Tec-Ed, Inc.
Usability Evaluation





# Participatory Design

In participatory design, a team of people who represent the major stakeholders in a product design effort work together to create product designs that reflect the way customers will actually use the product in their own work. Users play a central role in the participatory design sessions, telling us about their work environments and the tasks they're trying to accomplish, including what works for them and what doesn't when they use their current tools. This proactive user input can both result in better designs and help shorten product development and testing cycles.

Tec-Ed has designed and implemented several participatory design projects for clients such as Sun Microsystems, Cisco Systems, Logitech, and others.

## Origins of Participatory Design

For many years, the usability engineers at Bellcore (one of the AT&T research splinters) invited software engineers and prospective users into their labs to play games--games with serious product development outcomes. These game methodologies included PANDA (Participatory Analysis, Design, & Assessment), CARD (Collaborative Analysis of Requirements and Design) and PICTIVE (Plastic Interface for Collaborative Technology Initiative through Video Exploration).

Although the focus and precise rules of these games vary, they have the following common properties: engineers and end users working together on a design, using low-tech tools like different colors of index cards, sticky notes, and felt pens; an initial focus on user tasks quite apart from GUI design; and resultant software specs that demonstrably shorten GUI development and testing cycles.

## Participatory Design Methodology

Depending on the complexity of the tool or feature being designed, a complete participatory design exercise can last from one to five days. The exercise is performed by a team of individuals working with a facilitator at a round table to create a paper prototype of a GUI design. A complete participatory design exercise always includes the following top-level outcomes:

- Phase 1, Task Flows, represents what the users want to accomplish with the proposed tool. These flows do not refer to underlying system architecture or data representations but describe the real-world steps the user must go through in any environment. The team creates task flows as a sequence of index cards, each containing a noun and a verb.
- Phase 2, Task Object Design, occurs when the team fleshes out the definitions of the nouns on the first set of task-flow cards. The team notes the attributes and actions for each task object on a new set of index cards and regroups them, eliminating redundancies as they appear, into a hierarchy of parent and child objects.
- Phase 3, GUI Object Definition, finally allows the team to think in terms of software

tools as they translate their task objects into screens, lists, and controls and their representation--whether text or graphics. Any object can be represented by multiple types of windows or "views" that can be opened simultaneously.

Tec-Ed uses videotape to record the design process and specific results. In fact, it's a good idea to position the primary video-camera directly over the work surface to keep track of all the elements tried--and rejected or kept--as the paper prototype gradually takes shape.

At the end of the three-part exercise, the usability specialist takes the paper prototype, fills in design details according to the organization's style, and hands off a high-level GUI spec to the software engineers. This high-level GUI spec consists of sketches or block diagrams of screens and textual descriptions of the GUI behavior. It's often supplemented by a highlights video that underlines important design considerations and shows the paper prototype that emerged during the participatory design sessions.

A full-blown application with disparate users will require at least five days of participatory design sessions; initially, Tec-Ed "unpacks" the complex set of tasks into manageable chunks and then reassembles them before we finish. Often, though, tighter definition of target audiences and a constrained definition of the user tasks to be supported result in shorter participatory design cycles. A one-day session would typically support one major task (that will become a new product feature) for one key user audience.

### Participatory Design Participants

Every activity in a participatory design exercise requires a team of people who represent the major stakeholders in the product: users, system designers and developers, a usability engineer, and others as needed (for example, people from documentation, training, or testing). Tec-Ed's experience shows that teams of at least four individuals, but no more than eight, are most successful and make the best use of all the participants' time.

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