Review Article

POLICY AND POLITICS OF THE DIGITAL: TECHNOLOGICAL AND REGULATORY TRAJECTORY IN INDIA

KASHMIR JOURNAL OF SOCIAL SCIENCES
13(1) 01 - 29
ISSN: 0975-6620

https://deanss.uok.edu.in/Files/20ca86b4-9101-4485-98f9-1beb3b33b64b/Journal/e5dcd1de-4ea8-4b48-a1ea-154f55e04092.pdf

Manisha Tripathy Pandey*
Niharika Parashar†

Abstract
This paper examines the technological and regulatory trajectory of digital transformation in India from the pre-independence era to the present, focusing on state policies, civic engagement, and market forces through Harold Lasswell's model of "who gets what, when, how" (1936). This study employs historical institutional analysis and highlights the challenges of digital rights, addressing the divide, security, and emergence of "digital elites". The analysis is divided into four phases: Foundational Communications Infrastructure (pre-independence to 1980s), Liberalisation and Digital Revolution (1980s to early 2000s), Data Governance and Digital Economy (mid-2000s to 2018), and Data Rights and Data Protection (2018 onwards). The analysis reveals a three-stage evolution from monopoly to liberalisation and the rise of private entities, leading to the dominance of tech giants or DigiLords. The study identifies interventions enabling this concentration and demonstrates how illiteracy creates DigiSerf dependency. The paper concludes digitalisation requires protection of rights, ethical security measures, balanced government-market influences, and citizen-centric advancement.

Keywords
Cybersecurity, Digital Infrastructure, E-governance, Data Protection, Public Policy

* Professor, Department of Sociology, Jamia Millia Islamia, New Delhi
Email: mpandey@jmi.ac.in
† Research Assistant, Department of Sociology, Jamia Millia Islamia, New Delhi

Introduction

The 21st century has witnessed widespread technological advancement and digital transformation propelled by the invention, intervention, integration and implementation of digital technologies. The technology-driven 'Information Age'saw a proliferation of computers and information devices and was enabled by a network of satellites and broadband fibre optic cables, paving the way for 'the rise of the network society' (Castells, 2011). Central to this transformation and the rise of this new digital age are the processes of digitisation and digitalisation, the terms that are often used interchangeably but are distinct in their scope, role and application in the digital landscape. As per the Oxford English Dictionary, digitalisation is "the adoption or increase in use of digital or computer technology by an organisation, industry, country, etc." It describes “how knowledge is processed, and the processed knowledge provides social transformations beyond digitisation, interaction, the annihilation of time and space, the phenomenon of usage in multimedia.” Digitalisation in India cannot be understood in isolation. It must be seen in the context of the political and economic structures and processes that shape and continue to give meaning and essence to digitalisation. Digitisation, on the other hand, is a part of the digitalisation process that involves the conversion of analog information to digital data. The aim of digitisation and digitalisation as a united force is to create a digital ecosystem that promotes digital growth, sectoral integration, citizen engagement and empowerment.

As per the *State of India’s Digital Economy* 2024 report, India is the third largest digitalised country in the world. However, only 38% of Indian households are digitally literate. This raises critical questions about the extent and impact of digitalisation in India: How far are we digitalised, and *who gets what, when, how?* (Lasswell, 1936). Has the process of digitisation in India led to the emancipation of the masses, or has it led to the creation of newer forms of haves and have-nots? Does it benefit the majority, or does it serve the digital elite? To what extent have we transitioned to an “electronic cottage”? Is the digital infrastructure available across regions and demographics in India homogenous? What is the

context and the time frame in which digital transformation was given primacy by the Indian State? What are the value conditions sought, gained, and lost at the altar of digital progress?

To understand this, one must critically examine India's digital prowess and progress beyond the surface-level metrics to examine key elements like digital inclusivity and exclusion, accessibility and affordability, cyber security threats and privacy concerns and quality over quantity of digitised services. The social milieu and ethos on which the policies are premised must be addressed. This paper attempts to trace various policies pre- and post-independence, which have led to the bridging of connectivity and proximity and the building of digitalisation and digitisation in India. An attempt will be made to assess the country's digital ecosystem by means of reviewing secondary resources and suggesting amends (if required) on the existing policies to combat the digital divide by exploring avenues aimed at reducing digital hierarchy and enabling the digitally poor. To interpret policies aimed at achieving public objectives and politics of a state, it is pivotal to understand the state's history, culture and public problems (Lasswell, 1936). Politics influences discourse; policy governs it. Conversely, policy should be objective (Lasswell, 1936) and binding (Easton, 1955) in nature.

An ongoing yet incomplete process, digitalisation, requires state intervention and market innovation for policy implementation as both state and market have complementary roles in bringing about digital transformation regardless of their distinct functions. Technological advancement and digital transformation are propelled by the market while the state acts primarily as the regulatory force in the new age of liberalisation and interconnectedness. However, challenges like inadequate skill to use digital services causing skill gaps that further create hierarchies and foster digital lag; resistance to change from traditional manual systems to integrated digital systems; the lack of robust cyber security measures to deal with cyber intrusions and sophisticated cyber threats; cost barriers; and uneven infrastructural development serve as an impediment to bringing about overall digital transformation.

Mapping the Technological and Regulatory Trajectory of Digital Transformation in India

India has witnessed major paradigmatic shifts in technology, governance, the nature of crime and societal expectations over the years. Policies facilitating digitalization in India have transformed from state-controlled establishment of basic communication systems and laying the groundwork for future technological development to marking a shift towards privatisation, computerization, and internetization, followed by the integration of digital technologies into the economy and governance, and finally emphasising on content moderation and data regulation.

Digital policies in India marked a transition from the seemingly feudal Post Office Act of 1837 to the prevailing discourse surrounding deep state and personal data protection, which is reflected in its approach to communication, privacy, and digital governance. While some experts view this progression as a move from an agricultural revolution to an e-governance revolution, this perspective may be overly simplistic, where e-governance refers to the application of Information and Communications Technology (ICT) to the process of government functioning. Such a myopic view fails to recognise India's transition from traditional industrialism to digital capitalism. This trajectory reflects the impact and effectiveness of India's digital policies in shaping the nation's socio-economic landscape with the potential for further evolution into what may be called "digital feudalism" or “technofeudalism”.

India’s march towards the digital can be explained by examining the development of communication, information, and digital policies. The development of India’s digital policy can be traced through four phases:

Phase I: Foundational Communications Infrastructure (Pre-independence to 1980s)

Phase II: Liberalisation and Digital Revolution (1980s to early 2000s)

Phase III: Data Governance and Digital Economy (Mid-2000s to 2018)

Phase IV: Data Rights and Data Protection (2018 onwards)

Phase I: Foundational Communications Infrastructure (Pre-independence to 1980s)

Phase I marked the transition from rudimentary postal services to more sophisticated modes of communication like wireless telegraphy as the foundation to India's technological landscape was established during this period. A basic communication infrastructure was set up, and the legislations required to regulate and monitor the same was established.

What seems to be unfathomable now is that horse and foot-based postal services dominated the region before the imperialist rule. The Post Office Act of 1837 laid the legal framework for providing for a state-sponsored, systematic, centralised and 'public' postal system in British India. Based on the colonial British administration's desire to monitor and regulate the flow of information, this act set a precedent for state intervention in communication technologies. The Post Office Act, 1837 was replaced by the Post Office Act, 1854.

A trans-India telegraph system was subsequently adopted in 1854. The Act No. XXXIV of 1854 rendered the British government exclusive rights to establish and manage electric telegraphs in India. However, while the enactment is adaptable and applicable to emerging technologies, its centralised nature created significant limitations. Besides being a communication medium, the telegraph also became a source of information for the government.The establishment of the British-owned telephone and telephone lines in 1881 further supplemented the existing telegraph networks; however, concentrated prosperity and localised growth led to a "deep digital divide".

From birds fetching letters to individuals talking to each other on wired phones, the world witnessed quite a transformation. A similar line of upgradation in the communication sector was witnessed with the introduction of wireless telegraphy apparatus. The Indian Wireless Telegraphy Act of 1933 was enacted "to regulate the possession of wireless telegraphy apparatus" such as satellite phones. The umbrella term "wireless telegraphy apparatus" can be applied to monitor and control radiotelegraphy as well because of its ability to disseminate information wirelessly. The Indian State Broadcasting Service (later All India Radio in

1936) introduced organised radio broadcasting in India on April, 1930 on an experimental basis which went on to become All India Radio on 8 June 1936.

After Independence in 1947, India's communication infrastructure witnessed a paradigmatic shift with the transfer of power from the colonial regime in 1947. While the foundational communication infrastructure established by the Britishers served as the kernel, India after 1947 was vested with the responsibility of ensuring, maintaining and expanding the existing network to suit national interest. India's Scientific Policy Resolution (SPR) of 1958 was one such regulation that emphasised on the role of science and technology in the pursuit of national development. It aimed at fostering, promoting, and sustaining the cultivation of scientific inquiry, rational thinking and scientific research in all its aspects - pure, applied, and educational to actualise a scientifically oriented society.

The first phase of development set the motion for India's scientific and technological vigour but lacked inclusivity. Though the subsequent policies are premised around the ideals of democracy, transparency and indigeneity, the colonial hangover is still reflected in the legislations of today. For example, the Internet Freedom Foundation (a digital rights organisation) notes that parts of the Telecommunications Act of 2023 are nearly identical to the Indian Telegraph Act of 1885, particularly with reference to their focus on government control.

Phase II: Liberalisation and Digital Revolution (1980s to early 2000s)

The second phase, aided by economic liberalisation, witnessed widespread digital transformation between the 1980s and 2000 policy, characterized by widespread adoption of data services. The IT industry in India boomed fifty times more than in the 90s by 2000 (Gopalakrishnan, 2016). This phase was marked by a shift from the erstwhile state-controlled economy to an open and competitive environment.

Technology Policy Statement 1983 (TPS 1983) focused on the importance of "technological competence and self-reliance, with the objective to integrate programmes of socio-economic sectors

with the national R&D system and create a national innovation system". It aimed to foster indigenous technological capabilities to uplift all sections of society through tech-driven large-scale production. As the role of science and technology gained momentum for the nation's overall development, policies focused on expanding its key driver, the computer and its associated parts. Computer Policy of 1984 and Computer Software Export, Software Development and Training Policy, 1986 were premised on liberalising import duties and hardware imports to facilitate "software exports" in sophisticated machines.

The bodies monitoring and enabling the telecommunication sector in India, too, witnessed massive shuffles and remodelling during this period to cope with the technological advancement of the day. The Department of Telecommunications (DoT) was created in 1985 to ensure targeted growth. Mahanagar Telecommunication Nigam Limited (MTNL) for metro cities and Videsh Sanchar Nigam Limited (VSNL) for international services were established for effective and efficient telecommunication services. Further economic deregulation marked the privatisation of telecom services in the subsequent years. The National Telecom Policy 1994,a landmark policy, mandated universal, affordable and efficient connectivity for Indians while rooting for India as the "major manufacturing base and major exporter of telecom equipment".

As the telecom industry grew rapidly, there emerged a need to regulate, oversee and monitor the same because of which the Telecommunications Regulatory Authority of India (TRAI) was established in 1997. It aided the transition from a state-controlled monopoly of telecom services to an organised, regulated market system marked by competitiveness and quality standards. TRAI, a regulatory body could recommend new telecom service providers, set the terms for license and ensure compliance, regulate tariffs and aid in spectrum allocation. A consumer protection tribunal, Telecom Dispute Settlement Appellate Tribunal (TDSAT), was also established as part of its objectives. However, TRAI sustained as a recommendatory body alone as its directives were not binding on the central government (Section 11(1)). The Act, regardless of its objective to provide quality telecom services by catering to

consumer interest, fails to list out the various mechanisms that may be implemented to achieve the same. A “hardcode” definition for “net neutrality” was not provided, as noted by a report by the DoT (Chandrasekhar, 2015)

ICT revolution paved way for the electronification and digitisation of analog data (images, voice, text, data) by the computer which led to the convergence of technology as used in telephone, video, fax, data, radio, pager or broadcasting into one network, i.e. the Internet. This subsequently led to higher regulation and demonopolization of the networks and services as directed by the New Telecom Policy (NTP), 1999.Aimed at modernising and revolutionising India’s telecom infrastructure and amplifying tele density penetration by attracting investment and entry of multiple operators, the NTP 1999 enforced the Universal Service Obligation to bridge the digital divide and serve the remotest and geographically isolated communities (Section 6); however, critics argue “NTP 1999 does not prioritise USO objectives” leading to inadequacy in equitable distribution of access to telecom services.

Phase III: Data Governance and Digital Economy (Mid-2000s to 2018)

The third phase saw the onset of data-driven governance and digitised economic services between mid-2000s to 2018. Such a digital transformation was sustained by augmented network coverage which led to the creation of an e-identity system designed to provide electronic delivery of government services.

The IT Act, 2000 serves as the legal apparatus allowing “e-transactions, e-governance and cybersecurity” by rendering “electronic records” and “digital signatures”, constitutionally valid. (Section 4 and 5) It laid the foundation for government initiatives like Aadhaar and DigiLocker aimed at public service delivery and “record-keeping”. Unlike other legislation, “cybercrime” was defined and the penalties for violations were determined in the IT Act 2000. However, critics have expressed concerns and scepticism about potential government intervention, interception, and overreach, irrespective of its role in upholding data security and privacy.

Technology, the fuel for building a digital state, was widely adopted and endorsed before 2003, but “sustainability” was not given priority until STP 2003.

Science and Technology Policy, 2003 aimed to "advance scientific temper and fully integrate science and technology into all spheres of national activity on a sustainable basis". Drawing upon the protection of fundamental rights and principles of inclusivity and equality, emphasis was made on creating an Intellectual Property Rights (IPR regime). It sought to increase state funding for the development of science and technology.

India’s telecommunication system witnessed massive shifts as reflected in its policies to build a strong digital infrastructure. The Broadband Policy of 2004 aimed at improving the growth rate of subscribers and clearly defined the term “broadband” as “always on” “internet connection” with a download speed of a minimum “256 kbps”. It focused on affordability, accessibility and affordability of services so that last-mile connectivity can be achieved by bridging gaps and eradicating barriers. However, the broadband speed was insufficient, and no clear blueprint was devised to cater to service delivery challenges. It failed to meet its targets as noted in “Telecom Regulatory Authority of India Recommendations on Growth of Broadband” and “Information Note to the Press (Press Release No. 63 of 2010)”. It became important to "make all government services accessible to the common man in his locality, through common service delivery outlets” by ensuring “efficiency, transparency, and reliability of such services at affordable costs to realise the basic needs of the common man" as highlighted in the National e-Governance Plan (NeGP, 2006). However, while centralised SDCs were deployed in India, advanced technologies like cloud computing gained momentum with the introduction of AWS with Elastic Compute Cloud (EC2) service by Amazon in 2006.This Act was important to the Public-Private Partnership; however, unequal access to telecommunication services impacted e-service delivery and its utilisation. This led to the formulation of the Information Technology Act Amendment of 2008 (effective from 2009) which formed the underpinning for a secure, safe and private

implementation of digital initiatives while ensuring a secure cyberspace.

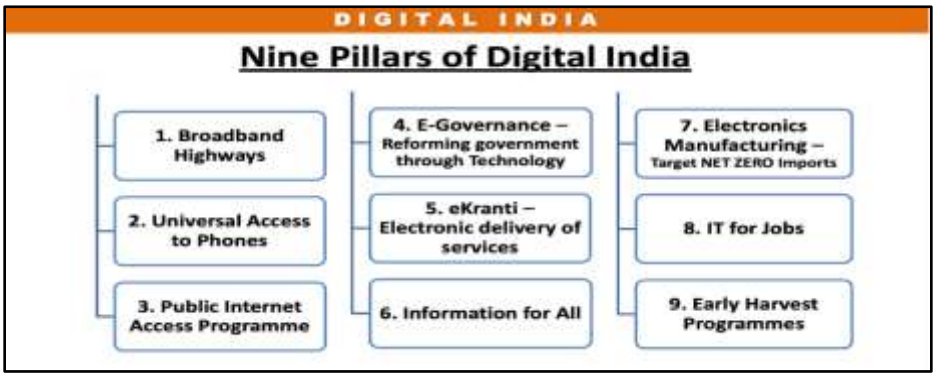
IT Act Amendment of 2008 defined cyber offences like cyberstalking, identity theft and phishing and imposed penalties while addressing the need to inculcate data security to protect data and prevent breaches. The term “digital signatures” was swapped for “electronic signatures”, yet the enactment failed to address emerging technologies like AI, blockchain, etc. It also introduced specifications for cyber cafes and intermediaries with the goal of user data retention by the state, but key aspects like "sensitive personal data" were not addressed. Rule 3 and Rule 4 of the Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011 defined what constitutes "sensitive personal data" and directed “body corporate to provide policy for privacy and disclosure of information”. It mandated accessible and easily comprehensible privacy policies that sought consent from users before collecting personal data and its disclosure, with certain exceptions,like government agencies could obtain the data when legally required. Little to no emphasis was placedon mechanisms that ensured or enforced compliance measures, and neither were the IT Rules, 2011 at par with global laws around cybersecurity. It was thus imperative to “strengthen and enhance India's position as the Global IT hub and to use IT and cyberspace as an engine for rapid, inclusive and substantial growth” for the creation of a “knowledge-based global economy” as per the provisions of National Policy on Information Technology (NPIT) 2012.

The Science, Technology, and Innovation (STI) Policy, 2013seeks to establish a “robust national innovation system" by promoting research and development through public-private partnerships (PPP). Scientific temperament was considered ideal for human resource development, and private sector participation encouraged the establishment of R&D institutes alongside and as equals with government institutions. An attempt was made to revise existing IPR policies for IPR’s developed through PPP. However, no clear roadmap has been drawn to increase “R&D spending to 2% of GDP” yet has influenced notable initiatives like 'Startup India' and 'Make in India'.

Building upon the cybersecurity foundation laid by the NCSP 2013, the Digital India Initiative, launched in 2015, aimed to expand the scope of digital transformation while incorporating the principles of secure and resilient cyberspace established by its predecessor. The Digital India Initiative, launched in 2015, represents a comprehensive effort to transform India into a digitally empowered society and knowledge economy. This flagship program aims to enhance digital infrastructure, expand online services, and promote digital literacy among citizens. It aimed to implement e-governance across all government departments, enhance education (National Education Policy, 2020), healthcare, agriculture, financial inclusion (UPI), and justice delivery systems through technology (IT Intermediaries Guidelines, 2018), and boost domestic electronics manufacturing.

The initiative is built upon nine foundational pillars:

Figure 1. illustrating the Nine Pillars of Digital India



Source: *Ministry of Electronics and Information Technology (MeitY), Government of India.*

However, the Digital India initiative faces significant challenges like digital illiteracy, particularly in rural and underprivileged areas; poor infrastructural capabilities; digital inaccessibility, etc which creates substantial barriers to digital adoption. Last-mile connectivity is a persistent issue, with over 55,000 villages still deprived of mobile connectivity due to commercial non-viability (ASSOCHAM Deloitte Report). While India has jumped 10 spots in median mobile speeds globally according to an Ookla report (Economic Times, 2023), a survey by VPN brand Surfshark still ranks India as having one of the slowest mobile internet speeds in the world (India Times, 2021). These connectivity issues, along

with internet shutdowns and failures in Aadhaar authentication due to digital illiteracy or internet inaccessibility, significantly impact the initiative's effectiveness (Human Rights Watch, 2023). Furthermore, India's rank of 105 out of 193 member countries in the UN e-Government Development Index and 61 out of 193 in the E-Participation Index as of 2022 indicates substantial room for improvement in digi-governance. Additionally, lack of quality content in local languages, inconsistent electricity supply, inadequate grievance redressal channels to address cybersecurity-related concerns, etc., makes users hesitant to engage in digital services. It must be noted that though Digital India initiative mandates the establishment of Common Service Centers (CSCs) to ensure Public Internet Access, a report by the Comptroller and Auditor General of India highlighted issues of "Deficient planning, delayed implementation and non-resolution of issues" in providing broadband connectivity to CSCs in the Northeast Region and other inaccessible areas, leading to "sub-optimal use and idling of equipment" and rendering expenditure of ₹35.09 crore "unfruitful" (CAG, 2021).

The legal framework of Aadhaar (targeted delivery of financial and other subsidies, benefits and Services Act 2016) assigns unique identification numbers to Indian residents based on biometric and demographic data. It formalises the enrolment procedure for all Indian residents and outlines procedures for authentication. The act set up the statutory body of UIDAI (Unique Identification Authority of India) to oversee the implementation, management and security of personal data of enrolled Aadhaar holders. Despite the stringent provisions and penalties, fears persist about potential breaches and surveillance due to frequent data breaches. Extensive data gathering and mandating linkages of Aadhar with services like PAN cards have faced ethical and legal challenges. Judicial controversy has also surrounded section 33(2), which mandates data disclosure for national security.

Phase IV: Data Rights and Data Protection (2018 onwards)

The fourth phase of development of India's visual policy, set in the era of the Fourth Industrial Revolution represented by big data automation and the Internet of things, focuses on an evolved Indian approach to all digital. It is centred on the tenets of privacy

rights and data protection (2018 onwards) and seeks to evolve rapidly to suit the modern-day techno-globe's requirements as the country begins to brace itself for industry 5.0. It reflects the balanced approach of technological advancement with data protection, privacy rights and cyber security framework. The techno-industrial revolution, fuelled by cyber-physical systems and smart tech technologies, has brought to the four scalable concerns of digital governance, data ethics, regulation of artificial intelligence and data terrorism.

The National Digital Communications Policy (NDCP, 2018) marked a significant leap taken by the Indian government towards creating a ubiquitous, fast, accessible and secure digital connection to all of India. It set ambitious targets of Universal broadband connectivity with the speed of 50 MBPS to every citizen while reaching a ‘ unique mobile subscriber density’. It brought a pivotal shift towards citizen-centric approach with an emphasis on all-encompassing digital communications rather than the narrow scope of IT industrial transformation. The three primary missions of NDCP were: secure India, propel India and connect India. The policy emphasised emerging technologies, like 5G, AI, the Internet of Things and cloud computing, and committed itself to establishing an exhaustive data protection regime. This policy recognised the importance of net neutrality and stressed on effective and efficient satellite communication, investor enthusiasm, and spectrum management. It stressed the need for effective and efficient "satellite communication", sustainable investments, and "spectrum management" while being marred by limitations like implementation of universal broadband access in the remote uncovered and under-covered areas. It aims to encourage start-ups and SMEs to enter "new and innovative segments and services".

An extensive and strong broadband infrastructure is imperative to realise and monetise the potential of the digitisation of government services. The National Broadband Mission, based on the “principles of “universality, affordability and quality”, was established to fulfil the goals of National Digital Communications Policy, 2018. “Equitable access to broadband services for across the country and especially in rural and remote areas” was

prioritised. A GIS based tool and a National Fiber Grid was proposed. Make in India was given precedence, and a Broadband Readiness Index was decided to be developed to ensure the quality of services. The NBM took into cognisance the role of stakeholders at all levels for implementing the same. However, while infrastructural development gained momentum, effective digital literacy programs were on the back foot. Also, infrastructural development in India has, time and again, favoured the urban regions more than rural areas.

The Information Technology [Intermediaries Guidelines (Amendment) Rules] 2018 designated responsibilities and duties for "online intermediaries" to ensure a secure digital ecosystem. It ratified the publication of "user agreement and privacy policy" by intermediaries in-order to inform users about possible termination of access in case of "non-compliance". Intermediaries must curtail access to "unlawful content" by means of content moderation, employment of tech savvy means of removing "prohibited content" and due reporting to "Grievance Officer" or "nodal contact" to ensure swift action. Preservation of violative content by intermediaries was mandated for a brief period of time to help enable seamless investigation by the state. Nevertheless, the ambiguity in defining terms like "unlawful content" and "actual knowledge" have concerned sceptics regarding the difficulty in balancing digital regulations and individual fundamental rights in the world's largest ungoverned space of the digital.

"Data is the new gold" yet not much emphasis on data rights has been put. Data continues to be the foundational basis of digitisation therefore it is vital to protect and preserve individual data rights and engage in ethical and lawful data privacy and data processing of the same by the state machinery. The Digital Personal Data Protection Act, 2023 (DPDPA)serves as the legal framework for data protection, processing and transfers "within India and for Indian residents' data processed abroad". It recognises, conceptualises and legitimises Data Fiduciaries in Chapter II (3 (b) & 8 (4, 5)), Data Principals (Chapter III) and Data Protection Board to facilitate compliance and impose penalties for non-compliance. The act not only grants the individual's right to "access, correct, and erase" personal data but also legitimises

"consent-based processing" of data and provides special protections and provisions for children. However, when compared with global data protection standards, the Digital Personal Data Protection Act faces significant criticisms. It does not cover the right of the citizen to object to data processing by the state in special cases, nor does it allow for data portability as in European countries. Also, no provisions exist for individuals to be exempted from being subjected to "automated decision-making" aided by processes independent of "human intervention". Automated decision-making process uses historical data and predictive algorithms for assessment because of which citizens may potentially be incriminated based on digital records and statistical probabilities.

The Information Technology (Amendment) Bill, 2023 is built upon the Information Technology Act, 2000 but extends its scope and objectives to the address the issues pertaining to social media and its challenges. It introduces key terms pertinent in the contemporary world like "Content" (Section 2, clause a), "Online Account" (Section 2, clause b), "Social Media" (Section 2, clause c)". It proposes penalties for "spreading hateful communal propaganda," and for content that may be "grossly offensive" or a source of "annoyance or inconvenience" as per section 66 G.

Conclusion

This article examines the evolution of India's digiscape from the pre-independence era to the present day by focusing on the role of state policies, civic engagement and market forces. It traces the technological and regulatory trajectory of communication/digital policies from the pre-independence era. India's movement towards digital age has been divided into four distinct phases wherein unique prospects, barriers and setbacks characterise each phase. In this article, the phases have been reviewed using Harold Lasswell's model of "who gets what, when, how" to understand the "politics" of the digital. (1936)

In the first phase, the state exercised its "influence" over the "masses" to enhance its control. The communication infrastructure, while ostensibly aimed at improving basic postal and telecom services for the benefit of the masses, primarily served colonial interest to control, monitor and regulate its

colonies. PSUs and state-owned enterprises dominated the sector in the post-independence, pre-liberalisation era.

The second phase saw massive transformation of the telecom sector with the IT sector boom. The introduction of computer and telecom policies and formulation of the regulatory body, TRAI paved way for the widespread entry of private players into the digital sphere. The private sector was the core beneficiary in this phase.

The third phase aimed to improve digital infrastructure and accessibility to government services for the benefit of the masses. The government, in its pursuit to enhance service delivery, put forth initiatives such as e-governance projects, digital identity systems like Aadhaar, e-KYC, UPI, DigiLocker, etc. and open data platforms like the Open Government Data Platform. Aided by the accumulation of data, targeted service delivery by the state and market forces grew while the need for data rights and data privacy emerged. This period was marked by the emergence of several private players especially in the e-commerce, ed-tech and fintech sectors such as Flipkart and Myntra (2007), Nykaa (2012), Zerodha (2010), Paytm (2010), BharatPe (2018), BYJU'S (2011), Unacademy (2015), etc.

The key turning point of the Indian telecom industry was marked by the launching of Reliance JIO during this period. Critics have pointed that the role of TRAI was skewed in the favour of JIO. The Cellular Operators' Association of India has also criticised TRAI "for creating telecom policies that favour Reliance Jio over other operators". It is alleged that the TRAI revised the definition of "Significant Market Power", extended "network testing periods" and upgraded the "spectrum license" at an unusually lower cost to benefit the company. The Reliance JIO engaged in "Predatory pricing" alleged to have negatively impacted the telecom industry generally and other telecom service providers specifically.The evolution of India's digital landscape has been characterized by a significant shift in power dynamics in the third phase, moving from the state's monopoly to the rise of numerous private entities, and ultimately to the dominance of JIO. The phase since 2018 saw a tripartite approach serving the interests of the state, market and citizens. Initiatives aimed at data localization are given primacy to

ensure the security of the state by enhancing citizens' accessibility to data, limiting foreign control and surveillance, and promoting economic growth. Bodies like the Competition Commission of India were constituted to probe against anticompetitive practices often employed by tech giants. AI and other emerging technologies have played and continue to play a significant role in positioning India "among leaders on the global AI map... to ensure social and inclusive growth in line with the development philosophy of the government." The state machinery engaged in data compilation to build a strong database of its citizens while its policies aimed to protect citizens data rights. The market forces, too, flourished in a data-rich environment. Here, both the state and cross border tech giants became colossal repositories of data. Such concentration of data in the hands of a few powerful and influential entities raises significant concerns.

India witnessed widespread digitisation over the decades, however, how much has India been digitalised is unclear because of the relatively slower transformation of socio-economic processes. Regardless of the growth of digital infrastructure in the country, equitable access to the digital is a far-fetched reality with only 38% of Indian households digitally literate. Digital incompetence and digital inaccessibility have led to the creation of a new form of elites, the digital elites. Such a divide is amplified by the state policies and market forces favouring urban development more. There have also emerged newer forms of digital precarity and vulnerability caused by data breaches and data surveillance. Internet, the new opium of the masses, has been rightly defined as “the first thing that humanity doesn't understand, the largest experiment in anarchy that we have ever had” (Schmidt, 2013).

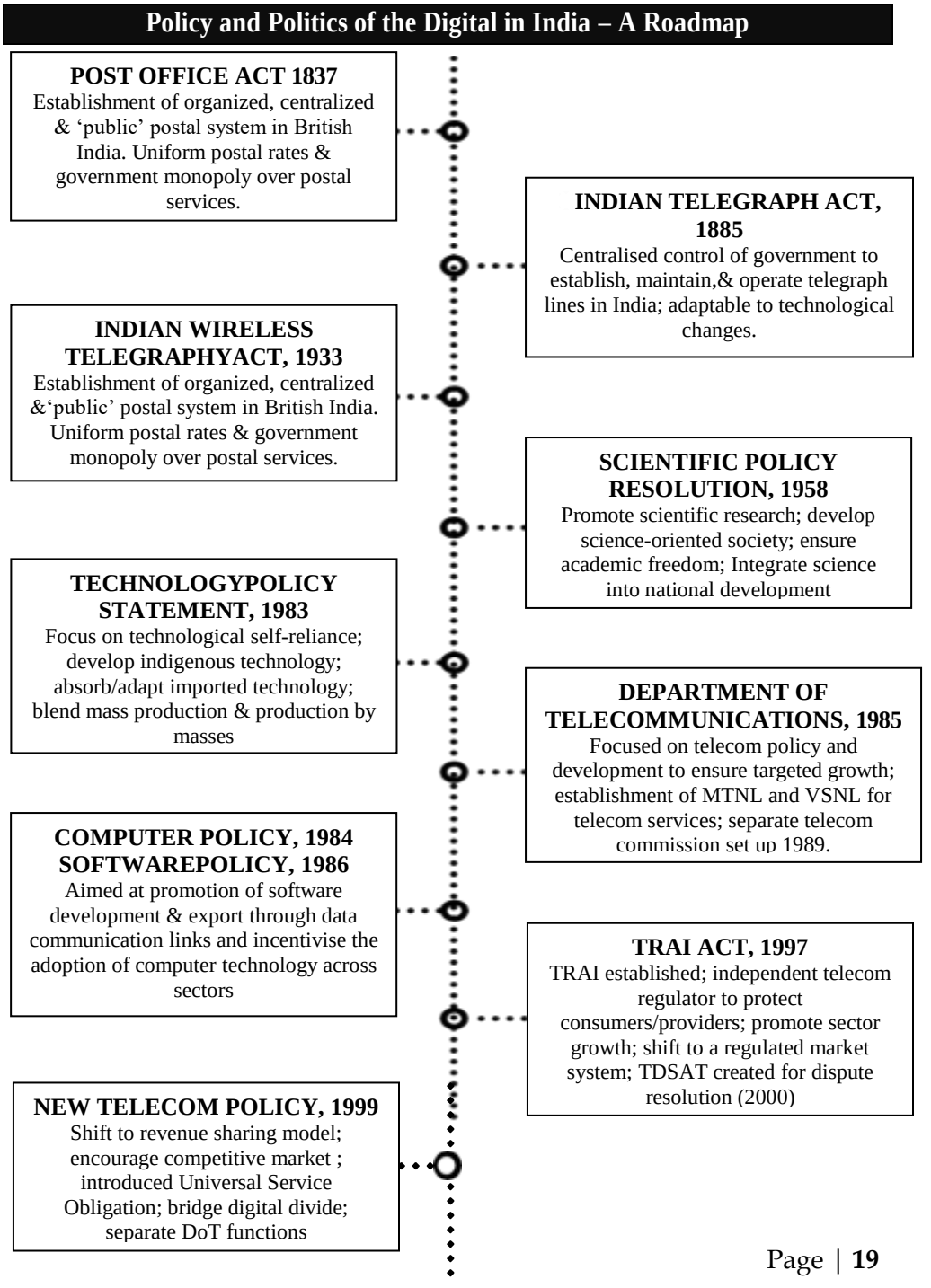
The co-existence of digital capitalism and digital feudalism is emphasised to understand how power and control operate in the digital economy. There are concerns that concentration of power in the hands of a few techno-capitalists turned digital lords could lead to a new economic order. Instead of free market capitalism now, the digital economy resembles the feudal structure of Medieval Europe, where large global companies or corporations like Apple, Meta, Google, Microsoft, Amazon, Alibaba, Wipro, TCS, Infosys dominate the digiscape and act as DigiLords or Digital

lords, controlling digital ecosystem and infrastructure. These DigiLords own and control the digiscape much like the feudal lords of the pre-capitalist era who owned and controlled land and resources. This not only gives the DigiLords immense power to shape and regulate public discourse and democratic processes to their advantage, but users become digital serfs as they rely on these platforms for essential services while engaging in data production.

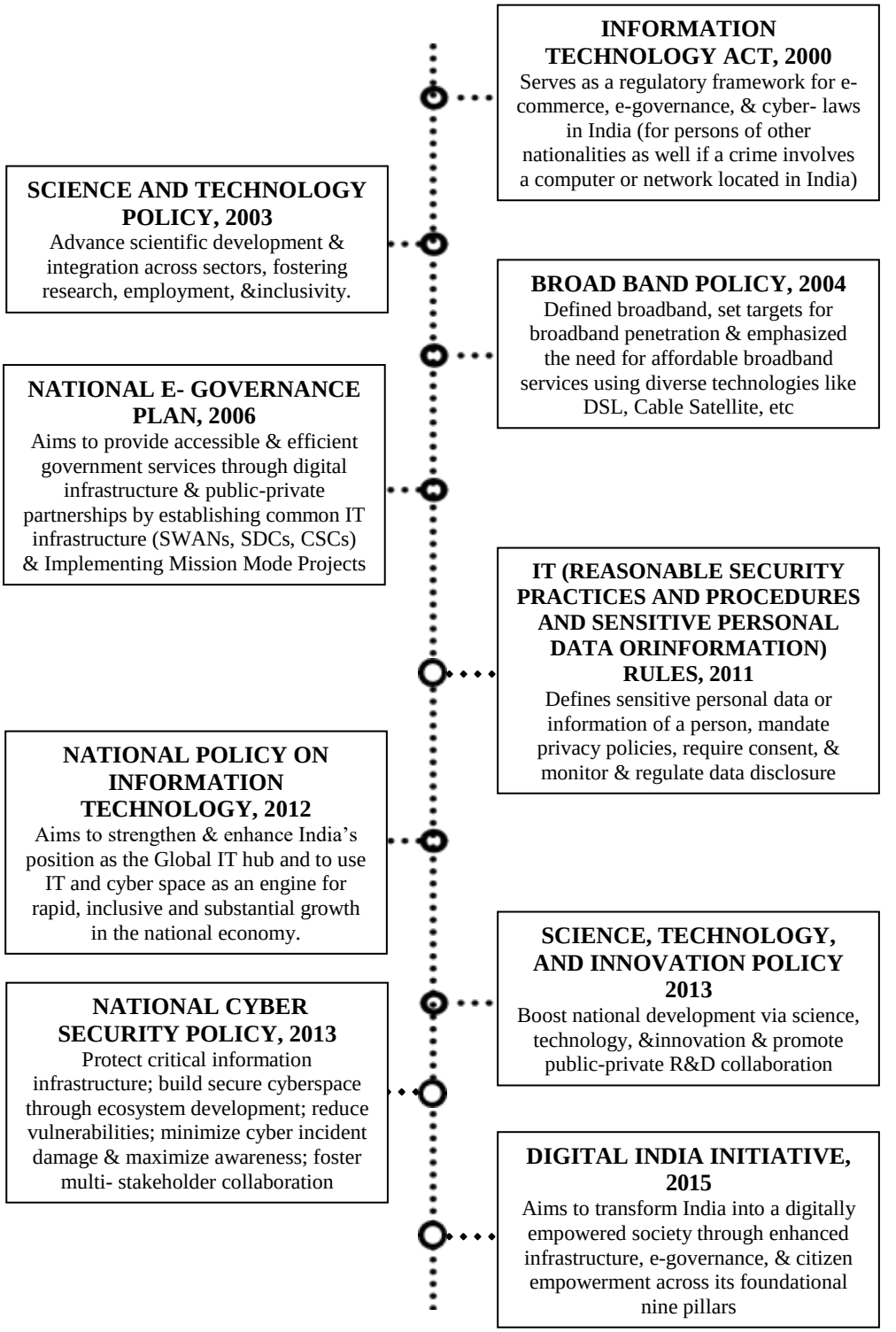
Leading tech firms in India such as, TCS, Wipro, and Infosys, have been authorised to develop, design, operate, and maintain key e-government services such as the Passport Seva Kendra, India Post, IRCTC, Employee State Insurance Corporation and the National Registry of Citizens. As stalwarts of digital transformation in India, these companies serve as intermediaries between the state and its citizens unlike other consumer-facing platforms like Facebook or Google. Digital serfs or DigiSerfs willingly provide free valuable data and mandatory content in the form of personal details, browsing habits and content creation in exchange. Personal sensitive data so provided by the user, becomes a commodity to be appropriated by DigiLords. Thus, real power today lies with tech giants and the state, who are in possession of Big Data, thereby leading to a newer form of imperialism by means of digital colonisation and surveillance capitalism. Therefore, the policies must address issues of privacy, data exploitation and surveillance. Technofeudalism has also led to the rise in gig economy wherein DigiSerfs are subject to precarious work condition because of algorithmic management and rating systems as in Ola, Zomato, Swiggy, etc. Digital serfdom is enabled through cronyism as data lordism of the capitalists exists but government in India is the sole authorised regulator. Hence, ethical data security measures must be established by the state to mitigate data breaches. A balance of power between governmental and market influences should be maintained to ensure a continuum between the digital policy and the politics (Horowitz, 2018). Policymakers must develop legislations which are adaptable and forward-thinking so that citizen-centric technological advancement can be prioritised while protecting digital rights and advancing digital sovereignty.

The technological and regulatory trajectory of digital transformation in India has been traced by the authors through a roadmap as given in following figure 2:

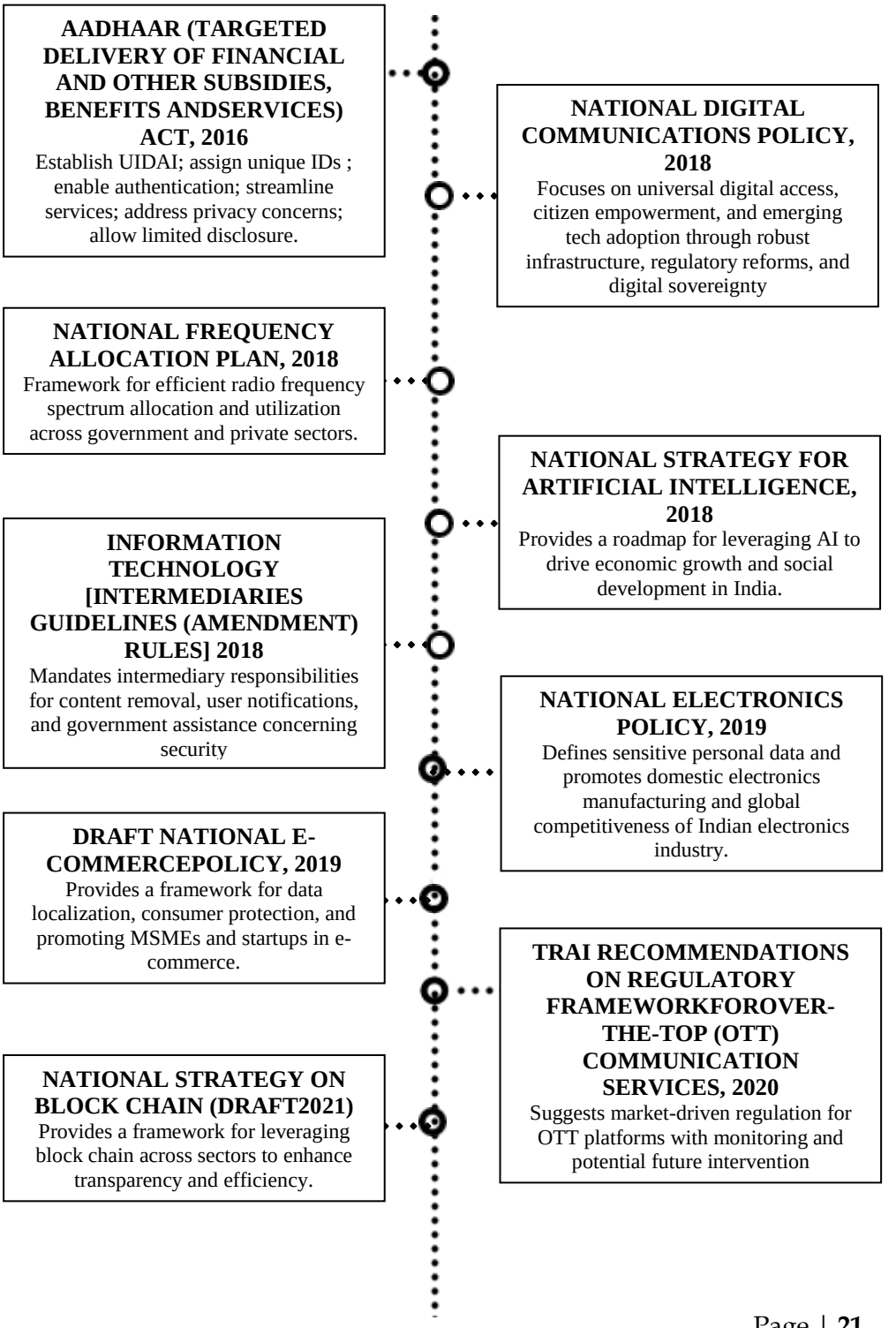
Figure 2



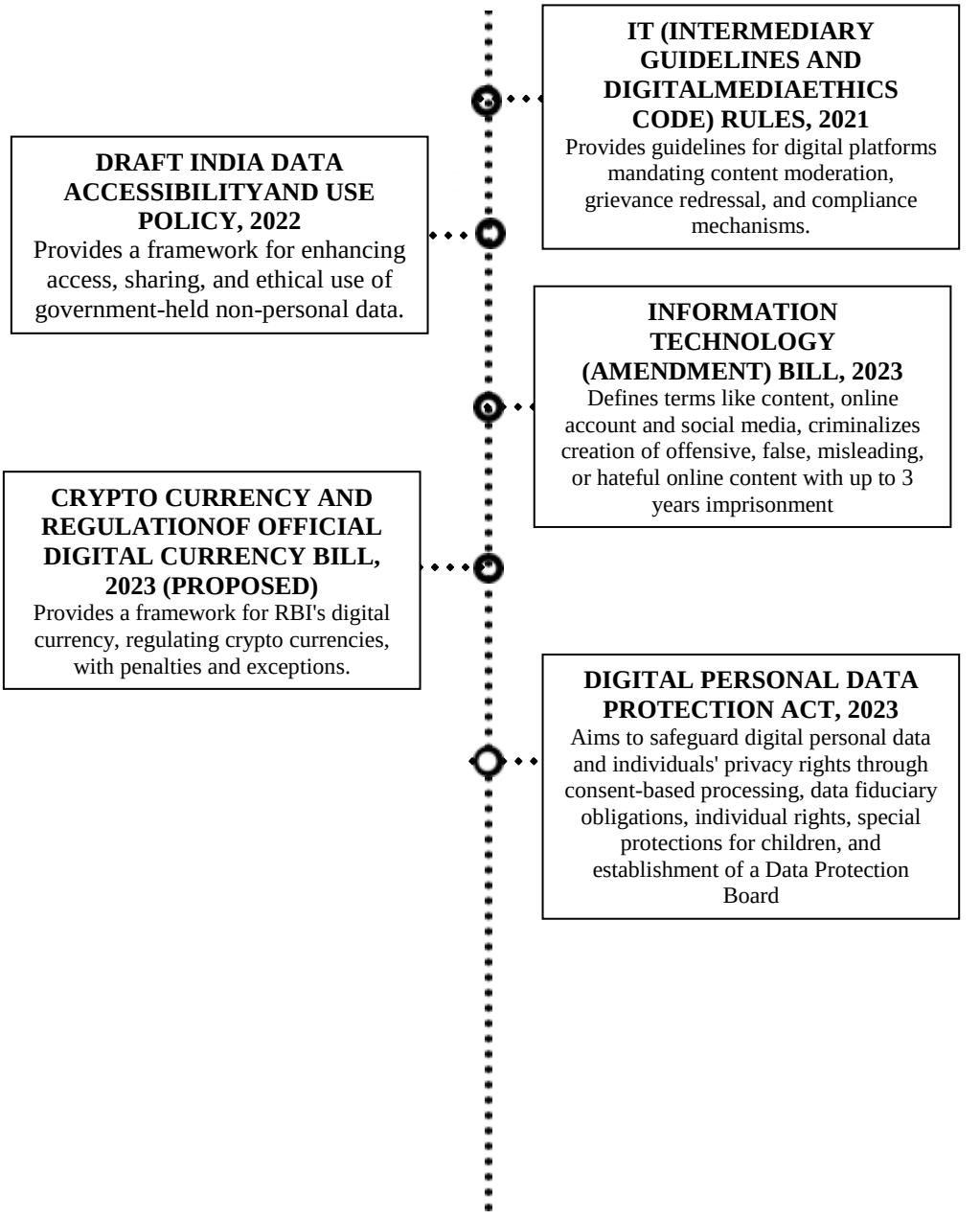
Policy and Politics of the Digital in India – A Roadmap



Policy and Politics of the Digital in India – A Roadmap



Policy and Politics of the Digital in India – A Roadmap



Note

This research paper is drafted in partial fulfilment of the requirements of the ICSSR-sponsored Major Research Project titled 'State, Market and Digitalisation: A Study of Digital Democracy and Exclusion in India'. The authors acknowledge the financial support provided by the Indian Council of Social Science Research (ICSSR), Ministry of Education, Government of India for this research work. However, the authors are responsible for the facts so stated, opinions expressed, and conclusions drawn. This research paper is based entirely on publicly available secondary sources, including government policies, acts, reports, newspaper articles and academic literature. All sources used are cited in the references section.

References

- Act No. XXXIV of 1854 (for Regulating the Establishment and Management of Electric Telegraphs in India). (n.d.). *WIPO Lex*. Retrieved June 6, 2024, from https://wipolex-res.wipo.int/edocs/lexdocs/laws/en/in/in116en.html
- All India Radio. (n.d.). *Important milestones since independence (AIR).* Retrieved May 7, 2024, from https://web.archive.org/web/20100612212622/http:/allindiaradio.org/milestone.html
- Bajoria, J. (2023, September). *India's digital governance "model" fails on rights.* Human Rights Watch. Retrieved May 17, 2024, from https://www.hrw.org/news/2023/09/06/indias-digital-governance-model-fails-rights
- Bigelow, S. J. (2022). *The history of cloud computing explained.* WhatIs.
- BSNL Kolkata. (n.d.). *History & growth of Calcutta Telephones.* Retrieved June 13, 2024, from https://calcutta.bsnl.co.in/mainfooter/MainFooter_Company.html#:~:text=The%20exchange%20at%20Calcutta%20named,to%201%2C%20Council%20House%20Street
- Castells, M. (2011). *The rise of the network society.* John Wiley & Sons.
- Chakraborty, S. (2024, June 26). *Telecom Act gets partially notified: Govt can now intercept, stop messages. Business Standard.* Retrieved July 22, 2024, from https://www.business-standard.com/industry/news/telecom-

act-gets-partially-notified-govt-can-now-intercept-stop-messages-124062501075_1.html

- Chandrasekhar, R. (2015, July 27). *The DoT panel says it wants net neutrality but can't tell us what that is. Scroll.* Retrieved June 23, 2024, from https://scroll.in/article/743409/rajeev-chandrasekhar-the-dot-panel-says-it-wants-net-neutrality-but-cant-tell-us-what-that-is
- Clarke, G. (n.d.). *The Post Office of India and its story.* Project Gutenberg. Retrieved May 1, 2024, from https://www.gutenberg.org/files/45092/45092-h/45092-h.htm
- COAI says TRAI regulations distorted competition in favour of Reliance Jio. (2018, February 21). *The Indian Express.*
- Comptroller and Auditor General of India. (2015). *Report No. 20 of 2015.* Government of India.
- Cybersecurity Centre of Excellence (CCoE). (n.d.). *Unveiling the 7 biggest ransomware attacks in India.* Retrieved July 11, 2024, from https://ccoe.dsci.in/blog/7-biggest-ransomware-attacks-in-india
- Dash, D. K. (2023, October 26). *Set up mobile towers in all villages by March 2024: PM Modi. The Times of India.* Retrieved July 29, 2024, from https://timesofindia.indiatimes.com/india/set-up-mobile-towers-in-all-villages-by-march-2024-pm-modi/amp_articleshow/104708659.cms
- Dattopant Thengadi National Board for Workers Education and Development, Ministry of Labour & Employment. (n.d.). *Digital literacy.* Government of India. Retrieved July 10, 2024, from https://dtnbwed.cbwe.gov.in/images/upload/Digital-Literacy_3ZNK.pdf
- Department of Electronics and Information Technology. (2013). *National Cyber Security Policy, 2013.* Government of India. Retrieved May 27, 2024, from https://www.meity.gov.in/writereaddata/files/National%20Cyber%20Security%20Policy%20(1)%20(1).pdf
- Department of Electronics and Information Technology. (2015). *Digital India.* Government of India. Retrieved August 1, 2024, from https://www.meity.gov.in/sites/upload_files/dit/files/Digital%20India.pdf
- Department of Personnel and Training. (n.d.). *RTI Act.* Government of India. Retrieved May 9, 2024, from https://rti.gov.in/rtiact.asp

- Department of Science & Technology. (2003). *Science, Technology and Innovation Policy, 2013.* Government of India. Retrieved May 29, 2024, from http://missioncsir.nclinnovations.org/wp-content/uploads/2014/10/News-STPolicy-2003.pdf
- Department of Science & Technology. (2020). *Science, Technology, and Innovation Policy, 2020.* Government of India. Retrieved May 29, 2024, from https://dst.gov.in/sites/default/files/STIP_Doc_1.4_Dec2020.pdf
- Department of Science and Technology. (1958). *Scientific Policy Resolution.* Government of India. Retrieved June 23, 2024, from https://indiabioscience.org/media/articles/SPR-1958.pdf
- Department of Science and Technology. (1983). *Technology Policy Statement, 1983.* Government of India. Retrieved July 23, 2024, from https://thesciencepolicyforum.org/wp-content/uploads/2020/05/TPS-1983.pdf
- Department of Telecommunications, Ministry of Communications. (n.d.). *Indian Wireless Telegraphy Act, 1933.* Government of India. Retrieved August 9, 2024, from https://www.india.gov.in/information-indian-wireless-telegraphy-act-1933
- Department of Telecommunications. (2004). *Broadband Policy.* Government of India.
- Digital Infrastructure Providers Association. (n.d.). *About us.* Retrieved June 9, 2024, from https://dipa.co.in/about.php
- Digital Sansad. (2023). *The Information Technology (Amendment) Bill, 2023.* Government of India. Retrieved June 13, 2024, from https://sansad.in/getFile/BillsTexts/RSBillTexts/Asintroduced/08_IT_Derek-E29202470826PM.pdf
- Easton, D. (1955). *The political system: An inquiry into the state of political science. Ethics, 65*(3).
- ET Online. (2023, February 20). *India jumps 10 spots in median mobile speeds globally. The Economic Times.* Retrieved September 7, 2024, from https://economictimes.indiatimes.com/industry/telecom/telecom-news/india-jumps-10-spots-in-median-mobile-speeds-globally/articleshow/98082470.cms
- ETtech. (2023, October 31). *Aadhaar data leak: Personal data of 81.5 crore Indians on sale on dark web – report. The Economic Times.* Retrieved July 2, 2024, from https://economictimes.indiatimes.com/tech/technology/aadh

ar-data-leak-personal-data-of-81-5-crore-indians-on-sale-on-dark-web-report/articleshow/104856898.cms
- Gopalakrishnan, K. S. (2016, April 25). *Indian IT and ITES journey: Liberalization and beyond. Mint.*
- Government of Puducherry. (n.d.). *E-governance initiatives at district level.* Retrieved June 21, 2024, from https://puducherry-dt.gov.in/e-governance/
- Headrick, D. R. (2020). *Communicating information: Postal and telegraphic systems.* In *When information came of age: Technologies of knowledge in the age of reason and revolution.* Oxford University Press. https://doi.org/10.1093/oso/9780195135978.003.0008
- History of radio in India: 100 years of rich legacy. (2023, October 11). *Indian Media Studies.* Retrieved June 11, 2024, from https://indianmediastudies.com/history-of-radio-in-india/
- IANS. (2016, December 27). *Around 950 million Indians still not on internet: ASSOCHAM-Deloitte study. The Indian Express.* Retrieved July 12, 2024, from https://indianexpress.com/article/technology/tech-news-technology/around-950-mn-indians-still-not-on-internet-assocham-deloitte-study-4446630/
- India Post. (n.d.). *Postal history.* Retrieved June 9, 2024, from https://www.indiapost.gov.in/VAS/Pages/PostalHistory.aspx
- Indian Telegraph Act, 1885. (n.d.). *Telecom Regulatory Authority of India (TRAI).* Retrieved June 3, 2024, from https://www.indiacode.nic.in/bitstream/123456789/13115/1/indiantelegraphact_1885.pdf
- Indiapost. (n.d.). *Annual Report 2020–21.* Government of India. Retrieved June 27, 2024, from https://www.indiapost.gov.in/VAS/DOP_PDFFiles/AnnualReportEng2020-21.pdf
- Karonnon, P., & Rajeev, M. (2023). *Policy impacts on Indian telecom services industry: Sales, connectivity and usages.*
- Khanna, M. (2021, September 28). *India has one of world's slowest mobile internet speeds, reveals global survey. India Times.* Retrieved September 2, 2024, from https://www.indiatimes.com/technology/news/india-mobile-internet-speed-report-550219.html
- Lasswell, H. D. (2018). *Politics: Who gets what, when, how.* Pickle Partners Publishing.

- Lienhard, J. H. (2003). *The engines of our ingenuity: An engineer looks at technology and culture.* Oxford University Press.
- Mann, M. (2010). *The deep digital divide: The telephone in British India 1883–1933. Historical Social Research / Historische Sozialforschung.*
- Marvick, D. (1980). *The work of Harold D. Lasswell: His approach, concerns, and influence. Political Behavior, 2*(3).
- Ministry of Electronics and Information Technology. (2000). *Information Technology Act, 2000.* Government of India. Retrieved September 2, 2024, from https://www.meity.gov.in/writereaddata/files/itbill2000.pdf
- Ministry of Electronics and Information Technology. (2006). *National e-Governance Plan, 2006.* Government of India. Retrieved May 23, 2024, from https://mpkrishi.mp.gov.in/Englishsite_New/pdfs/NeGPA.pdf
- Ministry of Law and Justice. (2016). *Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act.* Government of India.
- Ministry of Law and Justice. (2023). *Digital Personal Data Protection Act, 2023.* Government of India.
- Ministry of Law and Justice. (2023). *Telecommunications Act, 2023.* Government of India. Retrieved July 5, 2024, from https://egazette.gov.in/WriteReadData/2023/250880.pdf
- Mishra, D., Kedia, M., Reddy, A., & Ramnath, K. (2024). *State of India's Digital Economy (SIDE) Report.* Indian Council for Research on International Economic Relations (ICRIER). Retrieved July 27, 2024, from https://icrier.org/pdf/State_of_India_Digital_Economy_Report_2024.pdf
- Mistree, D. (2019). *From produce and protect to promoting private industry: The Indian state's role in creating a domestic software industry. Stanford Law School Working Paper 07-2018.*
- National Digital Communications Policy, 2018. (2018). Government of India. Retrieved May 29, 2024, from http://www.meity.gov.in/writereaddata/files/National_Digital_Communications_Policy–2018.pdf
- Ninan, T. N. (1984, March 31). *India seems poised to finally enter the computer age. India Today.* Retrieved May 7, 2024, from https://www.indiatoday.in/magazine/economy/story/19840331-india-seems-poised-to-finally-enter-the-computer-age-802887-1984-03-30

- Postal History of India. (2023, November 3). *The Postal Museum.* Retrieved August 30, 2024, from https://www.postalmuseum.org/collections/postal-history-india/
- Prasar Bharati. (n.d.). *Growth & development.* Retrieved June 17, 2024, from https://prasarbharati.gov.in/growth-development-air/
- Saleem, V. (2015, July 18). *J&K yet to commission the State Wide Area Network (SWAN) for e-governance. The Indian Express.* Retrieved May 9, 2024, from https://indianexpress.com/article/india/india-others/jk-yet-to-commission-the-state-wide-area-network-swan-for-e-governance/
- Sapkale, Y. (2019, February 19). *Aadhaar data breach largest in the world, says WEF's Global Risk Report and Avast. Moneylife.* Retrieved May 19, 2024, from https://www.moneylife.in/article/aadhaar-data-breach-largest-in-the-world-says-wefs-global-risk-report-and-avast/56384.html
- Schmidt, E., & Cohen, J. (2013). *The new digital age: Reshaping the future of people, nations and business.* John Murray.
- Singh, H. V. (2006). *India's experience with universal service obligations in telecommunications. OECD Trade Policy Studies.*
- Singh, H. (2023). *The IT Amendment Rules, 2023: Censorship in the guise of fact-checking. Economic and Political Weekly.*
- Tejasi, P. (2024, July 16). *The Telecom Act, 2023 is ready for (partial) take off: Outdated, colonial provisions to go into effect from June 26. Internet Freedom Foundation.* Retrieved June 30, 2024, from https://internetfreedom.in/the-telecom-act-2023-partial-notification
- Telecom Regulatory Authority of India. (2008, January 2). *Recommendations on growth of broadband.* Government of India. Retrieved July 19, 2024, from https://www.trai.gov.in/sites/default/files/recom2jan08.pdf
- Telecom Regulatory Authority of India. (2010). *Telecom subscription data as on 30th September 2010 (Press Release No. 63 of 2010).* Government of India. Retrieved July 23, 2024, from https://www.trai.gov.in/sites/default/files/PR-TSD_sept_01_12_10.pdf
- The Telecom Regulatory Authority of India Act, 1997. (n.d.). *Centre for Internet & Society.* Retrieved July 3, 2024, from https://cis-india.org/telecom/resources/trai-act-1997

- Toffler, A. (1980). *The third wave.* Morrow.
- Van Laarhoven-Smits, E. (2023). *If data's the new gold, how do you use it to create value?* EY Switzerland.
- Weisman, S. R. (1986, July 14). *Computers' impact growing in India. The New York Times.* Retrieved October 1, 2024, from https://www.nytimes.com/1986/07/14/business/international-report-computers-impact-growing-in-india.html
- Zhu, T. (2023, September). *On Lasswell's public policy ideas.* In *3rd International Conference on Internet, Education and Information Technology (IEIT 2023)* (pp. 1367–1372). Atlantis Press.

Figure Legends

Figure 1. Nine Pillars of Digital India

The figure outlines the core focus areas of the Digital India program, organized into three columns of interconnected pillars.

Figure 2. Technological and Regulatory Trajectory Roadmap in India

The figure illustrates a chronological roadmap marking the transformation of digital policy and politics in India through major legislative acts, policies, and initiatives. The timeline progresses chronologically and enactments are marked by blue/white dots. The movement of transition is shown with the help of connecting lines. Each entry includes the year of implementation and a brief description.