



Digital Communications India Forum
*Empowering the nation with
telecommunication solutions*

Digital Tarang

A DCIF Newsletter

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FROM EDITOR'S DESK



Dear readers,

Welcome to the July edition “***Digital Tarang***” a Newsletter issued by **Digital Communications India Forum (DCIF)**, where we proudly present in this edition past and present story of the DCIF forum, events at DCIF, collection knowledge of info from within and other important sources pertaining to telecommunications.

This is first newsletter within purview of new executive body (2025-27).

This issue is dedicated to rejuvenating, revamping, rebooting and thereby repositioning DCIF. Transformation is way of life & is continuous process more so when nations and life itself is technology driven.

Today it is difficult to imagine a society without connectivity. The meaning & context of connectivity and evolving services is ever changing with time and so are the means and ways of remaining connected, thanks to technology & innovation.

In this spirit continuum of reinvention erstwhile PTCIF has taken final shape as **Digital Communications India Forum (DCIF)** as new avatar.

What sets DCIF apart is its **non-partisan neutrality**. Unlike other forums that align with industry or government narratives, DCIF's hallmark is evidence-based clarity. We do not lobby; we illuminate. We do not polarize; we harmonize. Our role is to translate complexity into actionable pathways that safeguard sovereignty while enabling innovation.

DCIF's hallmark lies in neutrality. By spotlighting India's burning digital frontier issues and offering evidence-based, sovereignty-first pathways, DCIF ensures that India's embrace of frontier technologies remains safe, sovereign, and globally resonant.

Following thoughts below capture spirit of DCIF hallmark.

India at the Digital Frontier: Neutral Pathways Amid Burning Issues

✦ *"Neutrality is our strength. Sovereignty is our compass. Evidence is our language."*

As India embraces frontier digital technologies, the challenges before us are not merely technical — they are structural, legal, and deeply sovereign. The month of June has underscored that our digital future cannot be left to fragmented laws, industry lobbying, or orbital entrenchment by foreign operators. The burning issues are real: satellite governance, AI opacity, hyperscale capture, environmental sustainability, and consumer trust deficits.

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- On **satellite governance**, DCIF calls for deterrent clauses and revocation rights to prevent orbital capture.
- On **fragmented digital laws**, we map convergence and divergence, offering harmonisation briefs free of bias.
- On **AI governance**, we champion explainability and convene citizen-inclusive roundtables.
- On **data sovereignty**, we benchmark India's DPDP Act against GDPR (EU), PIPL (People's Republic of China), & the US Cloud Act, ensuring adequacy without capture.
- On **sustainability**, we push for lifecycle accountability through Green Cable Standards.
- On **consumer trust**, we simplify rights into citizen dashboards, ensuring protections are not lost in legal jargon.

This neutrality is DCIF's hallmark. It is what distinguishes us from other technology forums or industry-aligned platforms. By spotlighting burning issues and offering **sovereignty-first, evidence-backed pathways**, DCIF ensures India's embrace of digital frontier technologies remains safe, sovereign, and globally resonant.

Burning issues are brought out for quick glance in table below & its last column shows **Neutral Way Forward (DCIF's hallmark)**.

July 2026 is not just another month in India's digital journey. It is a reminder that neutrality is not passive — it is active stewardship. DCIF stands committed to being that steward.

We hope to refine Digital Tarang in forthcoming issues.

I thank all the authors & members newsletter team for their contributions and valuable input/suggestions.

It is hoped that readers will find it useful.

DCIF requests our readers to send their contributions; like technical paper, field case studies etc for Publication in the next issue. We also request your valuable comments & suggestions to improve the reality of this new letter.

Happy reading! Warm regards!!

K. K. Minocha

Editor

TABLE 1

Burning Issues in India's Digital Frontier

Issue	Why It's Burning	Neutral Way Forward (DCIF hallmark)
Orbital Entrenchment by LEO Satellites	Risks of bypassing national jurisdiction, spectrum capture, and dependency on foreign constellations.	Advocate jurisdictional deterrence clauses and revocation rights in licensing; publish neutral compliance dashboards.
Fragmented Digital Laws	Telecom Act 2023, IT Act 2000, DPDP Act 2023, Broadcasting rules, Cybersecurity frameworks overlap without harmonisation.	Provide policy resonance maps showing convergence/divergence; issue neutral harmonisation briefs without lobbying.
AI Governance & Explainability	Rapid AI adoption without adequate guardrails; opacity in decision-making.	Promote Explainable AI (XAI) frameworks; convene multi-stakeholder roundtables on AI safety.
Data Sovereignty vs Hyperscaler Capture	Expansion of hyperscaler data centres risks vendor lock-in and weak localisation compliance.	Publish neutral adequacy benchmarks comparing India's DPDP Act with GDPR, PIPL, US Cloud Act.
Environmental Sustainability of ICT	OFC, HDPE ducts, and data centres lack lifecycle accountability.	Push for Green Cable Standards aligned with EU/US norms; neutral lifecycle audits.
Consumer Trust Deficit	Privacy, misinformation, and opaque grievance mechanisms erode confidence.	Create citizen dashboards simplifying rights and protections; run awareness campaigns free of corporate bias.

Message from the Co-Editor

VIJAY KUMAR GUPTA

20th July, 2026

Editor



Wishing all our readers a Very Hapy & Enjoyable Time.

On behalf of DCIF and my own behalf, I share my immense pleasure in releasing this issue of our News Letter. During the recent past, we have conducted many activities which have been reported in the Website and as well in this Newsletter.

Your suggestions encourage us to do better in our future News Letter publication & Website for its improvement and more informative & meaningful.

I invite you to explore these articles and share your thought as we collectively work together a more sustainable, meaningful and energy efficient time to come.

I also, very humbly request our Honorable Members to support, share your Success story & contribute by writing their articles for uploading on our website.

With warm regards

Sd/-

Vijay Kumar Gupta

Message from the President

India's telecom landscape is undergoing a decisive shift from rapid 5G expansion to strategic leadership in next generation technologies. With 5G now available in 99.9% of districts and over 5.2 lakh base transceiver stations deployed nationwide, the foundation is set for AI driven network optimisation, 5G monetisation through network APIs, and enterprise grade use cases such as fixed wireless access and edge computing.

At the same time, the Bharat 6G Vision and a 10 year spectrum roadmap (2025 to 2035) signal India's ambition to co-shape global standards, with early R&D funding for indigenous 6G, quantum communications, and satellite and non-terrestrial networks.

Parallel to this, internet technology trends are being defined by the integration of AI at scale, cloud native architectures, and heightened security and resilience. Generative AI workloads are reshaping traffic patterns and pushing intelligence to the edge, while post quantum encryption, SASE, and network automation are becoming baseline expectations for digital trust.

For DCIF, this confluence of intelligent, programmable networks meeting an AI first internet creates a pivotal opportunity to convene stakeholders around policy frameworks, skills development, and innovation ecosystems that ensure India not only adopts but also helps define the next era of connectivity.

I wish to thank KK Minocha ji and Vijay Gupta ji for their coordination with all contributors and for the arrangement of flow that has brought out a beautiful piece of newsletter.

Anil Kumar Jain

President,
Digital Communications India Forum

Message from the Secretary General

Satellite communications and fibre optics are emerging as two of the fastest growing pillars of India's telecom infrastructure, each addressing distinct but complementary connectivity needs. With the administrative assignment of non-geostationary orbit (NGSO) spectrum and the entry of global low Earth orbit (LEO) operators, India's satellite communication market, valued at approximately USD 3.77 billion in 2026, is projected to more than double to USD 7.93 billion by 2031, driven by demand in maritime, aviation, remote enterprise, and backhaul applications.

Simultaneously, fibre deployment has more than doubled since 2019, exceeding 4.2 million route kilometres by late 2025, underpinning a fixed broadband base that has crossed 1 billion connections and is expected to reach 150 million fixed customers by FY2031.

Together, satellite's reach and fibre's capacity are enabling a converged, resilient network architecture that will be central to India's digital economy and a key focus area for DCIF's policy and industry engagement in the coming year.

Ravindra Kumar Mishra

Secretary General,
Digital Communications India Forum

Strategic Support Extended to IAFI in Organizing the Workshop on "Role of AI and Telecom in Dealing with Cyber Frauds and Digital Arrests", on March 17, 2026.

The ITU-APT Foundation of India (IAFI), supported by the Supreme Court Cyber, Data Privacy & AI Bar Association, organized a workshop titled "Role of AI and Telecom in Dealing with Cyber Frauds and Digital Arrests", on March 17, 2026, at Le Meridian, New Delhi. The event focused on leveraging AI, IT, and telecom infrastructure to safeguard citizens and organizations against emerging digital threats. Speakers deliberated on critical issues, including the anatomy of cyber frauds, digital forensics, cyber law, digital evidence, legal remedies, strategic cyber-security, national response frameworks, and corporate cyber-security. The workshop received additional support from organizations such as CSAI, DCIF, IEEE, and the CSI Delhi Chapter.



Domestic & Global News, Technological, Policy Trends

NEWS:

Union Minister for Railways, Information & Broadcasting, and Electronics & Information Technology, Shri Ashwini Vaishnaw, said that India has entered in a new era in the semiconductor sector, as the CG SEMI (OSAT) facility in Sanand, Gujarat commenced commercial production, becoming the country's third semiconductor plant to do so this year.

The Sanand unit, built with an investment of over ₹7,600 crore in partnership with Japan's Renesas Electronics, becomes the third semiconductor facility in the country to enter commercial production in 2026. The rapid transition from groundbreaking in March 2024 to operations in just over two years highlights accelerated execution within India's emerging chip manufacturing ecosystem. Chips produced at the facility will cater to automotive and industrial applications, with both domestic supply and exports to key global markets including the US, Europe and Japan

Article: Global Telecom Shifts and Their Likely Impact on India

Anil Kumar Jain, President, DCIF

The global telecom sector in 2026 is being shaped less by a single breakthrough and more by the convergence of several powerful trends: deeper 5G-led network transformation, AI-enabled operations, the rise of satellite-based connectivity, stronger enterprise demand for cybersecurity and cloud-linked telecom services, and a sharper focus on customer trust and digital experience.

For India, these shifts matter because the country is simultaneously expanding digital public infrastructure, scaling 5G, strengthening manufacturing ambitions, and trying to connect large underserved geographies. Global telecom trends are therefore not distant industry signals; they are early indicators of where Indian operators, regulators, enterprises, and citizens may feel both opportunity and pressure over the next few years.

A first major development is the move from basic 5G rollout toward more intelligent and resilient digital infrastructure. GSMA Intelligence identifies 5G and network transformation as one of the core themes defining telecom in 2026, while wider industry analysis highlights AI embedded into network design, provisioning, and self-healing operations. For India, this can improve network quality, lower operating inefficiencies, and support higher-value industrial use cases such as smart manufacturing, logistics monitoring, connected healthcare, and private enterprise networks. The main policy implication is that spectrum strategy, fiber backhaul, and data-center readiness will become just as important as subscriber growth.

A second major development is the telecom sector's push beyond consumer connectivity into business technology services. Deloitte notes that telecom operators globally are trying to grow in cloud, cybersecurity, IoT, edge computing, and managed enterprise solutions because traditional connectivity revenue remains structurally low-growth. This is highly relevant to India, where digitalization of MSMEs, financial services, health systems, logistics, and government platforms is accelerating. Indian telecom companies that build credible B2B capabilities could become strategic digital infrastructure partners rather than remaining only bandwidth providers, but they will face strong competition from hyperscalers and systems integrators.

A third development is the increasing role of AI across telecom operations and customer engagement. Global industry outlooks describe AI as central to automation, network optimization, proactive support, and personalization, while warning that trust and privacy will become decisive differentiators. In India, AI-led telecom operations could help manage network scale more efficiently and improve service reliability for hundreds of millions of users. At the same time, India will need robust governance on telecom data use, algorithmic transparency, and cyber resilience so that efficiency gains do not create new risks around privacy, exclusion, or digital fraud.

A fourth development is the growing importance of satellite and non-terrestrial connectivity. Deloitte flags a sharp rise in requests for low-Earth-orbit satellite deployment, and broader 2026 telecom trend coverage points to converged access between terrestrial and satellite networks. This could be especially important for India because remote terrain, border areas, maritime zones, and disaster-prone regions still challenge terrestrial coverage economics. If regulated well, satellite integration can complement—not replace—mobile networks by improving resilience, emergency

communications, and rural reach; however, it will also raise questions on spectrum coordination, national security, and fair competition.

A fifth development is the shift from pure price competition toward trust, loyalty, and digital-first service models. Deloitte argues that telecom operators are rethinking customer experience through digital-first brands, simpler propositions, omnichannel support, and ecosystem-based services as connectivity becomes increasingly commoditized. India's telecom market is intensely price-sensitive, so the lesson is not merely to copy premium international models. The more practical insight is that Indian operators may need to differentiate through reliability, transparent service recovery, bundled digital offerings, and enterprise-grade service assurance rather than through tariffs alone.

For India, the strategic takeaway is clear. Global telecom is moving toward intelligent, software-led, service-rich infrastructure. Countries that align spectrum policy, fiber rollout, satellite regulation, AI governance, domestic manufacturing, cybersecurity standards, and enterprise innovation will capture disproportionate benefit. India has the market size, engineering talent, and policy momentum to do this well, but execution discipline will matter more than announcements. The next phase of telecom growth will be defined not by who connects the most users, but by who builds the most trusted and adaptable digital communications ecosystem.

Fundamentals of Emerging Blockchain Revolution

Dr. Satya N. Gupta, NGNguru

Chairman, Blockchain for Productivity Forum

1.0 Introduction

In the realm of technological innovation, only a few concepts have garnered as much attention and promise as Blockchain, the Distributed Ledger Technology. (DLT). Born out of the necessity for a Secure, Transparent, and Trusted data-sharing system, Blockchain has emerged as a revolutionary force with far-reaching impact across whole of industries. In this brief exploration, we delve into the introduction and fundamentals of blockchain technology, untying the complexities that make it a game-changer in this digital era, as below::

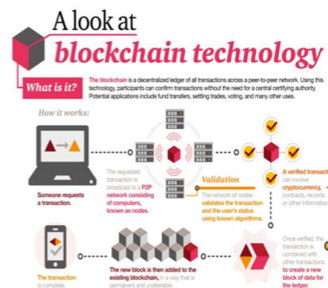


Figure 1: What is Blockchain?

At its core, Blockchain is a decentralized and distributed ledger technology that facilitates secure, temper-resistant and transparent transactions without the need for trust-providing intermediaries. The term "Blockchain" refers to a chain of blocks, each containing a list and data of transactions. These blocks are linked together using cryptographic hashes, creating an immutable and transparent record of every transaction across a network of computers.

2.0 Fundamental Elements of Blockchain

Blockchain technology has emerged as a revolutionary force, transforming the way we think about data-sharing, transactions and trust in the digital realm. The internal working of this ground-breaking technology, is achieved with the involvement of the following fundamental elements;

Blocks: The blockchain is structured as a chain of blocks, with each block serving as a container for data. These blocks contain information such as transactions, creating a chronological sequence that forms the backbone of the blockchain.

Chain: The linkage of blocks is achieved through cryptographic hash functions. Each block contains a unique identifier, called a hash, which is generated based on the data within the block and the hash of the previous block. This chaining ensures the integrity and immutability of the entire blockchain.

Transactions: Transactions represent the data stored within each block. These can include details about the sender, receiver, amount, and timestamp. The transparency of transactions is a key feature, allowing participants to trace the flow of assets through the blockchain.

Decentralized Network: A hallmark of blockchain is its decentralization. Rather than relying on a central authority, a network of nodes (computers) maintains the blockchain collectively. Each node possesses a copy of the entire blockchain, creating a distributed and resilient network resistant to single points of failure.

Consensus Mechanism and Rules: To ensure agreement on the state of the blockchain across the network, consensus mechanisms come into play. Whether it's Proof of Work, Proof of Stake, or other variants, these protocols establish rules for validating transactions and adding new blocks to the chain. Each blockchain network operates under a set of consensus rules that dictate its parameters. These rules may include the maximum block size, block time, and other protocol-specific guidelines that ensure the network's stability and functionality.

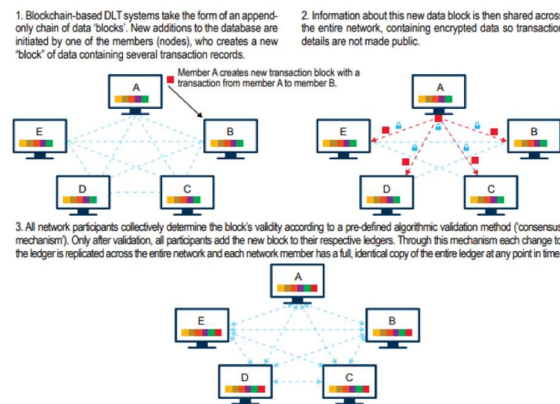


Figure 2: Blockchain Internal Working

Cryptographic Hash Functions: Hash functions are cryptographic tools employed to secure and link blocks. They generate a fixed-size hash that uniquely represents the data within a block. The integrity of the blockchain relies on the properties of these hash functions.

Public and Private Keys: Security in blockchain transactions is achieved through the use of public and private keys. Public keys serve as addresses for receiving funds, while private keys, kept confidential, are used to sign transactions, ensuring authenticity and ownership.

Smart Contracts: Smart contracts are self-executing contracts with predefined conditions written in code. They automate the execution of contractual agreements, eliminating the need for intermediaries and enhancing the efficiency of transactions.

Decentralized Applications (DApps): Built on blockchain technology, decentralized applications (DApps) operate on a distributed network. Leveraging smart contracts, DApps offer a wide array of functionalities while maintaining the principles of decentralization and transparency.

Proof of Work (Mining): In Proof of Work consensus systems, such as Bitcoin, miners contribute computational power to solve complex mathematical problems. The first miner to solve the problem is granted the right to add the next block to the blockchain and is rewarded with cryptocurrency.

In essence, these fundamental elements synergize to create a robust and trustworthy system that has the potential to disrupt industries and redefine the way we conduct transactions and share information. As blockchain technology continues to evolve, understanding these foundational elements becomes crucial for grasping its vast potential and applications across diverse sectors.

The inter-working of the main elements and underlying technologies of Blockchain, is depicted in the diagrams below;

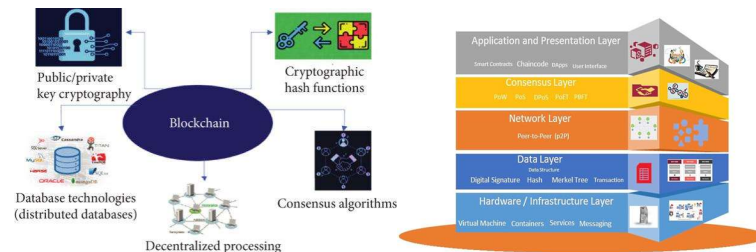


Figure 3: Five Layer Blockchain Architecture

3.0 Applications of Blockchain Technology

Blockchain technology, originally designed as the underlying framework for cryptocurrencies like Bitcoin, has evolved into a revolutionary force with far-reaching implications across various industries. Its decentralized and tamper-resistant nature has paved the way for numerous applications that extend beyond the realm of digital currencies. Following are the key applications of blockchain technology that are reshaping industries and driving innovation:

Cryptocurrencies and Financial Transactions: Cryptocurrencies, such as Bitcoin and Ethereum, remain one of the most well-known applications of blockchain. These digital assets enable secure, transparent, and decentralized financial transactions, reducing the reliance on traditional banking systems.

Supply Chain Management: Blockchain's transparency and traceability make it an ideal solution for supply chain management. It allows stakeholders to track the production, shipment, and delivery of products in real time. This reduces fraud, improves efficiency, and ensures the authenticity of products.

Identity Management: Blockchain offers a secure and decentralized solution for identity management. Individuals can have control over their personal information, and organizations can rely on a more secure verification process, reducing the risk of identity theft and unauthorized access.

Healthcare Data Management: Blockchain ensures the integrity and security of healthcare data, making it easier to manage patient records, streamline processes, and enhance interoperability among different healthcare systems. This can lead to improved patient care and data accuracy.

Voting Systems: Blockchain has the potential to revolutionize the voting process by providing a secure and transparent platform for elections. It can reduce the risk of fraud and ensure the integrity of the electoral process, fostering trust in democratic systems.

Intellectual Property Protection: Blockchain can be used to timestamp and secure intellectual property, such as patents, trademarks, and copyrights. This ensures the authenticity of creations and provides a transparent and immutable record of ownership.

Cross-Border Payments: Traditional cross-border payments are often slow and costly. Blockchain facilitates faster and more cost-effective cross-border transactions by eliminating intermediaries and providing a decentralized and secure network for financial transfers.

Various emerging opportunities for Blockchain in various domains are depicted below:

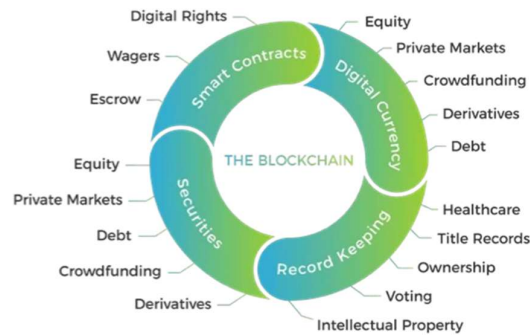


Figure 4: Blockchain Use-Cases and Generic Opportunities

4.0 Conclusion

In conclusion, Blockchain technology stands as a transformative force with the potential to redefine how we transact, share information, and trust digital systems. By providing a secure, decentralized, and transparent framework, blockchain has already made substantial strides in various sectors. As the technology continues to evolve and find new applications, its impact on industries, economies, and societies at large is set to become even more profound. Embracing the fundamentals of blockchain is not merely an option but a necessity for those seeking to navigate the dynamic landscape of the digital future of Economy and Society.

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