Dear FEI 2012 Partners,

We recognize now more than ever the need to collect and disseminate the information gathered at conferences to immediately take action when you return from an event.

As a true partner, IIR proactively welcomes the responsibility of facilitating the aggregation of executive summaries which highlight the key points and overarching themes of the 2012 FEI conference covered by our esteemed keynotes, to provide you and your organization with true tangible deliverables.

It is our intention that you and your teams find value in these compilations and that these action points will continue to provide value, drive innovation and create real life business impact on both you and your leaderships’ health and future success.

Thank you again to all participants. And a special thank you to Dr. Heidi Bertels, Visiting Assistant Professor of Business Administration at University of Pittsburgh for the compilation of this report.

Best regards,

Kim Rivielle
Managing Director
Marketing and Business Strategy Division
The Institute for International Research

www.FrontEndofInnovation.com
OPENING NIGHT KEYNOTE:

A.K. PRADEEP, President & CEO, NeuroFocus
SECRETS OF APPEALING TO THE SUBCONSCIOUS MIND: THE ROLE OF NEUROSCIENCE IN HOW WE DECIDE.

When you prototype concepts and ask consumers for their opinion, do you think they really know what they want? Neuroscience has established that 95% of what we desire is non-conscious. Indeed, consumers often cannot articulate what they want. However, they know what they want when they see it. Neuroscience might help companies talk facts rather than having to rely on consumers’ opinions and by providing metrics for making decisions on the path of innovation. Increasing computing power, the acceleration of progress in neuroscience and dissatisfaction with traditional research approaches has led to the consumer neuroscience revolution. Neuroscience is galloping at the speed of a race horse with breakthroughs every day.

So what metrics can neuroscience provide? Neuroscientists can assess three things: attention, emotion and memory retention. More effective innovations are those that command attention, elicit an emotional response, and are memorable, are more effective. Therefore, we can find out:

1) How much attention do you really pay?
   Based on the science behind ADD & ADHD clinical diagnosis,

2) How emotional are you?
   Measured based on the science behind mania and phobia clinical diagnosis, and

3) What was so memorable of what you experienced?
   Based on the science behind Alzheimer’s clinical diagnosis.

There are a couple of ways in which these measurements can help us innovate innovation. First, we can figure out white spaces through descriptions of life. Second, we can rank order ideas. Third, we can create a baseline for the brain activity a concept triggered and track it through the evolution of the product. Fourth, we can create an intelligent way to blend consumers’ articulated responses with identical responses gathered through neuroscience.

First, we can figure out white spaces through descriptions of life. We write concepts that are elaborate descriptions of activity in life. Then we convert these descriptions in audio (someone reads it unemotionally). The descriptions are converted into audio recordings because the visual cortex is extremely responsive and hence you want to shut it down. Then, we bring consumers in and have them wear a Bluetooth wireless headset. They just hear these concepts being read. Concepts are not solutions, just descriptions of life. As they hear the concepts being read, their brains are continuously reacting. We know where the brain paused and said: “Oh, that is exciting.” We know where it is people get frustrated or excited and this helps us understand what the possible spaces for innovation are. Between the big boxes of activity lie the nuggets of white space for innovation. Very quickly, just from a description of life, you are able to tease out where the brains connected and where the brain got disengaged. This is the first space of identifying where to innovate. A second space in which to use neuroscience is analyzing commercials. Neuroscience is able to identify particularly brilliant points in the advertisement where the brain was engaged or disengaged. The lows can give insight into what needs to be fixed.
Second, we can rank order ideas. Let’s say we have 60 wonderful ideas. We convert them again into audio. Consumers wear a headset and without asking the consumer a single question, you can rank order the ideas along metrics of novelty, understanding and emotional engagement. We can easily develop a score for ideas at the concept level this way. And, we measure these metrics 2,000 times per second. So you get a score at a very fine-grained level: a particular word or phrase, a particular pricing that made the brain lit up.

Third, we can create a baseline for the brain activity a concept triggered and track it through the evolution of the product. Once we have decided which concept to take forward, we can continue to measure the very same metrics at different stages of the lifecycle to prevent the original concept from turning into something that no longer triggers the same brain activity. By such disciplined measurement of key metrics through a concept’s lifecycle, we can systematically decrease the probability of failure.

Fourth, we can create an intelligent way to blend consumers’ articulated responses with identical responses gathered through neuroscience. If concepts score high both on the articulated and emotional responses, they are highly valuable. If concepts score high on the articulated responses, but low on the emotional responses, people are faking it. If concepts score high on emotional responses, but low on articulated, they somehow feel guilty about liking the concepts and you need to give them reasons to feel comfortable about them.

OPENING MORNING KEYNOTES

MARK JOHNSON, Author, Seizing the White Space

OPPORTUNITIES FOR TODAY: LEADING FOR GROWTH AND RENEWAL: HOW A MANAGEMENT TEAM CAN INNOVATE A BUSINESS MODEL THAT THRIVES.

Mark starts off by talking about the Lockheed Martin Hybrid airship. The government, Lockheed Martin’s typical customer, was not interesting in the hybrid airship and its two key features: short take off/landing and heavy lift. Hence, Lockheed Martin decided not to pursue it. However, a video of it was posted on YouTube. Commercial companies really liked the idea. Seeing the benefits of an airship like this, mining companies wanted it, shipping companies wanted it. Even the government of India wanted it as India lacks infrastructure necessary for much transportation. However, Lockheed Martin’s “history was unblemished by any success in the commercial world.” Lockheed Martin had no language to think about this innovation that did not fit the business model that made them successful and that they were used to.

There are two circumstances of innovation. The first is core innovation: innovation in your established business and business model. It is 90% of what you are going to do. It is very important to sustain and extend the core. The knowledge to assumption ratio of this kind of work is very high. You know the customer, you have an established business model, you know how to make money, and you understand your competition. Distinguish that from creating the new – serving existing customers in new ways or new customers in existing ways. The knowledge to assumption ratio of this kind of work is very low. Customers might not exist yet, markets might not be analyzable, and there will be uncertainty regarding how to turn a profit. Companies need both types of innovation. 90% of the effort should be focused on
strengthening and extending the core. 10% should be focused on creating the new. This is where the business model comes in. But how can you innovate a business model that thrives? You need to set the right language, set the right strategy, set the right structure, and set the right process.

1. **Set the right language**

   There needs to be a *customer value proposition*, a critical unmet need or job to be done that is not currently satisfied where you can provide an offer and a *profit formula* (e.g., Xerox leasing model). How often do you go to your finance people and say: “We have to change the overhead structure” or “We need more velocity”? People do not talk that way. But a new business model might mean a new overhead structure or a different velocity (i.e., a new profit formula). And lastly, how do you deliver this value repeatedly through an operating model (*key resources and key processes*)? Operating models take years to develop. If you want to create new growth, you will need to work *outside in*, from the value proposition to what the company needs to look like to commercialize that value proposition. You think from the value proposition into the profit formula and operating model and do not treat them as a given. In order to not treat them as a given, you need to have a conversation about what your assumptions are regarding the value proposition, the profit formula, and the key resources and processes.

2. **Set the right strategy**

   To set the right strategy, you need to start from the future state: What do we want our company to look like in 2020? What do you want its financials to be? What should its scope be geographically? What should the product/service portfolio look like? If you do not do this exercise for more than 2 years in the future, anything you will come up with is going to get morphed and shaped in existing way of doing business. You will not be able to free yourself. Instead, you should define the future state as a prerequisite. From there, strategy will be defined: prioritizing the things we want to get done to achieve the future state. This will help us come up with a growth strategy that has both core growth and adjacency/white space growth in it. We will be able to have a portfolio that has been developed based on looking out more than 2 years out in the future. We call this setting of the strategic direction with a future back process. Envision a future state and then work backwards. It is not about getting the future right. It is more about thinking of the future as an impressionist painting instead of a photograph. The future back process will help us determine the direction to go into, not the specifics.

3. **Set the right structure**

   When the PC disrupted the mini computer, manufacturers of mini computers or components of mini computers got disrupted because the personal computer was a $2,000-$4,000 toy with 20% margins versus a $250,000–$500,000 machine with 60% gross margins. Existing companies ignore these new innovations by not allocating resources to them because they see them as a threat or, at best, they will cram new technology into existing business models. Today’s newspapers, for example, responded to the Internet by putting newspapers online. They did not think about getting disintermediated by Craigslist or Google with Adwords and Adsense… Kodak kept digital photography away from the market even though they invented the technology and when they later had to deal with it, they tried to get the quality of the digital camera as close to the quality of 35 mm film as possible, creating a $30,000 camera.

   A last important piece of the business model (in addition to the value proposition, profit formula and key processes and resources) are *the rules, norms and metrics that drive behavior in the firm*. They drive the way things are done and what is ignored. They include financial rules and rewards, HR (incentives),
and operational metrics. New growth teams need to operate by new rules, norms and metrics because they are meant to sustain a new, successful thriving business model. Therefore a new growth team should be a co-located, autonomous team of entrepreneurs with distinct resource commitment. They might not get the business model right from the beginning: on average, the business model changes 4 times before it is “right.” The team should be patient for growth, but impatient for profits.

4. Set the right process.
Do not presume the existing way of operating is right. Test and learn as you change your business model for success. Test and learn when it comes to the key resources (e.g., brand, people, technology, channel), key processes (e.g., R&D, manufacturing, HR, marketing, IT), the customer value proposition (e.g., job to be done, offering: product/service, access/channel, payment scheme/price) and the profit formula (e.g., revenue model, cost structure (direct and overhead), and resource velocity).

MICHIKO KAKU, Famed Futurist, Physicist, and TV Personality
A LOOK TO TOMORROW: PHYSICS OF THE FUTURE.

No one predicted the 2008 crash. Or did someone do so? Wealth ultimately comes from science and technology. But science comes in waves, sparked by a few key inventions. These waves create fabulous wealth, but wealth is not static. It has to go somewhere. Wealth goes in a bubble, which crashes later on.

We have seen a couple of waves of science and wealth in the past. The industrial revolution of the 1800s caused excess wealth, leading to a bubble on the London Stock Exchange and the crash of 1850. Advances in electricity and automobiles again created fabulous wealth and led to wild speculation and to the crash of 1929. The third wave was one of high tech: computers, satellites, lasers, telecommunications, the Internet... The money went into real estate in the US and into sustaining the Mediterranean lifestyle in Europe. This was unsustainable so the housing bubble crashed in the US in 2008 and in Europe right now. What might be the fourth wave? Is it telecommunications and computers, biotechnology, artificial intelligence, nanotechnology and the quantum era, new forms of energy? They are all candidates.

Moore's law will keep on going for another ten years, but the curve cannot last forever. We now know the future of the computer. The computer will cost a penny ten years from now. The computer will disappear. Electricity as we know it is everywhere and nowhere (under the floor, in walls). Where does electricity come from? The cloud some place. Similarly, in the future, we will pay for metered use of computing power. The Internet will be everywhere, including in our glasses. Google already has Google glasses. They are still toys today. Children are going to be the driving force behind much of this technology. The video game industry is bigger than all Hollywood movies put together. It will be fashionable to be online all the time. There will be augmented reality: unlimited virtual information imposed on reality. We saw this in The Terminator movies. We will be able to see people's biography when you look at them and even subtitles as they speak in different languages. We will be able to recreate ancient tourist attractions and finally solve the problem of the blind spot for trucks. In the future, you will be able to scroll out e-paper thanks to OLED (Organic LED) technology as big as you want it, fold it up and put it in your back pocket. We will have intelligent wall paper (computers as thin and cheap as paper). The living room of the future will have 360 degree wall screens which can act as a
doctor, a secretary, a matchmaker. Even glass will be intelligent in the future. In the future, you can choose what the view of your window looks like.

Cars of the future will drive by themselves using GPS, radar and chips. These cars, if optimized, can be much safer than human driven cars. Humans fall asleep, get distracted, drink and drive, get into road rage. 40,000 Americans die every year in traffic accidents, more than in all the wars of the last few years. In the future, you will see that perfect dress and e-mail your 3D measurements to the store and they will send you a customized dress. Mass customization, an economic way to make products made to order because of computer power. We are headed towards perfect capitalism, an era during which the consumer knows everything about products. We will have infinite knowledge of supply and demand, via our cell phones and contact lenses. There will be increased competition. How will manufacturers stay afloat? Through mining data collected over internet tracking, cell phone tracking, targeted marketing, and through branding.

We will have smart pills with chips and a TV camera inside (new meaning of “Intel Inside”). Nanoparticles the size of molecules will be able to locate and even kill cancer cells (today this is being done in lab experiments). Smart toilets will monitor your health three times a day. There will be miniature MRI machines, the size of a cell phone. We will all have a CD with our genes on it, like an owner’s manual for our body. And it will only cost $100. We will be able to grow new organs from our own cells as they wear out or get diseased.

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CHRIS ANDERSON, Editor-in-Chief, WIRED, Author, The Long Tail, FreeEconomics
FROM THE LONG TAIL, TO FREE!ECONOMICS, TO THE NEW INDUSTRIAL REVOLUTION: NEW BUSINESS MODELS FOR THE ECONOMICS OF ABUNDANCE

At the end of the industrial revolution, we optimized production but we did so at the cost of having to organize around economies of scale. A second industrial revolution is around the corner. The second industrial revolution is about democratizing the tools of creating (making one thing/prototyping) and the tools of distribution (e.g., a blog) – exactly the opposite of economies of scale.

MakerBot Industries is a company which produces open source hardware, specifically 3D printers, with the goal of bringing desktop 3D printing to homes at an affordable price. People design objects using 3D software on their computers and the printer outputs the object layer by layer. If MakerBot Industries reaches this goal, individuals will be empowered to make basically anything they can imagine. In terms of performance, 3D printing today is where laser printing was in 1996. What about distribution? The last ten years, the global supply chains have opened up to many people. Alibaba, for example, is a portal into Chinese manufacturing. You are able to print 3D models yourself, or have them printed and shipped. Technologically, the n of 1 distribution model is now possible and available. For a fee per month, you can get access to a Maker Space: machinery, coaches and trainers you would otherwise have no access to. Anyone can join a Maker Space. The Detroit facility, for example, houses $750,000 worth of laser cutters, 3-D printers, CNC machines and tools of all kinds. Today almost any material can be printed (aluminum, titanium, glass, all sorts of plastics…). Just go online, for example to Ponoko, and get your
CAD designs printed. We are all designers now. We might as well get good at it. Other available tools for revolutionaries are Sketchup, owned by Google, Autodesk 123D and Tinkercad.

Let’s look at some business models of the New Revolution. Kickstarter is a crowd funding website for creative projects. You upload a project. If people would like to see the project come to fruition, they pledge to buy the product and pre-order it. One success story is the Pebble Watch, an e-paper watch for iPhone and Android. The watch connects to smartphones using Bluetooth (alerting you for incoming messages or calls) and is infinitely customizable with downloadable watch faces and internet apps to use, such as Pebble as a bike computer or to control your music. The magic of Kickstarter is its innovative funding model. You used to have to raise money first to pay for R&D, tooling, labor... After that you would produce a lot of products and make money through sales. Kickstarter is built around the pre-order model. You get the money first so you do not need to raise it. Kickstarter is also a community-based model. Comments and feedback help creators to modify their products. Based on feedback from the community, the Pebble team decided to make the watch waterproof and Bluetooth 4 compatible. Every one of the people that pre-ordered Pebble became an evangelist for it. Kickstarter also allows for free market research. Let’s say the Pebble watch received only $100,000 in pre-orders, maybe this would have been a sign it was not going to take off in the market? So there is no need to develop it and take risk. This is the financing model for the new industrial revolution. Other examples of New Revolution websites are etsy, indiegogo and rockethub. This type of crowd-funding works very well for physical objects with real costs.

**CAN INNOVATION BE TAUGHT?**

**JEFF DYER, Co-Author with Clayton Christensen, The Innovator’s DNA**

**THE INNOVATOR’S DNA: MASTERING THE FIVE SKILLS OF DISRUPTIVE INNOVATORS**

True or false? Studies by psychologists show that creativity is largely genetic. Research has tested this hypothesis by looking at identical twins that were raised apart. IQ tests reveal that roughly 80% of our general intelligence is genetic. Creativity tests reveal that only 33% of creativity is genetic, the rest is nurture.

**Key-takeaway 1: How do innovators think?**

Innovators have at least five skills that set them apart from the rest: associating, questioning, observing, experimenting and networking.

The first skill is what we call "associating." Steve jobs once said: “Creativity is just connecting things. Creative people … are able to connect experiences they have had and synthesize new things.” Associative thinking is a cognitive skill that allows creative people to make connections across seemingly unrelated questions, problems, or ideas. You can become better at associative thinking by doing so in a forced way (e.g., take a microwave as inspiration to come up with new innovative features for a dish washer) or through feeding it by questioning, observing, experimenting, and networking.

The second skill is questioning, the ability to ask "what if," "why," and "why not" questions that challenge the status quo. Doing so will help gain an understanding of what the problem is and is not. Good questions impose constraints. What if we were legally prohibited from conducting any future
business with our current set of customers? How would we make money next year? Steve Jobs was often known to ask this kind of question. Good questions are those that challenge the status quo and impose or illuminate constraints.

The third skill is the ability to closely observe details, particularly the details of people's behavior. Scott Cook, CEO of Intuit, said: “The only way I know how to teach people to be more innovative, is to teach them how to observe. Then I ask just one question that often generates surprising responses: What is different than what you expected?” Cook’s ideas for Quicken came from observations he made when his wife was doing the bookkeeping and personal computing was in its infancy. Dyer and his team also found that if a person lived in two or more countries and/or you worked in more than two industries, people were twice as likely to be innovators. P&G and Google on occasion swap their marketing and HR employees for two months so they can learn through observing and networking. P&G learned from these swaps how to use mommy bloggers to promote products as well as the tools to create “user created content” for their commercials.

The fourth skill is the ability to experiment. The people we studied are always trying on new experiences and exploring new worlds. Jeff Bezos (founder and CEO of Amazon) said: “One of the things we try to do at Amazon is to reduce the cost of conducting experiments. If you can increase the number of experiments from 100 to 1,000 without costs going up exponentially, you dramatically increase the innovations you can produce.”

The fifth and final skill of innovators is that they are really good at networking with smart people who have little in common with them, but from whom they can learn. Marc Benioff is Chairman & CEO of salesforce.com, a cloud computing company. He said: “I like to hang out with young entrepreneurs, like Drew Houston, the 29 year old founder and CEO of Dropbox. He grew up on the Internet. I did not. So he can see things in ways that I do not and that perspective is really important. I can still be in my headquarters and pretend I am in touch.”

**Key take away 2: Innovative companies have innovative leaders**

Business Week publishes a yearly list of most innovative companies. Dyers and his colleagues took companies’ average Business Week score from 2005 to 2010. The list looked something like this: 1) Apple, 2) Google, 3) Microsoft, 4) Toyota, 5) GE, 6) P&G, 7) IBM, 8) Nokia, 9) Sony, and 10) 3M. They then tried a different approach, crowdsourcing questions like: “If you were investing your money, would you pick Sony or Apple?” Through this process, they came up with a share price, taking into account whether or not investors were willing to pay a premium for future expected innovations.

Looking at it this way, they found the five most innovative companies to be: Salesforce, Amazon, Intuitive Surgical (manufactures robotic surgical systems which allow surgery to be performed remotely using robotic manipulators), Tencent QQ (the most popular free instant messaging computer program in mainland China with more than 700 million active user accounts) and Apple. These companies have in common that they all have creative leadership at the top and are led by people that come up with original ideas. These leaders do not have to be the founder (e.g., A.G. Lafley at P&G). How do CEO’s of innovative versus non-innovative companies compare, on average? CEO’s of innovative companies on average have discovery skills (questioning, observing…) in the 88th percentile and average execution skills in the 55th percentile (analyzing, planning, implementing…). They spend 31 % of their time looking
for innovative ideas. CEO’s of non-innovative companies are in the 62^{nd} discovery skill percentile, 80^{th} execution percentile, and spend 15% of their time looking for innovative ideas.

**FROM BLUE SKY TO REALITY: DESIGN AT THE FRONT END**

**PHIL DUNCAN, Global Chief Design Officer, Procter & Gamble**

**PURPOSE INSPIRED INNOVATION, BY DESIGN**

In a nutshell, P&G has $83 billion in sales, operates in 80 countries, has 26 billion-dollar brands, and grows 4% annually... That is about 4 billion dollars they need to grow per year. So P&G has no option but to focus on finding new ideas and commercializing them.

P&G has a strong sense of purpose. At the organizational level, it is “touching lives, improving life.” They have a strong purpose in their individual brands too. For Pampers, it is “improve baby’s happy healthy development,” for Crest it is “help people confidently engage in the world around them,” for Old Spice it is “helping guys navigate the seas of manhood,” and for Duracell it is “powering life without limits.”

To Phil, innovation can be defined as the known plus the unknown. It means to put something together that is known with something that is unknown. For example, Crest White Strips is something we know (the idea of whitening teeth) and something we do not know (a new form).

Phil has five rules for innovation. He calls them Phil’s Phive. They are: knowledge funnel, framing, core and extreme users, connections that spark, and prototyping.

**KNOWLEDGE FUNNEL**
You always need to think about how to push knowledge through the funnel to ensure that you are putting something meaningful in the hands of the consumer at the end of the funnel. One must innovate, at every phase of this funnel. The four phases at P&G are mystery, heuristic, algorithm and code. Mysteries are things that we observe and that intrigue us, but that we do not yet understand. Heuristics are ways of understanding the general principles of what were heretofore mysteries (what if scenarios). Heuristics are rules of thumb or guidelines for solving a mystery by way of organized exploration of the possibilities (e.g., ideating, prototyping). An algorithm is a logical, arithmetic or computational procedure that, if correctly applied, ensures the solution of the problem (how can we commercialize this?). Code means translating the algorithms in a series of 0’s and 1’s, in software (scale and go to market).

**FRAMING**
The second rule of innovation is framing the opportunity. Fairy (P&G’s dishwashing liquid in the UK) was losing market share to a private label. They framed the opportunity not as how to be “private label competitive” but rather how to determine what is unique about Fairy and tap into the “emotional construct” of the brand.

**CORE AND EXTREME USERS**
This is all about the design target. What if we designed for a person in a wheelchair instead of a person at home that can walk? If we can design for children or people in wheelchairs, the rest will come...
automatically. Utilizing different or less populated consumer group has released interesting elements of creativity for P&G.

CONNECTIONS THAT SPARK
This is all about putting people together, about driving connections. The first prototype for Swiffer WetJet literally was Pampers on a stick with Mr. Clean on the end. The adhesive-film technology used in Glad Press ‘n Seal (made together with Clorox) was developed by P&G as an essential material needed for Crest Whitestrips and its creation was spurred by a partnership among three P&G divisions.

PROTOTYPING
Most organizations are highly verbal (P&G as well). You get rooms filled with Post It notes. Phil bought his team sets of Tinker Toys and told them start building. Building “low resolution prototypes” enables others to come to the table and helps connect with consumers. Consumers are really good at helping you detect bad ideas. P&G does a ton of modeling and simulations across the board.

Gillette’s mission is “helping the next generation of men having a great start”. About three years ago, they sat together with the Gillette group in Boston and they decided that at some point in time, they could not just add another blade anymore. So there was an opportunity here to innovate. Here was Gillette, focusing on hairless man. But when they pulled the last ten annual "Sexiest Man Alive" issues from People Magazine, many of the covers showed men with facial hair. Gillette reframed to see itself as also wanting to help those men trim and groom facial hair through the Gillette Styler, which is combination device for shaving and automated grooming.

P&G also decided to take on Olympic sponsorship. It is one of the biggest things P&G has ever done. But what do P&G and the Olympics have in common? Every Olympic athlete has a mom and P&G is in the business of helping mom. In 2010, P&G sponsored the US team in Vancouver. They found out about some really amazing challenges that Olympic moms face (e.g., personal, financial) to get their child athlete to the games. It often means significant family members are not able to go and watch the Olympics to support the athlete. Among other things, P&G gave every US mom a $5,000 VISA gift card to help with expenses. P&G also wanted to the consumers to emotionally connect to show how proud they are to provide to these families. It is a huge decision to have your child focus on the Olympics. When these kids come of the program, they have not spent time in school and have a limited future outside sports. Watch the video again, here: http://youtu.be/NScs_qX2Okk.

INNOVATION... IS IT REALLY WORTH IT?
PETER KOEN, Stevens Institute of Technology (MODERATOR)
JOHN HILLENBRAND, CIO, Owens Corning
MARKUS FROMHERZ, CIO, Xerox
NAOMI FRIED, CIO, Children’s Hospital Boston
CHIEF INNOVATION OFFICER PANEL

As CIO, what is your biggest challenge?

Markus Fromherz: Xerox is most well-known from its printer/copier business, but since about two years more than half of our business is in services (through acquisition). As a typically hardware-oriented
company, we were challenged regarding what innovation in the services business means and how to connect all of Xerox’ capabilities with the new business groups. These groups were also not really used to long term thinking, so how to get them to articulate a strategy that is 3 or 5 or 10 years out to help determine what researchers should be working on, was challenging.

Naomi Fried: Children’s Hospital is the pediatric teaching hospital for Harvard Medical School. We invest over 250 million dollars annually in research. The hospital has been voted as number 1 pediatric hospital in 2011 by US News. We have a three pronged approach: 1) identify unmet innovation opportunities (identify, assess and introduce innovative technologies), 2) Enhance the adoption of innovation by leveraging research, resources, tools and platforms, and 3) connect: advise and support innovators and their projects, foster collaboration and build a culture of innovation.

We put in place a number of programs including an innovator’s forum (monthly), social networking/virtual collaboration for innovators so innovators can find resources, seed funding, software development resources, etc. The biggest challenge is engaging the department heads or chiefs in innovation (compare them to division heads in large multinational companies). They are very busy. I really want to draw them into my group’s innovation activities because they are an important stakeholder in building an innovation culture. The chiefs appoint liaisons, called innovation ambassadors, in divisions and hopefully the liaisons will help overcome this challenge.

We can bucket innovation into three areas: sustaining, transforming, and disruptive. How do you actually do transformational and disruptive innovation?

John Hillenbrand: I believe the first step is to converge on what is the most useful definition of innovation for a company. For me, it is “turning knowledge into value for customers.” In terms of getting to a balanced agenda, a portfolio of innovation, step 1 is to try to get the most out of sustaining investments. It is dangerous to jump to the “new new” if there is low hanging fruit to be picked on the sustaining side. I believe it is important to try to have a very efficient/effective innovation muscle in the sustaining space to free up resources to work on attractive adjacencies. What works is culture dependent.

Markus Fromherz: Years ago, we adopted a two dimensional framework for innovation portfolio management with market risk and technology risk on two axes. Researchers should focus more on the quadrant that is far out on technology innovation but not too far out on the market dimension because often researchers/technologists are not very familiar with other markets. Similarly, for the business group we expect a lot more innovation that is not far out on the technology dimension but further out on the market dimensions. They are better at coming up with ideas to chase new markets with technologies we are familiar with. We have some in the upper right corner, but not many.

How are people incentivized to move away from the sustaining? How do you get them to work in that space?

Naomi Fried: we support all types of innovation, because the kids need it. If it is about improvement in a device or drug we already have, that is beneficial. For example, a new regional pain medication that will last longer. At the transformational/disruptive level, we have identified a paradigm shift in healthcare: tele-health i.e., remote health care. This model is really disruptive. There would be different payment
models, a different physician workflow, a new technological infrastructure and different ways of engaging with patients and colleagues. We have pilots going on where pediatricians are taking pictures and sending them to dermatologists which get back with a diagnosis. We have a program with a follow-up for concussions through a video visit rather than a physical meeting. We do not know yet how we are going to get paid for a lot of these models, but tele-health might turn out as disruptive to healthcare as iTunes was to the music industry.

Let’s talk about innovation gaps, like “I know we should be here but we are here and I wish we could close that gap and I even have ideas for how to do that, but I cannot.”

Markus Fromherz: A problem I have seen is that you might have good ideas, but you are not sure about the business case yet and you need some money to try it out and to consult domain expertise (time from people). Once you are over this gap and have a prototype to show customer validation, it will be much easier to convince senior management to invest in the development.

Naomi Fried: Where we hit the challenge is to get an idea into operation. In practice it is hard to diffuse a good idea through an organization. I call it the O-gap or operational gap. A couple of levers that can help are to be engaged with leadership, to get them involved and to get resources for change management training. I council innovators to get others involved early that are going to be gate keepers. Show them prototypes, involve them in the pilot,... to shrink the O-gap.

John Hillenbrand: We struggle with being able to explore different business models, different ways to combine technologies and test and validate. We are a very polite bunch in the company and that gets in the way sometimes. We would like to be more of a learning organization that is self-critical.

How do you provide time for your employees to innovate? Do you have slack like at 3M or Google, which allow people a certain percentage of their time to work on their own projects?

Naomi Fried: We have a different model than 3M and Google. When our employees have a problem in front of them, they are going to keep on thinking about it. For example, a nurse has a problem. She might get the project started on resources provided through a seed grant. I have seed grants available; small funding grants for applicants that have an idea that has potential to impact patient care. One applies online and the innovation board reviews the applications. We have supported 19 projects to date, some of which have been successful. They also have a fast track innovation and technology program (FiT) for new ideas involving software. One can apply for a FiT award to get access to developers who will sit with them to build out what they envision.

John Hillenbrand: We have a dedicated group of people for new platform opportunities that have the bandwidth to take on these initiatives.

Markus Fromherz: We have innovation groups and research centers. The real challenge is that people in the business groups are working on day to day operations. So we do exercises to bring people together where they get time off. We have innovation days at Xerox. There will be messages from senior management to say they are looking for ideas in a specific area and then for a week, people are encouraged to post ideas and comment on ideas. We have a group of reviewers/mentors whose job it is
to comment and build on ideas and move them along. At the end of the week, the steering committee spends time to rank ideas and start up new projects.

**What message would you like to tell people about innovation that they could take home?**

**John Hillenbrand:** The fun of innovation for me is there is no single way to do this. I did a survey based on an HBR article in 2007 (Innovation Value Chain by Morten T. Hansen, Julian Birkinshaw). This survey helped us understand where our weaknesses were and where to concentrate. Know your organization and where to fix it.

**Markus Fromherz:** It is really important to have a long-term vision. What is the goal 10 years from now? At the same time, this needs to be translated into short term impacts in the businesses.

**Naomi Fried:** innovation is fun but it is also hard. You encounter a lot of failure, you take risk. You need to actually take time to recognize and reward the innovators in your organization because they really have a hard time when things do not go right. Make sure you keep them on that path. Try to build a culture that recognizes and rewards innovators for successes and learning.

**ROB CROSS, Author, Driving Results through Social Networks**

**DRIVING RESULTS THROUGH SOCIAL NETWORKS: HOW TOP ORGANIZATIONS LEVERAGE NETWORKS FOR PERFORMANCE AND GROWTH**

Rob covered three points relating innovation to networks:

1. Network dimensions underlying innovation
2. Network traps derailing innovation
3. Personal networks and innovation

**NETWORK DIMENSIONS UNDERLYING INNOVATION**

Although the sky might be the limit, some network dimensions that are relevant to innovation are: who is turning to whom for information to get their work done, who are the brokers (people that have many ties across functions), where exist collaborative silos, and who are energizers?

Networks are often under-appreciated in comparison to the formal structure. Cross and his team mapped networks in terms of who is turning to whom for information to get their work done and it can be noticed that the informal structure is very different than the formal structure. 3-5% of people tend to contribute to 20-25% of value added ties, but leaders have a tough time predicting who is central in the network and who is on the fringe.

One can have a really nice impact on NPD initiatives by not focusing only on central people, but also on key brokers (people that have many ties across functions). Cognitively they often know what works in different parts of the organization. Brokers can help speed diffusion because if you can get the brokers to adopt early, there is a 20-40% uptake of the idea (e.g. technology, change management).
It is not that everyone should be connected to everyone, but more efficiency can be reached by identifying and bridging collaborative silos in a targeted way. For ideation session, you first and foremost need people with depth in a certain area. However, you also need brokers to overcome collaborative silos between functional areas – they totally change the conversation.

Cross and his team asked people: When you interact with this person, how does it affect your energy level? By asking this question, you can map the energizers in groups. They create enthusiasm and energy. Highly energized networks are more successful. People tend to be more engaged, creative, and willing to spend discretionary time on a project with energizers. The ability to motivate others is as, or more important than, knowing the answer. Energizers create personal connections, build reciprocity, follow through on commitments, and stand for something larger than the self. They engage in possibilities, are attentive in meetings, help others contribute, disagree productively, and are flexible. De-energizers can be deadly on this front.

NETWORK TRAPS DERAILING INNOVATION
There are at least three network traps. The first trap concerns fragmentation of networks (gaps across functional capabilities) at points that invisibly undermine efforts to innovate along desired trajectories. The second trap is the domination of networks by particular perspectives and expertise unwittingly creating an innovator’s dilemma trap. And the third trap is the inability to look externally – insularity keeping an organization from effectively leveraging external expertise. You need to know who are the key holders of external connections, and take good care of those people.

PERSONAL NETWORKS AND INNOVATION
On average, people identify 4 to 5 others with whom they are “extremely guarded” in terms of sharing thoughts and ideas. The minimum and maximum amount of times that a person was cited by others was 1-13 times. Basically it means that if this person is in the room, you will not share. In that scenario, you might have all the human capital in the room that you want – the culture will block you from creating.

CLOSING KEYNOTE
TOM SZASKY, CEO & Founder, TerraCycle
REVOLUTION IN A BOTTLE: ECO-CAPITALISM IN CHALLENGED ECONOMIC TIMES

Tom fell in love with the concept of garbage, with helping to eliminate the idea of waste by making things that are thought of as non-recyclable, recyclable. Terracycle is the biggest collector of wrappers, chips bags, and other forms of packaging we typically consider non-recyclable. Why are these typically thought of as non-recyclable? On their own, the economics do not work. The company has more than 20 million people in over 20 countries participating in its programs, collecting waste in their workplaces, schools, and churches, and sending it to Terracycle. Their cost (in some cases the collectors have the option to choose which charity receives 2 cents per item).is funded by major consumer products companies. Terracycle also has a team of scientists and designers that determine how to best process the garbage.

How it all started... Tom and his friends were trying to grow marijuana and he figured this worked particularly well with worm poop as fertilizer. So he was interested in producing worm poop. He started
by taking organic waste and feeding it to worms. No animal likes to hang out around its own poop, so how can we innovate to separate the two? He designed a converter belt that made the poop move out and the worms move in. He dropped out of Princeton to start a fertilizer company selling worm poop, which is ultra-effective and completely organic. When the time came to package and sell the fertilizer, the company could not afford to buy packaging. So they wondered: can we package in waste? They sorted out soda bottles in the garbage. They discovered the vast majority of trigger heads were of the same size. They also found there were really only four volumes in soda bottles. The only difference between the brands was the contour of the bottle. So, given the similarities, they could run them through high-speed bottling all the same. The settled on a used soda bottle with a left-over trigger head. This was the first time packaging that was ever re-used. This was 8 years ago. Today, they still are the only company to do so. Why? Using existing bottles creates an interesting legal scenario. Pepsi and Coke and the likes still own the IP of the shape of their bottle, even if it is used in a different context. Terracycle had to get a license from Pepsi and Coke to sell shit in their bottles.

Garbage is a completely man-made idea. Waste does not exist in nature; it only exists in the human system. Waste is a combination of two things that have come together: the concept of consumption (we buy way more than anyone ever did before) and the concept of complex materials (not just wood or cotton, but complex polymers). These two things combined created the concept of waste. Waste is a very big issue – 5 billion tons are produced per year globally. Waste has a unique economic trajectory: it is something we pay to get rid of. But what happens with waste today? There are two systems: recycling and landfilling. Whether or not something is deemed recyclable depends only on the economics of recycling. 80% of consumer products do not fall into this category because it is not financially interesting to recycle them. We spend all this time and effort taking resources out of the earth and converting them, to use them just once and then burn them or put them in land fill?

We always find people that say “biodegradable is the solution.” Tom thinks it is a bad idea for two reasons: 1) most biodegradable packaging will not be able to biodegrade in the US and 2) why make something biodegradable that has cost so much effort to bring it in its current refined state? Sun chips spent a quarter billion dollars to create a biodegradable bag, but recently pulled it back out of the market because the package made sounds that were too loud. But what happens when you are done eating chips? There is almost no green waste collection in the United States. The only place you can put your chips bag is in the trash. From there it will go to the land fill, in a pile without oxygen throughput, which means it does not biodegrade. You could compost at home, but only 5% of Americans do this. What is the lifecycle? Soils converts to a plant, the plant is converted to a petrochemical which is converted into packaging. These conversions over the lifecycle cost a huge amount of energy. Why then turn it all the way back to soil? Why not cycle them their highly refined state?

Waste has three characteristics: composition (i.e., plastic, wood...), features (i.e., shape, color...) and intention (i.e., bottle, vase). Based on this, Terracycle developed a hierarchy in terms of waste treatment. The very worst is landfill. The next worst is incineration (can keep caloric value of the waste i.e., the energy value of burning it), then recycle (values composition), upcycle (values composition and form, but not intention), and reuse (values all things).

Reuse is idea of taking the same object and using it again. So there exists a shoe program where you can send in shoes. They clean the shoes and give it to the next person. Pet food often has expensive packaging; because it needs to be thick and durable (pet food bags are so strong you can suspend an
entire care on it). Tidy Cats collects the packaging and marks the packaging in terms of how often it has been used as packaging. Upcycling is when composition and features are valued. There are huge opportunities in upcycling. Backpacks made with juice pouches, pet products made with pet food bags, shower curtains made from Kellogg’s packaging, speakers from soccer balls, dresses from M&M’s peanut wrappers... The third thing you can do is recycling. There are things that were never recycled before that are now being recycled. Programs are in the works to collect cigarette butts, dirty diapers, chewing gum ... Through innovation any type of waste can be solved.

You can send Terracycle your waste. A third of the companies that work with them, have used this to make their products recyclable. If companies can demonstrate that their stuff can be collected and recycled in over 80% of countries, you can legally put the word “recyclable” on your packaging. Nike runs a shoe program like that in many countries. Nespresso collects its caps. Terracycle collects drink pouches. In its first year, they only collected 22,000, but now they are collected 500,000 per business day or 3% of all drink pouches produced in the US. How do we ease people into collection? Over time, they hope to develop meta collection systems with clusters of collectors. They also have many pickers in certain countries that sell to cooperatives.

Would it not be amazing to create products that have secondary intentions designed in them? Can packages be designed to automatically include a secondary purpose? Can we rethink the entire way a package is used? Puma makes a bag with instructions to make it a game. The more we can rethink packaging, the less it becomes waste.

How can all this help promote your brand? Terracycle had a program with Tang, which is a big product in Latin America from Kraft Foods (half a billion dollars per year in turnover). They found out some very simple demographics about the environment. Kids care the most about the environment. Then women, especially if they are moms. People who do not care at all, are men. Tang is a kid’s product. Kids want to feel engaged about the environment, but they do not have any power. Tang changed its entire marketing around: “Yes, you can make a difference. One piece of packaging at a time.” Tang went up 40% in turnover that year in an otherwise decreasing market.