



# Tokenization Readiness Checklist

A comprehensive pre-flight compliance, legal, operational, and technical checklist for enterprises and asset owners before launching any tokenization project.

<b>9</b> Asset Classes	<b>170+</b> Checklist Points	<b>8</b> Subcategories	<b>2026</b> Edition
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<b>Prepared by</b>	BlockchainX — A Sparkout Tech Company
<b>Scope</b>	All Tokenizable Asset Classes
<b>Confidentiality</b>	Client Use Only — Do Not Redistribute

*This checklist is provided for informational purposes only and does not constitute legal, financial, or regulatory advice. Engage qualified advisors before initiating any tokenization project.*

# How to Use This Checklist

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## **Purpose**

This checklist was developed by BlockchainX to help enterprises, asset owners, fund managers, and developers systematically assess their readiness before entering the tokenization process. Each asset category is structured into eight subcategories — Legal, Technical, Compliance, Financial, Operational, Risk, Documentation, and Other Considerations — so every stakeholder team can focus on their relevant domain.

## **Scope**

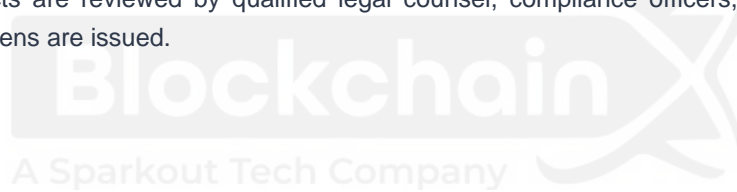
The checklist covers nine major categories: eight tokenizable asset classes plus a dedicated Technical and Software Development Readiness section. Each category contains checklist points organized under the relevant subcategories for maximum clarity.

## **Completion Guidance**

Work through each subcategory with the relevant domain expert — legal counsel for Legal Requirements, your engineering team for Technical Requirements, and so on. An item should only be marked complete when supported by documented evidence. Incomplete items represent residual risk that must be escalated and disclosed to prospective investors.

## **Disclaimer**

This framework is a starting template, not an exhaustive legal or regulatory guide. BlockchainX strongly recommends all projects are reviewed by qualified legal counsel, compliance officers, and registered financial advisors before any tokens are issued.



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## Real-World Assets (RWA)

Core pre-flight checks before tokenizing any tangible or intangible real-world asset on-chain.

### LEGAL REQUIREMENTS

**01 Legal Title Verification**

Obtain title search reports; ensure no encumbrances, liens, or disputed ownership exist.



**02 SPV / Legal Wrapper Structure**

Establish a Special Purpose Vehicle or trust to legally hold the asset and issue tokens.



**03 Jurisdiction Selection**

Choose the primary legal jurisdiction for token issuance; confirm it supports RWA tokenization.



**04 Disclosure & Offering Documents**

Prepare a compliant offering memorandum, term sheet, and investor risk-disclosure statement.



**05 Anti-Dilution Provisions**

Define rules governing future token issuances that could dilute existing holder value.



**06 Dispute Resolution Mechanism**

Establish on-chain/off-chain arbitration process for token holder disputes.



### TECHNICAL REQUIREMENTS

**01 Smart Contract Scope**

Specify on-chain logic: issuance, transfer restrictions, dividend/yield distribution, and redemption.



**02 Oracle Integration**

Identify trusted data feeds for real-time asset pricing, yield data, and compliance triggers.



**03 Transfer Restriction Rules**

Encode lock-up periods, geographic restrictions, and secondary-market trading eligibility rules.



**04 Platform Security Audit**

Conduct an independent third-party smart contract and platform security audit before any token issuance.



**COMPLIANCE & REGULATORY CHECKS**

**01 Regulatory Classification**

Determine whether the token qualifies as a security, utility, or commodity under applicable law.



**02 KYC / AML Compliance**

Implement investor identity verification meeting FATF standards; whitelist only verified wallet addresses.



**03 Investor Accreditation Checks**

Confirm investor accreditation status where required (e.g., SEC Rule 506(b/c), MiFID II).



**FINANCIAL & VALUATION CHECKS**

**01 Third-Party Valuation**

Obtain an independent, certified valuation report dated within the last 6 months.



**02 Tokenomics Design**

Define total token supply, fractional ownership units, minimum investment threshold, and price per token.



**03 Tax Structuring Review**

Engage tax counsel to address withholding tax, VAT, and cross-border tax treatment.



**04 Exit & Redemption Strategy**

Define token buyback, liquidation, or asset-sale process at end of the tokenization lifecycle.



**OPERATIONAL REQUIREMENTS**

**01 Asset Identification & Documentation**

Confirm the asset has a unique identifier, full legal description, and ownership certificate on file.



**02 Custodian Agreement**

Appoint a regulated custodian for physical or digital safekeeping of the underlying asset.



**RISK ASSESSMENT**

**01 Insurance & Risk Coverage**

Verify insurance policies cover the asset for loss, theft, or damage throughout the token lifecycle.



**DOCUMENTATION & VERIFICATION**

**01 Audit Trail & Record Keeping**

Ensure immutable on-chain and off-chain records meet 5-7 year regulatory retention requirements.



# Real Estate

Pre-tokenization checklist for residential, commercial, and mixed-use properties.

## LEGAL REQUIREMENTS

- 01 Property Title Search**  
Confirm clean, unencumbered title; review deed history for the past 30+ years. ✓
- 02 Mortgage & Lien Clearance**  
Discharge or subordinate existing mortgages; obtain lender consent to tokenize the property interest. ✓
- 03 SPV Formation for Property Holding**  
Register an LLC, LP, or equivalent entity to legally hold the property and issue tokens. ✓
- 04 HOA / Strata Rules**  
For condominiums or strata properties, confirm tokenization is permissible under HOA bylaws. ✓
- 05 Real Estate Regulatory Filings**  
Complete required real estate securities filings (e.g., Reg A+, Reg D, EU Prospectus Regulation). ✓
- 06 Geo-Restriction Compliance**  
Restrict token sales to jurisdictions where real estate securities offerings are legally permitted. ✓

## TECHNICAL REQUIREMENTS

- 01 Secondary Market Trading Rules**  
Establish ATS or DEX listing rules; set minimum holding periods and token transfer restrictions. ✓
- 02 Property Management Agreement**  
Appoint a licensed property manager; define rental income distribution cadence for token holders. ✓

## COMPLIANCE & REGULATORY CHECKS

**01 Zoning & Land-Use Compliance**

Verify current zoning permits the intended use; check for any pending rezoning orders.



**02 Environmental Assessment (Phase I/II)**

Conduct environmental site assessments to identify contamination or remediation obligations.



**03 Building Permits & Compliance Certificates**

Collect certificate of occupancy, fire safety, and all regulatory compliance certificates.



**04 Tax Withholding on Distributions**

Model withholding tax obligations on rental distributions for domestic and foreign investor classes.



**FINANCIAL & VALUATION CHECKS**

**01 Property Valuation (RICS/MAI Certified)**

Secure a certified appraisal or RICS Red Book valuation; document cap rate and net operating income.



**02 Rental Income History & Projections**

Provide audited rental income statements (3 years) and forward-looking income projections.



**03 Capital Expenditure Reserve Fund**

Define a CapEx reserve model to fund future maintenance without diluting token holders.



**04 Property Exit Strategy**

Define trigger events for asset sale, refinancing, or token buyback at maturity.



**OPERATIONAL REQUIREMENTS**

**01 Tenant Lease Abstracts**

Summarize all active leases: term, rent, renewal options, and break clauses.



**02 Investor Reporting Cadence**

Commit to quarterly NAV updates and annual audited financial statements for all token holders.



**RISK ASSESSMENT**

**01 Property Insurance Coverage**

Confirm property, liability, and loss-of-income insurance policies are active and current.



**DOCUMENTATION & VERIFICATION**

**01 Survey & Boundary Confirmation**

Commission an updated land survey; confirm boundaries, easements, and encroachments.



## Financial Assets

Checklist for tokenizing bonds, equities, funds, receivables, and other financial instruments.

### LEGAL REQUIREMENTS

**01 Prospectus / Private Placement Memorandum**

Prepare a regulator-approved prospectus or PPM with full risk disclosures for all investor categories.



**02 Securities Law Compliance**

Map the token structure to securities exemptions (e.g., Reg S, Reg D, EU Prospectus Regulation).



**03 Transfer Agent / Registrar Appointment**

Appoint a regulated transfer agent to maintain the official token holder register.



**04 Conflict of Interest Disclosure**

Disclose any issuer, arranger, or platform conflicts of interest in offering documents.



**05 Bankruptcy Remoteness**

Confirm SPV structure isolates token holders from issuer insolvency risk.



### TECHNICAL REQUIREMENTS

**01 Coupon / Dividend Distribution Logic**

Automate on-chain coupon payments or dividend distributions tied to off-chain payment events.



**02 Maturity & Redemption Smart Contract**

Encode bond maturity date, put/call options, and principal redemption mechanics on-chain.



**03 Corporate Action Handling**

Design on-chain processes for stock splits, rights issues, tender offers, and mergers.



**04 Rate Benchmarking (SOFR/EURIBOR)**

For floating-rate instruments, integrate reliable oracle feeds for benchmark rate data.



**05 ISIN / CUSIP Assignment**

Apply for a financial instrument identifier to facilitate institutional settlement and clearing.



**06 Depository & Clearing Integration**

Evaluate integration with CSD, DTC, Euroclear, or equivalent for settlement finality.



**COMPLIANCE & REGULATORY CHECKS**

**01 Instrument Classification**

Confirm whether the underlying is a bond, equity, fund unit, derivative, or receivable.



**02 Investor Suitability Assessment**

Implement suitability checks distinguishing retail versus professional investor categories.



**03 Regulatory Reporting (MiFID II / EMIR)**

Confirm trade reporting obligations to financial regulators are automated and auditable.



**04 Anti-Money Laundering Monitoring**

Deploy transaction monitoring tools to detect structuring, layering, and suspicious flows.



**FINANCIAL & VALUATION CHECKS**

**01 Credit Enhancement Mechanisms**

Document overcollateralization, guarantees, or insurance structures backing the instrument.



**02 Secondary Market Liquidity Plan**

Define market-making arrangements, liquidity pools, or ATS listings for secondary trading.



**OPERATIONAL REQUIREMENTS**

**01 Custodian for Underlying Security**

Ensure the original financial instrument is held by a regulated custodian linked to token supply.



**RISK ASSESSMENT**

**01 Issuer Due Diligence**

Obtain audited financials, credit ratings, and board resolutions authorizing the tokenization.



**DOCUMENTATION & VERIFICATION**

**01 Audit Trail & Record Keeping**

Ensure immutable on-chain and off-chain records meet 5-7 year regulatory retention requirements.



## Precious Metals

Pre-launch checklist for gold, silver, platinum, palladium, and other precious metal tokens.

### LEGAL REQUIREMENTS

#### 01 Allocated vs. Unallocated Structure

Disclose clearly whether tokens represent allocated (specific bars) or unallocated (pool) metal.



#### 02 Redemption in Specie Policy

Define minimum redemption quantity, delivery logistics, and associated costs for physical delivery.



#### 03 Fractional Redemption Rules

Clarify minimum fractional holdings and whether sub-threshold tokens settle in cash equivalents.



#### 04 Export / Import Regulations

Confirm compliance with customs, VAT, and export/import controls in the metal's jurisdiction.



### TECHNICAL REQUIREMENTS

#### 01 Metal Pricing Oracle

Integrate real-time spot price feeds (LBMA fix, CME data) for accurate NAV calculations.



#### 02 Serial Number Registry

Record individual bar or coin serial numbers on-chain to prevent any double-tokenization.



#### 03 Token-to-Metal Peg Mechanism

Define the exact gram or troy ounce backing per token; document adjustment procedures.



### COMPLIANCE & REGULATORY CHECKS

#### 01 Regulatory Commodity Classification

Confirm whether the token is regulated as a commodity derivative in relevant jurisdictions.



**02 Conflict Mineral Compliance**

Verify the metal's chain of custody complies with OECD Due Diligence Guidance (conflict-free).



**03 Transfer Tax & VAT Analysis**

Assess VAT treatment on purchase and redemption of metal-backed tokens by jurisdiction.



**FINANCIAL & VALUATION CHECKS**

**01 Storage Fee Model**

Define annual storage and insurance fees; clarify how these are deducted from the token's value.



**02 Secondary Market Listing Criteria**

Confirm exchange or DEX listing standards and liquidity provisioning arrangements.



**OPERATIONAL REQUIREMENTS**

**01 Physical Custody Verification**

Confirm physical metal is held in an LBMA Good Delivery-compliant vault facility.



**02 Investor Communication Standards**

Define frequency and format of spot-price updates and custody statements to token holders.



**03 Disaster Recovery for Custodian**

Ensure vault operator has a business continuity plan covering natural disasters and force majeure.



**RISK ASSESSMENT**

**01 Counterparty Risk Assessment**

Evaluate vault operator creditworthiness; plan for vault operator insolvency scenarios.



**02 Environmental & ESG Sourcing**

Provide documentation on responsible mining practices and environmental impact assessments.



**DOCUMENTATION & VERIFICATION**

**01 Metal Assay & Purity Certificate**

Obtain assay certificates from an LBMA-accredited assayer confirming purity, weight, and bar numbers.



**02 Vault Audit & Insurance**

Commission independent vault audits quarterly; verify all-risks insurance coverage is active.



**03 Annual Independent Audit**

Mandate an annual attestation by an independent auditor confirming metal-to-token backing ratio.



## Luxury Items & Collectibles

Checklist for tokenizing fine art, luxury watches, rare wines, classic cars, and collectibles.

### LEGAL REQUIREMENTS

**01 Legal Ownership Transfer to Custodian**

Execute a bailment or legal title transfer agreement to the custodian entity holding the asset.



**02 Cultural Property & Export Laws**

Verify compliance with UNESCO Convention and national cultural-heritage export restrictions.



**03 Fractional Ownership Governance**

Define governance rules for fractional owners regarding decisions on sale, loan, or public display.



**04 Buyout & Exit Mechanism**

Define rules for a majority token holder to trigger a full sale or buyout of minority holders.



**05 Transfer of Enjoyment Rights**

Clarify if token holders gain any rights to physically use, display, or access the luxury item.



### TECHNICAL REQUIREMENTS

**01 Anti-Forgery / NFC / RFID Tagging**

Attach tamper-evident digital identifiers — NFC chips, RFID tags, or DNA markers — to physical items.



**02 Secondary Market Price Discovery**

Implement a transparent on-chain auction or OTC matching mechanism for secondary trades.



### COMPLIANCE & REGULATORY CHECKS

**01 Regulatory Classification of Tokens**

Determine if collectible-backed tokens are classified as securities or commodities per jurisdiction.



**02 Tax Treatment for Collectibles**

Assess capital gains tax treatment (often at higher collectibles rates) across investor jurisdictions.



**FINANCIAL & VALUATION CHECKS**

**01 Third-Party Expert Appraisal**

Commission valuation from a recognised specialist (Christie's, Sotheby's, WatchBox, or equivalent).



**02 Market Liquidity Assessment**

Evaluate secondary market depth for the asset category; document historical auction price records.



**03 Periodic Re-Valuation Schedule**

Mandate bi-annual or annual re-appraisal by a certified specialist; publish results on-chain.



**OPERATIONAL REQUIREMENTS**

**01 Secure Storage & Climate Control**

Confirm items are stored in climate-controlled, high-security facilities or bonded warehouse.



**02 Display & Exhibition Rights**

Define whether token holders share in revenues from museum loans, exhibitions, or IP licensing.



**03 Restoration & Maintenance Fund**

Establish a reserve fund for conservation, restoration, or servicing costs over the token term.



**RISK ASSESSMENT**

**01 Insurance Valuation & Policy**

Obtain an agreed-value insurance policy covering theft, accidental damage, and transit risks.



**02 Counterfeit Detection Protocol**

Establish an independent expert panel to adjudicate authenticity disputes during the token lifecycle.



**03 End-of-Life Asset Disposition**

Agree upfront on the process for handling an asset that deteriorates beyond insurable value.



**DOCUMENTATION & VERIFICATION**

**01 Authentication & Provenance**

Obtain expert authentication certificates, provenance records, and full chain-of-title documentation.



**02 Physical Condition Report**

Document current condition with high-resolution photography and a certified condition report.



# Intellectual Property & Digital Assets

Checklist for tokenizing patents, copyrights, trademarks, royalties, and digital content.

## LEGAL REQUIREMENTS

- 01 IP Ownership Verification**  
Confirm full, unencumbered ownership via IP office registration records and assignment agreements. ✓
- 02 License Agreement Structuring**  
Define what rights token holders receive: royalty share, sub-licensing rights, or governance rights. ✓
- 03 IP Register Filing**  
Register the tokenization arrangement with relevant IP offices where legally permitted. ✓
- 04 Moral Rights Consideration**  
Address inalienable moral rights of creators under the applicable copyright law framework. ✓
- 05 Creator Buyback Rights**  
Clarify whether the original creator retains any contractual right to repurchase the tokenized IP. ✓
- 06 NFT vs. Security Token Distinction**  
Clearly distinguish utility NFTs from security tokens backed by IP revenue streams. ✓
- 07 Governance of IP Decisions**  
Define token holder voting rights on licensing deals, enforcement actions, and IP disposals. ✓

## TECHNICAL REQUIREMENTS

- 01 Royalty Collection Mechanism**  
Automate royalty collection from licensees and pro-rata on-chain distribution to token holders. ✓
- 02 Smart Contract Royalty Splits**  
Encode co-creator or co-inventor royalty splits directly into the smart contract issuance logic. ✓

**03 Digital Rights Management Integration**

Link tokens to DRM systems that control and log access to protected digital content.



**04 Platform Integration Agreements**

Secure distribution agreements with streaming, SaaS, or content platforms using the IP.



**COMPLIANCE & REGULATORY CHECKS**

**01 Cross-Border IP Enforcement**

Map jurisdictions where the IP is registered and plan a clear enforcement strategy per region.



**02 Tax on Royalty Income**

Assess withholding tax obligations on royalty distributions to domestic and foreign investors.



**03 Content Moderation Liability**

Address liability for user-generated derivative works when IP is a creative property.



**FINANCIAL & VALUATION CHECKS**

**01 IP Valuation Methodology**

Use a recognised valuation method (income, cost, or market approach) with a certified IP valuer.



**02 Revenue Reporting Standards**

Commit to quarterly royalty statements with full revenue accounting delivered to token holders.



**RISK ASSESSMENT**

**01 Technology Obsolescence Risk**

Disclose risk of revenue decline due to technology shifts; document in offering materials.



**02 Infringement Monitoring**

Appoint an IP enforcement agency; define litigation funding from a dedicated escrow reserve.



**DOCUMENTATION & VERIFICATION**

**01 Orphan Works & Clearance**

Conduct thorough clearance searches to eliminate any third-party IP claims on the underlying asset.



**02 Copyright Duration & Expiry**

Disclose remaining IP protection term; plan for wind-down procedures upon IP expiry.



# Infrastructure & Energy Assets

Checklist for tokenizing renewable energy projects, utilities, toll roads, and infrastructure.

## LEGAL REQUIREMENTS

- 01 Regulatory Permits & Concessions**  
Verify all operating licenses, concession agreements, and grid connection permits are current. ✓
- 02 Land Use & Right-of-Way**  
Verify perpetual or long-dated land leases, easements, and right-of-way agreements are in place. ✓
- 03 Off-Take Agreement Review**  
Examine creditworthiness of off-takers; model revenue concentration risk across counterparties. ✓
- 04 Secondary Market Restrictions**  
Define transfer restrictions aligned with project finance covenant constraints and lender consent. ✓

## TECHNICAL REQUIREMENTS

- 01 Grid Interconnection Agreement**  
Confirm interconnection stability; review curtailment risk and dispatch priority arrangements. ✓
- 02 O&M; Contract Review**  
Evaluate operations and maintenance contract terms, performance guarantees, and penalty provisions. ✓
- 03 Technology Performance Guarantees**  
Obtain manufacturer performance warranties for key equipment (e.g., turbines, solar panels). ✓
- 04 DSCR & Financial Covenant Monitoring**  
Set up automated monitoring of debt service coverage ratio and covenant breach triggers. ✓

## COMPLIANCE & REGULATORY CHECKS

**01 Environmental Impact Assessment**

Confirm EIA approval and ongoing compliance with environmental monitoring requirements.



**02 Carbon Credit / REC Accounting**

Define the allocation of renewable energy certificates or carbon offsets to token holders.



**03 Cross-Jurisdiction Tax Treaty Analysis**

Assess treaty benefits and withholding tax positions for international infrastructure investors.



**FINANCIAL & VALUATION CHECKS**

**01 Revenue Model Verification**

Document PPAs, tolling agreements, capacity payments, or tariff structures backing cash flows.



**02 Distribution Waterfall Model**

Define cash flow waterfall: operating costs, debt service, reserve, then token holder distributions.



**03 Government Subsidy Dependencies**

Disclose reliance on feed-in tariffs or government grants; model subsidy removal scenarios.



**04 Long-Term Asset Life & Extension Plan**

Model token value impact of asset life extension decisions and capital reinvestment options.



**OPERATIONAL REQUIREMENTS**

**01 Community & Social Impact Reporting**

Provide ESG metrics: local employment, community benefit fund, and social impact KPIs.



**02 Decommissioning Reserve Fund**

Establish a decommissioning liability reserve compliant with regulatory end-of-life requirements.



**RISK ASSESSMENT**

**01 Force Majeure & Business Interruption**

Confirm insurance covers natural disasters, grid outages, and prolonged downtime scenarios.



**02 Debt Structure & Senior Creditor Priority**

Map senior lender security interests; confirm tokenized equity is appropriately subordinated.



**DOCUMENTATION & VERIFICATION**

**01 Asset Technical Due Diligence**

Commission an independent engineer's report covering asset condition and remaining useful life.



## Private Equity & Fund Interests

Checklist for tokenizing LP interests, private equity stakes, venture fund units, and SPACs.

### LEGAL REQUIREMENTS

**01 Fund Structure Legal Review**

Review the limited partnership agreement or operating agreement for tokenization permissions.



**02 GP Consent & LP Approval**

Obtain written consent from the General Partner; notify existing Limited Partners per LPA terms.



**03 Transfer Restrictions & ROFR**

Encode right-of-first-refusal provisions and GP consent requirements into token transfer logic.



**04 Accredited / Qualified Purchaser Gates**

Restrict token sales to qualified purchasers (>\$5M investable assets) where required by law.



**05 Co-Investment Rights for Token Holders**

Define whether token holders inherit co-investment rights from the original LP interest.



**06 Governance Rights Mapping**

Specify whether token holders inherit LP governance rights (advisory board, key-man votes).



**07 Fund Wind-Down Procedures**

Define token holder rights and the full liquidation process upon fund termination.



### TECHNICAL REQUIREMENTS

**01 Waterfall & Carry Replication**

Accurately replicate fund economics (preferred return, carry, clawback) in smart contract logic.



**02 Capital Call Mechanism**

Design on-chain capital call process; ensure uncalled capital obligations transfer with the token.



**03 Distribution Notice Automation**

Automate distribution notices and payments to token holders upon portfolio company exit events.



**04 Clawback Reserve Mechanism**

Establish an on-chain escrow to satisfy GP clawback obligations on previously distributed carry.



**COMPLIANCE & REGULATORY CHECKS**

**01 ERISA / Pension Fund Considerations**

Assess whether plan asset rules apply; implement look-through tests where necessary.



**02 AIFMD / Investment Advisor Compliance**

Confirm compliance with AIFMD marketing rules for EU-based fund tokenization offerings.



**03 Regulatory Filings (Form D, AIFMD)**

Ensure all required securities filings are completed before any token distribution or marketing.



**04 K-1 / Tax Statement Delivery**

Confirm digital delivery of K-1s or equivalent tax documents to all token holders annually.



**FINANCIAL & VALUATION CHECKS**

**01 NAV Calculation Methodology**

Define frequency and methodology for Net Asset Value calculations; appoint a fund administrator.



**02 Secondary Market Discount Modeling**

Model expected secondary market discount to NAV; disclose methodology to prospective buyers.



**03 Performance Fee Trigger Events**

Disclose hurdle rate, high-water mark, and crystallisation frequency to all token holders.



**OPERATIONAL REQUIREMENTS**

**01 Side Pocket Handling**

Define treatment of illiquid side-pocket investments within the scope of the tokenized interest.



**RISK ASSESSMENT**

**01 Diversification & Concentration Limits**

Disclose portfolio concentration; confirm the token offering complies with diversification rules.



# Technical & Software Development Readiness

Engineering, architecture, security, and DevOps readiness checks before building or deploying a tokenization platform.

## LEGAL REQUIREMENTS

**01 Data Privacy & GDPR Compliance**  
Separate PII from on-chain data; store personal investor data off-chain with encryption at rest and in transit; implement right-to-erasure workflows compliant with GDPR/PDPA. ✓

**02 Regulatory Reporting Automation**  
Automate on-chain transaction data exports to regulatory reporting formats (CAT, EMIR, MiFIR) using structured data pipelines with reconciliation controls. ✓

## TECHNICAL REQUIREMENTS

**01 Blockchain Network Selection**  
Evaluate and select the target blockchain (Ethereum, Polygon, Avalanche, Hyperledger, etc.) based on throughput, cost, finality, and regulatory acceptance. ✓

**02 Token Standard Selection**  
Choose the appropriate token standard — ERC-20, ERC-1400, ERC-3643, or ERC-721/1155 for NFTs — aligned with asset type and compliance requirements. ✓

**03 Smart Contract Architecture Design**  
Design modular, upgradeable smart contracts using proxy patterns (OpenZeppelin Transparent or UUPS proxy) to allow post-deployment fixes without full redeployment. ✓

**04 Oracle Infrastructure**  
Integrate decentralised oracle networks (Chainlink, Pyth) for asset pricing, yield triggers, and compliance event data; implement circuit breakers for stale feeds. ✓

**05 API Gateway & Backend Architecture**  
Design a secure, horizontally scalable REST/GraphQL API layer with rate limiting, JWT/OAuth2 authentication, and comprehensive structured request logging. ✓

**06 Investor Portal & Frontend Development**

Build an investor-facing portal covering wallet connection, KYC onboarding, portfolio dashboard, secondary market access, and distribution history.



**07 Wallet Integration & WalletConnect Support**

Support MetaMask, WalletConnect v2, and custodial wallet APIs; ensure hardware wallet (Ledger/Trezor) compatibility for institutional investors.



**08 Event-Driven Architecture & On-Chain Indexing**

Implement on-chain event indexing via The Graph or a custom indexer (Moralis, Alchemy) to power real-time portfolio updates and analytics.



**09 Scalability & Load Testing**

Perform load and stress tests simulating peak investor onboarding and secondary market activity; document baseline performance benchmarks before go-live.



**COMPLIANCE & REGULATORY CHECKS**

**01 KYC/AML SDK & Wallet Whitelisting**

Integrate a compliant identity verification SDK (Onfido, Jumio, Fractal, or Synaps) to enforce on-chain wallet whitelisting before any token transfers are permitted.



**02 Role-Based Access Control (RBAC)**

Implement granular RBAC in smart contracts: admin, issuer, compliance officer, and investor roles with least-privilege design and separation of duties.



**OPERATIONAL REQUIREMENTS**

**01 CI/CD Pipeline & DevSecOps**

Establish automated CI/CD pipelines with static analysis (Slither, Solhint), unit tests, integration tests, and coverage thresholds enforced on every deployment.



**02 Multi-Environment Deployment Strategy**

Maintain separate development, staging (testnet), and production (mainnet) environments; enforce controlled promotion gates between environments.



**03 Disaster Recovery & Business Continuity**

Document RTO/RPO targets; implement multi-region database replication, failover node infrastructure, and automated health checks with alerting.



**04 Third-Party Dependency Management**

Maintain a software bill of materials (SBOM); monitor open-source dependencies for CVEs using automated tools (Snyk, Dependabot) with auto-patching policies.



**RISK ASSESSMENT**

**01 Smart Contract Security Audit**

Engage a minimum of two independent smart contract audit firms; remediate all critical and high findings before mainnet deployment.



**02 Formal Verification**

For high-value contracts, apply formal verification tools (Certora, Echidna, or Mythril) to mathematically prove correctness of core business logic.



**03 Penetration Testing**

Conduct annual web application penetration tests and infrastructure vulnerability assessments by a certified firm; track and remediate findings within defined SLAs.



**DOCUMENTATION & VERIFICATION**

**01 Upgradability & Governance Framework**

Define an on-chain governance mechanism (multi-sig or DAO) for approving smart contract upgrades; document the upgrade policy and communicate it to token holders.



**OTHER CONSIDERATIONS**

**01 Key Management & HSM Integration**

Use Hardware Security Modules (HSMs) or MPC wallets (Fireblocks, Copper, or Qredo) for all operational private key storage, rotation, and transaction signing.



# Next Steps with BlockchainX

## 01 Book a Discovery Call

Schedule a complimentary 30-minute discovery call with our tokenization architects to review your checklist results and identify the critical path to launch.

## 02 Gap Analysis Workshop

Our team conducts a structured workshop mapping every incomplete checklist item to a concrete action, owner, timeline, and cost estimate.

## 03 Platform Architecture Design

BlockchainX designs a bespoke tokenization platform architecture — smart contract scope, blockchain selection, KYC/AML stack, and investor portal — tailored to your asset class.

## 04 Legal & Regulatory Roadmap

We partner with leading law firms across major tokenization jurisdictions (UAE, Singapore, EU, USA, BVI, Cayman) to deliver a complete legal and regulatory roadmap.

## 05 Development, Testing & Audit

Our engineering team builds, tests, and third-party audits your smart contracts and platform before any tokens are issued or investor funds are accepted.

## 06 Launch & Ongoing Support

Post-launch, BlockchainX provides platform maintenance, regulatory monitoring, investor reporting tools, and secondary market infrastructure support.

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<b>Company</b>	BlockchainX — A Sparkout Tech Company