



3FSS Leadership Team

Capacity Building Session:
Tokenisation

Agenda

- 1. Tokenization Fundamentals**
- 2. Global Framework Trends**
- 3. QFC Digital Assets Framework**
- 4. Digital Assets Lab**
- 5. Blockchain Types and Transactions Fees ('Gas')**

Tokenisation Fundamentals

What is Asset Tokenization

Tokenization is the process of conferring ownership rights to an asset through digital tokens on a blockchain. Depending on the legal framework, these tokens may embody contractual rights to the underlying assets or serve as representations requiring supporting legal agreements.

Key distinctions

- **Digital twins:** on-chain representation of something that exists off-chain
- **Native tokens:** assets that exist inherently on-chain

Scope of assets

- **Physical assets:** cars, paintings, real estate
- **Financial assets:** securities, commodities, debt
- **Intangible assets:** IP, data, ratings

Select definitions

- “The process by which real-world assets are turned into something of digital value called a token, often subsequently able to offer ownership of parts of this asset to different owners.” (**International Capital Market Association ICMA**)
- “Tokenisation of assets involve [s] the digital representation of real assets on distributed ledgers (digital twins) or the issuance of traditional asset classes in tokenized form (native tokens), excluding crypto-assets.” (**Organisation for Economic Cooperation and Development OECD**)
- **CFTC GMAC DAMS Digital Assets Classification Approach & Taxonomy:** defines and categorizes digital assets, including tokenized forms of digital assets, based on their specific features

Global Tokenization Trends

Market size & growth

- Global fixed income market: USD 150 trillion
- Digital bonds issued to date: USD 17 billion
- Only 0.01% of total value of global fixed income and equity securities combined currently tokenized

Real-world asset (RWA) market trajectory

- Increasing tokenized value: tokenized RWA market surpassed USD 30 billion in on-chain value in 2025
 - Tokenized US treasuries alone accounting for USD 8 billion (BlackRock, Franklin Templeton, Ondo Finance)
- Fast growth: projected USD 1-3 trillion in RWA tokenization by 2030

Key market drivers

- High yields and safety (US treasuries-backed RWA)
- Faster settlement and 24/7 trading
- Decentralized finance (DeFi) integration: RWA tokens used as collateral in liquidity pools

Institutional adoption

- Increasing variety of tokenized assets issued on blockchains by sovereigns, corporations, municipalities, asset managers, ratings agencies, etc.
- Banks and asset managers expected to tokenize additional instruments
- Convergence of traditional networks and blockchain-based networks

Foundational Key Concepts

Six core features of tokenization

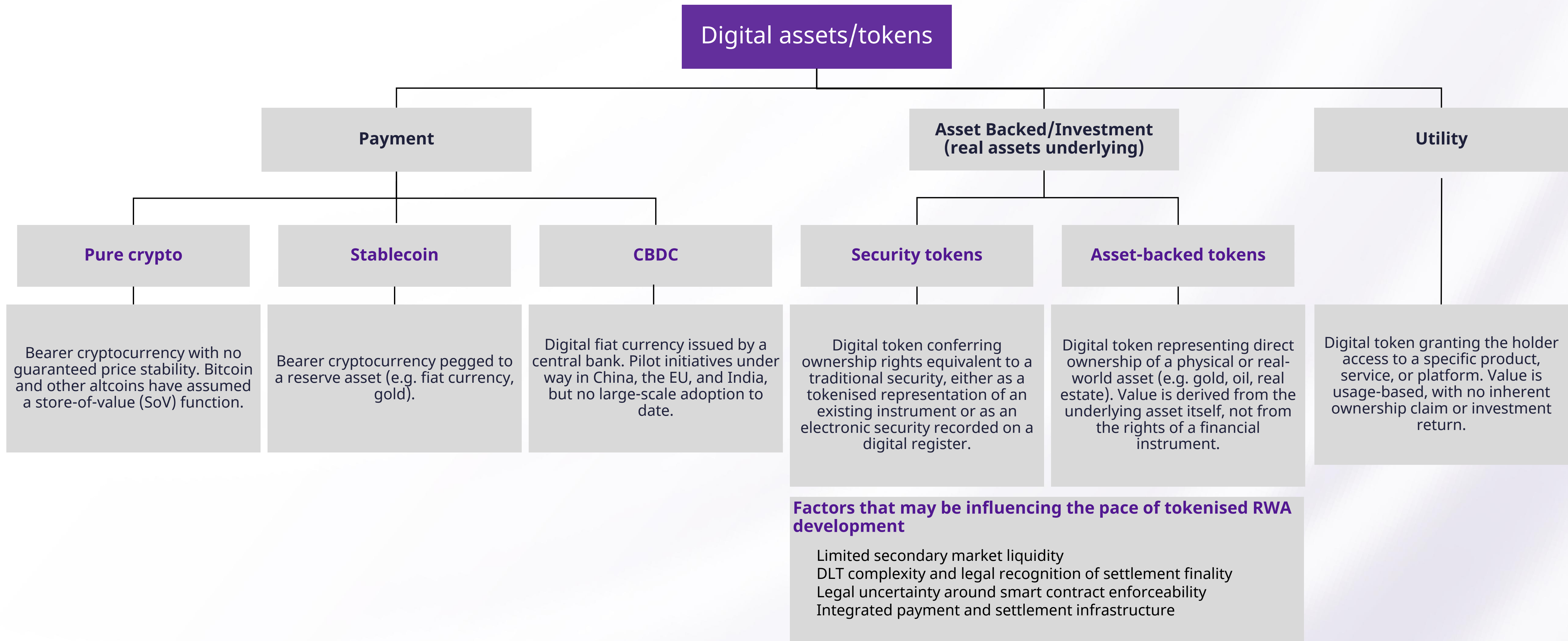
Representation	• On-chain representation of off-chain assets (digital twin) or DLT-native assets
Memory aid	• Tokens as ledger-based equivalents of contracts and records • Historical precedent: physical tokens (clay, stone) used since prehistoric times for accounting
Ownership records	• Verification of ownership and provenance through verification mechanisms • Settlement finality determines when assets legally change hands
Fractionalization	• Assets divided into smaller, tradable units • Enables trading of portions of high-value assets (real estate, private equity) • Facilitates secondary trading at a larger scale
Liquidity	• Unlocks trapped liquidity through listing and trading fractionalized tokens in secondary markets • Improves market efficiency for traditionally illiquid assets
Authentication	• Digital identifiers for verification of authenticity and digital identity • Critical for supply chain, art, and medical devices

Value Proposition of Tokenization and DLT

Operational efficiencies	• Smart contracts conduct complex trades nearly instantaneously • Reduces need for slow and expensive compliance checks and audits • Automatic reconciliation on distributed, shared ledgers (vs. siloed traditional systems)
Market structure benefits	• 24/7 market operations beyond traditional market hours • Near-instant settlement for transactions • Reduced counterparty risk and settlement delays
Cost & intermediary reduction	• Bypass legacy intermediaries • Lower costs, faster transactions • Open-source blockchain protocols built on open standards ensure cross-platform interoperability and foster innovation
Democratization & access	• Enables fractional ownership, lowering investment barriers • Broadens investor autonomy over instruments and access to traditionally illiquid markets • Financial inclusion: bypasses need for traditional bank accounts via digital wallets • Empowers unbanked/underbanked communities globally
Enhanced security & transparency	• Well-designed smart contracts reduce human error and fraud risk • Use of distributed ledgers safeguards assets from unauthorized access • Blockchain traceability restores trust in opaque processes • Supports AML/CFT efforts while protecting privacy
Programmability	• Rules & logic embedded into payment behaviors (automatic interest, dividend, tax payments) • Compliance-by-design: regulatory rules coded into token logic

Token Types

Digital tokens can take different forms, including cryptocurrencies, stablecoins, NFTs, digital securities, and other tokenized assets. While many represent value or ownership, some are designed to provide access or usage rights instead. There is currently no universally accepted legal definition or framework for digital assets.



Global Framework Trends

United States

The U.S. underwent a transition in 2025 following the change in the presidency. As a result, regulators and government agencies have outlined new roadmaps, put forth new policies, and and shifted their stance on crypto and digital assets more broadly.

Securities and Exchange Commission (SEC)	Created the Cyber and Emerging Technologies Unit (CETU) to combat cyber crime and fraud	Division of Corporate Finance provided views on proof-of-work mining activities and “covered stablecoins”
Outlined priority areas for digital assets: legal status under securities laws, outlining SEC jurisdiction, registration, cross-border experimentation	Hosted roundtable series on key topics related to crypto regulation (e.g., DeFi, crypto trading, custody)	Division of Corporate Finance provided views on proof-of-work mining activities and “covered stablecoins”
Launched Project Crypto as agency-wide effort to modernize securities rules	Approved rule changes by three national securities exchanges to adopt generic listing standards for exchange-traded products that hold spot commodities, including digital assets	Issued no-action letter to DTC to offer a new service to tokenize real-world, DTC-custodied assets
Commodity Futures Trading Commission (CFTC)		
Launched initiative for trading spot crypto asset contracts listed on CFTC-registered futures exchanges	Held a CEO forum to discuss CFTC’s digital asset markets pilot program for tokenized non-cash collateral such as stablecoins	Created a CEO Innovation Council to provide insight on developing regulations
Launched initiative for the use of tokenized collateral including stablecoins in derivatives markets	Launched pilot program for certain digital assets to be used as collateral in derivatives markets	Convened public roundtables to discuss evolving trends and innovation with key industry stakeholders

United States

Legislature

Joint Congressional resolution passed to overturn IRS Broker Rule which prescribed reporting requirements for DeFi protocols	Passed Guiding and Establishing National Innovation for US Stablecoins (GENIUS) Act to provide legal and regulatory framework for stablecoins	Multiple discussion drafts published by various committees building upon the CLARITY Act
House Committee on Financial Services advanced Digital Asset Market Clarity (CLARITY) Act as a comprehensive regulatory framework for digital assets	House passed Anti-CBDC Surveillance State Act, but was not taken up by Senate in 2025	

Other Developments

Federal Reserve announced that reputational risk will no longer be a component of examination programs for its supervision of banks	Office of the Comptroller of the Currency (OCC) stated that OCC-regulated banks may buy and sell assets held in custody and can outsource bank-permissible crypto-asset activities	OCC confirmed that conducting riskless principal crypto-asset transactions is part of the business of banking and is permissible for a national bank
Federal Reserve announced an end to its novel activities supervision program and return to monitoring banks' novel activities through the normal supervisory process	OCC confirmed that a national bank may pay network fees to facilitate otherwise permissible activities and hold, as principal, amounts of crypto-assets on balance sheet necessary to pay network fees for which the bank anticipates a reasonably foreseeable need	Department of Labor rescinded previous guidance that discouraged fiduciaries from including crypto assets in 401(k) retirement plans
		Internal Revenue Service updated guidance to include a safe harbor for trusts to stake digital assets

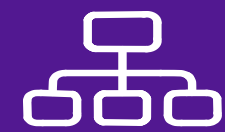
EU MiCA: The Single Market Goes Live by 1 July 2026

The European Union's Markets in Crypto-Assets Regulation (MiCA) is transitioning from policy framework to active enforcement, creating binding compliance deadlines that will reshape the European digital asset landscape. This represents the EU's most significant regulatory milestone for crypto-asset service providers.



1 July 2026 – Hard Stop Deadline

End of all EU transitional regimes. CASPs (Crypto-Asset Service Providers) must be MiCA-authorized or cease EU operations entirely. This is a binary outcome with no extensions.



Fragmented Glidepaths Until Then

Member states implementing varying timelines—some shorter, some longer—creating short-term regulatory patchwork. France's deadline is 30 June 2026, with other jurisdictions following similar patterns.



Early Warning Signals Emerging

France reporting surprisingly low application momentum relative to market size, suggesting significant consolidation and wind-down planning already underway among providers.



Passporting: The Strategic Prize

Once authorized in one EU member state, CASPs can scale operations EU-wide via simple notification process—creating powerful incentive for compliance despite costs.



ESMA Supervisory Convergence

European Securities and Markets Authority enforcing stricter "substance" expectations: real governance structures, adequate staffing, and tighter outsourcing oversight to prevent regulatory arbitrage.

Why it matters: EU market access is becoming binary by mid-2026—authorized-and-scalable versus forced exit. This is no longer a policy debate; it's an execution test.

UK's Crypto Regime: Phased Rollout Through 2026

The UK is developing its regulatory framework for digital assets in carefully staged phases, aiming to balance innovation with consumer protection. This approach positions the UK as a potential regulatory model for other jurisdictions observing MiCA's implementation challenges.

Key Timeline and Developments

The Financial Conduct Authority (FCA) is rolling out rules across multiple asset classes and service types, with stablecoins receiving priority attention. The UK's approach deliberately differs from the EU's "big bang" implementation, allowing for iterative refinement based on market feedback.

- Stablecoin regulation – First phase targeting fiat-backed tokens used for payments, with framework expected by mid-2026
- Broader crypto-asset rules – Custody, trading, and lending services coming under FCA oversight progressively
- Marketing restrictions – Already active since October 2023, requiring firms to ensure promotions are "fair, clear, and not misleading"
- Financial promotions gateway – Only FCA-authorized firms can approve crypto marketing materials
- Cross-border coordination – Active dialogue with EU on equivalence and mutual recognition frameworks

Why it matters: UK offers gradualism and dialogue vs EU's cliff-edge approach. Firms are watching which model proves more effective for balancing innovation and protection.

Asia-Pacific

Major APAC jurisdictions continue to move toward institutionalization and integration of digital assets into the financial infrastructure through the implementation of comprehensive licensing regimes; formalization of stablecoin regimes; updates to AML, capital markets, and securities laws; and elaboration of private law. Diversity in timelines and approaches; Basel III crypto rules implementation in flux.

Hong Kong Vision: “Establishing Hong Kong as a premier global hub for digital assets...a trusted market where innovation flourishes in a risk-managed manner, delivering concrete results to the real economy and financial markets” ... “Anchored in principle of ‘same activity, same risks, same regulation’...” (Policy Statement 2.0, 2025.06)	HK Government’s LEAP Framework (2025.06): Legal and regulatory streamlining Expanding the suite of tokenized products Advancing use cases and cross-sectoral collaboration People and partnership development Securities & Futures Commission (SFC)’s ASPIRE Roadmap (2025.02): Access, Safeguards, Products, Infrastructure, Relationships	Stablecoins Ordinance (in force 2025.08.01): establishes comprehensive regime for regulating issuance of fiat-referenced stablecoins in HK; confers to Hong Kong Monetary Authority (HKMA) powers of licensing and enforcement Financial Services and the Treasury Bureau (FSTB) + SFC’s comprehensive virtual asset (VA) licensing regime: in progress; covers entire VA service chain (dealing, advisory, investment management, and custodian service providers); consultations concluding, will be introduced through amendments to AML Ordinance in 2026
Singapore Vision: “to build an. Innovative and responsible digital asset ecosystem in Singapore” (Monetary Authority of Singapore [MAS])	2024 Amendments to Payment Services Act 2019 (PSA): PSA regulating all payment services, including Digital Payment Token Service Providers (DPTSPs), since 2020; 2024.04 amendments expanded regulated activities, imposed new user protection and custody requirements MAS Stablecoin Regulatory Framework (finalized 2023.08): applies to single-currency stablecoins pegged to SGD or any G10 currency and issued in SG; requirements for value stability, capital, redemption rights, disclosure	Financial Services and Markets Act 2022 (FSMA): addresses additional risks (retail investors, money laundering); 2025.06 – new regime requires all SG-incorporated DPTSPs serving only overseas clients to to obtain Part 9 license or cease operations; no transitional period Projects Ubin, Dunbar, Orchid, Guardian Supreme High Court in 2023 rules crypto-asset is a personal property right, capable of being subject to a trust

Risk Mitigation Framework

Industry-led Initiative facilitated by GBBC

- ◆ The Capital Markets Risk Mitigation Framework for Non-financial Risks of Blockchain Infrastructure (RMF) is an industry-led initiative aimed at helping financial institutions identify, evaluate and minimize non-financial risks associated with the blockchain infrastructures.
- ◆ RMF prioritizes the integration of blockchain-specific risks into existing enterprise risk frameworks using the broad set of risk management frameworks deployed in regulated financial institutions.
- ◆ KEY RISK CATEGORIES COVERED BY PHASE 1:
 - ✓ **Novel Risks:** technology risks (protocol governance, node diversity), financial crime (sanctions evasion, AML/KYC), key management, cybersecurity, smart contract vulnerabilities, etc
 - ✓ **Adapted Risks:** contractual enforcement, legal ambiguity, data management & irreversible transactions, etc.
 - ✓ **Standard Risks:** regulatory compliance, internal fraud, people risk, etc.

Website Landing Page: [GBBC and Oliver Wyman Release Industry-Led Risk Mitigation Framework \(RMF\)](#)

Phase 1 DRAFT: [Risk Mitigation Framework \(RMF\) 2025](#)

RMF FAQs: [FAQs - Risk Mitigation Framework RMF Phase 1 July 2025 .pdf](#)

RMF Fact Card: [RMF Fact Card](#)

Phase 2: Expansion to L2s and Digital Payments

◆ Workstream A

Refinement and Expansion of RMF

- **Expands RMF to include Layer 2 solutions:**
 - Defines taxonomy of Layer 2 solutions to ultimately generalize mitigation strategies and approaches
 - Risks are re-visited based on mitigation strategies available at L2 levels
 - Takes-in feedback on Phase 1 and incorporates as appropriate
 - Addresses both net new emerging risks from infrastructure advancements and novel risks from Phase 1

◆ Workstream B

Digital Payments

- **Digital Payments Risk Mitigation Analysis:**
 - Expands RMF application to digital payment related use cases, such as 1) stablecoins and 2) tokenized bank deposits/deposit tokens
 - Defines taxonomy of payment instruments, relying on CFTC taxonomy
 - The approach will focus on specific risks and mitigations stakeholders across digital payments value chain should consider
 - Focuses on non-financial risks only to remain consistent with Phase 1

Both workstreams will run concurrently with dedicated working group members

QFC Digital Assets Framework

QFC Digital Assets Framework

Key concepts

QFC Digital Asset Regulations - Part 2 Tokens: ownership, transfer, cancellation etc.

- Establishes the concepts of a **token**, **permitted tokens** and **excluded tokens** and rights in the underlying asset, and provides for the generation, ownership and transfer of tokens.

What is a token?

- is **cryptographically secured** i.e., a method of protecting information and communications using codes, so that only those for whom the information is intended can read and process it;
- is a digital representation of **real or personal property rights, including contractual rights**; and
- is capable of being issued, transferred or stored using **distributed ledger technology** or other similar technology.

What is a Permitted Token?

- A permitted token is a token that may be **generated** (i.e., brings the token within the QFC legal framework and confers ownership) only by taking the following steps through **a QFC licensed Token Service Provider**:
 - the owner of a right which is to be tokenised obtains a certificate of **validation** from a validator.
 - the owner of the right makes a request to **a token generator and generates a token** representing the underlying right in the RWA.
 - is not an **excluded token** (Example, cryptocurrency tokens (**including stablecoins**) that are used as an alternative to fiat currencies but are not governmentally backed). However, a token representing a right to a commodity, such as a precious metal, is not an excluded token even though it may be tradeable.

QFC Digital Assets Framework

2 separate parts to the QFC Framework

1. QFC Digital Asset Regulations:

- Establishes the concepts of a token, permitted tokens and excluded tokens.
- Permits tokenisation of assets in the QFC.
- Gives legal certainty over ownership and transfer of tokens and the underlying asset.
- Establishes licensing regime for token service providers.

2. QFCRA Investment Tokens

- Establishes the concept an investment token (a token representing a regulated financial product).
 - Requires investment tokens to be regulated in same way as underlying financial product.
 - Declares **operating an investment token exchange** and **clearing and settling investment tokens** to be regulated activities.
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- In both cases, activity related to excluded tokens is prohibited.
 - An excluded token is a token that does not represent a right in property (other than the token itself) (e.g. cryptocurrency) or is a substitute for, or represents, currency, or can other wise be used as a means of payment (e.g. stablecoins or other pure payment tokens)

QFC Digital Assets Framework

QFC Digital Asset Regulations

A legal regime for tokenisation

- **Permits tokenisation of assets within the QFC:**
 - **Asset neutral** – can be any right in property whether a real right (enforceable vs any other person) or a person right (enforceable against a counterparty – for example, a contractual right).
 - **Technology neutral** – regulation does not specify any particular blockchain technology BUT must comply with standards set out in QFC technology guidelines.
 - Must be generated and validated by a licensed token service provider (TSP) in the QFC.
 - Uses **trusted technology** – token generation must comply with QFC guidelines that (i) embed the high standards necessary to ensure trust and confidence among consumers and support from high quality service providers and (ii) leverages the standards established by Ministry Of Communications and Information technology and Qatar Central Bank (QCB) and accepted international standards for tokenisation.
 - Tokens generated under this regime are known as ***permitted tokens***
- **Provides legal certainty:** the Regulations provide legal recognition of permitted tokens meaning that token owners have legal ownership of the underlying asset. Regulations and associated amendments ensure there is legal certainty over transfer of ownership, custody arrangements and smart contracts.
- **Permitted tokens may be held and transferred outside the QFC:** If another legal regime recognises QFC law, ownership rights represented by a permitted token may be enforceable outside the QFC. (Other QFC legal concepts such as QFC trusts and QFC security rights are recognised outside the QFC.)
 - **Example** – A bank seeks to issue a tokenised bond. It employs a licensed TSP to generate the tokens and provide validation of the token as representing ownership of the bond. As this is done using the QFC regime, the QFC Digital Asset Regulations provide the legal certainty that the tokens represent ownership of the bond for investors. But the bond issuance is still regulated as normal by QCB (and Qatar Financial Market Authority if publicly offered or listed).

QFC Digital Assets Framework

QFCRA Investment Token Rules

Financial services regulatory regime expanded to investment tokens

- **Regulates tokens that represent:**
 - **A specified product.** (Shares, debt instruments, credit facilities, warrants, securities receipts, units in collective investment schemes, options, futures, contracts for differences, contracts of insurance, deposits, and rights in investments).
 - **An approved derivative.**
 - **An Islamic financial contract.**
 - Tokens representing such products are known as *investment tokens*.
- **Activity involving investment tokens is regulated by QFCRA in the same way as the underlying product would be regulated** e.g. collective investment funds are regulated by the COLL or PROF rules; if a fund issues units in tokenised form the COLL or PROF rules continue to apply. Existing QFCRA rulebooks have been amended to provide for activities involving investment tokens.
- **Investment tokens can be but need not be permitted tokens.** If a token is generated outside the QFC but it represents a specified product, financial services activity carried out in or from the QFC involving that token will be regulated by QFCRA.
 - Example – An investment group offers custody services for tokenised securities generated and traded under the UAE VARA regime. That constitutes the regulated activity of providing custody services in or from the QFC and will be regulated by QFCRA.
- **Certain activities are not regulated even when carried out in relation to an investment token.** e.g. token generation and validation. These are not financial services.
- **Same economic effect – same regulatory treatment**

QFC Digital Assets Framework

Token services

QFC Digital Asset Regulations – Part 3 Token Services

- A token service in the QFC is a permitted activity under the QFC Law and cannot be carried in or from the QFC unless an entity is licensed to do so by the Authority.
- A token service means any of the following services:
 - **Validation** - confirming that a person is the owner of a right capable of being represented by a permitted token and issuing a certificate of validation
 - **Token generation** - token generation means the service of generating a token, on token infrastructure, on behalf of the owner of the underlying represented by the token
 - **Token custody services** - holding or controlling tokens on behalf of clients or holding or controlling the means by which clients' tokens may be recorded and transacted on token infrastructure
 - **Operating a token exchange** - operating a system which brings together multiple third party buying and selling interests in tokens, in accordance with the system's **non-discretionary rules**, in a way that results in a contract in respect of the tokens
 - **Token transfer services** - token transfer services means providing any service (other than the above) that facilitates the transfer of a token to, or from, a person from, or to, a third party

Note: A token service may constitute a **regulated activity** under the QFC Law, if it relates to investment tokens. In which case, an entity may not carry on the activity in or from the QFC unless the entity is approved or authorised to do so by the Regulatory Authority. (The entity will then be a QFCRA authorised firm and not a licensed TSP)

QFC Digital Assets Framework

Token related activity – Regulated vs non-regulated

Investment tokens

Regulated

- QFC Banks
- QFC Insurers
- QFC Asset Managers
- QFC Funds
- New entrants – Specialised tokenised financial services firms (no indication yet)
- All regulated by QFCRA
- Example: A bank wants to issue a Tokenised Bond:
 - traditional bond turned into digital tokens and on a decentralised ledger
 - could use in-house technology or a licensed TSP to generate and validate the tokens (generation and validation alone are not regulated activities so a licensed TSP can carry out those steps, provided the Bank carries out the regulated activities such as issuing the bond tokens).
 - If TSP, how is that relationship structured? third party provider / outsourced, white label.
 - QFCRA Authorised firms likely required to have authorisation amended to note that they are an issuer of a tokenised specified product.

Permitted tokens

Non-regulated

- **Token Service Providers (TSPs)**
 - May be a pure technology provider (e.g. providing the technology for generation, storage and transfer). If so, not regulated even if tokens are investment tokens (the authorised firm who uses the TSP would be regulated).
 - May provide a more extensive suite of token services but only in relation to permitted tokens that are NOT investment tokens (for example: running custody services and operating a trading platform for NFTs representing IP rights to music or some other non-financial product). Licensed but not regulated by QFCRA.
 - In any case, all TSPs subject to QFCA Rules, TSP code and Technology Guidelines (See the QFCA Non-regulated Activities Rules and the QFCA Rules which include the Token Service Provider's code, a set of operational and governance requirements for licensed TSPs)

Digital Assets Lab

Digital Assets Lab

The Digital Assets Lab was launched by QFC

Under the Lab and with the direction of the Governor of the Qatar Central Bank, **the QFC Digital Assets Regulation was developed**, in 2024 and **firms have subsequently begun to explore tokenization in Qatar**

What is the Lab?

- The Digital Assets Lab is a virtual banner, setup to support firms developing digital assets use cases in Qatar
- It brings together local and international companies exploring blockchain and tokenization in Qatar
- The Lab is supported by selected local and international partners and experts
- The lab is supporting a variety of cases spanning real estate, Islamic finance, tokenised funds, fractional equities, commodities, and digital deposits
- The Lab does not facilitate live transactions and does not operate as a regulatory sandbox.

What it does?

- The Lab supports firms progressing from early validation through regulatory engagement and pathway-to-licensing discussions
- Acts as a gateway into Qatar for startups and institutions in the digital asset space
- Provide support through:
 - Guidance
 - Visibility
 - Connectivity
 - Technical & Testing support
 - Other Benefits (office space etc.)

Why it matters:

- Supports Qatar's ambition to be a regional hub for digital innovation
- Allows regulators to incubate innovation and support the growth of the digital economy
- Can be a potential pathway to get a full license for successful participants

Current Status



Applications



Participants



Partners



Use Cases



TSP Licensed
(Non-regulated)

Understanding Blockchain and DLT Transaction Fees ('Gas')

Blockchain Selection

- **Choice of DLT/Blockchain is Critical - The blockchain technology is the foundation for trust, transparency, and automation in tokenised assets**
 - Determines how securely and efficiently fractional ownership is recorded, transferred, and governed
 - Affects how easily investors can access, trade, and interact with the token
 - Establishes ability to comply with regulations (e.g. KYC/AML, accredited investor restrictions)
 - Impacts scalability, transaction cost, and long-term interoperability with other financial platforms

- **Key Considerations for DLT/blockchain selection**

Public vs private blockchain

Public: Open access, transparent, liquid, but less control (e.g., Ethereum, Polygon, Avalanche); broader ability to participate, see data, and hold tokens

Private: Controlled access, higher privacy, but closed ecosystem (e.g., Hyperledger Fabric, R3 Corda); only approved participants can join. Can be fully private ecosystems or built as private layers under an established chain (Layer 1 v Layer 2)

Smart Contract Capabilities

Automated rules written into the blockchain that control what the token can do; needed to automate dividends, ownership rules, and compliance logic

Ecosystem Maturity

Availability of developer tools, legal frameworks, support for token standards (**e.g. ERC-1400, ERC-3643**)

Interoperability

Blockchain choice will determine the token’s ability to interact with other systems, like wallets, trading platforms, or apps.

- High interoperability provides token with ability to work with wallets, be traded on marketplaces, and integrated with DeFi or exchanges (e.g., Ethereum, Polygon, Avalanche).
- Low interoperability - token stays inside a closed system that requires custom apps to interact with it. (Hyperledger, R3 Corda):

Compliance & Permissioning

Ability of the blockchain to help build in KYC/AML checks, transfer restrictions, and whitelisting

Scalability & Cost

Blockchain choice will determine how many transactions can happen, how fast, and how expensive they are

- Ethereum is secure but expensive and slower during peak times.
- Polygon and Avalanche are cheaper and faster, and suitable for smaller or more frequent transactions.

What Are Gas Fees? Understanding DLT Transaction Costs

Purpose of Gas Fees

Gas fees compensate miners and prevent network spam by costing users for transaction processing.

Gas Consumption Factors

The gas required depends on transaction complexity; smart contract operations consume more gas than simple transfers.

Gas Price and Fee Calculation

Gas fee equals gas units multiplied by gas price, which users can adjust based on transaction urgency.

Impact of Network Congestion

High network demand causes gas fees to increase sharply as users compete for faster transaction processing.

Gas fees are paid in the native token of the blockchain

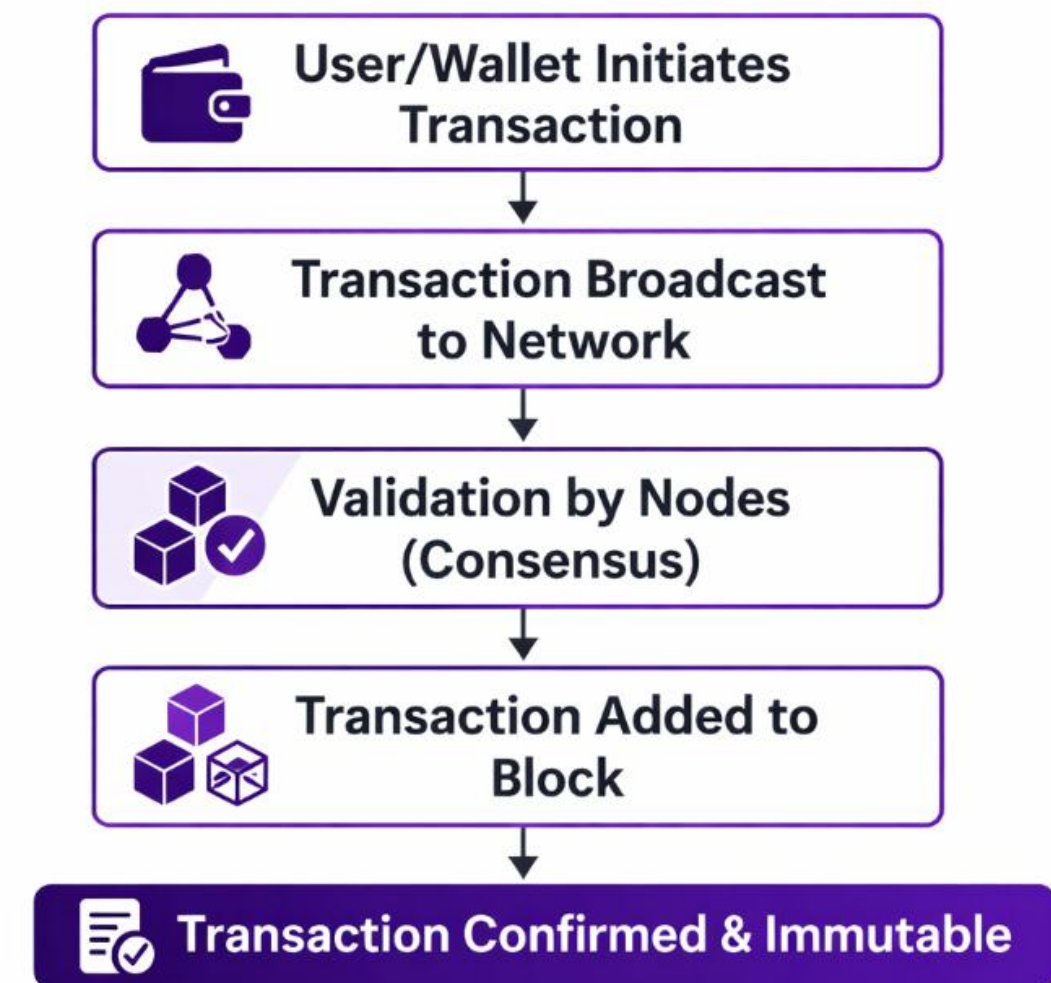
Ethereum (Layer 1) → Paid in **ETH**

Binance Smart Chain (BSC) → Paid in **BNB**

Arbitrum / Optimism (Layer 2) → Paid in **ETH** (because they settle on Ethereum)

Solana → Paid in **SOL**

Gas represents the cost of computational resources on that network, and networks use their native token as the unit of payment



Transaction Initiation

Users create transaction requests using digital wallets including recipient details and transfer data.

Network Validation

Nodes validate transactions using consensus mechanisms ensuring funds and rule compliance.

Block Formation and Hashing

Validated transactions are grouped into a block, cryptographically hashed and linked to previous blocks.

Block Addition and Immutability

Block is added to the blockchain ledger, making transactions immutable and transparent.