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The Most Powerful Name in Corporate News

Sensor Data Analytics

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CEOCFO: ***Mr. Clark, Savi Technology has a twenty five year history. What is the focus today?***
Mr. Clark: The focus today is on analytics around data that is produced by sensors. When I say sensors, that is becoming a much more generally understood idea out there. Much of it happens in the consumer world. We are not focused on consumer data, but it is the same idea. Whether it is a sensor that is in your car, whether it is a sensor that someone might wear; all of those things are producing data now and the focus at Savi Technology is on analyzing that very specific kind of data that comes from sensors.

CEOCFO: ***What is different about data from sensors? What are some of the challenges in analysis that people might not realize?***
Mr. Clark: That is a fantastic question and it is very important that people understand that. Data coming from sensors is different from almost any other kind of data. That is because we are surrounded by data every day. The reason it is different is because of the nature of sensors themselves. Sensors themselves, for the most part, were never designed for this thing that is generally known now as the "internet of things". That is a more current buzzword. However, everything from the sensor that is in a store that you would put on a piece of clothing so that if you walk out of the store with it a buzzer goes off; that kind of a sensor, a sensor that you might wear on your person to track personal health information, a sensor that might be in a car; all of those kinds of things were designed primarily for the purpose that they have. Therefore, as a result they were optimized around three things. They were typically optimized around form factor. Therefore, for example, it has to fit on whatever it is that it is supposed to be sensing. That can be different if it is on the rotor blade of a helicopter verses a cashmere sweater in a store. The second thing it is typically optimized around is low cost. The fact that the cost of these sensors has been dropping every single year at a very rapid rate allows you to put sensors on more and more things, which allows you to collect more and more data. The last thing that they are typically optimized on is that since they are battery powered they have to be very low in terms of power consumption. Therefore, by optimizing on a specific footprint, by optimizing around low cost and optimizing around low power, the end result of all that is the data that comes out of them is not like any other kind of data. It is not like ERP data. It is not like financial data. It is not like cell phone data. It is unique and it is not even standard. Almost every sensor has its own type of data that it produces and that data is much closer in type to machine language, the very, very simplest amount of information as opposed to the more structured information that we typically deal with in the computer world.

CEOCFO: ***Would you give us an example of what you are analyzing and how you work with a company?***
Mr. Clark: Let me give you a concrete example and two different types of analysis. One of the things we do today is that we track the trucks that traverse certain routes in the countries in Africa. I am just going to give you a very real life example. In the country of Kenya one of the major trade routes is from the Port of Mombasa to the city of Nairobi. It is a major traffic land and a lot of goods that arrive into Kenya arrive in the Port of Mombasa. They get loaded on trucks and then they get goods into Nairobi. What is specifically interesting about this and many other countries in Africa is that an awful lot of the goods that are carried on trucks in these countries are actually stolen. When I say a lot, I mean that typically about forty percent of all the goods that are carried by truck are stolen, which is astonishing to most of us who live in the developed world. That is because this society would never tolerate losses of that degree. However, in those kinds of countries there is an awful lot of theft and black market and corruption. Therefore, there is a huge focus on stopping that. Therefore, we place sensors on the trucks and with the cargo that allows us to track, in real time, the status

of not only the truck, but of the cargo. Therefore, we can track that every step of the way and from a concrete standpoint, what we learned was when we did this in the country of Ghana, Ghana's revenue authority reported back to us that they had been loosing about thirty eight percent of all the goods that were shipped and after installing and implementing what we do it dropped to one point eight percent. That is an enormous financial change in terms of the loss. In terms of what we are doing, these sensors that are on the trucks and with the cargo are sending signals from the truck every minute or so and that is carried across a cellular phone network. That information goes back to our software where we track it in real time. If something is not right, if there is a deviation from a route, if there is a tamper on the truck, that information is immediately relayed to the authorities in the country and they take action to intercept the truck, to call the driver or to do whatever they think is necessary to prevent something from going wrong. That is the first example of what we do. We would call that a solution around risk. What we would do there is allow people to reduce the risk associated with the shipment by being able to track and monitor the goods and the truck on that route. The other thing we do using the exact same information, once again going from that route from the Port of Mombasa to Nairobi, is we analyze every single journey and every single truck, every single journey every single day for days and weeks and months and even years. Over time we see patterns develop around being able to tell how long it will actually take a truck to traverse that route. In a country like Africa that varies very, very broadly depending on a range of factors from traffic patterns, to driver behavior, to weather and to all kinds of things. Therefore, being able to be able to predict how long a particular journey will take on a particular day is very, very valuable. When I say that the duration of the journey varies, the average journey time on that route is about nineteen hours, but it can vary anywhere from as short as ten hours and it can go up over thirty hours. Therefore, if you are a company and you are shipping goods along that route, even if they are not going to be stolen, the variance of twenty hours in predictability about when that truck is going to arrive is just way too long. Therefore, by mining and analyzing that data for hundreds and thousand of journeys over the same route on different days at different times of the year, we are able to predict when the truck will actually arrive. That is of great value to these companies.

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CEOCFO: ***Would you tell us about your military involvement?***
Mr. Clark: That was really the foundation of the company. The company started, as you noted, about twenty five years ago. It pioneered a type of technology that was new at the time called Radio Frequency Identification or RFID. After 9/11 the US military got very interested in tracking assets as they moved around the world. When we say assets we mean big containers full of everything from food supplies, the uniforms to equipment to munitions; everything. Today the United States Department of Defense tracks every single asset that leaves the United States with this RFID technology. They have a network set up around the world that exists in over forty countries called the RFID In Transit Visibility Network or RFID ITV Network, where they are tracking every single asset that moves around the world on behalf of the Pentagon. Savi invented that technology. Savi has been the supplier of the vast majority of that hardware for over fifteen years. That is where we really got our start in tracking and monitoring high value assets. It was from that knowledge and that experience that we then moved from that skill set over to the commercial side. Therefore, the technology is not exactly the same and the customers are not exactly the same, but the problems we are addressing are very similar.

CEOCFO: ***There are many companies in your industry. When you are speaking with a prospective client do they appreciate the history? Do they know the history of Savi?***
Mr. Clark: That is another very good question. I think it is probably fifty / fifty. A challenge that we face is that many people know us from the military background. Therefore, if we are talking to a commercial prospect they are interested, but they are wondering why we are talking to them perhaps. That is because they are thinking, "I thought you guys did this tracking stuff for the military." On the other side we have a fair number of people who do not know anything about us. Therefore, when we explain what we do today, in the context of what we have done for the military, doing this for over a decade and doing it in some of the harshest environments in the world; not just in places where there are highways but in deserts and in warzones and all of that, coupled with all of the security requirements that are much higher when you are dealing with military cargo than they are in the commercial world; all of those things absolutely help us when we talk to prospects in the commercial world. That is because their view is, "If you can do it for that environment you can do it for us."

CEOCFO: ***How do you reach out to prospective customers? Given your global reach, what is the marketing plan?***
Mr. Clark: It has been evolving over time. Initially we started to work with a partner. We have a partner called SGS, which is about a six billion dollar public company, headquartered in Geneva, Switzerland. However, they have offices in virtually

every single country on earth, including places like North Korea and Cuba and Iran and places like that. Therefore, they are literally everywhere. We partnered with them over four years ago. Therefore, when I mention things like what we do in Africa, they are the ones who brought our technology into Africa. They have actually got people on the ground that provides services to support the use of the technology, so that there is a total solution there. It is not just us sending people hardware or implementing software. They actually have services people who make all of this stuff work. That was one path; to work through partners. Another one is that we have been reaching out directly to prospects. We have built up our own direct sales force, both in the United States and in the UK and in Australia to cover the rest of the world. We also reach out directly to major corporations. Those are typically large corporations; multi nationals who have a significant number of assets in their supply chain that they move around. They are typically the best prospects for what we do. What we are bringing to them is previously unavailable insight into the visibility in their supply chains. Therefore, it is a combination of direct sales, coupled with a partner channel, coupled with more frequent direct outreach on the marketing side.

CEOCFO: ***Do you find that companies or governments are more aware of the need to do this kind of tracking or is it still not in the mainstream?***
Mr. Clark: I think it has been evolving very quickly. I think it was always of interest on the security side. Whenever something gets stolen anywhere in the world, any high value asset, people get alarmed by that, both in terms of the monetary exposure and also if you have got something like a shipment of medical waste, there is the radiation aspect of that. Therefore, in today's more dangerous world people are much more focused on the transport of dangerous goods and expensive things. Therefore, that was always there. However, I think now that there is this broader topic of the "internet of things" where people are trying to figure out what the value is of having sensors on everything and what you do with all of this data, major corporations that manage supply chains all over the world are saying, "Can we finally now get true visibility, end to end, from raw material to plant to production, all the way to end customers? Can we actually have visibility into that supply chain?" They have always wanted it, but it was not possible, until you had the technology that is available today. Therefore, that is kind of a long answer to your question, but I say that it is becoming much more of a priority and there is a lot more awareness around it.

CEOCFO: ***When you are providing data are there certain data points that you might look at that others do not recognize as important?***
Mr. Clark: I would say that much of the data are things that I think everyone would realize are out there. You have things like the location. Therefore, when you track a truck you have got the latitude and the longitude and you couple that with the time of day. That is not the most exotic data. However, what we do that is so special is that we combine that with other data. Some of it comes from other sensors, so it may be the temperature inside a truck, which can matter depending on what you are carrying. It can matter for food supplies. It can matter for pharmaceuticals. You can put radiation sensors in there, so if you have radiation material or you do not want radiation near the contents of the truck you can sense that. Then you can look at outside data sources. As I mentioned earlier you can factor in weather. Therefore, what we do that is different is not about that we look at one specific type of data that is unique from what everyone else does. We combine many different data sources that are all relevant to this kind of global supply chain issue. We analyze them together and we look for relationships. Some of them may be things that people thought might be related, such as if there is a big snowstorm, chances are a truck might be late. That is not the most unique hypothesis that someone might have. However, what is more sophisticated is looking for hidden or previously unrecognized relationships between things. Is it a particular driver? Is it a particular type of truck? Is it a particular type of cargo that gets hit? Is it a particular location that is more susceptible to a security incident? All of those things factor together. We do not go into the analytics knowing everything about what we might find. Part of this is what is known as machine learning. The computers themselves are actually able to analyze all of these data points and then spit out to human experts' relationships where they can determine if there is something there that we need to go look at. That is really the breakthrough aspect of the technology.

CEOCFO: ***How is business these days?***
Mr. Clark: Business is very, very good! We are growing very quickly. You asked a moment ago about, "Are people recognizing the challenge?" They absolutely are. I would say that it has been in the last twelve to eighteen months that it has really taken off. As some companies actually start to do this and start to embrace it and talk about it we find more and more people are interested in it. Therefore, it is kind of snowballing. Things are looking very good and we are excited about it!

CEOCFO: ***Why should people choose Savi Technology?***
Mr. Clark: The answer on that one is pretty straightforward. We are taking our twenty-five year history and expertise in this and applying it in a way that literally no one else is. There are other people who do sensors. There are other people

that have kind of horizontal computer tools available for generic analytics. However, Savi is unique in that we provide a full solution. Therefore, if you are a global company that has a worldwide intermodal supply chain and you just want your problem solved, you just want visibility into your supply chain; you want a purpose built solution. You want something that was designed from the ground up to solve your problem as opposed to what is generally out there in the marketplace, which is a bunch of tools. Other things available would be something that an IT department would try to use and make their own solution for a particular company. However, there is no guarantee that that solution is actually going to work. There is no guarantee that the IT department of one of these big corporations actually has the expertise that Savi based on doing this for the military for well over a decade and doing for commercial customers, of whom we have over seven hundred just in Africa. With all of that expertise it gives us the ability to develop those purpose built solutions. Therefore, we are actually unique in the market right now. We may not be unique forever, but for today we are the only ones doing this. That is why people should be interested in looking at what we have.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine

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