CASE STUDY

Testing haptic technology for usability and articulating design enhancements

THE INDUSTRY
Haptics

TIMELINE
6 months

METHOD
Between-subjects

DELIVERABLES
Task analysis, heuristic evaluation, usability report, mixed methods UXR

TEAM


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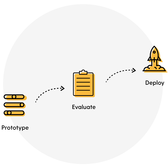
Haptic technology can be complex and typically requires coding experience.

HapticLabs is a no-code development toolkit for creating haptic interactions, comprised of

- **Software**, HapticLabs Studio allows users to create haptic patterns through drag-and-drop interactions
- **Hardware**, Electro-magnetic actuators and a satellite unit to experience instant feedback



THE PROBLEM

The new-to-market dual software and hardware toolkit had never been tested for its usability.

Our research questions focused on **first-time users**:

1. How successful are users in completing a given set of tasks?
2. How effective are the onboarding materials* in educating users on the product experience?

Online documentation & an in-app tutorial

OUR SOLUTION

A heuristic evaluation and usability tests uncovered many gaps in intuitiveness.

- **Text-heavy onboarding materials.** Participants avoided reading the instructions and remained confused
- **Unintuitive in-app tutorial.** Participants found the graphics inconsistent with the kit and the experience cumbersome
- **The purpose of kit components was unclear.** Participants were left unsure how to use them optimally
- **"Fragile" hardware components.** Participants were fearful of damaging the kit components

4
heuristic evaluations conducted

12
usability study participants

25
recommendations for improvement

#1:	Visibility of system status
#2:	Match between system and real world
#3:	User control and freedom
#4:	Consistency and standards
#5:	Error prevention
#6:	Recognition rather than recall
#7:	Flexibility and efficiency of use
#8:	Aesthetic and minimalist design
#9:	Help users recognize, diagnose, and recover from errors
#10:	Help and documentation

A common set of heuristics revealed insights that were validated with participants.

Jakob Nielsen's 10 Usability Heuristics were used due to their applicability to complex multimodal experiences such as a dual software and hardware experience.

Usability study groups varied in their access to onboarding materials*.

- Group 1 had access ***before and during*** the test
- Group 2 had access ***during*** the test
- Group 3 had ***no*** access

Online documentation & an in-app tutorial

Participants found the experience unintuitive with below average SUS scores.

The average System Usability Scale (SUS) score according to usability.gov is 68.

For HapticLabs, the average SUS score was **58**, with a 95% confidence interval.

RECOMMENDATION

"Quick win" interface enhancements present an ideal starting point.

All recommendation were prioritized in our report by considering their placement on an **Effort vs. Impact Matrix**.

This strategy helps us balance what is best for the user along with any business constraints.

Include additional entry points for the in-app tutorial in the interface

Automatically open the in-app tutorial upon first use of the application

Increase color contrast between UI elements to at least 4.5:1

Add in common keyboard shortcuts like copy, paste, undo, etc.

RECOMMENDATION

Improve the in-app tutorial.

- Introduce an in-app tour instead
- Update graphics that are inconsistent with the real kit

RECOMMENDATION

Improve the text-heavy online documentation.

- Add a "getting started" video
- Reduce copy and provide concise, clear, human language
- Use more graphics to help users correctly identify components
- Better define the purpose of certain components

RECOMMENDATION

Enhance the hardware kit experience.

Add a pamphlet within the kit with more instructions:

- Clarify how careful users must be while handing components
- Include information about each component and why a user would use each

We supplied HapticLabs with crucial usability insights, derived from both qualitative and quantitative data. These insights informed our recommendations for enhancing the experience for first-time users.