AI in Financial Services: Making it happen at scale

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Foreword

The landscape of artificial intelligence (AI) has seen an astonishing transformation over the last decade. Specifically in the context of data and banks, financial institutions have been urged to embrace AI to explore the myriad of opportunities it offers.

From 15-17 November 2023, the Monetary Authority of Singapore, Elevandi and Constellar, in partnership with The Association of Banks hosted the Singapore Fintech Festival 2023 in Singapore.

The roundtable discussion and sessions hosted over the week by the Festival brought together global stakeholders to engage in needed discussions surrounding AI. Insights from regulators and financial institutions from all over the world were shared, and this report summarizes and complements discussions held, providing insights for each.

We have found that while financial institutions engage frequently in experimentation in AI, many pilots do not progress past initial pilot stages, raising questions on the ability of institutions to bring use-cases to scale. Similarly, from the regulator's perspective, while generally supportive of industry experimenting with AI, regulators still take risk-averse stances to regulation, given the many "unknown unknown" risks that AI poses.

This report explores the practical concerns surrounding AI, the practical takeaways for institutions to consider how they may bring pilots to scale and for regulators to consider how they may foster a regulatory environment that would encourage such pilots to be brought to scale, both to achieve AI's desired impact on the financial services industry.

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# Institutions need to scale AI before its full impact can be seen

AI is a proven technology and is now a game-changer

Artificial intelligence (AI) is reshaping fundamental processes and functions across entire industries and its productivity gains are already proven. For instance, GitHub reported 55% faster completion of coding tasks with higher success rates for those using GitHub CoPilot[1]. MIT research also showed use of ChatGPT had resulted in 37% faster completion of knowledge work with comparable quality results[2]. [Exhibit 1]

It is thus no wonder that AI has been the focus of attention with global investments estimated at $200 billion by 2025[3], with $12.5B of equity raised in 2023 globally, a steep increase compared to 2022's $1.9B. The Singapore FinTech Festival, which attracted 66,000+ participants, even centered its 2023 theme on "The Applications of AI in Financial Services", with 62 sessions tagged directly to AI.

1. https://github.blog/2022-09-07-research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/

2. https://joshbersin.com/2023/03/new-mit-research-shows-spectacular-increase-in-white-collar-productivity-from-chatgpt

3. AI investment forecast to approach $200 billion globally by 2025 (goldmansachs.com)

Exhibit 1- Productivity gains from use of GenAI are real and proven

55%
Faster completion of coding tasks[1]

37%
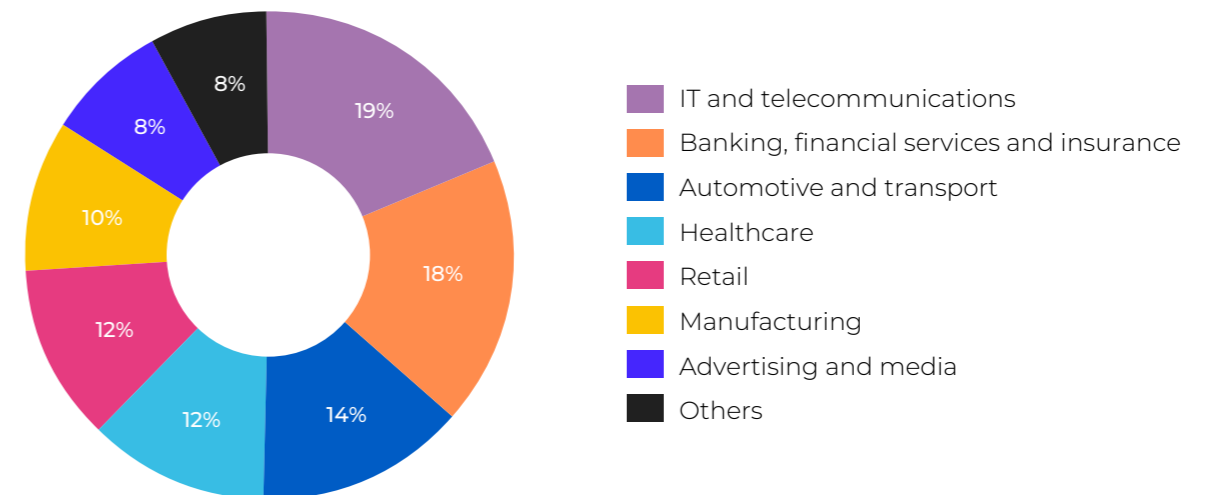Faster completion of knowledge work[2]
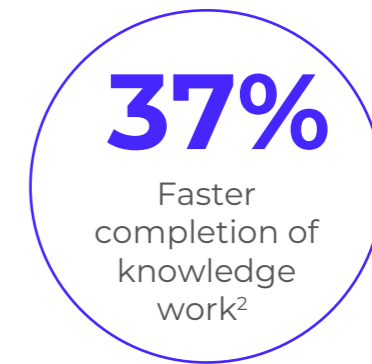
[1] Github [2] MIT

> **"[On AI dividing advanced populations from less advanced populations] People said the same thing about digital… and now everyone has digital… I'm betting the same thing will happen to AI… AI is the most democratic thing that will happen to us.**
>
> *Shekhar Kapur*
> *Film, TV, Theatre Director & Producer*

Within financial institutions, AI has already become a key driver

The banking, finance and insurance industry are amongst the biggest users of machine learning covering 18% of the market[4]. [See Exhibit 2.] It is a key component of processes with 40% of financial services companies relying on machine learning for fraud detection and financial forecasting[5].

Exhibit 2- Banking, finance and insurance are among the biggest users of machine learning

- IT and telecommunications
- Banking, financial services and insurance
- Automotive and transport
- Healthcare
- Retail
- Manufacturing
- Advertising and media
- Others

Data as of 2022

4. https://www.spglobal.com/en/research-insights/featured/special-editorial/ai-in-banking-ai-will-be-an-incremental-game-changer

5. https://www.spglobal.com/en/research-insights/featured/special-editorial/ai-in-banking-ai-will-be-an-incremental-game-changer

Exhibit 3 - Banking "gold mine": Extracting value through AI

			Extracting value through established AI...	...and the emerging potential of GenAI
App usage	Account transactions	Risk profile	Predictive modeling of	Generative models to
Card histories	Call logs	Product usage	· behaviors	· understand
Loan behavior	Channel usage	App geolocation	· preferences	· converse
External aggregators	Website behavior		· needs	· synthesize
			· risks	· create

Banks have already begun to experiment with GenAI, beyond traditional AI [See Exhibit 3.] In retail banking, leveraging AI to forecast and tailor future product offerings based on customer needs and behaviors has become "table stakes".

> **50% of organizations have adopted AI in at least one business area already**
>
> *Thomas Dohmke,*
> *Chief Executive Officer, GitHub*

Regulators have also shown to be open to innovation

Regulators regard AI positively, with many recognizing the need not to overregulate to encourage innovation through the introduction of regulatory sandboxes and continuous feedback loops with industry. For example, Singapore's Infocomm Media Development Authority and AI Verify Foundation unveiled a GenAI evaluation sandbox in late 2023[6] while Spain had recently approved an AI regulatory sandbox in light of the upcoming EU AI Act[7].

Nevertheless, most experimentation do not successfully move past pilot stages and struggle to achieve scale

Despite efforts by both institutions and regulators to push for AI development, more than 70% of GenAI use-cases remain in the pilot phases[8]. Within the UK, 65% considered AI regulation uncertainty as top concern for adoption of AI and scaling efforts[9]. Therefore, while efforts by institutions to operationalize pilots to scale remain important, regulation also play an important role in pushing such pilots to scale.

As such, in BCG's view, there are **3 key takeaways for institutions** to consider operationalizing AI to scale and **3 key takeaways for regulators** to consider in developing the AI regulatory landscape to foster such scaling efforts.

3 key takeaways for financial institutions

Institutions need to transform entire functions and reimagine E2E processes to realize AI's full value

Increasingly institutions have found that incorporating AI into legacy processes built around the needs and capabilities of human workers can lead to disjointed rollouts and potential frictions for employees, impacting their ability to bring pilots to scale. In response, companies are becoming more aware that they see greater impact and capture more value when they holistically reimagine entire processes end-to-end with both AI and human roles in mind. To do this, executives have found that it is increasingly crucial to integrate AI directly into workforce planning processes to manage the transition to AI well across all functions.

This reimagination process is typically done through 3 key steps:

1. Update ways of working and changes in processes for the future state

2. Assess current workforce potential and devise strategies to fill supply-demand gaps

3. Support comprehensive culture and change management

6. https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2023/generative-ai-evaluation-sandbox
7. https://www.connectontech.com/first-european-regulatory-sandbox-on-artificial-intelligence/
8. https://www.ukfinance.org.uk/system/files/2023-11/The%20impact%20of%20AI%20in%20financial%20services.pdf
9. https://www.ukfinance.org.uk/system/files/2023-11/The%20impact%20of%20AI%20in%20financial%20services.pdf

Step 1: Update ways of working and changes in processes for the future state

As institutions move towards an integration into AI, work will increasingly become automated and augmented. Such automation and augmentation will inevitably impact the following major types of work across the organization:

1. Repetitive tasks (e.g. low/no-code automation)

2. Knowledge synthesis (e.g. reviewing of all commercial loan agreements)

3. Data-driven decisions (e.g. automation of vendor negotiations)

4. Creative tasks (e.g. augmentation of code generation)

As a result, AI is likely to have a major impact on certain functions, including marketing, customer service, legal and software development, resulting in significant opportunities for cost reduction, demand generation via higher-quality service, and the ability to focus resources on higher-value tasks. As such, institutions have begun to rethink functions based on four major archetypes of roles and consider the skills needed in the organization's future state given their AI transformative vision [Exhibit 4].

Exhibit 4 - GenAI introduces four archetypes of roles with various degree of training needed

| Roles that **BUILD** GenAI	Roles that **SHAPE** GenAI	Roles that **USE** GenAI	Roles that **GOVERN** GenAI
Technology specialists who build and monitor GenAI models and support technology platforms, leveraging advanced tech. capabilities	Business & functional experts who collaborate with technologists to articulate business needs and integrate models into bus. processes	Practitioners who interpret resulting content and data from GenAI models to deliver value to customers and employees	Professionals who monitor GenAI to ensure software is driving returns while verifying technology is used compliant, safely and ethically
Sample roles (Gen)AI engineers, Application specialists, Cyber security	Sample roles Marketing manager, Biomedical engineer, Director of Strategy	Sample roles Customer support, HR generalist, marketing employee	Sample roles AI governance specialist, Risk Manager, Legal Director
• Technical skills on AI/LLM engineering (incl. prompting) • Cloud infrastructure and cybersecurity • Regulatory implications on development process • Novel GenAI dev. tools	• Understanding of possibilities and limitation of GenAI use case archetypes • Hands-on testing of tools (e.g., demos from multiple vendors) • Exchange formats with other experts (inside & outside firm)	• Tool usage (how to use tool, incl. prompts, outputs) • Policies/guidelines (incl. quality control mechanism to ensure output quality) • Contribution opportunities (e.g., sharing feedback)	• Depending on specific role • Up-to-date knowledge of legal frameworks & interpretation • Overview of tech-stack supporting governing • Business & tech acumen to support delivery squads

Step 2: Assess current workforce potential and devise strategies to fill supply-demand gaps

Having determine the skills and roles that will need to be redesigned and redefined for the organization's future state, institutions must assess its current workforce potential. This includes considerations as to the degrees of training that the relevant role would require and whether hiring new roles or contracting third-party providers would best suit the organization's needs.

Most importantly, financial institutions must be pragmatic about implementing changes. This entails identifying which roles have the highest value to their particular AI strategy and then developing an appropriate value-added talent plan [See Exhibit 5.]

Exhibit 5 - GenAI introduces four archetypes of roles with various degree of training needed
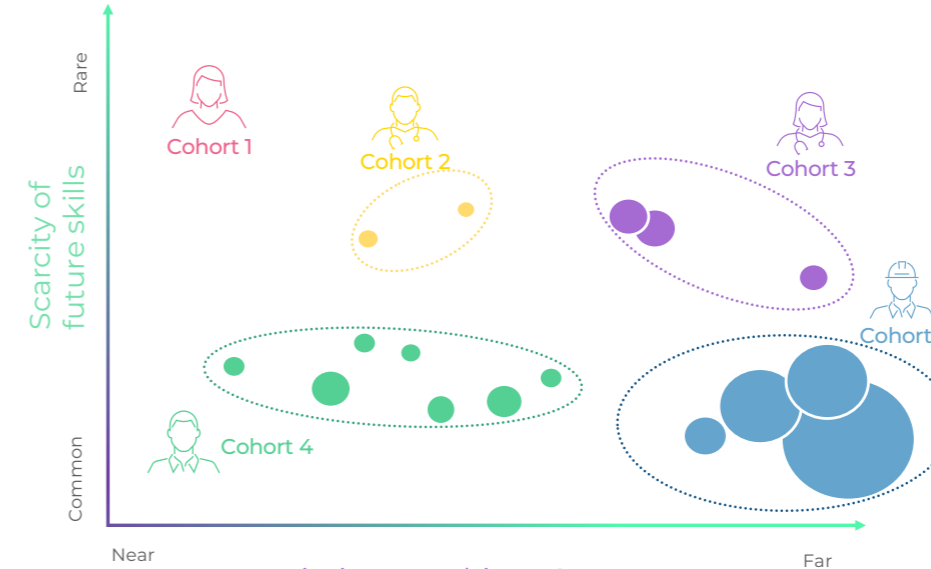
Example criteria assessed
- GenAI impact on Skill
  - Skill scarcity: % of new or disrupted skills
  - Criticality: # of new positions opened
- Near term value to GenAI strategy
  - Business case and risk to GenAI strategy based on company-specific use cases

Example talent plan
- Cohorts 1, 2: Significant upskilling & recruiting required; build long-term plan
- Cohort 3: Immediate upskilling where possible; significant external sourcing in parallel
- Cohort 4: Manage the message; minimal near-term action
- Cohort 5: Targeted upskilling

Furthermore, in our experience, such transformation measures have generally been more successful when staged, first with back-office functions such as accounting, customer service and marketing. Organizations may then incrementally improve productivity and efficiency across itself and start to boost digital and product support teams and customer-facing teams.

> **A critical question you must ask as you start to implement AI in different technologies and that is 'is this an improvement over our current approach?**
>
> *Dr Margaret Mitchell,*
> *Chief Ethics Scientist, Hugging Face*

Step 3: Support comprehensive culture and change management

To comprehensively implement such transformative changes end-to-end, it is also important for institutions to begin introducing change management efforts. These include implementing cross-functional teams with end-to-end ownership on products, journeys, and services to help the organization reimagine complete processes and implement AI products within the organization seamlessly.

Furthermore, to reflect changes to roles as a result of high levels of automation and augmentation, interdisciplinary teams with embedded data, business analysis and legal capabilities are also needed. More advanced institutions have also introduced flatter and more agile structures for quicker iterations and decisions, and a reduction in the spans of control to handle more complex nature of work.

Overall, these steps are a good starting point for institutions who wish to see greater impact in AI implementation and institutions who have not done so are recommended to follow suit and move away from traditional methods of inserting AI into the organization in a piecemeal fashion.

To succeed, financial institutions need to first have a vision and not focus on near-term changes only

In determining its needs for its future state, institutions must first develop a holistic vision for AI application across their entire business, where roadmap (from choice of AI use-cases, use-case development, and implementation) is prioritized based on level of business value and where technology can be utilized in multiple applications.

First, it is important for institutions to understand how they may utilize each type of AI technology. GenAI and predictive AI, for example, serve fundamentally different purposes and should be utilized and implemented discerningly before their full value may be achieved.

To illustrate, predictive AI is comparable to the left side of the brain, wired specifically for logic, measurement, and calculation – it comprises algorithms that assign probabilities, categorize outcomes, and support decisions. GenAI acts as the right brain, wired to excel at creativity, expression, and a holistic perspective – the sorts of skills required to generate plausibly human-sounding responses in an automated chat. [See Exhibit 6.] A bank's strategy will need to include both, harnessing their respective strengths in different ways.

Well-proven and potential AI applications now span almost every aspect of FI workflows, from client-facing roles to back-end operations. [See Exhibit 7.] To take full advantage of these new AI opportunities, financial institutions must sharpen their methods for identifying, prioritizing, and incubating initiatives that are likely to have the greatest positive impact on value generation, customers and employees, and quality.

> " When we think about how AI can make things better, we have to think about where does intent and capacity to do that better exist.
>
> *Manu Chopra,*
> *Chief Executive Officer, Karya*

Exhibit 6- Predictive AI and GenAI complement each other

Predictive AI
Predictive algorithms that, among other things, can assign probabilities, ategorize outcomes, and support decisions

Generative AI
Generative algorithms that, among other things, can create text or images in human-like quality in response to prompts or requests for synthesis

Exhibit 7- Overview of some common AI-driven value opportunities in banks

	Marketing & Sales	Prospecting & Onboarding	Product Development	Ops Process	Financial Advice	Customer Support	Risk & Compliance	Supporting Corp. Functions
Predictive AI	Customer retention	Customer lifetime value (CLV) modelling	Analytical banking offerings	Intelligent payment routing		Call transcript analysis & insights mining	Early warning credit risk monitoring	RWA optimisation
	Cross-sell & acquisition	Personalized onboarding		Smart payment repairs			Collateral risk assessment	HR: AI-powered talent acquisition
	Pricing and fee optimisation			Differentiated collections			Automated credit decisioning	Optimal allocation of resources
	Omni-channel engagement			Branch network optimisation				
Both		Intelligent document processing and digitization			Support & proactive needs identification for RM/client interactions		Transaction monitoring	HR: Talent retention – employee sentiment analysis
Generative AI	Hyper-personalization of content	Streamlined onboarding (incl. KYC)	Identification of emerging product trends to support product teams	Document pre-population	Investment reports and research synthesis	Policy/contract monitoring and synthesis	Knowledge database for legal teams	Knowledge management & analysis
	Client acquisition chatbots for engagement	Initial fact find for a new client	Helping users discover products tailored to needs		Synthesized, tailored reports for customer distribution based on individual interests	Automated document classification	SAR pre-population	Code generation & review
	Sales training for simulating client conversations					Customer service/ ontact center support interface and chatbot	Ongoing customer due diligence	Memo writing
						Agent coaching and performance	Compliance monitoring and documentation creation	IT: Synthetic data generation & use for test cases
							Document synthesis for lending reviews	Finance: Drafting of reports and planning
							Enhanced underwriting	

Key	Customer intimacy	Operational excellence	Controlling credit risks	Containing compliance & operational risks	Building workforce and culture	Steering and controlling	Analytics-based products & services

Second, a value-based approach is also recommended for when institutions reach its AI development phases. Institutions should be selective, focusing on use-cases with high value-add and marginal AI risks.

Experimentations often start with smaller scale use-cases before scaling their application. By starting small, institutions can reduce the risk of projects (especially financial costs of large-scale implementation), flexibly refine techniques and approaches, gain a better understanding of the issue they are trying to solve and how AI may be applied as well as allow quicker reiterations and delivery of results.

But the past decade of AI growth has shown experimentation can get out of hand. While many pilots and proof of concepts have been introduced, few progress to production deployments with 90% of organizations admitting to having difficulty scaling the number of AI use cases across their companies[10]. Furthermore, not only is AI costly and time-consuming for companies to develop, AI comes with many inherent risks [Exhibit 8]. For this reason, the strategy of seeding many small use-cases to see which one survives and flourish is not the ideal approach to AI.

Instead, the most effective AI strategies have stemmed from selective experiments in controlled "laboratory" testing environments. Selecting and focusing on the development of use-cases based on areas that make the most practical sense for the organization and funneling out use-cases that do not, early on in development. This way, leaders can use insights from experiments to laser-focus on a small number of high-impact AI opportunities and rally the organization around them, to identify the most specific and relevant gaps, to build internal tech capabilities and allocate resources to reiterate key systems.

These may include laser-focusing on high value-add use-cases that introduce marginal AI risks, i.e., applications to improve internal efficiencies such as faster coding, document identification, and developing such use-cases incrementally.

Third, the institution's holistic vision also extends to how it chooses to define its governance and operating model.

With regards to governance and resource allocation, quick iteration and decision-making of AI is often not capitalized due to static resource allocation processes.

Institutions should consider adopting dynamic resource allocation with regular review to capitalize on new opportunities. For example, by focusing on parallel AI pilots using the same technology to prevent duplicative work.

Furthermore, institutions also introduce unnecessary layers of review for AI outputs due to unclear decision rights or legacy decision-making process. It is best for financial institutions to be clear on AI capabilities from the outset and align control and ownership structure of AI development and deployment based on their understanding of new processes and risks involved with the new technology.

Additionally, to ensure ethical and responsible development of AI, it is also prudent for companies to include internal governance principles to set checks and balances to assess AI risks and any potential ethical concerns, preventing a project from being further deployed where it has failed to meet certain internal criteria or ethical checks.

Going forward, institutions will need to solve newest hurdles faced for end-to-end transformation with AI
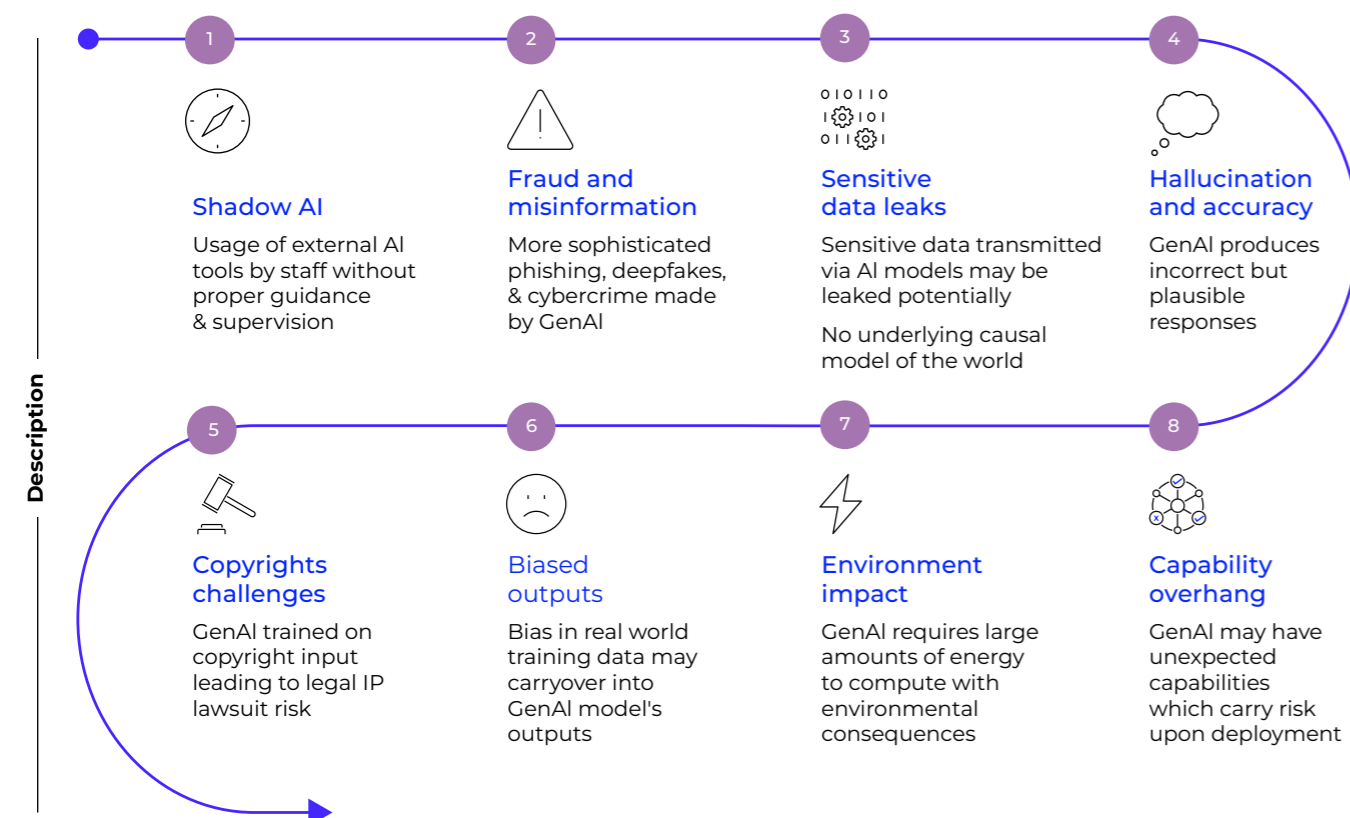
Despite extensive progress on AI end-to-end implementation and transformation, the industry still struggles with bringing AI pilots to scale. We have identified 3 major hurdles that institutions will need to solve for end-to-end transformation with AI.

First, institutions often lack organizational buy-in from all levels of the organization, including business units, preventing successful AI rollouts. Despite most business leaders being relatively optimistic about GenAI's return on investment potential and benefits, our recent Digital Acceleration Index survey 2023 found that >50% of c-suite executives discourage use of GenAI. This sentiment was largely due to GenAI's limited traceability and irreproducibility of GenAI outcomes, raising possibility of bad or even illegal decision making by such c-suite executives.

Such lack of buy-in from c-suite executives can cascade down to a lack of proper AI implementation and transformation efforts. A successfully developed chatbot or algorithm's utility will be limited if there is insufficient buy-in from the organization to use the AI tool or introduce and train employees to use the AI tool successfully. Its lack of utility by the organization can translate to discouragement of use or development of any future AI tools, deeming such tools to be a waste of resources that may be better allocated elsewhere in the institution, resulting in a cycle of difficulty to implement AI.

Second, while KPIs to measure success and impact of such AI tools can help bolster support for continued development and implementation of AI, institutions have found it difficult to establish appropriate KPIs that best fit their institution's needs. This is particularly difficult as AI use is not one-size fits all for organizations.

Exhibit 8- Examples of risks associated with GenAI

1 Shadow AI	Usage of external AI tools by staff without proper guidance & supervision
2 Fraud and misinformation	More sophisticated phishing, deepfakes, & cybercrime made by GenAI
3 Sensitive data leaks	Sensitive data transmitted via AI models may be leaked potentially. No underlying causal model of the world
4 Hallucination and accuracy	GenAI produces incorrect but plausible responses
5 Copyrights challenges	GenAI trained on copyright input leading to legal IP lawsuit risk
6 Biased outputs	Bias in real world training data may carryover into GenAI model's outputs
7 Environment impact	GenAI requires large amounts of energy to compute with environmental consequences
8 Capability overhang	GenAI may have unexpected capabilities which carry risk upon deployment

> "We've been working on AI for many years in Microsoft… and we've built responsible AI principles that govern everything we do by… No new feature gets released without it going through a series of tests, which you will have to submit through a council before it can be released…"
>
> *Chris Young,*
> *Executive Vice President, Business Development, Strategy, & Ventures, Microsoft*

Lastly, to build a scalable and easily usable architecture, institutions should consider company constraints and dependence on third-party providers. This includes clear understanding of the key tech considerations for model design and implementation, tech architecture needed for change, different types of operating models, impact on existing organization's tech stack, where partners would best fit and impact to data security and strategy. An understanding and clear outline of an architectural strategy at the start of pilot development establishes a clear AI coordination roadmap.

> "Responsible AI starts with your principles and what you believe in and you will learn as you go but it does take years of work which we have been able to put into practice"
>
> *Chris Young,*
> *Executive Vice President, Business Development, Strategy, & Ventures, Microsoft*

Third, institutions also find it challenging to fund implementation journey needed as AI projects are costly and time-consuming. This is particularly challenging for more conservative business units where AI transformation would require complete end-to-end reorganization and transformation. Where there is little to no concrete evidence that such AI tools will benefit the organization, more than the existing system, business units find it difficult to justify the large cost and time needed to develop and implement AI large-scale.

Given the impact and fast-pace development of technology, institutions will need to overcome the hurdles above before they can successfully implement AI at scale and benefit from its full value.

> "Countries and organizations that have figured out how to purpose AI with reduced risks will exist in a different spectrum of productivity entirely, and those who don't will fall behind
>
> *Thomas Dohmke,*
> *Chief Executive Officer, GitHub*

3 key takeaways for regulators

Regulators must first aim to continuously equip themselves with internal AI capabilities to understand impact

In the past few years, regulators around the globe have quickly responded to AI developments by introducing AI drafts and legislation. [Exhibit 9]

However, as technology evolves with increasing velocity, regulators are struggling to catch up. To illustrate, in 2021, EU lawmakers had introduced a 125-page draft law to regulate AI, believed by many to be the global model and the first of its kind[11]. The draft law, however, did not provision for the type of AI that powered ChatGPT, GenAI, that was introduced soon after. Perhaps catching up with technology's evolution, the EU AI Act is still in its
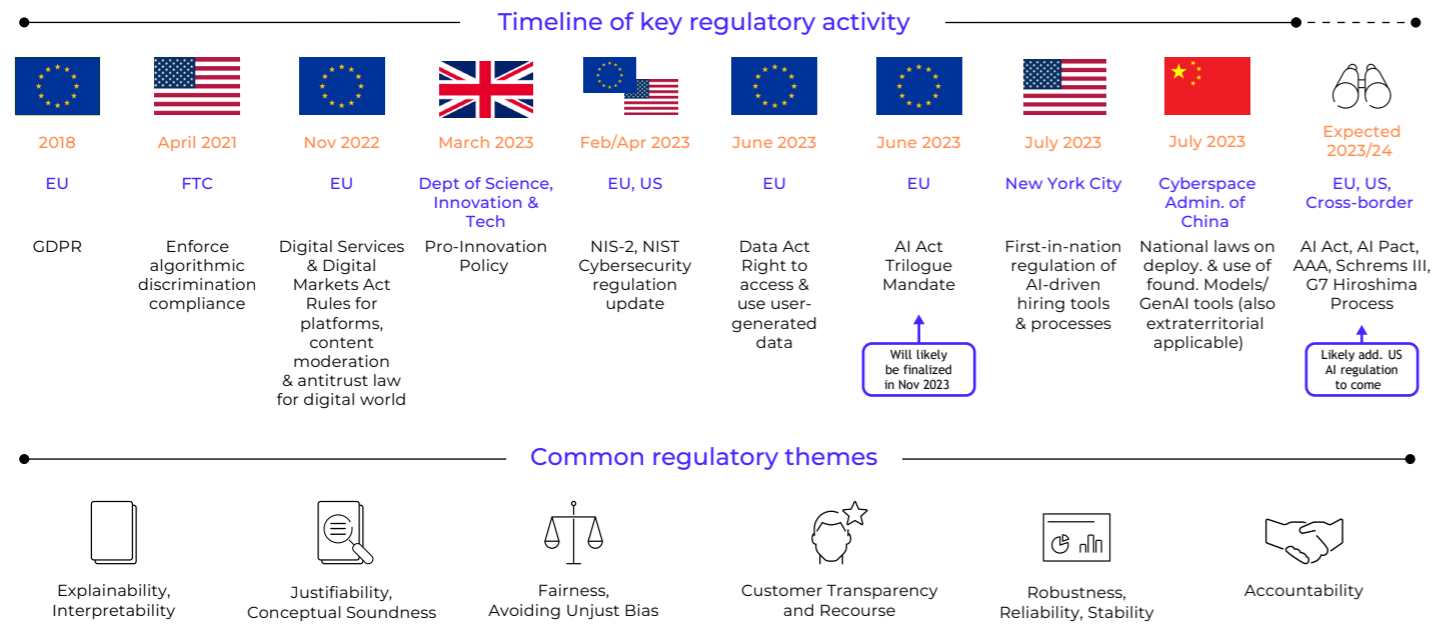
final negotiation stages to this day. Similarly, President Biden issued an executive order on AI national security efforts as lawmakers scrambled to debate what measures should be passed, with no additional legislation passed to this day.

Furthermore, where new regulations have been introduced, implementation of such rules can be uncertain. This regulatory uncertainty has become a top barrier to implementing AI, with 77% of CEOs of large companies stating that regulatory uncertainty impacts their GenAI deployment decisions, and 41% indicating that they will take a short pause of 3-6 months to monitor regulatory landscape[12].

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11. https://www.nytimes.com/2023/12/06/technology/ai-regulation-policies.html
12. https://www.cio.com/article/649973/regulatory-uncertainty-overshadows-gen-ai-despite-pace-of-adoption.html

Exhibit 9- Existing and impending AI regulations

Timeline of key regulatory activity

2018	April 2021	Nov 2022	March 2023	Feb/Apr 2023	June 2023	June 2023	July 2023	July 2023	Expected 2023/24
EU	FTC	EU	Dept of Science, Innovation & Tech	EU, US	EU	EU	New York City	Cyberspace Admin. of China	EU, US, Cross-border
GDPR	Enforce algorithmic discrimination compliance	Digital Services & Digital Markets Act Rules for platforms, content moderation & antitrust law for digital world	Pro-Innovation Policy	NIS-2, NIST Cybersecurity regulation update	Data Act Right to access & use user-generated data	AI Act Trilogue Mandate	First-in-nation regulation of AI-driven hiring tools & processes	National laws on deploy. & use of found. Models/ GenAI tools (also extraterritorial applicable)	AI Act, AI Pact, AAA, Schrems III, G7 Hiroshima Process

Will likely be finalized in Nov 2023

Likely add. US AI regulation to come

Common regulatory themes

Explainability, Interpretability   Justifiability, Conceptual Soundness   Fairness, Avoiding Unjust Bias   Customer Transparency and Recourse   Robustness, Reliability, Stability   Accountability

A major root cause of regulators' inability to catch up and uncertainty of implementation stems from regulators' knowledge deficit of AI, their inability to understand risks and to properly mitigate them as a result. Many regulators have openly admitted their lack of expertise, with many relying on tech and other industry inputs as to how AI may be properly regulated[13]. In fact, regulators are typically not digital natives. A survey of 1,200+ government officials from over 70 countries concluded that nearly 70% lag behind the private sector in terms of digital transformation[14]. Nevertheless, without clear understanding of how AI works and its impact, regulators would struggle to develop appropriate guardrails that would both encourage innovation and growth of the financial services industry and protect the public against its risks. Regulators must therefore first aim to quickly learn to embed AI in its own organizations.

> If we are collectively promoting this then we need to understand it better. In 2015, many of us in the MAS were not familiar with these things, as were most regulators, tech was a bit distant. But it was also the effort within MAS, how we galvanized people to understand technology better, to see its relationship with regulation and so on. Learning was a big part of it.
>
> *Ravi Menon,*
> *Managing Director, Monetary Authority of Singapore*

> You can't operate at the speed that you historically operated at. If you're a regulator and the way of your understanding of whether there is a problem in the market is a tip from a whistleblower, you do an investigation, a big press release and you hold the executives in front of some regulatory body and that happens generally on the scale of years, that's too slow because AI will evolve so quickly… if say there is a bias, that would result in a very bad outcome if it took years to figure out that there is bias.
>
> *Jeff Lawson,*
> *Co-founder, Chairman & Chief Executive Officer Twilio*

researching policy-related cases, summarizing the news, drafting policy proposals, and preparing responses to citizen questions. The introduction is expected to increase business efficiencies across government processes.

Similarly, the Ministry of Communications and Information Technology of Qatar has partnered with Microsoft to leverage GenAI capabilities through Azure in digital government services, including the e-Government Portal "Hukoomi", and as a tool to help identify innovative solutions to challenges faced by government agencies. The Qatar government hopes that these GenAI models enable digital and cloud transformation within the government and help improve citizen services through better user experience and delivery at improved levels of efficiency and speed.

Furthermore, as monitoring and issues become more complex with AI, such as financial crime, regulators need to equip themselves with AI to solve these complexities. In August 2023, the White House launched a multi-million-dollar cyber contest to spur use of AI to find and fix security flaws in US government infrastructure, in the face of growing use of technology by hackers for malicious purposes. As AI is increasingly being used to create phishing emails and writing malicious computer code to spread disinformation, we expect to see greater need for governments to respond similarly to develop AI to detect malicious activities, malware and to proactively hunt threats to resolve them before issues arise.

There are many applications of AI that leading governments have already been exploring and that have shown transformative impact. [See Exhibit 10]

Singapore had recently incorporated ChatGPT into Microsoft Word to help ~90,000 civil servants streamline wide range of natural language tasks, including

Exhibit 10- Potential applications of GenAI explored by leading governments

Research and synthesis	Streamlining legislation	Public sentiment & feedback
Boost productivity of core government work involving topic research, synthesis, summarising of conclusions, drafting of discussion papers etc. and extend to include internal Knowledge Bases for rapid, powerful search and synthesis	Similar to legal and contracting use cases, GenAI could be used to automate routine drafting, freeing up the time of experts; and also help to identify improvements to legislation through simplification and identifying potential inconsistencies	Use GenAI to analyse social media data to measure public sentiment towards government policies and programs, or during natural disasters to provide real-time feedback that enables practical adjustments in activities and responses
Open data access	**Improve service accessibility**	**Quality of citizen services**
Empower citizens to make easier, better use of open data sets through GenAI interface that allows sophisticated exploration by non-experts	Using AI-powered chatbots to provide 24/7 access to government services & information, which improves accessibility and satisfaction of citizens	Use conversational GenAI to support customer service and citizen engagement, with tailored information responding to detailed needs and queries

13. https://www.nytimes.com/2023/12/06/technology/ai-regulation-policies.html

14. Tech Marvels In Government: Inspiring Examples Of Digital Disruption (forbes.com)

Nevertheless, regulators must advance in stages. First, by focusing on its workforce transformation to prepare and equip itself with public employees for the new AI era. Given the current war on tech talent across sectors and industries[15], it would be particularly difficult for regulators to attract top talent needed for their tech transformation needs. As such, it is important for regulators to prioritize training and reskilling their existing public employees and contracting third-party providers, incrementally taking hiring tech talent as its existing capabilities improve.

Second, regulators must prioritize its own digital transformation, moving on from legacy systems and incorporate AI-powered tools that could benefit cost optimization and strengthen public authorities' own cybersecurity. Third, to start developing and prioritizing AI use-cases to benefit citizens, either through hastening slow processes (i.e., extensive filing and paper-heavy processes) or delivery of information to citizens. Finally, through the process of understanding AI's impact, regulators must develop solutions, policies, or guardrails to both strengthen and encourage an environment of continuous innovation and appropriately protect the public against more material risks of AI.

> **I think the solution lies in technology. The solution does not lie in withdrawing from technology. The solutions lies in using technology to solve problems… AI poses many risks. What does it mean for those of us who can't handle this? The solution lies in using AI. Bad actors are going to use AI to pose mounting cyberthreats. What's the best defence? Use AI to detect. Use AI to deter. Use AI to disrupt your malicious actors.**
>
> *Ravi Menon,*
> *Managing Director, Monetary Authority of Singapore*

Regulators to tackle underlying risks rather than treat AI as 'new tech' to be regulated against

One way that regulators can avoid becoming reactionary to AI is to take an outcomes-based approach instead, by extending current policies to deal with real implications and risks of use-cases of AI.

> **In most countries, it is illegal to have bias… So if you are using AI to come up with pricing strategies and they have a bias (in interest rates), that would be bad. But… we already have laws… If the tool you're using changes, it used to be an excel spreadsheet and now it's AI, that doesn't change the outcome that they are still held accountable to**
>
> *Jeff Lawson,*
> *Co-founder, Chairman & Chief Executive Officer Twilio*

This is illustrated more clearly in use-cases of AI with non-material risks. GenAI can be used to increase efficiency of code-writing or to increase speed in which internal documents are found and assessed by employees. Such use-cases expose the public to minimal material risks like bias, discrimination, etc. In short, contextualizing and understanding the AI use-case and its impact, may be a fairer approach forward for regulators than to punish financial institutions just because the medium technology used happens to be AI.

Additionally, although AI is still a new technology, many of its risks (i.e., hallucination, bias, discrimination, and fraud) are known. Regulators should learn to assess and solve for these known risks, establish guidelines and governance requirements to address them and avoid being too prescriptive on regulations. These may include guidelines on the need to keep the human in the loop, establish checks and balances and provide clear data governance to reduce AI risks, particularly where the relevant use-case presents potentially materially higher risks.

Furthermore, regulation cannot be one-size fits all. Individual researchers and small group innovators and FinTechs should not be held accountable to the same standards as big international corporations which have large compliance teams. To do so would limit the innovation that the financial industry can accomplish.

Instead, we recommend that regulators implement innovative legislation approaches to flexibly tailor legislation to needs of economy. These are commonly through 3 ways: (1) provisions of sandboxes to allow private sectors safe spaces to operate AI and test use-cases in controlled environments, (2) pilot zones with dedicated infrastructure, legislation, and financial support, and (3) national studies of most pressing

opportunities, risk and governance challenges associated with AI and data use serving as an input for AI legislation. In these methods, more effort is focused on identifying and learning practical outcomes from the use of AI and providing relevant guidelines based on learnings.

> **It is encouraging to see that the regulatory efforts today focus on high-risk AI models and high-risk use cases and not directly at the innovators and researchers that sit at the heart of innovation because otherwise we will extinguish innovation before the flame is lit**
>
> *Thomas Dohmke,*
> *Chief Executive Officer, Github*

Regulators need to balance their need to mitigate risks to protect consumers versus need to support the industry

AI poses a range of risks that must be managed and mitigated carefully [Exhibit 8 above]. Such risks are often referred to as the "messiness" that results from technology.

Regulation is necessary to protect people while still ensuring sustainable development of AI to maximize value from AI solutions. Therefore, the regulator's role can be seen to encompass three broad areas: (1) establish core ethic principles to guide development of AI solutions and create trust in AI, (2) stimulate AI through legal certainty, compliance guidance, and an innovation environment to allow economies to develop and (3) protect health, safety and rights by introducing mechanisms to avoid harm, discrimination, or undesired use of AI. The regulator must balance these three areas delicately.

In its role to protect against risks, regulators should be careful not to be quick to give harsh punishments where AI experimentation has gone wrong as this can potentially create an environment where organizations are more cautious to experiment.

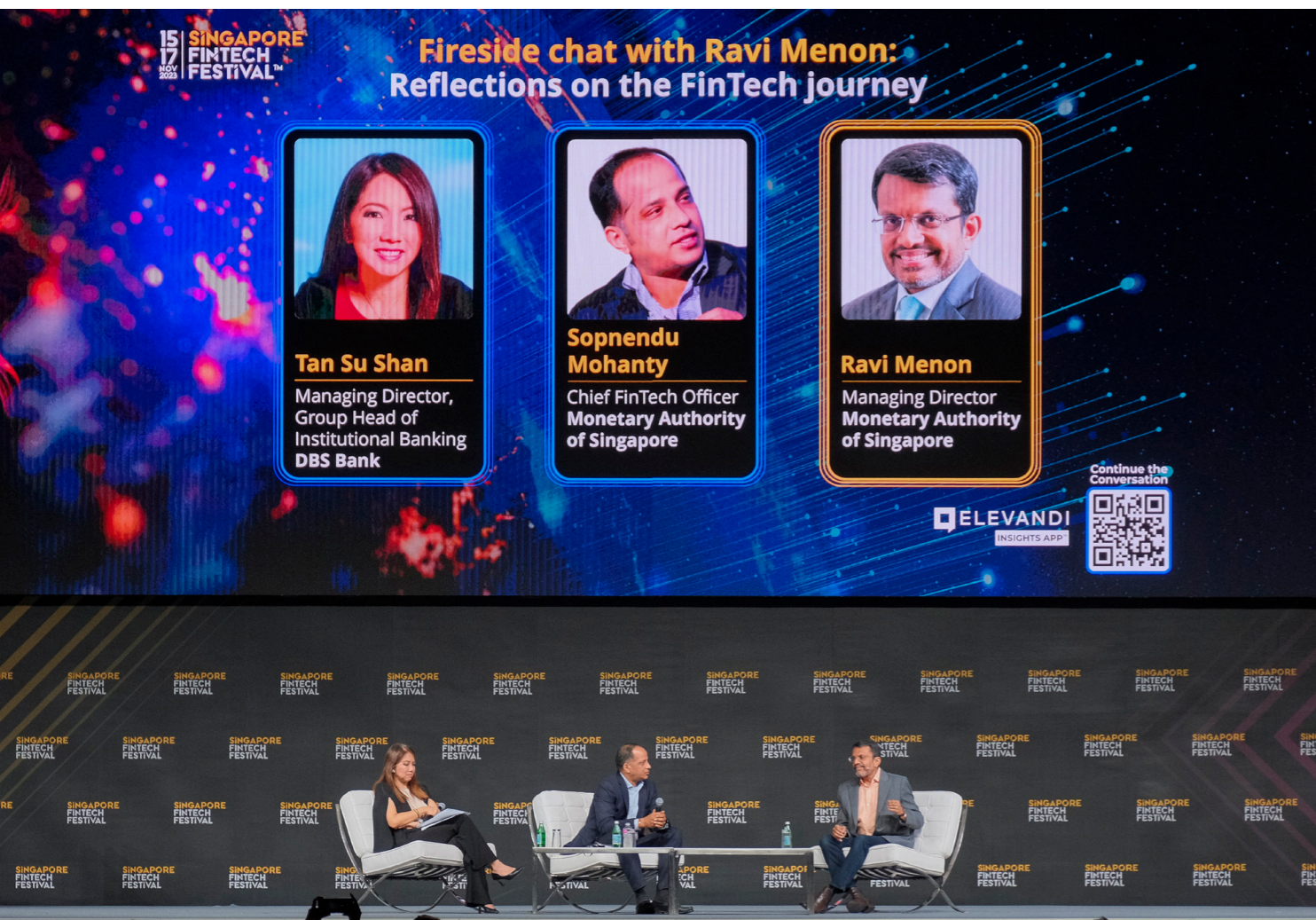In 2020, the Dutch central bank, De Neederlandsche Bank (DNB), had banned digital challenger bank, bunq,

from using AI to monitor its anti-money laundering risks, which requires banks to create risk profiles of their customers and monitor transactions. The decision implied the need for a manual only processes for banks, a decision that came at a pivotal time where AI was found to have undesirable outcomes and became a key cause of concern for public authorities.

By 2022, the Dutch courts found that DNB should not have banned bunq and enforced manual processes for banks. The new ruling provided legal certainty to allow financial institutions to introduce AI solutions as part of their fight against financial crime and compliance, but also meant a period of two years within which substantial AI developments could have been made was wasted - a long time considering how quickly AI has developed.

While the regulator's role in protecting the public against risks is acknowledged, regulators need to continuously balance between protecting our end-customers and financial fabric while supporting our innovation and growth, for financial institutions to continue to compete on the world stage. In this bid for balance, the regulator's first step needs to be to learn to be comfortable with "mess" and accept that there is room for error in experimentation and new developments of technology, not to appear reactionary.

> **There are some things I am never going to understand… with tech, we will never know. That's the other thing I would emphasis - to keep an open mind. Obviously, there's not going to be a solution to all our problems.**
>
> *Thomas Dohmke,*
> *Chief Executive Officer, Github*

15. https://content.11fs.com/article/how-the-financial-services-sector-can-win-the-war-for-tech-talent

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Going forward…

The benefits of AI are clear. Institutions and regulators can each take practical steps to ensure that AI achieve its full potential and allow pilots to be pushed to scale.

Nevertheless, AI, and consequently other forms of technology, will continue to develop at an exponential speed. As such, it is important for the financial services industry and regulators to continuously hold dialogues, exchanges and collaborate with each other to share views on current and future issues of AI, challenges to the landscape and potential solutions. It is through these discussions that stakeholders may continuously learn and develop new perspectives to facilitate the growth of the financial services industry.

> **We had this instinct that tech was going to be important, it was going to be transformative in ways that we do not understand but by getting into it early, by experimenting, by feeling our way forward, by collaborating with others who are likeminded and wanted to try new things, we can take it somewhere**
>
> *Ravi Menon,*
> *Managing Director, Monetary Authority of Singapore*

About Elevandi

Elevandi is set up by the Monetary Authority of Singapore to foster an open dialogue between the public and private sectors to advance FinTech in the digital economy. Elevandi works closely with governments, founders, investors, and corporate leaders to drive collaboration, education, and new sources of value at the industry and national levels. Elevandi's initiatives have convened over 350,000 people to drive the growth of FinTech through events, closed-door roundtables, investor programs, educational initiatives, and research. Elevandi's flagship product is the Singapore FinTech Festival alongside fast-rising platforms, including the Point Zero Forum, Inclusive FinTech Forum, Elevandi Insights Forum, The Capital Meets Policy Dialogue, The Founders Peak, and Green Shoots.

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