

SDS PODCAST EPISODE 680: AUTOMATING INDUSTRIAL MACHINES WITH DATA SCIENCE AND THE INTERNET OF THINGS (IOT)



Jon Krohn:	00:06	This is episode number 680 with Allegra Alessi, IoT product owner at BOBST.
	00:27	Welcome back to the SuperDataScience Podcast. Today I'm joined in person by Allegra Alessi, a phenomenally articulate expert on designing industrial equipment that has data science embedded deeply within it. Allegra is Product Owner for IoT Internet of Things devices at BOBST, a Swiss industrial manufacturing giant. Previously, she worked as a product owner and data scientist for Rolls-Royce in the UK, and as a data scientist for Alstom, the enormous train manufacturing company in Paris. She holds a master's in engineering from Politecnico di Milano in Italy.
	00:59	In this episode, Allegra details how modern industrial machinery depends on data science for real-time performance analytics, predicting issues before they happen and fully automating their operations. She talks about the tech stack her team uses to build data-driven IoT platforms, the key methodologies she uses to be effective at product management, and the kinds of data scientists that might be ideally suited to moving into a product role. All right, let's jump right into our conversation.
	01:26	Allegra, welcome to the SuperDataScience Podcast. It's awesome to have you here.
Allegra Alessi:	01:31	Hi Jon. Thank you for having me. Great to be here.
Jon Krohn:	01:33	It's an honor. We just met at the St. Gallen Symposium, so we're in Switzerland for the people watching the video recording of this, I didn't have the ideal setup for recording in, so we gave Allegra really good light, but I'm like a, my face is in a whole shadow. You get really great light reflecting off my bald head.



- Allegra Alessi: 01:54 Thank you. I appreciate that. Thanks.
- Jon Krohn: 01:57 So the St. Gallens Symposium, we should probably give a little bit of context on that. It takes place in the town of St. Gallen every year. It's this amazing symposium. Past speakers include people like the Prime Minister of Canada, Justin Trudeau was at last year's symposium. Christine Lagarde who's head of the World Bank. She used to be head of the IMF. And people like Jack Ma have attended in the past and now Allegra has attended.
- Allegra Alessi: 02:24 Absolutely. And we had a lovely presentation last night from Sal Khan from the Khan Academy.
- Jon Krohn: 02:29 Sal Khan from the Khan Academy. Yeah, that's true.
- Allegra Alessi: 02:32 Very inspiring.
- Jon Krohn: 02:33 Yeah, he was a really great one this year. So yeah, so it's an amazing symposium and it has real objectives. So the, it isn't supposed to just be a talking shop. We come away with actions for ways that we try to make the world a better place. But for podcast purposes, we're just going to talk about great data science content for you today. I just happened to meet Allegra and she has a science background and she's doing things now that I had not encountered in a guest on the show before. And so I wanted her to enlighten the audience with that. So Allegra, where are you usually based?
- Allegra Alessi: 03:12 So usually you'd find me in Lausanne, not in St. Gallen. Still in Switzerland, towards the French side. I say usually because I travel a lot for work. So 30%-50% of the time I'm traveling between production sites or customer. And if you come to Lausanne you should find me there 50% of the time.

- Jon Krohn: 03:28 Cool. We'll look out for you in the streets. So you're a product owner for IoT, for Internet of Things at a company called BOBST. I hadn't heard of BOBST before, but BOBST is quite well known in Switzerland.
- Allegra Alessi: 03:44 Absolutely. And in the packaging industry. So BOBST is a world leader for manufacturing machinery, for packaging, for the for industries, corrugated board, folding card, flexible packaging, and labels. You say it's very well known as Switzerland. Correct. It's very well known worldwide actually because absolutely world leaders in terms of technology and quality. It's a family-owned business. The headquarters are here in Switzerland, but there's production sites all over Europe and all over the world. And that's what BOBST does.
- Jon Krohn: 04:15 And so you manufacture manufacturing equipment.
- Allegra Alessi: 04:19 Exactly.
- Jon Krohn: 04:19 So people buy manufacturing machinery from you.
- Allegra Alessi: 04:24 Exactly. So we sell to big companies that make packaging for brand owners. So you would know, for example, Nestle. Nestle goes to a converter and says, this is a box that I have to make. And our customers are the converters that make the box.
- Jon Krohn: 04:37 Yeah.
- Allegra Alessi: 04:37 So whenever there's a new requirement in terms of legislation or in terms of where brands are going for marketing, new requirements come to the equipment that we have to manufacture.
- Jon Krohn: 04:46 Cool. Yeah. So the end result is boxes, keeping things safe as they're shipped all over the world.
- Allegra Alessi: 04:54 Yes.

Jon Krohn:	04:54	And also making things look pretty. So people pick them up off the shelves.
Allegra Alessi:	04:58	Exactly. There's a lot of also food safety around the flexible packaging. Because of course that is pharma food, baby food, dog food and yes. So there's a lot of discussions around barrier, making sure that it's impermeable to water and there and making sure that the food you buy is actually of quality when you get it at home and eat it several days later.
Jon Krohn:	05:15	Cool. Yeah, there's a lot of different kinds of boxes out there. I hadn't spent much time thinking about it, but yeah.
Allegra Alessi:	05:19	You would not imagine. [crosstalk 00:05:21]. Yes. I'm not from the packaging industry. When you join and you go see all the different boxes, you realize just the plethora of variety that you have when you go in a supermarket. Crazy.
Jon Krohn:	05:30	And so the Internet of Things angle that you're involved with is this because, so I guess a manufacturing item is a thing.
Allegra Alessi:	05:41	It's a big equipment. Yes.
Jon Krohn:	05:42	So the Internet of Things relates to having analytics and connectivity in anything that isn't typically thought of as a computer. Like presumably a computer, you wouldn't call that IoT. A a phone you probably wouldn't even call that IoT.
Allegra Alessi:	05:58	No.
Jon Krohn:	05:58	Cause it's kind of like computer first.
Allegra Alessi:	06:00	Yes.

Jon Krohn:	06:01	But it's when you have other kinds of things in the world, it could be, I guess suitcases and maybe televisions-
Allegra Alessi:	06:08	Things that are not typically connected that you want to connect. We use the Internet of Things to add sensors to collect the data and bring them to a central repository, which could be the cloud or a locally stored server. So a lot of people today have connected homes when you have I don't know, your lights, your heating, your alarm. It's connected and you can have access to it from your phone.
Jon Krohn:	06:28	Right.
Allegra Alessi:	06:28	And that is the Internet of Things, so people have smart fridges and next generation of the internet coming into your life and connecting things that 10 years ago you would not have data from.
Jon Krohn:	06:39	And then, so the utility for manufacturing for the kind of work that you're doing is enormous.
Allegra Alessi:	06:44	Huge.
Jon Krohn:	06:44	So for me, I can have lights that turn on when the sun goes down for example is like a function in my home. But for you with the Internet of Things, it means you can have machines not only just so immediately on the top of my mind, the kind of things that comes to mind is like making sure that everything about the machine is working. Maybe you could even predict when something was getting close to breaking down might need replacements.
Allegra Alessi:	07:09	Exactly. So that's the goal. The goal is to collect data from these machines and at a first stage optimize monitor what is happening on the machine, be able to troubleshoot remotely because just like you say, you're far away from home and you want your lights to turn off. Maybe you're

away from your shop floor, but you're production manager, you want to know what is happening and if everything is running smoothly and your operations. But the next stage is really analyzing the data, being able to predict if there's a problem, not do only proactive and do proactive maintenance, not only reactive. And of course there's also the aspect of being able to optimize your settings, optimize how these machines run. So these machines cost a lot and running production, production runs very fast. So if you mess up something, you're ruining a lot of boxes, throwing a lot of well away, a lot of material. And it's not exactly the best at both the sustainability, but also for our customers because they want to do the most material with the least waste possible.

Jon Krohn: 08:03 Right, right, right.

Allegra Alessi: 08:03 So being able to connect the machines, gather the data and get the best possible settings is really key in our industry.

Jon Krohn: 08:10 And you mentioned to me earlier that it can go even beyond that, that you can have full automation as a result of this.

Allegra Alessi: 08:16 Exactly. So the whole industry is moving towards dark factories. We see this across all industries and it's impacting the packaging as well. That's where we would like to go in the future. And the first step really is connectivity, digitalization, automation. And in order to do that, you need to know what is happening to the machines. So in my team, we develop the IoT box. It's an edge device, we, it's the edge because it sits on the edge of the machine towards the cloud. We gather data from sensors that were preexisting on the machine because of course machines have highly equipped sensors because they're essentially automated locally. We gather the data,

we put it in the cloud, we leverage Microsoft Azure for this. And once the data is there, we have a team of software developers, engineers, data scientists who look at the data and try to make use of it so that there's actionable insights for our customers.

- Jon Krohn: 09:04 Yeah. So you mentioned Azure there as your cloud provider. What other kinds of tools are in the tech stack? So because you presumably, so you are in a product role, so you're also concerned with I guess not even just your internal data scientists being able to access the this data or information about the machines, but you also create UIs.
- Allegra Alessi: 09:26 Yes.
- Jon Krohn: 09:26 For your clients, right?
- Allegra Alessi: 09:27 Correct. Exactly. So we have a product which is essentially a software. It's today a login. It's BOBST Connect. You can go and you can see your machine remotely. So there's a whole UI for our customers to log in and see the machines. Just like you want to see your house from remote, they want to see the machine from remote. And so yes, we are stack contained well .NET and Angular. But anything we do data science is usually in Python and then we package it into Databricks, which is a Microsoft Azure function. And we run it on the cloud. So we selected Microsoft because at the time it had the best IoT stack in general and it really helped us leverage our solution.
- Jon Krohn: 10:04 So yeah. So when you say the IoT stack that Microsoft Azure was better than other cloud providers at that time, what does that mean? Like what kind of specific ways can a cloud provider cater to you as an IoT company?

- Allegra Alessi: 10:18 So there's a lot of items around connectivity. So your edge device, your IoT device, it has to be connected to the cloud and you have to check if it's up and running. It has to have local storage. There has to be backup solutions. You have to have in place a monitoring system in order to troubleshoot if something is going wrong and being able to restart everything. And Microsoft at the time had a lot of inbuilt functions and today it still does. It still absolutely fantastic. And we use that. We have a lot of partners as well in the industry, like ei3 [inaudible 00:10:44] data which are just suppliers that do similar things and help us run our services smoothly.
- Jon Krohn: 10:48 Cool. And so using .NET for the backend and Angular JavaScript for the front end, Python for the data science done offline-
- Allegra Alessi: 10:58 Yes. And then packaged into the cloud.
- Jon Krohn: 11:00 Yeah and then packaged into the cloud. And so you don't write much code today, but you have in the past as a data scientist.
- Allegra Alessi: 11:07 Yes.
- Jon Krohn: 11:08 And so is there value in you knowing how to write code as a product owner?
- Allegra Alessi: 11:14 So I think there is, I think there's immense value for several reasons. One of them is whenever I create a requirement, a user story for my team, I know essentially what they're going to have to do. And I'm able to discuss with them the technical implications. They have full autonomy to decide how to do it, but being able to understand how complex something is, allows me to say, Ooh, this is a bad idea, or maybe I shouldn't do that just now because it's a huge amount of work.

Jon Krohn:	11:40	Right.
Allegra Alessi:	11:40	At the same time when they come back to me with further questions, knowing how to code or the reasons why they're asking this helps me understand where they're going. And the answers that I give are more particular to their use case rather than being generic business reasons. And at the same time, I like to delve in the code. So sometimes I'll have someone tell me there's a bug and they don't want to show me the code. I'll say, no, let's have a chat together. Show me the query. It's okay. We can talk about it even if I'm a product owner.
Jon Krohn:	12:09	Nice. And so something that I actually haven't asked you explicitly, because we kind of just got caught into all these amazing applications, is what does it mean to be a product owner? Is that the same as a product manager?
Allegra Alessi:	12:21	So it really depends on the company. Some companies call product owners, some companies call them product managers. Some have a distinction between the two. It depends how your company is implementing Agile in what they give. And it depends what meaning they give to the role. In my case product owner, I own the product. I'm responsible to define what features go into our cloud product, what I want to actually build. I'm responsible to know why I want to do that, and I have to tell my team what I would like. And sometimes it's as simple as I want a yellow button here. And sometimes it's a lot more complex because I need them to do some calculation in order to support a new business requirement in a new service.
Jon Krohn:	12:58	Yeah. And my understanding is that one of the big complications is often the client is not asking for what they really need, right? So you've got to like, you've got to do like a psychotherapy session. They come in, lay down on the couch, you ask them how long this has been

troubling them, what their relationship is like with their parents and so on.

- Allegra Alessi: 13:17 It's a not exactly like that, but you, you hit the nail on the head. So usually there's this really famous Ford quote where he said, "if I asked a customer what they wanted, they would've just asked for a faster horse."
- Jon Krohn: 13:27 Oh yeah.
- Allegra Alessi: 13:28 So customers just say they want better machines and you have to understand what their pain points are. So 80% of my job is asking them, why, why do you want that? What is the actual problem? And trying to dig deep. And you get a mix of reactions to that. Some people are just like, I just want a better machine. Others try to explain the why they want a better machine and what the actual problem is. And sometimes they do just want a faster horse. Other times they want something else. And my role is exactly that. Grasping the why and making sense of it and trying to see if there's a business need behind it or it's just an issue.
- Jon Krohn: 14:03 Beautifully said. And we love that Henry Ford quote in my machine learning company, Nebula, it is the most abused quote by far in the company to the point of like, farce.
- Allegra Alessi: 14:13 Okay.
- Jon Krohn: 14:13 Like we don't even, nobody says the quote anymore. We just say the quote.
- Allegra Alessi: 14:18 Okay. I should do that.
- Jon Krohn: 14:19 Yeah, no, because it's, it's a really, really useful one.
- Allegra Alessi: 14:22 It is, it is.

Jon Krohn:	14:23	Yeah, it's this amazing, yeah, this amazing idea. People would just want faster horses, they wouldn't have thought of cars. And it's your job as a product owner to conceptualize a completely different kind of solution than the client could even imagine for themselves.
Allegra Alessi:	14:37	Exactly. Can I divert a tiny bit?
Jon Krohn:	14:42	Oh, please.
Allegra Alessi:	14:42	So what's really interesting that we talk about the horses and the cars, because in New York City where you're from, there was an incredible horse poop crisis.
Jon Krohn:	14:51	Yes.
Allegra Alessi:	14:51	In the late 1870s, I think 1890. Yes. And they had a two-year symposium to discuss what they were going to do with all the poop, sorry, that the horses were doing and what could they do, what was the solution. And they couldn't come up with an answer they didn't know. At the end of the symposium, they said, we're just going to have to move to another city because New York City is-
Jon Krohn:	15:10	Really?
Allegra Alessi:	15:10	Yeah. It has too many horses. We don't have a good drainage system for all the
Jon Krohn:	15:14	Poop
Allegra Alessi:	15:14	Excrements of the horses. Two years later the car was invented. And they just couldn't imagine another solution.
Jon Krohn:	15:22	Right. Yeah. So makes sense. Nice. Thank you for that enlightening poop story. Let's jump into your role, which certainly isn't poop at all. It has lots of interesting aspects that I want to get that I want to share with our

listeners. So I know that there are lots of specific product management kinds of methodologies and I know that one that you mentioned to me was important for the way that you work as a product manager is product increment planning. So-

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| Allegra Alessi: | 15:50 | Yes. |
| Jon Krohn: | 15:51 | Maybe tell us about that and maybe for our listeners' sake, you could like kind of bring it into a data science relevant analogy. |
| Allegra Alessi: | 15:58 | Okay. Tough. So increment planning is essentially something that you do as part of an agile framework called SAFe, which is Scaled Agile Framework. It's when you have multiple scrum teams, so multiple development teams working on the same product but on different areas and you need to align everyone, coordinate them and make sure that the dependencies are very clear so that you can meet your targets. You can do this every X amount of sprints. Usually it's three to six sprints. We do it every quarter, for example, because we have three scrum teams. And we discuss what do we aim to do in this quarter. The team then has to say, what are the impact? Who's going to work on what? Is there a dependency? What has to come first in order to unblock everyone else? And traditionally you would all be in a room, big wall, put post-its for the user stories, file the dependencies, connect with strings And try- |
| Jon Krohn: | 16:50 | What's a user story? |
| Allegra Alessi: | 16:50 | A user story is the least amount of work that I can describe to developer to say, I need this to happen. And usually it's a requirement, it's just what, what it's framed in Agile Framework as a requirement. And it's usually written out as a, as a customer user, I would want to be able to do this and I give you the business need. I would |

want to be able to click on a yellow button. And that is the user story. And you as a developer, you take it in and you know that you have to develop a yellow button in this location for the specific user role. So for example, for data science, we may need to implement an algorithm to detect the degradation of one of the components. And in order to do that, you need to have the data and you need to have it cleaned, then you need to have it filtered and you need to baseline the model based on historical data. And you have all of these in the sequence. And in order to have at the end of the increment the degradation mechanism in the cloud that detects the actual failure, you need to have all of that in order. And maybe there's different teams that have to work on the different parts and you have to just align everyone and make sure that they understand the why.

- Jon Krohn: 17:53 Beautiful. Perfect explanation. Very easy for me to understand. I think for our audience as well, I don't even feel like I need to repeat anything back for you. So what is the difference for you having been a data scientist before as a product owner now, what's your experience like of these kinds of Agile methodologies that you now talked us through?
- Allegra Alessi: 18:10 So I really enjoy being a product owner today because I like the business side trying to give the reason why. And most of my role as a product owner inside these, the Agile ceremonies, so there's the backlog grooming where you discuss the details of what you're going to do. There's the daily standup where you discuss what I did yesterday and what I'm going to do tomorrow. And there's the demo at the end of the sprint to show what you actually developed. As a product owner, I'm there to confirm that that's actually what I wanted. And it may seem trivial, but there's a lot that gets lost in translation between what you write and what you really mean and what you get. So that's essentially my role, making sure that we're on

course with business and that I have explained it clearly. From a data science perspective, it's more about the what and the how. And you spend the sprint looking at how do I tackle this issue? How do I address it? How can I actually deliver what I think I need to deliver? And yeah.

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| Jon Krohn: | 19:03 | Nice. Well, so I've said a couple of times now, so our audience knows that you transitioned from data science into this product owner role. And so specifically that happened while you were working previously at Rolls-Royce. |
| Allegra Alessi: | 19:15 | Exactly. |
| Jon Krohn: | 19:15 | Which you reminded me is actually, we think about it as a car company, but they actually sold the car aspects- |
| Allegra Alessi: | 19:22 | Yes. They sold the car business to BMW when they've been bankrupt in the 90s. So today any Rolls-Royce car is actually manufactured by BMW, the royalties go back to Rolls-Royce and I was in Rolls-Royce Aviation Civil. |
| Jon Krohn: | 19:33 | Yeah. So that's like their, it's aviation I guess. Yeah. So civil aviation, maybe military aviation. |
| Allegra Alessi: | 19:39 | There's also, yes, the defense, but it's I couldn't work there because I'm not a British citizen, so. |
| Jon Krohn: | 19:43 | Right, right, right. |
| Allegra Alessi: | 19:44 | I was in Civil. |
| Jon Krohn: | 19:45 | And so the main thing that I'm trying to get to here with this Rolls-Royce thing is that while you were at Rolls-Royce, you made this transition from data scientists to product owner. Is this something that you would recommend to some of our listeners? So what kind of data scientist might be listening or what kind of person, maybe they're thinking about a data science career who's |

listening how can, what kind of person would they be, where that maybe being a product owner would be an even more fulfilling job for them? Especially if they're on a data product like you are.

- Allegra Alessi: 20:17 Yeah. So that's a very good question. I think that what I enjoyed the most as a data scientist was understanding what I was doing and why. So the bigger business context and that's really what propelled me to wanting to become a product owner and put me in the spotlight. Because a lot of people who do data science, they love the data science and they love the technicalities of it. And that's fine, but it doesn't transition well into a product owner. If you're really curious about strategy, about roadmap, about what am I doing, why am I doing it, what is the actual benefit to the customer? That's what pushes you towards the product a bit more, I think product ownership. If you're interested in the bigger context of your product, I think that's a first key element that you should look out for in your personality.
- 21:00 But also I think you have to accept that you will stop coding and you're going to be a lot more towards customers or internal stakeholders, because sometimes you build internal products for your own company and that often means having to say no. Whereas as a data scientist, I really liked to dwell into the data, try to figure out what I was actually looking at, what the data was telling me. As a product owner, a lot of the time I have to say no, I have to disappoint people, users, customers, my colleagues, because what they're asking isn't compatible with what we're doing today. And it takes a bit of resilience and you have to get used to it. It's not easy in the beginning for me, that was one of the hardest parts also because I like people genuinely and it's complicated.
- Jon Krohn: 21:41 So if you like people, but you're also very negative, like you are Allegra, you like to say no all the time.

Allegra Alessi:	21:46	Perfect.
Jon Krohn:	21:47	Then that's, that's a great role.
Allegra Alessi:	21:48	That's it. Yeah.
Jon Krohn:	21:49	Product owner. Cool. If you're an optimist, data scientist.
Allegra Alessi:	21:53	I didn't say that.
Jon Krohn:	21:56	I may be misquoting.
Allegra Alessi:	21:57	Yeah.
Jon Krohn:	21:57	So one of the things that I know that you're doing at Rolls-Royce was a methodology called Kanban. K A N B A N.
Allegra Alessi:	22:08	Exactly.
Jon Krohn:	22:08	What does that mean?
Allegra Alessi:	22:09	So I think it's a term that comes from Japanese, actually.
Jon Krohn:	22:12	I believe it's Japanese. Yes.
Allegra Alessi:	22:13	And it's essentially a way of viewing your work. It's very similar to Agile, but it's just a, you have a several columns of work. One is your Backlog, so things that you haven't started, but you know you will have to, you have Ongoing Work and you have essentially the tasks that you're currently working on. You have a column for, I don't know Blocked because maybe you're waiting on a dependency, maybe you're waiting on some feedback. You have a column called Done and a column called maybe Deployed or maybe Needs Fix. And often we would have a column called At Risk because we were worried about something. And it's just every day you discuss what you're doing and instead of using your Agile sprint

backlog, you would use a Kanban board and move tasks around. And hopefully across the line to the finish and into deployment.

- Jon Krohn: 22:58 I think I end up, I didn't realize that I was doing this already. I call it a Jira board.
- Allegra Alessi: 23:05 Exactly. So a Jira is often based off of Kanban. And a lot of the things we do, any, any day in project, in projects, in programs is based on that. You have a thing, list of things you have to do, it's a to-do list just in a fancier format and in a way that is trackable because you have tasks that move along.
- Jon Krohn: 23:22 Yeah. It sounds like a great way to stay organized on any kind of task.
- Allegra Alessi: 23:24 Exactly.
- Jon Krohn: 23:25 At home and at work. Yes.
- Allegra Alessi: 23:26 Yeah. I do not use it in my personal life. I should, but I don't.
- Jon Krohn: 23:30 Awesome. And so before you were at Rolls-Royce, you did a master's thesis in data science focused on neural networks. And that was your transition in but you started with a chemical engineering degree.
- Allegra Alessi: 23:44 Absolutely.
- Jon Krohn: 23:45 Just give us a little bit of context on that and how that quantitative background or that analytical background has been useful for you as a data scientist later on. And maybe you could even tell us a bit about the neural networks that you were working on.
- Allegra Alessi: 23:58 Okay. So I decided to do chemical engineering because I liked math, science, math, physics and chemistry. And I

couldn't pick what to do at university. And so I just tried to mix them together and the best thing that came out was chemical engineering. It had enough of everything to keep me happy and I figured I'd then decide what to do later. I got very, very into it. And I remember very clearly that one of my lessons of I think it was a Chemical Industry 2, in Italy, we have funny way of calling exams. The teacher told us that it's important to optimize, but to remember that the cost of a production site is way more than the cost of a human life, so we should really think about it. And that struck me because that's not what I wanted to do.

24:44 I didn't want to be doing things for companies. I wanted to be doing things for people. And that didn't resonate with me. So I decided to do my master's in safety engineering just out of that single quote. And in my masters we did a lot of modeling, simulation modeling for disasters, for prevention. And as part of that we did a lot of matlab, we did a lot of fluid dynamics. And I did my master thesis in self-organizing maps, which are single layer artificial neural network, to identify when transistor and specifically an IGBT transistor would break and a breakage of an IGBT transistor often results in a fire. And these are being used today in electric cars. So there was an European study about what could we do to prevent issues with electric cars in the future. And my university was tasked with analyzing the data and I used a self-organizing map to detect when this would happen.

Jon Krohn: 25:40 Super cool.

Allegra Alessi: 25:41 Very, very fun. And there was partnerships across Europe. So the actual data was done by another European university. And we analyzed the data in Milan and I wrote a paper on that and it got caught. It caught the eye of a company in Paris, which I worked for before Rolls-Royce. And they were using the same artificial

neural networks inside their preventive maintenance program. And they got in touch and I moved to Paris for my first job as data scientist at Alstom.

Jon Krohn:	26:09	Yeah. That explains all the transition. So, grew up in Italy, do a chemical engineering degree. Realize that you don't want to be aligned with some concept of factory being potentially more valuable than a human life.
Allegra Alessi:	26:24	Exactly.
Jon Krohn:	26:24	So going into safety engineering, getting into neural networks with that.
Allegra Alessi:	26:28	Yeah.
Jon Krohn:	26:28	And then the same kind of predictive maintenance neural networking approach was used by Rolls-Royce,
Allegra Alessi:	26:34	By Alstom.
Jon Krohn:	26:34	By Alstom.
Allegra Alessi:	26:35	Alstom, a train company manufacturer in Paris.
Jon Krohn:	26:37	In Paris. That's right. But then that led you to the Rolls-Royce job.
Allegra Alessi:	26:41	Exactly.
Jon Krohn:	26:42	Also doing predictive-
Allegra Alessi:	26:43	Exactly.
Jon Krohn:	26:44	Modeling pre initially at Rolls-Royce, but then at Rolls-Royce you transitioned into a product owner role. You've been doing that since now even though you're in BOBST in Switzerland.

- Allegra Alessi: 26:54 Yeah. Four years later as a product owner, I absolutely love it. I think it's, it's really, really motivating for me to actually deliver something that customers want and at the same time be able to talk technical with my team. So I do miss sometimes the technical aspects. So we have a few data scientists on the team and I absolutely love to see what they do. And so sometimes I'm on breaks, I'm like, oh, show me some charts, show me something, please, I need to get this in, because I was speaking to too many customers maybe. And but I really love the mix and for me today it's a, it's a really good way of putting practicality behind what I was doing before.
- Jon Krohn: 27:29 Awesome, Allegra. All right. Thank you for enlightening us on your career, on-
- Allegra Alessi: 27:32 You're welcome.
- Jon Krohn: 27:34 Product ownership, on the Internet of Things and manufacturing applications. Do you have a book recommendation for us before I let you go?
- Allegra Alessi: 27:42 I do. That's my fangirl moment. So I'm a huge fan of Basecamp from 37Signals. I've mentioned this briefly before. I love-
- Jon Krohn: 27:50 Yeah, to me off air.
- Allegra Alessi: 27:52 I love all of their books. Especially Rework. I love that. David Heinemeier Hansson and Jason Fried, the way they describe working in Agile and working in software development, they have some radical ideas. Some I think are incredibly applicable across a lot of industries. Some, maybe it's specifically for their case, but I think they question a lot of the standard practices that we have at work and they challenge the way we work. So the book is called Rework.

Jon Krohn:	28:21	Cool. I have heard of that book before and there's a corresponding podcast as well, right?
Allegra Alessi:	28:25	Exactly, where they discussed the chapters because this was written I think about 20 years ago, or they started the company 20 years ago. So these are the founding principles of them. And today, they discuss the chapters they discuss, how are they applicable today? Do they still stand by what they wrote 20 years ago? And how has that evolved over time?
Jon Krohn:	28:41	Nice. And the podcast is called Rework as well?
Allegra Alessi:	28:43	Exactly.
Jon Krohn:	28:44	Cool. And so Allegra, you are fabulously articulate.
Allegra Alessi:	28:49	Thank you.
Jon Krohn:	28:49	Doing very interesting work. If our listeners want to connect with you or follow you, how should they do that?
Allegra Alessi:	28:55	They can find me on LinkedIn under Allegra Alessi or they can follow me on Twitter. I don't tweet a lot, but I retweet all the time because I'm very passionate about AI, data science and the whole space.
Jon Krohn:	29:05	Oh, nice. Awesome. Well thanks for that. Thank you so much for taking time out of the St. Gallen Symposium to spend time with me recording an episode for our audience. I think it was awesome. And yeah, we'll have to check in with you again sometime in the future, and see how your career's coming along.
Allegra Alessi:	29:21	Can't wait. Thank you Jon. Thanks for having me.
Jon Krohn:	29:25	I had such a fun time filming this SuperDataScience episode in person with Allegra in Switzerland. She's brilliant at clearly communicating complex concepts, no



doubt an asset in her role as a data science-oriented product owner. In today's episode, she filled this in on how Azure is a leading cloud platform for IoT, how her team's particular tech stack consists of Python for data science, .NET for their platform's backend and Angular for their front end. She filled us in on the key product methodology she follows, including product increment planning, SAFe and Kanban. And she told us why you might want to consider a career as a product owner yourself if you're comfortable saying no, love digging into what a customer really needs and are interested in the broader context of how data science fits into a product.

30:09 All right. That's it for today's episode. Until next time, keep on rocking it out there folks. And I'm looking forward to enjoying another round of the SuperDataScience podcast with you very soon.