

## **IIT Mumbai Talk: Innovation blowback and its impact on your career**

30 Jan 2005

### ***Introduction***

I am delighted to be here. Dr. Rathi and TechFest organizing committee, I would like to thank you for inviting me.

Many eons back I started out by porting Unix on Intel platforms at DCM Data Products. In 1987, I was a junior member of a team that created what we think was the first twin-CPU Intel based Unix server – it was called Cosmos. Since then I have had the opportunity to work on mature products and on emerging products, in India and in the US. My last gig before I joined VERITAS about 10 months back was a wireless infrastructure startup that I had co-founded and led as the CEO. In late 2003 we sold Teltier off and it continues to thrive as part of CISCO now. After that happened, I took some time off and asked myself the very question that you might be asking today. What's the next big thing?

It's a legitimate question to ask in the IT/telecom industry. Mid-70s to early-80s was about mini-computers. Mid-80s to early-90s was about PCs. Mid-90s to recent times has been about the internet. So, what are the next 7-10 years going to be about in the IT/telecom industry?

Some people say it is going to be about "managing complexity". Some liken it to what happened to electrical motors. Over time they became sophisticated and ubiquitous – we have over 20 of them in a car alone. But at the same time they also "disappeared from view" – the users don't see them or worry about them any more. To achieve the same "simplification", people are counting on service-oriented architectures in the IT industry. In the evolution of computing architectural systems, SOAs are the next architectural change in how computing programs are created. While SOA is nascent today, it signals the next big shift in the development of computing architectures.

Others say that simplification will happen by treating software as a service. This is a model where companies outsource the deployment, management, maintenance and support of business software to third-party service providers. Indeed, this trend seems to be taking off. Would-be users are starting to overcome their initial resistance to having critical data managed off-site as hosting models become more sophisticated and secure. The compelling driver is the predictable costs and substantial savings.

If you move away from enterprise software, there is a gaggle of voices around WiMax and Mesh Networks. Indeed, some of these wireless technologies have a big future. Like their cellular brethren, they have the potential to bridge the digital divide for countries like India.

For some others the action will be in embedded systems. The reality is that firms can now afford to put intelligence not just in your phone or but also in your doorknob.

Yet others believe the transformational technology of our era will be Wetware. After all, biology is doing a form of computing on some kind of hardware – that mushy stuff is wetware. Systems biology is bringing genetics and computing together to help us understand change and modify this mushy stuff. Essentially, this protein engineering is helping create new living organisms.

You can never discount nanotechnology – its laboratory success in inventing new materials and tell them how to behave is impressive. People now predict that incremental nanotechnology is round the corner. It will take the form of new products such as paints (with nanoparticles), medicines (coated drugs for targeted drug delivery), foodstuffs ('taste-burst' foods), clothing (stay-clean textiles with nanofibres), packaging (specially adapted polymers that prevent contamination and sense decay) and new materials for aerospace, automotive and construction applications (lightweight but tough, heat-resistant nanocomposites).

These are all hot technologies and they will make an impact on our lives. But are they the next big thing? No, I don't believe that is the case. There is something larger at work; something bigger than any of these technologies. I will get to that in a minute in my talk. But first, I think an apology is in order.

I am not going to be talking of a particular technology today. I know some of you will be disappointed by that. Sorry! Part of the blame though – and I say this completely in jest so don't get me into trouble with this– lies with the TechFest organizers. They were nice to me and let me select the topic. Not everybody is nice to me like this. For instance, the NASSCOM India Leadership Forum organizers haven't given me any leeway. So I am going to do a technology session for them. If you get a chance come and attend my session on "Five Technologies to Watch For in 2005" at NASSCOM on 9<sup>th</sup> Feb here in Mumbai.

With that apology for a non-technical talk out of the way, let me ask you a question. With a show of hands, can you tell me how many of you believe Oracle's Larry Ellison that the IT/telecom industry is now maturing much like what happened to aircraft industry or electrical industry in the past?

### ***Stay in India; it makes sense as never before***

10 years back when I was in Bell Labs, it was being granted 3 patents a day, and not one of them was coming from India. Over the years, things have changed dramatically. Today, for a company like VERITAS, 1/3<sup>rd</sup> of the internal patent filings are coming from India. What is more, VERITAS's India engineers are filing

more internal patent applications on a per-capita basis than its engineers in Silicon Valley.

To me this patent phenomenon at VERITAS is one of the indicators of the fact that offshoring and outsourcing are representative of broader trends in the marketplace. Increasingly, it is not cost reduction alone that is driving offshoring and outsourcing. It is also a desire to address emerging geographies with products and services at price/performance points that are very different from the development markets. This is forcing decision makers to rethink product development strategies. I am not talking about merely modest localization. I am talking about re-conceiving products and services from the bottom up. The idea is to have emerging products for emerging markets developed in emerging markets themselves. It is what we can call as a local-for-regional model, as distinct from a local-for-global model or a local-for-local model.

C. K. Prahalad in his new book, *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, writes eloquently about some of the examples of impressive product and process innovations that are happening in these emerging markets.

The key thing is that many of these product and process innovations that are being spawned in these emerging markets will not remain there. My favorite example of this migration from emerging markets to developed markets comes from the mobile industry.

CDMA would not have happened but for Korea. 3G would not have happened but for Japan. SMS would not have happened but for Philippines. In fact none of these major innovations would have taken off had they not been ironed out in an emerging geography first. It is in these geographies that they sorted out the demanding price/performance targets.

Many predict that the product and service innovations that are happening in emerging markets, like India and China, will be the basis for attacker strategies by companies seeking to penetrate and establish leadership positions in more developed economies. This is in essence the concept of innovation blowback. They argue that offshoring and outsourcing, in essence globalization, will spawn furious innovation in both India and China.

I believe that their predictions are right. I think the next big thing in the IT industry is not going to be a new category of products. Instead, it is going to be how products and services are designed and delivered using a global footprint. This new trend will change the landscape in the industry in the coming 7-10 years. We can already see early signs of this in the global IT services area. But there is more to come – not just in services but also in products. And I will talk about this in a little more detail in a few minutes. But before I get there, let me digress just a little.

Before you finish your current course in this fine institution, you, like many of your predecessors will make a choice whether to stay on in India or go abroad. When you consider that decision, do take into account this innovation blowback trend. Even if people like me are wrong and it doesn't end up being *the* big idea for the industry for the next 7-10 years, it will certainly be a big trend. Either way, it makes staying on in India a sensible thing to do like never before.

***If you are going to work on products, pick the right MNC to work for***

I am sure some of you are wondering if my emotions and desires are coloring my bullishness about innovation blowback. After all, as you look around, you don't see many examples of innovation blowback happening. This is true. But this situation reminds me of 1988. Digital was a powerhouse then on back of its hugely successful VAX/VMS product line. They essentially owned the mini-computer market. In fact, in 1988 their profits of \$400m exceeded the revenues of a small PC company called Compaq. Yet, in 10 years, Compaq had come over from behind and acquired Digital. My wife used to work for Digital at that time and I can tell you that the Digital folks were shell-shocked. They didn't know what hit them. The moral of this story is that: *Things change in the IT industry. And they change a lot in 7-10 years.*

Lest you think this is a one-off example, take the case of VERITAS itself. In 1997, it had revenues of only \$120m. Last Friday, it announced that it had done over \$2b in 2004 – over 16 times growth in 7 years!

How many of you know about ICIM? Can I have a show of hands? When I passed out in 1986, ICIM used to give two-page advertisements headlined “we are twice as big as the next biggest”. In 5 years, they had seized to be in the Top 5. Now, for all practical purposes, they don't even exist.

So things change in the IT industry and they change a lot. In such environments, Warren Buffets do well and not day traders. This is counter-intuitive. But the reality is that the faster the things change the longer the planning horizons need to be. This long-term planning approach is hard to do. But this is the approach that works best for stock markets, corporate planning and, even more importantly for all of you, for career planning.

Let's dive a little deeper here. One planning tool that is used for dealing with rapid change is the concept of S-curves. In fact, any methodology that focuses on a succession of related inflexion points is useful in studying the kind of changes in the IT industry that we are talking about.

Let's compare Accenture with the group of Big Indian Four - TCS, Infosys, Wipro and Satyam. Both have about 90K consultants. Accenture generates \$12b

revenue for its consultants, while the Big Indian Four generate \$4b. As you can look through recent history, things have been changing here. First, the market cap inflexion point happened. Then the staffing inflexion point has happened. Someday, there will even be a revenue inflexion point with the BIF.

These inflexion points imply change. Nobody is standing still. Accenture is re-jigging its business model to have a significant India delivery footprint. Similarly, the Big Indian Four are going beyond an implementation play and become trusted advisors.

Not all companies make these transitions equally well which is why some of them fade away. For instance, among the US IT services service players, Accenture, IGS and HP services have handled the changes much better than, say, EDS, CSC and CGEY. Among the Big Indian Four, it's not yet clear to me who is handling the transition to becoming a trusted advisor better than their peers. You probably have a better sense of that than I do.

My basic point is this – that you, like industry players, must also think in terms of inflexion points. As you invest your career in one of the industry players it is important that you try and be on the correct side of the inflexion that the industry and the company are going through.

With that idea in mind let me talk a little bit about software products. Unlike services, software product companies are much earlier in the globalization/innovation blowback cycle. Currently most of the software product operations in India are really coding or test factories operating in a captive or outsourced job shop model. Some of these operations are large but very few of them are about product inventions and creating IP. In fact if you look around and make a list of what I call as innovation workshops, there will only be a list of 4-5 players who have critical mass today. If we apply a test and say that the India team has to be, say, 25% of world-wide R&D and has to have an innovation rate, as measured by per-capita patent, that is comparable to their US counterparts, I can only identify VERITAS in that category. If one dilutes the entry criteria, then TI, SAP and perhaps Oracle might also make it to the list.

But having a small list of innovation workshops is not a reason to be pessimistic. My view is that this list will grow. What is more, the current innovation workshops will morph into integrated product engineering centers. This is certainly the big inflexion point that VERITAS India is going through right now and I know that this is the perhaps the case for SAP India and TI India as well.

In banking there is a maxim that “you should know your customer” especially if you are giving a loan to them. In IT, there should be a maxim that you should know the inflexion point that your current or prospective employer is going through. Once you identify that inflexion point for a company, you will be able to evaluate if it is the right one from an industry perspective. You will also be able to

evaluate the company's chances of succeeding with the transformation inherent in that inflexion point.

For instance, if you are looking at a MNC player that wants to evolve its captive job shop operation to an innovation factory, look for evidence of a strong technical track. Also, talk to your alumni not so much about what is happening today but what they sense are the changes afoot today. In general, it is easier to assess a company for readiness for an inflexion point than it is to assess if the inflexion point is the right one from an industry perspective.

I have this controversial view that many of the India based software product startups are running too far ahead of the headlights. I believe that the industry has to first have a few successful MNC-owned integrated product engineering centers before that model can be replicated in a small startup. Right now, the domestic market is still small and does not have enough friendly sophisticated customers, except, perhaps, for telecom to sustain local-for-local startups. So many India startups end up as just job shop centers for their US counterparts. Notwithstanding all this, you may decide that working for an India based startup may still be the right thing to do for you. But you should go in knowing the risks.

I think its time to take a breather and recap what we have covered so far. Take a long-term perspective. Anchor yourself to a big idea – my recommendation is that innovation blowback is that big idea. Break up that larger trend into a number of related inflexion points. And then chose the right inflexion point – company combination as you join the industry.

### ***Pick the right role***

With that recap out of the way, let's move forward. I want to peel the onion and take this discussion to the next level of detail.

Each inflexion point adds new roles to the company and/or the industry. For example, in VERITAS India, as we move from an innovation workshop stage to the integrated product engineering center stage, we are adding brand new roles at the front-end and back-end. At the front-end we are adding specialist product management roles and specialist architecture roles. At the back-end we have release management and program management roles. As you can imagine, these new roles are critically important to our successful transformation at the current inflexion point.

Basically, you should decompose the inflexion point into its set of new roles. You should plan to go after these new roles in the next 2-5 years. Doing this analysis allows you to determine whether you will enjoy and excel at what you might be working on.

These new set of roles that we just talked about - PM, architecture, release/program management - all expand the set of opportunities for recent engineering graduates in a fundamental way. They now let you have a significant multiplier impact without asking you to become a people manager. So far, becoming a people manager was necessary to having any kind of multiplier impact on the organization. These new set of roles make that route optional and not mandatory. I think this development is quite exciting.

But I must point out that these new roles are also very challenging. Part of the reason is that there has been an absence of thoughtful career planning programs in our industry. This hurts us as an industry, as these new roles have no local role models and mentors don't exist. Over the years, I have learnt that it takes several years to produce world-class professionals. There is 2-3-2 model at work. It takes 2 years to get the some seed people into a new role, say, product management. Then it takes another 3 years to get critical mass. Finally, we begin to see world-class professionals in another two years. Recently, I did an informal survey with a friend, K. Subbu, of Oracle on how many product managers do we have in the software products area. We concluded there are probably less than 10 true PMs today but that will grow to 50 in next couple of years. Of these 50, probably, only one of two may be truly world-class by late 2006.

### ***Skills matter, but so does your personal code of conduct***

So there you have it. We have talked about how globalization and innovation blowback is the big trend of our times and how to be in the right place at the right time. But life is never a straight line. It never ever fully works out as we might have planned it.

It is at these times, that one realizes that software, like other branches of engineering, is a team sport. Soft-skills play a big role. But even more important is having a personal code of conduct. Say what you mean. Do what you say. Share good news and bad. Produce results and not reasons. Never let your team down. Be nice to others.

Being nice? Corporate life is about being tough, not nice – I can hear some of you saying under your breath. But the fact is that we are lucky to live in a time of abundance of opportunities in India. You are not limited by the person in the next cube. You are limited by your own ability to grow as a person. This is not a rat race. So remember to continuously invest in yourself and be nice to others.

I think we can all learn from mountaineering when thinking of career planning. First, you must have this big peak that you want to climb. Then you must have the good sense to translate that dream into the right goal for now – going after Everest as your first climb is plain silly. You also need the maturity to carefully plan and prepare. You also need a team – you can't do the trek alone. You will

also need the mental strength and stamina to overcome the inevitable problems you will encounter on the way. And, finally, when it's all done, the ascent would have been sweet not because you would have beaten anybody but because you would have conquered your own limitations.

## ***Conclusion***

I like to believe that I am practicing what I am preaching. After we sold Teltier, the conventional thing for me to do would have been do another startup in US – after all raising money from our existing investors was not an issue at all. But, as I reflected on what the next big thing would be I concluded that the action is going to be in India. That part was easy. The tough part was to deal with the conclusion that the action for the next some years on the software products side will be with MNCs.

After 10 months of being back in India and at VERITAS, I must tell you that I think I took the right decision. The team is simply fantastic and is bubbling with energy that inevitably comes from being at an inflexion point.

I don't know if you feel it. But I feel raw energy pulsating through our industry. I felt the same way in 1993-5 in Bangalore. And out to that period were born the Wipros and Infosys of today. There is connection happening between our strong tradition of learning and scholarship, our age-old scientific spirit and the knowledge industries today. These knowledge industries are giving us a way to move past the sharp philosophical divide between the mental and physical that we have in our DNA. This arbitrary separation of the physical and mental has prevented our best people from going beyond passive observations to practical experimentation and quantification.

There is another aspect of the social milieu that underpins innovation in India. You are the best example of that – merit that is blind to many other factors like religion, etc. While this is not perfect it has created Abdul Kalam, Premji and Sharukh Khan in public life. Abdul Kalam, our president also a respected engineer, Premji, the richest man in the country, the bill gates of India, and Sharukh Khan, the most popular bollywood actor are examples of merit rising to the surface. Take pride in that. We may not have Shanghai's glitzy roads and buildings but we have the social fabric that will take us forward.

With that let me open it up for questions.

Notes:

Note that I use the term broader term innovation and not invention. Innovation, unlike invention, applies not just to product design, but also to services and to the business processes required to deliver these to market.