



The power of supervisory technology (SupTech) for market conduct supervision

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Why suptech for market conduct supervision?

Over the last decade, digital financial services and fintech have driven major benefits for financial consumers. However, they also present market conduct supervisors with new challenges:

- Protecting millions of new users
- Oversight of new financial actors
- New types of risks to consumers
- And, of course, capacity constraints faced by supervisors

The solution is not to stop these financial sector developments, but to ensure market conduct supervisors have the tools they need to address these challenges.

The health/economic dimension of the COVID-19 pandemic + broad shift to digital have increased consumer vulnerabilities and heightened the need to enhance the capacity of market conduct supervisors via suptech and other means.

New World Bank technical note on suptech

Objective of technical note is to assist financial authorities in enhancing the efficiency and effectiveness of market conduct supervision by providing concrete examples of situations where supervisory technology (“suptech”) can be leveraged.

Target audience of this note is market conduct authorities and other stakeholders in low- and middle-income countries.

Scope of research and analysis

1. Categorization of 4 types of suptech solutions for market conduct supervision
2. Identification of 18 suptech solutions that can be used for market conduct supervision across these 4 categories
3. Rationales for investments in suptech, as well as people, processes, and underlying IT, to support market conduct supervision
4. Practical considerations for successful implementation of a data-driven supervision program



Information sources & methodology

The note draws from a wide range of regulatory experiences and is the result of primary and secondary research with 14 financial authorities.

Research methods included interviews, demonstrations, questionnaires, and review of internal materials, external publications, and public-facing websites.

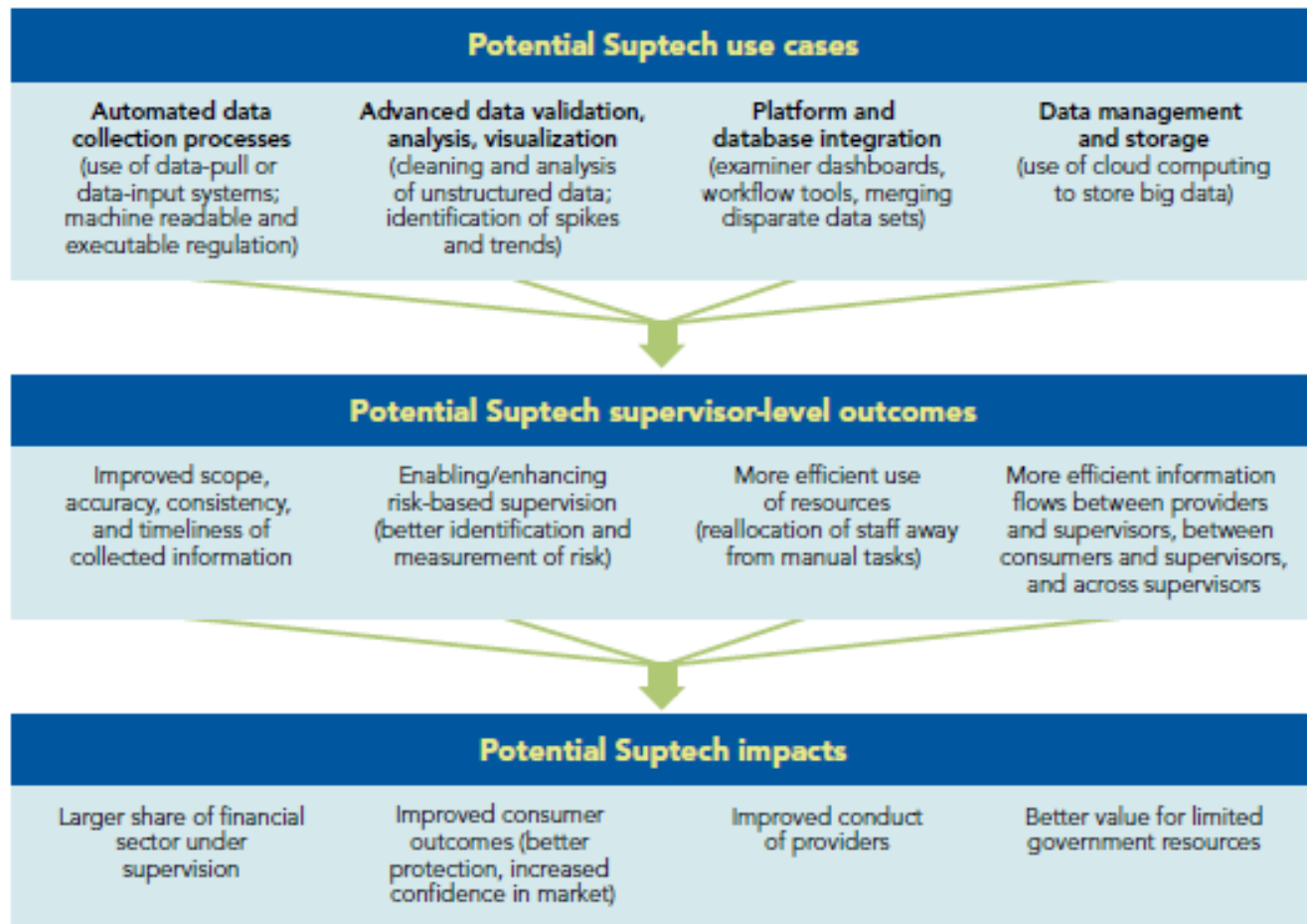
The following financial authorities contributed critical inputs to the note:

- Australian Securities and Investments Commission
- Authority for the Financial Markets (Netherlands)
- Autorité des Marchés Financiers (Québec, Canada)
- Banco de Portugal
- Bangko Sentral ng Pilipinas (Philippines)
- Bank of England
- Bank of Lithuania
- Central Bank of Brazil
- Central Bank of Ireland
- Consumer Financial Protection Bureau (United States)
- European Insurance and Occupational Pensions Authority
- Financial Conduct Authority (United Kingdom)
- National Bank of Rwanda
- Nepal Rastra Bank

Motivations for supotech adoption

(1) Increasing operational efficiency, and (2) enhanced supervisory effectiveness are the primary motivations for adopting supotech solutions

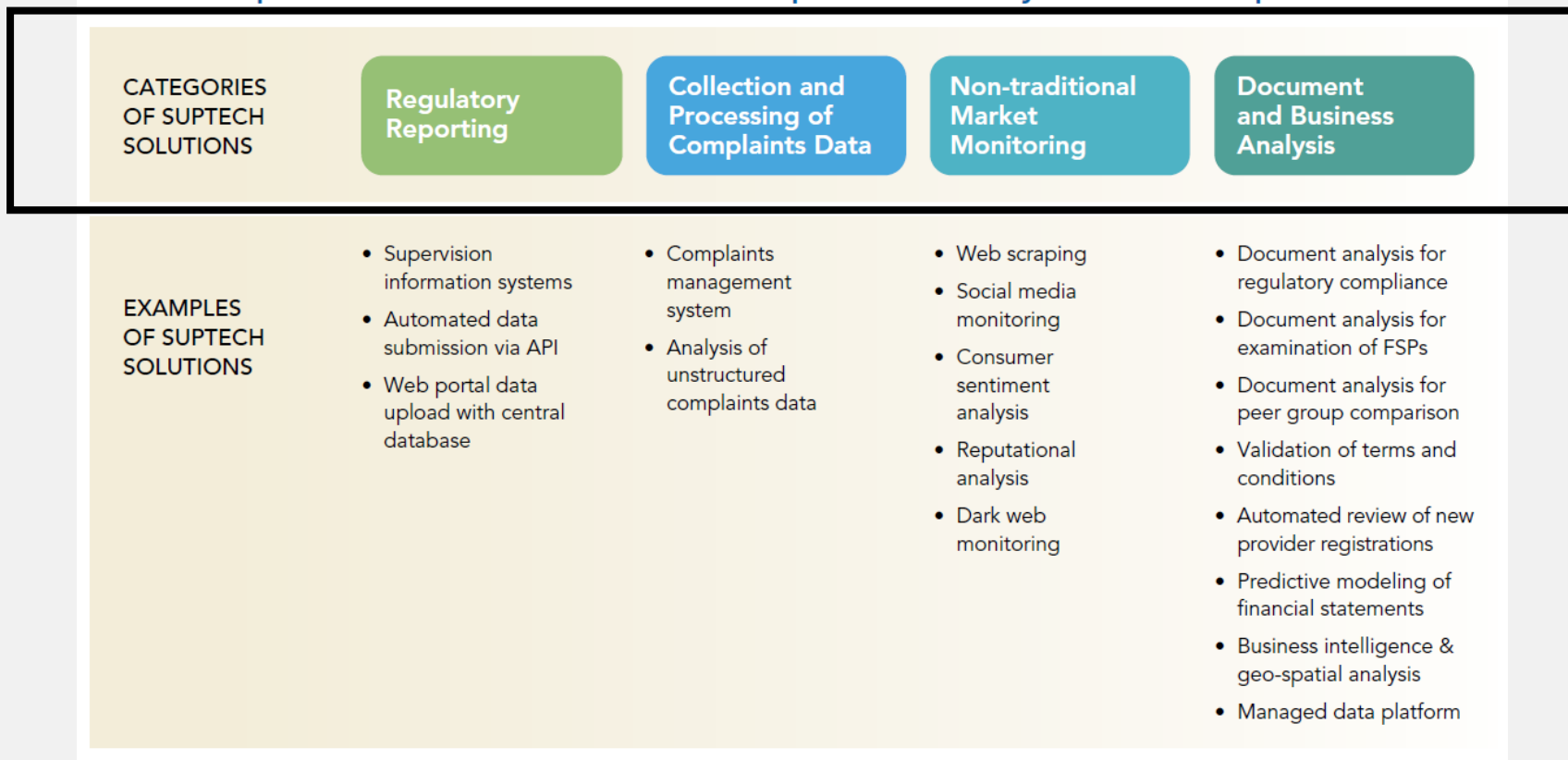
FIGURE 4: Results Framework for Market Conduct Supotech Solutions



Four categories of suptech solutions for market conduct

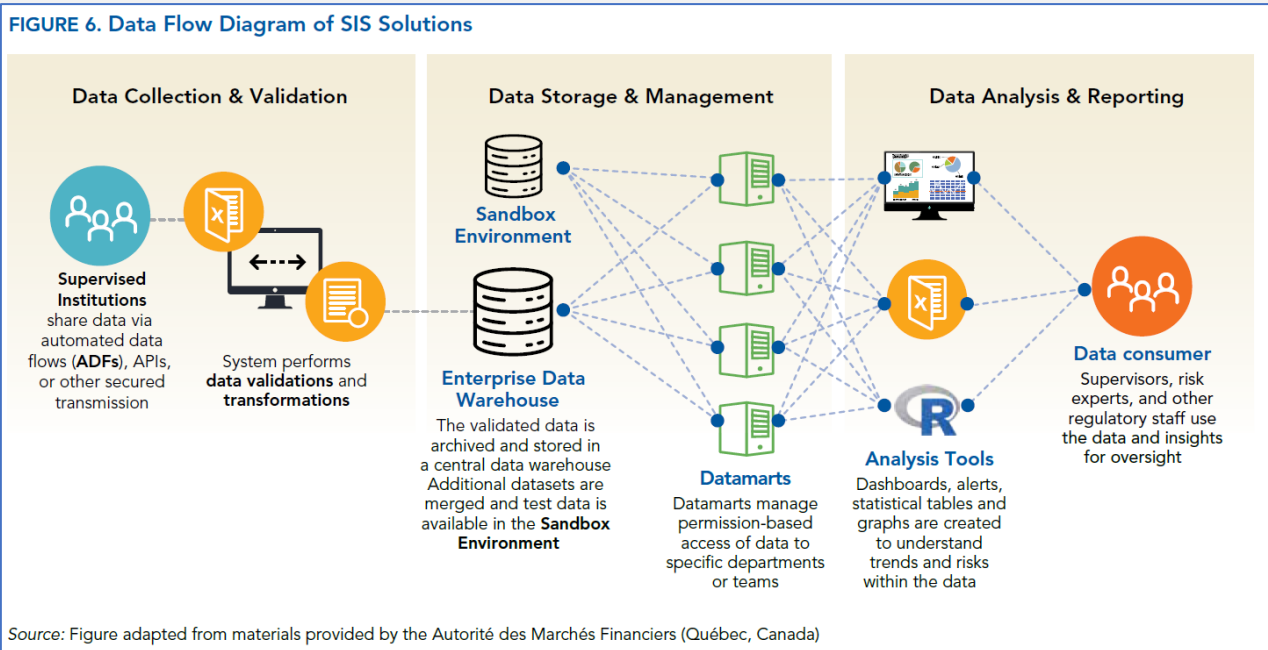
For this note, suptech solutions are categorized by supervisory activity. The four main categories of suptech solutions for market conduct supervision are:

FIGURE 2. Suptech Solutions for Market Conduct Supervision and Key Enablers for Implementation



1.1 Regulatory reporting: supervision information systems (SIS)

Supervisory value: Collection, management, and centralization of granular regulatory data, facilitating off-site examinations and market monitoring.



Considerations:

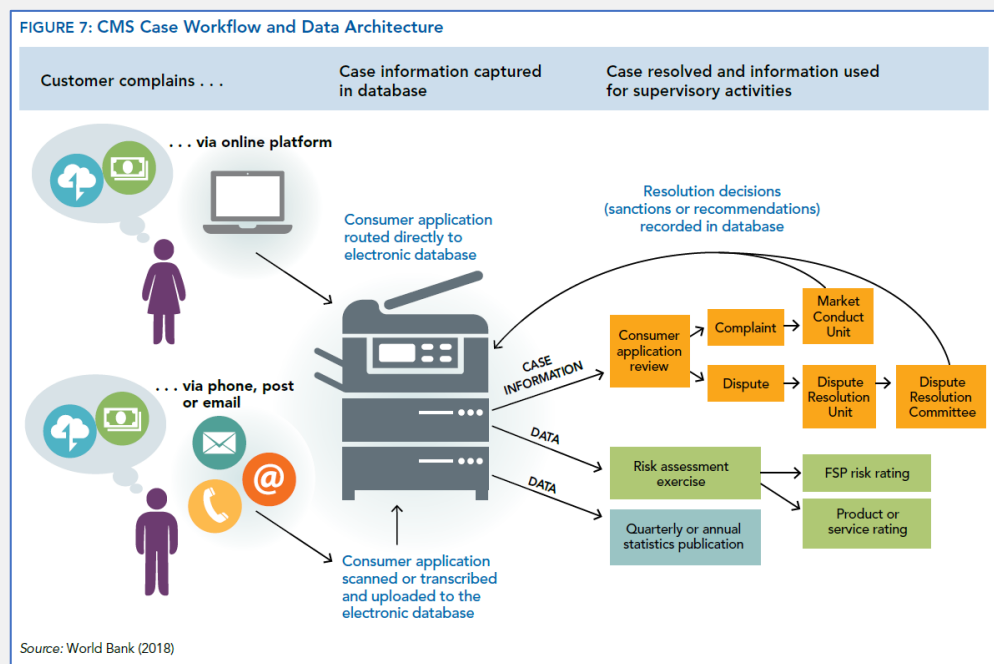
- Design to support the market conduct supervisory framework (e.g., risk-, institution- or product-focused)
- Collaboration with supervised institutions
- Supervisors can monitor fees, accounts, transactions, and trends in credit quality to identify consumer risks

Used by such financial authorities as:



2.1 Collection & processing of complaints data: Overview of complaint management systems (CMS)

Supervisory value: With increased volume, streamlines complaints handling processes, optimizes data management, and expands the visibility and access to the public for submitting a complaint.



Considerations:

- Sharing of data internally and with supervised institutions and others
- Supervisors can identify trends and specific instances of products or providers with higher potential of harm to consumers

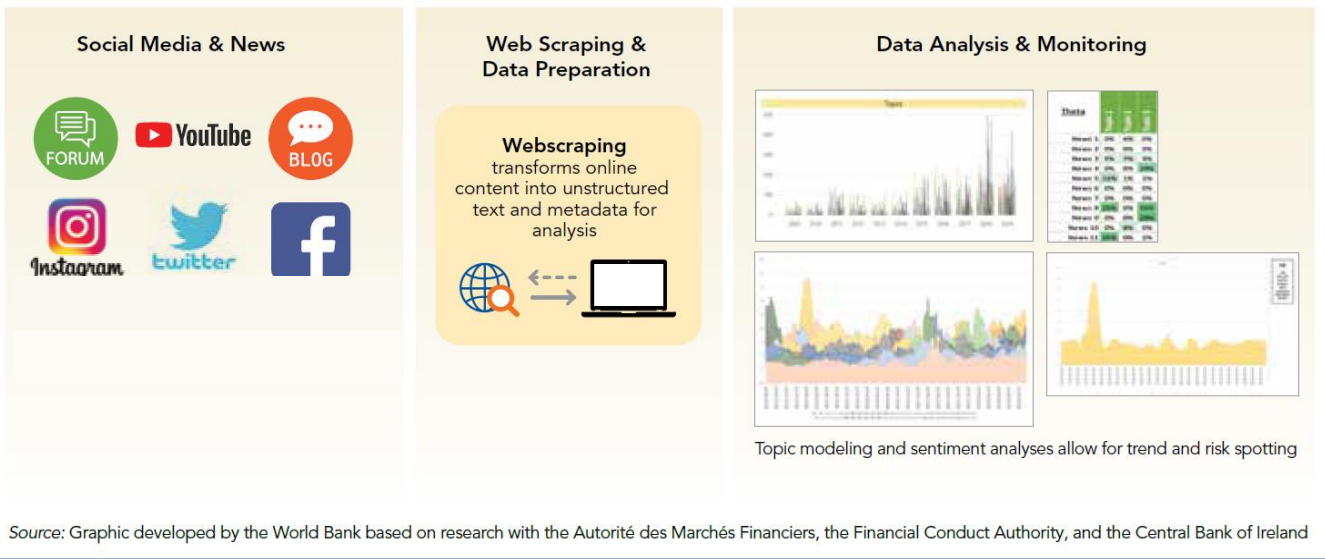
Used by such financial authorities as:



3. Non-traditional marketing: web scraping, social media monitoring, and consumer sentiment analysis

Supervisory value: Provides real-time information on consumers' experiences with financial service providers. Increasing commercial availability with ability to stand up solution in a near-term time horizon.

FIGURE 8: Dataflow Diagram for Social Media Monitoring



Considerations:

- Categorization errors & need for manual review
- Limitations of social media as a data source
- Supervisors can monitor topical trends and consumer sentiment for emerging risks

Used by such financial authorities as:



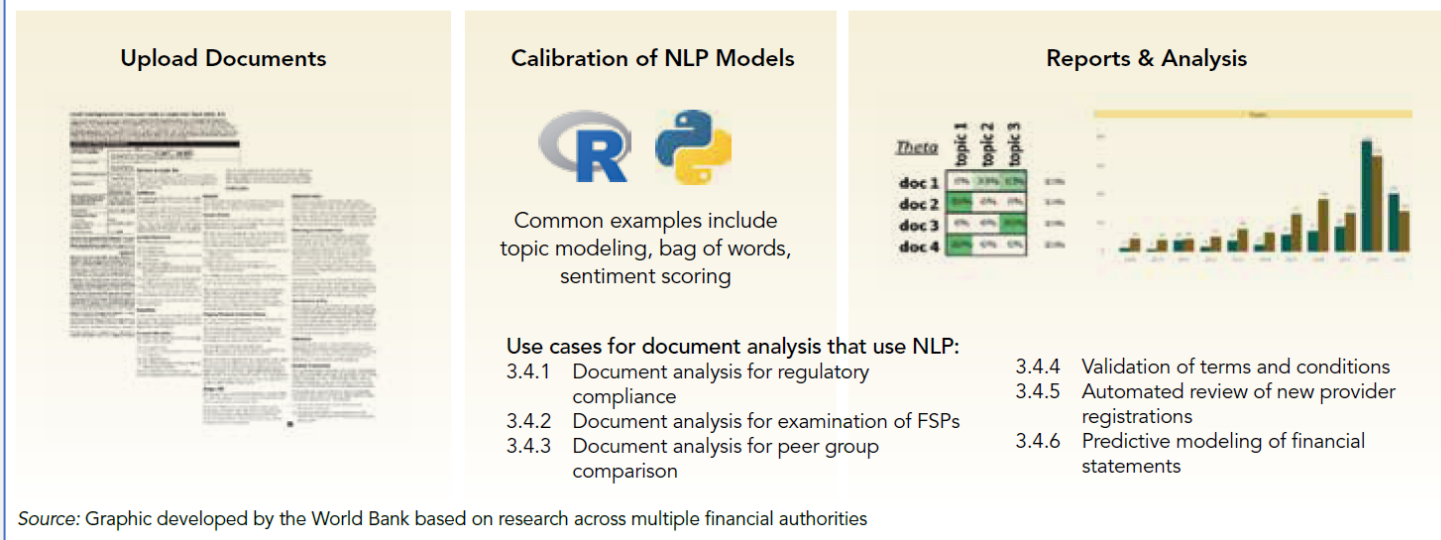
Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem



4. Document and business analysis: multiple solutions derive from the use of NLP to analyze unstructured text data

Supervisory value: Introduces automation and ability to draw new insights from the analysis of large volumes of text documents for various supervisory use cases. Open-source and common software packages make these solutions increasingly accessible.

FIGURE 9: Example of Dataflow Diagram in Document Analysis Solutions



Considerations:

- Solution functionality can be repurposed and leveraged across multiple use cases
- Ability to identify areas of potential compliance risk for further evaluation within documents

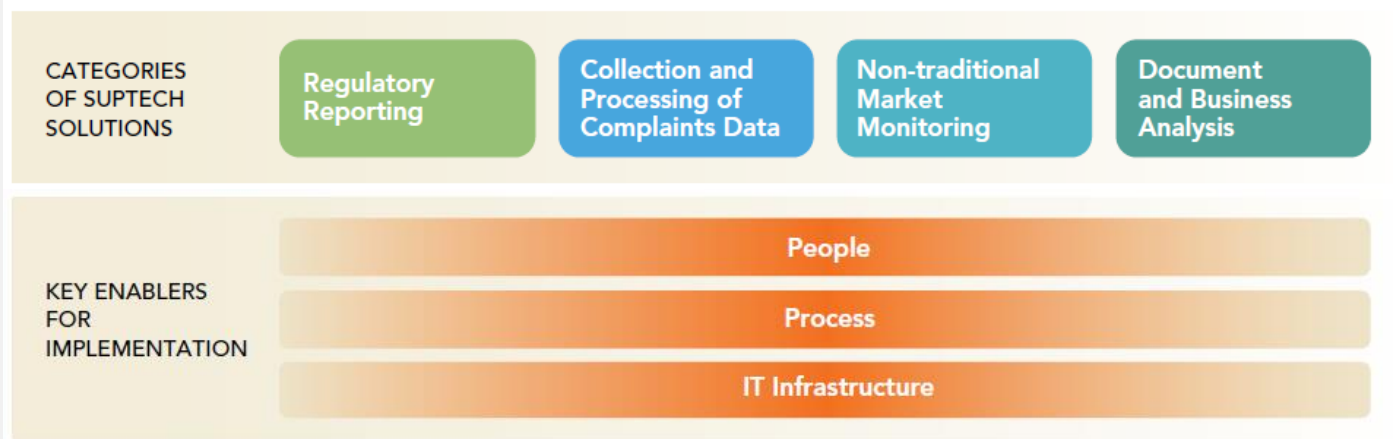
Used by such financial authorities as:



Key enablers of supotech implementation

Three key enablers should be considered in parallel with the supotech solution.

FIGURE 2. Supotech Solutions for Market Conduct Supervision and Key Enablers for Implementation



1. **People:** Talent, mindset, and skills of employees and the larger organizational culture toward data and technology
2. **Process:** How supotech ideas are supported from ideation to implementation, including how supotech is championed and governed
3. **IT Infrastructure:** The underlying IT infrastructure and capabilities needed to develop and operate supotech solutions internally

Implementation Considerations

Key decisions in supotech implementation

1. Building the business case for supotech adoption
2. Addressing legacy IT systems
3. Deciding between in-house solution development versus third-party vendors
4. Organizing internal staff working on data and technology
5. Utilizing adaptive approaches to supotech development

Initiatives to accelerate supotech implementation

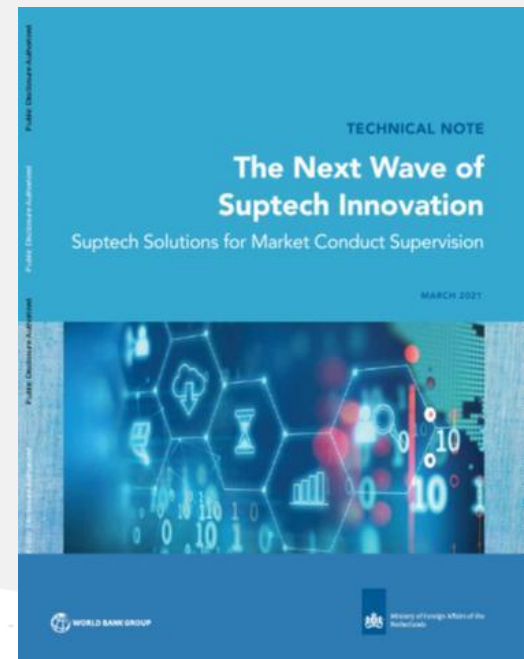
- Formal supotech or data strategies
- Innovation offices and liaising with stakeholders

Additional challenges encountered by regulators

- Development of supervisory framework as a precursor to supotech
- Management of cybersecurity and related risks introduced by supotech

Now Available.

The Next Wave of Suptech
Innovation
Suptech Solutions for Market Conduct
Supervision



Introducing Our Panelists



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Protecting Consumers: The power of Supervisory Technology (SupTech) for Market Conduct Supervision

***The Bangko Sentral ng Pilipinas Consumer Assistance Management System with
Chatbot Functionality (BSP CAMS)***

BSP Online Buddy (BOB)



Consumer Assistance Mechanism of BSP

- ▶ facilitates communication between parties by elevating consumer concerns to the Senior Management of financial institutions for appropriate action
- ▶ escalation point for financial consumers against financial institutions
- ▶ data-gathering channel on pressing financial consumer concerns
- ▶ aids to get insights on the trends of complaints and consumer behavior
- ▶ encourages trust and confidence in the financial system



Background of the Project

- ▶ BSP participated in the **Regulators Accelerator (R2A) Project**.
- ▶ The chatbot prototype developed in the R2A Project was then continued by BSP as a fully functional tool for consumer assistance processing

Rationale: A SupTech solution is seen to --

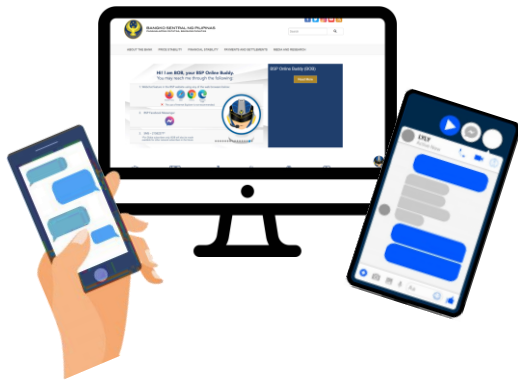
- ▶ enhance the efficiency and efficacy of consumer protection work
- ▶ enable consumers to file complaints through more accessible means

The R2A Project is a pioneering technical assistance for selected regulators in developing RegTech solutions to improve the speed, quality and comprehensiveness of information for risk-based supervision and evidence-based policymaking



The Chatbot Functionality

- ▶ uses a **Natural Language Processing (NLP)** engine and artificial intelligence recognizing complaints in English, Filipino, and Taglish
- ▶ provides an accessible, timely, and efficient platform for escalating complaints against financial institutions



- ▶ equips the BSP with more insights into customer experiences, banking practices and conduct as input to policymaking and supervision
- ▶ can respond to Frequently Asked Questions (FAQs)



Meet BOB, the BSP Online Buddy

Hi! I am BOB, your BSP Online Buddy.
You may reach me through the following:

1. Webchat feature in the BSP website (www.bsp.gov.ph) using any of the web browsers below:



Mozilla Firefox



Safari



Chrome



Microsoft Edge

✗ The use of Internet Explorer is not recommended.

2. BSP Facebook Messenger



3. SMS – 21582277*

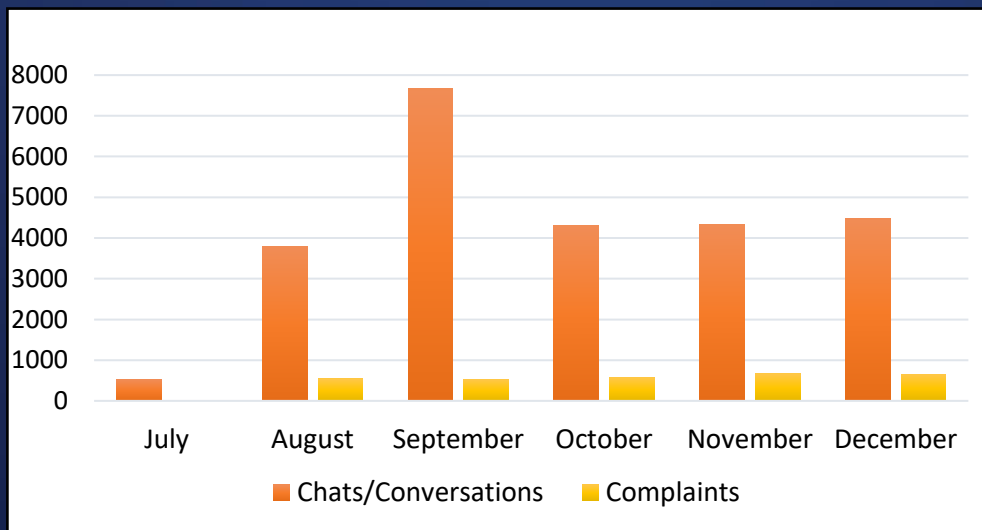
**For Globe subscribers only. BOB will also be made available for other network subscribers in the future.*





BOB: Bringing BSP closer to the Filipinos

BOB has been gaining traction in becoming the foremost avenue for financial consumers to escalate to the BSP their concerns, inquiries, and complaints.



From launch until 31 December 2020, BOB has had:

- **25,120** chats/conversations with the public
- referred to BSFIs **2,980** complaints or **13%** of the total complaints referred under BSP's CAM in 2020.



Future Plans

- ▶ Further enhancements planned for BOB:
 - Improvement of the system and analytics feature to fit BSP's needs
 - Inclusion of other dialects in NLP
 - Availability via other platforms
 - Access by supervised institutions to the system
- ▶ Ongoing studies and partnerships with other organizations to:
 - Encourage BOB use by the public
 - Maximize data generated by BOB
 - Enhance Market Conduct work



Thank you!



SupTech tools:
**How to meet the
market conduct supervisory challenges
of the next decade**

Maria Lúcia Leitão
**Head of Banking Conduct Supervision Department Chair
of FinCoNet**

Financial Inclusion Global Initiative Symposium 2021



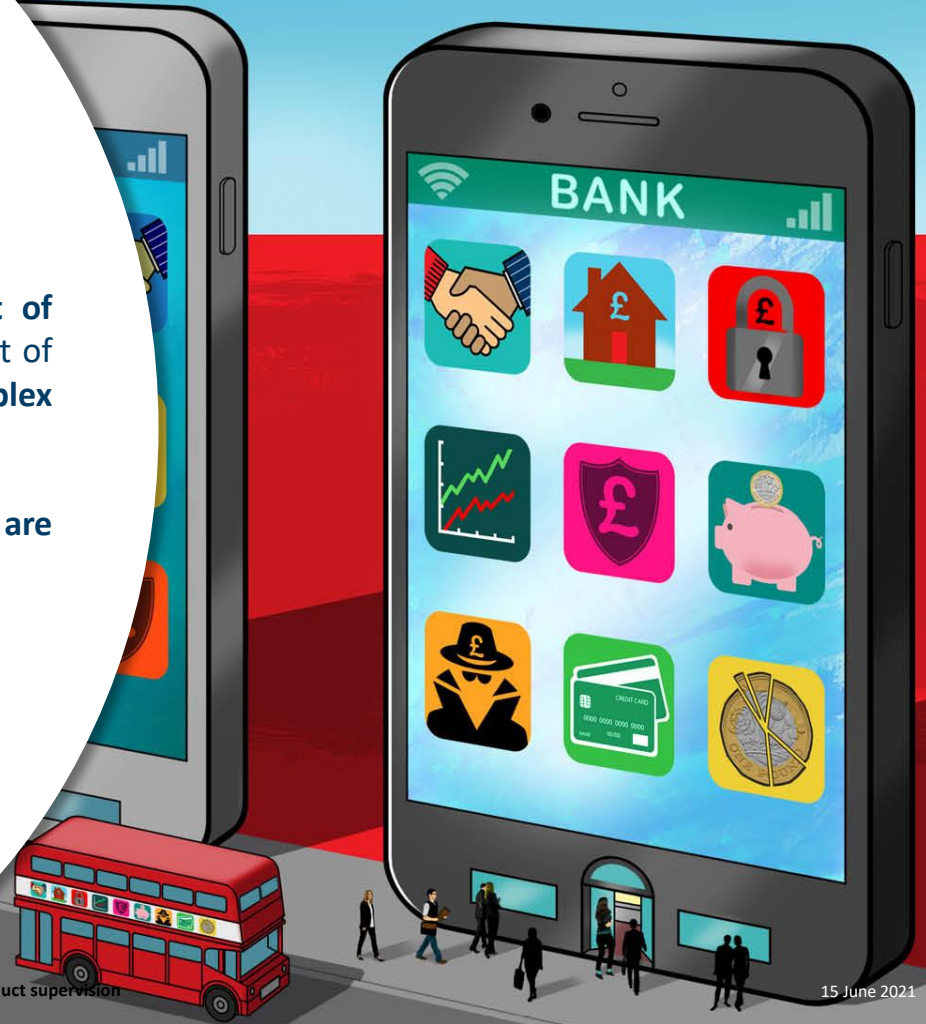
**BANCO DE
PORTUGAL**
EUROSISTEMA

A changing environment

Consumers now have access to a **more diversified set of products and services** offered by **more players** in a context of **digital transformation**, thus facing a **more complex environment**

More **comprehensive legal and regulatory frameworks** are being introduced to protect consumers

Market conduct supervisors need to oversee compliance by financial institutions to ensure an equal level of protection for all consumers



A challenge for conduct supervisors

Market conduct supervisors should act timely and effectively, adopting efficient processes and solutions

They need to deal with large amounts of data most of which unstructured

Market conduct supervision is a data-driven task
Millions of customers, millions of contracts... millions of data!



The need for SUPTECH

It is not humanly possible to deal with such a **high amount of data**, which includes **non-traditional market monitoring** sources, such as the internet and social media

Automating business processes supported by **algorithms and AI** can help market conduct supervisors

We need to resort to technology for an effective and more efficient conduct supervision



SupTech is a strategic priority for conduct supervision at the Banco de Portugal



Innovation



Draft credit agreements validation | The current (manual) process

- Since 2010, institutions **have to report all draft consumer and mortgage credit agreements** to the Banco de Portugal (Banking Conduct Supervision Department)
- All (new and modified) draft credit agreements are filed and **stored in a database manually**
- The Banco de Portugal **oversees** the compliance of those draft credit agreements with legal and regulatory requirements
- A **risk based approach** is followed due to the large amount of data



Draft credit agreements validation | Challenges

- Such a **large volume** of draft credit agreements raises **several challenges**
 - ✓ Significant number of human resources
 - ✓ Need to prioritise
 - ✓ No real time monitoring and oversight
 - ✓ Time-consuming task increases human error

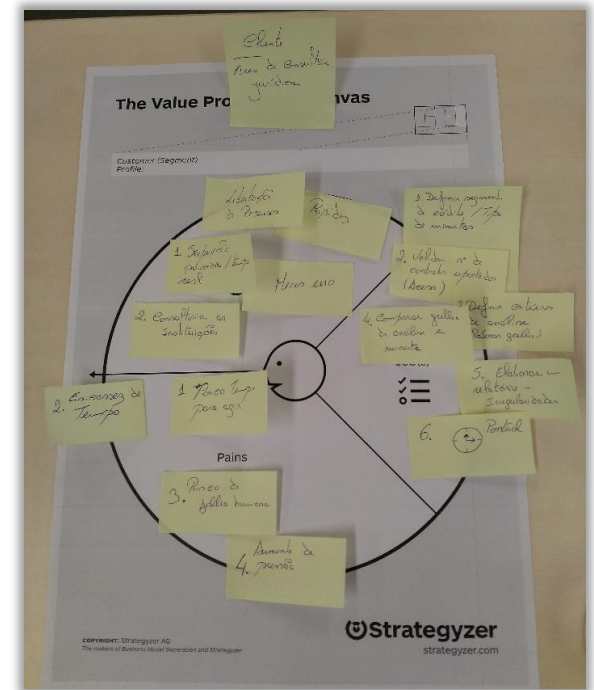


We estimate that the manual oversight of draft credit agreements for rules validation requires from **24 to 48 months of staff time for each exercise**



Draft credit agreements validation | An idea to automate this task

- In 2019, the Banco de Portugal set up the **Innovation Lab (inov#)** to catalyse an innovative mindset and to support decision making
- After a **brainstorming** between the Banking Conduct Supervision Department and the Innovation Lab, **potential SupTech tools** were identified to improve business conduct supervision
- A **tool to automatically validate draft credit agreements** was proposed



The result of our brainstorming



Draft credit agreements validation | The pilot

- In 2019, the Banco de Portugal implemented a **SupTech tool pilot** to automate this task
- It focused on **the validation of a set of rules** with a relatively low level of complexity (20 % of all requirements checked manually) and in one type of credit (personal loans)
- The pilot was run for **3 months** and partnered with a third-party vendor

N.º	Requirement	
1	Credit Type identification: consumer credit agreements must indicate the category of credit to which the operation belongs, taking into account the classification contained in Instruction 14/2013	✓
2	Credit Institution identification and address: consumer credit agreements must identify the credit institution, including its geographical address and contact details (see field 1 of Chapter A of Annexes I and II in Instruction 12/2013)	✓
3	Credit Intermediary identification and address: consumer credit agreements settled with credit intermediary intervention must identify the concerned credit intermediary and indicate his geographical address and contact details (see field 2 of Chapter A of Annexes I and II in Instruction 12/2013)	⚠
4	Credit total amount indication: consumer credit agreements must indicate the total amount of the credit.	✓

CONDIÇÕES PARTICULARES

Partes	
Credor	Banco ABC Pessoa coletiva n.º 123456789 - matriculada na Conservatória do Registo Comercial do Porto sob o mesmo número Capital social: € 1.000.000,00 Praça Marquês de Pombal
Cliente	[Nome do cliente particular; estado civil, maior, documento de identificação n.º [...], contribuinte n.º [...], morada [...], E-mail: [...], Telemóvel: [...]]
1. Tipo de Crédito	O Crédito concedido ao abrigo do presente Contrato é um crédito pessoal a consumidores sem que esteja definido o fim a que se destina a quantia mutuada, configurando um Crédito Pessoal sem Finalidade Específica .
2. Montante total do crédito	X.XXX.XX € [por extenso]
3. Forma de Disponibilização e de Utilização do Crédito	3.1 O Crédito concedido pelo Banco ABC ao abrigo do presente Contrato é disponibilizado, após aprovação, na conta n.º [a] aberta junto do Banco ABC numa única prestação, através de transferência a crédito (a "Conta de Depósitos à Ordem")
3.2	Para efeitos do presente Contrato entende-se por "Data de Utilização" a data em que o Crédito é disponibilizado na Conta de Depósitos à Ordem.

The image shows a document with several sections of text, likely terms and conditions, with red 'X' and yellow '!' markers overlaid on it, indicating errors or warnings. The text is partially obscured by these markers.

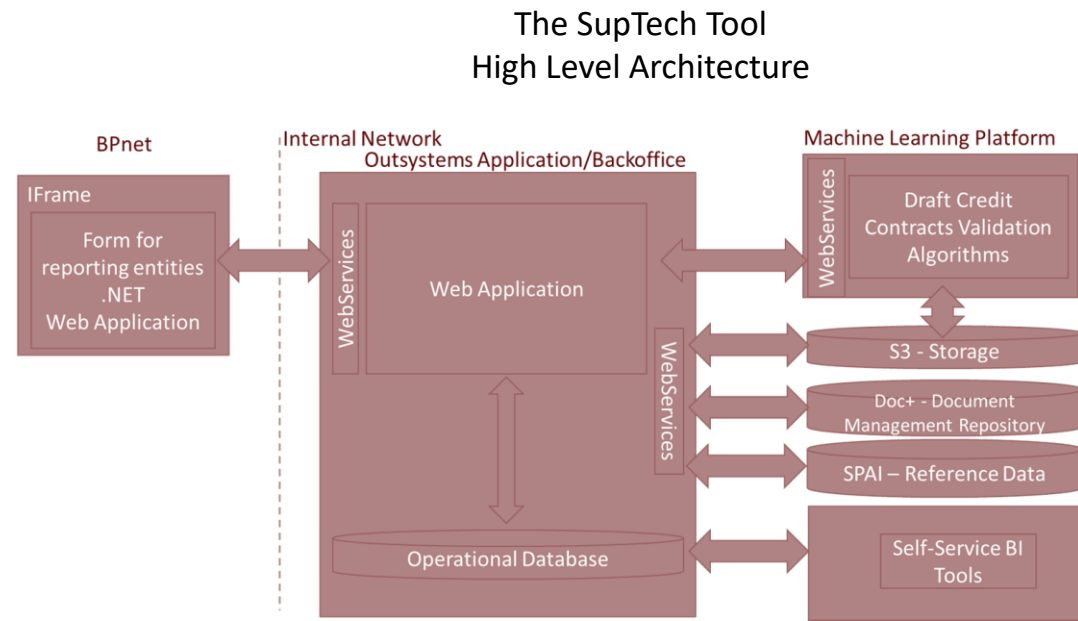
Protecting Consumers: The power of supervisory technology (SupTech) for market conduct supervision

15 June 2021



Draft credit agreements validation | The implementation of the SupTech tool

- The implementation of the project started this **January** and will finish in **July 2021** in partnership with a third-party vendor
- The release to go live in July will **gradually** include almost **all regulatory requirements** for **all types of consumer and mortgage credit contracts**
- After July, **all draft credit agreements** will be stored automatically through an interface between the internal reporting channel and the SupTech tool



The tool incorporates **NLP** and **ML**



Draft credit agreements validation | The front office

The screenshot displays the 'MCC - Minutas de Contratos de Crédito' application. The header includes the Banco de Portugal logo and navigation links. The main content area is titled 'Lista de minutas de contratos em vigor'. It features a search bar and filters for 'Tipo de crédito' (Todos, Consumo, Habitação) and 'Produto'. A table lists active contracts with columns for 'Referência BDP', 'Referência interna', 'Tipo de crédito', 'Descrição', 'Entrada em vigor', and 'Ações'. A large red 'IN PROGRESS' stamp is overlaid on the table.

Referência BDP	Referência interna	Tipo de crédito	Descrição	Entrada em vigor	Ações
1123	R87-2019-011	Habitação	Crédito à Habitação Construção de habitação própria e permanente, secundária ou para arrendamento	1 - Crédito à Habitação para aquisição, com bonificação, sem carência, com campanha de crédito à habitação especial Hoje 08h36	Ações
1124	R83-2019-011	Consumo	Crédito automóvel e outros veículos Locação financeira ou ALD com opção ou obrigação de compra: novos	1 - Crédito Automóvel Cofidis 2 - Leasing automóvel 3 - ALD Daqui a 5 dias 26-10-2018	Ações
1135	R21-2019-011	Habitação	Crédito Conexo Com finalidade específica	1 - Minuta de mútuo com hipoteca Obras em habitação própria permanente, secundária ou para arrendamento ... Há 10 dias 26-10-2018	Ações
1126	R83-2019-011	Consumo	Crédito automóvel e outros veículos Locação financeira ou ALD com opção ou obrigação de compra: novos	Crédito Automóvel Leasing automóvel: ALD Há 10 dias 26-10-2018	Ações

- The Banco de Portugal is also developing **an application to support draft credit agreements' analysis**
- **User experience tests** were conducted with our staff to present information (in particular, the results of the SupTech tool) in a **user friendly way**



Draft credit agreements validation | First results

Proposta de Crédito Pessoal Banco ABC
Proposta N.º ____/____/____

1º PROPONENTE

N.º Contribuinte : _____

Nome: _____

Localidade: _____ Código Postal: _____

Titular(es) da conta de Depósito à Ordem com o NIB : _____ adiante designada por conta vinculada.

Caracterização:

Taxa de Juro: _____ (Fixa/Indexada)

Montante Concedido: _____ EUR

Taxa de Juro Nominal Anual: Euribor 3 Meses + ____ %

Prazo Total: Anos ____ Meses

Total de Bonificações : ____ %

Prazo de Carência: Anos ____ Meses

Taxa de Juro com Bonificações: Euribor 3 meses + ____ %

Prazo de Reembolso: Anos ____ Meses

TAEG à Data de Concessão do Crédito: ____ %

Mês da 1ª Prestação: _____

Dia de Vencimento das Prestações: ____

Periodicidade: Mensal

Montante total imputado ao(s) Mutuário(s): _____ EUR

Comissão de Abertura de Crédito: _____ EUR

Garantias:

Livrança em Branco: ____ Aval : _____

Seguro de Vida

1º Titular: _____

Prémio do Seguro: _____ EUR

O(s) Subscritor(es), abaixo assinado(s) ou acidente : _____

Avalistas:

Nome: _____

Nome: _____

O(s) Subscritor(es), abaixo assinado(s) ou acidente : _____

Prémio do Seguro: _____ EUR

1º Titular: _____

Livrança em Branco: ____ Aval : ____

Comissão de Abertura de Crédito: _____ EUR

IN PROGRESS

10 comments

PAGE 1

3.1.1 - Identificação do tipo de crédito

Add a reply...

PAGE 5

3.1.4 - Indicação do montante total do crédito

Add a reply...

3.1.8 - Indicação da taxa de juro anual nominal

3.1.15 - Indicação da TAEG

3.1.14 - Indicação do montante total do crédito imputado ao consumidor

- The SupTech tool will **highlight the contractual clauses** that need to comply with each legal and regulatory requirement



Other SupTech project at the Banco de Portugal | Information requests classification and response

- The Banco de Portugal receives more than 6.000 information requests per year (average of the last 4 years)
- All information requests are classified according to the subject (there is a list of themes); each reply follows a specific pre-defined template whenever possible

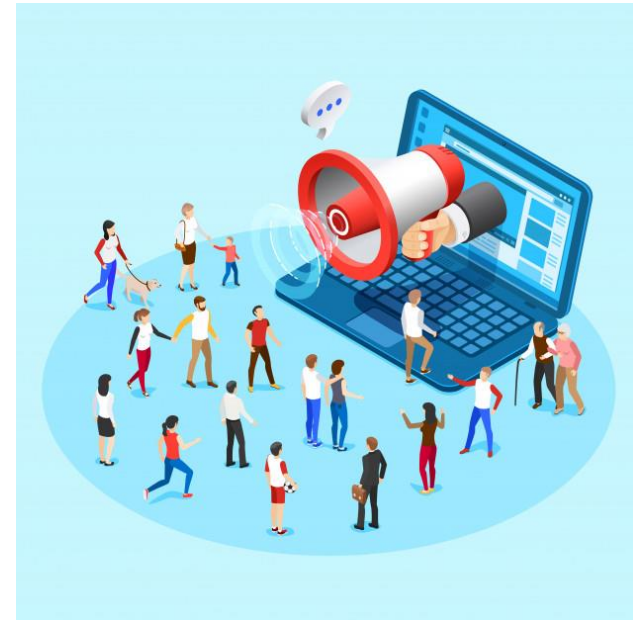


- The Banco de Portugal, in partnership with a third-party vendor, tested the idea to have an automated classification of information requests, as well as an automated proposal of response
- The tested tool incorporates **NLP** and **ML**
- After the results of the pilot, **the development of this SupTech tool will start in July**



A new idea to a SupTech tool | Monitoring of advertisements @ digital channels

- The Banco de Portugal oversees advertisements to ensure the compliance of supervised institutions with information requirements
- Financial institutions are relying on their advertisements on the internet and social media
- The Banco de Portugal intends to implement a **pilot tool to monitor online advertisements at the end of this year**



SupTech plays a vital role for business conduct supervision

- SupTech tools are crucial to support our work. Without them, we are "behind the curve"
- Market conduct supervisors need to learn about its adoption from each other by sharing information

**ENHANCEMENT OF SUPERVISORY
ACTION
=
BETTER CONSUMER PROTECTION**

FinCoNet has been working on SupTech to support business conduct supervisors in overcoming these new challenges



- SupTech has been on FinCoNet’s agenda since its AGM in Jakarta (OJK) in 2016
- A new Standing Committee (SC4) was set up to focus on the use and application of SupTech by market conduct supervisors
- The SC4 was chaired by the Banco de España with representatives from Australia, Brazil, Canada, Germany, Indonesia, Japan, Mauritius, Portugal, Russia, South Africa and Spain



In 2019, a Workshop on SupTech took place in the FinCoNet AGM in Rome (Banca d'Italia)



Session 1: Exploring Suptech approaches for market conduct supervision

Jermy Prenio, Bank of International Settlements: *Innovative technology in financial supervision (suptech) – the experience of early users*

Lígia Lopes, World Bank: *From Spreadsheets to Suptech: Technology Solutions for Market Conduct Supervision*

Miles Larbey, OECD: *Collection and use of data to inform risk-based supervision*

Session 2: Exploring Suptech approaches for market conduct supervision

Ed Towers, Financial Conduct Authority, UK: *The UK approach and strategy with regards to Sup Tech and specific Sup Tech applications.*

Nuno Pereira, Banco de Portugal: *oversight tools to support banking conduct supervision*

Chris Green, ASIC, Australia: *NLP to monitor financial promotions*

Gouro Sall Diagne, AMF, Quebec: *Suptech approaches in Quebec*



Protecting Consumers: The power of supervisory technology (SupTech) for market conduct supervision

15 June 2021

FinCoNet released two reports on SupTech for market conduct supervisors: in 2018 and 2020



- The first report on SupTech was released in 2018
- In 2020, a second report was published drawing on case studies and responses to a survey conducted by SC4 among FinCoNet Members and others
- SC4 also coordinated with the World Bank, carrying out a peer review of each other's reports on SupTech



Current FinCoNet work on SupTech

- SC4 continues its work on SupTech for market conduct supervisors, now co-chaired by the Financial Consumer Agency of Canada and the Central Bank of Russian Federation, and with representatives from the AMF (Québec, Canada), Central Bank of Brazil, FSA (Indonesia), Bank Indonesia, Bank of Mauritius, FSA (Japan), Central Bank of Ireland, AMF (Netherlands), FCA (UK), Central Bank of Portugal, Bank of Spain, SBS (Peru)
- It is currently focusing on oversight challenges and the evolution in approaches for conduct supervisors in the context of COVID-19
- A survey will be launched soon to gather data for this report, with an expected publication date of November 2021



About FinCoNet



- Established in 2013, FinCoNet is an international organisation for market conduct supervisors with responsibility for financial consumer protection
- FinCoNet promotes sound market conduct and strong consumer protection through efficient and effective financial market conduct supervision
- FinCoNet is a member-driven organisation, with over 30 supervisors from around the world
- FinCoNet is supported by the OECD as Secretariat, and structures its work through a number of Standing Committees. Each SC focuses on a specific supervisory challenge or issue, and explores and promotes best practices for market conduct supervisors

For more information, please visit: www.finconet.org



Protecting Consumers: The power of supervisory technology (SupTech) for market conduct supervision

15 June 2021

Suptech – a giant leap to supervisors

“(…) Within this landscape of digital transformation, SupTech becomes an invaluable tool for financial authorities. (…)”

World Bank, The Next Wave of Suptech Innovation: Suptech Solutions for Market Conduct Supervision, 2021

“(…) Every effort to develop SupTech tools should be understood as a continuous learning process, even if the tool has already been implemented. (…)”

FinCoNet, SupTech tools for Market Conduct Supervisors, 2020



Thank you!

Maria Lúcia Leitão
Head of Banking Conduct Supervision Department
Chair of FinCoNet

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Financial Inclusion Global Initiative Symposium 2021



**BANCO DE
PORTUGAL**
EUROSISTEMA

National Bank of Rwanda (NBR)- Electronic Data Warehouse (SupTech Solution)

Wilson Kamali
Director Statistics
National Bank of Rwanda

Outline

1. Why Electronic Data Warehouse (EDWH)?
2. EDWH Architecture
3. Data Type Sample (Data Standardization)
4. Initial Requirements
5. Challenges

Why BNR embarked on EDWH

Reporting (external Data)

- Heavy Resource Requirements
- Time Consuming and Inefficient
- High Costs and information comes post the reporting period

Data Consolidation (BNR)

- Data spread across multiple systems
- Manual Consolidation was time consuming
- Data integrity issues

Regulatory Reporting

- Central Bank reporting was manual and very time consuming
- Cost of errors, inaccuracies, audits, compliance issues is very high
- No audit trails in case of any manual reporting

Why Automate Reporting Process?

- ✓ Improve timeliness
- ✓ Improve scope (data coverage)
- ✓ Improve granularity of collected data
- ✓ Reduce reliance on manual process
- ✓ Relieve FSPs of the burden of data aggregation
- ✓ Relieve FSPs the burden of compliance costs

CP & Financial Inclusion

- Measuring & monitoring FI & CP has been a challenge to BNR especially on supply side
- EDWH tool: besides centralizing all data for financial stability & price stability
- ✓ a number of FI variables are captured (from banks, insurers, DFS)
- ✓ CP related variables (fraud, complaints, contractual prices at individual levels)

Fraud Transaction- Data Type (pulled Daily)

A	E	F	G	H
Column Name	Guidelines	Mandatory Fields	Column Description in Details	Sample Format
Country		Y	Country Code will be RW fixed for Rwanda	RW
LE_Book		Y	Legal Entity Code will be assigned by BNR for each Stakeholder	A01
Business_Date		Y	Reporting Business Date	DD-Mon-YYYY
Fraud_Sequence		Y	Unique sequence number	1
Vision_OUC		Y	Branch in which fraud txn originated	Kigali
Name_Fraudster		Y	Name of fraudster	
Fraud_By	<u>Y</u>	Y	Fraud By	S
Fraud_Type	<u>Y</u>	Y	Fraud Type	11
Fraud_Scheme	<u>Y</u>	Y	Fraud Scheme	11
Description_Of_Fraud		Y	Fraud Description in detail	Embezzled
Fraud_Txn_Status	<u>Y</u>	Y	Fraud Transaction Status	0
Currency	<u>Y</u>	Y	ISO Currency Code. (Example: USD, EUR, RWF, etc.)	RWF
Fraud_Amount_FCY		Y	Amount Involved in FCY	80000
Fraud_Amount_LCY		Y	Amount Involved in LCY	80000
Amount_Paid_FCY		Y	Amount Recovered in FCY	7000
Amount_Paid_LCY		Y	Amount Recovered in LCY	7000
Adopt_To_Avoid		Y	Remarks: Process adopted to avoid a repeat	Should be secured

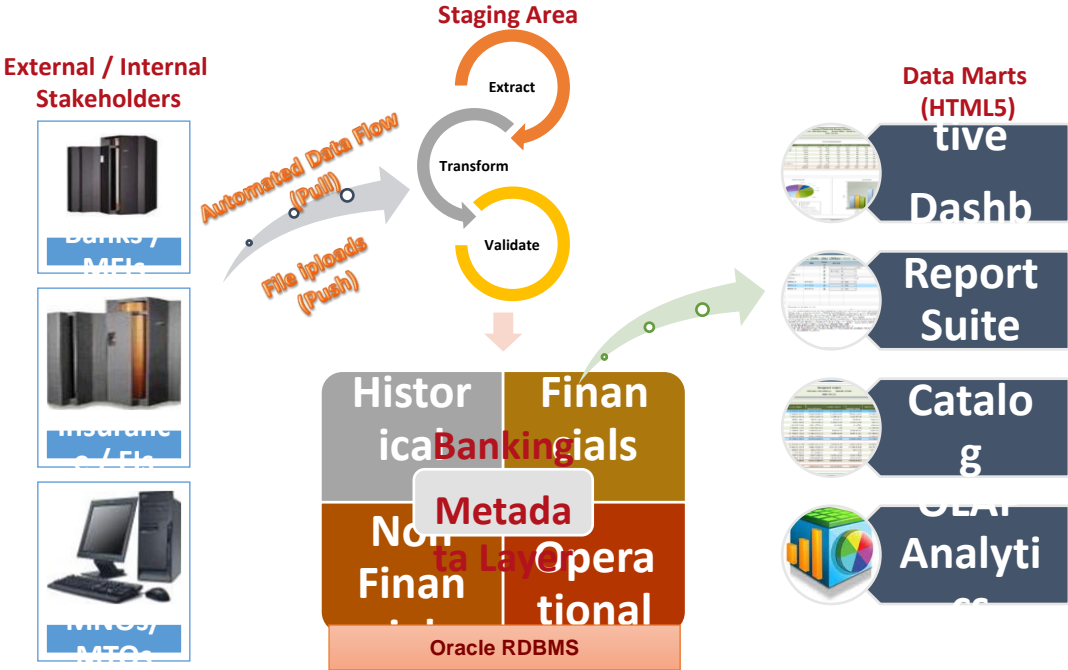
Suspicious Transaction Data type (pulled on a daily basis)

	A	E	F	G	H
	Column Name	Guidelines	Mandatory Fields	Column Description in Details	Sample Format
2	Country		Y	Country Code will be RW fixed for Rwanda	RW
3	LE_Book		Y	Legal Entity Code will be assigned by BNR for each Stakeholder	A01
4	Business_Date		Y	To obtain the business date	DD-Mon-YYYY
5	Fraud_Report_Type	<u>Y</u>	Y	Suspicious Report Type	I
5	Fraud_Sequence		Y	Suspicious_Sequence_Number for uniqueness	1
7	Vision_OUC		Y	Branch ID, where the Fraud happened	001
3	Account_No		Y	Account Number, Default "0"	87296497436
3	Surname		Y	Name of the Entity/Surname	Micheal
0	First_Name		Y	First name	John
1	Middle_Name		Y	Middle name	Suzi
2	Postal_Address		Y	Address information	Executive suite apartment
3	Date_Of_Birth		Y	DOB of the customer/incorporation	DD-Mon-YYYY
4	Passport_Number		Y	Passport number/ID number	K93765
5	Occupation	<u>Y</u>	Y	Occupational/Business	1
6	Identity_Verified	<u>Y</u>	Y	If applicable(Passport,ID no,Other,Incorporation No,Date&Place Issued)	0
7	Relationship_With_ReportEntity		Y	e.g Accountant, Agent, Broker, Client/Customer, Depositor, Director, Employee, Service Provider, Officer, Shareholder etc	Client
8	Action_Taken	<u>Y</u>	Y	No(if no specify),Resigned,Suspended,Terminated	T
9	Resignation_Date		Y	Date of resignation if any	DD-Mon-YYYY
0	Transaction_Date		Y	Date of transactions	DD-Mon-YYYY
1	Transaction_Type	<u>Y</u>	Y	Types of Transactions	Withdrawal
2	Transaction_Narration		Y	Description of transactions	Money withdrawn from a bank
3	Currency	<u>Y</u>	Y	ISO Currency Code. (Example: USD, EUR, RWF, etc.)	RWF
4	Fraud_Amount_FCY		Y	Suspicious Amount Involved in FCY	80000
5	Fraud_Amount_LCY		Y	Suspicious Amount Involved in LCY	80000
6	Amount_Paid_FCY		Y	Amount Paid/Recovered in FCY	7000
7	Amount_Paid_LCY		Y	Amount Paid/Recovered in LCY	7000
8	Source_Of_Fund		Y	Source Of Funds	Property
9	Destination_Fund		Y	Information on the destination of the funds	Bank
0	Basis Of Suspicion		Y	Basis Of Suspicion	Large money withdrawal

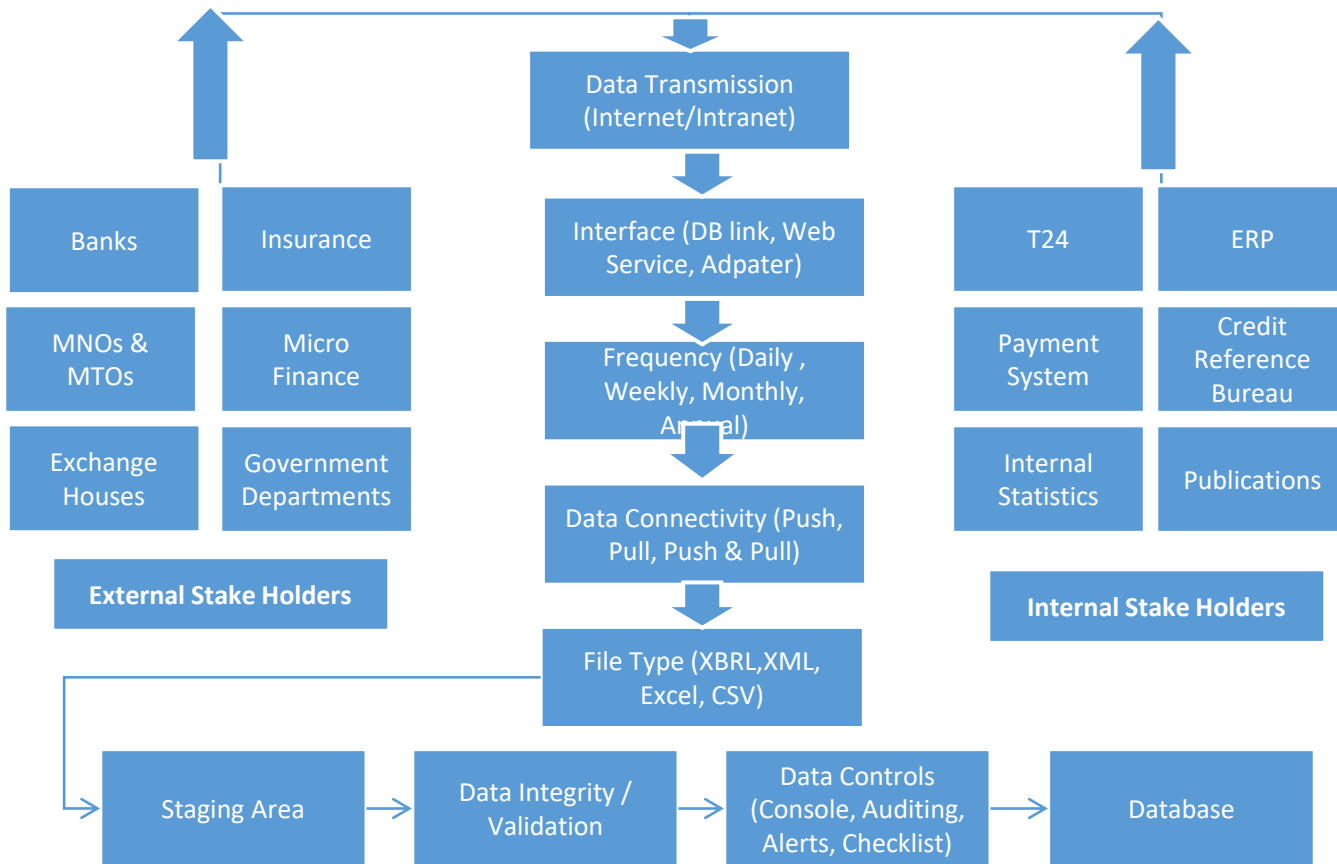
Pricing Data type (pulled on a daily basis)

A	E	F	G	H
Column Name	Guidelines	Mandatory Fields	Column Description in Details	Sample Format
Country		Y	Country Code will be RW fixed for Rwanda	RW
LE_Book		Y	Legal Entity Code will be assigned by BNR for each Stakeholder	A01
Contract_ID		Y	Contract ID	8797350
Customer_ID		Y	Customer ID	969634
Vision_OUC		Y	Branch id where the Account has been opened	001
Vision_SBU	Y	Y	Account is in which Business Segment. (Example: Retails, Corporates, SME, etc.)	MEDOTHR
Start_Date		Y	Starting Date	DD-Mon-YYYY
Maturity_Date		Y	Maturity Date	DD-Mon-YYYY
Settlement_Date		Y	Date on which the obligation of the contract is due for payment or honor. (Date when the contract was settled)	DD-Mon-YYYY
Deal_Type	Y	Y	Deal Type as per guidelines	
Deal_Sub_Type	Y	Y	Deal Sub Type as per guidelines	
Interest_Rate_Method	Y	Y	Interest Rate Method	
Interest_Rate_DR		Y	Interest rate for Debit	14.5
Interest_Rate_CR		Y	Interest rate for Credit	7
APR_Rate		Y	Calculated annual percentage rate	
Contract_Application_Fee		Y	Contract Application Fees	
Contract_Administrative_Fee		Y	Annual contract maintenance/administrative charges	
Other_Contract_Charges		Y	Annual other contract charges (apart from above)	
Commissions		Y	Commissions earned on this contract	
Insured_Flag		Y	Y/N flag. If the contract is Insured	
Contract_Insurance_Charges		Y	Annual contract insurance charges	
Ins_Expiry_Date		Y	Insurance expiry date	
Currency	Y	Y	Contract Currency Code	RWF
Principal_GL		Y	Principal GL	000111
Interest_GL		Y	Interest Accrual GL	
Principal_Amount_FCY		Y	Principal Amount in Contract currency	10000000
Principal_Amount_LCY		Y	Principal Amount in Local currency	10000000
Interest_Amount_FCY		Y	Total Interest Amount in Contract currency	

SupTech solution architecture @NBR
 - referred to as Electronic Data Warehouse (EDWH)
 - has inbuilt Business Intelligence (BI) platform



Data Flow Automatic Data Flow (ADF)/Uploads Architecture & Components



Initial requirements from external stakeholders

- Name of Core System
- Other applications
- Database type
- Network type
- Dedicated focal persons (here most institutions have nominated)
- Create scripts / views to read required data from their databases, which are loaded to a staging area from which BNR pulls data

Implementation and Current Status

Implementation

- Launched in 2016 with initial stakeholder consultation (3 months)
- Piloted with 3 banks to test 'pull' functionality and architecture
- Gradually expanded to include all external stakeholders
- e-reporting regulation in place

Current Status

- Over 600 stakeholders are connected and data is pulled and/or pushed (for non automated data flow) on a daily and/or monthly basis

Challenges and Next Step

Challenges

- Data heterogeneity – addressed by “data standardization & developed data dictionary”
- Data accuracy (historical data), addressed by adding data validation rules (e.g, system rejects missing /incomplete values & data analysis
- MIS gaps- missing some important fields (e.g. gender) for KYC
- Data quality gaps at source. This requires FSPs to streamline their business processes

Work in Progress

- Data validation in progress
 - Created a new division within Statistics Dept “Data Science Division” in July 2020- to champion data analytics to complement other existing techniques
- Stakeholders to update core systems or MIS in order to capture KYC requirements
- Stakeholders to automate business processes, e.g. complaint & fraud handling and management

Thank you

What's the burning platform for the FCA?



Scale and complexity of the regulatory remit



The complexion of new entrants



Expectations

About us

We deliver analytics that helps the FCA to use its data better and provide novel and meaningful insight.



Generate new insights from data



Inform & enable decision making



Improve & optimise processes

How do we increase efficiency & generate new insights



Analyse documents & text faster



Predict Harm



Spot Outlier Firms



Analyse Criminal Networks



Build realistic synthetic data



Analyse Google results and webpages



Natural Language Processing



Machine Learning



Data Enrichment & Statistics



Graph Analytics



Agent Based Modelling



Automated Intelligence Gathering

Deep dive on core FCA SupTech tooling

The logo for WITL, featuring the letters 'WITL' in a stylized, outlined font.

Anomaly detection tool that enables access and understanding of our regulatory data, as well as providing the ability to quickly identify issues within our data, to find similarities in the behaviours of the firms, and to flag likely harms.

The logo for Sleuth, featuring the word 'Sleuth' in a white, cursive font with a yellow underline.

Both tools support analysing documents and unstructured text information, Sleuth can be used by non data analysts.

The logo for textplorer, featuring the word 'textplorer' in a purple, lowercase font with a purple underline.The logo for VECTOR, featuring a blue geometric icon followed by the word 'VECTOR' in a white, uppercase font.

Joining together data from Companies House and the FCA Register and plots the inter-relationships as a visual network map

The logo for searchLight, featuring the word 'searchLight' in a white, lowercase font with a yellow sun icon.

Automates searches and monitoring of URLs on the web, and automatically scrapes data from the resultant web pages for analysis

Want to find out more?

Francesca.hopwoodroad@fca.org.uk

**Head of RegTech & Advanced
Analytics**