

Multisensory Pre-Alarm System for Physicians



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Mystery Machine

Oral Report 2
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What's the Problem?

Problem Statement

- Distracting alarms and sounds in Intensive Care Units
- Leads to patient and physician fatigue
- No differentiation between different parameters
- Solution: multisensory pre-alarm device
 - Improves positive predictive value
 - Less stress for patient and physician

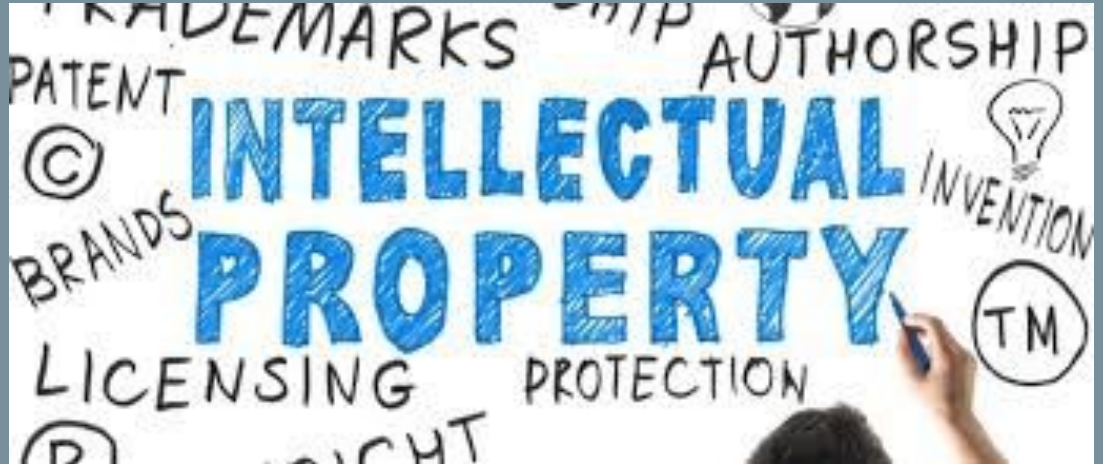


Updates

- 1) Signed McGill
CDA
- 2) Spoke with
Haptics Expert

Signed CDA

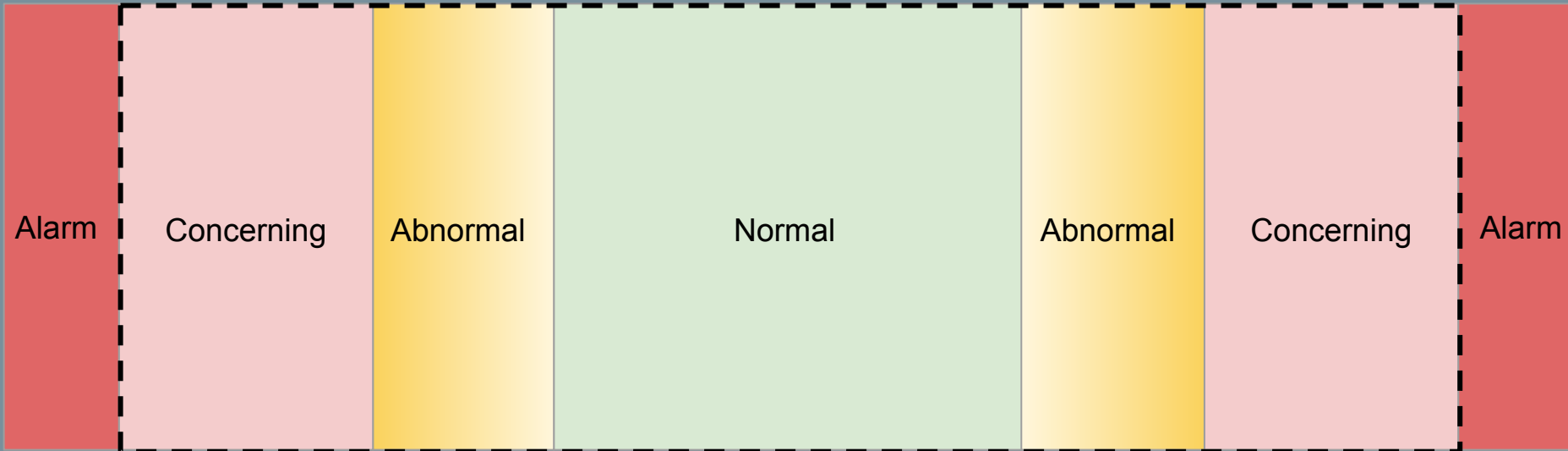
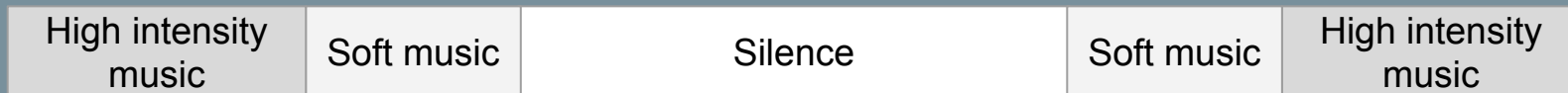
- McGill University
- Haptics
 - Next steps



Discussion with Antoine Weill-Duflos, Haptics Expert

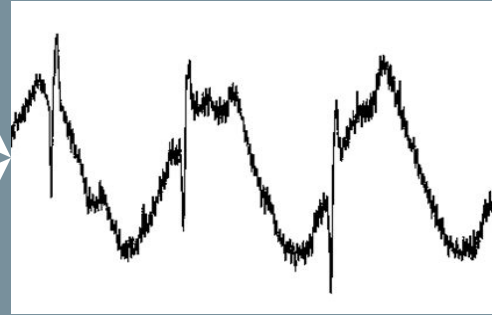
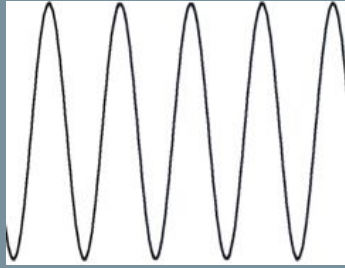
- Haptic and Robotic Engineering at McGill University
- Use of haptics in our project
- Suggested the following:
 - A continuous, low frequency haptic signal
 - Change in rhythm of signal as opposed to amplitude
 - Haptuators on separate parts of the body
 - Device on wrist or ankle (close to bone)
- Next step: he will send relevant articles and Basslet audio files

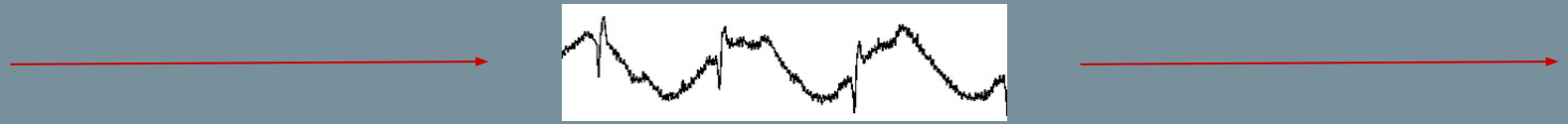
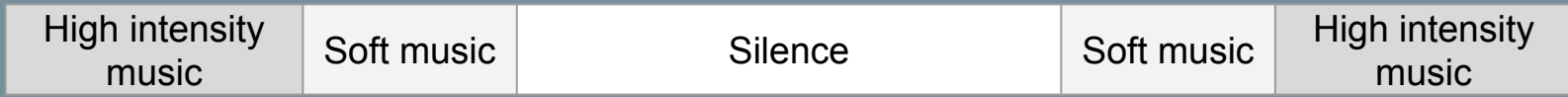




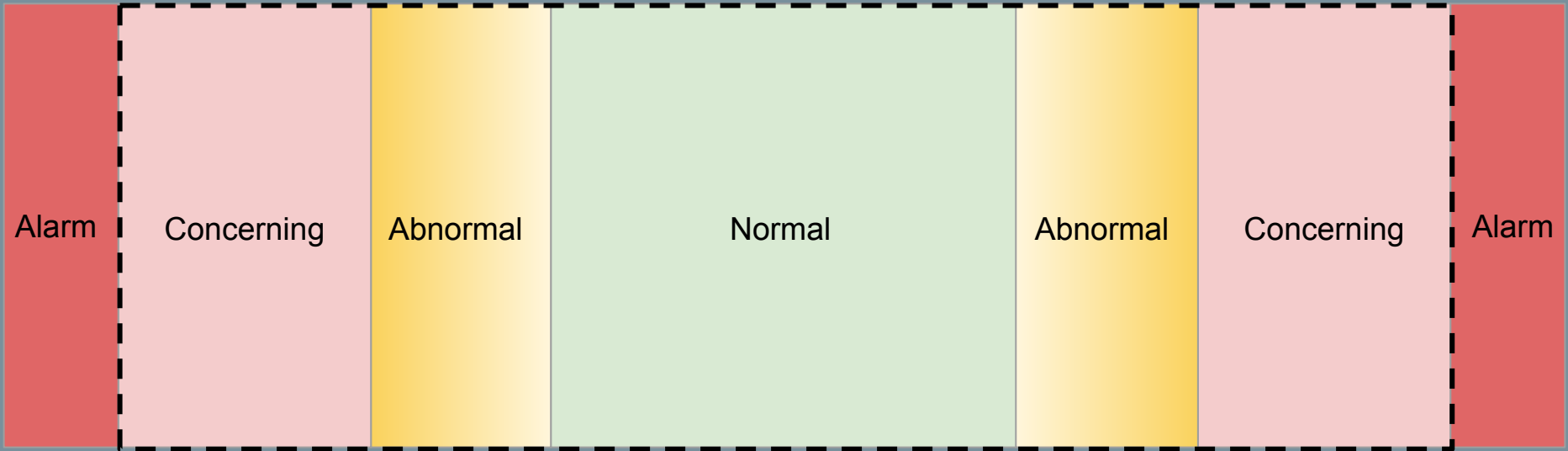
*Additional haptic when change in secondary patient's vitals

Continuous haptic signal





Haptic signal throughout



Comparison of Two Methods

Discrete Haptics

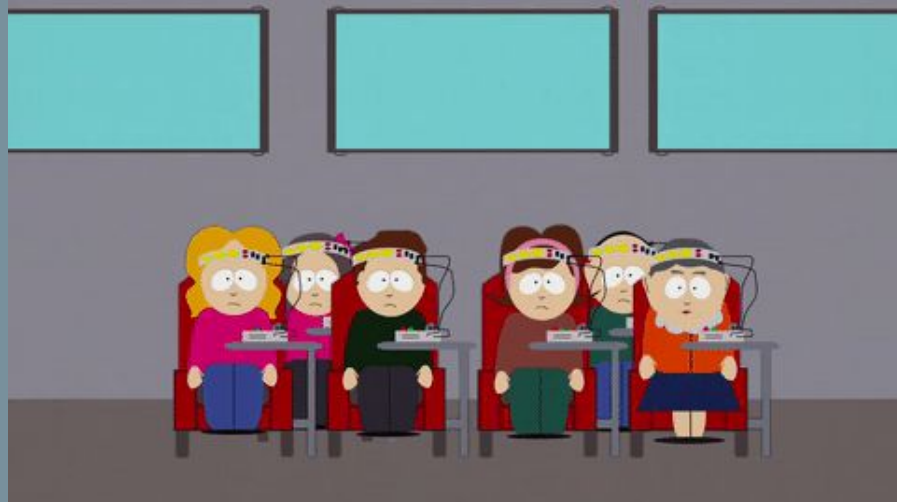
- Clearer distinction between change in zones/direction
- Provides additional information--directions, other patient, etc.
- Not redundant

Continuous Haptics

- Multisensory integration
- Sophisticated sub-threshold technology
- Continuous haptic monitoring of both patients
- Information overload

Preliminary Study Ideas

- Best locations for haptic actuators
- Ability to detect changes:
 - With vs without haptics
 - Continuous vs discrete haptics
 - Haptics with movement
 - Comparing 3 sound signals
- Long/short term retention and extinction
- Trainability (Training video)



Next Steps

- Discuss with Dr. Schlesinger about how to incorporate haptics
- Create a second iteration of sounds
- Determine different ways to differentiate between the zones
- HFES Conference March 2019 - Chicago
 - Meet with Dr. Schlesinger's collaborators from multiple institutions
 - Increase insight into other research in the field
 - Logistics of funding



Long-Term Planning

- IRB Draft
 - Recruitment
- Efficacy Studies
 - Test preparation
- Design Day
- Beyond design day
 - Plans to publish?



QUESTIONS?

