Case study

Enhancing *operational efficiencies* on Stock Connect

Our commitment to supporting the Hong Kong market and its efforts to bring clients closer to local infrastructures led to the development of a fully automated, API-powered connectivity solution to provide investors with easier, frictionless access to Hong Kong Exchanges and Clearing Limited's new Synapse platform on Stock Connect.

Synapse gives Northbound institutional investors greater transparency and visibility into transaction statuses at a time when shorter settlement cycles and no-fail requirements are creating settlement challenges in jurisdictions across the Asia-Pacific region.

Challenge

Stock Connect – a mutual-market access channel enabling investors in mainland China and Hong Kong to trade and settle listed securities in each other's market via their respective stock exchanges and infrastructures – has been live for 10 years. Yet lingering settlement challenges have affected the utilization of the Northbound leg of Stock Connect given the disparity between international market practices such as the T+2 settlement cycle and mainland China's T+0 settlement structure.

Operational complexities

Such challenges create a number of complexities for Stock Connect users, three of which we highlight here.

Firstly, the tight settlement cycle means that investors have only four hours to complete settlement. As a result of time zone challenges, operations teams of European- and US-based investors often need to work through the night to support settlement processes. This comes as operational resources are already being diverted to support the global settlement compression trend.

Secondly, the time zone difference may require US and European investors to prefund their Stock Connect trading activities.

And thirdly, settlement risk concerns remain on single-sided settlements.

Additional considerations

Besides having to deal with the tight settlement window, investors using Stock Connect face other issues too.

There is a lack of comprehensive and real-time trade lifecycle transparency around T+0 settlement finality.

In addition, investors' intermediaries may not have real-time access to HKEX's Central Clearing and Settlement System (CCASS), meaning that they often have to rely on global and local custodians for information on settlement statuses. This lack of real-time visibility into settlement statuses and the sequential nature of the settlement processes where investors rely on the global custodians to handle settlement via local custodians reduce the amount of time investors have to resolve exceptions, which deters some institutions from participating in Stock Connect altogether.

Moreover, multiple integration points of reconciliation can result in duplication and expensive exception management.

Regulated funds are also supposed to have full control of assets/transactions, but this control is sometimes lacking when moving to an auto-settlement process.

And there is the consideration that operations teams may need to prepare for the impact of potential future increases in China A-share weightings on EM indices and future Stock Connect enhancements.

Traditional sequential processing
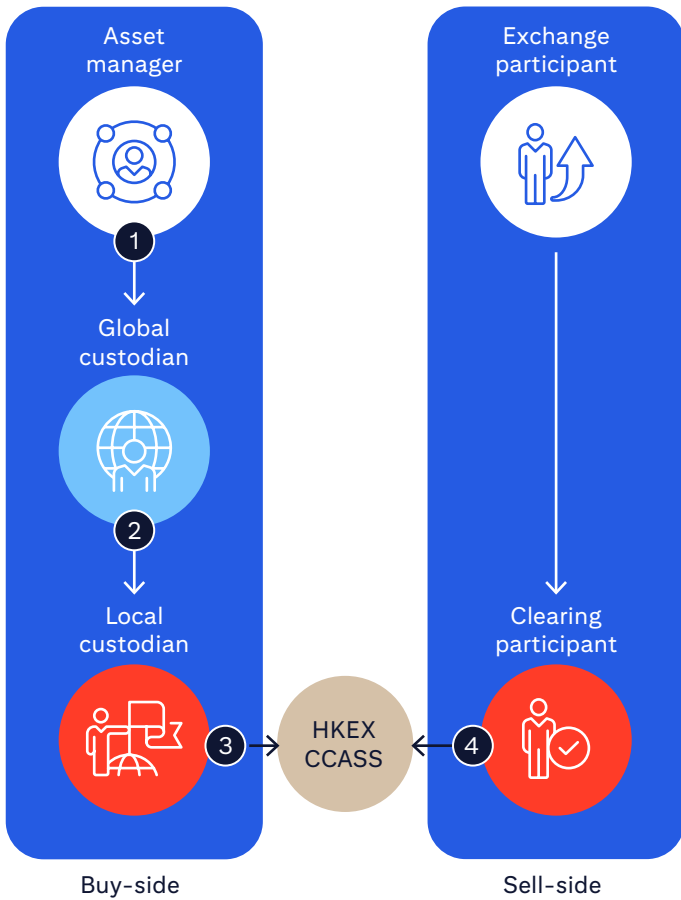
Standard instruction flow: 1) asset manager instructs global custodian; 2) global custodian instructs local custodian; 3) local custodian instructs HKEX CCASS; 4) clearing participant instructs CCASS. Source: Citi.

HKEX Synapse

To overcome some of the transparency issues facing Stock Connect, HKEX implemented Synapse – an optional integrated platform for market participants – to complement the existing post-trade infrastructure for the Northbound leg of Stock Connect. It was developed to help institutional investors participating in Northbound Stock Connect to better manage their post-trade operations across time zones, in particular, adhering to the T+0 securities settlement cycle on the mainland.

Using DAML smart contracts, HKEX Synapse can simultaneously create settlement instructions and provide status updates to all parties along the settlement chain, facilitating concurrent processing and greatly improving transparency for market participants. The Synapse platform provides institutional investors with greater visibility over transaction statuses, which is critical given the time zone differences that affect operating and processing hours.

Synapse also gives market participants a choice of using either API or SWIFT connectivity to standardize and streamline post-trade workflows by maximizing connectivity and enabling transparency.

The development of Synapse by HKEX is complementary to the global push towards settlement cycle reduction, as seen most recently in the Americas (Argentina, Canada, Mexico and the United States), which transitioned to a T+1 settlement cycle at the end of May 2024.

Supporting Synapse every step of the way

Citi worked closely with HKEX during Synapse's development, from participating in the pilot project back in 2019 right through to developing and bringing online a fully automated API-powered Synapse connectivity solution in 2023. Citi is the first bank in Hong Kong to offer this capability, fully aligning its custody platform with Synapse and enabling the seamless execution of trades while addressing existing operational complexities.
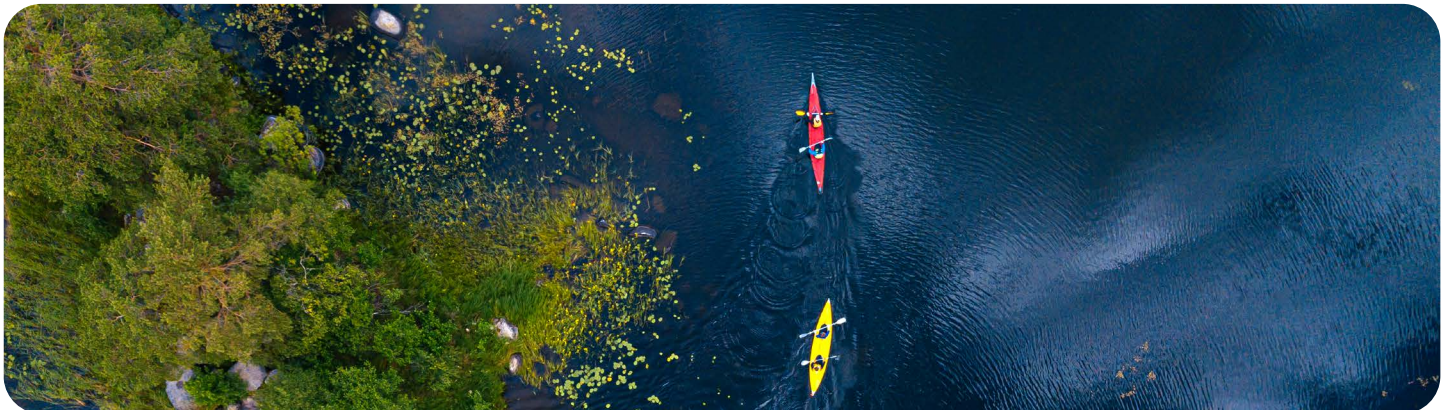
Solution

Citi's API Synapse Solution

Financial institutions using HKEX Synapse now have three connectivity options – a GUI via the internet, application programming interface (API) and SWIFT. Citi is currently the pioneering bank in Hong Kong to offer an API connectivity channel that allows financial institutions to connect to HKEX Synapse without the need to send instructions through CCASS. Trades are confirmed in the DTCC's Central Trade Matching (CTM) platform, which is then fed automatically into Synapse.

Supreme visibility

Citi's API Synapse solution provides users with a near real-time trade feed and status updates, giving them better and quicker visibility into what is happening during the transaction lifecycle. The tool is also scalable and can incorporate additional Synapse features as and when they are developed.

Full connectivity

By utilizing DAML smart contract technology to streamline Stock Connect post-trade workflows, Citi's API Synapse Solution addresses common challenges faced by market participants in the current post-trade lifecycle. And using a single operating model, Citi provides full connectivity to Synapse through integrated technology, allowing clients to take full advantage of Synapse without having to develop or enhance their existing infrastructure or operational processes.

Parallel processing
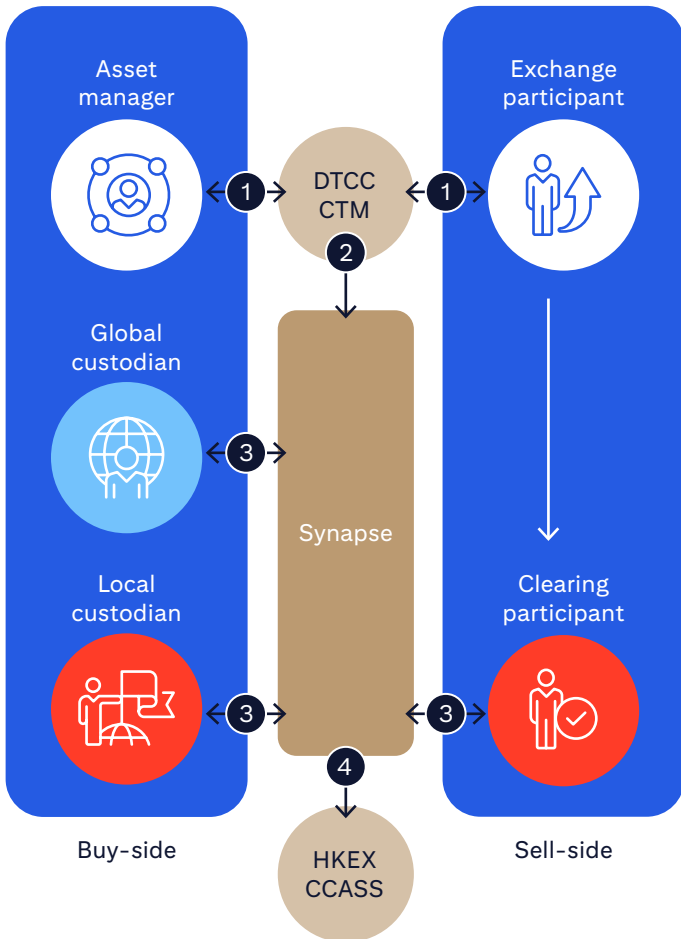
Citi's API Solution plugs into Synapse: 1) asset manager confirms trade with no need for client instruction; 2) DTCC CTM auto-feeds into Synapse; 3) global/local custodian confirm trade via Citi's API Solution; 4) Synapse auto-instructs CCASS. Source: Citi.

Benefits

Citi's API Synapse Solution presents a range of benefits that take full advantage of parallel processing.

Real-time data and connectivity

The Synapse API provides real-time settlement status and real-time approval tracking, which allows financial institutions to have a more accurate, up-to-date view of their transactions.

Seamless data access

The Synapse API provides effortless access to critical static data, such as global custodian and local custodian account information, which can help financial institutions to streamline their operations and improve efficiency.

Settlement instruction flexibility

Clients have the flexibility to send settlement instructions either via the Citi Synapse API interface or via SWIFT, whereby Citi will process the instructions directly in HKEX CCASS.
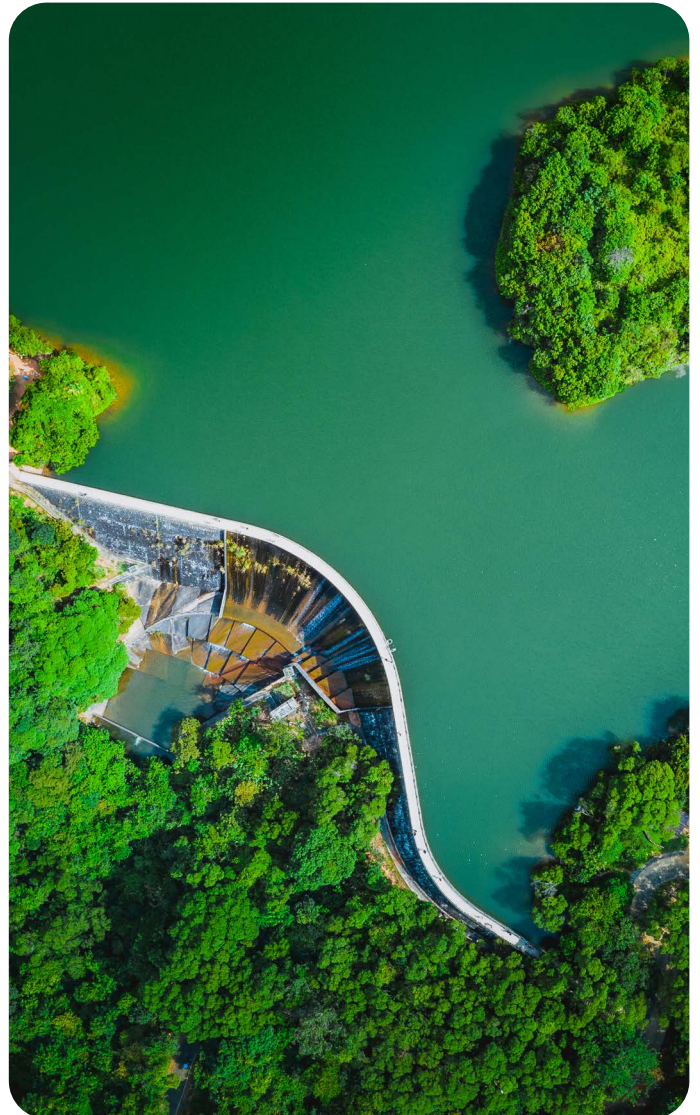
Checks prior to approvals

Citi's Synapse infrastructure provides additional feeds of Synapse transactions for performing reconciliations and sanctions/credit checks against regulatory and risk management requirements prior to issuing approvals.
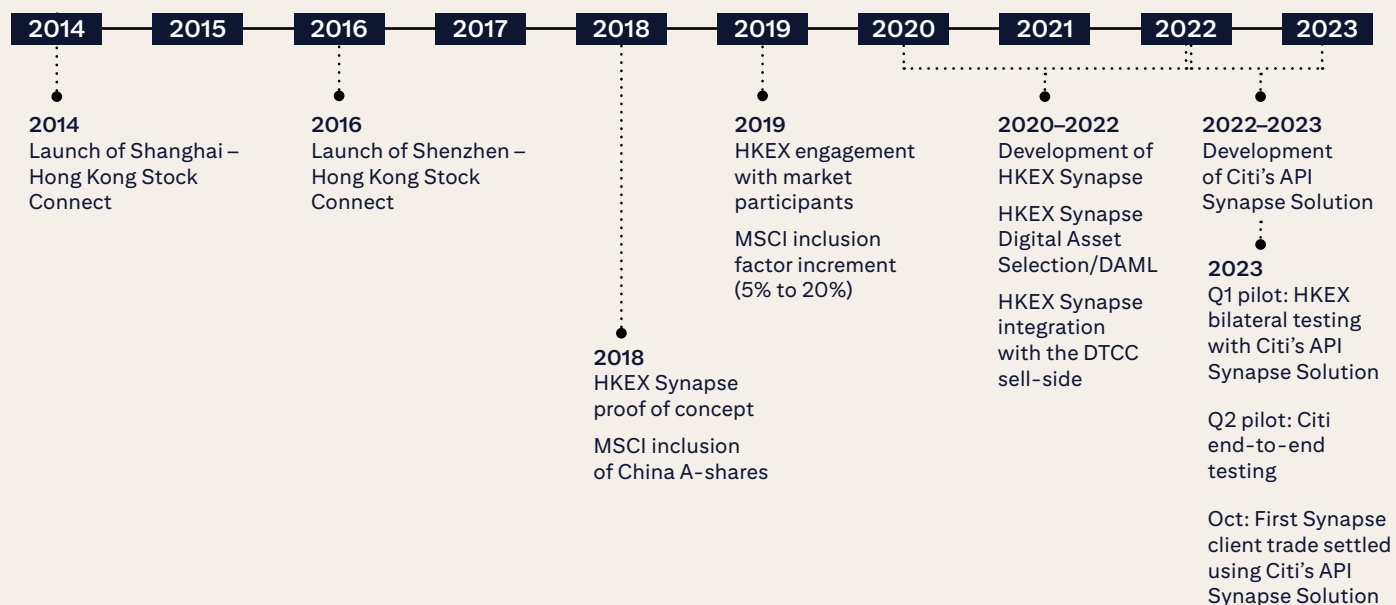
Status checking

Citi can process settlements and issue approvals using Citi's Synapse API. Citi clients can track settlement instructions and settlement statuses through either Citi's Synapse API or Citi's SWIFT confirmations and reports.

Enhanced security

The Synapse API is built on strong security and encryption methods to protect data. All data is encrypted at rest and in transit, and only authorized users can access it. The project also audits all activity to track the access and use of data.

Timeline

| 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |

2014
Launch of Shanghai – Hong Kong Stock Connect

2016
Launch of Shenzhen – Hong Kong Stock Connect

2019
HKEX engagement with market participants

MSCI inclusion factor increment (5% to 20%)

2018
HKEX Synapse proof of concept

MSCI inclusion of China A-shares

2020–2022
Development of HKEX Synapse

HKEX Synapse Digital Asset Selection/DAML

HKEX Synapse integration with the DTCC sell-side

2022–2023
Development of Citi's API Synapse Solution

2023
Q1 pilot: HKEX bilateral testing with Citi's API Synapse Solution

Q2 pilot: Citi end-to-end testing

Oct: First Synapse client trade settled using Citi's API Synapse Solution

Timeline: From the launch of Stock Connect to the development of HKEX Synapse to the first client trade settled with Citi's API Synapse Solution.