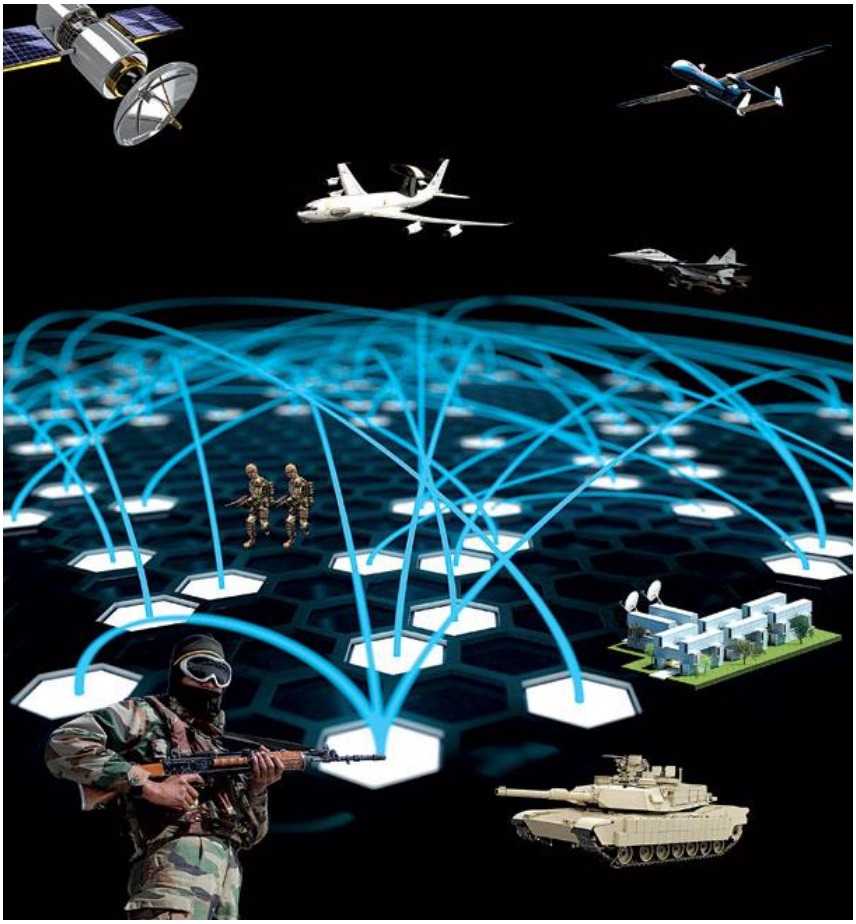
Indigenous Wireless Communication Solutions to Augment National Security



India sits in the midst of geo-strategic crossroads. The recent clash between Indian and Chinese forces in Ladakh has highlighted the perilous security situation in India's neighborhood. Traditionally, India used to be a net importer of defence and strategic communication equipment.

In 2014, the Government of India realized that the country must be self-sufficient manufacturer of defence equipment and the Hon. PM Shri Narendra Modi launched "Make in India" and "Atmanirbhar Bharat", both programs to encourage indigenous manufacturing of defence equipment and communication systems.

Saankhya's tryst with Atmanirbhar Bharat

Saankhya Labs' journey and contribution towards India's indigenization and self-reliance in defence manufacturing started well before the Make in India initiative took shape. Founded in 2007, Saankhya Labs is recognized for its pioneering work in Wireless Communication 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, Saankhys Labs offers solutions to the Telecom, Broadcast, Defence and Satcom industries.

Saankhya Labs products and solutions are powered by the company's award winning, patented SDR chipsets. These are Ultra Low Power, Small Footprint Chipsets with advanced computational capabilities that can be used in wide spectrum of applications. Saankhya's first SDR chipset "Pruthvi" launched in 2011 supports over 20 waveforms with a simple change in software. In 2018, the next generation of chipsets based on "Pruthvi3" architecture were launched. Powered by Pruthvi family of SDR chipsets, Saankhya has developed a diversified product portfolio in terrestrial and satellite communications. Saankhya's solutions are designed to address a variety of requirements, be it of strategic importance like defence communications, satellite communications, asset tracking, maritime security, disaster management or of socio-economic and cultural importance like rural broadband, automobile entertainment, broadband-broadcast convergence, IoT etc.

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.

Defence-centric Vision

Some of the products and solutions developed by Saankhya Labs for defence and paramilitary forces include Samrat, a satsleeve which can augment an android phone to a satphone; Navsampark, a UHF based long range radio communication system and Navdoot, a satellite-based vessel tracking system. Saankhys Labs also works closely with various defence OEMs to build battlefield ready radios for Indian defence forces using our SDR technology platform. The company is also developing next-gen communication solutions for defence purposes, including 5G NR and 6G RAN.

Samrat S-Band Sat phones

A strategic MSS Technology partner of ISRO, Saankhya Labs has developed cutting edge satellite communication systems based on in-house SDR Chipsets. SAMRAT is one such example of a next-gen communication systems.

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, converting it to a Satphone. It operates via a user-friendly app, leveraging 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.

Navsampark UHF IP Radios for perimeter security and long-range communication

Navsampark is a UHF based communication system specially developed for defence and paramilitary forces. It is designed to operate in remote terrain including forests, deserts or mountainous regions that do not have adequate mobile network coverage. It consists of Shaurya Base Station radio and Jayant CPE radio. These are used to provide long-range non-line-of-sight communication. The range of these systems is up to 12 KM. Navsampark can be used both as a vehicle mounted mobile communication system or a fixed rapidly deployable tactical communication system.

The system can also be used for border and perimeter security. The CPE radios are connected to infrared sensors and cameras for perimeter security. They can be used to transmit data from a remote location to a central command location. They can also be used to control cameras and sensors from the central location.

Navdoot satellite-based vessel tracking systems

NAVDOOT is a two-way Mobile Satellite Service terminal designed to operate as a satellite-based vessel tracking system for augmenting coastal security. The IP67 compliant terminal provides excellent water and dust protection in harsh marine environment. It comprises an S-Band Modem, GPS/GLONASS Receiver (upgradable to IRNSS-NAVIC), Bluetooth Module, Antenna and Battery. An Android APK is used for control, configuration and interaction with the device.

To allow coast guards to communicate with fishermen when they are at deep sea, NAVDOOT is being installed in all fishing vessels. This allows coast guards to track and monitor fishing vessels in Indian coastal waters. It will also monitor boats near the international maritime boundary. Once it is installed in all fishing vessels, it will offer an accurate assessment of traffic and assist the multi-layer security apparatus to identify and distinguish un-registered boats, a key requirement in assessment of ‘friend or foe’ at deep sea.

Next-gen communication solutions of 5G NR and 6G RAN

Development of Next-Gen communication systems including 5G NR based on ORAN and 6G AI-based Cognitive Radio Access Network which automatically and dynamically adjusts the radio environment is underway.

Self-reliance in technology is the hall mark of a great nation. Since inception, SaankhyaLabs has been in pursuit of excellence in indigenous technology. The company is are well equipped to compete with the best in the business. However, to unleash the full potential, Saankhya Labs requires proactive support from the government as this is key to success, especially in defence and strategic communication. Nurturing and supporting Indian companies such as Saankhya

Labs will not only help India attain its objectives of self-reliance in defence communication, but also galvanize the Indian ecosystem to save on imports and earn precious foreign exchange through exports, unequivocally establishing true accomplishment of Make in India.