**Session 1 – Team 1**

1. **Discussion about methods. 9:24 - 22:10**

00:09:17 Speaker 1 -J

So now I'm gonna ask you both to present a little bit of what you wrote in there and then we start.

00:09:23 Speaker 2 - ST

Of course, I choose hotspot mapping probably you know it as well?

00:09:35 Speaker 3 - FL

I don't know it specifically.

00:09:38 Speaker 2 - ST

I can explain it. It's a it's a tool to make a product hierarchy and to determine how to build a product so it can be easily disassembled and circular. I've used a couple of times.

00:09:56 Speaker 3 - FL

Yeah, the one from F.

00:10:00 Speaker 3 -FL

OK.

00:10:04 Speaker 2 - ST

Why do I?

00:10:04 Speaker 2 - ST

Prefer this method because it gives concrete insights so it can really.

00:10:10 Speaker 2 - ST

Find specific.

00:10:13 Speaker 2 - ST

Components of product that can be redesigned to make it more sustainable, so it's really concrete and gives you a nice handle sort of conversation with clients.

00:10:25 Speaker 1 -J

Oh, because you also use it as a communication tool with your clients, OK.

00:10:28 Speaker 2 - ST

Yeah, but they're not using the tool.

00:10:30 Speaker 2 - ST

More the results of the tool.

00:10:32 Speaker 1 -J

Of the tool. Yeah. So you just communicate the results of the tool. You just go to your clients and like, OK, this is what we found through this process.

00:10:40 Speaker 2 - ST

Yes

00:10:42 Speaker 3 - FL

Yes

00:10:45 Speaker 2 - ST

Well, the concern is not everything is taken into account.

00:10:46 Speaker 2 - ST

So yeah, that's with every tool.

00:10:49 Speaker 1 -J

Yeah. Like what? What is not taken into account?

00:10:55 Speaker 2 - ST

To keep it general, it's like the design process is like multidimensional.

00:10:59 Speaker 2 - ST

And there's like a lot.

00:10:59 Speaker 2 - ST

Of ways to go about.

00:11:02 Speaker 2 - ST

Design and this is only like 1 aspect to make more.

00:11:08 Speaker 2 - ST

Like repairable and circular doesn't mean that it's going to be more environmental in the sense if you only if you can just throw it all way. In that sense, you have to have the additional conversation.

00:11:19 Speaker 1- J

OK.

00:11:20 Speaker 1 -J

Go do you use other methods to support it or?

00:11:24 Speaker 2 - ST

Yeah, I've also got General design process.

00:11:31 Speaker 2 - ST

But it's the second tool, so I don't.

00:11:32 Speaker 2 - ST

Know if we're gonna do something later.

00:11:35 Speaker 1 -J

No, you can tell me a little bit about it.

00:11:38 Speaker 2 - ST

Yeah, so this is more the iterative design tool that.

00:11:41 Speaker 2 - ST

We use at the agency.

00:11:42 Speaker 2 - ST

Which is.

00:11:44 Speaker 2 - ST

A way for us to offer different phases to our clients and you don't have to pay to do the whole thing and they can go into stages.

00:11:52 Speaker 2 - ST

And then every stage is like, yeah.

00:11:55 Speaker 2 - ST

Segments into certain type of activity and each activity can be measured if we finish a phase.

00:12:03 Speaker 2 - ST

And it starts from insights and strategy going into integrated concept into design, design for manufacturing, production preparation, and implementation.

00:12:13 Speaker 1 - J

Yeah, cool.

00:12:14 Speaker 1 -J

And I guess that not a single designer goes through.

00:12:18 Speaker 1 -J

The whole thing.

00:12:22 Speaker 3 - FL

Sometimes yes, it depends on the. Yeah, the colleague. Everyone is a designer with own different state.

00:12:31 Speaker 3 - FL

And some people do from the beginning to the end, or are in the middle.

00:12:33 Speaker 1 -J

OK, nice. Yes, that's nice. That's nice to know. OK, cool. Do you want to share your method? Yes.

00:12:42 Speaker 3 - FL

I really like drawing and visualization for the mine, so I make a lot of.

00:12:48 Speaker 3 - FL

I also use it for the design process. So what I'd like to do is make a context slash table map.

00:12:57 Speaker 3 - FL

But in a visual way of the words and then I create a visual of the context of the products or intended solution if don't have product yet and the influences are visualized as well as different users and their problems, for example.

00:13:16 Speaker 3 - FL

These are cooling containers, so it starts at the factory, and then it's packaged and then transported. And if you visualize it in this way, then OK, what are the?

00:13:32 Speaker 3 - FL

Yeah, things the requirements of the forecast goes through, but also the user what kind of users does it fit in this way you can visualize the gardens in one go.

00:13:42 Speaker 3 - FL

And also talk about it with clients.

00:13:44 Speaker 1 -J

Yeah, OK. And this is OK. Again, you get to communicate with clients.

00:13:50 Speaker 3 - FL

Yes, that's very important.

00:13:52 Speaker 1 -J

You get to communicate like a complex system.

00:13:55 Speaker 3 - FL

Yeah, and it is also for my own design process.

00:14:01 Speaker 3 - FL

Overview of things that you have to think of during the whole process.

00:14:04 Speaker 1 -J

Yeah. So it allows you to consider many things at the same time. Yeah. OK.

00:14:09 Speaker 1 -J

Cool. OK, these are really nice methods you chose. Nice. So now I'm just gonna ask you a couple of questions. Yeah, but I did a pilot of this session, and it was harder. Yeah, for sure.

00:14:28 Speaker 1 -J

Yeah. OK. So how do you think these methods?

00:14:31 Speaker 1 -J

This is going to be a little bit of a complicated question. How do you think the methods that you mentioned integrate in the design process?

00:14:40 Speaker 1 -J

So do you use them throughout the whole design process? You use them in a specific stage of the design process. What what are your thoughts about this?

00:14:50 Speaker 3 - FL

For me it would be at the beginning. It's it's very nice to have this the whole way through because when you get discussions later on with clients.

00:15:02 Speaker 3 - FL

Well, often things are lost. To say, oh yeah, we changed that. Why? But if you can just have a visual back up and it's like, oh yeah, you know, because in that stage....

Then it's in my head again and we can trace it to provide arguments later on.

00:15:21 Speaker 1 - J

OK.

00:15:22 Speaker 3 - FL

So maybe it's it is an ongoing tool but it's often not used because it takes a long time to adjust the visual.

00:15:28

00:15:31 Speaker 1 -J

Yeah. OK. But you do you adjust the visual later on, does it have net iterations?

00:15:36 Speaker 3 - FL

Yeah often in the beginning we have multiple iterations.

00:15:41 Speaker 2 - ST

Yeah. And then you go to the next stage.

00:15:43 Speaker 2 - ST

Or something. Then it's more.

00:15:46 Speaker 3 - FL

We yeah, we are restricted by budget. So when you're a student you get to do it more times.

00:15:52 Speaker 1 -J

Yeah, true.

00:15:55 Speaker 3 - FL

Often we don't get the chance to go back.

00:16:01 Speaker 2 - ST

Certainly though... it would be nice.

00:16:06 Speaker 2 - ST

Shall I take over? I think this is like very broad. So it's like overarching of the whole design process. It is actually the design process that we that we use, and then the hotspot mapping could be either at the beginning, if you want to have the product improvements where you have already something in mind you want to improve on.

00:16:21 Speaker 1 - J

Right.

00:16:26 Speaker 2 - ST

Or later in the process if you want to have like a validation of the the choice that you've made. Yeah. Like before the design for manufacturing stage.

00:16:37 Speaker 1 -J

Yeah. So you use it for.

00:16:40 Speaker 1 -J

As an assessment tool.

00:16:42 Speaker 2 - ST

Your own design or....

00:16:46 Speaker 2 - ST

A design that has been made in the past by same company.

00:16:50 Speaker 1 -J

Yeah. And when you use it as an, so actually I've only used it.

00:16:56 Speaker 1 -J

I teach this thing.

00:16:58 Speaker 1 -J

Yes, in one of the courses. Yeah. So this I've seen it used quite a lot in products that you want to improve indeed. And then you get all of this. I don't know, I.

00:17:10 Speaker 1 -J

Would call it like action points or attention points.

00:17:13 Speaker 1 -J

But then.

00:17:15 Speaker 1 -J

Yeah, I've never heard of it being used.

00:17:18 Speaker 1 -J

Afterwards. So like.

00:17:20 Speaker 1 -J

Previous validation just to make sure that everything is in place.

00:17:25 Speaker 2 - ST

On your own concept.

00:17:26 Speaker 1 -J

Yeah. So do you validate, do you assess your own concept?

00:17:29 Speaker 2 - ST

Yeah, like, not as early as I would like to, but yeah.

00:17:34 Speaker 1- J

OK.

00:17:34 Speaker 2 - ST

But what limits us sometimes is time.

00:17:37 Speaker 1 -J

Yeah. No, I understand.

00:17:39 Speaker 2 - ST

What is difficult with this tool is...

00:17:42 Speaker 2 - ST

It takes quite a lot of time to fill it in and

00:17:44 Speaker 2 - ST

Like the client has.

00:17:48 Speaker 2 - ST

The results are not known before, so it can also be like there's no actions coming out of it.

00:17:54 Speaker 1 -J

Yeah. And can I ask you very specifically if you always have enough data to fill it in for your concept?

00:18:04 Speaker 2 - ST

Yeah, that's more at the back end of the design process. So in that sense, I can fill it it no problem. If there's like more conceptual directions, then you don't have enough information. Yes, for sure.

00:18:18 Speaker 2 - ST

With a lot of the work that we do is actually engineering and making things ready for production. So in that sense, I think we have the information that we need.

00:18:26 Speaker 1 - J

OK, cool.

00:18:26 Speaker 2 - ST

If if you use it in the right process, sorry, the right phase.

00:18:27 Speaker 1 - J

Yeah, that's good to know.

00:18:32 Speaker 3 -FL

What is goodfor you to know.

00:18:35 Speaker 3 - FL

About ourselves, but maybe on terms of....

00:18:38 Speaker 3 - FL

The work that we do.

00:18:41 Speaker 3 - FL

You are also more in the.

00:18:43 Speaker 2 - ST

Yeah, I'm more on the engineering back end of the design process, so.

00:18:49 Speaker 2 - ST

We have a divided team within the agency

00:18:52 Speaker 2 - ST

Some people do both, but like mostly are people who are in the front ends. Conceptual use research, yeah. Developing concepts and visualizations.

00:19:01 Speaker 2 - ST

And then there's also a group at the agency who focuses more on the engineering and the design for manufacturing, technical concept.

00:19:09 Speaker 2 - ST

And I would be the latter.

00:19:09 Speaker 2 - ST

So more in the later part of the design process.

00:19:10 Speaker 1 - J

OK, and you are everywhere?

00:19:16 Speaker 3 - FL

Yeah, yeah.

00:19:18 Speaker 3 -FL

Right.

00:19:21 Speaker 3 - FL

Often contractual, but like all parts of technical conceptual, I would say, and I don't know how to make technical drawings.

00:19:31 Speaker 3 - FL

An injection molding detailing or that kind of things, but I would be the person who thinks of the mechanical and dynamic systems.

00:19:39 Speaker 1 - J

OK.

00:19:42 Speaker 3 - FL

Dynamic structures.

00:19:51 Speaker 3 - FL

Yeah, I'm not sure, part of the technical concept? I would say.

00:19:52 Speaker 2 - ST

Detail design?

00:19:57 Speaker 1 - J

OK.

00:19:58 Speaker 1 -J

Cool. Yeah. All right. And, well, the last question about methods, do you have very clear pros and cons? Like if you, well, actually let's focus on the cons, like if you had to pick one or two things that you really dislike about the method that you were talking about, what would that be?

00:20:21 Speaker 1 -J

Or that you would think like, oh, this could.

00:20:23 Speaker 1 -J

Be better.

00:20:25 Speaker 3 - FL

Takes time,? yeah, time is always an issue here. Yeah, the big Pro is, is very fun to make, for me.

00:20:34 Speaker 2 - ST

What I would say is like the....

00:20:41 Speaker 2 - ST

The method is not as detailed as I would like to.

00:20:44 Speaker 2 - ST

Yeah. So the...

00:20:46 Speaker 2 - ST

Restriction on the amount of choices that you have.

00:20:50 Speaker 2 - ST

And for like a lot of the time, that's fine, but sometimes you.

00:20:54 Speaker 2 - ST

Feel like this is.

00:20:55 Speaker 2 - ST

Like a little bit of a force fit.

00:20:58 Speaker 1 - J

OK.

00:21:02 Speaker 1 -J

All right. Do you do you, have you ever altered these methods because it feels like you have made your own method a little bit?

00:21:09 Speaker 3 -FL

Yeah. It's true.

00:21:10 Speaker 3 - FL

I think I think I combined Stakeholder mapping and context because it suits me better.

00:21:12 Speaker 1 -J

Yeah. Yeah. So it it feels like you just pick the best of the world that you needed and you made something nice out of it. I think it's cool. But have you ever modified this method to make it work?

00:21:30 Speaker 2 - ST

What what I do is I.

00:21:31 Speaker 2 - ST

Keep it in the back of my mind.

00:21:32 Speaker 2 - ST

And use it like that.

00:21:34 Speaker 2 - ST

So I don't really fill it in. I'm really like...

00:21:36 Speaker 2 - ST

I have the feeling of it.

00:21:38 Speaker 2 - ST

So in a way it's like...

00:21:40 Speaker 1 -J

OK.

00:21:40 Speaker 2 - ST

To ideate as a designer and then really fill it in.

00:21:45 Speaker 2 - ST

Like first time filling it in gave me insights that I could use later in the process without having to fill in the whole tool. More of a feeling.

00:21:50 Speaker 1 -J

Yeah. OK. So you don't need to all the information to already guide your little. OK, cool. That's nice to know. OK, well, we're done with the first bit...

00:22:06 Speaker 1 -J

Yeah, we're done with the first bit of the thing and I have question, do you want to take a break now or do you wanna take a break later?

1. **Discussion – Dealing with SoC. 37:02 – 1:09:00**

00:37:12 Speaker 1 -J

It's fine. We can jump to the next one. Cases in professional practice.

00:37:19 Speaker 1 -J

Have you encountered anything that you had to deal with in terms of substance of concern?

00:37:30 Speaker 3 - FL

Yeah, well, I did.

00:37:35 Speaker 3 - FL

Let's see.

00:37:37 Speaker 3 - FL

These kind of details on materials we also ask a supplier or injection molder because we are the designer, we are not experienced experts on these details.

00:37:49 Speaker 3 - FL

Often they will provide data sheets or something and I that's why I have come in contact with it. But.

00:37:57 Speaker 3 - FL

I've never, personally.

00:37:59 Speaker 3 - FL

Had to make choices here and maybe also because I didn't know what to ask and maybe after this session we'll know better what to ask.

00:38:06 Speaker 3 - FL

But I do know for the barrier for the new material, we used recycled fishing nets and I know there was a big problem because they're plastic and they soak up all the chemicals that are in the ocean. Yeah, it's really a hazard actually, to recycle it. And now they work with special suppliers to get these chemical out.

00:38:29 Speaker 3 - FL

Yeah, also for.

00:38:33 Speaker 3 - FL

Couple of projects we did for children. The supplier helped us choosing the right materials.

00:38:40 Speaker 1 -J

No. Yeah. And there's products that are very much regulated, right? So for example, for children products, yeah, you really cannot use anything. You just have to comply with.

00:38:55 Speaker 1 -J

X regulation and whatnot.

00:38:57 Speaker 3 - FL

Because actually for...

00:39:00 Speaker 3 - FL

The project mentioned, we were searching for textiles that were light.

00:39:08 Speaker 3 - FL

Very heat resistant, fire proof, but also recyclable, and that's like.

00:39:12 Speaker 1 -J

Two things that.

00:39:13 Speaker 3 - FL

Are of course standing in the way of each other.

00:39:20 Speaker 3 - FL

Also with these things are there are so many options and can have such detailed information that I cannot make a choice.

00:39:26 Speaker 3 - FL

And they asked the suppliers and they also didn't really know.

00:39:30 Speaker 1 -J

OK.

00:39:31 Speaker 2 - ST

Flammability is almost always a requirement.

00:39:35 Speaker 2 - ST

So yeah.

00:39:37 Speaker 2 - ST

And just specifying this in V0 specification.

00:39:41 Speaker 1 - J

OK.

00:39:42 Speaker 1 -J

So you go to your supplier most of the times..

00:39:43 Speaker 3 - FL

Yeah.

00:39:46 Speaker 1 -J

Cool. And you've never had, like, any assignments where you had to get rid of a certain substance of concern.

00:39:55 Speaker 3 - FL

No, not that specifically. Not that they gave us products. And then said take care of the problem.

00:40:04 Speaker 1 -J

Alright so.

00:40:05 Speaker 1 -J

Now we're going to I'm going to make you fill another fun form. It's going to be very nice.

00:40:14 Speaker 1- J

Here you go.

00:40:16 Speaker 1 - J

OK.

00:40:16 Speaker 3

We are going to talk about...

00:40:18 Speaker 1 -J

Dealing with substances of concern in products, so I'm going to give you a little bit of time to go through those questions.

00:40:31 Speaker 1 -J

If you have questions.

00:40:32 Speaker 1 -J

Or they're not clear. Just let me know.

00:40:36 Speaker 1- J

It's also just to let you think a little.

00:43:54 Speaker 1 - J

Yeah. Do you need more time? No, no. OK, cool. Alright, then. Let's go into our discussion time.

00:44:08 Speaker 1 -J

OK, cool. So I answered these questions are a little bit cryptic and that we cannot really get to a point.

00:44:17 Speaker 1 -J

Yeah, research is a little bit weird in that way because I'm not allowed to bias you.

00:44:23 Speaker 1 -J

Which was not weird. It's just what it is, but OK, so I wanted. I really wanted to discuss with you, to understand. What do you think our role as designers is?

00:44:37 Speaker 1 -J

When dealing with substance of concern, so that means like how far, like, where do we start like, where are we involved and how far can we go?

00:44:48 Speaker 3 -FL

Want to start?

00:44:54 Speaker 2 - ST

That's different than this question, right?

00:44:57 Speaker 1 -J

A little bit different, yes.

00:44:59 Speaker 2 - ST

OK.

00:45:02 Speaker 2 - ST

How far do we go as designers? I think we have a big responsibility that we have to pick the right materials, but we are not actually the ones specifying it most of the time.

00:45:13 Speaker 2 - ST

We do that specification from inputs from either clients manufacturers

00:45:22 Speaker 2 - ST

Other relevant parties, and I think how we can deal with substances of concern in the correct way, is to have more knowledge about what is actually dangerous.

00:45:31 Speaker 2 - ST

What is the concern?

00:45:34 Speaker 2 - ST

In that sense, we can have like a qualitative conversation about the options that are out there.

00:45:41 Speaker 2 - ST

Pick the right one.

00:45:43 Speaker 2 - ST

I think right now for me at least...

00:45:48 Speaker 2 - ST

I don't have that knowledge at hand and in that sense it's difficult to pick the right material because I don't know what it is. And like manufacturers, they I can always ask them. But then I'm like very dependent.

00:46:08 Speaker 2 - ST

Dependent on the manufacturer to give me the right material.

00:46:20 Speaker 3 - FL

Yeah, I do think we have the to obligation inform and teach our client.

00:46:24 Speaker 3 - FL

Because...

00:46:28 Speaker 3 - FL

It's also in terms of sustainability, as we're talking about, we also have to teach our clients because they don't know something exists, for example.

00:46:37 Speaker 3 - FL

We have these things limit us because yes, we also don't know right now00:46:42 Speaker 3 - FL

But I do think it is our obligation, and maybe indeed ask the right questions, ask about it. If the supplier is offering you something...

00:47:00 Speaker 3 - FL

Or...

00:47:00 Speaker 2 - ST

Yeah, what's the rationale behind it?

00:47:03 Speaker 2 - ST

I also wrote that we have to look at the underlying causes of the concerns.

00:47:10 Speaker 2 - ST

So maybe there's like some general rule. It's well, if you have a material and you want it to be more soft touch or something, then the additives is almost always a substance of concern, something like that.

00:47:30 Speaker 1 - J

Yeah, I understand. Yeah.

00:47:31 Speaker 2 - ST

Really, there's an intuitive guide...

00:47:36 Speaker 3 - FL

Regarding the material choice also, it depends if you determine conceptual choice early on, then is solved. Then you have already made the choice, almost. Then it is harder to convince your clients to go in the other direction because you determine specific concepts.

00:47:51 Speaker 2 - ST

Yes, then we have presented it and the client likes it, and then later on you are like oh, \*\*\*\*, we have to make it soft and there are additives in it.

00:48:02 Speaker 1 -J

So we have, it would help you.

00:48:03 Speaker 1 -J

To have form of map of materials.

00:48:07 Speaker 2 - ST

Yes, yes, yes, that's what we say every time.

00:48:15 Speaker 2 - ST

Of course, it's really difficult. We can see but.

00:48:19 Speaker 2 - ST

Maybe there are some generalizations that can be made that that will help us in determining the right direction.

00:48:27 Speaker 1 -J

OK, so so far I heard that the responsibility is.

00:48:34 Speaker 1 -J

Make a good material choice.00:48:37 Speaker 1 -J

Or an informed material choice, and get that information from the supplier. So it would be our responsibility as designers to talk to the supplier about these things.

00:48:47 Speaker 3 - FL

Our clients are probably not going to, so we need to do it.

00:48:48 Speaker 1 -J

Yeah, yeah. OK, cool. What else? Apart from and now I'm getting to the question of the paper.

00:49:02 Speaker 1 -J

What else can designers do about substance of concern? So can we.

00:49:07 Speaker 3 - FL

I think when we are redesigning products with the clients, sometimes projects start with a current product, not always. We can try to identify the areas that probably contain SoC.

00:49:25 Speaker 3 - FL

And then.

00:49:27 Speaker 3 - FL

Yeah, inform our clients and maybe we can also push this into the project.

00:49:34 Speaker 2 - ST

Yeah. Well, I think like the main aspect is...

00:49:36 Speaker 2 - ST

That we need to have a lot of knowledge gained and then look the right way, then we can do something that's substantive concern.

00:49:47 Speaker 1 -J

OK and.

00:49:50 Speaker 1 -J

What about the things that you need to be able to deal with substance of concern? So you mentioned information about materials.

00:49:57 Speaker 1 -J

Do you need other forms of information?

00:49:59 Speaker 3 - FL

It would be nice to.

00:50:01 Speaker 3 - FL

I think that you already mentioned it.

00:50:03 Speaker 3 - FL

SoCs that are commonly used in specific materials for more specific products, because then you know to be alarmed if you go into certain concept direction. OK, now we have to mind that we steer away from these things.

00:50:19 Speaker 2 - ST

Yeah, and during the conceptual phase. There's like a lot of freedom to have that choice.

00:50:23 Speaker 2 - ST

So if we really....

00:50:26 Speaker 2 - ST

Want to stay away from "soft touch", we can actually do that if we have, if we are early enough in the design process.

00:50:34 Speaker 2 - ST

It gets harder and harder when you go further into the process and you go more towards later stages then such alterations become more difficult.

00:50:45 Speaker 3 - FL

And maybe commonly good replacements or alternatives that are already available. If they are, yeah.

00:50:52 Speaker 1 - J

So if they exist, you want to know about them.

00:51:00 Speaker 1 -J

Very demanding list of things, is that all you need? Like information, we need a couple of tools about materials and whatnot. Is there anything you need from other stakeholders like?

00:51:20 Speaker 1 -J

You need to communicate with.

00:51:21 Speaker 2 - ST

I think.

00:51:23 Speaker 2 - ST

We can convince a lot of stakeholders if we actually have a good story about sustainability.

00:51:29 Speaker 1 -J

We need numbers.

00:51:31 Speaker 3 - FL

If I'm gonna define if one is better than the other? Are there? Like, is there like a rating or score of how bad a substance is?

00:51:40 Speaker 3 - FL

Can we quantify it or are they all bad or is the one less worse than the other?

00:51:44 Speaker 3 - FL

medium concern? high concern?

00:51:54 Speaker 1 -J

Yeah, it's, it's it's a little bit like that. You can quantify it. So you can do a risk assessment on the substance.

00:52:09 Speaker 1 -J

And you have to look at how emissions occur and who is exposed to to to those missions so.

00:52:20 Speaker 1 -J

That that's usually.

00:52:21 Speaker 1 -J

How normal risk assessment works and then you're gonna have different.

00:52:29 Speaker 1 -J

Well, whether concern is big or not big?

00:52:32 Speaker 1 -J

Depends on who is exposed and it depends on many different things. But for example, in the case of children, children's metabolisms just work completely different than adult metabolisms, so it's just not a matter. It's not only a matter of size, but it's also a matter of how quick they can process whatever substance goes into their bodies.

00:52:50 Speaker 1 -J

So that's why if you put X substance in a product that is going to be near children.

00:53:03 Speaker 1 -J

Then yeah, you really have to be very careful.

00:53:05 Speaker 1 -J

It's different. In the case of adults.

00:53:08 Speaker 1 -J

So maybe if you put it in a product.

00:53:11 Speaker 1 -J

That is only going.

00:53:12 Speaker 1 -J

To be in touch with adults then, that's a little bit less risky.

00:53:17 Speaker 2 - ST

You have.

00:53:21 Speaker 2 - ST

Until a certain extent you have like influence on that, but on the other hand, like if we design products, we have an intended design or intended use case.

00:53:32 Speaker 2 - ST

But a lot of the times are not going to be used like that.

00:53:34 Speaker 1 -J

Yeah, that's right. And when you talk about, yeah, thinking about products for the circular economy and whatnot. And then you put them back and then you did decide to put the substance of concern because that was safe for your particular product. That product is still going to go somewhere.

00:53:53 Speaker 1 -J

And if it's recycled into just the open loop. Then yeah, those substances are going to end up somewhere.

00:54:00 Speaker 1 -J

So indeed it's it's difficult to to give you....

00:54:10 Speaker 1 -J

Yeah, like very, very simple rules of thumb because products are so diverse and materials are so diverse and chemicals are way more diverse. So you when you when you put together all of those elements, you have to, yeah, look at what the situation is for yourself.

00:54:28 Speaker 1 -J

But we will get into that.

00:54:31 Speaker 1 -J

We will get into that, actually not in this session, but after this session I will already give you the sort of like the method that I came up with. So you will have now access to the thing that I made. Yeah. And then, yeah, I didn't want to send it before because I actually.

00:54:52 Speaker 1 -J

Want to pick your brains up a little bit first, but you will you. I will give you more information about this. That will be a little bit more. Yeah, reassuring. Or I don't know. We'll see.

00:55:07 Speaker 1 -J

Maybe you hate it. Hopefully you won't.

00:55:14 Speaker 1 -J

Yeah. So we talked about the necessary information. Do you think you do you think you need any knowledge, do you think you need to be?

00:55:24 Speaker 1 -J

Is there any necessary knowledge? Yeah, yeah, or what?

00:55:28 Speaker 2 - ST

Yeah, what the actual substances are?

00:55:33 Speaker 2 - ST

How to use risk assessment.

00:55:36 Speaker 1 -J

OK. Do you think you need to know how to do a risk assessment?

00:55:41 Speaker 2 - ST

Yeah, maybe.

00:55:42 Speaker 2 - ST

In this specific context it is very different than than the other risk assessment, yeah.

00:55:51 Speaker 1 -J

Do you do you do any forms of risk assessment here? Yeah. And do you have risk assessment expert around or do you have to?

00:56:03 Speaker 2 - ST

No, I think like.

00:56:07 Speaker 2 - ST

Two colleagues of ours.

00:56:08 Speaker 3 - FL

So for example on the medical advice.

00:56:12 Speaker 2 - ST

Yeah. Yeah. So we do like a failure mode analysis.

00:56:22 Speaker 2 - ST

Well, what we do is like we look at all the different ways you could misuse the products.

00:56:32 Speaker 2 - ST

So this is lying more towards.

00:56:35 Speaker 2 - ST

We look at all the different ways you could misuse the product.

00:56:41 Speaker 3 - FL

And how often it will get misused.

00:56:47 Speaker 2 - ST

For example, within the like for children, you also have like those rings. Yeah, if you can put a part of your product through it then it will not be able to have the certain kind of certification because children can actually swallow it.

00:57:01 Speaker 1 -J

Yeah. OK.

00:57:03 Speaker 2 - ST

Yeah. So there's like.

00:57:04 Speaker 2 - ST

A lot of things, but it's mostly.

00:57:07 Speaker 2 - ST

Mechanical and like.

00:57:11 Speaker 2 - ST

Being restrained or being caught up in like in a certain motion like those, those kinds of risks.

00:57:19 Speaker 1 -J

Yeah. So it's mostly just predicting what the hell can happen with these things. Yeah, OK.

00:57:25 Speaker 1 -J

Cool, alright.

00:57:31 Speaker 1 -J

Do you think there is a need for a method or for a for something to help for designers deal with substances of concern?

00:57:44 Speaker 3 - FL

Yes, methods or information base.

00:57:47 Speaker 1 -J

Methods or information. What would be the difference?

00:57:52 Speaker 3 - FL

One would be more maybe a list of information, for example, the other one like a table you could fill in.

00:58:00 Speaker 1 -J

Yeah. So the method would be like a.

00:58:02 Speaker 1 -J

Table you could fill in or.

00:58:04 Speaker 3 - FL

Yeah, that's how I see methods, but yeah.

00:58:15 Speaker 2 - ST

I think like information is really good, but then.

00:58:18 Speaker 2 - ST

The methods will.

00:58:21 Speaker 2 - ST

Make it easier to get to the right information, so in that sense everything is always good to have. OK good ways for people to.

00:58:29 Speaker 2 - ST

Get easy access to information that they don't know that they don't have at that point, yeah.

00:58:41 Speaker 1- J

I want people to use it but.

00:58:44 Speaker 1 -J

Yeah, OK, cool.

00:58:49 Speaker 1 -J

Yeah. One last question before we. We're actually going very fast through the questions.

00:58:52 Speaker 3 -FL

Can I add something maybe?

00:58:54 Speaker 3 - FL

Maybe the difference between the method and the list of information, because sometimes you get like like quick LCA tools, for example, yeah, and you get a drop down list. I actually really like what is behind the things that you choose. What are the other options and what are the differences then.

00:59:12 Speaker 3 - FL

So what I personally also like next to a method that you can have an overview that you can pick or read through yourself so you know if you go right but what you are not choosing does that make sense?

00:59:25 Speaker 3 - FL

Yeah. So that would be in addition to a method that you also, get a separate list or something.

00:59:34 Speaker 1 -J

Yeah. So you mean like?

00:59:38 Speaker 1 -J

Yeah. So your method would be your way of understanding the situation, yeah.

00:59:44 Speaker 3 - FL

Yeah like easy, quick.

00:59:47 Speaker 1 -J

Oh the camera stopped recording.

01:00:05 Speaker 1 -J

Sorry you were saying? So the the method would be a way to understand the situation and then you would also want to have some form of recipe of like, a little bot like the material thing we were talking about.

01:00:28 Speaker 1 -J

If you go for some things, then you're probably going to encounter this and this and these problems.

01:00:33 Speaker 3 - FL

Yes, but also if you have a table like you will have all that information separate of what the table is based on.

01:00:41 Speaker 3 - FL

So that you can navigate the information like a Wikipedia. Yeah. Yeah. OK well, like if you have, like pieces where I think I'm not sure it could be either this or that. If there's a big difference in that answer and in you end result, then that's....

01:00:55 Speaker 2 - ST

Yeah, you could actually do the wikipedia.

01:00:56 Speaker 2 - ST

And just all kinds of articles about substance of concern.

01:01:02 Speaker 1 -J

Maybe. Yeah. Yeah. I think that would be an interesting one.

01:01:10 Speaker 1 -J

Yeah, yeah. OK, cool.

01:01:17 Speaker 1 -J

Last question is what do you think are the potential barriers for dealing with substances of concern?

01:01:22 Speaker 1 -J

So what do you think is going to be difficult?

01:01:26 Speaker 3 - FL

Well, like you already mentioned, there's no one answer.

01:01:29 Speaker 3 - FL

And that's also the same case for sustainability.

01:01:32 Speaker 3 - FL

People here in the office just keep asking me.

01:01:34 Speaker 3 - FL

Can you just make a list that we can use?

01:01:36 Speaker 3 - FL

Just to call it alrigth.

01:01:37 Speaker 2 - ST

Exactly what we are asking you to do.

01:01:37 Speaker 3 - FL

Exactly what we are asking...

01:01:47 Speaker 3 - FL

I know it's so annoying, because then I have all these arguments of why there isn't a list, but people keep asking you for one.

01:01:59 Speaker 2 - ST

Yeah. And I think also sometimes there is no alternative. Yeah. So in that sense, we just have to specify it.

01:02:10 Speaker 3 - FL

Make it a vote, choose other materials.

01:02:19 Speaker 3 - FL

wood, cotton, wool.

01:02:28 Speaker 2 - ST

All right. I was thinking about all of these inflatables.

01:02:31 Speaker 2 - ST

Those are pretty bad as well.

01:02:41 Speaker 2 - ST

Unicorn Unicorn floaties. Ok, sorry.

01:02:46 Speaker 1- J

No, it's OK, it's OK. But it's.

01:02:50 Speaker 1 -J

You're not wrong. They are pretty bad.

01:02:56 Speaker 3 - FL

Is it in the top layer then?

01:03:01 Speaker 1 -J

Yeah, most of many of them are made of PVC and to make PVC flexible you need a plasticizer and depending on the plasticizer they use, they may or may not be bad, so there is not so bad plasticizers out there, but the cheapest ones and the common most common ones and also the ones that make the manufacturing easier are the shitty ones.

01:03:30 Speaker 2 - ST

But what's maybe nice to add to this conversation is that for us specifically, we design a lot of products that have a lot of complicated mechanisms in them and a lot of different materials. What we find is that the build materials that cost for all the plastics are like...

01:03:58 Speaker 2 - ST

Almost non existent in comparison to all the other materials and processes that need to be done. For example, an injection molded part like this can just cost like $0.05, but then in the context of the whole product, $0.05 is nothing. So if this like if the price of the material is 20% higher or even 50% higher, it will still not have a lot of impact on the final cost price.

01:04:22 Speaker 2 - ST

No, that's that's. But that's really that's good. But that's really specifically to the work we do because of course there are also a lot of design agencies who make new shampoo bottles and then it's probably a bit different.

01:04:35 Speaker 1 -J

Yeah. So you have a little bit more flexibility.

01:04:40 Speaker 3 - FL

Yes, because we make more high end products that are mostly used in B2B cases.

01:04:46 Speaker 3 - FL

Yeah, like medical products or for industries itself, not always.

01:04:55 Speaker 3 - FL

But, it gives us space.

01:04:57 Speaker 1 -J

So production volumes are a little bit lower. Yeah. OK, yeah. Cool. Yes, that's interesting, actually.

01:05:06 Speaker 1 -J

So that wouldn't be a barrier, but that.

01:05:08 Speaker 1- J

Would be a barrier for.

01:05:09 Speaker 1 -J

People who do other types of products.

01:05:11 Speaker 2 - ST

Yeah. And then.

01:05:15 Speaker 2 - ST

At this design agency we want to make a product that works in the beginning.

01:05:18 Speaker 2 - ST

So that's most important and then optimizations, cost down, engineering will mostly be done....

01:05:25 Speaker 2 - ST

Sometimes with us, but most of the time with the client itself, their internal team, they will look at these aspects.

01:05:32 Speaker 1 -J

Yeah. OK. Yeah. So you don't look into all of the details for, at least for optimization.

01:05:42 Speaker 2 - ST

Yeah well, we can put a product on the market that works that is not optimized yet because it takes a lot of time. But that gives us a little bit of flexibility to choose the materials that are maybe a little bit more expensive, yeah.

01:05:57 Speaker 1 -J

OK, but then...

01:06:03 Speaker 1 -J

That that would be a form of it would be a form of barrier. If you spend all this time researching the type of material that is not going to include the substance of concern to then just go to your client and they're gonna go like they chose this material but we are going to use the other one even if it includes the potential SoC.

01:06:21 Speaker 2 - ST

In the end, if we don't communicate it good enough for they also have the freedom to do that of course.

01:06:30 Speaker 3 - FL

In the end the client makes that decision, yeah. It is not our product.

01:06:35 Speaker 1 -J

So what do you think would make a a client really understand the problem or the severity of the problem of the substance of concern?

01:06:46 Speaker 2 - ST

I think if we if we have good rationale.

01:06:52 Speaker 2 - ST

We can convince clients with if we say like, well, maybe this is better material and maybe this will have less substance concern. Then the story is not strong enough.

01:07:04 Speaker 3 - FL

Yeah, but if we are really convinced that it's better, then we can just say no, we don't use this because this is bad. More of a fact.

01:07:12 Speaker 2 - ST

And and it would be better if.

01:07:17 Speaker 2 - ST

We get a lot of arguments, like in our decision like, yeah, we say this is why it's bad because we're seeing here, blah blah....

01:07:24 Speaker 3 - FL

We talked to an expert....

01:07:33 Speaker 2 - ST

And then the story can also be internalized by the client.

01:07:37 Speaker 2 - ST

To convince themselves of what's good, and they can also spread the word. There's also a part of us that like this or rationale, is also important to tell, because otherwise, maybe we say, well, we don't use this because of it's bad for you. And then we leave at that.

01:07:54 Speaker 2 - ST

Maybe the company will not know how important that consideration is.

01:07:58 Speaker 1 -J

Yes. Do you ever use?

01:08:04 Speaker 1 -J

Yeah. Regulation as a guideline on what to do or what not to do?

01:08:21 Speaker 3 - FL

But we do know it should be for example repairable...

01:08:26 Speaker 3 - FL

Actually, these are all very focused again for the same reasons for our projects.

01:08:30 Speaker 3 - FL

Because the projects that we do are often the ones that have more value and are repaired more often.

01:08:39 Speaker 3 - FL

They are not single use or the cheap products.

01:08:43 Speaker 2 - ST

Yeah, we don't use, we don't do those. We only make like complex.

01:08:50 Speaker 2 - ST

Products mostly.

01:08:52 Speaker 2 - ST

And that have to be repairable, yeah.

01:08:55 Speaker 1 -J

Cool because of the.

01:08:56 Speaker 1 -J

Business to business aspect that also helps and so yeah.

01:08:59 Speaker 2 - ST

And costs and those are expensive products. So if you if something breaks and you just throw it away, there's not OK.

1. **Proposed process. 1:30:00 – 1:56:00**

01:30:58 Speaker 2 - ST

OK. So it's essentially it should look like there's a few steps within every step an action.

01:31:06 Speaker 2 - ST

Yeah, an action can be either gain information, talk to stakeholders or apply the theory.

01:31:12 Speaker 1 -J

Yeah, exactly.

01:31:25 Speaker 2 - ST

So step one start.

01:31:29 Speaker 3 - FL

My first thought would be OK what are the main risk for this product with people?

01:31:35 Speaker 3 - FL

And then I would say this one. For example, there's the risk of skin contact or washing.

01:31:43 Speaker 3 - FL

Some other things, so I would...

01:31:46 Speaker 3 - FL

Divide the risks of the PFAS in this project, then define ideation things.

01:31:53 Speaker 3 - FL

Find alternatives or you know, total different product functions that we can go about.

01:32:02 Speaker 3 - FL

Maybe moving the PFAS away from the body or the hazardous parts. Or like rethinking the total product identity to people that would be for me the first conceptual steps.

01:32:18 Speaker 2 - ST

The first one is to know hat PFAS actually is...

01:32:26 Speaker 3 - FL

So starts with.

01:32:29 Speaker 2 - ST

Desk research. Nice.

01:32:33 Speaker 2 - ST

Right. And then go into what you said...

01:32:43 Speaker 2 - ST

And then alongside talk with customer.

01:32:46 Speaker 3 - FL

Because the task would be to redesign or or just do this case and do anything to make better?

01:32:52 Speaker 1 -J

Yeah. It's just to make it better so you can decide how far you can go. You want to go. So do you just wanna make it a little bit better? Do you want to go all the way to eliminating the PFAS? You can decide where you wanna.

01:33:07 Speaker 2 - ST

And then the wild card would be the client.

01:33:20 Speaker 2 - ST

Because they it's like how far you want to go is.

01:33:25 Speaker 2 - ST

Partly to us, what we think is feasible those.

01:33:28 Speaker 2 - ST

But it is really the decision of the client in some sense?

01:33:31 Speaker 2 - ST

So that's the wild card, because we can have.

01:33:33 Speaker 2 - ST

An ambition.

01:33:35 Speaker 2 - ST

The client can say otherwise, yeah.

01:33:42 Speaker 2 - ST

It's like first gained a lot of information, right?

01:33:44 Speaker 1 -J

Yeah. Then the step one, assessing the product?

01:33:51 Speaker 3 - FL

General information.

01:33:53 Speaker 2 - ST

Context sketch and desk research.

01:34:05 Speaker 3 - FL

And then problem definition.

01:34:14 Speaker 3 - FL

The classic double diamond.

01:34:32 Speaker 3 - FL

And I think it will. I just described it can be like dividing it into parts but also different angles. So I think that's already in here. So then when we start ideation.

01:34:47 Speaker 2 - ST

Yeah, and the problem definition is with stakeholders.

01:34:55 Speaker 3 - FL

Yes, and also here...

01:35:01 Speaker 2 - ST

Because a lot of the times, like at the beginning of project project, we talk a lot with clients to get a feeling for the context because as a design agency you have a lot of context that can work on and the client mostly knows a lot.

01:35:16 Speaker 2 - ST

We do a lot of....

01:35:18 Speaker 2 - ST

Yeah, meetings to get to know each other and to see what that actually what's what is the question. You know the question.

01:35:26 Speaker 3 - FL

Yeah. So I would say with the stakeholders. We talk about the history of the products and their materials. So if they already try approach certain problems and define goals.

01:35:45 Speaker 3

What did you say? First we need to know what is PFAS?

01:35:50 Speaker 2 - ST

It's a good question, right? Yeah, I would seriously Google that just to.

01:35:54 Speaker 1 -J

You will be overloaded with information like you will drown ...

01:36:05 Speaker 3 - FL

What alternative materials are available?

01:36:07 Speaker 2 - ST

If we make that, then that's already ideation or not?

01:36:11 Speaker 3 - FL

Yeah, maybe you could. Yeah, often desk research is already part of the ideation because if we find the materials, the ideation is how can we use it and how can we not use it.

01:36:23 Speaker 3 - FL

But if you.

01:36:25 Speaker 3 - FL

Don't find alternative materials you have to remove things. Yeah. So I.

01:36:29 Speaker 2 - ST

I think maybe PFAS you can also split and analyze core functionalities.

01:36:36 Speaker 2 - ST

See if there's a way to either substitute that with a different material, or substitute to that with a different approach in your problem solving.

01:36:48 Speaker 3 - FL

So I think that would be ideation already, yeah.

01:36:50 Speaker 2 - ST

Ideation, right?

01:36:54 Speaker 3 - FL

Mindsets. That's on mindset.

01:37:02 Speaker 3 - FL

This is going great.

01:37:06 Speaker 3 -FL

Don't you think?

01:37:07 Speaker 2 - ST

So it's not funny. It's just like boring, right?

01:37:13 Speaker 3 - FL

We can also just go with only wildcards and then add steps.

01:37:21 Speaker 2 - ST

Maybe like the wild card would be in the beginning would be to set an ambition, ambitious ambition.

01:37:37 Speaker 2 - ST

Really really see if it resonates with your client because sometimes it does, yeah.

01:37:40 Speaker 1 - J

Yeah, yeah, maybe it does and they give you a bunch of money to do it, yeah.

01:37:51 Speaker 3 - FL

OK, then mindset will be.

01:38:03 Speaker 3 - FL

Here we get different mindsets that we can use for the ideation. So ideation mindsets would be.

01:38:14 Speaker 3 - FL

alternative functions.

01:38:20 Speaker 2 - ST

Really like first principles.

01:38:35 Speaker 2 - ST

What are the things we could actually solve and what are things are just?

01:38:40 Speaker 2 - ST

Yeah, like laws of nature.

01:38:44 Speaker 3 -FL

Right.

01:38:45 Speaker 2 - ST

No, but I mean it in a serious way like the constructural things like structure.

01:38:56 Speaker 2 - ST

Yeah, It is more mindset to approach the problem.

01:39:00 Speaker 2 - ST

To approach it in such a way as like first principles, see the division between what we could solve and what is actually given.

01:39:08 Speaker 1 -J

How would you find that out?

01:39:13 Speaker 2 - ST

you ask yourself a question, if you....

01:39:18 Speaker 2 - ST

First, you a have the feeling that could be solved and then you can also look at different products to see if they have solved the problem and then if there's like a multitude of ways it could be done then you know it is not impossible.

01:39:45 Speaker 3 - FL

It doesn't need to be a rain jacket. we can solve it with an umbrella..

01:40:00 Speaker 2 - ST

Then we go to prototype I think.

01:40:07 Speaker 2 - ST

But this is interesting because then we can either like within the prototype phase, we can either go different archetypes or we can go for example ask for samples of manufacturers and do like testing of functions.

01:40:22 Speaker 3 - FL

Both sides like concepting, prototyping samples.

01:40:26 Speaker 2 - ST

Yeah. Then we can also do like ask for samples and do some verification tests. For example, if it would be water resistance.

01:40:37 Speaker 2 - ST

In our context, yeah.

01:40:51 Speaker 3 - FL

Like prototypes to test sub-functions.

01:40:56 Speaker 2 - ST

And and FMEA analysis.

01:41:10 Speaker 2 - ST

What we could think could go wrong, like a risk assessment.

01:41:24 Speaker 3 - FL

Then go into concepts maybe?

01:41:30 Speaker 2 - ST

Yeah, we throw in the wild card.

01:41:53 Speaker 3 - FL

Test sub-functions and then create main concepts.

01:42:01 Speaker 2 - ST

Should we also do like quick?

01:42:06 Speaker 2 - ST

Meta scan of EU regulations?

01:42:12 Speaker 2 - ST

That can be part of desk research.

01:42:55 Speaker 2 - ST

Meta analysis.

01:43:09 Speaker 3 - FL

What are we meta analyzing?

01:43:13 Speaker 2 - ST

Regulations from the European Union and maybe some experimental.

01:43:23 Speaker 2 - ST

Companies working on new materials.

01:43:47 Speaker 3 - FL

Universities while we are at it? Researchers...

01:43:52 Speaker 2 - ST

OK.

01:43:54 Speaker 2 - ST

Do we need more in ideation?

01:43:56 Speaker 2 - ST

Ideation is super broad, right?

01:44:13 Speaker 2 - ST

First we diverge and then we go to create main concepts. Yeah, make 3.

01:45:05 Speaker 2 - ST

Then choose or combine and again create main concepts.

01:45:08 Speaker 2 - ST

Then we go validation.

01:45:20 Speaker 2 - ST

Or would you go first concepts and then maybe first prototyping?

01:45:27 Speaker 2 - ST

Because that's what you're validating, of course.

01:45:44 Speaker 2 - ST

Investigate competitors.

01:46:42 Speaker 2 - ST

Create main concepts and then do.

01:46:46 Speaker 2 - ST

Prototype, validation, testing, we can do like user testing.

01:46:50 Speaker 3 - FL

Information, maybe test results?

01:47:14 Speaker 3 - FL

Yeah. Here maybe.

01:47:16 Speaker 3 - FL

define promising areas.

01:47:22 Speaker 3 - FL

Promising sub solutions.

01:48:06 Speaker 2 - ST

validate testing with users with clients.

01:48:16 Speaker 1 -J

Make them enthusiastic.

01:48:35 Speaker 2 - ST

To do like a session with clients. How can we? type of questions.

01:48:57 Speaker 2 - ST

Explore together with them and then something like the far future, interesting one. And then we can really make them interested and involve them.

01:49:07 Speaker 2 - ST

So this would be a nice one to do in between I mean.

01:49:52 Speaker 2 - ST

Look for different funding.

01:50:05 Speaker 3 - FL

like applying for an EU subsidy

01:50:42 Speaker 2 - ST

Yes Delft is also close to you right?

01:50:50 Speaker 2 - ST

Other options for funding.

01:51:00 Speaker 2 - ST

And then you have like a lot of engineering.

01:51:15 Speaker 2 - ST

Yeah, maybe. Let's finish it, validating, testing.

01:51:20 Speaker 2 - ST

Design for manufacturing.

01:51:32 Speaker 2 - ST

Then we have talking to suppliers.

01:51:40 Speaker 3 - FL

Have your test with users and technical facilities.

01:52:09 Speaker 2 - ST

OK. then make agreements with suppliers. And now we have the start of an LCA

01:52:29 Speaker 2 - ST

We've designed something that we want to validate again.

01:52:38 Speaker 1 -J

There's another validation step. Yeah. And how is it different from the first?

01:52:44 Speaker 2 - ST

Here you test your main concept, like core functionalities, and in this you validate like your production tolerances howe well it's made what other changes need to be made.

01:53:13 Speaker 3 - FL

I'm thinking can we squeeze something more in in this area?

01:53:25 Speaker 2 - ST

Yeah. What are you more interested in?

01:53:26 Speaker 2 - ST

This part or this part.

01:53:29 Speaker 1 -J

What do you think you need for for the PFAS? What's more interesting for the case?

01:53:35 Speaker 2 - ST

So I think if we if we end up here, then we have a solution, right?

01:53:40 Speaker 3 - FL

Probably. I hope so.

01:53:42 Speaker 2 - ST

So maybe this would be more interesting.

01:53:44 Speaker 3 - FL

Maybe you can put this on the other phase.

01:54:01 Speaker 1 -J

Do you think you have everything you need? Like, did you talk to everybody? You needed to talk to?

01:54:11 Speaker 2 - ST

Well, we did user tests and we did desk research.

01:54:13 Speaker 2 - ST

We talked to the client.

01:54:19 Speaker 3 - FL

Talk to suppliers should be in here somewhere.

01:54:47 Speaker 1 -J

When you talk about validating, the main concept, are you talking about testing the main functionalities? Or are you also going to test whether there are still PFAS or?

01:55:03 Speaker 3 - FL

Yeah, I would say here we have prototyping subfunctions, so we can assess some materials.

01:55:12 Speaker 2 - ST

So hopefully we can phase out the PFAS in this. Yeah, if we cannot then we test here.

01:55:18 Speaker 2 - ST

How much we still....

01:55:22 Speaker 3 - FL

yes maybe that can be put in goals or something, like test for PFAS risks or something

01:55:45 Speaker 1 -J

So ideally you want to get the PFAS completely out, but then if that's not possible.

01:55:49 Speaker 1 -J

In the concept phase, you're going to test how bad the new PFAS situation is.

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

02:03:19 Speaker 1 -J

Yeah. So what did you think about the process was this, was it easy to come up with the process, how you would?

02:03:29 Speaker 3 - FL

I think this is what.

02:03:29 Speaker 3 - FL

We are trying.

02:03:30 Speaker 3 - FL

To do to come up with things to approach different projects.

02:03:36 Speaker 2 - ST

I think.

02:03:37 Speaker 2 - ST

The way we approach this is no different than any other, yeah.

02:03:43 Speaker 1- J

OK.

02:03:43 Speaker 3 - FL

This is how we do general things and then we come up with, OK, what specific things do we have to look into to tackle a specific problem?

02:04:00 Speaker 1 -J

In which, yeah, in which situations do you think you would use this process? Would it be like only in redesign?

02:04:14 Speaker 1 -J

Or could it also be? Would you also use it for a design assignment?

02:04:24 Speaker 3 - FL

Because actually the problem definition could be from problems with the current products, but it can also be the.

02:04:31 Speaker 3 - FL

OK, what do we want? What is the problem of the user? What do we want to solve?

02:04:35 Speaker 3 - FL

So I think it's applicable for both.

02:04:41 Speaker 3 - FL

But we did define it, of course, like materials and functions for PFAS. So yeah.

02:04:41 Speaker 3 - FL

But we did define it, of course, like materials and functions for PFAS. So yeah.

02:04:46 Speaker 2 - ST

And like these are super general and then we have like these are more fleshed out towards.

02:04:53 Speaker 2 - ST

Specific yeah.

02:04:57 Speaker 1 -J

So do you think it would just integrate because the way I see it, it just integrates into your normal design process, so you just have like bits and pieces of information that you need to consider as part of the bigger picture?

02:05:09 Speaker 2 - ST

Yeah, for sure.

02:05:12 Speaker 1 -J

Alright. And what do you think would be the?

02:05:19 Speaker 1 -J

Main goal of this process. So what would you want to achieve?

02:05:24 Speaker 3 - FL

I would the main question that I would want to answer is, are there other material options or do we have to look at the total function of the product differently to put the?

02:05:36 Speaker 3 - FL

Hazardous materials.

02:05:38 Speaker 3 - FL

On different places with different ways, so we can limit.

02:05:43 Speaker 3 - FL

Risk exposure.

02:05:46 Speaker 2 - ST

I think also one of the goals would be how to.

02:05:50 Speaker 2 - ST

Really have significant steps towards a PFAS free world

02:05:58 Speaker 2 - ST

We can do. We can walk through this process and have, like, an incremental innovation.

02:06:03 Speaker 2 - ST

We can have more radical.

02:06:07 Speaker 2 - ST

Solution that can actually inspire other others to do the same.

02:06:11 Speaker 1 -J

Yeah. And and which of the do do you think is attainable in professional design practice?

02:06:18 Speaker 2 - ST

Both, but they have totally different scope.

02:06:22 Speaker 1 -J

OK. And what what do they depend on like how?

02:06:26 Speaker 2 - ST

The ambition of client.

02:06:28 Speaker 3 - FL

The portfolio of clients, right?

02:06:33 Speaker 2 - ST

Frankly the amount of money, right?

02:06:38 Speaker 3 - FL

That's why subsidies could be interesting.

02:07:02 Speaker 2 - ST

Yeah, that would be awesome. Yeah. I think there are, like, different questions like, yeah, we have lots of subsidies.

02:07:12 Speaker 3 - FL

Yeah. We also have some for various projects.

02:07:16 Speaker 2 - ST

I think that's a really good way to facilitate.

02:07:19 Speaker 2 - ST

Innovation, yeah.

02:07:21 Speaker 1 -J

All right. Interesting.

02:07:26 Speaker 1 -J

Yeah, you define an order of steps that is very.

02:07:31 Speaker 1 -J

In line with your design process, do you see any other order of steps?

02:07:38 Speaker 2 - ST

If we could rearrange them.

02:07:41 Speaker 1 -J

Like, do you see any shortcuts? Do you see any?

02:07:44 Speaker 3 - FL

That would be during testing.

02:07:46 Speaker 3 - FL

If you can do all the testing of the materials in this stage.

02:07:49 Speaker 3 - FL

Or if it's already known then we can go easier into creating main concepts and ideation, and we can skip a few steps, by getting the right information, then we know what to do.

02:08:05 Speaker 2 - ST

And then from here, no, this cannot be cut out (detailing and engineering).

02:08:14 Speaker 1 -J

OK. But then the shortcut is from. If you identify that there are safe alternatives, yeah, then you would just go for those.

02:08:29 Speaker 3 - Fl

Or if the supplier tells us there is something, then we are done.

02:08:32 Speaker 2 - ST

Yeah, but then there will be like an incremental innovation.

02:08:38 Speaker 1 -J

OK. Can you tell me some of the steps like can you present it to me?

02:08:43 Speaker 2 - ST

Do you want to present in? or shall I?

02:08:45 Speaker 3 - FL

You can go.

02:08:45 Speaker 2 - ST

Yeah, step one desk research.

02:08:49 Speaker 2 - ST

desk research is like defining goals, getting to know the context, what are the risks what are alternatives?

02:08:57 Speaker 2 - ST

Then, problem definition and design goals.

02:08:59 Speaker 1 -J

Wait before, before you dive into what are the risks and what are the alternatives? Can I ask? Where do you think you could find this information?

02:09:07 Speaker 3 - FL

That information, I hope.

02:09:11 Speaker 3 - FL

In a table, if you're going to make it.

02:09:20 Speaker 3 - FL

Or at suppliers or on the Internet or in EU regulations. And if it's not there.

02:09:29 Speaker 3 - FL

We are not gonna solve it.

02:09:30 Speaker 1 -J

Yeah. Do you, can I ask you, when you when you do your research?

02:09:36 Speaker 1 -J

What kind of sources you use? Do you also use any form of scientific literature? Do you use?

02:09:43 Speaker 1 -J

Because I I see that you use for example this one and that you use you you mentioned an existing method and whatnot. Do you read into that work? Do you read into that research?

02:10:05 Speaker 3 - FL

For example, at the project that's last weeks into this and we were trying to define material that's recyclable and it fits all the specification. And then you get OK you go to the internet and you find like different companies that are recycling specific things and also as suppliers do you do you have experience with recycling? do you use recycled material as a base?

02:10:31 Speaker 3 - FL

And then you get a no or I don't know, yes, I think it's starting and then I got to...

02:10:38 Speaker 3 - FL

To work with a colleague of yours and then I got all these papers and things. But then, yeah, the main answer is it's can be done theoretically, but it's not done commercially. So it's not interesting for us right now, could be in ten years. But we are designing for them now.

02:11:00 Speaker 2 - ST

Yeah, there's a divide between the theory and the practice.

02:11:06 Speaker 3 - FL

I don't know how relevant it is for us right now if you want to put the projects on there right now, then you have to ask the suppliers that are already working on these things otherwise you get a paper you cannot use.

02:11:17 Speaker 2 - ST

Yeah, that's for example If we, if we are not the design agency but we would work for the client you are doing the project for...

02:11:26 Speaker 2 - ST

Then maybe that's more interesting because you get a lot more resources, a lot more time and a lot more focus on just one project.

02:11:32 Speaker 1 -J

Yeah. Yeah. So. So you think there's a limit to how much information design agencies can get to solve certain things or get certain insights?

02:11:44 Speaker 2 - ST

It's more that we have to work with practice.

02:11:51 Speaker 2 - ST

Not always. Yeah, not always, but.

02:11:54 Speaker 2 - ST

In general, yes, right.

02:11:56 Speaker 3 - FL

Yeah, yeah.

02:11:58 Speaker 3 - FL

Yeah. Now at the current part, it is not as crazy expensive because it's experimental

02:12:03 Speaker 2 - ST

Yeah, that's that's one of the drawbacks of the product and the design.

02:12:08 Speaker 1 -J

How do you imagine you would you would you would be able to verify that if let's say that you found a list of safe alternatives, how would you be able to verify it safe?

02:12:20 Speaker 3 - FL

Talk to.... I would talk to my suppliers.

02:12:24 Speaker 2 - ST

Yeah, I would do as well. I would do the same. I would just talk to them either the....

02:12:30 Speaker 2 - ST

Person or a company that made this, or other suppliers.

02:12:36 Speaker 1 - J

All right.

02:12:37 Speaker 1 - J

Cool. OK, what's the next step? Sorry.

02:12:41 Speaker 2 - ST

Problem definition and examples. So define the scope and the goals, look for funding, we had like end of the moon session with client.

02:12:54 Speaker 2 - ST

End of the end of the moon session.

02:12:55 Speaker 2 - ST

It's like I don't.

02:12:56 Speaker 2 - ST

Know if that's where the widely.

02:12:57 Speaker 2 - ST

Used phrase or term with this right?

02:12:59 Speaker 3 - FL

I don't know, it sounds, but.

02:13:01 Speaker 2 - ST

It's like how how to get to the end of the moon...

02:13:07 Speaker 2 - ST

Design methods where anything can be thought of.

02:13:11 Speaker 2 - ST

Think of something crazy, and if you do that with people, they actually become more loose and more like associate freely instead of them sticking within their own boundaries.

02:13:21 Speaker 1 - J

Yeah, this is like a brainstorming.

02:13:26 Speaker 3 - FL

And for the for the problem definition and design goals, we would also thinking...

02:13:30 Speaker 3 - FL

First principles like requirements or facts given by the context with things with clients and what kind of solution space are we looking into? Then we go to ideation.

02:13:42 Speaker 2 - ST

Yeah, the ideation is just integrate everything that you have learned so far into different concepts ranging from like very specific sub solutions to a more general concept.

02:14:02 Speaker 2 - ST

Alternative functions.

02:14:04 Speaker 3 -FL

Alternative materials.

02:14:05 Speaker 2 - ST

Different archetypes, is a good one. So client comes up with we want a rain jacket? and does need to be a rain jacket? That can be done in the ideation phase.

02:14:19 Speaker 2 - ST

Getting input from suppliers...

02:14:22 Speaker 2 - ST

Again, right, yeah.

02:14:24 Speaker 3 - FL

Yeah, continuously, when you bring in new materials, it's really important to just stay in the loop.

02:14:32 Speaker 2 - ST

Prototype sub functions, so that's is not the whole jacket, for example..

02:14:38 Speaker 2 - ST

Or just, can we get a sample of the material? Can we test this? If this is durable enough, water resistant enough? If it tests the right color, if it degrades with UV material testing but also....

02:14:54 Speaker 2 - ST

Can we get the right seemings for like the checking for example machine testing that?

02:15:02 Speaker 2 - ST

Or buttons, press buttons, all manufacturing questions....

02:15:07 Speaker 1 -J

Can I ask if you do all of these testing yourselves or if you ever collaborate with other testing facilities and like testing labs and whatnot? OK, cool.

02:15:18 Speaker 3 - FL

Yeah, but that's more maybe also more validation because then you get like bigger testing stuff like water tightness, things I know that's for the street lamps we called...

02:15:30 Speaker 3 - FL

Testing facilities. Yeah, yeah.

02:15:33 Speaker 1 -J

So that would be to get like a like a.....

02:15:35 Speaker 1 - J

Certificate right? Like to say like this is IP 50 something...

02:15:43 Speaker 3 - FL

Yeah, but we also collaborate more on doing... Elaborate calculations of certain things, yeah.

02:15:47 Speaker 2 - ST

But we're trying to do a lot of those things ourselves as well.

02:15:49 Speaker 2 - ST

Because you learn a lot from it.

02:15:52 Speaker 2 - ST

It can also inspire you to go a certain direction.

02:15:54 Speaker 1 - J

Yeah, cool.

02:15:56 Speaker 2 - ST

Yeah. Yeah. And so move fast and break things.

02:16:04 Speaker 2 - ST

It was a slogan from facebook, like a few years back.

02:16:07 Speaker 2 - ST

Move fast and break things. Not anymore, OK.

02:16:13 Speaker 3 - FL

Prototyping is also indeed getting some materials, and look into competitors, maybe.

02:16:19 Speaker 3 - FL

Yeah. Then we get results.

02:16:21 Speaker 3 - FL

Like define promising sub solutions or results of the PFAS risks that are still there or not anymore. And then we dive into, main concepts.

02:16:33 Speaker 1 -J

How would you? How would you assess that? How would you assess if there are still risks from the PFAS?

02:16:40 Speaker 3 - FL

Washed into water and then.

02:16:42 Speaker 2 - ST

Yeah, that's that's what we learn from the desk research, right? That's what we try to get here, so.

02:16:44 Speaker 3 - FL

Yeah, yeah, yeah.

02:16:48 Speaker 2 - ST

What are? What are the possible risks?

02:16:49 Speaker 2 - ST

And then we can.....

02:16:53 Speaker 2 - ST

Test if those possible risks with our prototypes.

02:16:55 Speaker 1 -J

Yeah, because I'm curious for like sustainability projects. Do you also ever?

02:17:00 Speaker 1 -J

Go all the way to requesting like an LCA or risk assessment and whatnot on a certain concept or a certain well, just more developed concept, or enough developed to.

02:17:16 Speaker 1 -J

Run on LCA.

02:17:22 Speaker 3 - FL

No we do it ourselves, at least the baseline, or clients, that's like really, of course you can get like really elaborate professional LCA

02:17:29 Speaker 3 - FL

Actually I have, sometimes they deliver an LCA of a past project..

02:17:35 Speaker 3 - FL

It's not really part for our design process.

02:17:45 Speaker 2 - ST

What's a little bit tricky if we do like an LCA in the beginning then.

02:17:50 Speaker 2 - ST

It can help us guide us towards the right direction, but it takes a lot of time, lot of cost. So maybe we want to go one step further and then LCA that.

02:17:55 Speaker 3 -FL

Yeah, yeah.

02:18:04 Speaker 1 - J

Right then next.

02:18:05 Speaker 2 - ST

Create Main concepts, Prototype concepts, prototype these. Mostly we don't make these ourselves. Sometimes we do, but mostly we find suppliers that actually are gonna make the end project for us and then ask them if they could prototype this for us

02:18:26 Speaker 2 - ST

Or we have some prototyping companies that can make high quality prototypes.

02:18:33 Speaker 2 - ST

And here we can do a lot of testing. So we have written down test for PFAS risk.

02:18:41 Speaker 2 - ST

But like ergonomics or durability or all kinds of things we can test with this, because this is quite close to the eventual product.

02:18:55 Speaker 2 - ST

And we still have the freedom to change things up so we don't have already all the molds and everything, then we can still change it.

02:19:09 Speaker 1 -J

And when you when you change things up, do you go all the way back to the three concept stage or do you go all the way back to ideation or?

02:19:20 Speaker 2 - ST

Yeah, yeah, it depends. But we we do a lot in this prototype. We do lots, we test sub assemblies and check if something didn't work.

02:19:30 Speaker 1 -J

All right, cool.

02:19:37 Speaker 2 - ST

Design for manufacturing, all the engineering, all the tolerances, talk to suppliers. Make arrangements about...

02:19:44 Speaker 2 - ST

About the cost about lead times, everything.

02:19:49 Speaker 2 - ST

Receive the first samples.

02:19:52 Speaker 2 - ST

And do another validation runs on these samples.

02:19:56 Speaker 2 - ST

Here we don't do user testing anymore, mostly just testing if everything still works and can be mass produced.

02:20:03 Speaker 2 - ST

Then we go to hand it over to the client.

02:20:06 Speaker 1 -J

OK, cool. Clear.

02:20:11 Speaker 1 -J

Alright, there's.

02:20:14 Speaker 1 -J

Two more questions because we already talked about resources.

02:20:20 Speaker 1 -J

Well, actually one more question about resources.

02:20:22 Speaker 1 -J

Do you think?

02:20:24 Speaker 1 -J

There are enough resources out there for you to get into the topic of substance of concern.

02:20:29 Speaker 3 - FL

I don't know.

02:20:30 Speaker 1 -J

You don't know, OK.

02:20:33 Speaker 2 - ST

No, I don't know either.

02:20:35 Speaker 1 - J

OK.

02:21:01 Speaker 1 -J

What do you think? Are limitations or barriers that you can find in there? Like what would be the main?

02:21:08 Speaker 1 -J

Barriers that you can expect.

02:21:09 Speaker 3 - FL

Which is, we don't know. We get often if you ask suppliers specific questions or for materials or recycling that they just don't know.

02:21:20 Speaker 1 -J

And what do you do when you don't know?

02:21:23 Speaker 2 - ST

We mitigate risk, so if they don't know, we mostly don't use it.

02:21:27 Speaker 1 -J

OK, so you just definitely don't not use it.

02:21:29 Speaker 2 - ST

Or we prototype it and find out ourselves.

02:21:32 Speaker 1 -J

OK, cool.

02:21:37 Speaker 1 -J

So that that's how you would deal with uncertainty. So if you.

02:21:42 Speaker 1 -J

If you ask your supplier be like OK, Are you sure there's no PFAS in here?

02:21:47 Speaker 1 - J

and your supplier was like well....

02:21:50 Speaker 3 - FL

I don't know.

02:21:51 Speaker 3 - FL

It depends on the risk, I think that's.

02:21:55 Speaker 3 - FL

Yeah, maybe what you're saying is not a definite no. Maybe sometimes it's bigger risk to not go for the material.

02:22:03 Speaker 1 - J

Yeah, yeah.

02:22:04 Speaker 3 - FL

It determines the risk cost factor

02:22:07 Speaker 2 - ST

Yeah, but we always try to have.

02:22:09 Speaker 2 - ST

As little risk as possible

02:22:12 Speaker 2 - ST

While still being creative.

02:22:15 Speaker 3 - FL

Or just tell the risks to the clients, and then...

02:22:19 Speaker 3 - FL

Also you just don't know until you produce it. You may still have problems in first series.

02:22:31 Speaker 1 -J

Yeah, OK, cool.

02:22:34 Speaker 1 -J

Yeah. OK, last question is.

02:22:39 Speaker 1 -J

Yeah. How how would you?

02:22:42 Speaker 1 -J

How would you like to have all of this information or resources and whatnot available to you?

02:22:51 Speaker 2 - ST

I think it would be super nice to have a material database and just possible alternatives.

02:23:00 Speaker 1 -J

Like the Safe alternatives list, kind of like.

02:23:03 Speaker 2 - ST

More general, maybe just some material database that says, well...

02:23:06 Speaker 2 - ST

These are the qualities these are the possible qualities when you add these additives, these additives could be harmful.

02:23:11 Speaker 2 - ST

If you want to have this kind of ...

02:23:17 Speaker 2 - ST

Material functionality. Look at this, or be careful with this.

02:23:22 Speaker 2 - ST

that would be super nice.

02:23:26 Speaker 1 -J

Well, right now you don't have a list of things that are good, but you have a list of things that are bad.

02:23:33 Speaker 2 - ST

I would rather have a list of things that are good.

02:23:36 Speaker 1 - J

Yeah, yeah, me too.

02:23:39 Speaker 1 -J

Yeah, yeah, I think also what I'm trying to ask is, for example, when you, when you work with the hotspot mapping, you have this like Excel thing that you just fill in. Is that ideal? Is that something that is that a format that you appreciate?

02:23:57 Speaker 2 - ST

I appreciate in the sense that gives really concrete guidance.

02:24:02 Speaker 1 -J

Yeah. So it's very structured and it's very clear where you have to fill in.

02:24:08 Speaker 2 - ST

Yeah and that information we can use in our communications with our clients.

02:24:12 Speaker 1 -J

OK. Yeah. So the output here is a number or a flag in this case.

02:24:19 Speaker 2 - ST

Yeah, we don't communicate that. But we communicate well... this part is not in the right hierarchy tree we need to change it.

02:24:37 Speaker 1 -J

Do you have?

02:24:40 Speaker 1 -J

Any other things that you wanna?

02:24:42 Speaker 1 -J

Mention or ask or.

02:24:46 Speaker 3 - FL

No, but I will be interested in the things that you mentioned, like the sources that you use. Yeah, your paper or things that you already made.

02:24:56 Speaker 1 -J

Yeah, yeah.

02:25:01 Speaker 2 - ST

For example, like within the steel category of materials.

02:25:06 Speaker 2 - ST

You have like super details materials and you can find everything about it like the elasticity and the strength, how well it is to manipulate. I think that's like the database that I am looking for when I'm looking for good alternatives or good plastics to use.

02:25:33 Speaker 1 -J

Well, in terms of like functionality, those tables exist or like in terms of like mechanical properties of materials those exist, but in terms of toxicology then that gets a little bit more complicated.

02:25:47 Speaker 2 - ST

There's like an edit, you can add it.

02:25:52 Speaker 1 -J

Yeah, yeah, that would be. That would be nice. Yeah, I think I think that's quite complex because on top of.

02:26:01 Speaker 1 -J

Being difficult to test whether something is hazardous or not, it's also, yeah, just chemicals are, and there's an infinite amount of chemicals out there and we only know like very little bit and we've only done testing for toxicology for very little bit. So there's not.

02:26:21 Speaker 1 -J

Like enough information out there to to say something is good.

02:26:27 Speaker 1 -J

And it takes.

02:26:29 Speaker 1 -J

Yeah, a lot of testing. So like like you have to test in a lot of contexts and a lot of people and a lot of things to say, this is good for sure.

02:26:38 Speaker 1 -J

Yeah. So yeah.

02:26:40 Speaker 2 - ST

Yeah, it's difficult.

02:26:42 Speaker 2 - ST

It's a wicked problem.

02:26:47 Speaker 1 -J

But yeah, that's it. That's it for today. Yeah. Thanks. Thanks a lot for enduring.

02:26:55 Speaker 2 - ST

I hope it was insightful.