MIT Committee On the Use of Humans as Experimental Subjects

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To:	V Bove E15-448
From:	Leigh Firn, Chair COUHES
Date:	04/23/2014
Committee Action:	**Approval**
COUHES Protocol #:	1403006286
Study Title:	Digital Synesthesia
Expiration Date:	04/16/2015

The above-referenced protocol has been APPROVED following Full Board Review by the Committee on the Use of Humans as Experimental Subjects (COUHES).

If the research involves collaboration with another institution then the research cannot commence until COUHES receives written notification of approval from the collaborating institution's IRB.

It is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date. Please allow sufficient time for continued approval. You may not continue any research activity beyond the expiration date without COUHES approval. Failure to receive approval for continuation before the expiration date will result in the automatic suspension of the approval of this protocol. Information collected following suspension is unapproved research and cannot be reported or published as research data. If you do not wish continued approval, please notify the Committee of the study termination.

Adverse Events: Any serious or unexpected adverse event must be reported to COUHES within 48 hours. All other adverse events should be reported in writing within 10 working days.

Amendments: Any changes to the protocol that impact human subjects, including changes in experimental design, equipment, personnel or funding, must be approved by COUHES before they can be initiated.

Prospecitve new study personnel must, where applicable, complete training in human subjects research and in the HIPAA Privacy Rule before participating in the study.

COUHES should be notified when your study is completed. You must maintain a research file for at least 3 years after completion of the study. This file should include all correspondence with COUHES, original signed consent forms, and study data.

Recruitment:

Tired with the current user interface of your mobile device?
Do you feel that mobile technology is alienating and is separating you from the world around you?

Help us with the Digital Synesthesia study. You will be asked to wear an E-Garment and follow some simple activities. Then let us know what you think of the system in 2 short surveys. All responses will remain confidential. No video or Audio will be taken.

The study will take place at the media lab building E15- 445

To participate, please contact Santiago Alfaro, talfaro@media.mit.edu

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Approved on 23-APR-2014 - MIT IRB Protocol #: 1403006296 - Expires on: 22-APR-2015

CONSENT TO PARTICIPATE IN NON-BIOMEDICAL RESEARCH

Digital Synesthesia: Using Mobile Technology to Interact with Our World

You are asked to participate in a research study conducted by Santiago Alfaro and V. Michael Bove Jr., from the Media Lab at the Massachusetts Institute of Technology (M.I.T.). The results will contribute toward Santiago Alfaro's PhD thesis. You were selected as a possible participant in this study because you responded to the study advertisement. You should read the information below, and ask questions about anything you do not understand, before deciding whether or not to participate.

- **PARTICIPATION AND WITHDRAWAL**

Your participation in this study is completely voluntary and you are free to choose whether to be in it or not. If you choose to be in this study, you may subsequently withdraw from it at any time without penalty or consequences of any kind. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

- **PURPOSE OF THE STUDY**

Digital Synesthesia is a user interface theory in which the user will be able to interact with the world in new ways. It uses sensing technology to detect information that your body cannot sense naturally and it translates this information to either vibration, temperature or sound so your body is able to interpret this information.

The purpose of this study is to evaluate the users' experience and acceptance of this of system; whether it is distracting or if it really enhances the user experience. Some of the overall questions we want to answer are:

How does a user perform in a specific task when using new information that could not previously be sensed, compared to completing the same task without sensory enhancement?

How accurate is the interpretation of data when experienced through new digital senses?

Will there be feelings of "phantom sense" where the user will feel the effects of a stimulation that is not present anymore?

How valuable is Digital Synesthesia when used to complete an unfamiliar task? When used by someone who is experienced in the given task?

In a situation where vision is used to make a quick decision, will Digital Synesthesia prove to be a valid alternative to accomplishing the same task or part of that task?

- **PROCEDURES**

The study will last between 20 and 40 minutes. At the end of the study and depending on your experience and results you may be asked if you want to participate again in the future on the exact same study. This repeated participation is completely voluntary and your decision will have no effect on your present participation. You will not be asked to come back for future participation more than 3 times.

If you volunteer to participate in this study, we would ask you to do the following things:

Each user will be asked to wear one of three devices:

1. A glove that has a pressure sensor on the tip of the middle finger
2. A head band that has 2 temperature sensors
3. A scarf with an actuator that will be located on the back of the neck.

Each device can be coupled with one of three actuators:

1. A vibrating surface transducer. This is a small device (21.5 x 14.5 x 7.9mm) that generates a vibrating sensation of different frequencies. This vibration will be of similar intensity as the vibration of a mobile phone.

2. A Peltier device. This is a small device (15.00 x 15.00 x 3.99mm) that can generate a warm or cold feeling depending on the amount of electricity it is fed. The temperature of this device will never reach more than 45°C or less than 7°C.

3. This will be the same actuator as number 1 but applied near the skull. The feeling will be no different but the user will experience sound in addition to vibration. This is known as bone-conduction and it is similar to the way we hear our own voices transmitted through our bones directly to the inner ear.

Setup:
1. We will ask you to fill out a questionnaire that asks about your usage of mobile devices. All responses will be anonymous and not associated with your name or any personally identifiable information.
2. The device to be used, which will be chosen by the investigator, will be described to you and you will be given a brief demo on its basic operation.

Main study:
While wearing the garment you will be asked to perform simple tasks and your ability to complete the tasks as well as your accuracy will be measured. We will interview you at the end of the study about your experiences with the system.

One of the following tasks will be set up:
1. To differentiate and organize a group of precision weights according to their weight.
2. To press a button as soon as you feel a signal from the garment this can be vibration, temperature or sound.

3. You will sit across other players and play a game in which you must try to decide which of the other 3 or 4 players is lying. This will be done by interpreting the sensation given to you by the garment.
4. To simply walk around the lab and be aware of the sensation your garment is giving you. The task is to try to understand what it is that your garment is responding to.

- **POTENTIAL RISKS AND DISCOMFORTS**

We do not anticipate any risks with the use of this system. But in case that something might go wrong, all of the systems have a safety check built into them.

To control the temperature the investigator will have constant control of the amount of voltage and current going into to the device and so the temperature will not be allowed to reach levels of danger or discomfort. In addition, a temperature sensor will be placed next to the device to constantly read the actual temperature of the device. If the read temperature was to exceed the safety limits, the system will automatically shut off.

- **POTENTIAL BENEFITS**

You may benefit from the use of a new system of interacting with your physical surroundings in a way that you had not experienced before.
You will also be helping inform designs of a system that can improve the TV watching experience and technology in the future.

- **PAYMENT FOR PARTICIPATION**

No monetary compensation will be provided.

- **CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law.

All information collected about you, including responses to survey questions, and log entries will only be associated with a numerical ID. Your name will not be recorded or associated with any of the data.

- **IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about the research, please feel free to contact

Santiago Alfaro, Research Assistant, MIT Media Lab.
talfaro@media.mit.edu
617-253-1631

V. Michael Bove, Jr., Director, Object-Based Media Group, MIT Media Lab
vmb@media.mit.edu
617-253-0334

- **EMERGENCY CARE AND COMPENSATION FOR INJURY**

If you feel you have suffered an injury, which may include emotional trauma, as a result of participating in this study, please contact the person in charge of the study as soon as possible.

In the event you suffer such an injury, M.I.T. may provide itself, or arrange for the provision of, emergency transport or medical treatment, including emergency treatment and follow-up care, as needed, or reimbursement for such medical services. M.I.T. does not provide any other form of compensation for injury. In any case, neither the offer to provide medical assistance, nor the actual provision of medical services shall be considered an admission of fault or acceptance of liability. Questions regarding this policy may be directed to MIT's Insurance Office, (617) 253-2823. Your insurance carrier may be billed for the cost of emergency transport or medical treatment, if such services are determined not to be directly related to your participation in this study.

- **RIGHTS OF RESEARCH SUBJECTS**

You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you feel you have been treated unfairly, or you have questions regarding your rights as a research subject, you may contact the Chairman of the Committee on the Use of Humans as Experimental Subjects, M.I.T., Room E25-143B, 77 Massachusetts Ave, Cambridge, MA 02139, phone 1-617-253 6787.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

_____
Name of Subject

_____
Name of Legal Representative (if applicable)

_____ _____
Signature of Subject or Legal Representative Date

SIGNATURE OF INVESTIGATOR

In my judgment the subject is voluntarily and knowingly giving informed consent and possesses the legal capacity to give informed consent to participate in this research study.

_____ _____
Signature of Investigator Date