

**Smarter Planet: Integrating mapping and geospatial analytics with
business intelligence software**
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LANINGHAM: This is the Smarter Planet Industry Solutions Series of the developerWorks podcast. I'm Scott Laningham. Today we have three guests here to talk about mapping and geospatial analytics, and how their integration with business intelligence is bringing new, more powerful analysis tools for all kinds of organizations.

Steve Trammel is the IBM Alliance Marketing Manager at ESRI, the company that leverages geographic information system technology to address social, economic, business and environmental concerns at all levels of organizational complexity.

Then we have Dave Kerr, who is technical marketing manager with SpotOn Systems, the leading integrator of IBM Cognos Business Intelligence with ESRI ArcGIS.

And finally, Rob Doland is here, who is global industry and strategy leader for business analytics in the public sector for IBM. Thank you all for joining today.

TRAMMEL: Thank you very much.

DOLAND: Thank you.

LANINGHAM: Now, I wonder if we could kick this off at the top by just getting you all to chat a little bit briefly here about the state of the union around data and geospatial analytics and public sector needs right now. What are the big needs there, and some of the solution thinking around it?

DOLAND: Yes, so let me dive into this. This is Rob Doland. So, you know, IBM recently conducted a survey among public sector organizations about the power of analytics specifically for public sector. And some of the things that we're seeing really talk about this sort of integration, this convergence of both data analytics and geospatial analytics together, because what this broad analytics offering does is really drive to this whole notion of where government needs to be.

First it's around fact-based decision making, which is leading...is going to lead to improved services delivery to citizens. It's going to lead to deeper program and budget analysis and evaluation. It leads to better risk management, and ultimately it's going to lead to the stronger focus on outcomes-based government and smarter decision making -- all of which are being...are big issues today with government from the U.S. federal government on down to any and every municipal government around the world. So I think it's a very, very timely topic here.

TRAMMEL: This is Steve Trammel at ESRI. One of the things that we've noticed in the industry in particular is the fact that people have become more and more aware of the power of maps and geographic analysis. A lot

of this is due to the popularity of Google Maps on the Internet as well as the media's use of maps in their news stories.

People have come to expect that, and it's got a lot of government people who may not have traditionally been involved in a GIS application; they may be more involved in business process work. They're starting to think spatially, and so they're asking about the union of the two technologies, realizing full well that they do have expertise in GIS technology in their organizations already; they've just never thought to bring the two together to help them run a more efficient and accountable business.

KERR: Yes, and this is Dave Kerr. I'd concur with that for sure, and we've witnessed a lot of public sector organizations that have made serious investments in business intelligence solutions over the past decade or more. And these solutions really serve as the information foundation for them, and we've also seen them then extending that with things like predictive, with SPSS and planning with IBM TMI, things like that. So mapping's just another extension of that, and we play a pretty big role in that right now, which has been fantastic.

LANINGHAM: Well, thank you all for setting that up. I think that really helps establish the parameters of what we're talking about here. Rob, I wonder if I could ask you, being involved as you are with IBM Business Analytics, what's the current level of interest that we're actually seeing in IBM around this for mapping and GIS, and what's causing it?

DOLAND: Well, I think, you know, within IBM certainly we recognize it as the next logical step, the next big innovation around the use of business intelligence and business analytic capabilities. It is resonating with customers. And as we go out and we talk to folks within government, that's what they're asking for.

I mean, to Dave and Steve's points, there's a huge convergence right now, this need for the visualization that mapping capabilities are going to bring to this, whether it's crime prediction and prevention, whether it's social services benefit deliveries, whether it's water management. It really is where they're going.

And what you find is many, many of these institutions are already using some form of mapping capabilities; many, many of them are using ESRI already. So it's almost a natural convergence that we see here. And you know, it's exciting, because it gives a far, far deeper analytic capability than a lot of these governments have had in the past.

LANINGHAM: Can you translate that a little bit more into layman's terms in terms of business intelligence user benefits?

DOLAND: Sure. Well, I mean, what you see then is what starts to happen then is you take the traditional scorecard or dashboard capabilities that exist within business intelligence, and what you lay into that is a geospatial capability which allows a decision maker this ability to click on a map that is sitting on the dashboard and being to see how the analytics populates...some of the business intelligence populates into that map.

So that you, if you take crime prediction and prevention as an example, you begin to see where incidents occurred on a map, and you can identify hot areas for crime. You can drill down on those maps the same way you drill down on a key performance indicator to see what is impacting that particular incident, and really giving you this much, much deeper insight.

LANINGHAM: Steve, let me turn to you for a second. I mean, I hope I'm understanding this correctly, but at least at a high level, it sounds like SpotOn together with ESRI and IBM Cognos really bridges the gap between two significant systems here, GIS and BI. And wonder if you could talk a little bit, and the others chime in, about where does the demand for this generally start?

TRAMMEL: It generally starts with government wanting to be more responsive to citizens' concerns, as well as our budgetary constraints. I mean, we all hear "do more with less." The government guys have gotten down to the point where they're asking...being asked to do everything with nothing.

We actually, the integration actually kind of fits between those two paradigms right now in that they already have the technologies in house and the realization that they can start joining these two technologies together to address their mission and to be more responsive to the citizenry. We've gotten over the huge expenditures on the financial side and we're asking them to just further leverage technologies and expertise that they have in house.

KERR: Yes, and this is Dave from SpotOn. I'd say also the demand in terms of where it comes from organizationally is, our experience has been mainly on the BI side of the house where most people really, head starts are quite often honestly with just a simple demand, they want to see maps and reports.

So a business manager wants to see their data in a map in a report and then do some kind of analysis against it with their IBM Cognos data. And a lot of our joint clients may have already tried this using Google Maps and mash-up services or some other technology, but they found out that it's a little harder to do than they thought going that route, and so they come to us, to SpotOn and ESRI and IBM, because we've done a lot of that heavy lifting in terms of the platform integration for them, so we can generally have them up and running fairly quickly.

So, and we're seeing a lot of interest in this. I mean, we've been talking about public sector, but it's everywhere, actually retail, insurance, finance, health and a lot of different industries.

TRAMMEL: Yes, this is Steve at ESRI again. I like it when we are asked about the possibilities of integrating the technologies, and with the help of SpotOn we're able to go ahead and show very quickly some examples of how the joint technologies can help these folks.

Generally when they see their data on a map, it's a "wow," you know, they've never really looked at their data that way. Usually the very next thing you see is somebody will start to point to something on the map and say, "wow, I wonder why that is," or, "I never realized that." What they are doing at that point in time is analytics that they've never done before.

DOLAND: And this is Rob Doland. I would agree with that, and that's where you see, you know, we call it the line of business, but the executive level who begin to understand how they can make much better decisions with this insight from the maps and the mapping capabilities, because to Steve's point, if you're able to point to something and say, this is something I never even thought about, and this is something I never even considered, and how did I ever get along without this insight...

It is an A HA! moment. And when you hear these A HA! moments, it's actually very gratifying, because it is the integration of all this great analytic technology.

TRAMMEL: The fact that we're able to put the data in the context of the real world is what really resonates with folks right off the bat. They understand it. You know, they can look at something and go, "wow, I know that neighborhood." Or "so and so is over there," or "this is where we've got assets." Everything starts to click, the relationships.

LANINGHAM: Because a core part of our audience in developerWorks is developers, I wonder if you guys could give us a little bit more of an under-the-hood peek at how SpotOn, ESRI and IBM Cognos all work together in this.

KERR: Sure, this is Dave again. So, SpotOn actually started as a platform really for integrating not just maps but any third-party technology into IBM Cognos. Early on in the days around the Cognos 8 launch, we saw that there were just a few gaps in the offering that we wanted to plug. And we saw customers who wanted to integrate alternative charting and mapping solutions, so we built that. We provided that.

But really early on it became really clear that mapping was a sweet spot in this, so we focused a lot of our joint energies towards that. And our Vantage Maps product brings that spatial perspective we've been talking about to data and really is jaw dropping for people when they see their own data. They see things that they otherwise would miss altogether or miss until the opportunities are just gone.

So, I mean, architecturally, we've built something that pretty much mirrors IBM Cognos's architecture with all the stuff that they are familiar with there, the gateway and the dispatcher and the server tiers and the ability to deploy and leverage all the in-place security, all those kinds of things.

So, when we get it installed, the typical reactions to it once it's installed is...and people are using it, is, "did we just see what I think we saw?" And on the GIS side of the equation, Vantage Maps is built

using the ESRI Flex API, so it's got fully-integrated components, and it's built for report authors.

So the IBM Cognos report author, the same guy that builds your reports now, just uses the same tool to map-enable those reports together with a viewer component that seamlessly integrates into the reporting applications for end users. So, we view it very much as a non-intrusive add-on to IBM Cognos Business Intelligence.

TRAMMEL: Yes, this is Steve, and David hit on a key point here for the ease and exactly what's going on under the hood here. In the public sector, we do have groups of folks with GIS experience and expertise; on the other side, we've got the BI folks that are used to that environment.

The integration doesn't disrupt existing workflows; we're just bringing the two together. So, it's that in itself is a huge help. We're basically just asking for the GIS guys to allow the BI guys to access their data, not really interfering with how they go about their work or the things that they've been tasked with doing in the past.

LANINGHAM: Rob, did you want to add anything to that?

DOLAND: You know, I think these guys, they both covered it very, very well. I think it is, as I've said earlier, I think it's the natural convergence and how it's been put together, makes it easier for customers to understand that they can do this. It works, and it's not overly complicated to make it work.

LANINGHAM: That leads into the next thing I wanted to ask, Rob, which was time-to-value being a critical customer requirement. And I'm sure in with these kinds of needs there, "I would like to have this yesterday." So, how much of this is reusable from instance to instance; or, is it just customized from the ground up every time?

DOLAND: Well, I mean, our experience has been, and certainly Dave and Steve can add on to this, but what we've seen is once it's implemented in any part of the public sector organization it is much more easily replicated, because you understand many of the data requirements, you understand many of the limitations of the data if any exist, and it can be more quickly deployed.

I mean, I think you know, the first implementation in an organization is probably going to take the longest, but then as you begin to deploy it throughout, it gets easier and easier.

KERR: Agreed. And then...Dave again...the fact that this thing is built, you know, as an add-on to an existing environment for resources that you already have in place is a huge plus, right? We can get people up and running a lot faster than they usually think. There's not a lot of coding. In fact, out of the box, to integrate the maps into the IBM Cognos BI reports, there's no coding; it's all this drag and drop and wizard-based deployment.

Now, if there are some obscure esoteric requirements to do that, you know, you can do that. There are APIs available from ESRI and from Cognos and from us as well. But you know, why not save those resources, your coding resources to handle those esoteric requirements rather than, you know, having to code a report every time you want to embed a map in from somewhere? That's just not a good use of resources, we don't think.

TRAMMEL: Well, we've seen a lot in the past where folks will go ahead and do this implementation if we can keep them on path with the initial implementation to solve a specific need. And basically it's the need that prompted the discussion in the first place. Once we get them up and running with that, because there is for all intent and purposes no programming involved; it's just a matter of pointing your application to the data source somewhere...

After that initial implementation, it's pretty much an all in-house operation for folks to go ahead and add other applications, other reports, other maps. They're familiar enough with the interface and it's easy enough where it's easy for them to do.

LANINGHAM: Steve, you mentioned Google Maps earlier, and I mean, everybody uses it. I can't even make a phone call nowadays practically without using it. Is Google a GIS system?

TRAMMEL: You hit the key word there, you said "systems." So, GIS stands for Geographic Information System, so it's more than a visualization tool, which is typically what folks are using Google for. You know, put this data as a dot on a map somewhere, and that's pretty much where it ends.

What they're unable to do from that point forward is to do things like, you know, "that's an interesting phenomenon that I'm seeing up there, find everything else on the map that has that same type of phenomenon or those same data points in common." You can't do that with Google. You can't go out and look for similar geographies.

Pretty much all you can do is see where your existing data is and when it comes time to ask those important questions like "what's nearby," "what's inside this district," you know, "what may be the reason that folks are availing themselves of my services when they live so far away"...that's questions you can't answer with Google.

So GIS, the system, has got 40 to 50 years' worth of science behind it that's addressed those questions long ago.

LANINGHAM: I see. I wonder if I could look specifically just briefly at the domain of public safety in all of this and talk about how SpotOn, IBM, ESRI, can combine together to in that arena. Maybe you all could share how ever you want on that.

DOLAND: This is Rob Doland. We've already started to do that. One of the solutions that has been developed from all three organizations has been a crime prediction and prevention solution that combines Cognos capabilities around dashboards, scorecards and reporting with our SPSS

offering around predictive analytics along with SpotOn and ESRI for the geospatial capabilities, and it is a very, very strong solution.

It is a solution that as I described a little earlier at a high level really allows law enforcement to begin to pinpoint potential crime areas based on any number of variables -- you know, weather variables, where there's an event like a concert or a hockey game or a football game, you know, whether it's early in the morning, late in the afternoon, and begin to predict where crime is likely to occur and then present that with maps.

And then, deploy those maps out to officers on the beat via smartphones and iPads and other technologies so that they understand where this crime is likely to go, because if you think about it, those are the people that understand the neighborhoods as Dave and Steve both talked about.

So you get this sort of, you know, they immediately by looking at the map know exactly where they have to go, where they have to focus their resources. And it's a huge...it's been a huge, successful solution for us as we begin to deploy this out as part of our public safety and security initiatives.

TRAMMEL: Yes, it's the holy grail of analytics, to kind of bring the discussion full circle right now, is to not just see what's happened in the past but to be able to use that confidently to what's going to happen the future. And the crime solution and analysis solution that we've all put together has a proven success record for doing those sort of things. We can indeed predict where things are most likely to happen and get the resources in place.

KERR: Absolutely, so, yes. If you can visualize things like demographics together with crime events, or as Rob said, other things like weather, proximity of parks or schools or whatever, with crime, if you can actually see that on a map and start making those correlations that it can have a huge effect on...

TRAMMEL: Right, and again, you can look at the temporal aspect of it, too, you know, time of day, even things that, you know, is this the day that folks get paid? There's actually a spike in crime on those days. So to know where those things are going on and when they're going on can help you as well.

KERR: That's right. Actually space and time, sorry, Rob, I talked about those two dimensions really in business intelligence as foundational dimensions, you think about space or location and time, and those are two dimensions that everything else gets sliced across...

TRAMMEL: Absolutely.

KERR: ...in an application. So location is just one of those dimensions that every application has.

DOLAND: And it becomes very collaborative. So what you see is you see this information being shared outside of the police department. So if

there's a streetlight that's out, that mapping capability is shared with public works. You know, it could be shared with an education organization to, if you're looking at spikes in juvenile crime and understanding that this particular school district is seeing a high drop-out rate.

So, you begin to get this collaborative government that everybody talks about as you share this information. And the common...really the common thing being shared here is the map itself and the neighborhood and viewing it from that perspective.

LANINGHAM: So in a summary sense, then, it really sounds like what you all were saying right there at the end and reiterating: space and time are critical to these central themes, these big themes that we are talking about all the time at IBM at these conferences with those we are working with like SpotOn and ESRI, the business analytics, big data, and really the Smarter Planet story, right? It sounds like these things are central to that whole...those initiatives, anyway, wouldn't be happening without this focus, right?

DOLAND: Absolutely. And let me...this is Rob Doland. Let me share with you an example of that, of where this sort of is beginning to converge. So we're working with a state right now, the governor of a large state in the U.S. And they're taking social analytic capability, so crawling through the governor's Facebook page, the governors's Twitter account...

...and being able to understand citizen sentiment around issues and mapping that out for the state, so that the governor understands where these issues are most relevant and they can then focus the resources to address those issues and begin to very much target how they're performing against that.

So the governor's map shows up around this initiative, say, around economic development. And there's red, green and yellow areas that he can then drill down on and begin to understand why and how his initiatives are being successful.

And it's all being driven real time by real-time citizen sentiment that's being mined constantly. That's a very, very powerful tool, all about delivering the kinds of services that we talked about. And you see it in other applications as well.

TRAMMEL: Hey, Rob brings up an interesting point about the social media and that phenomenon that we're seeing in the world right now too, to take this back to the crime analysis we've talked about, where things may happen and how we can deploy resources.

The guys out there on the street can actually, once they're deployed, start looking at their phones or iPads, whatever device they've got, and they can actually see and monitor what's going on in the social media in that specific area. So they have got a very real-time view of what's going on in an area.

LANINGHAM: Can I ask this as a wrap-up, because listening to the discussion I can't help it but, I would love to get your summary thoughts on this statement from Spiderman's uncle: With great power comes great responsibility. I've got to think listeners also have those kinds of questions when they think about all this type of capability. And how can we be sure that we use this stuff in a smart way?

DOLAND: This is Rob Doland. I think it goes back to, what is the mandate of government, which is not only to deliver services to citizens, not only to deliver good governance, but also it's, you have to protect privacy. You have to protect citizens as well. It's protecting them from bad guys, but it's also protecting them from any kind of intrusion that they may feel is unnecessary by government.

So, you certainly don't want to release somebody's home address saying, oh, yes, here's...we've seen incidents here, publicly, unless, you know, unless that's an issue. So I think that responsibility still exists, and how do you balance the privacy concerns of citizens with the needs to use this very, very strong analytic capability, which you can get down to the house level. I mean, you can get down to my house, and you can pinpoint me. Now, how do you balance that? And I think that's government's big challenge.

LANINGHAM: In a way, I think it's very encouraging when you have collaboration around this kind of technology, and for example, right here, three different companies working together to solve problems. That is a level of protection right there by having, you know, not all this technology centralized in one place but that it doesn't happen without all this collaboration across business lines, right?

TRAMMEL: Oh, absolutely. That's correct, because there are so many people involved with it and they all have vested interests in what's going on with their data. There is a self-regulating mechanism in place.

Also, there's been over the last few years a huge push towards open government, and mapping has played a very important part of that. So if you take some of the data and put that in the context of maps that people publicly access; I'll bet most of the folks that avail themselves of this podcast go search for their city government or county government, they're going to find maps out there on the Internet that they can look and they can actually see what's going on in specific areas of where they live, their town, their city, whatever.

So there's that whole open government movement, too, is tending to be a layer of protection of what's going on out there and how data is being used.

DOLAND: Absolutely. I mean, I was trolling for data the other day, as a matter of fact, and I believe there's a huge amount of data published up for the City of Philadelphia, for example.

TRAMMEL: Oh, yes, Philly's got a great map...

DOLAND: philly.gov, I think it is, yes. So, all kinds of data that I can take and plot on a map if I feel so inclined to see what's going on in Philadelphia.

LANINGHAM: Well, this has been a great discussion, guys. We could go on for hours, but thank you so much for making time for this. I really appreciate it.

TRAMMEL: Yes, thank you for the opportunity.

KERR: Thanks very much.

DOLAND: My pleasure, thank you.

LANINGHAM: You've been listening to Steve Trammel with ESRI, Dave Kerr with SpotOn Systems and Rob Doland with Business Analytics at IBM. And you know, what we didn't mention was if people want to follow up on more information from the different angles you all come from, if you want to share some links like Steve, where do they find ESRI? Is it a nice simple way?

TRAMMEL: esri.com.

LANINGHAM: Okay, E-S-R-I dot-com, right?

TRAMMEL: Yes, absolutely.

LANINGHAM: And Dave, SpotOn, you have to be careful or you'll go to the wrong SpotOn. So what's your...

KERR: Yes, spotonsystems.com.

LANINGHAM: Okay. And Rob, what link do you want to give out at IBM?

DOLAND: I would go to www.ibm.com/analytics/government.

LANINGHAM: Fantastic. And of course, hear other episodes in this developerWorks podcast series at ibm.co/spisodcast. I'm Scott Laningham, thanks for listening.

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