

# Body-Technology Interfaces

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## ABSTRACT

Our interactions with personal electronic devices provoke a broad range of emotional states from frustration to confusion to feverish obsession. Increasingly, these devices mediate our everyday work activities, our social network development and our personal communications. In this paper, we propose a participatory installation that aims to bring critical awareness and consideration to the complex relationship between people and their technological artifacts. Based on participant interview data, we will create Body-Technology Interfaces<sup>1</sup> in the form of hand-knitted custom wrappers for personal electronic devices. Each BTI will reflect salient interaction behaviors between the participant and their chosen device. Analyzed participant interview data, BTI designs and overall participant response to the project will be documented and shared online.

## Keywords

Cultural computing, craft, critical design, personal narratives, participatory design

## INTRODUCTION

This proposed project contains elements of all three ParticipART exhibition categories. Participants will actively engage in the creation of artistic artifacts that are prototyped to their needs. In addition, all visitors will engage in ideation, construction and consideration of these pieces in an installation setting with daily performative aspects. Over the course of the Participatory Design Conference, our installation will be the locus for uncovering insights into the dynamics of human-device relationships as revealed and expressed by conference attendees. Participants will choose to engage in all or some of our three-stage process of discovery. In stage one we will administer a semi-structured interview designed to help participants articulate the nuances of their relationships with their personal electronic devices. Next, based on our interpretation of this data and in collaboration with the participant, we will propose an appropriate BTI custom wrapper design that can then be created by the participant, by our team, or collabora-

tively with other conference attendees. In the third stage, participants present both their BTI and their response to the experience either in the installation space itself or online on the project website. The website will also serve as an archive for collected interview data, BTI designs and artifacts and participant reflections created during and after the conference. Our proposal fits well with this year's PDC theme of "Experiences and Challenges". The individualized ideation of BTIs establishes a formal examination of our everyday experiences with technology and the creation of an artifact that challenges or confronts some aspects of this interaction. Body Technology Interfaces enable participants to create new and possibly startling experiences with familiar devices, while also challenging creators to engage with colleagues and conference participants in reflective discussion and collaborative development.

## BODY TECHNOLOGY INTERFACES

Body-Technology Interfaces are knitted apparatuses to connect our beloved electronic devices to our bodies. BTI devices perform a slew of physical and psychological functions to engage us with our digital lifestyles in a visible and tangible way. The process of creation of each knitted computational accessory is unique for a specific interaction between the human body and a digital device. We have chosen to explore technology-focused relationships through the design and creation of knitted artifacts as we believe that the activity of knitting itself can be understood and examined with a computational mindset. Knitting can be thought of as sharing many properties with computer programming, whereby both can be executed in a procedural manner, contain looping patterns, and debugging is achieved through a cyclical process of trial and error. Additionally, it can be argued that handmade objects hold a higher significance than the mass produced commodities we typically interact with, particularly electronic devices. The personalization and modification communities customize mass-produced products to their own needs and tastes to inject elements of their personality and express unique ownership over these products. Although not designed to enhance the functional interaction experience of using computational devices, these Body-Technology Interfaces form a provocative and critical dialog around our devices and the ways we use them. They can be considered as soft interventions that

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seek to exaggerate an existing relationship with technology in a thoughtful manner.

### **PARTICIPATION ALONG A SPECTRUM**

This proposed project will offer co-creators an interaction experience that covers a wide spectrum of participatory opportunities, from engagement in an interview session to completely assembling an entire device. Depending on the level of desired engagement, participants can learn a new crafting skill or use their existing skill-sets to coach each other in the creation of these prototypes. Participation can occur through a) in-situ reception and discussion of final artifact, b) onsite participant completion of proposed design by participant or investigator c) offsite completion of actual or modified design, and d) online discussion through the project website.

### **INTERVIEW PROCESS AND DEVICE PLAN**

In the consultation stage, data will be collected in the form of semi-structured interviews where the investigators will probe participants about the qualities of their human-device relationships, perceived interaction benefits, efficiency tradeoffs, time spent together, social fallout etc. Interviews may be conducted one-on-one or in small groups of colleagues, as collaborating peers might be able to provide insight into each other's behaviors while engaging with digital devices in the work and social spheres. These interviews will be recorded, annotated and informally (in the moment) and formally (longer time frame) analyzed. Based on these findings, a device pattern will be established that uses a combination of pre-made modular pieces created by our team and proposed elements to be created and refined by the participant.

### **CREATED ARTIFACTS**

Body-Technology Interfaces that have been developed to date share certain properties such as shielding keys from view to encourage touch-typing and enhance the sensory experience of typing. They warm the hands, promoting good circulation, and encourage specific postures during use that raise awareness of risks of repetitive strain injuries (RSI) during electronic device usage. These BTIs also necessitate deliberate action where previously activity may have been subconscious, for example frequently checking a portable phone, overtly drawing attention to the activity. They provide physicality to the otherwise invisible obsessions we may have with our devices. The following are some examples of BTI devices already built or in the proposal stage:

#### **Keyboard**

A sheath surrounds the keyboard and terminates as two wrist sleeves [1]. The hands slide through the sleeves to meet the keys of the keyboard. This device encourages sustained concentrated work, as the hands are confined to the area of the keyboard which discourages fidgeting and face-touching.

#### **RSS Reader**

In a modification of the above design, here the left hand sheath is oriented down and away (toward left elbow) from the "J" key on the keyboard, and the right hand sheath is positioned over the mouse. This device encourages the left hand's middle finger to rest on the "J" key (shortcut for advancing to the next blog entry in Google Reader) thus focusing the user on completing the reading of all subscribed blog feeds.

#### **Laptop Traveler**

Often business travelers have trouble concentrating on their work. A sheath surrounds the laptop and terminates as a face piece and two arm sheaths [1]. Perfect for cafes or air travel, the device keeps the face focused on the screen for maximum concentration, provides privacy in crowded situations and pleasantly helps to keep hands nice and warm.

#### **Blackberry Checker**

Transforming this very casual and intermittent activity into a focused and deliberate one, the electronic device is enshrouded in a sheath terminating as two arm sleeves and a face hood which covers half the face, leaving one eye open to the surroundings. The device provides privacy in crowded areas such as public transit while also accommodating mobility, as one eye is exposed for safe navigation. This particular BTI can additionally be modified for portable gaming systems.

### **PROPOSED PROJECT SCHEDULE**

Day 1-2: Conduct interviews/consultations, assemble kits for interviewees to construct on their own/with help, and fabricate kits for those who cannot/do not wish to assemble them. Document process, designs and artifacts and display online.

Day 3-4: In addition to continuing to perform Day 1-2 activities, we will include creations with descriptive tags on a table for exhibition, and/or encourage creators to use their devices around the conference

Day 5: Aid in construction, exhibition and discussion of devices, update website.

### **REQUIREMENTS OF EXHIBITION**

This project requires two small adjacent workstations, one for interviews/consultation and kit production and one for group workshop assembly. Thus we require two tables, 11 chairs, and as much floor space as these occupy, approx. 25 sq. ft. We request room lighting at a level required for detailed craftwork, an electric outlet, and network connectivity (can be wireless).

### **EXPECTED DELIVERABLES**

We expect to generate anywhere from 10 to 50 Body-Technology Interfaces, a body of qualitative consultation data, and a project website for sharing personal experiences and creations.

### **REFERENCES**

1. Supplemental materials available at <http://ame4.hc.asu.edu/reflectiveliving/participART>