USER INVOLVEMENT IN NEW PRODUCT DEVELOPMENT

A very brief overview of why, what, and how of involving users for the *Product Sustainability* course (Aaltonaut), Fall 2018

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This is a very brief introduction and overview on why, what, and how of involving users in product development. Do not consider this a comprehensive take on the issue, but merely as pointers on how to get started with considering the user perspective to you product.

WHY DO YOU NEED TO UNDERSTAND YOUR USERS?

Let's kick-off with a few harsh facts:

1. The success rate for new products is only about 40-50%. In many industries even much lower.
2. Leading edge technology alone is not sufficient if the product does not meet the user needs
3. Lack of sufficient understanding of the users and use of a product is one of the most common causes of product failure on the market and of costly changes to the product after the launch of the 1st generation

It is quite evident that understanding user needs and preferences is a critical aspect in creating a successful product. However, in reality, most design decisions are made either partly or fully based on designer's own experience, assumptions, and intuition on what the user needs and preferences are. A development process includes hundreds of decisions of different scale that effectively determine what the resulting product will be and it is not just possible to conduct user research about every aspect and it is not realistic to test and confirm all decisions with users. Intuitive understanding is thus an important resource; it is readily usable, helps make fast decisions and avoid large errors.

However, this designer **intuition is only as good as the knowledge and understanding that it is based on**. The risks of relying on intuition in decision making include unreliability such as incorrect generalizations, and relying on assumptions without testing or analysis. As humans, we are prone to many types of errors in our thinking. We tend to generalize our views to apply to others as well and make assumptions about others not based on solid information.

As a general rule, the greater the social distance between you, the designer, and the user of your product (age, economic situation, profession, context of living, culture etc.), the less likely you are to intuitively understand the user. However, **do not jump into assumptions** even with people quite similar to yourself, as people are more different in their views, beliefs, ways of thinking and preferences than it would seem on the surface.

WHAT DOES USER INVOLVEMENT AIM FOR?

Ultimately, understanding users aims at creating products (or services) that satisfy the current and future needs and preferences of their users. So what is a successful product like from the perspective of the user? One way to articulate this is the following as presented by Hyysalo (2009). It should be:

- **Useful**; it helps the user to reach their goals and develop their actions.

- **Usable**; it is easy to operate and performs as intended also in practice.

- **Desirable**; it conforms with user needs and desires.

- **Delightful**; using or owning it provides joy and pleasure (or at least diminishes misery).

    … and contain as few aspects as possible, that prevent the realization of these qualities

Another way to think about the issue would be to consider the different *dimensions of user experience* for a product that might be articulated as follows:

- **Utilitarian;** efficiency/convenience/usability, excellence/quality…

- **Emotional;** aesthetic/beauty, play/fun…

- **Social;** status/success/impression management, esteem/reputation…

- **Altruistic;** ethics/morality, religious/spiritual…

Note that there are multiple ways of articulating the different aspects of user experience. The above can be used as a checklist for considering different aspects of user engagement with a product. User involvement aims at generating knowledge about the **user** and the **context of use** that make it possible to create such products.

People are not often able to truthfully articulate their preferences. That is why directly asking the users without questioning their responses works poorly. We tend to rationalize our actions and wants, project an ideal image of ourselves and avoid revealing things we might find embarrassing, such as being unable to make sense of an app. We don't always do this on purpose, but unknowingly. Our perceptions of our preferences differ from our actual preferences. A classic example is coffee; whenever people are asked about what kind of coffee they prefer, they respond along the lines of "*dark, rich, full of that coffee aroma and taste*", but in the end, it is the lighter roasted more bland tasting variants that sell.

So you need to look beyond the what the user says. If you are lucky, you get from false assumptions of both you the designer, as well as the user, to what actually hits home, even to suprises and novel offerings that the user would not realize she needs or wants before being presented with them.

There is a mismatch between what designers think they know, what the users think they know, and what is actually true.

WHO ARE THE USERS?

It is important to note that it is not only the first-hand primary user who might be important. Many others are also affected by the product use or they affect the use experience of the primary user. For instance, if I am using my smart phone to navigate to a meeting with a friend, I am the primary user of the maps app in my smart phone, but if it does not work properly and I am late, my friend is also affected, as she ends up waiting for me. So think about the different levels of users and their relation to your product.

- **Primary users**; use the product themselves

- **Secondary users**; do not use the product or system directly, but give or receive feeds

- **Tertiary users**: affected by product use even though are not directly interacting with the product

- **Non-users:** not using the product at all, sometimes by conscious choice

Also people who are not using the product might affect the use experience, take for example that one friend who is not on Facebook and can't join the group you made for planning your friends bachelor party. Also, people who have opted out of using a product by choice might have interesting insights on what made them abandon or not start using the product. A good example of looking at non-users is Nintendo Wii, which was created by not looking at console gamers, but people who were not into it. Nintendo would not have been able to compete with Sony or Microsoft if they had attempted to create a more powerful console for heavy gamers, but created a huge success in an untapped market by adopting a different approach.

It is not just the actual users who are important, but there always is a variety of other stakeholders who might be important. You should consider these stakeholders, their importance and how much you need to know about them. There might be people with a relation to the product such as:

- Purchaser
- Decider
- Maintainer
- Maker
- Seller
- Regulatory body

A good designer considers all stakeholders!

Avoid generalizations and assumptions

Be wary of the assumptions you make about your user! Seemingly similar segments of users still contain staggeringly different people with differing needs and preferences. This is why you really need to dive in to understand what your users are about.

OUR USER

- Male
- Born in 1948
- Grew up in Great Britain
- Married with children
- Successful and wealthy
- Likes dogs
- Spends his winter holidays in the Alps

On paper, like two peas in a pod

HOW TO INVOLVE USERS?

Users can be brought in to the development on very different levels. On one end of the spectrum is not involving the users at all, only developing a solution based on our knowledge and intuition on what the users would need and want. Obviously this is very risky. Beyond that, basic market research aims at exploring the potential user or customer base typically by using questionnaires or market size estimations. This type of quantitative research definitely has its place in order to estimate the potential of markets and prevalence of needs. Quantitative data, however, yields very surface-level understanding and carries a low possibility of providing proper understanding of the users or new and innovative ideas. This makes it less useful or at least not sufficient for conceptual design.

In actual user involvement, users can be used primarily **as passive informants** ("design for"). This typically means doing interviews or observation. Talking to the users and going to see them in the actual (possible) use situations. This is often a sensible approach in terms of resource use and the most common approach to involving users.

"Designing with users", i.e. participatory design, means that the users are brought in to the design process as more **active participants** to ideate and generate with the developers. They are given tools and means to participate with. This can take place for example in the actual use context, possibly with the help of concept drafts, early mock-ups or prototypes that the user can tinker with. Or the user could be invited to a artificial lab setting, involved in a online platform to ideate and discuss with others and so forth.

Users can also be the **actual innovators**, who come up with new solutions based on needs they have faced before the mainstream ("design by"). This is called user innovation. In these cases, companies can try to locate and identify the innovative users, their solutions and/or needs, and bring them in to development. Surprisingly many products and product categories, such as mountain bikes have been first invented by users rather than any manufacturing company. There was a time when mountain bikes were not commerically available. They were born from enthusiasts modifying their city and touring bikes to be able to ride downhill and soon caught fire to become the largest selling bicycle type. Imagine the comptetitve edge for a bike manufacturer back in the 1970's that would have identified the early solutions and the trend itself.

To sum up, users can be involved on many levels and we definitely need to at least talk to them if nothing more.

(Market research)

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Designers active	**User-Centered Design**	"design for"
	Participatory Design	"design with"
Users active	**Lead User Innovation**	"design by"
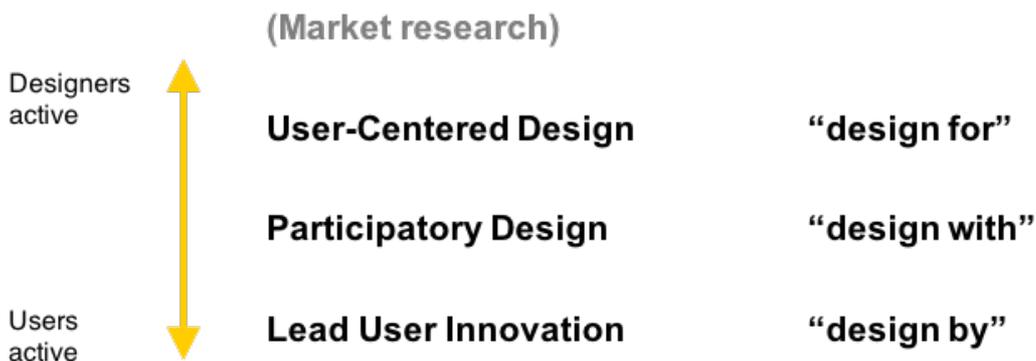
There is a massive amount of higher level approaches and more detailed tools for collecting user insights. This can be quite daunting. In practice, what is in most cases important, is a systematic and sufficient gathering of user information as a basis for design. The images on this page depict typical ways of organizing user-centered design processes.

Typical user-centred design process
[http://www.emotivesystems.co.uk]
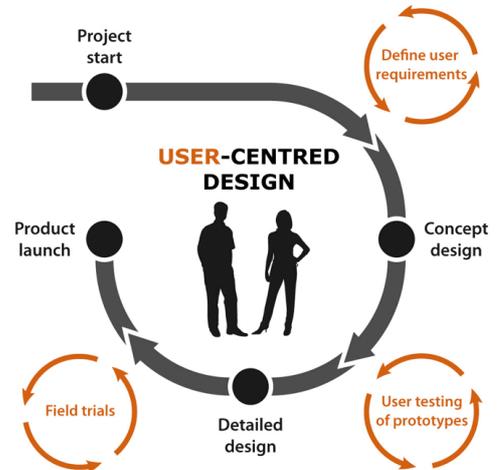
Stanford d.school Design Thinking Process

https://dschool.stanford.edu
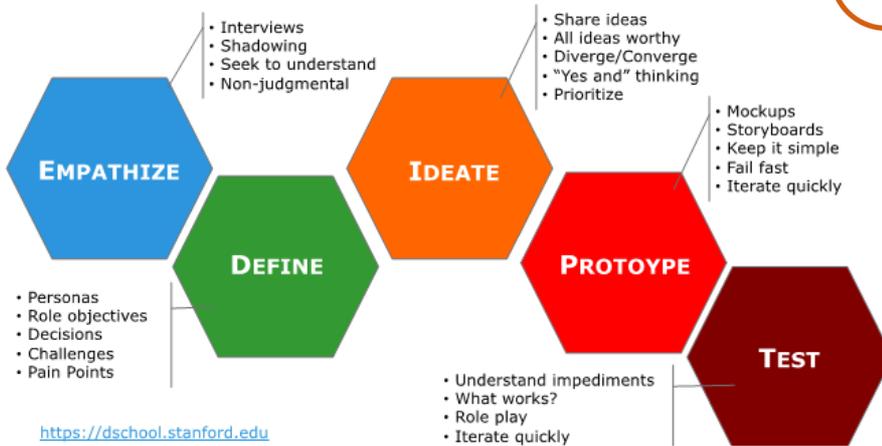
Most approaches are built on differing ways of utilizing some basic tools. Here we will briefly overview some of these which are potentially useful and applicable for PDP. The image below depicts the relationships between human actions, knowledge and data collection methods.
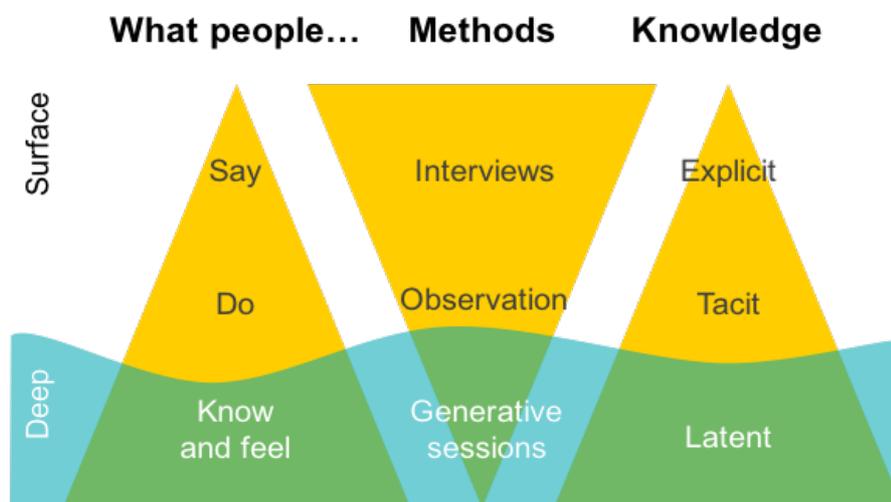
Source: Katja Hölttä-Otto, adapted from maketools.com (original by Sanders and Stappers)

HOW TO COLLECT INFORMATION?

Interviews, observations and participative setups are basic tools of user involvement, which are applicable on the PDP course.

Interviews

There are many ways to conduct interviews; an interview be anything between going through a structured questionnaire and open conversation. A semi-structured interview is often a safe bet.

Consider:

- Who are the people or groups of people that should be interviewed? The loud ones are always not the most important.
- What needs to be found out? Avoid spending time on irrelevant issues, but also be wary of too narrow focus.
- What kind of questions should be asked? Open or specific? Those more specific ad-hoc follow-up questions allow digging deeper into fruitful topics
- How many interviewees (and interviewers)? Usually one to two interviewers are ok, more is going overboard.
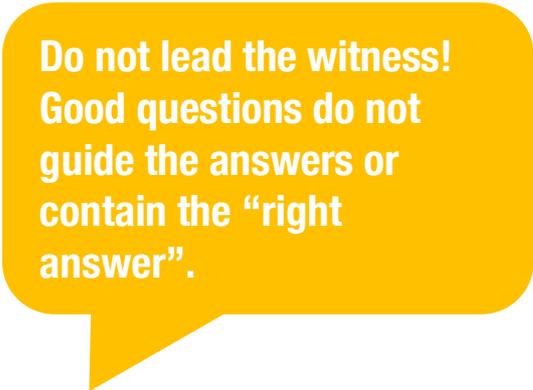
> **Do not lead the witness! Good questions do not guide the answers or contain the "right answer".**

Conducting the interviews and asking questions:

- Do a trial run on the interview to adjust questions
- Record if possible, always take notes (with two interviewers, one can be the primary interviewer and the other focus mainly on taking notes and helping with the follow-up questions)
- Think about what are good or bad questions. The questions should not contain assumptions or reflect the interviewers opinions. Usually it is good to avoid questions that can be just answered by yes or no.
- Start with more open questions and only move to specifics in follow-up questions. This helps in avoiding bias
- Follow up with why – asking why can lead to uncover user motivations and rationale
- Always take a moment right after the interview to make field notes of your immediate thoughts and impressions, these are often hard to recollect later on.

Contextual interview/inquiry

Essentially combining observation and interview. The researcher asks questions during the use situation or in the use context. More reliable than a regular retrospective interview and makes it possible to ask for clarifications on user actions. This can be a powerful and resource-effective approach. More informative than interviews, but less time consuming than observation. Ask questions such as "Could you walk me through the process of getting a cup of coffee starting from the very beginning?".

Design probes

Probes are tools for user self-documentation. They are resource-efficient as the researcher does not need to be present and might provide access to parts of life where it is not possible to follow the user. Probes can be kits (for example instructions, notebook and camera) or stationary (for example a question on a wall next to the coffee machine where users can leave their views on post-it notes).

Observation

Observation is about seeing users in their "natural environment" to gain first-hand experience and understanding, and to identify hard-to-verbalize actions and reactions. Observation usually tries to avoid interrupting the natural flow of events. Some key concerns in observation are:

Seeing enough;

- Negotiating access, not disturbing the normal flow of events (unless meaning to)
- Catching what is going on even in tricky situations, e.g. when user looks at a computer, cell phone, listens to a call, reads…
- Not limiting focus or fixating on a specific action; something unexpected might be important

Recording enough & the right things

- Observation can be quite time consuming, a long time might pass without anything significant taking place. This however varies a lot depending on what the activity is.
- Going through videos (if they are used) takes time
- Live transcription requires speed and focus: use a simple templates or frameworks to document, for example AEIOU-framework*
- Go through the data as soon as possible

  *AEIOU is a coding structure mnemonic for organizing data standing for Activities, Environment, Interactions, Objects, Users.

Different types of observation

Passive observation
The researcher stays passive observing for example how people act in a space. The research does not interfere with the activity. Observation relies on the interpretation of the researcher as no questions are asked from the user to clarify on their actions or motivations.

Shadowing
Like passive observation, but moving around following a specific person for example during their workday.

Stimulated recall
Recording a use situation on video and then watching the video with the user to be able to discuss the use situation without interference. Makes it possible to ask for clarifications on user actions without interrupting the natural situation.

Observation in a laboratory setting
For example usability testing in a non-natural setting. Makes it possible to for example use multiple cameras to catch intricacies of use. Typical approach to user testing.

Participant observation
The observer is part of the activity while conducting observation rather than a passive by-stander.
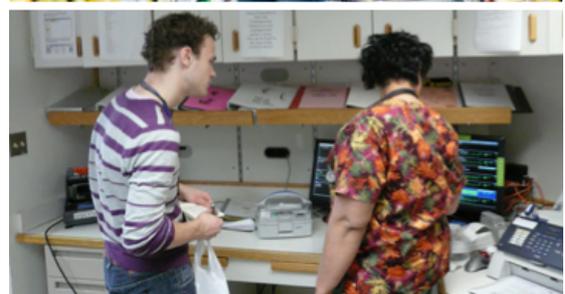
HOW TO MAKE SENSE OF THE DATA?

This is a typically somewhat messy process with no single correct answer to how to analyse the gathered insights. The process is typically externalized, meaning that you get off the laptop and use space to make the collected material visible and easy to access. Affinity diagramming is often a good way to start. Different visuals are typically used (journey maps, relationship maps, expectation maps…) to structure the information. Connections are made between the learnings and the initial challenge. The answers you are looking for might follow directly from the questions you have presented but found between the lines.

Consider issues such as:

What was surprising?

What was usual?

What was unusual?

Typical tools for communicating user insights include:

- Personas
- Scenarios
- Use cases
- Storyboarding
- Journey maps
- A day in the life
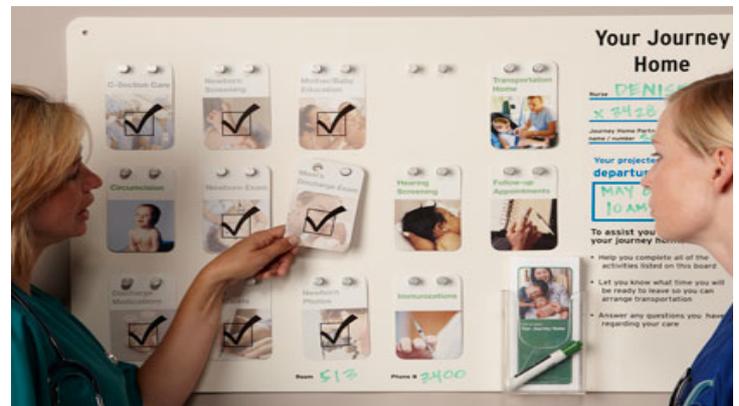
Example: Personas

Fictional individuals created to represent user groups

Describe "real people" with backgrounds, goals, capabilities, values, and context

A (clear) picture of the user's expectations, needs, or how they're likely to use a product

Need to be based on actual user insights, not assumptions!

Persona by Greg Carley, via Behance:
https://www.behance.net/gallery/14975537/Disney-Movies-Anywhere-App-Personas

REMEMBER THE USERS OR
YOUR EFFORTS ARE LIKELY TO BE IN VAIN

Consider:

How does your product deliver value for the user?

Who are your users? Who are not? Why?

Who are other stakeholders related to your product?

Who are the users that should be involved, how and when?

What would be the appropriate methods?

Do not trust the users blindly.

Involve the users early enough.