



Technology in Investment Management

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Objective of the examination

The objective of the examination is to provide candidates with an understanding of how the role of technology relates to investment operations.

The examination will test candidates' knowledge and understanding of the following elements:

- Technology in Investment Management
- The Regulatory Framework
- Technology and the Functional Flow of Financial Instruments
- The Role of Technology in Trade Capture
- The Role of Technology in the Pre-Settlement Phase
- The Role of Technology in the Settlement and Post-Settlement Phases
- The impact of Technology on Financial Control
- Technology Management
- Managing Business Change
- Technology Services Procurement

Syllabus structure

The unit is divided into **elements**. These are broken down into a series of **learning objectives**.

Each learning objective begins with one of the following prefixes: **know** or **understand**. These words indicate the different levels of skill to be tested.

- **know** requires the candidate to recall information such as facts, rules and principles
- **understand** requires the candidate to demonstrate comprehension of an issue, fact, rule or principle

Candidate Update

Candidates are reminded to visit (cisi.org/candidateupdate) regularly for updates on industry changes that could affect their examination.

Examination Specification

Each examination paper is constructed from a specification that determines the weightings that will be given to each element. The specification is given below.

It is important to note that the numbers quoted may vary slightly from examination to examination as there is some flexibility to ensure that each examination has a consistent level of difficulty.

Examination specification		
50 multiple choice questions		
Element number	Element	Questions
1	Technology in Investment Management	4
2	The Regulatory Framework	6
3	Technology and the Functional Flow of Financial Instruments	3
4	The Role of Technology in Trade Capture	4
5	The Role of Technology in the Pre-Settlement Phase	5
6	The Role of Technology in the Settlement and Post-Settlement Phases	5
7	The impact of Technology on Financial Control	5
8	Technology Management	8
9	Managing Business Change	6
10	Technology Services Procurement	4
Total		50

Assessment Structure

Assessment is a 1 hour examination of 50 multiple choice questions.

Candidates sitting the exam by Computer Based Testing may also be asked to answer up to 10% of additional questions. These are trial questions that will not be separately identified and do not contribute to the result. Candidates will be given proportionately more time to complete the test.

Summary Syllabus

- Element 1 Technology in Investment Management**
- Element 2 The Regulatory Framework**
- Element 3 Technology and the Functional Flow of Financial Instruments**
- Element 4 The Role of Technology in Trade Capture**
- Element 5 The Role of Technology in the Pre-Settlement Phase**
- Element 6 The Role of Technology in the Settlement and Post-Settlement Phases**
- Element 7 The Impact of Technology on Financial Control**
- Element 8 Technology Management**
- Element 9 Managing Business Change**
- Element 10 Technology Services Procurement**

Element 1 Technology in Investment Management

On completion, the candidate should:

1.1.1 know the role of the following participants within the financial services Sector

- retail banks and building societies
- investment banks
- asset owners
- fund managers
- wealth managers
- platforms
- financial advisers
- robo advisors
- custodians
- third party administrators (TPAs)

1.2.1 know the elements of a secondary market equity trade

1.3.1 know the elements of a secondary market bond trade

1.4.1 understand the importance of automation

1.5.1 understand the criticality of data management:

- accuracy
- timeliness
- security

Element 2 The Regulatory Framework

On completion, the candidate should:

2.1.1 understand the regulatory framework

2.2.1 know the function of UK and European regulators in the financial services sector

- Markets in Financial Instruments Directive II (MiFID II)

2.3.1 know the significance of European Data Protection Regulation (GDPR and similar data protection regimes in other jurisdictions):

- principles
- non-compliance

2.4.1 understand how firms are using technology to comply with regulation

2.5.1 know the major technology implications of the following rules:

- FCA specific regulation including Client Asset Sourcebook (CASS), Conduct of Business Sourcebook (COB), Senior Management Arrangements, Systems and Controls (SYSC)
- Senior Managers & Certification Regime (SM&CR)
- Approved Person's Regime (APER)
- Markets in Financial Instruments Directive II (MiFID II)
- Basel II & III
- Foreign Account Tax Compliance Act (FATCA)
- Dodd Frank
- European Market Infrastructure Regulation (EMIR)
- Central Securities Depositories Regulation (CSDR)
- Know Your Customer (KYC)

Element 3 Technology and the Functional Flow of Financial Instruments

On completion, the candidate should:

3.1.1 understand the function and connectivity of investment exchanges, multilateral trading facilities, organised trading facilities, systematic internalisers and fund platforms:

- classification
- economic functions
- order handling systems
- connectivity

3.2.1 understand the function and connectivity of central counterparty services:

3.3.1 know the function and connectivity of Trade Repositories

3.4.1 understand the functionality of external real time information sources

- pre-trade price and liquidity discovery
- analytics
- post-trade information dissemination
- transaction reporting / publication

Element 4 The Role of Technology in Trade Capture

On completion, the candidate should:

4.1.1 understand the investment decision support process

4.2.1 understand the implications of Environmental, Social and Governance (ESG) investing

4.3.1 understand the technology support requirements of order placing and filling including:

- order entry (agency, principal and 3rd party orders)
- pre-trade compliance, including mandates
- best execution
- Treating Customers Fairly
- transaction capture
- client connectivity including Direct Market Access
- communication via electronic media
- pooling, allocation and aggregation of a single order across two or more investors/funds
- dealing systems
- charges, fees and expenses

4.4.1 understand the purpose and consequences of algorithmic trading

4.5.1 understand the features of investor self-servicing

4.6.1 understand the basic technology characteristics of risk mitigation for the following trade capture functions:

- risk management
- transaction capture
- best execution

Element 5 The Role of Technology in the Pre-Settlement Phase

On completion, the candidate should:

5.1.1 understand the technology alignment to pre-settlement phase key risk indicators including:

- reference data
- standing settlement instructions
- client and counterparty agreements

5.2.1 understand the technology implications of the trade agreement process

5.3.1 understand the role of matching engines

5.4.1 understand the technology requirements for reporting to regulators:

- wholesale v retail

5.5.1 understand the technology requirements for reporting to customers:

- wholesale v retail

Element 6 The Role of Technology in the Settlement and Post-Settlement Phases

On completion, the candidate should:

6.1.1 understand the technology requirements for transaction settlement instructions

6.2.1 understand the purposes of stock lending and repos, their technology implications and the importance of asset segregation

- 6.3.1 understand the technology requirements for cash funding (positioning)
- 6.4.1 understand the function of technology within the settlement process:
 - trade capture systems
 - operations systems
 - financial control systems
- 6.5.1 know the function of the following standards:
 - SWIFT
 - FIX
 - FpML
 - XBRL
- 6.6.1 understand the function of technology within reconciliation procedures including:
 - reconciliation requirements and record keeping
 - ensuring cash and stock movements are recorded
 - journal movements
 - corporate actions (including dividends, bonus issues and rights issues)
- 6.7.1 understand the technology implications of post-trade compliance

Element 7 The Impact of Technology on Financial Control

On completion, the candidate should:

- 7.1.1 know the role of the financial control function
- 7.2.1 understand the relationship between trade capture, settlement operations and the financial control function
- 7.3.1 know the purpose of the general ledger
- 7.4.1 know the components of a general ledger account
- 7.5.1 know how account selection parameters are maintained
- 7.6.1 know the purpose of the stock record

Element 8 Technology Management

On completion, the candidate should:

- 8.1.1 know the typical roles and responsibilities within the technology department
- 8.2.1 Know the importance of ensuring technology strategy matches the corporate strategy
- 8.3.1 know the typical building blocks of a technology infrastructure
- 8.4.1 understand the roles and uses of relational databases, distributed systems and real-time messaging
- 8.5.1 understand the technology governance relating to:
 - measuring technology performance
 - managing change
 - benefits realisation
- 8.6.1 understand the importance of cyber security
- 8.7.1 understand the concept of management and support of applications
- 8.8.1 understand the function of service (help) desks and follow-the-sun model
- 8.9.1 know the purpose of service level agreements (SLAs) and key performance indicators (internal and external)
- 8.10.1 understand prioritisation levels and the responsibilities of support teams
- 8.11.1 understand the technology implications of disaster recovery (DR) and business continuity planning (BCP):
 - planning
 - risk assessment
 - priorities for processing and operations
 - recovery strategies
 - data collection
 - written plan

- testing criteria and procedures

8.12.1 understand the technology implications of operational resilience

8.13.1 understand the importance of change control procedures

8.14.1 understand the nature and management of technology risk

8.15.1 understand the challenges of separate systems

Element 9 Managing Business Change

On completion, the candidate should:

9.1.1 understand the purpose and benefits of project planning and control

9.2.1 understand the importance of project governance

9.3.1 understand the key stages of a software development life cycle (SDLC) including:

- project planning
- feasibility study
- systems analysis
- requirements definition
- systems design
- code generation
- development
- integration and testing
- acceptance, installation, deployment
- maintenance

9.4.1 understand the different software development methodologies including:

- waterfall methodologies
- Iterative / incremental methodologies
- other methodologies

9.5.1 know the following different methodologies used in technology delivery:

- PRINCE II
- PMI
- ISO

9.6.1 understand the need for testing and its importance to quality assurance including:

- testing strategies
- test stages
- techniques
- cycles
- test reporting

9.7.1 know the impact of disruptive innovation and FinTech initiatives:

- cloud computing
- big data
- cryptocurrencies
- blockchain / distributed ledger technology
- artificial intelligence
- machine learning
- open finance

Element 10 Technology Services Procurement

On completion, the candidate should:

10.1.1 understand the buy v build decision and implications and varieties of open source software

10.2.1 know the advantages and disadvantages of outsourcing

10.3.1 know the advantages and disadvantages of insourcing

10.4.1 know the advantages and disadvantages of offshoring, near-shoring, best-shoring

10.5.1 understand the vendor relationship including:

- the vendor selection process
- vendor assessment
- task order / work order / contract negotiation and finalisation
- effective vendor management and oversight
- exit planning

10.6.1 understand the technology implications and risks for outsourced and vendor arrangements