Faysal Aziz

Blockchain Professional

Architecture, Strategy and Enterprise Applications

FA-0127 · three-day

DevOps, Cloud & Infrastructure

Introduction

Blockchain has moved beyond its early association with digital currencies and become a serious architectural option for organisations that need shared records, verifiable transactions, programmable assets and coordination across organisational boundaries. Its value, however, depends on selecting the right problem, network model, governance structure and security controls. Applying blockchain where a conventional database would work better can create unnecessary cost and complexity.

This intensive three-day course develops the technical and commercial understanding required to evaluate blockchain opportunities responsibly. Participants will examine how distributed ledgers operate, how transactions are validated, how tokens represent rights and assets, and how public and permissioned blockchain networks differ. The programme also addresses smart contracts, privacy, enterprise architecture, implementation planning, governance, regulation and current industry applications.

The instructor has over 30 years of industry experience and will deliver real, industry-demanded content rather than an academic treatment of the subject. The emphasis will remain on the concepts, decisions and professional practices that organisations expect blockchain specialists, consultants, architects, analysts and technology leaders to understand.

The scope is designed for three full days of instructor-led training. It provides substantial professional coverage while recognising that software development, production deployment and specialist platform certification require additional technical training.

Learning outcomes

Upon successful completion of the course, participants will be able to:

- Explain the origins, purpose and defining characteristics of blockchain technology
- Differentiate centralised, distributed and decentralised system models

- Describe blocks, transactions, cryptographic hashes, digital signatures and distributed ledgers
- Explain how blockchain networks establish trust without relying on a single central authority
- Compare public, private, consortium and hybrid blockchain architectures
- Distinguish permissioned and permissionless network models
- Explain Bitcoin's UTXO transaction model and Ethereum-style account-based models
- Compare Proof of Work, Proof of Stake and other consensus mechanisms
- Describe blockchain mining, validation, finality and network incentive structures
- Explain tokens, tokenisation, smart contracts, digital assets and non-fungible tokens
- Identify key components and participants within the blockchain ecosystem
- Evaluate blockchain security, privacy, identity and key-management considerations
- Assess the scalability, interoperability and operational limitations of blockchain platforms
- Identify appropriate and inappropriate enterprise blockchain use cases
- Apply a structured process for evaluating and planning blockchain solutions
- Recognise governance, regulatory, compliance and sustainability considerations
- Communicate blockchain opportunities, risks and architectural choices to business stakeholders

Prerequisites

- Basic understanding of information technology and digital systems
- General awareness of business processes and online transactions
- Familiarity with databases, networks or cloud computing is helpful but not mandatory
- No previous blockchain development or cryptocurrency experience is required
- No programming knowledge is required
- A laptop with internet access for demonstrations and guided exploration
- Willingness to examine blockchain from both technical and business perspectives

Training outline

1. Blockchain Foundations and Industry Context

1. Origins and evolution of blockchain
2. Centralised, distributed and decentralised systems
3. Blockchain value propositions and limitations
4. Current public, enterprise and Web3 ecosystems
5. Appropriate and inappropriate blockchain use cases

2. Blockchain Architecture and Core Components

1. Blocks, transactions and distributed ledgers
2. Nodes, miners, validators and wallets
3. Hashing, public-key cryptography and digital signatures
4. Transaction verification and confirmation
5. Tamper evidence, immutability and finality

3. Blockchain Network Models

1. Public blockchains
2. Private blockchains
3. Consortium blockchains
4. Hybrid blockchain architectures
5. Permissioned and permissionless networks

4. Transactions and Ledger Models

1. Transaction lifecycle
2. Bitcoin UTXO model
3. Ethereum account-based model
4. Transaction fees and gas
5. Ledger state and transaction history

5. Consensus, Mining and Validation

1. Purpose of consensus
2. Proof of Work
3. Proof of Stake
4. Byzantine fault-tolerant consensus
5. Mining and validator incentives
6. Network security and finality

6. Smart Contracts and Decentralised Applications

1. Smart contract principles
2. Smart contract execution

3. Decentralised application architecture
4. Wallet and blockchain integration
5. Oracles and external data
6. Smart contract limitations and risks

7. Tokens and Tokenisation

1. Native coins and application tokens
2. Fungible and non-fungible tokens
3. Utility, security and governance tokens
4. Stablecoins
5. Real-world asset tokenisation
6. Token design and lifecycle considerations

8. Blockchain Security and Privacy

1. Wallet and private-key security
2. Smart contract vulnerabilities
3. Consensus and network attacks
4. Custody and key-management models
5. Pseudonymity and transaction transparency
6. Privacy-enhancing technologies
7. Security governance and auditing

9. Scalability and Interoperability

1. Blockchain performance constraints
2. Layer 1 and Layer 2 scaling
3. Rollups, sidechains and payment channels
4. Cross-chain communication
5. Blockchain bridges
6. Interoperability risks

10. Enterprise Blockchain Architecture

1. Enterprise blockchain requirements
2. Identity and access management

3. Confidentiality and permission controls
4. Blockchain-as-a-Service
5. Integration with cloud and enterprise systems
6. Platform and architecture selection

11. Blockchain Solution Planning

1. Business problem definition
2. Blockchain suitability assessment
3. Stakeholder and trust analysis
4. On-chain and off-chain data decisions
5. Proof-of-concept planning
6. Pilot and production transition
7. Success criteria and operational readiness

12. Governance, Regulation and Compliance

1. Network and consortium governance
2. Participant roles and responsibilities
3. Protocol and smart contract changes
4. Digital asset classification
5. Know Your Customer and Anti-Money Laundering
6. Data protection and privacy
7. Legal and jurisdictional considerations

13. Blockchain Industry Applications

1. Banking and financial services
2. Cross-border payments and settlement
3. Supply chain and logistics
4. Healthcare
5. Government and digital identity
6. Insurance
7. Energy and sustainability
8. Education and credential verification

14. Web3 and Decentralised Services

1. Web3 architecture
2. Decentralised finance
3. Decentralised autonomous organisations
4. Decentralised identity
5. Digital ownership
6. Wallet-based services

15. Blockchain Adoption and Strategy

1. Adoption barriers
2. Technology and operational risks
3. Governance and regulatory risks
4. Cost and value considerations
5. Organisational capability requirements
6. Blockchain strategy and implementation roadmaps

16. Current and Emerging Developments

1. Layer 2 adoption
2. Modular blockchain architectures
3. Institutional digital assets
4. Tokenised real-world assets
5. Zero-knowledge technologies
6. Blockchain and artificial intelligence convergence
7. Post-quantum security considerations

17. Professional Knowledge Consolidation

1. Blockchain terminology
2. Architecture and platform comparison
3. Use-case evaluation
4. Security and governance review
5. Solution planning principles
6. Certification knowledge domains

Disclaimer

This training outline is provided as a professional instructional guideline and represents the anticipated scope of the programme. The trainer reserves the right to amend, reorganise, substitute or omit topics where reasonably necessary to accommodate participant needs, technological developments, time constraints, organisational requirements or instructional priorities. Such adjustments may be made at the trainer's professional discretion without prior notice, provided that the overall learning objectives and intended standard of the course are substantially maintained.

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