Government of
Maharashtra

Voice of Indian Commtech Enterprises

# Voice of Indian Communication Technology, Enterprises (VoICE)

**dedicates to the Nation**

# 'India's first Smart Intelligent Village'

**at Satnavari, Nagpur (Rural), Maharashtra**

**on the Independence Day 15th August 2025**

**Inauguration by**

# H.E. Devendra Fadnavis

**Maharashtra Chief Minister**

**on 24rd August 2025**

**at SATNAVARI Gram Panchayat and School Premises**

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**Commencement of Journey of Smart Intelligent Village**

On 19th June 2025 a Consortium of Domestic Design Led Telecom players supporting Make in India and Atma Nirbhar Bharat under the umbrella of Voice of Indian Communication Technology Enterprises (VoICE) had a meeting with Chief Minister of Maharashtra, Principal t Secretary to CM, and many more senior officials of Maharashtra Government. The Pilot Project will set-up a Smart Intelligent Village at SATNAVARI in Nagpur Rural District and it will be the first one of its kind in India and is ready as we celebrate Independence Day on 15th August 2025 so that many more could be announced at Satnavari on 24th August 2025 by the Hon'ble Chief Minister after the success of the Pilot Project.

Use case covered included E health, e education, smart agriculture, smart irrigation, smart panchayat management, drone-controlled fertilizer and pesticide spray, fisheries, smart surveillance, smart drinking water solution and many more.

The initiative from Director General, VoICE and domestic design led players is being implemented at no cost to the state or central Government. Domestic design led players are quite convinced that it will give a boost to the rural economy and if similar solutions are implemented in Maharashtra and other rural belts across the country, India GDP can get an upgrade of at least 3 to 4 % over next 3 years.

Uttar Pradesh, Goa, Andhra Pradesh, Telangana, and Gujarat are next possible States for Pilots by VoICE Consortium based teams of startups and SMEs.

Media Reporting

**https://www.communicationstoday.co.in/indias-first-smart-intelligent-village-in-nagpur-pilot-by-august-15/**

**Generic Details on Last-Mile Use Cases implemented**

Last-mile connectivity under BharatNet or other solutions enables the extension of broadband from GPs to households, institutions, and fields via Wi-Fi, fiber-to-the-home (FTTH), satellite, 4G/ 5G (subject to spectrum usage permission) or other wireless technologies. This supports innovative applications in rural areas. Below are details on the specified use cases, drawn from IoT/ICT implementations being showcased by Voice of Indian Communication Technology, Enterprises (VoICE) and includes how they leverage sensors, drones, and connectivity for benefits like efficiency, sustainability, and improved livelihoods. Various use cases are as below:

1. **Smart Agriculture through Sensors**:

    IoT sensors (e.g., soil moisture, pH, nutrient, temperature) monitor real-time farm conditions, enabling precision farming. Implementation involves deploying wireless sensor networks integrated with cloud platforms and mobile apps for data analytics.

    Benefits include

    ➢ 25-40% water savings,

    ➢ 30% reduction in fertilizer costs,

    ➢ early pest detection, and

    ➢ up to 25% yield increase.

    ➢ Automated irrigation systems reducing waste and AI-driven predictions for crop rotation.

## 2. Fisheries through Sensors:

Sensors monitor water quality (dissolved oxygen, pH, ammonia, temperature) in aquaculture ponds, with data transmitted via IoT to farmers' devices for alerts. Implementation uses ML algorithms for predictive health management and automated feeders.

Benefits:

- ➢ Reduces fish mortality,
- ➢ boosts yield by 20-30%, and
- ➢ cuts operational costs.

Dashboards for real-time monitoring are adapted for smart agriculture and rural ponds.

## 3. Drones for Spraying Fertilizers:

Drones with GPS and sensors apply fertilizers precisely, using variable rate technology based on soil mapping. Implementation integrates with IoT for real-time data from ground sensors, covering large areas quickly.

Benefits:

- ➢ Reduces chemical use by 20-30%,
- ➢ minimizes environmental impact, and
- ➢ saves labour (up to 80%-time reduction).

Youth can be trained as drone pilots for income generation.

4. **Pesticide Spraying by Drones**:

Like fertilizer spraying, drones equipped with high-resolution cameras and sprayers detect pests via multispectral imaging and apply targeted pesticides. Implementation uses AI for weed/ pest identification and 5G for live data transmission.

Benefits:

➢ Precision reduces overuse (up to 50% less pesticide),

➢ lowers health risks for farmers, and

➢ improves crop health.

5. **Smart Street Lighting**:

IoT-enabled LED lights adjust brightness based on motion, time, or ambient light via sensors and WiFi networks. Implementation involves mobile app for remote control.

Benefits:

➢ Cuts energy use by 50-70%,

➢ enhances safety in villages, and

➢ reduces maintenance costs with efficient rural lighting.

6. **Surveillance**:

IoT-linked CCTV cameras and drones provide real-time monitoring of farms, villages, and assets, with data streamed over broadband. Implementation includes AI for anomaly detection (e.g., intrusion or crop damage).

Benefits:

➢ Improves security,

➢ deters theft

➢ Disaster management

➢ Alarm announcements

➢ Enables quick response for community safety,

➢ Enables quick response for pest attacks in fields.

7. **AI-Powered System for Rural Drinking Water Supply & Quality Monitoring:** :

A cutting-edge IoT and AI/ML-enabled solution ensures safe, sufficient, and reliable water supply to villages. The system conducts real-time monitoring of water quantity—meeting the government's mandate of 55 litres per capita per day (LPCD)—and continuously checks key quality

parameters like TDS and pH. An intelligent dashboard uses AI/ML analytics to predict potential health risks from contamination, enabling early intervention and safeguarding community health.

Benefits:

- ➤ Reliable supply of safe drinking water.

- ➤ Live tracking of rural water scheme performance.

- ➤ Daily consumption data with instant alerts and notifications. It can save up to 50-65% water consumption.

- ➤ AI-driven prediction of disease risks due to water contamination.

- ➤ Prevents shortages as we optimize rural water use based on real-time data.

- ➤ With this innovation, rural communities gain a powerful tool to secure their most vital resource—clean and safe water.

## 8. Comprehensive Rural Health Care

- ➤ On-the-spot testing for 120+ vital health parameters, including blood, cardiac, hormonal, infectious, ECG, TB, Cancer screening and vision profiles.

- ➤ Results within minutes, enabling immediate diagnosis and timely intervention.

- ➤ Early detection of health risks, reducing complications and treatment costs.

- ➤ Fully integrated ERP system for patient records, reporting, and analytics.

- ➤ Doctor panel access — General Practitioners, specialists, and super-specialists available via teleconsultation.

- ➤ Seamless telemedicine integration for remote case reviews and prescriptions.

- ➤ Data-driven public health planning with aggregated village-to-state health insights.

- ➤ Brings urban-grade preventive and primary care to the most remote communities.

- ➤ Supports ASHA and community health workers with instant test results and guided next steps.

## 9. Online Education:

E-learning platforms deliver classes via Wi-Fi dedicated bandwidth for tele-education. Implementation includes smart classrooms and apps like Zoom for interactive sessions. Benefits:

- ➤ Lowers dropout rates,

- ➤ Bridges urban-rural Divide, and

- ➤ Supports adaptive learning with enhance access in remote areas.

10. **WiFi Hotspots**:

Public hotspots at GPs extend BharatNet connectivity (up to 100 Mbps) for community access.

Benefits:

➢ Enables e-governance,

➢ info access;

➢ reducing migration and

➢ improving incomes.

11. **Climate Smart Agriculture – Environmental impact assessment and analytics**

Agriculture is reported to be responsible for about 18% of global Green House Gas emissions. The National Mission for Natural Farming acknowledges this need for climate transition and climate resilience of agriculture ecosystems. A mobile app-based bookkeeping of natural farming practices being followed by farmers provides the benefits as below:

➢ Farmers have fully digital and verifiable data, downloadable from their mobile, for:

a) Availing natural produce certification with ease, which in turn enables higher income

b) Availing benefits such as carbon credits, water credits, etc., which in turn can be sources of additional income

➢ Government and Administration have extensive data-led insights, from individual farm level to village, district, state, or national level, for:

c) Assessing environmental impact of agriculture including emissions, energy usage, water usage, and soil nutrition impact

d) Assessing impact of the National Mission for Natural Farming and related farmer support schemes

e) Designing better programmatic interventions tailored to local needs of farmers

12. **Integrated Network Management Control System**

'IP and Bandwidth' to showcase multiple IP-enabled devices solutions that enable monitoring and displaying of the supported parameters on a common dashboard, as well as provide status alerts, is also made available.

13. **C-DOT Dash Board**

All solutions are available on C-DOT's CCSP Dash Board, link provided below:

Government can monitor all the data from a common centralised village-level dashboard, which eases monitoring and decision-making.



Common Dashboard for India's first Smart Village Satnavari, Nagpur
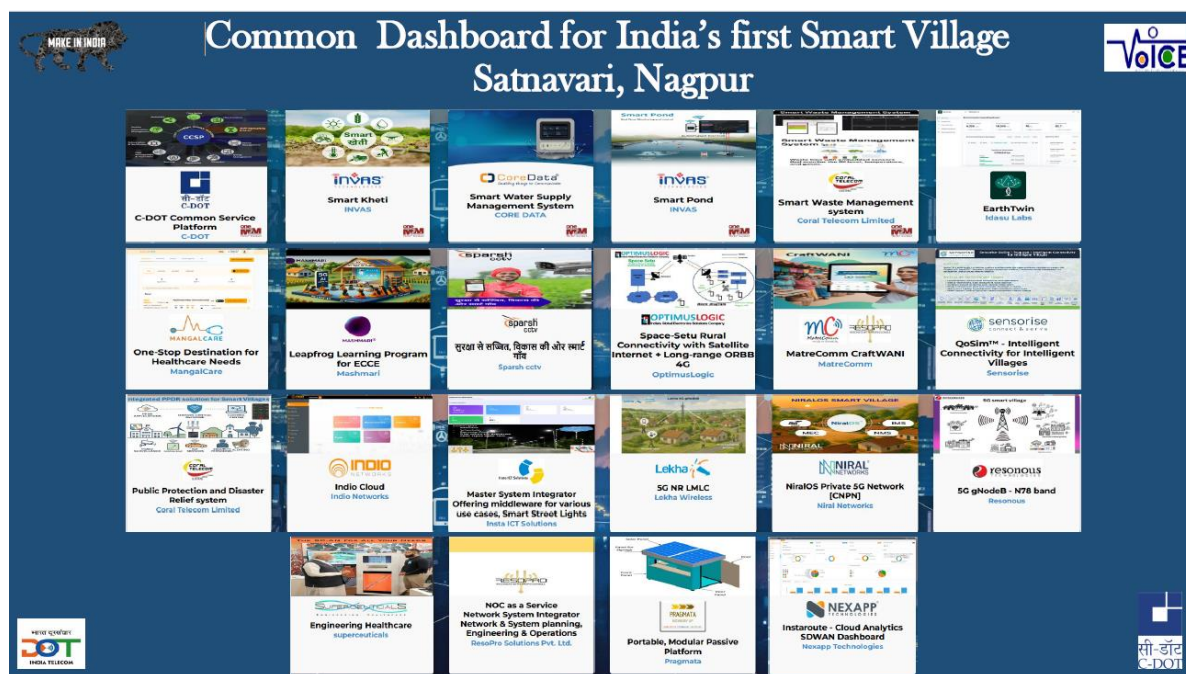
## 14. C-DOT CCSP – IoT Security and Services Platform – National Standard based IoT/ M2M platform

The platform ensures that security framework is implemented by all IoT use-cases and also, provides scalability and sustainability in the deployments. Apart from these it enables interoperability, vendor neutrality in the solution and data sharing from different sensors, thus reducing OPEX and CAPEX of the solution.

Centralized Data Management – CCSP enables collection and storage of data from multiple sources (soil sensors, weather stations, solar panels, water meters, etc.) in a unified standardised structure. Since data will be available centrally, so providing AI based analytics will become very easy in future.

## 15. PMWANI & ONDC enabled details

Also provided connectivity through PM-WANI, ONDC

Benefits

> Affordable Connectivity: Public Wi-Fi hotspots via PM-WANI enable education, e-health, and digital services.

> Rural Commerce Enablement: ONDC empowers farmers, artisans, and retailers to

access national markets.

- ➢ Smart Governance: Digital platforms manage agriculture, healthcare, and resources transparently.
- ➢ Sustainable Development: Boosts economic growth, digital inclusion, and self-reliance in villages.

## 16. Smart waste management system
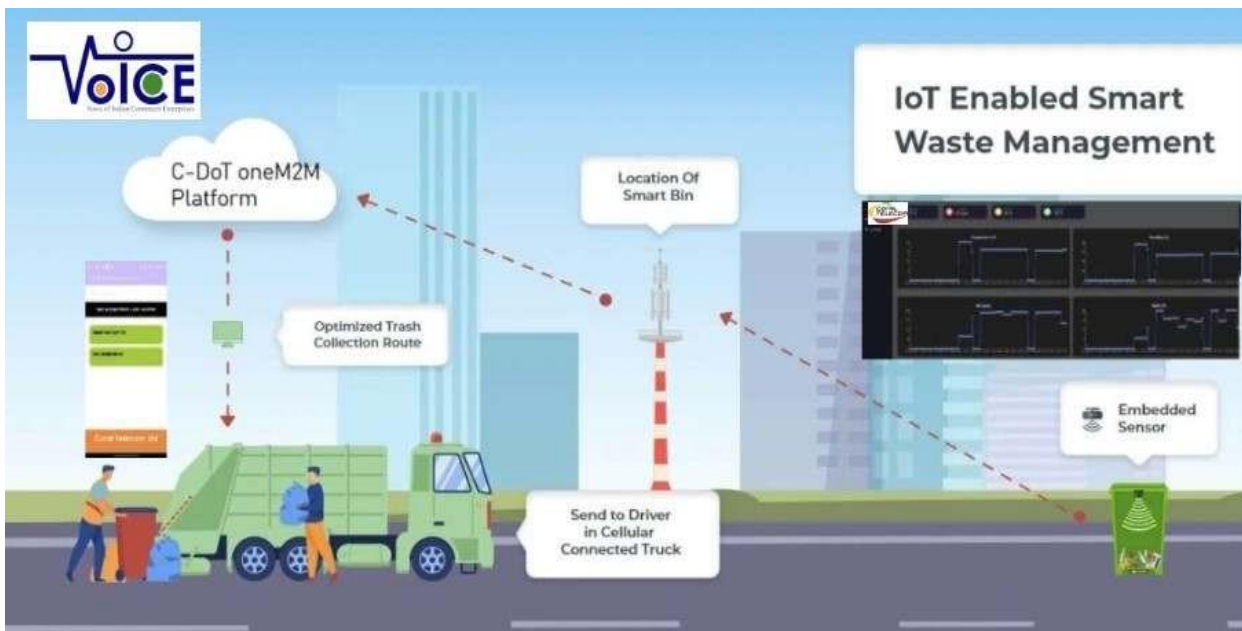


Benefits of implementing a **smart e-waste management system**:

- ➢ Prevents harmful chemicals (lead, mercury, cadmium) from contaminating soil and water.
- ➢ IoT-enabled bins and tracking systems ensure proper collection and disposal.
- ➢ Digital records help monitor waste flow and compliance.
- ➢ Reduces open burning and unsafe disposal, improving air quality.
- ➢ Encourages reuse and refurbishment, reducing dependency on raw material mining.
- ➢ Minimizes manual scavenging and unsafe dismantling practices.
- ➢ Data analytics can help plan better waste management strategies over time.

## 17. FIRE CONTROL THROUGH DRONES and Fire Extinguishers

**PLAYERS WHO HAVE PARTICIPATED IN THE EQUIPMENT DEPLOYMENT AT SATNAVRI ARE**

VoICE team has implemented the pilot project in a Consortium mode at their cost with no future commitment from Maharashtra or Central Government. The VoICE Consortium with 24 players as below are included in the pilot project.

a)     Indio Networks,

b)     Invas Technologies,

c)     Mashmari,

d)     Sparsh,

e)     Superceuticals,

f)     UTL,

g)     Matrecomm,

h)     Insta ICT Solutions,

i)     Idasu Labs,

j)     Resonous,

k)     Lekha Wireless,

l)     Niral Networks,

m)     Optimus Logic,

n)     Core Data Networks,

o)     Pragmata,

p)     CDOT,

q)     Mangalcare,

r)     Sensorise,

s)     Nexapp

t)     Resopro,

u)     Coral Telecom

v)     Kenstel,

w)     Sensorise and

x)     Telimart

**COMPARATIVE STATUS ON BHARATNET RELATED ISSUES**

| State | Planned GPs | Service Ready GPs (Phase 1 & 2 Combined, as of Dec 2023)* |
|---|---|---|
| Maharashtra | 27,939 | 23,963 |
| Gujarat | 14,324 | 14,302 |
| Karnataka | 6,090 | 6,084 |
| Tamil Nadu | 12,525 | 6,959 |
| !ndhra Pradesh | 13,416 | 12,848 |
| Telangana | 12,865 | 10,728 |
| Kerala | 978 | 978 |

*Note: Figures represent total service-ready GPs
(mostly via OFC, with minor satellite contributions).

As of May 2025, nationwide BharatNet has made 2.14 lakh GPs service-ready, indicating potential updates since 2023

However, Bharatnet Phase 1 implementation was completed 5/6 years back and Bharatnet Phase 2 implemented till 2023 and not many use cases at last mile being generally implemented, most of the fiber is no longer available.

For example, in Maharashtra only 3750 GPs are active and it may include even those connected on public networks also. Road widening and other infrastructure projects, no maintenance of OFC etc has resulted in very poor availability of bandwidth availability.

In some villages individual one-use case like healthcare, education, agriculture etc may be working based on local initiatives but all 15 to 20 use cases at same Gram Panchayat or village are never implemented in the country so far.

Further, the consolidated Smart solutions from VoICE at Satnavari village allows not only Bharatnet OFC bandwidth usage but at a later date also allows 4G/ 5G Private Enterprise networking support (subject to WPC spectrum usage approval), satellite connectivity support and even tapping of public 4G/ 5G networks. Technology wise and Use cases wise, a game changer solution offers FIRST SMART INTELLIGENT VILLAGE in India but even globally as lastest International ITU expectations are also covered.

We are fully ready for 15th August 2025. Present indications are that Satnavari will have the inauguration by Hon'ble Chief Minister on 24th August 2025.

It will be a historic day for the Rural Indian economy and a game changer. Support from State Government, Nagpur Administration right up-to Zila Parishad & Panchayat, BSNL, DoT, Village community and all Domestic Design Led Players under VoICE is highly appreciated.

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