User Interface Design
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Lecture - 07
User Research - II

Welcome students to the online NPTEL course, User Interface Design. In the previous class we started discussing about the process of user research and in today's class we will continue to the process of user research through qualitative approach and the tools and techniques and from there the collected data through the user research through the process of ethnographic survey and phenomenological documentation.

So the collected data how to process the data and how we lead towards the next level of design. So design decisions and finding the need statement what has to be done and interpreting where the problem lies and how the interface design or it can be web application, mobile application how it can help the user. So that process the decision making will be the next stage.

So within that this discussion is how to process the data to prepare for the design decisions or the brainstorming or the design ideations. So here we will discuss the remaining part of the data collection and data synthesis.

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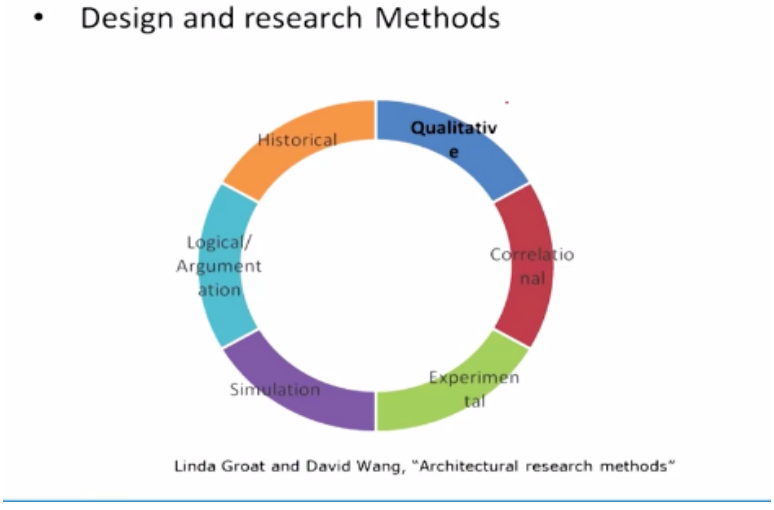

So we were talking about the design research in qualitative domain.

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- Qualitative research

Characteristics

Strategy: Qualitative Approaches

And in the qualitative research we have discussed the characteristics of the qualitative research and the strategies of the qualitative research. Within the strategies we have discussed ethnography and phenomenology, that is the process of collecting data where users are interpreters within the natural setup, that is the ethnographic approach and user in natural setups and what is the meaning going behind this setup. So that is how the phenomenological approach is there.

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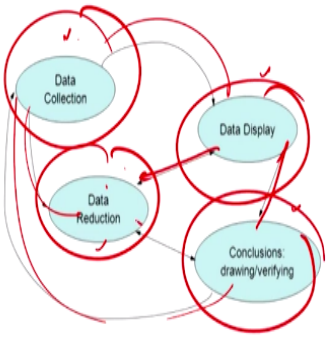
- Tactics

Process:

In the book, Qualitative Data Analysis, Miles and Huberman describe the interactive relationship between data collection, data reduction, data display, and conclusion drawing.

Miles and Huberman Qualitative Research Process

The researcher moves among these four "nodes" during information gathering/data collection and then shuttles among reduction, display, and conclusion drawing/verifying for the remainder of the study.



Now the process and tactics of the collected data, how do we process the data? So the data has been collected by this approach of ethnographic research as well as the phenomenological research and based on that how do we process this huge amount of data. So data can be unstructured research documentation where they can be photographing and videographic documentation or noting down how people are behaving.

Or can be very structured observation questionnaire through that. We have lot of data. Now we have to process the data to start the designing decision making or the ideation. So in the process, in the book, Qualitative Data Analysis, Miles and Huberman have described the interactive relationship between the data collection, data reduction, data display and the conclusion drawing. So this 4 stages are the process of data synthesis.

So Miles and Huberman's in the qualitative research process the researchers moves among this 4 stages or 4 nodes during the information gathering, data collection and then shuttles among the reduction, display and then conclusion drawing or verifying for the remaining of the study. So first is the data collection and data gathering. Then the reduction or display and then the conclusion process.

So reduction and display here are two stages, reduction and then display and the fourth stage is the conclusion. But again from the conclusion there might be some, they can go back to the data reduction even if the conclusion is not concrete enough. So there might be a few datas might be eliminated again and this is a nonlinear process but these are the 4 nodes. One is data collection and then data reduction, then data display and then conclusion and which can also go back and forth.

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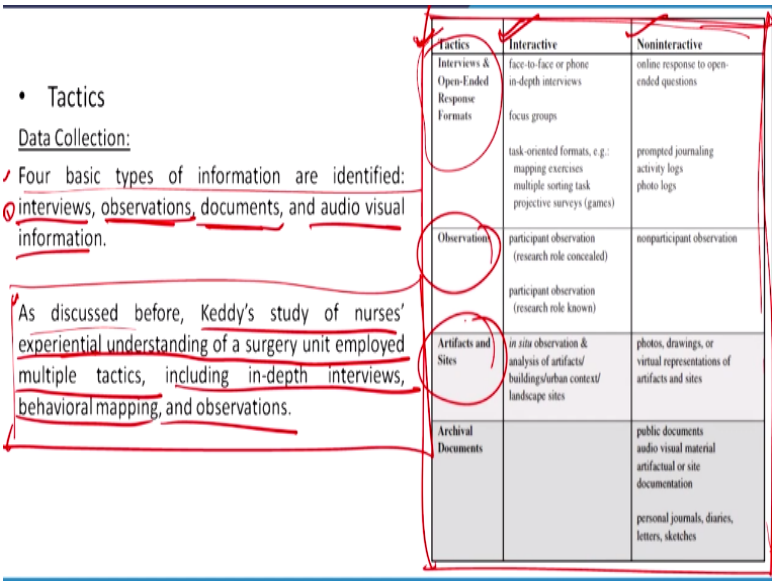

- Tactics

Data Collection:

Four basic types of information are identified: interviews, observations, documents, and audio visual information.

As discussed before, Keddy's study of nurses' experiential understanding of a surgery unit employed multiple tactics, including in-depth interviews, behavioral mapping, and observations.

Tactics	Interactive	Noninteractive
Interviews & Open-Ended Response Formats	face-to-face or phone in-depth interviews focus groups task-oriented formats, e.g.: mapping exercises multiple sorting task projective surveys (games)	online response to open-ended questions prompted journaling activity logs photo logs
Observation	participant observation (research role concealed) participant observation (research role known)	nonparticipant observation
Artifacts and Sites	*in situ* observation & analysis of artifacts/ buildings/urban context/ landscape sites	photos, drawings, or virtual representations of artifacts and sites
Archival Documents		public documents audio visual material artifactual or site documentation personal journals, diaries, letters, sketches

So the process of data collection which we have, the main process of data collection was through the tactics, through the previous strategies we have discussed ethnography and phenomenology. Those are the process of data collection and then 4 basic types of information that are identified as interviews, observation, documentations, audio visual information. Audio visual information is photography and videographic documentation.

Documentation in other ways like questionnaires and other things and other way of documenting the artifacts, documenting what the context is so all these parts come in the documentation. Observation is just while observing in a very structured task or unstructured task and interviews or questionnaires and it can also be a focus group discussion selecting few people and then they discuss within that or just want one interaction interviews.

As discussed before, Keddy's study of nurses experimental understanding of a surgery unit employed multiple tactics including in-depth interviews, behavioral mapping and observation. So these are the few ways of data collection and data collection has been discussed before when we were discussing ethnography and phenomenology. So that part is again repeated over here.

And data collection when we were doing the data collection, it is always better to map those data in a particular excel file or in any format to structure it up for the next process of data reduction and data display. So this is also a process of data display but not exactly. But data display can

have few more refinement but while collecting the data it can be jotted down in a particular systematic manner.

So here it can be just an example, so it can be structured in different columns like tactics. One tactics is interactive tactics and non-interactive tactics. So within that he have observations, documentation of artifacts in the cases of nurse and archival of documentation within that interactive methods non-interactive methods. Interactive means when designers interact with the users and then they let the users know their presence that they are observing them.

And it can be questionnaire, focus group discussion with the presence of the users and the researchers and it can also be like when researchers or designers are asking the users to perform a particular task in that context. So that is a interactive method of tactics. And then non-interactive method of tactics will be well when designers does not let users know their presence. So it can be silent observation following them or just trailing, tracking the users.

So it can be a trail mapping or just documenting what users are performing in the unbiased undisturbed way. It can also be within the one way mirror. One side of the task is performed and another side designers are silently observing how people interact with the interface given to them. So these are some non-interactive ways of data collection.

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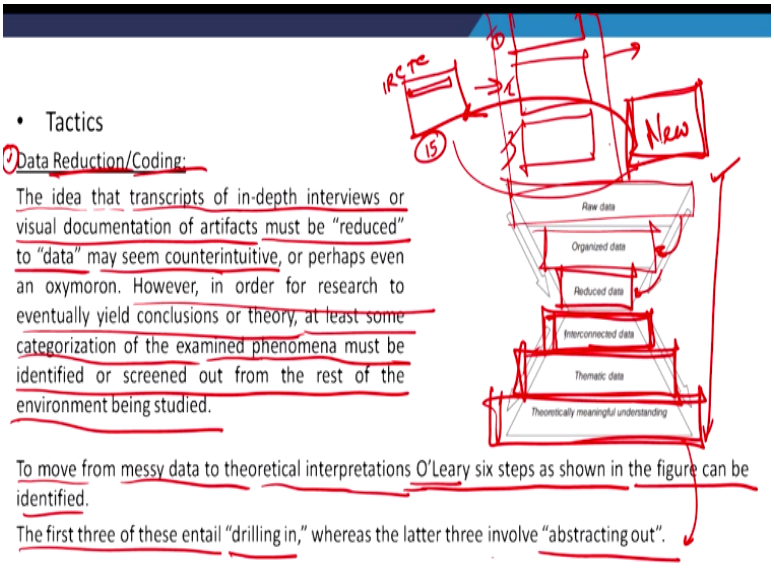

Now the next process is the data reduction. It can go back and forth but this comes after data collection. The idea that transcript of in-depth interviews or visual documentation of artifacts must be reduced to data which may be seen which might be a worst amount of data which has to be reduced and to be ready for the next level of data display. So this reduction of data is required because many of the data will be redundant.

For example few of the task which designers ask user to perform might not be relevant for the particular cases. So those datas are redundant data and those datas that does not provide any insight. Few of the cases, many of the times users might tell some very important point and sometimes they might talk about some irrelevant issues which might not be directly related to the decision making or ideation of the design.

So that decision has to be taken by the designers and the researchers. So redundant data has to be reduced and then the datas which provide some insight in the particular context of designing the problem solving of a particular scope of work that datas has to be there. Otherwise there will be lot of data in qualitative research. So however for the research to eventually yield conclusion or the theory at least some categorization or examined phenomena must be identified or screened out of the rest of the environment being studied.

So there has to be a conclusion and some pattern has to be identified within the data. So it should be categorized and after the reduction and reduction and coding. So the data also has to be categorized. So similar kind of data where people are saying, doing a particular task and the activities are similar so that typology can be one categorization. And categorization can happen in a different manner. So it can be categorization based on the typology of data.

It can be categorization of the task performed. Whether how many people have performed the task successfully. How many could not perform the task which has been given to them. So based on that, based on many factors the data can be categorized. But categorization of data has to be done to yield a conclusion. Otherwise scattered data does not help designers to provide any conclusive insight.

To move from messy data to theoretical interpretation O'Leary six step has shown in a figure. So he have, O'Leary have told that six different steps to reduce the data and the first three is drilling in whereas the later three is abstracting out. So first it converge and then diverge in the data. So first raw data has larger amount of data. Then organized data. So when we clusterize data based on the similar pattern and many of the redundant data sometimes overlap.

And they can be clubbed into one and few of the data which are redundant can be omitted. Then it will be reduced to concised data when we have organized few data might be deleted and clubbing of different sectors is this and then reducing it. Then interconnected datas can be again expanded and then we can see the thematic data which forms a different theme and theoretically meaningful understanding will be the next stage. So this is going as a abstraction.

So while we are interpreting this data so we start with a particular case and within that what we have observed that is the raw data and within that we categorize this raw data and then reduce the data. The next stage is generalization. So first we start observing in a particular user group, only maybe 10 or 15 people's behavior, how they have behaved and why they have done. Now from there when we start interpreting we do not interpret for this only 15 people.

We interpret for the set which is getting represented by this 15 people. So we are abstracting out. So this is more generalized data. So we started with only 10 people and how they interact in a particular situation of a particular context. When we are interpreting the data so we are extrapolating the data for all which will come within the same segment.

For example if we are designing some mobile application for particular segment of maybe of a particular region of India, for a particular user group of 10 – 12 for the education purpose. We do the study with 10, 15 students. But when we interpret the data we interpret for that particular segment of the user group which is much more, the number is much more. So interconnected data is a one layer of abstraction.

Then thematically we interpret the data and then theoretically meaningful understanding. When the understanding comes, this understanding is for all not for the 10 people. So it is the segment

of the full user group, how they will perform. Sometimes we might even extrapolate the data which task has not been performed but how they will perform the task that can be also understood.

Because when we are designing something new that they have not interacted with a particular design. For example we can give them for data collection a particular website. For example if I take an example of how people book railway tickets, rail tickets. So we can give them irctc's website and how they are interacting with irctc website. But when we are extrapolating and taking the meaningful insight, so we have to understand how they will interpret with some design which we are going to give them later.

So option 1, option 2, option 3. In these cases how will they behave. Those designs does not even exist right now but that extrapolation should happen in terms of the design and that extrapolation should happen in terms of the number of users. So here maybe we have studied with 15 people but all the rest of the user how will they interact with all these designs, that has to be conceptualized. And then we can design.

So when the next design if the task is to we design the website or we design the irctc website. So we cannot do the same website. So the new website when we are designing new design we need to have, the designer need to have the perception how this new design will perform. So to interpret that perception we need to go broad again to understand if we give them a new typology of design what will be the provision of, what can be the probable interaction between this new design with the user.

There is definitely ways of testing how it will perform. So that is the next stage, user testing. So that has to be done. But designers cannot create random design for the user testing. Then it will not lead to any insight. So designer should have a preconceived idea. After this ethnographic study they should have an idea how the design will behave. That is why they can create multiple design options.

But those option should be meaningful and they should be convinced enough that the designs are better than the existing one. So that understanding will come while abstracting getting the meaningful idea of abstracting out the final datas. So it should go in a generalized way. So designer should know what kind of design will work better and what kind of design will not work for the users.

That level of abstraction should come from this data reduction and then abstracting out or the coding.

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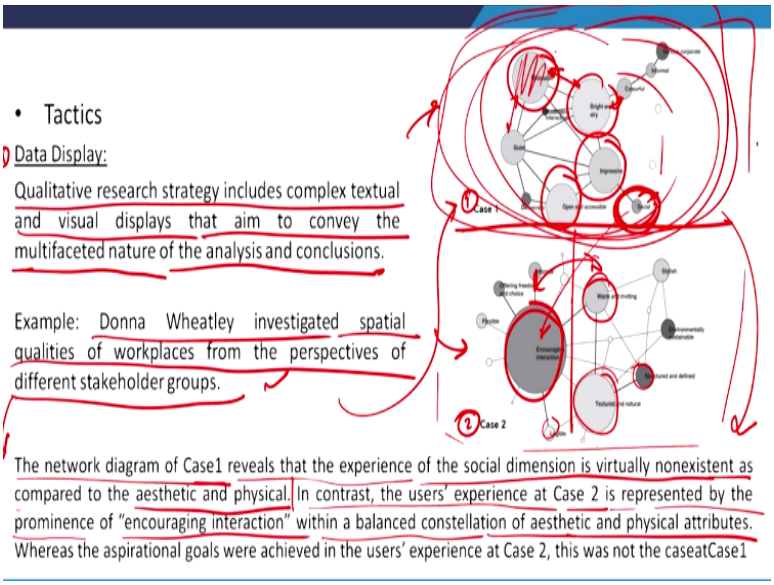

The next process is the data display and always this goes back and forth. Data display can happen after data reduction and after abstraction again the data display can happen. So in the data display there are different tactics of data display. We will discuss that. So it can be bubbles and then correlation of different categorization. So after the raw data which has been categorized the data can be correlated and shown as bubbles.

And then the correlation between the bubbles can be shown as a process of data display. There can be different columns and data clustered columns can also be displayed. So there can be different visualization technique of data display. So qualitative research strategy include complex textual and visual displays that aims to convey the multifaceted nature of the analysis and conclusions.

There are different multiple tactics and how this tactics are giving different datas and categorization should happen based on that and then data display is very important from where the designers and researcher should find out the correlation between these datas. So the pattern should be identified based on the displayed data. So it is very important for the designers and researchers to identify the simile between these patterns how people are behaving in this way.

If they do not identify the pattern they will not come to a meaningful ideation or the generalization. So if they see the pattern between how people are behaving in that way then they will take a decision so this kind of design works better and this kind of design does not work better. So that kind of understanding if it does not come then ideation or first stage of design will not be meaningful.

So for example in Donna Wheatley's investigation, one of the researchers in special qualities of workplace from the perspective of different stakeholder group. So she was trying to interpret the special quality of a office workspace and what are the different important parameters of the workspace. So this was a data display process she have taken. So this is from her cases. So case 1 and case 2. So from there she is taking an insight.

So we will discuss the process of data display after reading what is the insight she is getting. The network diagram of case 1 reveals that the experience of the social dimensions of virtually nonexistence in case of workplace compared to the aesthetic and physical appearance. Aesthetic and physical appearance is more important than the social dimension in case of the workplace. That is one insight she is drawing from case 1 data display.

Now in the contrast of the user experience in case 2, is represented by this process which encourages the interaction within the balance constellation of aesthetics and physical attribute. So here in the case 2, it is talking about the interaction is also important which is the social dimension as well as the aesthetic and physical attributes are important. This might be a correlational research between two study of different kind of work environment and different kind of user group.

So one user group is saying in case 1 social dimension it is negligible and others like bright and airy environment, minimal style, impressive, open to access, these are the larger bubbles and many people have talked about that. So this has been represented in larger circles based on the importance. Maybe they have ranked it higher. Many people have said that and maybe few of the users have only said social. And that is case 1.

So in the case 2 what she is saying is encouraging the interaction that is the social part of it is becoming a very important part and then textured and natural color warm and inviting environment. So these are also different other bubbles. So this is quite equally important in these cases, in case 2. But in case 1 this is not. So based on the demographic segmentation and different behavior and different kind of work it might differ.

So in the workplace 1 so this is how she is trying to draw the insight. In case 1 if you want to create some design case 1 people do not want the social interaction much while they are looking for the aesthetic dimension more. In case 2 their social interaction is quite as important as the aesthetic physical attributes. So that helps for the next decision making how while designing this office space what should be the important parameter in case 1.

In case 1 social interaction is not required. So space will be designed in that style. It should be aesthetic and physical. Comfort should be emphasized much more. So this gives the design decision making. It helps designers to start the design decision making and to understand what kind of design will work better. In case 2, the same design will not work better based on the user's perception because the users group was different and typology of work was different.

In case 2 they want more interactive work environment. So the design decision should be based on the data synthesis, data display, and the insights. So this kind of data display helps to interpret the design decisions before they start the design ideation.

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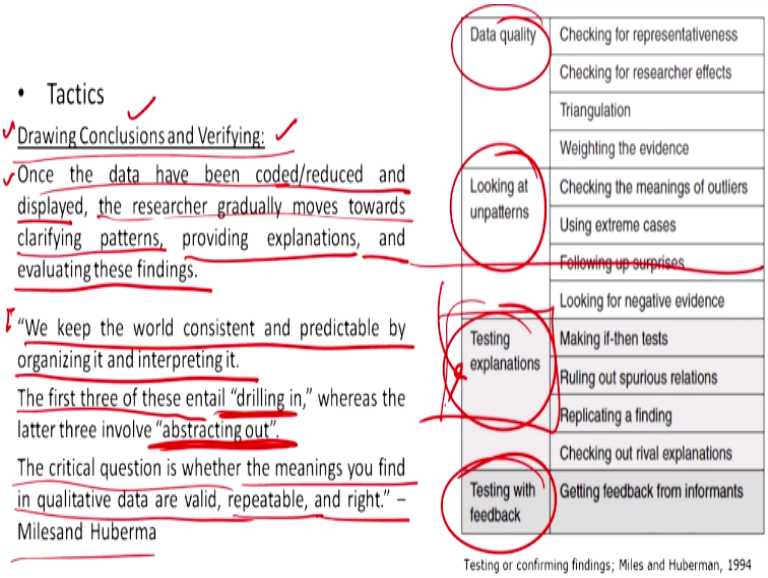

Now drawing conclusion and verifying. So this also is a derivative of data display. When we display the data in a proper meaningful way and data display can be the strategy of data display should differ based on different projects. So it should be a function of the what we are trying to do. So it should be dependent on that. So a similar kind of data display might not work in different projects.

So it should be dependent on the project what we are trying to infer from the data. Based on that data display has to be done. So after that we have discussed the example of the conclusion in the previous example after the data display. But in the conclusion and the verifying why we have studied this and what this large number of data means. So once the data has been coded or reduced and displayed the researcher gradually moves towards the clarifying pattern.

Researcher starts seeing the coherent pattern and try to interpret what users need and that pattern identification leads to the next stage of design decision making. Providing explanation why this has been done and evaluating these findings are the next stage of, is the process of conclusion driving the conclusion. So this is, we keep the world consistent and predictable by organizing it and interpreting it.

This is one of the quotation from our researcher and the first three of these are essentially drilling in and then abstracting out. So which has been discussed earlier in this process of O'Leary's six

step of design. So this first three stages are data display and data reduction and the next three stages are actually conclusion. So when we are abstracting out, we are trying to see the pattern and we are generalizing for the larger target audience.

And we are expecting how different design if we put the different design within the same system of natural setup and with the same psyche of people how will they interact with the different design. So if we try to see the pattern of these while we are abstracting out then we can make the design decisions in a much better way. So the critical question is whether the meaning you find is qualitative data are valid, repeatable and right that has been told by a researcher.

So here how we display that, this is one of the example. Data quality looking at the pattern and testing and explanation and the testing with the feedback. So here we can again go to the users so more we contact with the users better it is for the user centric approach of design. While we see the pattern, after that we can again go back to the users to validate whether for the testing of the explanation whether this pattern what we are seeing can that be explained by the users again.

So what we are seeing the pattern, what designers are reading the pattern as a pattern as a meaningful coherence between the displayed data that can be again validated by the users if required and it can be tested and user can give the feedback yes we have done this. They can say that yes, we have done this because of this. Or verified again what we have seen the pattern. Because based on the pattern the next design decision making will happen.

So if the project is short then after seeing the pattern, designers can directly go to the design decision making and few of the design decisions can be shown to the users. That can also be one process. And in other process if the project is elaborated and the project involves a lot of money, investment and the final product is very expensive then the validation should happen in each and every stages. So after seeing the pattern it can even be validated by the user for testing and the verification of the pattern.

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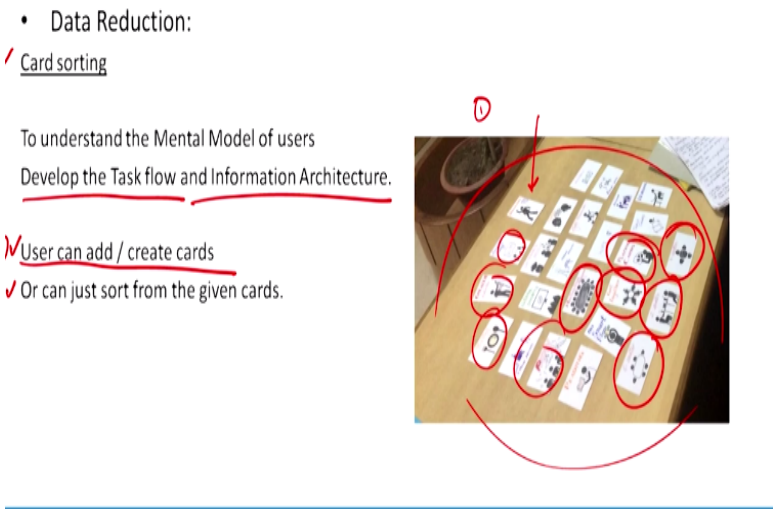

Now few of the process of data collection, data reduction, and coding the data and processing the data in user interface design. So these are few of the tools which has been used very frequently in different companies of user experienced design companies and IT and UI UX companies. But these are not the only tool. There can be different tools. You can ask them to create a collage.

Designers and researchers should be creative enough to invent their own process of data collection, data reduction, and data coding and abstracting out. So few of the process I am discussing here. One is card sorting. So card sorting is a process of giving the users different card and ask them to sort that. So these cards will be designed based on the probable behavior what they might like and based on the scope of the domain.

So this is one example where the students of M. Arch students of IIT, Roorkee they wanted to interpret the behavior within a cafe. So what can be probable activity the users want to do within a cafe apart from just eating. So there can be dancing, there can be a meeting, there can be cards for discussion, there can be playing cards, there can be just two people can have coffee or there can be 4 people, there can be 6 people's group.

And different things were activities and different setup of the furniture setups this has been given to the users who are there in the coffee shop and then they have selected, picked those card based on their intention and their what do they want to do within the cafe. So this is a one example of

card sorting and card sorting can be done in other projects like if somebody wants to order, somebody wants to order something through online so what can be the probable products which they want to order.

What can be the probable mood, what can be the probable time, do they order different things, what is the price range. Based on many things the card sorting can be done. So this helps user to understand the mental model of the users by designers. So designers should understand the mental model of what is going inside the psyche of the user. So this is one of the tactics to interpret that. To understand the mental model of the user.

So this helps, after understanding this, this helps to create the task flow. What task should be performed by this web application if you are designing a web application. So web application should perform what task? So based on their preference what kind of activity they want to do within a cafe? If there is a cafe app you want to design so that should help in the decision making of the application which will help if there is a cafe app.

So what kind of task it should perform, the app should perform to enhance the user experience within the cafe. And to create the information architecture. So how this information within the task has to be designed. So we will discuss the information and architecture and task flow in due course. Now there can be two ways, one is user can add and create the card. This cards has been created by the designers.

But in case if it is you want to do it more unstructured way then the users can even draw the activities what do they want to do, what kind of task they want the design to perform so that they can just draw and within the card and then add the card and sometimes it can be a set given by the designers when designers are very particular about these are the kind of activity we want to cater to, rest should not be included. So this is the decision making totally dependent on the designers.

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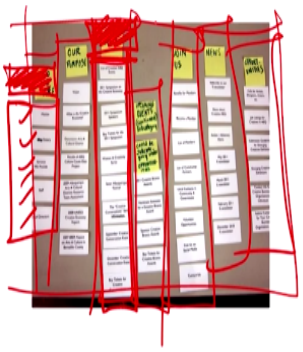
- Data Display:

Affinity Diagram

A tool to create group of similar information from a large amount of data.

Helps to interpret user's Task flow and create IA



Next, the data display after card sorting. There is one process called creating affinity diagram or affinity map or affinity diagram where we see the categorization happens within the data. So this is a tool to create group of similar information from a large amount of data and which helps to interpret user's task flow and information architecture which will lead to the next stage which is task flow and then information architecture.

So it is nothing but sorted cards can be now clubbed into different groups. So what are the task they want this application to perform they can select or this product should perform they can select and when they have selected the cards designers can club them based on the need of the or the scope of the work. So different columns will be created and then codifying and clubbing and categorization of information is what the affinity diagram is.

So these are the cards which has a affinity. So when the cards are selected within a particular group and then there will be a group name. So this will be given by the designers. So these are the other cards which has a similar kind of aspects; so based on the parameter of selection criteria. So it can be selected based on the type of activities. So one type can be while sitting and doing something, one type can be while roaming around.

So the typology of the parameter can be decided by the user based on the requirement of the design. And then these cards will be again named what these typology or this category is under

which heading. So this is what affinity diagram is, which helps designers to create the task, what are the task this application should perform. Now after interpreting this and when we were seeing, while doing the ethnographic survey and phenomenology we will try to understand what is the type of user we are catering to.

Based on that we create a persona so which will be our representative of the all the users which the application or website or any product will cater to. Because when we design a product or user interface this will not be restricted to the users whom we have studied. So we may study only 10 people but the final product can be launched and it might cater to much larger target audience.

So this much larger target audience should have while we are testing the data, while we are doing the ethnographic survey we should have representatives. It can be 15, it can be plus minus that number you have to decide. So those people are the representative people from this larger target audience. So interview the people, we do the ethnographic survey and we do the phenomenological research based on that.

And while talking to them we also create a mental model of this who the users are. After interviewing that then we create our representative persona or one persona for all the representative, all the user, one of all the typology of the group. We can cater to 4, 5 persona and based on the users to whom this application will be available.

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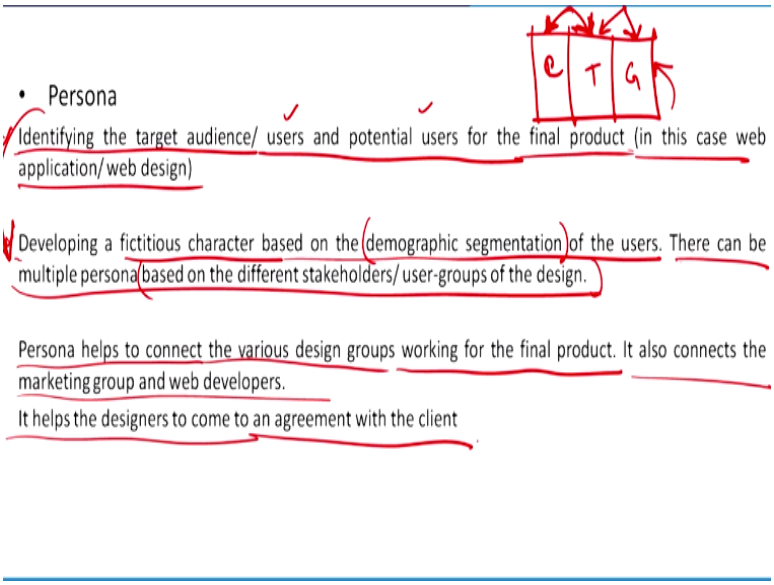

For example if we are designing a hotel booking application. So hotel can be booked by a corporate. So I am just giving example. So one type of persona will be corporate sector. Hotel can be booked by the people who are just travelling. So the traveler will be another typology of the persona. Hotel can be booked by some other like the people who are inviting, people not for myself but for someone like a guest. So there can be different kind of persona.

There can be many more based on the web application. So these are the persona. So it should not be just one persona for this hotel booking site. It can be the different typology of the user group. So one can be corporate, one can be the people who are booking for the other person who is guest and another can be the traveler himself. So there can be many more. So these each and every typology is one persona.

Within that we have already interviewed 15 people in the corporate sector, 15 people the traveler, 15 people who are booking for somebody else. So those are the real people whom we have interviewed. But persona is just one for each and every segment. So for corporate one persona, for travelers one persona, and then who is booking for guest is another persona. So what is persona?

Persona is the identifying the target audience or the user's potential or the users or the potential users for the final product. So this is the role of the persona. What it does is it identifies the target

audience. It delineates the identified target audience behavior in a much better way and it caters to users and the potential users if we design the app some other potential users might even start using the app which we are not using in the real situation in the competitive other apps which they are not catered to.

We might even cater to many more or we might delete few of the user group, that also is possible. Now developing a fictitious or what is persona, the definition is it is a fictitious character based on the demographic segmentation of the users. There can be multiple persona based on the different stakeholders or user group in the design. So multiple persona, this concept we have just given an example.

There can be different stakeholder, different typology of the users. Based on that there can be multiple persona. But one persona for one particular segment. So what is the demographic segmentation. Segmentation is the process of dividing why this segment is, the parameters based on what these, the persona is different from the others. So this segmentation can be based on demographics, age, sex, the language they speak or location based segmentation.

It can be the task based segmentation. But the same person can once be a corporate person who is booking the hotel for himself. The same person during the holidays, he can behave as a traveler or sometimes he can also book for someone else. The same person can when they are behaving in a different way, they are going in a different segment and they are behaving as a different user group and they will fall under different persona.

That is why creating a fictitious character whom we have not seen, not interviewed, some other person and who has the quality of behavior of the generalized behavior what people have done that is very important. Persona helps to connect with various design groups working in the final product. It connects within one design group different designers are there. So they will be agreed on the same persona.

Even the designer groups with the engineers and designer groups with the management people, they also should agree with the persona what is their target audience. It also connects the

marketing people and the web developer. So web developer should also understand what are they catering for and the marketing people what should they market and how the advertising should go, how they should market their final website and they should also understand who they are catering to. It helps the designers to come with an agreement with the client.

And not only the marketing people developers and the designers it also talks within the team of design and this design company where marketing people are there, web developer is there and designers are there with the client. Client should also understand that this is the real people who will be using the final product. Because you will be the person who will be paying for the final design.

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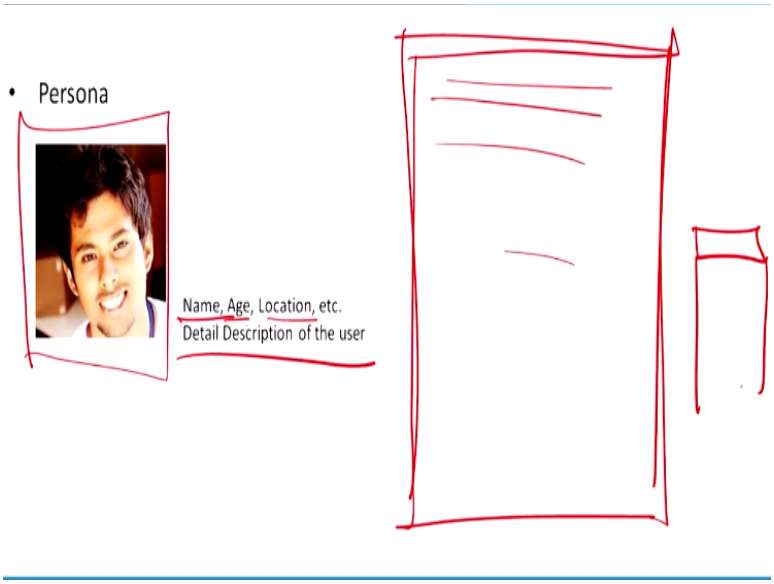

Now persona should look like something like this. In persona you should put a real picture of a person who can be a representative of the same segment. So if that is a teenager you should put a photograph of a teenager but real photograph not a cartoon photograph. So that will not give the understanding in the client. Because many people will not interpret the expression and the typology of the people of this through a abstract photograph.

So that person should have a fictitious name, age, location, sex and then what kind of detail description of a persona. So you have to also write, so persona is not complete if you are not writing the detail daily life of that person. So that also be described. And what that real user is,

how do they behave, what is their favorite activity, related to the product and not in a different totally different context which does not have any correlation.

But around this product what might be their likings, what might be their behavior. So everything has to be detailed out. More you detail out in the persona, later the design decision can come from there. So if you write that what is the behavior of the hobbies of a particular person, later the design decision making or the visual style can come from the hobbies of the person, what do they like and what is their language preference, what kind of activity they do.

Based on that the style of design, many of the design decision making even the logos and within the UI UX design also what should be the word which you should use for a drop down menu, what type of word they will connect with. So what should be the nomenclature. Many other things can come from this detailed persona. So persona has to be very detailed. More detail, the better in the next stage the design decision can come. Now the next stage is called scenario.

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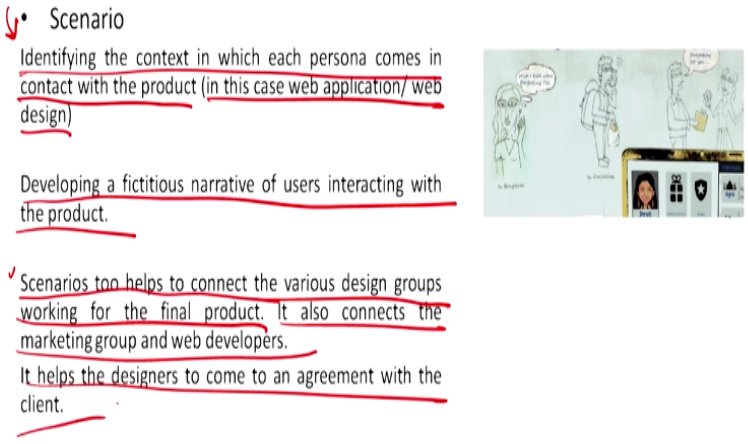

Scenario is based on one persona how this particular fictitious character which is the persona is behaving with a product. So within a product, product can be in this case web application. So if this person is interacting with a particular product for example if you take the example of irctc product. So if this person is interacting with a irctc product how will they behave.

Now if we are designing some new idea which is redesign of irctc website maybe, so how will they behave within if we have given this new product. So those are scenarios. And this has to be built in terms of, scenario can be a written description, it can be like a story, narrative of a written description. Task 1 first stage this will be he will interact with the webpage like this. Next he will do this, next he will do this. So it will be a sequential narrative.

It can be also represented by a storyboard. So identifying the, what is scenario, identifying the context in which each person comes in contact with the product, in this case it is the web application or web design. Developing a fictitious narrative of user interacting with the product. So that narrative stands as a scenario. So we have observed different people interacting with the product in a different way.

But it is a generalized format of one scenario how the general common people who have observed, who has been observed within that particular persona how will they behave. The scenario will be, there will be at least one scenario for one persona. So you cannot create one scenario for multiple persona. Because different persona for example the example we have taken before, the corporate or the people who are booking for guest and then traveler, they will not behave in a same way if they are booking a hotel.

They will behave in a different way. If you are creating one scenario for all this 3 persona then your insights are not very good. You have to revisit and do the testing again so that you can create substantially different scenario you can ideate that scenario. Otherwise the observations are not complete. Even there can be multiple scenarios for the one persona.

For example when a corporate person is booking in a hurry like today's hotel booking that might be different when he is booking for 7 days prior his booking criteria might be different. When he is performing another task, he have already booked. He wants to change the booking. Then his behavior will be different. So there can be different scenarios for one persona. But there should not be one scenario for which will cater to multiple persona.

Scenarios too help to connect with the various design groups working for the final product. It also connects the marketing group with the web developer. And it also helps the designer to come in agreement with the client. It does the same thing where he is not the real user. So how users, not just the users, how users will behave in the context.

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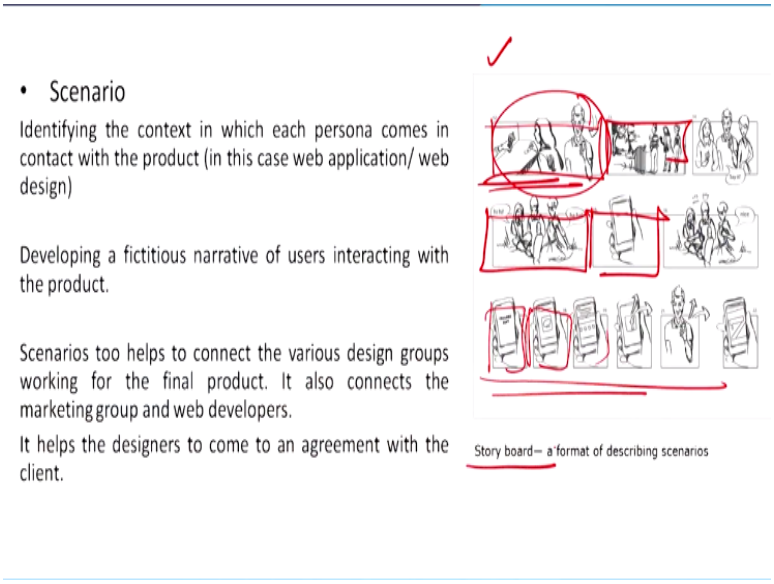

So this is one way of writing the scenario. It can be just a story. So first this is the task which can be just a picture, a pictorial representation as a narrative. They can be write-ups also what they are doing and the next situation is this how they are interacting with each other, how they are behaving with a web application and then what are the things they do, perform in the mobile application. This can be just stories and the narratives and the written description. This is called storyboard. This is one tool to represent scenario.

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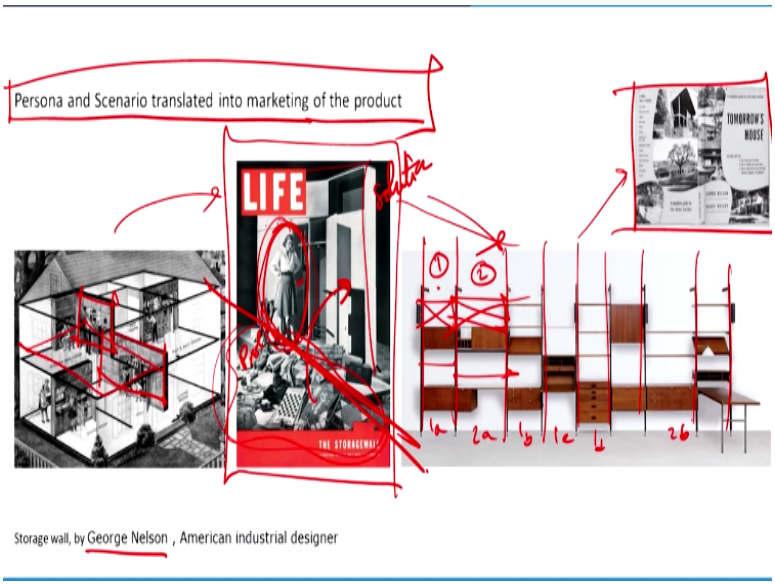

Then persona and scenario translated to a marketing product. So this also translate into a marketing product and persona and scenario together helps the user to understand the user by the designers, marketing people, web developer as well as the client. So this is one of the project where persona and scenario has been displayed very well. This is by a famous furniture designer, George Nelson who is called the father or American modernism.

So he have designed this concept in the modernist era which is between 1920s to 1950s. So this is one of the international style of design where function, so he have given a concept of taking user's behavior and user's decision within the design, the meta design; he called it meta design in this book Tomorrow's House. So Tomorrow's House has free floor and free plan. So sometimes the partition wall is required.

So this house is divided in different spaces with partition wall and lot of different materials which has to be stored within. This is the solution. So this is the, this photograph, so this is actually a poster which marketing guys are using has the persona and the scenario. So this is the American housewife who faces the problem of this. So this is the problem. So scenario 1 is the problem and this is the solution.

So solution is the storage wall and the problem is lot of scattered stuffs and the person is the lady in the house, the housewife or the wife who takes care of the house. This is the persona, this is

the situation 1. And after the product comes what will be the situation? And this is the final design of this. Storage wall, one of the version of the storage wall then the other version is there can be more part within the storage wall.

And this is what in the first George Nelson is the first one who have had the concept of modularity in design. So based on users they can select each and every module. You can see one module 2. This is narrow module. This is wider module. And within the module also there are version 1a, 1b, 1c, 1d and then this is 2a, 2b. Based on the requirement of the user, user has the voice to select the design.

So here the users, experienced users, decision making is there within the final design itself. So final design does not look like one particular design solution given by the user. So voice of customer is incorporated within the design and they can select, we can select what kind of storage wall they want. They can even go for a more covered storage wall. Instead of the vacant shelves they can have more covered shelves within that. So lot of decision making is left towards the users as well.

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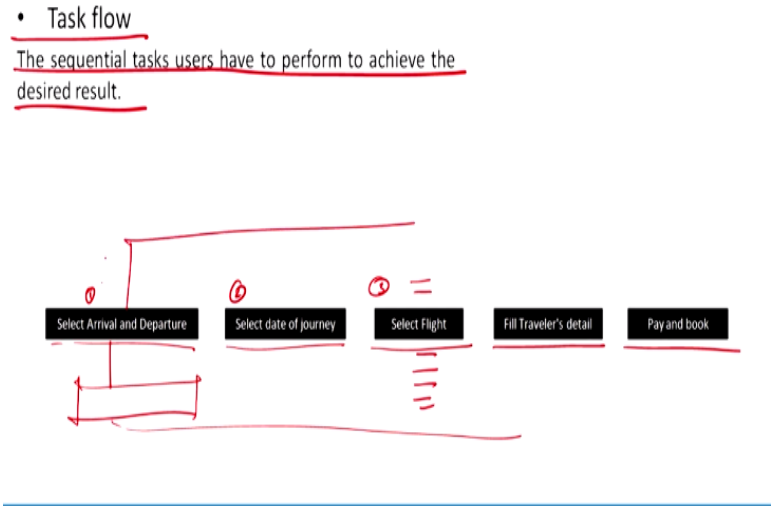

So the next process after persona and scenario is task flow where this is a derivative of a scenario. Within the scenario we can decide what is the task. Scenario is how this people, the users are interacting with the product and based on that what product or the interface should

perform that is the task. What is the task for the product and that is the task flow. If this is the sequential task, user have to perform to achieve the desired result.

If we take an example of a flight booking, so what should be the task? So this is one of the task flow of 1. So selection of arrival and departure destination. Then next is selecting the date of journey. Then next can be the selection of flight based on his preference, cost or whether it is hopping flight or the time of flight. So there can be many decision making criteria over here. Then next is fill the travelers details, how many travelers going?

What is their age, name and every other details and then pay and then book. This is one of the task this flight booking app will do. There can be multiple task which flight booking app can do. One is checking what is the mileage, checking the offer, cancelling the flight, changing the date of the flight. So these are multiple other task. So this is one task the application should do. So it can be like a tree chart. So multiple task; task 1, task 2, task 3.

Within the task where multiple sequential activities within the task. So the final mobile application or web application is a combination of different task that user want this mobile application to perform. Now based on this task flow, based on our ethnographic survey, so if this is the task they are performing if you take the example of irctc in which stage, which task they are creating problem.

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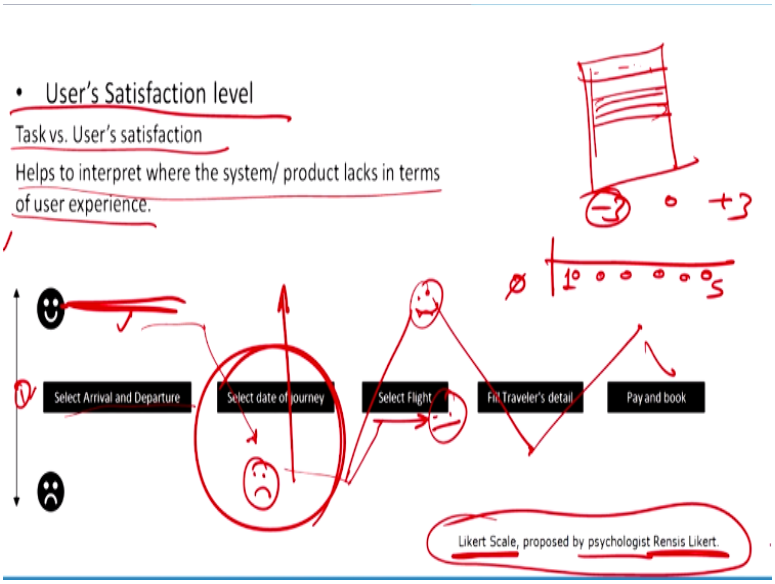

So users satisfaction level can be mapped based on our survey. So we have documented and seen the user's behavior while performing that particular task which has been given during the ethnographic survey and phenomenological research and based on each and every segment and activity of the task whether they are performing the task properly, whether they are satisfied with the task or not that can be mapped and that is called user satisfaction level can be mapped.

So after mapping we will understand that in which stage of this task this design is lacking. So if in the first stage, so this can be one of the option of representing user satisfaction level. So this is task versus user satisfaction. This help to interpret again the system and to understand where the system or the product lacks in terms of the experience. So if you think from a user experience perspective where is the lacuna of existing products.

If you are thinking about flight booking application, existing flight booking application of a particular site for example MakeMy Trip whether in the first task in the task number 1, the stage 1, selecting of arrival and departure date, whether people are happy or not. If they are happy, so it will be like this. The selection of journey becomes journey date might be little difficult if in a fictitious I am just taking an example.

There might be difficulty to scroll down within the calendar. Calendar is not so well designed. So in that they are not so happy if you interpret from there. So they have some difficulty within that.

Then selection of flight. Maybe they are neutral because the flight was not, the selection criterias that was not might not be well designed. There can be many other criteria. So you just need to map whether they are. So I am just mapping based on my just random thing.

That can be also happy. So based on case 1 they are happy. Case 1 they are happy. Case 2 they are neutral. So these maps helps designers to understand this is a important part where this design is not performing well. So we have to make them happy and what should be the other option and we should deviate from this option so that they will become happy and where this performance is going well. So that similar kind of design can be adopted in the new design.

So what is there, it can be case study of other web application. When we are studying the other web application they are performing well. The similar concept can be applied. If they are not performing well, then we should go for a different option of design because this is not working. So one of the way whether people are happy or not can be in the questionnaire. You ask them to mark the happiness index in 1 – 5 rating which is a Likert Scale or it can be Likert like scale.

So it can be 0 to +3 and -3. So this becomes a Likert like scale. So Likert Scale is when you are marking them 1, asking them to mark from 1 to 5. So Likert Scale is proposed by a psychologist Rensis Likert. So what this scale does is this scale can transfer a qualitative behavior in a quantifiable numbers. So when you are asking 10 people so they are giving each and every activity a particular number based on if they are unhappy they will give it 1.

If they are very happy they will give it 5. So based on all this number finally it can be a data, as a number can be represented. So these numbers multiplied by how many user you have studied. So that number can be a relative correlation between what is the happiness index of this particular task. And based on those numbers this affinity diagram can be displayed. So in one example we are seeing how many people are the office goers are happy with the looking for a physical aesthetic appeal of this place or they are going for a social interaction.

There was many different bubbles were represented. So the radius of the bubbles can be represented by this number. So this is one way, Likert Scale is one way to transfer the qualitative

qualities into a quantifiable numbers which will help the designers and the web developers and the marketing people to understand and also the client to understand where the lacuna of the studied designs are. And where is the scope of this design is.

In the next class we will talk about the next stages of designing when we talk about the low fidelity, the initial stage of design and ideation.