

### ***Interview with a senior manager #1***

- SPEAKER1 00:02 Hopefully that now that has started. OK, so I'm just going to confirm to start with that you've received the participant information sheet and sign the consent form, which I've also countersigned, and also that this section is being recorded for transcription. So, the interview is out in four parts and the first part dealing with the background as to what this sort of what the firm does that you work for the types of things that it does and stuff like that. The second part is to do with emerging conduct risks which relate to algorithmic trading and their implications for human accountability. The third part is about the possibility of machine-to-machine regulation. And then the fourth part is about initiatives maybe to mitigate conduct risks and lessons learned. So, I'm hoping it will take no longer than an hour is what I've pencilled in. Also suggest starting with on the background, could you just describe the sector that the investment firm that you work for is in?
- SPEAKER2 01:26 Yeah, so, I mean, we cross a few different sectors, really. I mean, it's more general financial services now. So, we cover a wide range of client base and be a retail professional counterparty. We cross different marketplaces. So, we've got a payments business license and then we've got essentially massive investment business there in incorporates, a lot of F&O business. So, we've got a large presence in commodities, particularly base metals, precious metals. Then a bit more on the soft and agricultural side of the business as well. Again, this is all exchange traded except for Precious, which is exclusively OTC. And then we've also got a brokerage business as well, um, and always bought brokerage business. So, we effectively transact on a match principal basis for that and the securities business as well. But again, it's a cash business. It's a purely execution. There's no clearing or custody. Um, so what we saw was sort of transcends the major asset classes, although we participate in each one in a different way, different sites. And a lot of the client base we have traditionally was always on the hedging side as we moved into retail. Obviously, we are involved a lot more now in terms of speculation and we don't tend to typically take principal positions in the market. We do have what we call facilitation books that allow some proprietary risk, but it's relatively small in comparison to the sort of revenue we attract. I think probably less than. Well, less than five to 10 percent of our topline revenue comes from any sort of proprietary activity. It's really not fundamental to our business model, but we do transaction on these marketplaces and a number of different ways, obviously not the sort of high-level crux.
- SPEAKER1 03:37 And how would you describe the investment goals?
- SPEAKER2 03:46 Good question, and I think really continuing a trend they've seen, say, the firm wants to become an all-encompassing, clear and execution service platform, so it wants to be someone who is agnostic of the asset class. The market just wants to be able to give the consumer whatever access they need to fulfil, whatever their desire is, speculation, whatever. So, I think really the firm is

trying to place itself to be right for all markets. So, against the global firm, you know, with us driven firm but big presence in Europe and growing presence in Singapore. I think the idea is to monetize the infrastructure we pay for in terms of market activity, in terms of clearing ability and make sure that touches a wider audience as possible. Obviously, in tandem to that, we want to continue to grow the market access because the idea being the more markets we participate in, the more ancillary business you pick up. So, if you become a one stop shop for some of these things, you're much more likely to gain some critical mass down the line. I think we've also seen that, you know, in a space where the banks don't want to set or astrologist technology to capital reasons, theory is a huge chunk of our client base has arisen from banks not wanting to do certain types of business. It's not because they couldn't be that it was either not cost effective for them to do so and it didn't fit their risk appetite, or they were capital constraints to justify the return on their side to sort of growth in that space. And I think, generally speaking, made our own there's not many firms set in that space. Now there's us and maybe three or four others that are slightly comparable, although no one's really directly comparable to us anymore. But, yeah, we sort of found a niche in the market. The idea is to explore that niche and to grow our presence as much as we can in terms of increasing number of clients. Really, I'd say that's the main driver.

SPEAKER1 06:07 OK, and your role is?

SPEAKER2 06:11 So, I'm the COO of EMEA

SPEAKER1 06:15 OK, and what types of algorithms does the firm deploy?

SPEAKER2 06:22 So, the firm specifically doesn't have any in-house built algorithms and it's all vendor based. So, we have a handful of cases that are committed to trade is essentially whatever the ISPs offer. This the box. We do have some clients that have API connectivity in some markets, but they're still beholden to the religious views place on what you know, what algorithms can be used. So typically speaking, it's the much more generic. And I'm probably not what you immediately think of when you associate with algorithmic trading for us. Algorithm can be as simple as OCO order or, you know, the stuff that is typically considered. You know, maybe two different types of model order, things like icebergs that were never considered algorithms, but in hindsight, they had some of the same traits. So, they are classified as that now. But that is much more the algorithms that we as a firm deploy, or our clients, deploy rather than the house-built algorithms.

SPEAKER1 07:31 And it's a not machine learning artificial intelligence algorithms, no. And what sorts of strategies do you think are employed when those algorithms are used

SPEAKER2 07:49 within the firm I represent?

SPEAKER1 07:51 Yes, yeah.

SPEAKER2	07:52	So typically, it's just efficiency of execution. They are to utilize the government rather strategy. They want to execute, relatively speaking. Again, it's going to be executing a hedge of some of some sort. The club will have a hedge strategy and even algorithm helps them execute that strategy most efficiently. Then that's what they're doing. I'm going to say efficiency. I mean, obviously, the price is a factor as well as the number of trades they have to execute to meet that requirement. So really, I think it's just about efficiency of getting the position they want from the market.
SPEAKER1	08:35	OK, and what's the process in the in relation to the to design deployment and recalibration of the algorithmic functionality that has been brought in from this vendor?
SPEAKER2	08:50	Yeah. So again, it's based on a series of statements from the vendors to confirm they comply. The necessary answer. Um, and then we also keep in total inventory of these operations that we sort of maintain and keep up to date as per the corresponding vendor contractually. All right. Yeah, so that sort of results is a function within our trade platform support department who maintain that that list of other rhythms and, you know, liaise with the vendors in terms of whether we're up to date on our conformance testing, whether the exchanges are releasing any enhanced conformance testing, whether they comply. So really, it's more than, I guess, more of a relationship management thing as well. We are very dependent on the US business space to help us comply. Obviously, responsibility sits with us and no one else. But yeah, we have to maintain close relationships with them to make sure we meet the criteria at all times.
SPEAKER1	10:01	OK, and what's your understanding of the meaning of the term conduct risk?
SPEAKER2	10:08	Conduct risk, yes. So, I mean, in the context of algorithmic trading or just general trading, it's about how do people contract with the markets? So, I think whether their actions and what they're looking to achieve from the markets, I mean, our client's criteria or B or the best interests of the firm to see where they're adhering to the market regulations. And, yeah, just to check the conduct that they are performing is in line with a what they're registered as the regulator being our own internal policies in regard to conduct and culture, obviously adhering to market abuse regulations and market manipulation with that sort of stuff, making sure that their conduct is appropriate.
SPEAKER1	11:09	And does the firm have a framework, a defined framework as to what its approach to sort of identifying mitigating conduct risk?
SPEAKER2	11:20	Yes.
SPEAKER1	11:22	OK, and what to briefly, what does that entail?
SPEAKER2	11:29	So, I mean, I think there's different ways that we looked for four risks. We have a surveillance department that will monitor our activities, our client's

activity. But we also want a wider range of measures that just review our staff's conduct in general so that communication internally with clients where they're misrepresenting the company or not. But in regard to the more on the trading side, is really around the sort of post execution, surveillance and obviously any training that needs to be provided beforehand to make sure people understand what conduct this means to them, and not just because the regulated what it means to the firm as well. So, yeah, we've got processes to monitor things.

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| SPEAKER1 | 12:23 | OK, and what would you say the firm's perception of conduct risks associated with algorithmic trading is bit related to itself or the wider sector subsector. Both now and in the future,  |
| SPEAKER2 | 12:43 | So I think conduct risk and algorithmic trading are two things that seem to correlate heavily at the moment, at least in the exceptions, I think, as a company , because we don't classify ourselves as algorithmic traders, although like I said earlier, the regulation does in terms of some of the ways we execute our clients execute does constitute algorithmic trading, but certainly not the purest form the algorithm. Conduct risk is much more about how our staff representing the firm, whether they're misrepresenting what we do, whether they're treating clients fairly. I think that's more at risk means for us as a firm. And we don't necessarily run to make that connection between algorithmic trading and conduct risk just because it's not necessary in nature. I think from an outside world perspective, I think that you do go hand in hand, I think mainly because of scepticism around aggregate trading. And there's a lot of questions about how whether it can be led to market abuse, market manipulation and in conduct risk as well. But for us as a firm, we don't necessarily tie the two together. |
| SPEAKER1 | 14:10 | OK, and what would you say are the likely levels of self-calibration? So, we've got these platforms which offer these various degrees of functionality. What level of self-calibration is there in those platforms now?  |
| SPEAKER2 | 14:27 | Yes. So, some of the platforms have high level. So, we talk about algorithmic trading immediately. Listen to someone writing an algorithm from scratch. That's not necessarily always the case. And all these activities, cities offer certain products that almost allow my graphical interfaces, like building blocks to build your own algorithm that way. Now, again, typically speaking, that's not in the nature of our client base. There is not. We have a demand for that from our clients on the Web, you asked me to talk about offer based products and it's certainly something that we have to be aware of, but it's not a stock that we subscribe to at the moment. And if we did, obviously then go to a different level of conformance testing. And it's not just, you know, it's not always we go let's carry on. We do have to review the access. But at the moment, certificate of access, that's not really a factor for us.  |

SPEAKER1	15:28	So why do you think clients perhaps aren't interested in those types of self-calibrating algorithms at the moment?
SPEAKER2	15:38	<p>I mean, I think in part it's a level of sophistication. And I mean, again, for us, it boils down to our client base. I mean, typically speaking, that's our clients are not looking to gain advantage by means of algorithmic trading. And they generally have a different strategy. And like I said, predominantly hedge, but could be speculation. But I don't want to speculate on. You know, I don't think they're looking to gain advantage by means of our trading because we're not the right outfit to do that and we don't offer as much connectivity. Some other firms, we don't have things like, you know, we don't communicate next to within certain exchanges and stuff. We just don't have the infrastructure to allow our clients to do that. So, I don't think we're an obvious choice for those types of clients. I mean, that being said, you know, some of them will consider it going forward. But I think traditionally speaking, our clients have been doing what they've been doing for quite some period of time. I just don't think they're up to speed. And I do think that maybe algorithmic trading has obviously carries a different set of risks to their normal business model. And I would assume that if they're not, as I find those risks that don't want to dissipate and, you know, there's always a finish case, someone sets up what they perceive to be a safe algorithm and had done something wrong, and it can cost them a lot very quickly. And so is that sort of risk. But I don't think our clients are sophisticated enough to want to run.</p>
SPEAKER1	17:15	Do you think that it's always going to be that way, or do you think in the future things could change and you might you know, you might see a divergence in approach?
SPEAKER2	17:26	<p>I would definitely change, and I think truly great generational thing. I still think a lot of the executives and the companies I'm talking about had to be disrespectful to them, but that they're of a different generation where electronic trading was not necessarily front and centre when they were coming through. Because I think nowadays and even looking at the sort of stuff that we hire as a company and the technological ability of staff, young staff coming through now is so advanced that as soon as that starts flowing through to the trading side of the business, it's going to become pretty standard. And I also think as time goes on and more and more people do turn towards an Internet execution and potentially algorithms, it's just going to become sort of prerequisite for being able to do your business and to, you know, to trade in the market is going to have to have a degree of technological ability. And you've got that. You look for advantages, I don't think in India is comparative advantage came from potentially who you knew and what marketplace. I think the transparency in the markets now that it is got the edge is going to come from. How tech savvy is your first, really? And that's my view anyway.</p>

SPEAKER1	18:43	And how well positioned do you think your firm is to accommodate that kind of development?
SPEAKER2	18:52	We're not well-positioned at the moment. I'm just back to what I said, because it's not with the demand for more clients. That being said. But what I said at the beginning, we want to become a wide-ranging clearing execution services firm then, which is by means of evolution, you're going to have to offer that at some point. When we do, I think it's going to raise a lot of questions internally. I think our conformance testing will become a department unto itself, such as the importance of market stabilization. I just think there's too much risk for us to just wade into that without saying very good returns. So, I think we have a large, profitable client base wanting to do that. I think it's too risky for us to enter into because we just don't have the infrastructure for it.
SPEAKER1	19:49	OK, which thick products? So fixed income, currency and commodities products... which products say were particularly important in the firm?
SPEAKER2	20:12	Yeah, about 50 percent of our commodity supply is not 50 percent, actually about a third of its base metals that precious metals and mining third made up of various different things
SPEAKER1	20:26	on the base metals. So just that there's a there was a study done by a couple of researchers who worked for, I believe it was for the Chicago Mercantile Exchange or possibly the CFTC in America called Hayne's and Roberts. And they found that in the first review that they did between November 11 and October 14, they found that algorithmic trading was present in forty-six-point five percent of metals contracts on the S&P. And then by far, most of October 18, they did every review. They did a fresh review, and they found that had gone up to sixty-seven-point six percent and of metals trades on the CME. The base metals that you are trading for, primarily trading on which venue, LME. And how do you think that compares to that kind of right that was there for the CME? How do you think that compares to where the LME is?
SPEAKER2	21:28	I mean, I don't necessarily think that stat tells the story because it's the definition of an algorithm is so broad. I think if that stopped pertained to algorithms that you mentioned in how complex algorithms, I think it would carry more weight. But I think that not just to me says that the more people would execute via platforms using things like iceberg, iceberg, things like that, which are quite generic platforms, so much whatever he says, too much. I mean, I do think on the revenue side, it's going to be the same trend as the wider market. The more platforms to plug into that exchange, the more platforms will offer their own versions of these vanilla, yet still algo, orders and the broader market will use them, especially when, you know, if you have to have a client who's hedging on multiple commodity markets, well, they're going to use the same strategy across the board. And typically speaking, a lot of clients who hedge things like base metal on both COMEX and LME and that use the same platform likely to both. And so therefore they'll use the same

strategy of execution for both as well as the venues do differ significantly, maybe make a sweeping statement. But I think typically people get more and more used to using these lighter touch algorithms that I think will become more prevalent.

SPEAKER1      23:00      Do you think in the LME, what do you think the possible impact could be? Because obviously, as we've seen in the in the news recently, there's been this currently of discussion paper out about certain structural changes to the market in terms of changes to the margining methods, maybe the removal of open outcry trading and then also dis incentivizing sort of traditional voice broked interoffice market targeting with higher fees. What, if any, impact do you think that could have in terms of maybe encouraging firms to look at using in this sector to use more algorithmic methods of execution.

SPEAKER2      23:45      I think you would have a massive impact. I mean, I think the markets tend to find an equilibrium in terms of where they want to sit in regard to what business plays into them. So, they're HFT is they're hedging their general speculation each venue will have a certain balance that works for them. The LME's balance at the moment is heavily weighted towards the hedging client base. They've got a unique date structure. They've got a unique member set up that they're almost unique in regard to having a trading floor of. All these things are geared toward that one target market. I mean, I don't have a percentages to hand, but I'd imagine they make up a huge proportion of the open interest on the trading volume on that on that venue. Now, the LME need to change. The regulatory environment around them is changing. And the sort of regs that try to give more transparency to the market are the ones that would effectively kill the LME. Current structure they have now not as designed to not be transparent, but it's just an unfortunate facet of their structure that it is more open to abuse in other areas in terms of being a venue. So, I think that that change is being forced upon them. I think when it is forced upon them, the dynamic of what they have to change, and I would be concerned that they'd lose their equilibrium so that they lose the balance that works for them. And when that happens, it's difficult to say where the market's going to go. They become much more vanilla. They begin to look exactly like their competitors, almost identical, but without the broad product offering. So, I mean, I think it's going to be a struggle. And I think if algorithmic trading steps into that marketplace, you wonder how that's going to impact the existing marketplace and possibly to the detriment. Possibly not. It could just you might just add much needed liquidity to solve some of the some of their products. But generally speaking, their client base has been using that as venue for a certain way for a long number of years. They'll see it change and it's likely to be a negative one. And I think if they are really trading steps into that space, might suit the venue in terms of increased volume. It might give more depth to the market. But, you know, it's quite a big risk if it jeopardized their existing client base by putting that put in that balance, you know, we're changing that balance too much, too quickly. And it could really jeopardize the

market and it could either see the open itself up to. But tonight, something like a flash crash with the markets just not built to handle that sort of stuff, or I could just see itself become gradually eroded over time. Great. Compared to just have a better infrastructure.

SPEAKER1 26:58 And with that in mind, what do you think this is possible pending change? I mean, how would you say the knowledge and level of understanding of algorithms and conduct risk are in your firm, senior management, the front office and support staff in order to maybe accommodate this kind of shift towards perhaps more electronic forms of trading than have been previously?

SPEAKER2 27:25 Yeah, they're nowhere near good enough, I guess, because it's not inherently part of our business. So that's slightly understandable. Excusable because it's you got to really understand how the risks of algorithmic trading understand how to control them and how to manage them. And especially so if you want to offer them to your client base and you've really got to understand what your key risks are not just to your firm, but to the marketplace. If you're seen to be facilitating conduct that's not good for the market, then the reputational fallout on that is massive nowadays. I think we chose to step into that space and said we want to start offering algorithmic trading as a service to our clients, allow them to build a bespoke algorithm. We love to be able to have, you know, monitoring specifically for that type of trading. And we have a lot of in-house training as well, especially the senior management level, to make sure we understand the risks. And I think that probably. Carries the same sort of concept which carries the most personal space, unless it's a part of your activity on a Day-To-Day basis. I don't think you would understand the inherent risks.

SPEAKER1 28:49 How do you keep track of developments relating to sort of algorithmic or more autonomous forms of learning type trading, how do they stay on top of any developments in that space, if at all?

SPEAKER2 29:12 I think the difficulty is the answer, I think is obviously a lot of, you know, because we try to study venues, there's a lot of conflicting regulations around these things. And, you know, Pasma might have certain standards that we can adhere to for certain markets. But generally speaking, it doesn't translate across all markets. So, trying to stay on top of the applicable regulation is very difficult. And I think that's in part because it's difficult for any regulator out there or any group of regulators or governing body to define set standards here. So, it does become very difficult to stay on top of the you know, I think as a said, which is certainly a sort of monitoring program across the functions that are involved with algorithmic trading is better than it is, because I think at the moment it's still seen as. But if additional governance, but we don't feel the value, but as and when the world starts to transition more towards this type of trading, we need to understand more about it and make sure we're on top of it.



SPEAKER1 30:19 And have there been any incidents that you're aware of, contact risk incidents that you're aware of involving Algorithm's in the past four years in your firm or not? And do you think. A move towards more algorithmic or automated or machine learning based trading in the firm would result in a reduction of overhead in terms of staff. And if so, in which areas?

SPEAKER2 30:49 I think it will represent a shift in staff, not a reduction. So, we have staff who are out there selling our services as a company and talking to clients, etc. But I think as time goes on, that sort of service where it becomes less bespoke to individual clients, it's more modest. covid offering a brochure, to be honest. I mean, if we were to open up a division to look to on board clients for algorithmic trading, they're not going to want to sit in front of the salesman having lunch somewhere. They're going to learn the technical aspects and they want to know the detail about this. They're going to want to know our performance on latency. They don't know that these things. So, I think in reality, the sales aspect would drop. The sales effectively become generic things like our website. I think the monitoring around it would increase significantly. And you've got to have these algorithms are complex and technical. You've got to have people that are well versed enough to understand them internally. It can't just be to the client understands their algorithm. We give them a process that promises to work with them and that set off they go. That's not good enough. And you've got to understand exactly what that client is trying to achieve, how they're trying to do it, and the risks of what it is. You've almost got to analyse the technical KYC on each client from that perspective and even each other. Then you can't just say we adhere to the venue conformance testing. We adhere to the regulatory general conformity testing that won't cover our risk in a firm that would just take boxes. We have our own conformance testing to a much higher level. So, I think for those sorts of functions, I think it would increase a lot.

SPEAKER1 32:43 And do you think there is a possibility that conduct risk set or certain types of conduct risk increase or decrease as a result or maybe a shift in personnel focus in the organization or even levels of staffing?

SPEAKER2 33:05 I think by default, levels of staffing that you conduct should, in theory, go down. And I certainly do think that it's going to accomplish much more with our federal staff. They are saying they would like to reduce that. Yes, I think I would go down. Does it morph into a different topic? Quite possibly, yes. We've got people here in the House monitoring our clients algorithmic trading. You know, how closely do we want them involved in our trading activity? And it sort of raises a few more question marks there. But broadly speaking, I think it should potentially reduce our conduct risk purely by means the fact that we've got less sales staff and I still perceive them to be the highest combat risk.

SPEAKER1	33:51	OK, and what would be the firm's approaches to machine conduct mitigation? So, this is a risk that a machine does something which, you know, ordinarily [if] a human did it would be perceived to be a conduct risk.
SPEAKER2	34:12	There's still something driving the machine. There's still ownership behind the machine. If someone has deployed an algorithm into that machine, it's not the machine responsibility flowering, it's the person who's to say they're still going to be an individual, you know, to tie things back to you. That has to be a person responsible for the activity. Not being said. You know, I think the machine does something specific on that risk, it could be much more sizable, much more impactful than an individual. So, I think it was almost going to be heightened. You got to have a not just for member of staff that, you know, the high-level segment within the firm is it was very much responsible for this activity. It's got to be these acts that are directly in line for when these things fail, there can't be any sort of passing around the chain in terms of accountability. It's got to be someone's name pinned to the fence to say they're responsible for this and it's got to be a high-level person.
SPEAKER1	35:20	Is it possible I mean, what do you think about South calibration because. Those accountability structures that you're talking about, obviously they were put in place at least at a time when human beings were still trading in pits or trading on the desk or something like this, and activity could be traced to one individual or something like. What do you think happened to that chain of accountability that you've described in the sense of if a machine is able to recalibrate itself? So, yeah, there might have been a designer who input the original criteria or something, but then maybe the machine is taking some data and then it's reacted to that data and maybe it's behaving differently to what the designers expected. Do you think that that chain of accountability still works then
SPEAKER2	36:17	as much as it needs to the designer. Yes. Now, that might be harsh because especially if you're talking, I hear no principle the fact that you would not seem to think for itself. So, you argue and then how can an individual become responsible for that machine thinking and becomes a philosopher? But I think, yeah, it's difficult. You have to still pin a name down to that on that machine. And even that that could be a. You know, that could be a part of this process because there's certainly an argument if something of a that machine creates a flash crash and that that person finds himself in court. It'd be hard to convict them. And I think even if we said, right, you're responsible for creating this machine that conducted this this you know, this conduct is called a risk issue. It's still hard to pin that person to the wall. So, I think it's going to be I don't I still think if you have executives with their names attached to stuff and they are directly responsible, I think it adds to it. Aside from that, I think it's going to be difficult how you really pin down conduct these things.

SPEAKER1	37:32	I mean, with that in mind, as you aware of this form or maybe one of the firm's vendors. Perhaps seeking to embed ethical standards into the design of the algorithms, which they are
SPEAKER2	37:49	Not to my knowledge, no.
SPEAKER1	37:53	So it's really just all focused on order-based activity. It's storied no sort of building calibration or design to account for potential risks that that might cause. What surveillance tools does the firm currently use that you're aware of two maybe manage sort of machine conduct risk potentially? Are there any that the firm uses maybe now that are adaptable to the new environment? Or is it a case of completely change?
SPEAKER2	38:32	Do you think, say we have monitoring systems designed more to pick up market abuse? It won't necessarily pick up sort of contentious algorithmic activity. I think there are tools out there was previously that will show us certain metrics, such as the system to try to insert a thousand dollars within 20 seconds, that sort of stuff. We've not taken up any of these systems yet. I think we will in due course, and I think it will become standard practice. And the regulations would really prefer that we did this. It's just I think, again, we've relied on the fact that it's not an inherent piece of our business. We don't view this as a major risk at the moment. So maybe system wise, monitoring wise, we're not quite as proactive as we should be. But we've certainly got the data to review this that we need to. And like I said, I think in sort of tools we use to monitor the activity there probably can be enhanced or the vendor solutions. We can take up different things to the systems here. But they're not going to know what to cover all aspects of our risk in terms of, you know, certain parameters and systems are allowed to work within that we ever went down the route where we probably went off. This is a service. I think we've got to look at new vendor solutions, but there's nothing we could do in the house. We have the data. We don't have the expertise to monitor that stuff. So, we have to take a new vendor solution.
SPEAKER1	40:20	So, would you say that I mean, the ability of the humans to conduct events that are caused by algorithmic activity that working in the business mean, what would you say to that?
SPEAKER2	40:34	So that's nearly impossible. And the sort of outward risk that you run, you need me to counter, I don't make sense. I mean, you need a system to monitor the system.
SPEAKER1	40:48	And how about regulators in the markets? Do you feel that type of readiness for this kind of shift is difficult?
SPEAKER2	40:59	I mean, I think they've acknowledged it, and I don't think there's much consensus about what to do about it. I think in part that's what I said earlier. It's about classification problems and it's far too broad. They've got to narrow that down much more, because if you treat it, like I said, what would have

traditionally been simple market orders for a long period of time, if we treat them as algorithm's people won't take it seriously as a risk because they're pocketing some simple structures. And with the hugely complex ones, they create a flash crash, whatever that that they're bracketing it all together, that that's a bit of a danger to begin with. And like I said, people don't take it seriously. I mean, you've got to nail down what our training is, what the risk is and classify it. They have to take one or two to whatever they're past that. How do you control it? That's really difficult. Again, it's got to come from systems that they open up then used to allow people to trade freely, but maybe they should put restrictions on things they can certainly monitor and even restrict how many how many orders these are going to send down at any given time. Let's be honest, that's more of a feature of nature to you. I mean, I think any return in regard to how they're designed, they probably got a set of standards out there, which is, again, very difficult to do. it's a hard piece to take place, and I think maybe it from a technical perspective, they might have to admit there's little they can do here, that they can't stop someone going around writing program now. They can restrict the way it connects to the market. But if an algorithm has a hundred thousand law limit attached to it for genuine, genuine activity, it is a fund or something. And they've got a strategy built into that algorithm. It can sit there and take away and do. It's meant to do. On the other hand, the algorithm could easily have something in there that says it's going to flood the market within a millisecond. There's virtually nothing the venue can do to stop that, I think. So maybe they just look at dealing a bit more with the sort of governance around the process. So, like I said, making individual accountable, but also maybe discouraging people from taking this this route. And maybe if people register, they have an algorithm, maybe they pay higher fees. So, the sort of, um, factor in the enhanced monitoring that's required and maybe to try to stop the presses a button, say, by maybe he pays less than the algorithm and does the same thing. Maybe that's the way. And maybe they look at even things like taxation. Do you tax the profits from algorithms differently? Is that a deterrent? Is it right to put a deterrent on it? I mean, there's lots of ambiguous questions you can ask, but I think first and foremost, authorities have to quantify what they mean, by algorithms. They have to see what broad steps they can take to stop unwanted activity. But then I think that has to come a point, you push it back to the governments surrounding the process.

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| SPEAKER1 | 44:28 | So, with that in mind, what do you think firms would look to develop in-house or do you think they would go for sort of a build, partner or buy? I mean, would it be smart they built themselves with a strong partner with somebody, or do you think they would buy that capability in?                               |
| SPEAKER2 | 44:44 | Buy, buy, buy all day long. Why? Because I just think, for one, subscribing to a vendor of expertise in this area for someone who's dedicated to doing this process. One shows regulative taking it seriously on these shows. And you're not proclaiming to be you know, you're not working in-house, quick fix to the |

problem or something that you think will simply appease the regulator. You're subscribing to someone who, you know, should be a lead in the field and has bespoke solutions to what is a very bespoke problem. Yeah, I mean, I think people will try to buy that rather than build themselves.

- SPEAKER1 45:29 And do you think there are any merits in trying to incentivize machines to behave properly?
- SPEAKER2 45:38 There are. I don't know how you do that. I mean, the ethical standards you referred to earlier, how you build them into algorithms is difficult. There are certainly certain parameters you can put. There could be some blocks and put restrictions around how humans can work. But I think that, too, it's too subjective. It's too broad to really carry much weight.
- SPEAKER1 46:01 What about deterrence and punishment? Do you think machines would respond to that? I mean, obviously, if somebody is on a desk, you know, there's been a lot in things like Smikle recently about trying to incentivize people to behave properly, maybe for their remuneration or something. But equally, there's always that threat of a deterrent or punishment. Machine is different because they don't think for that, you know, there's it's still they're not living organisms, I suppose, with the same sort of social background. So, I mean, do you think do you foresee any way of deterring or punishing them and being effective or not really?
- SPEAKER2 46:43 No, I don't mean I don't see how I see how you practice punishing the individual associated with the algorithm or the A.I. machine or whatever. All the fun itself. Yeah, I think maybe you can't do anything with the machine. It's fun that choose to participate in that sort of trading should definitely be subject to enhanced regulation. And with it, you know, fees, fines and any other disciplinary action should be an enhanced version of what other firms that access the same venue take, really. because I think the problem is unless you have some real severe penalties in there to make people think twice about whether it's worth it, knows that people will effectively have a shot if they think they can create an algorithm, that they can print the money in effect. And that downside is limited to what the general regulations are, that more and more people are going to have a go. I think it needs to be a greater deterrent for people that want to take that gamble, if you like. Um, you know, there's got to be consequences if they disrupt markets.
- SPEAKER1 48:00 OK. And are you aware of any industry or sector wide initiative to sort of address possible emerging conduct risk implications of. More sort of automated Algorithmics or machine learning type trading?
- SPEAKER2 48:16 No, I mean, I see enough papers on it, enough discussion papers, enough, you know, whatever. It always comes up in any sort of news for when you look at this specific trade throughout my industry and but no initiatives that I'm aware of that would really tackle the conduct risk aspect of this.

SPEAKER1	48:41	What sort of how you would rate the collaboration levels between the various sort of firms in your subsector in terms of working to identify this type of stuff and find solutions to things?
SPEAKER2	48:55	It's non-existent. And it's always in my sector because, like I said, both my firm and our peers, it's not inherent in our business. And that being said , if a bank was doing something similar on a bigger scale , I'd imagine there would be more consultation only because the regulations are Gray and vague in this area , in which case , to get some comfort , you do tend to fall back on , you know , your peers and what they're saying or the standard , but not for us . There's no there's no contact with anyone about this type of risk.
SPEAKER1	49:36	And do you get any approaches from sort of third-party vendors or anything trying to sort of tout for business in this space or not? Really.
SPEAKER2	49:47	So, a third-party vendor tells you on a daily basis, but not specifically to assist with this risk at all? No, I think I've seen maybe. Three to four voters in the last three to four years that even have anything that would cover off the sort of risk surrounding algorithmic trading.
SPEAKER1	50:06	And what would you say? I mean, the sort of to try and balance the sort of matrix of legislative versus industry led solutions mean to the extent that there could be these sorts of changes in the market that, you know, could accompany the current discussion paper and things like that, we do. Who do you think should be leading the charge? Should it be a top-down approach or a bottom-up approach or allow the industry to run with this and sort of define what becomes acceptable, what doesn't?
SPEAKER2	50:37	Only because I think that there's lots of, like I said before, the fact that it is so, so great, so subjective around what constitutes even something like that. I think it opens itself up to be abused. I think one market participant thinks they can get an edge by pushing boundaries here, and I think they will. I think it's got to be you know, it's going to be regulated, alleged, to be honest, in terms of. In terms of controlling, it to start with anyway.
SPEAKER1	51:22	OK.
SPEAKER2	51:23	And I actually think I mean; a lot of the venues should be leading this charge in my view.
SPEAKER1	51:30	And for what reason is that?
SPEAKER2	51:32	It seems, is their markets that can become destabilized in this process, like I said before, and there's this balance between market participants is correct. It's going to be their venue that becomes destabilized. It should be in there in their interest and anyone to keep their stability, keep that balance right and to control this type of trading.
SPEAKER1	51:54	And just in terms of what is happening in the U.K. In comparison to perhaps, you know, what is happening in the European Union or in the United States, I

mean, how far behind do you think the U.K. is in sort of trying to get to grips with this type of risk and potential changes in comparison to its peer regulators?

SPEAKER2 52:19 It's hard to say. I'm not as familiar with sort equipment. US regulation in the space, I think you can play to a degree, has some standards in place because more money, because investment really is comparable, comparable to the EU. I don't know if we diverged on their stance around these things. I can at least say the FCA. I think it's more of a discussion point than most other regulators, but it is difficult me to answer without knowing enough about US regulation.

SPEAKER1 52:53 And have there been any instances within the sort of wider industry that the sort of. Thick industry, if you like, which have caused you to reflect on where your own firm's systems of controls are or not really recently?

SPEAKER2 53:18 Not recently. I would say that I'm always conscious and aware that we connect to a plethora of financial markets, each one via different means, different levels of sophistication of system. It's not quite something that keeps me up at night, but it's something I'm very aware of that, you know, one of these things goes wrong. We could detrimentally impact the market and get severe, maybe possibly financial loss. But certainly, reputational damage is well thought through no real intention. I don't worry too much about the content side of things. I just worry more about technology side. I think if you go into these sorts of, you know, the sort of trading space without being very sophisticated in terms of your own tech, then I think you could get found out pretty quick.

SPEAKER1 54:17 And is there any sort of incident that you, you know, that have been quiet. Extraneous to the actual trading or financial industry, which. Maybe it caused you or the firm to reflect on where they all need us, just by way of example, I think there was a case in America not that long ago where they trialled the use of robo judges, and those judges were. Obviously calibrated by somebody to start with, but when they took in a lot of data and then they were sort of judging cases of people with certain demographics. And there were there some accurate accusations that, you know, maybe they weren't that ethical in how they approached in the resolution of certain cases. Do you think there's any are there any lessons learned from any other sort of sectors, maybe highly regulated sectors, which is where, you know, where there's I or something is being deployed, which the financial industry could learn from? And this and this area? I mean, not

SPEAKER2 55:27 not to my knowledge. Like, I don't know. I mean, I've seen the last sort of decade or so. We've seen a few instances of these sorts of things with algorithms having a negative impact on markets. Now, it's been relatively few and far between. One of which sticks in my head was. Trader based in the UK trading from his parents' attic or something, caused the S&P crash about eight percent several years ago. We're talking about eight, nine years ago, and I still stuck with me that an individual can have that sort of impact on one of the biggest financial markets in the world. But that I find that terrifying, really,

because how many people are out there doing that? And off the back of that, there were a few more controls put in place, a few more circuit breakers in markets. But generally speaking, nothing's changed. Now, like I said, that was, I think, eight years ago. And we're no further on that because I don't think there's obvious technology to deploy that. I think, you know, to say I is a risk. Let's combat it with I mean, I'm not sure two wrongs make a right. And I think that could be equally risky. And I'm not sure I've seen in the financial markets are always going to be the forefront of technology. And I think there's no other industry out there that has this sort of investment in technology that financial markets will have. So, I don't think there's anything else that other industries can really offer potentially on things like the social media side. You know, these things, they can do that. But I'm not sure how it translates to financial markets. And I think that's probably the problem is that no one's too sure. Really.

SPEAKER1 57:17 OK. And finally, what would you say your principal concerns are for the future and respect of trying to identify and mitigate conduct risk in your sector?

SPEAKER2 57:30 It's identifying it. That's one of the biggest things to identify. I mean. Before that happens, that's the biggest thing and it's very hard to. We have so many different types of trading activity going on under one roof and we don't do one thing. We don't do two things do 10 different things, 10 different ways, try to monitor all that activity and then sift through it for, you know, conduct issues is extremely difficult. And that would concern me. But certainly, you know, as things do become more electronic, it's even harder to monitor. Sometimes something like conduct risk can mean so many different things that I'm not even sure there's a system out there that would really cover off what we need. So that's probably more concerning to me is that you just can't stop human nature in some of these things. And if human nature wants to do something that represents a breach of conduct, it's going to be hard to stop. You put parameters around it. But I'm just worried that you can't stop it.

SPEAKER1 58:44 OK, well, that brings the interview to an end. So, thank you very much for your time. OK. Just going to end the recording now.