

Blockchain Technology: A Strategic Overview

Distributed-ledger concepts, use cases and adoption trade-offs

FA-0592

DevOps, Cloud & Infrastructure

Understand blockchain architecture and compare potential applications, governance needs and limitations before considering adoption.

Introduction

This non-technical overview helps decision makers understand how distributed ledgers work and when they may or may not fit an organisational problem. It explains blockchain concepts, consensus, network types and smart contracts alongside security, privacy and governance considerations.

Illustrative sector examples are used to compare blockchain with conventional databases and existing processes. Potential efficiency or trust benefits are assessed against costs, dependencies and constraints; they are not guaranteed. The course is not implementation training, legal advice or an investment recommendation.

Learning outcomes

The course teaches participants to:

- Explain basic blockchain, cryptography, transaction and consensus concepts.
- Compare public, private and consortium networks with conventional databases.
- Describe smart contracts, tokenisation and digital assets at an introductory level.
- Assess illustrative applications and identify assumptions behind proposed benefits.
- Recognise scalability, security, privacy and governance constraints.
- Frame questions for technical, legal and commercial due diligence before adoption.

Prerequisites

- No prior blockchain or programming knowledge is required.
- Familiarity with basic business processes and digital technology is helpful.

Training outline

1. Module 1 — Distributed-Ledger Foundations

- What is Blockchain? Definition and Core Concepts
- A concise historical overview of distributed ledgers and blockchain applications.
- How Blockchain Works: Basics of Cryptography, Transactions, Blocks, and Chains
- Compare a distributed ledger with a conventional database and identify the trust problem each design addresses.

2. Module 2 — Consensus, Contracts and Network Types

- Decentralisation, transparency and tamper resistance depend on network design and governance; 'immutability' is not an unconditional guarantee.
- Smart-contract execution and dependencies on code, permissions and external inputs.
- Compare proof of work, proof of stake and other consensus approaches without implying identical guarantees.
- Public vs. Private vs. Consortium Blockchains
- Use Cases of Each Type of Blockchain
- Cryptocurrencies and Beyond: Tokenization and Digital Assets

3. Module 3 — Illustrative Sector Applications

- Illustrative payment, settlement and digital-asset scenarios and their limitations.
- Illustrative supply-chain record-sharing and traceability scenarios.
- Identity and healthcare-record scenarios: privacy, access and off-chain sensitive-data considerations.
- Illustrative asset-record and tokenisation scenarios with legal and custodial questions.
- Illustrative public-record scenarios and governance responsibilities.
- For each scenario, ask what belongs on-chain, what remains off-chain and who governs the participants and data.

4. Module 4 – Strategic Adoption Decisions

- Assess potential transparency and shared-record benefits against governance and data-quality assumptions.
- Compare blockchain-enabled process designs with existing models and simpler alternatives.
- Evaluate possible cost/efficiency benefits against implementation and operating costs.
- Technical Challenges and Scalability Issues
- Security Concerns and Risk Management
- Identify applicable legal/regulatory questions for qualified jurisdiction-specific advice; no compliance assurance.

5. Module 5 – Privacy and Social Considerations

- Privacy and Data Protection
- Assess illustrative charity or sustainability use cases and the evidence required for claimed social benefits.
- Roles and skills needed to operate and govern a chosen blockchain system.

6. Module 6 – Technology Examples and Review

- Review how designs and use cases evolve without predicting adoption or market outcomes.
- Explain DeFi, NFTs and Web3 as application concepts, not automatically new or commercially successful trends.
- Define a proportionate assessment and evidence-gathering plan before adoption.
- Review a proposed use case against database alternatives, operational needs, costs and risks.
- Summarise evidence gaps and due-diligence questions rather than assume a blockchain-enabled future is inevitable.
- Questions and next learning steps.