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Digital IQ Dialogues

GE
Jim Fowler

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Jim Fowler, *Chief Information Officer*
Jim Fowler is the chief information officer for GE and is responsible for developing and delivering the global information technology strategy.

GE is undergoing a massive reinvention, from a 140-year old industrial company to a technology powerhouse that will marry the physical and digital world. Getting there will require a new kind of chief information officer, one that CIO Jim Fowler says works alongside the CEO and has to be willing to 'take more risk and more responsibility.' At GE that means retooling IT's mandate, roles, processes, outlook, and more.

PwC met with Fowler as part of our 2015 Digital IQ Survey interview program, a series designed to gain insights into how leaders value technology and weave it throughout the business.

This interview has been edited and condensed.

PwC: Can you tell us about your role as the CIO for GE?
Jim Fowler: GE is undergoing what is absolutely the most important and absolutely the biggest transformation that it's had in its 140 year history. The transformation is all about taking the physical world of machines and the logical world of software and analytics and bringing them together to drive a whole new type of industrial. Inside GE, we've had a great understanding of this for the past two years. We've invested a billion dollars in a new software development center in San Ramon, California, we've insourced over 2,000 IT roles to start to build out our capability, but, more importantly, the role of the CIO across the businesses has really changed—from a cost-focus, back office oriented, outsourcing driven role, to one of helping our business leaders, our CEOs, our COOs, our CMOs, understand the art of what's possible at the intersection of information technology and operations technology.

PwC: What are the challenges for GE in becoming a technology company, as much as an industrial company?
Jim Fowler: We face a lot of challenges as we think about this transition. First, we are predominantly a hardware company. We've got deep domain expertise in how to build aircraft engines or locomotives, or in healthcare equipment. And that domain experience is actually a benefit to us, because if we can marry that up with software and analytics, we believe that we can become a digital industrial. But to get there, we've got to rethink the way we work. From my team's perspective, one of the things we've had to think about is people. Over the last ten years, we've extensively outsourced, and in that process, we've given up a lot of our domain knowledge.

So one of the first things that we have to do is hire. On the IT functional side, we've hired back about 2,000 employees, and we've got more to go. Also, retraining our people to think about agile and software development methodologies they haven't used before is a big piece of it.

The second thing is technology, and really thinking about what we build versus what we buy—building the software that differentiates us in the marketplace, building the software that is going to ensure we sell another aircraft engine or another locomotive. We've spent a lot of time thinking about what we're going to build, and, then, to my third point, who we're going to partner with on the things that we're going to buy. Those are the things that don't differentiate us from our competitors, the things that you would expect any company of our size to have, and we're going to buy those and find great partners to work with in delivering that capability.

PwC: Going back to your first point, are there particular skills that you're focused on in order to meet your goals?
Jim Fowler: There are a lot of skills that we're focused on to help us meet these goals — agile software development is at the top of the list. We had an IT team and a software development team that was rooted in waterfall methodologies, and the one thing that we're short on right now is time. New competitors are coming out of the woodwork, and we can't wait for the length of time it took us to get through some of those waterfall methodologies, so agile software development is at the top of the list, followed very closely by analytical skills. I never use the word big data, and I'm not going to use the word data scientist. I'm looking for people who are analytical, who ask questions, who know how to use tools and data, and who know how to use analytical models to be able to come up with good answers to those questions.

There are also some skills we're going to have to get—I would say—lazy about. It might seem backwards until I explain this: my best systems administrators are lazy systems administrators, because they automate everything. We spend so much time in some of the mundane work of IT that we're not spending it on the important stuff that differentiates us, so a big part of what we're building out are infrastructure skills that are all around automation and self service. And I want to make sure that we don't slow ourselves down in our own processes and that we're not hindered by too many manual touchpoints.

PwC: Now, let's get to your second point, about emerging technologies. What are you doing differently now?
Jim Fowler: A good example of what we're doing differently with emerging technologies is a lot of little bets. In the past, we would spend months and months looking at which technology was the best technology, going through these very long, detailed analyses that, at the end of the day, didn't greatly differentiate between the products we were looking at, but we spent a lot of time doing it. Instead, we're doing a lot of experimentation. We'll invest a few thousand dollars, we'll try something out, we'll do a quick experiment, we'll turn a solution back around. A good example is in our oil and gas business, which had a legacy configurator tool that they were spending about $65,000 to run. It was only quoting about $600,000 in parts and, at the end of the day, was not something that the sales teams liked to use.

They did a little experiment and quickly developed an application in less than two weeks. Now, they have a production application that only cost them about $6,500 to run, and they can do new configuration deployments in it in about three minutes. So these little experiments we find are paying off, and it helps us make decisions to either move forward or stop more quickly.

PwC: In a company like GE, a lot of innovation happens internally. Do you look to other sources as well?
Jim Fowler: The way we think about technology has had to change in the last few years. We have a fantastic Global Research Center that's still looking at emerging technologies, and that will still continue to be a big source for us going forward, but we've also started to take little bets. We have our own venture company, GE Ventures. They make little bets in companies around the world— everything from a few hundred thousand dollars to a few million—in technologies that we think could affect us going forward. Additionally, specific businesses have created their own venture capital organizations inside their businesses, working in conjunction with GE Ventures, where they're looking at industry specific big bets. How that relates back to us from an IT perspective, is that we use a lot of the information that comes in from that venture business, to help us understand where technology's headed, and we're trying to incorporate that into the designs for our enterprise going forward.

PwC: Let's talk about the market for GE Digital. Why form this business now? What's changed?
Jim Fowler: One of the things that we see with industrial companies today is that they've really been stymied for the last ten years—1 percent year-over-year productivity on average after the heyday of the '90s when they were getting 4 percent year-over-year productivity. And when you look at it, productivity really happened in silos, and there's an opportunity to combine the physical world of the machines with the logical world of software in a way that's going to let us reap more productivity than we've ever seen before. So when we think about it from a GE perspective, we start thinking about outcomes that our customers want.

An example might be within our Renewables business, where we make wind turbines. When you buy a wind turbine, you're probably buying 40 or 50 wind turbines, and you're putting them in a wind farm. One of the things that we've found is through the development of software, we're able to allow those wind turbines to talk to each other and also bring in outside information around weather, wind speed, and temperature. The software then can tune the entire wind farm, increasing the overall output of power by 10 to 20 percent. So that's an example of where information technology and operations technology are coming together to drive huge productivity for both us and for our customers going forward.

PwC: What is manufacturing going to look like in a few years?
Jim Fowler: Manufacturing in the short term is going to become much more digital and much more automated, both in discrete and continuous manufacturing. Continuous has been automated for years, but even in discrete, we're seeing the opportunity to automate more. But it's not just about automation. It's about the amount of sensor information that is coming off of the equipment that you can use to optimize the way we manufacture, and our power plant in Greenville, South Carolina, is an example. We've been running a brilliant factory project for the last three months. We've been able to take sensing data along with demand data and information around the parts to be able to decrease cycle time by 20 percent.

Another example is unplanned downtime. In our plant in Grove City, where we make locomotive equipment, we've been able to reduce unplanned downtime by over 25 percent by taking all of the monitoring data and predicting when we were going to have equipment failures that might slow us down. I think in the short term, you're going to see further optimization of things like unplanned downtime and cycle time. But in the long term, I think digital's going to have more fundamental changes in the way we think about manufacturing.

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I was in a recent conversation with one of our logistics partners who's starting to build the ability to do 3D printing within their logistics facilities. Fast forward 10 or 20 years from now: I see a manufacturing world where instead of having one plant that produces one set of parts, we may license our 3D models to a logistics partner who then prints it locally where the need is and delivers it to the customer, eliminating all of the pains of getting through customs, of import taxes, and that helps us increase the amount of content that's produced in country. So I think this industrial change, this digital industrial movement that we have going on, is going to change the way manufacturing looks drastically over the next 10 to 20 years.

PwC: How is your relationship with customers changing?

Jim Fowler: Our relationship with customers is becoming more about outcomes. In the past, we would sell on the specs of a piece of equipment, how much thrust or fuel efficiency was coming off of a jet engine, or the amount of output from a power plant. And those are still important, but our conversation is really changing with the customer. It's getting into a deeper understanding of how they make money, of how they're successful in their industry, and we start to look for the intersection of where we can be successful together, and we start to find solutions there. So when I'm talking to my IT teams, one of the first things that I tell them is that they should understand how we make money, they should understand how our customers make money, they should understand where the overlaps are, and they should be helping us figure out how to do that better or think about how we might get challenged on the outside and have to change. And so we talk more about customer outcomes.

PwC: How does all of this change the role of the CIO?

Jim Fowler: The role of the CIO is changing, and I don't think this will surprise anyone. When I sit at the table with the CEOs of our businesses, with the CEO of the company, I'm there as a trusted business partner. I don't go in and talk about things like obsolescence. I don't go in and talk about technology or upgrades. It's a discussion around what we have to do for the business. What can we do to help drive topline revenue growth, what can we do to reduce the variable cost of our products, how can we apply data analytics and technology to improve the cycle time of getting parts out to customers? Here's how my role has really changed: In the last three years, it's one where I'm talking less about technology and more about the implications that technology has for the business.

And that's meant a couple of things for me personally. One, I had to be willing to take some risk. In the past, IT was looked at as a cost center, a back office activity, and it was just kind of left to run itself. Today I'm expected to come in and sign up for productivity. Between now and 2020, I've committed to delivering $1 billion of productivity across the General Electric Company through the use of technology. I've also committed to converting $1 billion of internal IT work that we do inside the company into commercial products that we'll sell externally. So more and more, my job is becoming a trusted business partner. The CEO of our company spoke at a conference last week, where he said two things that I've kind of framed on my wall. One, CIO is king or queen, and the second part of it is really that when he goes into a discussion today to talk about how to drive revenue, how to drive productivity, it's his CIO, me, that he wants next to him doing that. And I think that is a great respect for what CIOs in this business have to offer from a growth perspective.

The second thing is we need to give up a little bit of control. I can't tell you how many discussions I go into where people complain to me about shadow IT or the fact that another function is off doing something that is viewed as our responsibility and our role. And I have to tell them, "Embrace it. If somebody else has a better way to do something, if somebody else has a better idea, we should go out of our way to support their ability to get it done in a way that can be scaled across the company." So one of the other things CIOs are just going to have to get used to is not controlling everything. Your influence needs to be about making sure we get the right data in a safe and secure way to the people that need to use it and get more comfortable with the fact that people are going to develop their own solutions.

PwC: What are the biggest challenges for the new CIO?
Jim Fowler: I think there are several things that CIOs in the industry are going to have to deal with. One is coming to grips with the fact that the thing that we're short on is time. I did a study with a group of IT professionals from our business two weeks ago, where I asked the question, "How many of you didn't have enough money to do something that you knew needed to happen in the business last year?" And every person in the room raised their hands. And then I asked a follow up question: "How many of you came in under budget last year?" and every one of them raised their hands. I said, "That's a problem. You've got to be willing to take a risk. You've got to be willing to blow your budget for the things that you know are important for the company and for the growth of the company." So I think that idea of taking more risk and more responsibility is going to be one big part of what's going to have to change for CIOs.

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PwC: Do CIOs in industrial products companies face different challenges than CIOs in other industries?
Jim Fowler: I've been at GE for 15 years. I've worked in every GE business with the exception of GE Healthcare. That includes our GE Capital business that had about $550 billion of assets, a large financial institution by anyone's measure. And so having seen both the financial services world and the industrial world, I can say, unequivocally, the industrial CIO has the harder job. It is clear when you're in a financial services industry that data is the product, it is what you sell, right? Information is king, and it is the cost of goods sold. You are the supply chain, you are manufacturing, you are services when you are IT in a financial services company. Along with that comes the respect, the seat at the table.

Industrial's not there yet. Industrial has grown up with the idea that engineers and manufacturing supply chain leaders ran the plants. They ran operations, and IT was somewhat of a necessary evil to make sure that we could bill customers and we could track costs. And so one of the hardest things that a CIO in an industrial business is going to have to do today is to build credibility with those leaders, to become their trusted partner. They have to make sure leaders understand that they've got their best interests at heart and that they're there to really see the same outcomes that those other function leaders have been driving for years.

We're very early in what I can only liken to the next industrial revolution. This revolution will be really focused on the digital industrial, and the digital industrial is all about using data and analytics to optimize operations, and we're very early on in the process. The term Internet of Things or Industrial Internet has really only been coined in the last three years. We're just now starting to understand what it means and what it's capable of doing. So for the next ten years, we're going to be building into this new revolution that is going to change the way we think about industrials. In the US, one of the phenomena that you're starting to see is more manufacturing plants coming back to the US, because we can automate those plants and run at a cost base that might have been similar to a low cost country going forward. We're going to see this volatility in manufacturing around the world. China just announced a $6.9 billion investment in automation and digital technology in the industrial space. So, clearly, counties around the world are starting to understand that manufacturing is going to look very different over the next 10 to 20 years.

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