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Matthew Katz is a Vice President and Technical Relationship Manager at Arcesium, where he manages the delivery of R&D for D.E. Shaw. Prior to joining Arcesium, Matthew was Executive Director for Software Development and Support at Perella Weinberg Partners, delivering solutions for investment banking, private equity, and hedge fund groups. Earlier, he ran client-facing technology and mobile development for BNP Paribas Prime Brokerage. Matthew earned a B.S. in computer science from the University of South Carolina.

# Driving innovation through volatility in 2020

Matthew Katz of Arcesium discusses how the firm's innovation strategy has overcome 2020's market volatility and has contributed to continuous client success.

## Q How has Arcesium's technology been developing since you joined the firm?

**A** I joined Arcesium in 2018, having previously been working at a smaller scale with the likes of prime brokerages at boutique investment banks. In 2018, Arcesium was thinking carefully about how trades and data management should be modelled and developing our practices around supporting clients. We were asking ourselves questions such as: how do you scale distributed systems? How do you make sure that your data management can hit any scale and respond to turbulent events?

We want to always be prepared for unanticipated events, and unexpected spikes in volume are among the most common. Those are the worst days for something to go down or go wrong. We have been laser-focused on our technology, which amounts to a series of very complex systems and different servers talking to one other, operating at scale and successfully continuing to function when any part of the system has degraded.

Perhaps the most critical aspect

of the technology lies in ensuring that the whole Arcesium platform is responsive and able to recover after a challenging event.

Recently, I have seen a lot of change driven by these lines of thought, and the focus has shifted to how we can make things even more seamless in terms of data management, scale and reliability. An essential factor that has proven helpful for us in developing our technology is our experience working with large companies; we take the lessons from the experiences we've had with meeting their needs and apply them to improve our modular offerings.

As a result, the Arcesium platform is one that can very much handle, if it comes, the day when a given client experiences a huge market event that causes their volume to triple, quadruple or even quintuple. At that point, we should expect to scale along with them automatically. We're doing a lot of work around this area that enables us to operate alongside each of our clients' business realities rather than the client having to anticipate and overpay for whatever possible situation in which they may find themselves.

At a basic level, most firms can achieve some understanding of their

scaling requirements with a simple tool like an Excel spreadsheet. In this case, one can, to an extent, calculate and roughly understand the anticipated scale. However, when you begin to get more complex, and the complexity increases with time, it becomes ever more important to have a system in place that can truly handle and make sense of the complexity. The ideal system would be resilient and capable of providing a clear view as to how best to enforce rigor around data modelling and data management.

Nowadays, everybody is talking about machine learning and artificial intelligence. The real secret behind these technologies is majorly a case of capturing a lot of data and having it be correct and complete enough that valuable insights can then be derived from it. A simple spreadsheet likely is not going to cut the mustard in the sense that, with only a limited dataset of this nature, it will be difficult to glean meaningful patterns out of it.

When we have dipped our toes into the likes of machine learning, we've been able to do it very quickly and with innumerable datasets, because Arcesium has a large volume of data dating back a long time. With the data having

been well structured and modelled over that time, we can more easily identify clear patterns and draw some useful inferences from it.

Our platform is built on a foundation of rigorous data modelling. Our system makes sure that this data is captured and is meticulous in ensuring that each dataset is reliable in its own right, in addition to reinforcing that the technology modules can each handle any kind of outage and recover gracefully in a way that won't even be noticeable to our clients.

that we do at scale for big companies operate well for small companies too. The modular offerings help give clients an introductory sense of whether we are a good match for their anticipated needs.

**Q With the coronavirus pandemic, and the shift for many to the new reality of working from home, how has the Arcesium product weathered this period?**

keep our productivity up. The rigor around utilising business processes as data and tracking how decisions are made put us in a good spot when we suddenly couldn't meet in person. That's worked well for our clients, too, because we had already prepared ourselves well for the possibility of a decentralised workforce and have been able to maintain our platform, keeping clients up and running throughout this challenging time.

Our preparedness here feeds into one of our fundamental principles: to always expect the unexpected. The more rigorous your data model, the better job you're doing with your engineering upfront. As such, many things that may negatively disrupt the system can be prevented. This overall mentality has affected our approach for the better; we have a flexible infrastructure and have readily been able to scale alongside our clients' evolving needs.

Our further ability to respond to our clients' needs in real-time has proven particularly beneficial throughout 2020. I have been on calls where we have said that we have a number of application servers, and they're handling things within the platform, but suddenly, there's high stress on one area of the platform. If we do nothing, something is going to grind to a halt. We're able to see it, diagnose it, verify that we won't introduce stress in other areas of the system, and remediate it by, for example, automatically spinning up a couple more servers to handle the increased volume. Alternatively, we can decrease the priority of something else that is causing background noise or defer it for later, the likes of which we can systematically manage so that clients' needs are never interrupted.

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**Q What are the current focal points of innovation at Arcesium?**

**A** When I joined Arcesium, the full platform was the only thing offered to clients. More recently, we have been carving out each element of what we do and turning these into modular offerings. As a result, people can buy a 'slice' of our platform, making sure that our platform does not have to operate as a monolith; the security master can stand by itself in its own right. A lot of our innovation is also currently centred on making sure that the things

**A** I was in the business throughout the 2008 Global Financial Crisis, and I'm now seeing that firms who took the lessons seriously back then have been able to manage substantial volume differentials now, while others have struggled. Our practice of doing things in a structured way, and scaling in accordance with our client's individual spikes in volume, has paid off in 2020.

The fact I'm sitting at a desk in my house instead of my desk at work has been seamless. We do everything through systems, like wikis or virtual meetings, so we've been able to