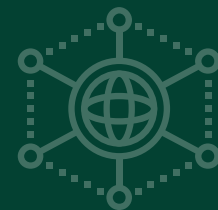


APPLICATION PROGRAMMING INTERFACES (APIs)

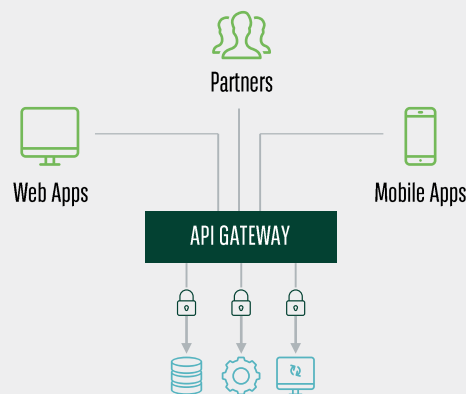
MEMO • SEPTEMBER 2019



WHAT IS IT? An API is a set of programming instructions and standards for accessing and exchanging data. Basic interoperability programmes supporting information exchanges can be traced back to the 1960s. Yet the growth of APIs in the last decade has been nothing short of astronomical. An API provides a frictionless system-to-system communication channel to facilitate automated sharing of data in accordance with a pre-agreed structure. It eases the access to data, the creation of new tools and reports and the exchange of information between platforms, as it is eliminating the time consuming process of multiple integration points in the client's internal applications.

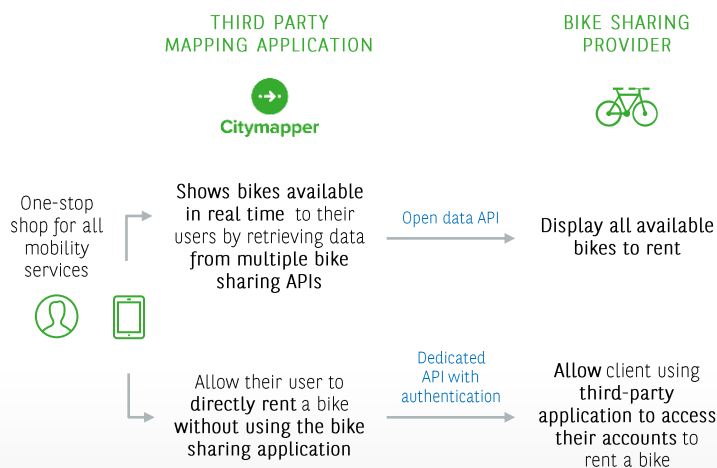
IN A NUTSHELL

- APIs are codes that are utilised by computer systems to communicate in 'conversation mode', asking questions and obtaining answers in real time.
- Aside from improving connectivity, APIs can help companies augment user experiences and acquire insights into customer behaviour.
- APIs have the potential to significantly transform current market practices, and how our industry processes data and provides services.



SOME EXAMPLES OF APIs

- New business and new revenue models are enabled thanks to API platforms and ecosystems. API platforms allow the combining of different services, from different providers through one single point of entry, in an API store, to facilitate engagement with the final user.



Mutual benefits

- The bike sharing platform can reach customers **beyond its existing client base**
- Mapping apps can integrate services from third-parties and **aggregate data from multiple parties**
- **Increase usage of the app**
- Development of **commercial agreements**

SECURITIES SERVICES INDUSTRY

To date, API adoption has been relatively low in the securities services industry, primarily due to a lack of market API maturity / skill sets, coupled with industry concerns around security and API interoperability when considering API solutions. However, the securities services industry may be nearing a tipping point where APIs are being viewed as pivotal in delivering value in 3 key areas:

1. **Improve process efficiency / Reduce risk:** drive cost reductions by improving or removing inefficient or manual processes
2. **Data on-demand:** allowing clients to access the data they need, when they need it
3. **Unlock next generation services:** bespoke reporting with the ability to enrich the data with additional sources

"By aligning an approach to set standards, and pursuing networked rather than point-to-point solutions, the securities servicing industry stands to unlock significant collective value generated by greater use of APIs." *

* Source : BCG SWIFT securities services white paper 2019

Clients' key priorities in relation to API development **

CUSTODY

- Cash Intraday
- Pending Failed Trades
- Settlement Confirmation
- Position Reporting
- Cash Balances & Statements

FUND ADMINISTRATION

- Fund/Group/Portfolio Valuations
- End of Day/Fund Valuation/Accounting Sign Off
- Fund/Group/Portfolio Transactions
- Fund/Group/Portfolio Cash Balances & Statements

** Source : Digital Client Sensor 2019



BNP PARIBAS

**The bank
for a changing
world**

WHAT WE ARE DOING?

- The API Programme at BNP Paribas Securities Services has been developed by working hand-in-hand with our clients. This has ensured a strong focus on delivering real solutions to our clients' key pain points.
- To date we have prioritised our API investigation and delivery in areas such as NAV Calculation and Distribution, Settlement Instruction and Settlement Status, Corporate Actions as well as exploring how APIs can help with regulations such as SRD II and CSDR.
- We have developed 18 distinct Fund accounting APIs that provide clients with NAV data in a flexible manner to facilitate client internal operations. NAV API integration provides clients with self-service solution, providing them with the freedom to receive their data when and how they want it. Clients can choose which API to call, the download frequency, modify their set up and send instructions (NAV Validation). APIs can provide clients with a cost effective alternative to CFT or FTP transfer.
- We are investigating with our clients to define the relevant application areas for APIs.
- We have commenced an initiative with SWIFT to standardise our API offering to the ISO 20022 standard for the benefit of the investment community.
- We are also concurrently working to leverage our own in-house API Management System (Google's Apigee solutions) in order to further industrialise our approach.

OUR VISION

APIs are at the core of our digital transformation and data strategy for BNP Paribas Securities Services. We want to leverage APIs and other client facing technologies to drive efficiency. APIs are viewed as key to streamlining our internal processes and enhancing our client's experience by providing a channel that allows retrieval of the information when it's wanted, in a format that is user friendly for our clients.

By easing access to data, creation of new tools, reports and information exchange between platforms, clients can make better informed business decisions. To do this BNP Paribas Securities Services has defined a multi-layered enterprise API strategy in collaboration with our clients and partners which ensures we are progressing towards an "API ready" ecosystem that addresses both internal and external considerations.

REGULATION

Unlike the payment world where the PSD2 was instrumental in driving the adoption of APIs there is no such regulation in the security services industry which has been identified as a reason for slower adoption of API solutions. However, there is a potential opportunity to leverage APIs to address upcoming industry regulation such as SRD II and CSDR which BNP Paribas Securities Services is actively investigating.

GLOSSARY

API Application Programming Interface: Enables different systems to interact with each other programmatically.

Two types of APIs are REST APIs (web APIs) and native-library APIs. REST API stands for Representational State Transfer. Uses web protocols (HTTP) to make requests and provide responses in a language agnostic way, meaning that users can choose whatever programming language they want to make the calls.

API Gateway: A service that makes it easy for developers to create, publish, maintain, monitor, and secure APIs at any scale.

Apigee: provides services for you to manage the whole lifecycle of your API. Specifically, Apigee lets you "manage API complexity and risk in a multi-and hybrid-cloud world by ensuring security, visibility, and performance across the entire API landscape."
Supports the OpenAPI spec.

Microservices: are an architectural pattern where various loosely coupled services work together to form an application. Each of these services focus on one single purpose only, encapsulating all related logic and data.

CONTACT

denis.farrell@bnpparibas.com

paud.okeeffe@bnpparibas.com

WHERE TO LEARN MORE

<https://www.cgi.com/sites/default/files/pdf/open-api-whitepaper.pdf>

<https://www.swift.com/news-events/press-releases/swift-and-bcg-say-securities-industry-ripe-for-apis>

<https://securities.bnpparibas.com/insights/result/results/apis-securities-services.html?themes=technology>

NOTES

FOLLOW US



FIND US securities.bnpparibas.com



The information contained within this document ("information") is believed to be reliable but BNP Paribas Securities Services does not warrant its completeness or accuracy. Opinions and estimates contained herein constitute BNP Paribas Securities Services' judgment and are subject to change without notice. BNP Paribas Securities Services and its subsidiaries shall not be liable for any errors, omissions or opinions contained within this document. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument. For the avoidance of doubt, any information contained within this document will not form an agreement between parties. Additional information is available on request.

BNP Paribas Securities Services is incorporated in France as a Partnership Limited by Shares and is authorised and supervised by the European Central Bank (ECB), the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and the AMF (Autorité des Marchés Financiers). BNP Paribas Securities Services London Branch is lead supervised by the European Central Bank (ECB) and the Autorité de Contrôle Prudentiel et de Résolution (ACPR). BNP Paribas Securities Services London Branch is authorised by the ECB, the ACPR and the Prudential Regulation Authority and subject to limited regulation by the Financial Conduct Authority and Prudential Regulation Authority. Details about the extent of our authorisation and regulation by the Prudential Regulation Authority, and regulation by the Financial Conduct Authority are available from us on request. BNP Paribas Securities Services London Branch is registered in England and Wales under number FC023666. Registered office in the UK: 10 Harewood Avenue, London NW1 6AA.

In the U.S., BNP Paribas Securities Services is a business line of BNP Paribas which is incorporated in France with limited liability. Services provided under this business line, including the services described in this document, if offered in the U.S., are offered through BNP Paribas, New York Branch (which is duly authorized and licensed by the State of New York Department of Financial Services); if a securities product, through BNP Paribas Securities Corp. which is a broker-dealer registered with the Securities and Exchange Commission and a member of SIPC and the Financial Industry Regulatory Authority; or if a futures product through BNP Paribas Securities Corp., a Futures Commission Merchant registered with the Commodities Futures Trading Commission and a member of the National Futures Association.