THE ENTERPRISERS PROJECT

I.T. AS THE NEW STRATEGIC REVENUE DRIVER

The to-do list for today's most innovative IT organizations continues to grow beyond technology. They are now expected to be business strategists, marketers, innovation leaders, customer experience specialists, and revenue drivers. In fact, CEOs are increasingly calling on IT to develop new moneymaking opportunities.

A 2016 report from Harvey Nash and KPMG found that: "The CEO continues to be interested in IT projects that make money. Almost two-thirds (63 percent) indicate this is a priority, compared to approximately one-third (37 percent) who report that the CEO is more interested in IT predominantly being used as a cost-saving tool."

How are leading IT executives identifying opportunities for new digital products and/or processes? The Enterprisers Project gathered three IT executives to discuss how they're tackling it in their organizations and the important role data plays in their efforts.

PANELIST PROFILES

TOM SODERSTROM
Chief Technology and Innovation Officer, Office of the CIO, Jet Propulsion Laboratory

JIM SWANSON
Chief Information Officer, Monsanto

BRYSON KOEHLER
Chief Technology Officer – IBM Watson & IBM Cloud
General Manager & Distinguished Engineer – IBM

THE ENTERPRISERS PROJECT (TEP): Increasingly, IT leaders are being seen as revenue generators for their organizations. It's by no means a new mandate, but it's one that's gaining steam as IT's role takes on even more prominence in organizations. In today's "disrupt or be disrupted" landscape, why do you think IT leaders need to shed the cost center mentality and become top-line producers?

TOM SODERSTROM: Becoming top-line producers results from both an existing "need" and a new opportunity. The "need" is reacting to smaller budgets, doing more with less, writing apps, and increased competition for talent. This is not new. What's new is the opportunity of finally having a way to accomplish it. By using cloud computing, the CIO and the IT department can stretch their budgets and don't have to focus all their time on infrastructure. Instead, they can focus on the applications, which is where the revenue and the business value comes from.

We've been doing cloud computing for nine years and are seeing these benefits. It opens up opportunities to do things as simple as building a mobile app that tracks whether the spacecraft has any issues. We can also take advantage of new trends, like the inexpensive sensors that comes from Internet of Things, and show immediate benefits in our business environment. In fact, by employing chaotic architecture, we are able to benefit quickly from many emerging trends, and they are usually on the revenue-generating side.

JIM SWANSON: The question is how do you unlock the value of the assets you have and amplify that value through digitizing the product or offering. We spend a lot of money on research for our germ plasm – our seed, our genomics – and how chemistry is applied. We have over a million acres that we plant our seeds on, because we grow our products, we don't just manufacture them.

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We have a lot of information and insight, but we must turn that insight into value for our customers or growers. We are putting models in place to better predict outcomes; to look at reducing input costs for growers; to bring in new value for them over and above just selling them a bag of seed or a jug of chemistry. So it's really taking what you have right now and building adjacencies through digital products, digital tools, and digital services to create a great value to extend your reach.

I think CEOs are getting it. A lot of them want to look at new growth, and digital's the way to do it. It gives you revenue lift. It gives you customer intimacy and interaction. It gives you employee productivity.

BRYSON KOEHLER: We're all kind of saying the same thing, and we've all known this for years. The mission of IT is to get out of the back office, get into the front office, and add value. The beauty of the cloud infrastructure and the services that are available now is that they provide the perfect opportunity for IT to make that pivot.

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It is a leap of faith, and one you have to take, because you're shifting from what made you great in the past to a new thing that you may not have mastered yet. And so there's going to be that period of uncertainty and anxiety within the teams as they're going from something familiar to something new. You're probably going to fall down a few times as you learn that new skill, and that creates some anxiety within the team. But if you don't have those experiences, you're not learning and improving.

TOM SODERSTROM: I agree 100 percent, Bryson. IT is becoming a revenue generator and leader because of this rapid pace of change. Things have always changed fast in I.T. It's always uncomfortable because you're never really up to speed with the latest technologies and approaches. But that's our world. The uncomfortableness of leaping off the cliff – that's precisely what will accelerate opportunities for the business.

HOW TALENT GAPS CHANGE RECRUITING STRATEGIES

TEP: Can you each briefly highlight some of your IT projects that are generating revenue or adding increased value to the business?

JIM SWANSON: For us, we have our Farm Rise platform for growers in India and Philippines, which allows farmers to be more profitable through agronomic information and services. We provide that through either SMS text messaging or through direct dialogues with farmers, and we use a digital capability to interact. It's simple technology, because that's what they have in those markets.

This program is rapidly evolving, but we've helped growers become profitable farmers through a better understanding of disease. For instance, they can take a picture of a plant and we're able to tell them what kind of herbicide to use or agronomic practice to apply. That's turned into customer confidence and has given the business a way to reach our customers in very remote geographies. We have over four million growers on the platform. There's no way you can have enough sales reps to touch four million growers across these markets. But we've created a way to digitally reach out and make them better farmers. And when they are better farmers, they can operate more sustainably, have higher profitability, and brand loyalty comes back to us.

Our other asset is a climate platform, which is a separate P&L within Monsanto. It's providing high-end, high-tech agronomic services and advice – whether it be weather modeling, harvest modeling, information about nitrogen leaching in the soil, or disease management. It's both a free service and a paid service across the United

States and expanding. We touch a number of different areas to drive revenue and growth for the company, and it's been changing the way agriculture is becoming more digital.

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TOM SODERSTROM: I have a couple examples, as well. Take the Curiosity mission to Mars; it's a $2.5 billion mission. With the technology that existed at the time, one of the critical aspects of the mission was temperature. Our science instruments could only operate within a limited temperature range, and it's quite cold on Mars. So analyzing the temperature was key to success. With the system that was built years ago, they were limited to look at static pictures of instrument temperatures, one-by-one. This could take days, sometimes weeks. Wasn't there a better way?

We realized that we could securely and interactively do analytics of the data within a cloud computing environment and by using open software. We used the paradigm of comparing stocks on the stock market (like finance.google.com) and now, analysts could interact with visualizations of 30 billion data points and compare multiple instruments at the same time, in near realtime. This was completed in just a few weeks and led to increased drive time for the rover on Mars and more information about Mars. It's now used for all new spacecraft.

As another example, we have a spacecraft circling Earth, looking for carbon dioxide. The scientists had to reprocess all the data they'd collected over the years because the algorithms had suddenly changed. They didn't have the money or time to do it the old way, so we acted like a startup and used AWS' SpotMarket. As a result, we completed the work in 1/10 the cost and 1/10 the time. And in doing so, we spun up 100,000 processors in Amazon's cloud for a couple of days. It worked and unlocked the value in everybody's mind. They were saying, "Well, if this works on a real-time mission, I guess it could work for everything."

So, the speed of trying new things and putting them into business context has been accelerated. We are now going from toy projects to actual implementation in months, as opposed to the many years it would have taken before. Our next two missions, by themselves, will dwarf everything we've done before, and it's directly related to our ability to handle lots and lots of data.

BRYSON KOEHLER: One of the cooler recent examples for us has been Watson Ads, which is a full-stack ad platform, infused with cognitive capabilities. This can, for example, enable a chatbot within an ad. So if you see an ad for Flonase, for example, you can ask the ad itself questions about the product: "Hey, can I take Flonase and Benadryl together? Can I give Flonase to my 13-year-old son?" etc. And conversations with the ad make the ad smarter, more engaging, more useful, and therefore, more valuable to the advertiser – and, the consumer. I've been really proud of the innovation team and what they did very early on with the Watson team to combine very traditional digital-display advertising with a really neat cognitive bot capability, bringing those worlds together.

Another example that is pushing the envelope is something we call JOURNEYfx. It's a tool that enables businesses to have an anonymized view of their customers' journeys and the lifestyles they lead. Let's say you run a hardware store, and you want to understand who is coming in the store, where they were before they came in, where they went after, and whether they went to a competitor first or second. These are massive insights that you may want to find out about your customers in an anonymized way – not tied to an individual, but tied to a persona.

JOURNEYfx takes a lot of data from many different sources, brings it all together and provides a visualization of the journey of people tied to location. So you can now get a feel, en masse, of the types of people and the kinds of journeys they take. That enables you to modify lots of different things related to in-store experience, the advertising, and how you hook people. Maybe it points out that one store is performing better or worse than another.

JOURNEYfx is an evolution of a lot of stuff we've been working on at The Weather Company over the years with data science, mass collection of data and visualization and bringing all of that together in a really useful tool. It's been fun to take the technology that we've been working on in the back end, wrap that with a really fun front-end project, and then put that out with our sales force and watch it take off.

DATA: THE CRITICAL ASSET FOR REVENUE GENERATION

TEP: One common common theme in the projects you all have shared has been data. What are some critical ways IT leaders should be thinking about data as a tool for new product creation and revenue generation?

TOM SODERSTROM: Speak differently. In going from a back-end, systems-of-records world to more of a front-end systems-of-engagement focus, the IT organization has to learn to use words that the customers care about. Less IT speak and more outcome-focused. To help, we're trying to come up with very simple tag lines, just like an advertiser would. For example, "Think Data First," because the true value lies in our data. Innovating Together instead of Information Technology because that's how we will get things done.

Architect differently. We've changed our architecture so that the data is no longer locked in the application but instead resides in data lakes. By decoupling the data from the application, other applications can use and derive value from the data and create a force multiplier for the company.

Interface naturally. We are enabling interfaces to the data through a variety of devices that connect to the data through APIs. If we do that right, then all of a sudden, we can access the data by talking, by typing, by swiping, by blinking, and soon merely by thinking. This is tremendously helpful because it allows people to use multiple senses to interface with the data. And we can combine the data in new ways by using artificial intelligence and analytics and provide answers to their queries back to the same devices they used to ask the questions. This use of Internet of Things drastically increases speed-to-insight for the users.

Open the data. The hardest lesson learned on data was not the technical parts. It was about people or a department feeling like they "own" the data. Once everyone realized that the corporation owned the data, we were able to make rapid progress.

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BRYSON KOEHLER: We've had to really shift our thinking as we move into being a big data company. Previously, when there's been a data need, individual teams would go and buy it. One team would say, "I need lightning data." One team would say, "I need pollen data." One team would say, "I need traffic data." One team would say, "I need location data." There were various sources of data. And when we did that in silos for individual products, it became harder for those individual business cases to support the growth of going after new data sets.

We shifted the mindset to say, "Data is a raw material for the entire business. Let's look at that more centrally." There was initial concern and push back. The word "centrally" always makes some people's hair stand up because of things like bureaucracy. But, in this case, it's a great thing because now we are able to pool individual business cases more collectively, which means we can spend more on data that we, individually, would not have been able to before. When you spread that cost across 15 different product lines, all of a sudden now everybody can tap into it. It took a little while to get over that hump, and it took a little while to build the trust that it was worth the pain of having a Politburo-type model for it.

Now that we have it, I would say that nobody would ever go back to the way it was before. In fact, you'd tank the business if you did, because everybody is reliant on data being treated as a shared raw material across the board.

JIM SWANSON: I would absolutely agree with both Bryson and Tom's comments. Back to the point of removing silos and making data acceptable and consumable. Maybe, think of it as a layer cake. The bottom of the cake is a really strong, agile foundation – things like your cloud-based computing, your high-end network, your ability to move information service around. The second layer of the cake is your data access. We've actually codified our data access through grouping things like our "Customer 360," or "Field 360," or "Lab 360," which pulls together information assets including data access through APIs and microservices. Our third layer is the products and platforms we create enabling our business processes and making the data consumable, and the fourth is decision science and analytics to turn insights into value.

What you use to consume data for a model might be different than what you need to consume for a product, but you have to have that data available for both. I like the way Tom said it – it is a decoupled asset, but it's an asset you think about – layered into this cake. And then you can start to answer questions like, "What do I need to do to consume and be consumed by product, services and decision-modeled analytics?"

And, "What foundation do I need underneath that data to make it available, make it ubiquitous, and make it easily protected and accessible?" That's allowed us to think very differently around our architecture and our approaches and drive a very different inertia in the company, which is top line for unlocking digital value for the company.

TOM SODERSTROM: A very practical application that I'm sure we've all run across is the increase of Software-as-a-Service in our enterprises. Our bottom line in our contract is that we own the data.

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STAYING ONE STEP AHEAD OF INNOVATION

TEP: How is your IT organization experimenting with new technologies to determine what holds promise for the business?

JIM SWANSON: We put a whole structure around this. I have what I call a "digital outreach team" that is targeted to meet with 250 startups every single year. We do a kind of "speed dating" where we'll go to a VC and they put 10 startups in front of us for a series of 10-minute pitches. We look specifically at the areas that we're focused on – IoT, analytics, cybersecurity, remote process automation, machine learning, etc.

Then we align our digital outreach group with our venture group to find companies that have novelty in those areas. And it's not only startups that we're looking at. We also meet with large companies, like AT&T, Microsoft, Cisco, etc. Out of those 250 meetings, we do 20 to 30 proofs of concept a year. And then we apply, on average, five new technologies. And so that's one way we bring new thinking into the group.

Another way is contributing to open source. My developers and engineers are contributing to the open source community; not only to help support open source and new thinking, but also to attract talent. One good engineer could bring 10. We've also got a full DevOps model, and we've been able to iterate quickly with our business partners on new ideas and new thinking. That's helped us to educate our business partners on how technology can disrupt process and how it can be used as a driver for thinking.

All of these combined have allowed us to create this innovation engine in the organization that doesn't just sit on this periphery of the innovation group. It's actually embedded into my product and engineering team, which I globalize. And they're making innovation and disruption part of what we do.

TOM SODERSTROM: We spend quite a bit of time researching emerging trends, talking with partners, experimenting with new technologies, and researching startups to try to figure out what benefits we could bring each other. Every year, we hold a JPL-wide meeting to say, "Here are the next disruptive technologies. What do you think?" Whoever shows interest in the new technologies end up being the leaders of those initiatives that we then prototype. Six months later, we hold the same meeting again, and the early adopters who tried the new technologies discuss their results with the rest of JPL. The idea is to find a passionate end user who has a real business problem to solve, and a passionate developer who can help solve it by using the new technologies. We treat the prototyping effort as a startup in that they get a small amount of seed funding, a very short deadline, and get to focus 100 percent on the prototype.

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Afterward, it's got to be something they can demonstrate and show to other business users. The way we measure success is if that end user organization is willing to fund the next phase of the prototype. If they aren't, it wasn't important enough. Since there's no lack of things to try, then we'll just drop it and try something else.

This recipe has led to the infusion of many new capabilities. By proactively disrupting ourselves, we have avoided being forced to react to disruptions later when it's much harder to adopt.

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