

# "Customer Needs and Values"

A Method Developed as a Springboard for Innovation

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## Introduction

Between 2000 and 2002, a technique for probing end user needs and values was developed for the Development, Technology & Innovation unit at STScI. The purpose in capturing user needs and values is to form a solid basis for innovation, product development and process improvement. This paper discusses the general methodology used. Detailed examples of the method's application and how it fits into overall innovation and process improvement appear in the reports for the *STScI Travel Project* and *Documentation on the Fly* (SharkCage 2) available through <http://www.stsci.edu/~carolc/reports/>.

For example, we determine the value to the user of the products, services and processes that are or will be provided to them. We follow through by examining all activities that contribute to the creation of the product, service, etc. Herein I refer to a product, service, method or process provided to or for a user as "the product" for simplicity.

Value, being defined by the end user, may have many attributes such as quality, integrity, simplicity, speed, volume, responsiveness, etc. These may not be the same attributes articulated by the designer or developer (well-engineered, efficient, comprehensive design, contains many features, etc.). Product value is defined, in part, through customers' **feedback** and, *more significantly*, by what customers **do** and **how they work**. Observation of customers *in situ* is advantageous. Actually, I believe it is critical.

**Why is it difficult for customers to articulate value?** Because end users usually only can describe value in terms of existing solutions and products.

**Why is it difficult for developers to understand value?** Because they primarily hear value assessment in terms of products and services they already provide.

## Background for The Method

The primary goal is to determine what the user needs and desires. It is unwise to bring in a pre-conceived notion of the product or have an already designed product with the intent to teach users how to utilize the product "properly". I contend that a warning sign that the competitive edge could be easily lost is to hear the user say "the product is ok, *we have learned to use it as you intended*" or "we have learned to adapt to the way you do things". This sentiment may be appropriate in some circumstances but is rarely valid in situations where an organization is providing support or products to users. Even in product testing and improvement we need an unbiased initial view of the situation.

In our SharkCage projects, we needed to understand how the customers work and their work environments. Initially in each project, we had to ignore existing products and services so we would not influence the data we were collecting. User feedback and response to surveys can be used as data to be included in our ultimate analysis, but surveys and feedback mechanisms must be crafted exceedingly carefully to extract the necessary information. Survey items are usually heavily biased by the survey author who wishes for or envisions a particular outcome. Therefore surveys may not present all the possible options for answers or even be relevant for the user being queried. Surveys rarely provided unbiased clean data to SharkCage.

A recommended method for understanding the user needs is described in *The Art of Innovation* (Kelley 2001). “Though we’re pretty confident in our ability to observe people and draw insights out of them, we pride ourselves on starting every project humbly – and a little dumb. We don’t want to peek at the answers before we know the questions”. Tom Kelley further writes “So [we] started with the basics, sending a team of people into offices to take photographs, watch and ask questions”. A further principle that we, like IDEO, experienced in DTI was that “through studying people of all ages, shapes, cultures, and sizes we’ve learned that the best products embrace people’s differences”. End users usually do not have identical habits, values or needs as each other or the developer.

A similar method has been used by STScI’s OPO in understanding how teachers and students use online educational materials. Through observation of a variety of classrooms, video and interviews, a clear picture of the working environment emerges and the ramifications for product improvement are illuminated.

### Application of The Method

**“Observation” became Storytelling:** Considering that for SharkCage, our end-user base was usually far-flung, it was difficult to observe a representative sample of our users. Instead, we used “storytelling” as a surrogate for direct observation. We explained to users our methods and they were amused by the concept of installing observers or a video camera in their offices or following them through their work activities. They appreciated the impracticality of the situation. Instead, we asked them to describe, from start to finish, how they approached a task. Usually they were quite pleased to spend a few minutes to chronicle their experiences.

**Framework for Storytelling:** To create some initial structure for obtaining stories from users, we first articulate within the investigative team what the key question or questions are. For example, for the STScI Travel Project our *big question* was “What happens once a person decides to travel?” In fact we also wanted to understand earlier steps in the process - how travelers decide to travel, that is, what triggers a trip to be taken in the first place? For SharkCage 1, our big question was “What do observers want to know about their data?” We want to avoid crafting the answer within our big question. For example we did not say “Will an online travel request form make the travel process more efficient?” We purposefully put aside any preconceived concept for the solution when we take on a project. Therefore we cannot feed our favorite solution to the user during storytelling.

In order to encourage the user to tell the story pertaining to the key question we are investigating, we identify the principal categories of items to be learned about. For example,

- What actions does the user take? Why?
- How much actual time do the activities take?
- What is the elapsed time?
- What annoyances or inhibitors exist?
- What accelerates the work/task/activity?
- What work-arounds do users invoke?

In an additional step, we craft questions to help the story telling should we miss some crucial points, to assist if the story becomes stalled, and to insure we have a complete picture and can “see” everything that the user would do in the circumstance we are probing c.f. *The Travel Project* (Christian, Curran and Hough 2000). These questions are primarily to remind ourselves, the interviewers, of items we might otherwise omit. Usually we do not use the questions verbatim, but instead, use them as our own reference to stimulate the discussions with the users. If the user can demonstrate to us an actual activity such as accessing and using a website, filling out a form or some other relevant item, it can be very helpful in creating vignettes into their work environments. “Show me what happens next...”

We also ask questions to understand what would happen if things did not proceed as planned or desired, e.g., “What if the travel office did not receive the authorization form in a week?” or “What happened if you could not contact your program coordinator for your observation?” etc.

**Documenting the Story:** We document each step of a customer’s task or transaction to achieve a result. We also want to get an unambiguous depiction of the result that the user actually *wanted* rather than the result that was obtained. (“Well I thought I would always get an e-ticket, but I ended up with a paper ticket that I forgot when I went to the airport”).

For each step, we also want to associate values, effort, elapsed time and other attributes to it. Our guiding philosophy is that every individual and process that handles a product on its way to completion should have an unobstructed path to the end user. Every step should add value. We augment the user’s story with the unseen tasks and transactions that the Institute provides so that we depict the whole flow of product creation. Every step and activity, no matter how small should provide some value to the end user. Near the end of storytelling we can ask “Did you know that we do X, Y or Z?” or “We usually do X, does that make a difference to you?” etc.

**Determining User Values:** While the user tells us the story, we are alert for anything that is connected to a user value, for example words such as:

- Saves time
- Allows me to control/decide
- Convenient, easy
- Clear
- Flexible, adaptable
- Good service
- Competitive
- Automatic
- I prefer..., I need...

Clearly antonyms for the above are detractors and signal that value has not been added! We also associate such values to any of the internal processes or actions that the Institute may take to create the product.

## Result

The method I describe here is one I adapted from proven industry techniques. The desired outcome of the user or “customer” needs and values assessments is a nearly complete picture of the users’ work habits and environments in the context of the “big question” we pursue. The method is a surrogate for direct and thorough observation, but is clearly less invasive, is more practical and is more economical. The results are solid *data* that are input into innovative thinking, systems, and product creation. These data can be augmented by surveys and user feedback queries, but those data have to be analyzed carefully for hidden biases and preconceptions that usually form the basis of the survey authoring.

## References

Kelley, T. 2001, *The Art of Innovation*, (Doubleday: New York)

Christian, C., Curran, G. and Hough, D. 2000, "*The Travel Project at STSci: a Case Study Focused on User Values*", see link at <http://opostaff.stsci.edu/~carolc/reports/index.html>