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SPEAKER 1: From the largest global governments and health insurers, to local hospitals and public health agencies, from Sweden to Singapore to South Dakota, SAS Health helps the world get to a healthier future faster, with advanced analytics and leading artificial intelligence and machine learning platforms. I'm your host Alex Maiersperger, and in season 3 of our podcast and YouTube series, we celebrate those changing health care and life sciences for the better. Today, we get to celebrate and welcome Dr. Koen Kas, health care futurist, author, and founding CEO of Healthskouts Scouts. Welcome, Dr. Kas.

KOEN KAS: Well, thanks, Alex, for that nice introduction and a pleasure to be here.

ALEX MAIERSPERGER: So I come from a consumer experience background in hospitals and health insurers, which might be unique to the United States health care market. But I've certainly seen the words exceptional experience, the human experience. In Europe I know there's the citizen experience. Certainly, they're roles for design thinking and human-centered design. You use the term delight thinking. Why?

KOEN KAS: Yeah. So design thinking is indeed built to solve problems. You start from a friction. You find a solution. But that's limited. Because if you are able to show people something they can even not imagine would exist, then you can start creating from a white page, and you can start to create a kind of an ultimate future.

Delight thinking provides ultimate experiences. Close to magic, but still real. And we found that rather than bringing new technology and new science into health care, it helps to show the health care system, whether it's a payer, a government, a hospital, based on things they didn't realize they could get, how they can create something so magical for the patient, for the citizen, that is what delight is-- an experience which makes me look forward to encounter.

Let me give you two examples. Example one, the hospital might expect me to come to the hospital. If I can use new technology which allows me to bring the hospital to my home and the hospital says to me, well, you no longer need to come, I think two parties are happy. I need-- I mean technology for doing that. I need ways to deal with data doing that-- one example.

Second example-- if I tell a patient I can look to the chance that you get colon cancer, well, the majority of patients say, well, Dr. Kas, I'm not interested, because you're not going to put a tube in the back of my body. I'm not looking forward to that. If I then show a small tiny pill, which I can swallow, which makes better pictures than ever seen before, all of a sudden a naysayer becomes a yes-sayer. And the idea of showing something unexpected creates that delight.

And so, we are using that now to really say, well, what would be the ultimate health care system? And let's try working back-- reverse engineer what we need to get there.

ALEX MAIERSPERGER: So you sound excited. Years ago, I think you said this is the most exciting time to be in health care. And then you said you'd say that again in 10 years. With all the challenges we currently face, is that still true today?

KOEN KAS: Yeah, absolutely. You can never be born too late, by the way. So I think that if I would have had a talk a year ago with you and we'd have used the wording NFT, metaverse, digital twin, and anticipational intelligence in one podcast, you would call me a super nerd. Now, I'm still a super nerd, but I guess the words will start to fly. Because, yes, you see increment of increased exponential adoption from new things which we need to get together to really create the future. Things need to come in parallel together.

It's a little bit like the GoPro. GoPro became popular when YouTube was there. Because I was able to film my downhill skiing, other people could see that. It was streamed. And they said, well, let's bring it on. You sometimes need to have technologies coming together to really move things forward. And that's indeed the time we are in.

ALEX MAIERSPERGER: From a year ago, I think we've now heard all of those words more. And certainly, we're hearing more about the concept of a digital twin. What does that mean, and where are we at with that?

KOEN KAS: Yeah, so the concept comes initially from NASA. When Apollo 13 had an issue, basically NASA made a twin of the capsule, trying to mimic what was happening in outer space. And then industrial comm started to adopt that. And digital twins became virtual copies of physical assets.

And if I make, for instance, a new car-- I want to develop a new car-- I first have to proof on the virtual copy that I can improve the quality of the car before making it. We start to see now, for the first time, that using big data sets, sensors, we can start to envision to see a digital copy of a human being. Which is basically defined by all the features which define who I am-- my genome, my microbiome, my transcriptome, my social determinants of health, my whereabouts-- basically everything which defines me. So we start to become able, Alex, to envision a world where everybody, a patient today, a citizen tomorrow, has his or her own avatar which is able to learn what works on me therapeutic-wise, predictive-wise, preventive-wise, before you bring it on on me. And so, I think that the biggest future of health care is a future where we go back to a system 2,500 years old, where in some parts of China the doctor lived amongst people in the village and was paid to keep people happy. I think that we start to be able to create that Chinese doctor again, in a virtual fashion, and provide everybody his kind of personal health companion.

ALEX MAIERSPERGER: We learn a lot from the past, and I love that. In a lot of ways, the overall health care system and the overall internet are just now being connected. What happens when they come together?

KOEN KAS: Yeah. I think we have only seen the top of the top of the iceberg. Incidentally, The Economist, this week, had an entire issue about the "quantified self." The idea to put wearables and dermals and insideables all need to measure heart rate, pulse rate-- I mean, whatever you can think of. Basically, we've been there something like 15 years ago. But that is still so artificial, that's still Stone Age. What I really envision is that health care becomes something by default. I'm living in a space-- a house, a club, wherever-- and invisibly sensors are able to measure what's happening with me and connect me to that Chinese doctor almost on the fly, 24-7. So I don't want to have wearables and machines around me. I want to have the internet, which measures what is happening and basically acts upon this data. And that is the reason why things like 5G and 6G start to become relevant. That's the reason why we need to have machine learning, to mine, for instance, the fact that what I will do the next 15 minutes, if move from A to B, we can already start to predict, based on big data sets of, let's say, hundreds of

thousands of people, where someone will be in the next 10 minutes. And that's early, but today of tomorrow we will be able to predict what's happening in the next 20 minutes.

And we start to be able-- that computer power and really smart algorithms are able to predict things in time. And so, that is what I think is the answer to your question. The overlay of the internet really on our real world will shape a system which is always on and brings health care by default. And I'll come back maybe on one aspect of that, because that brings us to the question, where will these data be stored?

ALEX MAIERSPERGER: Yeah. Right. I think that's part of all of our questions. If we have this digital twin, if we have this explosion of data that just sort of predicts where we're going to be before we're there, who controls that? Who owns it? Should we be worried about the privacy of that?

KOEN KAS: Yeah. I often say on the stage that privacy is something for sissies. I think what is going to happen is the following-- you have three big models on the planet. You have the US-based model. My data goes to Facebook or to Google, they make a business model around it, and, well, I live with that. You have the Chinese model-- my data goes to the government, and they decide what I do. Maybe not perfect. And then there is the European dream-- the European dream saying, well, can we manage to provide every citizen kind of the steering wheel and the dashboard to do things by himself or herself and decide what happens with his or her data. And the US-based gentleman Tim Berners-Lee, one of the co-inventors of the internet, who at some point in time starts to realize, well, maybe we should make something better. And he starts to come up-- together with a Belgian professor, by the way-- with a new iteration of the internet called solids.

And solids is a way to start thinking about the decentralized web, where everybody gets a POD-- a Personal Online Data store-- for Alex, for Koen, for Cici, who basically allows you to decide what you upload in the PODs. And then you get doors, and external parties can come knock on the door. I think that will be the new integration of the internets. Now, incidentally, Alex, for some reason my government got pretty excited in that idea. And we started to help them thinking about, well, what if we provide it as a nation to our citizens?

And we are very close to launching that exactly in my country, as the first, well, global citizen-centric data platform, which will be called WeAre, and which will allow that we can start to play with our personal stores and build experiences based on that. And that is, I think, something where the entire planet will start looking to how that pans out here.

ALEX MAIERSPERGER: Really exciting. We'll be following along to see how it goes and love that you laid out those three models so specifically. The way we currently pay for more health care, instead of more health, which you talked about with the Chinese doctor in older times, it's often called sick care. You wrote a book called Sick No More. Does the business model of health care need to change before we'll actually see some of the vision you lay out for a healthier future?

KOEN KAS: Yeah. Yeah. There is some change needed. And that's part of my job, to kind of a little bit inspire people that we can build a world in which we make more money from staying healthy than getting sick. First of all, there is the economical side. For every \$100, euro, yen, we spent on sick care, we spent 92 euros to the last two years of our life and less than three years to prevention or \$3 to prevention. So what could you imagine, that if we take 10% of the curative parts and increase the tree to, let's say, 10. That's a huge amount of difference, right?

So how would that look like? Imagine I'm a diabetic patients, and my biggest fear is my eyes will go-- well, I get blind-- and my kidney will fail. That makes me the most expensive patient in the health care system.

But 10 years before I get prediabetic, I start to get prediabetes. And that is a time where you can still interfere with lifestyle or with change in my life.

So what if we use the money, we save on the end of game, end of life, and start to use digital tools to enter into the real world, real life of prediabetics and show them how we can stop disease and revert disease back to normal. That's where we currently are. Also, a number of US-based companies have really good clinical evidence that you can do that-- revert disease back to normal and make money from that. So then you have to start to think, well, who has to pay for that? And we see the first pairs, we see the first nations which really start to get that model.

Dubai, pays me 1 gram of gold for every 2 kilograms I lose by exercise not to get diabetic. Singapore has a deal with Apple, where every citizen gets a reward, monthly rewards, if he or she lives healthy. So we start to see the reverse. And I think that the key now is to make that delightful-- to provide people kind of an experience where it becomes normal to stay healthy.

And if I may, to give one example-- I find it a fascinating one-- the majority of people have a Netflix account or whatever-- a Disney account now. Netflix allows you with a little tweak to program the major or the favorite character from your favorite series on your smartphone as your coach. And only if you exercise enough you can watch the next episode from your favorite series. That's a pretty good experience, which keeps me healthy and which gives me something artistically almost to look forward to that next thing, right?

So think about what, for instance, that metaverse can do. I don't like exercising. I don't like walking. But I like to play with swords or with kind of light sabers, and the exercise I do in a VR kind of environment is the same which other people do by walking 30 minutes.

So let's take that one step further. We currently have apps which, for instance, show people a piece of art after exercising a bit. What if that piece of art becomes an NFT-- a real unique piece of art, which I can get from an artist, which basically gets happy because he gives you something unique, a unique piece, which basically helps him to bring happiness and wealth to you and provides you with a unique token because you remain healthy. I think that is a fascinating new way to look to new ways to deal with health. And what I always like, also from a US perspective, your Best Buy example. The company which started to spend time in building trust with elderly people that they could really stay at home, watched by technology from within a data science center in Best Buy. So Best Buy is no longer just a consumer electronics company. It became a health care company.

And it got even more fascinating, I think a few months ago, when they acquired a digital health tool which is a small patch which sticks to my skin and is able to measure six vitals in the comfort of my home. So all of a sudden a company like Best Buy is able to start running clinical trials. So I think SAS and pharma companies will see the Best Buys of this planet as their new partners to bring health care really to the patient in the comfort of his home. And it started with building trust and building new experiences.

ALEX MAIERSPERGER: A lot of what you're talking about sounds like the precision medicine of getting to that n-of-1. How precise is precision medicine today? And then, how precise is it going to be in the future?

KOEN KAS: Yeah, that's a difficult one. I have an oncology background. And in oncology, in 1950 we had one blood disease. It was called blood disease. And then five years later we discovered the difference between leukemia and lymphoma. And 20 years later we had 24 different diseases. Now, we have 200 blood cancers.

So it took 50 years to go from one disease to 200 more precise diseases. And now we start to realize, when we get more insight in our genome, our transcriptome, or my proteome, that, yes, everybody will be unique. So that at the end of the game, every disease is a rare disease, with n is 1.

So if you could think that true-- if that would be true-- the ultimate personalized medicine-- we are not there yet, and maybe we need to get there, but bear with me-- is a world where we are able to have so much data which distinguish Koen from Alex that you no longer need to run clinical trials with more than n is 1. Because you can compare me against a baseline, and if I am off baseline by disease, you bring me back to baseline by providing a treatment or an interference in my life. And so, the idea of ultimate personalized medicine is indeed the ability to use all the data, which I initially introduced to make my digital twin, to start really thinking about what personalized medicine looks like.

Now, to make it a little bit more concrete, I got my own genome sequenced, and I have a number of things which I find interesting. I'm a very bad sleeper-- really bad sleeper. And normal people would say, well, you should sleep more. That's pretty annoying when people tell me that. But I will look in my genome. I have a mutation which runs in families, which incidentally makes that you can live with a little bit less sleep.

Three weeks ago, an interesting study appears in Cell, best kind of bio journal, where it's discovered that in mice-- not in humans yet, but in mice-- a mutation in one of these sleep genes delays the onset of Alzheimer's. So these mice, when even stimulated, they don't get Alzheimer's.

You know what I did? I went back to look into my genome. And yes, big time, not at the same location as in mice, but a few locations upstream of the mouse gene I have a mutation in my gene. What does it mean? I don't know.

So we used an AI tool. We used AlphaFold from DeepMind to look to the 3D expression of that piece of DNA at the protein level. And all of a sudden I discovered that at some point in my genome it introduces a notch in the protein which kills the function and probably implies that I have the same mutation as what happens in mice. Well, I find that exciting, because that is n is 1. So how are we going to bring that to the public to even explain to people that you can find out? Are we even willing to find out.

So the answer to your question is that personalized medicine will only live if we can inform people that the way we deal with data brings a benefit for them and that people will be willing to bring all these data together to kind of the ultimate kind of uber minimal set of data. With one big difference-- they do not need to get in one place. They can remain in my private online store.

ALEX MAIERSPERGER: In your work with delight thinking, you talk about the unknown unknowns. And you sort of said that you're not dealing with the problem or the coming at it from a problem or solution standpoint, you're giving someone something they don't know about. And so, as someone that invests a lot of time talking about and learning about health care, what's something that would surprise me now as a health care leader? What insight has surprised you?

KOEN KAS: Yeah. First of all, the willingness of people to share data. Really, believe me, it limits our thinking that people are not willing to share. So if I explain something to someone that with a data point I can do something that's kind of very often an eye-opener. Second, if people say, well, I don't want to share a sample of blood because you put a needle in my body. You could argue, well, there is maybe a kind of an unknown unknown which helps this.

And then, if we show, for instance, a small patch-- and there is three vendors now-- which is sticking to my skin and barely six blots without even me knowing it, which is a pretty delightful way of dealing with,

all of a sudden you bring someone who says, well you cannot introduce me in a trial or use data from me, into someone who says, wow. If you can do that, you might be able to find out x or y. So that idea of using unknown unknowns, where you didn't realize you get something, I find a way to progress things.

And let me give you another example. You know what the biggest fear is which people have if they have to go to the hospital? I mean, mainly elderly people? It's basically, who will take care for my dog.

So in one of the hospitals here in Belgium, we installed a kennel on site of the hospital, so that patients can walk with the dog to the hospital. And apparently it makes them better faster. Because they're less stressed, and basically the delight of that unknown insight makes health care truly better and gets you or gives you a delightful experience.

ALEX MAIERSPERGER: Incredible. With all of the challenges facing the world and facing the world of health care and life sciences today, what makes you optimistic about the future?

KOEN KAS: Yeah. People called me a kind of progression optimist. I don't know whether that even exists in English. But I don't know whether you get a statue for being a pessimist, but it makes the world easier to show the art of the possible. And believe me, a number of things we do completely failed. But I found a way to turn that failure into not just learning, but the way to say, well, now, we're going to do something even more exciting. And that's the reason why that first book even was called Sick No More.

Sick No More is the ultimate. It's 100th. And maybe we'll not get there, but it's easier to aim for something big and to land at 93, than to say, well, this is the current reality we have, let's make it better, and we maybe end up with 64. So by showing the art of the possible and showing people what can be done to provide them novel experiences, you really can move the needle.

Incidentally, Alex, if people get asked before they die what they regretted in their life, it's always the same. It's not what they've done. It's the experiences they haven't had. And for that reason, I think the real power, also for SAS, is starting to think, what would SAS delight look like? How can I bring something to my customer but also my end user?

Look beyond your customer. Just don't see your hospital or your nation as the end user. You have to see the citizen as the end user. And if you can start to think what delight looks like in your world, well, believe me, people will come and knock on your door. And delight, you cannot top it.

I can make a better product than yours. I can make a better service of yours. Maybe I can't top your experience, but delight I cannot top. And for that reason, bringing that into people's mindsets really helps to change the future. And everybody feels kind of energized by that.

And so, all the parties I have the honor to work with, they built tiny, tiny bits of the world I once hoped to build. And that's a world in which our grandchildren no longer need to get sick.

ALEX MAIERSPERGER: Tremendously exciting. The title that you often have is a futurist. What does a futurist mean? Do you predict the future?

KOEN KAS: Oh, no, no, no. We should kill that term. I hate it. I cannot predict the future. No one can. Even Bill Gates didn't predict the pandemic. Truly not. But what I do believe is that we can co-create the future. And that is a skill set which I think everybody can learn in a sense. It's a mindset almost.

And I see a lot of pharma companies which the last few years have hired a chief digital officer. And I always make a joke, you don't need a chief digital officer, you need one officer in your entire company.

That's a chief delight officer. And everybody should be that.

Also, in your company, the cleaning lady, make her a delight lady. And she sees frictions. She sees issues as well. She can also say, well, why don't we do it this way? But I guess that was not your question. I forgot your question. What was your question?

ALEX MAIERSPERGER: Do you predict the future as a futurist?

KOEN KAS: So, no. No, no. So I don't predict the future, but I show bits and pieces of things which are possible, bring them together, and all of a sudden people say, well, wow, if I can do that, that is magic. Let me give you one example. People with multiple sclerosis, they are now able to get a shoe which contains a sensor. And the sensor measures gate.

And the gate is linked to my Spotify or to an app which plays with the rhythm of the music in my ears and compensates the fear which I have to step by a musical experience. So it's a digital therapeutic which delights. And multiple sclerosis patients, with the combination of data, a piece of technology, an AI tool, and a piece of art-- well, I find that a fascinating way to show how a future could look like based on bits and pieces which exist but which we bring together in a new format. And that is creating the future.

ALEX MAIERSPERGER: Dr. Kas, really appreciate your time. Love your vision that a healthier future is going to take all of us and that we all are delight officers. I know you have infinite demands on your time. Really appreciate you choosing to spend a little bit of it with us today.

KOEN KAS: No, no, the pleasure is absolutely mine. It's spreading the warmth. It's like-- it's part of the putting forward. It makes people happy, really, spreading the word and putting it forward.

ALEX MAIERSPERGER: And as a viewer and listener, there's so much demand on your time. Thank you so much for listening and participating. We can't wait to continue creating a healthier future with you. There are so many real challenges in the world. We hope that wherever you there are ways to find and be the good around you. We welcome you to the conversation at our email address, thehealthpulsepodcast@sas.com, and here in the comments on YouTube. Thank you.

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