



Scenario boards can be used to improve validation of early product and service concepts

A critical skill in today's environment

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Understanding how new product concepts fit into user workflows and environments of use usually requires the creation and testing of prototypes. Today, some companies are using scenario boards to accelerate this process. In this article, the authors will explore this flexible concept development tool that is being used to help define user needs and opportunities for product and feature innovations with minimal time and resource investment.

Senario boards consist of a series of sketches loosely depicting the new product or service concept integrated into the user's workflow and environment of use. Users provide feedback on how the new product or service will impact their process or environment without focusing on specific product features. Scenario boards elicit valuable, early-stage user input to guide concept selection and definition. They enable companies to avoid committing significant resources to the advancement of unproductive concepts.

Specific applications of scenario boards include the introduction of new technologies, directional testing of concepts, definition of a new workflow or business model, and the communication of development decisions to internal stakeholders. In this article we will discuss the steps involved in conducting scenario board research, its applications, and results.

Early-stage concept validation

Concept validation is a gating step in most formal Product Development processes; however, presenting early-stage product and service ideas is challenging because:

- They are intrinsically new and foreign to users
- They have limited resolution and refinement at this stage
- Users must imagine them rather than experiencing them in real-world environments

Overcoming the above challenges usually requires the creation of physical models, service infrastructures, or digital prototypes for user

testing. Scenario board research is an effective alternative that elicits meaningful and actionable user input before the creation of expensive prototypes.

Defining scenario boards

Storyboards have been used for many years in the film, advertising, and electronic game industries. Their modification into scenario boards for Product Development has gained prominence over the past few years.

Scenario boards show a series of images in multiple vignettes that depict the product or service as an integral part of user workflow. The product or service is loosely sketched, purposely maintaining the research focus on process rather than on product form or features.

Unlike prototype-based user research, the preparation of scenario board research requires little investment. The investment at this point consists of conceptual development of product or service ideas and the potential context of use, and the sketching of the actual scenario boards. Details can be found in the box on this page.

Exhibit 1: Using Scenario Boards to Create a Color-Matching Technology Concept for Home Decorating



Source: Insight Product Development

How scenario boards are used

Scenario boards are used to research both physical products and service offerings in the following ways:

- **Physical Products**—Scenario boards may depict different configurations of the product and specific interactions the product may support. They often highlight the contexts of use and complementary instruments or devices as well as the detailed layout of the environment of product use.
- **Service Offerings**—Scenario boards may show different steps of the workflow, possibly customized to depict a variety of user applications. These scenario boards are often devoid of any specific product embodiment.

Simple sketches are detailed enough to successfully communicate the concepts although call-outs may highlight key affordabilities, configurations, or steps in the proposed workflow. For example, a call-out might highlight how a new product concept would interact with another tool that is central to users' processes. In general, the focus is not on product features but rather on process, environment, and context.

Applications in Product Development

Scenario board applications fall into three main categories, as shown in the box on this page. The introduction of new-to-the-world technologies, selection of a concept direction from a range of potential solutions, and the definition of a new workflow or business model with products or services. An auxiliary benefit is the effectiveness of scenario boards for communicating final design directions to internal company stakeholders.

Introduction of new technologies

When companies acquire new technologies that are not embodied in a product or service, or when they seek to re-apply existing technologies in new ways, the challenges are two-fold: to conceptualize ways to apply or transition the technology, and to choose the most promising concepts.

A good example is X-Rite Corporation (See Exhibit 1 on page 16), which provides color-matching equipment to retail stores, such as Ace Hardware, Home Depot, and Lowe's. X-Rite's technology helps paint department operators measure customer samples (such as pillows or carpet squares) and mix matching paint colors. X-Rite wanted to transition its technology from behind the paint counter into the hands of home decorators, a group that is unfamiliar with the technology. Based on generative research of interior designers, homeowners, and vendors, the Product Development team conceptualized a wide range of potential products.

Given an abstract description of the technology, research participants would have had trouble giving productive input. Using scenario boards (such as the one below), users were able to see how the new product might impact their process of choosing colors.

Based on scenario board research, X-rite ranked the concepts and moved forward, confident that the selected concepts addressed user needs in the company's new vertical markets.

Exhibit 2: Using Scenario Boards to Test the Concept with Doctors, Nurses, and Patients

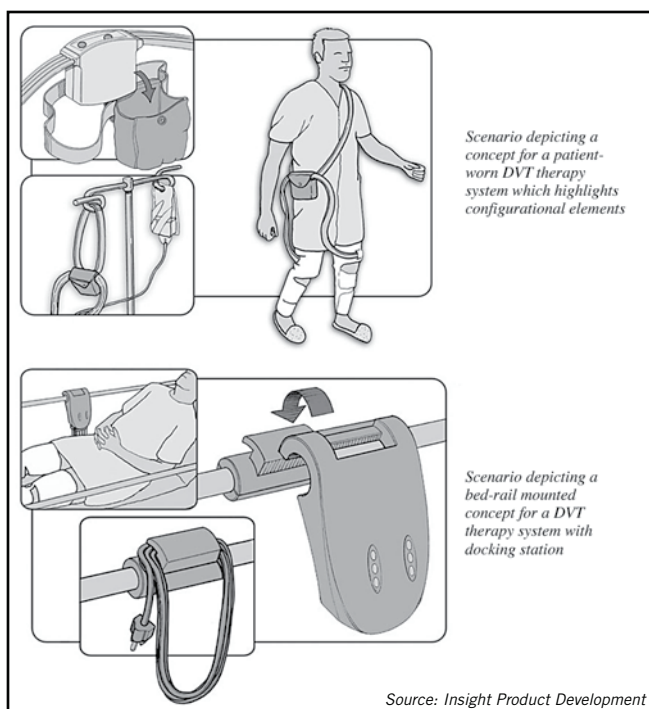
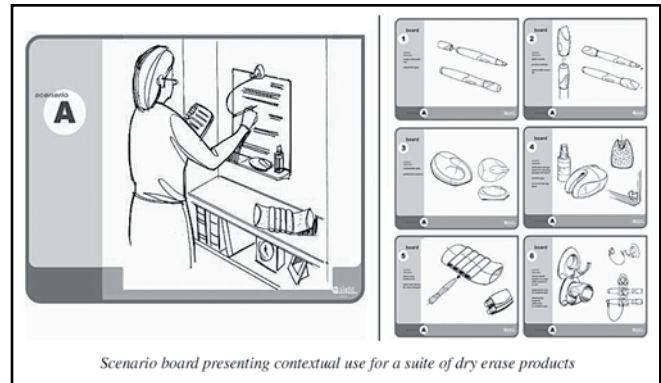


Exhibit 3: Scenario Boards Can Show Contextual Uses



Source: Insight Product Development

Directional testing

When companies try to select a concept, initially that process can be problematic because they lack user input. In the process of concept testing, scenario board research provides user input to fill this gap.

Scenario board research can also drive concept refinement and component reconfiguration. For example, a manufacturer was creating a next-generation product for the prevention of deep vein thrombosis (DVT or blood clots) in post-operative hospital patients (See Exhibit 2 on this page). The company needed to make its existing technology portable, and product developers were considering a wearable concept with a docking station residing in the patient's room.

Scenario board research showed that the wearable concept was unnecessary. Patients were confined to bed; therefore, a bed-mounted unit was more desirable. Nurses saw the docking station as an encumbrance and requested fewer, not more, components. The scenario board research justified a change of conceptual direction to a bed-mounted unit that would be portable and self-contained. The company now had a validated concept and could proceed with confidence down the involved path of medical device development and regulatory approval.

Workflow and business model definition

When a new product or service changes the workflow, scenario boards can be used to communicate the change to users. Since participants lack an intimate understanding of the new workflow, an abstract or generic portrayal of the new product encourages respondents to fill in the blanks. Then, users may generate ideas for innovation. In this case, the change in workflow is necessary for the product's success. Scenario boards may also provide insightful perceptions for task allocation and responsibility centers, and even uncover expectations about who would pay for what part of the product or service.

One project that used scenario boards involved the development of processes for managing patient data across multiple healthcare environments. Scenario boards uncovered expectations about who is responsible for setting up records and preferences about how the process should be co-managed across clinics. Scenario board research also revealed issues about compatibility with existing technology infrastructure and institutional

Scenario Board Applications— Three main categories

- The introduction of new-to-the-world technologies
- Selection of a concept direction from a range of potential solutions
- Definition of a new workflow or business model with products or services

policies; it defined preferences and requirements about how data would be presented and exposed various viable reimbursement patterns.

Internal communication

The scenario boards used in research can be refined to present final design directions to company management and other development stakeholders, who respond positively to seeing concepts illustrated with relevant contexts and communities of use.

Developing scenario boards

Scenario boards need to be customized from program to program. Fortunately, line sketches can be used for the initial creation of the scenario boards.

**Scenario Boards—
Implementation Guidelines**

Following some general implementation guidelines helps developers to optimize scenario board research results.

Concise Images—The visual layout of a scenario board moves the participant’s eye through the image sequence in a logical way so that the respondent can quickly understand the product or service concept.

Color—The use of color should be limited—specifically for highlighting key interaction points or emphasizing specific components—and should be consistent across all images in a sequence.

Coherent Sequencing—Scenario board sequences need to be organized logically and intuitively with image counts kept to a minimum (but not at the expense of overloading an individual image with content and description).

Simplicity of the Product Representation—Representing only the core attributes of the product or service helps participants focus their feedback on environmental fit and workflow rather than on detailed product attributes.

Context of Use—Conducting scenario board research in the relevant environment of use helps cue participants to the challenges and advantages of the product or service concept as it relates to their environment or workflow. The context cues users to potential conflicts with other tools and processes normal to their routines and environments. If the environment of product use is unavailable or inappropriate (for example, a desert battlefield for a military product), developers may place special emphasis on depicting it so that the boards help keep the participant’s input grounded in that environment.

Communities of Use—Since scenario boards often represent the product’s entire workflow or lifecycle, it is important to include all relevant communities of use in the research process. When goals and product interactions vary among user groups, it becomes necessary to customize the scenario boards for each group. This customization establishes credibility with users and quickly opens a constructive research dialog, which is important when time in the field may be limited.

Counterbalanced Order—It is important to counterbalance the order in which the product concepts are shown to reduce order bias and garner more reliable preference data.

Leveraging generative research

Generative research provides the basis for understanding user workflow as it will be represented in scenario board form. For example, when testing a new surgical technology, the creators of the scenario boards used generative research to enhance their understanding of how surgeons would use the product, scrub nurses would manage the product before and after its use, and circulating nurses would store and unpack the product. Effective scenario board creation should draw from generative research.

Prompting improvisation

In situations where little is known about existing workflow, a simplified and abstracted portrayal of the storyboard sequence allows respondents to build upon presented scenarios and fill in the blanks. Often, structured improvisation can lead users to generate interesting feedback that guides development in unexpected and meaningful ways.

Clarifying unknown variables

Scenario boards help product developers clarify specific areas of ambiguity. Take the example of a product concept whose functionality and technology are well defined but the contexts of use are not. Scenario boards loosely depicting various environments of use can be paired with concept renderings, allowing users to populate the scenes with the most appropriate solutions and articulate how concepts need to be designed to meet specific needs within these contexts.

Identifying interferences and improving workflow

Scenario boards help users to envision and point out how new concepts may interfere with other important activities and products within their workflow. Users offer feedback on how concepts might be modified to avoid interferences, improve workflow, or enhance the user experience.

Developing systems

Scenario boards help users visualize the use of multi-component systems or suites of products. The boards illustrate how system components will interact with each other and with other tools and environmental factors. For example, when Sanford Corporation wanted to evaluate a dry erase system consisting of markers, erasers, cleaning solution, and mounting equipment, the developers created scenario boards depicting a boardroom context. In the scenarios, the user was responsible for diagramming sales projections, which required research participants to envision themselves multi-tasking (writing, erasing, picking up and setting down various implements) and achieving a specific goal (communicating effectively with colleagues while using the dry erase system).

Staging a range of conceptual elements in plausible situations helps users to consider the larger picture and make informed trade-offs as necessary. In the box on this page you will find some guidelines to optimize the use of scenario boards.

Scenario board research has many advantages. It provides development teams with a straightforward, inexpensive, and effective method for selecting, developing, and refining product and service concepts. It has the ability to achieve validation goals before significant development expenditures are incurred, which is an important improvement over past methodologies. In addition, it gives developers a deep understanding of user workflow, needs, goals, and environment of use as they advance the chosen concepts. Used in conjunction with other generative and evaluative research techniques, scenario boards are becoming a key research tool of user-centered Product Development.

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