

# RegTech and SupTech: Implications for Supervision

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# Suptech and Regtech: Implications for Supervision



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## Definitions: Fintech and Insurtech

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**FinTech:** “Technologically enabled financial innovation in the financial services” that could result in new business models, applications, processes, or products with an associated material effect on financial markets, institutions and the provision of financial services.

*Financial Stability Board (FSB) 2017*

**InsurTech:** The variety of emerging Insurance Technologies and innovative business models that have the potential to transform the insurance business.

*International Association of Insurance Supervisors (IAIS) 2017*



## Definitions: RegTech and SupTech

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**RegTech:** "Regulatory Technology is a sub-set of FinTech that focuses on technologies that may facilitate the delivery of regulatory requirements more efficiently and effectively than existing capabilities".

*Financial Conduct Authority (FCA UK) 2015*

**SupTech:** Supervisory Technology is a sub-set of FinTech that uses of innovative technology to support supervision. It helps supervisory agencies to digitise reporting and regulatory processes, resulting in more efficient and proactive monitoring of risk and compliance at financial institutions.

*Bank for International Settlements (BIS) 2018*

# Uses of Regulatory Technology (RegTech) [1]

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**Dynamic Compliance:** solutions for identifying and keeping track of changes in regulatory requirements, for automated real-time monitoring of compliance levels and compliance risk, based on the analysis of operational and other data

**Identity Management and Control:** Counterpart due diligence and KYC procedures, anti-money laundering (AML) controls and fraud detection.

**Risk Management:** Tools to bring efficiencies to the generation of risk data, risk data aggregation, internal risk reporting, automatically identifying and monitoring risks according to internal methodologies or regulatory definitions, and creating alerts or to triggered action at pre-determined levels.



## Uses of RegTech [2]

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**Regulatory Reporting:** to automate and integrate regulatory reporting requirements to cut costs, and

**Transaction Monitoring:** Focuses on conduct-of-business requirements and offers real-time transaction monitoring and auditing, such as by using end-to-end integrity validation, anti-fraud and market abuse identification systems.

**Trading in Financial Markets:** The automation of procedures related to transacting in financial markets, like calculating margins, choosing counterparties and trading venues, assessing exposures, complying with conduct-of-business principles.



# Implementing RegTech

## Challenges

**Understand the firm's readiness position:** the firm's market position or expertise can set the extent of the RegTech solution. Determine the strategy, road map and senior level 'buy-in'. Evaluate cultural and infrastructure. Identify the relevant compliance and reporting elements that can benefit from automation.

**Existing regulatory compliance:** clarify compliance risks, complexities and resulting requirements. The design and delivery of an integrated framework is fundamental, including standardised taxonomy for risk mapping and monitoring.

**Upcoming regulatory data and reporting requirements:** Have a clear understanding of the existing and emerging regulations that impact the business.

**Skilled resources:** Have the experienced people to deliver services and manage change.

**Lack of a common position amongst regulators:** Lack of a clear position from the regulators on solutions and standards. Regional variations, as well as inter-regulatory conflicts can lead to uncertainty and inefficiency. Including common standards for data protection. Of course there are rules of data protection in different countries.

**Technological change:** Development costs of solutions are high and need to be carefully considered. The choices of the approach or solutions for the implementation may vary by each player. Standards and solutions used in the past can become obsolete.

## Benefits

**Increased revenue:** RegTech automation solutions increase competitiveness while increasing customer satisfaction and retention, through faster onboarding and completion of KYC and AML requirements

**Reduced costs:** Streamlined processes that reduce the number of people needed to check false positives lower overall compliance costs

**Efficiency gains:** RegTech enables businesses to scale higher customer volume more efficiently. The automation of compliance protocols, reporting to enable strategic business focus, will also let compliance officers focus on more substantial activities, such as investigating cases.

**Reduced risk:** When firms can comply with AML, KYC, and the myriad of other requirements more easily, they are less likely to suffer reputational damage, penalties, and fines from compliance missteps.

**Supporting innovation:** Industry participants are developing and adopting RegTech to meet regulatory compliance requirements. Innovative technologies will support firms to develop advanced data analytics capabilities (scenario analytics, trend and horizon scanning), which regulators consider as important tools to improve the quality of risk management.

# Uses of Supervisory Technology (SupTech) [1]

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**Data-Input Approach:** reporting institutions automatically package business data in a standard and highly granular format according to specifications (e.g., taxonomy) by the supervisory agency and send it to a central database.

**Data-pull Approach:** raw (non-standardized) business data is sourced directly from the institutions' operational systems by automated processes triggered and controlled by the supervisory agency, and only later standardized by the agency itself, using Suptech solutions.

**Dynamic, predictive supervision:** taking supervisory actions in a preemptive manner based on predictive behavioral analysis.

**Real-time Access:** the supervisor pulls or “sees” operational data at will (rather than at predetermined reporting periods) by directly accessing the institutions' operational systems, which could include monitoring transactions in real time basis.



## Uses of SupTech [2]

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**Reporting Utilities:** SupTech can create reporting utilities, i.e., centralized structures that function not only as a common database of reported granular data but also as a repository of the interpretation of reporting rules, in a format that is readable by computers (this may be called a “semantic reporting utility”).

**Gathering Intelligence from Unstructured Data:** collection and analysis of unstructured data with greater efficiency, which could relieve supervisors from time-consuming tasks such as reading numerous PDF files, searching the Internet, etc.

**Regulatory Submissions and Data Quality Management:** Fully automated procedures to manage submissions by reporting institutions and manage the quality of the reported data, including running validation tests.



# Implementing SupTech

## Challenges

**Technical issues:** computational capacity constraints and lack of transparency on how some “black box” technologies work. Suptech output will need to be evaluated by a humans before action.

**Data quality issues:** Data quality and completeness can be an issue for non-traditional sources of information (e.g. social media). Data size can also be an issue, sources are too big to handle (e.g., trading).

**Legal risk:** data collection, the unintentional access to the commercially sensitive data, or breaching of data privacy laws, if alternative sources of data, such as social media, is collected.

**Operational risk:** cyber-risk that threatens data losses and/or the interruption of supervisory activities. While data security controls may be in place, there is increased risk from open source and cloud applications, suptech reporting applications and interconnectedness.

**Reputational risk:** Suptech applications can mitigate reputational risk by picking up early-stage signals of, for example, fraud. However, these applications may create false positives or false negatives from poor-quality algorithms or data may affect the reputation of both entity and supervisors.

**Resource issues:** Finding the right talent is a challenge and key person risk. The ideal candidates for suptech support work should be knowledgeable in data science, computer science and supervision. Because of the scarcity of staff with the right background, this raises continuity risks.

## Benefits

**Real-time supervision:** looking at data as it is created in the regulated institutions’ operational systems.

**Exceptions-based supervision:** automated checks on institutions’ data and other information automatically collected and analyzed for the identification of “exceptions” or “outliers” to pre-determined parameters.

**Automated implementation of supervisory measures:** sending an automatically created direction for capital increases based on automated data analysis, and decision-making;

**Algorithmic regulation and supervision:** for oversight of high-frequency trading, algorithm-based credit scoring, robo-advisors or any service or product that automates decision-making;

**Efficiency:** the cost of compliance is a burden on the industry. Reduced compliance costs at the regulated entity and enhanced risk management can serve to improve marketplace stability and effectiveness. Regtech can minimise different interpretations of rules and enhance timeline management.

**Supporting innovation:** many regulator’s mandates include the promotion of innovation. Through the identification of appropriate technologies, supervisors may help firms better manage regulatory requirements.



# SupTech Lessons Learned

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Considerations for supervisory agencies are:

- Adapting to the digitisation of the activities of supervised entities. As finance becomes increasingly digitised, financial supervision needs to keep up.
- Senior management support is critical in exploring the opportunities and benefits of suptech. while keeping in mind its limitations and risks.
- Need specialised human resources. Supervisory agencies should carefully consider their strategy in attracting and retaining suptech staff, as well as in ensuring that institutional knowledge is maintained.
- The buy-in of supervision or enforcement units helps to fully embed suptech in supervision work. Input from supervision or enforcement units should be considered in developing suptech applications.
- Supervisory agencies can benefit from partnerships with the academic community, to pace with fast-moving technical developments.
- Seek opportunities for collaboration. Growing or enhancing suptech capabilities is for supervisory agencies to continuously exchange knowledge and experience at a global level.

# RegTech Case Study: Insurance BlockChain



## Risk Block Alliance

- P&C insurance focus
- 30+ insurers (U.S.A.) engaged
- Proof-of-concept for four use-cases
- Blockchain auto insurance proof-of-insurance rolled out by Nationwide Insurance

## B3I Consortium

- Reinsurance focused
- 15 global reinsurers / insurers
- Mostly focused on exchanging ideas and proof-of-concepts, including commercial insurance
- Strategy to focus on one use-case to production

## R3 Consortium

- Financial services focused
- 77+ global members
- Building components to perform basic functions (identifying users (KYC), registration)
- Some members developing insurance use-cases

# SupTech Case Study: Global Financial Innovation Network



Following an initial proposition document on the idea of a “global sandbox” issued by the UK’s FCA in February 2018, these themes emerged from the feedback:

**Regulatory co-operation:** providing an environment for regulators to collaborate on common challenges or policy questions firms face in different jurisdictions. It was also highlighted how under the present conditions it can be challenging for a company looking to engage with different regulators on a bi-lateral basis.

**Regulatory engagement:** a space where industry can engage with a broader group of regulatory stakeholders on a single topic or policy question.

**Speed to international markets:** could reduce the time it takes to bring ideas to international markets. The cross-border potential of emerging technologies (e.g. encryption technology) or business models, since firms often have ambitions to grow globally.

**Governance:** must be transparent and fair to those potential companies wishing to apply for cross-border testing.

**Emerging technologies/business models:** areas highlighted were AI, distributed ledger technology, data protection, regulation of securities and Initial Coin Offerings (ICOs), know your customer (KYC) or anti- money laundering (AML), and green finance.



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## Additional Readings

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# Toronto Centre Resource Centre

Key References can be found here. The TCRC is an online curated library compiling publications relevant to supervisors and regulators drawn from over 50 sources worldwide.

The screenshot shows the Toronto Centre website header. The logo on the left reads "TORONTOCENTRE Global Leadership in Financial Supervision". The navigation menu includes "Home", "About", "Programs", "News", "Resource Centre", "Jobs", "Contact", and "Login". The "Resource Centre" link is circled in red, and a red arrow points to it from the main text above. To the right of the menu is a "Register Now!" button. Below the header is a large banner with a blue and white geometric pattern. The banner text reads "GLOBAL LEADERSHIP IN FINANCIAL SUPERVISION". To the right of the banner is a quote: "I learned a lot of new things. I also learned from other countries' experience, especially the lecturers, they were very good. I'm thinking of bigger objectives here for the institution itself, not only from the central bank perspective, but also how we can improve our systems nationwide." attributed to Arya Yogasati, Indonesia. Below the banner are two sections: "EXCITING NEWS" on the left and "What's New" on the right.

# Appendix A

## Key Technologies in FinTech [1]

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**Aggregator or Comparator:** a web-based or installed application that aggregates related, frequently updated content from various Internet sources and consolidates it in one place for viewing (e.g., customers fill out questionnaire to get estimates to get a quote on insurance).

**Application Program Interface (API):** APIs are definitions, protocols and tools that specify how different software should interact.

**Artificial Intelligence (AI):** AI is the science of making computer programs perform tasks such as problem-solving, speech recognition, decision-making and language translation.

**Big Data Analytics:** Big Data refers to large volumes of unstructured (e.g., Internet traffic) and structured (e.g., databases) data whose analysis is not possible using traditional analytical tools.

**Biometrics:** relates to the digital capture and storage of unique characteristics of individuals, for the purpose of security (and convenience) or to support financial transactions like life insurance.

**Chatbots:** virtual assistance programmes that interact with users in natural language. Chatbots on a large scale can be a cost-efficient way of managing customer engagement.

# Appendix A

## Key Technologies in FinTech [2]

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**Cloud Computing:** uses remote and shared servers hosted on the Internet to store, manage and process data, rather than servers and computers owned and locally maintained by each user.

**Cryptography:** cryptography is the science of protecting information in a secure format.

**Deep Learning:** an algorithm that can, independently, learn new skills. This subset of ML refers to a method that uses algorithms inspired by the structure and function of the brain.

**Digital Platform:** consists of many services, representing a unique collection of software or hardware services of a company used to deliver its digital strategy. Some services are almost always required for all applications or solutions.

**Distributed ledger technology (DLT) or BlockChain:** A distributed ledger system is a database shared between multiple parties (nodes) to execute mutually agreed-upon transactions.

**Image recognition:** a form of deep learning that can be applied to many image-processing and computer vision problems, such as categorising handwritten numerals within an image.

# Appendix A

## Key Technologies in FinTech [3]

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**Internet of Things (IoT)** – IoT is not a technology per se, but a concept. It uses several technologies with the purpose of inter-connecting everyday life devices

**Machine Learning (ML)** – ML can be considered a sub-field of AI that focuses on giving computers the ability to learn without being specifically programmed.

**Machine-readable Regulation** - To make rules machine-executable, first you must make them machine-readable. And, because machines read in a different way from humans, this means using a less ambiguous form of language. The UK's Financial Conduct Authority is aiming to “digitize the rulebook” by tagging regulations with machine-readable markers.

**Neural Networks:** are the base concept for deep learning algorithms and can be used for supervised and unsupervised learning. Like a brain, a neural network contains a large number of nodes and typically learns by training on real data in which the correct answer is already known.

**Random Forest:** combines multiple ML algorithms, allowing for overall better performance. It is a supervised learning algorithm that can be used for both classification and regression tasks with historical data for predictive purposes.

# Appendix A

## Key Technologies in FinTech [4]

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**Robo-advisors** or **robo**-advisers: a class of financial adviser that provides financial advice or Investment management online, based on mathematical rules or algorithms, with moderate to minimal human intervention.

**Smart Contracts:** a smart contract is a digital contract that can self-execute automatically when conditions are met. Examples of DLT platforms are Ethereum and Corda.

**Telematics / Telemetry (vehicle):** interdisciplinary field that encompasses telecommunications, vehicular technologies and computer science which records speed, distance travelled or driving style to determine motor insurance premiums.

**Topic Modelling:** method of unsupervised learning or data analytics that lets the data define key themes in a text. It can efficiently identify hidden trends in large amounts of unstructured information.



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