

Zoë Shay-Tannas

INFO

A senior at The Ohio State University studying industrial design and a Stamps Eminence Fellow.

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PullITagTM

Save a limb, save a life

About me

Zoë Shay-Tannas is a senior in industrial design at The Ohio State University. She is a former division one fencer for the OSU fencing team. Additionally, she is a Stamps Eminence Scholar on a full academic scholarship.

Zoë learned about the intersection between design, manufacturing, and business operations when she interned for two summers at Rogue Fitness first as the Product Development intern and then as the Project Management intern.

While designing her senior thesis project— the PullTag, a mass casualty triage tag used by EMS personnel— she realized that her favorite part of the design process was design research and facilitating co-design research sessions.



PullTag

Save a limb, save a life

Design Challenge: In collaboration with Battelle, an innovative non-profit, design for mass casualty response and transport.

Constraints: Must design for mass casualty response and transport and keep in mind the modern age of mass casualties.

Deliverables: A viable product, a 2-3 minute product video, a process booklet, and a final product poster.

Time Frame: 4 months

Dates: August 2023 - December 2023

Client: Battelle



Initial Research

For the preliminary research, I looked up articles on categories mass casualty response including as focus, science and technology, arts, and business.

I developed five impossible conjectures to get my brain rolling. Business conjecture: E-Motion, a device that transmits signals to alter peoples' mental states during a mass casualty. This helps EMS better control a situation so that people are more rational in a disaster situation. Science and technology conjecture: Magnet Mover a giant horseshoe magnet that is flown in by a helicopter and easily grabs casualties lying on magnetic beds. This allows for mass transportation in a short time and eliminates the need for the responders on the ground to physically move the casualties to another location. Arts conjecture: The Root Chute, an underground network of tunnels that allow for easy casualty transport during a mass casualty. Focus conjecture: the Hover Shield, which protects first responders when their back is turned. Lastly, I developed another conjecture unrelated to the articles, the GPS Litter. This litter would track patients as they moved throughout the MCI scene.

Business



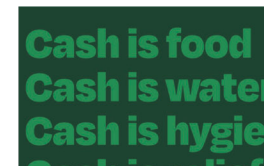
The U.S Military Hollywood Connection



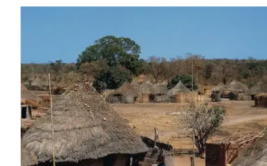
Here is Why Indigenous Economics is the Key to Saving Nature



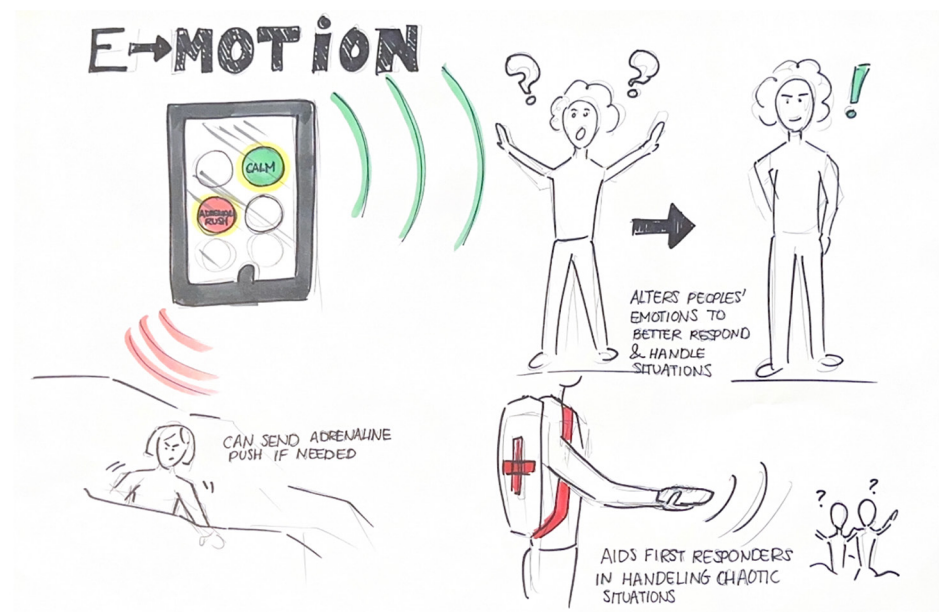
Homeowners in California and Florida are Running out of Options to Protect their Homes



Why "Cash is Best" for International Relief Donations



Do Africans Want Peace Corps Volunteers?



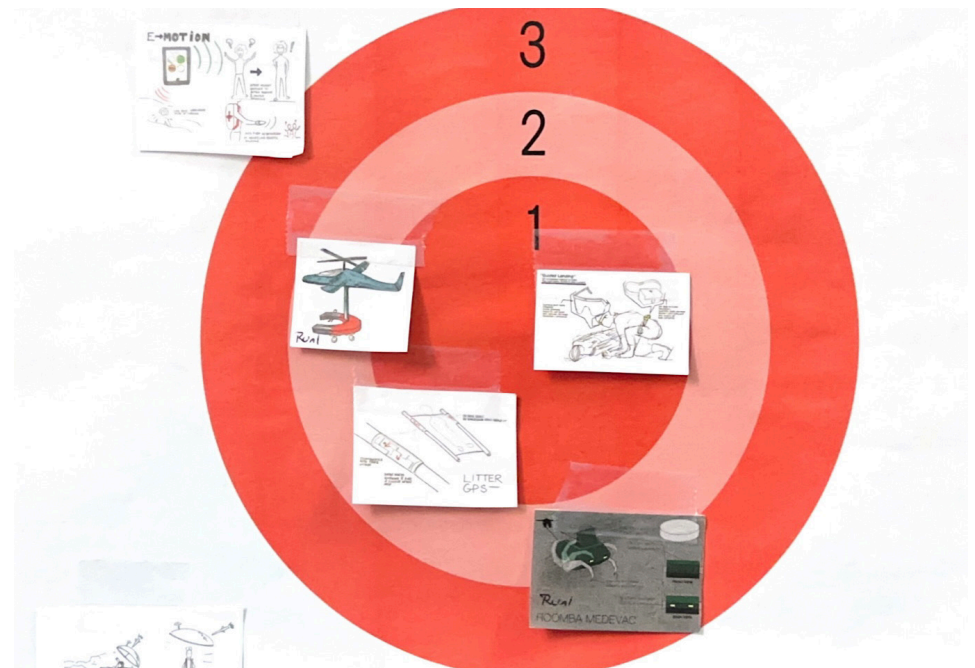
Co-Design Session #1

Columbus Fire Department

I reached out to the Columbus Fire Department to schedule a co-design session to know where to focus my energy. I was still a bit lost as to where I should start to brainstorm. I had the firefighters respond to a variety of design conjectures. They wrote placed small images of the conjectures within a bullseye to rank the ideas in order of preference. This activity helped me to focus my ideas.

Communication seemed to be a big topic of conversation in both sessions. While I gave ideas that covered transport, protection, and allocation of resources, communication surfaced as the main point of focus. This suggested that while physical movement of the casualty is important, communication is what makes everything possible. During the mass casualty response mock scenario, information dissemination was essential to the success of the transport and survival of the triaged casualties.

For example, some ideas such as the "Hover Shield" didn't get responses because they were so out of the ballpark regarding mass casualty response. Throughout our discussion, everyone kept on coming back as to why the "GPS litter" and "Guided Landing" were on target. The participants thought that keeping track of patients after they triaged them was stressful. As for the "Guided Landing," in both co-design groups, the idea of visual communication instead of just verbal communication would make a world of difference to those who are on scene and those who have not yet arrived.



Visit to Fire Station #1

I was invited to tour fire station #1 which houses the mock mass casualty vehicle. This was a great experience to better understand the inner workings of a fire station and to meet some more firefighters as well. The ambulance at the top left is the mass casualty vehicle that carries all of the MCI treatment equipment. The top middle image pictures the inside of the MCI van. The case shown in the top right, shows what is inside the cases. I am pictured here wearing a ballistic helmet and a bullet proof vest.



Mock Mass Casualty Shadowing

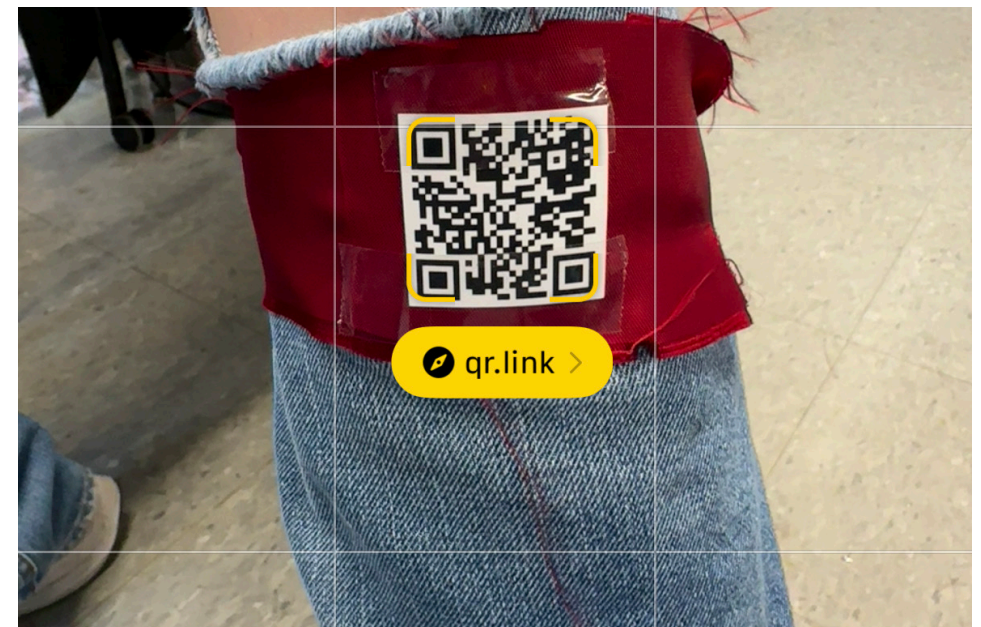
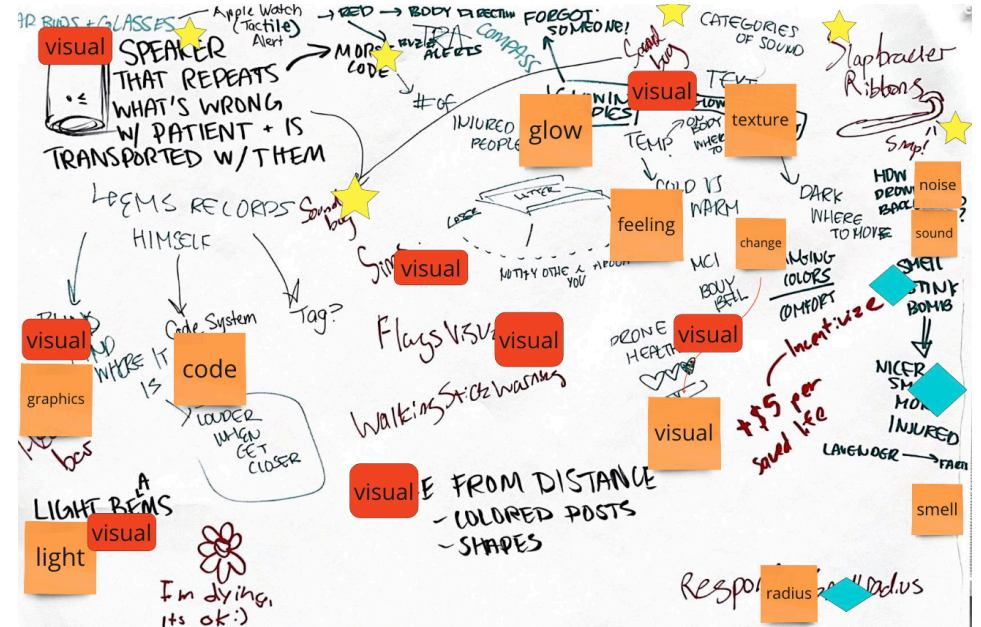
The Columbus Fire Department's medical director invited me to shadow a mock mass casualty training at the Columbus airport. The training included 88 casualty volunteers, EMS responders, firemen, and police officers. The training scenario involved a car that crashed into an airplane. The firemen started a controlled burn. Then, volunteers ran out to different areas of the tarmac. It was incredibly interesting to see EMS personnel responding to this scenario. I got to see real response in real time and saw things I read on paper happen in real life. This confirmed some of my findings, for example that communication was one of the vital parts to a successful outcome of a mass casualty response.



First Iteration

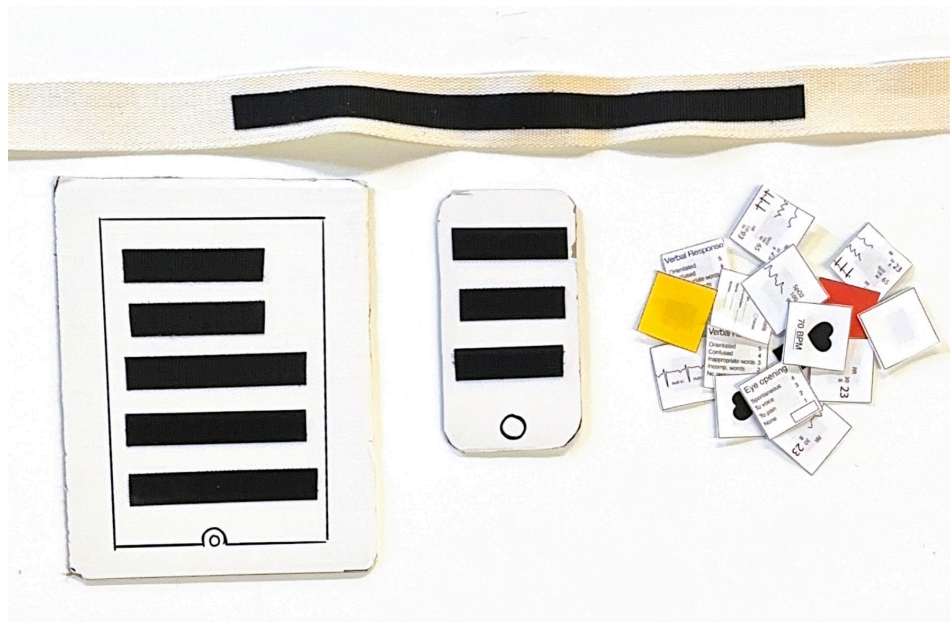
After all the initial research and primary research, it was time to start brainstorming. Back at school, along with several peers, we brainstormed under the umbrella of communication. After the first co-design session and shadowing the mock mass casualty training scenario, communication seemed to be the overarching theme that I needed to focus on. Therefore, I asked three separate questions to answer during a brainstorm: fast ways to convey information, ways to communicate in an emergency, and fast ways to communicate in an emergency. I noticed that from the brainstorming, a lot of the ideas had to do with the senses. Distilling this information demonstrated that the senses are what gets one's attention during an emergency.

Then, I asked myself what part of the triaging process needs the most attention? After viewing the mock MCI, I knew that things such as sound weren't going to work. The mock MCI was so loud that I could barely hear the person speaking next to me. However, visuals were important. The triage tags and ribbons were very visual amidst a sea of chaos. Those cards helped the EMS personnel quickly understand the patient's condition just by using color. Where could the triage cards be improved?



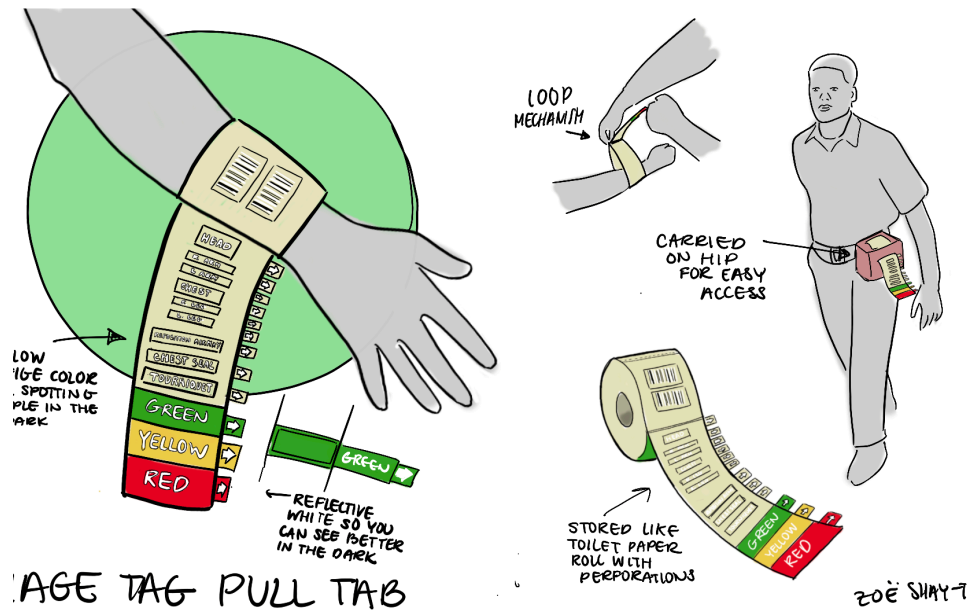
Co-Design Session #2

I scheduled another co-design session with the Columbus Fire Department. Focused on the triage tag, I wanted the firemen to create their ideal triage tag. My initial design conjectures for a triage tag involved designing a wearable or using a QR code on a triage tag to access patient information. I was also interested in learning what kind of patient information was most necessary for triage. Therefore, I gave them an empty triage tag with cards that had graphics such as heart rate or patient tracking. I then asked them to attach what they deemed the most vital information. They also emphasized that they wanted to eliminate all writing on the field.



Prototyping

The second round of iterations was focused on ways to eliminate writing. Therefore, I thought of methods such as a pull tab or sticker mechanism that reveals what is underneath. I decided upon this method of communication because it would be much easier to communicate the condition of a patient in an emergency. I started to prototype the pull tab design. After some consideration, I decided to make each triage tag one of the four priority colors: red, yellow, green, and black.



Prototype Testing

The firemen tested one of my prototypes during one of their training sessions. They used it during one of their training sessions. Below are pictures of fake wounds on different parts of the body. The tag was used with different combinations of treatment and patient injuries.

Overall, it got very positive feedback. There were only a couple of suggested changes. One was adding an "unconscious" and "conscious" tab this was to "would determine the status of the patient at the time of the first evaluation." Another suggestion was changing the "reposition airway" tab just to "airway" because "it would give the thought of breathing problems that would need to be addressed if nothing is visible to the eye." (from an email response).



Final Refinements

I still wasn't happy with the visuals of the tag. Therefore, I refined the graphics and updated the tags with the comments from the firemen. I added the final suggestions given by the EMS personnel. I added a "conscious" tab and an "unconscious" tab. Additionally, I changed the wording of "reposition airway" to "airway". In the future, further refinements can be made regarding the tracking tab. It would be difficult to keep track of a small piece of paper without any container. Therefore, further exploration would be beneficial to design a mechanism to keep track of all the tracking barcodes.

