

Stars of Pune's COVID19 response: Startup Success Stories from Venture Center

While the global pandemic has hit businesses hard, it has also created opportunity. Soma Chattopadhyay (Senior Manager, Incubation and Mentoring, Venture Center) and Pinky Raychaudhuri (Associate Manager – Incubation, Venture Center) reflect on how Pune-based Venture Center's startups not just survived these disruptive times but emerged as champions with their globally competitive technologies and innovative products.

Despite all the constraints posed by the pandemic over the last year, many startups actively adapted to the situation and emerging market opportunities, bringing new products and services to the market within tight timelines. In this article, we look back at the highlights and success stories of a very challenging time. Here are a few highlights:

Venture Center start-ups fight against COVID19

MyLab Discovery Solutions:

It was still early days of the pandemic in India, and the government was desperately looking to ramp up its testing capacity for the COVID19 virus, and reduce its reliance on imported diagnostic kits. It was at this crucial time, that MyLab Discovery Solutions provided the breakthrough that was needed.

MyLab's RT-PCR based Pathodetect was the First Indian company to receive CDSCO approval for their commercial COVID-19 PCR kit PathoDetect. Being manufactured domestically with a local supply chain helped to control costs. Each Mylab kit can test 100 samples and costs Rs 1,200, about a quarter of the cost that India was paying to import testing kits. The kit also reduced testing time by 65%, from 7 to 8 hours required for the imported kits to 2.5 hours.

To help ramp up production capacity, MyLab was fortunate to receive support from various sources, including pune-based Serum India CEO Adar Poonawalla and AP Globale Chairman Abhijit Pawar, BIRAC, Technology Development Board, Action Covid-19 Team (ACT) grants, and CSR support from companies such as Asian paints and TechnipFMC.

MyLab continued to lead India's fight against COVID, also becoming the first Indian company to receive ICMR approval for its Rapid Antigen Testing kit PathoCatch. The point-of-care test could be used with samples from throat or nasal swabs, with results in 20 minutes. Recently, Mylab was also the first Indian company to launch ICMR-approved rapid antigen self testing COVID-19 kits. These easy-to-use kits allow people to test in the safety of their homes, with results in 20 minutes.

During the devastating second wave across the country, testing laboratories across the country were struggling to meet the extraordinary surge in testing requirements, with many

testing staff getting infected with Covid-19. To support these high-volume testing needs, Mylab rolled out its fleet of ICMR-approved and NABL certified ultra-fast mobile testing labs powered by automated Compact XL machines. 'Compact XL' is India's first machine to automate the manual processes of molecular diagnostic tests such as RT-PCR tests for COVID-19. These machines can test 3 times faster than the conventional labs due to parallel processing and automated handling 24 x 7.

Blackfrog Technologies:

A Times of India article in 2016 reported that the Immunization Technical Support Unit (ITSU) of the Indian Health Ministry estimated that 25 percent of all vaccines were wasted each year, with a more recent report saying that the wastage of COVID19 vaccines was as high as 37 percent in some cases. The reason for such colossal wastage is poor, suboptimal, cold-chain management practices.

Back in 2015, to solve the problem of vaccine wastage, Blackfrog technologies, a DBT-BIRAC-Seed investee company of Venture Center, developed an innovative device — Emvolio. It is a Battery-powered, easy-to-use, leak-resistant medical grade portable refrigerator for last-mile delivery of vaccines. Designed in accordance with WHO PQS E003 specifications, it ensures strict maintenance of pre-set temperatures for over 12 hours under varied geographic conditions. The device also Enables geo-tagging and mapping of vaccine delivery routes that enables decision-makers and distributors plan a vaccination drive. Other than Venture Center, the company has also received support from Social Alpha & is the winner of the Qualcomm Design in India Challenge.

While a robust cold-chain technology is important at any time, its need was reinforced during the ongoing vaccination drive across the country, where more than two-thirds of the population live in rural areas with scant healthcare support.

Jeevtronics:

Cardiac arrest is common in critically ill patients with covid-19 and is associated with poor survival. Jeevtronics' defibrillator, named SanMitra 1000 HCT, is the world's first dual powered, hospital-grade defibrillator, and in the last few months, Jeevtronics' defibrillator has been used to save lives across across tier-II, tier-III towns in Maharashtra, Gujarat, Haryana, Tamil Nadu, Rajasthan, and even Africa.

The dual powered bi-phasic defibrillator is operable even on generator mode, making it functional in the absence of electricity supply. This makes it suitable for hospitals in rural areas as well. Jeevtronics' defibrillator is designed to international standards and comes with the promise of a very long life, at one-fourth to one-fifteenth the cost of defibrillators from branded companies. Jeevtronics' defibrillator has passed ambulance worthiness standard- AIS125, making it is India's **ONLY** AIS125 rated defibrillator.

Jeevtronics is also among the 53 odd Indian start-up companies to receive support under the Centre for Augmenting WAR with Covid-19 Health Crisis (CAWACH) programme, announced earlier this year by the Department of Science and Technology. The company has also been supported by Expanded Polymer Systems Pvt. Ltd.

Genrich Membranes

Many critical COVID19 patients have severely compromised lungs, and supplemental oxygen is a first essential step for the treatment of such patients. It is also very often the only treatment available in resource-limited settings where capacity for invasive ventilation is scarce. The oxygen enrichment unit (OEU) developed by Genrich Membranes, a DST-Seed investee company of Venture Center, uses proprietary hollow-fiber membrane technology to increase oxygen concentration from ambient air. The unit enriches atmospheric air at certain pressure (4-5 bar) using an oil-free compressor to provide medical-grade oxygen enriched air (23-35%). The compressed, filtered air from the compressor is fed to the membrane cartridge, which selectively permeates oxygen over nitrogen offering oxygen-enriched air at ambient pressure. The membrane cartridge restricts the passage of viruses, bacteria, and particulate matter.

The company has also received support from Bajaj Auto. Ltd., Indus Biotech Pvt. Ltd. & Cipla Foundation under the CSR program of Venture Center.

OmniBrx Biotechnologies

Leading vaccine manufacturers such as Bharat Biotech have partnered with Omnibrx to ramp up COVAXIN production. Their CellBRx bioreactor systems are designed for large scale and cost effective adherent cell culture based vaccine production. The Dynamic Bed Reactor (DBR) technology incorporated within CellBRx bioreactors offers obvious advantages for vaccine production when compared to traditional technologies, including faster and easier scalability. The company has been supported under BIRAC-National Biopharma Mission for development and commercialisation of their novel single-use bioreactor technology platform for production of Biologics at large scale.

Padcare Labs: Padcare, a BIRAC SEED investee company of Venture Center has modified their UV-based sanitization system for sanitary napkins to develop two UV Sanitization Systems - UVSAN and UVHandy that can reduce the risk of spreading infections. UVSAN is an UVGI disinfection system for area and surface disinfection, and is best suited for meeting rooms, hospital wards, ambulance, and offices. UVHandy is a handheld UV disinfection portable device available in two models - with and without battery. It is best suited for instant decontamination of groceries, furniture, etc. Padcare has also developed a non-alcoholic, non-toxic multipurpose disinfectant spray that provides 99.99% disinfection. It is certified and tested by government accredited NABL Lab as per WHO standards.

The company has been supported by Cummins Foundation under the CSR program of Venture Center to develop a face mask sterilization system.

Other startup efforts against COVID19

In addition to these efforts, Venture Center has also been proud to support the efforts of many other startups working on other COVID19 technologies. These include an open-source, easy-to-assemble non-contact infrared thermometer to be used for thermal screening at public spaces developed by BMek, development of COVID19 vaccines & immunodiagnostic ELISA kits by Seagull Biosolutions, diagnostic kits by Module Innovations,

FastSense Diagnostics, Vidcare Innovations, Diagnorite and others, surface disinfection kits by Snthera Biomedicals, patented NanoAgCide technology based alcohol-free hand sanitizer by WeInnovate Biosolutions, better and more breathable PPE suits, drone technology “FlytNow” for monitoring of COVID19 lockdown deployed by FlytBase, a non contact (foot operated) anosmia (smell) and fever screening device by Kozhnosys, low-cost, reliable and effective ventilatory support by Gyrodrive, endotracheal tube obstruction monitoring device by Atmen Technovention, and COVID-19 Symptom and Vital Signs tracker app by Adiuvo Diagnostics. Many of these startups have been supported under various Govt. programs implemented by Venture Center like prototyping grant of DST’s NIDHI-Prayas & seed fund support under NIDHI-SSS.

Various nationwide efforts to tackle COVID19

Task Force on Repurposing Drugs for COVID-19 (TFORD-COVID-19)

The Principal Scientific Advisor to the GoI, Dr K VijayRaghavan, constituted a S&T Core Group on COVID-19. Under the aegis of the S&T Core Group on COVID-19, an interdisciplinary task force was constituted focused on Repurposing of Drugs for COVID-19. The task force has been providing key decision makers with high quality information based on systematic analysis of heat maps for 31 molecules and 9 medicinal herbs. The task force has developed heat maps for drug candidate readiness and potential, patent position, clinical trials reported, and more. The group is also studying the path to market for these molecules, anticipating barriers and suggesting alternate routes to get these drugs to market sooner.

CAWACH Partner and Satellite Center

The Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH) is an initiative NSTEDB, Department of Science and Technology (DST), Government of India. Under this initiative, a nation-wide call was announced requesting proposals from startups working on developing solutions for COVID-19 for funding assistance up to Rs 2 crore per start-up. As a partner to this program and a satellite center, Venture Center is managing and tracking the progress of the following start-ups developing, manufacturing and deploying indigenous solutions to manage the pandemic: Mobile Diagnostics lab by Shanmukha, Bendable Technology Solutions, Powered Purifying PiRhoAlpha Labs, Alcohol-free hand sanitizer by WeInnovate Biosolutions, , Hand-cranked Defibrillator by Jeevtronics, queue management system by Vrienden Tech, PPEs and thermal gun by Virtuoso Optoelectronics.

Special Funding Call for COVID-19 startups

Under the aegis of DST-NSTEDB and NITI Aayog, Venture Center announced a special funding call for proposals from startups and entrepreneurs with technology relevant to COVID- 19 and that can be deployed within the next few months. This financial support was to help expedite validation, testing and its commercial deployment. The start-ups supported under this initiative were BMek, Module Innovations, and Seagull Biosolutions.

COVID-19 Resource Center for Regulations and Test Standards

COVID-19 Resource Center for Regulations and Test Standards for products needed urgently for the national response to the COVID-19 crisis. This repository contains a list of standards for ventilators, clinical thermometers, medical diagnostics, PPEs, and lists of NABL accredited testing labs, and updated contact information of important offices or associates of notified bodies in India.

This is an initiative of Regulatory Information and Facilitation Center at Venture Center (supported by BIRAC under the BIRAC Regional Bioinnovation Center)

TechEx – COVID19 Tech Transfer Help Desk

TechEx.In is the technology transfer hub operated by Venture Center, and is supported by the National Biopharma Mission. During the COVID pandemic, it set up a COVID-19 Tech Transfer Help Desk that facilitated (on a pro bono basis) technology transfer between technology providers and technology seekers that can be deployed rapidly by manufacturers to assist in the National Campaign against COVID-19. The TechEx team helped license two technologies using a standard license under Creative Commons. The two technologies are: BMeK's Digital Non Contact IR Thermometer and the Pune Face Shield.

DIY and Open Source Projects

The Venture Center's Protoshop team made available the following open source projects relevant for COVID-19 response:

- IR Thermometer
- Face Shields
- Alcohol based hand-rubs
- Open source Ventilators
- Reusable cotton masks
- Decontamination and Reuse of N95 Face Mask

Renewed sense of community: giving back to our beloved city

One of the most positive and unexpected outcomes of the pandemic is the widespread outpourings of charity, togetherness and empathy: ordinary people coming together in small self-organized groups and volunteering to offer support to the most vulnerable. Two such groups had their roots within the Venture Center community: the **Pune Face Shield Action Group** and the **Pune masks action group**. Both of these groups constituted various staff, employees, and entrepreneurs at Venture Center, pulling together in the interests of the wider community. Despite a complete lockdown, these teams showed immense resilience and determination to make available high-quality N95 face masks and face shields to frontline workers who were at the highest risk of getting infected.

We are very happy to share that with generous support from over 30 organizational and 130+ individual donors, Venture Center donated over 1 lakh face shields to healthcare workers and police force across the country. With generous support from Cognizant

Foundation, Venture Center has donated over 1 lakh MH12 N95 face masks to frontline warriors across various hospitals and police stations.

Moving on from the COVID19 pandemic

Globally, the COVID19 situation is showing signs of stabilizing, and we're all making a slow move towards recovery. Much of the COVID19 response has been made possible by amazing technology, which has been generously supported by various government agencies, such as BIRAC, Department of Science and Technology, Technology Development Board, and the National Biopharma Mission, and corporates such as Persistent Systems, Cognizant Foundation, Asian Paints, Cipla Foundation, Cummins, Kirloskar and more.

The pandemic has highlighted the importance of businesses to be agile and respond rapidly and accurately to an emerging situation, and the necessity of fostering an ecosystem that can withstand shocks and bring together organizations to join forces and collaborate to find a solution to a common problem. Venture Center is proud to be part of a robust ecosystem that helps entrepreneurs overcome new challenges and grow during these unprecedented times.

About Venture Center: Entrepreneurship Development Center (trademarked and famously known as Venture Center) hosted by CSIR-National Chemical Laboratory (NCL) in Pune is India's leading inventive enterprises and science business incubator. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the "Pune region" in India. The Venture Center aims to empower and enable scientists and engineers in pursuing technology, innovation and entrepreneurship objectives.

It is home to more than 70+ resident start-ups at any given time and in the last 14 years since inception in 2007 Venture Center has supported >600 knowledge intensive enterprises, innovators and entrepreneurs through its various incubation programs.

Venture Center was founded with support from NSTEDB, DST, Government of India. Venture Center is NIDHI Center of Excellence, national implementation partner for the NIDHI-Entrepreneur in Residence Program and NIDHI Prayas Center. Venture Center also hosts a BIRAC BioNest (Bioincubator), BIRAC Regional Bioinnovation Centre, Center for BioPharma Analysis and Technology Transfer Hub. Venture Center is a BIRAC-Biotechnology Ignition Grant partner and home to NIDHI Seed Support System of DST-NSTEDB and BIRAC Seed and LEAP fund.

Venture Center is the winner of National Award for Technology Business Incubator 2015, Asian Association for business Incubation (AABI) Incubator of the year 2018 & National Entrepreneurship Award (for Eco-system Builder) 2019.

More details: <http://venturecenter.co.in/>