Efficiency of the payment ecosystem

Challenges, trends and solutions to streamline the payments ecosystem

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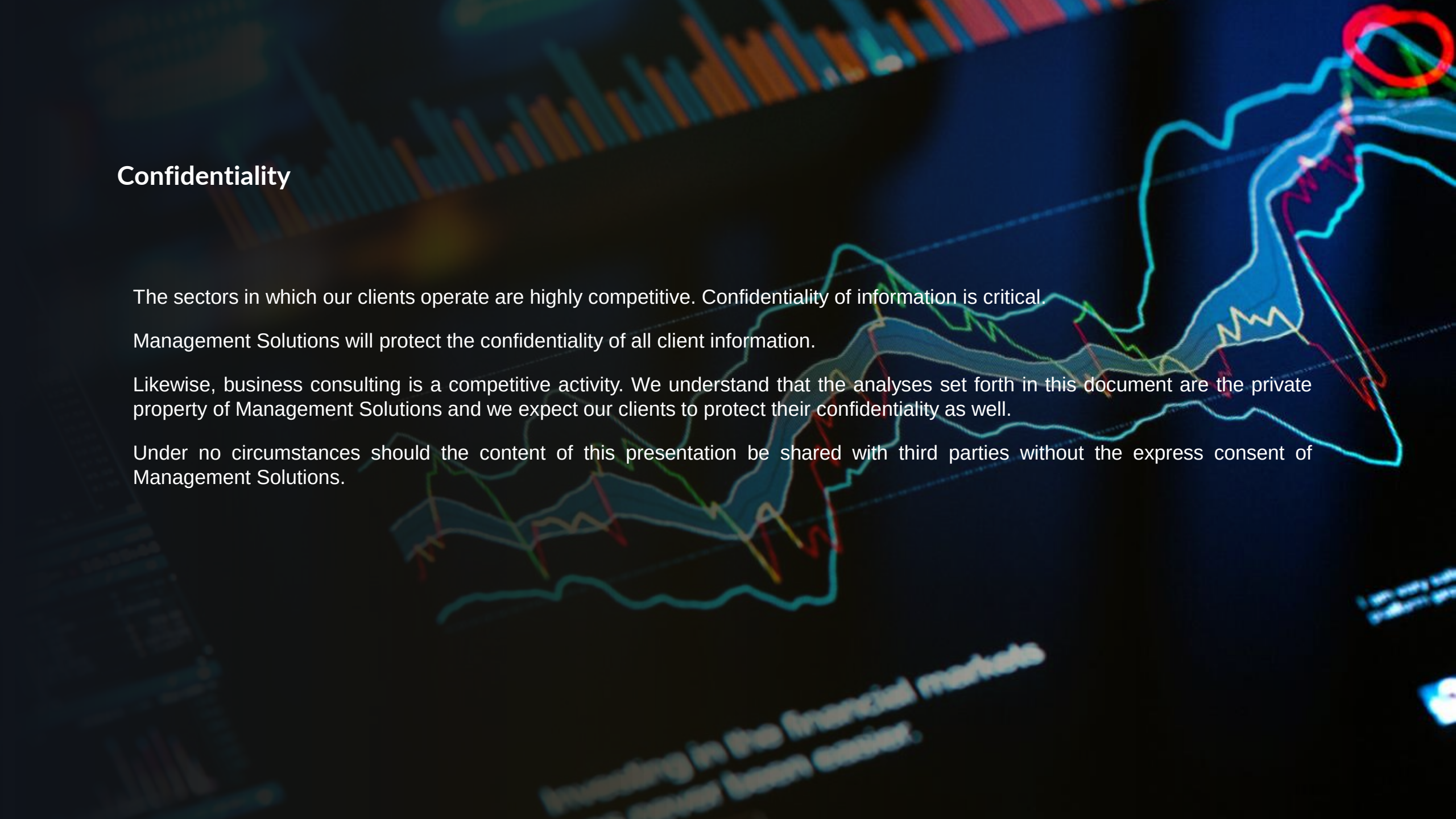

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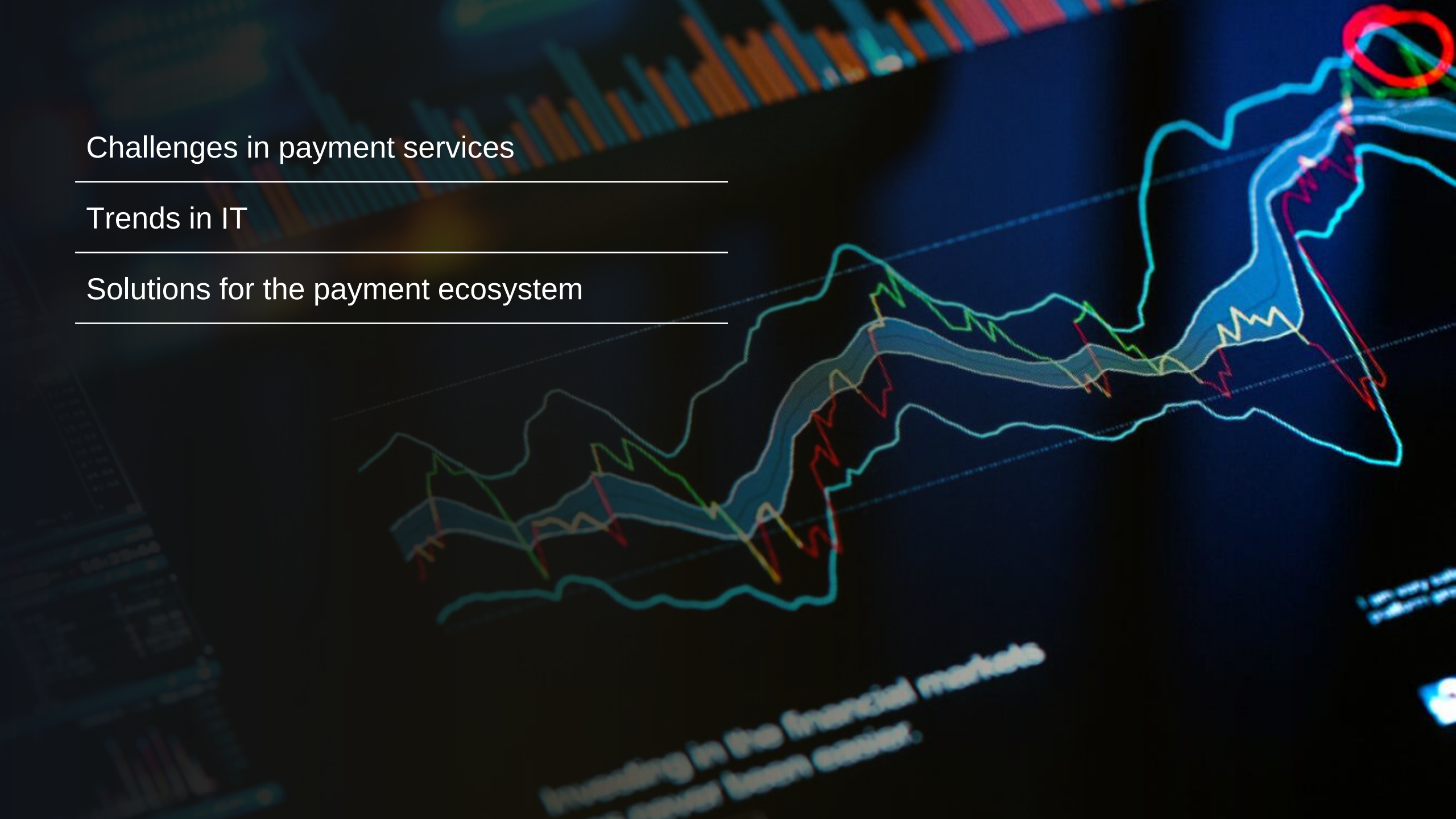
Challenges in payment services
Trends in IT
Solutions for the payment ecosystem

Challenge in payment services

The provision of payment services, the foundation on which the exchange of monetary flows in our financial system is based, is subject to continuous transformation as it develops in a highly demanding competitive environment.

More sophisticated and digital customers

- Demand for **efficiency and excellence** in customer service
- They demand access to a **greater variety** of products and services.
- Demand for **specialized products** and **homogeneous service**
- Increase in the sophistication of clients exporting their goods and, consequently, in the demand for **information** they require.

Boosting "globalization

- Joint actions of several players through **partnerships** to reduce risk, share knowledge and profits.
- Promotion of **supranational institutions**, such as ICC, which seek to define standard models for the development of the sector.
- Requirement, with new regulatory guidelines, for cost **transparency**, open data and cross-platform integrations.

A market with low margins and new players

- Tightening of margins, forcing the evolution to volume/scale (flow) or
  volume/scale (flow) or niche/specialist (sophistication) **models. niche/specialist** (sophistication).
- Pressure to **reduce time-to-market and costs**.
- Emergence of **fintechs** to occupy market niches that also generate opportunities for more traditional businesses.

New technologies for the development of the sector

- Focus on facilitating user processes with easy-to-use **interfaces. easy-to-use interfaces.**
- Need to use the **new IT capabilities** that exist in the market: *data storage*, Big Data, lower cost modeling, etc.
- Need to **modernize** Front-to-Back system **infrastructures** that are proving obsolete, inflexible and restrictive to growth
- Process certification using **blockchain, AI** techniques for credit risk management and process automation.

Changing competitive environment

Focus on customer experience

Growth Online payments

New products and services

Consistency in the business model

New integrated platforms

Information control models

Regulatory impact high

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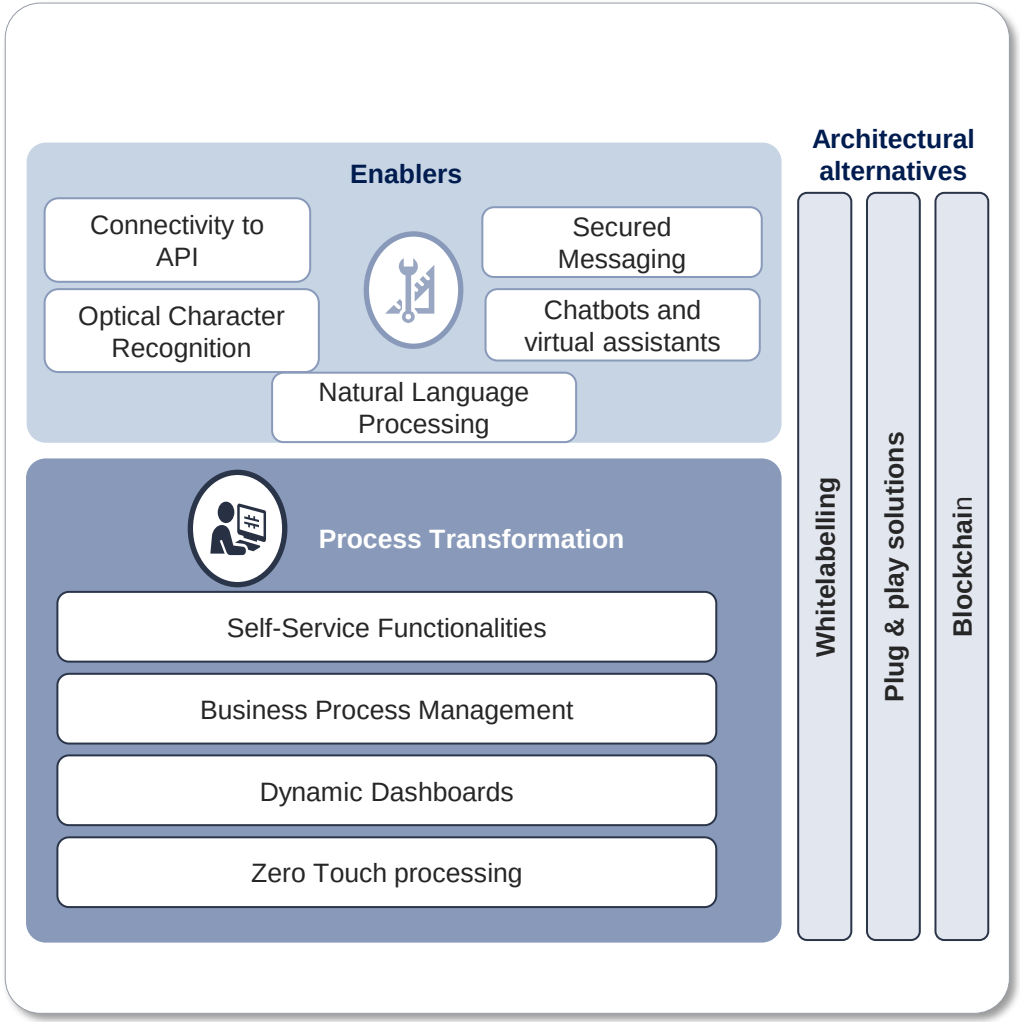
Trends in IT

Where digital transformation becomes a must.



ENABLERS:

- **Connectivity to API:** APIs allow the bank's systems to connect to external data sources to retrieve customer data that can be used to obtain reliable information and speed up processes.
- **Secured messaging: secure** messaging improves the exchange of information and data between banks and their customers to prevent data breaches.
- **Optical Character Recognition (OCR):** enables computers to understand documents, text and web pages and extract valuable information that can be used to automate data entry.
- **Chatbots & virtual assistants:** chatbots are an automated technology to interact with users by answering their queries in a very specific and structured way. Virtual assistants are more sophisticated and personalized, applying predictive intelligence and data analytics to enable personalization based on user profiles and previous behavior.
- **Natural Language Processing (NLP)**: analyzes the transcribed text of a conversation or audio recording. It allows streamlining processes, reducing costs and obtaining practical information.

PROCESS TRANSFORMATION:

- **Self-Service functionalities:** allow manual and repetitive tasks to be automated without the need for human intervention, allowing them to be completed more efficiently and cost-effectively.
- **Business Process Management (BPM):** enables organizations to connect people and applications to improve business processes.
- **Dynamic dashboards:** allow users to access real-time data, present it in customizable and visually appealing graphs/charts.
- **Zero Touch processing: it** is based on automating the processes in a complete way, so that it is an integral "touchless" process, totally digital.

ARCHITECTURAL ALTERNATIVES:

- **Whitelabelling:** these are in-house platforms that include key functionalities, to be subsequently offered as a service to other entities.
- **Plug & play solutions:** outsourced solutions that can be integrated into the enterprise architecture.
- **Blockchain:** this blockchain technology allows the creation of smart contracts that can be used to automate the execution of an agreement when previously defined conditions are met.

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Solutions to streamline the payments ecosystem

And different solutions are emerging to make the payment ecosystem more efficient and controllable.

Virtual Accounts

A method of organizing balances and transactional information within a traditional "physical" bank account by seeking the proactive creation by the bank's customers - self-service model - of a hierarchical structure of virtual accounts that route any payments or collections to the main physical account.

Real time payments and Transactional FX

Traditional banking is progressively incorporating solutions for the digital management of payments and collections, adopting more secure and scalable standards.

Payment Hub

Evolve from an "island" model in which correspondent banks participate in all transactions to a collaborative model.

Integral platforms

The different payment service players are increasingly focused on delivering value to their customers through the personalization of their offerings, feedback-based methodologies and end-to-end platforms.

05 **Control Framework**

06 **International networks (Swift)**

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Virtual accounts

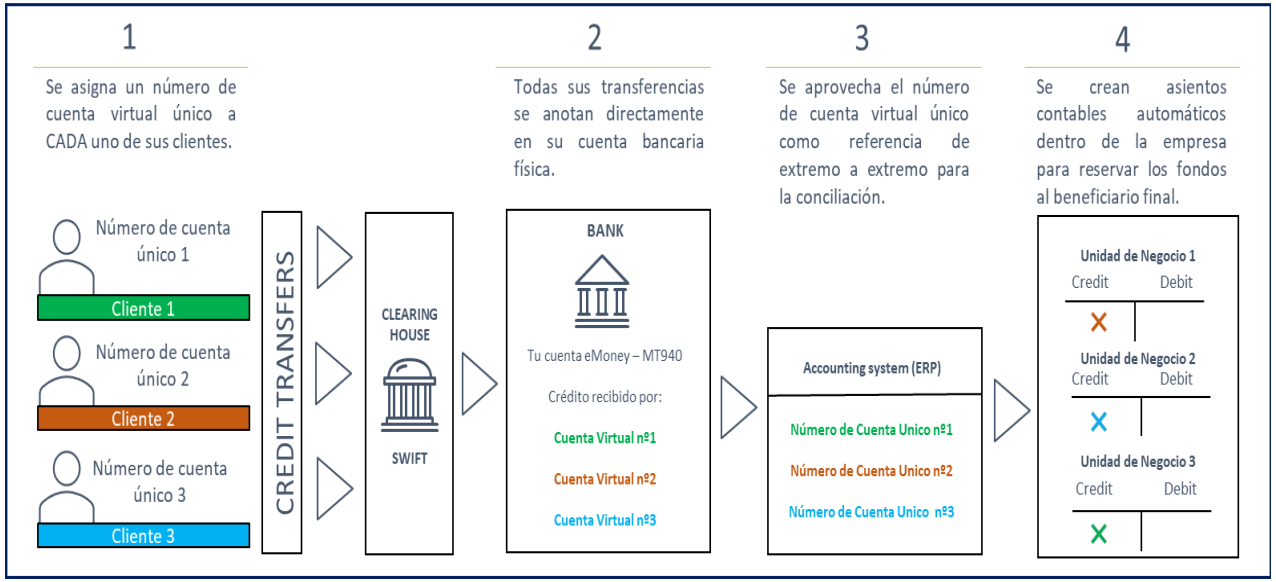
Virtual account management is the method of organizing balances and transactional information within a traditional "physical" bank account by seeking the proactive creation by the bank's customers - self-service model - of a hierarchical structure of virtual accounts that route any payments or collections to the main physical account.

What is virtual account management (VAM)?

A method of organizing transactional information within traditional "physical" bank accounts under a single centralized bank account, while maintaining the visibility and reporting necessary to facilitate reconciliation and internal accounting.

How does VAM (Virtual Account Management) work?

- All funds are paid into the **physical bank account** and the money is allocated to different **virtual accounts associated** with the main account. Each virtual account has its own **unique reference number** that will specify the virtual account to which the payment should be allocated.
- It is an **automated process**, as the payment reference specifies the virtual account to which the payment should be assigned. For each virtual account, an opening and closing balance is calculated, which gives them the **granularity of** physical account **information**, but within a virtual account.



https://cashmanagement.bnpparibas.com/_webdata/solution-brochure/pcard_virtual_account_dec_2015_v1.pdf

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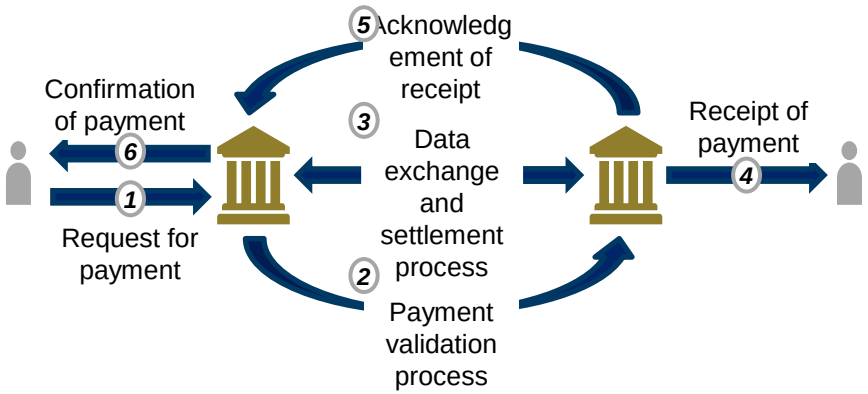
Real time payments and Transactional FX

Payment service providers are progressively incorporating solutions for the digital management of payments and collections, adopting more secure and scalable standards.

Real Time Payments

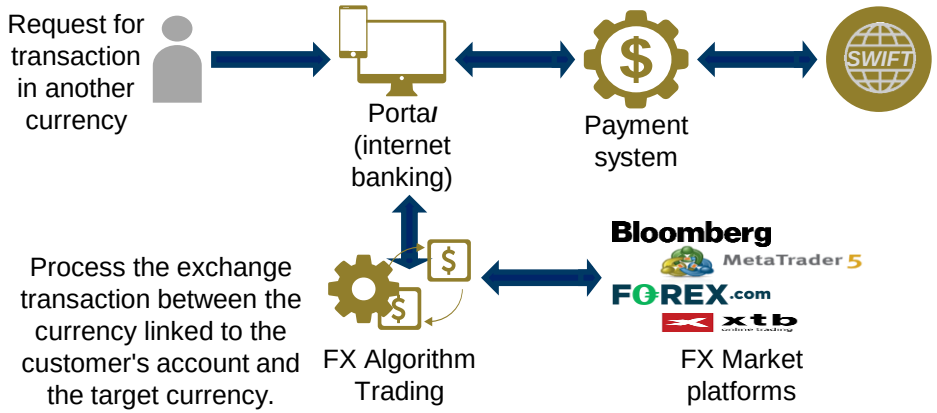
- **Real Time Payments** is a technological solution that processes **the payment, sends the confirmation and credits the funds to the recipient in seconds.**
- **Transactions** through the RTP solution are **irreversible**, so institutions must optimize security, fraud and ALM controls, as well as technological incident management and liquidity management procedures to **control this operation in real time.**
- Some examples of these solutions are: Faster Payment Service (FPS) in UK, Real Time Payments (RTP) in US or Instant Credit Transfer (SCT Inst) in Spain.

General end-to-end process



Transactional FX

- Transactional FX allows institutions to **offer a market price for an FX** to their customers, when they want to make **a payment in a different currency, through** their web portal via a single request or bulk payment files.
- The FX price offered to the client is competitive because the bank uses an **online pricing tool**, which is **connected to market platforms and contracts an FX at market price at the moment the** payment is made.



AI trading

- The maturity achieved by **artificial intelligence technologies** makes it possible to **apply these techniques to trading financial products to** gain competitive advantages, minimize operational risk and comply with regulations.

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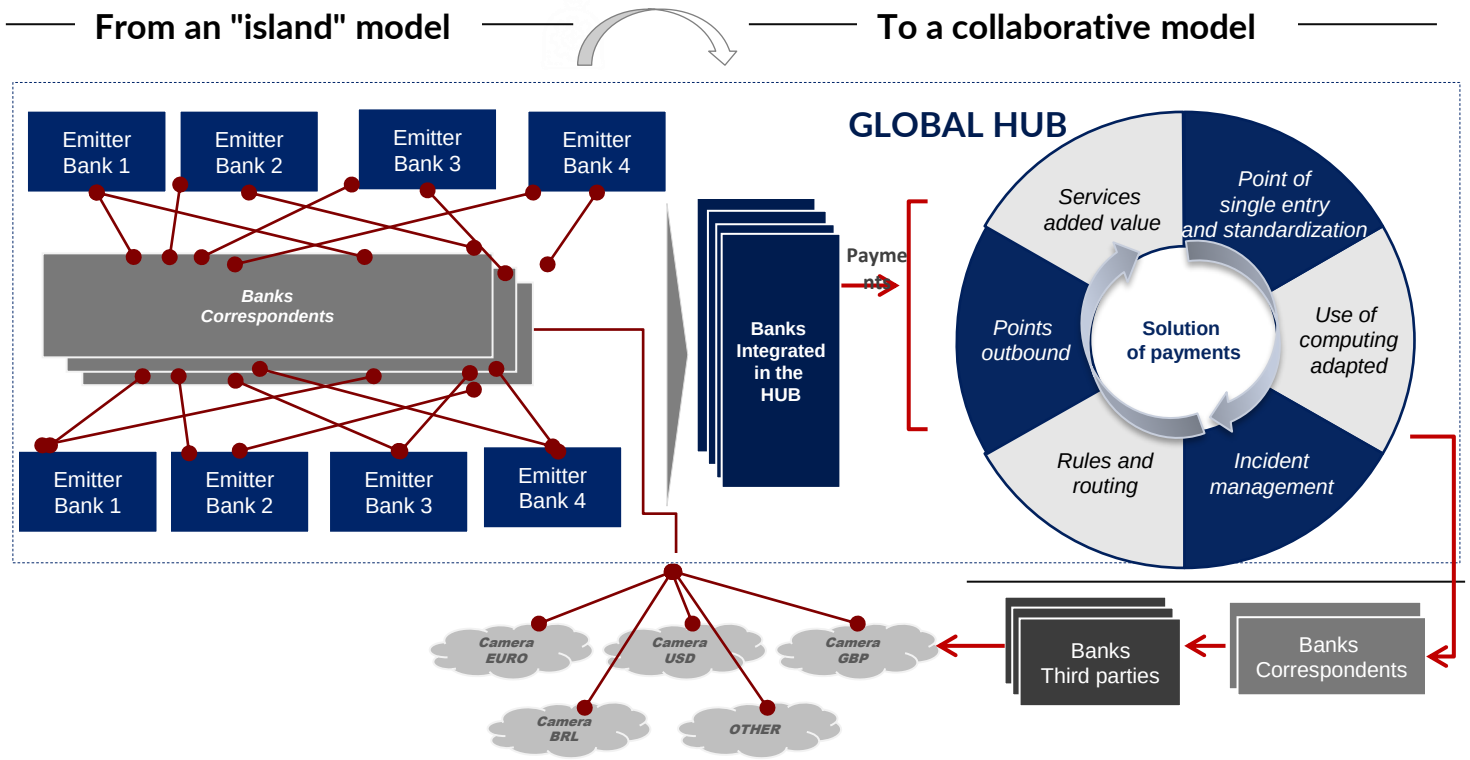
Payments Hub

Evolve from an "island" model in which correspondent banks participate in all transactions to a collaborative model.

Payments HUB

- The collaborative model involves:
  - New value-added services: artificial intelligence, fraud detection, back-office tasks, etc.
  - Payment instructions are received through APIs or files of different formats and are transformed into a standard format.
  - Cloud consumption adapts to the volume of payments in real time.
  - If validations or automatic correction rules fail, the instructions are processed in an issue handler (which may include a self-learning repair module).
  - Application of commercial rules per customer and routing of payments to the destination for each one (clearing house, correspondent, book entry...).
  - The solution is directly connected to the different networks for sending and receiving payment instructions (SEPA, CHAPS, TARGET, SWIFT,...) and complies with ISO 20020.



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Integral platforms

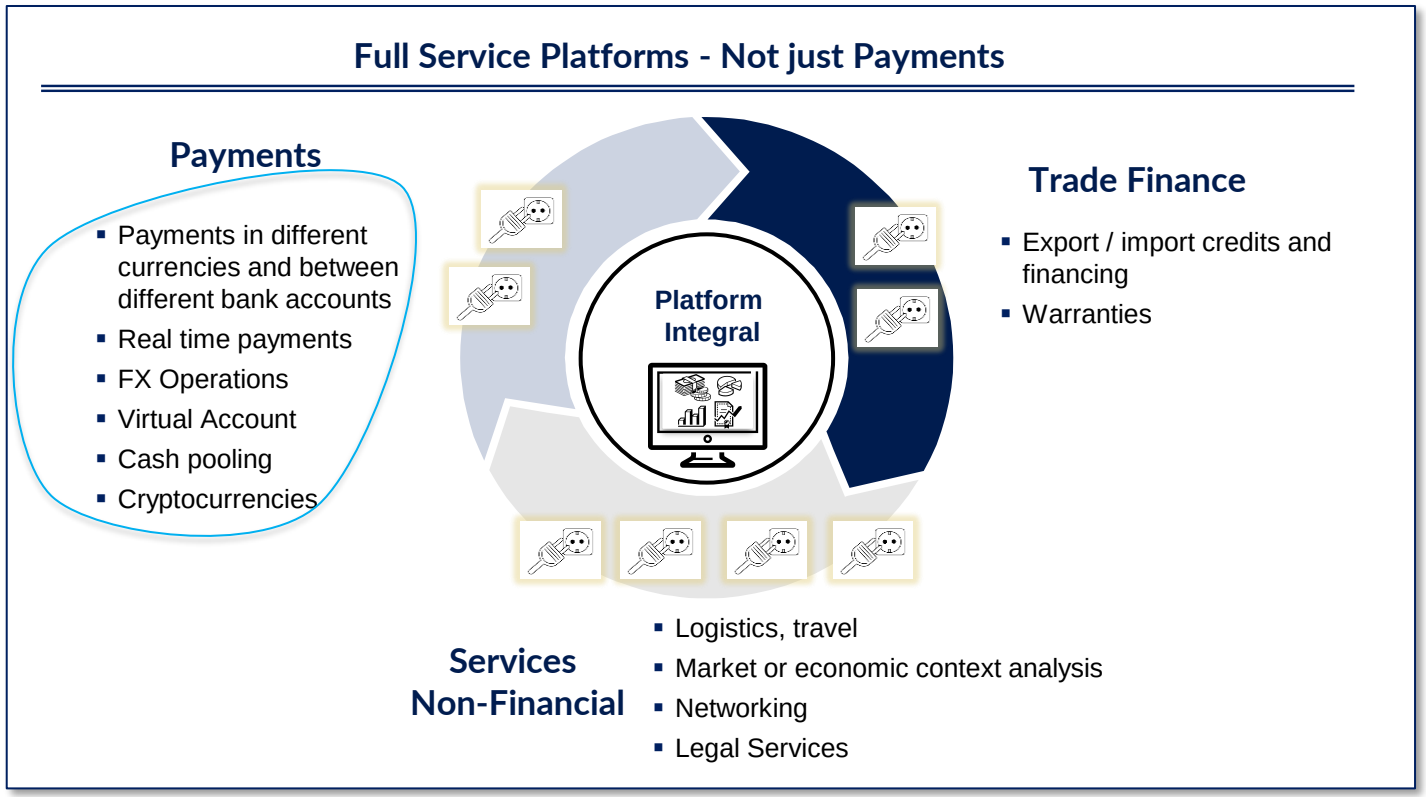
The different payment service players are increasingly focused on delivering value to their customers through the personalization of their offerings, feedback-based methodologies and end-to-end platforms.

Creation of integrated platforms

- The client has access to **all the services offered** by the entity, as well as by its *partners.*
- **All actors** involved in the business value chain are connected to the same platform.
- Operations are executed **faster and with greater traceability**.
- Open to **access by other entities** through *partnership* models.

APIs

- APIs facilitate the **availability of services on a single platform**, which can be accessed by different units of the same entity (especially relevant in the International Business) or even by other entities.



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Control Framework

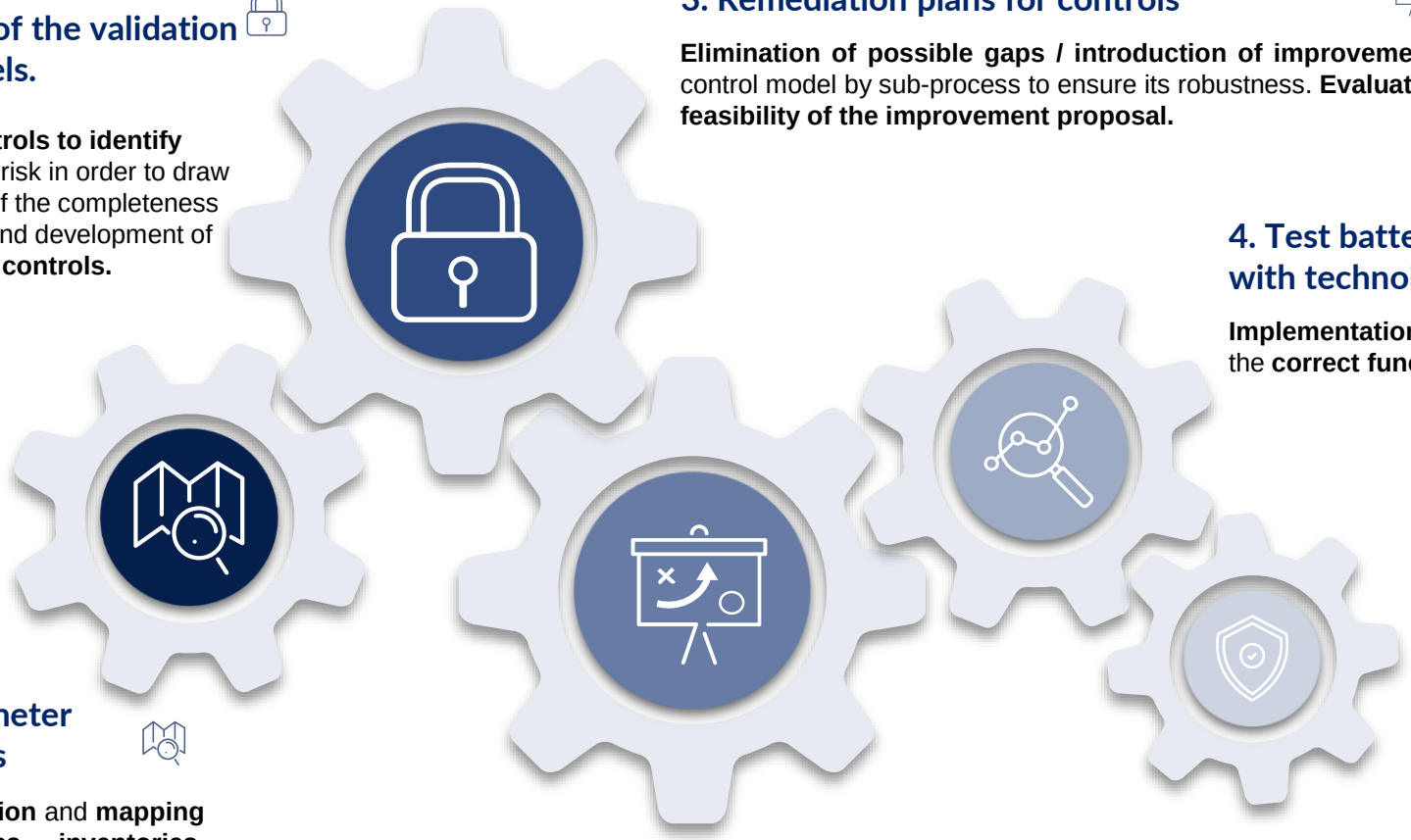
Leading Payment Services entities need to ensure that their control models, especially in the collection and payment circuit, are robust.

1. Clear closure of the perimeter of collections and payments

Delimitation of the **perimeter of action** and **mapping of the different sub-process inventories**. Development of their prioritization based on their levels of exposure to inherent risk and their complexity.

2. In-depth review of the validation of the control models.

Analysis of current controls to identify robustness and residual risk in order to draw up action plans. Review of the completeness of linked sub-processes and development of an **inventory of existing controls.**



3. Remediation plans for controls

Elimination of possible gaps / introduction of improvements in the control model by sub-process to ensure its robustness. **Evaluation of the feasibility of the improvement proposal.**

4. Test batteries implemented in coordination with technology.

Implementation of the certification function by technology of the **correct functioning of the control environment**,

5. Development of an assurance function to ensure the correct functioning of the controls.

Implementation of a **new *assurance* function** that ensures the robustness of the control environment, **continuously *challenging*** and **monitoring its evolution according to** business needs.

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Swift

In the financial industry, SWIFT is the leader in payment systems for international transactions...

What is SWIFT?

- SWIFT is an **international network** owned by several banks and financial institutions and is the world's **largest provider** of **secure financial messaging services.**

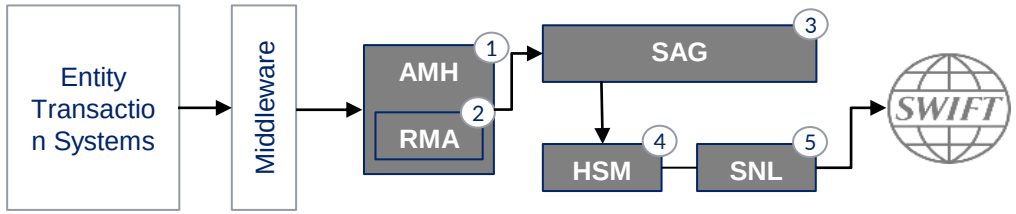
Who uses it?

- SWIFT is used by more than **11,000 banking and securities organizations, market infrastructures and corporate customers in over 200** countries and territories.

What is it used for?

- SWIFT offers **financial messaging** services (payments, information messages, guarantees, etc.) and solutions for the **automation** of **procedures**, **simplification** of Back-Office **regulatory complexities**, among others.

SWIFT IT infrastructure components(1)



① **AMH** Alliance Messaging Hub	System in charge of generating SWIFT messaging with its own Web Interface (GUI).
② **RMA** Relationship Mgmt App.	Module in charge of filtering that messages received from SWIFT come from the allowed counterparts.
③ **SAG** Alliance Gateway	Local hub for SWIFT courier delivery
④ **HSM** Hardware Security Module	Module for encryption of communications to the SWIFT network
⑤ **SNL** Swift Net Link	Connectivity part enabling communication with the SWIFT network

SWIFT in figures
(Source: SWIFT, data as of 2019)

7.8+ billion
FIN messages

99.999%
SWIFTNet availability

99.998%
FIN availability

11,000+
Institutions connected to SWIFT

200+
Countries and territories connected

(1) The components described may be locally installed in the entity or reside in a third party (Service Bureau) that provides the service.

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