

## ATP002 Credit Suisse

**Announcer:** Voices in Business presents The Algorithmic Trading Podcast, sponsored by Sybase.

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**Announcer:** Hello, and welcome to The Algorithmic Trading Podcast. In this, the second of our series of interviews on algorithmic trading, sponsored and supported by Sybase, we interview Stuart Bevan, the head of Alternative Execution Products Technology for Credit Suisse, the largest player in the automated trading space today.

Stuart discusses the technology environment of algorithmic trading from a development perspective and contrasts his role today to that of an IT director supporting a trading technology operation 10 years ago. Sinan Baskan, senior product manager at Sybase, and Greg Grimer, editor at Voices in Business, ask the questions.

And thanks to those listeners who've emailed us questions. Listen out to the future interviews in this series, where these questions will be addressed by interviewees.

**Greg Grimer:** Stuart, welcome to the podcast. Maybe, Sinan, would you like to kick off with your first question?

**Sinan Baskan:** Sure. MiFID and Reg NMS is upon us, and I'd like to have your views on what impact it's having on the IT infrastructure, data distribution, and meeting requirements for various applications.

**Stuart Bevan:** My own view is I don't think MiFID will have an immediate, dramatic impact on capacity or data storage requirements, to begin with. I think that will probably come later on. I think the initial focus has been, yes, we've got to meet the regulatory requirements. But then it's also the opportunities it allows us, in terms of more the algorithmic trading side of things and being able to get out there and exploit the fragmentation that we believe is coming from this.

Undoubtedly, down the line, yes, there will be impact. We're going to see more market data as fragmentation comes upon us as well. We're going to see more orders and executions as well. But I don't think it's going to be the big bang, necessarily, that some people think it is.

**Sinan:** Do you plan to distribute data to more locations? Or are you looking to consolidate data in response to MiFID requirements or the reporting requirements?

**Stuart:** I think it depends on what the final destination is going to be. We already have a very sophisticated internal distribution mechanism. And I think there's a key point to make here as well, which is where we don't look at the 1st of November as, for us, being

a massive change in the way we do things. Yes, there are some regulatory changes, but, as a firm, we've been trading using the technology that we're going to be using for MiFID for some time now.

So the smart order routing technology that you need to exploit these different liquidity pools we've had out there now for several months. And we're already beginning to see the benefits of those as well. So we're already seeing that slight uptick there, but I don't think there will be that step change.

**Sinan:** Is there a particular technology that you would regard as a breakthrough technology to address this problem that you've deployed or are looking to deploy?

**Stuart:** The key change is just an extension to the algorithms, to exploit these multiple, different liquidity pools. Now, this is technology we've had in the States for some time now, and we are taking the benefits of that and exporting that to Europe.

**Sinan:** What is the technology that you're using? Event processing? Data streaming? Messaging?

**Stuart:** It's a combination of all. It's an extension to that AES engine we have in-house. But the key thing is what MiFID brings us, because of that fragmentation, and most undoubtedly the increased use of dark liquidity out there as well, is we're bringing that technology on board, which allows us to exploit that fragmentation, and also hunt out that liquidity.

**Sinan:** OK. Do you see more competition from smaller vendors because they have access to same or similar technology and they can find their own niche and compete with Credit Suisse?

**Stuart:** There's always going to be competition, and competition is undoubtedly a good thing. And I would never say there's never going to be a space for the niche player, but one of the things about this game is where the cost of entry just keeps going up.

So, in terms of just having the infrastructure necessary to cope with, A, the complexity of the environments, and B, just some of the volumes we're seeing, that cost of entry is huge. So, undoubtedly there will always be something that comes up where somebody can come in and exploit that opportunity. But again, one of the things we pride ourselves on our firm is, despite the complexity of the environment, we're still very nimble and able to react very quickly to any opportunities as well.

So, yes, undoubtedly people will come in, but I regard that as a challenge rather than a threat.

**Greg:** How would you define how much more complex the thing had got over the last two years, in terms of amounts of data and other technologies you've had to bring to bear to deal with this? Because, obviously, smaller or medium players have been squeezed out, to some degree, or are getting squeezed out.

**Stuart:** I think the irony is I'll probably give you the same answer I would have given two years ago, which is where the complexity keeps increasing and the strain or the challenge that we face with volumes is massive. And I think the events of August show that any capacity predictions, I think, any of us have made went out of the window. And it's something where we take great pride in the fact that we survived that onslaught, and we know that some of our competitors didn't.

But that, again, just means the number of transactions we were seeing internally was absolutely phenomenal, and it was unlike anything we'd seen before.

The real challenge of all this is where the complexity is going up, and we still have to be in a position where we can respond to new stuff coming in. The volumes, as we've said, just keep on increasing at a fantastic rate. And the tolerance for problems or failures just keeps on going down as well, because, especially with electronic trading, the first person we don't want is the first person to spot a problem, being your client, which means you cannot afford to have problems. And in those situations where a problem is unavoidable, say, due to a hardware issue or something like that, you have to be able to cope with it as rapidly as possible.

I think that probably sums up those challenges, which is where it's that eternal triangle of "better, cheaper, and faster." We're not allowed just to pick two. We have to do all three.

**Greg:** Do you have an indicator of the amount of data per trade and whether that's increased as an average, as an aggregate? Obviously, you're considering more data now than you were two years ago.

**Stuart:** That goes without saying. I think, without giving out numbers, and I think in the States especially--and we'll see this coming in Europe--is where, with fragmentation, that means internally you are potentially putting more orders out to the market. Especially as well is if you're hunting out liquidity, you are going to be putting more events out there. But that's going to lead to more events in the public market, given that everybody's doing this to some degree as well. There is a feedback loop there.

But even if we look at the measure of number of external events, even with something as simple as the number of events generated by one client order, yes, that number is undoubtedly going up significantly.

**Sinan:** Considering increasing volumes will continue for a while, and the requirement for low latency is not going to ease up, do you buy into a shared service paradigm for consolidating data and presenting it in two different layers? Or do you anticipate data being distributed to the users continuously, and fragmented data per user community or application or business unit?

**Stuart:** It depends on the problem we're trying to solve. This is one of those areas where there is not a one size fits all. So there are some parts where we need to know absolutely everything that's happened, and we need to know it as quickly as possible, and then there

are other sections of what we do where it's not as important. So we will compress the data, and we'll just deliver it in just the levels that we need.

Yes, volumes are going up. Yes, latency is critical. Latency is not as critical in all particular scenarios. So, yes, we do hear a lot of talk about the drive for latency, and it's an important part of our business, but it's not something that drives absolutely everything.

**Sinan:** Do you see the algorithmic trading applications themselves being increasingly developed in-house for clients?

**Stuart:** At the moment, some 60 percent of all the work we do in the algorithmic space is customized for specific clients. Bear in mind, it's one of these spaces where we have the advantage of having the infrastructure. We've got the experience, and we've got the knowledge. Will some of that move to the buy side? Yes, undoubtedly. I think, if we look at the whole way electronic trading has spread, it's moved the decision-taking from the broker and moved it towards the buy side.

What I'd say, though, is as some of that decision-making moves out; we'll undoubtedly back-fill it with other stuff, in terms of just providing the clients with yet more opportunities.

**Sinan:** When you're looking for new technology, are you generally looking at technology that you'll essentially bring in as a tool, or looking at a complete solution with a certain threshold for completeness out of the box for what you're looking for?

**Stuart:** I don't have a particular preference. I think we'll look at a particular problem and look at the challenges that it faces. The classic example is handling fixed messages. There is an element of that, which is it's undoubtedly commoditized now. There is absolutely no value-add in me building that myself.

Likewise, if we look at some of the technologies we use internally for processing messages, we've gone out and we're using third-party solutions because, again, if you look at that space, they solve the problem in a way which is, A, faster and, B, cheaper than we could ever hope to do it. And it's not a particular space that we're looking to be in.

**Greg:** And the environment you're in is quite an extreme one. The speed that you need, in terms of architecture, is not regular in the regular business world. This morning, we were talking to someone who talked about, "We don't need T plus zero. We need T." [laughs]

So are there technological barriers there, in terms of adopting third-party, where you might think, "We need to develop that, because the architecture's not there, and, ongoing, that technology doesn't really understand what we're trying to do here, and it's not going to bend itself to do this"?

**Stuart:** Undoubtedly. But then, hopefully, that's where we add some value as well. And one of the things we look at doing is, yes, our latency demands are extreme, but are they extreme as, say, some of the telecom providers? So are there other people out there where we can learn from them in this space?

In terms of networking technologies, and things like the use of GigE or InfiniBand, yes, that's going to be the next step forward. But there are other people out there who, while they might not be directly in this space, their requirements are just as extreme as ours, if not more extreme, and we can learn from them.

**Greg:** Now, Credit Suisse has got some of the biggest trading volumes in the world in this area, as I understand it.

**Stuart:** That's correct, yes.

**Greg:** Yeah. And so, how much of that is US-centric, compared to Europe, compared to Asia? What's the spread look like?

**Stuart:** Electronic trading is undoubtedly more developed in the US. What we're seeing, though, is the spread into Europe and Asia is something where, for us, it's not new. It's been developing. We've had a global infrastructure in this space for several years now.

What we are seeing is the penetration of electronic trading in Asia and Europe is most definitely on the rise. And that's undoubtedly due to a large number of factors, but it's not something we're afraid of. We have a massive advantage, in that we have a globally consistent infrastructure. So I'm not afraid of any volumes from MiFID, in that I know I can deal with the volumes in the US, so I'm more than ready for anything that can happen to me in Europe.

**Sinan:** I would like to turn the attention to a particular technology: complex event processing. Are you using it to help these problems, whether it's algorithmic trading in MiFID? If you are, how much you're investing in customizing a complex event processing solution, and your opinion as to the return on investment on that effort and the longevity of that approach.

**Stuart:** We are using it in some areas, but is it a panacea? No. It's one part of a toolbox that we use for solving problems. And I think the key thing here is there is no one size fits all. You need to solve the entire problem. You can't just solve one part of the problem.

**Sinan:** OK. So, it's a toolbox, and you're actually building your own solution using that. You're not getting a custom solution from a vendor.

**Stuart:** Yeah, we use it in particular spaces. I'm not going to say which spaces we're using it in. But it's something where, yes, does it have a place? Undoubtedly.

**Greg:** If you're doing this, though--I think you said earlier, 60 percent of what you would do would be customized...

**Stuart:** It's customized algorithm solutions for clients. Yes.

**Greg:** Right. If you broke that down, then, that's quite a lot of customization. So, each time, the thing has to be re-approached. How much of what you are doing is then reusable? Because, to a large extent, the nature of, say, a technology company is they produce it once and sell it many times. How much of what you're doing there is reusable in units? Is it mostly to do with the knowledge and experience you pick up along the way, or is it that you're actually saying, "Well, actually, this solution is really a tweak of this one"?

**Stuart:** That's where we add value, in terms of our knowledge of this space and our knowledge of what our clients want. It allows us to work with them in such a way where we're not having to re-implement something from scratch, but we have like a set of options which we can pull down off the shelf and then we can link together to fit a particular client's requirements.

**Greg:** Can you give us some idea of the typical life cycle of one of these developments? Because we've heard from other people in the markets that you can often do this, and the thing can have a significant advantage for four months, and then it's got to be re-architected and re-looked at or new strategies developed.

**Stuart:** That's the whole definition of customizable, and that's the whole definition of having a relationship with a client is where, yes, we'll come up with something for them, and then it will evolve to suit their requirements over time, or they might find that they no longer have a need for that particular kind of strategy. So, fine. It will wither away, and we'll move on to something else.

**Greg:** Right. I see.

**Stuart:** But it's also, too, understanding that even the off-the-shelf options that we bring to this space, it's moved on from just the traditional VWAP view of the world. For us, yes, we do it, and we do it very well. But we believe there are other options out there for clients, too.

**Greg:** If you could sort of headline, tomorrow, a breakthrough technology that would really assist you, you could take one particular technology--it could be anything. Fantasy technology, we'll call it...

**Sinan:** [laughs]

**Stuart:** [laughs]

**Greg:** Kind of like fantasy football. What would that be? And you could have exclusivity on it for, say, six months. You could really get your fingers into it and get the meat out of the sandwich. What would you choose; in terms of what do you think the biggest bottleneck is at the moment?

**Stuart:** I'd say that's probably less on the algo side. If you could ask me what the most magic technology is, it's something which could further speed up the automatic testing of some of these systems, because the level of inputs into these systems is absolutely massive. So having something which can generate repeatable but realistic scenarios, based with all these different inputs but which all have a dependency on each other, that would be huge.

**Greg:** Do you feel, then, that the existing technology is hitting a wall all the time, and are you constantly battling up against the edge of this technology, or do you feel that that's not really the issue?

**Stuart:** I think there are technologies out there that do this kind of thing, but they only solve part of the problem.

**Greg:** Yeah. It's actually the combination that's critical.

**Stuart:** It's the combination and the complexity of the situation we face. I think one of the biggest challenges we have is to make sure that we don't break anything. So we have the irony, which is where we want to have an environment where we can evolve it and develop it rapidly, but with change comes risk. And that is the ultimate, biggest challenge is to keep that level of development going, but without breaking something in the process.

**Greg:** Yeah, yeah.

**Sinan:** In response to Reg NMS and MiFID, you're becoming a custodian over a whole lot of data that you didn't have before, and you're retaining it and transforming it in some ways. Has it happened yet that you've found new uses for this data and leveraged it as a business opportunity to offer more services to your clients?

**Stuart:** Well, bear in mind that one of the things we pride ourselves on in this space is anonymity. Yeah, the data itself poses a challenge, in terms of just the sheer amounts that we have to store. And that's pushing the technology envelope. But from a business perspective, no.

And I'll give you an example to make that clear. We have a regular audit where Price Waterhouse come round and actually certify the fact that our entire electronic trading infrastructure is anonymous. And they do that to the extent where they're here for several weeks, and they are in everywhere. And they deliver us a signed piece of paper at the end which says, "There is no way that anybody else can see this information." So, no is the answer.

**Sinan:** Now that you mention anonymity, is there a gap that you're looking to fill, in terms of secure technologies, or do you think you have enough technology out there to maintain your data secure environment?

**Stuart:** Well, we pride ourselves already that it's secure. So, yes, we're always looking for advances. But is that my primary worry at the moment? No, it's not.

**Greg:** So, presumably, that means that the developers you've got have to have a much greater holistic view of how what they're doing fits into a bigger framework. They can't just essentially take a spec and say, "I'm going to do this", until someone says, "Well, these are all the things we have to consider." Because they could be optimizing something which ultimately didn't really increase in much of a value, because it's operating in another environment where there's another bottleneck.

**Stuart:** Yeah, correct. And I think its understanding. You have to understand the space that you're operating in. And it's a question of understanding both our internal clients' and our external clients' requirements.

There's a key thing here, too--and this is something we take pride on--which is where this is a space where the business are selling the firm's technologies. They're selling our technology. And when you start looking at things like that, you're no longer delivering to maybe one or two people; you're delivering to an extremely wide audience.

So, I think, from a development perspective, if I look at how the demands placed on us as developers have changed over, say, the last 15 years, where, 15 years ago, the focus was on delivering functionality and delivering it quickly. And almost, yes, you didn't want things to break, but you didn't have to deliver a perfect solution. You could evolve towards the perfect solution over time. And if we just look at the volumes then, and then we compare them now, it's an utterly different place that we're operating in.

So, yes, we still have to deliver things which are functionally rich, but we're now talking in terms of millions and millions of transactions a day, and performance now becomes a big key, and just in terms of you're going back to people and having that discussion about a trade-off between performance and functionality. And if we trade this little bit of element off, do you know what? We could knock a 10th of a millisecond off this transaction.

And if you add on top of that, then, as well, the demands for reliability and availability and resilience, it's almost like the thing's gone a full circle. So we're now entering a space where, yes, we have to deliver very rapid change, but some of the software challenges we're facing, especially about operating on a global scale, I find absolutely fascinating.

**Sinan:** Is the compensating for that relying mostly on enriching the skills of the developers, or just managing the process? Is it more along the program management, project management side that you try to remedy that, or enriching the skill set of the individual developers?

**Stuart:** As with all things, there's a bit of both. There's undoubtedly an increase in the level of program management. So, in terms of some of the cycles we're going through, you've got a global trading system there. When you're rolling that out, you're introducing

risk into the environment, so you have to be sure that you've QA'd things properly.

On the other hand, that doesn't mean we can move to a world where we can only do one release a year. That's just not acceptable. We can't then evolve at that level to keeping the business competitive.

For me, another great example, I think, of the additional challenge as we're putting on developers is just the introduction of different asset classes as well.

**Sinan:** Right.

**Greg:** Yeah, yeah.

**Stuart:** So, traditionally, you've had people focused on cash equities or futures or FX. That's no longer the case. Through the same trading platform, we're offering FX, futures, cash, and options. So, from a point of view of the teams of people answering the phones to clients, their whole breadth of knowledge just has to grow; likewise, on the development side as well. You're no longer solving one problem.

**Greg:** That is difficult because, traditionally, people have verticalized, and they've been specialists in fixed income or equity. They haven't been broad-brush specialists. So that must actually be quite a difficult thing to manage.

**Stuart:** It's challenging to manage. But on the other hand, if we look at where these other asset classes are going, they're all trending, in some way, down towards the same way of operating as well. But it's good. That's what makes this a really fascinating place to be.

**Sinan:** Also, people are trading in baskets and structured credit, and that affects what your developers will have to deal with, correct?

**Stuart:** Eventually, yes. We tend to concentrate more on the exchange traded side of things. But certainly, as we go down the road, it's like anything: this will evolve. There is no end state here. As they say, it's coming up to December, and we're trying to do the planning for next year now: I can't say with confidence what's going to happen in January, let alone December next year.

**Greg:** Thank you very much for your time today, Stuart.

**Stuart:** My pleasure.

**Greg:** Appreciate it. Bye-bye.

**Announcer:** That was an interview with Stuart Bevan, the head of Alternative Execution Products Technology at Credit Suisse. The Algorithmic Trading Podcast, sponsored by Sybase, was brought to you today by Voices in Business, helping our sponsors to achieve thought leadership in their business sector. To find out more about Voices in Business, visit [www.voicesinbusiness.com](http://www.voicesinbusiness.com).



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