

CEP07

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Announcer: Hello and welcome back to the Complex Events Podcast, brought to you by Voices in Business, and sponsored by BEA Systems. Today we bring you the second and concluding part of our interview with David Luckham, Emeritus Professor at Stanford University.

Professor Luckham shares with Vicki Zesses of Voices in Business and David Fergie of BEA his thoughts on the future of CEP, and how it's being used to manage critical business challenges in real-time.

Vicki Zesses: David, you mentioned a few minutes ago that this is the gold rush days of CEP. Can you give us your predictions for the next 12 to 18 months, what you expect to see?

David Luckham: The first stage was simple event processing, and we've sort of merged a little bit beyond that to a stage that I call "creeping CEP". What that means is that in the case of the first generation of event processing tools and applications that we saw in the early years - 1999, 2000, 2002, up to present time - there was really very little event processing involved of principles, if you had simple kinds of patterns, maybe single event triggering on business activity monitoring, dashboards with a key performance indicator, graphics.

Now we are beginning to see event processing applied to more complicated problems. That requires the products to employ more complex event patterns and perhaps a little bit of abstraction, and so on. So we're in this area of creeping CEP. Now, that's from a technical perspective, OK? So we're beginning to see CEP coming into the mainstream, there's more technical content in tools that claim to do complex event processing.

We're seeing a broad spectrum of use cases developing. We're seeing a quite established area of applications in say, the financial services market. That was where event stream process systems grew up, but now the vendors in that area have found that they need to expand into different areas like transportation, for example, where you're seeing distributed event processing systems.

By distributed I mean we're beginning to see CEP applied to say, a fleet of several thousand trucks running around the country. A truck has a local event processing engine onboard monitoring the parameters of the truck, its position, its time, its cargo and where the cargo's supposed to be, the scheduling is being done by more centralized event

processors, there's satellite communication between the event processing engine, and so on.

So we're beginning to see an expansion of the kind of use cases in complex event processing. We're also seeing the beginning of event processing societies and workshops, and open source event processing rules engines. But I'm afraid my horizon is a lot further out than that.

Vicki: Give us a feel for the horizon you're looking at, because now that's very expansive. Those that we've spoken to thus far are thinking in terms of the next year to two years.

David Luckham: Yeah, well they have to because they're actually in companies, and they're actually doing things, right? They have to justify their budget and they've got problems they want to solve. That's why things don't gel sufficiently.

I think that one of the futures of complex event processing is that it will get wrapped into more comprehensive applications.

Long-term I think it becomes a technology that is a tool in a more comprehensive approach to building enterprise communication systems, and finally further out, I think event processing simply becomes another technology in an event-driven world.

Now that's what those articles about global epidemiology and airline operations... You know, airlines are a really fine example of event-driven enterprises that really need real-time processing and business intelligence from everything that's coming in and going out of the enterprise. They're kind of just pussy-footing around basic problems at the moment with event processing.

They want to do a bit better at scheduling their airplanes and their flights in the face of bad weather or other problems. But there are so many issues, event feeds coming in and things that they need to do going out, that a large airline - well, even a small airline - take the recent scandal with Southwest, was it? Noncompliance to FAA maintenance regulations. Now why the heck didn't they have an event-driven system that monitored that among other things, and warned them that this was going to be a problem sooner or later? Now of course every airline is being investigated for that.

So there's an area of comprehensive event processing that has to develop, and will take many years. Even for a single large enterprise, like one airline. Now imagine just integrating the airlines with the global air traffic management system. You have the FAA - which is an event-driven system - intercommunicating with all the airline operations, the airport operations, the air traffic global operations, you want to get all of that together. That's something that's going to take 20 or 30 years to happen, and CEP will be a small piece of a technology basis like that.

Now worldwide epidemiology monitoring and forecasting, that's another one. Long-term

environmental forecasting, climate monitoring, you can see that coming. You can see the beginnings of it now, the world itself! -- it's an event-driven system. Well, it's a monitored system, it's a wired system, we've got sensors all over the place - bottoms of the oceans, in the forests, up in satellites. There are all kinds of things you want to be able to do with that; pollution monitoring, weather data, historical data, simulations of what's going to happen, demographics.

So the goal of such a system would be continuous estimates of long-term effects of current human activity. There's plenty of evidence, you can see it in the newspapers everyday, that we've got environmental disasters unfolding before our eyes. So we need some kind of information system to come to grips with this. That will take another 20 years.

You know, I just bought a new car, one of these "information driven" cars. The manufacturer loves it. I hate the damn thing.

Vicki: [laughs] Why is that?

David Luckham: Because it's so bloody complicated. Now why did I buy it? Well the salesman took me out and we went driving around the countryside and although the thing is supposed to be an SUV it drives quite close to a sports car. It has a Ferrari suspension on it. I thought, "Boy, this is great."

But I bought the thing, then I got to learn about the sorry state of automated speech recognition, and all of the things that the car can do for you. But in order to access those features you have to learn how to do it. It won't just understand you, you've got to use exactly the right commands, you know. If you ask it the time of day and it doesn't understand you, it might say, "Oh, yes. Temperature 60 degrees."

Vicki: [laughs.]

David Luckham: The next area or one of the scenarios of future event processing is mobility in the future metropolis. We're talking about large cities like London and New York, where traffic congestion is a major problem. It's also a major problem in the Bay Area and Los Angeles. The time lost in traffic jams going to work and so on, people put that in the billions of dollars.

So, what are we going to have in some places? We're going to have drive by wire. You know, you'll get in your car, you'll read the newspaper and you'll tell the car what to do and it will do it. It will communicate with all of the other cars on the road, and all the monitors on the road, and the global metropolis traffic system. The whole thing will just get you where you're going, and you will have nothing to do with it. The car I bought is just a small step in that direction.

So that is an area where complex event processing will provide a technical basis for some of the stuff that touches it, like keeping track of where things are going.

Then the final area would be privacy for the common man. Right now we have major issues with what people are doing with our data, right? Just imagine that people are monitoring our data and collecting it, and pushing it on to other people who use it for different purposes. Suppose you used a similar technology to monitor the data monitoring activities and to warn the individual of who's using what, and when their ID's might be being stolen.

So Internet monitoring of as many sources of data on an individual as possible, the collection points and distribution points of that data, requests for the individual's data, individual's phone activities, possible ID theft events, and so on. What this would do is, the goal would be defense against lack of privacy in an age of digital spies. It's basically the ultimate counterespionage application, and I don't think that technology will ever be finished, it will be continually evolving.

The pundits have talked about this, they think it's the ultimate police application, and it will take 50 years. So those are some scenarios going out 20, 30, 50 years as to where event processing is going. The lesson is that we are living in an event-driven society. Everything is communication by events. We have only just begun our uses of those events. The sort of scenarios that I've given you, are some of the ways that things might develop in the future.

Vicki: I see why you say your view as you look forward into the future is a long horizon, because it will take time for all these pieces to develop, and then to integrate them..

David Luckham: Yeah, I mean in the next 18 months I don't think there's going to be a lot different from what's happening now. More of the same, better products. We're in the "creeping CEP", and so you'll get products that do a little bit more CEP coming on the market, you'll get more use cases of the kind I mentioned - transportation and other areas.

So the technology will be developing gradually. And by the way, in that transportation case, it's the customer's IT department that's actually building it, and the vendors simply selling the engines. The vendor doesn't know what they're doing.

Vicki: It seems like we're seeing that as well. That we're at the point where we see large corporations and major financial institutions taking what the vendors have and then developing it for their needs at this point. To make use of the technology that's available today so that they can make sure they're staying current, and then develop further as the technology is available to do so.

David Luckham: Yes, and that's probably the way it has to go, because the vendors don't really understand the customer's problems a lot of the time. Possibly the customer doesn't itself. And that's why this independent facility for building your own stuff is so important, because that's where things really will start to happen.

Vicki: Yes, where solutions get created of course is the people living the problem, right? The people living the problem really are the ones who understand it a lot better than they do.

David Luckham: That's right. You build event processing to do this, somebody builds event processing to do that, and you put them together, you know? And one thing about event processing done properly is that it is much easier than it has been traditionally to integrate them.

Now that does bring up one other topic, and that's the topic of standards in event processing. We're just beginning to see some standards efforts in the area of event processing, some early efforts. People think it might be a little too early to do this, but anyway the whole question of standards at some point begins to arise. I don't have any opinions, roughly...

David Fergie: Yeah, we didn't ask you that question initially.

David Luckham: No. [laughs] It's a very thorny issue. I think sitting on a standards committee is really a big time thing, so I stay away from it.

Vicki: [laughs] All right. Well, gentlemen, thank you so much.

David Luckham: All righty. Nice talking to you.

David Fergie: Cheers, bye.

Vicki: Cheers, good afternoon, bye-bye.

David Luckham: Bye-bye.

Announcer: That concludes our interview with Professor David Luckham of Stanford University.

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