The Personal Portable Profiler Project

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ABSTRACT
This presentation will demonstrate the Personal Portable Profiler (P^3) system, capturing the characteristics of a user profile from one computer and copying them to a second computer. This is accomplished through an auto-run program stored on a UD-RW flash drive device. Such a system will be useful for those with disabilities by allowing them to easily set the interaction characteristics of any computer they encounter to their "home" settings.

Categories and Subject Descriptors
H.1.2 [Models and Principles]: User/Machine Systems – *human factors*. K.4.2 [Computers and Society]: Social Issues – *handicapped persons/special needs*.

General Terms
Experimentation, Human Factors.

Keywords
Assistive technology, user profile.

1. INTRODUCTION
There are many settings available with most operating systems that allow the user to customize the characteristics of the interaction environment: display, keyboard, mouse, etc. Typical settings might include screen resolution, window styles, cursor blink rate, key repeat rate, and mouse pointer speed. For most users, these are modified from default settings as a matter of preference rather than necessity. For users with disabilities, however, such changes can be fundamental to providing accessibility.

As an example, Microsoft Windows XP® provides for numerous control panel applets dealing with dozens of settings that change the interaction characteristics of the system. The three main applets of concern for this project are for the display, keyboard, and mouse characteristics. Also, a special "Accessibility Options" control panel applet is included which provides additional settings for these devices that were deemed to provide extraordinary access to the system – i.e., these are the characteristics that would be of most interest to those with disabilities. Examples would include providing sticky keys in place of multi-key combinations, visual representations of sound alerts, or the use of high contrast in the display.

Beyond these control panel applets, Microsoft provides an Accessibility Wizard accessory to assist users in making modifications to some of these various controls without using the control panels. While this wizard may assist some users with customizing their system to help make it more accessible for them, it does not give the user the type of fine control over their working environment that the control panels provide. For most users with disabilities, the wizard is insufficient for customizing their system – they must eventually resort to direct manipulation of control panel settings.

2. THE PROBLEM
The collection of all interface settings is referred to as a user profile. This profile is, of course, typically unique to an individual computer (except in certain network situations) for a particular user. Most users set their profile through trial and error and have little recollection of the exact details of their settings. Users may spend considerable time getting their settings adjusted just right, but they are not likely to be able to reliably repeat those settings on another system. In the case of users with disabilities, the resulting profile is critical to their accessibility of the system.

For most users, such profile customization will take place on their home computer first. Consider then, what happens when that user needs to access another computer, e.g., at work. In an educational setting, the problem may be compounded many times by the student needing to access computers in multiple labs that are within different networks. How does that user customize his/her profile on additional computers in the most economical way?

3. THE P^3 PROJECT
The Personal Portable Profiler (P^3) is a device and software that allows a user to capture the profile of one computer and copy it to another, either temporarily or permanently. The goal of this project is to develop a program that will allow users to carry their personal Windows® profile settings with them when they use a different computer. This is accomplished using a special UD-RW (universal device – read/write) USB flash drive device and auto-run program. The software installed on this device will (1) capture a user's settings from a source machine (e.g., their home computer), storing those settings on the UD-RW device, (2) set

the target machine's profile settings by first copying the target's current profile to the UD-RW, then installing the profile captured in the first step, and (3) restore (if desired) the target machine's original settings when the user discontinues use of the target machine by copying the profile captured in step (2) back onto the target computer.

The UD-RW device (see Figure 1) has a special section that is seen by the computer as a CD-ROM device, which allows an auto-run program to be executed upon insertion of the drive into a USB port (Figure 2). This auto-run capability is seen as important to this system because the device is intended to be used by those with disabilities: the three actions of capture, set, and restore should be accomplished with a minimal amount of interaction from the user, and are presented to the user as three simple buttons (Figure 3) by the auto-run program.

4. DIFFICULTIES

System registry keys of the operating system must be interpreted in order to store only those elements that are necessary for capturing the user profile. The relevant key-value pairs must later be translated into parameters to a system call that makes the desired settings, avoiding a restart or log-off. Several key-value pairs require grouping into a heterogeneous structure, compounding the difficulty of the translation.

5. RESULTS AND FUTURE WORK

The current version of P^3 successfully captures, sets, and restores settings for the keyboard and mouse. The next version will add capturing display features set through the Accessibility Wizard, Accessibility Options applet, and the Display applet.

Two trials will be conducted to test the robustness of the system. The first will include several non-disabled students. The second will be conducted with at least a dozen disabled users.

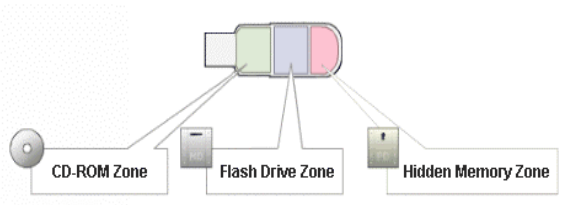

Figure 1: The logical design of a UD-RW device.

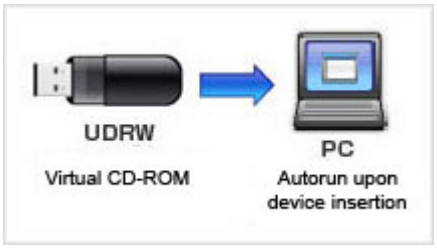

Figure 2: Auto-run capability.

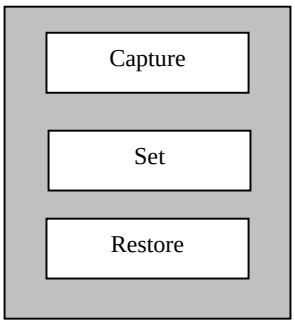

Figure 3: The P^3 interface.