

By Niranjana Mudholkar

READY FOR THE NEXT LEVEL

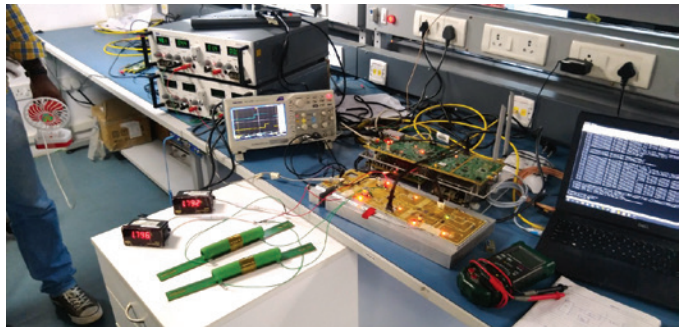
Saankhya Labs is betting big on the growing indigenous defence market says **Parag Naik**, its Co-Founder and CEO.

Saankhya Labs was established in 2006. How's been the journey since then?

Saankhya Labs was founded in 2006 as a semiconductor company for communication systems. We spent our early years developing SDR architecture and launched the first set of chipsets using this SL1000 and SL9000 architecture in 2012.

Using these chipsets, in the later years, we developed several products including Flexible receivers and Transmitter modules, UHF Radios, Satcom solutions, etc.

The year 2015 was a momentous year. Indian Space Research Organization (ISRO) and Saankhya Labs signed an MoU for MSS and under the partnership, a host of ground communication systems were developed. The solutions include SAMRAT, the world's first S-Band Satphone, Critical National Asset Tracking solutions, Vessel Tracking terminals for coastal security, and portable broadcast receivers. In December 2018, Saankhya Labs launched the Next-Generation SDR Chipsets - SL-3000 and SL-4000. These fully programmable software-defined chipsets are used in wide variety of applications, including 5G broadcasting solutions. Our long-range wireless communication solutions include Fixed Wireless Access radios which are used in South Korea, South Africa, Rwanda, Zimbabwe, USA and the UK.



Currently, Saankhya is focused on developing a wide variety of 5G solutions that will redefine the wireless communication landscape of the future.

During our 14 year journey, we have had the support of several angel and strategic investors.

What kind of defence communication products does your company design and manufacture for the Indian armed forces?

The Defence Procurement Procedure DPP-2016 for the first time introduced a new category -Buy Indigenously Designed, Developed and Manufactured (IDDM) products. Being the most favored category, Saankhya Labs has focused its synergies to deliver more secure, reliable communications solutions to defence and paramilitary forces. Saankhya Labs is the only Indian company to offer system solutions powered by its own award-winning, indigenously designed Software Defined Radio (SDR) chipsets. With all the intellectual property rights created and owned in India, Saankhya's solutions are one of the most secure communication systems with maximum indigenous content.

Saankhya Labs offers a variety of terrestrial and Satcom solutions for narrowband and wideband applications. A non-exhaustive summary of Saankhya's product portfolio is provided below:

Manpack SDR: Saankhya Labs has jointly bid for army's manpack SDR RFID in partnership with Cyient Limited. The tactical radio is India's first, 100 percent indigenously designed, developed, and manufactured software defined radio (SDR) for secure military communication. The manpack SDR supports military



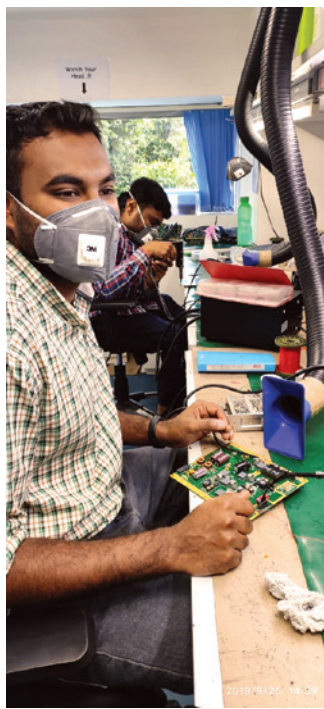
The Covid-19 period has been like a 'Nuclear Winter' for many startups. We also thought that this will be a period of long hibernation. Fortunately, that has not been the case for the wireless communication sector.

In fact, during this period, we have closed far more deals than in the corresponding period last year.

communication over VHF/UHF frequency band in MANET environment. The SDR is powered by a Saankhya's fully-programmable SDR-baseband chipsets. A suite of custom waveforms developed in-house from the ground-up, ensures the highest level of ComSec and TranSec security

Navsampark Radio Communication Solution: Navsampark is an indigenously developed end-to-end wireless communication solution that consists of Shaurya Base Station Radio and Jayant CPE Radio. The system delivers reliable, scalable, secure and long-range wireless connectivity and coverage in tactical battlefield areas, deserts, rural and semi-urban environments. The On-The-Halt (OTH) connectivity is provided over a UHF band.

The radios support both Line-of-Sight (LoS) and Non-Line-of-Sight (NLoS) operations. Navsampark can work in both Point to Point (P2P)



eraging the phone's display, keypad, mic/speaker and GPS. Compact and lightweight, SAMRAT is a low power consumption device. It provides a highly secure mode of communication and offers excellent redundancy in no mobile network coverage areas.

SAMRAT was developed as part of our Strategic MSS Technology partnership with ISRO.

Navdoot Vessel Tracking System: Navdoot is a two-way Mobile Satellite Service Terminal that enables real-time tracking and monitoring of Deep-Sea Fishing vessels via Satellite transponders fitted on sub 20-meter mechanised (trawler) boats. Navdoot strengthens coastal security by enabling tracking, monitoring and better co-ordination amongst all the maritime security agencies. The network offers an accurate assessment of traffic and assists the multi-layer

security apparatus to identify and distinguish unregistered boats, a key requirement in the assessment of 'friend or foe' in deep sea. For the fishermen, Navdoot is a life-saving equipment thanks to its SOS feature. During exigencies, the fishermen can seek help via SoS aiding the search and rescue teams to reach the exact location. Apart from routine ship-to-shore and shore-to-ship communication, it provides weather alerts and preferred fishing zone information to fishermen.

Sat IoT and Asset Tracking Solution: Saankhya Labs has designed and developed a portable, low power Satcom terminal that can be used for a variety of applications including Satellite-based IoT network and asset tracking. These are small form factor terminals that can be installed in military vehicles like tanks, APCs etc. They are capable of providing real-time location of defence assets. They can also use satellite links to establish a two-way, secure communication between the assets and the central command.

Lehar Portable Broadcast Receiver: Lehar is a portable, USB powered, handheld S-Band, DVB-S broadcast receiver. It can be connected to any host device such as a PC/Laptop or mobile device. It supports audio, video and data reception. Lehar has an inbuilt patch antenna that receives ISRO's GSAT -broadcast signal over S-band. The demodulator based on Saankhya's patented Software Defined Radio (SDR) chipset demodulates the signal and an application installed on the host system decodes the transmitted content and displays it on the device.



The 'Make in India' initiative of the Government of India has given a boost to private players in the defence space. The Government of India aims to make India a leading defence export country. Saankhya Labs will be happy to export our communication systems to friendly countries.

and Point to Multi-Point (P2MP) topologies. They can communicate across a range of up to 20 KMs and provide high-speed data connectivity up to 24 Mbps

Wireless Surveillance for perimeter security: Navsampark Radios can be used for wireless surveillance and perimeter security when used in a Point-to-Multipoint (P2MP) configuration. Infrared detectors, motion sensors and cameras are installed in the perimeter areas. Data from these sensors is transmitted to a central command via the Navsampark solution, over a secure UHF band.

Samrat S-Band Satphones: SAMRAT is a two-way S-Band Satellite Mobile Radio Terminal (Satphone), supporting voice, data, short messaging and geolocation services. It is a Satsleeve that is designed to fit as an add-on to any 5.5" Android phone, transforming it into a Satphone. It operates via a user-friendly app, lev-

How are you contributing to 'Make in India' and 'Atmanirbhar Bharat'?

Saankhya Labs' contribution towards India's indigenisation and self-reliance in defence manufacturing started well before the Make in India initiative took shape. Saankhya Labs is recognised for its pioneering work in wireless communication systems based on its SDR Chipsets and has been awarded more than 65 patents, along with several international and national awards. As India's first vertically integrated fabless semiconductor and systems company, Saankhya Labs offers solutions to the telecom, broadcast, defence and satcom industries.

Saankhya Labs has created a niche for itself by building an enterprise that is focused on innovation and transformative wireless communication solutions. Saankhya's indigenously designed, developed and manufactured (IDDM) systems offer the unique added advantage of full Intellectual Property Rights (IPR) residing in India.

We are betting big on the growing indigenous

//

We are also very active in standardisation efforts through active participation in 3GPP (through TSDSI, India's telecom standards organisation). We try to offer some of our IPR to benefit of the world at large through these standardisation activities.

defence market. The 'Make in India' initiative of the Government of India has given a boost to private players in the defence space. Saankhya Labs has been making indigenous products and solutions for the defence forces for a long time, even before the "Make in India" initiative. We are committed to delivering indigenously designed, developed and manufactured highly secure, reliable communication systems to the defence forces.



Are you also collaborating with other OEMs?

Saankhya Labs has a tie-up with Cyient Ltd. We have jointly developed a Man-pack SDR for the armed forces.

What kind of manufacturing facilities and capacities does



Saankhya Labs have?

Saankhya Labs is a wireless equipment OEM (Original Equipment Manufacturer). We design and develop the complete wireless communication equipment. We outsource the actual manufacturing activity to EMS (Electronic Manufacturing Services) partners, while our

in-house manufacturing team guides and manages the overall manufacturing process with the EMS. This in-house team manages various activities related to manufacturing of equipment, including procurement of components, special manufacturing considerations for sophisticated communication systems, design of manufacture test setup and process and complete quality assurance of the manufactured product. The team also takes care of special certifications for regulatory requirements such as TEC, FCC (Federal Communications Commission of USA). In fact, Saankhya is the only Indian OEM that has manufactured FCC certified outdoor telecom equipment.

Tell us about your R&D activities.

Our core strength lies in our R&D capabilities. Most of our products are in deep technology areas such as semiconductors and wireless communication systems, which require many years of R&D experience. We are pioneers and innovators and have a strong IP ownership. Our pioneering work includes the production of the world's first Software Defined Radio (SDR) Chip, Cognitive Radio Access Network (RAN), which is a technology that is beyond the current 5G network and 5G broadcast technology which is an innovation that brings Broadcast and Broadband networks together.

We are also very active in standardisation efforts through active participation in 3GPP (through TSDSI, India's telecom standards organisation). We try to offer some of our IPR to benefit of the world at large through these standardisation activities.

Do you also serve the exports market? If yes, please tell us briefly about the same in terms of the geographical footprint, industries served and share in your overall revenues in terms of percentage.

Saankhya Labs has customers all across the globe. Our UHF based Fixed Wireless Access solutions are undergoing customer trials in countries across the world including South Korea, New Zealand, South Africa, Zimbabwe, UK and USA. Leading broadcasters in US are using our 5G Broadcast Solutions. We are currently in talks with leading telecom operators in US to export our 5G NR Solution.

The Government of India aims to make India a leading defence export country. Saankhya Labs will be happy to export our communication systems to friendly countries.

How's been the business in the last one year?

We have seen good growth. In the last one year, we have grown more than 50 percent of our revenue and accordingly, we have increased our employee count as well. In the last one year, we have seen some significant business wins with some large customers such as the railways in India, a large telecom operator in the US and so on, that could pave the way for continued growth. We expect to continue this momentum in the future as well.

How has the Covid-19 outbreak impacted your business and what have been the key learnings from the same?

Even before the lockdown began, we had redesigned our workplace at short notice and asked our staff to WFH. The majority of our staff have been able to effectively work from home during the lockdown using lap-

//

The conditions are right; both in terms of changing technology trends in Open RAN based 5G networks as well as changing geopolitical scenarios around the globe. We will capitalise on these.

tops, VPN connections and video conferencing facilities like Google Meet. However, being a semiconductor and electronics company, access to hardware and labs is essential for some of our employees to function effectively. We are now redesigning the support infrastructure to address this subset of our employees. We are continuously improving our process to enable smooth and effective WFH.

The Covid-19 period has been like a 'Nuclear Winter' for many startups. We also thought that this will be a period of long hibernation. Fortunately, that has not been the case for the wireless communication sector. In fact, during this period, we have closed far more deals than in the corresponding period last year.

This is mainly because of a groundswell towards transition to a digital-led economy. The Govt's initiatives like Digital India, JAM (Jandhan, Aadhar, Mobile) along with social distancing and stay at home norms due to Covid 19 have led to a larger growth in technologies like video conferencing, Online Education, OTT platforms etc. This has helped us to have a



softer landing in these times.

What are your expectations from the government for your industry?

The wireless communication industry is extremely critical for India's growth. The Covid-19 pandemic and the recent clash with China have highlighted the fact that India has to be "Atmanirbhar" in this field.

With global supply chains disrupted, and fear of data being stolen by foreign entities there is no doubt that these risks can be mitigated with a homegrown ecosystem.

Recently the government has announced many measures to boost the Electronics Manufacturing industry and MSMEs. This is a welcome move by the Government of India, and will definitely provide a much-needed booster shot to the sector.

The government can do more build the indigenous ecosystem by focusing on supporting R&D and innovation, in addition to manufacturing. For companies like ours, this will go a long way in aiding us, as we continue to develop innovative and technology-driven solutions locally which can be exported globally. This will also be in line with the Government's Atmanirbhar Bharat plan.

Where do you see Saankhya Labs in the next two years?

We see ourselves as a major Indian OEM for the global telecom market in the next two years. The conditions are right; both in terms of changing technology trends in Open RAN based 5G networks as well as changing geopolitical scenarios around the globe. We will capitalise on these. We are quite focused on the next leg of our journey as a mainstream Telecom OEM and see the next two years as critical.

Until recently, Saankhya was primarily focused on operating in a few niche wireless communication technologies. Going forward, we will focus on mainstream 3GPP based telecom products for 5G and beyond. We have already embarked on the journey to develop products for 5G, and the next two years will see increased revenues in that area. We will focus mainly on 5G and Satcom and we are confident of growth. 