TECH NAVIGATOR:
EXECUTIVE SUMMARY

Infosys®
Navigate your next

Table of contents

Executive summary

We are at the beginning of a major technological era, one dominated by artificial intelligence (AI). Firms that build on their digital and cloud investments with AI will leapfrog those that don't and will dominate industries and professions.

This Tech Navigator sets out to explore what savvy firms need to do to put those investments to work. While they need to be human-centric, as we outlined in last year's report[1], they will need to use AI to augment and amplify human potential, to become more innovative, to unlock efficiencies at scale, to grow faster, and to build a connected ecosystem.

Consumerization of AI

Generative AI is the latest wave in AI advancement. It follows from machine learning and predictive analytics, then deep learning, and now transformer architecture and foundation models. It is described by Stanford as "models trained on broad data, generally using self-supervision at scale, that can be adapted to a wide range of downstream tasks[2]", and now used in the latest consumer products such as ChatGPT, which is built on OpenAI's GPT-4 large language model (LLM).

By leveraging the power of this general purpose AI technology, we are seeing enterprises evolve from using AI to manage operations and specific business functions to using it to reimagine the way customer experiences and services are delivered by the business (Figure 1).

Becoming AI-first: the building blocks

AI-first firms will have a strategy in place for deploying these nascent models. They will understand which experiences and processes to amplify through AI, the tooling and automation needed to deploy these models, and will have the right talent and operating model to bring this AI to life.

Figure 1. Businesses should move across the three horizons to evolve as AI-first

KEY PATTERNS

- Billion/trillion parameter models
- Zero-shot learning
- Multitask learning
- Multimodal and multilingual
- Closed and open access models
- Responsible by design
- Auto ML

H3

Transformer architectures, foundation models, generative AI (self-supervised)

AI models should be capable of learning and evolving on their own with minimal human intervention.

- AI governance – AI ethics, explainable AI
- Model pruning, quantization tech
- Transfer learning
- Neural networks
- Object detection, classification, segmentation

H2

Transfer learning, responsible AI (less data, explainable systems)

These are rapidly gaining prominence among enterprises. Businesses are investing in AI systems that are capable of making fast, transparent, and unbiased decisions.

- Prediction recommendations
- Logistic regression
- Classification regression
- Rule-based
- Expression-based

H1

Conventional AI (augmenting intelligence)

These systems are already mainstream, providing AI-powered assistance to business decisions.

Source: Infosys

Throughout the report, we refer to the three waves of AI, categorized into Horizons 1, 2, and 3, or H1, H2, and H3. Horizons are a way to evaluate tech trends[3]. Horizon 1, or H1 technologies, are well established and widely used. H2 is technologies that are in use and most of the ongoing work is happening using these technologies. H3 is emerging technologies that are used in pockets or for innovation pilots and include disruptive ideas across enterprises, but some have the potential to become mainstream. Advances in H3 can also create new risks in compliance, safety, and other areas that must be managed.

This is what we explore in the coming pages – a prescriptive framework composed of four building blocks (Figure 2) that we are using in Infosys' own transformation from a cloud-native to now an AI-native enterprise. The four building blocks are:

- **AI-first experiences and processes –** to evaluate and identify experiences and processes that will benefit most from AI-first reimagination, including AI assistants.
- **AI engineering excellence –** to build foundational data and AI engineering processes, tools and automation in a bid to craft digital rails for delivering and scaling AI projects.
- **Responsible AI by design –** to create guardrails, controls and processes to ensure that all the AI products and services are trustworthy and meet regulatory guidelines and policies.
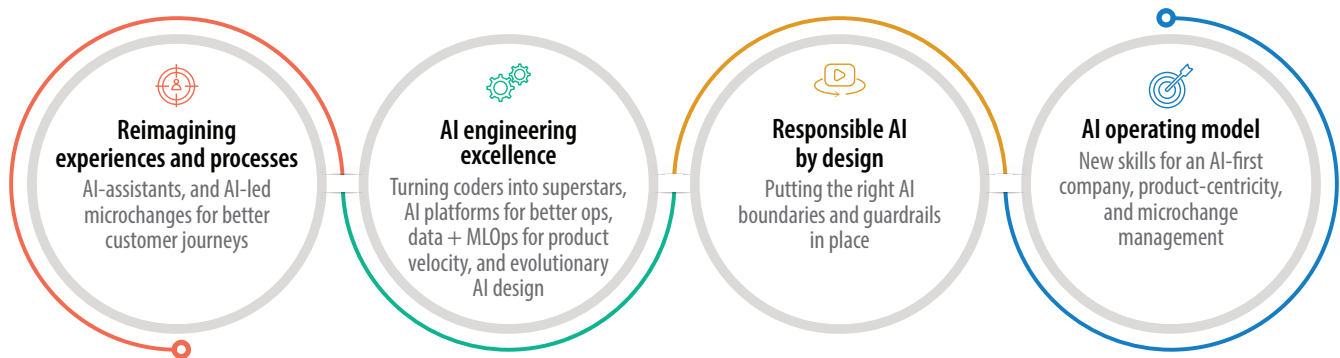
- **The AI operating model –** to build AI-first talent, processes and a product-centric operating model to design and deliver AI services.

Reimagining experiences and processes

Firms must prioritize the products, processes, and features that are most ripe for transformation through AI, and evaluate them in terms of business impact, ease of implementation, and trustworthiness.

An AI canvas can also be drawn up that covers business problems, expected end-user value, and the guardrails and controls to be put in place during implementation. Each experience must have a human-in-the-loop (HIL) and telemetry to improve AI model performance over time.

Figure 2. The four building blocks of an AI-first organization

Reimagining experiences and processes
AI-assistants, and AI-led microchanges for better customer journeys

AI engineering excellence
Turning coders into superstars, AI platforms for better ops, data + MLOps for product velocity, and evolutionary AI design

Responsible AI by design
Putting the right AI boundaries and guardrails in place

AI operating model
New skills for an AI-first company, product-centricity, and microchange management

These four building blocks create an enterprise that
- Amplifies human potential
- Unlocks access to intelligence embedded in artifacts, systems, and humans
- Drives exponential change for scaled impact

Source: Infosys

AI engineering excellence

In order to build good AI, the right engineering foundation and tooling design approaches are needed. A PolyAI approach ensures flexibility to choose the best-fit AI solution for a given problem, while making use of both open and closed AI models is needed depending on the use case.

Closed models such as GPT-4 (Open AI) can be used with generalized use cases to quickly realize value. For specialized use cases, models, and IP, open models such as BLOOM and CodeGen, can be fine-tuned using a narrow transformer approach to create differentiation and competitive advantage. The entire software engineering and operations processes should also be augmented through AI assistants that can help improve the productivity of developers, testers, and operations teams.

Responsible AI by design

Third, firms should implement the idea of shift-left with responsible AI by design. This isn't easy. Although the use of AI is exploding, ethics and governance are scrambling to keep up, with some jurisdictions banning the use of generative models until better regulation is in place.

To ensure failsafe AI systems, we recommend baking ethics into every step of the AI engineering and application lifecycle.

The AI framework we use here is comprised of five building blocks – starting with the objective of building a trustworthy process or product through appropriate governance, and then monitoring and measuring progress, building capabilities, and making sure the AI is compliant with data protection, record-keeping, and reporting.

AI operating model

In our Digital Radar 2023[4], earlier this year, we found that more important than the introduction of technology is the way the organization is set up to take advantage of it.

Going AI-first means recognizing that some existing jobs will get displaced and new roles like prompt engineers and model tuners will be created.

We recommend that firms use a product-centric approach for both AI product development and core engineering.

A product-centric mindset will therefore be vitally important, as will what we term "micro is the new mega" – a way of deconstructing change projects into a series of micro-sprints that produce exponential results (and business outcomes).

AI is not just another technology: it is a genuinely transformative way of building applications and processes that will upend the way that organizations make money in the future and remain competitive. Going AI-first is not optional for companies that want to succeed.

No wonder then that according to Stanford's AI Index report 2023[5] and CB Insights "State of Generative AI"[6] report, we are witnessing an explosion in AI development, with more than 37 LLMs available, $2.6 billion in equity funding and 500,000 AI publications released in 2022 alone.

Are you on board? Click here to discover the perspectives on these technologies from Infosys experts, and what it means for your business.

References

1. Tech Navigator 2022: Building the human-centric future, Harry Keir Hughes, 2022, Infosys Knowledge Institute.
2. On the opportunities and risks of foundation models, Rishi Bommasani et al, July 12, 2022, Stanford Institute for Human-Centered Artificial Intelligence (HAI).
3. Advanced trends in AI: The Infosys way, Sudhanshu Hate, Harry Keir Hughes, Jeff Mosier, and Anu Mary Tom, October 1, 2020, Infosys Knowledge Institute.
4. Infosys Digital Radar 2023: The next digital frontier, Harry Keir Hughes, 2023, Infosys Knowledge Institute.
5. Artificial Intelligence index report 2023, Nestor Maslej et al, 2023, Stanford Institute for Human-Centered Artificial Intelligence (HAI).
6. The state of generative AI in 7 charts, January 25, 2023, CB Insights.

Contributors

Authors

Rajeshwari Ganesan | Distinguished Technologist, Infosys

Rajeev Nayar | CTO of Data & AI, Infosys

Kamalkumar Rathinasamy | Distinguished Technologist, Infosys

Rafee Tarafdar | CTO, Infosys

Kate Bevan | Infosys Knowledge Institute

Harry Keir Hughes | Infosys Knowledge Institute

About Infosys Knowledge Institute

The Infosys Knowledge Institute helps industry leaders develop a deeper understanding of business and technology trends through compelling thought leadership. Our researchers and subject matter experts provide a fact base that aids decision-making on critical business and technology issues.

To view our research, visit Infosys Knowledge Institute at infosys.com/IKI or email us at iki@infosys.com.

For more information, contact askus@infosys.com

Infosys®
Navigate your next

Infosys.com | NYSE : INFY

Stay Connected