



*Regtech Watch is a newsletter published by the Hong Kong Monetary Authority (HKMA) to promote the adoption of regulatory technology (Regtech) by the banking industry. It provides information on actual or potential Regtech use cases rolled out or being explored in Hong Kong or elsewhere. The objective is to assist authorized institutions (AIs) in adopting innovative technology to enhance their risk management and regulatory compliance.*

*It should be noted that the sole purpose of this newsletter is to provide AIs with information on the latest Regtech developments. The HKMA does not endorse any use cases or solutions described in this newsletter. If an AI intends to adopt a particular solution, it should undertake its own due diligence to ensure that the technology is suitable for its circumstances.*

## **HKMA's Adoption of Supervisory Technology**

This seventh issue is the last issue of the HKMA's Regtech Watch series. It outlines the HKMA's three-year roadmap to adopt Supervisory Technology (Suptech) to enhance the effectiveness and forward-looking capability of its processes. Suptech is commonly regarded as a specific form of Regtech.

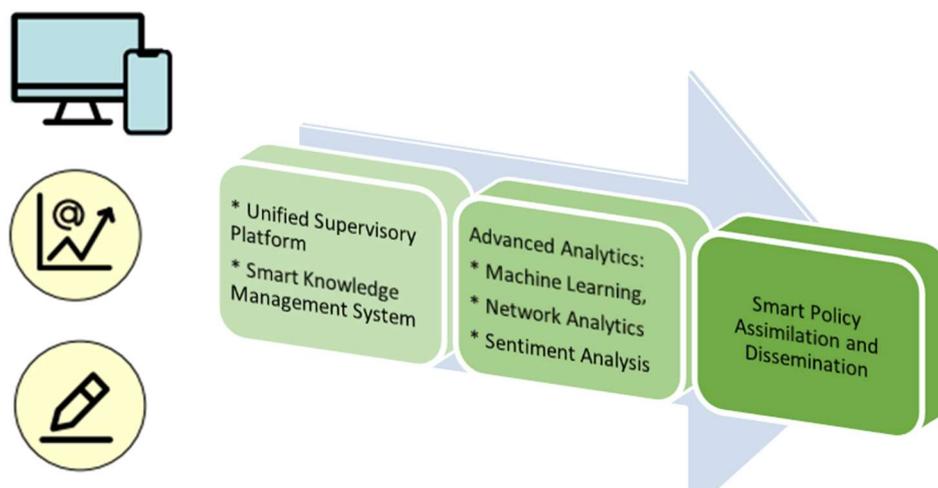
With rapid technological development, supervisory authorities around the world are exploring the use of advanced technologies to enhance the efficiency and effectiveness of their supervisory processes. The HKMA is no exception. The HKMA's Suptech journey commenced in 2019 when it engaged a consultant to assist with the development of a three-year roadmap for the adoption of Suptech solutions. The HKMA is now in the initial stages of implementing this roadmap, with the current focus placed on conducting pilots and proof-of-concepts (PoCs) to ascertain the suitability of the identified technologies before proceeding with production.

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## Suptech Three-Year Roadmap

As with other major structural changes, the HKMA will take a measured and incremental approach to embrace Suptech. Efforts will first be made to lay down a solid “backbone” or the “foundational” initiatives of the Suptech roadmap, which in turn will support the subsequent deployment of more advanced and sophisticated technologies to enhance the supervisory processes.

With this in mind, the first step in the Suptech journey involves a series of proof-of-concepts (PoCs) to test the feasibility of Suptech solutions. The initial focus is placed on developing a centralised platform so that supervisors can view and access information about AIs in a single location, and building a knowledge management system for storing structured supervisory information (for example banking returns) and unstructured information (such as board minutes and internal audit reports). A graphical representation of the Suptech roadmap is set out below.



To assist the process of centralising data and information, the HKMA is looking to conduct a PoC on the use of **Robotic Process Automation (RPA)** to automate standardised tasks involving repetitive, often rule-based processes and to streamline existing workflows. It is envisioned that RPA can help perform routine supervisory work by mimicking how users interact with applications such that the entire end-to-end processes can be performed by software robots with little human intervention.

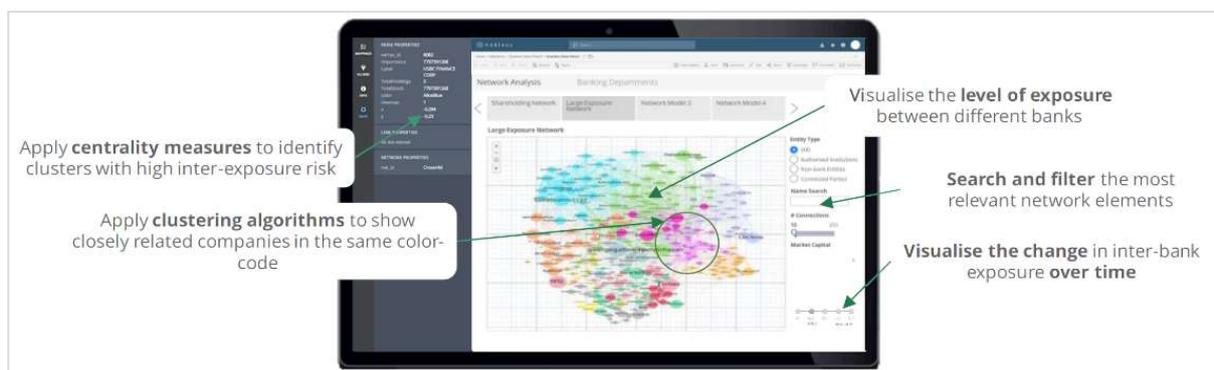
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Along the same line of thinking, the HKMA is looking to conduct a PoC on the use of **Speech-To-Text (STT)** tool to transcribe audio recordings into timestamped machine-readable text. This will enable further consolidation of information onto the centralised platform and knowledge management system for supervisors' ease of access and to perform more timely reviews. The HKMA will also explore whether STT can be used to help analyse the transcriptions through the identification of specific keywords, tone and sentiment. The results can then be visualised on a dashboard together with overall risk scores that give indications around potential misconduct episodes and sections of recordings that may require deep dive examinations.

Once the foundational initiatives are in place, the HKMA will turn its attention to the adoption of advanced analytics techniques. These techniques focus on enhancing the ability to detect early risk signals, which in turn will improve the HKMA's forward-looking capabilities.

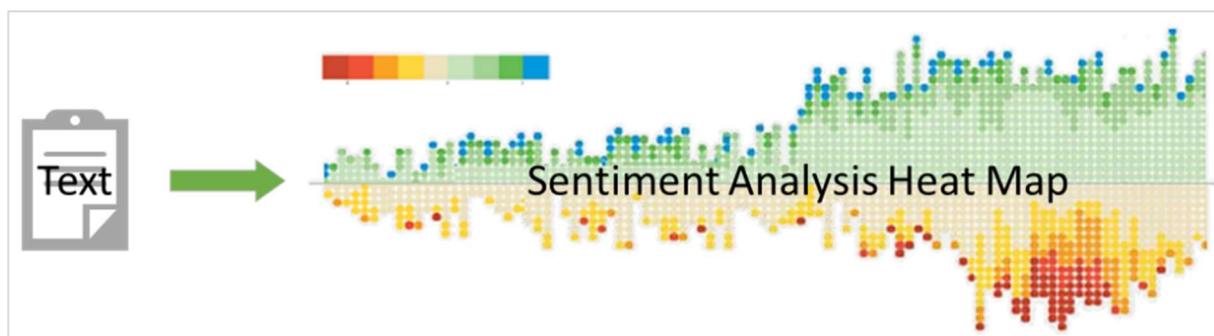
Accordingly, a later step in the Suptech journey will be to explore automated intelligence gathering and machine learning techniques that will allow the capture and processing of large amounts of structured and unstructured information, from both proprietary sources such as banking statistics and publicly available sources such as social media posts. This will enable the HKMA to develop a holistic and comprehensive understanding of the institutions that it supervises and the risks the institutions face. Two PoCs, one on network analysis and one on sentiment analysis tools, will be conducted to facilitate the gathering of emerging risk signals, thus enabling more timely supervisory actions.

**Network analysis** will help the HKMA explore how data and information about corporate shareholding and banks' exposures may potentially be brought to life as network diagrams, so that the relationships between different entities become more apparent. Greater transparency of the connections and dependencies between banks and their customers will enable HKMA supervisors to detect early warning signals within the entire credit network.



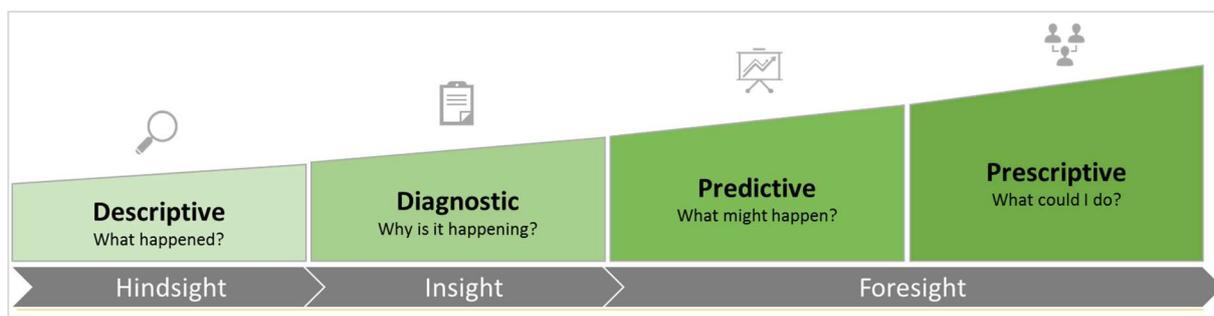
*Illustrative Network Analysis Solution*

**Sentiment analysis** tools, on the other hand, will help the HKMA stay more alert to negative news by categorising or assigning scores to large quantities of news related to supervised institutions. The same techniques can be applied to trends and social media reactions to financial products offered by specific institutions to gauge their exposures to conduct risks.



*Illustrative Sentiment Analysis Heat Map*

Other advanced analytics techniques are also under consideration. For instance, it may be possible to use machine-learning techniques such as **Text Tokenisation** and **Summarisation**, which splits text into smaller units to quickly summarise and obtain insights from a large number of documents stored within the system. This will greatly improve the efficiency and effectiveness of banking supervisory processes.



### *Advanced Analytics Capabilities*

Towards the end of the Suptech roadmap, the HKMA will investigate methods to make **Policy Assimilation and Dissemination** more accessible. Enabling policy circulation in electronic formats, such as through the use of an open API framework, will improve banks' ability to manage and process supervisory policy communications, complementing the drive by many banks to use Regtech to maintain compliance with evolving regulatory requirements.

In this process, the HKMA will explore emerging technologies for data collection and policy dissemination that allow the conversion of regulations into machine executable codes, and a system for automated creation of regulatory reports. The ideal end goal would be for a policy change directed by the HKMA to be automatically transmitted to banks' systems, executing a change to their internal regulatory systems and rules engine with minimal human participation. This may be enabled, for example, through Distributed Ledger Technology (DLT) embedded in smart contracts established between the HKMA and banks. The extent to which this goal can be accomplished is contingent on the availability of necessary technology and the readiness of banks to adopt such technology. In any case, with enhanced usability and search effectiveness of regulatory documents through itemisation and tagging, it will greatly aid compliance, thus freeing up precious compliance resources for higher value-added tasks.

In combination, these Suptech tools will help the HKMA discharge its function of maintaining the stability of the Hong Kong banking system. They will increase the HKMA's supervisory efficiency through automating manual tasks and optimising surveillance efforts, and improve regulatory effectiveness through pre-empting problems at early stages and proactively monitoring compliance, while reducing the compliance burden on supervised institutions by rationalising and streamlining regulations.

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## **The Journey Ahead**

As noted above, the HKMA is still at an early stage of its Suptech journey. There remains significant uncertainty as regards the final solutions and tools that will be deployed amid evolving technological developments.

That said, one key constant in this journey will be the need to enact an internal cultural shift towards embracing technology and more agile and flexible ways of working. For a Regtech or Suptech journey to be successful, hardware and software upgrades alone will not be adequate. The journey needs to be complemented by a culture change and the development of relevant soft skills by staff. Being able to successfully inspire positive mindset shifts among staff through appropriate tone from the top, communicating proper expectations and promoting buy-ins are crucial in driving Suptech adoption. This same principle also applies to the adoption of Regtech by AIs.

Over the past couple of years, the Regtech Watch series has provided AIs with information on actual or potential Regtech use cases in different aspects of risk management and compliance, covering cyber, AML, credit, conduct and treasury risks. It will be succeeded by the Regtech Adoption Practice Guide series, which forms part of the HKMA's two-year Regtech promotion roadmap announced in November 2020. The Regtech Adoption Practice Guide is aimed at providing the industry with detailed guidance on how to overcome implementation challenges associated with Regtech adoption.