

CEP08

**Host:** Voices in Business presents The Complex Events Podcast, sponsored by Oracle. Show number eight.

[musical interlude]

**Host:** Hello and welcome to episode eight of The Complex Events Podcast; brought to you by Voices in Business and sponsored by Oracle. On today's show, we feature an interview with Sumitro Sarkar of Thomson Reuters. Sumitro is Global Head of Business Architecture at Thomson Reuters, with more than 20 years of experience in management consulting; with a focus on strategy and transformation. Currently, he works in the office of the CTO on market data and associated areas.

In this interview, Sumitro speaks with Vicki Zesses of Voices in Business and David Fergie of Oracle about his thoughts on CEP as a disruptive technology; its applicability across industries, and the steps necessary for adoption.

**Vicki Zesses:** Gentlemen, welcome.

**David Fergie:** Thank you.

**Sumitro Sarkar:** Hello.

**Vicki:** Sumitro, let me start by asking you a bit about your background. You're currently VP of technology strategy, as we mentioned, at Thomson Financial. Can you fill us in a bit about what you do there?

**Sumitro:** Sure, Vicki. Thanks. I've been working at Thomson Financial for the last, close to four years now. Prior to that; I spent around 17-odd years in management consulting, mostly in the strategy and transformation area in technology.

So, when I joined Thomson Financial I joined what we call as the business systems group, which is basically running the technology strategy for their order-to-cash system. That means every bit of technology involved in the sales to billing and financial-systems space.

I subsequently moved to the office of the CTO to work on defining strategies around consolidations and transformations for next-generation systems in the areas of entitlements provisioning, the Thomson ONE platform consolidation, as well as consolidation of market data that we consume for our workstations and desktops.

So that is, in a nutshell, what I do here. And what I have done in the past.

**David:** Thanks, Sumitro. So, do you think that CEP is skewed towards the financial-services industry? For example, could it be successfully used in health care, insurance, life sciences, and so on?

**Sumitro:** I think it is a little overrated and skewed towards financial services; for the simple reason because CEP is interchangeably used with low-latency. And the general impression is that everything in financial services is low-latency; which is essentially not true, because there are a lot of areas in capital markets or retail banking which are high-latency and do not require sub-second response time and sub-second event-processing time.

So, the fact that CEP is analogous to financial services; mostly in the area of capital markets, is, to some extent, a little overrated. And it is a fallacy, because I think it has a very broad reach to other industries as well; in the health care and in the life sciences space--particularly because CEP, the complex event processing concept, is a very different way of thinking. It comes very close to thinking in the lines of parallel computing; which requires you to totally think in a different way.

It's a different paradigm, where you are involved in defining systems which may make a real-life business. Where there is a lot of interactivity and there are a lot of interactions which are simultaneous in nature across entities and which essentially end up working as a support for the decision-support group in any company.

And as a matter of fact, not only in the health care and in the insurance business can it be used; it can also be used in a very radical way in the gaming industry. Which is an excellent place to apply this technology because there's a lot of interactivity and simultaneity in the interaction across various players; and various entities that are part of this massively parallel arena of gaming--which is becoming more and more prevalent on the Internet with the decrease in cost of bandwidth and increase in allowing different kinds of media to be sent and to be shared across the Internet.

**David:** OK. And speaking of the gaming industry, what about risk? What are the risks to the business in embarking in something like CEP?

**Sumitro:** Well, as I mentioned earlier, I mean, complex event processing is a different way of thinking. It's a different paradigm. So I think the first thing is to end up designing a system in a way that it actually leverages the CEP tool or technology that you're using.

So, if you just flip the question, or flip the issue, the point is: does the system really require a lot of parallel processing or parallel event dissemination; where a lot of decisions are based on events that are coming at the same time from various places--which need to be analyzed, which need to be funneled into some kind of a decision-making exercise?

So it is a different way of thinking. It's a world in which you are not thinking in terms of applications; you are thinking in terms of how does a system react to different messages

or different events that are being sent across; by entities that are exogenous to this particular system. So it's a different way of thinking, firstly.

The risk of doing this is essentially twofold. Firstly, if you do not understand the CEP paradigm well; you may end up treating CEP as a rules engine or as a rules-based kind of a paradigm. And you will end up defining a system which could be easily designed using a rules engine in a CEP technology; leading to two things: wrong usage of technology, leading to a high learning curve. Then, obviously, there's a skill shortage because this is a very new technology. The adoption is quite new; and of course, there is time to market of the system that you're trying to design.

The risk is essentially embedded in all these areas. Where you have a larger learning curve; there is a shortage of skills--of people who are essentially well-versed with how to do this. Then, from the business side, there is a demand to put the system into usage as soon as you can; which essentially could be delayed because of the first two.

**David:** Right. So, do you think that CEP is disruptive to the business because it challenged the conventional business processes? And does it become a better way to model the real world?

**Sumitro:** It is definitely disruptive. Because in the sense of the word "disruptive," which essentially means any technology that essentially changes the way in which you do business and ends up defining it in a much simpler way, in a much different way; which adds a lot of value into business. So, definitely, it is a disruptive technology; because it is taking the maturity with which you define or model an application to a different level.

It is very close, or it is another step closer, to modeling the real world; which technology has struggled every day. And as we have seen with other technologies, such as object-oriented and adapted, which very clearly show that technologists and scientists are essentially trying to bring the whole concept of modeling business closer to the real way in which business is actually conducted. Hence, it is another step to align business and technology.

When we talk about business IT alignment, alignment takes place in various dimensions. And one of the dimensions is modeling systems closer to how the real world operates. So the complexity of a real system needs to be modeled using technology. And technology essentially is sequential in nature; by and large. So, if we can model the real world using complex event processing tools and technology; we are very close to modeling the real world and the way it operates.

So, I totally agree with the fact that it is disruptive in nature. And it is also a much better way to model the real world. And I think it's an extension from what earlier technologies have done and contributed from just purely modeling a business inaugural.

**David:** Given the changes that are going to have to happen; what steps should people take in order to adopt CEP in the upcoming months or even years?

**Sumitro:** When we talk about adoption of technology; we have to understand the rate at which innovation affects technology diffuses through the society. And one of the fundamental things that this whole concept of diffusion of innovation has given us is essentially breaking the entire audience of a given technology into five different categories.

The first category is essentially the early adopters of the innovators who are experimenting with new technologies. So, CEP, at this point of time, is being experimented by the early adopters in the cycle. And they are trying to assess the feasibility of using it.

I think what needs to be done is essentially more literature or more publishing needs to be done in terms of how to actually use the concept of complex events. And how does that substantiate a real business problem? So, I think just by talking about complex event processing, it does not help or it does not accelerate that option of this technology.

What will really help is when people start modeling the real world using this particular technology--whether it is in financial services, whether it is in gaming, whether it's in health care insurance, whatever it is. But I think there are a lot of applications. People just need to think about it.

They need to publish; need to get the awareness out to the public so that people start thinking in a different way--which is essentially the hurdle that will get you from the innovators to the early adopters phase. I think the jump has already taken place. But from early adopters to late adopters, that is a big jump. That jump will essentially be caused by pushing literature out in the Internet where people can go read and become aware.

Drawing comparisons in terms of how CEP is evolving, we need to understand a few things in terms of the role Object-oriented & adaptive have played. As we see the entire evolution of modeling software closer to business, object-oriented essentially was data-centric; which meant that you could model applications in a way the real world usually manifests itself, in the form of data.

For example, what are the operations you can perform on a given piece of data? Whether that piece of data is encapsulated in an object called the filing clerk or whether it is the salesman or whether it is just a system entity like a file. And what are the operations you can perform on a file? So, it is data centric.

From there, we have adaptive, which essentially moved to a concept of cross-cutting; which essentially says that there are pieces of functions that can cut straight across entities. And they to be aware of that; and that kind of functionality is not specific to a given entity; they're straight across entities.

Those are essentially examples of modeling entities and modeling data; which we prefer to a static modeling. From there, the entire evolution of modeling went into the whole

gamut of business process modeling, BPRM, etc.

Then, now we are in this whole phase of complex event processing where we have moved from the business process phase to massively parallel systems on massively parallel events; which are complex in nature. And which essentially affect decision-making.

The evolution is becoming more and more sophisticated in terms of how we are trying to get closer to aligning business and IT and how we model that. Now, it's not a tool, so the risks of doing this are essentially the risks with any other technology; because this is something that people need to understand when they're modeling.

I think that adoption will really accelerate if we start identifying applications in other non-intrusive areas which are not time sensitive and which are not temporal sensitive, but which are event sensitive. And try to create examples as I mentioned earlier by publishing literature across and trying to create small applications in the other areas. And once people start doing that, it becomes very easy for people to start thinking in terms of how this technology can be used.

**Vicki:** Can you give us some examples of non-intrusive applications?

**Sumitro:** Well, when I say non-intrusive; I necessarily mean that systems that do not impact revenue at the very outset. So, it could be things like billing systems or payment systems; which essentially require a bunch of events. So, if you're trying to process somebody's payments; and if you see that this person is been in debt for the last thirty days. And you're about to send his records to the collection agency. All of a sudden, you receive this event where this person has paid up. Then usually if you look at a regular, linear business process management system; by the time that this information actually reaches the billing department--they would have sent this information to the collections department; and would have affected the credit rating of this particular person.

So what can be done is: it is time sensitive--but it is not that sensitive to the extent that people are going to lose millions and millions of dollars around that. So people could actually start thinking in terms of how to model those kinds of scenarios using this kind of technology.

So, that the propagation is fast, and the decision that is taken based on this propagation is also imbedded in the application so that you don't have to worry about human intervention. Or you have to worry about somebody's work queue being posted by a message saying that, "Oh, he's already paid up. Now you should not send his records to the collection department." And so on and so forth.

That is basically what I mean by saying non-intrusive. It essentially means that you're not talking real time trading. You're not talking about trades that are executed, multi-asset trades, across various parts of the geography and different kinds of assets; which

essentially require billions and billions of dollars.

So you reduce the risks. Non-intrusive is analogous to saying that's not that risky, in this context. Fundamentally, that's what I meant. If you try to force position of CEP tool in the financial services market; it is essentially trying to, again going back to my initial point of trying to use CEP in the context of low latency. But there are a whole bunch of other things that you can do with CEP which does not require low latency.

I think exploitation of those areas is very important for a quicker adoption of this. Because if you are slightly skewed in your mind that this can only be used in low latency financial services applications; then you're missing out on I would say probably close to 70 or 80% of the areas where essentially you can apply this.

Fundamentally, adoption of a technology is dependent on one of the various ways a technology can be used. And if that is limited, then adoption is slow. For adoption of a technology to be fast, it has to be based on multiple ways in which a technology can be used. What are the complementary technologies that would essentially make adoption of CEP faster? For example, fast processing, real-time processing of data.

There are a lot of vendors who have created engines which work on *real-time on the chip* appliances. When you're coupling things like CEP with software appliances which work at the speed of the chip, then you are actually trying to mimic the real world in parallel processing and parallel-distributed system -- which essentially can hook together and say that they are causing events at each other which can be processed. And then you can reach decisions at the application level which do not require a whole bunch of manual intervention.

So that is how you can essentially increase and accelerate the adoption of CEP in the industry. And I think it can be done very fast. It does not require years. I think it can be done within a year, if people start thinking. And I'm sure people are thinking on those areas. If the software-technology vendors are approaching people in the different industries, like in health care or life sciences or gaming, I'm sure people in those areas are also thinking. So probably it would be just a matter of a few months or probably a year when all these things will start converging.

**Vicki:** I heard another opinion, which is, because there's so much risk prevalent in financial services, CEP could greatly help to identify risks.

**Sumitro:** Right. Identify risks. Or it can also help in terms of identifying the impact of that risk much sooner.

**Vicki:** Yes.

**Sumitro:** So you can be more proactive in your risk-mitigation strategy than become a reactive risk-mitigation player; where you have to do that only because you have to be

compliant with certain things. I mean, even in financial services, it can be used in other things, like risk management, et cetera, which is not trading.

**Vicki:** Right, it is not trading, but is managing--overall management, of the organization, right?

**Sumitro:** Right.

**David:** Yes. It's applying it to measure systemic risk as well as the traditional market risk and credit risk; that has been used in the past.

**Vicki:** And I think that could be very interesting, especially given what's going on this year, starting last year and going on this year; where firms need to be more aggressive. Even Alan Greenspan... I read an article he wrote, I think it was for "The Financial Times," where he says that the one onus he puts on financial services right now is their risk models didn't work, it wasn't good enough; that they're broken or never worked as they should have. So CEP appears to be a solution to enable them to do that.

**Sumitro:** I think it has to be coupled with other technologies as well. So, when we talk about technologies, one technology by itself cannot have that impact on success as complemented with other technologies.

If you look at what Alan Greenspan said, it is essentially not the awareness of risk -- it is essentially the propagation of the magnitude of risk, or the loss caused by the risk, to actual people who are executing trades and who are actually on the floor. So complex event processing can process the complexity of these macroeconomic and exogenous factors; but in terms of propagating the results of the event to a decision engine--you need to have something that works real-time or something that is working at the rate of a chip; which is essentially where you get software appliances and things in place.

So, when you are essentially looking at a problem, you are not trying to say that complex event processing is going to solve this problem. You're talking about a technology solution to a business problem. So you have to look at the business problem in totality and say that, "OK, these are the technologies I'm going to use to essentially mitigate this risk and solve this business problem."

And hence, I think, going back to what Greenspan said, I think it is the propagation of what those risks could cause to the people who are actually executing trades or who are actually in the decision-making role. I think it can help that tremendously.

**Vicki:** Sumitro, you mentioned that it would be very conducive to have more publishing of research and ideas on how CEP can play into helping business processes. Who do you see as the writers or the authors of that? The vendors? More research analysts?

**Sumitro:** Yes. It's not research that I was basically alluding to. It's more practical usage. So I think forums where people are actually using it--I mean vendors as well as the

consumers--in various industries, and essentially going into forums and websites that people share with each other. I think it is a combination of vendors as well as the users.

**Vicki:** Ah, I see; so the users themselves.

**Sumitro:** Yes. Users themselves. So, if the vendors are approaching consumers in different industries besides the financial-services industry, I think they should urge them to start putting their thoughts on the web. And with the whole prevalent idea of social networking, I think these kinds of things can gain momentum in a very short period of time. It is a matter of how people react to certain things and give them an opportunity to react to certain ideas.

So, it could be vendors. It could be consortiums formed by vendors and users. It could be anybody. But there has to be that interactivity. There has to be that networking of people who essentially throw ideas at each other, and something definitely is going to resonate. And when you do it across industries, I think the whole result is kind of compounded in a very positive way.

**Vicki:** And so you really feel that we're in that year. We're in that year time frame--you said months, maybe a year--of when this will come together.

**Sumitro:** I think it's a year, year and a half away from being mainstream in the sense of late adoption will happen. It won't reach the majority. But the point is it will definitely not have a sad death like adaptive. It will probably become the next object-oriented. And once you start using it in the context of software appliances and services-oriented architecture; it will start gaining momentum.

So I think it's a matter of a year, year and a half. That's what I think. And that's my analysis.

**Vicki:** This is such an interesting time for CEP, I'd love to get together with both of you guys again, and whatever time--maybe nine months from now, sort of the half life of that period of time... [laughs]

**Sumitro:** Sure.

**Vicki:** ...and talk about these very same questions that we posed today. And probably adding a few more as we are able to then look back and see how things played out. Yes, I think that would be very interesting; if we could reengage in about nine months time. Sumitro, we'll go with your time line. [laughs]

**Sumitro:** OK. [laughs] Yes.

**Vicki:** Your prediction.

**Sumitro:** But don't hold me to that, because that's a prediction...

**Vicki:** Yes, yes. I know. But it's fair.

**Sumitro:** That's more of a practitioner's approach rather than the analyst approach.

**Vicki:** OK. Well, it's fair. And I think it would be a good time, probably, nine months from now. Who knows? Maybe it's sooner. Maybe it's in six months.

**Sumitro:** Sure.

**Vicki:** That we should get together and do this again. Maybe we can do it in-person next time. Yes.

**David:** OK. Thank you very much for your insights, Sumitro.

**Vicki:** Thank you.

**Sumitro:** Thanks, David.

**Host:** That was an interview with Sumitro Sarkar of Thomson Reuters.

The Complex Event Podcast, sponsored by Oracle, 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).

We strongly encourage feedback, so please submit your own questions, either via email or in the comments section of the website at [www.complexeventspodcast.com](http://www.complexeventspodcast.com).

Thanks for listening. Good-bye.

[music]