WEST BENGAL STATE BROADBAND POLICY 2020

Empowering citizens through Digital connectivity

DEPARTMENT OF INFORMATION TECHNOLOGY & ELECTRONICS

Government of West Bengal

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1. Preamble

Access to broadband has become critical, making the development of its telecom infrastructure a priority for the Government and the industry. Broadband ecosystem players, the government along with the regulator, need to work cohesively in order to reduce the digital divide between rural and urban areas in the state of West Bengal. Given the focus on growth of data networks, development of broadband infrastructure becomes essential. Dedicated focus on infrastructure and service provisioning will bring better results, as telecom infrastructure roll-out in the state needs to be strengthened across all layers of the infrastructure (towers, optical fibre, etc.). Strong digital connectivity brings social benefits by reducing the digital divide and acts as a GDP/ GSDP multiplier. The West Bengal Telecom Infrastructure Guidelines 2020 has been developed with deeper focus on strategic direction to facilitate telecom service providers in form of applicant to seek approval and/ or NOC from the district level committee without any physical touchpoint, no physical payment modality and improve tracking mechanism. The Department of Information Technology and Electronics, Government of West Bengal has proposed to formulate a West Bengal state Broadband Policy 2020 for imparting consistent digital connectivity and bridge digital divide across the state and to ensure "Broadband for All". The establishment of the state Broadband policy envisaged the sectoral empowerment and promoting participative governance across sectors by framing policy focussing on the emerging technology viz Blockchain, Artificial Intelligence, Internet of Things etc. The West Bengal State Broadband Policy shall extend to the whole of the State of West Bengal and come into force with effect from the date of notification on Gazette.

2. Background

The digital connectivity is a necessity for inclusive governance, strengthening communities and keeping economy progressive. Civic participation, imparting education, public service delivery, health care benefits, financial inclusion, public safety, ease of doing business, employment generation, government engagements, universal competitiveness, economic growth et al are better served by the expansion of robust, reliable and affordable high-speed internet connectivity. As our society and technology evolve and the use of online services grows exponentially, the availability of fast, reliable internet becomes more and more indispensable for all stakeholders in the ecosystem and help the state to bridge the digital gap between rural and urban. The state has formulated the West Bengal Telecom Infrastructure Guidelines 2020 and is in process to roll out Single Window platform to facilitate the Telecom/ Infrastructure Service providers (TSP/ ISPs) get timely approval/s and/ or NoC for establishing the Telecom infrastructure viz. Telecom base tower and laying optical fibre across the State.

3. Objective

The primary objective of this document is to outline the need for digital connectivity and ways to provide universal access to high quality affordable internet services within everybody's reach, leading to large scale development of Information Technology and Information Technology enabled Services (IT/ITeS) in the state and to boost employment.

- To make available benefits of broadband infrastructure to everyone including the rural population.
- To provide high speed broadband access to key service institutions even in rural areas viz. schools, colleges, health centres, anganwadi centres, police stations, government offices and other public service delivery institutions.
- To provide high speed broadband for quality services, especially services centred around education, skilling, healthcare and financial services.
- Accelerate OFC laying through quick and single window clearance to double the coverage of optical fibre cable in next two years.
- To facilitate and improve quality of connectivity and service by increasing tower density.
- To encourage and increase fibre-connectivity of telecom towers and to increase by around two and half times the number of fiberized telecom towers in the state. This will ensure that minimum telecom interruption takes place after any natural calamity.
- Promote local manufacturing industry / services through participation of private players by rolling out appropriate policy measures and to enable proliferation of wireless broadband services.
- To lay down policy paradigm for emerging technologies and/or processes, especially in the following areas viz. Public (Govt) Transactional Data Sharing; Govt. Data Storage Sharing & Retention; Public Data Centre Promotion; Blockchain & AI-ML Technology Promotion; Data & Information Infrastructure Security; Drone Technology, among others.
- To modify related framework cum guidelines (for implementation of the policy, as annexed) arising out of technological necessity or otherwise, requisite changes may be made following due diligence, as and when required.

4. Vision

The vision of the West Bengal State Broadband Policy 2020 is to formulate comprehensive broadband policy for growth of telecom infrastructure and information technology including various emerging technologies and/or processes, in the state and to foster the development of the robust IT & Broadband ecosystem, capable of sustaining IT and Broadband infrastructure and Network development that supports affordable adoption by all the people in order to promote economic development and to enhance social equality by ensuring easy access to safe & secure IT services, knowledge and information. To enable fast track growth of digital communications infrastructure, bridge the digital divide for digital empowerment and inclusion, provide affordable and universal access of IT/ITeS, Telecom infrastructure and Broadband for all. To add emerging technological advancements in telecom sector to ensure last mile coverage and seamless yet affordable as well as safe & secure public service delivery.

5. Mission

The mission statement of the West Bengal State Broadband Policy 2020 is to facilitate the provision of ubiquitous, reliable, affordable and fast broadband infrastructure various emerging technologies and/or processes as well as IT & IT enabled services to pave the way for technological innovation, job creation, state competitiveness, promoting entrepreneurship, inclusive governance in order to reduce digital divide between urban and rural and to improve lives of the people. The West Bengal State Broadband Policy 2020 is targeted towards:

- All state villages (Mouza/s) should be digitally connected by year 2022

  To institutionalize Public Private Partnership (PPP) for leveraging the optical fibre network laid under BharatNet and to provide last mile connectivity and broadband services to all villages by 2022 utilizing appropriate technologies, including optical fibre, radio networks, and satellite. To make available benefits of broadband infrastructure to everyone in villages. To provide high speed broadband access to key developmental institutions in rural areas viz. schools, colleges, health centres, anganwari centres, police stations, government offices and other public service delivery institutions.

- All public utility centres should be digitally connected by 2022

  Public utility centres include all sorts of Government to Citizen service providing centres starting from Departments, municipalities, Bangla Sahayata Kendras, Panchayats and Mouzas for delivering public service delivery.

- Achieving policy outcome by rolling out detailed framework and guidelines within 2020 and implementing them by 2021 involving emerging technologies and/or processes, especially in the following areas viz. Public (Govt) Transactional Data Sharing; Govt. Data Storage Sharing & Retention; Public Data Centre Promotion; Blockchain & AI-ML Technology Promotion; Data & Information Infrastructure Security; Drone Technology, among others.

Situational Assessment (AS-IS)

As per the National Digital Communication Policy 2018 (NDCP 2018), a consistent policy and principle framework to create a competitive telecom market to boost India's long-term competitiveness and better serve the information needs of citizens. BharatNet is an aggregation network infrastructure connecting Block to Gram Panchayats to provide broadband connectivity to all 2.5 lakh Gram Panchayat covering about 6 lakhs villages in the country using an optimal mix of optical fibre, radio and satellite media, by utilizing Universal Service Obligation Fund with an objective of facilitating delivery of e-governance, e-health, e-banking, Internet and other broadband services to citizens of rural India.

Digital connectivity is an enabler of growth. West Bengal has encouraged facilitation of the last mile connectivity and stimulating investment in broadband infrastructure in rural and remote areas are vital for ensuring that those areas can access opportunities for growth. In line with the NDCP 2018 and demand and technological developments, there is a growing need to formulate a comprehensive broadband policy for growth of telecom infrastructure in the State majorly focusses on the below goals:

- **Data Management**: How Broadband is deployed in line with Data collection, Data Protection and Data Usage.
- **Deployment model**: To clarify how stakeholders conduct and engage in deployment efforts by creating a consortium between the eligible Telecom service providers/ Infrastructure service providers, in terms of competitiveness and affordable coverage.
- **Defining Broadband service speed and goals**- This will define broadband deployment guidelines, last mile connectivity and standardization focusing public service delivery in both rural and urban areas of the state of West Bengal.
- **Funding and Financing**: State will incentivize Telecom/ Infrastructure organisations to invest in the Telecom infrastructure expansion or direct investment through public private partnerships (PPPs) targeted towards both rural and urban areas of West Bengal.
- **Infrastructure access**: The State will address how Telecom/ Internet service providers can access publicly owned infrastructure, such as roads, sidewalks, telephone poles including electricity poles to build or connect to their systems. This will be applicable through Dig Once policy, which requires government public service delivery institution including local self-governments viz. municipalities, corporations, development authorities and panchayats to install conduit—the empty pipe through which internet cables run through—when constructing or upgrading physical infrastructure, such as roads, sidewalks, and bridges. These public infrastructures are meant to encourage fibre investment because the land will not need to be dug up for any present/ future projects— minimizing frustration for residents and limiting costs for providers and government.
- **Law and Regulation**- To identify gaps in regulations and introduce new ones to facilitate sustainable and affordable broadband rollout.

- **Stimulating Broadband Demand initiatives**: This will bridge digital divide between rural and urban areas by improving communication, imparting knowledge by imparting trainings through channelizing viz. Bangla Sahayata Kendras, supporting local, relevant internet service providers, promoting local language internet content, subsidizing broadband equipment for social services in schools, hospitals, police stations, rural banking etc. Identifying the true potential and appropriate use case of the emerging technologies like AI, Blockchain, Drone etc. in various sectors will help the state in penetrating the rural market and infuse the demand supply curve.

The AS IS and To Be mapping are proposed in the tabular format:

	Current	Future – 2 years' time	Future – 5 years' time
Department/ Connectivity (end user) experience	All Departments and Directorates, all Development authorities, some of the municipalities, all of Block offices, more than 2100 GPs are presently connected with a connection of not less than 2 Mbps	All Public Service Delivery units including educational and health institutions are connected with not less than 10 Mbps connection	All Public Service Delivery units including educational and health institutions are connected with not less than 50 to 100 Mbps connection
Supplier market	Inconsistent broadband service provision in the existing market	Developed and competitive broadband service provision through consortium model and competitive pricing, as the market for Superfast Broadband expands	With evolvement of 5G technologies, maintain a world class competitive and flexible marketplace capable of delivering future technology connectivity
Network	Average network coverage but supplier plans for commercial provision of Superfast Broadband is very limited	To provide end to end rural connectivity at all Mouzas with super speed broadband network	West Bengal- first state with no shadow zones and best network connectivity.
Utilization of BharatNet	a) Services ready GP: 2081 b) Provisioned FTTH connection: 118 c) Utilisation Percentage: 5.81%	Extending FTTH connections to at least five public service delivery institutions located in the vicinity of 3354 Gram Panchayat offices.	
Service Area wise access (wireless &	56.91 million as on Sep'19 (Growth rate is 0.52%)		
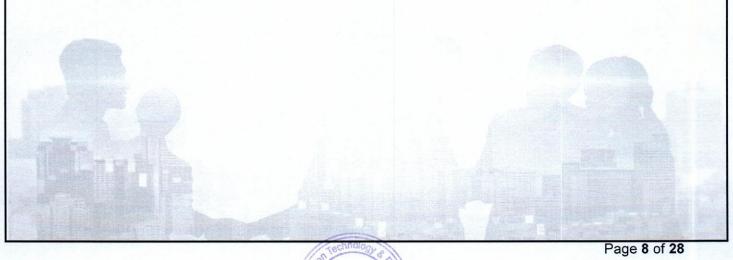
wired) subscriber base[1]			
Service Area wise Tele density[2]	a) Rural tele density: 54.57 b) Urban Tele density: 163.50 c) Total Tele density: 86.09		
West Bengal Telecom Infrastructure Guidelines 2020 and Single Window clearance platform	WB Telecom Infrastructure Guidelines 2020 awaits notification and Single Window platform development is in progress	All applications need to be approved/ applied based on State Row policy and via State Single Window clearance platform	
Percentage of RoW permissions accorded by the state for towers within 60 days, after submission of the complete application	10%	Strict mandate to be followed to clear all RoW application within 60 days, as mandated in State RoW policy	
Mobile towers in the state connected by fibre (in %)	45%	70%	100%
Number of mobile towers in the state	36214	Target to connect all rural areas including all villages (mouza)	Entire state digital connectivity
Percentage of public schools in the state connected by fibre	21.1%	70%	100%
Percentage of police stations in the state connected by fibre	40.38%	75%	100%
Percentage of Common Service Centers (CSCs) in the state connected by fibre	NA	75%	100%
percentage of districts in the state receiving	100%	100%	100%

[1] https://trai.gov.in/sites/default/files/PIR_08012020_0.pdf
[2] https://trai.gov.in/sites/default/files/PIR_08012020_0.pdf

priority electricity connection for your telecom infrastructure on preferential tariffs for commercial or industrial use			
Percentage of towers with grid supply in the urban areas as on March 2019	78%	100%	100%
Percentage of towers with grid supply in the rural areas as on March 2019	89.5%	95%	100%
Common duct "Dig Once Policy	New Town Kolkata Development Authority has long commenced laying cables & pipelines underground within a common utility duct	Establishment of the Dig Once policy and made it operational to meet future needs and cost optimization	
Adoption of National Building code	It has been adopted, but not formally notified or published	Required to be formally adopted and notified	

6. Governing Body of the State Broadband Policy 2020

To steer, drive and achieve the Mission's objectives, the Governing Body for implementation of West Bengal State Broadband Policy 2020 will be set up in the Department of Information Technology & Electronics. The proposed governing structure will be as follows:

| Chief Secretary	Government of West Bengal	Chairman
ACS/ Principal Secretary/ Secretary	Department of Finance, GoWB	Member
ACS/ Principal Secretary/ Secretary	Department of IT&E, GoWB	Member Convener
ACS/ Principal Secretary/ Secretary	Department of Panchayat & Rural Development, GoWB	Member
ACS/ Principal Secretary/ Secretary	Department of Urban Development & Municipal Affairs, GoWB	Member
ACS/ Principal Secretary/ Secretary	Department of Public Works Department, GoWB	Member
ACS/ Principal Secretary/ Secretary	Department of Forest, GoWB	Member
Representative	TERM Cell in Kolkata Telecom District	Special Invitee
Representative	TERM Cell in West Bengal circle (excluding Kolkata)	Special Invitee
Representative	COAI	Special Invitee
Representative	TAIPA	Special Invitee
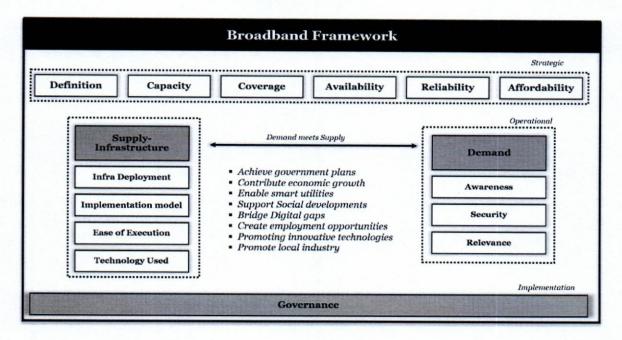
7. Strategy Roadmap

The implementation of the new policy namely; "West Bengal State Broadband Policy, 2020 will facilitate setting up Telecom infrastructure via single window clearance platform to facilitate in ease of doing business, getting telecom infrastructure establishment NOC/ approvals, to facilitate better returns on investment and improving public service delivery across the State. The existence of a fast and reliable broadband connection is today a necessary asset for economic progress, growth and well-being and is instrumental to harnessing the benefits from new technologies linked to, among others, health, education, business and administration. For rural areas especially, the ability to improve agricultural productivity relies heavily on access to broadband infrastructure and will increasingly continue to do so in the coming years.

The successful Broadband policy implementation are defined by below parameters:

- **Definition**: Continuous revision of the definition of broadband may be undertaken in-line with growth of infrastructure. A roadmap should be created to align definition with global standards
- **Coverage**: Consistent availability of the digital services across rural and urban areas in the state of West Bengal targeted towards bridging the gap between the digital divide
- **Capacity**: Set targets for bandwidth capacities to cater to all masses i.e. rural and urban population
- **Availability**: Ensure broadband availability without disruption beyond just the deployment of the infrastructure
- **Reliability**: Ensure highly reliable connectivity via broadband for fostering a sense of security while conducting important transactions online
- **Affordability**: This will help the state in bridging the socio-economic gap by ensuring affordable broadband for the masses including cost of service

Broadband Framework

| Definition | Capacity | Coverage | Availability | Reliability | Affordability |

Strategic

Supply-Infrastructure

Demand meets Supply

Operational

Demand

- Infra Deployment
- Implementation model
- Ease of Execution
- Technology Used

- *Achieve government plans*
- *Contribute economic growth*
- *Enable smart utilities*
- *Support Social developments*
- *Bridge Digital gaps*
- *Create employment opportunities*
- *Promoting innovative technologies*
- *Promote local industry*

- Awareness
- Security
- Relevance

Implementation

Governance

The outcome of the West Bengal State Broadband Policy 2020 is envisaged to fulfil the vision by delivering the proposed outcome:

a) Single Window Clearance Guidelines

The Single Window clearance for setting up the mobile tower and optical fibre laying by referring to the enclosed West Bengal Telecom Infrastructure Guidelines, 2020, attached in the annexure: A. The Single Window Clearance is an integrated platform for all applicants/ licensee in form of Telecom Services Providers (TSP) and/ or Infrastructure Service Providers (ISP) to facilitate them with a simple, transparent and efficient process to seek timely NOC/ Permits, provision for the Online payments, no physical touchpoints and end to end progress tracking/ monitoring. This will ensure speedy augmentation of the telecom infrastructure deployment through online single window platform. The anticipated to be model features involves Single Window clearance, Onetime fee payment, mandatory clearance, Permission for Temporary Movable Structures Cell on Wheels (CoW), No Rejection Policy and quick dispute resolution provision. A single window platform is being proposed and under development to create an integrated platform for all applicants in form of TSPs and ISPs. All fees will be paid online into the State Government exchequer at the Head of Account created by the Finance Department, Government of West Bengal with concurrence of the Accountant General, West Bengal. The details are furnished in the annexure: A of this document naming West Bengal Telecom Infrastructure Guidelines 2020.

b) Internet Landing Station for high speed internet, especially in the coastal areas

Internet landing stations shall act as facilitator of communication in coastal areas and shall be able to assist fishing vessels for weather forecast and time to time updates, locational information in the water. Building of high-speed internet landing station shall be through the following strategy outlines;
- Feasibility study of the area where the landing station will be built
- Master plan for creation of network infrastructure
- Identification and onboarding of telecom players for internet connection

It shall boost the overall scenario of employment in the location as locals will be needed to create and build the infrastructure in the State as well as specific skilled manpower will be required to create the network infrastructure as mentioned earlier.

c) Preparation of digital fibre map of the Digital Communications network and infrastructure, including Optical Fibre Cables and Towers

State Government intends to build digital infrastructure that is required for the masses, in order to aid the socio-economic development of the State. Similarly, investment in broadband needs to be viewed as a measure to help achieve National and State level objectives as well as improve our global competitive positioning. Given that broadband growth helps bridge the digital divide, and is a GDP/ GSDP multiplier, it is important to build a proper and sustainable digital infrastructure.

Clearance policies are critical across all infrastructure providers and much needs to be learnt and strengthened to ensure more transparency, faster deployment and ease of doing business for the industry. It is important that Clearance policy for broadband infrastructure buildouts are seamless and time bound.

In order to create a digital infrastructure across the State, following things needs to be in place;

- Proper survey of the planned location
- Finalization of the implementation master plan
- Integration with existing backbone network, if needed
- Identification of the implementation areas and finalization of the specific scope of work
- Onboarding of service provider
- Monitoring the implementation and project management
- Roadmap for post implementation support

d) Facilitating support infrastructure like electric supply and road connectivity

By developing a **UTILITY CORRIDOR**, disruption and serious implication on other existing infrastructure due to repeated digging with drastically decrease. A key measure taken by government to develop a utility corridor in conjunction with laying new roads and widening works., thus significantly reducing the need to dig. A utility corridor is a tunnel or passage that is built either under or over the ground which may be used by multiple utilities, such as electricity, water, etc. It serves the purpose of preventing repeated digs, which in turn reduce the cost of rollouts and deployments. For establishment of Utility corridor, all the appropriate engaged departments/ municipalities/ Gram Panchayats needs to be mandated in respect to the development of the standard process for undertaking any new/ existing road projects and must be enforced with penalties for non- compliance. Municipalities and Municipal corporations could be asked to build the utility corridor across major roads across city thereby easing out broadband needs for infrastructure. Policy must be laid to secure fibre network by prescribed guidelines on before you dig policy. The construction of utility corridors in the cities may be conducted through 4 steps:

- **Information collection:** Information on existing infrastructure projects, deployed utilities and standards & design guidelines followed by existing deployed infrastructure providers will be gathered in this step
- **Conceptual design development**: A conceptual design needs to be created taking into consideration the planning and transportation requirements. This effort has to be
- conducted between the planners, transport engineers and utilities engineers to enable agreement on an optimized design of the roads and utilities that will meet the requirements of the intended use of the development
- **Evaluation of design**: At this stage the competent authority from the local government will select from the conceptual designs presented which are in line with RoW policies, road plans and so on. Changes, if any are asked to be made at this stage.
- **Final approvals**: Final approvals may be given after design finalization. At this stage, all NoCs may be given to the utility tunnel contractor/designer through a facilitated single window process

The **UTILITY CORRIDOR** needs to be implemented along with the **Dig Once policy**. To successfully instate the policy, requisite statutes need to be created to ensure that adequate

Dig Once Policy: Citizen utilities such as Water connection, roadways, underground gas lines, Optical Fibre laying and deployments of broadband do not follow a synchronized digging policy, which leads to substantial cost from activities such as digging, trenching, accessibility and other restoration fees. The risks in this methodology are numerous, of which disruptions to public life and utilities are the highest. As one of the key measures and an important consideration West Bengal state government must adopt is the development and mandating of a dig once policy in conjunction with laying new roads, widening activities and other activities which requires digging. The key benefits of Dig-Once are as follows:

- **Saving Cost**: Restricting the number of times public utilities and transportation channels are dug helps reduce the costs significantly. These savings are observed primarily in urban areas where population is in the higher side.
- **Incrementally Access and Reliability**: When fibre is installed, the reliability of a network sees a significant increment. Also, it is easier to expand the reach of broadband networks which are dependent on fibre infrastructure. Both these aspects benefit the overall broadband adoption.
- **Public Benefits:** Dig once led to the reduction in resistive digging in areas which have other utilities installed. This leads to the reduced risk of damages to existing utilities already serving the populace, thus reducing public inconvenience. Also, road traffic is not affected repeatedly reducing times
- **Economic Benefits:** Laying down or fibre using the dig-once methodology enhances the speed at which broadband is rolled out. This adds to the overall economic benefit that the society draws from connectivity in education, business and healthcare
- **Increased Rate of Deployment of Fibre:** Since the duct/conduit for fibre is already present at the time of initial deployment, the additional fibre to be deployed can be done without much of a challenge. However, this is dependent on the overall health of the duct/ conduit system

compensation is made and met in the event of any damages to fibre infrastructure, due to digging by other utility providers and public and private infrastructure players. The Dig Once policy must be implemented in the state of West Bengal with no exceptions for the betterment of the state, citizen and adding to the benefit of the infrastructure provider/s.
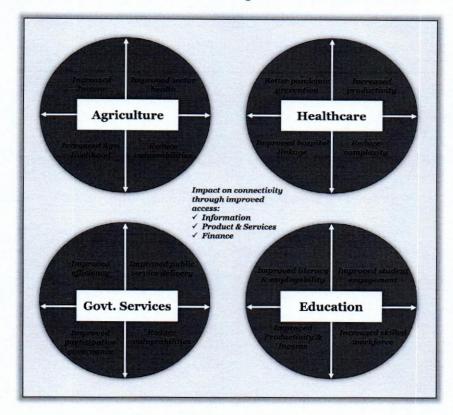
e) **Promoting innovative technologies for expansion of the local industry**
   The recent past has witnessed an unprecedented transformation in the Digital Communications Infrastructure and Services sector with the emergence of new technologies, services, business models and players. There is hence an imperative need to relook the existing National/ state policies viz National Digital communication policy, Incentive Policy, IT Policy, Clearance Policy, regulatory policies and resource allocation frameworks to incentivize local investments and innovation to optimise new technology deployments and harness their benefits to rural areas and unorganized or untouched sectors. Ensuring a holistic and robust approach for harnessing emerging technologies by developing a roadmap for emerging technologies and its use in the communications sector, such as 5G, Artificial Intelligence, Robotics, Internet of Things and Cloud Computing. The 5G technology has the potential for ushering a major transformation in the country/ state enabling a rapid expansion of the role of IT across manufacturing, education, healthcare, agriculture, financial and social sectors. More emphasis on 5G touching the lives of rural and weaker economic segments. The state needs to leveraging Artificial Intelligence and Big Data in a synchronized and effective manner to enhance the overall quality of service, increase productivity, improve reachability to the state-initiated scheme/s, spectrum management, network security and decision making. The state needs to develop and promote centre of excellence in emerging technologies to:
   - Facilitate collaborative ecosystem
   - Data management- *data creation, data analysis, data protection and data sharing models*
   - Content hosting & delivery through state data centre

- Enabling cyberspace security
- Data communication systems and services
- Promoting innovation in the creation of Communication services and network infrastructure
- Encourage use of Open APIs for emerging technologies
- Recognizing Digital Communications as the core of Smart Cities
- Employment generation opportunities as a result of development of Digital Communications infrastructure across the state and through the internet-based services
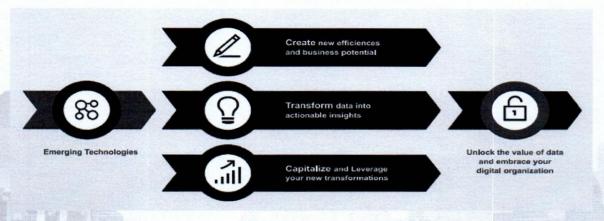

Multi- Sectoral impact of connectivity

A strong, robust, consistent and affordable network connectivity is one of the major requirements for the state of West Bengal to thrive across sectors. The gaps in connectivity adoption are driven by divide across geographies (urban vs rural), income levels (high vs low income groups), age and gender, among others. These gaps are required to be filled using targeted policy-based mandates to increase adoption and helpful in participative governance. Emerging data collection technologies and robust digital connectivity are giving business and society the power we need to understand the present and fuel the future. The state government is focussed in targeting the rural and unorganised sector for imparting technology awareness and connectivity. This will drastically help the government to penetrate the state-owned initiatives and schemes for better reach; in turn helps the people residing in rural areas to raise their per capita income. Whether it's the ability to reduce air pollution or traffic monitoring by measuring traffic patterns, agricultural field monitoring, smart city development, providing aid in healthcare domain, improving public service delivery, or tapping into intelligent systems to unlock actionable insights and citizen benefits. It is clear that over the next decade, emerging technologies will mature and proliferate, ranging from 5G to advances in AI, Edge computing, Internet of Things, Machine learning, Blockchain and others. To make an impact on the state as a whole, the state government of West Bengal needs to develop a strong ecosystem consist of futuristic infrastructure, robust digital connectivity focussing rural sectors, develop transactional public sharing platform, promote manufacturing (embedded systems), facilitate Start-up ecosystem and encourage sector wise automation through various emerging technologies. This will enable large-scale shifts in the economy by smart public service delivery, participative governance, innovation and smart decision making and will transform entire ecosystem by reducing the digital divide, generating huge employment and will acts as a GDP/ GSDP multiplier.

Leveraging strong digital connectivity to generate, feed & analyse sectoral data using emerging technologies. The connectivity requirements vary by sectors[3], explained in the table below:

Sector	Potential use cases	Bandwidth	Range	Reliability	Willingness and ability to manage a network
Automotive	Over-the-air updates, predictive maintenance	Primarily low, high for entertainment content	Medium–long	High	Low
Manufacturing	Operations optimization, predictive maintenance	Low	Short–medium	High	Low
Defense	Asset management, remote monitoring	Medium	Long	High	Medium
Agriculture	Yield optimization, asset management	Low	Short	High	Low
Mining	Predictive maintenance, operations	Low	Medium–long	High	Low–medium
Construction	Predictive maintenance, operations optimization	Low	Short	Medium	Low
Oil and gas	Predictive maintenance, production optimization	Low	Medium–long	High	Low–medium
Insurance	Patient monitoring, asset management	Low	Long	Medium	Low
Healthcare	Remote monitoring, safety	Low	Short–medium	Medium	Low
Cities	Traffic control, security	Low	Medium–long	High	Low–medium
Utilities	Asset management, remote monitoring, energy management	Low	Long	High	Low
Travel, transport, and logistics	Predictive maintenance, logistics optimization, automation	Low	Long	High	Low
Consumer	Productivity optimization, personalization, energy monitoring	Medium–high	Short	Medium	Low

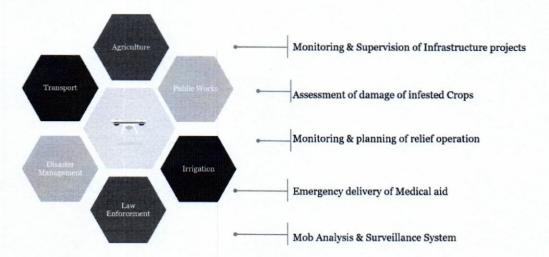*Sectoral connectivity requirements*

Creating values with emerging technologies

3 https://www.mckinsey.com/featured-insights/internet-of-things/our-insights/the-future-of-connectivity-enabling-the-internet-of-things#

Blockchain- Sectoral Use Cases (*not limited to*)

Healthcare
» Electronic Health Records
» Birth and Death certificate
» Pharma Supply chain management
» Provenance of Controlled and Critical Drugs & blood / organs

Municipal & Rural Affair
» Land and Property registration
» Property Lifecycle Management
» Public Record Management

Education
» 360 degree student education to employment
» Attestation of Educational certificates
» Identity Management

Transportation
» Vehicle Registry / Lifecycle Management
» Common Vehicle Asset Management

Drone Sectoral Use Cases (*not limited to*)

Agriculture, Transport, Public Works, Disaster Management, Irrigation, Law Enforcement

— Monitoring & Supervision of Infrastructure projects

— Assessment of damage of infested Crops

— Monitoring & planning of relief operation

— Emergency delivery of Medical aid

— Mob Analysis & Surveillance System

Artificial Intelligence (AI) Sectoral Use Cases (*not limited to*)

Industries	Potential Use cases
Healthcare	• Supporting diagnosis by detecting various variations in patient data • Early detection of potential pandemics • Imaging diagnostics
Transportation & Logistics	• Autonomous fleet for ride sharing • Traffic control and reduced congestion • Engine monitoring and predictive, autonomous maintenance
Financial services	• Fraud detection and anti money laundering • Automation of customer operations
Energy	• Smart metering • More efficient grid operation and storage • Predictive infrastructure maintenance
Manufacturing	• Enhanced monitoring and auto-correction of processes • Supply chain and production optimization • On-demand production

Internet of Things (IoT) Sectoral Use Cases (*not limited to*)

Sectoral Use cases

- Transportation
- Health
- Environment
- Administration
- Security

Impact in the public ecosystem

- Monitor transport -Using GPS tracking device
- Real-time image processing of structures
- E-waste management
- Surveillance and security
- Administer citizen identity better
- Smart city maintenance

Resulting in...

- Better traffic management
- Remote monitoring and predictive maintenance
- Improved air quality and pollution control
- Improved Banking penetration & services
- Better Citizen Engagement
- Drive economic growth and improve the quality of life of people
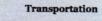
Embedded Systems Sectoral Use Cases (*not limited to*)

- Transportation
- Health
- Environment
- Administration
- Security

PLATFORM
- User Experience
- Applications
- Middleware
- Operating System
- Firmware
- Hardware

- Intelligent traffic management system
- Healthcare supervisory system
- Home automation
- Electronic voting machine
- Surveillance security system

Automation
Copier, Fax machines, printers, scanners, multi-function peripherals, point of sale terminals, storage devices, smartcards

Consumer Electronics
Music players, digital cameras, DVD players, set-top boxes, PDAs, videogames, GPS receivers, home appliances

Medical Electronics
Patient monitoring, surgical systems, diagnostic equipment, imaging, electronic stethoscopes

Telecom / Datacom
Routers, switches, bridges, cellular phones, smart devices, networking gateways

Embedded Systems

Remote Automation
Building automation e.g. heating, ventilation, air-conditioning (HVAC), home automation, utility meters

Military / Aerospace
Satellite systems, radar, sonar, navigation, weather systems, flight control systems, aircraft management systems

Automotive Electronics
networking, process controls Electronic control units used in chassis, body electronics, security, power train, in-vehicle entertainment, and infotainment systems

Industrial Controls
Smart sensors, special purpose controllers, Networking, process controls

f) Public Transactional Data Sharing Platform

One of the major gamechanger *"Public transactional data sharing platform"* has been proposed under the state of West Bengal State Broadband Policy 2020. *"Public transactional data sharing platform"* is a transactional data repository which *facilitates distribution of the anonymised data set to the interested community majorly state start-ups, MSMEs, App developers, Data Journalists and other interested parties.* This will be achieved by providing an easy access, reliable services, adaptive, flexible, responsive, better user experience to the users and by extending a deployable on cloud- as SAAS, open source driven service that supports publication of data alongside facility for easy search against multiple datasets. It is envisaged that Departments would release *anonymised* datasets on proactive/auto consumption basis through Application Programming Interfaces (APIs)/Web Services. There will be a strict mandate, by way of due government notification to share the data results consumed via this platform in form of any products, services etc. with the state government for better future consumption and utilization. This will help the state in developing a robust and consistent data repository which can be used for state's economic benefits.

The *main objective of this transactional data sharing platform* is to:
- Provisioning an enabling public transactional data sharing platform to provide proactive and open access to the transactional data generated by various departments/ organizations of the West Bengal State Government in a complete *anonymised* form whereby there will be no chance of retraction and profiling of the data principals i.e. the creators of the data, who created while receiving public service.
- Increase Transparency, Accountability, Citizen Engagement, Collaboration, Better Governance, Decision making & Innovation.
- To improve participative governance – Direct Delivery of Services to Citizen, Setting up a Platform for Collaboration, Innovation in delivery of Services to Citizen.

This social model is a community component which will facilitate and empower the sectoral community players to get first-hand data input in form of *anonymised* transactional data strictly for development and testing purpose i.e. facilitate the sector specific players to get maturity while developing an application or platform. The state departments generate tons of cross sectoral data which may reap direct benefits to state start-ups, MSMEs, public service delivery organisation, state departments, its subsidiaries or entities, data collaboratives can drive decision making, improve situational and causal analysis.
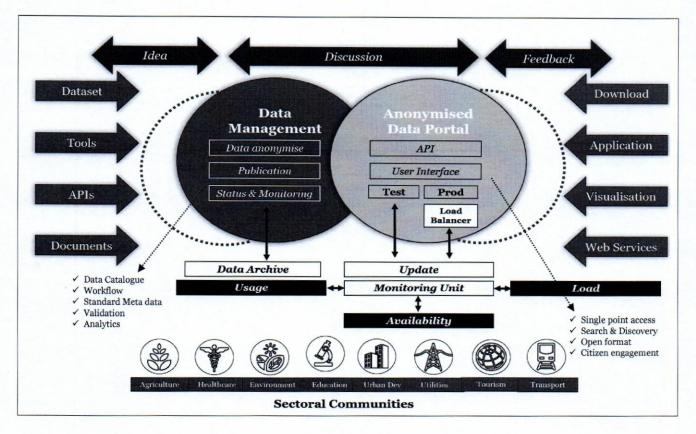
Data collaboratives can play a vital role in building better data driven models by breaking down silos and aggregating data from multiple sources. Moreover, such data exchanges enhance decision-makers' predictive capacity. The anonymised data sharing will deliver benefit to Public service delivery providers by:
- Reduce duplication and wastage
- Better target front service delivery
- Monitoring demand and delivery pattern
- Improving level of customer satisfaction
- Facilitating evidence-based policy and decision making
- Identifying root cause of the problems/ challenges
- Predicting user service needs
- Increasing public trust in government and Public functions
- Enabling research

To seek the above listed benefits, the shared data (anonymised format- to add data protection and prevent data breaches) should reach the right recipients viz. Start-up or Developer community, MSMEs, state decision makers, public service delivery organisation and NGOs. To encourage the anonymised data sharing for the public good and make it available to the state start-ups and MSMEs, the West Bengal state government has accepted in principle and allocated a portion of the cloud infrastructure of the WBSDC for the state start-up community to utilise the best available sectoral data

for their robust platform development, live data testing and better tracking of the user lifecycle in terms of public service delivery.

Sectoral Communities

The state government may direct data fiduciaries to share any: (i) non-personal data and (ii) anonymised personal data (where data principal remains unidentified and unprofiled) for creation and delivery of improved citizen-centric services.

Note: *A data fiduciary (Controller as per GDPR/PIMS) is an entity or individual who decides the means and purpose of processing personal data. Such processing will be subject to certain purpose, collection and storage limitations. For instance, personal data can be processed only for specific, clear and lawful purpose. Additionally, all data fiduciaries must undertake certain transparency and accountability measures such as: (i) implementing security safeguards (such as data encryption and preventing misuse of data), and (ii) instituting grievance redressal mechanisms to address complaints of individuals. They must also institute mechanisms for age verification and parental consent when processing sensitive personal data of children.*

The development of the proposed Public Transactional Data Sharing Platform may be done by floating an Expression of Interest (EoI) followed by an RFP and evaluation/ selection of the SI through QCBS process. A Selection Committee comprising Joint Secretary, IT&E Dept being Convenor will meet, call for application through Departmental Portal with adequate publicity in digital as well as print media and select fifty (50) deserving Start-Ups to be offered the above Cloud Infrastructure as a Service (C-IaaS) at the WBSDC

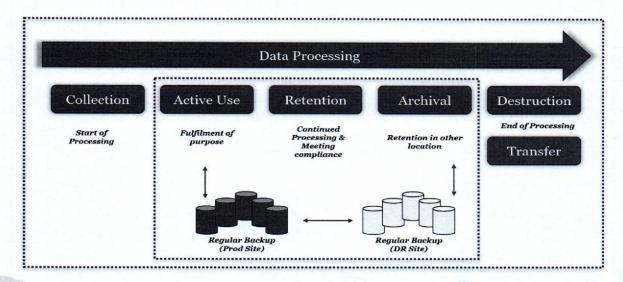### Use Case on Public transactional data sharing platform
The sharing of anonymised data leads to progress on treatment of Alzheimer, a collaborative effort between various government health departments, Food and Drug administration, medical imaging industry, Universities and Non-profit groups. They made a collaborative effort by sharing cross

platform data and now efforts are bearing the fruit by successful early diagnosis of Alzheimer by way of using methods viz. PET scan and test of spinal fluid. 600+ studies were made to get an inference. This collaboration required a strong digital network connectivity along with the cross-domain anonymised healthcare data viz. raw data, Derived data, Code, Methods etc. helped to create various models and analysis.

g) **Data Storage and Retention Policy**

Data is the new oil to drive the economic growth. The state governments who are cognizant of the rise of data economy, will feature in the list of the successful states in terms of stability, investment, employment generation, smart public service delivery, overall growth and prosperity. With the increase in demand for hosting environment it is imperative to develop certain guidelines for effective utilization of storage space and implementation of Information Security Management System (ISMS) under WBSDC environment. The State Government departments, associated Government organisations, parastatals etc. who desire to host any type of the application and/ or avail any form of the services from WBSDC should apply online for seeking storage space for hosting their required application/s. A Self-Supporting Portal (SSP) of WBSDC should be in place for requisition of storage space, augmentation & reclamation of storage space, monitoring and other remote service management under WBSDC operations. In terms of government services catering to public needs, huge amount of electronic data is being consumed and processed everyday by both Government organizations and private entities. In most of the instances, a substantial volume of data is being retained in form of electronic records even after the primary objective of data processing is fulfilled. While data retention is necessary for future business/ Departmental needs or statutory/ regulatory requirements, it is also important that the electronic form of data storage, data sharing and data retention are done in an authentic and secure way. A proper standard is required to be in place to avoid data breach and reduce unnecessary storage consumption.

Record Management has always remained a critical activity of the government departments, as it is viewed as key to efficient administration. On formulation of the retention schedule, utmost care is taken to ensure that files are neither prematurely destroyed nor kept for period longer than necessary. The schedule is reviewed periodically. A data retention policy should treat archived data differently from backup data. Archived data is no longer actively used by the organization, but still needed for long-term retention. The Department/ SDC may need data shifted to archives for future reference or for meeting compliance. Archives are stored on cheaper storage media, so they reduce costs and the volume of primary data storage. A user should be able to search archives easily.

| Type of Data	Minimal Backup Policy	Backup Retention Policy
System software	Latest Version plus patches At Least Weekly	Annual (verified) Backup Monthly Generations Weekly Generations
Application software	Latest Version plus patches At Least Weekly	Annual (verified) Backup Monthly Generations Weekly Generations
System data	Daily	Annual (verified) Backup Monthly Generations Weekly Generations Daily Generations
Application Data	Daily with real time transaction files	Annual (verified) Backup Monthly Generations Weekly Generations Daily Generations
Software licenses, encryption keys, & Protocol Data	Weekly	Annual (verified) Backup Monthly Generations Weekly Generations
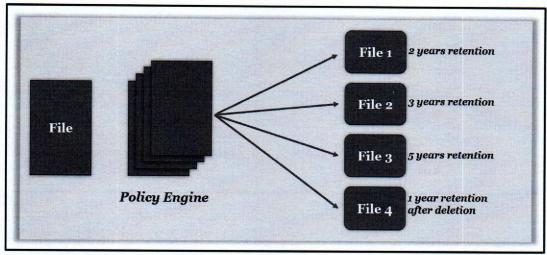
State Data Centre acts as a mediator and convergence point between open unsecured public domain and sensitive government environment. It enables various State departments to host their services/applications on a common infrastructure leading to ease of integration and efficient management, ensuring that computing resources and the support connectivity infrastructure (SWAN/NICNET) is adequately and optimally used. In SDC, the centralized computers/Servers are used to host multiple state applications with high availability zone, centralized authenticating system to authenticate the users to access their respective systems depending on the authentication matrix.

In purview of above explanation, considering a scenario where, the West Bengal State Data Center (SDC) holds 90% of the web servers are storing data but the data utilization i.e. data absorbed by various departmental hosted application stands at 40%. So, there should be an immediate need to formulate the appropriate state data center storage and data retention policy to encourage appropriate data storage and archiving. The Data Retention Policy would be guided by the following factors:
- Data classification and risk assessment of data.
- Data Retention Period.
- Data Security aspects.
- Disposal of data once the retention period is over

Note: *Before any data is archived into the physical tapes or drives, data must be made anonymised and shared with the state public data sharing platform to facilitate the state government, state start-ups, MSMEs for analysis in form of measuring trends, training data for their application or platforms, research and development.*

Retention Policies- Automatic Classification

The importance of Data retention policy can be described by:
- to meet compliance
- minimize storage cost
- monitoring and enhancing the performance of scheduled backups
- Schedule regular testing of backups and ensuring adherence to related retention policies as defined by the state
- Prompt execution of on-demand backups of volumes and files whenever required or in case of upgrades and configuration changes to the system
- Real-time monitoring, log maintenance and reporting of backup status on a regular basis.
- Media management tasks, including, but not limited to, tagging, cross-referencing, storing, logging, testing, and vaulting in fireproof cabinets (onsite and offsite).
- 24x7x365 supports for file and volume restoration requests at the Data centre.

Further detailing is mentioned in the Annexure E- West Bengal State Data Centre Storage Sharing and Electronic Data Retention Guidelines 2020
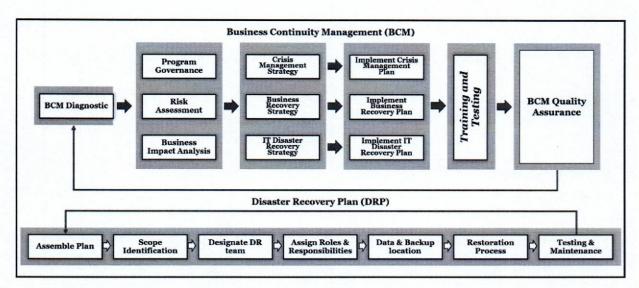
h) Disaster recovery and Business Continuity Plan

The high availability is one of the critical requirements of the Data Centre. As the systems are centralized at Data Centre, the State would be required to establish appropriate Disaster Recovery and Business Continuity Plan (DR and BCP) along with appropriate data backup and recovery infrastructure. Initially, State should plan for off-site Back-up mechanism for their DR strategy and depending upon mission critical requirement the BCP requirement would be met through the design architecture of the primary Data Centre itself. The Business continuity plan can be sub divided into four major phases:

1) **Business Impact Analysis**: During this phase the BCP team need to access the potential impacts that could harm the governmental process and review the impact summary with the appropriate data owners and stakeholders

2) **Recovery Strategies**: Identify and document the resource requirements based on the Business Impact analysis and determine the data recovery strategies.

3) **Plan Development**: this phase develops the framework for the continuity plan, establish and organise the recovery teams and develop a plan of relocation in the case of disruption or disaster. In this step, the a through business continuity plan is created and identification of the disaster site (location), provision of electricity, internet connectivity, backup servers etc. needs to make available beforehand. A proper recovery strategy document should be kept with proper RACI matrix.

4) **Testing and Exercise**: Creating a test plan and disaster recovery site needs to be tested regularly via various testing procedure viz. parallel testing, simulation testing, Walkover etc. The update the BCP plan based on the test results and exercise

Business continuity management & Disaster Recovery Plan

i) Capacity building and Employment generation

This Policy will involve creating awareness and building capacity on Digital communication domain, which will thereafter facilitate employment opportunities. The methodology will comprise:

- Collaborating with Technical Education, Training and Skill Development Department, to develop various short term, long term course/s on digital communication in engagement with the industry for building state capacity and developing institutional capabilities in telecom security tools, standards and forensics including in manufacturing of critical telecom equipment
- Creating educational resources relating to the communications sector and making them available in an open and accessible format to promote self-directed and collaborative learning through interactive formats, including audio, video and text
- Promoting Industry-Academia-Government partnerships to develop capacity and skills in line with future technology needs
- Training must be imparted to the technicians and laborers who deploy fiber and electronics. They may be further certified as well. These credentials may be used to qualify agencies for deployment of fibre and electronic broadband infrastructure.
- Paschim Bangla Society for Skill Development (PBSSD), through Department of Technical Education, Training and Skill Development may design separate skill qualification frameworks (SQF) for short term vocational training for the technicians and laborers for building the broadband network infrastructure.
- This way the capacity building shall develop skilled manpower rightly fit for the industry and will ensure a sustainable employment generation. The outline strategy for capacity building and employment generation may have the following components;
  - o Identifying the specific areas of skill requirement
  - o Designing skill qualification framework
  - o Involving industry players for industry-oriented skill sets
  - o Training and capacity building
  - o Providing certificates
  - o Assisting in employments

8. Implementation Roadmap

The Broadband is a tool which helps in strengthening communities, create more responsive and efficient government, and keep our economy moving. The distribution of internet across the districts, villages, mouzas through broadband connectivity reflects Governments efforts to develop knowledge economies, foster digital transformation in government services and digital transition across economic sectors, expand opportunities for businesses, and provide greater value for citizens and consumers.

The primary vision of the State Broadband Policy is to set up broadband connectivity across all the villages (mouzas) and public utility centre across the State of West Bengal by 2020. In order to realize that vision, the backbone infrastructure needs to be developed. West Bengal State-wide Area Network (WBSWAN) has already been implemented under the National e- governance requirement and has been spread over across districts and blocks of West Bengal. In the similar line, broadband may be implemented to connect all the villages and mouzas in the State.
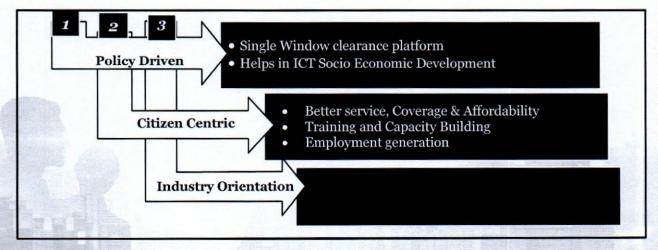
The existing SWAN infrastructure may be used to conceptualize and create a broadband network structure to connect Bangla Sahayata Kendras, Public Utility Centres and all the Mouzas. All the Gram Panchayat should be connected to CSCs within high intensity zones. Three major components are there to implement broadband across villages;

- Identification and utilization of already existing backbone network infrastructure
- Implementation/ creation of backbone infrastructure wherever required
- Identification and onboarding of telecom service provider through proper empanelment/ bid process to implement and support broadband connection

Through creation of proper backbone infrastructure and broadband connectivity across the all target areas (rural areas/ Villages (mouza)), industry orientation shall happen. West Bengal state Broadband Policy implementation will ensure faster deployment, segregation of infrastructure ownership, deploying implementation models and maintenance responsibilities are assigned. The project entails connecting all gram panchayats (GPs) via optic fibre cable; setup infrastructure for last mile infrastructure in the form of Wi-Fi hotspots at GP level, in parallel to setting up internet access points to utilize existing BSNL/ BBNL fibre, strategy to connect government institutions (Public utility Centres) by broadband.

Under the West Bengal State Broadband policy, the government intended to connect all Bangla Sahayata Kendras with Gram Panchayat (GP) via BBNL network and creates a POP framework (covering <500Metres area- similar to Mobile base station establishment) and hereby expanding the digital connectivity to all rural villages (mouza) thereby connecting to all Public Utility Centers (last mile connectivity).

Also, Latitude and Longitude of all Mouzas are captured via a state-owned survey to identify the grey zones, which will be dealt by the empanelled telecom service provider to establish last mile connectivity.

1 **2** **3**

Policy Driven
- Single Window clearance platform
- Helps in ICT Socio Economic Development

Citizen Centric
- Better service, Coverage & Affordability
- Training and Capacity Building
- Employment generation

Industry Orientation

Implementation Levels

To create a sustainable digital ecosystem, West Bengal government has primarily focussed on establishment of the digital connectivity throughout the state, use of single window platform for smart public service delivery, encouraged digital penetration via participative governance involving emerging technologies in form of Artificial Intelligence, Blockchain, Drones and Internet of Things. The state has also envisaged setting up a Public Transactional Data Sharing Platform, which will facilitate both government, private entities in getting the first-hand experience of readily available live data in anonymised format to meet both security and data sharing aspects. Focussing on the implementation aspect of the said development folio the state has progressed by leaps and bounds and has created a favourable and sustainable environment for growth in terms of better public service delivery, strong start-up ecosystem, employment generation, investment promotion, building capacity, social welfare, developing futuristic infrastructure and overall socio-economic progression. Owing to need for modification in the annexed guidelines arising out of technological necessity or otherwise, requisite changes may be made following due diligence, as and when required. The implementation plan based on various state initiatives are explained below:

a. **Drone/s in public service delivery:** The Department of Information Technology & Electronics (DoIT&E), Government of West Bengal shall be designated as the nodal department. A designated officer nominated by the DoIT&E shall act as the nodal officer for entire gamut of activities involving clearance, setting up, implementation of drone technology in public interest. West Bengal Electronics Industrial Development Corporation Ltd. (WBEIDCL) and/or any other organisation under its aegis, shall be notified by the Dept of IT&E to act as the State Implementation Agency (SIA) for all drone based initiatives, starting from promoting Drone Technology in West Bengal, building capacity through training programmes, meeting human resources recruitment, identifying technical upgradation requirement, helping in procuring specific machinery/infrastructure, creating awareness on Drone Technology to facilitate the Drone operators and to develop an ecosystem for R&D, Start-Ups and Innovation in the state, until directed otherwise. The SIA would responsible to establish a dedicated technical wing for executing drone initiatives in the state and facilitate empanelment to drone service providers for providing drone-based services to government departments across various sectors including agriculture & allied sectors, fisheries, rural & urban, disaster management, police, mining, tourism, and cross cutting areas such as project/asset monitoring, etc. The service provider is expected to undertake the drone-based surveys, capture high-resolution images/videos, prepare 2D maps & 3D models, evaluate captured data, and prepare other analytics-based outputs that can facilitate effective real-time governance. The drone manufacturing and sectoral deployment will encourage the usage of drones for the larger public good and presenting necessary resources for developing the talent pool to address the numerous roles emerging out of drone usage, from assembling of the drones to processing of the data acquired to promoting research and innovation. *Further detailing is mentioned in the Annexure C- West Bengal Drone Technology Promotion Guidelines, 2020*

b. **Blockchain based participative governance:** Blockchain Technology is poised to play a significant role in e-Governance in the near future. It is expected to empower the Government to construct a sector specific secure, reliable, auditable and efficient government workflows and procedures. The Department of Information Technology & Electronics (DoIT&E), Government of West Bengal shall be designated as the nodal department. A designated officer nominated by the DoIT&E shall act as the nodal officer for the entire gamut of activities involving clearance, setting up, implementation of Blockchain technology in the public interest. West Bengal Electronics Industrial Development Corporation Ltd. (WBEIDCL) and/or any other organisation under its aegis, shall be notified by the Dept of IT&E to act as the State Implementation Agency (SIA) for all Blockchain based initiatives until otherwise directed.

Trust and Transparency are one of the greatest requirements in governmental function, hence Blockchain will play a vital role in public service delivery viz. Securing academic records, securing land registration transactions and enabling cross-departmental workflows for land mutation, Tracking supply chain management in Agricultural domain, tracking and monitoring of the supply chain of medicine, preserve digital identity, public administration, voting and others. The department is encouraging the development of the blockchain ecosystem by Capacity building and Awareness, cross

industry collaboration, promoting blockchain based start-ups and majorly focussing on blockchain infrastructure development.

Further detailing is mentioned in the Annexure F- West Bengal Blockchain Technology Promotion Guidelines, 2020

c. **AI based participative governance:** West Bengal as a leading state for Artificial Intelligence and encourage its adoption in Government service delivery by adopting a state AI framework for public good. The Department of Information Technology & Electronics (DoIT&E) shall be designated as the nodal department and West Bengal Electronics Industrial Development Corporation Ltd. (WBEIDCL) and/or any other organisation under its aegis, shall be notified by the Dept of IT&E to act as the State Implementation Agency (SIA) for all AI-ML based initiatives. A designated officer nominated by the DoIT&E shall act as the nodal officer for the entire gamut of activities involving development of futuristic infrastructure, clearance, setting up, implementation of AI-ML technology in the public interest. The state primarily focusses in reskilling and upskilling of their past and present generation including state government state officials on various AI driven technologies, who are primarily important stakeholders in delivering public goods. The department of Information Technology and Electronics, Government of West Bengal is encouraging partnership with premier institute/s and organisations to develop industry-ready curriculum and courses to bridge the skill gap and generate sector specific employment. West Bengal is encouraging start-up community to come up with the sectoral solutions for smart public service delivery via initiatives like Bengalathon, Ideathon (in collaboration with industry chambers) and will support select incubators and accelerators with specific packages/support, depending on the critical product/solutions of strategic and economic value. To further boost the AI- ML industry, the Government shall extend the following incentives to the AI-ML tech. organizations for:

- Provision of AI -ML data storage, analysis, and application hosting facilities in West Bengal State Data Centre
- Access to anonymized Public transactional data to aid AI-ML based PoCs
- Support in talent searching, recruitment and training via state flagship skill registry program- Karmo Bhumi

Further detailing is mentioned in the Annexure G- West Bengal AI-ML Technology Promotion Guidelines, 2020

Fees and Charges

- The requisite fees for various clearance will be based on notification issued in this regard by the State Government in the Department of IT&E with concurrence from the Finance Department.
- Details are enumerated in the Annexure B containing note on existing fees and charges for clearance and permission for BTS and OFC subject to modification as and when required.
- Every application for clearance to establish telecom infrastructure shall be accompanied with such fee to meet administrative expenses for examination of the application and the proposed work as the appropriate authority may, by general order, deem fit *provided that* such fee to meet administrative expenses shall not exceed the designated amount as per the policy.
- The appropriate authority shall not charge any fee other than those to be prescribed for both over-ground and underground telegraph infrastructure.
- All fees will be paid online into the State Government exchequer at the Head of Account created by the Finance Department, Government of West Bengal with concurrence of the Accountant General, West Bengal.

9. Challenges

As the telecom industry in India prepares for the next level of growth through new digital initiatives the challenges that prevented the implementation of an effective broadband network in India in the past are regulatory hurdles, lack of futuristic infrastructure, Right of Way issues, Last mile connectivity, limited spectrum availability and appropriate investment and monitoring. The current challenges that needs to be addressed are listed below:

- Substantial investment in Infrastructure
- Governmental mandates and policy framework
- Multilingual support to rural areas
- Developing data driven process majorly focussing on data acquisition, Dta sharing and Data retention mechanism
- Technology upgradation

The poor quality of service (QoS) and call drop issues are primarily attributed to the country's low investment in fibre and backhaul infrastructure. It is a well understood fact that fibre networks are the most viable medium to deliver increased data capacity and improve the quality of voice calling. The disparity in broadband penetration and telecom infrastructure deployments between urban and rural areas are also one of the major factors for the low Broadband Readiness Index. The low population density in rural areas, low per capita income and lack of awareness and access to multilingual information in terms of Government initiatives hampers the achievements of the economies of scale for catering digital services. delays in roll out of data-based products and services due to government policies and regulations, are hampering the progress of telecom sectors.

10. Opportunity

The West Bengal State Broadband Policy 2020 will drastically facilitate the Telecom service provider and Internet Service provider to get clearance within the designated timeline and without any hassle to submit physical documents viz map, approval, Latitude/ Longitude details etc. and making physical mode of payment. The state policy will facilitate the below challenge areas for betterment of the digital connectivity and improves transparency and overall coverage. The areas of improvement are as follows:

- Establishing the West Bengal Telecom Infrastructure Guidelines 2020 with Single window clearance for telecom infrastructure deployments refers to West Bengal Telecom Infrastructure Guidelines 2020 in parallel with the adoption of emerging technologies viz AI, Drone, Blockchain, IoT facilitating participative governance and encouraging anonymous data sharing and data retention in principle to develop the entire state digital ecosystem
- Adopting strategies focussing capacity building, creating awareness and collaboration with rural channel players viz CSC, rural bankers, NGOs will drastically minimize the digital divide between rural and urban areas
- Promotion and Development of the multilingual data repository focusing on the governmental schemes and initiatives targeted to rural areas viz farmers, rural bankers, Bangla Sahayata Kendras, Rural cooperatives etc.
- Preparation of digital fibre map of the Digital Communications network and infrastructure, including Optical Fibre Cables and Towers
- The government should increase the network area through optical fibre instead of copper which is expensive, easy right-of-way permissions and lower cost of rights-of-way to ensure last mile connectivity for creation of the holistic digital ecosystem.
- Development of smart city projects, where IoT would play a vital role in development of those cities
- Internet Landing Station for high speed internet, especially in the coastal areas
- Telecom Operators should leverage on the talent pool in the country which is bringing in a lot of new innovations in AI, blockchain technology etc.

- Futuristic 5G will allow operators to move beyond connectivity and explore opportunities related to IoT, M2M, and augmented and virtual reality (AR-VR).
- Facilitating support infrastructure like electric supply and road connectivity
- Establishing common service ducts and utility corridors in new cities and high road projects
- Divestment of tower assets into separate companies will enable curb costs and focus on core operations.
- New Infrastructure on shareable basis just like the way telecom service providers share the cost of towers is need of the hour.
- Introduce new and efficient technologies such as M2M (technology that enables networked devices to exchange information and perform actions without the manual assistance of humans) and cloud computing.
- Promoting innovative technologies for expansion of broadband especially for the local industry
- Creating massive employment opportunities as a result of development of Digital Communications infrastructure across the state and through the internet-based services.

11. Recommendations

Implementation of West Bengal Telecom Infrastructure Guidelines, 2020 and promotion and implementation of other technology guidelines as described hereinbefore in order to ensure

➢ Creation of digital ecosystem

➢ Creation of seamless state-wide connectivity for data exchange

➢ Creation of a Cybersecure program to protect state data not restricted to State Data Center

➢ Special focus on data creation, data storage, data sharing, data retention and data usability

➢ Creation of collaborative platform using Public Private Partnership (PPP) for better exchange of data and promoting research and development

➢ Extension of the applicability of the Broadband policy 2020 and promote emerging technologies deployment/s across sectors to improve sustainability goals as a whole.

12. ANNEXURE

- Implementation Framework for West Bengal Telecom Infrastructure Guidelines 2020- Annexure 'A'

- Notification for fees and charges for clearance and permission for BTS and OFC- Annexure 'B'

- Implementation Framework for West Bengal Drone Technology Promotion Guidelines 2020- Annexure 'C'

- Implementation Framework for West Bengal State Public Transactional Data Sharing Guidelines 2020 - Annexure 'D'

- Implementation Framework for West Bengal State Data Centre Storage Sharing and Electronic Data Retention Guidelines 2020 - Annexure 'E'

- Implementation Framework for West Bengal Blockchain Technology Promotion Guidelines 2020- Annexure 'F'

- Implementation Framework for West Bengal AI-ML Technology Promotion Guidelines 2020- Annexure 'G'

DEPARTMENT OF INFORMATION TECHNOLOGY & ELECTRONICS

Government of West Bengal