

**GIO Podcast Series: Transcript for Research = Invention + Innovation  
An Innovation Conversation with IBM and Xerox Corporation**

**Transcript Title:** Research = Invention + Innovation

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**Summary:** Dr. Sophie Vandebroek, Chief Technology Officer and President, Xerox Innovation Group for Xerox Corporation, and Cathy Lasser, Vice President, Industry Solutions and Emerging Business at IBM, share their insights on the changing role of research in the 21st century and the type of research that not only advances technology but fosters innovation.



**Host:** Amy Hermes, Global Innovation Outlook, IBM

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HERMES: Hello and welcome to TheInnovationValue.com. I'm Amy Hermes. With innovation becoming ever more important in the world, breakthroughs in core technologies and methods that lead to products and services are urgently required.

Some would claim that foresight research and the right research environment are essential to nurture invention and innovation.

And so we're joined today by two leaders in this space. Dr. Sophie Vandebroek is Chief Technology Officer and President, Xerox Innovation Group for Xerox Corporation and Cathy Lasser is Vice President, Industry Solutions and Emerging Business at IBM. Ladies, welcome to you both and thanks for joining us today.

VANDEBROEK: Great, thank you. It's my pleasure.

LASSER: Thanks, Amy.

HERMES: So let's get started. In today's very competitive and fast-changing environment do you think

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there's a role for private industrial basic research?

VANDEBROEK: Personally I think it's essential. I lead worldwide research for Xerox and its research centers in five locations around the world, and the key mission is indeed to come up with really high impact technology that can do two things.

Number one, it must create differentiation in the marketplace. It's all about creating a unique customer value proposition. And number two the technologies must always continuously focus on cost reduction. So it's critical. Innovation is really the key to organic and as well as inorganic growth.

HERMES: Cathy, same question.

LASSER: I agree with Sophie, there is definitely a role for private industrial basic research and it's because research is changing over time. When you look at where we find problems to do our research, we need to look for them in the marketplace. And in industry, that's really where you find them.

We have lots of work going on with clients, with partners, and to be able to create the innovation by matching the invention that you do in a research organization with the insight from the marketplace in our

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clients, in our partners, that's really where the true innovation comes.

Also working with universities is important and you bring all those three things together, you really get that diversity to really truly create the best innovation.

HERMES: Can you talk a little bit about the skills and the kinds of researchers that you're looking for?

VANDEBROEK: When I look to hire a researcher across one of our research centers, worldwide, I look for two aspects. Number one, they have to be top-notch technical credibility in the field that they're hired for whether it's in nano technology or linguistics or computer science or mechanical engineering or chemical engineering, they have to have a really excellent track record.

However, that's not enough, because once you bring top-notch people, the key thing is that they will be able to not only successfully invent novel potential differentiating capabilities for our products and solutions, but we need to be able to innovate, and innovate means you have to be able to influence the business decision makers, to drive change to proceed forward because it's an amazing opportunity for our customers and for the company.

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One more thing I look for is diversity. Our customers are very diverse and global, and so we try very hard to create a diverse research organization. Everything from diversity of thinking to diversity of gender... of culture.

It's very important, because not only are our customers diverse, and so if you design a new product, thinking how would people around the world or how would different genders deal with the product is very important, but also once you create an environment that's diverse you can continue to attract amazing people.

LASSER: The diversity in backgrounds and thought, but also the diversity of disciplines. We used to be looking for people with fairly traditional science and engineering backgrounds... computer science, mathematics, chemistry, engineering.

But now with the work we're doing with clients in so many different industries, we find the diversity of the disciplines such as business, sociology, biology, management.

So the combination of the traditional sciences and the new sciences really is bringing a diversity of thought to a research organization where people really like to try to figure out what's the next thing that they can work on that's going to make an impact.

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HERMES: The President of the Palo Alto Research Center, PARC, which is the research arm of Xerox, was recently involved in the Global Innovation Outlook which is a platform to investigate innovation itself and to discuss emerging trends and challenges and opportunities that affect business and society.

If innovation can be defined as the application of invention, how is research changing in the 21st century in order to foster that innovation and advanced technology?

VANDEBROEK: Marc Bernstein who is the President of PARC, a wholly-owned subsidiary of Xerox, and I work extremely closely together. They do amazing research for the different Xerox lines of business, as well as they have many additional customers outside Xerox now and clients that they do research for.

And so I was delighted when Marc was telling me about your Global Innovation Outlook study that you have conducted and I'm actually reading it. It's really fantastic.

So how the role of research is changing, I think it is fundamentally important to making sure that the work in the research labs both enable the core businesses, in our

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case office, production and services, to really sustain differentiation and sustain the attractive economic returns.

At Xerox we look at the research labs to enable options to be created and we look at three different options. One is positioning options, where the technology is really new and the technology that is created can completely disrupt an industry or current businesses that we are in.

Then there are scouting options where you can use your current technology in the research labs, look at 'how do I scout out new markets'?

And finally there are completely stepping stone options that the researchers must look up and in that space you look up things like the role of electronic paper and then services running on that new media that customers could really embrace.

LASSER: As part of the GIO, being part of those conversations with our partners, both clients, partners, universities, that's really where you're looking for the opportunity. And research is changing because they are matching that opportunity and trying to find the hard problems and the hard research, based in something that can be used.

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We talked about energy and environment and talking about mining and finding resources. So we have a project, intelligent oil fields, that we've done here in IBM Research where we looked at a real world problem of being able to detect if there's something wrong in an oil field and shut things down before it gets too expensive to fix.

So we're looking at our base research which is algorithms and sensors and actuators and applying it to a real world problem that affects not just our company, but our clients and society.

I think research is changing because it's getting more connected. It's getting connected to clients. It's getting connected to society. It's getting connected to solving problems but also opening new opportunities.

We're looking for technology and science in different places than we've ever looked before. Science was always the hard sciences. And now we're looking at the science of services and the amount of research that you can do and the science you can do to help in the service economy is phenomenal. So research is continually changing, which is why it remains relevant today.

HERMES: Can you talk a little bit about the role of the end user in research?

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VANDEBROEK: The role to the end user in my mind is completely essential to successful services and products. Maybe five to ten years ago Xerox built these amazing products with these amazing technological features, and then tried to sell them and the customers don't end up using all these features that you build in.

And so if you only have engineers and scientists dream of the most amazing products, the customer is not necessarily going to want to pay for it. So we learned our lesson.

So that's really critical and we do that bouncing off preliminary research and technology ideas in the showrooms we have around the world as well as going to live on site to the customer.

And you cannot do it unless you really understand what the customer's work process is today and what their pain points are. I call it dreaming with the customer but ultimately it's really concrete actions and decisions that we make in research to focus our efforts and investments in certain areas and to stop doing other investments and overall optimize the value to our customers.

LASSER: One of the things researchers always like to do is continue to learn. IBM's giving patents away

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because we realize that being open together we can create a win for everyone; our clients, for ourselves, for our partners. And we do that with collaboration with our laboratories.

Just as Sophie said in Xerox, in IBM we have what we call industry solutions labs where we bring our clients to collaborate and brainstorm. They'll tell us where they think their business is going and we'll show them technology trends and what's going on in research. And we'll work together.

We have a program we call first of a kind, where these are technologies and they're not a product yet, but we'll find a leading edge client who would like to use these open laboratories, open patents and test it out.

We have another program -- on demand innovation services where we put real researchers on real client engagements out in the field so that the client gets the benefit of the brains of the researcher, and the researcher and then the research organization gets the benefit of really truly understanding the marketplace.

HERMES: How do you effectively measure innovation? And if the research environment that you're using is conducive for that innovation?

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VANDEBROEK: We have multiple ways of measuring innovation depending on the stage of the maturity of the project.

Of course, a simple metric that's used in almost any company that does their own research, and of course, the number of patents the company creates. It's a backward-looking metric, so you also measure how many invention disclosures are created by the researchers in the key areas that are extremely critical.

In addition, the metrics when the product actually launches includes how good is the business case being executed, what is the ultimate profitability, the revenue, as well as the customer satisfaction that's related to this service or this product and make sure we learn from that.

Xerox, not only do we have a strong innovation strength and core competency, we also have an amazing global sales force that can help the researchers in my organization truly understand and get feedback directly from the customer on the technologies that we were making.

So there's a whole portfolio management aspect to this that is very critical. We have clear objectives to measure for technology readiness and capability demonstrations, et cetera that we just execute as part of

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our regular execution processes we have in the research lab.

LASSER: Measuring innovation, it's a tricky thing. And just like Sophie said, there are some of the hard measures, number of patents, number of disclosures. Those are some numbers that are easy for people to get their heads around.

But there's also something we call a partnership assessment or client satisfaction. So very similar to what Sophie talked about getting feedback from the client, is it working, did it open up something new for them?

Or a partnership assessment on how well IBM Research is supporting our Software Group or System & Technology Group or our services in providing them with the differentiating technologies so that they can do well in the marketplace.

Another thing we look at is asset creation. How many of these projects, these first of a kind projects, can we create an asset which we then harden and transfer to a line of business, then can scale up to be reused over and over again.

And then finally one of the things we do test, because a

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test for whether or not innovation is truly doing well in the marketplace is the revenue.

Now there's one other thing. Being a research organization, we're very used to writing papers, having them refereed. We have a processes where we look at our technologies at the end of the year for an accomplishment.

And there are pretty strong criteria on the impact, did it change a science, did it change something in the external world. We have external people review it. We review it internally to find out what the impact is.

And not just what the impact is to IBM, but what is the impact to the marketplace or what is the impact to that field, whether it's mathematics or physics or even economics or finance or industry.

I look at it as a mix of very hard, quantitative and also qualitative, because that's the nice thing about innovation. It has some hard things, invention and some quality things, the insights.

HERMES: What do you think the most exciting area of your company's research is?

VANDEBROEK: I think I see research in two major planks

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we're working on today.

The first plank we call the on and off ramps between the digital world and the physical world, and the second plank is the smarter document management area.

So, the first plank is all about making our devices, the on ramps, the imaging devices or whether they're the off ramps the personalized digital printing type devices, the printers, making them smarter, smaller, more secure, and speedier. It's all this area of making sure that it's more simple for the customers to use.

The most exciting research area today is exactly the research we're doing in collaboration with the customer which is the second research plank. And so in the digital world, as well as in the physical world, we're looking at smart document management to make sure the documents themselves know what needs to happen next.

It's all about taking labor intensive and document-intensive processes, whether it's an admission office or a mail room or a litigation office, and really automate and simplify these processes and between learning and linguistics technology that really could be embedded to make this all happen.

Innovation is really key to continuously differentiate

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our products and services which is ultimately essential to not be commoditized and essential to keep vibrant and successful as a corporation and hence create amazing jobs for amazing scientists around the world that can do great open innovation projects, with universities, with our customers and with our partners worldwide. So innovation is a top priority for me personally and for Xerox as a corporation.

HERMES: Cathy, how about at IBM?

LASSER: What is most exciting to me... it probably isn't the area, it's the process on how we go about it. We are doing wonderful work in services, science management and engineering. So we're really opening the aperture of research and the type of research we're doing.

We're doing research in different industries and industry solutions, applying all the other technologies that we've always done before, such as analytics. A lot of the advanced analytics and algorithms in our math department affect so many different industries, so I find that very exciting to see how we apply that.

Then, of course, through the GIO and energy efficiency and the environment what we're doing and helping with energy and utilities or chemical and petroleum is very

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exciting, and of course risk and compliance from a financial sector are just some areas. It's a mash up of these different technology fields creating a difference in the marketplace, whether it's by industry or by services.

And working with partners like Xerox and others really brings an excitement and keeps us growing, which is what researchers like to do, so we grow with the innovation and we'll continue to grow with the marketplace.

HERMES: Well, thanks, ladies. I appreciate both of you joining me today to share your insight about research and innovation. Dr. Sophie Vandebroek of Xerox and Cathy Lasser of IBM, thank you both very much.

VANDEBROEK: Thank you Amy.

LASSER: Thank you, Amy.

HERMES: Thank you both this has been a podcast from TheInnovationValue.com.

[END OF SEGMENT]