Red Hat, Inc., the 14th annual Red Hat Summit

Company Participants

- Cassie Kozyrkov, Unknown

Other Participants

- Chris Wright, Analyst, Unknown
- Ritch Houdek, Analyst, Unknown

Presentation

Chris Wright {BIO 6239216 <GO>}

Now, if there's a company that understands these changes, including machine learning and big data as well as open source and collaboration, it's Google. You saw one of Google's open source projects, TensorFlow, in today's demo. In just a few minutes, Google Chief Decision Scientist will be here. But before she gives you more information about what intelligent apps will really look like, we'll hear from a shared customer, Kohl's, about their journey with Red Hat and Google.

So please welcome Ritch from Kohl's and Cassie from Google.

Questions And Answers

Q - Chris Wright {BIO 6239216 <GO>}

All right. Most of you know Kohl's as a chain of leading American department stores. But you might not know that they've also been a long-time customer of Red Hat. Ritch, could you tell us a little bit about Kohl's and your relationship with us?

Q - Ritch Houdek

Sure thing. So first of all, it's great to be here. I was really looking forward to summit this year. And then I saw Weezer was playing. And that put me right over the top, icing on the cake. So looking forward to that. So Kohl's, we're a department store, almost 1,200 stores, 49 states, about $19 billion in revenue. We've got about a 1,000-person IT shop, another 2,500 people in managed services around the globe. So big, big technology footprint. We're based in Wisconsin outside Milwaukee. But we also have a tech center here in Silicon Valley, in Milpitas. So long time Red Hat customer. When I got to Kohl's about eight years ago, there was a small pocket in the data center running RHEL. And it was a distant third out of 3 operating systems at Kohl's. And I look today years later, RHEL is the predominant operating system and we've just signed on for OpenShift as our PaaS platform in our hybrid cloud effort. We have efforts underway around Gluster, ActiveMQ. We have a relentless

automation effort, Ansible plays a big part there. So we are very excited about our future with Red Hat. We've had a good history. The future looks even brighter. It's a big part of our digital transformation.

A - Cassie Kozyrkov

So we at Google are thrilled to be on this journey with you. Can you tell us a little bit more about why you picked Google as a partner?

Q - Ritch Houdek

Yes. So as we embarked on our hybrid cloud journey, we felt it was important to pick a primary public cloud provider. One cloud provider -- even though multi-cloud is inevitable, we felt one primary was the right approach where you would go very deep and understand that platform, all the nuances, how to optimize your workloads to run cost-effectively, how to use networking, all the details and we chose Google. And there's really a few reasons for that. One is we're an existing customer. We use G Suite, Ads. But more importantly, there were a few things. One, engineering. We think Google's engineering is really top-notch. And as we did our reference calls, time and time again we heard that not only is the engineering great. But you have access to the engineering resources. So we felt that was really important. Two, Google, it was really interesting. They said, "Hi. yes, those GCP deals are great." I appreciate that. But what do you want to do together? Like, what problems do you want to solve in retail? And we found that pretty interesting but I think lastly, the tiebreaker, a lot of great cloud offerings out there, was machine learning. We believe that, like all of you probably, that that's the next big unlock in our industry. And we felt that Google was really the leader in that space and that's where we wanted to hit our wagon.

A - Cassie Kozyrkov

That's a topic really close to my heart. And I'm so glad that you've chosen us. Thank you.

Q - Chris Wright {BIO 6239216 <GO>}

So Ritch, you've been moving really quickly and even ahead of many of your peers. So it sounds like Red Hat and Google have both played a role in that. What do we offer both -- what do we both offer together that you don't get elsewhere?

Q - Ritch Houdek

Sure. So I would say that as I've gone through my career, one of the things I've gotten a much greater appreciation for is the value of partnerships. I would say earlier in my career, I didn't probably spend a lot of energy on that. But having gone through really good partnerships and other partnerships that weren't so good, it can take years, if not a decade, to unwind from some of those decisions that you make, right? So I think the secret is this: the secret is to understand what your values are as a company and then go find partners that align to those values, okay? So with us, it's pretty simple. We're a very engineering-led organization and we feel that you guys both align really nicely to that. Secondly, we're very committed to a future of open source, okay? Not only just open source. But enterprise-grade open source, right,

that we can run our business on. So we felt that with the future being so uncertain, you don't know where all this is going five years from now. So what you need to do is find a partner that has the right stuff in their DNA so that as new products are announced and new acquisitions are made, you know they're going to continue on that path of engineering-centric and a commitment to open source. So to us, that's really what it's about and that's why we're thrilled to partner with these 2 companies and looking forward to a great future.

Q - Chris Wright {BIO 6239216 <GO>}

Well thanks a lot. I love hearing the kind of open source collaboration is what really brings this partnership to the forefront. So we'll turn it over to Cassie. Thank you.

A - Cassie Kozyrkov

So how many of you had that moment where you realize everyone is using some word and you have no idea what that means but you're too afraid to ask at this point? What even is machine learning? Well it's an approach to making lots of small decisions with data, something involving algorithmically finding patterns in data. But let me just put it bluntly so that we can all get it.

It's a thing labeler essentially, that's what machine learning is. It's just a thing labeler. So why on earth should you be excited about thing labeling? Well here's my pet Huxley. And you've just taken in some pretty complicated data through your senses and you just know that that's a cat. And if I show you a different image, you're not fooled, you still know that, that label is cat. Your brain just does this, you don't even know how your brain does it. Now, if we want to get a computer to perform this labeling task for us, if we went the traditional way, you know this, programmers, we would communicate with the universe in some way, think really deeply about the problem and come up with a model. It's a model, it's just a recipe, it's a set of instructions that a computer has to follow to get from the image to the label. And we would have to hand craft that. Now, think about what this recipe would have to be for the computer to correctly detect that there's a cat in the image. I mean, think about what you, your brain actually did with those pixels. Can you express that? Do you know what your brain is doing? Or have you just had the benefit of eons of evolution and it just kind of figures it out for you? Now, that recipe is really hard to handcraft. Wouldn't it be better if you could just say to the machine: here, look at a bunch of examples of cats, look at a bunch of examples of not cats and just figure it out yourself. That is what machine learning is all about. It is a completely different programming paradigm. Now instead of giving explicit instructions, you program with examples, with data and let that machine learning algorithm figure it out and stitch that code that goes in between for you. So why should you actually be excited by this thing labeling?

Well engineers, you know we like to get computers to do stuff for us and there's a whole class of tasks where we just cannot express the instructions, they're ineffable. AI and machine learning are about automating the ineffable. This is a fundamental leap in human progress. Now you can get computers to do tasks where you cannot possibly express the instructions. This is so exciting and seems futuristic and difficult, right? And when you think about machine learning, the one thing I most want you to

think about is microwaves. Who here in the audience knows how a microwave oven works well enough to build a new one from scratch? Raise hands. Who can build a new one? Do I see any takers, any takers? No hands? Yes, me neither. Who here has never used one to reheat food? You all have. Even though you have no idea how it works, you're still happy to use one, right? And anyone here feel like you would have no idea how to get hold of one, I don't know, like maybe add Kohl's, if you needed one? Now, you just told me you have no idea how it works so how could you possibly trust this microwave? Well you're not going to trust it by reading the wiring diagram, are you? You're going to trust it by taking that it actually does work, by having a good idea of what you want it to do for you and then tasting what comes out on the other side. And that is exactly what you'll do with machine learning. And this is a perfect analogy for machine learning. Now what they don't tell you about machine learning, when we use that term, it's actually 2 machine learnings, not 1. Two completely different disciplines that are as different as building microwaves from scratch and innovating in the kitchen. And you need completely different skill sets for these. If you want to be a machine learning researcher, you are building general-purpose tools for other people to use. And so the bad news there is that there is quite a lot of education that you need to get, it takes a little while to ramp up because how on earth are you going to build a better microwave than the one that exists already, there's some pretty sophisticated stuff out there, if you have no idea how the current one works? So that's the bad news, it takes a long time to become a machine learning researcher. The good news though is that if that is your cup of tea, we at Google have a large machine learning research shop where we make these tools for you that are all powered by open source. So we give you those wiring diagrams as a springboard so that you can go and build a better microwave than what we have, using our blueprints. And TensorFlow, a really popular machine learning project, started at Google before we open sourced it because we believe that the community as a whole so much more innovative than just any one of us alone. But let's face it, most of you are not here to build general-purpose microwaves. You just want to get cooking already, right? You just want to use these things to solve business problems. And so you are in the completely other discipline, applied machine learning. Now for that, you do not need a PhD. You don't need to know how back propagation works and neural networks any more than a chef needs to know how a microwave is wired. Instead, what you need is a really good kitchen to play in. And we at Google, provide that for you. Let me show you some of the things that we have. And what you're going to need kind of depends on what you're cooking. If you're cooking with usual ingredients, data. And you're making usual dishes, labels, predictions. So say you're making pizza, please don't go reinvent the concept of pizza from scratch. There's already recipes out there and you can just grab those recipes and start making pizza. And that is what our cloud APIs are all about. These are recipes that we've already built that you can just pick up and start using. You can just plug them into your apps to make those intelligent applications. But say you're cooking with a little twist. Now, it's gluten-free, vegan pizza. Well you still don't need to -- you still don't need to start entirely from scratch, it's still pizza. You can just adjust what already exists out there. And so what we suggest for you here is try cloud AutoML. Sure, maybe we haven't trained our vision system on the clothing type that your Kohl's customers are wearing. But no problem, just feed in your images with your labels into cloud AutoML. And you'll be good to go, only a small adjustment necessary. Now say you're truly innovating, you have your own completely unique ingredients, you're doing something pretty different in the

kitchen. I don't know, maybe now you're making an edible sock that tastes like pizza. Well machine learning and innovation are in Google's core DNA. In fact, I can't think of a single one of our consumer products that doesn't have machine learning in it somewhere. And so if you are innovating in the kitchen, if you're building truly new recipes, what we have for you is cloud machine learning engine. This is access to exactly the same infrastructure that Google uses to train our models, incredible. So you could, if you wanted to, after this session, grab a laptop, open it up and test drive our shiny, gleaming kitchen with all those appliances ready to go. And you could feel the thrill of a data center and all this cutting-edge algorithms rising up to do your bidding. So solving business problems with machine learning, applied machine learning is far easier than what most people think. But you don't realize this that all those courses in university, those are all about how to build the microwave, not how to just use it to get cooking.

And when I hear people say "Oh, I couldn't possibly get started with machine learning until I take a course in it or, goodness, a whole degree," I couldn't help but imagine that same person saying "I couldn't possibly use a microwave until I've built one myself." You can just get cooking. It's not the lack of degree or course or knowledge that's holding you back. What's much, much more important than that, what you need to get started is creativity. Figure out what you're going to cook because all those tools are already there waiting for you to use them. Imagine gleaming kitchens just waiting for you to come play in them. But since this is a thing labeler, you need to start by thinking what on earth do you want labeled and see how creative you can get with that. You might imagine the label being maybe the wave form that sounds like a voice that could make a hairdresser's appointment for you. Or you can imagine a few other cases like maybe you are a loving son and your aging parents sort vegetables by hand and you want to save them the trouble of having to do that on their farm. So maybe, you're thinking about building a system that will label the vegetables and sort it automatically so your parents don't have to do it. Or maybe you're worried about the ingredients that go into baby food and you think it would be great if you could automatically check whether the ingredient is safe or spoiled before it goes in. Or maybe you're into the idea of a huge bank with trillions of dollars in assets, countering fraud and money laundering automatically across millions of accounts. If you imagine that world, you imagined this world. Well these are all real examples of things that have been done on Google Cloud platform. The first is a real family of cucumber farmers; the second is a Japanese manufacturer of high-quality baby food products, Kewpie; and the third is HSBC who uses Google Cloud to run a better business and catch the bad guys across 27 million customers. Pretty different chefs, completely different applications. Why is Google Cloud platform the right choice for all of them? Well think about what you might want in a kitchen. You'd want good engineering so you probably want to think about getting a partner whose quality you trust. But think more long term than that. If you believe in your own infinite creativity, if you believe in the future, you would be crazy to let yourself get locked into a kitchen where the purveyor sets it up one time for you and then controls what you can and can't have in there. And every appliance has its own proprietary little socket that you are not allowed to tamper with. And if your business changes, then you have to rebuild and rewire the whole thing. Imagine instead, the dream kitchen that becomes what you need it to be instantly. Complete universal

wiring, open interfaces, the best of everything, all the modern appliances always available. And you can plug them in with no fuss because that wiring is universal.

That, my friends, is the power of open source. And that is what Google and Red Hat together believe in. We don't want to see your creativity squashed by what seemed like a good idea yesterday. So we have built for you an incredible, future-proof machine learning kitchen. This kitchen can expand, contract as you need it. You can plug in whatever you like, all the most modern appliances are there and compatible as you need them, fully customizable. Because none of us can tell what innovations the future will bring. And we don't want you to have to bet on the direction of progress and lock yourselves in. We want you to be free to be as creative as all of us can be together. So I hope that you're excited to dive in.

This machine learning kitchen is there, ready, waiting for you to get started, start playing in it. Your machine learning adventure awaits. Thanks so much.