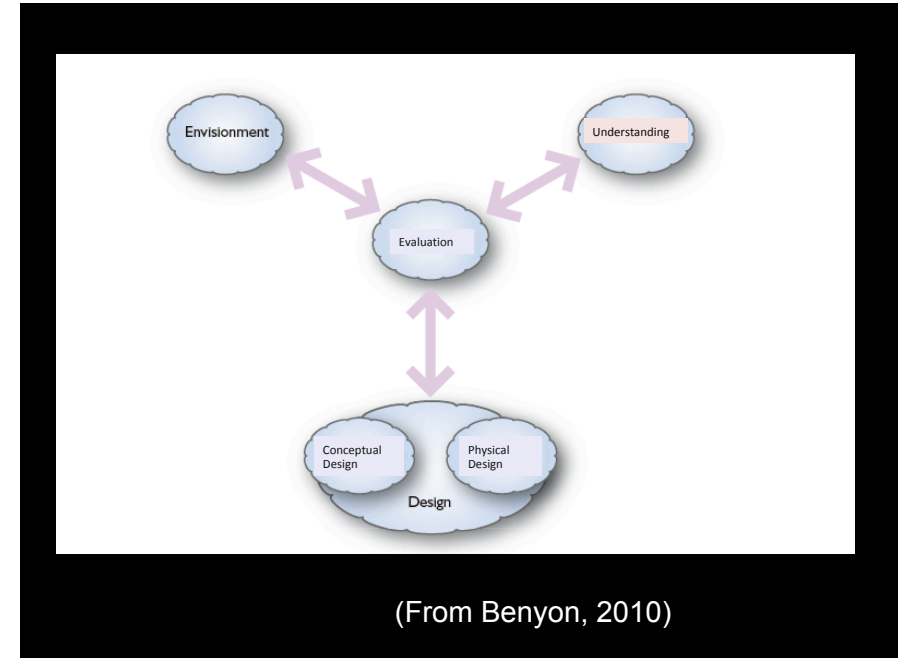


# Designing UX

Design is a creative process concerned with bringing about something new. To design (and to evaluate design) is a SOCIAL activity with social consequence.

There are many different ways of characterizing the activities involved in the design process, but they substantially go around three different process:

- 1) Understanding
- 2) Evaluation
- 3) Envisionment
- 4) Design (Conceptual and Physical)



For David Kelley, founder of the product design company IDEO, design has three activities:

- 1) UNDERSTAND (chaos, “the mess”),
- 2) OBSERVE (how the product will be used, which means users and use of the product),
- 3) VISUALIZE (they visualize which is the act of deciding what the product is).

For the UX, we should also visualize how the interaction remains/change over time, which errors are possible and which contents could be particularly satisfying for the users (or which could be surprising, in both good and bad direction) and which could be simply not considered.

# Things to keep in mind

- 1) The division is purely descriptive: the process can start at any point. Sometimes there is a conceptual design in place, sometimes we start with a prototype, sometimes we start with understanding;
- 2) EVALUATION is central to design interactive systems. Everything gets evaluated at every step of the process.
- 3) The activities can happen in any order, for example understanding might be evaluated and a prototype built and evaluated and some aspect of a physical design might then be identified.

## Understanding

Understanding is concerned with:

- a) What the system/new product has to do (what it has to be like and how it has to fit with other things)
- b) the requirements of the product/system/service.

If you are not the designer, understanding could be requested at any level. Very often you are asked to “evaluate”, but is however important to re-run the understanding process for the product on the one side and to start a phase of understanding the problem on the other side.

## Understanding

### Requirements

Requirements are essentially concerned with the understanding of the whole system. Conventionally, requirements are divided into two types:

- 1) Functional requirements. They are concerned with what the system should be able to do and with the functional constraints of a system.
- 2) Non-functional requirements. They are concerned with the quality that a system must have: the way the functionality operates

## Understanding

It is important to think about the whole interaction experience in an abstract way. Of course there are always functional constraints: the reality of what is technically possible, which render certain ordering, sequencing and allocation of functions inevitable. There are also logical and organizational constraints that may make particular design infeasible.

Two choices for us:

- a) Team working  
or
- b) One or more expert interviews and meeting with designers

## Prioritizing requirements

Requirements should be reviewed with customer and clients and modified as necessary.

Decisions will almost always be made about the relative priority of the requirements, since few design project have unlimited resources.

One way of doing this is by using the “MoSCoW rules”:

M o S C o W  
U H O A  
S O U N  
T U L T  
L D  
D

## MoSCoW rules

- 1) **Must have**: fundamental requirements without which the system will be unworkable and useless, effectively the minimum usable subset
- 2) **Should have**: would be essential if more time were available, but the system will be useful and usable without them
- 3) **Could have**: of lesser importance, therefore can more easily left out of the current development
- 4) **Want to have (but Won't have this time round)**: can wait till a later development

## Understanding

Requirements are generated through discussion and interaction with people who will use or be affected by the proposed system (the stakeholders).

The aim is to collect and analyse the stories people have to tell.

Requirements are also generated through observations of existing systems, research into similar systems, what people do now and what they would like to do.

## The Stakeholders

Stakeholders is a term that refers to all the people who will be affected by any system that results from the process of interactive system (re)design. Is not only about users.

For example, introducing a new system in an organization often changes working practice as well as simply providing information. There may be stakeholders outside the organization, such as government authorities, that need to verify some procedures.

An important part of the understanding process is to consider all the different stakeholders and how they might be affected, to decide who should be involved in discussions about the design.

## A simple exercise

Understanding a new project: OPEN A PUB

Another project: CREATE AN INTERACTIVE SYSTEM

## DEVELOPING PERSONAS AND SCENARIOS

In order to guide the design process, designers need to think about the PACT elements.

The people who will use the system are represented by personas: profiles of the different types, or archetypes, of people the designer is designing for. Activities and the context in which they will occur are envisioned through scenarios of use

## Personae(s)

Personas (from Latin persona-personae, “personaggio” in Italian) are concrete representations of the different types of people that the system or service is being designed for.

Personas should have a name, a background and, importantly, some goals and aspirations.

Personas want to be able to do things using your system.

Personas are a model of users in practice, and given that each system could be used by different types of people, it is important to develop several different personas.

## Personae(s)

Thus personas are a model of representative users (a kind or a group of users) and tell us:

WHO users are

WHAT, which activities they want to do

WHY they should use our product (their motivation)

HOW our product fit their lifes



Ayushi Mathur,20  
Design student

**Background :** Ayushi Mathur is a student of IIT Guwahati . currently pursuing her 3rd year bachelors degree in Design. Being a very enthusiastic student . She is always open to new ideas and information. She likes to be updated about the recent advances and is also interested in learning and encountering new stuff during her daily boring, isolated experience of surfing in the net.

**Goals :** Able to cope up and be updated regarding the recent happenings, technologies and techniques . Exploring the other world without her conscious effort.



Sourabh Prajapati,21  
Computer science student

**Background :** Sourabh Prajapati is a student of IIT Guwahati , currently pursuing his 4th year bachelors degree in Computer science and engineering. Being in a hectic and competitive environment , it is very difficult to take out time for other activities .He would be very refreshed to encounter the new happenings of the world to be able to explore new interests and find out more about himself.

**Goals :** The encounter of new and refreshing things . out of his own existing world and domain. Also also be kept informed about things he is not able to take out time for .



# Developing different personas

Remember:

- 1) Individual differences (physical)
- 2) Individual differences (cognitive: mental model)
- 3) Individual differences (cultural: different languages and “idioms”, time and technologies availability)
- 4) Context/s

# “Building” a Persona

## Background

Name  
Age  
Background/family etc.  
Role (work/occupation)  
Free time  
Interests/Aspiration

## Activities/Motivations

What she try to achieve?  
Why?

## Caracteristics

Technical abilities/possibility  
(tools, point of acces)

## Connections with the project

What relation with the brand/  
service/product?  
What trigger the interaction?  
Which brands/similar product  
she could use?

## Scenarios

# Let's do it

Find at least some personas for (your) project

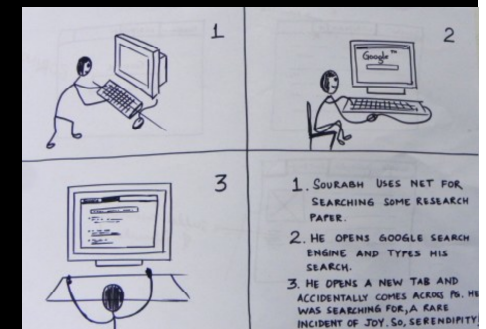
# Personas and scenarios



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## Scenarios

Scenarios are effective at dealing with 5 key problems of design (Carrol, 2010; Benyon, 2011)

- 1) The external factors that constrain design such as time constraints, lack of resources, having to fit with existing designs and so on
- 2) Design moves have many effects and create many possibilities, i.e. a single design decision can have an impact in many areas and these need to be explored and evaluated

## Scenarios

- 3) How scientific knowledge and generic solutions lag behind specific solutions. This point concerns generalities. In other design disciplines, general design solutions to general design problems have evolved over the years. In interactive system design this does not happen because the technology changes as soon as, or even before, general solutions have been discovered.
- 4) The importance of reflection and action in design
- 5) The slippery nature of design problems

## Scenarios

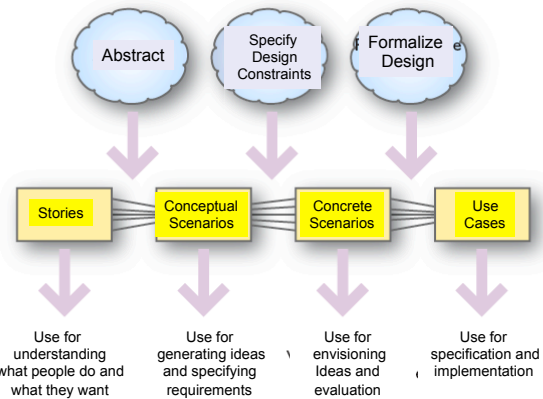
Scenarios are stories about people undertaking activities in contexts using technologies.

They are a core technique for interactive system design and appear in a variety of forms throughout interactive system design, from understanding to envisionment to evaluation.

## Scenarios

We distinguish four different types of scenarios:

- 1) Stories: are the real world experience of people
- 2) Conceptual scenarios: are more abstract description in which some details have been stripped away
- 3) Concrete scenarios: are generated from abstract scenarios by adding specific design decisions and technologies and, once completed, these could be represented as
- 4) Use Case: formal descriptions that can be given to programmer



Many stories could give raise to conceptual scenarios, which in turn could give raise to many concrete scenarios

## Stories

Stories are the real world experiences, ideas, anecdotes and knowledge of people.

These may be captured in any form and comprise small snippets of activities and the contexts in which they occur. This could include videos of people engaged in an activity, diary entries, photographs, documents, the results of observation and interviews and so on. People's stories are rich in context. Stories also captures many seemingly trivial details that are usually left out if people are asked to provide more formal representations of what they do.

## Analysing stories

To understand users' needs, goals and motivation it is necessary to do a RESEARCH WORK, which implies the knowledge of different techniques.

It is difficult. But observing people, interview them, videorecording activities, organizing focus-group, workshop etc. help us to understand both system requirements and the problems of existing systems.

In this way it is possible to gather an high number of stories that form the platform on which to build the work of analysis.

## Participative Design

When possible, is better to include users in the design, so that they can directly contribute.

Why? When it is easier to involve users?

## Gathering stories: interviews

One of the most effective ways of finding out what people want and what problems they have at the moment is TO TALK TO THEM.

Interviews to all the various stakeholders in the domain are a vital way of gathering stories.

## Gathering stories: interviews

Interviews could be:

- 1) Structured: questions that are developed beforehand. (never used...). The interview follows the wording exactly. People are limited to very restricted replies, and it is difficult for the interviewer to follow up the unexpected response (as questionnaires but longer...)
- 2) Semi-structured (very frequently used): Beforehand we prepare a checklist of topics that SHOULD be covered and some suggestions (as: What are the first things you do when you arrive in your office?). Questions could be re-formulated and it is possible to explore new topics as they emerge.

## Gathering stories: interviews

3) Unstructured: they are used when it is particularly important to minimize designers preconceptions, or where very little background information is available beforehand. There are not preset questions or topics beyond the general subject of the project in question.

## Practical considerations in interviewing

### 1. Preparation

- 1) Get to know the background; when possible, use all the material you could access (company's report, brochure, WEB site, maps, manuals...)
- 2) "Idiot questions": sometimes are useful, because they can uncover unspoken assumptions, but use them deliberately, not by accident
- 3) Do not use the "idioms" (slang) of the individual you are talking with, unless you are sure is also yours.

## Practical considerations in interviewing

### 2. Keeping track of the interview

Whether you are using or not a video-recording, interviewing is more effective if carried out by a pair of interviewers: one is making questions, the other observes/records/takes notes.

Even when the interview is recorded, notes are always useful: they help to find key points and are vital if some audio problems come out later on...

A full transcription is rarely needed, avoid transcriptions in "Google translator" style...

## Practical considerations in interviewing

### 3. Telling stories

Stories may be misleading: as listeners you should look for current problems, scope for improvements or endorsement of early design ideas.

Be careful because people often give disproportionate emphasis (both as listeners and as story tellers) to some aspects of the interaction (emotional factors).

## Practical considerations in interviewing

### 4. Reflection and exploration

Reflecting back during the interview (or quickly look over the notes) helps confirm that you have understood what has been said (not always possible, but take a try)

It is always a good idea to have the interviewee review a summary of the interview for

- a) Avoid misunderstanding
- b) Delete sensitive material

## Practical considerations in interviewing

### 4a. General purpose exploratory questions

These help the interview along, especially in the early stages or with a taciturn interviewee.

Some useful possible questions are:

- 1) Tell me about your typical day:
- 2) Tell me three good (bad) things about..
- 3) What if you have three wishes to make the application better?
- 4) What has gone wrong with the application recently? How did you cope?
- 5) What else should we have asked about?

## Practical considerations in interviewing

### 5. When to stop

Deciding when to stop interviewing means balancing practical constraints (time/money/requirements) against the comprehensiveness of the data.

Ideally you should have two or three interviewees per role (or type of stakeholder) across three or four different types of organization.

In many cases, client resources limit the process.

With unlimited resources, the general rule is to stop once no new insights are being obtained.

## An interview

- You are defining functionality and interactivity for next generation of smartphones: do an interview to a classmate asking the way in which he/she uses his/her smartphone and if she would like other functionalities to be present. You should prepare some notes. Make her show the most useful functionalities with and without comments.

## Gathering stories: questionnaires

Gathering stories through questionnaires has pros and cons.

Main advantages are:

- 1) You can gather a large amount of data, and capture responses from people who cannot be involved more directly
- 2) Data are easily quantifiable: data could be grouped for any specific feature of respondents (as gender, age, level of expertise) so to look for correlations
- 3) You can gather data at a distance
- 4) Less resources are needed

## Gathering stories: questionnaires

Disadvantages could be summarized in the fact that constructing a workable questionnaire is surprisingly difficult and time-consuming.

- 1) Once you created the question, it is impossible to clarify for any possible ambiguity
- 2) Not every individual gives the same meaning to the same word (this is true for both questions and answers), remember the difference between nominal and functional stimulus.
- 3) If an individual is in a peculiar situation (thus not predictable), this situation will never come out.

## Gathering stories: questionnaires

Thus it is better to carefully evaluate whether to build up a questionnaire or to use interviews instead.

Beginners often think that questionnaire are better, because they will end out with “data” .

However you should consider that interviews, aspecially with “key” individuals, are essential.

Furthermore it should be considered that for small numbers of people an interview will obtain the same information, and more, in manageable way. This will consume little or no extra resource if the time required to construct a questionnaire is taken into account.

## Questionnaires

Consider the following items from a questionnaire about use of the internet. Are there any problems with the wording? How could the items be improved?

(a) How often do you access the internet? (tick one)

- Every day
- Most days
- About once a week
- About once a month
- Less than once a month

(b) Please list all type of materials which you access frequently using the internet

## Questionnaires

A good questionnaire is time-consuming to construct so that all the items:

- (a) Are understandable
- (b) Are unambiguous
- (c) Collect data which actually answers evaluation questions
- (d) Can be analysed easily

Getting the wording right and choosing appropriate statements to elicit information relevant to the enquiry is surprisingly difficult and much trial and revision of statements will be required.

## Questionnaires: gathering data at a distance

With the proliferation of on-line questionnaire services such as *SurveyMonkey* quite complex questionnaires can be constructed and made available on the WEB.

Another tecnique for gathering data is “crowd sourcing”: small specific tasks are put on the web and volunteers sign up to take the tasks in return for a small payment. Amazon’s “Mechanical Turk” is the best known example, but needs careful design of the task if it is to be effective.

## Questionnaires: gathering data at a distance

You should always consider that response rates to questionnaires can be very low indeed (return rate of under 10% are common) if the intended respondents have no particular stake in the design of the technology or incentive (being entered into a prize draw, for example)...ideas?

## Questionnaires: gathering data at a distance

This is always true when there is no personal commitment. If you cannot be present, or if you don't personally know your respondents, is always better to make a presentation of yourself, making the completion of the questionnaire more "personal" (people like to help)...

## Gathering stories: questionnaires

Analysing data requests time and reflection. Do not "trust" already made graphs, learn to look "inside" data.

Where respondents have been given the opportunity to express opinions as unstructured answers, you will need to devise a scheme for classifying this material so that it is usable.

Decide in advance which values are you going to consider as "good": if a requirement receive a mean score of 7 (out of 10), and another requirement receive a score of 6, what sort of conclusion can we make?

## Gathering stories: questionnaires

Again, if most respondents have awarded feature "A" 5 out of 7 for usefulness but feature "B" 6 out of 7, does this really mean that feature B is better? Or it is enough that both features score above the mid-point?

Maybe feature A was misunderstood – without a following question the data is difficult to interpret. This is easy to do in an interview, but would add significantly to the length of a questionnaire.



## Gathering stories: questionnaires

Perception of system design are often collected through rating scales, known as Likert scales (Likert, 1931). People are asked to indicate their agreement with a statement using a x-points scale. The scale could be at 5 or 7 points (the most used) or 4 or 10...Think carefully about the number of points you would like and to the possibility of having a “zero” point (indifference).

## Gathering stories: questionnaires

The most important piece of advice is to pilot the questionnaire in draft form with a few people who are similar to the target group. It is always surprising how an apparent simple question can be misunderstood.

Furthermore, a probe statement such as “The system was easy to use” does provide a general impression but gives very little information for redesign if you do not supplement it.

## Gathering stories: questionnaires

Another approach is to devise “bipolar” rating scales, often called semantic differential (Osgood et al., 1957). In this method, for each statement two bipolar adjective are given (such as active/passive, mobile/static etc.)

Did you feel that you were?						
	Very	Quite	Neither	Quite	Very	
Passive						Active
Free						Restrictive
Disoriented						Oriented
Inside						Outside
Mobile						Steatc

## Gathering stories: questionnaires

To gather requirements and opinion about system features several ready-made and validated usability questionnaires are available, for example QUIS (Questionnaire for User Interface Satisfaction) from the University of Maryland and SUMI (Software Usability Measurement Inventory) from the Università di Cork. There is normally a fee for their use.

If you find something else on the Web (expecially free of charge), be sure that their sources is a reliable one.