



Saankhya Labs

Premier Semiconductor & Wireless solutions company

India Space Congress 2023

Vivek Kimbahune

Executive VP – Sales & Business Development



Saankhya Labs

- ★ The Economic Times – Excellence in Innovation award 2023
- ★ ATSC 3.0 – Richer Medal for exemplary contribution to ATSC 3.0 2023
- ★ Financial Times – High growth companies in APAC region 2020
- ★ SDR - Award-winning, patented SDR chipsets
- ★ ATSC 3.0 - World's 1st & only 4G-ATSC 3.0 Smartphone

5G
NR / Broadcast
Satcom
ISRO's trusted partner

ATSC 3.0
Solution provider

Started in
2007

**India's premier
Semiconductor &
Wireless solutions
company**

70+
International patents

1000+
Man Years Exp
'Antenna to Bits'

~200
Employees



Saankhya's Satcom heritage



Indigenous Satcom Solutions in the service of the Nation

Coastal Security

Nation's First

Vessel Tracking Network

for Coastal Security & Fisherman Safety



NAVDOOT

Strategic & Defence

World's First

S-Band Satellite phone

as a companion device for Android Smartphone



SAMRAT

Indian Railways

Industry's First

MSS Network

for Real Time Train Tracking & Emergency messaging



NAVRAIL

Powered by award-winning SDR chipsets

SAMRAT – Satphone as a companion device

- ❖ S-Band terminal as an Add-on accessory for COTS Android phone
- ❖ Capability to support voice, data, short messaging, and location reporting services
- ❖ Satellite Hotspot supports Wi-Fi/BT/USB interface
- ❖ Compact device with integrated battery and antenna. Can be used for emergency communication, redundancies, and secure communication
- ❖ Secure Android app for authentication, voice, data, and short messaging
- ❖ Multiple Pre-authorized Android phones can access the same hotspot (one-at-a-time)



SAMRAT

(Acronym for Satellite Mobile Radio Terminal)

Saankhya Labs is the first and only company offering a S-Band Satellite phone as an add-on accessory for COTS Android phone. The system was built ground-up (including the antenna) powered by Saankhya's SDR chipsets, interoperable with ISRO's hub-side baseband infrastructure.

D2M – Broadcast enabled Smartphone

- ❖ World's first & only ATSC 3.0 enabled Smartphone reference design
- ❖ Powered by Saankhya's award-winning SDR Chipset
 - ✓ Low power, fully programmable
 - ✓ RF+Baseband integrated chipset
- ❖ Free-to-Air Live DTV reception without internet
- ❖ Boon for Edutainment, Infotainment & Video off load
- ❖ True convergence of Broadband + Broadcast



Mark One

(ATSC 3.0 4G Smartphone reference design done in partnership with One Media)

Two way MSS Network for Vessel Tracking & Fishermen Safety



Tracking & Monitoring | Two-way Messaging | SoS | Weather alerts & PFZ info | Productivity

3000+ boats

ISRO's Satellite

Navigation Satellites (NavIC / GPS)



ISRO's
Satellite Earth Station

RF, Baseband, NMS,
Gateway etc

DoF
Command & Control Centre at
HQ & Monitoring stations at
regional offices of DoF

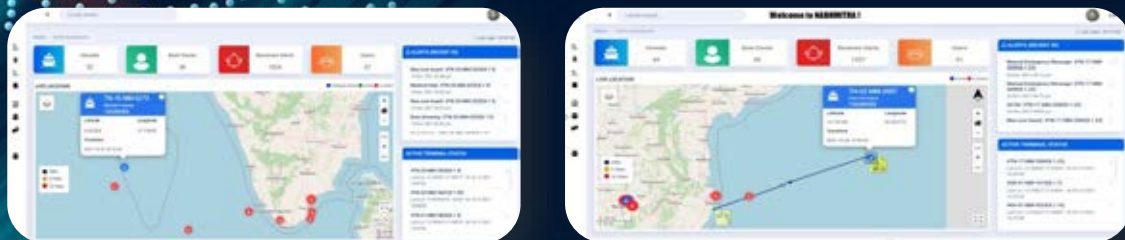
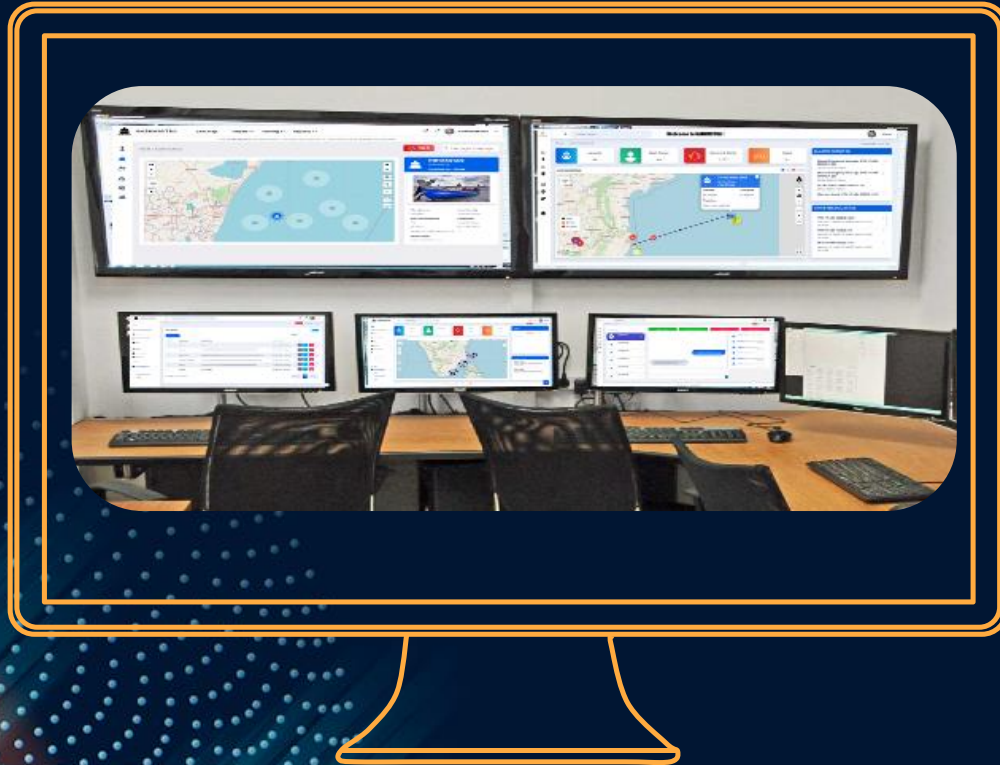
Hub-User NMS hosted on
IT Infra at State Data Centre

Boat Owner

Multi-lingual
Boat Owner App
for Android
Smartphone



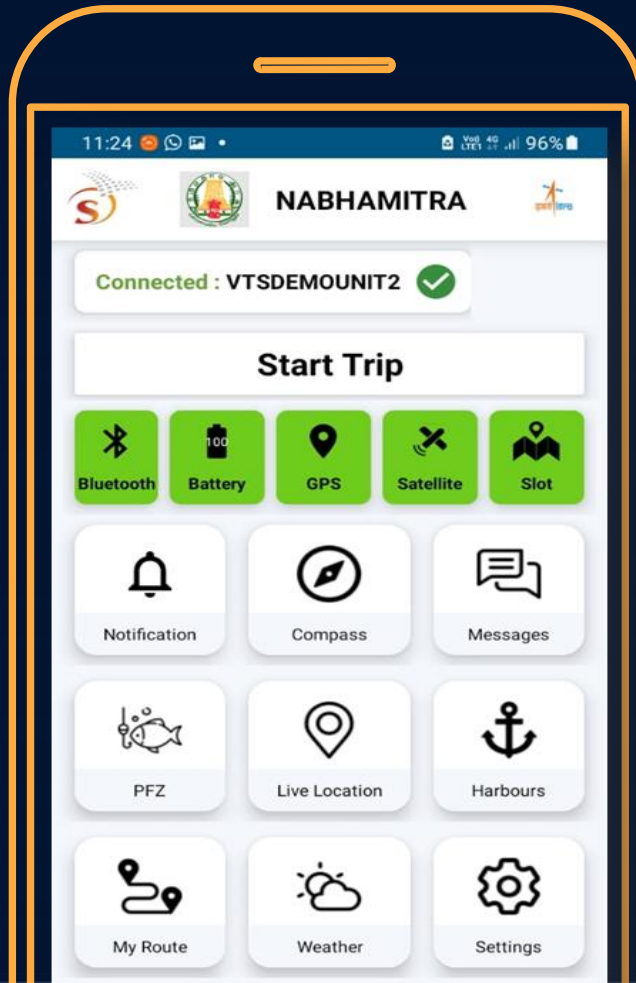
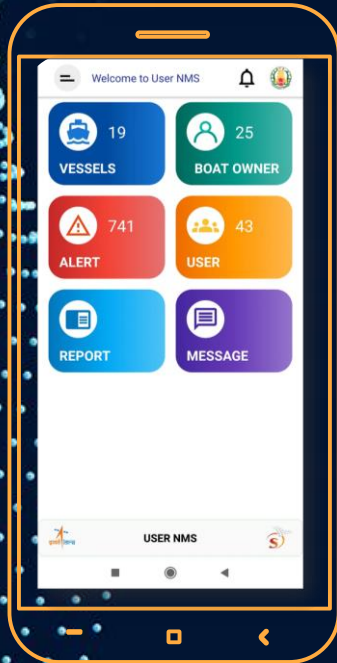
Setting up of Command and Control Centre at DoF



- **Tracking** NavIC / GPS tracking & periodic location reporting
- **Monitoring** SoS, violation alerts, individual boat / cluster-based monitoring, overfishing
- **Control** Demarcation of international /state boundaries, Geo-fencing, environmental & permit enforcements
- **Surveillance** Assist coastal security agencies in identification, tracking, protection of eco-fragile zones & border surveillance
- **Fishermen Safety** Two-way messaging, SoS, Search & rescue, Weather alerts, Warnings & path to safety
- **Messaging** Broadcast message from control room One-to-one and One-to-many, PFZ data (INCOIS) and weather info (IMD)
- **Administration** Centralized digitization of boat, crew & trip records. Offline analysis of violations, distance calculation, subsidies and penalties for violation, daily, weekly, monthly reports,

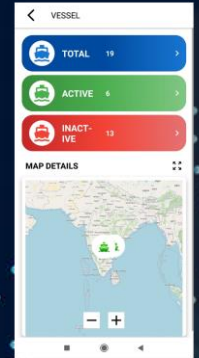


Android Mobile App



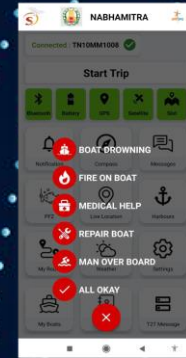
Dept official App

- Vessel tracking & monitoring
- Total / Active vessel list
- Alerts, Cluster tracking
- Geofence, Messaging
- Trip report



Fishermen App

- Multi-lingual app
- SoS, 2-Way Messaging
- Weather alert
- Path to safety, nearest shore
- Trip report



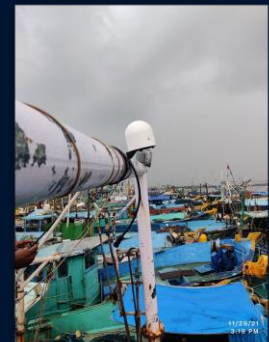
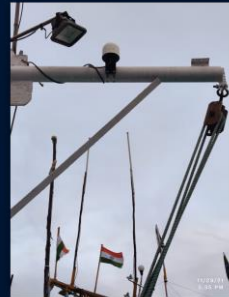
Fishe boat owner App

- Tracking
- 2-Way Messaging
- Trip report
- Crew details entry





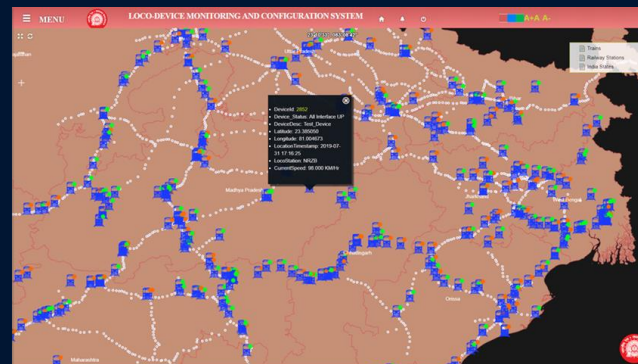
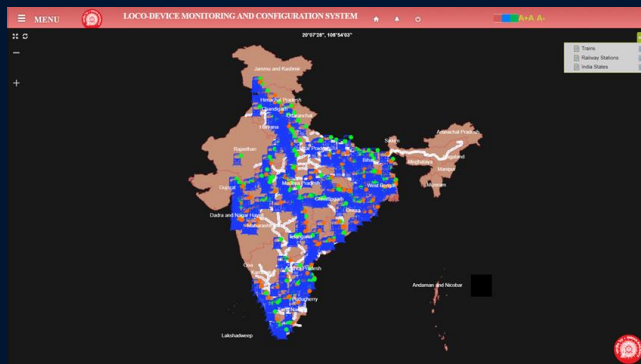
Installations



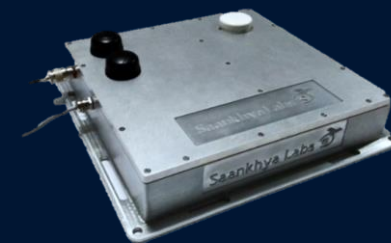


Indian Railways – Real time Tracking & emergency messaging

- ❖ Saankhya's SDR based Satcom modems are deployed on electro-locomotives for real time tracking of trains
- ❖ Saankhya Labs supplied the Hub-Baseband and Two- way MSS modems for Real Time Train Information System (RTIS – Phase I)
- ❖ The RTIS network is operational for ~ 4 Years now

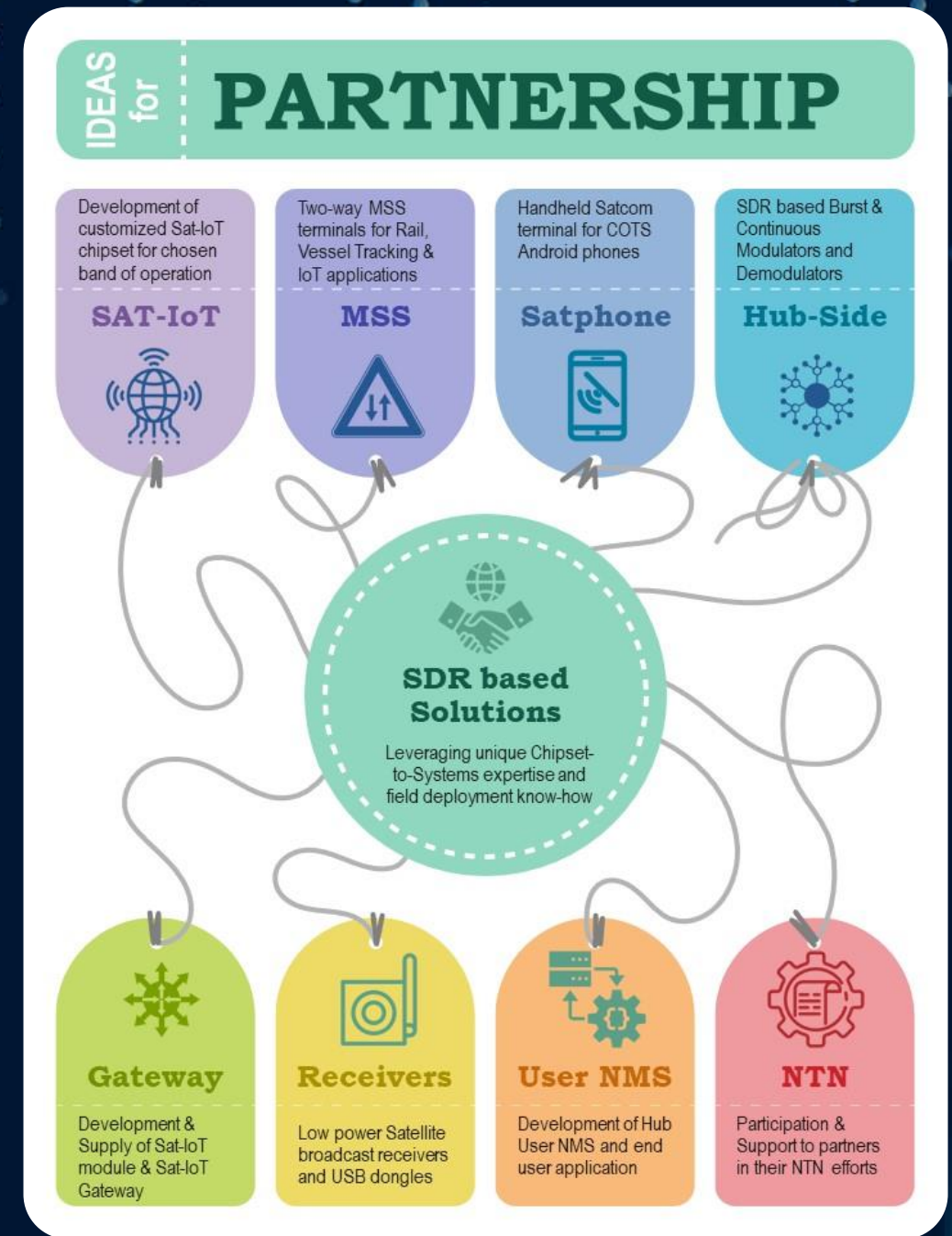


2700+
Trains



Summary

- ❖ End-to-end expertise
 - ✓ Design development of terminals
 - ✓ Hub-baseband equipment
 - ✓ User NMS platform
 - ✓ Application
 - ✓ Installation & commissioning of networks
- ❖ Development of SDR based, low power custom SoCs for Sat-IoT applications
- ❖ Unique Chipset to network deployment expertise
- ❖ Technology partnership with Satellite operators & Service providers





Direct Satellite-to-Mobile service

SoS & Emergency messaging

Voice and text messaging

Narrow band data & internet

Devices

Dedicated Satellite phone
Companion device
Modified Smartphone
Converged Smartphone

Space assets

LEO/MEO/GEO Satellites
Unified Service (Device + Sat)
Interoperable Satellites

Business Models

Standalone Service
Augmented Service
Converged Service

Regulatory

Global/Regional/Local
MNO/Satellite operator
Spectrum
Voice / Data /



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Thank You!