Emerging Technologies and Changing Contours of Public Administration: Challenges to Professionalism, Anonymity, Integrity and Neutrality

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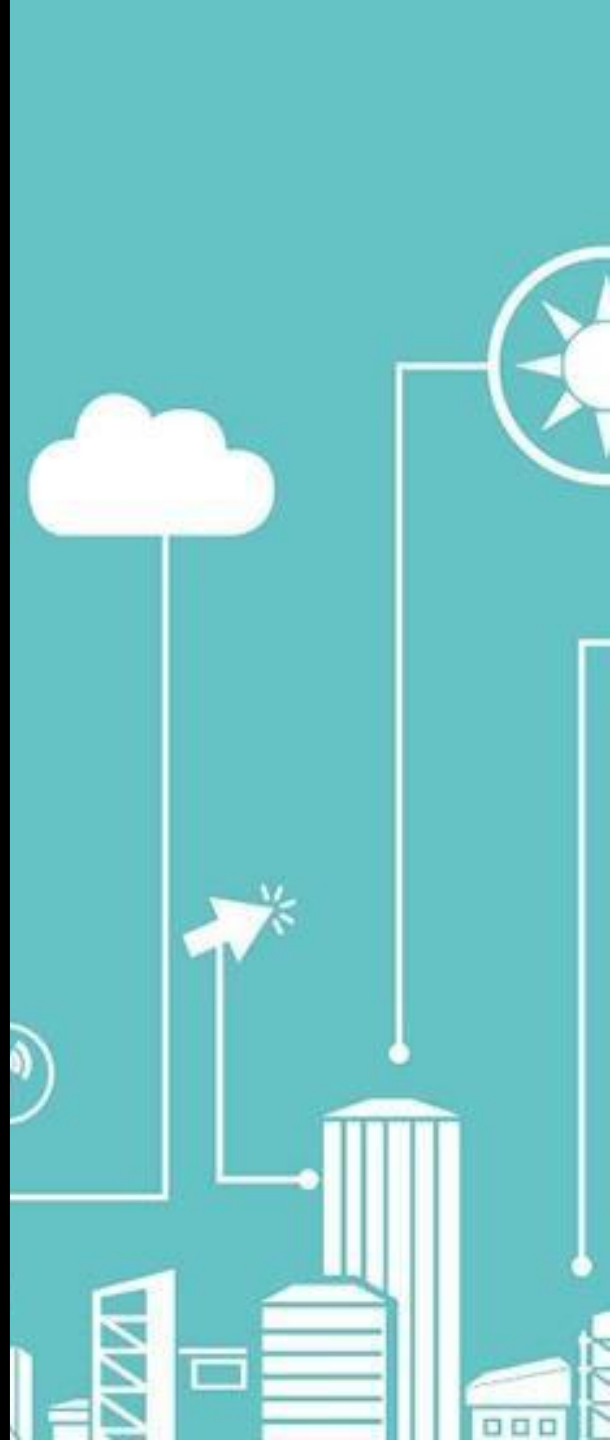


Life is Getting Better

- Early Independence: Roti, Kapda (basic needs)
- Mid-70s onwards: Sadak, Bijli, Pani (infrastructure, utilities)
- Mid-90s: Bandwidth, connectivity, low STD rates, rural electrification
- From 2020s: Low internet costs, low interest rates, tackling unemployment

Transformations in the 2020s

- AI & Biotechnology: new drugs, fight degenerative diseases
- Greater access: free internet, open information for all
- Poor working less compared to earlier generations
- Renewable energy: cheap, accessible, enabling new opportunities
- Skewed wealth distribution: top 5% control 95% of internet traffic
- Positive feedback loop: Education, healthcare, sanitation, democracy

Tech Acceleration & the Future

- API costs dropped by 97% in 2 years → wider access
- Price of storage falling rapidly
- Speed of computation increasing
- Communication costs falling
- Usable data volumes increasing multifold
- Growing investor confidence → more funding
- Human brain: ~10^{16} operations/sec
- Supercomputers: ~10^{18} operations/sec
- AI empowering human intelligence → path to Singularity

Technological Changes In Govt Sector … a Recap

1. **Rajiv Gandhi Era**

- Creation of Centre For Development Of Telematics (CDoT), the brainchild of Sam Pitorda
- Beginning of Subscriber Trunk Dialling (STD) in Metropolitan cities
- Support to Light Combat Aircraft (LCA) Tejas

2. PV Narasimha Rao Era

- STD spreads to District Headquarters level
- Liberalization made bureaucrats to be facilitators, not regulators

3. Digital Era in Government

- Adoption of Internet Technologies in Govt - 2006 onwards under National e-Governance Plan
- Alan Turing published his concept paper "Computing Machinery and Intelligence" in 1950, but work on ML and AI started in earnest in late 2000's
- Emerging technologies are accelerating the flow of information, transforming governance, business, economy, and society alike.

Digital Journey - From Automation To Computer Intelligence

- ERP Systems (1990s): Streamlined business functions like finance, HR, and supply chains across enterprises
- Data Mining & Warehousing (2000s): Enabled storage, retrieval, and pattern recognition in large datasets
- Predictive Analytics (2010s): Shifted from descriptive analysis to forecasting future trends and outcomes
- Late 2010s–2020s – Artificial Intelligence: machines that learn, adapt, and interact autonomously.

The Digital Maturity Spectrum

1. Exploring Digital

Leverage traditional technologies to automate existing capabilities

2. Doing Digital

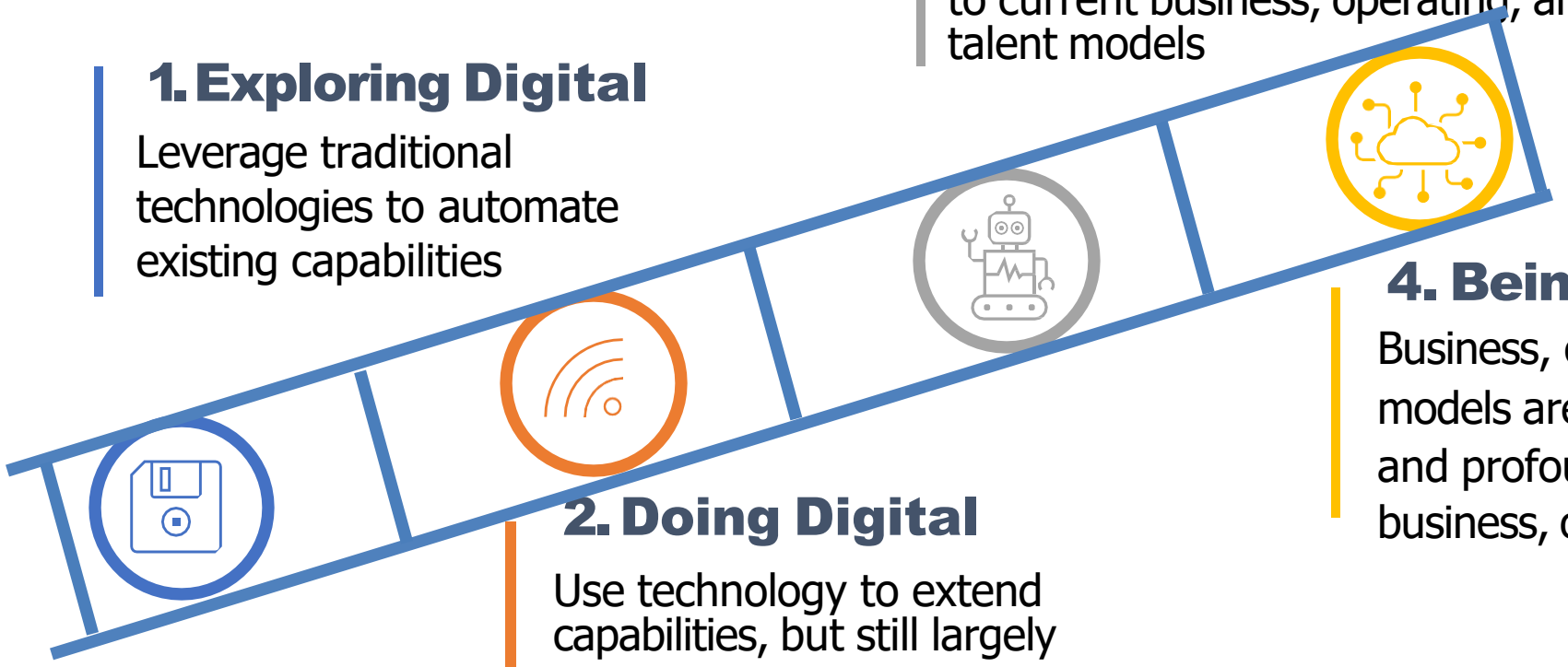
Use technology to extend capabilities, but still largely focused on current business, operating, and talent models

3. Becoming Digital

Becoming more synchronized and less siloed — with more advanced changes to current business, operating, and talent models

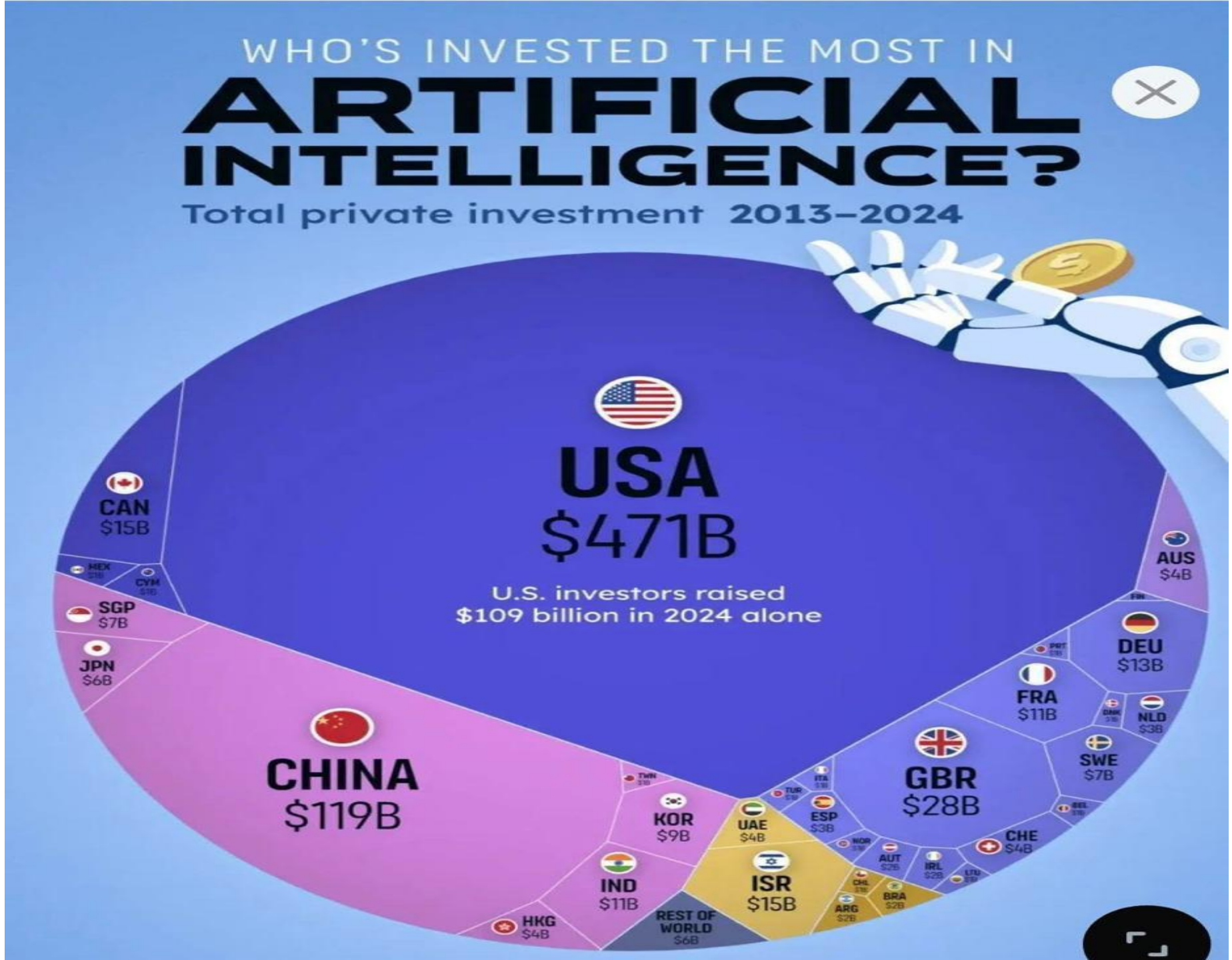
4. Being Digital

Business, operating, and talent models are leveraged for digital and profoundly different from prior business, operating, and talent models



Public Governance Milestones In Technology (2024–2025)

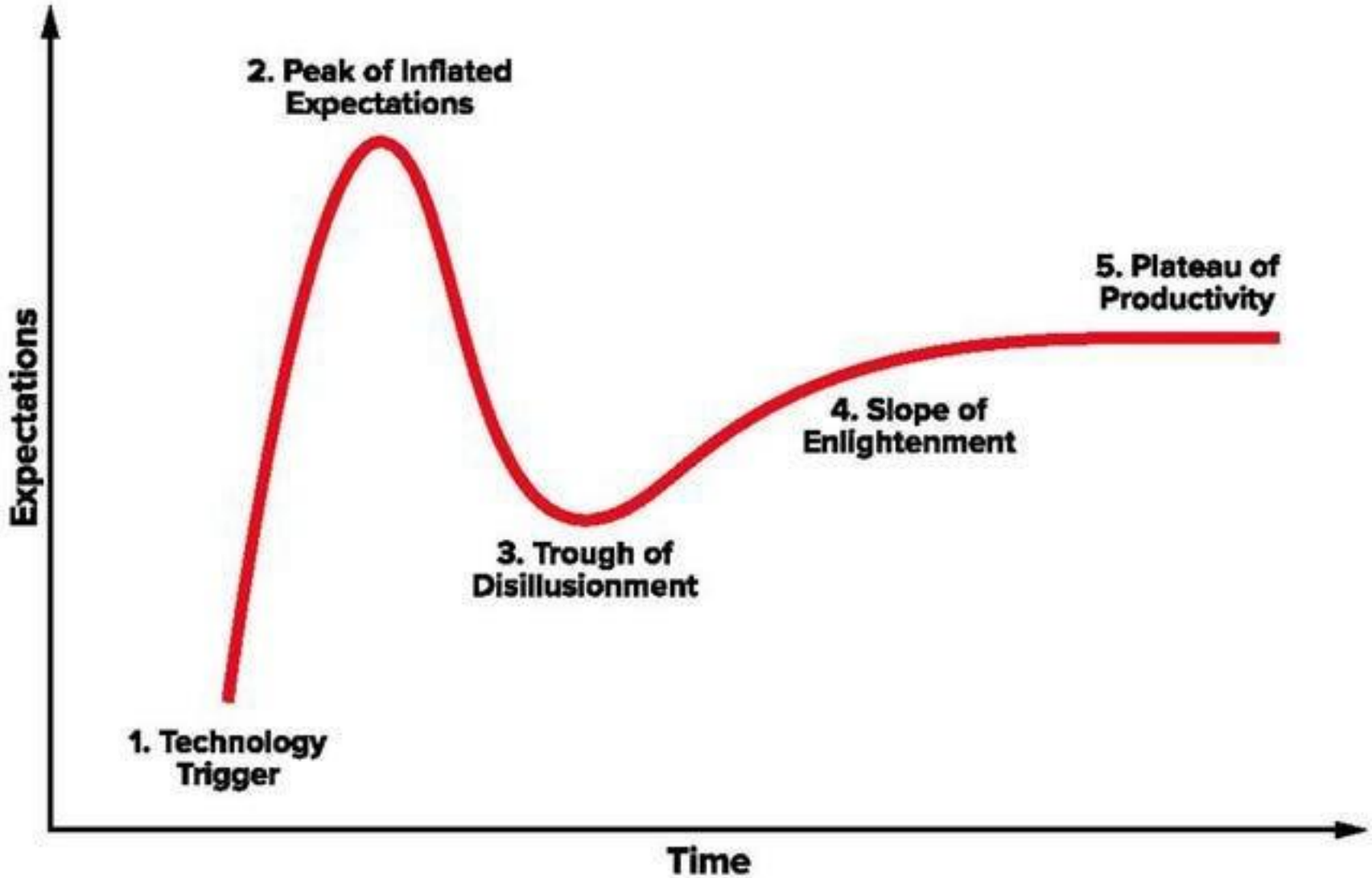
- EU AI Act's first phase (Feb 2025) bans biometric categorisation & emotion-recognition in public spaces; high-risk compliance due 2026
- IndiaAI Mission (₹10,300 Cr) launching national AI compute with 18,693 GPUs; 17,000+ operational by June 2025
- Open Network for Digital Commerce (ONDC) processed 14.45 M transactions in Nov 2024, mainstreaming open digital trade for SMEs
- White House directive (Apr 2025) orders U.S. agencies to name Chief AI Officers & craft AI risk frameworks within six months
- Generative AI pilots in public sector (2025) now inform urban-planning, policy design & citizen services (Deloitte 2025)


WHO'S INVESTED THE MOST IN
ARTIFICIAL INTELLIGENCE?
Total private investment 2013–2024
USA
$471B
U.S. investors raised
$109 billion in 2024 alone
CHINA
$119B
CAN
$15B
SGP
$7B
JPN
$6B
AUS
$4B
DEU
$13B
FRA
$11B
NLD
$3B
SWE
$7B
GBR
$28B
CHE
$4B
KOR
$9B
UAE
$4B
ESP
$3B
ISR
$15B
IND
$11B
HKG
$4B
REST OF WORLD
$6B
BRA
$2B
ARG
$2B

AI is the New Arms Race—Who's Investing the Most?

- AI has become a strategic priority for global economies and corporations
- The USA led with $109.1 B in private AI investment in 2024, nearly 12× China's $9.3 B
- Generative AI alone attracted $33.9 B worldwide in 2024, up 18.7 % year-on-year
- India's IndiaAI Mission (₹10,300 Cr, 2024–29) is scaling a 18,693-GPU national compute grid
- Private AI capital flowing into India surpassed $8 B by early 2025, focused on healthcare, agritech & public-service applications
- The global race underscores that AI capability is now a core driver of economic and strategic advantage

Gartner Hype Cycle



Artificial Intelligence: Opportunities And Challenges

- AI and the Job Market
  - ❖ AI's advancement promises to drive efficiency and innovation but also poses significant risks to job security across various sectors.
  - ❖ Middle-level jobs, especially, face the threat of obsolescence, raising critical questions about the future of work and income distribution.

- Surveillance, Data, and Privacy
  - ❖ The capability of AI to process vast amounts of data has profound implications for privacy and surveillance.
  - ❖ The use of AI by corporations and governments to profile individuals and influence behaviour poses a direct challenge to personal freedoms and democratic processes.

- Steering the Future of AI
  - ❖ Given AI's transformative potential, it is imperative to foster a global dialogue on its ethical use, ensuring that its development and application are guided by principles that prioritize human welfare, equitable growth, and the safeguarding of democratic values.

Potential Pitfalls Of Emerging Technology

- Ethical issues with respect to equity/bias in the training data sets in use cases such as police crime prediction, assessment of credit worthiness etc.
- Accuracy concerns remain vis-à-vis false-positive and false-negative scenarios.
  - ❖ A genuine user may be incorrectly identified as a fraudster
  - ❖ A positive patient may be identified as being disease free
- Laws and regulations are needed help in managing the risks especially for data anonymization

Cleary, some work remains to be done!

Acemoglu's paper argues that AI's overall economic impact will be modest — boosting total factor productivity by only about 0.5–0.7% and GDP by around 1% over the next decade. While AI may improve efficiency in certain tasks, it is unlikely to reduce inequality and may widen the capital–labour income gap. Moreover, some AI-driven activities could inflate GDP but harm social welfare through manipulative or low-value uses.

Global Governance Tech Trends

- EU AI Act (2025): bans biometric categorisation in public spaces
- USA: Chief AI Officers mandated in all federal agencies
- Singapore: AI-driven traffic management & predictive governance
- Estonia: Blockchain-based land records
- Africa: National digital ID programs scaling citizen inclusion

India’s Digital Public Infrastructure

- Aadhaar: Biometric identity for 1.3B citizens

- UPI: 8.7B+ monthly transactions (2025)
  - ❑ Unified Payments Interface (2016 launch)
  - ❑ 350M+ active users, 8.7B+ transactions/month (2025)
  - ❑ Reduced cash dependency, boosted small merchants
  - ❑ Replicated by global economies as IndiaStack model
  - ❑ Symbol of how digital public infrastructure reshapes governance

- DigiLocker: 250M+ users storing verified documents

- CoWIN: Vaccination platform, now repurposed for health

- ONDC: 14.45M transactions in Nov 2024, boosting SMEs

- IndiaAI Mission: ₹10,300 Cr, 18,693 GPUs operational by 2025

Civil Servants' Focus For 2025–2030

- Ethical & responsible AI adoption in governance
- Cybersecurity as a core governance mandate
- Balancing efficiency with inclusivity
- Constant upskilling in digital tools
- Anticipating regulatory & tech policy shifts

Ethics In AI Governance

- Bias in predictive policing & credit scoring
- Balancing surveillance with privacy rights
- Transparency in government algorithms
- Ensuring citizen trust in AI systems
- Global need for responsible AI frameworks

Leadership In A Time Of Change

- The primary objective of quality leadership is to harness capability, resources, talent and energy of team members
- Technological advancements aid in this process, increasing productivity and innovation
- Leaders in administration should adapt and respond effectively to the changing nature of governance, remaining cognizant to the vital role of technological development in this process
- Leaders should create an environment of trust, boosting employee performance


What Makes a Good Leader
Integrity
Clarity of Vision
Strong Communication
Technology Capability
Motivational Skill
Effective Delegation
Conflict Resolution
Openness for New Ideas