



The Innovators

Conversations

on the Cutting Edge

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January 2011

Interview on eXtreme Innovation

with **Alberto Savoia (Google)**
and **Jeremy Clark (FXX)**



Alberto Savoia is Engineering Director and Innovation Champion at Google Inc. He is currently focused on developing tools and infrastructure to accelerate innovation through ultra-rapid prototyping and real-time user feedback. Prior to Google, Alberto was Director of Software Technology Research at Sun Microsystems Laboratories, and co-founder and CTO of two venture-backed start-ups (Velogic Inc., acquired by Keynote Systems and Agitar Software, acquired by McCabe.)

Alberto's innovative work and thought leadership in software technology innovation has been recognized with numerous awards, including: The Wall Street Journal Technology Innovation Award, and InfoWorld Top 25 CTOs Award. Alberto can be reached at asavoia@google.com.



Jeremy Clark is President, FXX Inc. He has been helping corporate clients to grow and out-compete for over 20 years. He applies proven principles and process to innovation and growth strategy projects in many industries. Increasingly, he helps companies to harness the power of web-based platforms to engage larger communities of employees, partners, and customers in the work of innovation.

Jeremy was a Principal at Strategos, founded by strategy and management expert Gary Hamel. He continues to work with Professor Hamel at the Management Lab (MLab), the world's first and largest open-source project to reinvent management practices for the 21st century. Jeremy is a prolific speaker and author on innovation and growth strategy. Jeremy can be reached at jeremy@fxxinc.com.

Interview conducted by Doug Berger, managing director, INNOVATE doug@innovate1st.com

Doug: You have both done a tremendous job of characterizing different models around innovation. Please start by taking us through those models.

Jeremy: The most venerable one over the last hundred years, which is seen in well-established companies, is **top-down innovation**. It is characterized by fairly fixed structures to support innovation, such as an R&D lab populated by well-qualified scientists. It is also characterized by a New Product Development-

centric organization. The ideas that form part of the innovation portfolio tend to be clustered around the markets that are well established for that company. Ideas are guided by a significant direction from the top of the organization. It tends to have quite a degree of formality, internally-focused process, and specialist control over the innovation pipeline.

Alberto: One of Google's core beliefs is that great innovation can come from anyone at any time, so we organized the company to enable a model Jeremy and I called **democratic innovation**. As the name suggests, this form of innovation allows everyone in the company to participate and is open and transparent. There is another – very important – element that is essential in a democratic environment: voting. In a top-down environment decisions to start, continue, or kill innovative effort are usually made at the top; but in democratic innovation the major determinant of whether a project deserves more investment, or should be killed is based on a unique form of voting: actual user adoption. If innovative projects can show traction with users (people try it, come back for more, tell other people, etc.) that's the kind of data that tells us, "We have winner here."

Jeremy: The notion of a free market in ideas is very attractive to many companies. What Google's experience illustrates is that unless you're structured for supporting that kind of model, it is very difficult to migrate from or balance a centralized, top-down orientation with one that is democratic. It's tough to get equal access to resources. It is difficult to break down the cultural barriers that stop people from sharing their ideas early. While the notion of adding or amplifying the democratic model to supplement the top-down model is very attractive, in practice, it's very hard for an established company to do.

Doug: Can you illustrate companies other than Google that have some form of democratic innovation?

Jeremy: Procter & Gamble, while highly structured in defining their markets, has a well-developed innovation economy for sources of ideas, and the opportunity that employees have to explore and experiment.

The Whirlpool Corporation has been working for 10 years on a model that promotes democratic innovation within every division and at every location. This includes everything from idea circles, green and black-belt innovation coaches, all the way through to the senior executives within all of their divisions who have explicit innovation pipeline and portfolio management measures connected to their variable compensation.

Let me expand to say that the democratic-innovation model is in the DNA of most startups, which is a happy side-effect of relatively little structure. In Silicon Valley you do encounter a lot of "8,000 person startups" that never transcended their initial, cultural set of norms. Now, however, many are becoming too big for those clothes. Sometimes they scale the democratic-innovation model beyond what they can sustain.

Alberto: Looking from the outside-in, you can't really tell if a company has democratic innovation; you can only tell if you are inside the company and actually are able to innovate. Based on my experience, many companies have some groups or divisions where some form of democratic innovation is encouraged and practiced, but that spirit and attitude is not carried throughout the company and is not recognized or reflected as a core and essential company belief or practice.

Doug: If you were to characterize democratic innovation at Google in terms of observable behaviors, what would be three or four of those behaviors?

Alberto: First is our very flat hierarchy. When I first joined Google in 2001, we had 50+ reports per manager. Now that we are 20,000 people, it is still not uncommon to have a manager, a director, or a VP with 40 to 50 direct reports. That makes it easy for an average engineer to just go up and down the hierarchy because the hierarchy is very, very flat. Most companies would shudder at this.

Second is the role of management at Google, which is not to control but to connect. A senior executive once joked, "I'm not a controller; I'm an expensive e-mail router." A manager's most important job with respect to innovation is to get people together and to let innovation happen.

Third, and we already touched on this but it's important enough to reiterate, there is the element of voting. At Google, decisions are made based on usage data, and that data is a proxy for votes – you could say that people are voting with their 'clicks'. The opposite is also true. If we launch a new product or feature and people don't try it, or try it once but don't use it again, then we look very hard at whether or not that particular innovation is worth further investment.

Doug: With that as background, how would you characterize **extreme innovation**?

Jeremy: The top-down model is focused on expanding the core business, and responding to well-established customer needs with new and improved products. Democratic-innovation looks at logical adjacencies and tries to harness the power of the whole organization, but still in service of finding innovations at the margins of the core business.

These two models still leave some innovation potential unexplored, and it's no accident that this gap is exactly what frustrates natural entrepreneurs working in large companies: no structures devoted to exploring *beyond* the core. This is where the third modality, Extreme Innovation, comes in.

In any organization there is a small force with natural entrepreneurial ability - people who are passionate about exploring opportunities far enough away from the core that most business leaders would consider them fringe or extreme. Given how far away from immediate revenue or current customer demand these opportunities are, the methods used by extreme innovators are much "lighter" and more emergent than the other two models.

Doug: I'm hearing two aspects of Extreme Innovation. One aspect is extreme in what we innovate, and the second is extreme in how we innovate.

Alberto: That's correct. One of the things that Extreme Innovation takes to "extremes" is the product development cycle. It is measured in hours or days, weeks in some rare occasions – but never in months or years. Since you usually can't develop and deliver a full-featured and nicely polished product in such a time frame, this forces the innovators to identify the core functionality and implement the most basic version of the product that enables that functionality. The goal is to get user feedback as early as possible in the cycle.

Jeremy: We live in a golden age of rapid testing tools and platforms. You can actually mock up a concept like Twitter and go and get real data – not opinions, like a market research survey - but a count of how many customers actually use/buy it

before you even engineer the discussion about whether or not it's a smart idea. You bypass all of the brains who automatically come with the filters of business experience and business school thought.

Doug: One of your core ideas is the **pretotype** versus a prototype.

Alberto: The primary purpose of prototypes – with an 'o' – is to answer questions such as: "Can we build it? Will it work as intended? How small/big/cheap/energy-efficient can we make it?" These are important questions, but there is another set of questions that should be answered even before these: "Would I use it? Would other people use it? How would they use it?" Too many innovators spend lots of time and money to build working prototypes, often fully featured products – only to learn things about their product that send them back to the drawing board. In many cases, they could have learned those things with much less upfront effort by building a pretotype – with an 'e'.

We define pretotyping as the practice of testing the initial appeal and actual usage of a potential new product by simulating its core experience with the smallest possible investment of time and money. In many cases, pretotypes fake or mock some aspects of the functionality.

My favorite pretotyping story is about someone at IBM who, a few decades ago, wanted to test if and how people would use a speech-to-text translator. Instead of waiting until they had a workable speech-to-text translator, which would have taken years and a massive investment even to develop a working prototype, they put users in front of a microphone and screen, and told them that they were testing a speech-to-text system, and to try it out. In reality, there was a typist in another room listening to the microphone and doing speech-to-text the old fashioned way with the output showing up on the users' screen. I thought, "This is great! They were **pretending** to have something actually built to see if it was worth building in the first place." At that time, I came up with the word 'pretendotype' since pretending was the key part, but it was a mouthful so I came up with the shorter term pretotype to describe the concept.

Another great example of pretotyping comes from Palm's co-founder, Jeff Hawkins, who pretotyped the Palm Pilot by carrying a completely non-functional wood and paper version of the Palm with him for a few weeks to see if he'd actually use it. If someone asked him if he was free for lunch next week, he'd pull out the pretotype and pretend to check his schedule. If he needed to check a phone number, he pretended to look it up. He tried different interfaces and button configurations with paper printouts glued to the wood. Brilliant!

As these examples make clear, pretotyping is not something new, but it's something that is neither discussed nor practiced enough in innovation, and we thought that it deserved its own name and identity separate from that of the better known and more widely practiced prototyping. The line between pretotypes and prototypes is often quite fuzzy; some ideas lend themselves to pretotyping better than others. It would be difficult and not too useful, for example, to pretotype a laser before building one. But, I believe that in all cases it's worthwhile to spend at least a few minutes thinking about whether or not there is an opportunity for pretotyping, and what could be learned by doing so.

Doug: If I understand you then, where prototyping is getting people to use a preliminary form of something, pretotyping is a simulation.

Jeremy: It is a simulation of the core experience, and we're trying to test the market acceptance with a particular target market. "Would we use it? Do enough people want to buy this because it's useful?"

Doug: Let's jump to another key idea in extreme innovation, "**instead of following ideas ... follow innovators.**"

Jeremy: Alberto and I have come at the Extreme Innovation Manifesto from different experiences. Over the past few years, I was running innovation projects for large companies seeking to develop a democratic model. Companies always achieve a measure of success in generating a portfolio of new product concepts, but there's a very high wastage rate in an idea-centric model. Broad engagement at a very low threshold to submit ideas for new products and services creates a very large evaluation challenge. You end up straining your limited bandwidth trying to find a few good needles in a haystack database. We are increasingly convinced - that is the wrong target to go after.

We have come to believe in focusing on finding those individuals who have a track record of coming up with distinctive, catchy, novel ideas. That history is traceable. You stand a much higher chance of ending up with a smaller number of much higher probability options in your portfolio.

Doug: This is similar to the idea of the serial entrepreneur.

Jeremy: We believe that you can identify that set of individuals, whether they are entrepreneurs in the truest sense or within a company and have demonstrated those natural abilities on projects. You are choosing to favor your attentions and your processes on a minority of folk.

Alberto: Innovators over ideas is meant to shift the focus and attention away from ideas, which are plentiful and a-dime-a-dozen, and put it on innovators who are a much rarer. An analogy I use is that if you want to have a great sculpture, the first thing you should look for is a great sculptor, not a great piece of marble, or a particular subject. Ideas are plentiful in nature. What you need are people who realize them. So, the big fault I saw with how everybody talks about innovation is this focus on ideas ... collecting ideas, wanting million-dollar ideas, billion-dollar ideas.

When we give our presentation to a live audience, I hold up an envelope that contains what is, at least, a billion-dollar idea. I make it clear that I am not going to build it or help them build it, but if they could build it, they'd make billions. So far, the most we've been able to get for it is \$20, and that only happened once from a guy who wanted to come up on the stage. The rest of the time I get no offers. That's not surprising. Try going to a VC and tell them that you have some great ideas for sale. They don't want ideas; they want people who can build something. Google has a database of thousands of ideas from Googlers, but I don't think we could sell the ideas for any appreciable sum. On the other hand, most companies would love to have the Googlers who came up with the ideas. In the context of innovation, when you try to put a price on ideas, you realize how little they are worth.

Doug: Are there people at Google who you track because you know that they will be working on next thing, whatever it is?

- Alberto: Yes, I can think of a few people who are always working on the next thing, and they just cannot be put down. They are always moving ahead.
- Doug: People, who don't live in or around Silicon Valley, or other tech hubs, don't appreciate how often startup companies get formed not by an original idea, but by a group of people who have worked together and say, "Let's create an idea."
- Alberto: You're absolutely right. I've done it myself a couple of times. When I left Sun Microsystems to do my first startup my wife asked, "What are you going to do?" And I said, "Well, I don't know what I am going do, but I know who I am going to do it with." It is a very bad mistake to fall in love with your ideas. It can work if you're really passionate and you want to see 'X idea' come to fruition. However, if your goal is, "We want to do something new in this general area." Then be very flexible, experiment, and let the data more than your emotions drive you.
- Jeremy: This is probably a good time to introduce another aspect of extreme innovation, which is the notion of **lowering the threshold to test an idea**. Gathering data is the best way of inoculating yourself against the hubris of falling in love with your idea. A compulsion to keep going at all costs ultimately wastes resources. Some of the best success stories of funded startups are those companies that get beyond their original vision to a more viable Plan B or Plan C. They were able to morph a core concept according to the early feedback they got. There are many stories of companies that were acquired with the primary goal of acquiring talent, not products, assets, or even IP. We believe that premise applies to promoting extreme innovation within many companies.
- Alberto: There are different levels of pretotype. It is a continuum. For practice, I have people do paper pretotypes, using a sticky pad that has the same dimensions as a phone. But you can go beyond that. At Google, for example, we built a set of tools that allows you to pretotype an Android application in minutes. It may not look super fancy or work in all conditions, but you have a real, working application that you can use to begin collecting user feedback and other data. If you have a mobile application, for example, downloads are an important metric, but actual and consistent usage after download is much more important.
- If you've done any software development, you realize that 90 percent of the work is not in the basic functionality; it's in all of the bells and whistles – the icons, the security, the login. In pretotyping, you should bypass a lot of these details; you can add them later, once you're pretty confident that if you build the application people would actually use it.
- Doug: Looking at pretotyping as a continuum, at the very early edge is really the whole Palm Pilot pretend. Then as I move up, I get the 'talk to text' simulation. I then move into the ability to create very rapid, functionally stripped-down prototypes. You are getting real data rapidly, every step along the way.
- Jeremy: That is a good way of thinking about it. A lot of people do confuse pretotyping with storyboarding. When people show up with a storyboard, you are still getting back opinions. One of the big risks with ideas is that if you have an abstraction, the most you can get is opinion. That is not getting the response from the actual user audience. I wouldn't consider that pretotyping, that's more like a focus group. You're not simulating the real experience.

The opposite of pretotyping, we call product-typing. Product-typing is developing a complete product, with all of the bells and whistles, before you know who would

actually use it. Remember, during the internet bubble people were starting companies like WebVan, based on the idea, "Well, of course it's going to work." So much for the value of ideas. They built it; they internationalized it; they accepted 14 different currencies; they sold six million different products; they had warehouses; they had vans. All before they even tried it once.

Product-typing is the most common mistake that innovation teams make. Pretotyping encourages teams to do the opposite. Before investing the time and resources to build and launch a completed product, create a simulation of the core experience and offer it for trial. Do real customers make a free choice, not just once, but repeatedly? If so, you're on to something and should proceed to the next cycle of development and testing. You are aiming to really engage very early with your lead users.

Doug: What would you like to say in conclusion?

Jeremy: There is no excuse for not getting started testing your idea straight away. Our call to action is a revised mindset around what it takes to do early, authentic in-market testing of new product concepts. We think the first concepts that customers get to try are typically over-engineered. Simplicity matters more than anything else, and getting started is the most important attribute of all.

Alberto: The innovator's nightmare is to spend years and millions of dollars building something beautiful, perfect, well-tested, well-documented that nobody uses. It has happened to me – and it happens to most entrepreneurs or innovators at some point. If you want to be a consistently successful innovator, the number one thing you should keep in the back of your mind is: "Am I building the right 'it'?" The entire extreme innovation and pretotyping manifesto is about helping you to make sure that you are building the right "it" before you build "it" right.

Additional References:

Further information on Extreme Innovation is available at www.pretotyping.org

