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specifically, lies a process of evolving the concept through multiple experiments and playing with the concepts in live conditions. India offers very fertile ground for quick evolution of innovation. India is a land of contrasts – we are third world and first world at the same time; we are modern and traditional at the same time; we are rational and emotional at the same time. So if you have a solution that you want to evolve through experimentation, the country offers size, diversity, and multiple contexts as nowhere else. We can work with live labs, live markets where we can evolve not just new market strategies but also the context, formulating or co-creating products together with people. Very few countries can offer this. India can provide on-demand ecosystems or self-organised systems where innovation is an emergent phenomenon. When innovation happens as emergence you end up with surprises because the system produces it. For example, if you throw a mobile phone into different kinds of contexts in India, it would evolve into different kinds of applications.

Unique Culture: My third point is our unique culture. I think Eastern philosophy (here I include China as well) has traditionally had a deep and nuanced understanding of some concepts that enable innovation. Systems thinking is something that the world is discovering now but I think Indians and Chinese and other Asian cultures have understood it and have been using it for centuries. For example, the concept of balance, while defined very interestingly in modern science, is defined by the Chinese as balance between Yin and Yang – as between hot and cold, between inner ecology and outer ecology of the system, and between sufficiency and deficiency. Eastern philosophies, rooted in holism, have long understood that the sum is greater than the parts. I think we can give to the world a very elegant and balanced form of innovation that is not just centred around the economic parameters, the pursuit of profits. The world is just discovering corporate social responsibility (CSR) as a mandatory extracurricular activity. But I think doing good is central to doing well; where your purpose is to do good and as a consequence you also do well; where the collective comes first and the individual comes next. I think Asians can give that, so long as we are not trying to "copy paste" Western methodologies. We could provide to the world a guiding philosophy or frameworks that could become the innovation compass for individuals and collectives; A compass that will ensure that we are not mindlessly growing for the sake of growth.

Rishikesha T Krishnan: Wido, Philips has been in India since 1930 or so, but the Philips Innovation Centre is more recent. How do you use your heritage in India to focus on innovation for emerging markets? Please share with us your experiences in developing products in your innovation centre here that are especially suited to meeting the needs of India and other emerging markets? What are the challenges you have faced and how have you addressed those challenges?

Wido Menhardt: I have been in India for three years now and with Philips for five years. Philips is a Dutch company and has been associated with electronics for a long time in India. Incidentally, when I talk to people in India, sometimes they think that Philips is an Indian company and are surprised to hear that it is a Dutch company. It is so much part of the fabric. But our larger sector is healthcare and healthcare is headquartered in Boston.

I cannot profess to explain how innovation or innovation for the local ecosystem happens. But we have been very successful in the last three years in creating innovations for the local market, particularly in the healthcare sector. I would qualify them as happy accidents, as Gopi called them. I think the inflection point for us has been our centre, the Philips Innovation Centre, which has been here since 1996. Earlier, the engineering centre tried to find ways to innovate for the local market, used innovation drives, innovation ideation sessions, and refocused on innovation itself in order to find ways to innovate for the local market. The breakthrough we provided was to start with the customer. Once we tried to understand what the local customers want, and put the constraints in place, not only in terms of usage, but also in terms of cost, needs, and accessibility, we started to have some remarkable success. We used value engineering to the extreme and novel platforms such as open source technology, which in a company like Philips was unconventional and brought in its wake concerns about legal implications. We have also been very prudent in using very high technology in order to make very low-cost products – possible through innovation. We focussed on recreating products which have very low-cost points for the local market.

We innovated in the area of business models. In healthcare, typically, we take our "big iron" and sell it to the hospital. But we have changed that to per click, per procedure pricing. For example, take a telemedicine product which a hospital uses internally, for experts within the hospital to provide services to some of their satellite hospitals. We have sold a solution like that to one of the leading chains of big hospitals here, call it X. We sell that per click. Further, if Philips brings another hospital which is not part of the X hospital chain, and X provides that service to the new hospital, not only do we get a revenue stream out of that, but we also get a finder's fee from the first hospital we sold it to. So novel business models are part of the idea.

Finally, we have brought in new operational mechanisms. We have started to co-create with customers. We build something and get an agreement with the customer that this is what they want. But they also need an additional input "a". Then we go on site with our engineers and develop "a" on site. In American startups that would not be surprising, but in Philips people ask me, how is that scalable? How are we protecting our employees? and so on. But we have done that with great success. We have innovated on how we work within the company. Normally, the chain of communication is as follows: the engineers speak to marketing and marketing speaks to sales. Here in India, in Bangalore, the engineers had to talk directly to the sales people. That can often go wrong. But it has really worked well. So now our engineering managers are on the management teams of our sales organisation. That's a first at Philips. With those things, we have also been able to drive time to market to unheard of levels. We have developed products within 3–4 months by being extremely entrepreneurial, extremely pragmatic, getting pieces from wherever we can, putting them together, and getting them to the customer. Entrepreneurism is the key characteristic

that the Bangalore centre is perceived as having within the global Philips context. Our CEO from Amsterdam visits once a year – my MNC colleagues will know how important it is to get engagement at a high level – and what he takes away is that Indians are entrepreneurial.

As for our challenges, the first challenge is that of infrastructure – power, water, traffic on roads, and so on. This is a standing concern and we have heard a lot about it in this ecosystem, but these are real challenges we have to contend with. Second is people, and culture; culture is key. There are two elements in terms of culture. This ecosystem has grown up as a service industry – IT services and R&D services. But if you want to innovate with products, you cannot have a service mindset anymore. You cannot go to the customer and say, please tell us what to do; instead you have to go to the customer and challenge him. You have to know what they are doing, know their business, and challenge them on how they run their business and tell them how they can run their business better with your products. And that kind of mindset change is hard. I am working on it every single day. The second is engineering competence, engineering depth. The classical model is that we hire a bunch of freshers and we hire one person who speaks English and fronts with the global organisation. In the new model, where we develop products, the individual contributor here will also have to talk to the individual contributor who is his counterpart, and the old model will not work. So one of the things that we drive is more technical depth and more experience on the technical track. We have metrics to get the average experience of our people. We have two career paths which we promote. We actively promote and communicate, even to the families, that it is a good thing to be an engineer even after you have been in the workforce for 7 years.

The final challenge is to raise the bar continuously. In case of our value products, we have the products of our local competitors in sight. Of late, we have started rethinking another concept. The value based engineering approach for emerging markets has always been to take global products, either real or in concept-in-use case and to re-engineer them. Traditionally we always came from the top. For markets such as India, Africa, and the Philippines or Indonesia, we would have to approach the situation from the bottom. Often these are situations where a doctor may not have much to work with. So we have to think along the lines of, what is the product that you can create that is better than nothing? Rather than taking the value engineering down approach we have to take a completely different approach. We have been very successful in Philips in getting a continuous stream of innovative products to the local market that have been developed at the Centre.

Rishikesha T Krishnan: Gopi, I would like to get your insights on the same issues because GE has also been very active in innovating for the local market. What are the critical things that GE is doing to innovate more effectively for the local market?

Gopichand Katragadda: Before looking at innovation for India, and talking about getting to the next level, we need to answer questions at the fundamental level. Do we have enough energy to create an ecosystem which can produce the next big thing? We cannot think only about one product, we need to think about a portfolio of products. And we cannot stop there. We need to think of an area. If you look at how innovation happened and how the wealth of nations was created, the industrial revolution created wealth for Europe, the digital revolution created wealth for both the US and Japan. The electrical revolution in between created wealth for the US. So your thinking has to be grand. For example, if we consider the opportunity in genome decoding, we would have to consider the ability of our technologists to do well in IT systems, we would have to pull in cloud, and pull in the right demographics. We would need to go all out and say that if this is a new area, let us as a nation invest and create the next generation of innovation in this ecosystem.

Having said that, what we do at GE would be very small in comparison. I will give you two examples of what we have done in GE. One, we have looked at what is unique about product requirements in India. If you consider the wind turbine area, we are a low wind regime country at 7 m per second wind speed. Our turbines were made for 8–12 m per second. We in India developed a turbine for low wind regimes and we have now sold many more outside of India, even in better wind regimes. The other aspect of it is value and I think value should be looked at a little more than cost. We must ask what the need of the Indian market is. Vijay Anand talked about reverse innovation, and at GE, the portable ECG machine is a poster child for reverse innovation. We took a product, the non-portable version of which costs $10,000, and we made a portable one in China for $2,500, and one for the Indian market for $500. You may look at it as an example of disruptive cost, but it is really about value. It is a one button press for getting your ECG, suited for Indian conditions, where the machine has to work in rural areas. Considering the number of people that we have to train in India to operate these ECG machines in rural areas, it doesn't make sense to create a matrix of buttons where you can set up different options. It must be very simple to operate. We got round the cost aspect by putting a bus printer into our ECG machine. At GE, we are very proud of our high-resolution printers. So for us to use an Indian bus printer to put in our ECG machine was a big step. But we did that because it was the right thing for the market. What you need is an ECG printout which gives you sufficient information. You can later transmit it to a higher end computer or take a memory stick and print out an image with a higher definition. So these are the things you look at when you consider the local market. You should innovate locally, and if you do it right, you will find markets globally.

Rishikesha T Krishnan: Vijay, one of the things that your Intuit centre has done well is take our local talent, from our education system (that is often criticised for a number of reasons), and get them to do very interesting work such as the projects you described. How do you create the right environment within Intuit so that you can get the best out of these engineers, so that they can contribute to innovation both in the Indian market as well as the overseas?

Vijay Anand: You cannot talk about innovation without talking about talent. Typically within multinationals, mindset is key. One of the panellists talked about reverse engineering. I talked about the mindset of starting with a clean slate. These are all critical for you to succeed in