E-Kranthi initiative: A study of Digital Technology in Rural Telangana

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ABSTRACT

The Government of Telangana implemented the digital Telangana /e-Kranthi programmes to transform rural India into knowledge based society and economy is crucial for schooling and services in rural Telangana. The ministry of Electronics and Information Technology (MEITY), Government of India, launched the Digital India programme with the vision to transform India into a digitally empowered society and knowledge based economy by ensuring digital access, digital inclusion, and empowerment, bridging the rural areas.

Objective: To ensure that Digital technology improve the life of every citizen, expand Telangana digital economy and create investment and empowerment opportunities, in India and global digital technological capabilities in the state.

E- Krathi Electronic delivery of services envisages the provisioning of various e-governance services in the rural Telangana existing technology can be used to create solution that offer high-quality, dependable and secure internet connection, enabling unrestricted participation in the digital economy. Along with financial, gender and ethnic disparities, there are growing gaps between rural and urban areas, as well as gaps for their wealth impairments.

Poor local infrastructure can make the internet slow and expensive in location with, thus placing it out of many people's grasp. In contrast, Internet outrages can whole nation in the dark. The digital technology has grown and developed primarily as a result of technological changes, pillars of the information society now include e- learning, e- libraries, e- health, and e- Governance. The availability of information is not universal, and there has always been a gap between those individuals and groups who can effectively use IT and those who cannot, creating a digital divide in rural and urban is of the outmost concern to government.

Key words: Seva, Digital, IT, Electronics, Technology, Infrastructure, Information, Governance

INTRODUCTION

Telangana is one of the most urbanized states in the country with over 40% of the state's population being urban residents. The government aims to convert all cities and major towns in the state into smart cities and facilities this conversion for rural locations as well.

Digital India Scale up Program

Ministry of Electronics and Information Technology (MeitY), along with T-Hub this year, disbursed a grant of Rs.7.5 lakhs each to 13 selected startups in the hardware and IoT sector. The mentorship and guidance from T-Hub and MeitY through this acceleration program helped the selected startups acquire more customers, receive incentive opportunities from the State Government, raise funds from investors, expand globally and launch new products successfully.

EMERGING TECHNOLOGIES IN TELANGAGA

E-Kranthi/Digital Technology related services delivery in Rural Telangana

AGRITECH

1. Saagu Baagu

Saagu Baagu is the flagship AgriTech project in partnership with the World Economic Forum to leverage technologies to enhance Production, Productivity and Profitability of farmers. In a first-of-its-kind Public Private Cooperation (PPC) model, two AgriTech consortiums comprising a total of 8 Innovators/ Start-ups will create a positive impact for 50,000+ farmers over the next 2 years. Aimed at reducing input costs, Saagu Baagu focuses on Chilli and Groundnut crops. New age solutions such as AI-based pre-season crop planning advisories; timely pest management advisories and effective output market linkages, etc. are being utilised to yield desired results.

2. AI-based Pest Management for Cotton

The AI-based Pest Management for Cotton was deployed with 3,105 lead farmers and 653 AEOs from six major cotton growing districts viz. Adilabad, Karimnagar, Nalgonda, Mahbubnagar, Khammam, and Nagarkurnool. The solution by Wadhwani Institute of AI uses a smartphone-based app to advise farmers in advance of impending pest (pink bollworm) attacks. These timely advisories resulted in effective usage of pesticides e.g. the average spray cost for user farmers was Rs. 3,460 compared to Rs. 3,905 for other farmers.

3. Quality Assaying of Agri Commodities

A pilot project for AI-based objective produce grading and quality assaying for paddy, rice and red gram, the solution, developed by a Hyderabad based start up Nebula, captures and analyses images of the grains to determine quantitative procurement parameters, e.g. shrivelled grains in paddy. This ensures fair assessment of crops that is free of human error and bias. The technology helps in assessment of the quality thus aiding export of commodities.

4. Seed Traceability

A pilot project to securely trace the movement of truthfully labelled

Seeds from production till the final farmer on a block chain network. The solution is developed by AgHub incubated startup TraceX to curb the spurious seeds menace and save the farmers from purchasing them from the market. Farmers can scan the QR codes on seed packets and validate its authenticity and source.

5. Smart Irrigation Management

A pilot on smart irrigation systems i.e. using IoT for automated water supply to fields, the irrigation solution is based on moisture in the soil and the weather conditions as captured by various sensors. The solution, from Hyderabad-based start up aqua stride, will maintain the optimum moisture in soil thereby increasing the yields and reducing water consumption.

6. Smart Nutrient Management

A pilot has been undertaken for rapid soil testing solution developed by Hyderabad-based startup Krishitantra. A soil health map for various nutrients in the Mandals of Maheshwaram, Kadthal, Kandukar

and Amangal of Rangareddy District of Telangana was developed under this project. This would enable generating rapid soil health cards for farmers at their fields and the government interventions can be made based on geo-tagged soil health records.

MAJOR e-GOVERNANCE WORKS/ SOLUTIONS

1. DHARANI PORTAL

In co-ordination with CCLA, IGRS Department, TSTS is the nodal agency to provide complete technical support for Dharani, a Telangana government's initiative to implement new and completely IT driven Integrated Land Records System. As on 31 March, 2022, Dharani Portal has completed about 14.62 lakhs registrations and collected an amount of Rs.2533 Cr.

2. AUA-ASA Project

TSTS has launched authentication services as Authentication User Agencies (AUAs) to all the Government departments by using Aadhaar from August, 2017. Type of Services being offered by TSTS:

1. Authentication Services for identifying the correct beneficiary/user.

2. KYC Services to fetch Demographic Details of Citizen

3. AADHAAR Based Attendance System- A fool-proof Aadhaar based biometric Attendance system.

ABAS reached a new and big milestone of 10, 00,000 authentications per day and the services are being used by 28 Departments of Telangana Government.

Pension Life Certificate through Selfie (PLCS) in coordination with ESD Mee Seva:

PLCS is the first use case of RTDAI and has been launched in April 2019. The solution eliminates the need for pensioners to visit the authorized physical offices to submit a proof of their liveness. This application uses AI, ML, Big data and Deep learning which may be perhaps first time in Government for providing better Citizen Convenience.

4. Electronic service Delivery(Mee-Seva)

Telangana top State in e-Transactions

S.No.	State Name	Population	No of e-Transactions	e-Transactions Per 1000 Population
1.	Lakshadweep	64,429	1,09,93,407	170628.20
2.	Telangana	3,51,93,978	4,91,04,03,990	139524.00
3.	Andhra Pradesh	4,94,71,555	6,85,19,87,298	138503.60
4.	Kerala	3,33,87,677	4,44,98,60,428	133278.50
5.	Dadra and Nagar Haveli	3,42,853	2,97,79,291	86857.30

Telangana is one of the first States in India to adopt digital technologies for e-Governance. Telangana State has been ranked number one among the States in terms of e-Transactions per 1000 population as per the Electronic Transaction Aggregation and Analysis Layer (eTaal), MeitY, Govt. of India. Lakshadweep with a population of about 65,000 tops the list with 1, 70,628 transactions per 1000 population.

(The rankings are based on the e-transactions recorded from June 2nd, 2014 to 26th May 2022)

5. T App Folio

T App Folio, the flagship m-governance initiative of Govt. of Telangana, launched in February 2018, has recorded over 12 Lakh downloads. It is currently clocking close to 7,000 transactions a day. T App Folio currently hosts over 275 services from 33 participating departments.

6. T Wallet

T Wallet is the official digital wallet of Telangana State, launched on 1 June, 2017. Over 13 Lakh citizens have registered with T Wallet and it has facilitated close to 3.01 crore transactions amounting to about Rs.15, 719 Cr in the last 5 years. T Wallet is now clocking about 5, 00,000 transactions with a value of approximately Rs.300 Cr every month.

7. Smart Governance initiatives based on Emerging Technologies

Smart Governance is a key focus area for IT, E&C Department. In this regard, ESD has been adopting emerging technologies like Big Data, AI, ML, etc. for re-engineering processes involved in the delivery of all government services.

8. Real-time Digital Authentication of Identity (RTDAI)

RTDAI enables a document-less, presence-less governance mechanism using Big Data, AI, ML, etc. It facilitates key processes of government departments such as name verification, photograph verification, and ID verification for service delivery and ensures a proper audit trail for accountability and transparency. All the RTDAI citizen services are offered through T App Folio.

9. Pensioner's Life Certificate through Selfie (PLCS)

PLCS, the first use case of RTDAI, eliminates the need for pensioners to visit the authorized physical offices to submit proof of their liveness. During 2021-22 about 1, 20,000 i.e. 40% of the pensioners have used PLCS. The PLCS has inspired the Government of India to launch a similar initiative in October, 2021.

10. Small and medium enterprises (SME) vertical

The SME vertical works towards enabling aspiring and existing women entrepreneurs and women in business across the Tier 2 and Tier 3 regions of Telangana. A total of 354 entrepreneurs have been supported through various programs. They have been classified under two categories:

Livelihoods/ Women in Business	Small and Micro Enterprises
244	110

11.Rural Incubation: WE Hub has launched its flagship rural incubation program with a two-fold vision of accelerating existing enterprises as SMEs and strengthening local supply chains currently supporting 17 rural women entrepreneurs from across Telangana.

12. Model Municipality Project: To unlock the potential and power of women in business, WE Hub in collaboration with the Municipal Corporation of Ramagundam, launched a 6-month Sustainable Livelihoods project in June, 2021 to digitally and financially enable existing and aspiring women in Livelihood businesses. The project is curates to inculcate the knowledge of entrepreneurship and equip women in businesses with digital literacy and financial inclusion and to ensure sustainability of the businesses through tailored Enterprise Development Programs (EDP). A total of 166 enterprises were sanctioned loans to the tune of Rs. 7, 39, 20,882 so far.

13. WE Hub - TRICOR Incubation Program: The second cohort of the WE Hub TRICOR Incubation program was launched in 2021, with a total of 93 entrepreneurs. The program is supporting the women entrepreneurs through forward and backward linkages

particularly in setting and grounding sustainable enterprises through bank linkages to the tune of INR 5, 09, 61,264. It is also the first initiative under the Tribal Welfare Department that marks the shift from beneficiary model to entrepreneurship model.

E - Potential investors and consumers.

WE Hub entered into a MoU with Mathworks to develop customized curriculum and deliver programs to inculcate, promote, and foster entrepreneurship among women. The focus areas include encouraging girls in STEM fields and providing start-up support in the Deep Learning Sector and through subsidized access to Matlab platform for WE Hub incubated start-ups.

WE Hub and Meesho: Under the partnership launched in 2021, 183 Women from 5 districts of Telangana

were onboarded for the joint program with Meesho. Ten thousand Homepreneurs across Telangana will be supported with access to social commerce by bridging the digital divide.

14. T-hub

Telangana Government has set up T-Fund under its State Innovation Policy to support early-stage technology startups of Telangana with funding from the IT,E&C Department. The Telangana Government has designated T-Hub as the investment manager for this fund and allocated Rs.15 Cr in the 2021-22 budget to initiate the T-Fund operations. T-Hub has awarded Rs.1.5 Cr to three startups under the T-Fund initiative.

T-Hub was selected under the 'Startup India Seed Fund Scheme' by Department for Promotion of Industry and Internal Trade (DPIIT), GoI, to disburse Rs.5 Cr among eligible startups to support and fuel early-stage funding. The fund will be used to provide financial assistance to startups for proof of concept, prototype development, product trials, market-entry, and commercialisation. T- Hub will be disbursing this fund to 15 startups in three years.

T-Hub completed six successful years of empowering India's innovation ecosystem. In these innovations it has delivered 100+ innovation programs so far, enabling startups to scale nationally and globally, and connecting them with potential investors, corporate communities, and national and foreign government bodies. It has also enabled academia to introduce innovation and an entrepreneurial approach in curriculum and empower corporations to build a culture of innovation. Under its new leadership, T-Hub will continue to develop strategic programs to elevate innovation for outcome-driven results and support other ecosystem enablers — TSIC, T-Works, WE Hub, RICH, TASK — by sharing its knowledge and resources.

During 2021-22, T-Hub has welcomed 533 startups to its innovation ecosystem, and introduced unique programs and events with a special focus on 6Ms – Market Access, Money, Mentorship, Methodologies, Manpower, and Motivation. T-Fund

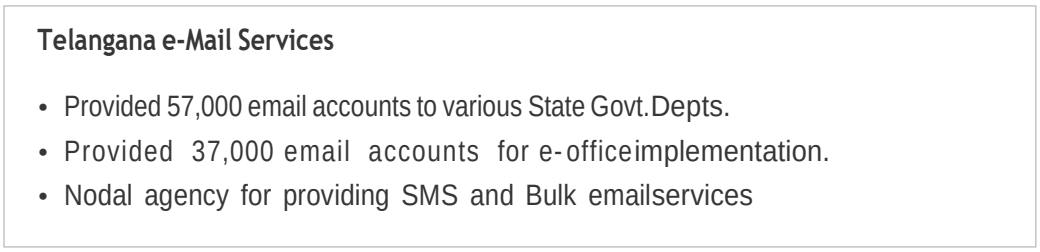
15. PMGDISHA

The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), part of the Digital India programme, benefits about six crore households, making them digitally literate. With PMGDISHA, most rural households would benefit and enhance their livelihood. This initiative aims to transform India into a digitally empowered society and knowledge economy.

16. State wide area network (T-SWAN): A high speed, reliable backbone network for Telangana State State Wide Area Network (SWAN) is one of the core infrastructure components under the National e-Governance Plan.

- TSWAN is integrated with Telangana Secretariat Campus Area Network (TSCAN), SDC and National Knowledge Network (NKN) and facilitates secure network services.
- Dedicated centralized Service Desk and a 24X7 Network Operating Center (NOC) is set up.
- More than 46 departments, 101 sub-departments are connected to TSWAN and rendering services to citizens.

- Video Conference facilities are set up with SWAN as backbone across all District, Mandal headquarters and user departments. More than 600 video conference centers were set up. A total of 180 State Level and 3,690 District Level Video Conferences facilitated.
- Telangana e-Mail Services
- Provided 57,000 email accounts to various State Govt. Depts.
- Provided 37,000 email accounts for e- office implementation.
- Nodal agency for providing SMS and Bulk email services



TSWAN (Point to Point Network Connectivity – Across Telangana state)

TSWAN Points of Presence (PoPs)	Qty
State Headquarters (SHQ)	1
District Headquarters (DHQ)	33
Mandal Headquarters (MHQ)	594
Horizontal Offices	1500
Video Conferencing services locations	536

www.it.telangana.gov.in

ARTIFICIAL INTELLIGENCE INITIATIVES

Telangana AI Mission (T-AIM)

The Telangana AI Mission is an institution established by Govt. of Telangana and is powered by NASSCOM. It undertakes several initiatives to catalyse the AI innovation ecosystem in the State.

Revv Up - Acceleration Program for AI Startups

Revv Up, the free-of-equity, free-of-cost acceleration program by T-AIM, is exclusively designed for early-stage AI startups. It is a key step towards making Telangana and Hyderabad a global destination for Artificial Intelligence. A total of 80 startups have been receiving mentorship and knowledge sessions from industry experts, access to global pathways, and technology and IP resources to build scalable businesses.

Telangana Forest AI Grand Challenge

The Grand Challenge, in partnership with Capgemini, aims to seek novel AI solutions from startups to predict the movement of wildlife and other valuable insights thereof that help in preserving wildlife in Telangana's forests.

NextGenGov 'Data for Policy' Initiative

ITE&C Dept. has entered into a partnership with United Nations Development Programme (UNDP) that will promote local and global innovations as appropriate and foster a 'data for policy' ecosystem in the State of Telangana in diverse streams of work, including but not limited to sustainable food systems. The focus would be on strategies such as anticipatory and data- driven governance, policy experimentation, etc.

E-Voting

A smartphone-based solution has been developed to enable eVoting especially for vulnerable demographics. AI is used for a three-factor authentication of valid voter viz. Name Matching with Aadhaar, Liveness Detection of Individual, and Image Matching with Electors Photo Identity Card (EPIC) Database. Blockchain (Distributed Ledger) is used to secure the de-identified and encrypted votes. A dry run was successfully conducted in Khammam District in October, 2021 and got positive feedback with 85% of the users terming it as user-friendly.

Gunny Bag Tracking

The State's Public Distribution System (PDS) has 2.83 million beneficiaries and uses 110 million bags annually for food grain distribution, but tracking the inventory of gunny bags and traceability of supplies has been difficult. Hence, a pilot has been initiated where block chain is being deployed to track distribution at the gunny bag level. The goal is to have an end-to-end tracking system, eliminating discrepancies in both quantity and quality of food grains.

MAJOR INITIATIVES AND ACCOMPLISHMENTS

Department of School Education

- T-SAT Network channels telecast 8 hours of digital lessons for school students (Class III - Class VIII) in all subjects.
- 1710 hours of content available. All digital lessons are available on T-SAT App.

Women Development & Child Welfare

- T-SAT Network channels telecast daily 1 hour live session of learning for preschool children.
- 436 hours of content available.
- Anganwadi Teachers and Workers across Telangana are benefitted.

Board of Intermediate Education

- T-SAT Network channels telecast daily 11 episodes of digital lessons for Intermediate students.
- 2170 hours of content available on T-SAT App.
- Digital classes are telecast in both English and Telugu mediums

T-SAT Network in partnership with PVC & TASK

- Partnered with PVC & TASK, T-SAT Network and telecast programs on VLSI and Quantum Technology.

Guidance on TS TET and TS PSC Group 1

- T-SAT Network channels daily telecast special live programs for TET & Group-1 aspirants with reputed faculty to create awareness and give guidance on exam pattern

1220 hours of content available.

Staff Selection Commission CHSL/CGL

- T-SAT Network channels telecast coaching classes for unemployed youth preparing for competitive exams such as Staff Selection Commission.
- Mock tests on T-SAT App for SSC CHSL and CGL aspirants. Content available on T-SAT App. Rytu Mitra (Vyavasayam & Pashuposhana)
- T-SAT Network channels telecast live interactive programmes with farmers in association with Professor Jayashankar Telangana State Agricultural University and Department of Animal Husbandry, Telangana.
- T-SAT e-Magazine
- E-Magazine from T-SAT on programmes broadcast by T-SAT network channels.
- Access to the e-library of T-SAT through e-Magazine.
- Hyperlinks of the programmes are broadcast every week.

CHALLENGES

1. There are many problems and challenges toward developing the information and communication technology in a rural area.

2. Most important inner challenges is how to introduce the technology and give the information to the villagers and convince them to accept the new technology.

3. Most of the time, the new technologies don't go further than the city borders and rural areas get the minimum share of technology improvement.

4. Lack of governmental investments in communication and information technology improvements in the rural areas and villages as one of the main human resources in Telangana

5. lack of suitable communication and information system to broadcast the information through villages, are the main outer challenges in technology improvement in villages.

RECOMMENDATIONS

1. Better internet connectivity should go hand in hand with improving digital infrastructure especially in rural regions
2. E-governance through regional languages is highly beneficial
3. Important Rural projects to produce and upgrade effective models uniformly across the nation
4. It is Important to address the consistent nature of the numerous applications created by different mandals , their integration to provide a single view, and their use of data mining and analytical approaches for decision making
5. It is clear that consistent growth across all mandals and services is important for successful adoption of e-governance in the nation.
6. A paradigm shift in how societies run themselves will be necessary to transform the Telangana and achieve sustainable development
7. Government should collaborate in rural areas with the business sector in research and development, particularly in solving the broadband connectivity gap, in order to have a major societal impact when adopted new technology

8. The digital technology revolution will include technological advancements, but it will include technological advancement, but it will also require a comprehensive approach that offers clients dependable, rapid, accessible and customized services

CONCLUSION

Telangana has been on an incredible journey of excellence since its establishment as a new state in 2014. Since rural areas have more problems in their structures and related functions than urban, in order to create a special performance in Telangana rural areas, economic, social and cultural structures should be made; otherwise, talking about rural development is nothing but a generalization. ICT development is not an exception. To develop ICT, it is necessary to study different aspects of needed substrates. Some of these aspects are from the village itself and some are external aspects. ICT development can solve some of the problems of rural residents but not all. ICT development increases access to information, markets, job opportunities, and governmental financial options.

After benchmarking with the best of economies, the state is looking to double production, productivity, farmer's income and overall, improve the welfare of all sections of society. It also aims at having the most optimum utilization of natural resources, high quality of living and accountable and citizen-centric government. As has been Telangana history, Technology will play a major role in pursuing all the above goals going forward as well.

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