

Open-Source Technology – What role can it have in the risk industry?



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Jon Cronin (JC):

Hello, and welcome to Ahead of the Curve, the podcast from Acadia where we take time to get under the skin of the risk, margin and collateral industry to dig deep and present topical perspectives and insights on this hugely important sector.

Now for the last few years, much of the industry has been moving towards an open and shared infrastructure. It's been a steady evolution in which Acadia has played a pioneering role and nowhere can that role be more clearly seen than in Acadia's support for ORE or the open source software project. First released as open source software in 2016 by Dublin based Quaternion, which is now a division of Acadia, at its heart ORE is designed for the contemporary pricing and risk analytics of traded financial products.

But why should global financial institutions rely on open source technology when it comes to the critical business of pricing and risk analysis? Well, with me to discuss this, I'm joined by Chris Walsh CEO at Acadia, Scott Soboleswki a leading partner at Acadia and Roland Lichters, Co-Head of Quantitative Services at Acadia.

Chris Scott Roland. Welcome to you all.

It's great to have all three of you with us today. I'm really looking forward to this conversation as well. Chris let's take a step back here. What is ORE or the open-source risk engine? And why is it so important?

Chris Walsh (CW):

John, as Roland and Scott know, I love ORE for so many reasons, it's hard for me to pick one. It's a hugely important tool, improving the safety and soundness of our markets and preventing a number of the problems that contributed to the bank failures we saw, not that long ago. It's exactly what Acadia needs to level up the open approach we've introduced in our markets and I'll explain.

We realized early on the only way to fundamentally change the industry is to work together with the industry in a more open way than I believe anyone else had in the years before us. By being open, collaborative with innovation, data, even IP, we've been able to introduce industry standards that have had such a significant impact on our markets. For Acadia, ORE is the next step in this journey. It enables our clients to collaborate in a more technical level. We dipped our toe in the water in the open source model five years back when we open sourced our SIMM calculation model. With the recent acquisition of QRM, the pioneer of open source risk, we are now fully in.

"The only way to fundamentally change the industry is to work together with the industry in a more open way"



Chris Walsh

CEO, Acadia



Roland Lichters
Co-Head – Quantative
Services, Acadia

**“We saw a
real need for
transparency
in the
industry”**

Now clients can directly contribute to, access and integrate key components of our solutions. And by doing it, they can satisfy the regs working together right down to the code. Roland, you're the creator, want to talk about its origins?

Roland Lichters (RL):

Yeah. Well, the origins are maybe 20 years ago when I was running a risk department and started building pricing and risk software to deal with new structured products and to validate software, namely black box vendor software.

When we founded Quaternion in 2010, 10 years later, which is now Acadia's Quantitative Services unit, this software became one of our focus areas and we managed to extend it on the back of expert services engagements with tier one investment banks. And we use it a lot in model validations initially, but also licensed part of it to clients. But in 2016, we decided to release a large part of our code base as open source, which is now ORE.

As a firm we didn't intend to morph into another software vendor, but we really wanted to pursue a kind of hybrid expert services and software services approach with really a focus on expert services for financial institutions. And we really expected to boost from releasing a big part of our software. And we saw this boost after the release.

The second reason was – we saw a real need for transparency in the industry, especially after the financial crisis. And also following the painful, let's say personal, experience with validating vendor software in the past. And the third reason – we really like open source. I used it before I even started in finance. We really deeply value open source and we have benefited from it a lot because ORE itself is built on top of another open source project that is called QuantLib.

So I believe the motivation for open source, releasing the code, is very similar from Acadia's point of view today. And I think we'll come back to that in a minute.

JC: Well, thanks Roland. And to pick up on one of the points you were making there on transparency, it's clearly a core driver here, but let's dig a little deeper. What are the key benefits for clients? Scott, I'm interested in your thoughts on this.



Scott Sobolewski
Partner – Quantative
Services, Acadia

Scott Sobolewski (SS): So, most models used by banks or swap dealers or large asset managers need to be independently validated, whether they're developed internally or provided by a third party vendor. Black box models are no longer allowed by global regulators following the '08 financial crisis.

So model users really need to demonstrate a strong understanding of what's happening under the hood of each and every model that they use. So being able to view and modify the source code like they're able to in using ORE is extremely valuable in pursuing those model validations and achieving regulatory model approvals for things like initial margin and internal regulatory capital requirements.

A sort of additional benefit unrelated to the model approvals is that the open source nature allows users to customize the models assumptions and calibrations to ensure that it's precisely fit for their specific use case. So that's another sort of functional benefit that users may not be able to do with traditional vendor software.

JC: Roland, anything you'd add to this?

RL: Yeah, I would like to take maybe another angle. Take the perspective of a firm that is engaging in open source and even encourages its employees to make contributions to open source, significant contributions even.

That actually is a calling card for clients of that firm. And this is what we have experienced in the past, after the first ORE release and the subsequent ones. And the second aspect is – it's also a calling card for employees. It attracts employees with an interest in this technical space and with a quant preference because these type of employees like to make these kinds of contributions, like getting the reward for doing this. It's like publishing papers or articles.

So that's a separate aspect, but I can't encourage this enough. Firms do engage in open source, especially please engage in ORE and become a sponsor as well.

JC: Well, let's take this on a little Roland. Conceptually, there seems obviously a strong case for the open source solution, but give me some examples of ORE in action. You described companies taking it on. Let's just dig a little deeper here. Talk to me about some of the companies that you've dealt with and you've seen adopt ORE.

RL: Yeah, we have helped many clients, these are banks and asset managers, with implementing ORE into their infrastructure and in tailoring it to their needs. There are many use cases. Let me just list a few very briefly.

The first and most basic one is firms have a need for derivatives pricing, derivatives valuation, maybe complicated derivatives. You can use ORE for that. We have clients who have built valuation platforms around ORE with our help.

A little bit more complicated case is the next one. Firms in need of computing XVAs, that stands for various valuation adjustments. For example, the impact of counterparty default risk on a derivative portfolio value or the impact of funding costs on the derivatives portfolio value or the impact of margin requirements, et cetera, et cetera. There are many XVAs and ORE covers a lot of them out of the box. And we have several clients who make use of that functionality.

We have a client who is using ORE for collateral requirements, projection, and even in its liquidity management. That's a use case we never anticipated and that's how we see ORE used nowadays in that organization.

Another one is a client in need of valuing structured loans and bonds. Something that off the shelf product and vendor software doesn't do properly and we have built ORE and tailored it for that client to do this job.

Another interesting case is a bank that built its entire interest rate risk management across the entire balance sheet of the bank for derivatives and fixed income products on top of ORE with ORE being the core of their interest rate risk management processes.

And maybe a last case, which is a little bit exotic – risk research with Columbia university which was also using ORE and was a collaboration between one of our employees and Columbia university.

So the variety is large and I could continue listing cases like this. It gives an idea what the scope of ORE is and how it can help you. What's important, I think, to mention as well is that clients use ORE in serious production settings and many of them then more over for

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“We contributed to a large industry study... indicating really substantial savings potential in the industry and all of this using ORE”

model validation tasks, because it's transparent and because it's extensible. They use it for benchmarking vendor models, as we do ourselves in our expert services.

But maybe by far, the biggest use case of ORE is Acadia. Acadia's Initial Margin Risk Generator services are all based on ORE and that means ORE feeds CRIF generation, ISDA SIMM back testing and benchmarking at industrial scale. So not only for local small portfolios, but at industrial scale for a very much growing part of the industry.

And using what we have built around ORE for that purpose, we've also contributed to a large industry study where we used ORE based margin and capital analytics, that is a new extension, to evaluate the impact of multilateral optimization on capital costs and margin requirements. That was a very interesting study, indicating really substantial savings potential in the industry and all of this using ORE which we started releasing in 2016, and with annual releases thereafter, and there are more to come.

CW: Roland, I can pick up on Acadia's position there. As you mentioned, before actually joining up with Quaternion and being a provider of ORE, we were one of its largest users and with it we were able to deliver the risk tools the industry required for UMR very quickly. The key components are already there. We assembled them to meet the client needs, integrating them with our workflows and launched. ORE has really changed how we bring products to market. And we're going to be doing more.

JC: So what about the alternatives out there? How does ORE stand up to proprietary in house solutions or indeed alternative vendors. Scott, what do you think?

SS: I think with ORE we could say that we compete traditionally against two sort of solutions – outsourced vendor software solutions and in-house builds. Regarding the first one, ORE can be used at much lower costs with what we believe is equivalent functionality to a software with big seven figure annual license fees.

So our clients are finding big benefits, replacing those expensive license fees with the completely free version of ORE from an annual license fee perspective, and maybe along with that, some minimal initial consulting or development costs to get everything integrated, but the cost benefit is massive in their favor by making that switch.

Regarding in-house solutions, in most cases, we look at ORE as being complimentary to accelerating an in-house build. In a lot of the cases that Roland just described ORE serves as the foundation for these in-house risk and pricing architectures that can then be extended by the internal quants and users internally at each of these banks or asset managers.

So when you use ORE you likely get 90 plus percent of your required functionality, completely free out of the box. And you're able to spend more of your time customizing ORE to meet your specific needs. So you avoid recreating the wheel for that baseline elemental functionality, and it allows your quants to focus more on fine tuning and testing and meeting a lot of those heightened modeling standards from a validation or a regulatory point of view.

So that sort of affords a much faster end to end development life cycle. And Chris touched on the benefits of that, that Acadia has realized over the last few years, as we've been able to quickly bring things to market in Acadia's deployment of ORE for its hosted commercial services.

“We’re able to bring best practices into our open source code base over time and allow a broader industry benefit by using ORE”

The last big benefit that you get with ORE that you may not get with a traditional software vendor is it’s supported by a wide user base and a big community of users. At Quaternion we’ve traditionally also tried to standardize a lot of the industry best practices that we’ve observed in working with a lot of our clients over the last decade and bringing those best practices into a common framework.

You know, a really tough problem that we may have helped a client solve in the past, we’re able to sort of bring those best practices into our open source code base over time and allow a broader industry benefit by using ORE.

JC: And Roland just briefly. Are there any alternative open source solutions?

RL: Hardly any. I don’t see an alternative to ORE maybe except for the QuantLib project which ORE is based upon. But a similar project to ORE, I don’t see it. So ORE is unique and if you go for open source in this space, then it has to be already, in my opinion.

JC: Let’s just turn the heat up here and bust a few myths that surround open source as well. What are the risks particularly for a business that’s exposing its intellectual property, in the case of ORE what would you say on this Chris?

“The technology is there all leveraging open source. It’s here. It’s widespread. It works.”

CW: John, those thinking that open source should be avoided or even minimized are dinosaurs. The technology is there all leveraging open source. It’s here. It’s widespread. It works. In fact, the last thing they want to do is have a serious problem that they don’t have the transparency and access they need to solve. Thankfully, there are fewer and fewer dinosaurs out there every year. What do you think about this Roland?

RL: Let me tell a little anecdote. When we released ORE in 2016, we also asked ourselves isn’t that risky to release all of this IP? I mean, we have been working on that for five years in Quaternion, maybe up to 15 years if you go back to the origin. So why give this away? Isn’t that risky?

I think the call for us at the time was very easy because we knew we didn’t want to become yet another software vendor. We wanted to focus on the expert services. And we didn’t think that we lose anything in terms of license fees, we rather expected that this open source release would boost our expert services and it really did and it keeps growing now.

So that was Quaternion’s perspective at the time. Is it any different for Acadia right now? I don’t see a risk either for Acadia now in exposing IP in ORE. The expert services argument really persists because we still have that function in Acadia. Beyond that, of course, we have the quantitative products. But what’s the value for the clients in these services?

It’s the value of an all round package that contains the analytics, which are ORE based, but also independent market data feeds. It contains onboarding services, adaptive development, ongoing support, and risk analysis. All of this is provided as the service. So I think releasing the ORE analytics part doesn’t damage any of the current or any of the future services of Acadia, it’s again, rather the opposite.

I believe it helps the clients who want to validate the service and it really helps a lot in demonstrating full transparency to Acadia’s clients. So, no, I actually do not see any risk in this initiative. And I really think that our release process will only accelerate in the future.

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“Clients are finding massive returns...as it relates to their ability to meet these heightened regulatory requirements and optimize around those. ”

JC: What about another myth then? And that is the uncertainty there may be around the maintenance, the upkeep, the quality of that maintenance and the frequency of updates that you would want as an institution using an open source plan.

RL: Yeah, you want to see that the project is alive and that there are continuous contributions to it and that there are many contributors, not only one. So far I have to admit ORE releases, the ones that we have in Acadia and before in Quaternion were annual releases. That's not enough. We really need to increase the frequency. There's a lot going on in ORE, behind the scenes, but the community doesn't see it.

Now we keep maintaining the library. We develop it every day because it's the core of the Acadia machinery. So we are continuously working on this, but we do not show it to the community. And I believe we have to increase the release frequency to show progress almost on a continuous basis, maybe with monthly releases, or at least quarterly releases. And when the project is alive or it's clearly alive, then it will trigger also more contributions from the community. This is really what I hope for, also with this podcast, to find interested parties to join the bus.

JC: So you heard it here first, more people on board that bus and more updates as well.

Well, listen guys, last question for you all. I just want to get a sense of the future here. Looking ahead, what does the future hold for ORE - the open source risk engine? Scott, I'll come to you first.

SS: You may have gotten the sense of this when Roland was talking through some of the client case studies, but there's so much functionality available in ORE that at least within Acadia, we're currently only touching on maybe less than 10% of it in the risk and margin related commercial services that we offer at Acadia.

So I'm personally very excited to continue bringing new ORE related functionality to the Acadia platform and bringing those to our clients. Things like the valuation adjustments or XVAs and regulatory capital optimization that Roland referred to. These are able to be provided at what we think is a very low cost ultimately to our clients because they're based on this open source software and clients are finding massive returns on those subscription fees as it relates to their ability to meet these heightened regulatory requirements and optimize around those.

RL: To be honest, we have kept some of the ORE functionality proprietary in the past. There is something that we call ORE plus, and it's not in the open source release. And what I believe is that we will step-by-step release more of what's there because like I said in the previous question, I'm absolutely sure this doesn't damage the service, at the contrary, and this is what I would foresee.

We don't need to do a lot of new development in order to make contributions to ORE. There's a whole pile of additional development done already, which we could release in part to the open source project. I will be very much looking forward to pursue this. And the other thing that I hope will happen is more adoption on the back of the fantastic Acadia ORE use case. And through this ORE adoption and through the growing services that Acadia offers to the market I hope to see a new emerging standard and ORE as an emerging standard for trade representation, but also for trade analytics.

“A very big opportunity we’re going to introduce... is ORE as a learning tool..”

CW: At Acadia, we’re going to do more with it. We have six new services planned that are ORE based in 2022. For our clients I think there’s going to be a very big opportunity we’re going to introduce, and it’s going to be ORE as a learning tool. And to best understand that, our clients at all levels need to know more and more about risk every year and the regulations are forcing it. ORE has the data models, it has the calculations, it’s documented. It’s a great place to turn to, to understand what you don’t understand, but will need to understand about risk in the coming years. So we’re really excited about it. We think we can really help our clients.

JC: Well, that is a great point to end on. And unfortunately we are out of time now. So Chris Walsh, Scott Sobolewski and Roland Lichters, thank you all very much for joining us and thank you for listening to Ahead of the Curve.

We’d like to know what you think. So please do get in touch and share your thoughts and you can find out more about Acadia by going to acadia.inc. But until next time, goodbye.

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