**Session 1 – Team 2**

1. **Discussion about methods**

00:05:33 Speaker 1 - J

All right. So everybody ready? Yeah. Now I'm going to ask you.

00:05:39 Speaker 1 - J

Like each one of you to talk about what method you chose and why.

00:05:46 Speaker 2 - SO

I chose the post- it ideation. I'm not sure if that's the real name, but so basically it's a method to generate as many ideas as possible on a specific topic and in a limited amount of time.

00:06:06 Speaker 2 - SO

Where you draw your idea on a post it and then share it back with the group.

00:06:12 Speaker 2 - SO

So the purpose is to generate many ideas on a smaller part of the problem or of a design or in single features, let's say, and then be creative without limiting yourself.

00:06:30 Speaker 2 - SO

Why do I use this method? Because it's quick and it allows you to really get out-of-the-box ideas that you would not get if you would think of the full design at once.

00:06:48 Speaker 2 - SO

And then pros and cons. So a lot of ideas are generating and generated. It's a group activity which is nice if you can do it with client because then you engage with them as well. Downside of it if they are not comfortable with sketching then it might be a little bit difficult to get them to do it.

00:07:10 Speaker 2 - SO

And also the process that you really breakdown the design of the problem in smaller problems.

00:07:18 Speaker 2 - SO

Which makes it easy to tackle.

00:07:20 Speaker 1 - J

OK. So you when you do this together with clients, they they draw or can they also use words or can they?

00:07:26 Speaker 2 - SO

I think it worked better if they draw, so sometimes they write, but I think I tried to do it with clients that also can really draw and then get them into the mood of sketching.

00:07:40 Speaker 1 - J

Yeah. OK. And do you use this?

00:07:44 Speaker 1 - J

In all stages of the design process.

00:07:46 Speaker 2 - SO

It's usually in the beginning. Yeah. So once you have opportunities or insights and then you start there.

00:07:54 Speaker 1 - J

Nice. All right. And you said that it allows you to focus on very specific parts that you.

00:07:59 Speaker 2 - SO

Yeah. So what I usually do is that so you do the analysis part right and then you have some opportunities or some insight.

00:08:07 Speaker 2 - SO

And then you really separate those from one another and start from that to do the ideation and then you do several rounds of post-it ideation on those topics.

00:08:20 Speaker 2 - SO

It helps you to have like many ideas and then you can start combining things.

00:08:24 Speaker 1 - J

OK, cool. Then someone else wants to go?

00:08:32 Speaker 3-IR

I picked the weighted criteria method. I'm not sure if everyone's familiar with it. Yeah, so? So it's also making a lineup of solutions slash context and reading them. Yeah, the goals with that is to get a more objective view of what will work best. And I wrote down....

00:08:52 Speaker 3-IR

Yeah, like mostly I usually try to useful in more technical design problems. So sometimes like a product architecture issue you need to solve.

00:09:00 Speaker 3-IR

Or, yeah, ways to produce it. Something like I. I find it like useful. Like that's kind of like a more technical part of the more engineering part of the design process.

00:09:17 Speaker 3-IR

Why I prefer this method is sometimes there's a lot of options and it can be sometimes hard to, yeah, have the overview of all the options you have and it can be really nice to yeah, make a more structured overview of the pros and cons of the different properties.

00:09:47 Speaker 3-IR

Pros... It can help to convince the clients and can help you clear your mind. Really good overview. Yeah, the cons in my opinion are. Yeah, the way you rate properties can be highly subjective. There's a risk you have too much faith or trust in that outcome..

00:10:01 Speaker 3-IR

So I think you should use it as a tool and not as a definite truth, or assessment. Yeah, so it can really help to structure, but sometimes the outcome is not what you expected and something that can be the the the reason can be that you didn't like weigh the different criteria good enough.

00:10:25 Speaker 1 - J

And are you the one assigning the weights or?

00:10:29 Speaker 3-IR

Yeah. So you can do it with the client as well of course..

00:10:32 Speaker 3-IR

Sometimes you already know, so if they already say like, yeah, so it needs to be as cheap as possible. They know that that's the most important one. Yeah, but.

00:10:47 Speaker 3-IR

Yeah, it it can be. Yeah. Whatever. It's it's it's quite subjective the way you weigh stuff.

00:10:52 Speaker 1 - J

So then you you weigh the criteria and then you say like, OK, most important thing is that it's cheap over it being, I don't know.

00:11:00 Speaker 1 - J

High quality. Yeah. And then you have people rate the concepts or.

00:11:06 Speaker 3-IR

Yeah, I think usually what we the way I use it in my job here right now was like yeah, with maybe one or two other colleagues, OK, with all these options, OK, what do we think? And then we kind of.

00:11:24 Speaker 1 - J

But it's very based on gut feeling and it's based on your own expertise as well then?

00:11:31 Speaker 3-IR

yeah... So basically....

00:11:32 Speaker 3-IR

The knowledge you already have, so I think it's never used. I never used it as like a. Yeah, a definite thing or an answer to everything.

00:11:41 Speaker 1 - J

And what do you use to find a more accurate answer?

00:11:47 Speaker 3-IR

You mean like which one to pick? I think sometimes you have like a few options that come out of it and you just discuss those with the clients and discuss like what you think are the pros and cons. And of course, they have an expertise as well.

00:12:02 Speaker 3-IR

So you try to give them advice and listen to their expertise as well. And I think sometimes we don't know yet because we don't know everything about all for example, production techniques. So we also need to sometimes have a chat with the injection molding or something like that or like the mold maker to know more.

00:12:21 Speaker 3-IR

And if what we came up with it will even work...

00:12:24 Speaker 1 - J

Yeah. Yeah. So as you progress.

00:12:28 Speaker 2 - SO

I think it depends on the criteria right?

00:12:31 Speaker 2 - SO

So if you think of the technical ones the it makes sense to talk to the technical people if it's about appeal, then you do some research...

00:12:39 Speaker 3-IR

And of course, like with cost, for example, you don't always. You can make an assumption but you don't know for sure if that will be the cheapest option. So.

00:12:50 Speaker 4-FR

I think it also depends a lot about how much time you have to do it because I think you could bring it to the extreme. Like maybe you can even develop different concepts at the same time.

00:12:56 Speaker 4-FR

And then you can use it for validation and then maybe.

00:12:58 Speaker 4-FR

You find out that some concepts do not resinate with the user.

00:13:04 Speaker 4-FR

I remember like because I think is also how we do it. But I think at the level of corporate like for instance in my previous company, I remember some requirements were really dictated by the business. So for instance, before they decide to start an NPI, a new product introduction....

00:13:20 Speaker 4-FR

...They do a lot of marketing research. They know exactly if we want to succeed, we have to be in this price range. They do a lot of competitor analysis, so they're like this. I don't know. Air dryer must be maximum this power otherwise then it ends up being conflict with the other category we have.

00:13:38 Speaker 4-FR

We should use only these colors, so we should use this technique because we already have this contract agreement with the supplier... and then just take that into account.

00:13:53 Speaker 4-FR

So yeah. So I picked the product journey map because it's something that we used recently.

00:14:00 Speaker 4-FR

So we use it to practically combining one single overview of the data about the current design. So also looking at the system level and what we used it recently for is to have it as one single point of truth as a sort of....

00:14:21 Speaker 4-FR

Document where you have all the insights collected about the current design and about the entire life cycle of the product. And then we map insights on it and then we use it to drive the ideation

00:14:32 Speaker 4-FR

And I think this helped, like for a recent project because you have different teams working on different things, right? .

00:14:39 Speaker 4-FR

So you have the user research team, you have the engineering team and then each of them really looks at their insights. So if you don't actually put them all together in one overview then you may miss information...

00:14:52 Speaker 1 - J

Then each team throws information at the analysis part as well. OK, so somebody looking into the sustainability part, if that's in the scope of the project, and then there's someone looking into users, others into production, etc

00:14:56 Speaker 4-FR

Yeah, yeah.

00:15:09 Speaker 4-FR

Yeah. So for instance, we have a team looking at user research and doing interviews with users that are to identify user needs, pains and gains. What do they do at end of life with the product, the team that did the life cycle assessment, the team that did the product assessment. So it was all related to sustainability in this case.

00:15:27 Speaker 4-FR

Yeah. And then you would already start like seeing right like before starting to put things together like people would already start going into brainstorming mode and then the engineering group was like less..... like

00:15:38 Speaker 4-FR

"Remove as much as we can. Let's make it a box. Let's have the the smallest PCB we can and that's it...." Instead, the design team was starting to think "Oh, let's make it modular so people can personalize it and they can just put what they want" and then the engineering team being like, "oh, but did you look at the LCA because this would be more impactful" and the design team would say "yeah, but did you speak to the user? because the user would never go for a brown box..."

00:16:04 Speaker 1 - J

OK, so it it, it also works for communicating inside. OK, all right and.

00:16:13 Speaker 1 - J

And you use it throughout the whole design process or.

00:16:16 Speaker 4-FR

We use it at the end of exploration and before concept development, so we do the exploration phase where we collect insights from different methods. Then we combine it in the map and then we....

00:16:30 Speaker 4-FR

What we did this time we tried it was a bit messy but I think it was nice .... we printed this map very big and then we used it to drive the ideation.

00:16:43 Speaker 4-FR

so the idea is that we go for all the insights, and then people have those insights in mind when we develop solutions.

00:16:50 Speaker 4-FR

I think it sounds more straightforward than what it is, I remember that there was quite a lot of information, but....

00:16:56 Speaker 1 - J

Sounds very democratic, everybody is represented...

00:17:01 Speaker 4-FR

Yeah, yeah, yeah, yeah.

00:17:05 Speaker 1 - J

Yeah, why? Why? And this is a general question for all of you 3. Why do you think these methods fit your professional practice?

00:17:19 Speaker 1 - J

Like what makes them what makes them attractive for you to use them in the in the first place?

00:17:27 Speaker 3-IR

I think it's more about getting structure in your process...

00:17:31 Speaker 2 - SO

I think methods in general are just bringing structure to something which can go in every direction.

00:17:39 Speaker 2 - SO

methods make a framework for us to be creative in a structured way...

00:17:43 Speaker 3-IR

Yeah, also communicating in a way I think to others...

00:17:50 Speaker 2 - SO

I think also it's, I imagine that from the outside or from the client side it looks more professional if you have like a method and like yeah something like set right?

00:17:59 Speaker 1 - J

Yeah, yeah, yeah. So if a client comes and asks you, why is this blue, then you could be like, well..

00:18:02 Speaker 2 - SO

It's more convincing.

00:18:06 Speaker 4-FR

Exactly. Yeah. So having something that you can show, like, that's why I did this.

00:18:16 Speaker 4-FR

Yeah, cuz I heard, we have also people here that would do very analytical things and stuff and then another one would just do brainstorming and come out with a very similar solution without any research or anything...

00:18:35 Speaker 4-FR

It was just a bit of gut feeling. So I think maybe sometimes methods are a bit overrated as well, right? Like also for us. In sustainability, also, clients often keep asking method, method methods and that's why we always come up with methods but sometimes I feel maybe it is a bit too much...

00:18:51 Speaker 4-FR

Sometimes you think you have to do stuff instead of just finding how to rationalize everything.

00:18:55 Speaker 2 - SO

Yeah, but I think that there is, like I think if I think of this method for instance, it still allows you to go in very different direction, but it's still structured it. So you can do it within efficient time frame.

00:19:12 Speaker 1 - J

Yeah, but also, at least in your method, allows you to document that you did have a moment with the client where where they could also intervene in the in the design process or the creative process. Yeah. So yeah, it makes sense.

00:19:25 Speaker 1 - J

Yeah. Whether they're under, like they're overrated or not, I I don't know. It really depends on the aspect. I guess that you're looking into, but yeah, OK, cool. So structure, that's that's why we use methods. All right, so now.

00:20:00 Speaker 1 - J

Ok, so now we are going to talk about substances of concern...

1. **Discussion – Dealing with SoC**

00:24:00 Speaker 1 - J

Do you have any ideas of cases that you have encountered in daily life products containing substances of concern? Or cases in your professional practice?

00:28:03 Speaker 2 - SO

I think the first time I really encountered it was when I was doing my internship.

00:28:17 Speaker 2 - SO

I was working in the department that was making electrical appliances for the kitchen.

00:28:21 Speaker 2 - SO

And then they were actually considering changing their plastics. And then I was just working on some stuff to make renders of stuff that were previously transparent.

00:28:30 Speaker 2 - SO

That was plastic, and then they were changing it to opaque plastic for it to not be also follow regulation.

00:28:51 Speaker 3-IR

Yeah, I have. Like, I did a project for client on a children's product.

00:29:02 Speaker 3-IR

We're not designing a toy, but it was something that they would probably stick in their mouth.

00:29:11 Speaker 3-IR

So I think that they were really like ... PVC is bad

00:29:16 Speaker 3-IR

And, I really didn't know a lot about it. Only that parents think PVC is bad. I'm not sure it's actually bad, but at least it's on all the toys right? PVC free.

00:29:32 Speaker 3-IR

I also encountered misconceptions of things like, what is sustainable and what looks sustainable because they want to have like the earthy colours that like a bit of grain in there and like yeah, hat doesn't necessarily mean that it's like recycled plastic.

00:29:47 Speaker 4-FR

I think I had cases with the cord winders.

00:29:52 Speaker 4-FR

I think the cable is made of PV and I think many companies already opted out of it, but there are many companies that still have waivers, so they still use PVC.

00:30:00 Speaker 4-FR

Flame retardants is a very big problem for recycling. So, like, I remember, a lot of projects around that. So design for recycling, really focusing on how can we have this part made without adding flame retardants. And many times it was extremely challenging.

00:30:18 Speaker 4-FR

Then I remember some cases with baby products, so things that you put in your mouth that they were trying to recently, I think that they they started to face out some substances, I don't remember anymore which ones but there was something there they removed.

00:30:36 Speaker 4-FR

But honestly, most of the time I really felt like I I don't know if I could really play a role in that. So for instance, the flame retardant part was part of a bigger project on recycling, and I was helping a lot with the more architecture, product architecture solution, right. So let's make part easy to separate and for shredding...

00:30:56 Speaker 4-FR

But then the part of flame retardants, I knew that they were there, but then there was a chemical engineer involved in the project so..

00:31:04 Speaker 4-FR

Probably what I would do is to help looking for suppliers without flame retardants, but I don't know if I could really play a role in making sure. Yeah, how do you design out flame retardants? right?

00:31:18 Speaker 1 - J

I guess it really depends on the type of project and substance.

00:31:22 Speaker 2 - SO

In the industry as well, I think because if you think about food then it has a lot, maybe more impact on the aesthetic as well if. OK, you had something transparent, then you're going to change it to something opaque , the perception of the whole product changes completely as well.

00:31:42 Speaker 4-FR

Yeah. Maybe anesthetic, I think is on one side is easier because the solution is finding a different solution or material.

00:31:50 Speaker 4-FR

If if there is functional requirements then it becomes harder because then you have to find an alternative.

00:32:51 Speaker 1 - J

I am now going to give you another form... Uh, so this this form has two questions and I'm going to give you 5 minutes. Ish. Yeah. So what can designers do to deal with substance of concern in products? So to to, to what extent can you participate in this and what do you need to deal with substances of concern in products?

00:39:30 Speaker 1 - J

Ok, time is up, do you want to start?

00:39:33 Speaker 2 - SO

OK, what we can do? I wrote well, we can be creative to find alternatives.

00:39:40 Speaker 2 - SO

Not only on the material level, but also on the solution level.

00:39:47 Speaker 2 - SO

Of course, make informed choices and justify choices to the client as well, so it's not only about making the choices, but also communicating them.

00:39:56 Speaker 2 - SO

And then what we need, I think more knowledge, I think we don't know enough today to make those informed decisions basically.

00:40:10 Speaker 2 - SO

Or at least an easy way to find the knowledge so it's not that you need to know everything, but you need to be able to find it somewhere.

00:40:17 Speaker 1 - J

Yeah, so know what you don't know? Yeah.

00:40:19 Speaker 2 - SO

Exactly, or having some sort of guidance based on what you need. So I was also saying something so let me try to structure it...

00:40:35 Speaker 2 - SO

I was also saying like I think it needs to be very simple and low effort.

00:40:39 Speaker 2 - SO

But you still need enough depth, so you need to have it in a simple language somehow, but also have information on what is the impact at different stages of the lifecycle...

00:40:51 Speaker 2 - SO

And understand what we know and what we don't know in material choices00:41:04 Speaker 1 - J

And and when you say knowledge you you mean knowledge about what?

00:41:09 Speaker 2 - SO

About, well, I think it is about the material and the impact basically, so.

00:41:26 Speaker 2 - SO

What I'm thinking is like if I need to make material choices and need to know what is the impact of those upfront so I can also find the right.....

00:41:35 Speaker 2 - SO

Well, the right material, but also the right strategy to work with this material, because I think it's not only about the material..00:41:46 Speaker 2 - SO

It's also about the impact on the life cycle, so where does it really has impact and whether it makes sense with the strategy you have as a product development?

00:42:02 Speaker 3-IR

Yeah. What, what? What can we do?

00:42:05 Speaker 3-IR

Yeah, give advice or guide the clients towards. Yeah, maybe better choice in material, I think especially with clients with little product development experience, I think we have sometimes clients that never had like an industrial produced product at all and they're oblivious to what needs to be done.

00:42:31 Speaker 3-IR

Yeah, you can guide them in the right direction, but then I also run down like we're always, or at least I'm. I'm not that often part of the decision making process when it comes to materials or details like that, so.

00:42:45 Speaker 3-IR

Yeah. For me it's a little bit of a story like where do I fit?

00:42:49 Speaker 3-IR

Like can I actually like in my position? Can I do something about it? Like if I look at my job right here?

00:43:00 Speaker 3-IR

So that's the concern I have. And then I think a lot of designers have basic understanding of materials, but they're not aware yet of the risks that's maybe certain materials bring, yeah.

00:43:18 Speaker 3-IR

We know more and more about sustainability in general, but it can be overwhelming. Where do you start? I think it's. Yeah. About. Yeah. I think in line with what S says.

00:43:30 Speaker 3-IR

Yeah. How? How do you approach it? Because there are so many different elements that's come together.

00:43:37 Speaker 2 - SO

And I think when you start searching today, you find so many things on the Internet and you're like, OK, what do I do? Where do I start? What?

00:43:44 Speaker 3-IR

Yeah, yeah. And what's up to date? Because sometimes something is. Yeah, it was true 10 years ago, but it's not true anymore. Like, yeah, you you don't know. Yeah. So I think that's, help with that would be great..

00:44:00 Speaker 4-FR

Yeah, yeah, yeah. Also for me, like in the past, I have been looking into a list of substance of concern. And it's always so messy. And it's always so confusing. So I've been on the, how is it called? the co website on substances of concern website where they have a list from the European Commission?

00:44:28 Speaker 1 - J

The one from the European Chemical Agency? that's the official one, yeah.

00:44:34 Speaker 4-FR

Yeah!

00:44:39 Speaker 4-FR

And then like, they have different lists, right? Like one that is officially like substance of concern. And then you have the potential substances of concern that are not there yet. And then it's always messy to understand what is the latest version then they have this table where it shows when they are going to test these things but it is unclear.

00:45:01 Speaker 1 - J

Yeah, it's the candidate list.

00:45:04 Speaker 4-FR

Yeah. The candidate. Yeah. Yeah, yeah. Yeah. Yeah. Yeah. So I think what we can do is to be aware about substances of concern and we can point them out if we know that they are there. So for instance, if you know that we have that PC part with that substance, then we can point it out.

00:45:21 Speaker 4-FR

And then maybe then that PC part transparent is there because of us right, because of design choices that we are making. If we know then we can say well, let's go for this other thing...

00:45:30 Speaker 2 - SO

But I think that's that's where I'm not sure yet. Like when do we need those information? Because if we have it up front, then we can design it in a different way.

00:45:40 Speaker 4-FR

Because I've seen so many times this like ping pong between, for instance, the engineering team saying oh, but yeah, we have that transparent part because of design and then the design team will like well if we know that that is \*\*\*\*\*\*\* killing people, then we are not going to make it transparent and you'll find an option. But sometimes I feel there is not enough focus on this.

00:45:59 Speaker 4-FR

It's not prioritized enough to actually start these dialogues and really discussing.

00:46:04 Speaker 2 - SO

I I feel like now it's a little bit of an afterthought being like, oh, we need to change it then really think about it. from the start.

00:46:12 Speaker 1 - J

Can I ask a question because you gave the example of PVC?

00:46:16 Speaker 1 - J

Who and when did they define that PVC was of concern?

00:46:22 Speaker 3-IR

Now I think I think it was something that that concerned them we talked about, but we didn't. It was never like in the end it was never like we didn't have to make that choice. And I think to it was not that we wanted to have PVC and they didn't.

00:46:43 Speaker 3-IR

But we talked about it and that's what I remembered, that there was. They they had, like, certain thoughts about what materials were good and what materials were bad. But it didn't always make sense.

00:47:03 Speaker 3-IR

I think that their main concern was that consumers wouldn't want to buy something that with PVC because other toys have written on it, PVC free. So they want to have that label on the product as well, just because other products have is as well and parents think PVC is bad.

00:47:23 Speaker 3-IR

It's more about marketing, parents want to see an earthy color because it looks sustainable. So that's that's often also a thing, right? Like people like the consumer, also has thoughts about what's good or bad and what will harm the kid or not.

00:47:39 Speaker 3-IR

Their main concern is the kids and not what happens with the products after they throw it away, of course. So I think that's also something of course, now we're talking a little about us and the client that I think the consumers is in the end the decision maker on if they will buy it or not. And I think that's sometimes what clients have to deal with as well because the consumer doesn't always makes choices based on thee truth.

00:48:14 Speaker 4-FR

Maybe on this what I saw like in in big companies is that usually there is a quality team, right? So they are the ones supposed to be aware of all new regulations. So they have the full list, right? And they are also notified when there is a new substance that is added to the list..

00:48:29 Speaker 4-FR

I remember what they set up in my previous company, since nobody had a good background to address substances of concern was to make what they call restricted substances list. Which is kind of a combination between what is really not allowed by law and some extra things, Phillips said it on top.

00:48:49 Speaker 4-FR

And then you have this tool called BOMcheck. So you simply upload your entire BOM of the product and automatically the software scans the BOM for you and it flags what is wrong with that because that was the only solution they found, otherwise, there was no way for engineers to check on this, because even mechanical engineers do not have the background on substances of concern.

00:49:10 Speaker 4-FR

So I think that would be amazing to have a bom check fully available.

00:49:15 Speaker 2 - SO

It would be, but it would be nice to do it before even you make a bom, because I think when you design this is also relevant, even maybe more relevant than doing it afterwards and be like we need to change things.

00:49:27 Speaker 4-FR

Yeah. So I would use it as we use like other tools for instance....

00:49:30 Speaker 4-FR

The disassembly map, so I would do it on the previous generation so you know what went wrong there. And then you know, before we start the next one it would be nice to have a full list of like the all the substances of concern and maybe with some examples because sometimes I don't know, I know the list that we use for recycling that is the one coming from also policy.

00:49:50 Speaker 4-FR

There is this list of substances to avoid, and you read these names and you're like what is this? right? So it would be nice to have examples like this is for instance what you could find here...

00:50:08 Speaker 2 - SO

What you mean is like giving like specific example of where those are used or.

00:50:15 Speaker 1 - J

OK, OK. So so just like common applications?

00:50:32 Speaker 4-FR

Yeah but if they say it's in the textile, then it's like, alright but where? like in the colorant, in the fibers?

00:50:39 Speaker 1 - J

Yeah. What else is on your wish list?

00:50:41 Speaker 4-FR

Alternatives. So that's the thing we always have also with a lot of other things. So like because it's not just enough to know there is a problem, but yeah, what alternatives do we have, right?

00:50:59 Speaker 2 - SO

Yeah, I think it can work on a product level, but it cannot always work because I can imagine that sometimes you.... You might just need to think differently and then find a different solution instead of thinking of well, of course, you need to think of a different material as well, yeah, but maybe you will come up with something different then that is not in your material list one on one

00:51:14 Speaker 4-FR

Yeah. Yeah, no, for sure. I think it also depends by the level of control you have, right? If you can come up with a completely new concept, but let's say you have to make a panel and it has to withstand a certain temperature and and then you have flame retardants and then you're like, alright, let's change that.

00:51:31 Speaker 2 - SO

It definitely would help, but I think it's also maybe not enough.

00:51:36 Speaker 4-FR

Not always, yeah.

00:51:51 Speaker 4-FR

So maybe plot the characteristics of the material that you need, right? So maybe let's say you need that part to be transparent and you cannot go without transparency. Then you can say, it has to be transparent. Maybe it doesn't have to be very structured right? Technical property a bit low, aesthetic high and then poof!! this is your material, yeah.

00:52:11 Speaker 1 - J

We had something similar on on the on the last session that we did and people suggested something like, OK, if I want to make something flexible, then if I say flexible in this imaginary database, then you can already tell me like. But if you make things flexible, make sure you don't use X Y and Z.

00:52:34 Speaker 1 - J

It was a little bit the same, but it doesn't give you the alternative, but it tells you careful with flexibility or something like that.

00:53:21 Speaker 4-FR

Maybe with Chat GPT or ai? Did you try yet? Maybe good to ask. Can you provide me a list of alternatives?

00:53:27 Speaker 1 - J

I haven't tried it. Maybe. Maybe I'm gonna. I'm gonna try. Yeah, maybe. Maybe with safe alternatives. I would still double check though...

00:53:38 Speaker 1 - J

Right. So we talked about, yeah, necessary resources and what our role is.

00:53:46 Speaker 1 - J

Do you think you need to know a lot? Is there a lot of necessary knowledge that you that you need to be able to tackle these problems?

00:53:57 Speaker 3-IR

if you know where to find it....

00:54:07 Speaker 2 - SO

Yeah, I was. I I don't think you need to know everything I think. But I do think you need basic knowledge of.... or understanding what you don't know. Basically. So not per say knowing everything but knowing when and where you need to search.

00:54:14 Speaker 3-IR

Knowing where potential risks are....

00:54:21 Speaker 1 - J

UM, do you think there is or there will be a need for a method that supports designers with this?

00:54:53 Speaker 1 - J

Do you think, if we as designers want to participate in the substance of concern problem, do you think a method would be necessary?

00:55:02 Speaker 4-FR

Well, because if I think about the process that I will follow, I think it's not really complex, right to require a method, but more like tools in different parts. So the first thing would be I want to know if there is the risk that I'm using some other substances in what I'm doing right? So something that helps me to spot them then something that helps me to identify alternatives.

00:55:23 Speaker 4-FR

The alternatives would be really about materials or what materials are alternative to that.

00:55:30 Speaker 4-FR

But also maybe at the level of ideation. So how can I maybe completely redesign this part in such a way that I don't need that substance anymore?

00:55:41 Speaker 4-FR

So I think it's more maybe tools...

00:55:44 Speaker 2 - SO

Yeah. I would also call it tools more than methods.

00:55:49 Speaker 1 - J

What what would be the difference?

00:56:01 Speaker 2 - SO

Well, I think a method is more like kind of a way to I don't know how to explain... to approach something let's say so thinking like. OK, this is like the different steps that you need to take while the tool is just something you can use, maybe at even different stages of the process to get information.

00:56:17 Speaker 4-FR

So the method is more like process...

00:56:39 Speaker 1 - J

What do you think are the barriers for designers dealing with substance of concern?

00:56:47 Speaker 2 - SO

Overload of information.

00:56:54 Speaker 2 - SO

Also lack of information, both.

00:56:58 Speaker 4-FR

Like, yeah, I mean, at first you don't know anything, right? And then at least for me, right, with this project that started to deep dive into it and now it's like Jesus like there is, it's a mess, right? Like it's a lot. So you go very fast from knowing very little to getting too much back and getting lost.

00:57:23 Speaker 3-IR

For me... OK, like design is really quite a complex process, right? And then this also adds up on what I need to think about..

00:57:33 Speaker 1 - J

Yeah. So one more thing to think about, yeah.

00:57:38 Speaker 1 - J

Do you think do you think you have time?

00:57:44 Speaker 1 - J

In your professional practice to also consider substance of concern.

00:57:47 Speaker 2 - SO

Depends how much time it takes.

00:57:51 Speaker 4-FR

I think it depends also about the project. Maybe like if it's sustainability focus that then we can also push it in maybe since the start, right? But I think if we don't do it since the start, then no. So for instance if we create a proposal, then we can explain to the client like it is important and then maybe we can get that extra time if we can do it, then I'm not sure.

00:58:12 Speaker 3-IR

Yeah, yeah, I've. I've already said. I think the projects I'm usually doing now are more like on the ideation and concept level still. So there's often not even a defined shape.

00:58:27 Speaker 3-IR

Like, of course, you're making prototypes and stuff, but it's not like the final stage..

00:58:43 Speaker 3-IR

I think that's what I did with the the, the, the, the baby toy or the child's toy. Yeah, kind of make that a topic. It it wasn't a topic. But you can make it a topic when meeting with the client. OK, but what? What? What do you mean with saying that it needs to be sustainable, but it doesn't need to look sustainable.

00:59:02 Speaker 3-IR

Or does it need to feel sustainable? or it needs to be sustainable, right? What do you mean?

00:59:08 Speaker 3-IR

Yeah. And then also what I think also on the concept level, you can still do that.

00:59:14 Speaker 4-FR

Yeah. Yeah. I wonder. Maybe something that you will not tackle from the start of the process, but maybe when you are at a certain point where you start developing different concepts.

00:59:27 Speaker 3-IR

Yeah, you can of course, say like, OK, if we would have like a property like this that might cause risks...

00:59:40 Speaker 3-IR

then you might need to implement certain things you maybe don't want to implement in the project

00:59:49 Speaker 4-FR

**Yeah, if you have different concepts, maybe at that point you can think right, which one allows me to face out this substance. Because in early stages I think sometimes you don't even know what's in there.**

01:00:08 Speaker 3-IR

NO, but you can already like, do you put a battery in there or not? I mean things like that. That's more on a higher level, of course, but things you can already start the process. You could already kind of steer. In the direction of yeah having been less harmful stuff in your product.

01:00:24 Speaker 4-FR

But because maybe sometimes I think there might be also trade off, right, even just on sustainability. I mean, having that substance there might allow something else.

01:00:34 Speaker 4-FR

That makes the product more sustainable, like playing retardants and refurbishment.

01:00:41 Speaker 4-FR

So maybe more durability of the product and then you have to consider what do I do do? Which one do I phase out?

1. **Proposed process**

01:24:58 Speaker 1 - J

OK, so we discussed the role designers in the with substance of concern and now I'm going to present to you the case of PFAS in textiles.

01:25:10 Speaker 1 - J

And the only reason I'm giving you a case is to have an excuse to talk about a process to deal with that case. So after I present the case, we are going to or you are going to ideate a process.

01:25:30 Speaker 1 - J

That so you're going to ideate the process and the focus should be on the process. So how do you, you might what, what are the steps that you imagine you would follow to deal with this thing?

01:33:18 Speaker 1 - J

How would you deal with PFAS in a in a in a waterproof jacket? Yeah, so you can use like waterproof jacket as a case. You can steer the process and decide how far you deal with the problem.

01:33:37 Speaker 1 - J

So I'm going to give you materials to draft the process and I really, really want you to focus on the process and not solving the case please.

01:35:40 Speaker 1 - J

I'm going to explain these cards, so I'm going to give you 25 minutes. I'm going to ask you to think out loud because I'm I'm recording the audio so that that's where I absorb all of your intelligence. And yeah, these are the building blocks, so you have.

01:35:59 Speaker 1 - J

A building block first step, so a step could be like researching XY set. I want you to please map if that's involved in your browsers.

01:36:12 Speaker 1 - J

Which stakeholders do you think you can involve in each step or what information you need to complete a step and then the results and goals of either the general process that you want to follow or each one of the steps of the process? It's up to you and I give you a wild card.

01:36:32 Speaker 1 - J

In case you want to consider something else or that you think that doesn't fit in the in the in the cards, you could also opt to only use wild cards if that suits you better so.

01:36:47 Speaker 1 - J

These are just ideas on how you could approach this, but feel free to to ignore that and like just do your own thing if that's what you want.

01:36:58 Speaker 1 - J

Yeah, I'm leaving this summary of of of, of the PFAS case. So some just highlights, yeah, of of the types of problems that they have throughout the life cycle.

01:37:14 Speaker 1 - J

Is that more or less clear?

01:37:52 Speaker 3-IR

We'll probably start with the stakeholder, which is the client.

01:37:55 Speaker 2 - SO

Do we consider that we know this already?

01:38:41 Speaker 1 - J

The task is to deal with PFAS in a waterproof and synthetic jacket. How would you deal with that? And then these are your guiding questions. So just make sure that you tell me what the steps are and if there are resources necessary or stakeholders, yeah, what kind of things is important to consider on each step?

01:39:02 Speaker 1 - J

Yeah. What do you want to achieve with either this process in general or each one of the steps of the process?

01:39:11 Speaker 3-IR

We envision that it's like in our current job, so we work for clients....

01:39:27 Speaker 4-FR

Yeah, because I think it depends, right depends also by the client. If the client is willing to really work on this together, then probably I will check if they have a maybe chemical department between their company. Let's say we are working for decathlon or something similar,

01:39:43 Speaker 4-FR

Probably they have a chemical department and maybe it's good to connect and check if any work has been done beforehand.

01:39:51 Speaker 3-IR

Go check current knowledge.

01:39:59 Speaker 4-FR

In the state of work, maybe? Because sometimes I see people already looked into things before.

01:40:11 Speaker 3-IR

Do you think it belongs to the same step?

01:40:15 Speaker 4-FR

Yeah, I mean, I I suppose I would get in touch maybe with yeah, I don't know if the stakeholder is the same, but yeah, overall I mean the client.

01:40:26 Speaker 3-IR

So then, experts of the client?

01:40:35 Speaker 3-IR

Also there could be an external partner of course.

01:40:50 Speaker 1 - J

And this would be an expert on PFAS? or on what?

01:40:54 Speaker 3-IR

Or or or or the product itself. So of course like maybe they're not that concerned about it or aware of it, but it could be, yeah, there. But it can be good to have a chat with because they have experience with the current product they're making.

01:41:18 Speaker 3-IR

They made choices based on expertise as well. So it also be always be good to talk to them.

01:41:22 Speaker 4-FR

Yeah, maybe I will check if they actually develop some of these solutions in house, right? So I don't know if maybe I suppose if you're talking with something like Decathlon, then maybe they have a department that has been specializing into developing the right coating for their jackets.

01:41:38 Speaker 4-FR

But otherwise, maybe they are simply relying on suppliers, right? So then I would check that who is actually.

01:41:48 Speaker 4-FR

How do you say what's the decision power on on that? So who decided to put the PFAS there in the first place?

01:41:58 Speaker 3-IR

Find decision maker.

01:42:02 Speaker 2 - SO

I would actually just map the whole process right, so then you can also identify.

01:42:12 Speaker 2 - SO

Where and what is the impact at each step of the process?

01:42:22 Speaker 2 - SO

I was saying that we probably at some point need to map the full process, so then we can really identify where is the impact and what is the impact on each step of the process.

01:42:38 Speaker 4-FR

The the process you mean the design process or the production process?

01:42:46 Speaker 2 - SO

I would say production.

01:42:48 Speaker 2 - SO

And then we'd also map the kind of life cycle.

01:42:56 Speaker 3-IR

But then you got we're already kind of assuming that we would deal with it.

01:43:11 Speaker 2 - SO

But where I dating on the process to deal with it. So I think we can make the assumption that we're doing it.

01:43:23 Speaker 4-FR

Because I suppose that maybe that was done before actually getting to this point right? At this point, we are being briefed as PFAS on the jacket is bad. So you need to find the solution to that. So I I would assume that people tracked the impacts in the process beforehand and then they define it. Yes, like this.

01:43:42 Speaker 2 - SO

The reason why I would map it is because then you can see if there is gaps

01:43:50 Speaker 4-FR

Knowledge gaps on the actual impact of PFAS?

01:43:54 Speaker 2 - SO

Well, because you're saying like, imagine that you would kind of know, but I think if you map it then you can clearly visualize it and also see the stages where you do not have information.

01:44:08 Speaker 3-IR

So I would say that this is probably then maybe the overall thing, yeah, but then we need to do different things too. Yeah. Be able to map the whole thing, yeah.

01:44:15 Speaker 2 - SO

You need to talk to different people, to have the right information.

01:44:41 Speaker 4-FR

Yeah, maybe what was done before, the reasons why we are using PFAS and maybe previous exploration that was done on alternatives.

01:44:55 Speaker 3-IR

Research sessions, yeah.

01:45:02 Speaker 4-FR

Because I'm thinking about like other topics related to sustainability, like repair, I remember once I was working on this project and then I was two months in and then this guy was like, do you know that we did this exact work 10 years ago? Was like, oh, no. And then they actually came out with their outcomes and was like, if I would have known that someone already investigated it, then I could have skipped a lot of things yeah.

01:45:40 Speaker 1 - J

So this would all be information that was already collected for you?

01:45:43 Speaker 2 - SO

Yeah, I think, well, I think the first step is to understand what do they have, what do they know.

01:45:49 Speaker 2 - SO

What do they don't know?

01:45:55 Speaker 4-FR

And then who also you have to work with to find solutions, right?

01:46:01 Speaker 2 - SO

Yeah. So once you have that, you know where to start digging deeper.

01:46:13 Speaker 4-FR

At some point I will start looking for alternatives.

01:46:34 Speaker 3-IR

And then maybe also inform like other experts like, get in contact with experts outside of the stakeholders?

01:46:45 Speaker 2 - SO

Yeah. So it's, it's, I think the research you can do in different ways, right? You can talk to experts, you can really search online, you can.

01:46:59 Speaker 4-FR

Yeah, probably. Maybe you would try to look for a different suppliers maybe.

01:47:05 Speaker 4-FR

So I think the first thing I would do is to go on Google and look for PFAS alternatives for jackets, and there are probably some startups somewhere in the world will come up.

01:47:28 Speaker 2 - SO

I'm also thinking that you might also want to deal from that what is the features that you want out of this?

01:47:38 Speaker 3-IR

I think you can try to rethink. Yeah, that might be overall.

01:48:07 Speaker 4-FR

I suppose, one is a bit more incremental. So OK, we have the same jacket. We need to apply something on it. What alternative is there and the other one is really just like how can we rethink the jacket to not need it?

01:48:21 Speaker 2 - SO

But I think in any way you will need material at some point.

01:48:37 Speaker 4-FR

I wonder because maybe when you start doing research and finding different suppliers of material, then maybe you find alternatives. But to use that alternative you need to change the design of the jacket, right? And then maybe that connects to rethink.

01:49:03 Speaker 2 - SO

I think you could also end up with the same jacket but needs to make some changes in factories or having different suppliers or which also means making some changes.

01:49:24 Speaker 3-IR

Yeah. Yeah. So there's just like, different directions possible.

01:49:31 Speaker 2 - SO

So maybe you have a different material that you can implement in a similar way that it is used today, or you might need to change stuff in the factory and either the factory can do it or not, and then you might need to either change factory or make changes in the product.

01:49:49 Speaker 1 - J

And then you also have the third direction that you mentioned with the... changing the product.

01:49:59 Speaker 1 - J

Can I ask how you make that decision from like those three?

01:50:28 Speaker 3-IR

Yes. So we have, we start with the impact of the product lifecycle.

01:50:32 Speaker 2 - SO

Then we didn't write that we identify gaps.

01:50:45 Speaker 2 - SO

Yeah. And maybe also the level of impact.

01:51:44 Speaker 3-IR

The result must be. There's no alternative.

01:51:48 Speaker 2 - SO

If there is no alternative. Either. You need to think the product in a different way...

01:51:55 Speaker 2 - SO

Or you need to look at how do you minimize the impact as much as possible.

01:52:14 Speaker 2 - SO

So. So yeah, so here I think we have two possible steps or two parallel steps maybe? Away to retain the product or.

01:52:31 Speaker 2 - SO

Thinking of reducing the impact as much as possible.

01:52:51 Speaker 2 - SO

And to answer the question on how you decide, I think it depends on what you get out of the research. So if you have.

01:53:01 Speaker 2 - SO

A material alternative, then it's going to depend on the the factory. Basically what they can do and what they can change or not.

01:53:14 Speaker 4-FR

Yeah, I think what you would try to do first is to try to change as little as possible, right? So if you can manage to find the.

01:53:22 Speaker 4-FR

Alternative substance one to one that we can simply just apply to the same design.

01:53:30 Speaker 2 - SO

The more changes the most cost, so yeah.

01:53:53 Speaker 4-FR

I wonder in this case maybe what I would also do is to use biomimicry. So since this is something about like living like what route maybe in nature there is something that we can use as inspiration.

01:54:06 Speaker 2 - SO

Would that be part of the research?

01:54:10 Speaker 4-FR

Yeah, I I suppose because in the research I see it more as really getting in touch with different suppliers producing a different material alternative. Biomimicry I see as a sort of inspiration.

01:54:21 Speaker 2 - SO

But that's that's what I was saying. I think here we also need to identify, OK, what are the the features that you need out of this material, because if you start from the feature then you can go in a broader direction than if you just look at OK I want something which is just the equivalent of that.

01:54:39 Speaker 4-FR

Yeah. So maybe that identifying features happens before the research.

01:54:48 Speaker 1 - J

Like the requirements of the materials? Is that what you mean?

01:54:49 Speaker 2 - SO

Yeah, exactly. So thinking, OK, waterproof, maybe we start from that. And then if this is the only thing maybe there is more, but you start from this feature and then starting like, OK, where can I find waterproof solutions?

01:55:02 Speaker 1 - J

Yeah, but I I do think that biomimicry could be one of the ways of finding alternatives.

01:55:10 Speaker 4-FR

Yeah, I suppose I would do this. So then defining the features before, right? So then I define what I'm looking for, and then I try to find this.

01:55:38 Speaker 4-FR

Yeah maybe we can use biomimicry here somewhere? So is there a way to rethink the product and then maybe biomimicry is one option?

01:56:19 Speaker 2 - SO

You need to identify it. If you don't identify it, then you might not have it

01:56:24 Speaker 4-FR

Maybe we need the results.

01:56:40 Speaker 2 - SO

And then you have different level of research. Then either you look for something which is like very similar in the way you apply it.

01:56:57 Speaker 2 - SO

Or very simple. Yeah, I think that's good for both probably.

01:57:01 Speaker 2 - SO

Or you're looking for something which is solving the same features...

01:57:11 Speaker 2 - SO

Not for this one, though, reducing the impact as much as possible. We're going to also be.

01:57:19 Speaker 4-FR

Yeah, maybe it's about how can we decrease as much as possible the impact.

01:57:25 Speaker 2 - SO

So actually here you might have to resolve. So either you really don't have the additives. and then this is this one.

01:57:41 Speaker 2 - SO

Or you have a different type of material basically.

01:57:43 Speaker 4-FR

Yeah, maybe it's like no one to one alternatives

01:57:51 Speaker 4-FR

Because I think here we are talking about really looking. Let's try to keep it as much as possible as it is today, right?

01:57:57 Speaker 2 - SO

But this is this one. The 1 to 1.

01:58:00 Speaker 2 - SO

Because this is no and this is no one to one.

01:58:05 Speaker 4-FR

Yeah, but because I'm thinking like this is a bit like you're you're going for maybe eco efficiency, right? So there are no one to one alternative. So what do you do? You just try to reduce as much as possible the impact then this one is rethinking completely.

01:58:23 Speaker 2 - SO

Yeah. What I was thinking is that in your research you might already find some alternative which are not one-on-one, but could be the start for this.

01:59:03 Speaker 2 - SO

So then, so these are then kind of done?

01:59:07 Speaker 3-IR

Yeah, but then you find out it is also bad!

01:59:11 Speaker 2 - SO

That's actually a good point. Maybe we need to still check whether that's better solutions.

01:59:28 Speaker 4-FR

Oh, yeah, yeah. Good point.

01:59:30 Speaker 2 - SO

Here probably.

01:59:34 Speaker 2 - SO

We research alternative and then we check the impact of those alternatives.

01:59:39 Speaker 4-FR

Make sure there are better alternatives.

01:59:42 Speaker 2 - SO

Because otherwise it doesn't make sense to make something worse.

02:00:04 Speaker 3-IR

Sometimes, like an alternative, can also have. Like, solves a part of the problem but then cause other problems.

02:00:09 Speaker 4-FR

Yeah, maybe check if alternatives are worth it!

02:00:17 Speaker 3-IR

They're worth it sounds a bit weird...

02:00:24 Speaker 2 - SO

Meets all requirements?

02:01:08 Speaker 4-FR

So I am thinking for this one, biomimicry is one, but maybe there are different ways of rethinking right?

02:01:17 Speaker 1 - J

Can I ask you a question?

02:01:21 Speaker 6

How would you do the checking on the alternatives?

02:01:26 Speaker 2 - SO

We need people that know.

02:01:28 Speaker 4-FR

Going back to the stakeholders.

02:01:30 Speaker 2 - SO

We need to meet with the experts....

02:02:01 Speaker 3-IR

I think if we still didn't like involve stakeholders outside of the project.... then...

02:02:05 Speaker 2 - SO

Yeah, we need to find the right experts right?

02:02:08 Speaker 3-IR

Yeah, external experts.

02:02:26 Speaker 4-FR

Well, I mean, I like, I think that also research alternatives that probably we would do it also involving the stakeholders and the companies they have chemical engineering groups, then we would try to reach out to them

02:02:43 Speaker 2 - SO

I would definitely involve external experts. If we have like specific questions...

02:03:06 Speaker 3-IR

Yeah, well, what about information?

02:03:11 Speaker 2 - SO

Well, we need the information of the material and the impact of the material.

02:03:54 Speaker 2 - SO

So is there a way to rethink the product?

02:03:58 Speaker 3-IR

I think maybe here you you almost start full design. Yeah. And here you can kind of maybe.

02:04:07 Speaker 3-IR

This is more like still research based, right? They there's an outcome answer to your questions, it's a different material...

02:04:17 Speaker 2 - SO

I think here you will start from the. Yeah, you would start from the material and then.

02:04:24 Speaker 2 - SO

You would start a design process from those materials.

02:04:38 Speaker 4-FR

I wonder if maybe we will get to a point here that we could rethink also the requirements. I wonder about some users that maybe will be willing to have less performing jackets that we know that doesn't contain toxic substances, so that that might give the freedom to find another solution even though it is less effective?

02:05:07 Speaker 3-IR

Yes, we can rethink the product but we could also rethink the requirements.

02:05:49 Speaker 2 - SO

This is becoming complex. Maybe maybe this goes here and then....

02:05:57 Speaker 3-IR

Yeah, well, it will result in the design process anyway.

02:06:13 Speaker 2 - SO

Yeah. Well, I think I think this this has different ways because either you reduce the impact based on what you know there and then you just make reductions. So maybe you don't redesign here. Or you rethink the requirements.

02:06:49 Speaker 4-FR

Well, I mean also when you reduce the impact, maybe it's because you're also rethinking the requirements, right? So let's say you decide to do it less waterproof and then all of a sudden you can use less PFAS

02:07:03 Speaker 4-FR

Maybe they are also connected to each other.

02:07:26 Speaker 3-IR

What I mean with full design process is... I think what we usually do is we would probably offer this as like one package.

02:07:35 Speaker 3-IR

But we don't know the outcome yet, so we cannot really offer what happens after this

02:07:42 Speaker 1 - J

Yeah. OK. But then, yeah, then here you will need another communication point with your client for alignment.

02:07:47 Speaker 3-IR

Yeah, yeah, yeah. So probably stakeholders, clients. Yeah.

02:07:58 Speaker 4-FR

**Yeah, maybe it's a decision point right on which of the different paths to take.**

02:08:03 Speaker 2 - SO

Well, it might not be a decision ...

02:08:06 Speaker 4-FR

Yeah, if you are forced, yeah.

02:08:16 Speaker 1 - J

Yeah. Yeah. So in here you give the client several scenarios and then they can decide which one to invest on...

02:08:27 Speaker 2 - SO

It could also be that you do different ones in parallel.

02:08:30 Speaker 2 - SO

Because thinking, OK, this might be time consuming to get to a new product. So maybe you do want to do something in between to reduce the impact of what you have.

02:10:31 Speaker 1 - J

Cool, alright, look. So do you wanna do you wanna guide me through the process a little bit?

02:10:50 Speaker 3-IR

Yeah. Yeah. So I think what we would first do is like, yeah, talk to the clients. See what they already know what they already did. And then I think kind of simultaneously map ...

02:11:01 Speaker 3-IR

the impact of the product life cycle that they currently have and see. Yeah, what's missing?

02:11:11 Speaker 3-IR

Identify the gaps.

02:11:12 Speaker 2 - SO

If there is anything that they, they don't have any information.

02:11:18 Speaker 3-IR

Yeah. Yeah, yeah, yeah. So. And also like the level of impact of all the yeah components in the life cycle.

02:11:28 Speaker 3-IR

I think then, so if we know what they already did, what they already know, we can also identify the features, the problem to solve. So what sometimes is happening is...

02:11:38 Speaker 3-IR

What client is asking for is not actually like the problem they're trying to solve, so you can also identify that.

02:11:49 Speaker 2 - SO

We're missing, though, that we might need to fill in some gaps. Yeah, yeah.

02:12:05 Speaker 3-IR

Yeah. So indeed fill in the gaps by researching

02:12:10 Speaker 2 - SO

Yeah, research or talking to experts or visits or yeah.

02:12:14 Speaker 3-IR

Maybe even the user. Yeah.

02:12:18 Speaker 2 - SO

Depends on what the gaps are.

02:12:19 Speaker 3-IR

So yeah, then. So we then indentify the main features and then with that we can research alternatives and...

02:12:31 Speaker 3-IR

try to find any alternative if there are any and with of all these alternatives, we want to know like of course like yeah, material production impacts on maybe just, etcetera.

02:12:46 Speaker 3-IR

A little more to know about it and then also to check if all these alternatives meet the requirements and don't cause any other issues that maybe were not in our first requirements

02:13:15 Speaker 2 - SO

So this is, yeah, this is analysis.

02:13:27 Speaker 3-IR

Then I think at some point we have like a good overview of what the alternatives are and if there are any, and we have to align with the client. So we probably would present this to clients and discuss with them like the pros and cons of all the alternatives we found.

02:13:43 Speaker 3-IR

And different outcomes we have here was alternative material, which is probably the most straightforward way to solve the problem.

02:13:51 Speaker 3-IR

If there's an alternative material, yeah. We would probably help the client implement that alternative.

02:14:00 Speaker 3-IR

into production and the design process because it's can be that there are changes needed to to those.

02:14:19 Speaker 3-IR

In case there's no one to one alternative or there's no alternative at all. So then there's maybe a way we can rethink the products.

02:14:32 Speaker 3-IR

Or we can reduce the impact as much as possible of the material that maybe was already researched before or considered before, so maybe use less of the material.

02:14:43 Speaker 2 - SO

Or yeah, or ones that are less impactful.

02:14:53 Speaker 3-IR

Or maybe also reduce impact as much as possible, we could also maybe.

02:15:02 Speaker 3-IR

Think about the overall system around the product, right? So it could be like if from the harmful things that it ends up on landfill that maybe there's like collecting back system or something?

02:15:16 Speaker 2 - SO

**Yeah. So this is really based on where is the impact.**

02:15:18 Speaker 3-IR

Yeah, yeah, yeah, exactly. So that could be on the full life cycle, I would say. I think this is just a way of doing things biomimicry can be a way to solve the problem, a way to rethink.

02:15:31 Speaker 3-IR

And we can also, of course rethink requirements, so maybe what we want is maybe not.

02:15:39 Speaker 3-IR

Yeah, not not not right in the in the time we live in right now. So we need to rethink the way we do things and that will probably result in us offering a new full design.

02:15:57 Speaker 1 - J

Cool. Alright, so it's clear.

1. **Discussion – proposed process**

02:16:07 Speaker 1 - J

Do you see this process integrating into your normal design process?

02:16:12 Speaker 1 - J

Or would it be like a new service because you talked about a new package that you could offer?

02:16:17 Speaker 3-IR

Yeah, I think to be honest, I think although the topic is slightly different, I think we already do research anyways.

02:16:25 Speaker 3-IR

Yeah, research like this with client maybe then the topic is just different.

02:16:32 Speaker 2 - SO

Yeah, no, this is the well understanding what's there is. First, if you're doing any process I would say and then identifying the gaps is also something you would do, filling the gaps as well. And then probably this is different.

02:16:51 Speaker 3-IR

Yeah, I think also this is probably most difficult part because it kind of also requires a level of expertise that you have to be confident about to be able to offer.

02:17:04 Speaker 1 - J

The different alternatives?

02:17:05 Speaker 3-IR

Yeah, and the research as well.

02:17:12 Speaker 1 - J

Yeah. Yeah. So this would this would really involve other people, yeah. All right. OK. Interesting. So it does it could integrate into your normal design process. It would just be part of your research, but you would also need additional tools and experts.

02:17:30 Speaker 3-IR

I think we need, of course, like we can only do this (because this is very extensive) if the clients will pay for it of course. So I don't think we would implement this in any products that comes to us.

02:17:44 Speaker 3-IR

If they are not going to pay for it. We. Yeah, we cannot spend the hours. Of course.

02:18:03 Speaker 1 - J

Apart from experts, what kind of resources do you think you will need to complete this process?

02:18:12 Speaker 3- IR

Maybe a database on on materials I don't know. Yeah.

02:18:16 Speaker 4-FR

Yeah, like in this part, right? the research.

02:18:27 Speaker 4-FR

Maybe also something for inspiration to rethink.

02:18:38 Speaker 4-FR

Yeah, because I think this could be also just a database right where you can actually find 1 to 1 alternative materials and suppliers that this one maybe is a bit something, a bit more abstract.

**02:18:49 Speaker 2 - SO**

**I would actually like to be able to search for features because then you're not putting in materials specifically, but you're putting features and then based on the features you get options.**

02:19:05 Speaker 1 - J

Because I was very curious about this stuff that you mentioned here, like checking if any of these alternatives don't cause any other issues. So I'm very curious how you managed to do that without getting into a phase where you already have some form of concept.

02:19:24 Speaker 1 - J

And you already know how you're going to be using that material, that new material or how you're going to be delivering the same function or something?

02:19:36 Speaker 2 - SO

I imagine that here we do it on the material level first.

02:19:41 Speaker 2 - SO

So we also need the information maybe on that material and the impact it has different stage of the process I would say and probably we'll need to do it again once we have a more clear concept... or product development.

02:20:03 Speaker 4-FR

. Yeah. So you don't want to start the full design process if you're not really sure that might be actually better.

02:20:09 Speaker 3-IR

Yeah, I can imagine it. In the end, you would probably indeed do this again. But then yeah, yeah.

02:20:18 Speaker 1 - J

Interesting. All right.

02:20:26 Speaker 1 - J

Yeah, I have. I have a little bit of a weird question and so so I have, I have it as like what what would be the ideal format, but what what do you think you would need from like we talked about tools and methods just earlier and you said like maybe I don't need a method to deal with substances of concern, but maybe we need tools.

02:20:47 Speaker 1 - J

Do you still see the same here? Like, do you still see? Yeah, I would need a tool in X step or yeah.

02:21:05 Speaker 3-IR

Well i think, we probably like kind of be in the same area as like the like the life cycle assessments like the general tools that are used.

02:21:17 Speaker 3-IR

But it is often that those are, are yeah databases that are not complete or you lack knowledge and therefore you cannot really make the right assumptions.

02:21:37 Speaker 3-IR

you have to make guesses right, you don't know any. Yeah. You don't know for sure. It's just like, yeah.

02:21:45 Speaker 4-FR

The reason why I I don't know if we need the method is because this is just the design process right? So I think it's like really specific for substances of concern.

02:21:59 Speaker 4-FR

But I think that we do these type of things any way for any project we work on.

02:22:02 Speaker 4-FR

Independently of whether it's about a specific topic or not, so this of course is a method, so this is what I would feel like would define as a method, but is also quite generic so there are some specific parts....

02:22:14 Speaker 2 - SO

I think this is where I would need tools and expertise....

02:22:19 Speaker 4-FR

So I think, yeah. So maybe again what we need is not the method I think with the method we can set it up as we do for other processes but we need these specific tools in specific parts of the method.

02:22:37 Speaker 2 - SO

I think those for me goes together. You need to find the material then and you need to find the impact and then probably here again. But it could be one solution, yeah.

02:22:48 Speaker 4-FR

And maybe so I think this is really the most important one maybe, but also.

02:22:53 Speaker 4-FR

Here right? So when we start to rethink then it will be nice to have some supporting. So, all right, how do we come out with something completely different?

02:23:03 Speaker 3-IR

But I'm thinking, like companies that do LCAs how do they approach it? They must get their information from somewhere right?

02:23:18 Speaker 4-FR

Yeah, but with LCA I don't know if it fully covers the substances of concern.

02:23:43 Speaker 1 - J

I have a question, when you have used LCA in in previous projects. Do you run a full LCA or do you have some form of fast track LCA that gives you indicators?

02:23:54 Speaker 4-FR

It depends.

02:23:56 Speaker 3-IR

I never did it.

02:24:00 Speaker 4-FR

Now, like we are teaming up with different parts of the company. So like in the project we did recently, then we run a full LCA yeah, but then it's not us. So it's not designers anymore but it's LCA experts.

02:24:11 Speaker 1 - J

and that LCA would like that full form of LCA is here, yeah. Or that is that for full form of LCA over there, where you have more information?

02:24:23 Speaker 4-FR

We do both

02:24:26 Speaker 4-FR

We do it here and usually we look at the current design.

02:24:29 Speaker 4-FR

And that's really frugal. And then we do it there and there often times we do it still at a relatively early stage. So there we cannot afford to do a full LCA because sometimes we still have a concept, right.

02:24:42 Speaker 1 - J

Yeah. So there's a lot of gaps.

02:24:45 Speaker 4-FR

Yeah. So you would then do the process, you will come up with the final design and then you can do another LCA.

02:24:50 Speaker 1 - J

And do you do you think when you have to compare like a full LCA with a fast track LCA and what kind of indicators it provides at the earliest stage? So there you're trying to decide like in which direction, what are your red flags.

02:25:04 Speaker 1 - J

let's call them like the the things that you really want to tackle. Do you think it's always necessary to go all the way into a detailed LCA?

02:25:13 Speaker 3-IR

in this case specifically it is only about one element in material, so maybe....

02:25:23 Speaker 4-FR

Well, I mean in this case, I don't even know if I would use an LCA

02:25:25 Speaker 3-IR

No. Yeah.

02:25:30 Speaker 2 - SO

You just. Yeah, you just need to understand where is the impact. Yeah.

02:25:35 Speaker 4-FR

Well, like you want to be sure to have reliable information, right? And I will be doing these cases not to really have like the decimals of an LCA, but at least to know right, what is the right cycle phase, what is the part that is and sometimes the results are so big right?

02:25:51 Speaker 4-FR

So you see, I don't know, 60% is impact in production of the electronics and then bah the rest?

02:26:00 Speaker 4-FR

So you know that even if we are working with very big assumptions, probably that's still going to be the key hotspot.

02:26:09 Speaker 1 - J

I asked because there's there's always like, there's many ways of doing LCA it right. Like there's ways of just doing, like Fast Track to find out a couple of, like, interesting points. You can go deeper and then maybe find a little bit more detailed information. And it's the same case with risk assessment and risk assessment. You can just be a little bit like.

02:26:27 Speaker 1 - J

OK, what's happening here and here and there in the lifecycle...

02:26:29 Speaker 1 - J

and you can go all the way up to like, OK, what's the exact dose to this part of the population that would be affected in case of ingestion?

02:26:42 Speaker 4-FR

I think the goal is to identify the hotspots, right? So if a higher level of detail can still allow us to define like PFAS in the jacket is the hotspots then that's it right?

02:26:56 Speaker 4-FR

We just need that right? and we don't even need the numbers, right? We just need something that points us towards the hotspots.

02:27:05 Speaker 4-FR

But then it has to be reliable, right? It's something that if we can use as a reference with the client, the client should not come back saying they do not trust the results.

02:27:14 Speaker 4-FR

because that's the problem with fast track LCA sometimes.

02:27:22 Speaker 1 - J

I can also imagine it depends on budget and time

02:27:40 Speaker 1 - J

Do you see any limitations? Do you see any barriers because you said something that I wrote down here, and it was like databases are not complete or you I not have the enough knowledge... Do you see any other barriers apart from these?

02:27:57 Speaker 4-FR

Time and budget. Honestly, I think that's really I think the key constraint then for most of the things we do like if we have the time and the budget we need, then I think we can deep dive. But if the budget is not there, then we cannot do it.

02:28:12 Speaker 3-IR

Yeah, sometimes there is no.

02:28:15 Speaker 3-IR

Knowledge or data about for example, like new materials, yet you don't know how it's going to what? Yeah, what it does in ten years or something like that. So I think kind of look into the future.

02:28:27 Speaker 3-IR

Yeah, yeah, because this this applies for everything, right?

02:28:34 Speaker 3-IR

No, but there's there. There has been products or or like solutions in the past that proved to be worse or as bad...

02:28:49 Speaker 1 - J

Yeah. So we, we we talked about like needing tools in specific stages. So for example here you talked about a tool where you can insert a certain function and then that gives you X&Y alternatives...

02:29:01 Speaker 1 - J

or different ways of doing it here but also in the assessment.

02:29:07 Speaker 1 - J

Do you have like any ideas on how you envision those tools? Like, do you think of formats that are more approachable?

02:29:17 Speaker 1 - J

Yeah, I don't know. Think about the disassembly map. This assembly map is just a bunch of instructions on how you do something...

02:29:37 Speaker 1 - J

It's a piece of paper that tells you this is how you do it.

02:29:43 Speaker 4-FR

Well, I think the the the key challenge I see compared to the disassembly map is that this is something that you probably want to keep updating over time, right? So it's not a static tool is something that it's always going to be changing. So you need to create the sort of repository sort of landing page or something where you can always go and check if there is a new version.

02:30:03 Speaker 4-FR

And then the biggest problem with tools is always that ideally you don't need any extra software, right? Because every time you need an extra software to use a tool and many companies are already opting out of it because then they have to buy the tool.

02:30:16 Speaker 4-FR

But then the alternative we have are for instance Excel, which is not the most exciting thing for designers.

02:30:23 Speaker 4-FR

But in excel you can do wonderful things. So if you're not busy, you can make great interfaces.

02:30:32 Speaker 2 - SO

I use excel well, but I would not use Excel for this.

02:30:36 Speaker 4-FR

Well, I mean it depends.

02:30:37 Speaker 2 - SO

I think I would make it smarter than excel.

02:30:45 Speaker 4-FR

I mean because if you want to put data in and then to get the list of suppliers then it's fine. If you want something to be more exciting than that, it's fine.

02:30:54 Speaker 3-IR

I think also the thing is that you also need to know hoe to use the tool.

02:31:01 Speaker 3-IR

I remember what was the school again like the material? Edupack, yeah, that one. Like, if you don't know how to use it, you're going to just take a random material and then yeah, yeah. Yeah. Then.

02:31:23 Speaker 4-FR

Yeah, I should be really straightforward.

02:31:26 Speaker 3-IR

Yeah. There, there, there can be misuse of the tool.

02:31:33 Speaker 2 - SO

Yeah, approachable and informative so you can make decisions.

02:31:36 Speaker 3-IR

Yeah. Yeah. And I think they they tried it in that tool the CES Edupack tool.

02:31:46 Speaker 3-IR

They're I think they have like levels, right? I think of level one to three and then you if level one is very basic, but then yeah actually never really. Yeah. Well you can pick. Yeah.

02:31:55 Speaker 1 - J

Yeah, because in level one, I think you can just go like thermosets and thermoplastics.

02:32:00 Speaker 3-IR

Yeah, I think you can go through like the general ABS General PP that just without any additives.

02:32:06 Speaker 4-FR

Yeah, but maybe that's also because that's you can use this for millions of purposes, right?

02:32:11 Speaker 3-IR

Yeah. So that's that's what I mean when I say you need to know how to use it. Otherwise it's it's not good.

02:42:05 Speaker 4-FR

Well, it's also about liability, right? Because with BOM check, I think it's also a way for companies to protect themselves. They use the platform BOM check officially takes I think legal responsibilities for the outcomes, right. And then what they simply do is upload the bond, then bond check tells you please, OK, this OK, this is not OK.

02:42:24 Speaker 4-FR

Then you simply rely on that, because I think if companies would do this themselves, then they are taking the legal responsibility.

02:43:04 Speaker 2 - SO

But is it something you can also capture somehow? Like I think you have?

02:43:10 Speaker 2 - SO

**You know, for how long the material has been out, right? Yeah. So you could also maybe somehow define like, OK, this is something we know and this is something we don't know because it's too recent, for instance.**

**\*\*precautionary principle based on how long this has been out there)**

02:43:30 Speaker 1 - J

What I am Developing is to have this thing called the precautionary principle, so if you can, you should collect as much information as you can

02:43:40 Speaker 1 - J

Yeah, done and is available, but if you do not have enough information on a new material, then you don’t use it or use it carefully. Maintain some form of control.