

CAPCO

AUTOMATING HKMA BANKING RETURNS

A USE CASE WITH XCEPTOR



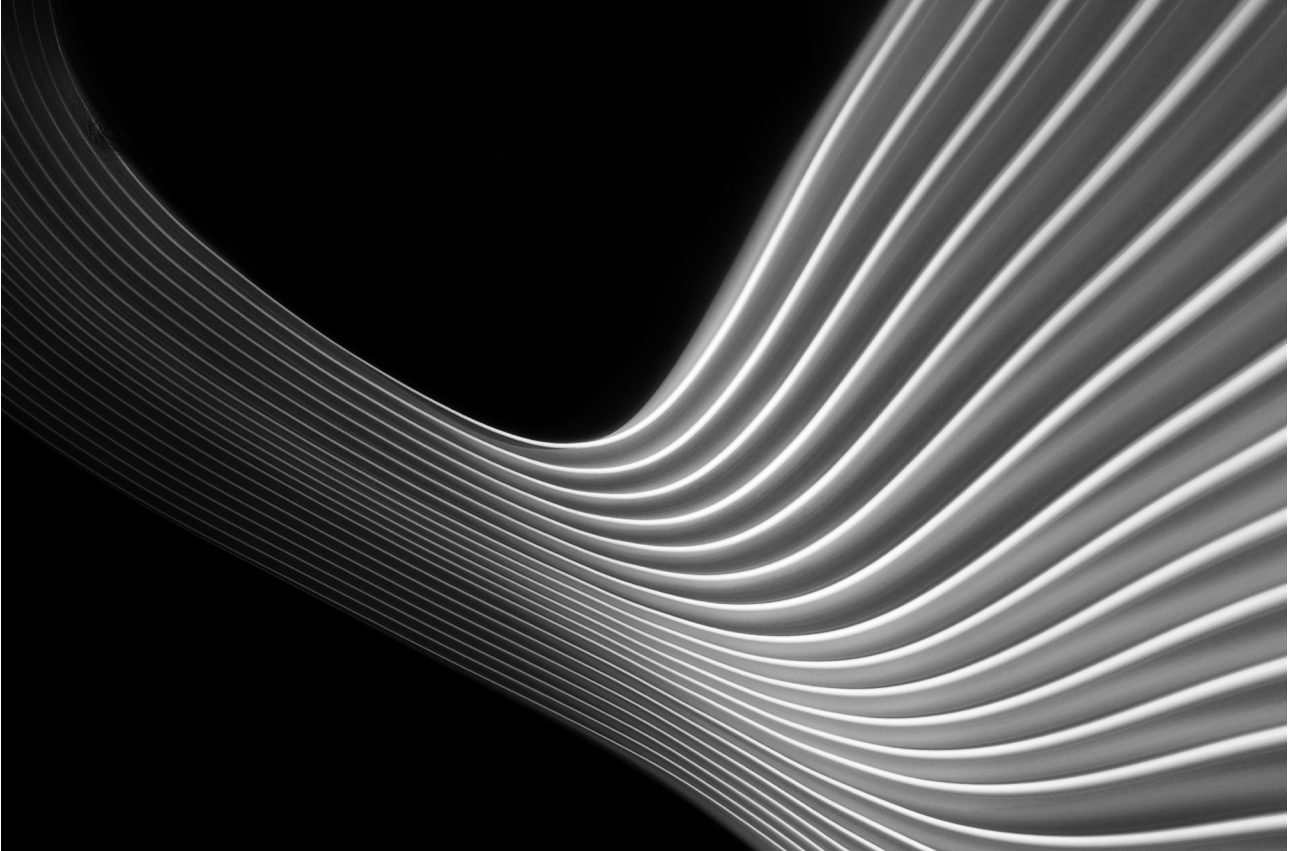
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EXECUTIVE SUMMARY

- Mandatory HKMA regulatory reporting requirements have moved towards tougher deadlines and greater granularity of reports. The new 'HKMA MA(BS) 1H' return also requires consolidation for non-bank subsidiaries, including companies without prior experience of HKMA-related returns.
- The key challenges to the timely completion of HKMA returns are manual adjustments, complex approval processes, the volume of data, and running complex sets of interlinked finance systems with onerous batch-running procedures – all of which also create substantial operational risk.
- The way forward is to systematize and automate more procedures using new technologies, with the end goal of building a much more automated cloud-based reporting process.
- A key component of this strategy is Xceptor, a no-code data automation platform that empowers financial institutions to build automated processes that deliver trusted data. As we describe, it can speed up reporting today while helping to prepare and aggregate datasets for future cloud-based implementation.



MANDATORY REGULATORY REPORTS IN HONG KONG

HKMA BANKING RETURNS – KEY CHALLENGES AND SOLUTIONS

The Hong Kong Monetary Authority (HKMA) requires a series of financial disclosures for Authorized Institutions (AIs) in Hong Kong and ensures that the disclosures are in line with other leading financial centers. These disclosure standards, which cover key financial returns such as the bank's capital adequacy ratio and large exposures, provide visibility on the financial health of AIs and allow the HKMA to identify systemic risks. More detailed requirements apply to locally incorporated AIs versus overseas incorporated AIs.

The increasingly complex economic environment has highlighted the importance of collecting this regulatory data in a more timely, comprehensive and granular manner, leading the HKMA to revise its requirements, as detailed below. However, the timely completion of HKMA returns is now a major challenge to banks, given that existing approaches involve a high number of manual adjustments, complex approval processes, and running complex sets of interlinked finance systems with onerous batch-running procedures – issues that also create substantial operational risks.

The way forward is to systematize and automate more procedures using new technologies, with the end goal of building a much more automated cloud-based process to prepare these regulatory disclosures. In this paper, we introduce a building block in that journey: Xceptor, a BFSI specialist, no-code, process and dataflow automation platform. We set out a use case to show how Xceptor can speed up reporting today, while also helping to prepare and aggregate datasets for future cloud-based implementation.

THE REPORTING CHANGES AND KEY AI IMPLICATIONS

Reporting submission timelines shortened from 6 weeks to 4 weeks

The deadline for quarterly submissions has been altered from six weeks after each quarter end to four weeks after each quarter end, starting from the reporting position as of March 2022.

Frequency	Return	Name of Banking Returns	Original deadline	New deadline
Monthly	MA(BS)1B	Return of Assets and Liabilities [@]	6 weeks	4 weeks
Quarterly	MA(BS)1C	Return of Current Year's Profit and Loss Account [@]	6 weeks	4 weeks
Quarterly	MA(BS)1H	Return of Consolidated Accounts ^{\$}	6 weeks	4 weeks ^{&}
Quarterly	MA(BS)2A	Loans and Advances and Provisions [@]	6 weeks	4 weeks
Quarterly	MA(BS)3	Capital Adequacy Ratio ^{@\$}	6 weeks	4 weeks
Quarterly	MA(BS)20	Return of Mainland Activities ^{^+}	6 weeks	4 weeks
Quarterly	MA(BS)23	Return of Liquidity Monitoring Tools ^{US^}	6 weeks	4 weeks
Quarterly	MA(BS)26	Return of Stable Funding Position of an Authorized Institution ^{US}	6 weeks	4 weeks
Quarterly	MA(BS)28	Return of Large Exposures ^{@#\$}	6 weeks	4 weeks

@ - Combined

- Solo

U – Unconsolidated

\$ - Consolidated

^ - HK offices

+ - Mainland branches and Mainland subsidiary banks

& - Starting from the reporting position as of December 2022

Sources: <https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2020/20201116e1.pdf>; <https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2020/20201116e1a5.pdf>

Als must adhere to the new submission timeline since it is a statutory requirement. In the short term, this has intensified the workload for AI's HKMA reporting teams. Longer term, the accelerated deadlines can be regarded as a useful catalyst for making the whole report production process more efficient through enhancing systems and processes and, eventually, moving to the complete automation of the reporting process.

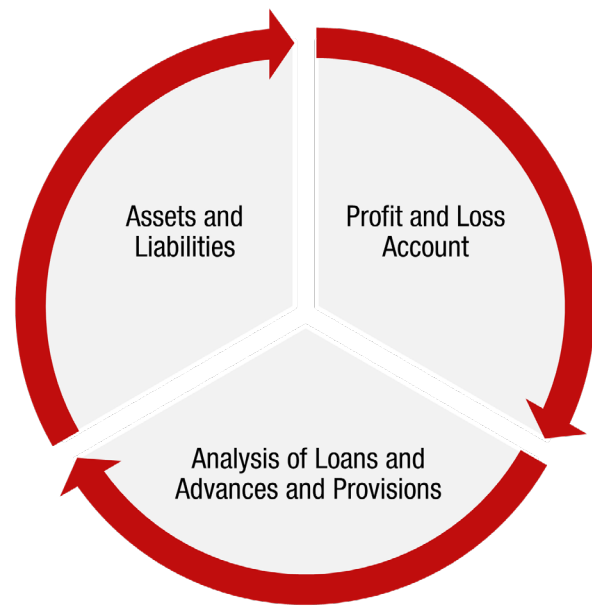
This is not just a matter of efficiency. Banks need to meet the deadlines or risk intense regulatory scrutiny, fines, and even suspension or revocation of their license as an authorized institution:

- **Non-compliance:** The AI concerned, should provide details of the non-compliance case, including its plan to rectify the situation. A full account should be given if the instance of non-compliance is a recurrence of similar instances.
- **On site examination:** This can range from an investigation of specific areas to a comprehensive review of an institution's operations. It provides regulators with an opportunity to assess how an institution is managed and controlled.
- **Fine:** Contravention can amount to an offence on the part of the directors, chief executive and responsible managers of the AI concerned. If necessary, the HKMA may commission an auditor's report under section 59(2) of the Banking Ordinance on the adequacy of the AI's internal systems and processes for the purpose of enabling the AI to comply with its duties.
- **Suspension or revocation of AI license:** Under the Banking Ordinance, the HKMA is responsible for the authorization of Als as well as suspension and revocation of such authorization.

Expansion of scope and more granular data fields requirement by HKMA

HKMA recently issued the new return 'MA(BS) 1H Return of Consolidated Accounts', which requires Als to report more granular data fields for loans and advances. In addition, the scope of the return is extended to all branches, banking subsidiaries and non-bank subsidiaries. Non-bank subsidiaries were not included in previous HKMA requirements so, for them, this is an entirely new requirement.

The purpose of the changes is to enable HKMA to monitor Als in a more holistic manner, given their increasingly complex operations. However, the result is that each AI is having to find a way to consolidate multiple data sources from different branches and subsidiaries.



Components of MA(BS) 1H Return of Consolidated Accounts

Challenges of scope expansion

Consolidation for non-bank subsidiaries, e.g. insurance companies or securities firms, can be a major challenge because those companies do not process HKMA returns as they are not subject to banking regulations. In addition, a handful of the local incorporated banks required to submit the new MA(BS) 1H return are Hong Kong incorporated banks with overseas branches, banks and non-bank subsidiaries.

HKMA is likely to increase the granularity of regulatory reports. At present, it is running a Granular Data Reporting (GDR) project that requires selected banks to provide more than 160 corporate loan data fields and more than 200 mortgage loan data fields to HKMA so they can be analyzed and monitored.

Currently, only these selected banks are required to submit data on a broad reporting data grid. However, once the GDR project and new MA(BS)1H return are both running smoothly, there is a high chance that HKMA will expand the scope to all banks and possibly to non-bank subsidiaries.

Risk of providing granular data

Non-bank subsidiaries, and some AIs, lack a centralized platform for data aggregation from various data sources. This makes providing a granular dataset challenging, with each data feed potentially not pulling data out accurately and completely. This could lead to a high risk of missing some of the required data entries or generating an outdated dataset.

To provide consistent, accurate and complete returns, AIs need to act as a gatekeeper to monitor the consolidation processes and the source of the data; they need to provide the data aggregation logic and offer a centralized repository with a control function for consolidated data. The data repository has to be easy to manage, run on a real-time basis and have certain

security controls to provide a reasonable assurance of report accuracy and completeness.

For the purpose of compiling the new return, AIs will have agreed some assumptions with the HKMA with regards to their own specific challenges and limitations. If AIs make their own judgement on particular fields, a communication log should be kept as evidence for HKMA review purposes.

Enormous dataset and long system processing time

One additional challenge facing AIs is that the datasets required for reporting HKMA returns are huge and demand lengthy system processing times. The root cause of the lengthy system processing time is the complexity of sourcing the data from multiple systems without a clear, standardized data management and aggregation framework.

Manual consolidation approach and approval process

Regulatory reporting generally requires layers of data consolidation, adjustments and approval processes that are predominantly manual with lengthy trails. The process is prone to errors and operational risks, resulting from the high degree of manual work. It also diverts time and resources away from operations.

The multiple manual adjustments are often related to poor data quality and to data not being captured in real time, which necessitates detailed manual checking and verification. Without a centralized database and data aggregation tool, the AI dataset portfolio is scattered across different systems, requiring manual consolidations and then further integration into HKMA return templates.

SOLVING THE CHALLENGE OF REGULATORY REPORTING

SOLUTIONS PRIOR TO ADOPTING CLOUD-BASED REGTECH

The key challenges arising from HKMA's regulatory changes are to improve the speed and quality of reporting, and to assimilate more information from different sources. Als are therefore looking for efficient ways to increase data accessibility and to improve data digitalization and aggregation.

One possible solution is to adopt a cloud-based solution and, indeed, HKMA has already released guidelines with regards to the cloud-based regulatory technology solutions that might be implemented in the future. However, Als have the following concerns:

1. How to guarantee the security of client-sensitive information handled by vendors
2. How to extract data from various manual processes
3. Digitalizing paper-based information takes time and resources
4. Some data has not been captured before

Given these practical issues, we think that certain new technologies can provide a useful first step towards a fully cloud-based solution, and one that can be implemented without delay. A good example of this new technology is a data automation platform called Xceptor.

XCEPTOR

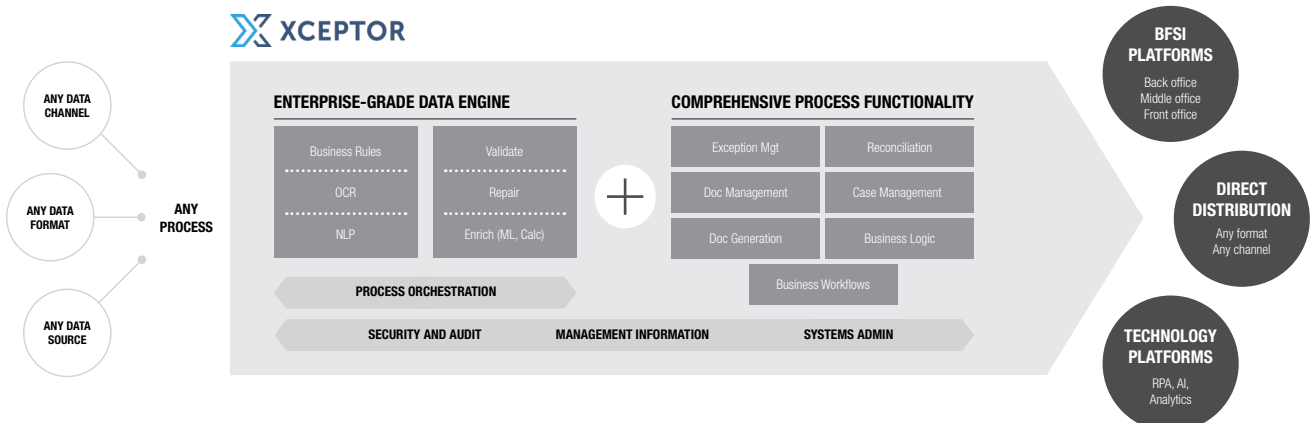
What is Xceptor?

Xceptor empowers financial institutions to build automated processes that deliver trusted data. Xceptor delivers no-code data automation software across the enterprise, facilitating data ingestion, data transformation and process digitization. Xceptor's platform automates dataflows and handles any data and document type, in any format, from any channel and has the power to automate even the most complex processes, end-to-end.

The Xceptor platform empowers institutions to automate a broad scope of processes across the enterprise using just one platform. Business users can easily and quickly self-configure processes as and when needed, ensuring clients are supported in their ability to build agile businesses.

At its core sits an enterprise data engine supported by comprehensive process functionality. All of this has a wrapper of process orchestration, security and audit, Management Information (MI) and systems admin.

Xceptor can be put to work with various technology platforms and solutions that include regulatory reporting systems, Robotic Process Automation (RPA) and AI analytics. These various capabilities mean that it can help to automatically generate regulatory returns by bringing together data from many sources and synchronizing with the bank's regulatory reporting system.



How Xceptor helps with regulatory reporting

In particular, Xceptor can help those responsible for regulatory reporting to reduce the number of manual adjustments. Manual adjustments often have to be executed when there is a change in client information, such as domiciled country or place of residence, because the underlying systems from which the information is drawn are not updated in real time and not consolidated. That kind of client information can be updated using, for example, the following means:

1. Email update from relationship manager/customer service desks
2. Confirmation letter or term sheet from operations
3. External database/files from external parties or subsidiaries

However, making manual data adjustments based on this new information is very time consuming and difficult to handle – it often lacks a standardized practice and incurs a high level of operational risk. As regulatory reporting grows in size and complexity, repeated manual adjustments are consuming more time, cost, and resources.

In particular, the faster, more granular and more complex data aggregation processes required by the HKMA are leading banks to look for tools to digitalize paper-based reports and aggregate selected external data sources into a centralized database that can support better data management and report automation.

This is where Xceptor comes in. Within a single tool, Xceptor offers data digitalization, data aggregation, and report automation functions that can streamline the whole regulatory report production process. Better still, the tool is highly extensible to existing systems and platforms, offering direct distribution to any format or channel.

The broad scope of processes Xceptor can handle ranges from simple processes such as basic data transformation, to complex business solutions such as multi-way regulations with unstructured document ingestion, matching and human-in-the-loop. It also offers a depth of process digitization capabilities in a single, common platform.

Importantly, Xceptor can help AIs to prepare and aggregate their reporting datasets in ways that will make it much easier to implement cloud-based solutions further into the future.

Use case: CAPCO-XCEPTOR data aggregation and report automation

One key type of information required when compiling regulatory reports concerns client loan facilities. In corporate banking, relationship managers conduct an annual facility review process in which they check if clients require higher or lower facility usage, or any additional products, and gather loan collateral information and so on.

It's essential that regulatory returns are updated accordingly so that they reflect the actual portfolio and the bank's financial position. However, systems occasionally fail to capture the updated client information for the following reasons:

1. Data is not synchronized in real time between various sourcing systems and the regulatory reporting system.
2. Data input is delayed by the bank's back office or by deferred notification from the front office.
3. Poor data quality control by various source systems.

In the following use case, we demonstrate how Xceptor can help to automate various processes underlying a bank's monthly HKMA regulatory returns reporting, including data aggregation, data monitoring, change assessment and data transformation.

Production of monthly HKMA return

During the preparation of HKMA monthly returns, the updated client portfolio data needs to be consolidated from different source systems run by business units including core banking, sales and trading, and settlement systems. Making use of this scattered data requires the regulatory reporting team to combine, analyze and reconcile data with other accounting reports from different sources, e.g. general ledger and trial balance.

At present, client information is usually captured manually and confirmed by an email or confirmation letter from the relationship manager – a process that can be prone to error.

By contrast, Xceptor can be used to automatically collect, consolidate, amend, and export this loan data. Once accurate upstream client data is aggregated into Xceptor, it can be exported to regulatory reporting systems, and the regulatory returns can be generated without further manual adjustments.

Before collecting data, Xceptor compares the client data in various systems using a pre-defined business logic to uncover different versions of the information. After that, it initiates a confirmation email via Outlook to the relationship manager using a standard template. After the response is received from the relationship manager, the email content or attached documents are automatically screened using an optical character recognition (OCR) module.

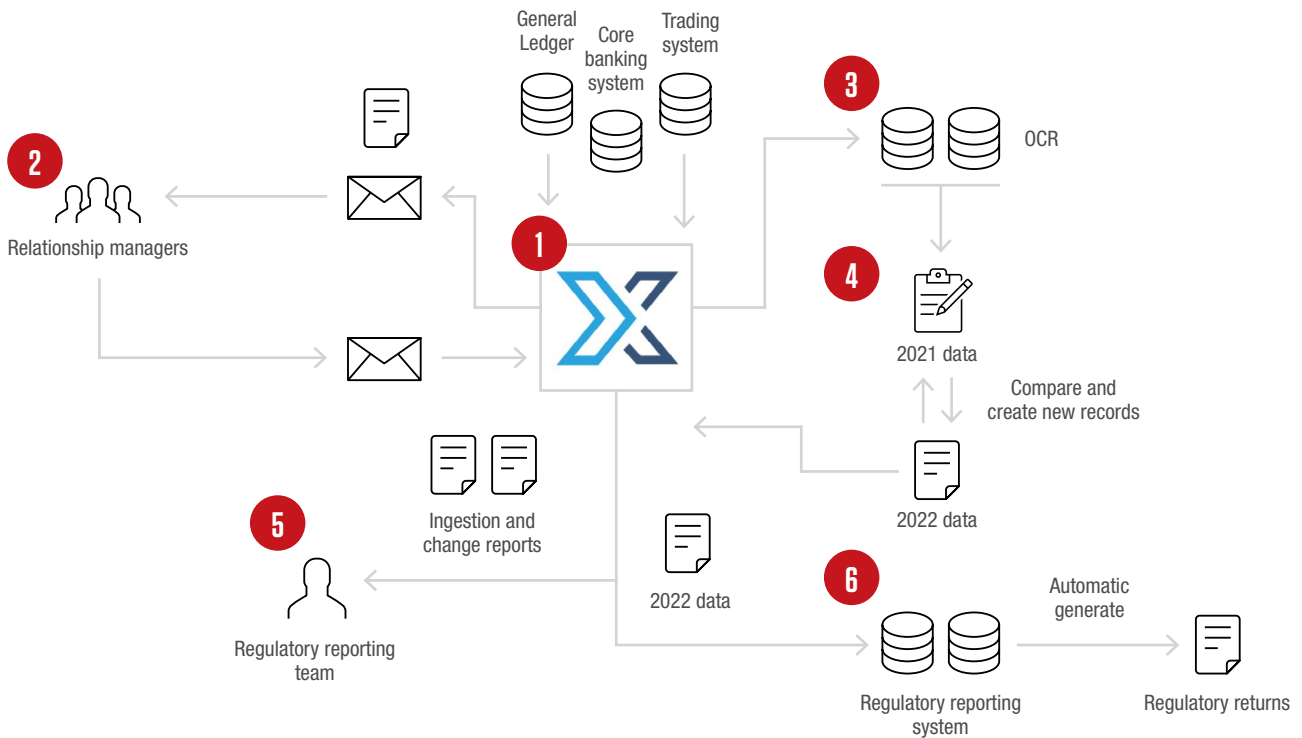
Xceptor then generates a data ingestion report to the regulatory reporting team to approve the data amendment. After approval,

the newly created portfolio data can be exported to the regulatory reporting systems. Finally, the regulatory reporting system can generate the returns automatically.

In the case of HKMA returns that require client data from external data sources, e.g. consolidated positions from subsidiaries, Xceptor can collect, consolidate and update the various client portfolio datasets, either by automatically sending an external email request to subsidiaries or by using manually imported data sources with flexible formats, e.g. Excel spreadsheet, csv files or Access database format.

The diagram below summarizes how the Xceptor platform's multiple capabilities can improve the end-to-end process of collecting, evaluating, and processing client data.

Xceptor automates the collection, evaluation, and processing of client data



- 1 Xceptor gathers data from the general ledger, core banking system and trading system and then sends a request to the relationship manager for up-to-date loan information
- 2 The relationship manager sends back an email and attached documents
- 3 Xceptor's optical character recognition (OCR) module automatically scans and extracts information from the documents
- 4 Xceptor compares the information from the relationship manager with last year's loan information to create a change report for regulatory reporting
- 5 A data ingestion report and change report are presented to the regulatory reporting team for approval
- 6 Subject to approval, the newly created portfolio data is aggregated and output to downstream systems that feed into an automated regulatory returns process

A key benefit of the Xceptor platform is that it automates the comparison of information from various source systems to increase the speed and accuracy of information about client facilities. Any material discrepancies are surfaced to the regulatory reporting team, saving review time by focusing attention only on the key reconciliation issues. In the same way, Xceptor's platform can help consolidate financial positions from different subsidiaries for reporting purposes.

The combination of Xceptor's data automation and OCR capability can help strengthen reporting in various other ways including:

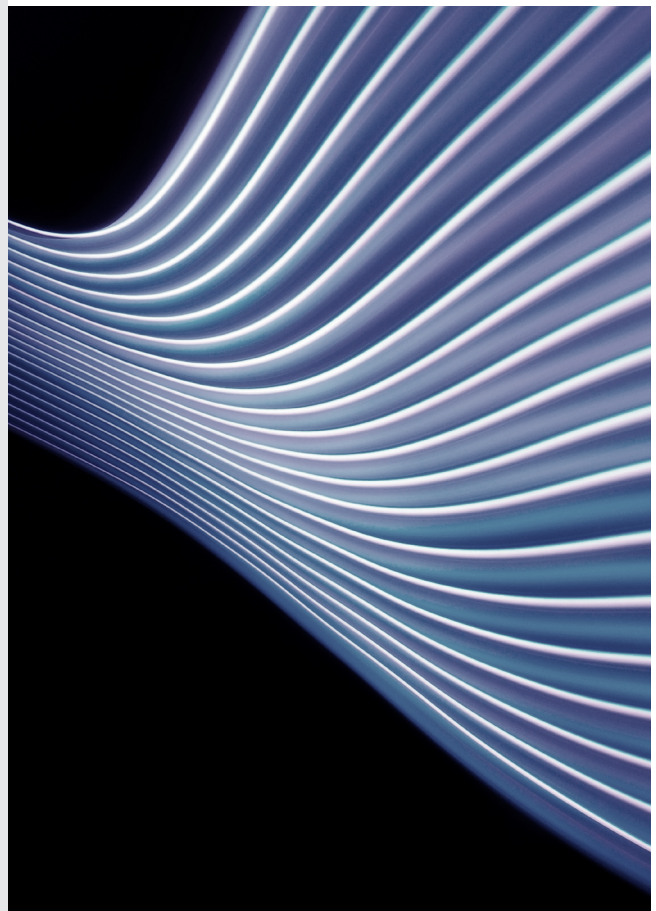
- Automated validation of whether client documents are complete, with no missing fields
- Key word and phrase scanning: automated identification of required data fields, significant amended items
- Identify negative or missing answers for mandatory criteria.

Xceptor's OCR scanning and ability to output to any format means that any extracted data can be automatically transformed into other downstream systems or types of internal document for onward processing. For example, a recent change to the client's name or address can be automatically forwarded to the front office and to the regulatory reporting team.

CONCLUSION

Als need to improve regulatory reporting and to leverage automation across their production of regulatory returns. It is unlikely that any single solution will solve all the issues. Instead, Als will need to consider several approaches in combination.

As a centralized platform for data aggregation and process automation, Xceptor plays a key role in addressing this challenge. Xceptor's platform offers a powerful option for speeding up and improving many parts of the end-to-end regulatory reporting process. In particular, it can automate task initiation and connect different source systems by ingesting upstream output, and then structuring this data so that it can be used by downstream automated regulatory reporting systems. It presents a route for automating dataflows, enabling financial institutions to build automated processes that deliver trusted data, repeatedly.



APPENDIX 1

List of HKMA Returns:

Frequency	Return	Name of Banking Returns
Monthly	MA(BS)1, 1A, 1B	Return of Assets and Liabilities
Quarterly	MA(BS)1C	Return of Current Year's Profit and Loss Account
Quarterly	MA(BS)1F (a)&(b)	Certificate of Compliance
Quarterly	MA(BS)1H	Return of Consolidated Accounts
Quarterly	MA(BS)2A	Loans and Advances and Provisions
Quarterly	MA(BS)3	Capital Adequacy Ratio
Monthly	MA(BS)6	Foreign Currency Position
Monthly	MA(BS)11	Hong Kong Dollars Interbank Transactions
Quarterly	MA(BS)12	Interest Rate Risk Exposures (For IRRBB-exempted Als)
Quarterly	MA(BS)12A	Interest Rate Risk in the Banking Book (For IRRBB-reporting Als)
Half yearly	MA(BS)13	Mandatory Provident Fund Related Activities
Half yearly	MA(BS)14	Securities Related Activities
Half yearly	MA(BS)15	Insurance Related Activities
Monthly	MA(BS)16	Return of Renminbi (RMB) Business Activities
Quarterly	MA(BS)18	Return on Selected Data for Liquidity Stress-testing
Quarterly	MA(BS)20	Return of Mainland Activities
Quarterly	MA(BS)21	Return of International Banking Statistics
Monthly	MA(BS)22	Return on Intraday Liquidity Position of an Authorized Institution
Quarterly	MA(BS)23	Return on Liquidity Monitoring Tools
Yearly	MA(BS)24	Return of Information for Assessment of Systemically Important Authorized Institutions
Quarterly	MA(BS)25	Quarterly Reporting on the Countercyclical Capital Buffer (CCyB)
Quarterly	MA(BS)26	Return of Stable Funding Position of an Authorized Institution
Quarterly	MA(BS)27	Return of Leverage Ratio
Quarterly	MA(BS)28	Return of Large Exposures

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ABOUT CAPCO

Capco, a Wipro company, is a global technology and management consultancy specializing in driving digital transformation in the financial services industry. With a growing client portfolio comprising of over 100 global organizations, Capco operates at the intersection of business and technology by combining innovative thinking with unrivalled industry knowledge to deliver end-to-end data-driven solutions and fast-track digital initiatives for banking and payments, capital markets, wealth and asset management, insurance, and the energy sector. Capco's cutting-edge ingenuity is brought to life through its Innovation Labs and award-winning Be Yourself At Work culture and diverse talent.

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