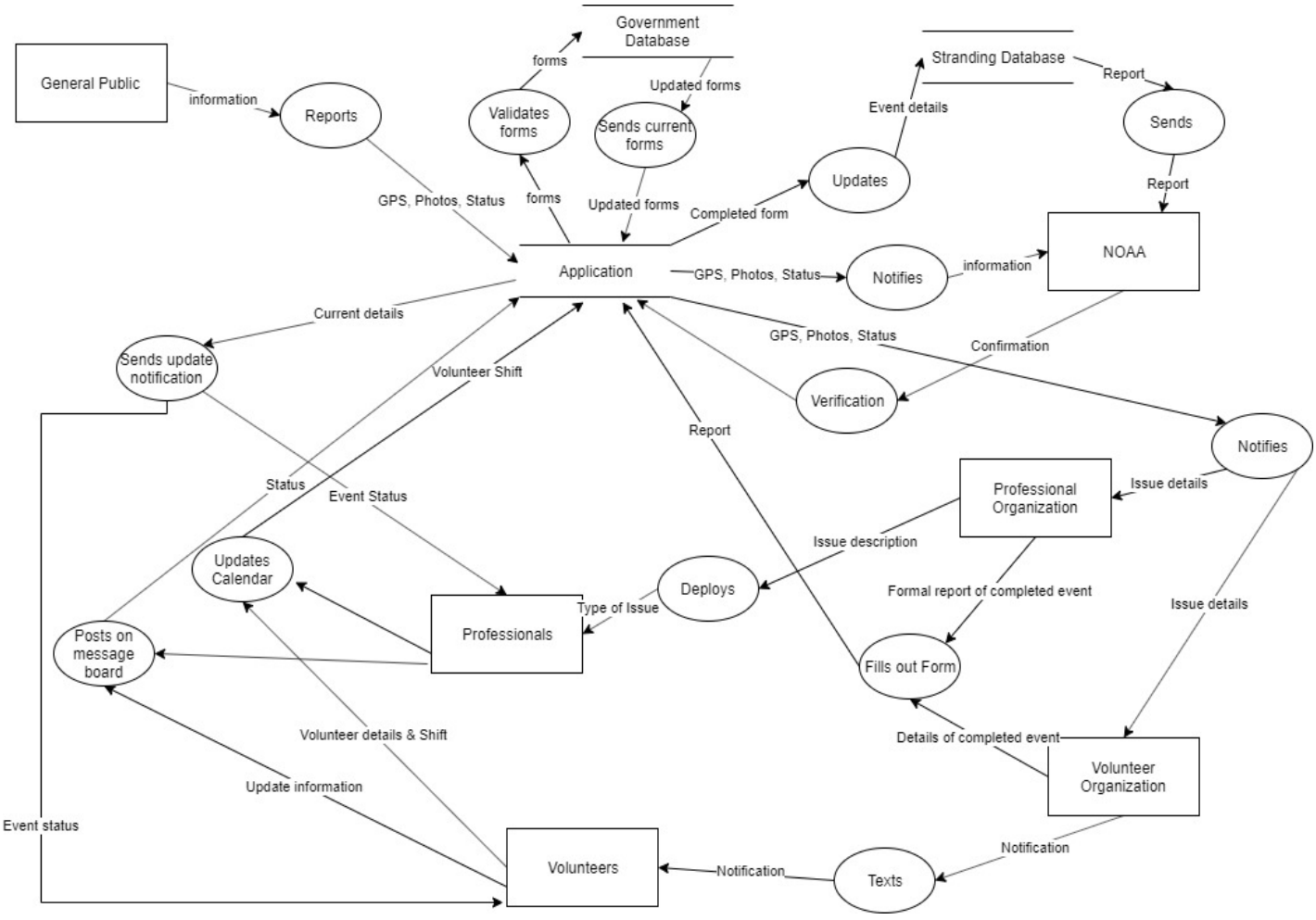
FUNCTIONAL REQUIREMENTS

- The system shall provide screens for responders/NOAA employees to create accounts
- The system shall validate email addresses for NOAA employees.
- The system shall store all filled out government forms from an instance of a stranded animal in the NOAA stranding database
- The system shall provide screens for organization groups to browse through all stranding-related government forms to select the correct one
- The system shall provide screens for NOAA employees to create an event per stranding incident for volunteer/professional organizations
- The system shall provide screens for NOAA employees to create a volunteer alert/notification for a verified stranding incident
- The system will track which time slots each volunteer has signed up for
- Data collected at the end of an event will be stored in the database
- The system shall retain all instances of stranded animal reportings
- The system shall attempt to resend any reports (public reported and volunteer reported forms) if initially completed offline
- The system will provide screens for volunteers to update event details
- The system shall communicate with the government database that stores the government forms to retrieve copies periodically
- The system shall compare dates of last being updates from the government forms to currently stored forms within the system
- The system shall ping users cell phones GPS to automatically attach a pin to a map within the event details page
- The system will verify the reported GPS location is valid
- The system will contact login servers when a user completes the "creating account" function within the system to upload this new account information
- The system will contact login server to verify correct account information for users signing in
- The system will have its own login servers that act as a database for users and types of users
- The system will communicate with user device notification permissions to allow a push notification
- The system will communicate to an external server to send text messages out to users

NON-FUNCTIONAL REQUIREMENTS

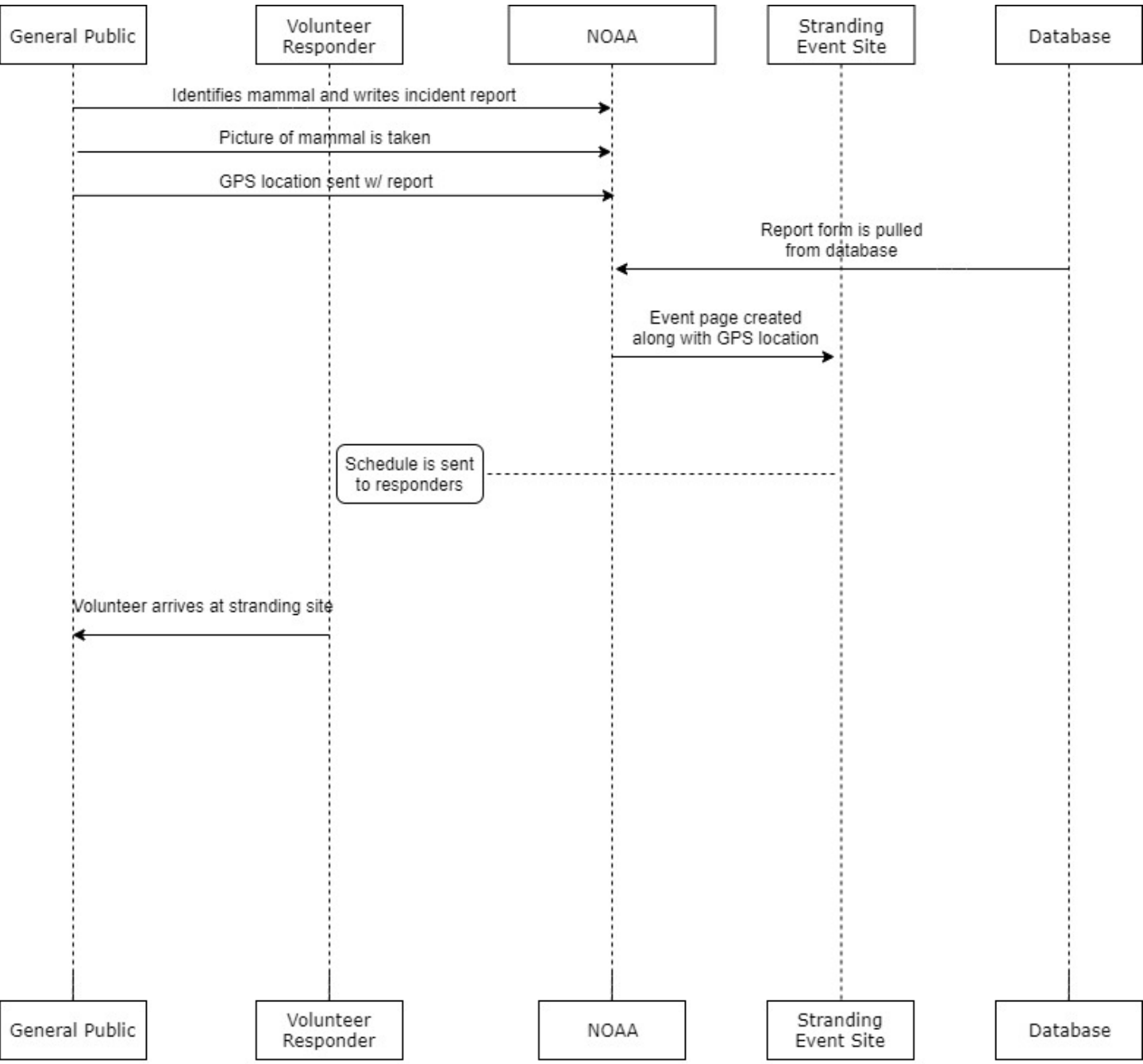
- The system shall differentiate between responders/NOAA employees based on the email address used to create an account
- The system will update volunteer slots at least every 10 seconds in an active event
- The system will close out an event when it receives a command from the volunteer/professional organization working the event
- The system will send new information to stranding event site within 5 minutes of the volunteer's update
- The system shall attempt to resend reports completed offline at least every 10 minutes
- The system shall move completed events to the completed event category on the NOAA homepage within 3 minutes of the event being completed
- The system shall compare dates of last being updated from the government forms retrieved and the forms currently held within the system within 3 seconds of having received the government form
- The system shall replace an older form with a newer form once having detected a newer form within 3 minutes of having detected a newer form
- The system shall validate a reported GPS location within 30 seconds of having collected it
- The system shall contact login servers when a user goes to create an account to and uploads that new user info within 3 minutes of the account being created
- The system shall return an error if the login servers can not be connected to within 30 seconds of not being able to connect
- The system shall request access to users notification permissions within 30 seconds of having created an account
- The system will contact login servers to verify user login credentials within 30 seconds of the user entering the credentials

DATAFLOW DIAGRAM

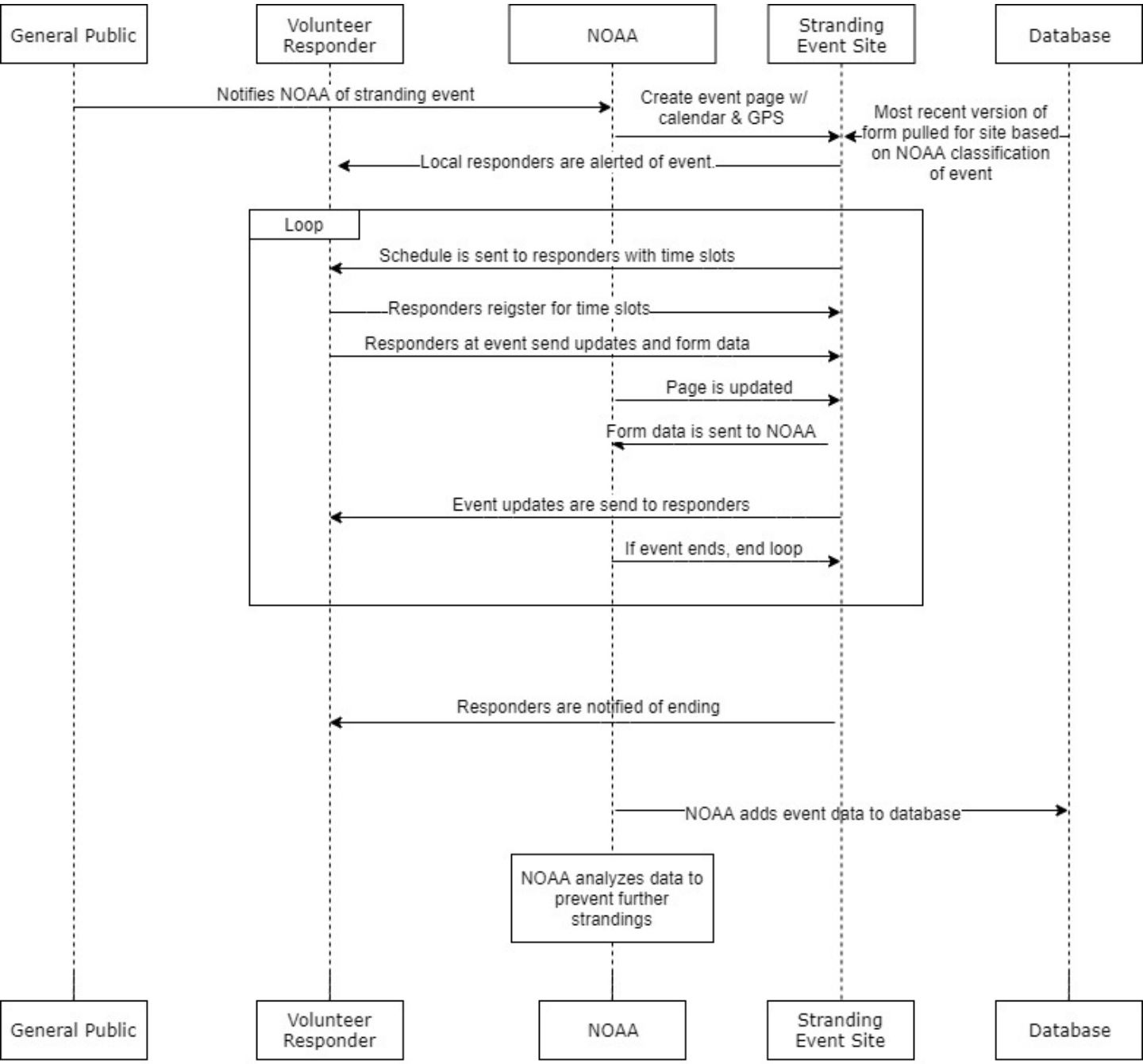


MESSAGE SEQUENCE CHARTS

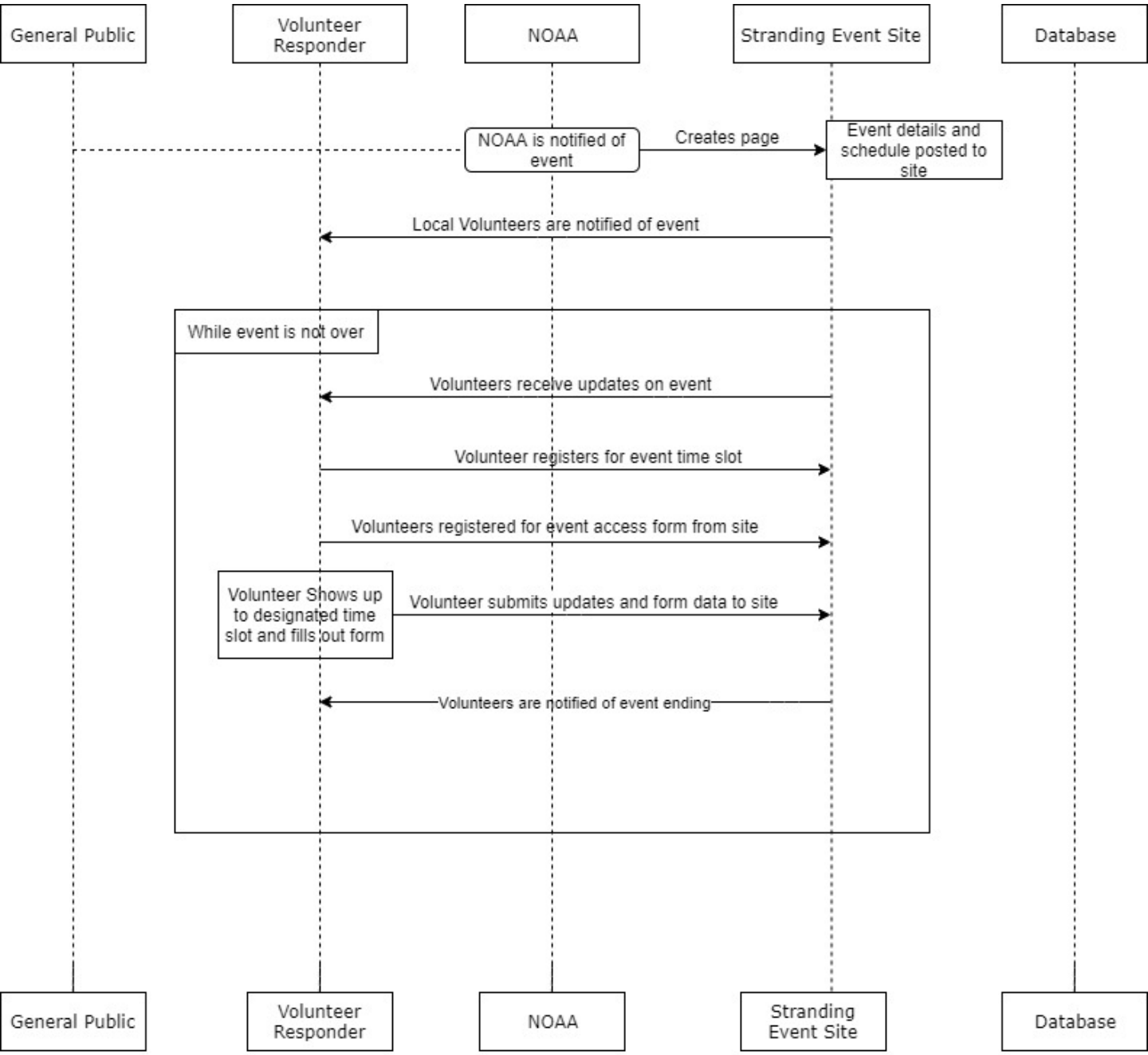
USE CASE 1



USE CASE 2


General Public
Volunteer Responder
NOAA
Stranding Event Site
Database
Notifies NOAA of stranding event
Create event page w/ calendar & GPS
Most recent version of form pulled for site based on NOAA classification of event
Local responders are alerted of event.
Loop
Schedule is sent to responders with time slots
Responders reigster for time slots
Responders at event send updates and form data
Page is updated
Form data is sent to NOAA
Event updates are send to responders
If event ends, end loop
Responders are notified of ending
NOAA adds event data to database
NOAA analyzes data to prevent further strandings
General Public
Volunteer Responder
NOAA
Stranding Event Site
Database

USE CASE 3


General Public
Volunteer Responder
NOAA
Stranding Event Site
Database
NOAA is notified of event
Creates page
Event details and schedule posted to site
Local Volunteers are notified of event
While event is not over
Volunteers receive updates on event
Volunteer registers for event time slot
Volunteers registered for event access form from site
Volunteer Shows up to designated time slot and fills out form
Volunteer submits updates and form data to site
Volunteers are notified of event ending
General Public
Volunteer Responder
NOAA
Stranding Event Site
Database

Definition/Specification Changes

- Volunteers can no longer end events by pressing a button and this power is only given to group leaders -- this way events can be properly evaluated by an authority before ending.

- Added more details on how each user interacts with the system - e.g., public users can only submit incident reports, responders/NOAA employees must log in add/manipulate information for events. This allows us to have a more visible separation between each user's role in the system.

- Volunteers can now be notified by text or push notification (chosen in settings) -- this way the notification system functions like a typical phone app would.

- The system now validates NOAA employee email addresses as a verification/security method -- this prevents misuse of NOAA employee specific functionality on the app (such as approving reports).

- Organizations can now select a form to use and it is no longer the sole responsibility for NOAA employees to select a form based on the event -- this allows group/organization leaders to change forms if circumstances change and after discussing this with the customer it was clear that in a real scenario of stranding, the forms are often chosen or change during the event and therefore a person not at the event (such as a NOAA employee) should not have sole authority over these forms and which is appropriate. The NOAA employees often do validate that the form used was appropriate.

- A page specifically for NOAA employees to review reports to approve, edit or otherwise view them was added to attempt to centralize the stranding process to our singular app and not require many outside resources. This way NOAA employees, organizations and the general public can use a single app to resolve all strandings along coast lines.

- Group/organization leaders can now search for a form -- this allows adding of additional forms to an event as needed or searching for a form that is not within the app by default. This also requires that the app be able to dynamically connect to the government database and fetch a form that may not have been retrieved by the system itself yet -- though the system was decided to be capable of automatically retrieving forms periodically.

- Age was removed from the sign up page prototype as it was deemed redundant by customer Justin Tromp -- the "date of birth" field will remain.

- The system now shows a map of all reports and a color coordinated event icon to it's event status to NOAA employees on the NOAA homepage -- before a location was attached to each event but no easy way to see duplicate or nearby events.

- The system has been designed as an app instead of a website and for the time being has no plans for being both. The original design could have gone either direction but after a team discussion regarding page designs and functionality it was decided an app would be the most usable and efficient for the purpose.

- As a result of a group meeting discussion the functionality of the app it was decided there would be a dynamic menu that changes based on the user that is logged in. For example, NOAA employees will have a menu that links to a list of reports and a map -- where an organization user logged in would have access to a menu that shows current events, settings and more. These changes are shown in the paper prototypes.

- General public users now only have access to filing a report (shown on the app's opening page) and the "sign up/login" function of the app is dedicated to only NOAA employees and organizations. Before it was unsure which groups would have which functionalities in the app. This will prevent misuse of the app's features and ensure authenticity in reports filed to a certain degree (though NOAA will still have to review reports for legitimacy before approving them for organizations to see and act upon).

- The customer recommended that the login page be only accessible by organizations and it was determined that email verification will be sufficient for NOAA employees but verification of organizational employees will require further discussion. For the time being an organization will receive a verification code (via email) to activate their account within the system though this is subject to further discussion.

- NOAA directs the leaders of the volunteer response team to the correct forms instead of the individual responders. This change is more logical than NOAA interacting directly with the individual responders It is more likely that the volunteers will interact with their team leader rather than NOAA.

- NOAA sends an alert to volunteer response teams rather than individual responder. This allows for the team leaders to send alerts to the volunteers within their team. The customer indicated that the responders get their directives from their team leaders, not NOAA directly.

- The response team now notifies NOAA of the event ending instead of NOAA notifying the responders. The customer explained that NOAA hands off the event to response teams who in turn address the event and return data to NOAA.

SUMMARY

CUSTOMER MEETING SUMMARY

Our customer, Justin Tromp, was sick this week and unable to meet in a video chat but was very thorough in a messaging response to changes he felt were necessary to align our project with his vision. He offered vast amounts of feedback to every aspect of the project from the use cases to the diagrams.

TEAM MEMBER CONTRIBUTIONS

- All – Had a group meeting without the customer in a video chat in Google Hangouts on 10/23/19 to discuss paper prototypes and specific system functionality. Discussed the weeks plan of action.
- Brittany Abad – Updated UML Class Diagram, Helped Update Requirements Definition/Specification
- Lauren Boone – Event Page Paper Prototypes, Updated Use Case 2
- Christopher Feth – Helped Update Requirements Definition/Specification, NOAA Paper Prototype Pages, Assembled and Reviewed HW2 Final Document
- Manda Phadke – Volunteer/Professional Organization Dashboard Paper Prototypes
- Kunal Patadia – Incident Report and Login Page Paper Prototypes