



SAP HANA EFFECT

Title: [Episode 6 - Killer Use Cases at CenterPoint, Part II](#) (Duration: 21:05)

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Description: Raj Erode, IT Architect at [CenterPoint Energy](#), joins us in this two-part episode to discuss three killer SAP HANA use cases for CRM and predictive scenarios and their incredibly innovative Internet of Things (IoT) and Big Data scenario.

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JEFF: This is the second of a two-part episode of The HANA Effect with Raj Erode of CenterPoint Energy. Welcome to The HANA Effect. I'm your host, Jeff Word, from SAP. Each week, we bring listeners the real stories of how companies are taking advantage of real-time computing to transform their organizations and let them share the lessons they've learned along their journey. This is the second part of our interview with Raj Erode from CenterPoint Energy and he's going to continue talking about some of the great use cases that CenterPoint has used for SAP HANA.

So, when CenterPoint rolled out the customer segmentation on HANA that we just talked about in the last episode, you guys didn't stop there, right? You said, now that we've got all this great data, we

can actually do some more stuff with this. So, tell us about the next use case that you guys did that went even further into the future and not just what has happened and what could be happening today, but you guys wanted to do some actual futuristic predictions on what might be happening in the future, right?

RAJ: Yes. So, one of the things that we also implemented as part of our customer vision platform was to create a predictive analytics engine, or in other words like call center predictive analytics engine. So, we call it the PAE. So what PAE does is to tell likeliness of the customer's call. Predictive analytics engine was developed to analyze almost 40 business scenarios by predicting why the customer might be calling.

JEFF: **That's pretty that's pretty amazing. So, you guys have a pretty big call center, I'd imagine. You've got a lot of residential customers that call up about questions about their bill or services and things like that, and in your call center you guys wanted to be able to predict what each one of those customers was calling about, what issue they had before you answered the phone, right?**

RAJ: A call comes in, within a few seconds, before the agent or the IVR picks up the call, this predictive analytics engine will estimate or predict the likeliness of the customer's call.

So, what it does, what it we wanted to do was potentially using the agent's call handling time and empowering the agents to interact with the customers in an informed and intelligent way that will result in an improved customer experience. So, this is for the agents. In another way is to proactively communicate to the customer and thereby deflecting a call. For example, it goes to the IVR channel, and if the customer is calling about reconnection or paying my bill, and they can directly be directed to an automatic payment, and it doesn't need to go to the agent. That basically would deflect a call, and that would be our goal. Or if it comes to the agent, we want to reduce the agent's call handling time, as well as also improve customer experience because we want to act in a more informed and intelligent way.

JEFF: **This is mind reading, right? You're trying to read the minds of what your customers are calling about before you pick up the phone while it's still ringing and direct them to not only the best place to resolve their problem, but also you did some really cool stuff in the SAP CRM system, so when the agent does pick up that call, they get to see all of the data that they would need to solve the problem that the customer's most likely calling about, right?**

RAJ: Yes. It's mind reading or data reading based on what we've analyzed by data we have about the customer. So, once it reaches the agent, it doesn't just tell that he's

calling about for example high bill. In addition to the likeliness of the call, it gives them almost more than enough information about the customer, for example, like what is total balance in the last bill? How many times he called in the last 30 days, how many times he didn't pay. For each scenario, it gives them like multiple more information about the customers even before the custom agent says hi to the customer. So, the agent is already empowered with precise information about the customer to the agent before they even say hi to their customer.

JEFF: **And so, they call up, their caller ID tells you who they are, what their customer number is, and then you go through their entire history—all of the data about them—and predict one of the most likely 40 scenarios of what they're calling for, then serve up all the data related to that potential issue for the call service rep when they answer the phone to have on their screen. What's been kind of the reaction from the call center people to this? Is it a little freaky for them, or is it something that they think is really cool?**

RAJ: So, they think it's really cool. So, initially, we've been rolling it out to a few agents because there is a training that has to happen before agents take this in, so it's been used by a few agents for last two, three months. But our IVR's channel is already running on PAE. So, they are automatic, and we are seeing some pretty good metrics

like how calls are being deflected in some scenarios like reconnection or disconnection results or even payments, late payments. So, we are seeing some good results about call deflections in some of these good scenarios.

JEFF: **And this has a pretty big bottom line impact for you guys, doesn't it?**

RAJ: Yes it is going to be and we also understand there's a training curve that will happen in the initial stages, and we should be getting good results based on what we are predicting. So this is the first time we're doing it, and we also understand there is some stabilization that has to happen. So, we don't think that all our predictions are going to be successful. So, we also store all the results of the predictive analytics engine and also actual reasons why they called, so that we can analyze this data and then improve upon our rules that that is used in the PAE.

JEFF: **Alright, so you're kind of doing some machine learning here to improve those algorithms based on you know the accuracy of what you're predicting. That's really awesome.**

RAJ: Eventually we want it to be a machine learning. Currently, it's a manual learning, yes.

JEFF: **Manual learning, okay. Here's one of the other things that I wanted to highlight about this, all this data**

you guys have had for years, right? There's nothing new about the data you're getting from this. It's all been in the systems you've had. What seems to be new is the fact that you can now calculate and predict within just a couple of seconds while the phone is ringing. Did you guys try this before? Is this something that you know you had thought about before HANA came along?

RAJ: Yes. So, the requirement was there already even before we started this project, custom this was one of the organizational drivers, how we can improve our customer experience. So, CenterPoint's business based on their experience, they came up with this requirement. Initially HANA was not even in the plans of being used for this kind of solution. It was supposed to be done in the CRM or SAP environment. So, as I mentioned earlier, we have around five million customers now, including electric as well as gas, so you need to store and analyze lot of information for these customers over the last one to two years to understand why they might be calling. The maximum this can happen is within five seconds. Initially when we used the traditional databases, it was taking more than 90 seconds to complete this process. So, once we added HANA, what we did was we put all the repository and all the data that's required for this inside HANA, and then it reduced to less than a second. Basically from 90 seconds it reduced to less than a second, which is basically a 9,000 times improvement in most of the cases. So, that basically

made this more real for reality, and HANA basically helped, HANA technology basically helped to achieve our business goal and business strategy and provide a solution for our business strategy.

JEFF: **So, that's what I think is the most amazing part about this is it's a brilliant, innovative idea, but you guys have had it and you've had the data and you've had the algorithm to do this for a long time. You were just unable to do it in a regular disk-based database because of the deficiencies of that architecture, and then when HANA came along, that was the magic pill that fixed the problem, right? And now, suddenly, instead of 90 seconds you can do it in less than a second, which is what the business required. That's what I think is the most amazing thing about that particular use case, that and the fact that you're mind reading the customers. That blows my mind. It freaks me out.**

RAJ: I usually say that HANA made it a reality. It was a good design. We already had everything and now HANA helped us make it a reality, and there were a couple of scenarios that we had analyzed. One was a like a batch scenario, where data doesn't exchange frequently, and the other one was real time scenario. A batch scenario might be your bill. Billing is done as of last night and your bill doesn't change. More frequent data that keeps changing over daytime is like your payments, right. You might have made a

payment five minutes ago. So, most of the time what happens is somebody makes a payment. They sometimes call and just want to make sure that their payment is payment went through fine. So, this is almost like a real-time scenario. So, the predictive analytics engine should understand there was a payment that was made a few minutes ago and based on that it should say technically say, are you calling about your payment? And your balance is zero dollars. If that happened or the caller is calling for payment information, the call is going to be deflected because he already knows that the payment went through. So, HANA came with the real-time replication, SLT, System Landscape Transformation. So, we used SLT to do a real-time replication of some of this real tables from ECC, the SAP ECC system, into HANA for all those tables that required a real-time scenario. And also the other scenario we did the real-time replication was this large tables, where we had more than billion records, and even to do that batch processing overnight, it took lot of time to go through that records to come up with the batch results. So, we did that real-time scenario replication into HANA and the batch process with the data in HANA. So, that in both ways it helped tremendously by using HANA and made this as a reality.

JEFF: Now, I want to switch gears a little bit to a completely different type of use case, this one is one that we hear lots of stuff. There's lots of marketing out there. There's lots of stuff from the Twitterverse

and the internet about the internet of things and especially big data. You guys actually have a really killer use case, where you combine the internet of things and big data with HANA to do some phenomenally phenomenally valuable things for the company. And, in fact, this is such a great use case, you guys actually won the HANA Innovation Award for 2014, didn't you?

RAJ: Yes. Thanks, I said before, the opportunity for the Innovation Award and it was great to win an award for this project, yes.

JEFF: **This was actually voted on by SAP customers that this was the most innovative big data use case with HANA of the year. And so, first of all, congratulations on that. But, more importantly, why don't you explain to the listeners exactly what it is that you guys did that was so unbelievably innovative— combining the internet of things with big data on top of HANA to really move the needle in your business.**

RAJ: So, the project or product name we called is a Forecasting Model Engine. So, it was based upon the load studies on the electric meter readings that has been done in the past for a long time. So, the idea our vision was basically to combine or correlate the meter reads that's coming out of our smart meter data. It's a large volume of data. Smart meters use 15-minutes interval data for our 2.2 million

customers. It's almost 300 million records every day. It's over 5-6 billion records for few months if you want to really analyze that. And then you have another set of data which is the weather data. So, you want to weather normalizing, if you want to load studies, you need to be weather normalizing and that's a list to understand what might be the impact on consumption, if your weather is colder than normal or warmer than normal. And, also, there's a third set of data, which is a customer data. So, basically, the vision of this project was to correlate consumption, weather and customer data, so that we can come up with a forecasting model engine. And it opens up a lot of opportunities in short term forecasting, long term forecasting for our financials, and also it opens other areas of opportunity in the ad search revenue, rate cases, demand management, energy efficiency, and customer experience improvements.

JEFF: So this is a huge thing for an energy provider like CenterPoint. Being able to predict with a fairly good degree of accuracy what the actual load and draw on your system is going to be based on weather patterns. And so, you want to be able to say next week it's going to be sunny and hot, and these five zip codes are going to be higher than normal load, so that you guys can obviously accommodate that and make sure you don't have a horrible brownout or blackout or anything like that, right?

RAJ: Yes. It was initially a pilot when we did this project early this year. The few things that we wanted to do was have a platform that can do their weather response functions and also understand the change analysis, basically what might be the reason why we are seeing this change. For example, last year, we compared with last year's consumption and this year's consumption. We want to understand what was the reason this change is occurring, and then we did a short term forecast, as part of this pilot, to which we can forecast based on weather. How much would be the consumption for tomorrow or the next five days. So, that's what we called short term forecast. Once we do that, that basically gives us an opportunity to do demand planning and also understand what might be a short term requirement of how our meters might respond based on severe weather or even normal weather, and also for demand planning.

JEFF: **You guys took a lot of data, I mean a lot of billions and billions of rows of data from multiple different sources, some from the smart meters, some from the National Weather Service, some from your own historical things, some from different load studies from third parties; it took a whole lotta different types of data and smashed it all into HANA, right? And then created this predictive or forecasting model on a really granular level. Like, you guys can get down even I believe below the zip code level, right, into actual neighborhoods. How has that really**

changed the way, you know having this power of forecasting, how has that changed the way that CenterPoint actually operates as a company?

RAJ: So, the biggest changes that happened as part of this project is it became a platform. Previously, it was, again, more siloed and more different ways of getting this data sets. So, like I said, we started with load studies. So, load studies has been done, but with the implementation of smart meters. So, previously, when we were doing the load studies, it was always done on a stratified sample set of data of 3,000-5,000 customers out of 2.2 million customers. So, with the implementation of smart meters, 15-minute interval data, and more expanded level of data, so we have to leverage the investments as well as the information that's coming out of smart meter we would want to and use all customers, like 2.2 million customers in our load studies. So, what it means is big data, billions of records, and if you want to really analyze like 2, 3, 4 years of data that's like more than 10, 15, 20 billion of records. So, we created this HANA platform, so that we can analyze this large volume of data as well as do more advanced analysis using our predictive analytics library. That was one of the big reasons that HANA was becoming as a platform to integrate information technology as well as operational technology and it simplified our process by giving more insights into data for better decision making and also speed of analysis on large volumes of data. So, now we are talking about management of multiple data

sources. So, like you mentioned, like we had multiple data sources. We still have our customer information in the legacy mainframe. Smart meters are coming from our MDM system, and also weather data is coming from National Weather, and we have few more like billing information that we also require to understand a few other scenarios. So, we are talking about three or four source systems that is feeding the data, and HANA acted as a platform so that we can manage multiple data sources in one place. And the advanced analytics, like I mentioned, was another big piece, so that we can do or apply more advanced analytics. What we mean by advanced analytics is we had our data scientist team that was analyzing all this data for last 12 months, and they tried to recognize different patterns. It can be at zip code level. It can be at the time of day or how the consumption patterns are coming, so that they analyzed our data in different patterns in more granular ways, so that they can come up with a better good recommendation on how we can apply on what kind of algorithms that can be applied for different customer's base or different areas. So, doing this in the past was done like with sample sets, as well as with the way that we've been doing in the past. So, now, a system and a platform like this gives us more opportunity and more flexibility to go do more advanced analytics at more granular level, as well as more data and large volumes of data. It's not that we didn't do it in the past or it was done wrong, but it gives us more flexibility and more opportunities that we can look at the data and more

people can get more insight into information for better decision making.

JEFF: Yeah, so that that's another really critical point. This isn't terribly new. You guys have been doing this, and other companies have been too, but the problem was it was on a small set of the data. It was on old data, and it was very, very labor intensive to just even get the data ready to analyze. But, now, with the power of HANA under it, you can use all of the data at the most granular level possible, every 15 minutes worth of consumption, and you cannot just use one or two algorithms, but now because you have this platform with the data in it, you can do some amazing new things that were totally impossible to do in the past. And that's what I think is really amazing about your use case is now that you do have this platform, you guys are in a position to do some truly mind-bending stuff with this in the next several years. So, I want to say, number one, bravo to the team for getting platform in place, but I'm really excited to find out where you guys go from here because the capabilities that you've got now with this platform filled with this data are truly amazing. Bravo, guys.

RAJ: Thank you. And basically it empowers our business users to access data quickly. The other thing that happened was we identified more areas where the subset of the load

studies was being used. So, now, transmission and distribution, they can use it for demand planning, or even the circuit load studies, or rates. And rates and pricing teams can use it for analysis, as well as getting more like reports based on the same set of data. Marketing team can use for their customer analysis, account demands, demographic studies, energy efficiency programs. Our risk management can use it for hedging, and finance can use it obviously for revenue management, short term forecasting, and long term forecasting. So, this will our featured reason is to have a platform with all the data integrated from IT as well OT, so that our business from different areas can be accessing it any time. It's more access data quickly and seamlessly and also more self-service BI and analysis.

JEFF: Raj, I want to thank you so much for jumping on The HANA Effect with us and sharing your three amazing use cases. This has been a phenomenal experience for us at SAP to help you guys deliver this to your users, but at the same time, I think that other SAP customers out there can learn a massive amount from you and what you guys have been able to do because you guys haven't done anything terribly revolutionary, but you've used these new technologies to really power some innovative ideas that you were prohibited from in the past because of the deficiencies of the technology you were using in

the old days. So, I want to thank you again for jumping on the call.

RAJ: Thank you very much and thanks for the opportunity again and we'll always be glad to share our experience with others.

JEFF: **And with that, we'll close out this episode of The HANA Effect with CenterPoint Energy and Raj Erode. Thank you, again. If you'd like to get more information about other HANA use cases, please check out saphana.com, the repository for all things HANA. If you want to get some more use cases on The HANA Effect podcast, please check us out on SoundCloud or iTunes, and you can always sign up to follow us on Twitter @hanaeffect. And with that, I wanna say, thank you again for joining us, and "Tschus." [END]**