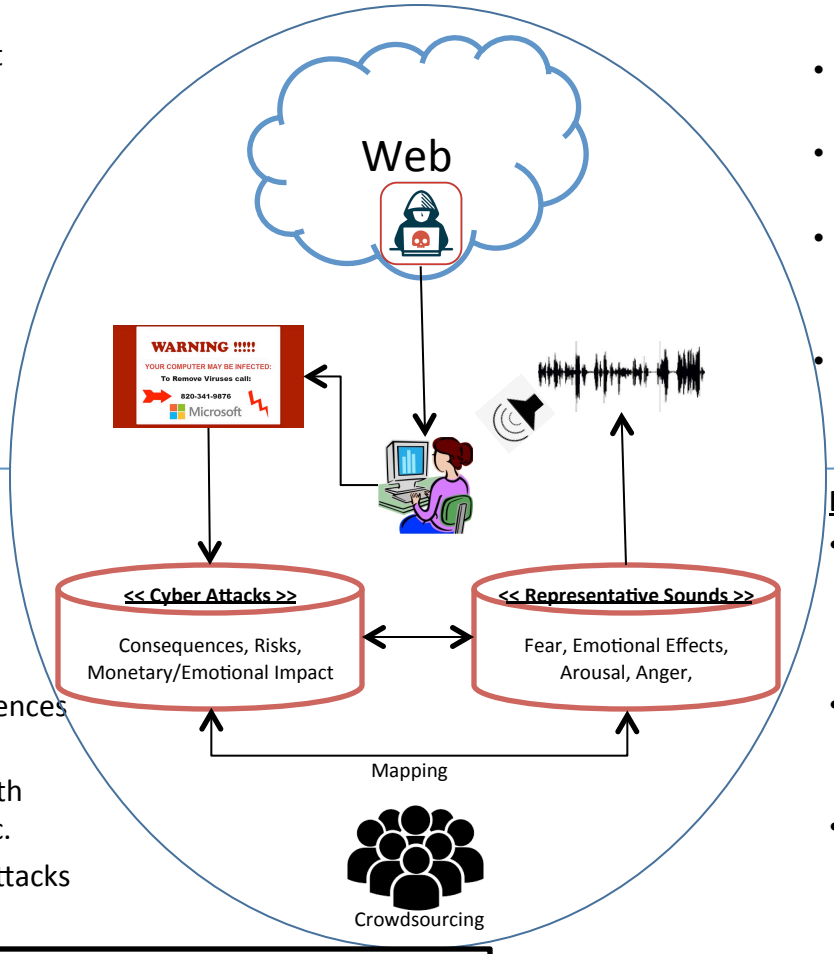
SBE: Medium: User-Centric Design of a Sonification System for Automatically Alarming Security Threats and Impact

Challenge:

- Enable usable security for users who are visually impaired
- Alarm users about attacks without overwhelming them
- Represent security warnings through unconventional and contemporary channels
- Help users comprehend attacks, meanings, implications, risks, and consequences



Solution:

- Use representative sounds to communicate risks, impact, and consequences of attacks to users
- Identify representative sounds semantically representing consequences of each group of attacks
- Label the representative sounds with emotional impact, arousal, fear, etc.
- Play representative sounds when attacks occur

Scientific Impact:

- Understand how general users comprehend security attacks
- Introduce sonification, as a new approach, to enable usable security
- Communicate the risks of cyber attacks with users through sounds
- Build repositories of cyber attacks and representative sounds tagged with their emotional ratings
- Build a framework to automatically translate cyber attacks and warnings to representative sounds

Broader Impact:

- Auditory alarm users about attacks and the impacts without any needs for technical understanding
- Enable accessible and usable security for users, who are visually impaired
- The technology can be integrated into existing cyber security tools

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