Julia: Welcome to a DerivSource podcast. I'm Julia Schieffer, Founder and Editor of DerivSource.com.

The FinTech space is booming, and newer technologies, including artificial intelligence and robotics, are gaining mainstream traction very fast. But like many technologies, the real question is how can the capital markets industry apply these new technologies to their businesses?

In this podcast today, DerivSource reporter **Lynn Strongin Dodds** talks to **Opimas' Axel Pierron** about how artificial intelligence can really be utilised in the derivatives space and the impact it could have on the larger capital markets industry. Here's Lynn Strongin Dodds speaking to Axel Pierron.

Lynn: **Hi, this is Lynn Strongin Dodds. I am here with Axel Pierron, co-founder and managing director of Opimas. We are talking about artificial intelligence today. Thank you very much for joining us.**

The first question I have, looking at Artificial Intelligence overall, is that it's a catchphrase for myriad different technologies. Can you please explain the difference between, for example, robotic processing automation, machine learning, deep learning and cognitive analytics?

Axel: Hello Lynn. First of all, I want to thank you for inviting me today to discuss the great topic of artificial intelligence in the capital markets and derivatives. The question is spot on because today what we see is that machine learning and artificial intelligence are often used as synonyms. The reality is that they are a bit different.

Machine Learning is a process in which we teach a machine how to improve itself, in terms of the operation it has to do, and that can be done in different ways. It can be done either with a supervised role of a human telling the machine what is right and what is wrong in terms of output, and, in that case, it's not really machine learning, it has more do with a rules-based engine that we're implementing and teaching the system. And then with artificial intelligence, obviously, you have that idea of intelligence, which means the system is trying to mimic how the human brain processes things. In that case, you can have machine learning, and especially what we call unsupervised machine learning, which is part of artificial intelligence. A good example of that is AlphaGO. When AlphaGo learned how to play the Go game, it learned to play against different iterations of the AlphaGo program, so it played against itself, and it learned how to do new strategies that could not

even be envisioned by human beings. That's one of the clear elements with artificial intelligence, that it will allow humans to envision patterns or options that they may not be considering themselves.

And then under the large umbrella of artificial intelligence and machine learning, we hear a lot about RPA, which is robotic process automation, but the reality is that RPA is actually outside of the artificial intelligence realm. It's really a rules-based engine that is able to replace repetitive manual interventions, and that's why we often see it being deployed in back-office operations. However, when you start combining RPA with artificial intelligence solutions, such as image recognition for example, you end up with something, which is called intelligence automation. In that case, when you are coupling robotics process automation with artificial intelligence, you are starting to have a solution, which is clearly in the artificial intelligence realm.

Lynn: **Out of all these different technologies, where is the spending being targeted and why?**

Axel: Well, if you look at the overall spending in the capital markets space, I would say currently what we have is a pretty even level of spending in machine learning technology, RPA, and cognitive analytics solutions. RPA has gained a lot of momentum because—especially in the post-trade arena—it's a low-hanging fruit and the benefits are quite obvious. Hence, it has already driven a lot of investment from market participants. However, we expect those investments to decrease in the midterm, as the benefits of RPA will be delivered. However, machine learning, cognitive analytics and the overall artificial intelligence piece will continue to increase in the future as market participants uncover new applications, new business opportunities. So we are really, in the artificial intelligence and machine learning spectrum, at the beginning of a new market infrastructure, and market participants are uncovering new applications almost every day.

Lynn: **When you look at the capital markets in particular, where do you think it will have the most impact?**

Axel: Well, it is quite a complex question, because I wouldn't answer it by where, but when. Artificial intelligence will have impact on the whole value chain of capital-markets operations. The question is when will it hit the market? And I think here one of the challenges is really the complexity of implementing new technology in our operations. So as I was mentioning, RPA obviously is already being implemented. Something that is also very important, as the foundation of artificial intelligence solutions and machine learning

techniques, is having big data solutions and data that is of good quality and well categorized.

Where it will have a lot of impact is in the compliance sector, for example, where artificial intelligence can provide a lot of benefit. For example, there is a start-up called Droit Financial Technologies, which is based in the U.S., that leverages artificial intelligence for derivatives trading and does some advanced risk checks to ensure that transactions are compliant with overall conduct and also does some reporting activity. AI will also have some significant impact on the trading side with the ability to leverage new data sources and identify new trading partners, new trading options or new trading strategies.

So to answer your question, it is not really a question of where but when, and the low-hanging fruit is obviously in back offices, Know Your Customer, compliance, and, while we are already seeing some implementation of artificial intelligence in the trading arena, widespread implementation of AI in the trading arena will take some time, because it is a new technology and we're still in the learning process. The reality with an artificial intelligence trading solution, for example, is that it could run very well for two to three years, and, three years from now, you might uncover that there have been some issues and some trading that was conducted that did not match your expectations. This means that even as artificial intelligence is being implemented, you are going to need quite some time and someone to supervise the activity of your AI.

Lynn: **How can the technologies be utilised, for example, in the derivatives space?**

Axel: Well, I don't think that derivatives are that different from other capital markets assets, however, we can imagine that for the most exotic or complex derivatives, artificial intelligence can certainly provide some great value, whether it's in terms of pricing, valuations, extracting information, etc. For example, Mizuho Bank has just launched a project using artificial intelligence to extract ISDA contract information through image-recognition solutions and to feed that into its system. So there are numerous ways that artificial intelligence can be used in the derivatives space, especially when you couple that with, on the trading side, new alternative data sources, whether from static imagery, telecommunications, shipping industry, etc. So there are numerous ways that AI can be implemented in the derivatives space.

Lynn: **There's been a lot of talk, and I know you have reports on it, about improving operational efficiency and cutting costs. How can that exactly happen?**

Axel: This is a very sensitive topic within the industry because one of the key aspects of artificial intelligence is that often—that's why it's called augmented intelligence—it's the idea that your employees will be able to do more with less. But, eventually, it will have a dramatic impact on the number of employees per activity, so it will have tremendous impact in terms of employee reduction in back and middle offices and on the trading desks as well. So that's certainly one advantage.

It will also have a major impact on the overall evaluation of risk and risk management practices, and there it will certainly drive some improvements. Also, one of the very interesting implementations of AI is its use to evaluate the efficiency of your current processes and identify not only the most common failures—or to say that more diplomatically, the more common inefficiencies—and solve them, but also to find opportunities to improve your overall efficiency.

Finally, on the compliance side, there will be a tremendous impact. The industry thinks the financial crisis has been hammered with numerous new regulations, from EMIR, Dodd-Frank, MiFID II, etc., and the majority of market participants have responded to this regulatory tsunami by hiring more and more compliance officers and beefing up their legal and compliance teams. While it's allowed the companies to operate under what I would say is some decent regulatory framework, it has, however, had a major impact on their cost-income ratios. Artificial intelligence in compliance and regulation will simply have a tremendous impact on the overall cost reduction of financial institutions.

Lynn: **You touched upon trading, and I know this isn't going to happen overnight, but how do you think the technologies will change the face of trading?**

Axel: Well, the technology is already being used by the most sophisticated market participants. It is changing in different ways. First of all, the ability of artificial intelligence solutions to crunch numerous data sources, which are often asymmetric in the sense that you will receive market data on a real-time basis, but there are other sources of data that you will use in your trading strategy that may come on a daily basis, weekly basis or a bi-monthly basis. Hence, for human beings, it starts to be complex to recrunch all the different data sources, especially when the timing is irregular. With artificial intelligence, we'll have the opportunity to uncover new trading strategies and new trading options. Again, it's outside the capital markets, but what AlphaGO has demonstrated is that artificial intelligence can identify strategies that have not been used by humans before and that are successful. That's opening up a new world of opportunity for market participants.

Lynn: **And, finally, there's been a lot of talk about these technologies, so what are the current levels of adoption, and how widespread is the use of AI for derivatives?**

Axel: Well, there is a lot of discussion around what AI can do and how AI can be implemented, but as I mentioned before, the cornerstone of any AI strategy is to have a relevant data strategy first, and a big data strategy. Most market participants are still struggling with their big data strategy, and their ability not only to store the data, but also to categorise, cleanse it, etc. So that's what the majority of people are still working on. The next level of adoption—and as I mentioned, RPA is a different animal—will be around machine-learning technology, but not in a way that the system is already able to conduct or identify trading strategies itself, but more as a recommendation tool. Here, you have the most sophisticated market participants that are out there, but it's a handful of market players, to be honest. There is a lot of interest because people are identifying the opportunity that AI can represent to the industry, but we're really at the early stage of launching it.

Lynn: **Well, thank you very much, as always, for your insights. I'm sure we'll be talking about this subject again.**

Axel: Thank you very much, Lynn, for inviting me today.

Julia: **For more information on this topic, please go to our show notes page on Derivsource.com. Thank you for listening. Join us next time.**