

# Redesigning waveform editing and data entry features for ELINT analysts

## THE INDUSTRY

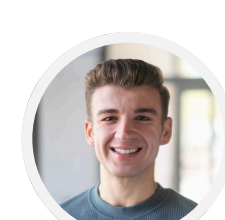
Military & Defense

## TIMELINE

4 months

## TEAM

Ben  
Sr UX Designer & Researcher



Isaac  
UX Researcher & Designer

## METHOD

Within-subjects

## DELIVERABLES

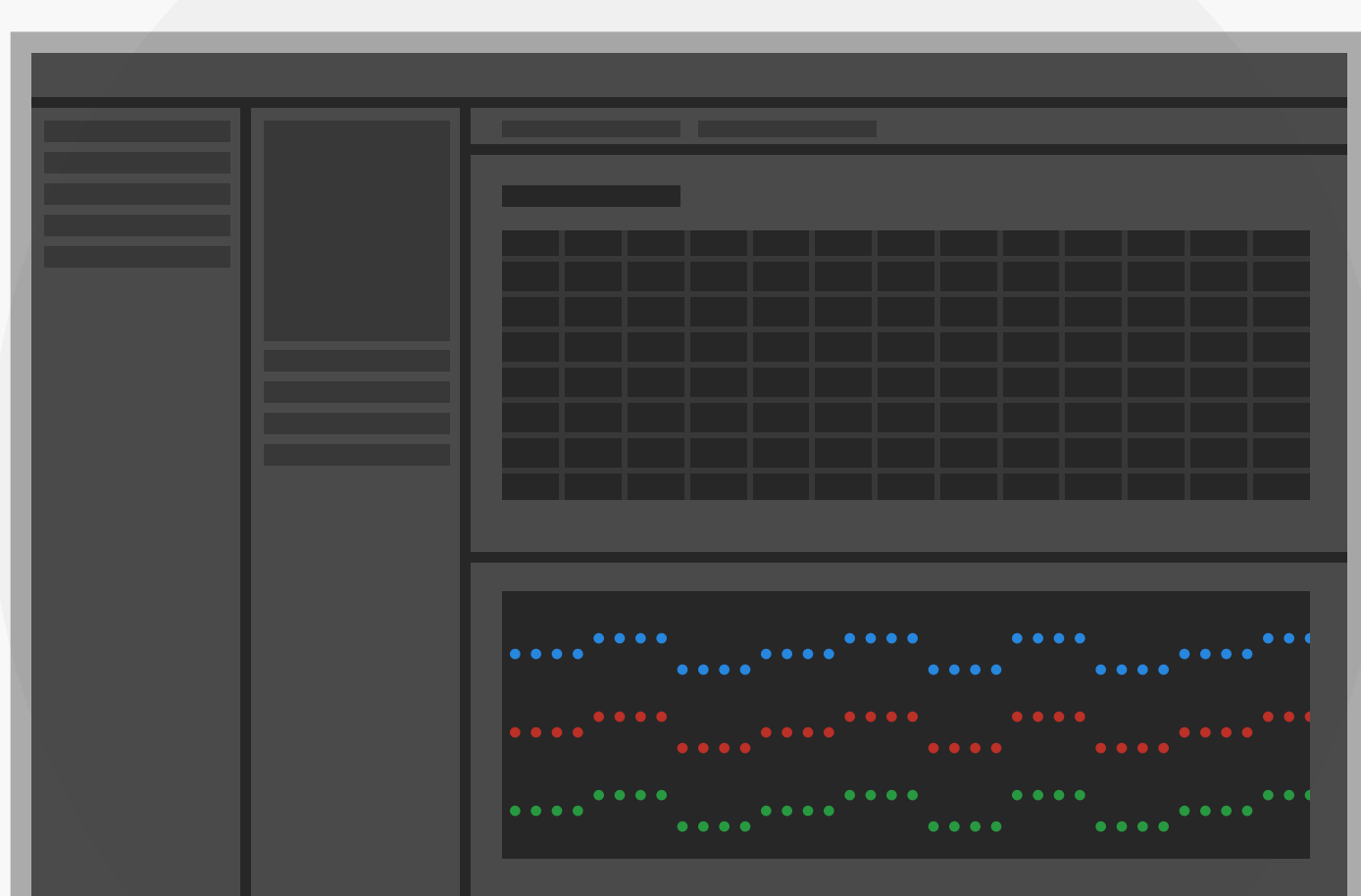
Usability study report, design recommendations



Client Product Team  
Software & Systems Engineers

## Electronic Intelligence plays a crucial role in supporting military defense efforts.

Electronic Intelligence (ELINT) analysts play a crucial role in developing countermeasures against enemy radar by collecting, analyzing and editing waveforms to disrupt or deceive enemies.



## THE PROBLEM

### A tool for ELINT analysts had features and functionality the team wanted to test for usability.

Testing revolved around data entry functionality with a scenario of documenting an individual waveform and forming a waveform sequence, which includes:

- **Entering waveform parameters.** Quantitative information about the signal's properties
- **Building pulse groups.** A series of individual pulses grouped together
- **Building pulse group sequences.** Arrangement of pulse groups designed to mimic or counteract the patterns of adversaries

## OUR SOLUTION

### We ran a usability study with 4 ELINT analysts and provided design solutions.

Participants were able to complete tasks, though it was apparent that users experienced confusion when it came to:

- **User orientation.** Participants had difficulty in understanding where to start, where they were, and where to go next
- **User perception.** Certain concepts and terminology appeared unfamiliar to participants
- **Detailed interactions.** Issues with data entry forced users to adjust to illogical or non-universal interactions



## AVERAGE QUANTITATIVE SCORES

We typically recommend aiming for scores of 80% or higher.

### SUS

79.4 (79.4%)  
Study Average  
System Usability Scale

### SEQ

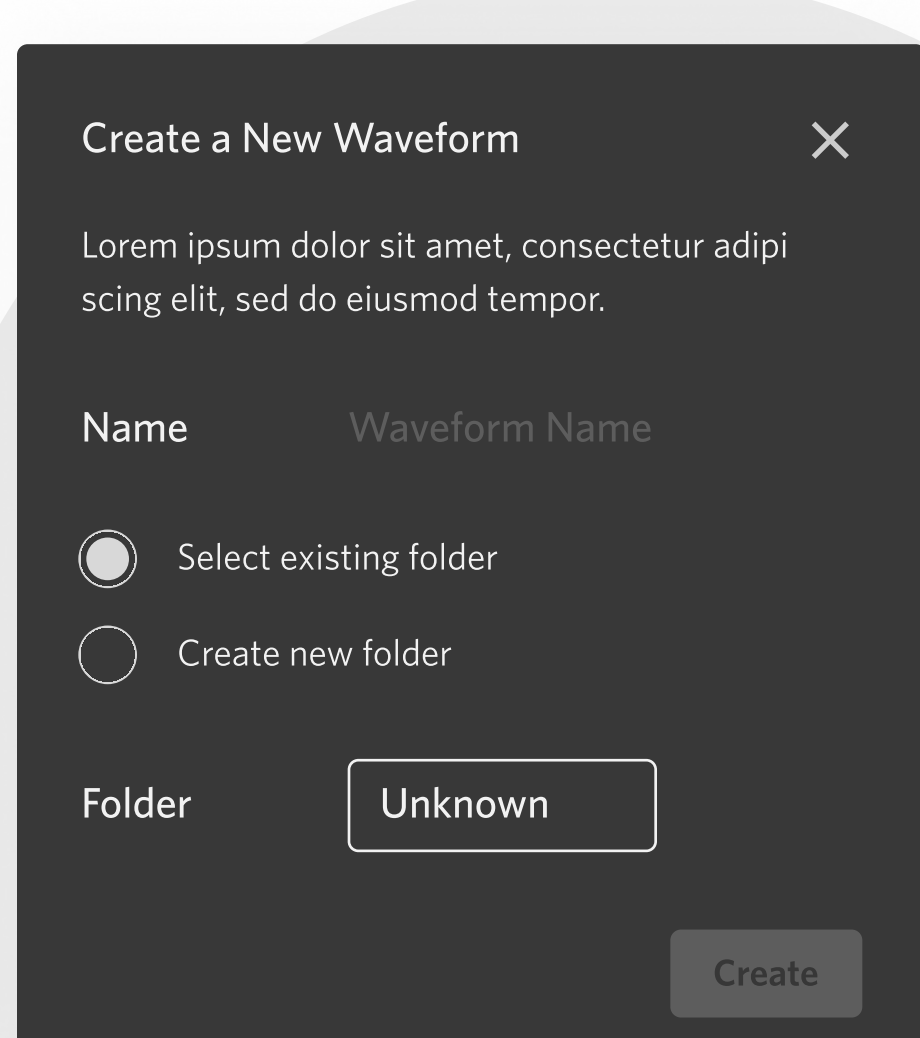
6.0 (83.8%)  
Study Average  
Single Ease Question

### TCR

1.7 (84.7%)  
Study Average  
Task Completion Rating

### NPS

25.0 (62.5%)  
Study Average  
Net Promoter Score



## USER ORIENTATION

### Establishing a waveform was discovered to be an unfamiliar concept.

- Redesign the flow for creating a waveform to **improve visibility** into where the waveform will end up (within a folder)
- Provide **tooltips** to clarify user action
- Offer entry to an **in-app tour** to provide additional context

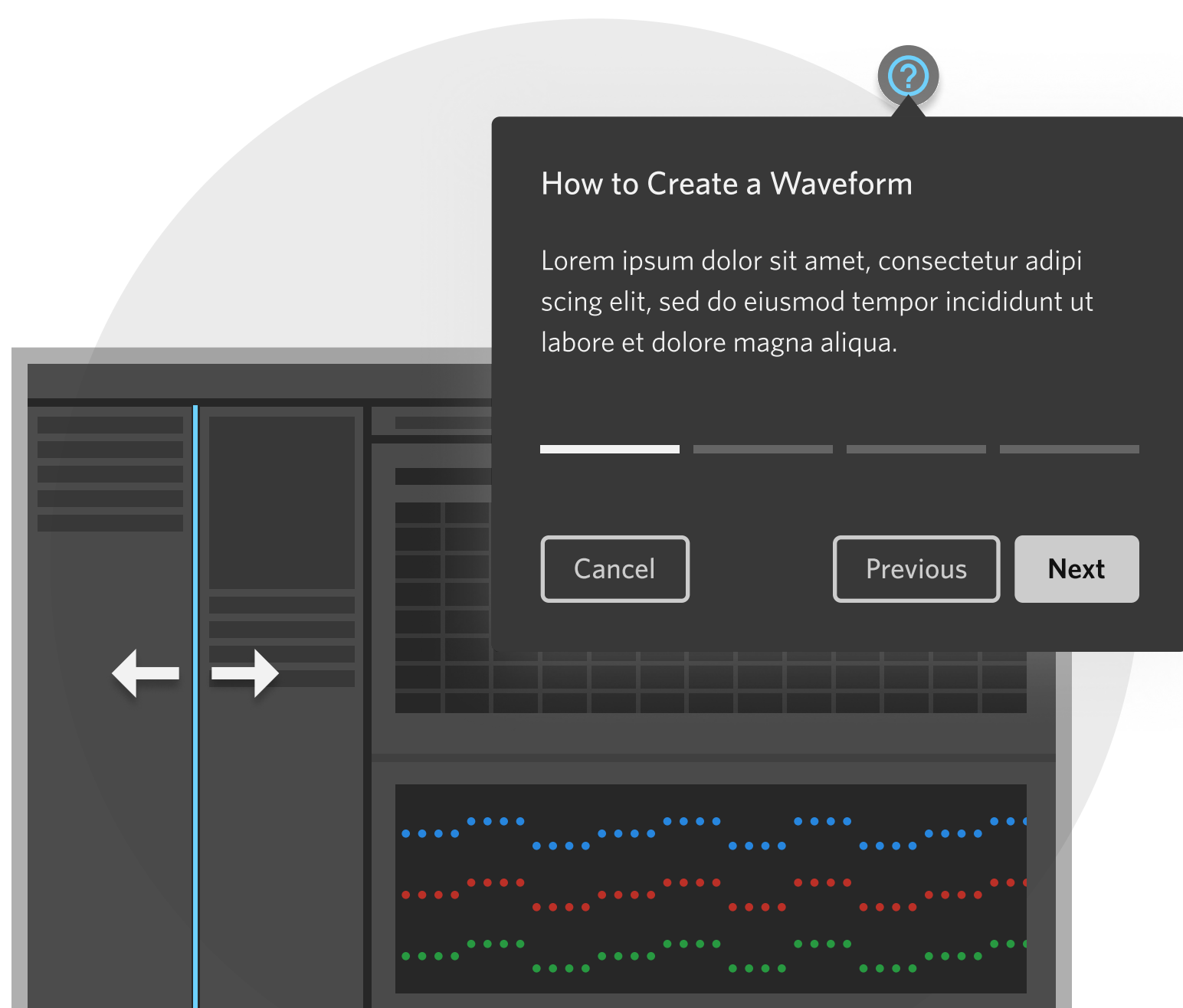
## USER PERCEPTION

### Verbiage and labelling was not clear, descriptive, or intuitive.

- Determine if **alternative verbiage** is more effective
- Focus **training efforts** on verbiage used

"We already use this term for something else within this context."

"It's definitely not all of the same jargon I'm used to..."



## DETAILED INTERACTIONS

### Participants experienced unmet expectations with detailed data entry.

- Offer entry to an **in-app tour** to provide additional context
- Allow for common **keyboard shortcuts** and quick actions
- Aim for **consistency** in how users perform an action
- Provide **flexibility** so users can rearrange the workspace

We provided the product team with recommendations to enhance the manual data entry experience for ELINT analysts. The product team gained an insight into what does (and does not) resonate with the ELINT analyst and ways to work around that.