



## Deloitte tech trends 2023 – India perspective

### The Backbone of Information Technology – Six Macro Technology Forces Explained

#### Executive Summary

With the advent of the digital era, technology has continued to be the primary catalyst in shaping the world, and has led to an unprecedented amount of change, both at work and at home. As a result of the pandemic, there has been a significant impact that has begun to break the inertia of digital adoption due to several government policies and initiatives, driving the adoption of emerging technologies across various industries.

In this Tech Trends report, Deloitte explores the impact of adopting new-age technologies on ground-breaking innovations and foundational business industries such as BFSI, health care and pharmaceuticals, e-commerce, retail, and manufacturing to understand economic development in India. These changes accelerate India's endeavour to carve itself as a unique identity and a global hub in a post-COVID-19 world.

This report outlines trends that are likely to disrupt businesses in the next 18 to 24 months, including new opportunities in automation, Big Data, blockchain, distributed architecture, Internet of Things (IoT) and other areas. The report shows that pioneering organisations are challenging orthodoxies, working smarter, and shifting their focus to drive innovation, both internally and across their tech ecosystem.

FY2022 has been a spectacular year for India's technology industry with a record of 15.5 percent growth (highest ever) to reach US\$227 billion in revenue, with the help of a winning combination of digital and innovation<sup>1</sup>.

#### Introduction

IT has been steadily evolving three enduring eternities—interaction, information, and computation. These three tracks are continuing to guide the future of IT towards specific convergent goals: simplicity, intelligence, and abundance. Existing systems and investments represent three foundational forces, the business of technology, cyber and trust, and core modernisation.

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<sup>1</sup> [Nasscom Technology Sector in India 2022 : Strategic Review](#)

India today is at the forefront of technology adoption and these trends will continue to shape the way business is conducted. With the existing 4G penetration, 5G adoption is projected to account for nearly 40 percent of mobile subscriptions in India (500 million) by the end of 2027<sup>2</sup>. As of December 2022, India had over 800 million broadband users, making it the largest market with connected devices<sup>3</sup>. Additionally, it is expected that there will be one billion smartphone users in India by 2026. With such a high adoption rate of smartphones and mobile/broadband connectivity, the average Indian become an integral part of the digital economy, with digital becoming the norm for everything, from online pharmacy, doctor consultations, and food delivery to education technology.

Today, emerging trends in technology are being adopted in India with wide-reaching use cases, as compared with other parts of the world. India is the leader in digital payments with a Unified Payments Interface (UPI) payment network taking over other forms of transactions in terms of volumes and affordable banking through inter-bank and direct-cash transfer schemes. Other examples include Digital Sansad that matches the new physical infrastructure of the parliament with cutting-edge technologies to enable parliamentarians and other relevant stakeholders to efficiently discharge their duties. It is a platform that Deloitte is helping build and bring citizens, MPs, and other stakeholders together in a one-stop, seamless, paperless, and sophisticated platform that will continue to evolve, modernise, and innovate over time.

As instant communication becomes increasingly popular across generations, the Indian government is also developing an open-source, indigenous instant messaging mobile application in collaboration with technology partners to facilitate instant messaging communication within government bodies without compromising on privacy concerns. These technological innovations change the way we operate businesses, engage with customers, and interact with each other, and they will continue to evolve with the trends outlined in the report.



## TREND #1

### Through the Glass: Immersive Internet for the Enterprise (Metaverse)

The pandemic accelerated the need to be connected virtually across the globe. Immersive internet is the next stage in the evolution of the video call with the rise of metaverse. Over the next few years, today seems more like a gaming environment, set to become more tangible and conversational, and transition to more of an enterprise tool.

With its immersive and simulative nature, this trailblazing technology is witnessing accelerated adoption amongst organisations. While the immersive internet provides facilities for users and companies to socialise and work from the comfort of their homes, it provides businesses virtual environments to enable, showcase, and advertise their products. From virtual learning centres to office rooms and show rooms, virtual reality is the new reality.

Per market estimates, the metaverse industry in India is expected to grow at an impressive CAGR of 37.1 percent and touch a whopping US\$758 billion by the end of 2026<sup>4</sup>. In addition to the global tech-giants racing to build on the emerging metaverse concept, leading Indian firms are also announcing the development of the metaverse. A multinational IT services company based out of India is working on use cases including a non-fungible token (NFT) marketplace for car dealerships, a virtual Meta bank, and a gaming facility. Moreover, India's pre-eminent jewellery brand held a virtual launch for its new bridal jewellery collection using the metaverse, where users could interact with 3D images and rotate them to view the pieces from various angles. As another example, one of the largest tyre manufacturers in India is building a metaverse store. Through its integration with the company's e-commerce platform, customers will be able to view products in 3D, place orders simultaneously, and have tyres delivered and fitted at their convenience.

<sup>2</sup> [Mobile subscribers report by swedish telecom gear maker Ericsson.](#)

<sup>3</sup> [India largest connected nation with over 800M broadband users says Rajeev Chandrasekhar](#)

<sup>4</sup> [dqindia reshaping the future of Metaverse in India](#)



## TREND #2

### Opening to AI: Learning to Trust our AI Colleagues

Even as artificial intelligence (AI) tools become more commoditised, businesses that are spending millions to implement them may struggle to achieve competitive gains. A truly AI-fuelled organisation can differentiate itself from its competitors only by how robustly it uses its AI investments. Trust on AI has evolved far slower than ML technology.

Approximately 50 percent organisations plan to increase their investments in AI according to Deloitte India's second edition of the “State of Artificial Intelligence in India” report. The survey included 200 Indian business leaders and 88 percent respondents planned to increase AI investments year-on-year (YoY) in 2022, as compared with 82 percent in 2021<sup>5</sup>. AI has been widely deployed across application areas by Indian companies, government ministries, and private firms in the past few years. As a matter of fact, AI is already transforming various industry sectors' operational, functional, and strategic landscapes and its scope and role are also expanding.

Organisations are integrating AI into enterprise applications and processes across functions. Both start-ups and established players are taking advantage of AI and ML to achieve new levels of success. The latest AI adoption index by NASSCOM shows that India's Artificial Intelligence (AI) investments are expected to reach US\$881 million by 2023, growing at a CAGR of 31.8 percent. With AI adoption, the four sectors, namely, BFSI, CPG and retail, health care, and industrials and automotive are likely to contribute 60 percent of the net new value add of US\$500 billion by FY2026<sup>6</sup>.

Amongst the start-ups that participated in the Google Assistant investment programme was a company that provides users with provisional expert assistance and AI-guided listening. By using cognitive-behavioural techniques based on evidence, it implements AI-driven chatbots that make users feel heard. Over 100 million conversations have been enabled by this product, and the self-reported depressive symptoms of regular users have improved by 40 percent.

A Bengaluru-based start-up offers businesses omni-channel, conversational AI tools to automate customer experiences. Its clients include Automobile Manufacturer, Large Oil PSU, Food delivery app, Online marketplace for cosmetics and well-being. A chat and voice-based bot can be accessed through 35 channels, including the web, WhatsApp, Instagram, in-app, IVR, and contact centres, in over 100 languages. Furthermore, the company has partnered with is working on transforming their voice automation solution using Azure AI Speech Services.

Also, AI has proven to be useful in solving environmental issues in far-reaching ways. The Government of Haryana along with Deloitte piloted an AI-based platform to support farmers in managing crop residue through the creation of a marketplace where farmers connect with equipment providers to curb the problem of stubble burning and enabled seamless access to the marketplace through integration with familiar channels such as WhatsApp.

Various D2C and B2B organisations are leveraging on conversational AI and automation to create digital journeys for stakeholders with a focus on first-time resolution. Deloitte has also helped a leading beverage manufacturing organisation in utilising conversational automation to identify low-stock volumes and automatically order additional quantities to replenish.

<sup>5</sup> [Deloitte State of AI in India](#)

<sup>6</sup> [ibef\\_nasscom report on AI investments](#)



## TREND #3

### Above the Clouds: Taming Multicloud Chaos (Metacloud or Supercloud)

Increasingly, enterprises are adopting multicloud strategies due to specialised capabilities and optimised pricing, but having said that, applications and workloads can be difficult to design and operate due to the complexity of working with a heterogeneous mix of proprietary platforms, services, and interfaces.

Adopting what is known simply as metacloud or supercloud involves building a compatibility layer through a family of tools and techniques that can help cut through the complexity of multi-cloud environments by providing access to common services such as storage and computation, AI, data, security, operations, governance, and application development and deployment

From an Indian market perspective, Superclouds will be unique, and we will see their emergence. Organisations that have already invested in leading hyper-scalers don't want to be trapped within the walled set of services. Surveys indicate that 84 percent enterprises in India prefer hybrid multi-cloud as their ideal operating model, and that 58 percent are expecting to implement such environments within three years<sup>7</sup>.

The goal is to fight vendor lock-in and allow developers to freely run ML and other workloads wherever and whenever they want. Developers often seek to do this to optimise for cost and performance. American cloud computing and virtualisation technology companies have already launched interoperable services which work across leading cloud providers, and we will see more of such cross-cloud integrators in the future.



## TREND #4

### Flexibility, the Best Ability: Reimagining the Tech Workforce (Tech Talent)

In India, a majority of employers are seeking to expand their workforce despite the buzz of recession, layoffs, and cost-cutting. Around 73 percent employers are eager to expand their resource pool this quarter, according to the "Employment Outlook Report Q3-22". The top five Indian IT companies hired around 100,000 new employees in 2022 even with the grim market forecasts<sup>8</sup>. The Human Resources departments must prepare for a non-stop battle for skills in the upcoming year, as the market is enormous for IT contenders. We have seen newer modules and hybrid work styles evolve during the pandemic, transforming the conventional workplace dramatically. Skill diversity and inclusion have become the norm, and new abilities are in demand.

As diverse teams have been proven to be 70 percent more advantageous, most organisations wish to expand their skills diversity. Today, it is the most in-demand condition for flexibility in any job as it is more affordable to train and upskill existing employees than to hire fresh ones. Using this work mode allows enterprises to persuade and retain top performers by modifying their organisational structures. The ability to collaborate with others, regardless of location, has been a key requirement for jobs in 2022.

Furthermore, per a NASSCOM report, India ranks first when it comes to reskilling in newer technologies, which is considered paramount in emerging technologies such as Web3 and blockchain<sup>9</sup>. India has 11 percent of the global Web3 talent, making it the third-largest pool for new and upcoming technologies<sup>10</sup>. Enterprises have also gone beyond exploring gig-workers to embracing them specially to meet demand surges in emerging tech skills such as cloud and data analytics. With India being one of the largest suppliers of the gig workforce, this flexibility in hiring is also core to the way the market is being shaped.

<sup>7</sup> [fourth annual Enterprise Cloud Index \(ECI\) report findings](#)

<sup>8</sup> [teamlease employment outlook report Q3 2022](#)

<sup>9</sup> [nasscom india web3 landscape](#)

<sup>10</sup> [India Web3 talent](#)



## TREND #5

### In us we Trust: Decentralised Architectures and Ecosystems (Blockchain-Empowered)

Using distributed infrastructure technology, decentralised ledgers enable the exchange of trusted data across networks by keeping records of each transaction.

India has successfully built fantastic foundational digital infrastructure such as Aadhaar, e-Sign and Digi locker along with digitally enabled networks like GSTN. However, these tend to centralise trust in a few agencies in the age of no trust and many users still have apprehensions on their use, and thereby misuse. From everyday enterprise applications to blockchain-native business models, decentralised architectures and ecosystems have started to emerge and are seeing more adoption than ever before. These disintermediate trust, placing trust not in a single organisation or person but distributing it across the community of users. With this in regard, not only the private enterprises, but also the Indian government is exploring the use of decentralised architectures to use in cases such as digital identities, credentials, transactions, contracts, and payments.

If you take the example of the telecommunications sector, the regulator has already deployed the distributor ledger technology to control spam SMS traffic and track down the unregistered telemarketing companies. On the other hand, the regulatory body for the securities and commodity market in India, under the Ministry of Finance, has instructed all depositories to make use of blockchain technology to maintain records. This will bring in more transparency in the process of record-keeping, as well as in the process of monitoring the creation of securities and covenants of non-convertible securities.

The Indian government is looking forward to establishing a national blockchain framework that will help in transforming the future of as many as forty-four sectors including education, pharmacy, farming, energy, and e-governance. An executive agency of the union government promoting e-governance has also supported a multi-institutional project titled “Distributed Centre of Excellence in Blockchain Technology” to carry out research on the use of blockchain technology in various domains and developed proof-of-concept solutions.

While global response to Web3 is still shaping up, India’s growing economy, demographic dividend, and exponential adoption of emerging technologies across sectors positioned the country to become one of the highest growth markets for Web3 globally, with more than 450 active start-ups in the space that raised US\$1.3 billion<sup>11</sup>.

<sup>11</sup> [Web3 Startups In India - a nasscom report](#)



## TREND #6

### Connect and Extend: Mainframe Modernisation Hits its Stride

Large businesses, even today, rely on trusted old mainframes to run their core processes. Up to 74 percent of global companies across sectors run their core systems such as banking and insurance applications, telco billing systems and even medical records management systems on such traditional mainframes<sup>12</sup>.

Cutting-edge digital technologies are shaping customer experiences through omni-channel touchpoints, but sit as layers on top of these legacy mainframe systems running core processes. While large modernisation programmes are running across organisations to modernise the core, moving mainframes to newer platforms are seen as either cost prohibitive or risky. Businesses are apprehensive to touch what is working well and want to make these shifts in long-drawn multi-year, multi-million-dollar programmes.

Firms are meeting this challenge by focusing their efforts on a tried-and-tested approach into the core system modernisation that will allow them to connect legacy applications to even the most modern tools. This includes AI-powered middleware solutions, advance microservices applications, and refreshed user interfaces that harness the power of the data that sits at the core. The result is a powerful pairing: the trusted functionality of core legacy systems with the expansive capabilities of emerging technologies.

Leading cloud providers have also announced mainframe modernisation solutions that dramatically simplify and reduce the risk of enterprise migrations of legacy mainframe systems to the cloud.

From an India perspective, the larger impact of this trend is towards jobs and skills. India supplies some of the largest mainframe talent to the world through large system integrators and technology GCCs for global organisations. It would be crucial for such individuals to wear two hats—one as legacy mainframe experts and the other as modern technologists, who understand APIs, microservices, and cloud, thereby enabling these interconnections and modernisation journeys.

<sup>12</sup> [Deloitte consulting articles hello mainframe, our old friend](#)

# Connect with us

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