What happens when artificial intelligence meets agile?

Script

0:00
Stefanini
What happens when artificial intelligence meets agile?
Some argue that the agile methodology can accelerate AI projects through feedback loops that facilitate fast-paced problem solving. Others maintain that existing agile methodologies encounter significant challenges when faced with the unique lifecycle requirements of AI projects.
So, which is it? Can agile and artificial intelligence work together or are they hopelessly mismatched?
We sat down with Fabio Caversan, the Digital Business and Innovation Vice President at Stefanini and Gercel Silva, former Agile Coach and current Agile DevOps Senior Solution Manager and Practice Lead to get to the bottom of this question.

00:51
Stefanini
Hey Fabio and yourself, thanks for joining me today.

Gercel
Hello.

Fabio
Hey there, Mary.

Stefanini
Uh, so we are talking about agile and artificial intelligence. Two subjects that some say work really well together, while others may not agree. But before we get to that, let's do a quick dive into the agile methodology for our listeners who might need a refresher. So, Gercel, I'll direct this first question to you. The agile methodology got its start in software development and has increased in popularity since then. How is agile being applied to other industries?

Gercel
Alright, so that's a good question, right? Agility was, like, presented to the world in

2001, right? It was defined by software engineers, but actually its influences date back to the 1950s with the Toyota production system, right, which was later labeled, like, lean manufacturing.

Stefanini
Uh-huh.

Gercel
And another influence is a 1986 article called "The New New Product Development Game."

Gercel
Uh, the authors of the article were looking at different multinational companies that were innovating in product development with cars, cameras, printers, physical products, right?

Stefanini
Uh-huh.

02:16
Gercel
Uh, so the roots of agility are not necessarily in software development, but in product development and in innovation. Then in the 90s, many software engineers started experimenting with different ways of developing software, projects, products, and it was radically different than traditional software development management. What we call "Waterfall," right?

Stefanini
Uh-huh.

Gercel
Uh, these practices, they were more adaptable. They were producing working software earlier with higher quality and more team engagement, and they were all in the software area, right? And then in 2001, seventeen of these engineers got together to identify what they had in common, and that's how the Agile Manifesto was created, right? But talking about other industries, we're now 20 years later after the creation of the manifesto and agility has a new role.

03:14
There's a concept that we call business agility, which means it is the ability to compete and thrive in the digital age by quickly responding to market changes and

emerging opportunities with innovative digitally enabled business solutions, right? Which means that lean and agile principles have been increasingly applied outside of IT areas like marketing, you have the agile marketing manifesto, HR, you have the agile people folks. It is also used in hardware in business strategy. So, to summarize: if you have a complex problem that requires intense cross-functional collaboration of experts then agile can help you succeed.

Stefanini
Right, right? So, you kind of answered my second question, which was, right, the idea that the agile principles that you mentioned or methodology are helping teams work more quickly and productively. So, if we're kind of stepping out of the way that agile is applied to software development and that kind of thing, how can working in an agile mode, you know, broadly increase efficiency for teams?

Gercel
That's a good point as well. A lot of people, when talking about the agile, we're talking about speed, but it's a bit more than that, right? Of course, there is more speed, more efficiency, more productivity, but agile – also, I think the real magic is to help teams work more intelligently and focus on value delivery, right? So, agile can help a team get a shared understanding of what are the business goals? And what are the priorities? And make sure that whatever we are working on is the most valuable thing, right? You would be surprised at how much waste can be found in any software development project.

And agility, um, helps us recognize value and waste, right? If we're talking outside of IT's value and waste, are things you need to be looking at in any initiative, right?

Uh, but agility also helps you with dealing with unpredictable problems and impediments by keeping everything visible and keeping everyone involved.

05:38
There are some agile engineering practices that will effectively help programmers be more productive through quality and automation, but it can be used outside of IT as well.
And lastly, agility focuses on continuous improvement, and it gives a team a chance to, from time to time, maybe every two weeks, they stop and they discuss about the problems, the way they're working on, and they are finding new and creative ways of improving their efficiencies. So, even if you're not in software, all of these practices would help you work more intelligently.

06:16
Stefanini
Right? Especially that emphasis on communication. Sorry, Fabio, what were you gonna say?

Fabio
Yeah, I think that those answers are really interesting because for me, you know, I was always thinking about agility in software development because it seemed so natural. I wasn't even aware that it was born in a different industry and now it's also spreading to different business cases, right? Because, because, since you can prototype and change things so easily in within the softer domain, I thought that, you know, uh, the agile methodology would be a natural product of software development.
But, that's an interesting point of view, and, and that's one side, right?
And at the same time, it's interesting, interesting what Gercel told about waste, right? Because the same agility and flexibility that allows us to change, and you know, implement or develop just that final, extra thing. The same agility leads to this, you know, a waste of effort because you can, since, since you can create those things relatively easily, right, without changing a production line, without setting up a machine or something like that, I guess most of us feel, you know, just tempted to, to do.

So that's an interesting aspect that I didn't think about before that agile is actually helping. That's, yeah, pretty cool.

Stefanini
Yeah, so Fabio coming from the AI side. Do you encounter agile a lot in your day-to-day or, I guess, how do you interact with agile from an AI perspective?

Fabio
Well, I would say that, you know, every single project that I engaged in AI until today was using agile methodologies, right? I mean, I started in a few projects, even before the manifesto that Gercel described – it doesn't matter when it was a long time ago – but, you know, if we have challenges and we know that agile development has to be adjusted to deliver AI projects. If we have challenges, we've had agile. If you go waterfall then, you are really in a in a bad situation.

Now, to adjust sprints of research and understand, you know, that research might give you the results, but might not, so this kind of activity is way, way easier, and I would even say feasible, using agile methodologies than using any other methodologies. So, I would say that it's truly important.

The products that, you know, we created at Stefanini, I can tell that, for sure. Like Sophie, they, from the start were developed and they are still nowadays developed using agile methodologies.

Gercel
It's interesting, Fabio, uh, agility helps us deal with complex problems, right, where the relationship between cause and effect is not like straightforward and then you'll have to actually analyze and try to understand. But, the thing is, if you don't know exactly how the product is gonna look like, agility will help.

You're gonna create small pieces of your product, right? And you're going to get feedback from that piece before you start producing the next one, right? So, by delivering pieces and getting feedback, it will help you understand what is the product going to look like.

10:57
Stefanini
So this is a question for both of you. Why do you think some people think that AI and agile just can't work together?

Gercel
It's a good one.

Fabio
Yeah I can start, but, I think, you know, you can't handle AI projects nowadays as cookie cutter, right? Well, let me split that in two. There are few projects that actually you can, but I'll split that into two aspects.

And these two aspects, we're gonna go back to them later. But, the first one is projects that require you to develop new AI models, architectures or techniques.

These are the projects that are shortly not a perfect fit for a typical agile methodology. Now, there are few projects nowadays, we are starting to have a lot of things provided as sources, ready to be used and, so it's, you know, predictable. If we have, for instance, translation or maybe face detection, that is getting a little bit of backlash, even voice biometrics, but those services are services that are available. More than often, you will need to train your datasets to experiment with different machine learning models and etc.

When that's the case, well, then I guess you can put that into, you know, a typical, uh, Sprint, you can plan and then you can probably handle as typical software development. We're having more and more of those right? Everyone is trying to release

more and more AI features that you can plug into your products without even knowing, right, AI without even knowing what's going on in there.

The one that gets, you know, that feedback or that backlash are the ones when we are working in new machine learning models or we have some heavy data analysis that we wanna do and we wanna try several different machine learning models and so on and so forth. So, it requires a little bit of flexibility – even for agile that is already flexible.
It requires some extra flexibility for you to understand that, you know, maybe that first Sprint that you plan that was to find the perfect machine learning model to analyze that data, maybe the end result is gonna be that the data is not, you know, you cannot apply any modeling to that data because the data is not properly distributed. Maybe you have two few examples of something like that, so I'll give you one example.
There was this data science project that we entered.

When you got the data, 99% of the cases were from Class A and 1% from Class B. So, if you deploy machine learning there, what's the point? You know, it's better just to have, "Hey, 1% is a noise."
Actually most machine learning models would read that 1% as a noise, so that's the thing, you gotta be ready to change this strategy completely and refocus the entire development if the result of your machine learning effort efforts were not expected. Sometimes you get great results in a lab, but then what you needed, you needed an answer let's say in one minute, but the the algorithm you created is gonna take three days to give you an answer, so that's another one.
Well, we managed to do the thing, but we need seriously to reevaluate computer power and alternatives to make it run and cost, naturally. So, those components can disrupt the project when you are planning your sprints and everything else. That's the challenge.

15:56
But again, I still say that it's way, way easier and agile will provide you the tools to handle that and to even discuss that with the client. I will always discuss that with the stakeholders right from the start that, "hey, the direction and the end goal might change based on the research results. But, we will handle that in in an agile way that is still going to be better than the traditional, let's say, waterfall project."

Gercel
Interesting, you say that, Fabio. From my experience in my research as well, I think I see it the same way. You need to understand what is the type of initiative you're having, right? Is it really a new product development initiative where you need cross

collaboration between AI folks and developers and keyway? Or, is it just "we're creating a model to be used," right?

And then sometimes what I saw in the industry from folks in AI is that they're having a hard time collaborating with agile engineers because agile engineers are focusing on, "Let's get to a valuable piece of product as fast as possible, and at least in less than two weeks and sometimes to create our model or train your model." It could take more than that, right? So, I think that is where the clashes started.

But also, from my experience with some other areas as well. I think there is some pattern here that I can see that happened with other areas and maybe it is happening with AI as well, right? AI is not new, but it is becoming increasingly more popular and more and more people are trying to do it. But, if we go back to when agility started in IT, usually people who will try to practice agility were software, programmers, right? And then you see the front end programmer and the back end programmer seeing that there's a lot of value in working together as a team, right? But then when we try to extend that, maybe in the first decade of this Millennium, the first area that we try to bring into this way of working was probably keyway, right, and keyway had their traditional waterfall ways of looking at how quality plays a role in software development and they had a hard time changing that mindset. For example, in waterfall, you do a big plan in the beginning, a very detailed one, and then you try throughout the project to conform to the plan and agility is a big difference, right? You do create your plan, but you're going to get feedback and adapt, so it was a hard time for keyways to start understanding how is it that they should be working differently, right? But, if you go today into any agile shop and you ask where is the keyway, you're gonna see they are inside the agile team. In the future, we're gonna see more and more agile teams where you have one person working on that.

19:18
Stefanini
So we've been talking a lot about how agile can benefit AI projects in a lot of ways, but if we were to flip that, I know at Stefanini we, for our artificial intelligence solutions that we build, we build squads for that. So broadly speaking, how can AI be used to empower agile squads?

Gercel
Let me take that one first, Fabio. So AI, like I said, it's not new, but it's more and more popular, so we're still learning how AI could help agile teams, right? But, there are many aspects in one that is a bit more recent one, it's something that we're calling autonomous automation.

Agile teams, they need to have automated tests, right? So usually, you would have a keyway that looks at your product, your requirements, your goals and then he'll

automate the tests by making sure that the product is running as expected, right? But then, there's this new area, maybe a couple of years in autonomous automation where you can actually plug an AI into a software and the AI will create if not all, a good part of that automation, right? So, it really makes things run way more faster.
Automating something that is almost essential to agility, right? We're talking about getting feedback and getting fast feedback. So, when you have your tests

automated, any change a programmer does in the code, they can press a button and check if anything broke in your in your product, right?

Stefanini
Uh-huh.

Gercel
But then, when you have AI supporting this, AI can cut that automation effort, very shorter than if you had to have a keyway programming all of the pieces of the test automation, right. So, this is one area that I think is quite promising on how AI would support agile teams.

Fabio
Yeah, that's a great example because I was gonna answer on two major fronts: one in the back end in the process itself and the other one I'll call the front end, but Gercel just gave a great example of the back end, right? Making the management itself of the teams and the tasks more and more automated, right? We were talking about pair programming, right? Recently, GitHub launched the AI Bear programmer. So, I guess we will see more and more applications on what I'll call the back end of the agile projects and management.

Gercel
It's called a GitHub copilot, right?

Fabio
Yeah, exactly.
Now, there's been a whole discussion about, you know, the intellectual property of the codes because the code pilot was trained on everything that is public on the Internet and there's a lot of open sources there. So, when you ask for copilot help and it writes some code for you that comes from an open source. So who's that code? That would be a podcast itself.

Gercel
Uh-huh.

Fabio
Now I wanna also draw attention to the front end that is interesting and what do we mean by front end of the agile squads? We're talking about agile, about fast prototyping MVPs, delivered things in short, no expense of time. So, if you think about twenty years before, if we're talking about, "hey, you're going to create this product and there's this simple feature here that is the users logging in using their faces." They'll say, "what the heck is this? I can't do this in two weeks."
Nowadays, with all those things that we have, all those services that we have available, you know, models and pre-trained models and everything, well, you can plug those features, voice detection, translation, you can plug those features in your applications or solutions, you know, pretty quick and pretty fast, so that for me is another aspect, right? Is that now what we have in terms of tools and services. And now I'm talking about the ones that are ready. I'm not talking about the ones that would require research and custom models and etc.
But, if you think about everything that is ready and available to use, you can prototype or create MVPs with amazing features that before would take you months to incorporate into a product. So, that for me is also another great benefit, is when you are planning and when you are with, you know, your product owners and your stakeholders., you can dream a little bit farther because you have those features. And when someone says "hey, could we maybe do this, put a voice detection on this application?" that before would scare any developer nowadays are pretty easy to integrate.

Gercel
Yeah, so you're talking about innovation on the product creation itself, right? Uh, you can use all sorts of, uh, AI models and things that are already working to actually make your product more valuable, right? And that's all that agility cares about.

Fabio
Yeah, exactly.

26:00
Stefanini
Great way to wrap up. Well, thank you so much to you both for joining today. Appreciate it.

Gercel
Thank you, Mary and Fabio.

Fabio
Thanks, man.

Gercel
Great conversation.
Fabio
Indeed.