User Interface Design
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Lecture - 08
Low Fidelity Design

Welcome students to the online NPTEL course, User Interface Design. In the previous class we started discussing about how to create the persona, scenario and do the ethnographic survey. So based on that survey and the requirement and the use task flow how designer start designing the first prototype. So this prototype is called low fidelity prototype in terms of interface design.

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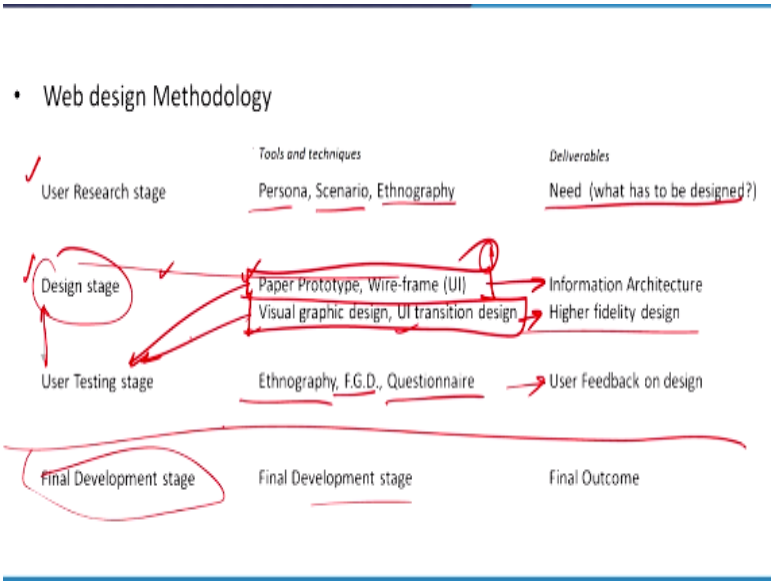

So this was the process which we have discussed as first as user research stage. From this user research the tools and techniques where creating persona, scenario and do the ethnographic survey and then understanding the use's geography, the persona. And what is the probable scenario, how people will interact with the particular product. Product can also be the web based product or tangible product, intangible product.

And the deliverable is the need. What has to be designed. So the need statement will be formulated based on this. Then the design stage. So in the design stage we are right now, we will discuss this design stage. So paper prototype which is the low fidelity prototype wire-frame in

terms of UI and visual graphics, UI transition design. So these are the design stage. So this is the first stage which is the low fidelity design which is information architecture.

We will discuss this. And the next stage is the visual graphics which is the high fidelity design which goes next for the programming where the graphic contents and everything is done. So this is the high fidelity design. So today we will talk about the low fidelity design, the first stage. And next is the user testing. And user testing can be done in the low fidelity design as well as well as the high fidelity design. So together within the design stage user testing will be done.

So there again the ethnography is there. F.G.D or the focus group discussion, questionnaire or different other tools and techniques are there in this domain. So deliverable is the user feedback on design. The final development stage is where it goes to the developer. This is not the domain of mostly not comes within the domain of the designers. So this is the tools and techniques and deliverables of different stage.

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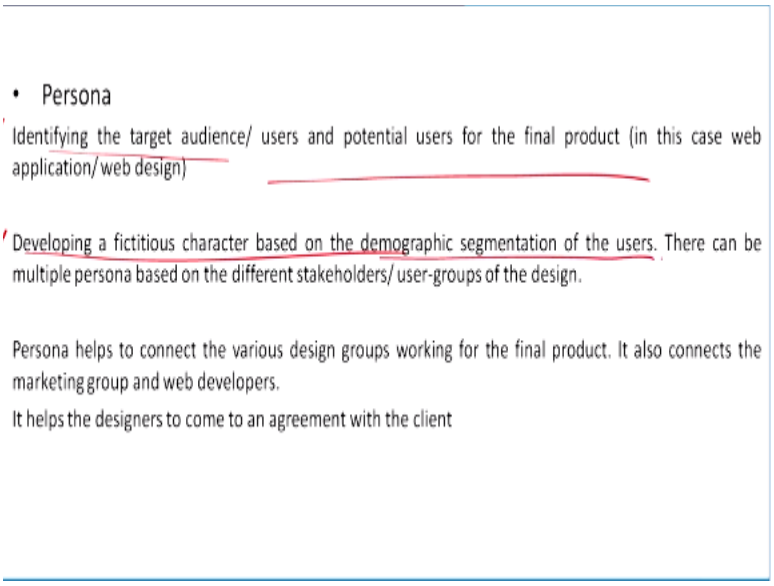

So this has been already discussed. Just to revive again. So persona is identifying the target audience. So that is the tool and users potential users will be find out and developing this is exactly like a fictitious character which represents the demographic and other segmentation of users which designers, developers, and different designers who is working on this team, they will agree upon that this is the target audience we are targeting. So that is why this has been created.

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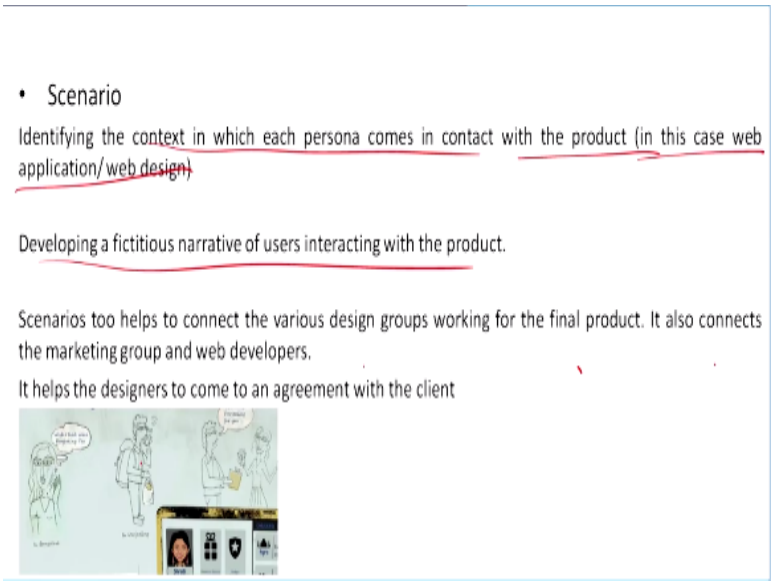

And then the scenario is how this persona will interact with the setup. So identifying the context in which each persona comes in contact of the product and how do they behave. In case of web application and web design it also is validated. Developing a fictitious narrative of user interaction with the product. First is the fictitious character, then the narrative of how this character will behave if we give them this product. So that narrative is the scenario.

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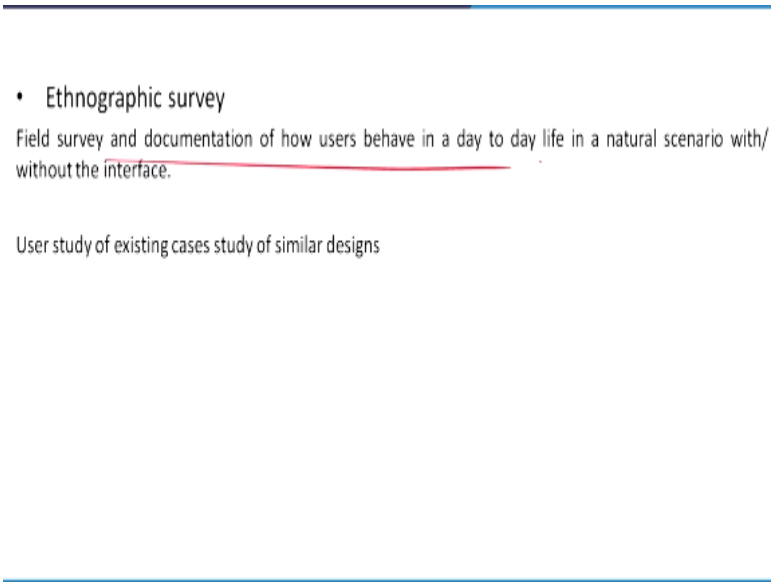

Now ethnographic survey is the tool. Based on this field research we create all these things. And then we create the task flow how based on this scenario what will be the task user want to perform within that. Based on this task flow we create the information architecture.

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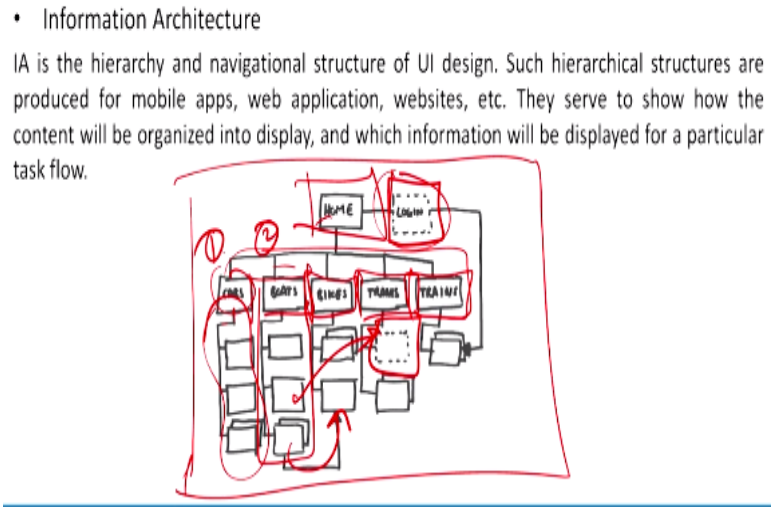

This is where the low fidelity design of the design stage comes into picture. Right now, till this part we have talked about, we have understood the need of the users. So first through ethnography we go, we study, we observe. Then we try to find out who exactly we are targeting, who is our target audience. There might be few Latin target audience who might be included if we create our product like this.

If we change the product a little bit then we can cater to other target audiences for them if there is some added features are added into the product. Some other people who are not right now user of the product will also be interested. That can also be there. To do that persona is required. So for whom we are targeting and then we start placing the product. Product placement can be done according to that.

Then based on that we try to find out what is the scenario, different scenario how they will interact with the product. So that is the scenario and then the task if the product is there what are the different task they want to perform. Those task are there and based on those task we have also talked about their moods within the task and based on the difficulty level or the ease of use what can be their mood and all these are research and to find out what exactly we are designing and what is the need.

Not what exactly we are designing, what need that final design should fulfill. Now within the design phase which designers start thinking about how we can tackle this need. So the first stage will be the information architecture. The information architecture also is like arranging all the information or the hierarchy which comes from the users task. So if users are following these different task so what will be the hierarchy of information in terms of web design.

What informations in UI UX design, what information will come first. Within that what are the different direction they will go and next what will be the next layer of information, next layer of information and so on so forth. So they serve to show how the content will be organized into the display and which information will be displayed for the particular task flow. So which looks like something like this. This is like a structure of the website.

So websites or the web application or any other interface design structure, the skeleton will be displayed like that. First we launch into the home and it might also be through logging or it might be like a visitor and within that there can be different main tabs or buttons where if you click, this is the tabs within the home button and within that if you click on this tab 1, this will be the information and this will be the different task.

If we click on tab 2 this will be the different task. And somewhere this task can be even related. From one side you can go to the other side and different things will be there. If we do the login then few task will be visible. If you do not do the login few other task might be. Therefore it creates a complete, complex structure which is the skeleton or the backbone of this website or web application; that designers try to conceptualize.

So here there is no feedback is not coming from the users. So designers are creating it first. Then it will go to the users. So in this process information architecture, this happens within the closed room when designers sit together and then they ideate. Based on the users profile or the persona, scenario and the user's probable task flow this will be the structure of the information architecture.

They can also design multiple structure of the probable structure of the information architecture based on their requirement and then it will be a multivariate design. Different options for one, catering to the one website and then they might test it for that. So this structure is called the information architecture. How this is coming from the task flow in the information architecture.

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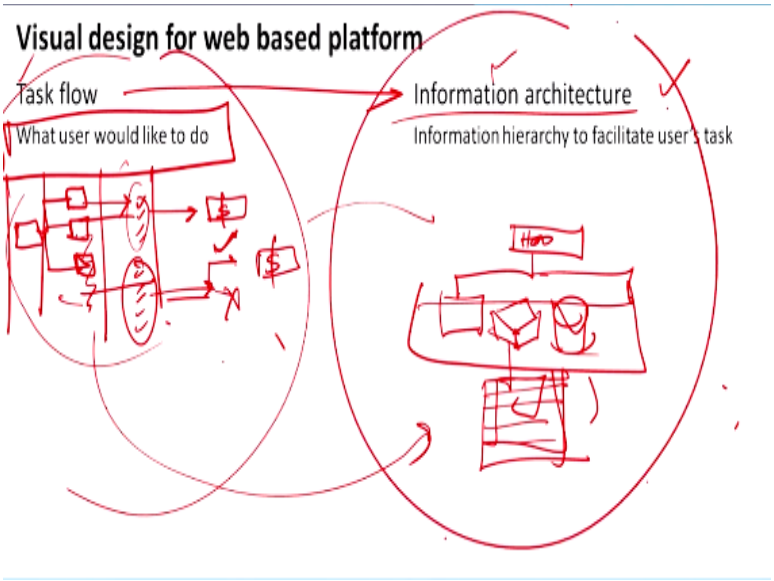

So task flow is what user would like to do. So that first designers think that if this is a task given to the users what are the different sequence they will try to follow and based on this sequence this structure will be decided. So this structure is very pragmatic, creating the structure is a very pragmatic process. So designers has to think from the perspective of the users what they would like to do when they have given this task.

Because when designers think that designer should not think from their perspective because the real users are somebody else. That is why the persona and scenario has been created. Because for whom we are designing, their perception and psychology might be totally different from the designers. And to take an example, if you take a e-commerce website, so first people will, the task flow will be what they want to purchase.

They will select that. Within that there will be minor other selection options. So whether they want to select this. So first we will be launching in the e-commerce site. Then going through the product. Selecting a particular product and then the specifications of the particular product. If

they want to select that, they will go for the add to cart or the payment option. Or if they do not like this, they will go back again search this product and then again select their specifications.

And if they like it, they will go for the purchase and if they do not like it and they will again go back or they might leave the website. So this is the task flow. Based on that, so this option, so designers will create the information architecture. So it might be home and then let us give them different options of product, different options. And then they will see that and then the next page will be based on this product specification.

They will design the what will be the options of the product specification. So this confronts, so information architecture is a translation of what users will behave in the task flow and then they translate that into the first skeletal structure of the website. So that translation is happen. So this is the first stage task flow and this is the information architecture, from the task flow how they are visualizing the website.

And here based on this task where there can be few iterations in the information architecture, they want to display their product like in one particular page or they will be in different particular page. Those decisions comes within the information architecture. They are not in the task flow. Task flow is how people will see the product. Task flow is the people want to see the product for the selection.

And the information architecture they can select whether this different category of product will be displayed in different segments or they will be displayed together or they have to click the button and then a new tab will be opened or it might be just a popup. Those decisions are there in the information architecture but not this is a translation of task flow into the information architecture.

So this is the observation and this is the designers decision based on this observation. So let us think about or see what is the information architecture from a case study. The case study is I have taken of a flight booking site, Cleartrip. So Cleartrip if we launch first. So this is the homepage you see.

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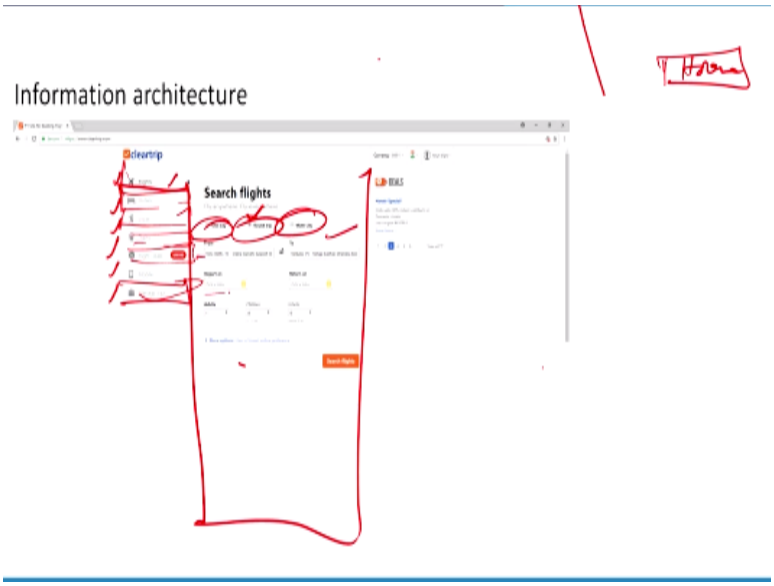

So if we try to find out the information architecture of Cleartrip first, this is the home button. Within the home button, we see these are the main key task which has been arranged like that. So task are in the Cleartrip this flight or the travel related site. One is the flight booking. This is the major site. So when you open, it automatically opens the flight booking. So that is also a decision in the information architecture which will come first.

And then the next other options are hotel booking, local events, train booking other flight deals and installing mobile application and manage trip and see the previous what you have already booked. So this is the first task. So within the task let us see what how they have created it.

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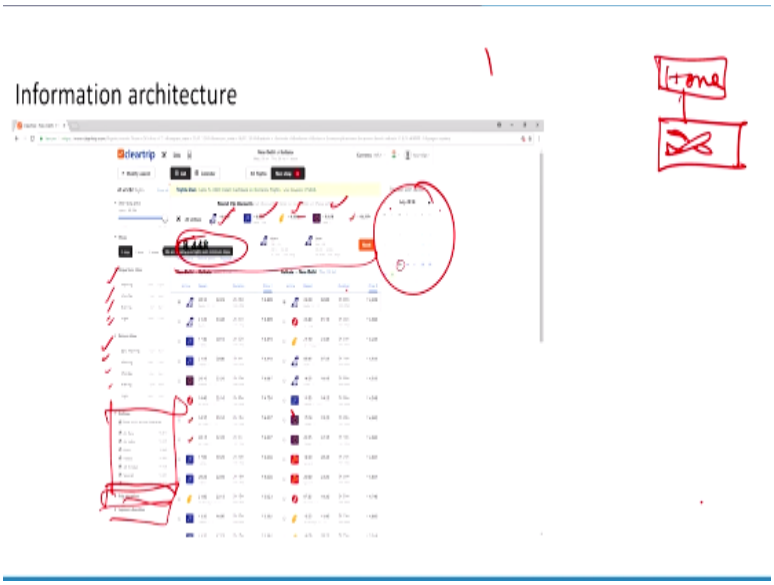

Within this home and the flight booking they have this first option is, first there is another option which I have not kept which is like from where you want to go, so which is there. So here within round 1, whether it is round trip or it will be one way or multicity. So that selection has to be done, from where to where you want to go and the dates and everything has to be filled up. After that they will give the option.

And you can select the option based on they give based on this price or you can select during departure time, return time, during different airlines. There can be preference of airlines, time duration, lay over or multiple carrier different options are there and you can also see the other flight fares and you can also go for this different carriers and see their particular prices. So this is how the information architecture has been designed based on a task of this flight booking and the next phase is seeing the different options of the flight.

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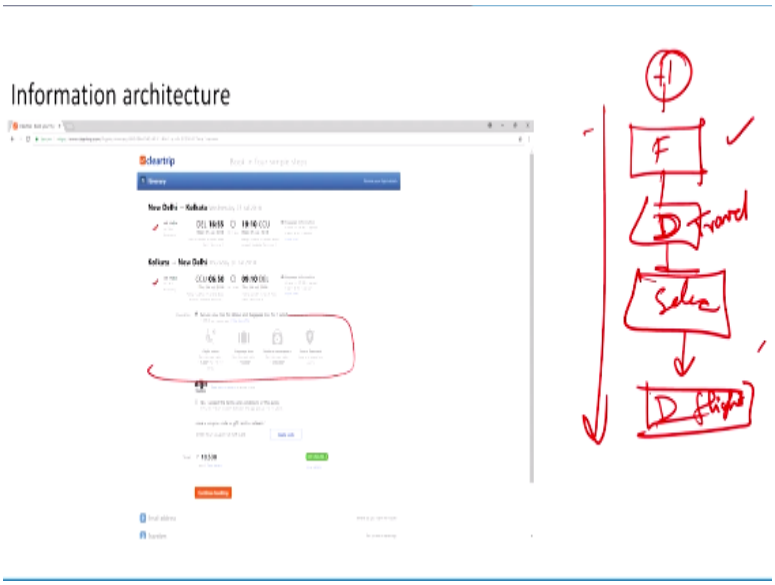

In the next layer, or the next hierarchy of this tree is, home was the first hierarchy, then flight, the details of the flight was the next hierarchy and the selection. And within the selection the detail of the, this was the detail of the travel, travel detail. And this is the detail of the flight, flight details. So you see the flight details, the baggage details and everything. So we are going deep into the hierarchy of one task. So the next layers are going, this is the UI for the next layer.

So if you fulfill this first task, then you will see the next option, next page and next page. So this is going down in the hierarchy and this page will appear when you fulfill the previous task. So all this decisions has to be delineated within the information architecture. So that decision making of these layers, how it will be created so that decision is part of the deliverable of information architecture.

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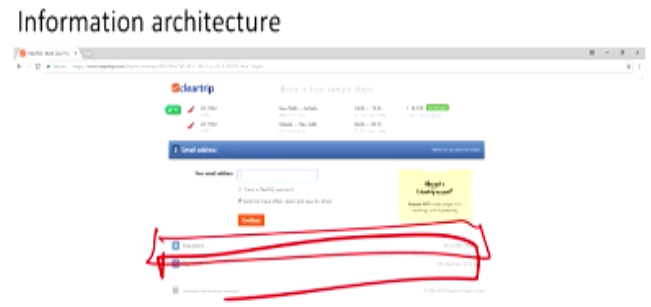

So within that we see this details of the flight. And then it will be the your contact details and then the travelers details. So you have to fill the details of the traveler, age and other things and then the next thing will be the payment. So that is the one task from one line when the hierarchy is coming.

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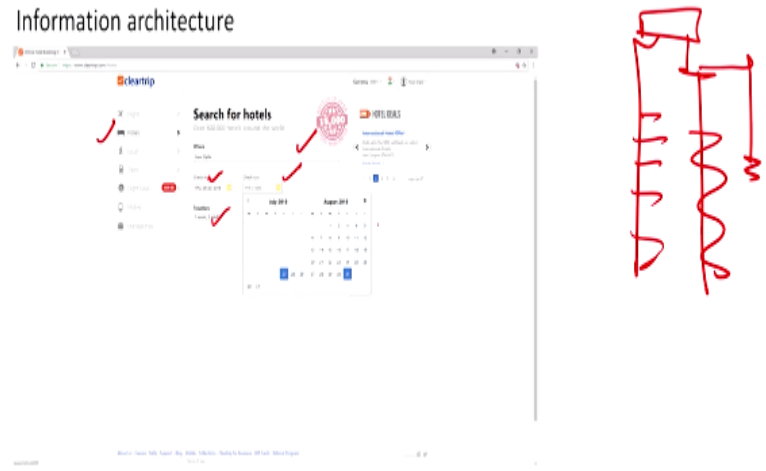

The next is the hotel. So that is this flight was one line in different hierarchy. Next is hotel and there will be also different hierarchy. And then so on so forth, local and other thing. So within the hotel also they have similar interface where which place the check-in check-out, how many travelers and similar drop down will open up and then they will show the list of the hotels.

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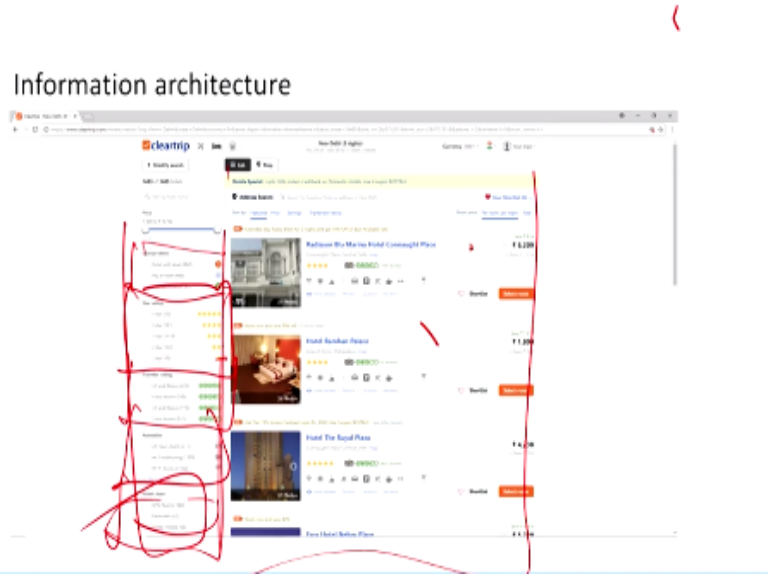

And then they will show the list of the hotels and the way they are showing it is different again. In the information architecture they have different ways of selecting and deselecting the hotels. So special offers, ratings of user ratings, the star ratings or the user ratings and amenities and other brands of the hotel chains and other things. So this is the way they have segregated the next layer of hierarchy.

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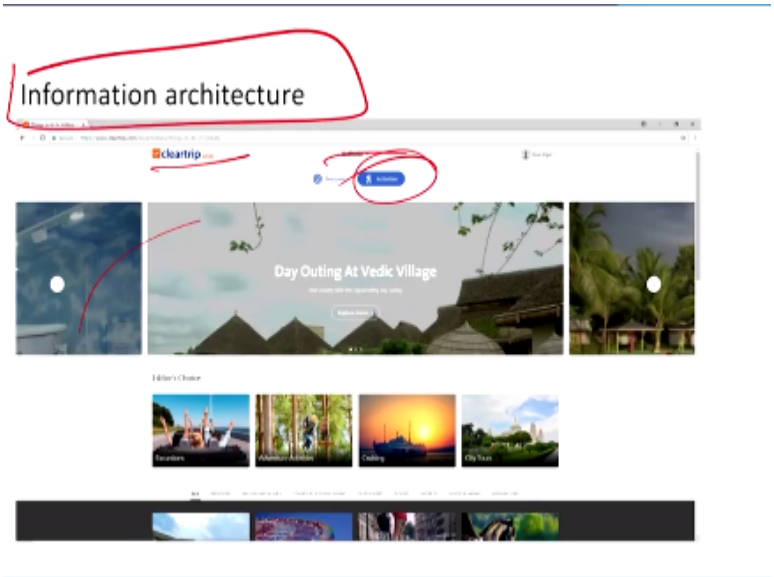

And then there are the what are the activities and features are going on in a particular city. So this is another task. So there are different task and each and every task has different hierarchy. So every hierarchy will be there within the information architecture under this skeleton or the

backbone of this design of this website or web application is part of the deliverable of information architecture.

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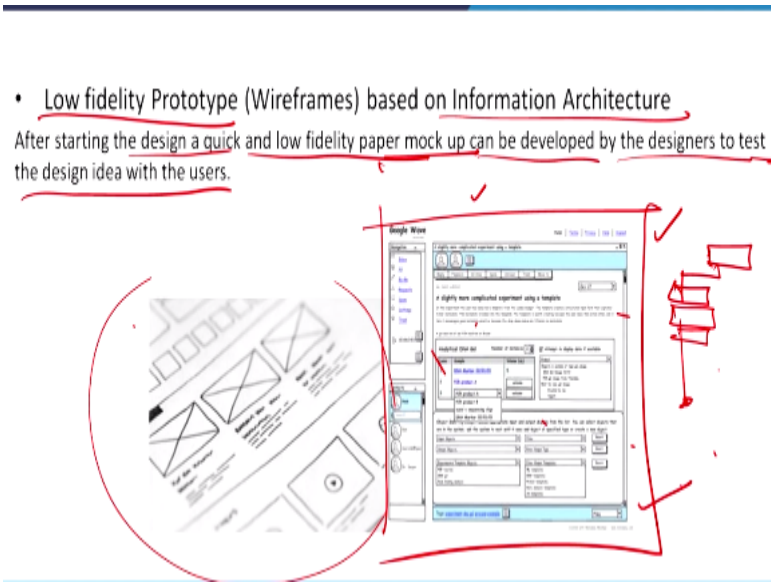

Now based on information architecture the low fidelity design is the next stage which is based on the information architecture created. Information architecture is just the hierarchy, what are the task. Within that what will be the option? Whether they can select the flight? Whether they will be selecting the flight based on the price, based on the flight carrier or multicity, other options. So that is part of information architecture.

Then low fidelity design is how the portal will look like. Where the button will be? What will be the position of the button? How it will be divided? What will be the different segments? Where this options will come? Those decision making will come in the low fidelity design. So from information architecture, it is difficult to do the testing. So at least designers has to come to this stage which is low fidelity design to go back to the user.

From first they have done the user survey, ethnographic survey. After that all this processes are designers decisions and till this point designer has to work till this point which is low fidelity design and paper prototype. And paper prototype can be displayed in the users if you display the information architecture, you might not get the real feedback because users will not be able to visualize the information architecture and their feedback will be different.

So at least you have to show them something like this which will look like what they will see. So they have to visualize which is kind of similar to what they are used to see in the website or mobile application on any interface design. So creating wire-frame is very important and from here it goes for the first round of user testing. So what is wire-frame or the low fidelity prototype? Low fidelity prototype is interface design is called wire-frame.

When we make this frames like a wire. We do not incorporate any visual design or the color or how the textures and everything or the decisions or whether it will be curved, edged or the sharp edge. So those decisions has been taken. And this looks like created by a wire. That is in case of interface design it is called wire-frame. Low fidelity prototype in terms of product design would not be called wire-frame.

That will be some might be a thermocol or PU foam model which can be tested with the users. After starting the design, a quick low fidelity paper mock up in interface design will be developed by the designer to test the design idea with the users. It can be a paper mock up, something like this or it can also be software generated.

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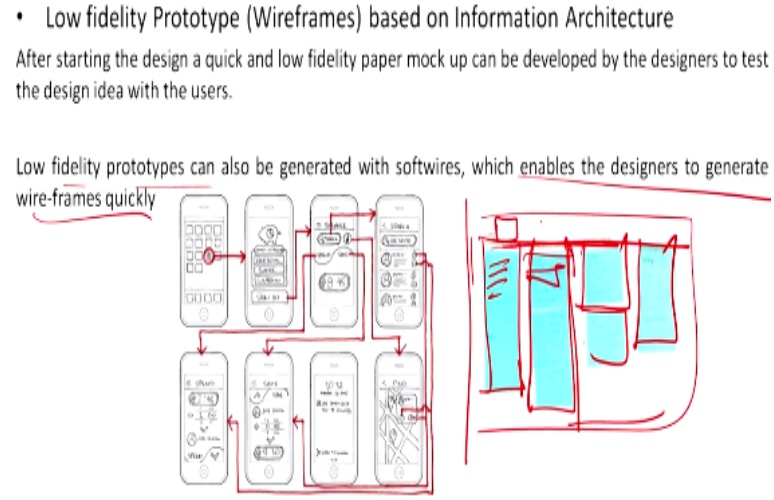

Low fidelity prototype can also be generated with the software. There are few softwares like balsamiq and other softwares which generates the low fidelity prototype which enables the

designers to generate wire-frame quickly in the software. So it can look like something like this. It might be very quick which is just like information architecture and just broader segment how this will be segmented and little polished work the information architecture and which were the sketchy outline.

Or it can be designed using a software where there are already existing template of different mobile phones or laptops and you can just take the screen of this mobile phone and other devices and then there are also templates of dropdown, scroll bars, breadcrumps and other things which you can just incorporate within that and create a quick prototype.

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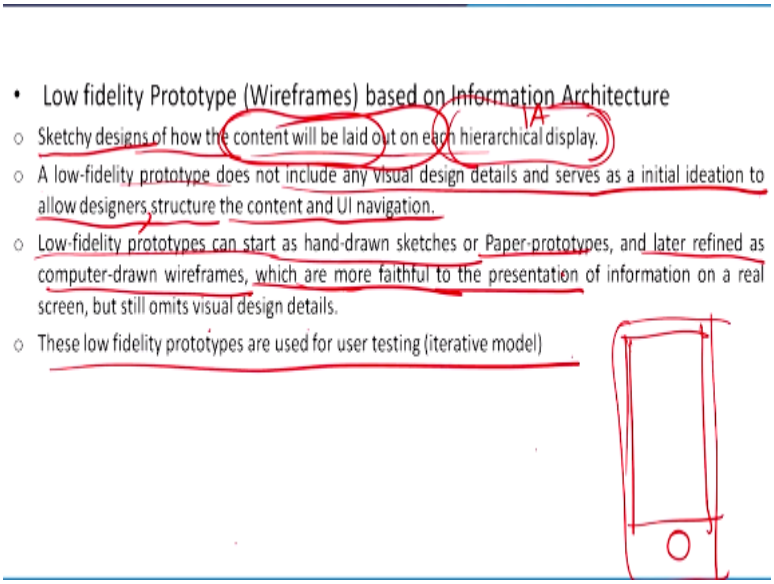

So what are the things in the low fidelity prototype. So this is a sketchy prototype designers do to show how the content will be laid out on each hierarchical display. Hierarchical display is the information architecture and this low fidelity prototype talks about how the content will be laid within the information architecture. Information architecture does not talk about how it will be laid.

Information architecture talks about what will be there in this particular page and low fidelity design talks about how it will be positioned, where it will be positioned. A low fidelity prototype does not include any visual design details and serve as a initial ideation to allow designers

structure the content and UI navigation. Designers to structure where the positioning of the content and what navigation will be there, whether it will be a dropdown, popup.

And where the popup will be, dropdown and popup is a decision taken within a information architecture. Where will be the placement and how the popup will come. So this decisions are there in the low fidelity prototype. Low fidelity prototypes can start as a hand sketch. It can be a very quick sketch, paper prototype or later it can also be refined in the. So low fidelity prototype can start as a hand-drawn sketch or just a paper prototype.

And then later it can be also computer drawn the wireframe which I was talking about and then the computer drawn things are more faithful for presentation because the proportions of the screens and of the mobile and everything is more real and the proportions are similar and user get a feel of that particular thing. And it is also a decision whether you want to show it on the screen to do the testing.

Or you want to cut the paper again after designing in the software you can take a printout and cut it and create as a mobile phone or the laptop and those situations are it is totally up to the designers. While testing whether users will be more comfortable holding the paper prototype or seeing on the screen. So based on those decision it can be hand sketch or it can be software generated as well.

This low fidelity prototypes are used for the user testing which is the next stage designers perform. This is a hand sketch prototype and this is how the user testing is being done. So users will be seeing it and the next page can be like a next layer. They will flip it and they will see the next layer and then they will flip and they will designers will ask if you are seeing this information where will you click if this is the task.

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- Low fidelity Prototype and user testing

Low fidelity Paper prototype

Assume this you are trying to navigate from one place to another or you are trying to book a flight or whatever the task is. If that is the task and this is the display which button will you click and they will tell this is the button for the next task and then the designer will show if you click the button this will be the next page and if that matches with their mental model what they are expecting then the task will be performed properly.

And if it does not then he will understand there is some problem with the low fidelity design and it can be checked quickly. And there can be multiple decisions by the designers so they can show the first option is this, second option and users can also, the behavior of the users might differ in these two options and which designers want based on that they might select the options.

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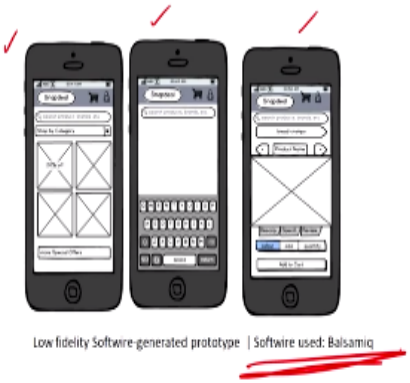
- Low fidelity Prototype (Wireframes) based on Information Architecture



Low fidelity Softwire-generated prototype | Softwire used: Balsamiq

These are some of the ways where you can create low fidelity prototype in software. This is a software called Balsamiq which is quite good and helpful to create the low fidelity prototype.

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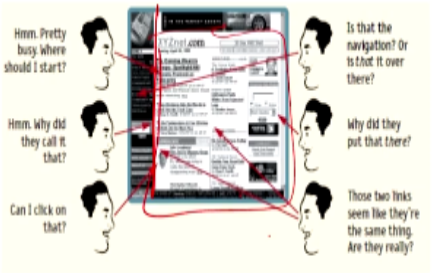
- Web interaction design

Usability

Cognition



Steve Krug, Don't Make Me Think

So next stage is usability design, usability testing which we will discuss in the next class but while designing the low fidelity prototype we need to understand few things that while we are creating the, structuring the web pages which is part of the low fidelity prototype. So this is a book by Steve Krug, Don't Make Me Think. It is a very interesting book for the UI UX designers. It is available online, you can download and read it.

And what he is saying is while we design the low fidelity prototype we have to segregate the information and there should not be any cluster.

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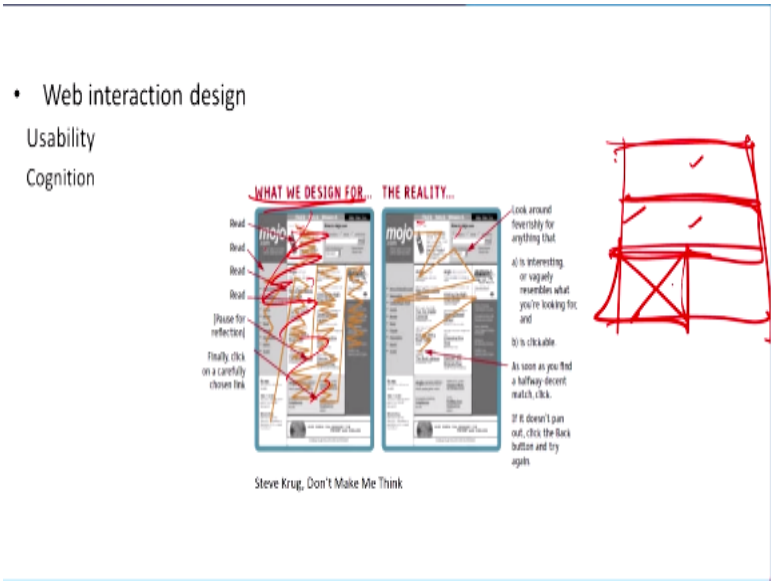

And if we give lot of information in one page, then we expect them to what designers expect them to see is every information but what people see is very few information. So clutter is always bad. So that decision should come in the low fidelity design. So if there are lot of informations which information architecture is telling to give lot of information, low fidelity prototype should create different pages.

Or some solution to show only few informations, key informations which user want to see. It can be in the next hierarchy some other information can be shown or if you mouse over some information related to that can be shown or click on that dropdown will be there. Some other ways to diminish the information at a glance. So it can be sequentially the information has to come and within the page setup a clear division of structured division has to be there.

Within this structure this type of information is there. Within this structure just that other type of information is there. Within this structure this type of information is there. So if there is a clear clarity within the structure that works much better in terms of usability testing. So those decision should come from information architecture.

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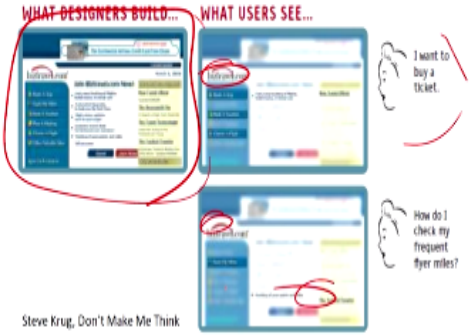
- Web interaction design

Usability

Cognition



And then what designers build if there is a lot of clutter the user will only see the highlighted point which is the buttons are more bigger, the text is bold, text is bigger and the main which is near the focal point, those will be only seen.

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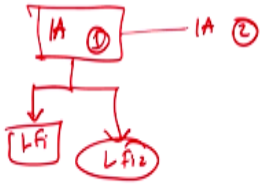
- Multivariate design

Multiple design solution based on different approach to solve a particular problem.

Designers leave the options to users to select the based on the performance of each variations through user testing and feedback.



Now while creating this information, after this information architecture and low fidelity design it can be multiple different design. So multiple different options for one solution. This option can be changed within the information architecture. There can be information architecture option 1, information architecture option 2 or one information architecture low fidelity design option 1, low fidelity design option 2.

So it can bifurcate from any stage but multiple designers when we create different low fidelity design to show the users and do the testing. So this options will be shown to the user and how do they perform based on their performance evaluation the multiple variates performance evaluation we will select the best option or the better option and then tweak it in a further way.

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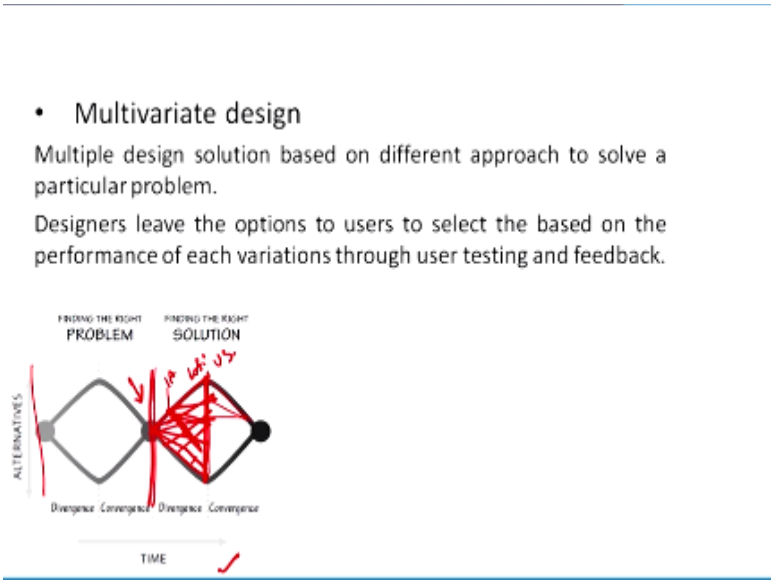

So this also comes within the Donald Norman's double diamond method which has been discussed earlier. So this first stage of the double diamond is the problem identification. In this stage the problem is identified and then we are bifurcating from the one problem. So information architecture comes in one stage, from one information architecture there might be one low fidelity design. There might be multiple low fidelity design from one information architecture.

In this stage there will be lot of options, in this low fidelity design stage. And here users will try to select and narrow down one, one option. And it might be the amalgamation of two option. It might be the already the best option which is designed, might be validated by the user and that can directly go or it can be iteration and totally all the options sometimes might be scrapped and you have to go for new direction of design, that can also happen.

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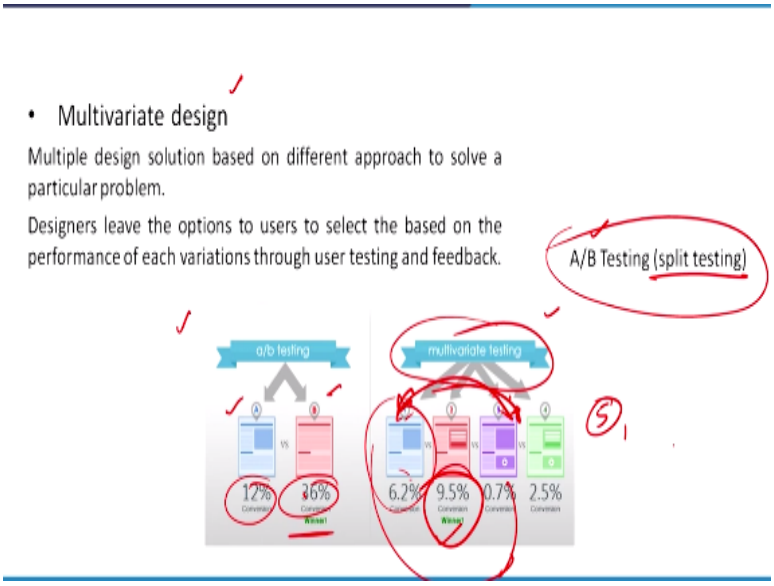

So in this situation, another option is alpha beta or AB testing. Multivariate design is when we create multiple options. AB or alpha beta is when we create only 2 options. These are actually not very different. So if we create 2 options, this is AB testing or alpha beta testing which is also called split testing or alpha beta prototype and then multivariate design is when you create multiple prototype. Alpha beta prototype in some cases are also different stages.

So alpha stage design and beta stage design is a beta testing. So that is different thing which we will discuss later but in this multivariate design sometimes this is called split testing when we create 2 options. So what is the different between these two is almost the same thing. But the chances of multivariate when you create multivariate testing or multivariate design and then do the testing is the chances of success rate will be much higher.

So here it is like 12% and 36% performance winner and here the percentage of other people and this is the winner and when we create multiple options we have the probability to see some other options which we have not created in the two options. So more we create options for more different perspective, better we will see how the salient needs or the desires of requirements are there. We might find out something interesting during the testing.

And when we create two different options both the options might not work and we might scrap both the options and major change might be required. And when we create multiple options we

have the probability to select option 1 with option 3 which will perform better than option 2 and option 2 here might be the winner. But through the user testing when we see that option 1 has some better points in this direction and option 3 has some other better points from other direction.

So we can create some other option which is the fifth option which is the combination of 1 and 3. So that gives when we create multiple options that in a way gives better way of different dimensions. That is why in double diamond method Donald Norman is saying create multiple solution for one particular design need. So today we are ending in the low fidelity design. The next class onwards we will start talking about the high fidelity design and the visual communication design part will come into picture.

And after that we will again come back to the UI UX part and talk about the testing and after this visual communication design part we will start talking about how this low fidelity design will be tested. So we will finish the UI part and then we go into the visual communication design part and together we will discuss how UI UX and also the visual communication part will be tested and the testing part will be, the process of user testing will be discussed in the third stage.