



Innovation Networks: Looking for Ideas Outside the Company

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According to Larry Huston, managing partner of consulting firm 4INNO, future competitive advantage will depend on "innovation networks" -- individuals and organizations outside a company that can help it solve problems and find new ideas for creating growth. A senior fellow at Wharton's [Mack Center for Technological Innovation](#), Huston was vice president of knowledge and innovation for many years at Procter & Gamble, where he was the architect of its Connect + Develop program, an approach that helped extend the company's innovation process to include 1.5 million people outside of P&G. Huston spoke with Knowledge@Wharton about how innovation networks function, the ways they can be nurtured, their potential downsides and the impact they will have on how firms bring products to market. Huston is a faculty member in Wharton Executive Education's upcoming program, "[Full-Spectrum Innovation: Driving Organic Growth](#)." (In a previous [podcast](#), he spoke with Knowledge@Wharton about innovation and its role in the global economy.) An edited transcript of the conversation follows.



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Knowledge@Wharton: I understand that you have been doing some work on innovation networks and arguing that these will be a major disruptive change, affecting all companies in the future. Could you explain that a little bit?

Huston: First of all, let's define what innovation networks are. Innovation networks are people, institutions and companies that are outside the firm -- they can also be inside the firm, but for purposes here they're outside the firm. They are intellectual assets that companies can link up with to solve problems and find ideas, while beginning to think about those assets as an extended part of their organization -- and therefore quickly create top-line growth and bring new things to the marketplace.

From a competitive-advantage standpoint, yes, I think it's going to be a really big deal. I don't believe we're at a tipping point yet, but I think, in the future, the companies that identify those assets outside and begin to build relationships with them have a real shot at building a competitive advantage and preferential relationships.

Knowledge@Wharton: Could you give an example of a company that has built an innovation network and is using it to its advantage?

Huston: I think there are a number of them. Procter & Gamble spent a lot of time defining the assets outside that could help it in its various science areas and business areas and set about developing, in different regions of the world, assets, hubs where we could link into those. [It also] developed a proprietary network of individuals who could contact others in different parts of the world.

So I think P&G has done that, and I think Boeing has done that with the Dreamliner, particularly around building supply networks that are solving problems. Microsoft has certainly done that to build out developer ecosystems, as has IBM and others. But it's a relatively new idea to really think about how you [can] build growth platforms utilizing ideas outside the company.

Knowledge@Wharton: It sounds like there would be concerns about intellectual property when it comes to building these kinds of networks. Is that the case?

Huston: Yes. There are concerns and I think they're well-founded, in fact. There are good ways to handle them. One of the major concerns is, if we go out and share what we're looking for on the outside, it's going to tip our hand to our competition. So one way to handle that might be to not clearly state what the problem is that you're trying to solve.

You don't talk about the end-product application, but you talk about the science problem you're trying to solve, and you don't even put your company name on it in some cases. You may do this anonymously, so that people are reading about a physics problem or a baking problem and they have no idea what company it might be coming from, or anything.

In some cases, however, you might want to deliberately put your name on it, because people want to associate themselves with perhaps a big company that can scale their idea. If you're not concerned about the competition seeing that, you may deliberately want to put your name on it. My experience has been [that] when you put your name on it, you get about twice the response rate.

The other issue is in sharing intellectual property like this outside, particularly in regions of the world like China, where there aren't as many intellectual property protections as there are, say, in the U.S. or Western Europe. You do need to be careful in terms of what you share, so you need to have good practices, good review points, good vetting by your business, by your purchasing people, by your legal counsel; but with the proper precautions there's not really a problem. It's just taking what you normally do and scaling it up big, utilizing the Internet and the ability to globally distribute e-mails and things like that.

Knowledge@Wharton: In offering the examples of companies that do this, you referred to Procter & Gamble, Boeing and Microsoft. Does that imply that this is only something for big companies, or can smaller companies also build their own innovation networks?

Huston: No, I think small companies can build them. In fact, a lot of these practices are based upon the kinds of things that little companies do, who don't have a lot of resources. They're always looking at what problems they have; they can't build a given technology capacity, or they can't go and hire a group of people, and so they're searching the patent literature, the technical literature, they're on the Internet, trying to find people who have the ideas and [then] go knock on their door.

So it's certainly something that small companies can do, and with the development of the infrastructure outside of companies -- things like InnoCentive, NineSigma, Alibaba in China, the innovation relay center system in Europe -- there's a whole infrastructure of companies, some of them government-sponsored, to help you get in touch with companies out there at fairly low costs. So it's certainly something that small companies can do.

Knowledge@Wharton: I guess it's pretty clear what the incentives might be for the company who's building a network like this, but what are the incentives on the side of the people who participate in the network or the other companies?

Huston: Thirty-five percent of the patents in the world are now going to small companies. When most companies built their R&D and innovation capacity, it wasn't long ago that a very small proportion of the patents were going to these small entrepreneurs, these small companies. The world has changed. In fact, many of the most innovative people out there are in small companies. They were leaders. They were technologists in big companies. They didn't like the environment in big companies and so they went and became a small company.

And so they're out there, and they're doing highly innovative work, but what they lack is market access, scale....

That's the kind of thing a Microsoft or a Procter & Gamble or Eli Lilly or companies like that can do. It's because they have scale, and the small company has the agility and the entrepreneurship to think, "I've got to do this well. I've got to do it at low cost." And, you know, they have some advantages that big companies don't have.

So what you do is marry the scale advantages of the big company and sort of the hungry attitude and agility of a small entrepreneur, and that's what you get. You get this capability, and it can be done in that way.

Knowledge@Wharton: I think you've made a very persuasive case about why companies might want to build innovation networks and participate in them. What may not be very clear, though, is how they go about it. Any thoughts on how a company could do this?

Huston: Well, yeah. One is get very clear on what your strategic intent is. Are you doing it to solve a specific problem? I might be a car company and I'm looking for a new battery technology. Well, am I trying to solve a battery technology problem? Or, am I like a Procter & Gamble, which fundamentally has said, "The invent-it-yourself innovation model is broken, it's not sustainable. Therefore, I've got to build a totally new capability. I've got to redefine my organization as my ten thousand people in addition to the two million people that are outside, and redefine myself as two million, ten thousand people."

So, the very first step is to get very clear about why you're doing it, and what your strategic intent is. And then begin to really design the network around the strategic intent. Do you need just incremental problem solving? Do I need to build idea nets? Do I need to build solution nets? Do I need cost innovation networks? Am I looking for disruptive innovation? Do I need to reach from one domain into another domain of knowledge outside of my industry where I might find more disruptive innovation?

So, getting very clear on that, designing around that, and then really creating an architecture of participation. How can you involve the outside world? I've seen some very interesting things. For example, Toyota at Nagoya -- they have supplier days. They have a briefing center, and anyone can theoretically knock on the door and come in and pitch an idea for Toyota.

GE will hold events in China, say, in their appliance industry, and they'll invite hundreds of suppliers in and say, "Here are our top problems. Can you solve them?"

So, how do you create this architecture of participation, where the outside world also can come in, and you can tap them? So there's a variety of different things that you need to consider in terms of the design.

Knowledge@Wharton: Once you've got this architecture worked out, how does one sort of get the ball rolling? What are things to keep in mind? How do you get a conversation started?

Huston: Well the number-one thing is, again, you have to really understand how you are going to use the networks and what you are trying to do. So typically, the best way that networks work is to create a brief, or a problem description that you're trying to solve. It might be that you're trying to make a diaper that's flushable in the toilet [for example].

From a problem like that, you begin to break it up into its components. It might be something that has to hold liquid, yet dissolve in liquid. It's a very difficult problem to solve.

You begin to develop what I call a "solutions playbook" for a problem area. And from that solutions playbook, you have a number of problem descriptions. Those get written up in a precise way in a two- or three-page brief process. Then, based upon the brief, you develop a taxonomy of science terms. And so in your brief, there may be 30 or 40 different science terms that you want to express in three or four hundred ways, because different industries would express it in a different way.

And then what you want to do is find people in the world utilizing search engines or the Yellow Pages, and begin to distribute out to these people your brief, so that you can make a connection and they can get back to you. That's a transaction-based network. And so there's a transaction. I want something. I send it out. I get something back. That's one way to go.

The other way to go with networks is to think about a relationship based model -- [that is,] to

identify small, medium, large companies that have strategic technologies where I would develop relationships -- top-to-top relationships between my firm and those firms. We basically co-invent, or collaborate together to create the inventions.

The reality is, you can't support a lot of those because those are time intensive. It takes a couple of years to get them off and going. They need to understand you. You need to build trust in them back and forth.

So what you're really doing is, you're building a portfolio of relationships with the outside world. Some of them will be transactions where you just send things out and look for things to come back. Others will be a portfolio of relationships that you very carefully have thought about and you leverage your networks in that way.

So, it's this combination of thinking, and this is a foreign concept because people think about their products that they want to take to market, what their portfolio is, but they never think about the portfolio of relationships that it's going to take and the demands of those relationships on the organization. So you have to begin to think about, in this network global economy and networks that we're talking about, the underlying capability and portfolio of relationships that you want to build in order to build disruption and top line growth in the business.

Knowledge@Wharton: When you source innovation from within an organization, the sort of chain of command is relatively clear. When you do it in a network, I can imagine that all kinds of governance issues might come up. How should a company tackle those? What issues come up?

Huston: Well, you're right. It's, number one, trust based. You give me something, I give you something back. You can't order people what to do, right? And in the end, your reputation is important.

You want to become the preferred partner to the outside world because, look, if I'm Procter & Gamble, for example, and I turn off a certain group of innovators, the next competitor can pick up those relationships. So, in the end we're in competition for building these relationships as time goes on. But I think the important aspect of this is, really think through the customer-supplier relationship and how do you become the preferred customer of the external worlds.

Innovators, they want information. They want transparency. They want quick speed and "get back to me quickly." They want a fair deal. And frankly, the word-of-mouth and advocacy networks are very rapid. OK? Because these people all move in the same circles. They all talk amongst each other as we do. So, you have to really think through what is your innovation brand? What do you stand for in terms of branding yourself in this global competition for talent?

Knowledge@Wharton: Do companies tend to do this informally as well? And do you think there are informal elements or informal networks that companies might recognize as valuable?

Huston: Oh, there are. I absolutely think so. Of course, the average scientist knows about 2,000 people. Their rolodexes probably only have about 400 names in them. But they know about 2,000 people. But, they're the typical go-to people. You know that certainly exists, but what you've got to do is find a way to connect up with those rolodexes inside of a company. How do I find a way to connect up my rolodexes?

Also, there's tremendous lack of connectivity inside of companies. There were a number of studies done on this. As soon as a scientist is more than 100 feet away your office, you tend not to know people. You don't even know their name. And I bet I could walk down the hall here and people who are probably only a little more than 100 feet from you, you would not know their names. It happened to me in my office. It happens to all of us. We come in and out and we're busy. So we're as isolated inside our companies as we are outside.

So there's a major opportunity to utilize these networking tools and approaches inside amongst ourselves with our trusted suppliers who have huge talent bases and then with people outside who

really have no reason to have a relationship with us other than the fact that we knock on their door and say, "Hey, we think you're interesting and you might have something. In what way can we create value for our consumers?"

Knowledge@Wharton: We've talked quite a bit about the value of participating in the networks. What are some of the risks or the disadvantages?

Huston: Well, there are a couple of them. Again, if you're not smart, you give away things from an intellectual property standpoint. You have to be very smart about deal making because very often, it's like the slot machine; the dollar wheels are spinning immediately. So, most scientists are not very good in terms of talking money and they give away way too much information. They're not exactly the people that you want negotiating your next car or your next house price; we'll say it that way. Now some are, of course. So I think you have to be very careful about having the wrong skilled people getting involved in deal discussions. I mean, that's an issue. The IP certainly is an issue.

The other one is that if you're not smart, the world is so big and you can throw requests out there and you'll just be inundated with responses. So you have to be very careful to match your absorptive capacity with the outside world. The ideal network is if you have three problems, three outside people right? This is because you want to contact somebody, do a deal and get it into the market. The fact that we have to build networks with many people is because we can't easily get to people. As a result, you tend to throw your briefs out and talk to a lot of people. But, you know things come home to roost at some point and everybody is knocking on your door and you're inundated. So, designing the network to match your absorptive capacity is a key issue.

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