**Session 1 – Team 3**

1. **Discussion about methods.**

00:01:33 Speaker 1 - J

So the purpose of this session is that, well, I have been developing a method to support designers in dealing with substance of concern in products.

00:01:48 Speaker 1 - J

This is not usually a topic where designers are very involved in most of the times is chemists or material scientists who are dealing with this kind of.

00:02:03 Speaker 1 - J

Problems. So I'm trying to research how designers come into the picture and what kind of guidelines and support materials do they need to come into the picture. And so far I've been doing all my work here, just alone in my computer, doing research on past cases.

00:02:22 Speaker 1 - J

And I came up with a method that is very much based on theory, but now I want to make it applicable to professional practice. So that's where you all come in. And yeah, it's.

00:02:35 Speaker 1 - J

Kind of like the mindset that I want you to have. So the the fact that you are professional designers and how yeah, you view the problem of substance of concern and what you think you can do in your in your practice.

00:02:55 Speaker 1 - J

We're first gonna have a small reflection about design methods.

00:03:03 Speaker 1 - J

Just cuz I want to understand if you use design methods at all and how do you use them and how do you integrate them in your normal work life.

00:04:12 Speaker 1 - J

Yeah, we'll see. All right. So let's, let's start with the design methods part of it. Did you have a chance to go through the preparation exercise? Yeah. Yeah. OK, cool. So I'm gonna give you a small form, and then there's pens here.

00:04:35 Speaker 1 - J

So please choose one of the methods that you thought of.

00:04:46 Speaker 1 - J

If you really don't have a method, we can.

00:04:49 Speaker 1 - J

Just have the open discussion.

00:04:51 Speaker 2 - JE

The thing is probably I do, but it's not that I put a name to it. I usually just go about it and do something like this, and sometimes different. Probably it is a method but sometimes it is jst more gut feeling.

00:05:02 Speaker 1 - J

It's OK every everybody here that has done this gave their method, their own name. So it's it's really not official.

00:05:11 Speaker 3 - TA

So it's in general a design method, so it could be anything...

00:05:14 Speaker 1 - J

Yeah, it could also be a tool that you use. So yeah, just write down whatever you like.

00:05:15 Speaker 2 - JE

Yeah, yeah, yeah. I'll write down my favorite.

00:09:39 Speaker 1 - J

Yep. Are you ready? Who wants to go first?

00:09:44 Speaker 3 - TA

Yeah. Shall I go? OK, so my tool is Jennifer Aaker tool. I don't know if you ever heard of it, but it's a tool that helps us in the conversation with clients. It translates from verbal to visual into visual and tangible when defining a brand identity.

00:10:00 Speaker 3 - TA

So it's very much, a lot of times when we talk to clients, they know what their brand stands for in words, but they have a really hard time translating it into something which is a product or a design language.

00:10:21 Speaker 3 - TA

The goal or purpose of this method is to translate brand identity into visual brand language and product design. OK, so it's taking them along. And that's also why we use it.

00:10:36 Speaker 3 - TA

So clients struggle to go from verbal to visual to tangible, and this tool helps us to take them along that journey. So we define together with them what their brand stands for. As in words, try to translate that into visuals. So how can those words be expressed into something which is visual and then into something tangible, which is a product.

00:10:58 Speaker 3 - TA

The Pro is that in practice it works really well. I've done this many times with clients. It also works for a full brand, so multiple products. So you do it for one brand and then you actually have a document that you can use as a language.

00:11:11 Speaker 3 - TA

So it might differentiate a little bit from maybe product categories. If it's a really big brand, but it's something you can use for a long period of time.

00:11:19 Speaker 3 - TA

The cons are that it demands quite some patience from the clients, especially in the beginning because they want to know, OK, but how does it look like, what is the end result?

00:11:33 Speaker 3 - TA

But you need some time to do that translation into an actual product, and even if you have one product,

00:11:39 Speaker 3 - TA

to make it work you maybe need multiple products to make it recognizable for users.

00:11:47 Speaker 1 - J

OK. And can I ask if you applied this at the beginning of your design process or?

00:11:54 Speaker 3 - TA

Yeah. So it's all the way in the beginning, it's, it's.

00:12:03 Speaker 3 - TA

It's something where we sort of, sometimes when you work for a client for a longer period of time, you already have this around, but this is, in an ideal world this would be the starting point. You start with this, then this is the foundation of your brand. When it comes to branding and communication and then you get projects and within that project there are different challenges, but this is always something you could use.

00:12:28 Speaker 1 - J

OK, so it's a communication tool with the with your clients, but it's also sort of like your initial phases of the design or it's already defining some steps in.

00:12:42 Speaker 3 - TA

Yeah, yeah.

00:12:44 Speaker 1 - J

Cool. Yeah. Who wants to go?

00:12:49 Speaker 2 - JE

I selected traffic lights, something called the traffic, and it's it's really simple. You have several concepts things that you can rate and then you visualize it. Now this is a simple one and sometimes you go with five dots and then you have a really long list and then you just rank from good to bad.

00:13:13 Speaker 2 - JE

You try to define how good is this concept's score or concept or whatever you're trying to do....

00:13:26 Speaker 2 - JE

So it helps you visualize things but, always when I start doing it, a lot of things, so good discussions emerge in the end. OK, I'm just gonna read this thing because otherwise I forget something. It's good to visualize pros and cons in the system in order to go forward. So of course you want to choose a direction.

00:13:44 Speaker 2 - JE

When you do this, sometimes you even see, you fill it in bit by bit and then you take a step back and then you just see. Ohh there's like a lot of red there....

00:13:53 Speaker 2 - JE

And then you of course you look into it. Yeah. So you really visualize really quickly how good a concept can be.

00:13:59 Speaker 2 - JE

So as a bonus you have something that's presentable to a client. It also helps you internally to discuss because you're not going to just on your own fill in the dots, but each point you start to discuss. So it really goes into depth. You create a nice overview, maybe if you see the different things combined, this is a perfect concept, but this is only thing that's lacking, maybe we can switch something, so you are already generating some ideas...

00:14:22 Speaker 2 - JE

So, it is an evaluation tool, but it also helps to get a bit of structure in sometimes really complex decisions that everything is not directional.

00:14:33 Speaker 1 - J

Yeah. So you give a number to something that would otherwise be a little bit subjective.

00:14:37 Speaker 2 - JE

Yeah. Yeah. And then even colorize it... Yeah. Yeah. I think I said everything. And it's nice that you can present this to a client and then you can say, look, we went quite deep, we created an overview, and they can understand it. Because if you start talking about something like 7 concepts, and each concept has 20 points to rate, then it becomes an endless discussion.

00:15:06 Speaker 1 - J

So the clients themselves, don't do the rating. You just show whatever happened during the rating.

00:15:11 Speaker 2 - JE

Depending, it could also be that we say, OK, you know what, we're gonna give our estimation or maybe also ask them, OK, how do you feel about it? or maybe some we leave in the open on purpose. So we don't prejudice a certain thing because sometimes that's important.

00:15:30 Speaker 1 - J

Yeah. OK.

00:15:32 Speaker 2 - JE

So you do have to put some thought in it to do it well, but.

00:15:37 Speaker 2 - JE

Yeah, I think it's a really helpful tool. There's one con that I put down, and if you do it wrong, then you can oversimplify sometimes I think, not everything is ratable.

00:15:48 Speaker 1 - J

Yeah. Yeah. OK. and does this come after the conceptualization phase?

00:15:57 Speaker 2 - JE

Yeah, maybe in the in, in the concept phase cause you may have a lot of concepts, but the one that we showed now is in a quite far engineering stage already, and there we use it like OK, we need to further develop the concept engineering.

00:16:12 Speaker 1 - J

Yeah, yeah, yeah. It's basically just a decision making tool that you can, like, adapt to the different stages, OK.

00:16:23 Speaker 4 - IS

I chose Design for disassembly, although it's very broad.... well in terms of the description, it's all about disassembling existing products to find....

00:16:31 Speaker 4 - IS

either good practices or bad practices that you can use to develop requirements for a redesign or a new design. So tools that you can use for it are the hotspot mapping tool, priority part identification and disassembly mapping. I guess the goal is to make sure that the design or the redesign that you make is in the end, is disassemblable for what can be a multitude of reasons, so repair, refurbishing, etcetera.

00:17:00 Speaker 4 - IS

Or you can use it to just analyze existing products and that's also why I really like disassembling products because you learn so much about a product if you disassemble it. I don't think there's a faster way of knowing what's in there, yeah.

00:17:18 Speaker 4 - IS

To learn about it, and also it's very hands on. So that's also always a plus. And in terms of the pros, you gain a deep understanding of products quite fast. It's fun. you really create visible or tangible results.

00:17:32 Speaker 4 - IS

Especially if you also map it out in the disassembly map, for example. In terms of cons it can be really detailed or complex, especially if you disassemble very large products. And then it's easy to lose your way a bit with all the little labels etc. And that can also lead it to it being quite a long process if you really meticulously follow every step along the way.

00:18:11 Speaker 1 - J

Ok, this level of detail that you're mentioning, do you always decide to go all the way into the very deepest levels of detail or do you also keep it a little bit simpler sometimes, if you can?

00:18:23 Speaker 1 - J

And does that influence a lot like, yeah, the decision making process?

00:18:34 Speaker 4 - IS

Yeah, I would say if we can we will keep it a bit simple, however the the one of the benefits of the disassembly map is how how intricate it is right? You can see at which point in time or after, how many parts of the product you have disassembled, you can see like, oh, I have two torx screws that I have to unscrew and then I have to open up something....

00:18:54 Speaker 4 - IS

That's the benefits that it can bring. So I find that there's a balance, yeah.

00:19:15 Speaker 1 - J

Do you also use the disassembly map as a communication tool with clients at some point? Yeah, yeah, OK, cool. Just to to very clearly say like, this is a problem with your product.

00:19:29 Speaker 4 - IS

The map makes it easy to see if they're doing something right or doing something wrong. You can see the shape of the map and the amount of penalty points.

00:19:39 Speaker 3 - TA

But I think that's an interesting part, because also in this tool, Jennifer Akker, you try to make things less subjective and I think in this case, like the disassembly tool it's even better to get a great overview to not get into subjective discussions. Like to get the facts on the table.

00:20:00 Speaker 2 - JE

Yeah, because I think there are even like. So I'm going to follow that this is anything next week somewhere. Yeah. But I think there are like even like points and time points or some kind of system like each action and each different tool is a certain amount of energy that adds up.

00:20:12 Speaker 1 - J

Yeah, yeah. And how many times? Yeah. And how many times you change tools and like, whether you use the arm or just your wrist or ..So all of that, yeah can be mapped. Cool. OK.

1. **Discussion – Dealing with SoC.**

00:20:40 Speaker 1 - J

OK, so now I'm gonna talk to you a little bit about substances of concern and yeah, then we're gonna do some warm-up exercises.

(Researcher explains intro about SoC)

00:26:04 Speaker 1 - J

Do you have any questions so far?

00:26:32 Speaker 4 - IS

I was maybe wondering because I think there's. I'm not sure if it's like an index which will tell you how much of a certain substance is actually toxic for for humans. That probably doesn't. It doesn't exist for for substances of concern.

00:27:00 Speaker 1 - J

Well, there is. Yeah, it it. It does exist, but it it means that somebody did a whole chemical risk assessment on that specific substance. And then they discovered what are like the thresholds for the substance. So. And then those thresholds are different for different populations. So for children, there's gonna be probably a lower threshold. And for adults higher, but yeah.

00:27:20 Speaker 1 - J

Uh, it it gets really complicated really quickly because you can measure it for like a single time exposure. So there's some type, one type of exposure would be like an acute response to exposure. So I don't know. I opened a gas tank and then I inhaled it and then I had a cardiac arrest.

00:27:38 Speaker 1 - J

But then there's also risk assessment that considers like long term exposure and and yeah, there's then the indexes start varying depending on the scenario.

00:28:01 Speaker 1 - J

So, now I will be asking some questions. I'm trying to warm you up a little bit. Can you think of any cases in daily life of of, of products that you know could be contaminated or that make you nervous?

00:28:14 Speaker 3 - TA

Yeah, I think shampoos body wash, all that sort of body care.

00:28:22 Speaker 3 - TA

I have young children. It's the same like I don't know what's in diapers. Also MDF and those kind of materials....

00:28:54 Speaker 4 - IS

I immediately thought of like body scrubs. I'm not even sure if they sell those anymore.

00:28:59 Speaker 4 - IS

Ten years ago, they were like small pellets in them...

00:29:02 Speaker 1 - J

Yeah Microplastics. Yeah. that's illegal now, to add microplastics intentionally.

00:29:33 Speaker 2 - JE

For me, I really like making stuff and now I am becoming cautious of things like paints and lacker, and stuff, and all these products you can spray with pressure... and maybe there's a bit of glue in there. And now I start to think of it like hey, you know how healthy is that?

00:30:35 Speaker 4 - IS

Anything that becomes very small dust particles, like anything you inhale that is not oxygen it's just bad for your lunges.

00:30:55 Speaker 3 - TA

But it's also difficult because some of the things like, for instance with laundry caps the fragrance alone gives me the reference that this 100% chemical, but of course it's not. There are probably materials that are a lot worse, but don't have this fragrance indicator, so I don't also want to be misled by some kind of cues.

00:31:17 Speaker 1 - J

Yeah. And as a as a consumer is very difficult to know exactly what you are buying...

00:31:28 Speaker 2 - JE

Yeah it's crazy, you have to put real effort in it, because probably you can avoid a lot. I'm sorry I'm not an expert on all these things, but I can imagine that even if you want to avoid everything, you just can't.

00:31:44 Speaker 3 - TA

Companies are also really good and misleading consumers if they, if they want to go around it....

00:32:01 Speaker 1 - J

Alright, what about cases in professional practice? Have you encountered anything in your professional practice where you had to deal with a substance?

00:32:25 Speaker 3 - TA

The use of glues or epoxy when prototyping.

00:32:54 Speaker 3 - TA

But I think also we, I know we had a request very long time ago for like an e-cigarrete. So it's also like within the project.

00:33:03 Speaker 3 - TA

You also, as a designer, think to yourself like, do I want to work on this? Like, how does this, how do I deal with this?

00:33:22 Speaker 3 - TA

Some assignments are more concerning or more clear than others, regarding safety.

00:33:27 Speaker 2 - JE

But I think it is also a question of materials and how you combine them. Everybody here is generally aware of this but, if you select for example recycle plastic but you combine it with something toxic to get some superior quality then if it gets thrown away it just ends up somewhere.

00:33:57 Speaker 4 - IS

I wonder how much influence do we have on, for example, additives that go into a plastic housing?

00:34:04 Speaker 2 - JE

If in the project we are involved up until the supplier or supplier is involved. Then we can maybe have a discussion? Yeah, but that's not always the case. So sometimes, it stops at proof of concept and then the client can in theory do what they want.

00:34:27 Speaker 3 - TA

And I think also like for the supplier. Like they they probably if they have, let's make it super simple. If they have three options for material. They like they have it on the shelf. You could make a decision between A is better than C, but they're not gonna customize it for the client. Depending on the volume. But they may not have the time and the money. And. Yeah. We worked on this project (points at colored glue toy for children).

00:34:48 Speaker 3 - TA

Yeah, it's a bit like the laundry caps for me. I have no idea. Maybe it's not bad for you, but it looks like do I want my kids to be playing with this?

00:35:51 Speaker 2 - JE

We also had an example a bit ago, in a project we wanted to have this product made of the same material. Really easy for the recyclers to pick up, but there was an issue with it and we could only solve it by adding a little piece of rubber or some flexible material. So we then had to combine both materials. We don't want to do it, but the alternative is we have a mono material and the product breaks way sooner. So yeah, what's more sustainable, right? Yeah, I think I think we it's not that we add like lead and chromium, but we still generated a problem in recycling.

00:36:19 Speaker 2 - JE

However, it was a product that should last 10 years and then it's really in the professional stream so they can take it back, remove the problematic part so so it's not that we throw it directly in the landfill, but it was a topic that we considered like how should we approach it?

00:36:43 Speaker 4 - IS

It reminds me of the case of a smart meter. We found out if they used glass fiber in the housing as a flame retardant and we were at first, we were like, yeah, that's bad because it's non recyclable. And if you want to, if you want to achieve your recycling goals, then you have to do something about the glass fiber.

00:37:03 Speaker 4 - IS

But the other option was just to use mono material but with added flame retardants, which are toxic. So yeah, you get this whole discussion on, like, which type of bad do we want?

00:37:16 Speaker 1 - J

Yeah, OK, interesting. These are very cool examples.

00:37:28 Speaker 1 - J

UM, now I want to talk to you about what you think the role of designers is in dealing with all of this. So I'm again going to give you a form so you can think a little bit to yourselves and then we can discuss.

00:42:33 Speaker 1 - J

OK, great. Do you, which one of you wants to start?

00:42:40 Speaker 4 - IS

Yeah. So I think what we can do to deal with soc in products is at least to be aware and also spread this awareness to clients to make sure that they are also aware.

00:42:55 Speaker 4 - IS

And I secondly, I wrote down always try to not use them in designs, but then we'd have to know suitable alternatives and convince our clients, which is then directly what I also wrote down to like what do we need. So I think it would be helpful to know at least different types of categories, so.

00:43:15 Speaker 4 - IS

You will know bit which ones will be more prevalent in your day to day work.

00:43:21 Speaker 4 - IS

Or could be more prevalent with the types of materials that you work with, and then also indeed like knowing suitable alternatives and knowing how to convince your clients

00:43:31 Speaker 4 - IS

That these alternatives are better indeed, so maybe like a toolkit or like a yes no questionnaire where you go further in the process and then you end up with like.

00:43:43 Speaker 4 - IS

Your solution is. I don't know what to talk powder instead of flame retardants, or something like that.

00:44:02 Speaker 4 - IS

I think also currently it's very important to stay in the know of any recent updates because like you mentioned, it's an iceberg problem. So we'll probably hear a lot about new materials in the future. Like ooops, they are dangerous....

00:44:32 Speaker 2 - JE

What do they need? I think first clear information about possible possible possible substances of concern?

00:44:43 Speaker 2 - JE

And what's also important is that they see the bigger picture for, for example, for the example I gave, like, OK, maybe in some cases it's better to not make certain choices.

00:44:54 Speaker 2 - JE

that... in relation to the whole picture, maybe there's a certain recycling stream available which then it's totally fine to use the substance in there ...

00:45:04 Speaker 2 - JE

So yeah, basically knowledge, in depth but with the bigger picture. For what they need to do, they need to collaborate with experts. It can be sustainability experts who have more knowledge on that bigger picture but it can be different designer or an engineer with more material knowledge...

00:45:27 Speaker 2 - JE

So they need information and for what they need to do is they need to collaborate and once they know share that themselves.

00:45:41 Speaker 1 - J

Cool. OK, so you you both mentioned information but also like like a synthesized way of arriving to the right answer. OK

00:45:56 Speaker 3 - TA

I think there's quite a lot of overlap, but So what? What can designers do to deal with the soc in products? So educate yourself. Be aware, share internally share, plus educate clients.

00:46:09 Speaker 3 - TA

Try to somehow show or prove impact by data. I know that's probably difficult because as you mentioned, we don't have all the data yet, but if we can have some then it could help show alternatives. And I also have connected third parties so it would be super nice if we can do it ourselves. But if this becomes really specific then why not partner up with somebody who is doing this full time?

00:46:34 Speaker 3 - TA

What do designers need in order to deal with with the soc in products? education knowledge, which equals also time and budgets, so arguments for clients which could link back to data. So somehow we need good arguments and indeed alternatives which could link to a tool.

00:46:56 Speaker 3 - TA

So somehow you need to indeed maybe go to like certain steps to come to a point where you say like, OK, do you want this? And then this is your solution or these two options you have.

00:47:06 Speaker 1 - J

It's funny that you mentioned data as a way to communicate with your clients, because even well, I think that even when you don't have the whole story of a certain substance...

00:47:17 Speaker 1 - J

I think already the lack of data on a certain substance should be a little bit of a red flag. Maybe we don't know enough about this thing.

00:47:28 Speaker 3 - TA

And maybe even like touching the the topic, I think a lot of our clients are not even aware of the fact that this is their products are helping in this this pollution, yeah.

00:47:41 Speaker 2 - JE

But it's quite the if I think about it, that there's a client. Yeah. And we are involved at early stage and maybe we think it's really important and then we make this thing really safe for the environment....

00:47:55 Speaker 2 - JE

But then the client says ok, thank you for the design, goodbye. Goes to the next stage. Engineering, maybe three stages of engineering, maybe three years later first range of products. So we have all these stuff and thoughts that we put in but....

00:48:14 Speaker 2 - JE

The client, I mean there are also quite some clients who are like unaware or like OK nice , I'll go with it. But when the when the the check comes in like OK, Let's just go add some stainless steel bolts in there. Whatever.

00:48:29 Speaker 3 - TA

But I think it's like planting the seed. Like if you if you at least mention it up front like maybe they're they're nuts like I know for sure that some of our like our clients they have like a marketeer sitting there like he wants his bonus in December he just he's just fully going for this option which is horrible...

00:48:49 Speaker 3 - TA

Probably we're not going to convince him by showing this, but like planting this little seeds and making them think about what they're actually doing. And and some clients will be more open for it than others, but.

00:49:05 Speaker 2 - JE

Yeah, that's definitely true.

00:49:08 Speaker 4 - IS

Some will probably use the the lack of data to continue using the substances of concern, whereas others might be open to educating themselves.

00:49:23 Speaker 1 - J

I would, I would argue that a a good leverage point would be regulation. Yeah, because, well, I don't know.

00:49:31 Speaker 4 - IS

Thinking of like should I should mention regulation actually.

00:49:35 Speaker 3 - TA

Or you want to actually be, like before, regulation like you don't want.... it can be a marketing advantage of course...

00:49:41 Speaker 3 - TA

But like, in an ideal world, you would like to have companies and clients that take the responsibility instead of just following regulations. Like we need to.

00:49:52 Speaker 3 - TA

Well also if I if I look at this iceberg and if I hear you, then governments are also not that aware of it and the regulation is also a bit behind so.

00:50:13 Speaker 1 - J

Is very tricky with regulation because you have to be very specific and be very well informed to avoid refutals.

00:50:35 Speaker 3 - TA

Yeah you need the data and the evidence.

00:51:21 Speaker 3 - TA

So ideally you just want to educate these companies in the early stage to develop products with a sort of conscious mindset and not think about ONLY regulation because hopefully they will be anticipating and not just reacting...

00:52:13 Speaker 1 - J

So we talked about knowledge. Yeah, what do you think? Do you think designers need to be? Very knowledgeable on chemicals to be able to do something about them?

00:52:32 Speaker 3 - TA

I don't know what very knowledgeable means, but I would assume that you understand some of the basics of the materials you work with or the options you have.

00:52:39 Speaker 3 - TA

You are able to explain that to your clients.

00:52:45 Speaker 3 - TA

And then I think when you dive deeper into it and come to the like the chemical part, I think you should go to to a third party for support.

00:53:03 Speaker 2 - JE

Usually there's like an engineer involved or working in parallel. Yeah, if if you intend to to get something in the real world or on the market, then probably there is some kind of access to engineers or at least to handover to engineer so.

00:53:15 Speaker 2 - JE

The opportunities are already there and I think some basic materialization. I think all designers have knowledge about at least some materials that you can use...

00:53:30 Speaker 1 - J

OK, so it it's not something that you haven't done before is what you're saying that that you reach out to an expert when you reach a wall?

00:53:41 Speaker 2 - JE

Recently for the baby monitor...

00:53:44 Speaker 3 - TA

the LCA you mean?

00:53:47 Speaker 2 - JE

No, when I tried to go all the way for this materialization of the door and then at some point I started asking questions like this hypothetical case....

00:54:00 Speaker 2 - JE

This is something we actually made, but this is something designed to be made in 10 years in the future, we didn't actually make it, but we try to at least make some prove that it's feasible and we needed some kind of additive for a part. And I asked. I started to ask the company questions...

00:54:20 Speaker 2 - JE

Can you tell me what kind of additives it is? Maybe there's something toxic in there and I never got a mail back.

00:54:31 Speaker 1 - J

You have your answer.

00:54:35 Speaker 2 - JE

Maybe I was just asking too much from them... or maybe they also don;t know themselves.

00:54:44 Speaker 1 - J

Yeah. Do you think that designers. Yeah. So for for disassembly you have all kinds of tools to analyze a product, etc etc. Do you think that there is a need for tools or methods or guidance for designers to deal with SoC in products?

00:55:04 Speaker 4 - IS

Yes, but I think maybe to start like just an overview of what what is out there. It could already be very helpful and maybe also in what combination they are present in different kinds of plastics...

00:55:21 Speaker 1 - J

Yeah, so an overview of where they could be, like hints of where in products and which materials.

00:55:26 Speaker 3 - TA

Almost like a catalog or like.

00:55:41 Speaker 3 - TA

Yeah, I was just thinking like I think I need the first step would be to educate yourself and to get like tools that we could use internally. And the second, when you have like a certain level of knowledge and understanding and and alternative, you could create a tool that you could do together with the client, because I think it still is very interesting to do with the client, to educate them as well.

00:56:03 Speaker 3 - TA

But we first need to educate ourselves. I think.

00:56:05 Speaker 2 - JE

But it's quite hard and if I start to think about it, let's say you make a simple table and you could cross out where you may have SoC or not...

00:56:23 Speaker 2 - JE

If you go any deeper than that, then it starts to get really complex. Even like basic knowledge about steel and plastic materials, used in most products. It's really complex because there are different processes behind it and different properties. And then before you know it, you're into chemicals. How are they bonded? And that actually determines how how good they can be separated again.

00:56:44 Speaker 2 - JE

It's not. It's not like math. It's like infinite combinations and possibilities.

00:56:46 Speaker 4 - IS

There is more than just one answer or option...

00:57:09 Speaker 3 - TA

I also wonder how how we could, but maybe soon, like to almost sell this to the client, because a lot of times they. If you would explain this, they would say yes. Yes I'm I'm interested and they say that while we do need to do some research and then we'll take some time, we need to take the talk to a supplier. It probably will take like two months then they go like well..... it becomes less interesting.

00:57:22 Speaker 3 - TA

Yeah. So, but I think that was the same stage for sustainability 10 years ago.

00:57:28 Speaker 3 - TA

We are now in a different position. So I think it takes some time for them to also be interested. So we still need to educate them and make them aware, and hopefully in ten years (i hope sooner) they will be more interested.

00:57:44 Speaker 4 - IS

I wonder if if if suppliers or manufacturers actually know the toxicity levels of certain for example additives...

00:58:00 Speaker 4 - IS

I know there is a debate on flame retardant? Well, at least you get 5 seconds more when there's a fire to escape. However, I've also read something about the actual fumes being more poisonous and toxic for humans.

00:58:53 Speaker 2 - JE

With this magic catalog, then the entire materialization study, and all the studies that we have, we can throw them away because we have a an easy catalogue where we can just say, OK, I need these properties... and that's it.

00:59:09 Speaker 3 - TA

Yeah, but I think also as as you mentioned it, suppliers are probably also not that happy or willing to give all the information away like so, yeah.

01:00:41 Speaker 4 - IS

yeah, and how would you verify that how can you check that a substance is really not there?

01:00:45 Speaker 2 - JE

I think they have some audits and tests.

01:01:08 Speaker 3 - TA

But it would also be interesting for users to have like almost like blockchain kind of thing that you can go all the way back to where the materials come from and.

01:01:16 Speaker 2 - JE

Yeah, but I think I think all the materials are are are quite traceable. Yeah. If you do that, I mean companies that produce, I don't know, airplanes, then it goes all the way back to the steel. They know, OK, this is a batch for aero industry and now there's some kind of stamp on that.

01:01:37 Speaker 2 - JE

It gets all the way there for every kind of food you should know where it's coming from.

01:01:47 Speaker 1 - J

OK. Last question for for this section would be what do you think could be potential barriers for designers to deal with substances? We already mentioned a couple, so clients may not be super interested at the moment.

01:02:00 Speaker 3 - TA

Yeah, I think clients are probably interested as long as they don't. It doesn't take time.

01:02:07 Speaker 3 - TA

And money, yeah.

01:02:17 Speaker 2 - JE

Yeah, knowledge can also be a bit of. a barrier.

01:02:32 Speaker 2 - JE

I think you have to. First you have to get the people involved or some global awareness and then the companies will follow because they just make money of what people want and if the people want to buy more sustainable products and the companies will follow.

01:02:46 Speaker 2 - JE

Legislation is one way, but it's the slow way. Yeah, so.

01:02:50 Speaker 3 - TA

And I think it's also the like the knowledge from the people could help in making the change. So where more and more people are now eco concerned. So they're also making different choices and not all of them, but still a small group. It will become bigger.

01:03:12 Speaker 3 - TA

I wonder if the knowledge level of just human beings in general is higher then is also more likely that companies can differentiate first competition, so they might have to pay a little bit more, have to do a little bit more investment or to get there, but then at least they have a differentiator.

01:03:25 Speaker 1 - J

Yeah you see that in pans, waterproof jackets and in baby bottles now right?

01:03:32 Speaker 1 - J

All these things have a tag that says PFAS free or BPA free, or whatever.

01:03:49 Speaker 3 - TA

But I think with baby bottles, it is a super interesting one because parents are just super concerned with their baby when they they get and they're using this basic bottle and they heat it so they they haven't they they feel like. Hmmmm this goes in the microwave...

01:04:04 Speaker 3 - TA

Yeah. So it also depends on the kind of product, it's more likely that the consumer will be critical than others, OK.

01:04:12 Speaker 1 - J

Yeah. Yeah, because, well, it it starts becoming a a almost like a buzz problem. Like, everybody starts hearing that BPA has been a problem here and there. And so now either the manufacturers start putting a label that says BPA free bottle and then that pushes for the competitors to also implement such a label because parent just hear of this in the news.

01:05:45 Speaker 4 - IS

I'm also like wondering. Even so, once the knowledge is there, knowing how to act upon it that's the next step, the next barrier.

01:06:09 Speaker 3 - TA

Because there's also, as you mentioned, most most of the things are probably take a lot of time before you actually have like. Health effects. And then to relate that back to a product you used 10 years ago.

01:07:08 Speaker 1 - J

Yeah, for all products and contaminants like microplastics and PFAS for example, you find them in the environment but it is hard to trace back where they came from...

1. **Proposed process.**

01:26:26 Speaker 1 - J

Uh, OK, now we're uh into the second part where I give you the case, PFAS in textiles, a waterproof jacket, and then I'm going to give you some materials to create a process to deal with those PFAS in the jacket. (Explains the case).

01:31:25 Speaker 1 - J

Uh, yeah. So this is this is the case. So, uh, now we're going to ideate a process and I'm calling it a process just for the sake of having a word. Yeah, we I want you to please ideate a process to deal with the PFAS in a jacket.

01:31:47 Speaker 1 - J

So let's imagine that some client comes to you and tells you I have this jacket with these PFAS, do something about it.

01:32:06 Speaker 1 - J

I cannot give you a more specific assignment because I wanna. I want to see where you want to go, so that's why I don't bias you.

01:32:16 Speaker 1 - J

So please pay attention to the process itself, because I don't think we're gonna solve the problem of PFAS in one hour together. Maybe. But the the attention should be in the process and and yeah. So I'm gonna give you this piece of paper, for you to formulate this process and I will also give you these building blocks (explains building blocks (steps, resources, results and goals, stakeholders, wildcards, etc.).

01:33:18 Speaker 1 - J

So yeah, so I'm going to give you around 25 minutes to ideate this process together. I'm gonna ask you to please think out loud. So then I can extract as much of your thinking process as possible. Please place the building blocks on the paper to communicate your process.

01:34:14 Speaker 1 - J

Yeah. So you can position you, define the steps, you define the order of the steps and you define what is necessary to follow those steps.

01:34:34 Speaker 3 - TA

I think at least the first thing that comes in my mind is like what we do often with the design process is to like get the first question like why? Why actually are we using PFAS in the first place, what does it bring?

01:34:42 Speaker 4 - IS

Yeah. Yeah, I think so.

01:34:43 Speaker 3 - TA

Because then we get a better understanding. In this case, it's makes it water proof.

01:34:49 Speaker 2 - JE

And more durable.

01:34:50 Speaker 3 - TA

and more durable, but then we can think of other solutions to make it water tight and durable, but like first get to understand why do you actually use it.

01:34:54 Speaker 2 - JE

Yeah, that sounds like we are first defining, what the requirements of your jacket? Right. Yeah. Going back to some, I don't know how we should. I think we need some kind of information. Yeah, there's a client....

01:35:08 Speaker 2 - JE

So gathering information is the first step?

01:35:10 Speaker 4 - IS

Client. Yeah, client approaches us, that's the first step.

01:35:22 Speaker 1 - J

You can move the steps around, then at the end we can glue them in your preferred order.

01:35:24 Speaker 2 - JE

let's put it here, because I can imagine the client approaches us because could be legislation could be some use cases that lead the client to saying, hey, you know what we're doing something different... that's how I imagine the process begins.

01:35:38 Speaker 3 - TA

Yeah. So the main question is already from the client to get rid of the PFAS or is it something that we notice?

01:35:45 Speaker 1 - J

The client comes and tells you I have this jacket. PFAS are problematic, how can we deal with them?

01:35:54 Speaker 3 - TA

So maybe first thing is the question why do you actually use PFAS?

01:35:59 Speaker 4 - IS

Yeah, we'll have. Probably. Yeah, we'll do like a session together with them to further understand their question and understand the context. Why indeed they want to tackle PFAS to begin with....

01:36:24 Speaker 2 - JE

We should also ask what are the requirements of the products they make right, because sure, there is the problem pf PFAS but we are also making product. In this case a waterproof jacket, so why? and what are the requirements I would say.

01:36:46 Speaker 4 - IS

We'll have to to ask them a lot of questions to further define the actual design brief.

01:36:57 Speaker 3 - TA

Yeah. So indeed ask for the requirements of the product and one of them is like, why do you use the PFAS, what does it actually bring? So we get a better understanding.

01:37:09 Speaker 3 - TA

What? What features do the PFAS bring? So what do you actually lose when you take it away and how? This is still something you want to capture. Is it still something you want to if you take the PFAS away and you're not waterproof anymore and not durable anymore? Yeah, is this still something you you need to have in your jacket?

01:37:28 Speaker 4 - IS

Yeah. Should it be? Yeah. Should it be replaced by something? or is it ok to just let it go?

01:37:45 Speaker 4 - IS

I guess that's like a piece of information. Yeah. What elements that the PFAS provide can we keep and which do we let go?

01:37:55 Speaker 2 - JE

Yeah, then something comes out of this..

01:38:04 Speaker 3 - TA

Almost like a list of requirements.

01:38:06 Speaker 3 - TA

Where it says like, OK, the jacket should have this and this and this features we're not allowed to use PFAS, but we do want this and this and this and this so.

01:38:23 Speaker 4 - IS

If we look at like if we zoom out of it, like if we so for example, things that we usually do for other projects. We look at the system asking end users or the actual users of the rain coats, their thoughts on this, yeah.

01:38:43 Speaker 2 - JE

Because they say, hey, this is the requirement, but who says that this is actually a needed requirement, right? Yeah.

01:38:49 Speaker 2 - JE

Is that maybe consumers don't even ask for it?

01:38:53 Speaker 4 - IS

Yeah. So like maybe users are like, yeah, we don't care. I just don't want to get wet.

01:39:04 Speaker 2 - JE

You asked like the requirements of the company, what the product should do according to the company, but you also have like the user demands. Yeah.

01:39:08 Speaker 3 - TA

Yeah, the user perspective.

01:39:14 Speaker 4 - IS

Maybe we can also talk to the manufacturer.

01:39:19 Speaker 2 - JE

This is a stakeholder.

01:39:31 Speaker 3 - TA

But I think it's indeed interesting to incorporate the user because it might be that the company is like, so limited in thinking where it's only thinking that their only idea is to replace the PFAS.

01:39:45 Speaker 3 - TA

Yeah. Or I want to get rid of it, but still remaining all the features that I have while maybe the user has a different opinion.

01:39:54 Speaker 3 - TA

And and this is indeed also interesting to have already in early stage an understanding of what a manufacturer can do or can offer.

01:40:10 Speaker 4 - IS

So we shouldn't believe from the start that our client knows everything and that what they know is the truth that we have to also do our own research, for example through...

01:40:26 Speaker 3 - TA

So this is in the ned information from different sides right? Information from the user information from the manufacturer and of course also information from the client.

01:40:44 Speaker 3 - TA

And this leads to a list of requirements or insights that give us better understanding on....

01:40:50 Speaker 2 - JE

Well, the true list of requirements...

01:41:12 Speaker 3 - TA

Because the interesting part is also that... if you think of a a jacket that doesn't, you don't want to have PFAS, but the the user still wants to not get wet and there's no actual other material that maybe you end up in an umbrella for instance, like yeah, or like something else.

01:41:28 Speaker 3 - TA

I think it's interesting to have these also in here already in the early stage to actually come up with alternatives that are feasible.

01:41:37 Speaker 4 - IS

Yeah, exactly. And then once we have the the requirements and the client approves, that's when we can start to add the other....

01:41:51 Speaker 2 - JE

Sorry to interrupt, I'm going to lose it, so if it's a bit about the process, so you could also ask the client... Why do you want to get rid of the PFAS? Is is it because consumers don't want it? Is it legislation or not because in one way you could say we can solve the jacket problem....

01:42:10 Speaker 2 - JE

But it could also be that they just changed their brand image somehow that consumers think, OK, now it's fine now it makes sense. And maybe in in the case of PFAS is not perfect but... So the question behind it could change in the end. What is the solution?

01:42:29 Speaker 3 - TA

True, absolutely. I'm. I'm also thinking like this third party expert that we talked about in the beginning should be already involved here? or should it be here?

01:42:39 Speaker 3 - TA

So do we like? It feels like we're getting information. We're gathering information from user manufacturer requirements of the product the client. Then we make this list ...

01:42:53 Speaker 3 - TA

And then I think maybe we should involve the expert already earlier to influence that requirement list.

01:43:09 Speaker 4 - IS

We are going to end up creating like a double diamond, right? Yeah.

01:43:21 Speaker 4 - IS

What happens here is all dependent on what happens here. Maybe if if the client just wants to create a better image for themselves and then the whole reason is it's different.

01:43:33 Speaker 4 - IS

Because in that case, maybe we can just do research into like alternatives and your bio based materials that are somehow also somehow water resistant.

01:43:44 Speaker 4 - IS

Whereas if we find out through this research that there are other ways to fulfill that user needs, for example an umbrella. Then that's two complete different projects.

01:44:00 Speaker 2 - JE

The projects could also relate though... The client doesn't want to use PFAS then he approaches us. But then somewhere here. It could be that, we go back and say, OK, you know what? We are going to start again from here and create a different thing.

01:44:17 Speaker 3 - TA

But I think maybe it needs ... I don't know if it's already incorporated in here, but so it's not clear yet if if they want to get rid of the PFAS due to regulation or due to the.bad image it has.

01:44:37 Speaker 1 - J

It's not defined.

01:44:39 Speaker 1 - J

But you can define it if that helps you in the formulation of the process like if you if you want to just say like, well, it's gonna be because of regulation, you can.

01:45:01 Speaker 4 - IS

We will find what the motivation is when we talk to other stakeholders.

01:45:05 Speaker 2 - JE

Well, it can also be that, the research of that is actually a step where if we do that because that is something for some projects we might do...

01:45:13 Speaker 2 - JE

But we're not going to 1st involve manufacturers and that's not, you know what, let's do our research about this problem. So. So we should not be here if we do a research..

01:45:29 Speaker 3 - TA

I think I think we should already have like a bit of an understanding here on.

01:45:35 Speaker 3 - TA

what do users look for in a rain coat. What do they find important?

01:45:43 Speaker 3 - TA

If they all say I don't want to get wet....

01:45:45 Speaker 3 - TA

Then we should understand like, well, maybe it could also be an umbrella. The user will not say I need an umbrella, but that's the role the designer to think a bit further than that.

01:45:58 Speaker 3 - TA

But of course here we can do another round of user research if we want.

01:46:03 Speaker 3 - TA

To get like here we have the requirements and maybe with this information we can say well...

01:46:09 Speaker 3 - TA

We can use this in this material and we can just easily solve it. We have the same jacket, but then different materials which are OK or we're not able to solve it with some kind of other coating or material. We need to go to an alternative broader solution.

01:46:27 Speaker 4 - IS

Yeah, exactly.

01:46:30 Speaker 4 - IS

Yeah like some other outcomes after synthesizing the findings.

01:46:31 Speaker 2 - JE

So you can combine this and then mirror it a bit with the motivation ...

01:46:40 Speaker 2 - JE

and say, this is the reason, this is what's needed, and somehow we put together a whole list of requirements.

01:46:51 Speaker 3 - TA

Yeah. So actually I think the client, when the client says I want a rain jacket without PFAS. They were hoping to be here and then we say no, no first do all of this because that's needed to get a better understanding if you actually need a raincoat or something else. And if we can solve it.

01:47:08 Speaker 3 - TA

So we need this research phase in order to get here and then we can start designing or yeah.

01:47:17 Speaker 4 - IS

I will call it design and then develop...

01:47:28 Speaker 3 - TA

Yeah. And then I think develop, we again have the user and the manufacturer and the third party, all of those in.

01:48:07 Speaker 4 - IS

You can gather all this information from different parties simultaneously. Like information from users, while also having discussions with your client.

01:48:16 Speaker 4 - IS

Although... If we're talking about like the initial first meeting with the client to understand their questions a bit better and to form a brief because after this you will definitely also make a quote.

01:48:30 Speaker 4 - IS

And then you have an official kickoff and all the things that you're going to do are defined.

01:48:39 Speaker 4 - IS

And then this, I guess the difference maybe is like this is pre quote and this is post quote.

01:48:45 Speaker 3 - TA

Yeah. And the question actually is also like it could also be the case, the client says we want to get rid of PFAS... but we already know what's possible, we already talked to the manufacturer.

01:49:03 Speaker 3 - TA

Yeah, but I think we should also be critical in what's the intent or the drivers for each of the stakeholders.

01:49:16 Speaker 2 - JE

Yeah. So maybe that's why the third party expert is something in case that the manufacturer, in case the manufacturer already has, like the information. To check and verify they really do not use anything bad..

01:49:32 Speaker 3 - TA

yeah, because the user and the third party, they're they're they're hopefully they're independent like they don't have any bias, but the manufacturer is a bit limited..

01:49:46 Speaker 2 - JE

And they say, OK, I have this, this is just how it goes. OK, I have this 15 machines here and if I don't have PFAS that I cannot produce this.

01:49:54 Speaker 3 - TA

It could even be that the third party has links to other manufacturers, but that's just hypothetical.

01:50:07 Speaker 4 - IS

Yeah, I'm wondering if maybe we should tailor anymore to PFAS. So for example,

01:50:14 Speaker 4 - IS

You know? Yeah, if we if we start to design, we'll have to look into further suitable alternatives or.

01:50:24 Speaker 3 - TA

Yeah, I think a lot of knowledge needs to be gained there as well. So if we start to design and if it's.

01:50:32 Speaker 3 - TA

For instance, I don't know if we use a different material, so we also need a different way of like gluing it or welding it, or I don't know, you need to know quite a lot about the material. So I think knowledge.

01:50:43 Speaker 4 - IS

I can imagine us like ordering lots of samples and experimenting with them...

01:50:48 Speaker 2 - JE

Exactly, so you want to have the knowledge, but I can imagine you also want wanna test it.

01:50:54 Speaker 2 - JE

You know, the developing phase probably has a lot of testing...

01:51:00 Speaker 3 - TA

To gain knowledge and try.

01:51:06 Speaker 2 - JE

And then yeah, maybe yeah, you could say that more extensive testing is necessary later..

01:51:34 Speaker 4 - IS

Because in the end we would also would like to verify...

01:51:38 Speaker 4 - IS

or at least show that the solution that we come up came up with is better, or at least as good as the original.

01:51:47 Speaker 3 - TA

Yeah. How are we going to do this? Because this is probably something that these two can do... the manufacturer and the expert.

01:51:57 Speaker 4 - IS

Yeah exactly, because we first come up with a concept and then they will further develop it?

01:51:59 Speaker 3 - TA

Yeah, unless. Yeah. Unless we step away completely from it and say, like, we're gonna do an umbrella and we know that the material of an umbrella is safe.

01:52:25 Speaker 2 - JE

Maybe it's quite obvious eh? but of course the clients are still involved. So if the client says this, and then there it's only about the user manufacturer, but maybe there's?

01:52:38 Speaker 2 - JE

Of course, the clients are still involved, but in theory the diagram does not show.

01:52:43 Speaker 3 - TA

Yeah. Yeah. So we should have stakeholder client.

01:52:52 Speaker 4 - IS

Having interim interim discussions, stuff like that.

01:53:02 Speaker 3 - TA

Yeah, so here I need like somehow we need validation from third party manufacturer and also from the user.

01:53:11 Speaker 3 - TA

That is actually a good idea or a good solution.

01:53:15 Speaker 4 - IS

Maybe another one that we should maybe add here like ask which PFAS are present in their coats

01:53:23 Speaker 2 - JE

to build up the case more specifically.

01:53:36 Speaker 4 - IS

Just to tailor it a bit more...

01:53:49 Speaker 2 - JE

So obviously each question and product are kind of going to end up with a different map... because if I now add up legislation here, then it's gonna be really tied to this problem and should also be a bot about the process..

01:54:03 Speaker 3 - TA

Yeah. And hopefully, but that's sort of an ideal scenario as you would explain as well. Like where the company is willing to be a front runner. So before regulation.

01:54:20 Speaker 4 - IS

Yes, if they have the money to be frontrunners and they actually like find suitable alternatives...

01:54:31 Speaker 2 - JE

So if if they if they make one and it's it's better accepted, even though this is a bit more expensive, they also have competitive elements in there, and that's quite important,

01:54:44 Speaker 3 - TA

But when I look at this, I I wonder if imagine you're the producer of this jacket with the PFAS, why wouldn't you go like directly to the third party?

01:54:54 Speaker 2 - JE

Because maybe the client just has contracts with suppliers and they once hired an agency of design And they let the producers make it, but they're not....

01:55:03 Speaker 2 - JE

Because we have the resources to do this. So then they come to us like yeah we have a problem. And even if I do this, then they say OK, with all this information, we're going to go there just straight away, go to a cool company like us.

01:55:17 Speaker 4 - IS

They can't do what we can do.

01:55:22 Speaker 3 - TA

We would all of what you said like I think we can offer a lot of value here, but probably the first thing you want to think like hey, is it like not the really simple solution to this like just replace this with a different thing and maybe the third party has this.

01:55:43 Speaker 1 - J

Yeah. So that would be like a shortcut.

01:55:45 Speaker 3 - TA

That would be short cut. I mean, as a company, I would first think of like the the the most simple solution. Like what can I just replace it by something else and then I'm done. Like I can just keep on producing this jacket...

01:55:55 Speaker 4 - IS

Yeah but they also ask themselves, what are their competitors doing?

01:56:04 Speaker 3 - TA

I think this is pretty complete, it's at least the core...

01:56:13 Speaker 1 - J

Do you? Are you guys happy with it?

01:56:16 Speaker 3 - TA

Yeah, yeah. And of course here you need somehow you need to prove it or test it.

01:56:23 Speaker 2 - JE

Technical but also that market wise and of course there's a lot of stuff that's happening...

01:56:28 Speaker 4 - IS

Yeah cause you also want to make the whole business and viability story...

01:56:37 Speaker 3 - TA

Yeah, very important because you can ask a user. Do you want a PFAS free jacket? And then they also yeah, of course. And then are you willing to pay €200 more than usual?

01:56:51 Speaker 1 - J

So OK, so part of the testing is also whether it be accepted in the market.

01:57:00 Speaker 2 - JE

Yeah, if we if we go all the way, then yeah, we could do it, I guess, yeah.

01:58:08 Speaker 4 - IS

It is very interesting though... how important this part is.

01:58:10 Speaker 2 - JE

Yeah, yeah, especially talking to people in the company... because before you know it you end up in a tunnel.

01:58:29 Speaker 3 - TA

I do feel like you need to find the right people to talk to within the company, like avoiding only talking to 1 marketeer or something...

01:58:54 Speaker 1 - J

Yeah, that you that you were almost saying like, OK, you would have a different approach if you knew that this assignment was coming from the regulation point of view. So like if the client comes says like regulation says, yeah, then what would you change? Because that wasn't clear for me. What changes then?

01:59:10 Speaker 4 - IS

More regulatory research.

01:59:14 Speaker 3 - TA

I think you would focus more on this single regulatory like, yeah.

01:59:18 Speaker 4 - IS

Yeah, of course. Like, because we what we do like, we will like the user at some point, but maybe like it it it depends also on.

01:59:30 Speaker 4 - IS

Budget. So if the client really is like, no, we don't have time for any user research, this is what the what the regulation says. Please find alternatives then.

01:59:40 Speaker 3 - TA

I think the mindset is also completely different of a client that wants to should be confirmed by the the the regulations, so they they are forced to do this or somebody who is a front runner and already you don't have to convince them they they they are and they are maybe also more willing to do this user research because they really already know it's needed.

02:00:03 Speaker 2 - JE

It's only the legislation and then you could say, OK, it's all the legislation problem and then the consumer is happy. But if if it's not legislation but the facts actually they say, hey, consumers, they don't want PFAS, then the underlying thing could be the consumers want to buy sustainable products...

02:00:22 Speaker 2 - JE

And then it's not only there's a legislation, but maybe the one is something else. They want like reusable or recyclable Jack, I don't know.

02:00:28 Speaker 1 - J

Yeah, yeah, I would argue. Well, there's different types of regulations, so there could be a regulation that says like, OK, so from now on, you cannot use PFAS anymore, but you can also find regulations in some of the cases that I did were about refrigerants. And you can use refrigerants and they are greenhouse gases...

02:00:54 Speaker 1 - J

But the regulations says like, OK, make an hermetic system. Don't let it. Don't let it escape or make a very good system for the recovery of the of the gas during recycling, so regulation could can go many ways is what I'm trying to say.

02:01:19 Speaker 1 - J

And then you're really making a difference between a client that is willing to innovate and like he's really looking for, like, OK, what else can we do and a client that is really looking to just be like, I don't want a fine because my product has PFAS.

02:01:32 Speaker 3 - TA

Yeah, I think ideally you would have the same like holistic approach for for both. But I think in practice clients who are forced to deal with regulations they want to, they want to a short cut, they want to invest as little time and money and and they just want to get the test done and that’s it.

1. **Discussion – proposed process. 2:03:19 – 2:26:00**

002:02:16 Speaker 1 - J

Yeah. So I saw that in your process you most of your research comes from stakeholders. So much most of the research you mentioned a third party. So I'm guessing suppliers manufacturer, client and user, did you think about any other sources because you when you mentioned in the....

02:02:36 Speaker 1 - J

The previous thing you mentioned, like you wanted this ideal like database and whatnot. Where does that come in play?

02:02:44 Speaker 3 - TA

I would say the database would be at the third party expert...

02:02:49 Speaker 3 - TA

But, but that's that's how I see it. So I think we as designers and engineers should have like a base knowledge, but it really goes about PFAS and like maybe there's another chemical solution for this and.

02:03:07 Speaker 3 - TA

Probably you need this third party and I would assume they have knowledge in alternative materials or alternative processes that.

02:03:17 Speaker 3 - TA

That could help or could be an alternative.

02:03:20 Speaker 3 - TA

I think the user research is definitely something we should should do. That's that's the part where designers should intervene.

02:03:27 Speaker 4 - IS

Yeah. Yeah, exactly. I think if we already know which PFAS are used.

02:03:32 Speaker 4 - IS

Then at that moment we can already kind of like do a Google search and then you can already like search "design PFAS out"

02:03:46 Speaker 4 - IS

Do some preliminary research and put it in the quote or you can still find some information after the quotation is signed.

02:03:57 Speaker 1 - J

No. OK, cool. Good to know. Can you think of any other resources that you would need somewhere in this process?

02:04:07 Speaker 2 - JE

Well in theory there should be some kind of global access, right? Something you can consult?

02:04:15 Speaker 2 - JE

Information on the substance, and you don't necessarily need manufacturer or someone there to do it right? You can go to a library. If these things still exist, yeah.

02:04:22 Speaker 4 -IS

Yes, this would be part of desk research right?

02:04:45 Speaker 1 - J

What do you think are the main limitations or barriers that you would like find throughout this process of eliminating PFAS?

02:04:55 Speaker 2 - JE

I can imagine that it's it's quite a costly process. Yeah, it's quite expensive exercise to to get to the right answer, hopefully so it's it's it's, it's a risk and it has really high costs attached to it.

02:05:09 Speaker 4 - IS

I think especially if it's a client that is pushed by regulation, it might be difficult to convince them to let us have freedom to really find suitable alternatives.

02:05:20 Speaker 4 - IS

In the ideation phase, and to also really do like to do proper user research, it can take a very long time to set up, like interviews with participants also and do all the data analysis...

02:05:39 Speaker 3 - TA

I think another thing would be if we suggest alternative materials, do we have the data to know that this is actually a better solution?

02:05:49 Speaker 2 - JE

It's it's a difficult one.

02:05:51 Speaker 1 - J

Yeah, yeah, I'm better. In which way? Right. Because you you you added the proof testing. So that was interesting to see that you you you guys were very focused on like OK does it work? Does it work? Does it work? Is it user happy with it? Is the client happy with it? and here you didn't go back to the PFAS, so is this solution better, worse or the same as PFAS?

02:06:19 Speaker 3 - TA

Yeah, because I think the interesting part of it is we try to understand at the beginning what PFAS bring into the product.

02:06:29 Speaker 3 - TA

It has certain characteristics like makes it watertight and durable. So I guess those things that are in the requirements we want to test, and...

02:06:44 Speaker 3 - TA

So that's the first test does it meet the requirements. Does it actually tackle those requirements. And then also is it actually better than the PFAS? Because that's...

02:06:56 Speaker 3 - TA

It's also difficult to.... you're measuring quite a lot of different things.

02:07:03 Speaker 2 - JE

So it's it's just like the the rubber thing that's worse than the mono material thing. Yeah, but in the end, if you consider, think about it, in this particular context it's OK, it's actually fine to do it.

02:07:17 Speaker 4 - IS

I think I think in the process how we how we put it now is we kind of assume that these requirements are already better than the original design, so if we comply with the requirements then our results will also be safe?

02:07:41 Speaker 4 - IS

But I think like ideally we at the end we'll also will always test the requirements to see if.... if we got the all.

02:07:49 Speaker 4 - IS

And also probably put the design and the redesign next to each other and compare them.

02:08:04 Speaker 4 - IS

Yeah. So maybe one of the results is also.

02:08:11 Speaker 4 - IS

Make sure the the requirements are met.

02:08:19 Speaker 4 - IS

Yeah, final design that meets the requirements.

02:09:05 Speaker 1 - J

Yeah. So yeah, we talked about having a database. We talked about talking with stakeholders. Do you know what to ask your stakeholders?

02:09:17 Speaker 3 - TA

In his specific case? I think so. I think for for a user research we have a lot of experience and guidance on that, so we can prepare pretty well that's that's fine I think.

02:09:35 Speaker 3 - TA

For third party, it's very much about gaining knowledge and some advice specifically on the substances, for example what PFAS are we using? and, what solutions and what alternatives...

02:09:45 Speaker 3 - TA

I think for the manufacturer it's a bit tricky, but I think I can imagine that....

02:09:53 Speaker 3 - TA

If you want to create the same raincoat, you talk to your manufacturer that you you normally use and see what you can do with this information. Also from the third party to to still produce that within that same production line for a reasonable price and with the same kind of speed and so on...

02:10:18 Speaker 3 - TA

Yeah, I think I think probably know what to ask.

02:10:22 Speaker 1 - J

Yeah. Yeah, I'm asking because when you were talking about the third party, I wasn't. I wasn't sure if it was like, a also sustainability experts like, more like, yeah, risk assessment experts or lifecycle assessment experts or all this kind of.

02:10:39 Speaker 1 - J

People that could put some numbers behind the PFAS problem and then tell you like, OK, this is what it looks like, is that what you were thinking about or?

02:10:47 Speaker 3 - TA

Yeah, yeah, I have no idea what's all out there. I'm not an expert. Yeah. So that's why we capture everything under this umbrella term (third party). But I can imagine, like, we need a party to convince the client with data.

02:11:03 Speaker 3 - TA

To back it up, and to also to have the knowledge behind it and to also come up maybe with some suggestions or alternatives that we can work with...

02:11:13 Speaker 2 - JE

I would say it is chemical experts...

02:11:21 Speaker 1 - J

Do you want to add anything else? Because I think we are done with the session.

02:13:09 Speaker 3 - TA

But it's also a bit of an eye opener because I was just also mentioning to you guys during the break that it's actually not something I pay a lot of attention to. And if I think about it, I should pay more attention to it... .

02:13:25 Speaker 3 - TA

And I also don't see a lot of clients of ours paying attention to it. So, but I do see the the concerns. So yeah, something we should focus more on, yeah.

02:13:53 Speaker 4 - IS

Well I think you hear the examples of BPA and similar things but, there are a lot of things out there, and you wouldn't know if there are substances of concern in there because no one tells you. And probably the people that produce it maybe also don’t know it? 02:14:02 Speaker 2 - JE

yeah exactly, who knows what's inside all the filament we use to 3d print, right?

02:14:04 Speaker 3 - TA

Yeah, yeah, we we only said like probably the like the the chemist will know... I worked also quite a lot on like dish washer tabs..

02:14:15 Speaker 3 - TA

Yeah, I'm pretty sure that at the R&D departments, the people working on the chemicals, they know what they put in there they have some knowledge there...

02:14:25 Speaker 3 - TA

But they're probably also put on the pressure to meet the requirements of like.

02:14:30 Speaker 3 - TA

Cost time to market. So on. So like it's almost, it feels a bit like yeah, don't be the critical one in the room like we need to.

02:16:42 Speaker 3 - TA

Yeah, it could even be almost like it's almost like a road map, so maybe there's, like, small things you could do in a short term, but not too much hassle and. And so you're working towards.

02:16:58 Speaker 3 - TA

And then manufacturers are more open to you.

02:17:39 Speaker 1 - J

Yeah, cool. Well, thank you very much, this is the end of the session. Thank you so much for helping me out. It really was a really nice session.