

# APDT: An Agile Planning Tool for Digital Tabletops

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**Abstract.** This paper presents Agile Planner for Digital Tabletops (APDT) as a tool that facilitates agile planning meetings using large horizontal displays. Utilizing APDT on a reasonably sized digital tabletop allows collaborators to create, edit, move, rotate, toss and delete index cards just like they would do with paper artifacts. APDT provides a multimodal input system that supports gesture-, handwriting- and speech recognition as alternative input methodologies to conventional mouse and keyboard input.

**Keywords:** Agile planning, collaboration, digital tabletop, horizontal display, surface computing.

## 1 Introduction

In iterative software development models, planning meetings are a main venue where the customer conveys his needs and requirements to software developers. In agile planning meetings, index cards, so called story cards, are traditionally used to arrange tasks and feature requests into iterations. After filling in the required information, story cards are spread on a tabletop surface to allow for knowledge sharing among the attendees while they collaboratively discuss and organize the next iterations/release. Story cards may also be grouped into piles to indicate what tasks are to be accomplished in which iterations. Moving a story card from one position to another on the table surface for grouping or prioritizing purposes is a very common practice. Because of the setting of the meeting around the tabletop, reorienting story cards to make them easier to read for collaborators on the other side of the table is a common practice. Other story card related activities include modifying contents, passing the story card from one participant to another and trashing dispensable story cards. Most tools and commercial products focus on delivering the functionalities that are very likely to be needed in a planning meeting, but introduce a gap between what the traditional practice is and how the agile team needs to interact with such tools. For instance, the visualization of index cards as information holders is overlooked in many planning tools. The tool we present in this paper was specifically designed for use on digital tabletops to address usability and practicality issues found in other tools.

## 2 Agile Planner for Digital Tabletops (APDT)

The digital surface we used in our project, shown in Figure 1, is 210 cm X 120 cm with a resolution of approximately 10 mega-pixels. APDT was specifically developed for use on such a large horizontal display. APDT's ultimate goal is to make interaction with the planning objects feel as close to interacting with real paper cards as possible, and enhance this planning meeting by utilizing advantageous features of electronic devices. APDT allows for a multimodal interaction with the digital tabletop. That is, besides being able to use traditional input devices like mice and keyboards, users can use finger tips, electronic markers and even their voices to interact with the tabletop. The tool allows for unrestricted 360° rotation and movement of index cards. Using the RNT algorithm [1] implemented for APDT, users can manipulate the location and orientation of artifacts in the workspace in one fluid motion. Moreover, a tossing function allows for 'throwing' objects across the table to meet participants that are out of physical reach. The size of the table and the varying positions of the different users results in ordinary interfaces like menus or toolbars to be inconvenient. To create an orientation-independent environment, gesturing was implemented for creation, deletion and organization of planning objects. For instance, using a gesture for creation, story cards appear properly oriented towards their creator.



**Figure 1 - The digital tabletop in our lab**

Unlike some previously discussed tools that depend on external devices to feed recognized handwriting as input to the tabletop, APDT integrates handwriting recognition functionality directly into the table-interaction. The original handwriting and the recognized text are both displayed and can be edited afterwards. APDT also supports voice commands as an alternative channel for user input without the need to touch the tabletop surface.

## References

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