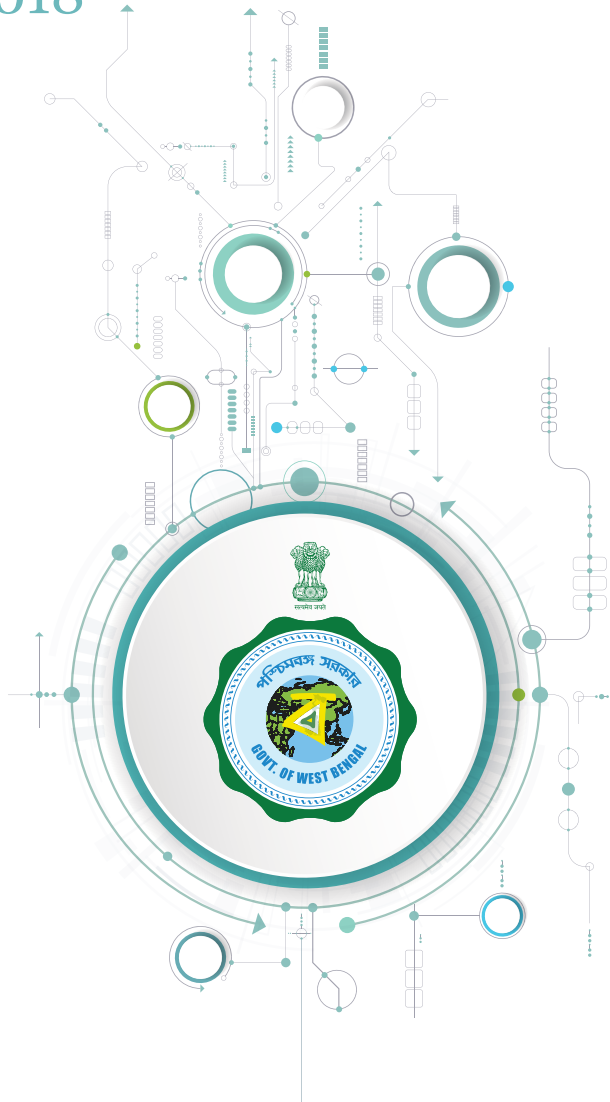# Information Technology and Electronics Policy 2018

#*LOGINTOTHEFUTURE*

Department of Information Technology and Electronics
Government of West Bengal

Contents

List of Abbreviations

Serial #	Abbreviation	Expanded Form
1	IT	Information Technology
2	ITeS	Information Technology Enabled Services
3	IT&E	Information Technology and Electronics
4	ICT	Information and Communication Technologies
5	ESDM	Electronic System Design and Manufacturing
6	GoWB	Government of West Bengal
7	GoI	Government of India
8	DIT&E	Department of Information Technology and Electronics, Government of West Bengal
9	IoT	Internet of Things
10	EMC	Electronic Manufacturing Cluster
11	PPP	Public Private Partnership
12	FAR	Floor Area Ratio
13	GVA	Gross Value Added
14	CoE	Centre of Excellence

Executive Summary

West Bengal has surged ahead economically and seeks to leverage IT for social welfare and economic development. The state has many strategic competitive advantages for business, including strategic location, robust physical infrastructure, rich education ecosystem and is the leading growth engine of the country. Information technology infrastructure and services are relevant enablers and crucial determinants of Bengal's continued growth and development, and thus, deserves special attention.

The state's vision is "To become one of the leading states in India in the IT, ITeS, ICT (Information & Communication Technology) and ESDM (Electronic System Design and Manufacturing) sectors and to enable West Bengal to transform into a knowledge-driven, technologically-enabled welfare society with extensive use of IT and ITeS, thereby increasing employment opportunities and promoting the state as a preferred investment destination".

To reach this vision, three pillars have been conceptualised:

- Government as a Platform: West Bengal as a hub of innovation with a focus on emerging technology. Operationalisation of high-technology clusters, making West Bengal the preferred IT/ITeS/ESDM destination, rising up the electronics value chain, hand-holding green cities are key priorities.

- Government as a Knowledge Catalyst: To build skillsets. Creation of talent pool, technology awareness, and skilling/upskilling/reskilling are priorities.

- Digital Technology for Social Benefit: Leverage digital technology to promote socially beneficial development.

Focus Areas and Key Strategies

Focus areas, amongst the emerging technologies, include: 3D printing, analytics (including big data analytics), animation and gaming, Artificial Intelligence, augmented reality and virtual reality, blockchain, cyber security/cyber forensics, data science, drones, fintech, intelligent infrastructure, internet of things, robotics, Industry 4.0, embedded technologies, quantum computing, telecom technologies (5G and beyond).

Along with skill building, ecosystem build-up, entrepreneurship promotion, spreading the benefits of the IT revolution in tier II, tier III cities are identified priorities.

We now look into the key strategies envisaged.

1. DIT&E will work in conjunction with other departments to create a world-class ecosystem.

2. The Bengal Silicon Valley Hub will catalyse innovation and be a globally renowned hub.

3. The state will promote IT Parks/EMCs/hardware parks.

4. In respect of specific fiscal incentives, the following proposals have been added:

   a. The Incentive Policy of Commerce and Industries and MSME Departments will be followed mutatis mutandis.

   b. Extra 15% Floor Area Ratio (FAR) will be allowed for IT/ITeS buildings [as per Government Order (GO) No. 3945-UD/O/M/HID/4I-3/2011 point 1 B].

   c. Exemption in property tax of 50% will be given for 12 years [as per section 102B of the West Bengal Municipal Act 1993].

5. The state will give opportunities to local companies/citizens to showcase their innovation.

6. IP creation will be encouraged. Hackathons will drive innovation. Incubation centres will be promoted.

7. The state will form partnerships for promoting emerging technologies. PPP will be encouraged.

8. The state will participate in nationally/internationally reputed events.

9. The state will work with renowned mentors and target diaspora.

10. A single window for investors will be promoted along with the means to streamline interactions with the government.

11. Last mile connectivity through partnerships with telecom providers will be encouraged.

12. Enterprise Architecture for West Bengal will improve service delivery.

13. The government will nurture training centres and work with stakeholders to build up skills.

14. The Cyber Security Centre of Excellence will drive efforts for awareness generation and capacity building, cyber security assurance framework, Security Operation Centre, cyber forensic and investigation, research and continual improvement.

Preamble

The state of West Bengal has surged ahead economically across various parameters in recent times.

The fourth largest state economy in India, growing at 15.64% GVA, West Bengal is leading the charge along the growth curve of India. The state is a perfect blend of economic strength and dynamism, with a strong consumer base, vibrant industry, large talent pool, industry-friendly stable policies, transparent governance, and record social and physical infrastructure development. The State Government is committed towards inclusive and sustainable development, providing increasing employment opportunities.

> **Strategic Location**
>
> **Robust Physical Infrastructure**
>
> **Rich Culture**
>
> **Leading Growth Engine of the Country**

The state of West Bengal has clear advantages conducive to business.

Strategic Location

- Gateway to South-East Asia and North-East India
- Shares international frontiers with Bangladesh, Nepal and Bhutan
- Closest international airport and metro to South-East Asia's economic hub (Singapore, Bangkok, Hong Kong, Taiwan, Seoul, Tokyo, Shanghai, Kuala Lumpur, Ho Chi Minh City, etc.)
- Hinterland comprises mineral-rich states such as Jharkhand, Orissa, Chhattisgarh
- Naturally beautiful: The Himalayas, the Dooars, the Riverine Delta of the Sunderbans and beaches

Flying time from Kolkata – select cities

Within 12 hours	Tokyo (~9 hours) Moscow (10.75 hours) Istanbul (10.75 hours)
Within 10 hours	Taiwan (7 hours) Shanghai (7.75 hours) Beijing (~8 hours)
Within 5 hours	Singapore (4.25 hours) Hong Kong (~4 hours) Kuala Lumpur (<4 hours)

Robust Physical Infrastructure

- Third largest road network (more than 3,15,404 km) of the country
- Richly endowed with natural maritime advantages; has 950 km of waterfront
- Two international airports – Kolkata and Bagdogra
- Leading in the country in terms of spread, density and reach of the national inland waterways
- About 4,000 km of railway tracks
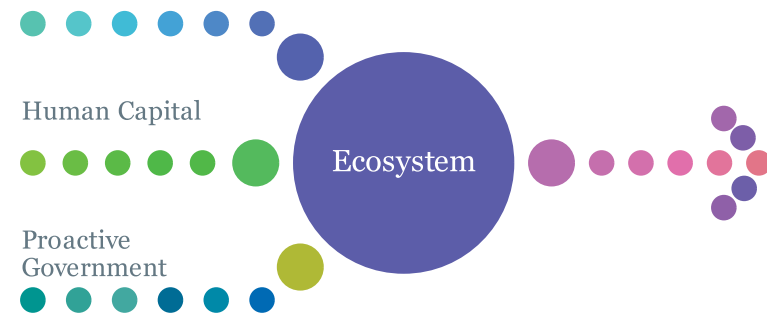- Second largest metro rail network in the country

Rich Education

- Home to the Indian Institute of Technology (Kharagpur – alma mater of Sundar Pichai, CEO, Google), Indian Institute of Management (Calcutta), Indian Institute of Engineering Science and Technology (Shibpur), Saha Institute of Nuclear Physics, Bhaba Atomic Research Centre, Bose Institute, Jadavpur University, Kalyani University. The state has 27 universities and produces 800 PhDs, annually. Bengal is a land of multiple Nobel Laureates
- Birthplace of modern Indian literary and artistic thought
- Kolkata is referred to as the 'cultural/literary capital of India'
- Land of Amartya Sen, Rabindranath Tagore, Satyajit Ray, Saint Mother Teresa and many more

Leading Growth Engine of the Country

- Largest in India in power distribution, quality and availability. West Bengal is a power surplus state
- Zero man-days lost in the last five years
- Kolkata was the first metro city in the country with 4G Wi-Fi connectivity
- West Bengal has a leading rank amongst Indian states in the context of Ease of Doing Business (EoDB)
- ~US$ 15 billion: India's highest bank credit flow to MSMEs in the last five years since 2011-12
- Second largest in terms of the number of MSMEs (~3.7 million enterprises)
- The state is the land of the famous Darjeeling Tea
- 3rd largest in mineral production in India

Strategic Advantages

Human Capital

Ecosystem

Proactive Government

In view of such intrinsic advantages, the Department of Information Technology[1] and Electronics (IT&E) has a strategic role in sustaining the growth momentum and ensuring that West Bengal maintains its technology leadership.

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[1]Unless otherwise mentioned, IT will refer to the entire landscape of ICT/IT/ITeS/ESDM

Information and Communication Technology (ICT), Information Technology, Information Technology Enabled Services and Electronics are all knowledge-based industries that will be of paramount importance in an era characterised by frantic technological growth and big data. A few crucial points pertaining to ICT/IT/ITeS/IT&E are as follows:

1. The emphasis is on two fronts. First, at harnessing emerging technologies so as to be amongst the top global performers, and second, to spread relevant skillsets in expanding the workplace to areas such as digital marketing, 3D printing, animation, gaming, data analysis, big data and contributing to the electronic value chain.

2. Information technology infrastructure and services are relevant enablers and critical determinants of Bengal's continued growth and development. With significantly advanced skillsets in advanced and emerging technology, the state is poised to benefit from leveraging new digital platforms and technologies. IT competency will have the potential to unlock higher degrees of productivity and target globally underserved or even unserved markets. This will be a vehicle to promote the development agenda and generate modern jobs and livelihood. Such initiatives will yield benefits to not only the present professionals but also students.

3. West Bengal is aware of the advantages of new age IT tools/platforms and has resolved to ensure equitable access to the fruits of the IT revolution. Keeping in mind the diverse nature of the state, the Government will work to ensure that citizens of all demographic groups, with varying education and income levels, will all be able to take advantage of IT.

4. West Bengal has made rapid strides in IT. From the epicentre of Salt Lake Sector–V, New Town, Rajarhat, the state has disseminated IT Parks and IT skill building centres all across Bengal, even in tier II and tier III towns. West Bengal's digital footprint is rapidly growing. Democratisation of hardware and software has contributed to the spread of mobile telephony. Technology can empower far-flung citizens by giving them access to information at their fingertips. The state of West Bengal will be guided by the United Nations Sustainable Development Goals, while leveraging IT for the common good.

5. The objective of this document is to lay out a policy and a strategic framework that will focus efforts for the creation of a vibrant competitive information technology ecosystem to strengthen Bengal's long-term competitiveness and serve the needs of the state's residents.

6. West Bengal possesses robust physical and digital infrastructure for the rapid proliferation of technology-driven businesses. It is necessary to explore the next level of action that will cause the rise of a new generation of technology. It is imperative to focus on infrastructure development initiatives that will form the bedrock of the next generation of software and hardware platforms.

7. A strong competitive landscape, which ensures the availability of new technologies, communication landscape, services and applications are essential to the growth of the state's economy. This will facilitate productivity and create new jobs in the economy. For users, competition directly contributes to innovation, access to new technologies, heightened quality, affordability and more choices. This document strives to promote healthy, legal and fair competition across the IT landscape.

8. This policy aims to simplify regulatory burdens on investors, as far as possible. Ease of Doing Business and investment facilitation are key aims of the State Government. Speedy, transparent and streamlined regulatory approvals are enablers of investment. Regulatory reform is a stringent process and the state will act hand-in-hand with key stakeholders to ensure that West Bengal can leverage the full potential of IT.

9. Digital security of the inhabitants of the state is a key concern. West Bengal's data security should be ensured in the face of proliferation of cyber threats. Privacy of the citizens and the ability to navigate through cyberspace without the fear of personal data being compromised are some key facets of a cyber-safe Bengal.

10. The objective of an IT&E policy for the state of West Bengal is to prepare the state for the future. Achieving these cherished goals would require close coordination between various entities including government bodies, public/private sector, academia, entrepreneurs, etc.

Vision

"To become one of the leading states in India in the IT, ITeS, ICT (Information and Communication Technology) and ESDM (Electronic System Design and Manufacturing) sectors and to enable West Bengal to transform into a knowledge-driven, technologically-enabled welfare society with extensive use of IT and ITeS, thereby increasing employment opportunities and promoting the state as a preferred investment destination."

Mission

✓ Make West Bengal the hub of emerging technologies and thereby capture opportunities in new age technologies:
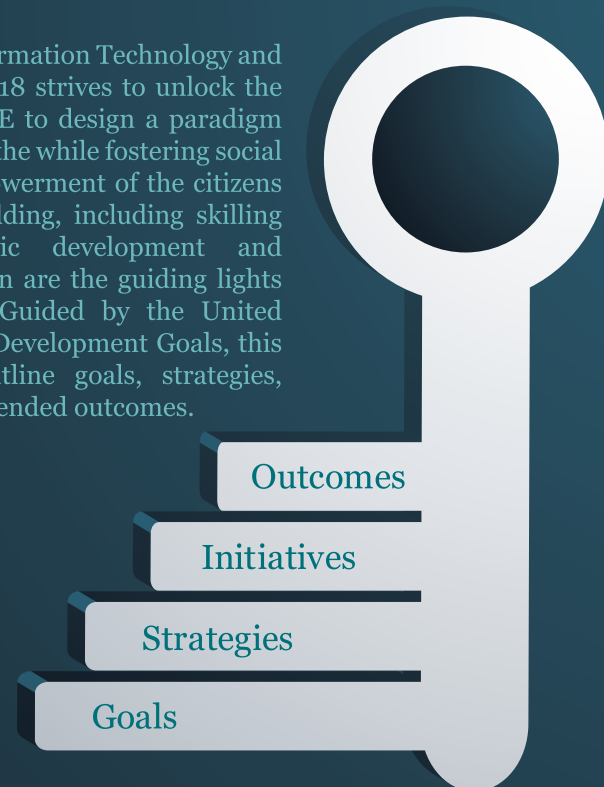
3D Printing ○	○ Data Science
Analytics (including Big Data Analytics) ○	○ Drones
Animation and Gaming ○	○ Fintech
Artificial Intelligence ○	○ Intelligent Infrastructure
Augmented Reality and Virtual Reality ○	○ Internet of Things, Robotics, Industry 4.0, Embedded Technologies
Blockchain ○	○ Quantum Computing
Cyber Security/Cyber Forensics ○	○ Telecom Technologies (5G and beyond)

- ✓ To leverage information technology, electronics and allied fields, as a means of creating job opportunities, economic development and growth.
- ✓ To upskill youths and reskill candidates as a means of empowering them for capitalising on upcoming technology trends.
  - ❍ To facilitate skill building and reskilling in IT/ITeS with special focus on tier II and tier III towns, and economically weaker sections of the society, as a means of livelihood augmentation.
  - ❍ To identify methods of quicker skill renewal and upgradation, consistent with the rapid technological changes by stressing on relevant online courses in the emerging technology domains.
  - ❍ To identify mentors for hand-holding support and strategic guidance on reskilling, in light of various disruptive technologies.
  - ❍ Industry-aligned university courses.
- ✓ To create an investor-friendly climate in the state for increasing West Bengal's share in the production of electronic goods.
- ✓ To create and facilitate a robust IT ecosystem for enhancing competitiveness and productivity of the key economic sectors, affecting the lives of the majority of the population of the state.
- ✓ To leverage on the premier educational and research institutions located in West Bengal to emerge as a leading state in the area of IT/ITeS/IC /ESDM (Electronic System Design and Manufacturing).
- ✓ To create an ecosystem for IT/ITeS/ICT/ESDM entrepreneurs.
- ✓ To identify the innovation potential of the residents of the states.
- ✓ To promote fresh entrepreneurs.
- ✓ To create clusters and hubs on analytics, fintech, animation, hardware and other focus areas.

West Bengal
Information
Technology and
Electronics
Policy
2018

The West Bengal Information Technology and Electronics Policy 2018 strives to unlock the vast potential of IT&E to design a paradigm shift in the sector, all the while fostering social welfare. Digital empowerment of the citizens through capacity building, including skilling /reskilling, economic development and investment facilitation are the guiding lights for this document. Guided by the United Nations Sustainable Development Goals, this paper strives to outline goals, strategies, initiatives and the intended outcomes.

- Outcomes
- Initiatives
- Strategies
- Goals

The West Bengal Information Technology and Electronics Policy 2018 aims to accomplish the following strategic objectives:

a) Establish IT/ITeS/Hardware as a means of social welfare

b) Creation of new jobs in the sector

c) Upskill, reskill and skill the population of the state to empower them for targeting jobs in the digital economy

d) Enhance brand Bengal as an epicentre of cutting-edge R&D in IT and promote innovation

e) Enhance contribution to the global value chain

f) Foster social benefits through digital technology and create an empowered populace

Pillars

The pillars of the policy will be as follows:

Government as a Platform: Make the state the hub of emerging technologies with a focus on innovation. Sustain traditional IT businesses. To derive a suitable ecosystem conducive to growth.

Government as a Knowledge Catalyst: To inculcate the necessary skillsets and support the ecosystem for leveraging global employment opportunities.

Digital Technology for Social Benefit: Leverage digital technology to promote socially beneficial development. Utilize advancements in technology to cause social welfare and strive to create an empowered populace in a cyber-safe Bengal.

Pillars		
Government as a Platform	Government as a Knowledge Catalyst	Digital Technology for Social Benefit

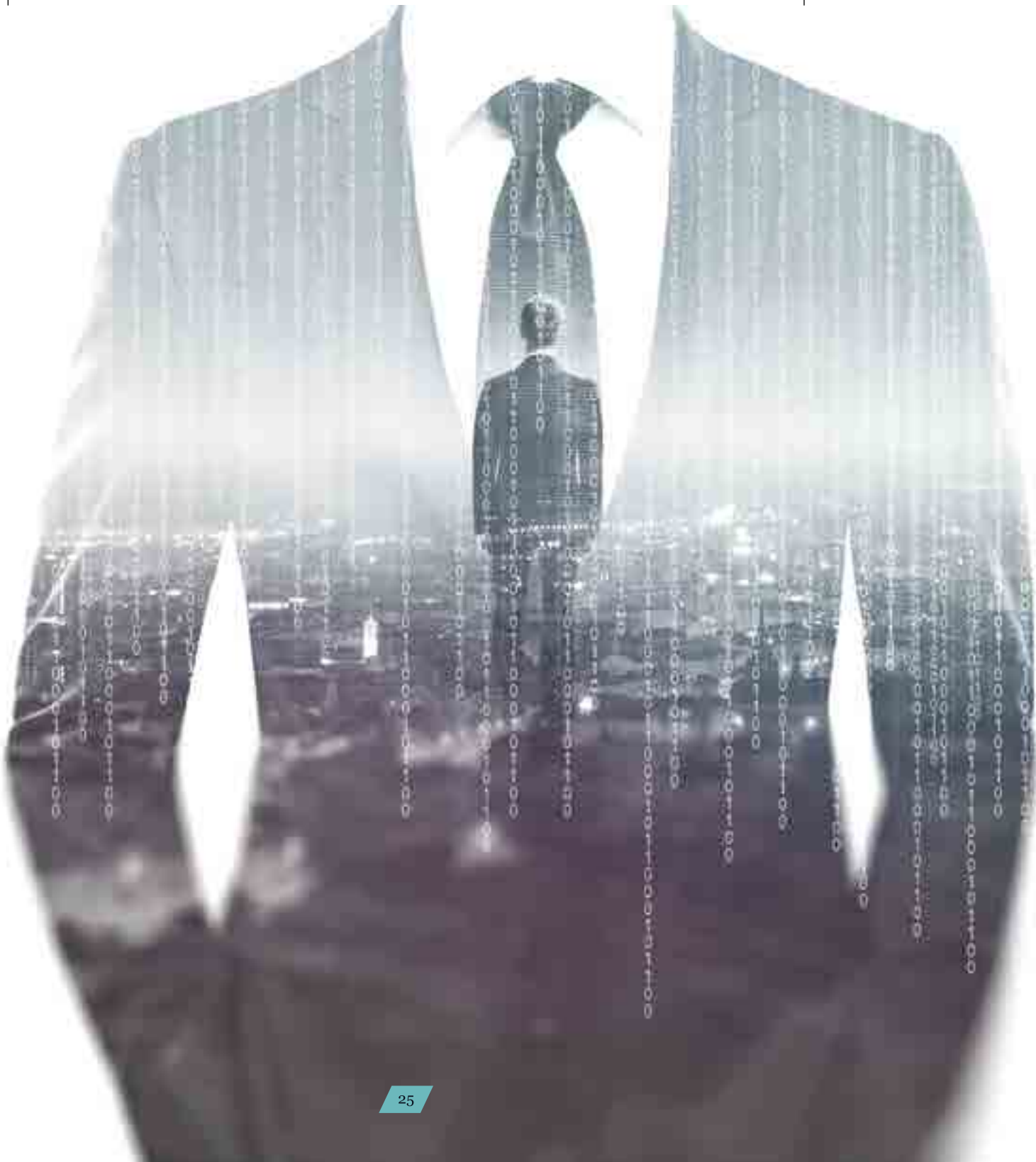These pillars will guide the strategy, initiatives and outcomes.

Government as a Platform

The outcome of this pillar is to see Bengal as the hub of emerging technologies and a sustainable IT business. West Bengal has strategic advantages for the IT business and it is envisaged that a focused push for creating the ecosystem is needed to encourage sectoral growth.

Goals

The following are the goals enshrined in this pillar.

1. Operationalise several high technology clusters across the state, each dedicated to a select vertical or a group of allied disciplines.
   a. Fintech Hub
   b. Information Technology Parks
   c. Electronic Manufacturing Clusters
   d. Hardware Parks

2. Make West Bengal the preferred choice for IT&E players in India and worldwide.

   a. To foster Electronics System Design and Manufacturing (ESDM) companies and encourage companies engaged in chip design.

   b. To rise up the electronics value chain. Focus on value addition. There will be emphasis on LED panels, gaming hardware, electric/automated vehicles, IoT components, cloud storage.

   c. To encourage growth of emerging technologies.

   d. Nurture existing IT businesses and safeguard their business from disruption.

3. Bring in global brands in IT/ITeS/ESDM/ICT.

4. The Department of Information Technology and Electronics (DIT&E) will assist in the promotion of e-Governance, as a means to simplify service delivery and improve the quality of life of the citizens by promotion of emerging technologies.

5. Hand-holding green cities for sustainable development of urban agglomerations.

Strategies

The following strategies will be executed to attain the goals of this pillar:

1. The Department of IT&E will work with other relevant Government of West Bengal (GoWB) and Government of India (GoI) entities to develop the infrastructure to house new age IT companies. State-of-the-art infrastructure, in line with the best practices worldwide, would be set up.

a. A technology hub may be considered with the best in class office space, internet connectivity, facilities, features and necessary support/social infrastructure. This would then facilitate other centres via a hub and spoke model. The state will work with leading consultants and subject matter experts to realise the vision.

2. The state will maintain and expand the network of information technology parks in the state. Each IT park will serve as a focal point to encourage IT-based entrepreneurship in the catchment area. The IT parks will have dedicated floor(s) as incubation centres to develop local entrepreneurship at the grassroots levels.

3. In respect of specific fiscal incentives:

   a. The Incentive Policy of Commerce and Industries and MSME Departments will be followed mutatis mutandis.

   b. Extra 15% Floor Area Ratio (FAR) will be allowed for IT/ITeS buildings

   c. Exemption in property tax of 50% will be given for 12 years

4. There will be a chain of events focusing on key technologies that are expected to shape the future of IT. These events will be organised by the Department of Information Technology and Electronics, Government of West Bengal (DIT&E, GoWB), and involve core stakeholders. Knowledge-sharing workshops will be held to improve capacity and facilitate networking.

5. There will be an innovation platform to highlight the achievements of local .companies. Companies based in the state and engaged in cutting-edge research will be recognised.

6. The development of intellectual property will be encouraged. The state will promote incubation centres for the development of path-breaking solutions. A Centre of Innovation will drive efforts in this regard.

7. There will be periodic competitions and hackathons as a means to promote the innovation potential of the state. Start-ups will be encouraged to participate as a means to capitalise on the talent. Initiatives like Bengalathon – a pioneering state-level hackathon will act as flagship events to drive innovation.

8. DIT&E will have the option of forging partnerships with government bodies, public sector units and private sector entities through a Memoranda of Understanding, following a first-come, first-served basis for promoting emerging technologies aligned to the mission of the state. Public private partnerships for value creation will be encouraged.

9. The state will participate in reputed national and international conferences, events, fairs, etc. to highlight Bengal's intrinsic competitive advantages and to garner investments.

10. The government will encourage the intensive use of land by allowing vertical utilisation by IT and ITeS companies through necessary changes in building rules and regulations including additional FAR and mixed development.

11. DIT&E will back reputed venture capital funds that promote entrepreneurship in West Bengal.

12. The state will target non-resident diaspora from the state for investment and work/research in Bengal.

13. Involving prominent mentors as domain experts to advise the government in policy making.

14. To encourage private sector participation in augmenting telecom connectivity – connecting urban local bodies with telecom infrastructure providers to bring in last mile connectivity.

15. The government will ensure that potential investors are serviced through a single window system. Online transactions will be facilitated to the maximum extent. The government will examine the provisions for self-certification and automatic clearances for various acts, and will continue to permit the same to the extent possible.

16. Facilitate collaboration of industry, academia and the youth, through state-of-the-art infrastructure development in the Bengal Silicon Valley IT Hub.

17. DIT&E will work with the nodal department/nodal agency/competent authority of the Government of West Bengal responsible for the promotion of e-Governance.

   a. Promotion of ICT as a means to streamline G2G (Government to Government), G2C (Government to Citizen), G2B (Government to Business), G2E (Government to Employee) interactions.

   b. Development of citizen-friendly applications to improve quality of life and easily acquire government services.

   c. Promote efficiency, transparency and convenience.

   d. Development of an Enterprise Architecture for West Bengal, that will promote improved service delivery.

Bengal Silicon Valley Hub

This pioneering hub will be the centre of innovation in India, as well as East Asia. The hub will attract the best of companies and talent. We have dedicated hundred acres of land for cutting-edge innovation, research and development, leading up to Industry 4.0.

❍ Top-notch facilities: Plug-and-play infrastructure

❍ Future-proof facilities

❍ Pollution-free electric vehicle for campus movement

❍ AI-based security surveillance

❍ Incubation, start-ups, innovation, and research and development facilities

❍ Web server farm

❍ Meant to attract the best brands and individuals

Government as a Knowledge Catalyst

The outcome of this pillar is to empower citizens to take up emerging jobs in the digital economy. This pillar serves to support the IT ecosystem, which will act as a launchpad for growth.

Goals

The following are the goals enshrined in this pillar:

1. Create a talent pool of candidates skilled in emerging technologies.

2. Upskill and reskill IT professionals to ensure their skillsets remain relevant in an age of disruption.

3. Promote technology skills and awareness amongst the youth, including school-going children.

Strategies

The following strategic initiatives will be executed to attain the goals of this pillar:

1. Nurture training centres, which will contribute to skill building.
2. Work with industry bodies and the relevant department/nodal agencies of the state government to devise a curriculum that will have increased industry acceptability.
3. Leverage existing IT parks and government properties to hold skill building workshops and more long-term interventions in the sphere of skill building.
4. Act in partnership with other Government of West Bengal (GoWB) departments to unveil a comprehensive IT and ESDM skill building programme.
5. Organise regular interactions with leading apex industry bodies to feel the pulse of the industry in terms of required skillsets.
6. Work with leading state educational institutions to augment students' skill sets.
7. Promote online videos and content as a means of disseminating IT skills.
8. Promote incorporation of the Bengali language in the user interface and the user experience of technology platforms.
9. Special training schemes suited for the rural population and economically weaker sections will be initiated so that job opportunities in the IT and ITeS sectors open up for the economically weaker sections also.
10. Special skills for the following sectors will be emphasised: animation and gaming, augmented reality and virtual reality, 3D printing.
11. Drive innovation and promote intellectual property generation in the state by facilitating mentor support for the youths and new technology ventures in the Centres of Excellence, Centre of Innovation in the Bengal Silicon Valley Hub. There will be extensive stakeholder collaborations for operationalising such centres.
12. Drafting policy documents on respective emerging technologies like Blockchain, Artificial Intelligence, Cyber Security, etc.
13. Identification of use cases.

Centre of Innovation

The Government of West Bengal is committed to empower the entrepreneurs of the state. The state will strive to create a suitable ecosystem where our talented citizens can grasp global opportunities. The Centre of Innovation will leverage innovative mechanisms to provide an impetus to the entrepreneurs in IT and the allied spheres.

This will work in conjunction with other CoEs (like the Cyber Security CoE), and along with events like knowledge workshops and hackathons (e.g. our flagship competition – Bengalathon), will build up an environment suitable for innovation.

Digital Technology for Social Benefit

This pillar seeks to leverage technology for the benefit of mankind. The Government of West Bengal will be guided by the United Nations Sustainable Development Goals to bridge the digital divide and create digitally empowered citizens.

Goals

1. Harness technology as a vehicle for poverty alleviation and social welfare.

2. Utilise technological and scientific achievements for the promotion of peaceful social and economic development.

3. Explore and resolve societal issues via technology, while protecting the citizens' rights.

4. Encourage co-operation to ensure scientific and technological progress.

5. To mitigate the social impact of cyber-crimes on the citizens and the state by endeavouring to contain and address such events which may have a social fallout.

6. To support law enforcement agencies in the effective prevention, investigation and prosecution of cyber-crime, and enhancement of law enforcement capabilities through appropriative legislative intervention.

7. To develop effective public private partnerships and collaborative arrangements through technical and operational cooperation.

Strategies

The following strategic initiatives will be executed to attain the goals of this pillar:

1. The Department of Information Technology and Electronics will identify suitable opportunities wherein technology may be developed for social welfare.

2. The state will strive to create an enabling ecosystem for socially relevant enterprises.

3. The state will forge partnerships to promote inclusive development.

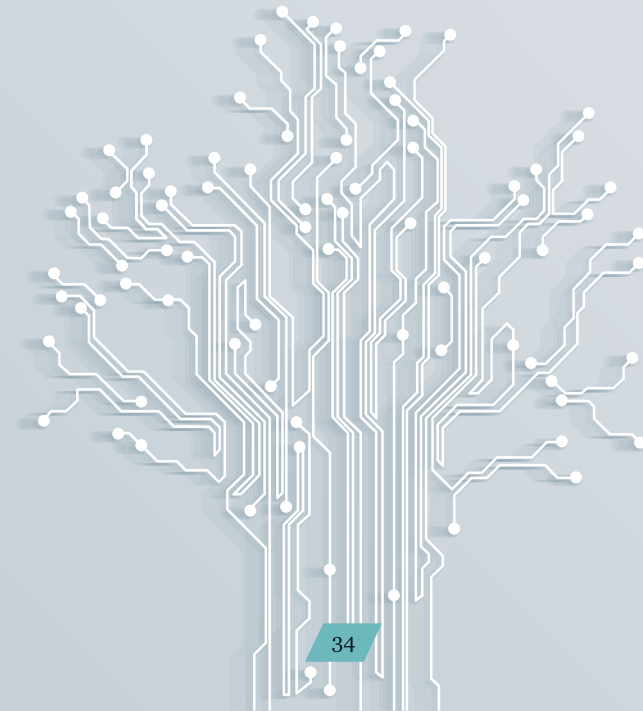4. The nodal agency of the department will implement technology-driven interventions for social welfare.

The broad strategies to ensure a cyber-safe Bengal will be enshrined in a separate Cyber Security Policy for the state of West Bengal.

Cyber Security Centre of Excellence

This CoE will drive efforts for success in Cyber Security. The five broad components are:

❍ Awareness Generation & Capacity Building

❍ Cyber Security Assurance Framework

❍ Security Operation Centre

❍ Cyber Forensic & Investigation

❍ Research and Continual Development

This policy is structured with the hope that the benefits of information technology will be spread across the state to enhance the quality of life of the citizens. It is hoped that the creative talent of Bengalis will gain an impetus to create innovative solutions in an age of disruption.

Department of Information Technology and Electronics
Government of West Bengal