Understanding Design Thinking and People Centered Design Prof. Jhumkee Sengupta Iyengar Department of Humanities and Social Sciences Indian Institute of Technology, Kanpur

Lecture - 01
Introduction and Problem Discovery
Introduction to Design Thinking

Hello everyone, I am Jhumkee Iyengar and I am really looking forward to speaking to you on an area that I strongly believe in, Understanding design thinking and people centered design. This course is an introductory orientation to this topic. Today, we have industry leaders from across various industries, speaking and writing a lot about design thinking and about being customer centric. It has become center stage in many organizations which are trying to rapidly adopt a people centered approach and culture in order to be more innovative.

So, design thinking is enabling organizations to create products and services that are not just what people want, but they are also differentiators in the market. But what is design thinking? This course will help you understand that. It will also help you understand how a people centered design approach is different from traditional engineering or marketing focused approaches, and understand as well how do you create designs that are focused on the people who will use them. The simple approaches, methods, concepts and tools are versatile and adapt well to various industries, settings and projects.

This course, however, is only an introductory orientation. While in this course you will answer questions in a traditional kind of exam. Design is not just about acquiring knowledge, it is as much about doing and making. Until you put your learning's into practice, hands on, a real project you will not have internalized the content and the concepts. While the doing and making is not a part of this course I would encourage you to try and actually apply what you learn at any and every opportunity you get, because opportunities to make things better are all around us, and because design is a way of life, it is not just a subject or a discipline.

I hope you will enjoy this course as much as I have enjoyed bringing it to you, and I am sure that equipped with the understanding and the appreciation of a different way of thinking and looking at the world, you will have learnt to approach a problem in a way

that makes the outcome a lot more innovative; not innovative just for the sake of being innovative, but innovative in the service of people and I hope that going forward, you will make these approaches a way of life for yourselves.

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Let's now get started. So, what are the objectives of this course? First off, to understand the design thinking approach; secondly, to learn how it applies to innovating people-product-experience systems, and we will speak a little later about this notion of people product and experience as a whole. And of course, to apply it hereafter and ongoing in everything that you do because, as I said it is applicable in any context, in any situation, in any challenge, because design is a way of life.

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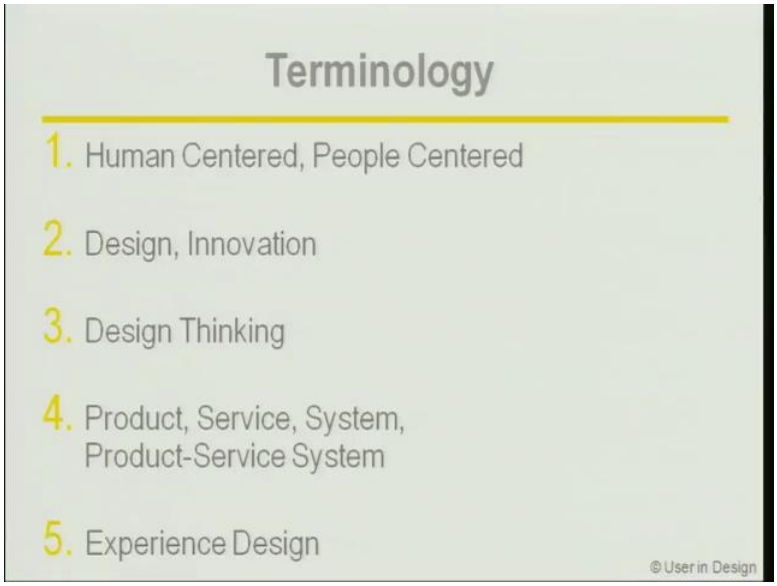

Before we get going, some of the terminology that I will use, that you will hear me use over and over, and perhaps sometimes used interchangeably.

First off, human centered and people centered, you will hear them both. Design and innovation: We will address these and what it means in a few minutes. Design thinking: the whole approach to thinking along a particular way in order to be more innovative. Product, service, system and product-service system. So, when I speak about product, given that in today's world, it is mostly that products and services come bundled together, and for a customer it is one big system, a relationship with a company. So, often times when I say product or service it also means the bigger notion of a product-service system. And the notion of experience design: the product-service system when interacts with a user you know, it creates an experience. So, how do we design those experiences?

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All right, let's now get started. I would like to start with this quote from Victor Papanek who is the author of Design for the Real World and also someone who I have always looked up to. He says the only important thing about design is how it relates to people, because design has the power to make lives better, to make our everyday experiences better. So, let's now look at the course content.

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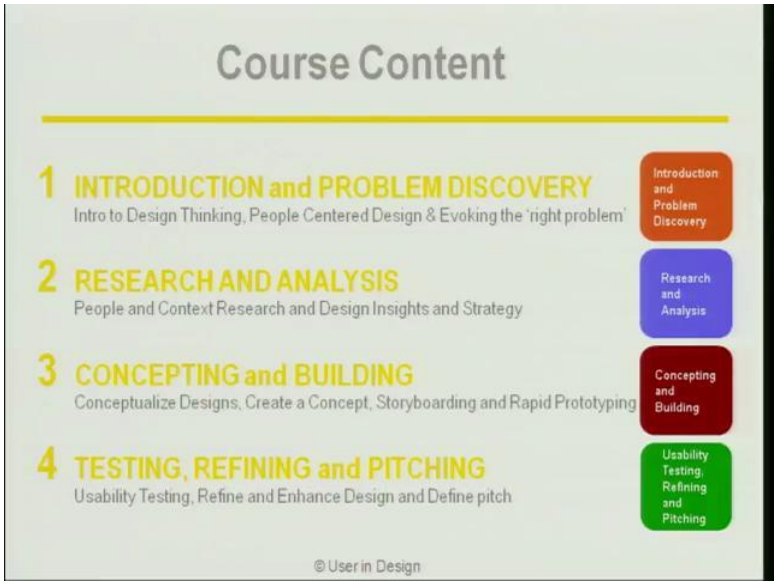

As you know the course is going to be delivered in 4 parts, part one is introduction and problem discovery, where you will get introduced to the notion of design thinking,

people centered design and then how do you evoke, how do you generate the right problem to solve. Part two is research and analysis; research of people, of the context that people live in and the design insights and strategy that we derive from those people and from those contexts. Number three, concepting and building from these insights, you would then go and conceptualize design. You would ideate and come up with multiple ideas and then create a single concept out of those and then create a story around how your design fits into people's lives, and then actually make it. And then the fourth section is about testing, refining and pitching where we learn usability testing, which is testing with people and how we refine and enhance our designs. And then finally, defining the pitch for our design, how do we speak about our design, how do we convey and communicate our design.

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So, let's look quickly at each of these sections. In part one, Introduction and Problem Discovery, these are the 5 sub parts that we will cover. Introduction to design thinking; the need to be people centric; then, the people centered design methodology; when examining and reflecting on the problem, trying to understand what the real problem is and then, reconsidering and arriving at the right problem to solve.

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In the second part, Research and Analysis, we will cover these 5 sub sections: researching with users and researching their contexts; framing questions and conducting the research, how to do that; then, how do you bring back what you learnt in the form of user stories and derive themes from it; Personas, another tool that you will learn; and then Insight Statements, what are the insights, what are the conclusions, what is the analysis we have drawn from these and how thereafter do we define the design strategy.

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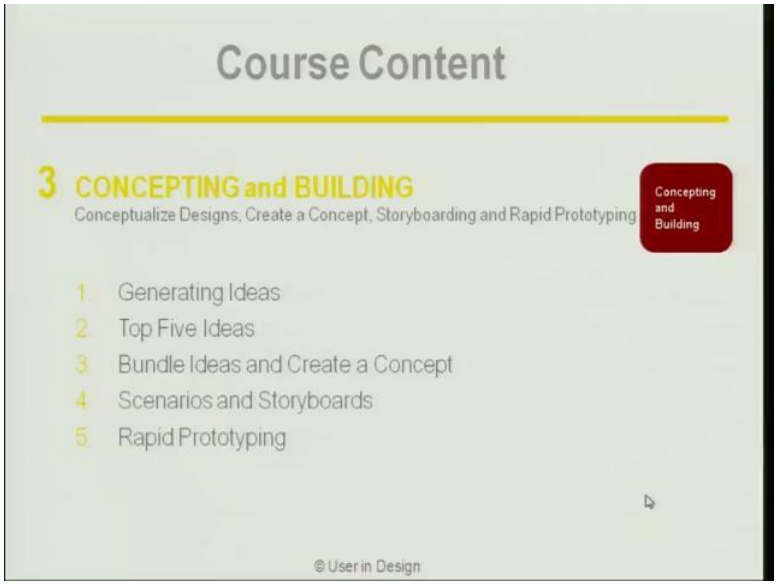

Part three: Concepting and Building. We will learn based on these insights how do we generate ideas and a technique called top 5 ideas is what we will cover. Then from these bunch of ideas, how do you bring it all down into one concept, bundle it and create a single concept, and then create scenarios and story boards in how your design is going to live in people's life. And then you are actually going to be making it, right; How do you make what you have designed, what you have envisioned in your head?

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Then part four: Testing, Refining and Pitching. The importance of testing with people; testing how do you actually test your design with people; how do you conduct the usability test itself; how do you record results, how do you enhance it, how do you retest and refine and, you know, make your design better; and then finally, how do you communicate your design.

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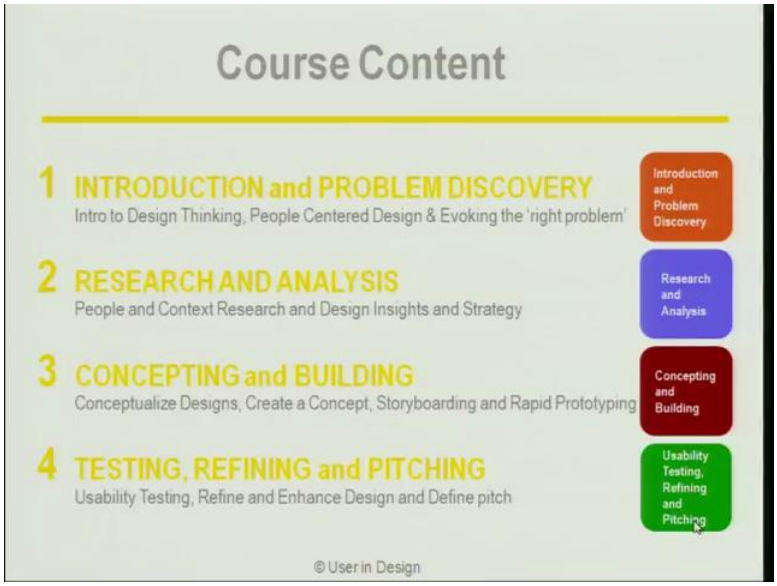

So, that's broadly the four sections and what they each cover. So, let's now start with Section One: Introduction to Design Thinking.

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So, these two arrows, the up and down arrows, are the two buttons of the lift. I am sure many of you have been through situations, where you have wondered should I press the up arrow or should I press the down arrow, which one is it? Because what is going on in your head is possibly, do I press down because I want to go down, or do I press up because I am thinking, lift please come up, because I want to go down. So, this is what it

looks like when you view it not just as a product, but as a people-product-experience system. There is the product, which is those two buttons and there is the people, the thinking that's going on in people's head.

Now, there are situations where this can be too expensive. For example, this sign that I saw outside the lift in a hospital. As you can imagine, in a hospital it is a time critical that the lift comes right when they need it. So, people randomly pressing, the wrong button and the lift going and then, taking longer to come to the right floor, is not acceptable. Therefore, in the hospital, they have put up this sign where they have called it 'press up to go up and press down to go down'. Why does this need a signage? That is the question that we need to think.

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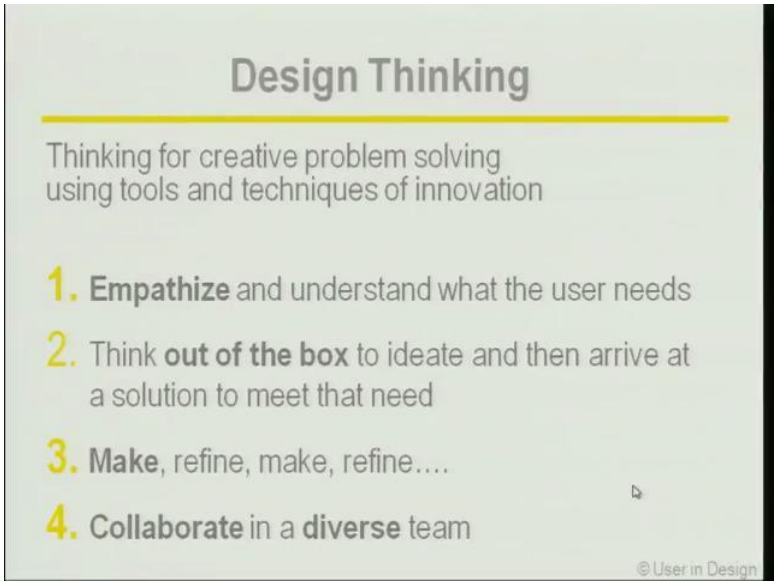

So, what is design thinking? Design Thinking is thinking for creative problem solving, using tools and techniques of innovation. Creative problem solving: so, there are these tools and techniques that designers use, that we use, in the process of practicing design thinking. What does it cover: Design thinking requires for us to be empathetic, to empathize and understand what the user needs, it needs for us to be able to step into the user's shoes, it needs for us to think out of the box; not the first obvious solution that comes to our heads, but to think beyond that and ideate more and more and arrive at a solution in order to meet that need. Then it needs for us to make that design, refine it,

make it, refine it, and so on and so forth until it meets the user's needs. And it also needs for us to collaborate in a diverse team, …

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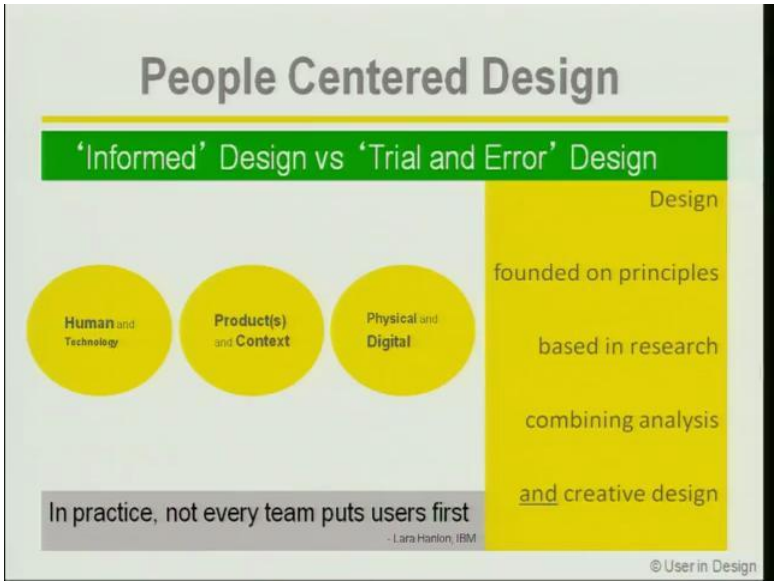

…work in a team, brings those different perspectives together that call for a much richer and more innovative product. So, this is the opposite of saying that you know, it is this one brilliant person who in the middle of the night may come up with this idea. In design thinking we believe in collaborating in a diverse team.

Let's now look at what is people centered design? It is not just about the technology, but it is the human and the technology. It is not just about the product, but it is about the product and it is overall context in which it lives. It is not about only a physical product or only a digital product because as we know today, lot of products are embedded with digital right, so it's about both. So, people centered design is design founded on principles based in research, combining analysis and creative design, based in research that exists. A lot of body, a huge body of research exists on how people interact with products and as well as the research that we will do with our users once we embark on creating and trying to develop a people centric design.

So, it is this notion of informed design verses trial and error design. Trial and error design is where we would not have an idea; we create the design, but we really do not have any idea whether the people for whom we design are able to use it or not whether it works in their lives or not. Then why is it necessary to have this whole approach of

people centric design because, as you can see from this quote, in practice not every team puts users first. That is not the way many teams ideate.

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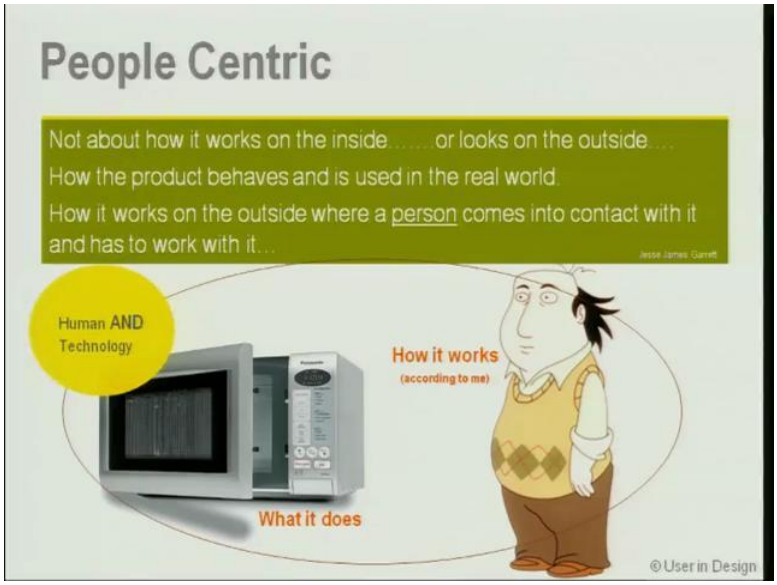

So let's now at this everyday example of a microwave oven, which has become a fairly commonly feature in a lot of kitchens, right. So, there is the microwave and then there is this person, the person who is going to use the microwave, right. So, it is about what this does: it can bake, it can roast, it can heat food, it can grill, it can do all these different things. And it is about this person, you know, how it works according to me, how I think it would be reheating the food right, how I believe what is in my head as far as how this machine works.

So, it is not about how it works on the inside or looks on the outside, it is how the product behaves and is used in the real world. It is about how it works on the outside, where a person comes into contact with it. So, it is that contact point between the user and the product. So, where the person comes into contact with it and has to work with it.

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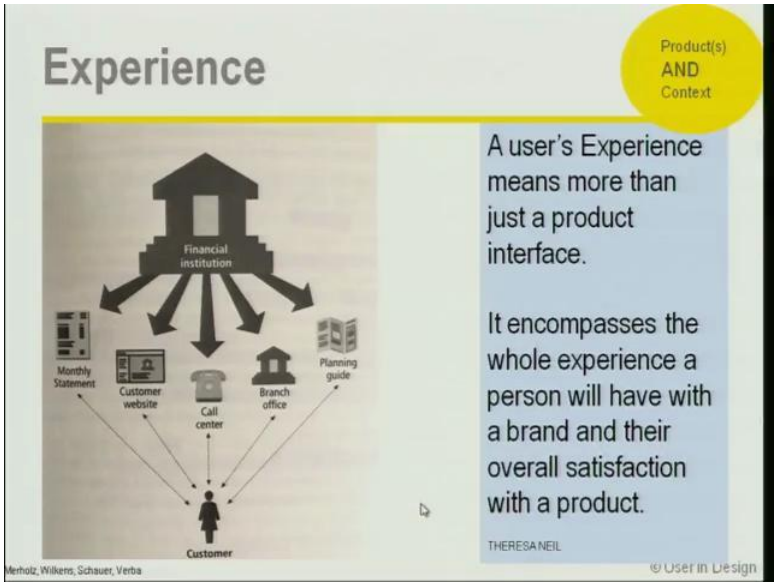

So, it is about the human and the technology being people centric. :et us look at the example of a financial intuition, for example, a bank right. The user has various touch points with it; you as a banking customer would have various touch points with that financial institution. So, with the monthly statement that comes to you, with the customer website perhaps that you interact with, the call center who you may call for certain questions, you have the branch office of course, with which we frequent a lot, a planning guide that their adviser may have sent to you or given to you and of course, the ATM which many of us use on regular basis which is not on this.

So, these are all the different touch points that together form the interaction or the experience that the user has with this bank. So, let us say you go to the branch and it is this really polished branch and this well-dressed person comes and you know, says how can I help you and really is helpful. And then you go home and you try to make sense out of your monthly statement and you just cannot make any sense out of it, or you call the call center and they are really rude or they aren't able to answer your questions. So, a user's experience means more than just a product interface. It encompasses the whole experience that a person will have with a brand, that brand in this case being the bank, and their overall satisfaction with a product. Because remember, for the user, for the customer whose dealing with all these different touch points, it is all one product; they are not separate products.

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So, it is about the product and the context in which it is used. So, it is about the whole experience. Look at these products now that have become a part of our everyday life, in fact, almost like an extension of our bodies- the mobile phone. Look now, not just at the software that you see on the phone, but look at the hand. Look at the hand and how the hand is interacting with the software that is shown, how easy it is based on how the software is designed to make a selection from among the options shown. Because today everybody is designing apps right, with designing the software. But it is not just about the software but also how does the hand interact with it, how easy is it to place an order, how easy is it to make a selection in this case, right. So, it is not just about the digital app. But it is about the digital and the physical, how that is placed in order such that the person may interact with it in a much more comfortable way.

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So, it is about this holistic thinking. So, let us now understand the people impact, through an example that we see every day that we almost take for granted right- the home screen on our mobile phones. But where did this come from. If we look carefully at those eighty-eight pixels, that is a standard that has been defined, this is where it comes from-from the average human finger pad size, the average fingertip size and then, therefore, what makes it a good touch target? So, from the tap target and the finger tip size we come up with this forty-four pixels size which has now become a standard and that is what is used in mobile phones as a de facto standard. But remember that it ties in with this size and the ability to comfortably interact with what is designed and visible on the screen in software.

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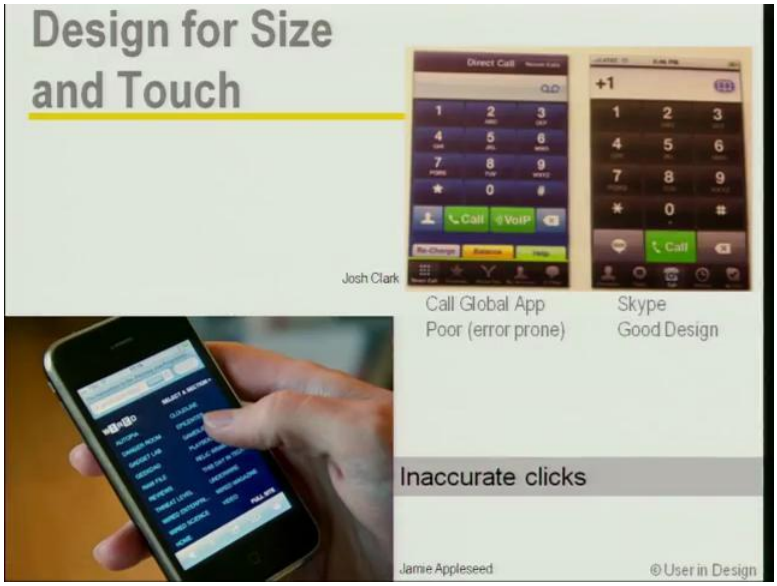

Let us now look at these two examples- this one is Skype and this one is another competing app, comparable app, called global app. Both work equally well, there is no difference in the performance. However, the one in the left was very error prone and, as you can see if you look carefully, it has violated those tap target sizes and therefore, it became very error prone. Whereas, Skype, you know. followed all the conventions. Here is another example and even by looking at it now you can tell that there will be a lot of inaccurate clips because the tap size target has not been confirmed to. Let us look at this very simple example now. These are strips of two tablets, both of which are fairly comparable tablets, taken by people with high blood pressure.

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So, it is blood pressure medication. Now if you have interacted with or know about someone in your family who has high blood pressure, you know certain things about it. Number one is that you know, it needs to be taken every day; it needs to be taken ideally at the same time every day. And of course, knowing how people are, we also know that people forget to take their medications. Not just that, after taking the medication they sometimes forget whether they took the medication or not. Now if you look at these two examples- this one has the tablets in a strip which has 10 tablets, the one on the left over here is 14, which is corresponding to the 7 days in a week, right. And each of the days of the week are labeled. Not just that, this plastic is transparent. So, when the tablet has been taken out, it is clear to you that, yes, I have taken the tablet. So, you can see how the tablet on the left, exactly same function, has been designed with a lot more thought, a lot more attention to people. The people have been brought into the design of this.

So, innovation is often in the details, that is the point I want you to take away from this. That innovation is not always or not at all necessary about you know, waking up in the middle of the night with a vision. It is this little detail or thing that, you know, can make a big difference in a person's life.

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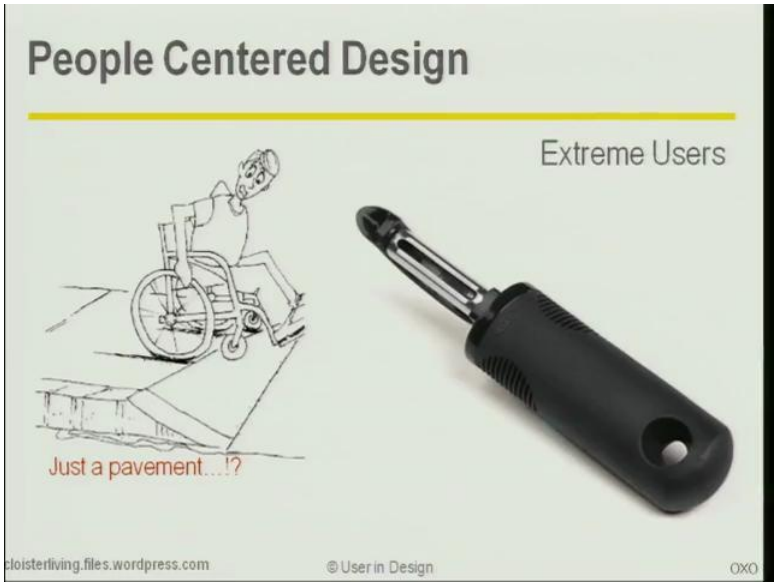

And design thinking does not need to cost more. I would imagine this hardly cost the company anything to do. This is people centric design. This is a peeler and it is from this company called OXO. Now this peeler was originally designed for people with difficulties with their hands and finger, like arthritis. They may have arthritis in the hand or motor control problems with their hand. So, this peeler was designed, you know, keeping that kind of user in mind and thereafter, once it was released in the market it was such a huge success that everybody wanted it, everybody liked it. And thereafter OXO developed many other products, you know, they formed a sort of a product line. But this was designed for a particular segment of users and then it became something that everybody could work with.

Similarly, the sidewalks, the footpaths, pavements- designing them with a little slope was originally in keeping in mind the wheel chair users. So, they would be able to use the pavements and the footpaths, but once it was designed, it was found that it worked really well for everybody. You and I also do not like to be walking on the footpath and then stepping down and up and down and up over and over again. So, it is often times in these details. So, if you would think of it as it as just a pavement, remember, it can make people's lives easier or it can make people's lives harder depending on how you have designed it. And you have probably seen places, where on the pavement, there are steps to go, you know; you step up and step down step up and step down in all those places.

You will find people are walking on the road; they are not using the pavement because it is not as comfortable.

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So, this notion of extreme users- designed for a particular kind of user, but then it works very well for everybody. this is another example from Ford motor company. Ford was interested in older consumers as a way of, you know, expanding their market and giving particular focus to this target segment, thinking that they were targeting a very special part of the market- older consumers. So, they make the lettering stroke forty percent wider for people, you know, with a limited vision that comes with aging. What they found however, was that it improved the reading speed and accuracy, eased eye strain and reduced distractions not just for the elderly folks, but it was easier even for the younger people to read. So, everyone benefited from this design, which was originally envisioned for these extreme users.

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These are products from Pepsi Co, one of the companies that is leading this whole revolution into being more customer centric, bringing about a change in the company culture, etcetera. And you might think, you know, what is there to be innovative? This is what they came out with- Pepsi Spire, where users are able to mix their drinks in different combinations depending on the kind of flavors that suit's their tastes. This is a quote from Indra Nooyi and she is the head of Pepsi Co. She says there is a fine line between innovation and design. Ideally design leads to innovation and innovation demands design. So, through the people centric design process that they went through, it ended up in an innovation.

I would also like to share with you this quote from a Nobel laureate Herb Simon, who says, everyone designs who devises courses of action aimed at changing existing situations into preferred ones. We know that all of us want to change existing situations into preferred ones; all of us are involved in changing existing situations into preferred ones. We want to be more innovative, we want to be creating the kind of designs that really work, not just in the market, but also in the lives of people.

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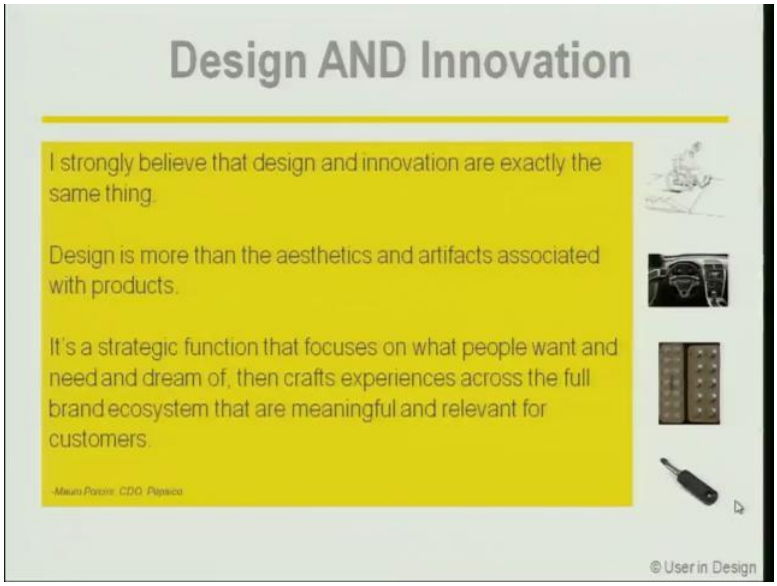

So, this is a quote from the chief design officer of Pepsi co, which really resonates with how I think about this. He says I strongly believe that design and innovation are exactly the same thing. Design is more than the esthetics and artifacts associated with the products. This is a very common misconception that most people have, that it is only about esthetics. It is a strategic function that focuses on what people want and need and dream of and then crafts experiences across the full brand ecosystem that are meaningful and relevant for customers. This captures very nicely what the overall design thinking approach is all about. So, what does it mean to be a design thinker and a people centered designer?

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Beliefs: believing first of all that all problems are solvable, believing that you have what it takes to try and use some of these approaches to solve any problem. Secondly, that the people who face those problems everyday are the ones who hold the key to their answer, the answer to those problems, those challenges that you are working with, lie in the people, the people who are struggling with this. So, what do we do as a designer thinker and people centered designer? We dream of lots of ideas. We don't just come up with the first thing that comes to our head. Some work and some don't work and that is okay. We make our ideas tangible, so that we can test them and refine them.

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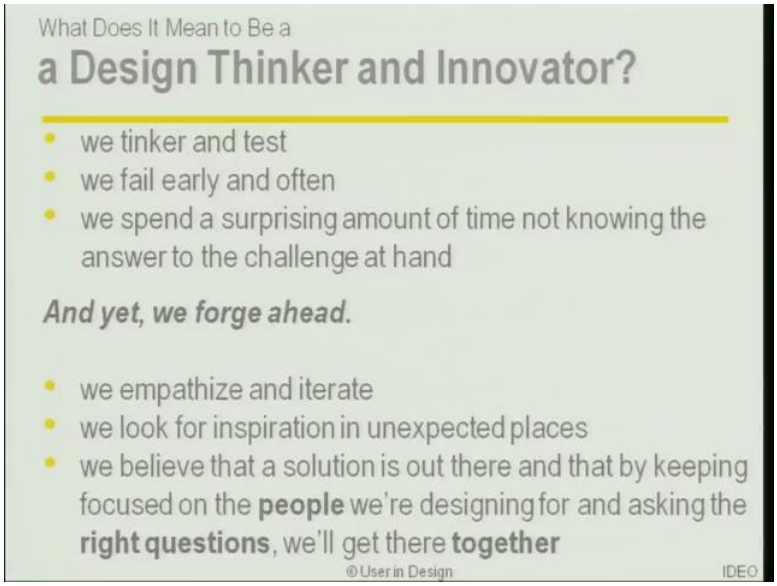

What else do we do? We tinker and we test like an experimenter. We keep trying, we try different things- try this, try that, reject this, enhance that, and keep testing it. We fail early and often except we do not think of it as failures, we think about it as eliminating things that do not work.

We spend a surprising amount of time not knowing the answer to the challenge at hand. We spend a surprising amount of time being comfortable and working in this whole zone of unknowns, of ambiguity. We work in that because we know that following this process, following this approach, we are going to get there. We have faith in it and yet we forge ahead. We empathize and we iterate. We empathize, we step into the shoes of the people who we are designing for. We try and understand what and how things are happening in their lives and we iterate, we keep refining. We look for inspiration in unexpected places, not in the most obvious place, not for most obvious solution that comes to our heads, but we keep looking around. Because there are so many inspirations all around us, if we only look. We believe that a solution is out there and by keeping focused on the people that we are designing for and asking the right questions, (we will address this in section two, how do ask the right questions) we will get there together. Who is together- I the designer and the people who I am designing for, together we will come up with the best solutions.

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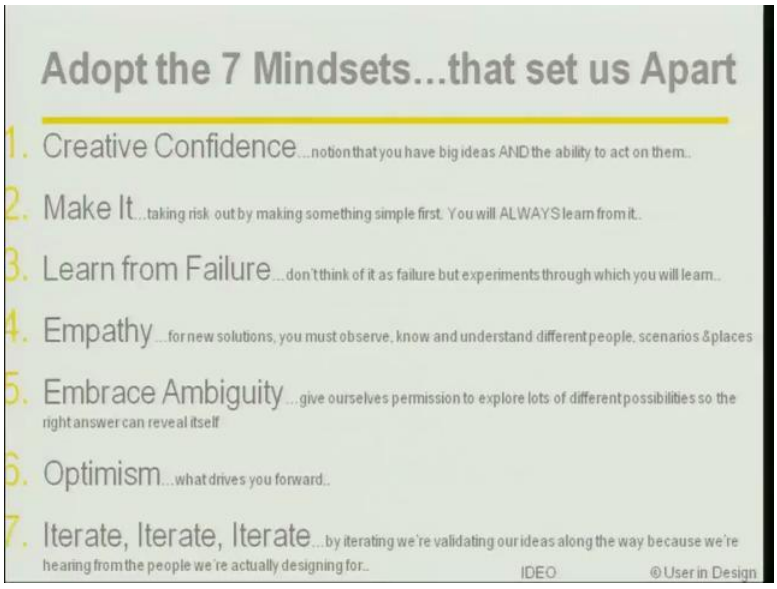

So, let us now talk about these 7 mind sets that set us apart as human centered designers and this has been put forward by IDEO. Number one is creative confidence- having that creative confidence, that you have big ideas and you have the ability to work on them. That, you know, it is not just one or two, there will be so many ideas and it is going to come, but you make it. You make your idea and what you are doing in the process of making is taking the risk out by making something very simple first. Because we always learn from our mistakes right. So, that is what this is about, making something and learning from it and making it better and leaving behind what does not work, so that we do not take it to the market with us; do not take forward into the market what does not work.

Number 3 is learning from failure, except we do not think about it as failure. We think about it as experiments through which you will learn.

Empathy: if we want new solutions we must observe, we must know, and we must understand different people, scenarios and places. So, we go through these activities that allow us to be empathetic and we will learn some of those activities that let us, you know, actually go out and bring back information about the people and the places and the context for which we are designing.

Embrace ambiguity: give ourselves permission to explore lots of different possibilities so the right answer can reveal itself. Remember it's saying reveal itself, it is not that you will come up with a right answer. But it is like if you keep going through this process you will how the fog starts clearing. We are filled with ambiguity in the beginning, we are filled with unknowns, it is all foggy. Slowly the fog starts clearing and the answer, the real answer, the most user centric answer, the human centric solution starts revealing itself, it starts emerging.

Optimism: Very important. A can-do attitude that the problem is solvable, that has to drive you forward and iterate, iterate, iterate. Iterate means, you know, keep going refining, again testing, again refining and making it better and better. So, what we doing by iterating is we are validating our ideas. We know what works and also what does not work. Why? Because we are actually hearing from the people in this whole activity of usability testing and iteration. We actually bring in the people for whom we are designing and that is why it works.

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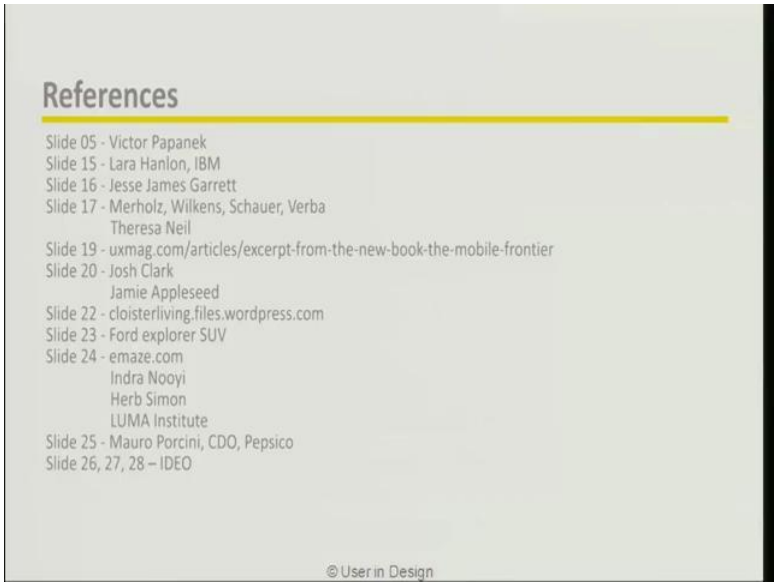

All right so, that was Part 1, Section 1.