

# Encouraging Design Reuse and Contribution in HCI Storyboarding

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Storyboards for HCI product design are helpful, but traditional storyboarding is not a long-term solution because paper-based work is difficult to centralize and disseminate. To provide a more usable alternative, we developed a digital storyboarding environment that replicates traditional storyboard functionality but takes advantage of the sorting, storing, and organizing of information that technology enables. Designed for use with nontraditional displays to provide sufficient space and natural interaction, our application allows users to construct storyboards out of previously created features shown in the form of "cards" as well as to contribute their own cards to the library for future use.

## 1 Problem and Motivation

Novice student designers in human-computer interaction often have ideas for products they would like to design, but lack the knowledge and supporting tools to aid their work. While it may be easy for students in a classroom to consult peers or instructors about ideas and to share within small groups, there is no centralized resource where people can access previously established domain knowledge, much less contribute to the community by disseminating new ideas. To provide a more usable alternative to paper-based storyboarding that replicates traditional storyboard functionality but takes advantage of the sorting, storing, and organizing of information that technology enables, we developed a digital storyboarding environment that provides access to claims in the library in the form of "cards" used to construct the pictorial portion of the storyboard.

## 2 Background and Related Work

Recently, the process of storyboarding has been used to help with product design. A storyboard is a sequence of pictures representing features, accompanied by narrative text that is used to illustrate how product-user interaction might occur[2]. A previous study demonstrated that reusing claims (descriptions of features and their positive and negative impacts on users[3]) can aid students during storyboarding[1]. However, it also showed that the currently used paper-based prototyping is not a long-term solution for this problem. As contributions to a paper-based library increase, the library becomes more difficult to sort, browse, and maintain, and the relationships between the cards in the library are not easily shown. Also, paper-based libraries are not easily centralized, further preventing designers from building on the work of others and disseminating their own work to the community.

## 3 Approach and Uniqueness

To provide a more usable alternative to paper-based storyboarding that replicates traditional storyboard functionality but takes advantage of the sorting, storing, and

organizing of information that technology enables, we developed a digital storyboarding environment that provides access to claims in the library in the form of "cards" used to construct the pictorial portion of the storyboard. Each claim begins as a picture representation, but users can choose to see other views using click options. For example, a card describing the "Using a Mouse for Interaction" claim would initially appear as a picture of a hand on a mouse, but when users choose to see one of the more descriptive views, a feature summary would appear ("Using a mouse to interact with a system") along with upsides and downsides for that feature ("+ Uses a common interaction device; - Requires users to be in contact with the system").

To provide sufficient space and natural interaction, our application was designed for use with nontraditional displays such as multi-monitor setups or tablet PCs. System interactions work with pen or touch input and currently support up to nine monitors, leveraging a scalable interface model that could support more.

The application is divided into three sections: Browse, My Workspace, and Storyboard. Each section is presented as a horizontal, resizable workspace on the screen, and cards can be dragged and dropped into any of the three workspaces.

The Browse section allows users to access the claims library to view previously contributed work. Using sidebar menu options, users can choose to see several subsets of cards: thirty cards randomly selected from the database, the ten most frequently used cards, or sets of cards that have been categorized under labels. Users can also choose to hide cards or show cards that have previously been hidden. Being able to access and organize this many cards at once provides a great advantage over paper-based storyboarding.

The My Workspace section is designed to help users separate out cards that they would like to use in their storyboard. In this module, users can edit preexisting cards as well as create new cards using a simple point-and-click interface.

Finally, the Storyboard section lets users arrange their cards in a storyboard form and add scenario cards where they can type their narrative. This section also supports templates that provide a general layout of where to place narrative cards and different types of claim cards.

#### **4 Results and Contributions**

The primary contribution of this work is a tool for storyboarding using pictorial artifacts. To further investigate how easy it was for users of the tool to search for preexisting cards and to create cards, six participants took part in a pilot study. The participants created a storyboard for a notification system and answered a questionnaire about their experience. We found that on a scale of one (easiest) to five (hardest), users rated creating their own cards (1.7/5) as easier than finding and reusing preexisting cards (2.7/5). Each participant had previously participated in paper-based storyboarding, and

five out of the six participants reported that they would prefer using the computer-based method for creating storyboards.

For future work, we would like to deploy this tool for use in student projects in HCI classes with the goals of encouraging reuse of previous work and making it easier for students to make their own contributions.

## **5 Acknowledgements**

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## **6 References**

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