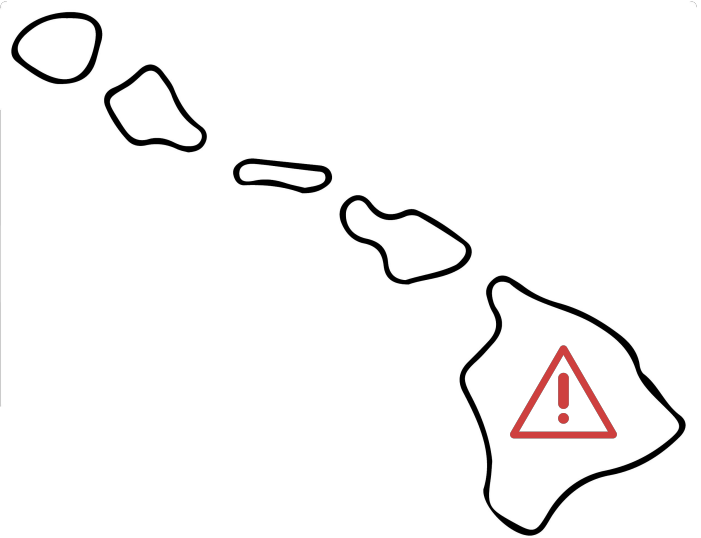


Hawaii’s Nuclear Warning Scare

Charles Andrews

Wireless Emergency Alert History

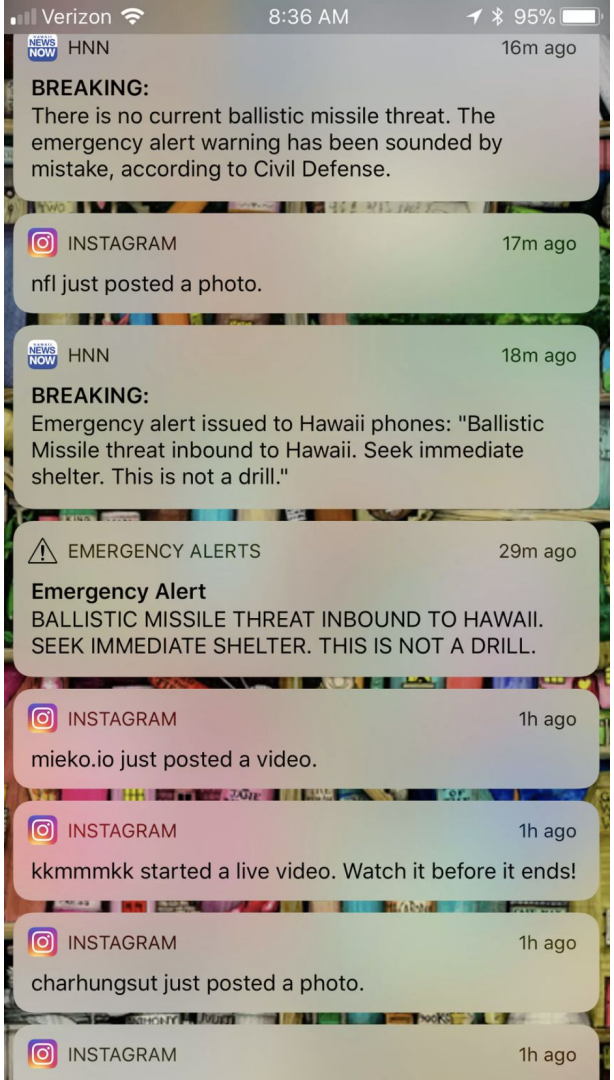
- Introduced in 2012 to modernize TV alerts and provide information conveniently via mobile devices
- Hundreds of federal, state, local, tribal and territorial organizations have the ability to send WEAs (Wireless Emergency Alerts)
- More than 30,000 alerts have been sent since its introduction, WEAs carried by all mobile carriers
- Criticized for its ability to cause rapid widespread panic and the lack of guidance it provides citizens

Uncovering the Factors that Led to the Accident

ANALYSIS

Background

- On January 13 in 2018, Hawaii citizens were mistakenly sent a WEA informing them of a false alarm “ballistic missile threat”
- HEMA (Hawaii Emergency Management Agency) was unable to call off the alert for 38 minutes
- Considered the most impactful mistake since the introduction of WEAs- black swan occurrence
- FCC cites a lack of “reasonable safeguards or process controls” as the cause of the catastrophe



State vs Employee 1: Where Was the Error?

Employee 1

Didn’t hear the part of the informing phone call where it was stated that the ballistic missile WEA was a drill

- “Drills were not done routinely in the office.”
- “There was an error in the phone call transmission.”
- “Drill occurred near a shift change.”

State (Hawaii)

Believes informing phone call stated it was a drill multiple times

- Fired Employee 1 after he received death threats from anonymous callers to HEMA
- “We simply need to address the problems in order to fix them -- not just in Hawaii, but anywhere... they may exist.”

Distinction Between Demo and Live WEA

Demo WEA

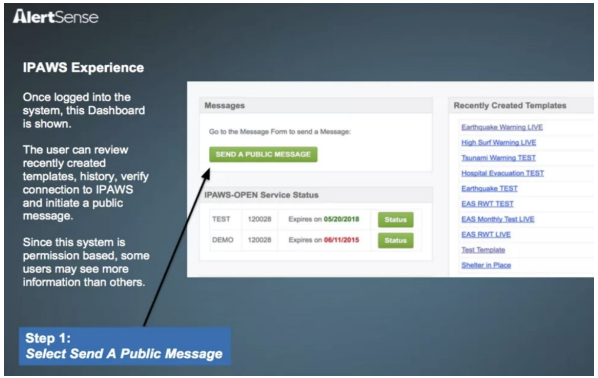
- Used for testing purposes to ensure operators and system are prepared when needed
- Usually associated with a specific disaster or event
- Signified to public by writing “TEST” in the WEA message

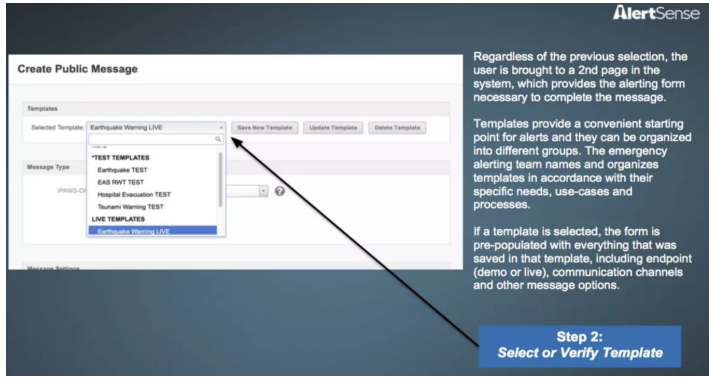
Live WEA

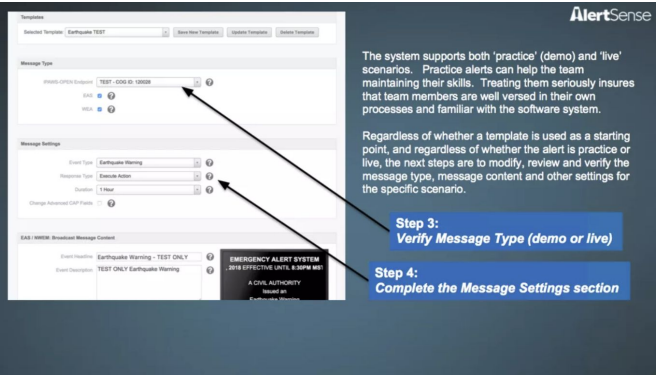
- Informs the public of an actual impending disaster or event
- Mentions the disaster and what should be done for the public’s safety

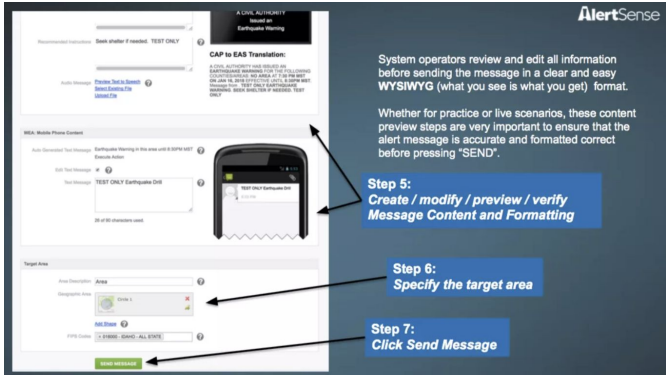
How to Send an Alert with AlertSense

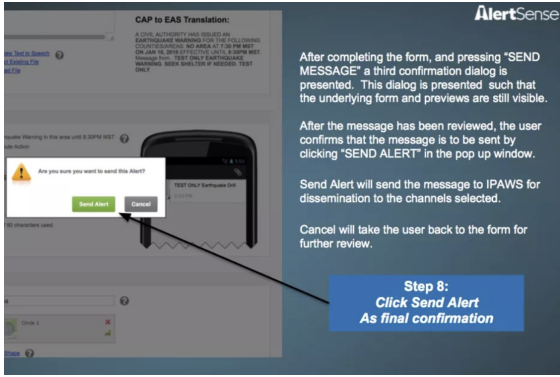
AlertSense is similar to the WEA software Hawaii used in 2018



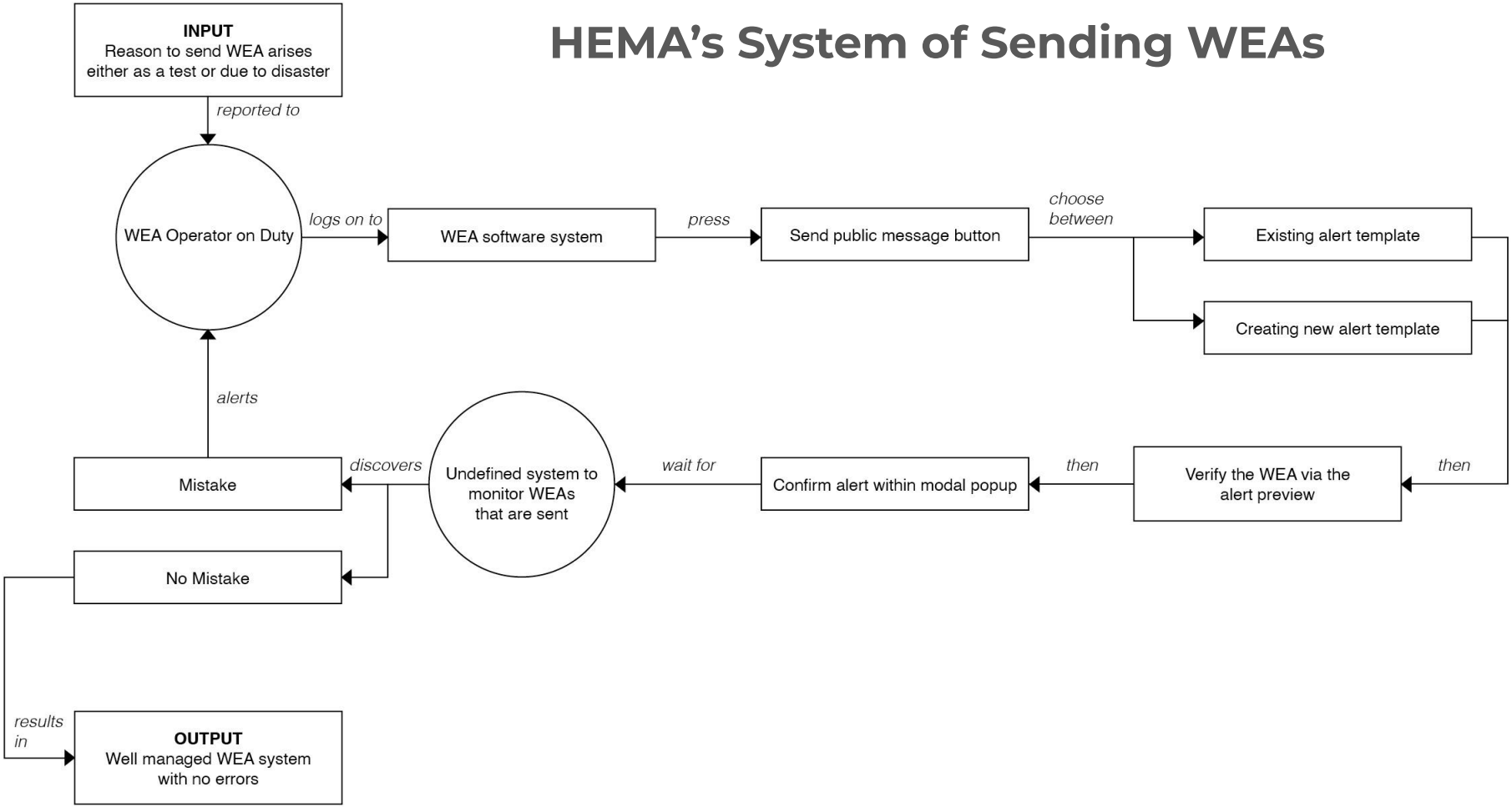








HEMA's System of Sending WEAs



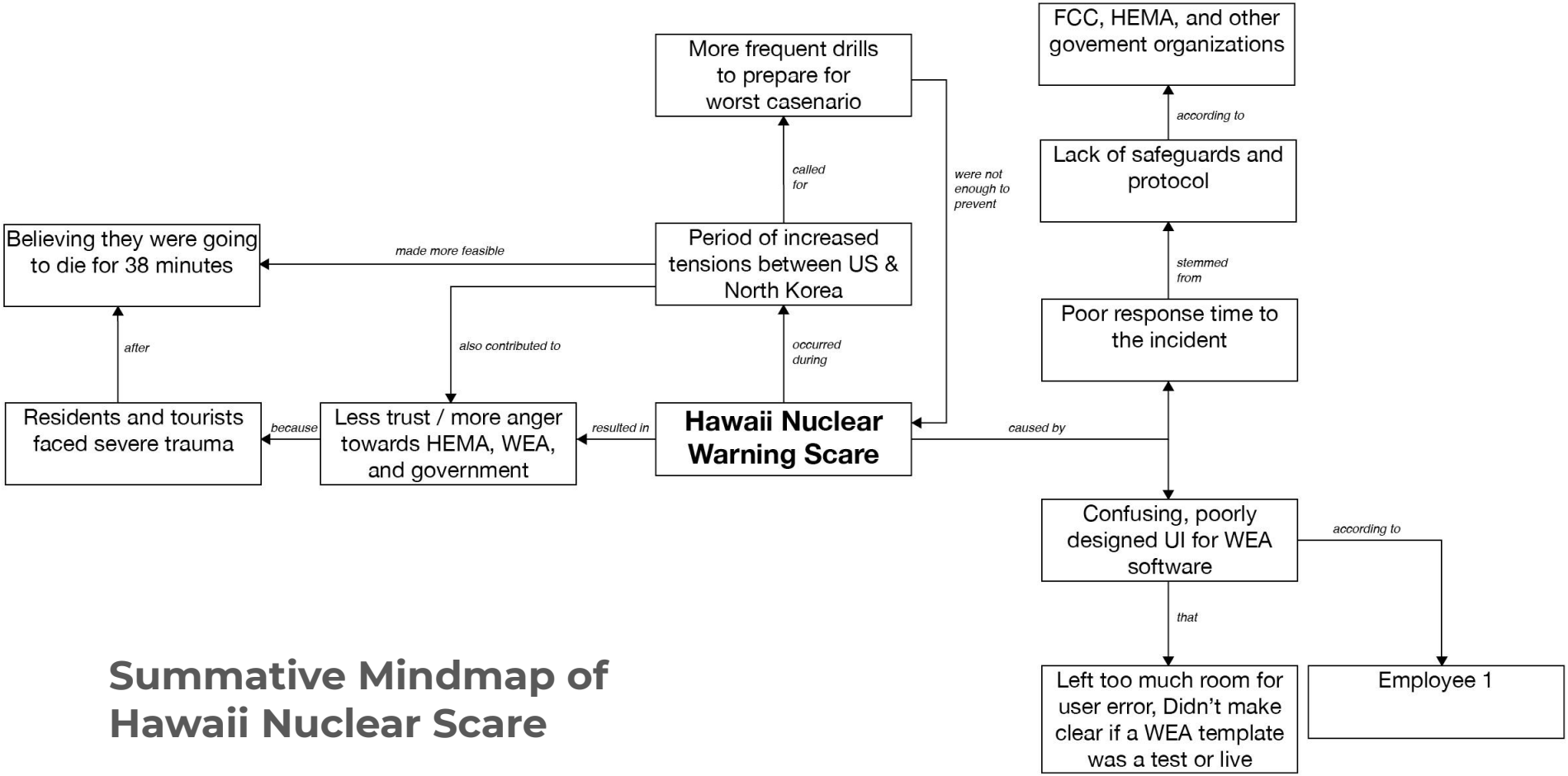
The Sources of the Problem

Poor UI Design

- Operator had to choose demo alert from a drop down menu with poorly named selection options
- The difference between a demo vs live WEA was not made clear by the software

Lack of Safeguards

- Following the event, it took too long to catch the mistake and correct it
- HEMA tweeted that the WEA was a demo 13 minutes after, but could not send out an official false alarm WEA in a timely manner



Summative Mindmap of Hawaii Nuclear Scare

How can we improve the processes surrounding wireless emergency alerts to reduce the chance of error and keep the public well informed?

Accident Proofing
WEA Software UI

SYNTHESIS

Major Issues with WEA Software UI

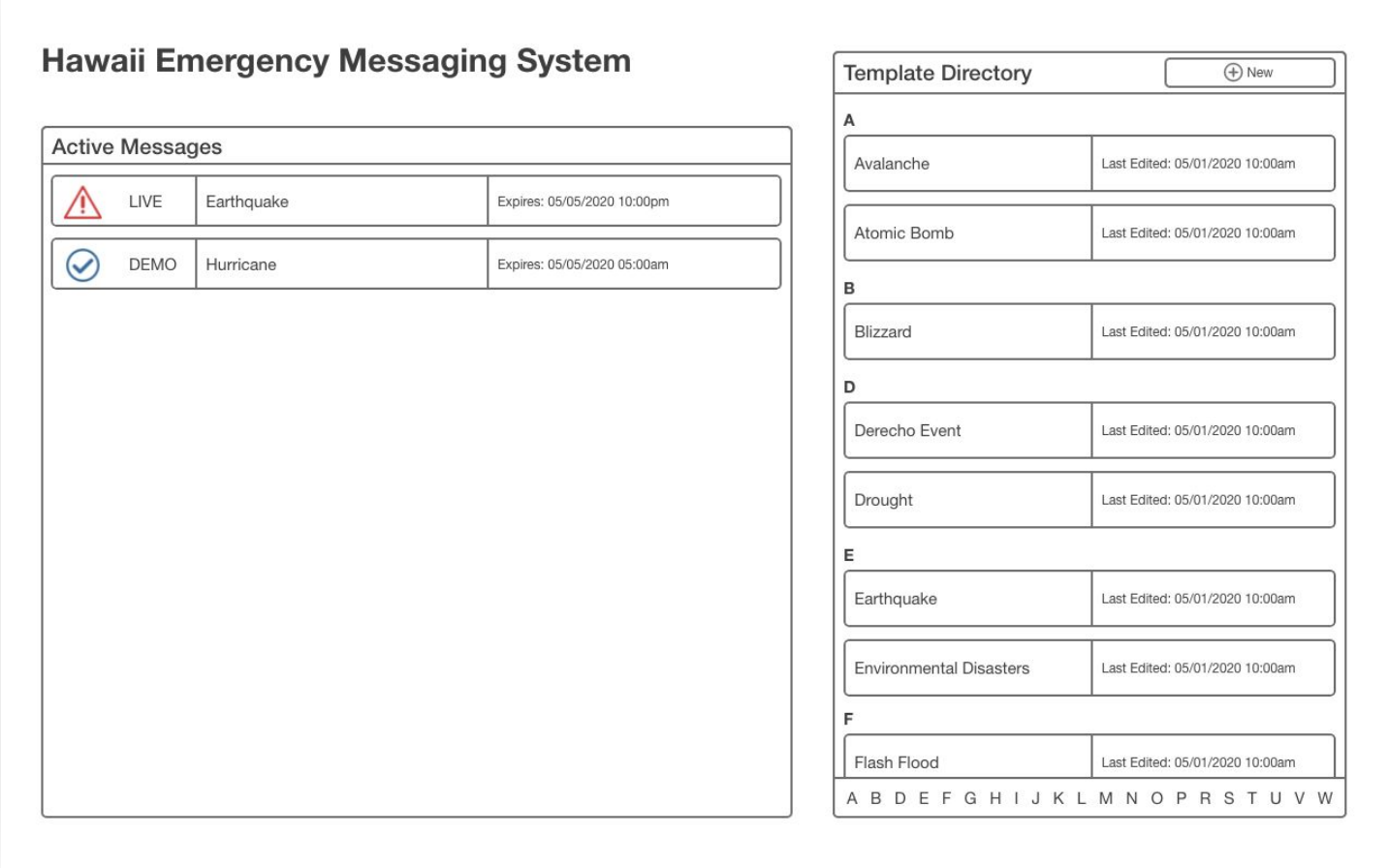
Issue	Evidence	Solution
Template names are responsible for communicating message type	Poor naming choices by operators that don't highlight demo vs live type	Create a single template for each event, then choose live or demo when sending
Previews for live alerts do not appear different from demo alerts	Demos previews often appear similar to live previews at quick glance, only distinguished by mention of "test"	Require preview to better emphasize message type so operator understands what they're sending
Confirmation modal does not display any preview	Operator confirmed their sending of the live WEA while believing it was a demo	Display important details about the WEA in confirmation modal, emphasize if live

Icon Distinctions for WEA Types

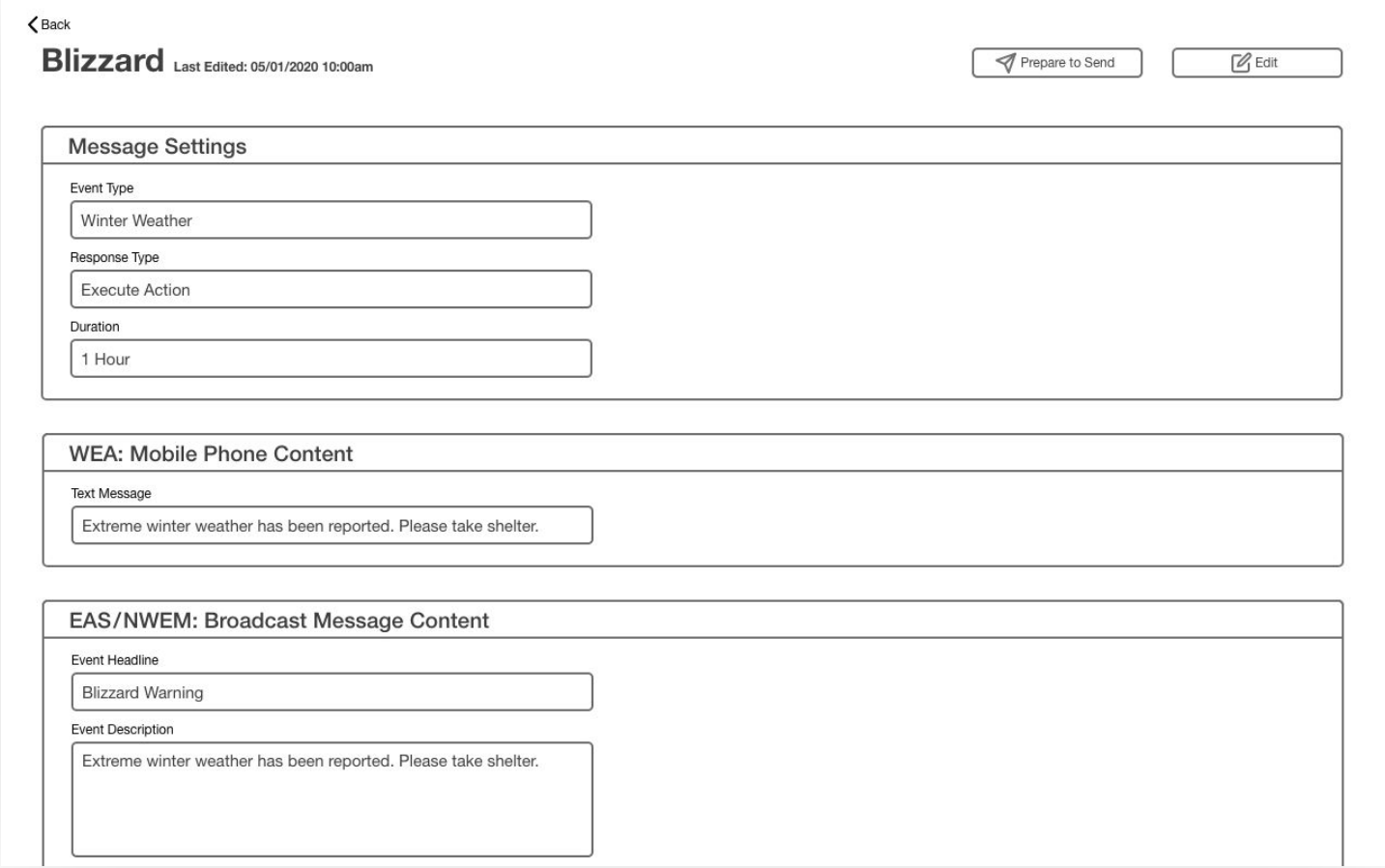
Visually represent message types to help prevent error through quick recognition

Live WEA

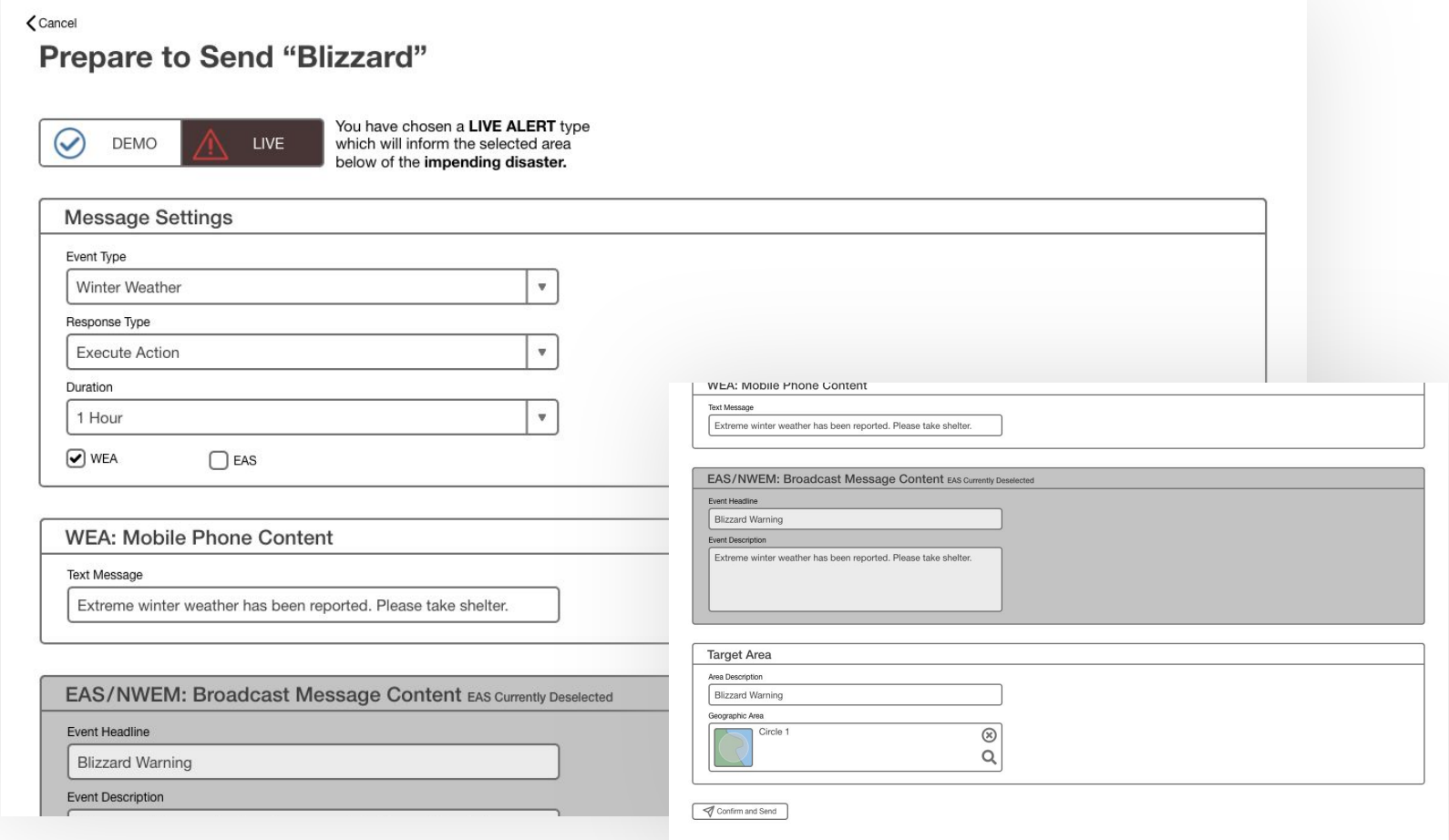
Demo WEA



Homepage: Select desired WEA template from alphabetized and scrollable Template Directory, Active messages are easily viewed using their respective icons indicating their message type



Template Page: View message templates without making stray edits or clicking send by mistake, Click “Prepare to Send” button to begin WEA sending process



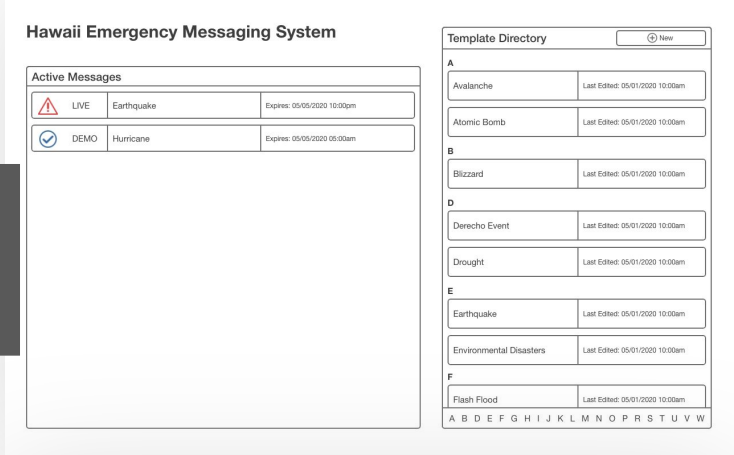
Prepare to Send: Manually select message type to prevent error through forcing decision making, Press “Confirm and Send” button when ready to send WEA after editing is complete

Confirmation Modal: Shows clear preview of message that will be sent, LIVE Icon **+** button ordering / coloring **+** warning statement clearly communicate the WEA type

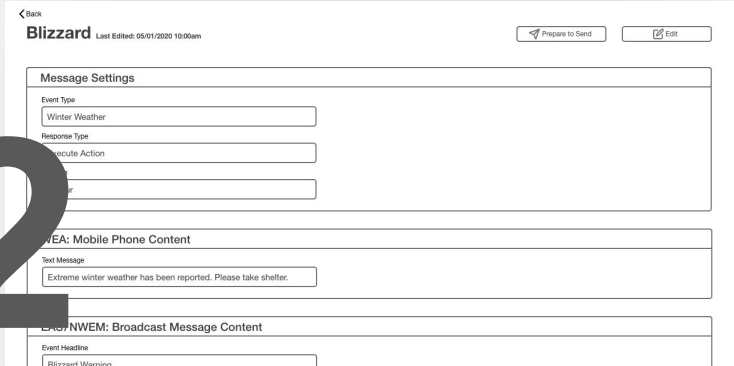
Improved WEA Software UI

Click to View Prototype in Adobe XD

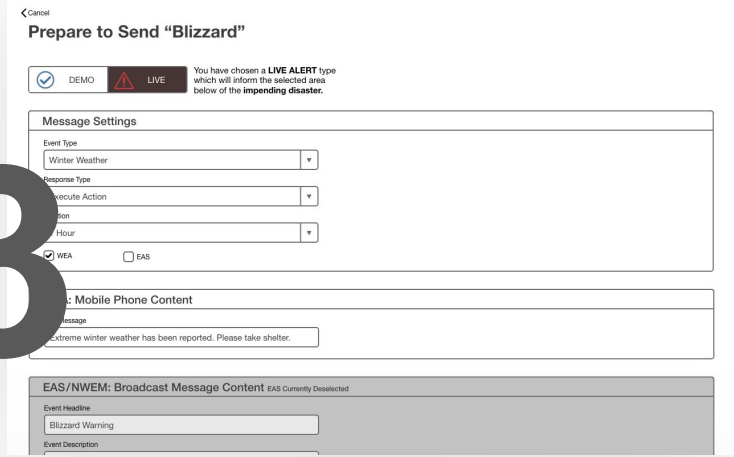
1



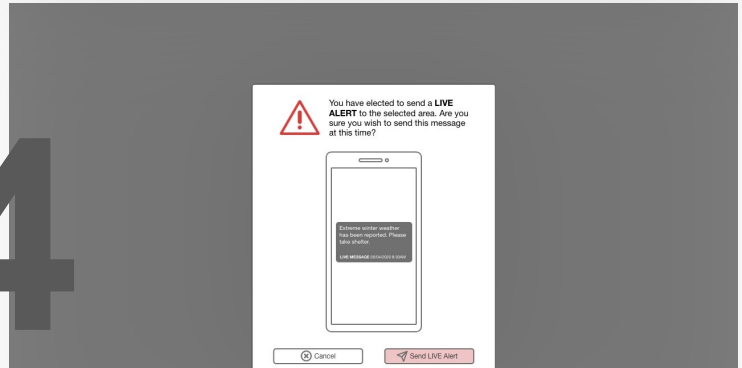
2



3



4



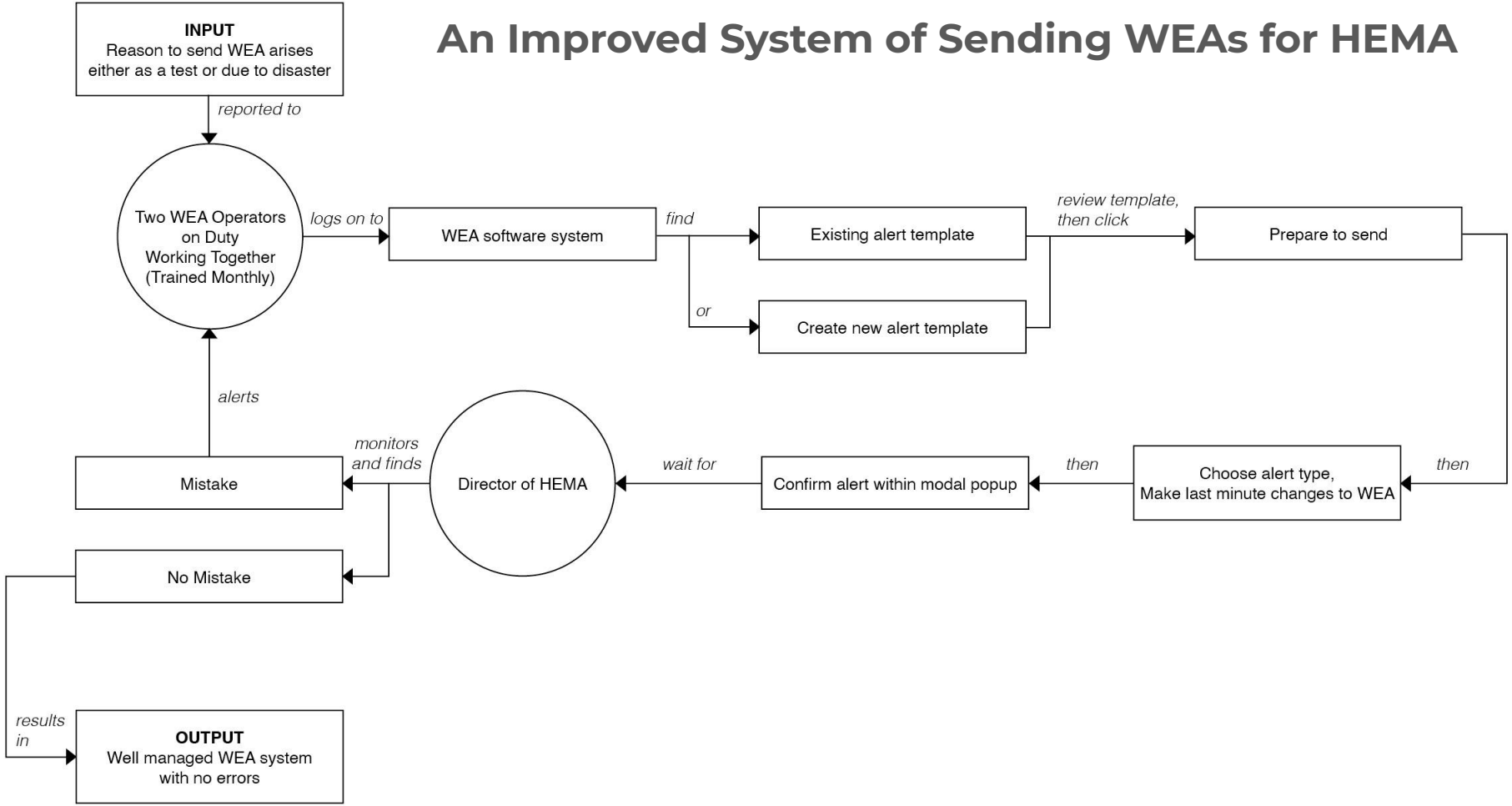
Improving Safeguards for Accident Prevention and Detection

SYNTHESIS

Major Issues with System Safeguards

Issue	Evidence	Solution
Lack of monitoring of WEAs after it's sent	Operator responsible realized his error later when he checked his phone	Require two people to send the alert together to reduce chance of error
Need clearer process in place in the event of a false WEA	Took 38 minutes for HEMA to send out an alert about their mistake	Create more formalized response process in the event of a mistake
Lack of proper training	HEMA did not have regular WEA testing or training	Require more frequent WEA drills to give operators experience with the task

An Improved System of Sending WEAs for HEMA

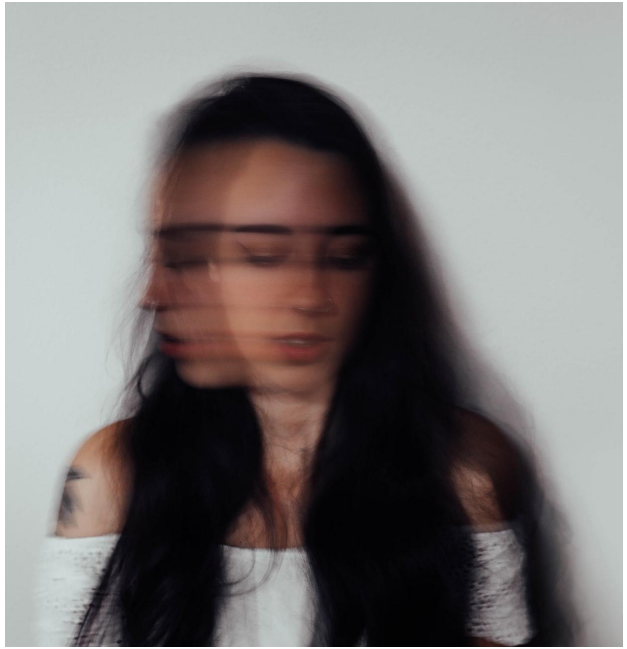


A More Empathetic WEA

SYNTHESIS

Major Issues within WEA Messaging

- Most of my solutions seek to improve the current system of sending WEAs to prevent human error
- Wireless Emergency Alerts lack empathy necessary to encourage rational, productive behavior
- Messaging must create a more productive sense of urgent preparedness rather than causing panic and stress

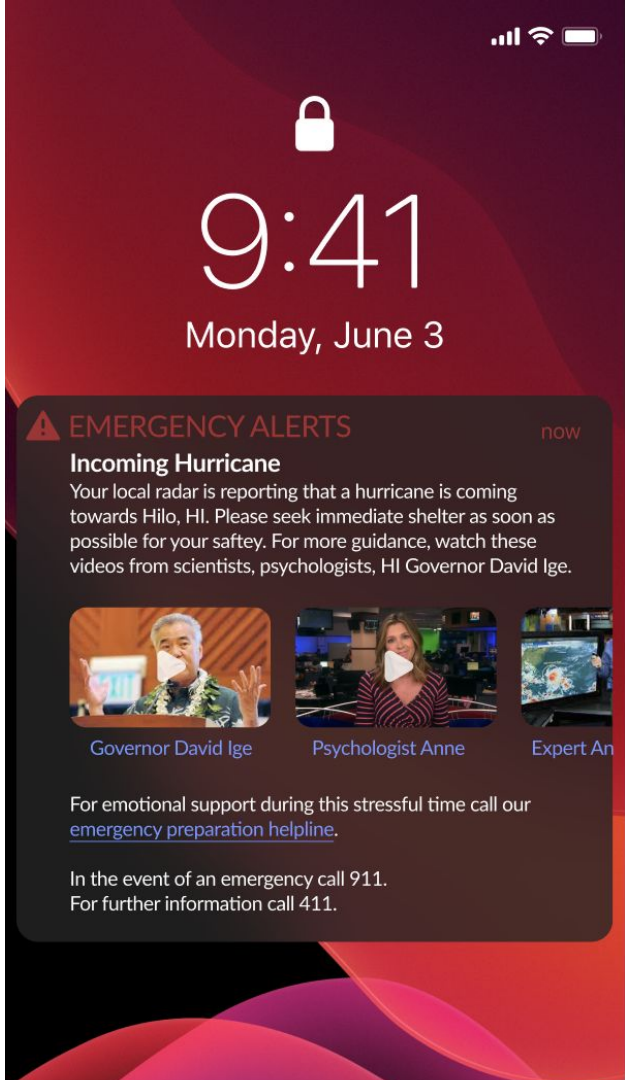


More Empathetic WEAs

- Instead of declaring disaster and offering minimal support to the public, this redesigned WEA offers informational and emotional resources to prevent panic

- Videos with guidance from the Governor, psychologists, and scientists offer support and information about the event from trusted sources

- Emergency preparation helpline allows recipients to speak to a representative that can help them respond to the event safely



Sources

https://www.extremetech.com/extreme/262166-hawaiis-missile-scare-driven-terrible-ui-fcc-launches-investigation

https://www.theverge.com/2018/1/16/16896368/hawaii-false-missile-alert-system-confusing-interface-poor-design

https://www.theverge.com/2018/1/18/16905512/hawaii-missile-software-false-alarm-emergency-alert

https://www.pcmag.com/opinions/blame-bad-ui-design-for-hawaiis-false-missile-alert

https://www.cnn.com/videos/us/2018/02/03/hawaii-ballistic-missile-threat-false-alarm-sender-speaks-orig-cws.cnn

https://www.nytimes.com/2018/01/13/business/hawaii-missile-emergency-alert.html

A Model of Innovation Accident Reference

a model of **accident & innovation**

Hawaii Nuclear Warning Scare

community

- Hawaii Emergency Managment Agency (HEMA) needs improved processes and software that allows them to organize WEA templates that are tests or live
- Hawaii citizens are anxious from the false alarm WEA and question the government's capacity to keep them safe

pressure (external)

Hawaii citizens demand answers as to why HEMA employees sent out a false alarm WEA on Jan 13

decay (internal)

FCC launches investigation into the events of Jan 13 in order to discover the errors in HEMA's processes

convention

- Lack of system safeguards
  - Following the event it took 38 minutes for the false alarm WEA to be called off
  - Unclear process in place in the event of a false alarm WEA
  - Lack of drills
- Issue prone WEA software UI
  - WEA templates are not clearly marked as test or live
  - Previews are not clear about template type or displayed in confirmation modal

change (disturbance)

FCC cites a lack of "reasonable safeguards and process controls" as the cause of the catastrophe

context (environment)

- Period of increased tensions between US and North Korea
- HEMA and Employee 1 disagree on why Jan 13 happened

misfit (pain)

Hawaii citizens, as well as US citizens, fear that WEAs are not managed well enough to reliably inform the people

accident

decode

reconnaissance

recognition (definition)

HEMA's current processes and software UI does not allow employees to accurately inform the public with WEAs in the event of catastrophe

(a bit of luck)

preparation (immersion)

innovation

- Accident proofing WEA software UI
- Improving safeguards in place for accident prevention and detection

insight (seeing opportunity)

The ability to improve HEMA's processes and WEA software UI to better inform the people

research

individual (you)

Researching the process failures and UI design issues that led to Jan 13

design

articulation (prototyping)

- Prototype an improved version of WEA software that better distinguishes between test vs live WEA templates
- Instituting safeguards tin HEMA's processes to better protect against error

invention

demonstration (testing)

- User testing WEA software improvements to determine their success
- Consultation with peers about process improvements

community 2

- Hawaii Emergency Managment Agency (HEMA) better infroms the public through process improvements and more visible WEA software UI
- Hawaii citizens feel more secure in their government's ability to protect them

decide

renaissance

convention 2

- Well guarded WEA system
  - No further false alarms
  - More efficent response times in the event of a mistake due to training and safeguards
  - Unclear process in place in the event of a false alarm WEA
- Software UI more clearly shows difference
  - Templates clearly distinguish between test and live alerts
  - Previews allow operator to better understand what they are sending out to the public to prevent mistakes

adoption (counter-change)

HEMA institutes process improvements and improvement to WEA software

beliefs

- HEMA and government are disorganized and using poorly design software
- Hawaii citizens believe they are going to die until the WEA was called off 38 minutes later

actions

- Employee 1 sends out false alarm WEA\
- HEMA does not detect and respond to mistake for 38 minutes, resulting in widespread panic in Hawaii

artifacts

- WEA software (similar to AlertSense)
- WEA alert sent to Hawaii citizens

intervention

context 2

- American public is better informed in the event of a nuclear ballistic missile
- HEMA is more well organized

fit (gain)

Nationwide WEAs are more well managed through new process safeguards and the improved visibility of software UI

value

- WEA software UI has better visibility
- Reduction in chance of mistake and response time in the event of a mistake