

# Tangibly Simple, Architecturally Complex: Evaluating a Tangible Presentation Aid

Elizabeth F. Churchill and Les Nelson

FX Palo Alto Laboratory  
3400 Hillview Avenue, Bldg 4,  
Palo Alto, CA 94304, USA  
+1 650 813 7024  
churchill; nelson@pal.xerox.com

## ABSTRACT

In this paper, we describe an evaluation of the Palette, a presentation tool that was reported at CHI '99. The Palette allows presenters to quickly access digital presentations using physical cards that have unique barcodes printed on them. The Palette has been in use in our lab for over three years, and has been released as a product in Japan. Our evaluation consists of an analysis of usage logs, an expert walkthrough review, and observations and interviews with users, non-users and the system administrator. The findings reveal benefits and drawbacks of the technology, and offers design ideas for further work on tangible tools of this kind.

## Keywords

Tangible interfaces; presentations; evaluation, hidden dependencies

## INTRODUCTION

Presentations are an important part of business, education and research life. They are an excellent way of transmitting information efficiently to groups. Presentation styles vary widely by individuals, by discipline, and the nature of the material to be presented. Although there are many Web sites, books and papers offering tips for effective presentations, very little research has focused on the use of technologies to support presentation creation and performance (exceptions are [2] and [3]).

## The Palette

The Palette facilitates the showing and sharing of digital presentation materials [3]. The Palette software formats and prints a card for each slide in a digital presentation (Figure 1), and these act as tangible interfaces to the digital slides. Swiping the cards under a barcode reader brings up the appropriate slide (Figure 2). The user need not explicitly search for the file and the specific slide, thus saving time and avoiding fumbling in front of the audience.



Figure 1: Palette Cards: tangible interfaces to digital materials

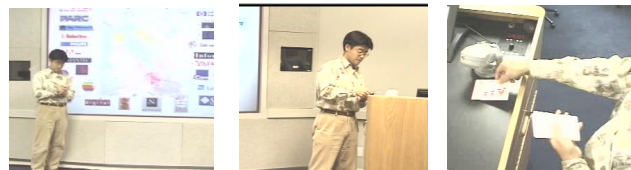


Figure 2: Giving a presentation with the Palette: close up of card and barcode reader for slide selection and projection

Creating Palette slides was designed to be extremely easy. Having created slides in a tool like Powerpoint™, the presentation file is sent to the Palette Converter, which copies the file to the presentation machine, and creates a card for each slide containing a unique ID barcode and a thumbnail. The ID specifies the path within the presentation directory to the digital slide. The cards are sent to a printer.

## THE EVALUATION

The Palette has been in use at FXPAL for over 3 years. An evaluation of the Palette was initiated after a product based on the Palette was launched in Japan in 2000 [1].

Our evaluation was in four parts. Firstly, we carried out an analysis of usage logs. Secondly, an evaluator did a step-by-step system walkthrough, including: creating a presentation in Powerpoint™, creating a set of Palette cards, giving several presentations and taking part in Q&A sessions. Thirdly, eleven people were interviewed about their presentation practices. Seven had long-term experience of the Palette, one uses the Palette extensively for card creation but does not give presentations, and three did not use the Palette although they had access to it. Interviews addressed: reasons for use and non-use; creating presentations in Powerpoint™; Palette card creation; presentation performance; interactive use of presentation materials in Q&A sessions; and presentation storage and management – both of the digital files and of the physical, Palette cards. Interviews lasted between 30 minutes and

one hour. Fourthly and finally, a 1.5 hour interview was conducted with the administrator responsible for maintaining the Palette. This included a description of his practices of managing and debugging the Palette system.

### Results

The Palette has been used on 404 presentations. Presentations ranged 10 to 40 slides. Twenty people have used the Palette more than twice; thirteen are regular users and 7 infrequent users. Two of the infrequent users were visitors to FXPAL who were interested in trying the technology. Three presentations using the Palette were external; two at a sister lab in Japan and one to a research group in another company. For these presentations, laptops with the Palette software and barcode readers were carried to the presentation location.

### Pros

Our expert walkthrough and user interviews revealed the Palette to be a useful tool. The main positive points people reported were: (1) Palette cards offer a persistent tangible object that “affords easy review” of upcoming and previous presentations; (2) Palette cards offer “a place to take notes and annotations” for in-presentation prompting and for recording questions and comments; (3) Palette cards can be “given to interested audience members”. When augmented with personal contact information, these were used as content-related business cards, where the content could act as a memory jogger for the card recipient; (4) as each card can be scanned individually to bring up the associated digital slide, Palette cards enable presenters to “reorganize presentations on-the-fly”. This was particularly useful for brainstorming sessions and workshops where a large number of cards could be reviewed out of order. An interviewee stated: “It is easy to skip slides if the presentation gets too long or questions come up because it [The Palette] overrides the linearity of presentation tools”. Interestingly, cards were seldom reused. More often, people made changes between presentations and reprinted cards.

### Cons

The primary problems and reasons for non-use noted were: (1) people worked on presentations “until the last minute”, and did not “have time to print cards”; (2) the copying of presentation files, and the lack of feedback to users as to this process. Specifically, people noted that they didn’t “know where the Palette puts my presentation” so if they wanted to make last minute edits, they were unable to do so without going to the main presentation room and using the barcode reader. Given Palette renames files before placing them in the appropriate directory, searching for the presentation file was difficult; (3) presentations were given in locations where the Palette software and hardware (barcode reader) were not easily available without considerable preparation; (4) system brittleness and a requirement for system knowledge to debug crashes and hangs in the Palette process.

The administrator interview followed up on the issues surrounding system brittleness, revealing that many

problems arose from the Palette’s necessary reliance on other technologies. These technologies are: a presentation creation tool (usually on the user’s PC), the PC that runs the Palette Converter, the presentation PC, a printer, and a barcode reader, all of which are located in different physical places. One or other of the PCs would sometimes hang for Palette or non-Palette related reasons. Users would not know about the hang, and that their Palette processing was in limbo. Printing to card stock also proved problematic: the default options for the printer needed to be changed to accommodate the printing of the cards, requiring users to negotiate several dialogue boxes to correct settings. This process changed as printers changed. In addition, if appropriate card stock was not loaded in the printer, cards simply failed to print. The end result of these hidden problems was that users would go to the printer only to find their cards were not available, sometimes minutes before presentations. Finally, if the barcode reader was not working effectively, the presentation could not be easily located manually because of Palette’s renaming scheme.

### DISCUSSION and SUMMARY

The Palette uses tangibility effectively to enhance digital presentation giving. The Palette allows direct, selection of ‘any slide, any file, any time’ and gives users cards that can be rearranged, annotated, and shared offline and on-the-fly during a presentation.

Problems derive from the Palette’s reliance on other technologies. This leads to brittleness and violates a central principle of system design: support for ease of use while maintaining robustness and transparency for debugging of unforeseen problems. Complex interdependencies are a general problem for interfaces that aim to fluidly support users’ tasks, which often cut across multiple applications and technologies.

In sum, the success of this tangible interface is dependent on much ‘hidden work’. Opaque processes and poor feedback frustrates users and creates considerable work for the Palette administrator. Nevertheless, there have been over 400 successful presentations: testament to the utility of the tool and the crucial role of his background work.

Finally, when evaluating technologies we need to ask (as one of our interviewees put it): “Is the bang worth the buck?” We are addressing this issue: how to preserve the benefits of tangibility, streamline underlying processes, support last minute editing and evolving slide sets, and provide clearer feedback to users *and* administrators.

### REFERENCES

1. CardGear [www.fxpal.com/ACM1/videos/CardGear.htm](http://www.fxpal.com/ACM1/videos/CardGear.htm)
2. Johnson, J.A. and Nardi, B.A. Creating Presentations Slides: A Study of User Preferences for Task-Specific versus Generic Application Software. ACM TOCHI, Vol 3, No. 1., March 1996, 38-65
3. Nelson, L., Ichimura, S., Pedersen, E.R. and Adams, L. *Palette: A Paper Interface for Giving Presentations*, in *Proceedings of CHI 99*, ACM Press, pp. 354-361, 1999.