

Government plans much-needed push for technology incubation centres

By [Hari Pulakkat](#), ET Bureau | 10 May, 2016, 05.28AM IST

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In recent years, 200 [technology](#) incubation centres around the country have been seeding about 500 companies every year. Such companies are generally slow to grow and mature, but the government is now planning to provide some much-needed help.

Even when studying in high school, Rahul Chatterjee wanted to be a problem-solver to society. As a Masters student of biotechnology at the Kalinga Institute of Industrial Technology in Bhubaneswar, Chatterjee watched a [business](#) incubator grow from close quarters.

He needed no prodding to use it as soon after his course. Chatterjee had found a process to make bread less unhealthy, by avoiding chemicals. He quickly got technical and business help through the incubator, raised Rs 2.5 crore from angel investors and government grants, and is about to launch his product in the city. "I was very lucky to have been close to a technology-business incubator," says Chatterjee.

Blooming Businesses Around the country, similar startups are thriving inside similar incubators in campuses, as founders use expertise from topnotch academicians and financial help from the government, along with offices and equipment necessary to start a high tech venture. About 500 companies are getting seeded every year in about 200 incubators around the country.

The department of science and technology itself manages 100 incubators, and had spent Rs 40 crore last year on them. This budget has risen this year to Rs 200 crore. With a rapid increase expected in the number of startups from academic institutions, technologists and business hope some of them to have big impact. "If we get enough number of companies from the incubators," says IIT Madras professor Ashok Jhunjunwala, "India will be different ten years from now."

The Department of Science and Technology (DST) and the Department of Biotechnology are now expanding this program, as they combine incubators with tinker labs, fabrication facilities and mentoring. DST, which has been funding the incubation centres, will now start funding companies directly. It is planning to start 25 new business incubators every year, and launch a new scheme for grassroots innovation by starting challenges in five lakh schools, with cash awards at each stage before getting 100 innovative students to Rashtrapathi Bhavan. The aim is to imbibe culture of innovation at school itself, and get the students ready for [entrepreneurship](#) when they reach university.

Jhunjunwala has been closely involved in incubation at the IIT Madras incubation centres, which has so far formally incubated 99 companies in three incubators in its research park. The largest of them is the National Chemical Laboratory in Pune, whose venture centre has worked with 166 companies since 2007. At IIT Bombay, the Society for Innovation and Entrepreneurship (SINE) has incubated 78 companies. KIIT has incubated 42 companies, and some of them raising money and expanding around [Bhubaneswar](#) and other cities. Similar incubation centres exist at IIT Kanpur, IIT Kharagpur, the University of Hyderabad, PSG College in [Coimbatore](#), and several other institutions. Academic incubators have attracted the attention of students, who are hoping to start companies after their graduation.

At IIT Madras, professors have noticed a surprising trend. Five years ago, about half of the best students — the top 15% students — used to go abroad for higher studies, and the other half went for high-paying [jobs](#) in big companies. Now 50% of the top students are either starting companies or joining startups. They think that technology incubation is one of the main reasons for this change. The idea of the government supporting startups had started in the 1970s, supposedly after a suggestion from the late scientist CK Nayudamma.



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But the idea took a turn a few years ago. In 2011, T Ramasami, the then secretary of the Department of Science and Technology (DST) reviewed the progress until then with about 64 companies that have benefitted from the exercise. He found that about `200 crore from the government had created 2,700 companies with a turnover of Rs 7,400 crore.

They had also created 28,000 jobs. This multiplier effect of incubation became the central argument for saying that incubation centres are eligible for Corporate Social Responsibility Investment, which in turn increased corporate investment in the incubation centres. Since then, government funding has been increasing for the centres, along with attractive schemes for providing grants in select areas. In biotechnology, the Biotech Ignition Grant (BIG) — Rs 50 lakh to prove a technology — has helped 170 companies to test their ideas with minimum risk.

The BIG winners are almost exclusively present in the incubators within academic incubators. The Department of Biotechnology insists on a few conditions before funding. For example, each company has to have a good technology management unit. The BIG scheme is attracting entrepreneurs to biotechnology, especially on medical technology. "The gestation period is short for medical devices and diagnostics," says Renu Swarup, advisor to the department of biotechnology. "The [regulation](#) is not complex." Over the years, some incubation centres have had several success stories. Laurus Labs, incubated in 2005 at IKP Knowledge Park in Hyderabad, is a Rs 1,000-crore company.

It also got an investment of `300 crore from the private equity firm Warburg Pincus. At SINE in IIT Bombay, one of the oldest of incubators in the country, 36 out of 78 companies have raised money from angel investors and venture capitalists. Sedemec Mechatronics has a turnover of Rs 100 crore, and Webaroo more than Rs 200 crore. At IIT Madras, several companies have moved out and have had an impact on the market. Last month, Athers Energy launched India's first electric scooter. Research-based startups find it hard to thrive in the absence of a good incubator.

"The more science there is in a startup," says V Premnath, director of NCL Venture Centre, "the richer the ecosystem needs to be." Startups need depth of expertise in many areas, and founders usually do not have all the technical knowledge. They need equipment hard to find except in a government lab, but the equipment in labs are not available easily to outsiders. Startups also need help with intellectual property strategy. "Startups in incubation centres are surrounded by knowledge, technology and infrastructure," says DST secretary Ashutosh Sharma.

Mutual Benefits Startups often benefit from their presence inside larger incubators. Inside these centres, faculty startups rub shoulders with student startups, as do experienced entrepreneurs with rookie entrepreneurs. They help each other. "We found that the presence of older companies is useful to the younger companies," says Taslimarif Syed, director of CCAMP. "We decided not to let the older ones move out quickly." At SINE in IIT Bombay, several kinds of companies coexist with mutual benefits. "There is an ecosystem of experience and youth, high-tech and low-tech startups," says Milind Arey, professor in charge of SINE. "There are also opportunities for mergers."

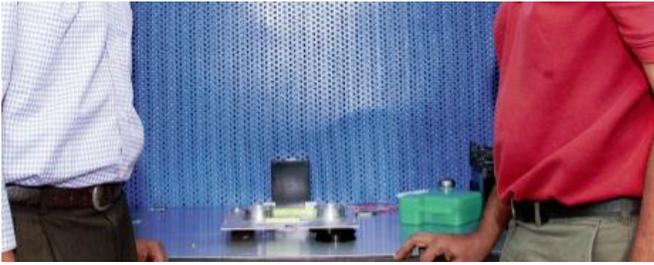
Incubators have been helped by the rapid expansion of India's [economy](#), with the concomitant rise of the middle class. Even a decade ago, students had to struggle against societal perceptions. According to professors in IIT, parents are now willing to let their children dabble in entrepreneurship and even provide them a helping hand. As the middle class fortunes improved, many parents no longer have to worry about long-term financial security.

Over the years, academicians and businessmen expect high-tech startups to tackle serious problems of society and industry. Some government officials have started the programme with a long-term goal in funding academic incubation centres. They want to create rich alumni of educational institutions. "We wanted to create an ability in alumni to [invest](#) in educational institutions," says former DST secretary Ramasami. That was how US universities grew. In a few decades, rich university alumni in India could help their alma mater grow in a similar way. Here is a bunch of startups seeded by incubators that are developing high-tech products specifically for the Indian market.



Increasing reach of laser tools *Unilumen Photonics Founders: Anil Prabhakar, Balaji Srinivasan*

In the last few decades, laser technology has become an indispensable tool in healthcare. Specifically, it is used to treat a variety of diseases in ophthalmology that would otherwise need surgery. But laser penetration is low in the Indian healthcare market. Many hospitals in small towns or villages do not have lasers.



The number of laser machines a hospital can buy is a limiting factor even in bigger towns or [cities](#), which in turn limits the number of patients they can treat. So many Indian patients undergo surgery even for diseases like cataract that can be treated quickly with laser. Unilumen Photonics from IIT Madras is trying to solve this problem by making reliable and inexpensive laser equipment. It has been founded by two professors from campus, with expertise in laser technology.

The company is beginning to make its entry with its first order from Arvind Eye Care, for which it has assembled its first piece of equipment. India has about 15,000 hospitals that need at least one more piece of laser equipment. Some would need as many as 10 pieces in their clinics. Medical colleges would need them too, as students are not well trained in using lasers for treatment.

Pushing gene tech into farms *Visargha agri sciences Founder: MLV Phanindra*

Gene transformation is useful in industry and the research lab, but it is also immensely useful in agriculture to create plants with specific traits like insect resistance, high nutrition content, resistance to drought and so on. Despite the continued opposition to transgenic crops, agricultural scientists around the world are convinced that transgenic crops are here to stay in agriculture. But the technology can be used more effectively if the process can be speeded up.



This is what Bhubaneswar-based Visargha Agri Sciences hope to do, and it hopes to provide services to Indian and overseas companies. Incubated at KIIT, Visargha uses a technique that is known but not yet used in plant biotechnology. The trick is to do away with an old technique that is common in the industry to figure out whether a cell has got the new gene or not. In this method scientists transfer a set of genes for antibiotic resistance along with those with the desired trait.

They can then test for the antibiotic-resistant genes in the plant, with the assumption that both sets of genes are transferred together. Scientists then delete the antibiotic resistant genes in a time-consuming process. Visargha's new technique avoids the antibiotic-resistant genes, and so shortens the time to develop a new trait.

'Energising' solar usage by cutting costs *igrenEnergi Co-Founders: Hemanshu Bhat, Jiten Apte*



Solar installations face large energy losses due to shadows falling on panels (buildings, poles, clouds), dust and bird droppings, high temperatures, degradation, wear and tear. The Optimizer, a product created by igrenEnergi helps increase the harvest of [solar energy](#) from solar installations by 10-20% or even more.

The company, being incubated at IIT Bombay's SINE, is creating disruptive products designed to reduce the cost and accelerate the adoption of solar. It all started when Sunit Tyagi and Hemanshu Bhatt, hostel mates at IITB, met up after 18 years on their return to India, at an alumni get-together in 2013. They discovered a mutual passion for the renewable energy space and decided to enter to turn entrepreneurs focusing on solar.

Another chance meeting with Jiten Apte who was Sunit's course mate led to them coming together at igrenEnergi to commercialise their US patented 'Energy Packetisation Technology'. Sujit Dey another IIT alumni and professor at University of California San Diego was roped in to lead the US end of the operations. The Optimizer is ideally suited for urban rooftops and enables usage of 50% or higher increase in usable area, otherwise 'dead' for solar. For a consumer this means lower cost per unit generated.

Making genes do the bidding *Viravecs labs Cofounder: Rohan Kamat*



Genetic engineering is a technology that is now widely used in many industries and research. Scientists pick a gene that has a certain code sequence, and then put this gene in a cell to make a protein to



perform a specific function. Many biologists do this frequently in their line of work, but the efficiency is not good.

Although biologists use the technique routinely, they are not sure where the gene has gone all the time. Research will speed up if biologists could put a gene at a specific place all the time, or at least most of the time. This is what Bengaluru-based Viravecs Labs is trying to do. It was founded by two scientists, Rohan Kamat and Srikanth Budnar.

Viravecs is developing a method to tag the genome at a specific place, so that biologists can put a gene of interest to this location with a high degree of confidence. When used with existing technology, Kamat thinks the efficiency can be increase from 2-3% to about 60%.

Viravecs is looking to crack the Indian market, consisting of research labs and drug discovery companies. The company is incubated within the Centre for Cellular and Molecular Platforms, and is in its early stages.

Zeroing in on tumour cells *Actorius innovations & research Co-founders: Muralidhara Padigar, Jayant Khandare, Aravindan Vasudevan*

If a tumour is not metastatic, cancer would be curable in most cases. It is the phenomenon of metastasis, where cancer cells leave the primary tumour and park themselves in other organs of the body that makes cancer impossible to treat. While we do not have a drug to treat metastasis, it is not easy to catch the phenomenon early either. Tests like Positron Emission Tomography (PET) can detect secondary tumours only when they reach a certain size.



What if we can catch metastasis in action, by picking up circulating cancer cells in the blood? This is what Pune-based Actorius Innovations and Research has set out to do. It has figured out a way to detect circulating tumour cells by drawing a small amount of blood. It isn't an easy job, as only one cell in a billion cells in the blood can be a tumour cell, if at all.

Actorius is incubated at NCL Venture Centre, and is doing clinical trials on its work. Only one company in the world, Johnson and Johnson, has a method to detect tumour cells in the blood. Their test is time-consuming and expensive. Actorius claims to have a faster and cheaper test.

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