

India an emerging player in bioinformatics

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The bioinformatics industry in the country has so far progressed like any normal new sector: initial rush, many mistakes, some closures, new births, difficult periods, and a few happy moments. The industry everybody imagined in the year 2000 was never born. But the Indian bioinformatics industry is now growing rapidly, gathering nourishment from the software and life sciences industries in the country. India is not a force in global bioinformatics in any sense, but several Indian companies are building healthy businesses that could sustain themselves without hand-holding, and one day help the country's drug discovery programs.

There are three distinct kinds of bioinformatics companies in India now. The large IT companies are now diversifying into bioinformatics, and some of them have large divisions devoted to life sciences. A second group consists of companies that began as start-ups a few years ago, and have now retained their original nature or have acquired other related businesses on the way. The third is captive bioinformatics groups within large pharmaceutical and biotechnology companies that use some bioinformatics for their research. To these we could add a fourth academic sector, the national laboratories and universities.

Almost all the large IT services companies in India have been looking at bioinformatics with interest from as early as the year 2001. Indian majors like Wipro, HCL, TCS and Infosys all have large life sciences divisions. The substantive engagements are structured around data warehousing and integration (particularly in regulated sectors like clinical and manufacturing) as well as applications support (with large on-site presence). Cognizant also has a strong play in informatics for marketing related activities after the acquisition of MarketRx. In terms of overall size, some estimates run close to \$1 billion in business that this sector generates for the IT services companies, although the actual bioinformatics content of what many of these companies do is difficult to measure. There is clearly gradual progress in the life sciences domain expertise in the services offering of the IT majors.

Some early bioinformatics companies like GVK Sciences, Jubilant Biosys, Ocimum Biosolutions, and Chembiotek have turned into broader contract research organizations and their bioinformatics business is a minor part of their strategy. Newer agile start-ups doing informatics driven discovery include Connexios and V-Life. Molecular Connections is one pure play content company that remains in the fray as does Strand Life Sciences which has a mixed products and consulting business model.

Return of Bioinformatics

Bioinformatics has had a long history and its early beginnings can be traced to the needs of structural biology and crystallography. The 1990s was an important decade for the computational sciences for two major reasons. The Internet was growing at an exponential speed and technologies of storage, retrieval and search were rapidly evolving to meet this challenge. In parallel, the human genome project was on and was leading the pack of biology transducers (the digitization of biology) that promised to affect almost every frontier of computer science.

The world has become hugely influenced by clever marketing and these two great innovations, Internet and Genomics, both had their share of hype leading to a bubble (unreal and poor investments) and then a burst (reality check). In India, the dotcom bubble burst did not have a large effect since our fortunes were tied more closely to outsourcing of software services from more traditional sectors of the Western economies. The genomics burst, very evident from 2002 through 2004, caused a general shutdown in the funding of bioinformatics companies, both in the West and in India. The role of the public institutions and educational institutions in keeping the bioinformatics flame burning became very critical.

The good news today in 2008 is that there is a general revival of fortunes in the genomics business. Genomics has now some proven value propositions unlike the hype at the turn of the millennium. Just like the Internet companies whose fortunes turned around when Google proved the Internet had value, the genomics business is looking for a pivot. Where will this pivot come from?

One possibility is that genomics will revive around the new biomarkers, diagnostics and patient profiling emerging from the efforts of high throughput experimental work on the genetics of disease carried out in the last 5-10 years. An example of commercial success in this mode is the company Genomic Health, based in Silicon Valley (USA), that has a diagnostic for prediction of risk associated with breast cancer recurrence which leads to guidelines for chemotherapy regimes. This diagnostic is in use today and insurance companies like Aetna have agreed to pay for the diagnostic. At last count this company was generating about \$100 million in revenue at a market capital valuation of \$550 million.

The buzz around "Next Generation Sequencing" which has brought the cost of human genome sequencing to the sub-million \$ mark and is raising the prospect of "consumer genomics" paid for by insurance to within reach in a couple of years. Google and Microsoft are electrifying the space with investments and actions that depict the seriousness of their intentions.

This bodes well for the "Return of Bioinformatics". What will be India's share of this cake?