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Global Trends in SupTech: A Supervisory Perspective

Ladies and gentlemen

It is a pleasure and a privilege to address you at a conference entirely devoted to the topic of SupTech here in New York, one of the very centers of global finance. I would like to begin by expressing my gratitude to the organizers for the warm welcome.

It is a well-known fact that technology is increasingly vital to finance. Having worked at the intersection of data, technology and finance for more than 30 years – across Asia, the U.S., and Europe – I know this has been the case for decades now. As financial professionals, supervisors, academics and as customers, we have learned to appreciate and utilize the productivity gains that new technologies have brought us. The downside of this development is the emergence of new or heightened risks such as cybersecurity and the like.

Nevertheless, I am convinced that the most significant transformation triggered by technology is still ahead of us. Artificial intelligence in all its rapidly evolving forms is not just another tool – it represents a fundamental shift.[2] It changes the way we interact with machines and data, and it has an impact on how decisions are made. In business and in financial services in particular, AI is changing – and sometimes disrupting – business models and value chains.[3][4] Collecting data, analyzing it and taking decisions based on it are core components of modern supervisory activity. AI therefore challenges supervisors on a fundamental level – while at the same time opening up entirely new possibilities. The challenge is compounded by the fact that this transformation is occurring at a time when other technological challenges – such as cloud computing and growing cyber risks – are by no means resolved. As supervisors, we cannot stand on the sidelines. We must understand these technologies, anticipate their impact, and harness them responsibly for the public good.

[1] International Organization of Security Commissions.
[2] Gary Gensler (2023), "Isaac Newton to AI" Remarks before the National Press Club.
[3] See for example: World Economic Forum Whitepaper (2025) "Artificial Intelligence in Financial Services".
[4] For potential impacts on the banking sector, see: Michael S. Barr (2025), "AI, Fintechs, and Banks".

I am convinced that after years of globalization and standardization of regulatory frameworks, the emerging new challenge for supervisory authorities will be to master technological change to fulfill their mandate.[5]

Today's talk has two parts. In the first part, I will present the results from a global survey on SupTech. In the second part, I will elaborate on our SupTech journey in Switzerland at FINMA.

Taking stock: the IOSCO SupTech survey

Global reach and representation

In view of the transformative impact of technology on financial supervision, IOSCO, the International Organization of Securities Commissions, has launched a strategic initiative on SupTech that FINMA has the honor of spearheading. IOSCO brings together securities regulators covering more than 95% of the world's securities markets in over 130 countries. In financial markets – especially capital markets and trading platforms – accuracy, speed, resilience, and compliance are key, and the stakes are high. Markets are therefore often among the first to introduce new technologies. This predestines IOSCO as an international forum for SupTech.

In March and April of this year, IOSCO and FINMA conducted a survey among IOSCO members to assess the current state of SupTech. Given IOSCO's reach, participation was truly global and was geographically balanced. Crucially, the data is not skewed toward advanced economies. Approximately one-quarter of respondents hail from the Americas, one-quarter from Europe, nearly 30% from Africa and the Middle East, and 20% from the Asia–Pacific region. We saw strong engagement from growth and emerging markets, which comprised over half of the respondents. Furthermore, nearly 50% of the participating authorities are classified as "small".

The participation of authorities responsible for roughly 75% of the world’s securities market value lends significant weight to the data. With its global reach and focus on global securities regulators, the report completes the picture painted by other surveys, such as the Cambridge SupTech Report. [6]

Let me now outline some of the key themes that emerged from the survey:

Theme 1: Efficiency and enhanced insights as key drivers for SupTech initiatives

As far as the drivers of SupTech adoption are concerned, the data presents a clear hierarchy of motivations. The primary motivation for SupTech adoption is to further increase efficiency and effectiveness. Across the dataset, more than 90% of authorities rated this as "critical" or "high".

It is noteworthy in this context that staff redundancy is almost never cited as a reason for SupTech adoption. Only 4% of respondents listed it as a goal. This underscores that the potential of SupTech lies not in replacing human supervisors, but in further empowering them – a finding that is confirmed

[5] On the evolution of financial supervision, see also: Marlene Amstad (2025), "Innovating Financial Supervision with SupTech", speech held at the Singapore Fintech Festival 2025.

[6] Cambridge SupTech Lab (2025), State of SupTech Report 2024, Cambridge: University of Cambridge and Digital Transformation Solutions (DTS).

by the fact that roughly two-thirds of respondents highlighted the potential to enhance supervisory capabilities and generate deeper insights as drivers for SupTech adoption. This indicates a fundamental shift in the use of technology for market supervision: Whereas in the early development stages of SupTech the focus was on "process automation" – essentially doing the same things faster and in a more cost-effective way – the true potential of SupTech lies in what is often referred to as the "cognitive augmentation" of supervisors – allowing them to see things they could not see before.[7]

Theme 2: "Strategy pull" outweighs "technology push"

Is the adoption of SupTech driven more by demand or supply? In other words: Are new tools and technologies primarily used because they are available (known as “technology push”) or because they solve a specific problem for which there is a need (a “strategy pull”)? The survey indicates that the mere availability of new tools and data is rarely a driver in itself. Fewer than 1 in 10 authorities indicate that supply-side factors alone drive SupTech adoption. Instead, almost 70% of authorities view supply and demand drivers at least as equally important. Interestingly, costs and regulatory requirements were rated lowest in terms of demand drivers. It would not be justified, however, to conclude that costs are not an issue with SupTech – I will come back to this later. Compared to the other demand factors, however, they are of less importance

Regarding the toolset itself, the verdict is decisive: AI comes first, and DLT comes last. Artificial intelligence is cited by 65% of authorities as a key supply-side enabler, followed by data access (61%) and cloud infrastructure (53%). This ties into the evolution of SupTech towards intelligent, advanced data analytics that allow authorities to identify emerging risks more quickly and respond more effectively.

The downside of this development is reflected in the risks: more than 4 out of 5 respondents see cyber and data security as the main risks, followed by third-party dependencies, which were mentioned by half of the respondents.[8] [9]

Conversely, distributed ledger technology (DLT) – once at the center of many conversations – is cited by only 9% of respondents. Whether this is a temporary finding or an indication that DLT cannot fully deliver on all the high expectations it raised as a transformative technology, at least in the field of SupTech, remains to be seen.

Theme 3: Use cases: consumer protection, conduct and capital markets at the top

When we examine where SupTech tools are being applied, we see that the most common area for SupTech activity across authorities is in consumer protection (75%). There, adoption is particularly high for small authorities at 83%. Capital market supervision is ranked second at 67%.

[7] Broeders, D., & Prenio, J. (2018), The suptech generations, FSI Insights on policy implementation No. 19, Bank for International Settlements.

[8] See also: Financial Stability Board (2023), Enhancing Third-Party Risk Management and Oversight.

[9] On AI risks in the financial sector see: FSB (2024), The Financial Stability Implications of Artificial Intelligence.

When we focus not on the most common use case but instead on the largest difference between "current activity" and "learning interest", use cases in digital assets stand out. While 35% of authorities express a high strategic interest in developing tools to monitor crypto-asset markets, actual operational usage sits at only 18%. What could be the reasons for this discrepancy, which is greater than in any other field of application? Various factors may be at play here. One reason could be that crypto assets may have gained traction more rapidly in recent years than some supervisory authorities anticipated. Another reason might be that supervisory authorities recognize the need for monitoring, but the regulatory frameworks are still developing in many places, so that SupTech applications have not yet had the chance to be implemented.

Another interesting result is the data sources used. Here we observe an evolution in data sources as authorities are expanding beyond traditional transaction reports. There is a growing reliance on unstructured data, with significant engagement in monitoring social media and trading forums. This suggests that supervisors are increasingly looking for behavioral signals and early warning indicators outside the perimeters of formal regulatory reporting – underscoring the trend towards predictive analysis.[10]

Conclusion: from experimentation to strategic priority

To conclude this first part: the transition of SupTech from an experimental pursuit to a strategic imperative is evident in the institutional frameworks emerging globally. The survey data also reveals that SupTech is no longer confined to technical back offices but has ascended to the highest levels of governance. In 45% of jurisdictions, responsibility for SupTech strategy now resides with strategic leadership – Chairs, CEOs, or Executive Offices – rather than being delegated solely to IT departments or technical executives.

This shift in ownership signals that technology is increasingly viewed as a core component of supervisory authorities rather than merely asupport function. However, while the strategic intent is established, operational maturity remains in a state of transition. The majority of authorities report that their SupTech, data, and innovation strategies are currently in a phase of "partial implementation". Few have reached full maturity, indicating that most regulators are still in a "build-up phase".

Interestingly, distinctions in market maturity reveal that growth and emerging market authorities are often more advanced in their strategic deployment, with nearly two-thirds reporting partial implementation, outpacing their peers in advanced economies. Similarly, small authorities demonstrate arguably more consistent progress in formalizing data strategies, having moved out of the "drafting" stage faster than many larger institutions.

A perhaps somewhat counter-intuitive finding concerns resource allocation. Despite the assumption that advanced technologies are the preserve of the best-funded regulators, the data reveals a "small authority advantage". Small authorities are significantly more likely to have established a dedicated SupTech budget (63%) compared to the global average of 51%. Growth and emerging market

[10] ESMA (2023), Artificial intelligence in EU securities markets, ESMA Report on Trends, Risks and Vulnerabilities Risk Analysis.

jurisdictions also show strong commitment, with 56% maintaining specific SupTech funding. This suggests that for smaller and emerging jurisdictions, SupTech can act as a strategic investment to "leapfrog" traditional supervisory constraints.

However, despite these commitments, financial reality remains the most important factor determining the pace of progress. More than half of all respondents identified limited funding as the single most significant barrier to closing the technology gap.

International cooperation – IOSCO SupTech Forum

As the survey demonstrates, supervisors worldwide are united in the challenges and opportunities that SupTech offers. The current "build-up phase" in global SupTech capabilities opens a unique window of opportunity for international cooperation. Where supervisors explore new frontiers, they can learn from each other.

I am therefore particularly pleased that IOSCO announced the establishment of the SupTech Forum in October 2025, which I have the honor of chairing. The SupTech Forum provides securities regulators from all over the world with a platform to discuss the challenges and opportunities of this digital transformation. Stay tuned for more information to be published soon.

SupTech at FINMA

Strategic implementation: Data, Discretion, Discipline

With that I will now turn to a few practical examples from Switzerland. At FINMA, SupTech is a strategic priority.

As an integrated supervisory authority, FINMA consolidates the oversight of banks, insurance companies, asset managers and markets under a single roof. This gives us a 'front row seat' to the transformation of financial markets as a whole. As illustrated by our SupTech framework, this integration enables us to centralize critical resources – like our Data Innovation Lab – and deploy them effectively across every division. This ensures that specialized technological expertise is not siloed, but is instead shared across all divisions and processes – from authorization to ongoing supervision to enforcement.

On a strategic level, SupTech implementation is governed through a "3D" framework: Data, Discretion, and Discipline:

- **Data-driven, but not data-dominated**: We recognize that while algorithms provide powerful insights, they cannot substitute for qualitative assessment. Supervision in areas like governance and conduct requires nuance and discretion that machines cannot – at least not yet – replace.

- **Discretion – "no robocop"**: We adhere to the principle that technology must enhance human judgment, not replace it. Supervisory decisions must remain explainable and accountable. We ensure this by strictly maintaining a "human in the loop" for all significant interventions.[11]

- **Discipline through principles**: Even though we are increasingly relying on technology, we are not turning to a more rule-based supervisory approach in order to more conveniently automate supervision. Our approach remains anchored in broad, enduring principles rather than rigid rules. This disciplines us in our use of technology, and it ensures flexibility and proportionality.

In sum, SupTech at FINMA is about amplifying our capacity to safeguard the Swiss financial center – and certainly not outsourcing it to machines. Through **Data, Discretion and Discipline**, we combine technology, human insight and principled oversight to stay ahead of emerging risks and maintain trust in the market.

Use cases in capital markets supervision: predictive, inquisitive, enforcing

Let me suggest a novel categorization for SupTech use cases into yellow, red and black flags, which represent the full bandwidth of SupTech applications.

1. **Yellow flags**
   are use cases to identify potential risks and market anomalies that are detected using **predictive analysis** and **proactive scanning**. These are starting points for further inquiry and analysis.

2. **Red flags**
   are use cases where early signals or other data evolve into concrete suspicions or risks. At this stage, we leverage technological tools to **dive deeper**, analyzing the facts with the necessary granularity to truly understand the underlying issues. Ideally, the case can still be resolved in this phase with adequate protective measures.

3. **Black flags**
   represent use cases in the **enforcement** phase, where we use advanced data processing to prepare complex case files and facilitate the rigorous gathering of evidence.

Let me illustrate this for the area of capital market supervision.

Scanning for "***yellow flags***", predictive analysis utilizing artificial intelligence can support the monitoring of market sentiment. By processing unstructured data from news feeds and social media, such systems can enable supervisors to identify potential vulnerabilities or emerging misconduct before they manifest in transaction data. This allows for a proactive posture, alerting supervisors to anomalies that warrant closer inspection.

[11] See also: De Nederlandsche Bank (2019), General principles for the use of Artificial Intelligence in the financial sector.

Such tools can also be valuable in banking, where recent experiences have brought the phenomenon of “digital bank runs” even more to the forefront of interest.[12] It is by no means a new concept that deposits can be withdrawn digitally – for example, via e–banking – in a matter of seconds. However, social media today has the capacity to spread rumors about financial institutions and promote herd behavior through algorithmic amplification, resulting in a digital bank run. It may therefore be increasingly relevant for banking supervisors to be able to gain insight into social media sentiment.

The second phase is the "***red flag***" stage. Once a potential issue is identified, we deploy advanced visualization tools to interrogate the market microstructure. Specifically, we have developed an in-house "Digital Heatmap" tool that visualizes not just the executed trades, but the order book depth at every price level within the Central Limit Order Book (CLOB) during the trading session of any Swiss-listed security. This granular visualization allows our analysts to instantly detect irregularities such as spoofing or layering – patterns that are invisible in standard price charts – and to "dig deeper" into the underlying mechanics of the anomaly. A further enhancement currently being evaluated is the automatic detection of suspicious patterns using machine learning based on order book data.

In the third phase, SupTech supports our **enforcement** specialists in making their case and defending it before the court. For example, modern data analytics are used for evidence consolidation. We utilize tools capable of processing unstructured data – including bank statements, email correspondence, and chat logs – to reconstruct the timeline of events and identify the "evidence" necessary to build a robust legal case. Particularly in the analysis of unstructured data, modern analytics can help us find the needle in the haystack.

SupTech as a leadership task

Let me close with one key reflection. If there’s one thing I’ve learned from my work at the intersection of data and technology and finance, it’s this: culture is everything in SupTech.

Culture outweighs data.
Culture outweighs technology.
Culture even outweighs budget.

You can have perfect data, the most advanced technology, and all the resources you want – but if you don’t bring experts in supervision and experts in technology to the same table, you won’t succeed. This is why I am convinced that SupTech is much more than an IT upgrade; it is a cultural upgrade.[13] While our jurisdictions may differ, our challenges do not. Whether in New York, Zurich, or emerging markets, we are navigating the same digital frontier. Through analytical work and collaboration in forums like the Cambridge Lab, the World Economic Forum and IOSCO and not least conferences such as today's, we have the opportunity to define the exciting future of supervision.

Thank you very much for your kind attention.

[12] See FSB (2024), Depositor Behaviour and Interest Rate and Liquidity Risks in the Financial System: Lessons from the March 2023 banking turmoil.

[13] See also: World Economic Forum (2020), "Agile Regulation for the Fourth Industrial Revolution. A Toolkit for Regulators".