

# **Barefoot Innovation Podcast with FINRA's Haimera Workie, Vice President and Head of Financial Innovation and Alex Khachaturain, Director in the office of Financial Innovation**

**\*Note that transcripts may sometimes contain errors and that transcript timing notations do not match the posted podcast**

Jo Ann: I am really excited about today's show because my guests are innovation leaders from FINRA, the Financial Industry Regulatory Authority in the United States. And I have the honor of serving on the FinTech Industry Committee of FINRA, and it's one of my very favorite things that I do, so I'm thrilled to welcome to the program Haime Workie, who is the Vice President and Head of Financial Innovation at FINRA, and Alex Khachaturian, Director in the Office of Financial Innovation. Welcome both of you to the show.

Haime.: Thank you.

Alex: Great to be here.

Jo Ann: As I said, I am second to none in my admiration of FINRA. I love serving on the advisory committee. It's one of the very most interesting things that I do in the tech world, as I have said to you two many times. I also am so impressed with the innovation that FINRA is bringing to your work. It really stands out. As I think you know, we at Air see regulatory bodies throughout the world, and FINRA just really stands in the forefront of the leaders in really thinking about technology in ways that are important and forward-leaning.

With that said, I've asked you on the show today in particular to tell us about some of the initiatives you're doing, including one that has a comment period open right now. But before we turn to that, let me just ask you for a moment to introduce yourselves. Tell us a little bit about your backgrounds and what you do at FINRA. Haimie, let's start with you.

Haime.: Well, thank you for those kind words, Jo Ann, and also thank you for having us here on this podcast. I think both me and Alex are really excited to talk about the "Machine readable rule book."

My career itself took a bit of a winding path. I started my career as an engineer and then went into law school. After law school, I worked for a number of years at a law firm focusing on corporate law, then switched to public sector to work at the Securities and Exchange Commission. At the SEC, I worked on a number of different policy issues dealing with trading and markets, including some initiatives around crypto assets like Bitcoin. Most recently, I helped form FINRA's Office of Financial Innovation, which I've been leading for the last four years. I'd like to think that the common thread throughout my career has been a desire to integrate elements of finance, regulatory policy and technology to find solutions that benefit individuals.

Jo Ann: Fantastic. Haimie, we've had you on the show before, and for our listeners, we'll be sure to link to that older episode in the show notes, so people can go back and listen to that again. Alex, tell us about yourself.

Alex: Sure, thanks. Well, first of all, we're both fellow Michigan Wolverines, so go blue.

Jo Ann: Go blue.

Alex: After college I went to New York and I worked in a financial services firm. I was there when 9/11 happened and working through the many issues, the fallout after 9/11, that was probably one of the greatest career challenges I faced. From there, I made a decision to go to law school and to get a Master's in international affairs. So from then on, my career has had very much a international policy and financial services related focus.

So after law school, I worked at a law firm here in Washington where we did international dispute resolution, mostly focusing on financial services issues. From there I went to the CFTC, I was in the Office of International Affairs there for several years. So a lot of cross-border policy issues, both on the bilateral level and multilaterally, mostly through IOSCO. I joined FINRA about five years ago to come work for Haimie. And here, I've worked on a number of areas and I think kind of the main one that's dominated my time over the past several years has been something we're going to talk about a little later today is this machine readable rule book initiative. So thank you again for having us join. It's really great to be here.

Jo Ann: Fantastic. And Haimie, let me come back to you and just ask you to tell our listeners about FINRA. It's an unusual regulatory body, as you know, we have a global audience. So what does FINRA do?

Haime.: Sure. So FINRA is a self-regulatory organization. Its responsibilities include overseeing broker-dealers as well as certain segments of the securities markets. FINRA has regulatory responsibility under the Exchange Act, so it's existence as well as it's duties are enunciated through the Exchange Act. And for many of these activities, we work both in partnership with the SEC and are overseen by the SEC for our regulatory activities. FINRA's mission focuses primarily on investor protection and market integrity in the securities industry.

Jo Ann: Great. And so let's stay with you, Haimie, ask you then to tell us about the Office of Innovation. What's its scope, its role it'd be interesting, I know, for our listeners to hear a little bit about how it's staffed and how it operates.

Haime.: Sure. So this is my favorite topic. So I love talking about the Office of Financial Innovation. The office is really designed to facilitate innovation in a way that's consistent with FINRA's broader mandate, which I spoke about before, which is really investor protection and market integrity. FINRA's office consists of three branches. The first branch focuses broadly on market innovation and emerging

trends, such as new products, new services that may exist out there in the industry, and really trying to understand how those trends are impacting us as regulators. The second branch focus is specifically on technology-based innovations that impact the business models as well as operations the firm's operating in the securities industry. These can be technologies such as artificial intelligence, cloud computing, quantum computing, and gamification.

The third branch, and this one was just recently formed, is the blockchain lab, and it focuses on understanding developments in the blockchain space, as well as facilitating the development of regulatory tools to assist in the regulation of blockchain based activities, think things like crypto activities and other activities that may exist.

Jo Ann: And Alex, do you want to add anything on the office of financial innovation?

Alex: Sure. So I'll add a little bit of color, as one of the directors working in the office. There's a few of us on the team. I'm on the branch that focuses on the tech-based innovations. So I can touch on some of the areas that I'm working on researching at the moment.

So as I mentioned, my background is as an attorney, so I do take a focus on the legal tech space, reg tech space, SOUP tech, very much up your alley, Jo Ann, we've spoken several times, of course. Haimie mentioned quantum computing, so that's something that's a deep-dive that myself and a couple other colleagues are doing at the moment, looking at quantum computing, understanding what it is and how it can potentially impact the financial services space, including our FINRA member firms, broker dealers.

We've recently been looking at the metaverse, the different iterations of the metaverse and how it can unfold and impact our regulated entities and also customers, investors in the securities industry. Number of issues around digital assets that might come up, including stablecoins and central bank digital currencies and some of the policy implications and operational implications of that, trending issues in cybersecurity and cyber safeguards among others, just to give you a sense of some of the things that we're looking at right now.

Jo Ann: What you're saying there, I'll just make this observation for other regulators who may be listening today, part of what has made my experience on your advisory committee stand out has been the focus on the underlying technologies. Lots of people are talking about the issues of the day and crypto or AI and so on, but I've learned so much from the work with you because in a lot of ways you've been doing those deeper dives on things like quantum computing, and I always like to mention the session that you did on DeepFace, which I found terrifying. But it's just been really, really educational.

Air is, I'll mention, we're offering an educational program to regulators and part of it is aimed at just helping people with tech literacy, tech 101 issues that are so

fundamental to what we're trying to do. So with that said, I'd like to turn then to talking about your project for building a regulatory taxonomy and a machine readable rule book, and this is something I know you've been working on it for a long time, I think success with this kind of an initiative is going to be transformative for the regulatory process. So start wherever you would like to in telling us about this project.

Alex:

Sure. I can start with the initial ingredient, which is the regulatory taxonomy that you mentioned. So a taxonomy as we observe it, and as we describe it, it's a hierarchical classification of key legal business and regulatory terms that apply to the FINRA rule book. So we, myself and colleagues in the general counsel's office, set about, starting about a few years ago, after Haimie had asked me to look into this area, and we'd received some interest. We started, sat down, and I've explained this to you before, Jo Ann, we sat down in an interior conference room with a whiteboard and a couple of laptops and an Excel spreadsheet and said, "Let's do it. Let's create this taxonomy." We didn't really have a blueprint. We didn't have how-to manual or anywhere to look to, which is different, as an attorney you're always looking at precedent. So we're looking to essentially craft this from our own know-how and experience.

So that started after the launch of our 2018 special notice on innovation where we received public feedback. After describing what a taxonomy is to the public and whether there is any interest in this, we received support for it from the public to move forward on a pilot basis. So that's kind of where the journey began. It started with that special notice, started in that interior conference room, moved into Zoom, pandemic-related zoom tagging sessions of developing the taxonomy. But essentially we started with the pilot and applied the taxonomy pilot to a small section of the rule book. We then began doing a lot of external testing. We ran demos for a number of firms across different groupings and areas, received their feedback not only on their experiences with navigating the FINRA rule book, but also in demoing the tool and getting their input.

We sent out a survey, and during this whole time we had a RegTech partner who helped validate our taxonomy and determine the global consistency of it, and review our work, and create a user interface. We did, of course, an extensive amount of internal presentation and discussion, not only amongst our group and our other colleagues, but also through upper management within FINRA and different areas of FINRA. We then moved on to a full scale rollout and a development of what we launched in October, on October 21st, the FINRA rule book search tool, FIRST, which Haimie's going to talk about in a sec. And we also tested a lot of our work through an external working group who also helped assess the consistency and the accuracy of our terms. We had subject-matter experts internally reviewing the taxonomy, and we worked with our technology colleagues to roll out the tool, which launched a couple months ago.

Jo Ann:

I think that a lot of listeners are following what you're saying at an abstract level, but still may have trouble picturing why you need the clearer taxonomy exactly,

and how you use it. Can you give an example, Alex, of a term or a set of terms that needed to be put into this type of framework in order to be able to use technology with them?

Alex: Yeah, sure. I can give one example. So we have, say, our core taxonomy. One analogy is maybe if you're going online shopping, we've used this example a bunch of times, and you're looking for a certain product on an e-commerce website, and you have a number of broad categories, price, color, shape, brand, et cetera. And you click those different subcategories within color, black, white, blue, et cetera. Size, 52 inches, 27 inches, whatever. So imagine taking these different categories, and what the taxonomy allows you to do is it allows you to search across different areas. So bringing it to the FINRA rule book, let's say you're looking for rule that applies to a certain type of customer. So you search for retail customer, and you click the box just like you would on a e-commerce search, and you get the rules that have retail customers.

Now in addition, you want to know which rules apply to retail customers that pertain to equity products. So you click equity under security type, and now you get it narrowed down to the rules that apply to retail customers and equity products. And let's say you're looking for obligations and duties that pertain to suitability for retail customers and equity products. You add that as a filter. And you want to narrow it down even further, and you say account opening, and you now have four filters across four different categories, or four cross-filtered terms that narrow down your search to this, essentially, fact pattern for retail customers, equity products, suitability obligations, when you're opening an account for them.

Jo Ann: And is it accurate to say that as you all were reading the text of your own regulations and guidance that you needed to rationalize or match up terminology? So say there's a term like "suitability", is it always phrased in exactly the same way, or did you need to find other terms that we're pointing back to a concept like that?

Haime.: Yeah, well that was one of the challenges, one of the big value-adds as well is any term, it could be "suitability", it could be something else, if there is a legal or regulatory or business concept that's captured in the rules, but it's not explicitly stated, so you're not going to find it on a Google search, you're not going to find it in a control F search on the actual webpage. What we brought was the human expertise, the human experience of being able to read through, parse through that language and determine that, let's say "suitability" for example, or another term applies to this rule, even though it's not explicitly stated anywhere in that rule, it does pertain to this concept. So that was really the real value added. We did not use an NLP tool to parse through this language. It was a manual effort based on the experience of attorneys.

Jo Ann: And we're going to come back in a little bit to talking about any advice that you may have for people who want to undertake a similar project, but Haimie, let's

turn to you then to talk more about this and to talk about the launching of the machine readable rule book.

Haime.:

Sure. So AI stole a little bit of my thunder with the shopping line example, but I'll see if I can give maybe just an overview of what the machine readable rule book is from practical purposes. So it's really designed to be able to allow individuals as well as computer systems to be able to navigate through the rule book in a way that's simple and can be done more readily than before. And the idea is that by doing that, we're able to facilitate compliance by the industry as well as develop efficiencies for the industry itself. And the machine readable rule book can really be thought about three parts. So the first parts, AI's describe quite well, which involves the taxonomy. This is basically a set of key business terms, legal terms, and other terms that are used to tag the rule book to categorize the rule book and develop structure for the rule book.

Now, once that taxonomy has been developed and the rule book has been tagged, we've developed two delivery mechanisms for that content that are designed to make it easier to digest that content. One is the FINRA rule book search tool, which we have trademarked as FIRST, which is an acronym for that. And this FIRST enhanced search tool is, as Alex described, really designed to make it easy to cross-filter to figure out what it is, what rule set actually applies in your specific situation. And so for example, if you're a specific type of firm, if you are, for example, a retail firm caring about record keeping requirements, related to debt securities, you get the set of rules that apply in that specific set of circumstances.

Again, this is designed to be a tool, it's not designed to be legal advice in any way. So obviously each of the individual firms or entities who are using the tool have their own regulatory obligations to make sure that they're looking through the rule book to make sure that they're finding all applicable rules are applied in their situation. But this does serve as a tool to help begin that journey to identify things that people may not be able to readily identify for themselves.

The second delivery mechanism that we're developing or we have developed is an API protocol where you can digest both the rule book as well as all the tags that are attached to the rule book. What this does is facilitate a process whereby one can actually have a tag set of compliance policies and procedures within the organization, and have that linked to the rule book and it's set of tag terms. So for example, if there's a change in a disclosure requirement, it may not say the word "disclosure" within the rule, but it'll be tagged as such, then one would know that they'd have to change their policies and procedures, so they're similarly tagged with disclosure requirements. It'll make that process be able to be more automated in a more seamless way.

And like I said, I think as we've been developing this tool, one of the things we've tried to do is develop it in a stage process where we can make sure that we're getting feedback as needed. And so the prototype that we've developed applies

to 40 rules, but those 40 rules represent about 50% of the page views for FINRA rules on our website, and we developed that information through using Google Analytics. And we decided to structure it that way because we wanted to make sure we were capturing the rules that are likely to be most relevant for what actual individuals and organizations were looking at in terms of our rule. And then we also had a committee that we had set up to help make sure that we didn't miss anything through this process as well.

Now the rule book, the enhanced search tool itself and the API protocol itself is now available on FINRA's website, at [finra.org](http://finra.org). And in addition to the launch of the tool, we also at the same time issued a special notice and request for comment that went through the process we used to develop the machine readable rule book initiative, talked through about what some of the economic benefits may be for the industry as a result of this, as well as asked a series of questions about the usefulness of the tool itself, any recommendations regarding the tools. But also, probably even more importantly, what are the next steps that we should take through this journey? Should we open this up through some kind of open source system where people can use what we've initially developed to build onto it themselves? Should we ourselves go through a process of tagging the remainder of the rule book, potentially in stages, or take another type of approach?

Jo Ann: And one of the reasons that we wanted to be sure to do this show is to encourage people to give you this input. And what's the timeline for doing that?

Haime.: So the comment period has actually recently been extended until February 21st. So if you have any comments, and again, special notice is available on our website at [finra.org](http://finra.org), please feel free to go on the website and submit your comments.

Jo Ann: And we will link to all of this as well in the show notes of the podcast. What do you know so far about the industry's appetite and uptake? The broker-dealer industry is one that has some very large firms and a lot of very small firms as well. And it seems like both can benefit from something like this. Is it too early to tell whether this is likely to be very, very widely used?

Haime.: So we do have some preliminary indications. As Alex mentioned, we've actually gone through this process where we had developed a pilot and talked with firms, showing them that pilot about what the potential of a tool like this may potentially be. And the feedback we got was that there would be a lot of uses, both for, as you mentioned, the large, diversified firms, who could potentially use the API protocol to integrate their compliance policies and procedures related to the rule book, but also from smaller firms who are able to use a tool like FIRST to be able to more easily navigate the rule book and make the process of identifying relevant rules for them much easier.

Jo Ann: And Alex, do you want to add some thoughts on the machine readable rule book?

Alex: Yeah, I can talk a little bit about some of the use cases more generically, more generally. FIRST is improving searchability and navigability of the FINRA rule book on [finra.org](http://finra.org). So there is often event-driven visits to the FINRA rule book on our website. So whether a firm is looking to launch a new product or a new business line, training and education, a firm is looking to do a risk assessment or an audit or some sort of internal inquiry, we think that the FIRST tool can just improve the ability to find relevant content.

Second, interrelated, is resource savings and Haimie touched on this. So it can potentially help to reduce the amount of resources needed by firms for compliance, whether that's FIRST or the API.

How so? It can empower or help empower proactive regulatory compliance. It can maybe help validate the quality of or the confidence in compliance efforts. It can lower barriers potentially to launching something new, a new product or business line. It can help with learning. It can save staff time and resources to devote to other activities, drafting up policies, procedures, things along those lines. And ultimately achieve cost savings, less employee hours, or potentially less hours for external parties, whether that's council, or some sort of vendor to assist you. And I guess just one anecdote that I remember is when we were doing our demos, is someone from a firm who's in the compliance area saw the demo, looked at the tool and they just paused for a minute, and then they said, "It's going to save me about 25% of my hourly work every week, because every time I get a phone call, or an email, or some sort of question about, "Which rule should I look at here or there," I either won't get that phone call at all because they'll find that rule, or the questions will be more streamlined and more limited." So I think that maybe helps kind of bring this to life a little bit.

And I guess the last area, so improve searchability, resource savings, and lastly, and this is through the API, rule-mapping and regulatory change management. So the API that Haimie described, it allows subscribers to pull our rule content and map it to their internal policies and procedures. But also importantly, I want to add, on December 5th, our technology team launched an automatic update. So what does that mean? If a tag on a rule changes, so for example, if such-and-such concept no longer applies to the rule, you'll get an automatic ping, and automatic update through the API that rule X no longer has such-and-such tag i.e. such-and-such legal business regulatory term applied to it, and it maybe has this new tag. So that can help firms identify and interpret regulatory change more easily.

Jo Ann: I was going to ask about the change management part. As you say, it was very laborious to build this. As you think about dealing with either ongoing minor changes or the prospect of major regulatory change in the future, what's your sense about the maintainability of the system? I can see it saving everybody else



time, but does it become hard for you all to potentially keep up with the change that's occurring?

Alex: I'll just say, on that, that's some of the stuff we're asking in our special notice in terms of the way forward. Certainly building it is one step, maintaining it is another. So we're looking at the most efficient ways to do that. And launching this tool, as Haimie noted, it was for 40 of the rules, again, they represent a substantial number of the views, but there's more of the rule book to go, and there's more to this project. And that's one of the areas that we're soliciting feedback from the public on input. We have some ideas, but those are things that are still to be determined

Jo Ann: When we think about the fact we do have a lot of regulatory listeners all over the world, I think they'd be very interested in hearing lessons learned or advice that you might distill from this experience. There are other regulators in the world that have worked on machine readable rules, but most have not, or haven't gotten very far with it. Starting with you, Alex, what would you think that it could be helpful for other people to know as they embark on an effort like this?

Alex: I like to think our journey in some ways is someone that any regulator from anywhere in the world can relate to, resource constraints, coming up with the concept. But really it starts with having a plan and having a goal. Know what can make an impact, and just as importantly, know what position you're in to effect that plan and achieve that goal, and what sort of resources you have available to do that. So have your roadmap, have your journey set out ahead of you, and what you're trying to accomplish, knowing that you'll have to change multiple times across the way. And a lot of unexpected things such as the pandemic will come about. And I would also say robust internal and external engagement has been very helpful in shaping where this product has landed at this point. And again, there's still more to go.

So as I mentioned, we work with the right tech partner every step of the way, we engage with yourselves at the FinTech committee and that was very helpful. We set up an external working group of compliance professionals, and we had internal subject-matter experts here at FINRA reviewing our work. And we have a fantastic top of the line group of technology colleagues, an entire team that devoted themselves to this to get this entire user interface up and running along with the API. So I would say, make sure you're surrounded by the right people with the same goals and the same motivations, and that's what got us to where we are at this point. But again, there's still more to go.

Haime.: And if I could maybe just try to summarize what Alex said, I'd put into three words, one is collaboration, the other's patience, and the third is perseverance. That element of collaboration, both within your organization, as was noted, this was really a partnership between OFI and the Office of General Counsel within FINRA to try to build something like this. But more broadly, we had to work with

many groups within the organization, including technology, member supervision, and others, to make sure that what we were providing was both relevant for the industry but also potentially useful for the organization as well.

And then collaboration externally with several different counterparties, both on a bilateral basis and a multilateral basis with organizations such as [inaudible 00:31:30] IOSCO, internally in the US, the SCC, which we've talked to several times about this, as well as other international organizations such as UK, FCA, who had actually done some pulmonary work in this area as well.

And then I think patience, it's really making sure that... There's fits and starts with any kind of large endeavor, so you have to have patients to ride out the storms, as you meet roadblocks, try to figure out ways of how to navigate around those. And perseverance, I think this is not an easy endeavor. There are a number of different stakeholders and I think it's important to realize that upfront, but I think it's also important to realize upfront that there's a large potential reward for building something like this as well.

Jo Ann: Absolutely. I sometimes cite this story when I'm talking with regulators to add a lesson that I learned from it, which is we'd like to say, at Air, "Think big, but start small." And I always picture you, Alex, with your, I think it was one colleague in the windowless conference room, and the spreadsheet at reading the role and just there's not a certain magic place to get started on a complex undertaking like this as much as it is just find a place and start doing it. And it may not seem glamorous at the beginning, but that just jumping in and starting to work on it, I think is sometimes half the battle.

What else should we talk about that we haven't covered?

Haime.: One thing Alex mentioned in passing earlier is that up to this point, this has been a highly manual process. And I think one of the things that we're trying to do is figure out how to incorporate various, either AI, such as machine learning tools, or other types of process to make the actual tagging process more streamlined. Obviously, in order to do machine learning, you need a base set of data in order to teach the machines in terms of how to tag. So I think what we have done now, I think, at least serves as a potential base set of data, but thinking about whether it's worthwhile to use those type of tools as we look to tag the rest of the rule book is something that's important to consider, because this is a fairly time consuming process if you were to try to do everything manually. And it's one of the things that we ask questions about in the rule book. And as we were also speaking before, the whole idea of this with the machine readable rule book is try to find ways to automate the process more, so automating the tagging process may be something that's worthwhile considering.

Jo Ann: I must say, my own view is that this is the future of not every aspect of regulation but a lot of it, and building on progress in the way you're describing is

going to be so important. Alex, did you want to add anything on what we haven't covered and should mention?

Alex: No, I think just the special notice was something we talked about where we're seeking out these types of questions, and it's something we welcome feedback on. But I think it's definitely a journey. I think you said it's not glamorous, that's a good couple of words, "Not glamorous." But enthralling at the same time. I think everyone who was involved in this project was deeply motivated and driven to get something out there.

Haime.: Yeah, and it is an exciting terms of the possibilities of how regulation can be done going forward, and how one can look to use various tools in order to make compliance itself actually better, which, at the end of the day, helps investors.

Jo Ann: It absolutely does. If we can free up 25% of that compliance officer's time, I love that story. Think how much of that could be going into other kinds of work that's enhancing the safety and the experience of the investor. It's fantastic. So I want to thank you both Haimie Workie and Alex Khachaturian. And where can people get more information? Is it [finra.gov](http://finra.gov)?

Alex: [Finra.org](http://finra.org). There's a section up at the top, rules and guidance. And if you go there, you'll see on the right-hand side there's a big red button, explore the rule book. That'll take you right to FIRST, and there's a number of links there to the API. There's a learn more section, there's a tutorial, video tutorial, and more details on the tool. Also, please feel free to reach out if anyone has any questions, or if they reach out to you, Jo Ann, you can feel free to put them in touch. We'd be happy to connect.

Jo Ann: Great. And we will link to all of this at our site at [regulationinnovation.org](http://regulationinnovation.org). Thank you both so much for being with us and I'll look forward to having you back when this has been running for a while and see how it's going and further lessons learned. So thank you so much.

Alex: Thanks, Jo Ann.

Haime.: Thanks Jo Ann.

Jo Ann: Sorry, I'm looking for my record button. That's odd. It's under more, for some reason, instead of popping up. There we go.