

Blockchain Adoption in Banking: Use Cases, Networks, and Key Players

Introduction

Banks and financial institutions worldwide are increasingly exploring blockchain technology to modernize their services. Major banks have launched pilot programs and consortiums focusing on distributed ledgers, spurred by evolving regulations and pressure to improve transparency ¹. Citi analysts note that blockchain adoption is driven by the push for greater accountability and the lure of new digital instruments like stablecoins, alongside efforts to streamline paper-based legacy systems ². Early experiments show promise – for example, UBS’s 2024 pilot of a “*Digital Cash*” system demonstrated **more efficient, transparent** cross-border payments using a private blockchain ³. However, most banks remain cautious, taking “*tentative*” first steps via limited pilots until legal clarity improves ⁴.

Crucially, banks’ interest spans both **permissioned ledgers** and the **public crypto ecosystem** ⁵. Many large institutions have joined blockchain consortia or built private networks – from JPMorgan’s Quorum (enterprise Ethereum) to IBM’s Hyperledger Fabric – while also watching public networks like Ethereum and even experimenting with cryptocurrencies under strict oversight ⁵. For example, Spain’s Banco Santander launched *One Pay FX*, a blockchain-based international payment service using Ripple’s distributed ledger technology (though notably not the XRP cryptocurrency itself) to speed up transfers ⁶. At the same time, banks are preparing for government-backed digital money: dozens of major banks (JPMorgan, HSBC, UBS, MUFG, and more) joined a BIS-led project *Agora* to pilot **wholesale CBDCs** (central bank digital currencies) and **tokenized deposits** for cross-border use ⁷. The attraction is clear – blockchain promises “*streamlined operational efficiency, better data protection and reduced fraud*” through an immutable, shared record ⁸ – but banks must also navigate challenges around privacy, fraud risk, and technical integration as they move forward.

Public vs. Permissioned Blockchains in Finance

A key strategic consideration for banks is whether to use **public** or **permissioned** blockchains. Most banks favor **permissioned (private) networks**, which restrict participation to vetted institutions and offer control over data sharing ⁹. This approach suits strict privacy and compliance requirements. For instance, UBS’s cross-border *Digital Cash* pilot ran on a closed blockchain accessible only to authorized participants ⁹. Permissioned platforms like **JPMorgan’s Quorum** (an enterprise-hardened Ethereum fork) or **R3 Corda** allow banks to transact on a shared ledger without exposing sensitive information to the world ¹⁰. In contrast, **public blockchains** like Bitcoin and Ethereum are open networks with no access restrictions, offering global reach and liquidity at the expense of privacy ¹¹.

In practice, banks have so far used public chains **indirectly** or in limited ways. Many hold or custody public cryptocurrencies (like Bitcoin and Ether) on behalf of clients, or leverage public networks for issuing tokenized assets, while keeping most internal processes on private ledgers ¹². The prevailing model is to combine public and private: for example, a bank might issue a token representing money or securities but

settle trades on a closed network for confidentiality. This is starting to evolve – in 2025, JPMorgan announced plans for **JPM Coin deposit tokens** (JPMD) on *Base*, a public Ethereum Layer-2 network, as a “permissioned token” for 24/7 payments ¹³. JPMorgan touted this as “*bringing trusted financial infrastructure onto public blockchain*” in a secure way ¹⁴. Notably, Base’s semi-decentralized design (with an oversight council) gave JPMorgan confidence as a middle ground between fully private and fully open systems ¹⁵. This illustrates a cautious industry trend: banks are beginning to *tip-toe* into public blockchain usage when they can maintain sufficient control, signalling a future of hybrid models mixing private and public networks.

Payments and Cross-Border Transfers

Payments – especially cross-border transfers – are one of the most prominent blockchain use cases for banks. International payments today often rely on slow, complex correspondent banking chains. Blockchain solutions promise near-instant, round-the-clock settlement across borders, reducing reliance on intermediaries. One major avenue is the use of **stablecoins** – digital tokens pegged to fiat currencies – to move value. By 2025, stablecoins have emerged as a “*realistic transformative*” tool for payments, with market volumes exceeding \ \$27 trillion in 2024 ¹⁶. Surveys show that **90% of financial institutions** are actively integrating stablecoins, and nearly **58% of banks** using them prioritize cross-border payments specifically ¹⁷ ¹⁸. These dollar-pegged or euro-pegged tokens enable **real-time global transfers** with full transparency and lower FX costs, operating 24/7 outside of conventional banking hours ¹⁹. Banks see this as critical to staying competitive: stablecoins can cut out days of settlement time and heavy fees that traditional wire transfers incur. For example, **Circle’s USD Coin (USDC)** stablecoin is being integrated with bank payment networks – Circle launched a network with Standard Chartered, Deutsche Bank, Santander and others to enable near-instant stablecoin-to-fiat transfers linked into local systems like Brazil’s PIX and Mexico’s SPEI ²⁰. Likewise, payments processors are on board: Visa and Worldpay have piloted stablecoin payout services, signaling that the broader payments industry is aligning with this trend ²¹ ²².

Banks are also collaborating on their **own digital cash tokens**. JPMorgan’s **JPM Coin**, introduced in 2019, is a prototype: a dollar-pegged token that institutional clients use to instantly transfer value on JPMorgan’s private network ²³. When one client sends funds, JPM Coin tokens move between accounts and can be redeemed one-to-one for cash, enabling “*trustless*” real-time settlement with reduced counterparty risk ²³ ²⁴. This network (part of JPM’s Onyx division) reportedly moves about \ \$2 billion daily in intra-bank transactions by mid-2025 ²⁵. Encouraged by such success, other U.S. banks have been discussing a **joint regulated stablecoin** for interbank use. In mid-2025 media reported that JPMorgan, Bank of America, Citi, and Wells Fargo were in early talks to create a unified dollar stablecoin, operable 24/7 and fully backed by deposits ²⁶. The idea is to modernize domestic settlements and “reclaim” some payments business from crypto startups by offering a bank-trusted digital dollar ²⁷. Notably, even as banks embrace these tokens, they often deploy them on **private ledgers** for now – for instance, Santander’s One Pay FX uses Ripple’s blockchain-based messaging but settles through banks’ own ledgers (it does *not* use XRP cryptocurrency), illustrating how institutions leverage blockchain tech while avoiding public crypto volatility ²⁸.

Another major platform targeting cross-border payments is **Ripple** and its XRP Ledger. Ripple offers tools like *xCurrent* (a payment messaging and settlement network) and *xRapid* (which utilizes the XRP token for liquidity). A number of banks and payment firms joined RippleNet to streamline remittances and forex transfers. Spain’s Santander, for example, uses RippleNet to allow same-day international transfers between its branches ²⁹. In one notable 2016 trial, a consortium of banks (Barclays, RBC, Santander and others) successfully used XRP to rapidly rebalance liquidity between subsidiaries, finding they could cut funding

costs by **up to 60%** by converting fiat to XRP and back for near-instant value transfer ²⁹ ³⁰ . However, direct **XRP adoption by banks remains limited** – Ripple’s own executives admitted that banks weren’t actively using XRP in production as of a few years ago ³¹ . Regulatory uncertainty and XRP’s nature as a public crypto asset made banks hesitant to hold it. Instead, many banks using Ripple’s tech stick to its fiat-backed network (RippleNet) without touching the XRP token ³¹ . That said, Ripple is expanding its offerings (including exploring **stablecoins on XRP Ledger**), and some Asian banks via SBI Ripple Asia have trialed the technology for intra-Asia transfers ³¹ . If legal clarity improves (e.g. resolution of U.S. SEC cases), banks may become more comfortable with leveraging XRP for on-demand liquidity in the future.

Beyond stablecoins and Ripple, a variety of **blockchain networks are being used for payments**. **Ethereum**, the largest public blockchain supporting smart contracts, underpins many stablecoins and decentralized payment apps (including ones that banks integrate). While public Ethereum itself is generally too open for direct bank-to-bank transfers, banks are leveraging Ethereum-based technology in permissioned form. **JPMorgan’s Liink (formerly IIN)** is built on Quorum (a private Ethereum), linking over 400 banks to share payment information and verify transactions to reduce errors ³² . In Asia, a consortium called **Partior** (backed by JPMorgan, DBS Bank and Temasek) uses Quorum blockchain to enable cross-bank, multi-currency clearing in Singapore and beyond – effectively a regional settlement hub running on distributed ledger (Partior arose from Singapore’s Project Ubin trials). Other examples include **Standard Chartered**, which in partnership with fintechs launched a blockchain remittance service between Malaysia and Bangladesh, using Ant Group’s enterprise blockchain to enable instant wallet-to-bank transfers for migrant workers ³³ . Meanwhile, **Stellar** (a public payment-oriented blockchain) was used in IBM’s now-concluded World Wire pilot to facilitate cross-border payments with some smaller banks. And even **Bitcoin’s Lightning Network** – a layer-2 for instant Bitcoin micro-payments – is on the radar; while traditional banks haven’t adopted Lightning yet, fintech challengers are demonstrating virtually fee-less global transfers using Lightning, something banks could eventually tap into for remittances if demand for Bitcoin-based settlements grows.

Importantly, **regional differences** are evident in payment innovation. Emerging markets have been especially quick to embrace crypto payment rails where traditional systems are costly. In **Latin America**, an estimated **71% of financial institutions** are already using stablecoins for cross-border payments – the highest adoption rate globally, driven by high remittance needs and volatile local currencies ³⁴ . **Asia-Pacific** banks are also forward-looking: around 56% of institutions there have live blockchain payment use cases, often aiming to expand into new markets, and Singapore’s regulators actively encourage pilots for cross-border digital currency exchange ³⁵ ³⁶ . **North American** banks have been more conservative but are now optimistic as regulation catches up – 88% of U.S. firms surveyed viewed impending stablecoin regulations as a “*green light*” to proceed ³⁷ . **European** banks, under the new MiCA framework, prioritize security and compliance in any stablecoin or blockchain payment rollout ³⁸ . And in **China**, rather than using public crypto, banks have integrated the **e-CNY** (digital yuan) – a central-bank-issued digital currency – for domestic payments, with trials already reaching trillions of yuan in transaction volume ³⁹ . China’s large state banks deploy blockchain in tightly controlled consortium networks aligned with government policy, illustrating a distinct model of *permissioned* blockchain use without cryptocurrencies. Globally, this landscape shows that while the **goal of faster, cheaper payments** is universal, the choice of blockchain solution (public vs private, crypto-token vs tokenized deposit) varies by region and regulatory climate.

Asset Tokenization and Settlement (Real-World Assets)

Another major avenue is **asset tokenization** – representing real-world assets as digital tokens on a blockchain. Banks are keen on this because it can unlock liquidity, enable 24/7 trading, and simplify the **settlement of securities or other assets**. Tokenization can apply to anything from cash deposits and bonds to stocks, real estate, or even commodities. In essence, a traditionally illiquid or cumbersome asset can be converted into a freely tradeable token, with ownership recorded on a shared ledger. Banks have been experimenting in this space for years, and momentum is building. Analysts at HSBC and Northern Trust project that **5–10% of all financial assets** could be tokenized on blockchains by 2030 ⁴⁰ – a vast market opportunity in the tens of trillions of dollars.

Tokenized deposits (sometimes called *deposit coins*) are one example. Citi has reported successful trials of issuing tokenized versions of customer deposits, allowing money to move after-hours between branches instantly ⁴¹. By tokenizing cash in this way, banks aim to enable **24/7 interbank transfers** and liquidity management that isn't limited by payment cut-off times ⁴². JPMorgan's aforementioned JPM Coin similarly is effectively a tokenized deposit used internally. Such tokens could potentially interoperate with other digital assets – for instance, a tokenized dollar deposit could be used in a smart contract or exchanged atomically for a tokenized security, streamlining complex transactions.

Another focus is **tokenized bonds and securities**. Several high-profile bond issuances have been done via blockchain to test the tech. In Europe, Société Générale issued a €100 million bond as a security token on the public Ethereum blockchain ⁴³, and the European Investment Bank followed with its own digital bond issuance on Ethereum in 2021. These experiments showed that a bond trade which normally takes days to settle could instead settle T+0 (same day) on chain. In Switzerland, the Swiss National Bank's *Project Helvetia* demonstrated end-to-end settlement of a tokenized bond on a **wholesale CBDC** platform (built on R3 Corda) with participation from major banks like UBS and Commerzbank ⁴⁴. Multiple digital bonds were issued and redeemed using a synthetic digital franc, proving the feasibility of blockchain-based delivery-vs-payment in traditional finance ⁴⁴. The SNB is now expanding this program, a sign that **central banks and commercial banks together see tokenization as the future** for large-value markets ⁴⁴.

Equities and funds are also being tokenized. For example, **Franklin Templeton** has put shares of a money market fund on a public blockchain, allowing for programmable and potentially round-the-clock trading of fund units. **BlackRock**, the world's largest asset manager, created tokenized shares of a fund (codenamed BUIDL) as well ⁴⁵ ⁴⁶. These efforts are in early stages but highlight a trend where traditional assets gain crypto-like liquidity. Notably, tokenization could save huge costs: by some estimates, moving to DLT (distributed ledger) market infrastructure could save asset managers **\$2.7 billion** a year in trading and settlement frictions ⁴⁷.

Trade finance – historically a paper-heavy domain – has been a prime area for tokenization and blockchain as well. Banks have formed multiple consortia to digitize **letters of credit, invoices, and supply chain assets**. A standout example was **we.trade**, a platform jointly launched by 12 European banks (including HSBC, Deutsche Bank, Société Générale, Santander, UBS and others) using IBM's Hyperledger Fabric ⁴⁸. On we.trade, a small exporter could initiate a trade transaction that is logged on the shared ledger, and a letter of credit or payment commitment is automatically executed via smart contract when goods are delivered ⁴⁹ ⁵⁰. This automation **slashed paperwork and delays**: what used to involve faxing documents and days of verification could be done digitally with all parties (buyer's bank, seller's bank, shipping company, etc.) seeing a single record ⁵⁰. While we.trade's initial company faced challenges, it proved the concept –

participating banks showed that blockchain **cut processing time and operational risk in trade finance** ⁵¹. Similar consortia include **Marco Polo** (on R3 Corda) for open account trade finance and **Contour** (formerly Voltron, also on Corda) for letters of credit. These private networks allow banks and corporates to share trade documents and status updates in real-time, reducing fraud (since each document or tokenized invoice is traceable and cannot be double-financed) and improving trust among counterparties. **Komgo**, backed by ING, Citi, and other commodity trade players, uses a Quorum blockchain to handle commodity trade financing – verifying KYC data and streamlining credit approvals for oil and agricultural trades ⁵². All these illustrate that **tokenized trade assets** (be it an invoice or a warehouse receipt represented on a blockchain) can make financing faster and safer.

The benefits of tokenization for banks are clear: faster settlement (potentially instantaneous versus days), improved transparency and auditability, and the ability to fractionalize assets (e.g., splitting a large loan or bond into smaller tokens to distribute risk). A Citi executive summed up the goal as replacing siloed systems with “*streamlined operational efficiency*” and better data integrity ⁵³. In practice, however, banks have found that scaling these pilots is challenging. Many tokenization projects remain in a proof-of-concept stage or used only internally. Broad industry tests have shown that while the tech works, adoption is slow – **banks so far mainly use tokenization for internal balance sheet management or bilateral trades, rather than mass-market trading** ⁵³. Issues like legal enforceability of tokenized assets, interoperability with existing clearing systems, and market liquidity for these new digital instruments all need to be resolved. Nonetheless, the trajectory is set: from tokenized interbank cash to tokenized stocks, we are likely to see increasing real-world volumes migrating to blockchain-based systems through the latter 2020s.

Decentralized Finance (DeFi) Integration

Decentralized Finance (DeFi) refers to financial services (lending, trading, payments, etc.) carried out by automated smart contracts on public blockchains, without traditional intermediaries. It grew in the crypto sector as a parallel financial system on platforms like Ethereum. To date, DeFi has remained largely separate from regulated banking – its anonymous, open-access nature is at odds with banks’ KYC/AML obligations. However, the innovations of DeFi have not gone unnoticed by banks and policymakers. In recent years, there’s been growing interest in how **DeFi concepts can be integrated or adapted** for institutional use ⁵⁴.

Few if any major banks are directly using public DeFi protocols yet (no bank is going to deploy depositor funds into a wild-west yield farm on Ethereum). But **experimentation is underway in controlled environments**. Banks are studying how components like **automated market makers (AMMs)**, liquidity pools, and smart contract lending could improve traditional services if implemented in a permissioned context ⁵⁵. For example, an AMM (the algorithmic trading pools used in DeFi exchanges) could, in theory, facilitate 24/7 currency exchange between banks without a central order book – providing continuous interbank FX liquidity. Banks have prototyped such concepts on private ledgers to enable round-the-clock intraday financing ⁵⁵.

One landmark project is **Project Guardian** in Singapore, a regulatory sandbox for institutional DeFi. Spearheaded by the Monetary Authority of Singapore, this project brought together global banks (JPMorgan, DBS, HSBC, Standard Chartered and others) to test using public blockchain protocols for regulated trades ³⁶. In 2022, JPMorgan and DBS conducted a live foreign exchange trade of tokenized deposits through a modified DeFi protocol (using a variant of the Aave lending platform) on a public blockchain network, with on-chain verification of identities and permissible counterparties. This was one of the first instances of **large banks directly engaging with DeFi smart contracts** – the pilot showed that it’s

possible to port institutional money onto a public chain in a compliant way (using “*permissioned liquidity pools*” where participants are pre-approved) ⁵⁶ . Deutsche Bank and other institutions joined subsequent phases of Project Guardian to explore tokenized bond issuance and trading through DeFi rails ⁵⁶ . These experiments aim to combine the **efficiency and automation of DeFi** (which can settle trades in minutes with full transparency) with the safeguards of traditional finance.

Banks are also engaging with DeFi by influencing its governance and protocols. **JPMorgan’s Onyx unit** famously joined the governance board of **MakerDAO**, one of the largest DeFi lending platforms, in 2022 ⁵⁷ . By participating in MakerDAO’s governance (which sets risk parameters for lending, collateral rules, etc.), JPMorgan signaled interest in helping shape DeFi to accommodate institutions. MakerDAO even opened a specific pool for real-world assets, and a European bank (Société Générale) used it to refinance a tokenized bond with a DAI stablecoin loan – a striking example of a regulated bank *borrowing from a DeFi protocol*. This kind of cross-over is early, but it hints at a **future where banks could tap DeFi for liquidity** or offer customers access to DeFi yields, within a compliant framework.

For now, banks are mostly **watching and learning** from DeFi’s rapid innovation ⁵⁴ ⁵⁸ . Concepts like “*liquidity mining*,” “*yield farming*,” and “*programmable money*” intrigue bankers as potential ways to improve interbank lending, treasury management, or automate complex transactions. We are seeing the emergence of “**institutional DeFi**” platforms – for example, Aave Arc is a permissioned version of the Aave lending protocol where only whitelisted institutions can participate, providing a sandbox where banks could lend and borrow with each other via smart contract while meeting compliance. Additionally, established exchanges and custodians are developing “*CeDeFi*” solutions (centralized-decentralized finance) where they offer DeFi-like products but with due diligence and risk controls.

In summary, **DeFi integration is still in its infancy** in banking. No major bank has deployed customer deposits into open DeFi, but the sector is strategically important. Banks see the potential to use **smart contracts for settlement, automated credit, and new liquidity sources**, which could reduce costs and counterparty risks. Any adoption will be *carefully vetted and incremental*, likely happening in partnership with regulators. As the MAS Project Guardian shows, regulators themselves are interested in harnessing useful parts of DeFi while containing its risks. Over the next few years, we can expect banks to roll out pilot services that *feel* like DeFi (instant loans, automated investing) but operate on **permissioned or hybrid blockchain setups** where identities are known and rules enforced. In essence, the banking industry is **learning from DeFi’s innovations** to upgrade its own infrastructure, even if it doesn’t embrace the anarchic, open nature of crypto DeFi directly ⁵⁸ .

Cryptocurrency Services for Clients (BTC, ETH, etc.)

Beyond using blockchain behind the scenes, many banks have started to offer **cryptocurrency services** to their customers – a notable shift from the past. Client demand for Bitcoin, Ethereum, and other digital assets as investments has grown, and banks don’t want to be disintermediated by fintechs or exchanges. Thus, a number of major institutions now provide some combination of **crypto custody, trading, or brokerage** services under their brand. According to reports, several prominent banks – including **JPMorgan, Goldman Sachs, and Standard Chartered** – have launched digital asset trading desks or custody solutions for select clients ⁵⁹ . For example, Goldman Sachs began trading Bitcoin futures and non-deliverable forwards for institutional clients, and in 2022 it arranged its first **OTC crypto options trades** with partners. JPMorgan created **Onyx Digital Assets** for settlement of tokenized securities and also offers banking services to crypto-native firms. **Standard Chartered** (via its subsidiary Zodia Custody) provides

custody for cryptocurrencies to institutional investors. Even **BNY Mellon**, America's oldest bank, debuted a crypto custody platform in 2022, allowing it to hold Bitcoin and Ether on behalf of asset managers – highlighting that digital assets are entering the traditional custody business ⁶⁰ ⁶¹ .

Typically, banks have focused on the **“big three” cryptocurrencies – Bitcoin, Ethereum, and often XRP** – when dipping into these services, as these are the assets with the most market acceptance. Bitcoin (BTC), as the original cryptocurrency, is seen by many as “digital gold.” Banks like Morgan Stanley and Citigroup have offered wealthy clients avenues to gain Bitcoin exposure (through funds or derivatives), and a few smaller banks have even put a portion of treasury reserves in Bitcoin. Ethereum (ETH) is attractive due to its association with smart contracts and DeFi – some banks now let clients stake ETH or invest in Ethereum-based products. For instance, Switzerland's BBVA offers Bitcoin and Ether trading within its app for Swiss clients ⁶² . XRP, while more niche, is sometimes included due to Ripple's focus on the banking sector, although U.S. regulatory issues have made some banks pause on XRP offerings.

In providing these services, banks heavily emphasize **compliance and security**. They often partner with established crypto custodians or use advanced custody tech (like multi-party computation or hardware security modules) to safeguard private keys. For trading, many route orders to liquidity providers or exchanges but shield the client from the complexities of crypto wallets. The overall strategy is to incorporate crypto within familiar banking interfaces – e.g. allowing a client to see Bitcoin holdings alongside their bank accounts in an online portal – to retain customers who might otherwise use external crypto platforms. A notable example is **BBVA Switzerland**, which integrated crypto trading so that customers can seamlessly buy BTC, ETH or even stablecoins with their bank account balance ⁶² . Similarly, **Revolut** (a fintech with a banking license in some regions) lets users hold and spend crypto just like fiat in their app, which has pushed larger banks to consider similar offerings.

However, banks remain **careful about direct exposure** to crypto volatility. They generally offer these as client services, not as assets on the bank's own balance sheet (aside from small pilot allocations). Regulators have set strict capital rules for bank crypto holdings, so most banks avoid holding significant crypto themselves. Instead, they act as a trusted intermediary – earning fees for safekeeping or facilitating trades – while the client bears the market risk. Banks are also investing in **crypto compliance tools** to support these services, using blockchain analytics (from firms like Chainalysis and Elliptic) to trace transactions and ensure anti-money laundering standards are met ⁶³ . For example, if a client deposits cryptocurrency, the bank will likely screen its blockchain history to check it doesn't come from illicit sources, as part of KYC/AML processes.

In summary, offering **Bitcoin, Ethereum, and other crypto products** is now part of the strategy for forward-looking banks. This allows them to capture new revenue streams and satisfy customer interest in digital assets. It also positions banks for a future where these assets might become more integrated into the financial system (e.g. Bitcoin ETFs, or digital securities that trade 24/7). While the **technical side** of supporting crypto (custody tech, blockchain node infrastructure) is non-trivial, many banks have concluded that partnering with fintechs or investing in internal capability is worthwhile. As a result, the once stark line between “crypto companies” and banks is blurring: **banks themselves are becoming significant players in the cryptocurrency ecosystem**, even as they maintain stricter guardrails than the crypto-natives.

Key Players and Notable Initiatives

A number of banks and financial institutions have emerged as **leaders in blockchain adoption**, along with specialized fintech firms and consortia. Below are some of the top players and what they are doing in this space:

- **JPMorgan Chase & Co.:** Arguably the trailblazer among global banks, JPMorgan (through its **Onyx** division) has developed multiple blockchain solutions. Its **JPM Coin** was the first live bank-issued stablecoin, enabling instant USD transfers between clients on a private ledger ²³. JPMorgan's blockchain handles significant volume (as noted, ~\$2B daily by 2025) and the bank is expanding it to serve corporate treasury operations worldwide ³². JPMorgan also built **Liink**, a Quorum-based information-sharing network with hundreds of member banks, used to verify payment data and avoid errors in cross-border transfers ³². Strategically, JPMorgan is now venturing into public blockchain – planning to issue **tokenized deposit coins on the Base network** to make its digital dollars interoperable with broader markets ¹³ ¹⁵. Furthermore, JPM is active in DeFi discussions (e.g. MakerDAO governance) and has invested in numerous blockchain projects (Consensys, Ethereum infrastructure, and HQLAx for collateral swaps ⁶⁴). In short, JPMorgan sees blockchain as foundational to future banking and has a diversified portfolio of initiatives from payments to trading and custody.
- **Ripple (Ripple Labs):** While not a bank, Ripple has been a key blockchain service provider for banks, focusing on cross-border payments. Its **RippleNet** network is used by institutions like Santander, Standard Chartered, and many smaller banks/payment providers to send remittances faster and cheaper than SWIFT by using distributed ledger tech and a standardized messaging system ²⁹. Ripple's software can work without XRP, but the company also promotes **XRP as a bridge currency** for liquidity – especially useful in exotic corridors where direct fiat trading is expensive. Ripple has signed deals in regions like Southeast Asia, the Middle East, and Africa to facilitate remittances (for example, PNC Bank in the US was an early RippleNet adopter for commercial payments). However, Ripple's traction with top-tier banks was hindered by regulatory uncertainty around XRP. Still, with a partial court victory in 2023 clarifying XRP's status for certain sales, Ripple gained momentum to expand its offerings (including a recent push into issuing stablecoins on its ledger ⁶⁵). It remains a major player attempting to “bridge” crypto and banking, with a focus on making cross-border transactions as immediate as information exchange.
- **R3 and Corda:** **R3** is a consortium startup that began in 2015 with a who's-who of global banks (over 100 banks and FIs joined as members). Its platform **Corda** is a permissioned distributed ledger designed specifically for finance workflows. Many banking use cases have been built on Corda: trade finance networks like Marco Polo and Contour, payment experiments, and insurance risk sharing platforms ⁶⁶ ⁶⁷. In 2017, R3 and a group of 22 banks prototyped a cross-border payments solution on Corda to settle transactions in minutes, cutting out correspondent hops ⁶⁸ ⁶⁹. Corda emphasizes privacy (data is only shared on a need-to-know basis between transacting parties) and high throughput, which banks value. Several central banks have also used Corda in lab trials for interbank settlement and bonds. R3 has evolved beyond just banks – today it partners with exchanges, corporates, and even explores interoperability with public blockchains like **Solana** to not miss out on wider innovation ⁷⁰. As a key player, R3 provides the enterprise DLT glue for many bank collaborations.

- **IBM and Hyperledger Fabric:** IBM was an early enterprise blockchain champion, contributing to the Linux Foundation's **Hyperledger Fabric** framework. Fabric, a private blockchain with modular architecture, became popular for consortia because it has no native cryptocurrency and allows fine-tuned access control. IBM worked with a group of major European banks to build **we.trade** on Fabric (as described), which was one of the first blockchain trade platforms in production ⁴⁸. IBM also collaborated with banks like Barclays on other Fabric pilots (e.g. a repo transaction platform) ⁷¹. While IBM's grander vision (like the World Wire payments network on Stellar) didn't fully materialize, IBM Blockchain services continues to assist banks and companies in setting up private ledgers for supply chain, KYC data sharing, and more. Hyperledger Fabric remains a go-to technology for **permissioned consortiums** beyond just IBM's involvement – it's used by firms like **DTCC** (Depository Trust & Clearing Corp) in the U.S. for testing accelerated securities settlement, and by **B3i** (a now-concluded insurance blockchain initiative) for reinsurance contracts. In summary, IBM's role has been as a tech integrator, bringing its enterprise credibility to blockchain for banks that prefer not to use public crypto tech.
- **Ethereum and ConsenSys (Enterprise Ethereum Alliance):** Ethereum's public network is too open for most banks to use directly, but **Enterprise Ethereum** has been hugely influential. The **Enterprise Ethereum Alliance (EEA)**, formed in 2017, brought together banks, tech firms, and startups to adapt Ethereum for corporate use. Members included JPMorgan, Santander, ING, Citi, and many others. **Quorum**, as mentioned, was JPMorgan's enterprise Ethereum variant with added privacy – it was later acquired by ConsenSys (an Ethereum development firm) to unify enterprise Ethereum efforts ⁷² ⁷³. Many bank projects used *Quorum* or *Hyperledger Besu* (another Ethereum-based client) under the hood. For example, **Komgo's commodity trade finance platform runs on Quorum** to facilitate LC issuance and KYC sharing among 15+ banks ⁵². Ethereum's technology also underlies **stablecoins** which banks use: USDC and USDT initially launched on Ethereum, and even if transacted on other networks, Ethereum's ERC-20 token standard set the blueprint. **ConsenSys** itself (headed by Ethereum co-founder Joseph Lubin) has partnered with banks to launch **CBDC trials** (like with the Bank of Thailand and HKMA) and built **permissioned Ethereum networks** for corporate alliances. In short, Ethereum – both the public chain and its private incarnations – is a key piece of the puzzle, providing the smart contract platforms on which many bank applications (from bond tokens to automated swaps) are being built ⁷⁴ ⁷⁵.
- **Central Banks and the BIS:** Though central banks are not commercial FIs, their initiatives strongly influence bank blockchain adoption. Nearly all G20 central banks are researching or piloting **CBDCs** (digital fiat) at either retail or wholesale level ⁷⁶. Commercial banks are deeply involved in wholesale CBDC pilots since those systems would directly change interbank settlement. The **Bank for International Settlements (BIS)** has led cross-border CBDC trials like **mBridge (Multiple CBDC Bridge)** with central banks of China, Hong Kong, Thailand, UAE, and others – big banks in those regions participated to test using multiple CBDCs on one network for international transfers ⁷⁷. Likewise, the BIS "Agora" project (overlapping with mBridge) saw 40 banks test using tokenized deposits and CBDCs together for cross-currency payments ⁷⁷. These experiments hint at a future where **banks transact directly with central bank digital tokens**, cutting out many intermediary steps in forex and settlement. Commercial banks like HSBC, Standard Chartered, UBS, and BNP Paribas have all been part of such pilots. The outcome may be new blockchain-based payment infrastructures that banks will connect to in order to transfer digital cash or digitized securities seamlessly. In Europe, banks await the ECB's decision on a **digital euro**, expected around 2026, which could bring retail CBDC wallets possibly intermediated by banks ⁷⁸. Banks are preparing by

upgrading tech and ensuring any CBDC can be integrated into their blockchain and payment systems. Essentially, central bank projects act as “*force multipliers*” for blockchain in banking – if a major central bank launches a digital currency on a blockchain, all banks in that jurisdiction will need to plug in, accelerating adoption.

- **Others and Emerging Players:** There are many other notable initiatives. **Fnality International** (backed by a consortium of banks including UBS, Barclays, MUFG) is developing a series of settlement tokens (Utility Settlement Coins) for major currencies, aiming to serve as interbank payment mediums on a distributed ledger once they get central bank approval. **Visa and Mastercard** – while payment processors, not banks – are partnering with banks on crypto and blockchain (Visa has settled USDC transactions on Ethereum ⁷² and Mastercard is developing multi-rail networks for CBDCs and stablecoins). In the crypto-native realm, **custody providers** like Anchorage, Coinbase Custody, and Fireblocks count banks as clients, helping them handle digital assets securely. And some **challenger banks** and fintechs are built entirely around blockchain: e.g. **Sygnum and SEBA** in Switzerland are licensed banks that run on crypto infrastructure and offer tokenization services (Sygnum even issued tokenized shares of its own). **Metaverse and digital identity projects** are on the periphery but could involve banks for KYC – for instance, some banks in Canada and Asia have explored blockchain for customer identity verification to streamline onboarding.

Overall, a rich ecosystem of **collaboration between traditional banks, blockchain startups, and tech giants** is pushing the envelope of financial innovation. The “*top players*” range from Wall Street titans like JPMorgan, to specialized firms like Ripple or R3, to central banks and global bodies setting standards. Each is tackling a piece of the puzzle – whether it’s payments, asset markets, or infrastructure – and together they are mapping out how blockchain will weave into the fabric of banking.

Regional Outlook and Strategies

As alluded to earlier, different regions have distinct strategies and attitudes toward blockchain in banking:

- **North America (U.S. & Canada):** The U.S. banking sector has been cautious, partly due to regulatory uncertainty. However, key American banks (JPMorgan, BofA, Goldman, Citi, Wells Fargo) have been quietly active with internal projects and lobbying for clearer rules. U.S. regulators are now formulating stablecoin oversight and bank crypto guidelines – in fact, a draft bill for stablecoin regulation gained traction in 2025, which banks view positively ⁷⁹. This has emboldened banks to plan offerings around **regulated stablecoins** and **tokenized deposits**. We see U.S. banks focusing on improving back-end plumbing (e.g., using blockchain for settlement efficiency, like the JPMorgan repo example where a day-long repo was settled in 3 hours on blockchain ⁸⁰) and preparing to support **FedNow instant payments and potentially a digital dollar** in the future. Canada’s major banks participated in **Project Jasper** with the central bank to test DLT for interbank clearing ⁸¹, and Canadian bank ATB Financial famously sent an on-chain payment to Germany’s Reisebank back in 2016 on Ripple as an early demo. The general stance in North America is *strategic caution* – engaging via pilots, investing in consortia (all big US banks are in either R3 or EEA), and waiting for clear green lights from regulators before large-scale deployment. That said, U.S. banks are looking to not fall behind global peers, so the latter half of the 2020s could see rapid adoption once rules are set.

- **Europe (EU, UK, Switzerland):** European banks have been at the forefront of collaborative blockchain efforts. The EU's **MiCA regulation** (Markets in Crypto-Assets), passed in 2023, provides a comprehensive framework for digital assets and has given banks more confidence to proceed ⁸². As a result, European banks are experimenting with MiCA-compliant stablecoins – e.g., **Societe Generale issued a Euro stablecoin (EUR CoinVertible)** in 2023 under France's digital asset laws, and fintech-bank partnerships are creating e-money tokens (like Banking Circle's Euro-denominated **EURI** stablecoin) to use in cross-border settlement ⁸³. The **EUROzone's planned digital euro** is another factor: banks are actively shaping its design to ensure they play a key role in distribution. Meanwhile, Europe's tradition of consortium projects continues (we.trade in trade finance, Finality's Utility Settlement Coin in interbank payments, etc.). **Switzerland** stands out with a very progressive ecosystem – Swiss banks not only engage in crypto trading (e.g., Julius Baer and Bordier offer crypto investments) but also participate in infrastructure like **SIX Digital Exchange (SDX)**, which launched a regulated exchange for tokenized securities. Swiss banks and the central bank's wholesale CBDC trials (Project Helvetia) put the country at the cutting edge ⁴⁴. The UK, post-Brexit, is trying to position London as a crypto hub too; banks there (like HSBC, Standard Chartered) have done notable blockchain projects (HSBC's *FX Everywhere* platform reportedly used DLT to settle \$250 billion of internal FX trades by 2020, and StanChart has run blockchain-based trade finance in Asia ⁸⁴). Overall, Europe's approach emphasizes compliance and leveraging blockchain for efficiency, with an eye on **sustainable finance** (e.g., BNP Paribas using blockchain for **green bond tracking** ⁸⁵) and integrating into the new regulatory regime.

- **Asia-Pacific:** Asia is a mosaic of approaches. **Singapore** and **Hong Kong** are major fintech hubs where banks actively collaborate with regulators on blockchain pilots. Singapore's banks (DBS, UOB, OCBC) and regional branches of foreign banks have been involved in **Project Ubin** (multi-phase project on blockchain payments), **Project Guardian** (DeFi/tokenization trials), and more ³⁶. DBS Bank has even launched its own **digital asset exchange** for tokenized securities and crypto, catering to institutional and accredited investors. **Hong Kong**, after some hesitation, embraced crypto and is piloting **e-HKD (digital Hong Kong dollar)**, with local banks exploring use cases in payments and tokenized deposits. **Japan's** big banks (MUFG, Mizuho, SMBC) each tried their own digital currencies for domestic use (MUFG's coin, Mizuho's J-Coin) and collectively they are investing in blockchain trade platforms and even crypto custody (Nomura, for instance, established Komainu custody with Ledger). **South Korea** is exploring security token exchanges with bank involvement, and its banks have launched blockchain-based ID systems. **China**, as noted, takes a very state-controlled approach: crypto trading is banned, but all big Chinese banks are implementing the **digital yuan** and using consortium blockchains for things like supply chain finance (e.g., the People's Bank of China's trade finance platform has billions in loans processed on a blockchain). Chinese tech giants (Ant, Tencent) also built blockchain networks that banks use for things like digital invoices and asset-backed securities issuance (Ant's blockchain facilitated a \$16 billion asset finance via tokens with participation from Chinese banks). **Australia** attempted a high-profile blockchain project replacing its stock exchange settlement system (the ASX's plan to use Digital Asset's platform) which was unfortunately canceled in 2022 due to complexity, but Australian banks continue smaller pilots and the Reserve Bank of Australia ran a CBDC pilot in 2023 with bank consortia. Across Asia-Pacific, there is strong interest in **cross-border connectivity** – projects like **mBridge** linking multiple Asian CBDCs ⁷⁷, or the ASEAN region considering blockchain to link faster payment networks – and banks are a crucial part of these efforts.

- **Middle East & Africa:** The Middle East's financial hubs such as **United Arab Emirates (UAE)** and **Saudi Arabia** are pushing aggressive blockchain adoption. UAE's largest banks (e.g., Emirates NBD) have used blockchain for **fraud detection in checks** (a Dubai initiative puts check IDs on a blockchain) and participated in **Dubai's KYC blockchain** platform to share verified KYC data among banks. The **UAE and Saudi central banks** collaborated on *Project Aber*, a pilot where several commercial banks exchanged a joint digital currency for cross-border settlements between the two countries – it was deemed successful in 2020, showing that a dual-issued CBDC on Hyperledger could streamline interbank currency flows. Off the back of that, the Gulf region banks are keen on blockchain for both retail and wholesale: Emirates NBD, for example, joined the Enterprise Ethereum Alliance, and National Bank of Abu Dhabi (now FAB) was one of the first Middle East banks to use Ripple for remittances to Asia. Bahrain has been friendly to crypto too – Bahrain's central bank worked with JPMorgan in 2021 to test instantaneous cross-border transfers using JPM's blockchain and JPM Coin, involving the Bank of Bahrain and Bank of Sharjah ⁸⁶. In **Africa**, adoption is uneven but growing. South African banks are active in blockchain consortia (Standard Bank and FirstRand were involved in some R3 trials). **Nigeria** launched the eNaira CBDC for retail use, which banks there distribute, though uptake is modest. African banks are also looking at blockchain for trade finance – e.g., Standard Bank (South Africa) and Stanbic (Uganda/Kenya) use a blockchain-based platform for letters of credit in some intra-Africa trade corridors, boosting efficiency for markets where verification infrastructure is weak. Moreover, African fintechs leverage stablecoins for cross-border payments (like remittances into Nigeria or Kenya using USDC/USDT), and some banks have started investing in or partnering with these fintechs to extend services to the unbanked.

In conclusion, **blockchain is becoming a strategic priority in banking across the globe**, but the approach and pace differ. Developed markets are aligning projects with regulatory developments (e.g., stablecoins in the US after laws, tokenization in EU under MiCA, CBDC pilots in Asia), while developing regions often leapfrog by using crypto solutions where traditional infrastructure is lacking. Permissioned, private blockchains currently dominate bank implementations due to the need for privacy, but there is a clear trend towards **greater interoperability with public blockchains** as technology like zero-knowledge proofs and regulated public networks (like Base or others) become available ¹⁵. Banks are also increasingly collaborating internationally – via forums like the BIS and partnerships with fintech – to ensure new blockchain-based systems can work across borders. The *strategic* goal is to harness the efficiencies (speed, transparency, automation) that blockchain offers, while the *technical* challenge is integrating those with banks' robust requirements (security, compliance, scalability).

As we look at current and future uses: **payments and settlements** are being revolutionized by tokenized money and stablecoins; **decentralized finance concepts** are influencing how banks think about lending and market liquidity; **real-world asset tokenization** is set to transform everything from bond markets to trade finance; and **new blockchain networks** – whether permissioned ones like Corda/Quorum or public ones like Ethereum/XRP Ledger – are gradually becoming part of banks' technology stack. The top banks and financial players are investing heavily to not be left behind. In the next few years, we can expect to see several blockchain-based platforms move from pilot to production, heralding a new era where **blockchain underpins mainstream banking services** in a way that customers may not see directly, but will feel in faster, smarter financial products.

Sources: ⁸⁷ ²⁶ ¹⁷ ²⁹ ³¹ ⁴⁹ ⁵⁴ ⁵⁷ and more above.

1 2 3 4 5 6 7 8 9 10 11 12 23 24 26 27 28 29 30 31 32 39 40 41 42 43 44 48 49 50
51 52 53 54 55 57 58 59 60 61 63 66 67 68 69 70 71 72 73 74 75 76 77 78 87 Top 7 Blockchain

Technologies Adopted by Leading Banks Today | Yellow.com

<https://yellow.com/news/top-7-blockchain-technologies-adopted-by-leading-banks-today>

13 14 15 25 45 46 79 JP Morgan to launch JPMD deposit token on Base public blockchain - Ledger Insights - blockchain for enterprise

<https://www.ledgerinsights.com/jp-morgan-to-launch-jpmd-deposit-token-on-public-blockchain-base/>

16 17 18 19 20 21 22 34 35 37 38 Reshaping Cross-Border Payments With Stablecoins - Payments Consulting Network

<https://paymentsconsulting.com/reshaping-cross-border-payments-with-stablecoins/>

33 StanChart, Ant Group, bKash launch blockchain remittance service

<https://www.ledgerinsights.com/standard-chartered-ant-group-bkash-launch-blockchain-remittance-service/>

36 47 56 Project Guardian explained: A global initiative for asset tokenization

<https://cointelegraph.com/learn/articles/project-guardian-explained>

62 81 82 85 Blockchain in Banking: Use Cases and Examples

<https://www.ulam.io/blog/blockchain-in-banking-use-cases-and-examples>

64 80 Goldman Sachs joins JP Morgan Repo blockchain network - Ledger Insights - blockchain for enterprise

<https://www.ledgerinsights.com/goldman-sachs-joins-jp-morgan-repo-blockchain-network/>

65 Ripple plans RLUSD stablecoin EU entry via Luxembourg

<https://www.ledgerinsights.com/ripple-plans-rlusd-stablecoin-eu-entry-via-luxembourg/>

83 Global Insights: Stablecoin Payments & Infrastructure Trends | Fireblocks

<https://www.fireblocks.com/report/state-of-stablecoins/>

84 StanChart executes Bangladesh's first-ever blockchain LC transaction

<https://www.thedailystar.net/business/news/stanchart-executes-bangladeshs-first-ever-blockchain-lc-transaction-1945733>

86 Standard Chartered Bank, bKash and Valyou Launch Bangladesh's ...

<https://www.sc.com/bd/news-media/standard-chartered-bank-bkash-and-valyou-launch-bangladeshs-first-blockchain-based-cross-border-remittance-service-facilitating-instant-transfers-from-malaysia/>