

2016 EDITION



FISD PROFESSIONAL Certification

Syllabus

**Financial Information
Associate (FIA)**





FISD PROFESSIONAL Certification

Financial Information Associate FISD PROFESSIONAL CERTIFICATION

Professional certification from FISD will establish your credentials in the increasingly complex and competitive financial information industry. The Financial Information Associate (FIA) certification is the first formal accreditation for market and reference data practitioners and will only be awarded to those who pass this formal examination.

This first level certification is structured for:

- ✓ Practitioners who are relatively new to the industry (typically between 1 and 3 years of experience). Certification will provide a robust and comprehensive foundation for your career.
- ✓ Those working in a highly specialized department who seek to grow into other segments of the financial information industry. Certification will provide the impetus for you to gain increased insight into the broader industry.
- ✓ Those working in another department/discipline not directly involved in market or reference data. Certification will provide you with an understanding of the primary issues facing your colleagues in market and reference data

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4

The Markets

THE MARKETS

A candidate must be able to demonstrate a broad understanding of the markets that generate and make use of the complex array of information and content characterized as market and reference data. They must understand that different types of organization have different requirements for data; they must understand what these differences are and why such requirements exist.

Where, how and why is capital created, and for what purpose? What is meant by financial intermediation and who are the participants in the investment process? What is the role of exchanges and related trade-crossing services, government and regulatory agencies, and what part does market and reference data play in the financial markets?

1.1 The Role of the Financial Markets

A candidate should be able to understand: the role of the financial markets and their structure; the capital formulation process; and the broad structures and makeup of the global financial markets.

1.1.1 THE TRADE LIFECYCLE

A candidate should understand the overall concept of the trade lifecycle:

- Pre-trade price investigation
- Pre-trade risk management and compliance assessment
- Trading venue selection – the trade
- Post-trade confirmation
- Trade reporting
- Post-trade clearing and settlement

...and the typical groups involved.

1.1.2 BROAD CONCEPTS

A candidate should understand broad concepts:

- The capital markets
- Primary and secondary markets
- Bull and bear markets
- Long and short

1.2 Major Classes of Assets

A candidate should understand the primary asset classes and the basic characteristics of each.

- Equities and the Key Types
 - Including equity-like instruments such as ETFs (exchange traded funds) and CFDs (contracts for difference);
- Fixed Income Instruments and the Key Types
 - Including concepts such as – coupon, maturity, face value, ratings, yield, etc.
 - Types such as – bills, notes, bonds, government, treasury, municipal, corporate, supra national, zero coupon, etc.
- Short Term Money Markets
 - Including – certificates of deposit (CDs), bankers acceptances, commercial paper, repurchase agreements (repos), etc.
- Rates
 - Including – interest rate swaps (IRS), interest rate options (IRO), basis swaps, forward rate agreements (FRAs).
- FX
 - Spot, forward, non-deliverable forwards, currency pairs, swaps, pips, cross currencies, etc.
- Commodities and Energy
 - Softs, precious metals, oil, electricity/power, etc.
- Futures and Options
 - Financial, currency and commodity
- Credit Derivatives
 - Credit default swaps, collateralized debt obligations
- Structured Products

What are the broad data requirements/interests of such groups?

1.3 Participants in the Financial Markets

They should understand what the major types of institutions are, their broad characteristics and what role they play.

1.3.1 THE SELL SIDE

A candidate should understand what types of organizations fall under the broad category of being a “sell side” institution.

- Investment banks and their role in the primary issuance of equities and bonds;
- Investment banks and their role in advising clients on mergers and acquisitions;
- Investment banks and their role in providing corporate and/or project finance;
- Investment banks and brokerage houses” role in:
 - Acting as “agency brokers” on behalf of their clients
 - Provision of advice through equity analysts;
 - Full service, low touch and no touch (e.g. DMA) services;
 - Execution services including Algo Trading;
 - “Prime brokerage” services.
 - Acting as “principal” in transactions, i.e. “proprietary traders”
- Commercial and retail banks providing bank services to corporations and individuals;
- What is an intermediary? What is the role of an intermediary in guaranteeing settlement of transactions?
- Retail brokerage – providing brokerage service to individuals and households as contrasted against “institutional brokers” who primarily do business with the “institutional” buy side.
 - Online brokerage is a further subset that should be well understood

1.3.2 THE BUY SIDE

A candidate should understand what types of organizations fall under the broad category of being a “Buy Side” institution.

- Traditional “long only” asset management firms
 - Describe the role of fund managers;
 - What are mutual funds, unit trusts, investment trusts?
- Other buy side participants
 - Describe the role of banks, insurance companies, pension plan sponsors
- Hedge funds
 - What is a hedge fund?
 - How do hedge funds differ from traditional asset management firms?
- ETF sponsors
 - What is an ETF sponsor?

1.3.3 EXCHANGES AND OTHER TRADING VENUES

A candidate should understand the different types of exchange and broadly understand the regulatory framework they operate within.

- Equities and exchange traded bonds (stock exchanges)
 - What do they do? Listing, trading, settlement, data, etc.
 - Who are the main organizations globally?
 - In what ways are they automated and why does that matter?
 - What is “floor trading”?
- Commodities (futures and options) exchanges
 - What do they do?
 - What are the main organizations?
 - How are they automated?
 - Where does floor trading still exist – and how does it work?
- Alternative trading systems (ATS) and multilateral trading facilities (MTF), ECN electronic communications networks, crossing networks and dark pools
 - What are these?
 - Where do they exist and why?
 - How did they evolve?
 - What regulatory framework do they operate under?
 - What is electronic trading?
 - Differences between “dark” and “lit” markets
- Fixed income, FX and other non-exchange (i.e. over the counter – OTC) traded instruments
 - The role of the inter dealer broker (IDB)
 - Evolution of voice and electronic trading
 - The issue of counterparty credit management
 - Role of FX dealing systems
- New, regulator-mandated trading venues such as swaps execution facilities (SEFs)

1.3.4 MISCELLANEOUS ORGANISATION TYPES

Candidates should be familiar with other organization types, including:

- Numbering agencies, custodians, transfer agents and clearing agents

1.4 Role of Government, Central Banks and Regulatory Authorities

A candidate should understand the role and function of government, central banks and regulatory authorities that govern the financial markets. They should also understand:

- What the key regulatory bodies are;
- How regulatory bodies impact market/reference data and securities at a conceptual level - such as listings, ownership restrictions and trading rules;
- What the key laws and regulations are that impact the creation, distribution and usage of financial information.

1.5 Primary Business Functions and Responsibilities

A candidate should understand and be able to describe the role and function of the primary business functions of the various departments in a financial institution, and the type of market and reference data that department would generate or consume:

- Trading floor
- Securities research
- Portfolio management
- Risk management
- Settlement and clearing
- Pricing and accounting
- Securities lending
- Client reporting
- Corporate actions
- Performance and attribution
- Automated execution services (Algo Trading)

In addition a candidate should understand the following phrases:

- Front office
- Back office
- Middle office

A candidate should be able to recognize broad job functions/titles:

- Trader
- Sales-person
- Sales trader
- Analyst
- Portfolio manager
- "Quant"
- Retail broker
- Wealth manager
- Financial advisor
- Risk manager
- Compliance officer

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The Data

A candidate must understand the different types of data used in the market, where that data comes from originally, who delivers it to customers, the many different ways that data is used and broadly what are the types of commercial model deployed for charging for it.

2.1. Sources

A candidate must have a thorough understanding of the different sources of data and the implications of what that means for the use of the data.

2.1.1 CONTRIBUTED DATA

- What is contributed data?
- Who typically are the contributors of data and why do they contribute?
- How do organizations contribute data?
- What types of data are typically contributed?
- What is the debate surrounding who owns contributed data?
- How could market manipulation occur?

2.1.2 EXCHANGE (AND SIMILAR E.G. MTF, ATS AND IDB ETC) GENERATED DATA

- What is exchange data?
- Why do exchanges (and other similar entities) distribute data?
- What types of data do exchanges generate and distribute?
- How do exchanges distribute their data?
- What are the differences between “direct” and “indirect” distribution?
- What is “co-location” and “proximity hosting”?

2.1.3 VENDOR GENERATED DATA

- What types of data do vendors generate?
- Where do news and commentary come from?
- How do vendors add value to data from other sources?
- What does the phrase “aggregator” mean?

2.2 Vendors (providers)

A candidate should be very familiar with the global vendors and also have a broad understanding of the range of regional and more specialist vendors.

A candidate should have a broad understanding of:

- The range of services provided and core competencies;
- Their methods of delivery and display;
- Their broad approach to commercials e.g. pricing and contracts.

2.2.1 EXCHANGES AND MTF/ATS AND IDB

A candidate should understand the role that exchanges, MTFs/ATSs (multilateral trading facilities/alternative trading systems) and IDBs (inter deal brokers) play in generating, distributing and marketing data and the types of data that they generate.

2.2.2 REGIONAL VENDORS

A candidate should have a broad understanding of vendors that provide regional or country specific services. They must demonstrate a good understanding of this part of the market and the role it plays. How does regional data vary from global data.

2.2.3 SPECIALIST VENDORS

A candidate should have a broad understanding of vendors that provide specific services focused on a narrow area of specialism. They must demonstrate a good understanding of this part of the market and the role it plays.

Specialist types of data vendor include:

- Corporate actions
- Fundamental data (corporate and government)
- M&A deals
- Company data
- Corporate social responsibility data/research
- Holiday calendars
- Research

2.3 Types

A candidate must have a broad understanding of the different types of data.

2.3.1 MARKET DATA

- What does the phrase “market data” typically mean?
- What are the main constituent elements of “price data”?
- What do fields like “bid,” “offer,” “last,” “high,” “low,” “volume,” etc., mean?
 - A candidate should understand a broad range of field types
 - How do different field types relate to asset classes?
- What do phrases like level 1 and level 2 typically mean?
- What is an order book and how does it relate to data? e.g. the phrase “full order book”
- What does “best bid and offer” (e.g. NBBO – as in national best bid and offer) mean and why is it important?

A candidate should understand the meaning, relevance and inter relationships of the following:

- Real-time
- Delayed
- Snapshot (static)
- Full tick
- VWAP
- Conflated
- Evaluated

A candidate should understand the broad meaning and significance of:

- Update rates (traffic/throughput)
- Latency
- Redundancy
- Symbology

A candidate should have a broad understanding of the major proprietary symbologies being used in the markets today and the issues and debate surrounding them.

2.3.2 FUNDAMENTAL AND ECONOMETRIC DATA

A candidate should understand what the phrases “fundamental data” and “econometric data” refers to.

- What are economic fundamentals?
- What are company fundamentals?
- What format(s) is fundamental data typically provided in?
- Be able to give examples of vendors

2.3.3 HISTORICAL AND TIME SERIES DATA

A candidate should have a broad understanding of:

- Historical/time series data
- How is historical data used?
- The importance of historical data
- How is historical data typically supplied and/or created?
- What do phrases like “intraday,” “interday” and “EOD” (end of day) mean?
- What factors affect time series?
- Be able to give examples of vendors

2.3.4 VALUATIONS DATA

Candidates should understand the overall concept of “evaluated pricing” in the context of hard to value instruments that trade very infrequently (i.e. that are illiquid).

- What do phrases like “mark to market” and “mark to model” mean?
- What is “fair value”?
- Be able to give examples of vendors

2.3.5 CREDIT RATINGS

A candidate should have a broad understanding of:

- A credit rating
- A credit rating agency
- Data provided by the credit rating agencies
- Financial products a credit rating is used for
- How credit ratings are used in the context of structured finance
- Be able to give examples of vendors

2.3.6 INDICES

A candidate should understand:

- An index
- An index’s constituents
- An index’s constituent weighting
- How indices are maintained
- How to give examples of companies which produce benchmark indices
- What industry classification standards exist (e.g. GICS, ICB, NAICS)

- How indices are paid for by customers
 - How does index licensing work?
 - What IPR considerations apply?
 - What types of customer would pay money to an Index provider and what different elements would they be required to pay for?
- Difference between standard vs. customized indices
 - Why organisations use customized indices
- Be able to give examples of vendors

2.3.7 NEWS AND COMMENTARY

A candidate should understand:

- The role of news and commentary (i.e. text) as it sits alongside numeric data
- The difference between “news” and “commentary”
- What are some examples of financial news providers?
- How is news being used in Algo Trading?
- What is a News Sentiment feed?
- How has social media impacted this segment? e.g. Twitter
- The meaning of the phrase “unstructured data”

2.3.8 REFERENCE DATA

A candidate should understand what the phrase “reference data” means in common usage within the industry.

A candidate should understand why reference data was, in the past, commonly seen as static data. However, a candidate should understand and be able to explain why over recent years much reference data is seen to be less “static.”

A candidate should understand and know the key differences between:

- Instrument reference data
- Entity reference data
- Issue and issuer

A candidate should understand the meaning, origination (history) and context of the following:

- Securities master file
- Enterprise Data Management (EDM)
 - Examples of who the EDM system and service providers are
- Golden copy
- Data governance
- Data lineage

- Securities Identifier
 - What is a securities identifier?
 - What are CUSIP, ISIN, VALOREN and SEDOL numbers?
 - What are numbering agencies?
- What proprietary identifiers are provided in the market (sometimes referred to as “Symbology”)? A candidate should understand what is meant by:
 - Security instrument “terms & conditions”
 - Financial instrument prospectus – what is the basic data found there
 - A data model (both in terms of physical and logical)
- With respect to entity data a candidate should understand:
 - Corporate hierarchies
 - What is the “ultimate parent”?
 - The concept of issuer
 - The concept of counterparty
 - The broad concept of KYC (Know Your Client)
 - The broad concept of AML (Anti Money Laundering)
 - The use of the phrase “Client Onboarding”
 - The background to and use of the Legal Entity Identifier (LEI)
- A candidate should understand what “corporate actions” are
 - What are the different kinds?
 - How they impact time series data?
 - Name some examples of providers
- A candidate should understand why calendars are important in reference data

2.3.9 SOCIAL MEDIA

Social media is growing in overall relevance to society. Candidates should understand the relevance of social media in the context of the data industry:

- Twitter
- Facebook

2.4 Standards

A candidate should understand the broad concepts of standards.

- What the ISO is – The International Organization for Standardization;
- “De Jure” contrasted with “De Facto” standards.

A candidate should be able to describe at a high level what certain standards are and why they have been introduced (*Please note candidates will not be required to remember specific ISO numbers*)

- Bank identifier code “BIC” (ISO 9362)
- Classification of financial instruments “CFI” (ISO 10962)
- FIX
- financial instrument global identifier (FIGI)
- LEI (legal entity identifier)Market identifier code “MIC” (ISO 10383)International securities identification number “ISIN” (ISO 6166)
- ISO currency standards

Standards for messages in securities trading (e.g. ISO 15022 and ISO 20022)

2.5 Delivery and Display

A candidate should understand the way that data is delivered to both organizations and individual users. (*Nb. this will be covered in more detail under the Technology section*).

2.5.1 TERMINALS/WORKSTATIONS

A candidate should have a broad understanding of the main functionality of display workstations:

- How price data is displayed
- How news is displayed
- How charts are presented
- How additional functionality is provided - e.g. Excel and desktop APIs
- How workstation functionality is different for off the trading floor
- How data from the Internet is provided, presented and used

2.5.2 STREAMING DATAFEEDS

A candidate should understand:

- What streaming datafeeds are and how they differ from terminal only solutions;
- What the different types of datafeed are and why they might be deployed in different use-case scenarios.

2.5.3 BATCH DOWNLOADS

A candidate should understand what types of data are accessed through a batch download from a database and broadly why.

2.6 Uses of Data

2.6.1 INDIVIDUAL USERS

A candidate should broadly understand the different uses that individuals make of data and the different types of data different users may require:

- Asset class:
 - Equities
 - Fixed income
 - Foreign exchange
 - Money markets
 - Commodities
 - Energy
- Individuals job function:
 - Trader
 - Sales
 - Research
 - Compliance
 - Portfolio manager
 - Clearing and settlement
 - Risk management
 - Wealth manager
 - Retail broker
- Type of firm:
 - Brokerage
 - Investment banking
 - Long only asset management
 - Hedge funds
 - Retail brokerage
 - Online brokerage

Candidates should understand how individuals can access data via online brokerage

2.6.2 LOCAL APPLICATIONS

A candidate must broadly understand how data is sometimes used within local applications for example within:

- Microsoft Excel - including real-time adapters
- Bespoke in house software created for a specific user
- Product software purchased for a particular purpose

2.6.3 CENTRAL (SHARED) APPLICATIONS

A candidate should broadly understand how data is used within central applications which are often shared by many individuals, including:

- Pricing engines
- Risk assessment and management
- Trading systems
- Portfolio management
- Clearing and settlement
- Data storage
- Back testing

2.7 Commercials (Pricing and Contractual Terms)

A candidate should have a broad grasp of commercial issues including:

- Enterprise deals
- Volume discounts
- Price benchmarking
- Global (i.e. cross border) deals
- Alternative pricing models e.g. AUM (assets under management) based
- Non display usage
- “Most Favored Nation”
- Derived data (including “new original works”)
- Redistribution
- Audit - practices and issues
- Professional vs. non-professional users

2.7.1 UNITS OF COUNT

A candidate should understand the meaning of, and the differences between, pricing based on “units of count”:

- *Per* - user, user id, application, application instance, machine, instrument, location, assets under management (AUM);
- The relevance of MISU (Multiple Instance/Installation Single User) in this context.

2.7.2 DATAFEED PRICING MODELS

A candidate should understand the commercial challenges presented by datafeeds and how pricing for datafeeds can be constructed:

- Per site and per department charges
- Per application type charges
- “watchlist” or “cache”

2.7.3 CONTRACTS, COMPLIANCE AND AUDITS

A candidate should understand contract concepts such as cancellations dates, rollover dates, and notice periods and the broad concepts of compliance and how and why data audits take place.

2.7.4 INVENTORY MANAGEMENT, PERMISSIONING, USAGE REPORTING - AND ASSOCIATED TOOLS

A candidate should understand the broad principles of how to set up and maintain an inventory management system for market and reference data. Candidates should be familiar with the main product solutions.

A candidate should broadly understand the concept and the process of permissioning/entitlements and usage reporting; including dynamic entitlements.

A candidate should be familiar with how usage reports can be generated through permissioning and entitlement systems and why they are needed.

2.8 Market and Reference Data Job Functions

A candidate should understand the broad characteristics of various generic roles within the market and reference data sectors.

2.8.1 CONSUMER FIRMS

Commercial

- *Business Analysts* – tasked with liaising with end users to find out what their data requirements are;
- *Procurement - Vendor and Relationship Management* – tasked with negotiating the best deals with a vendor and maintaining collaborative information exchange;
- *Performance Management* – tasked with measuring the performance of services supplied;
- *Administration Including Billing/Invoicing* – tasked with processing and tracking contracts and invoices;
- *Financial Analyst* – tasked with more details financial analysis of ongoing and future purchasing;
- *Inventory Management* – tasked with keeping track of which services are being used and by whom;
- *Contracts Management* – a specialized task of keeping track of contracts and associated terms and conditions;
- *Compliance Exchange Management* – a specialized task of staying on top of the complex rules that exchanges impose on the use of their data;
- *Chief Data Officer;*
- *Data Governance.*

Technical/IT (Engineering)

- *Selection* – tasked with reviewing technical choices and making a selection of IT and System related products and services. (NB not content);
- *Implementation* – tasked with physically deploying new software and systems;
- *Support and Maintenance* – tasked with looking after existing software and systems;
- *Software/Systems Development* – tasked with creating new software and systems (as opposed to buying them in from a supplier).

2.8.2 VENDOR FIRMS (INCLUDING EXCHANGES AND SOFTWARE/TECHNOLOGY SUPPLIERS)

Customer Facing

- *Trainers* – tasked with educating users on the functionality and content of services;
- *Customer Support* – tasked with responding to specific problems or requests from customers, often via a telephone helpline;
- *Account Manager (sales)* – tasked with managing the relationship with the customer which would include either increasing revenues or maintaining them;
- *New Business (sales)* – tasked with generating brand new business revenues often from new customers or new departments within existing customer groups;
- *Administration and Billing* – tasked with generating invoices and collecting payment.

Office – Cross Customer

- *Product Management* – tasked with managing a product or service as a business. This would include collecting and recording market requirements as well as understanding the P&L economics of a given product/service;
- *Product Development* – tasked with actually developing a product/service (as probably defined by product management);
- *Marketing Communications* – tasked with such things as PR, advertising and the production of collateral such as brochures, etc.

3

The Technology

A candidate should have a broad understanding of the various technologies that are deployed in association with market and reference data and how they are used. While a candidate is not expected to know all of the following in any kind of detail, he or she is expected to recognize the phrases and understand very broad concepts and the overall context where such things are relevant.

3.1 Technology Basics & Terminology

A candidate should be able to understand what the following basic technology elements are and their relevance in the world of market and reference data:

3.1.1 HARDWARE

What is Hardware

- Processor
- Memory
- Storage (disk, tape, USB/memory stick, SAN)
- NIC (network interface card)
- KVM (keyboard, video and mouse) switches
- FPGA – field programmable gate array
- Telecoms turret

3.1.2 OPERATING SYSTEMS

What is an operating system

- Windows (various)
- Unix, Linux
- Mac (Apple)

3.1.3 APPLICATIONS

- Spreadsheet (incl. MS Excel, Functions, DDE, RTD, Macros, VBA)
- Databases (Incl. SQL and Database Queries)
- Custom applications (in-house, vendor)
- Browser, messaging, email

3.1.4 SOFTWARE / APPLICATION DEVELOPMENT

- What is software/firmware
- Programming Languages (C, C#, .NET, Java)
- Scripting (Perl)
- API (Application Programmatic Interface)
- FPGA and hardware acceleration
- Hadoop (Big Data)

3.1.5 GENERAL COMPUTING TERMINOLOGY

- The Internet (the world wide web)
- Distributed computing/systems
- Grid computing
- Cloud computing (the cloud)
- Big data
- Quantum computing
- Deployed/hosted

3.1.6 CONNECTIVITY

- Connectivity
- Networks
- TCP/IP
- Point to point
- Multicast
- Broadcast
- Transmission medium (copper, fiber optics, satellite, microwave)
- Network/communications hardware (hubs, switches, routers, modems, firewalls)
- Telco providers
- Leased lines
- VPN
- Internet
- Extranet
- Middleware
- Bandwidth, throughput
- Hosting, data center
- Co-Location
- Managed service
- Proximity

3.1.7 STABILITY

- Resilience and fail-over
- Latency
- Scalability
- Message rates

3.2 Datafeeds

A candidate should be able to understand what is meant by a datafeed, and:

- How a datafeed is typically delivered to a client
- What a “consolidated” datafeed is
- What a “direct” datafeed is
- How datafeeds are processed

A candidate should have a general understanding of the following terminologies as they relate to data feeds:

- Throttling, pulsed, intervalized
- Snapped, streaming, delayed, real-time, EOD, conflated
- push/pull technologies
- Pub/Sub mechanisms
- Protocols (FIX, FAST,ITCH, XML)

A candidate should have an appreciation of the strengths and weaknesses of various types of datafeed offerings and the effort required to implement new or to migrate between feeds. They should further have a broad understanding of when and why datafeeds might be implemented. A candidate should have a robust understanding of the datafeed offerings in the market:

- Aggregated/consolidated
- Direct
- Hybrid or co-located or hosted solutions

3.3 Data Distribution – systems and software

A candidate should understand how data is distributed both between the provider and the client site but also within and around the client site. They should understand the basics of market data distribution systems, and:

- What is a market data distribution system (MDDS)?
- Who the providers of MDDS are?
- What application permissioning and user entitlements is?
- What the core components of MDDS systems (feed handler, cache, distributor, wan gateway) are?
- What are the different types of market data consumers and the respective “quality of service” required, e.g. desktop display apps, Algo applications, tick capture engines?
- What is broadly understood by the phrase EDM system?

3.4 Desktops (e.g.Terminals)

3.4.1 WORKSTATIONS

A candidate should understand the basics of desktop workstations

- The role of Microsoft Windows: DDE, OLE and RTD;
- How market data applications connect and communicate with the server;
- The difference between fat and thin client technology.

A candidate should have a basic understanding of the key workstation offerings in the market.

A candidate should have a basic understanding of mobile and handheld devices and how data can be distributed and displayed to such devices.

3.4.2 INSTANT MESSAGING

Instant messaging (IM) has become part of the product offering of many market data vendors.

A candidate should understand the broad concepts of IM and Chat - and the key providers to the financial community with specific focus on how this has been associated with market data solutions; Also the compliance obligations for storage and retrieval of IM transcripts.

3.4.3 TRANSACTION PRODUCTS (DESKTOP)

In addition to providing core market data, many market data vendors have expanded into the transaction product space, and support and ownership of these products often fall under the market data groups' responsibility.

A candidate should have a broad understanding of this area and the products that are provided.

A candidate should understand what the phrase "view and do" means.

3.5 Applications and Associated Technology

3.5.1 APPLICATION TYPES

A candidate should understand how and why applications are deployed and how they either add value to market and reference data, or how they consume it as part of a wider functionality.

- Charting and technical analysis
- Various mathematical functions
- Algorithmic trading
- Risk management
- Trading systems
- OMS & EMS
- Smart order routing
- Pricing systems

3.5.2 ALGORITHMIC TRADING

Specifically for algorithmic trading, a candidate should understand the market data technologies currently in play, who are the key vendors, what are their key challenges, including their recent history and reason for being. Candidates should also understand in broad terms:

- Low latency feed and distribution systems
- Messaging systems
- Complex event processing (CEP) and its relevance
- The reasons for tick capture systems
- The reasons for latency metrics and the existing technologies being marketed
- The benefits and challenges of co-location and proximity hosting

3.5.3 PRICE CONTRIBUTIONS

A candidate should understand the concept of price contributions, methods and core components:

- Spreadsheet publishing
- Multi-vendor contribution systems
- Vendor contribution protocols

3.6 Development, Implementation, Management and Support

A candidate should have a broad understanding of how applications and systems are developed, deployed and subsequently maintained.

3.6.1 SYSTEM DEVELOPMENT

- Basic understanding of programming languages and terminology (code, run-time, API, UAT, version control, etc.);
- Development environments (dev, QA, production);
- Handling data (data integrity, support of entitlements and usage tracking, implications of derived data and redistribution);
- Importance of test environments.

3.6.2 IMPLEMENTATION

- How systems are tested and deployed;
- The techniques used to package software for mass deployment;
- Software compatibility issues and resolution;
- Importance of change management processes;
- The role of “project management”;
- The importance of being able to “fall back” to an earlier version;
- The importance of backward compatibility.

3.6.3 SUPPORT

- Importance of incident and problem management within market data;
- Need for capacity management as it relates to market data;
- Understand client (i.e. end users) base and impact of systems failure (availability management);
- Impact of systems recovery to end users and applications;
- Business continuity management and disaster recovery planning;
- System monitoring and alerting, including latency.

3.7 Enterprise and Reference Data Management

A candidate should understand how data is distributed both between the provider and the client site but also within and around the client site. A candidate should understand the importance of Enterprise Data Management (EDM) and hence the technologies required to support it. They should also understand the interdependencies between reference data and price data.

Candidates should be familiar with data providers and solution providers servicing this market segment.

3.7.1 BASICS OF BACK OFFICE DATA DISTRIBUTION SYSTEMS

A candidate should understand the basics of back office data distribution systems

- What a reference data distribution system is;
- Understand how files are transferred via FTP, push/pull, secure FTP, automated FTP extraction delivery.

3.7.2 TYPES OF INFORMATION FILES

Understand differences between types of information files – reference data; pricing, corporate actions supplied and the range and types of instruments which can be accessed.

3.8 General topics

- The rising importance of Big Data – what is it and how does it relate to this industry?
- Increased reliance on “outsourcing” and/or “managed services.”

4

Industry Issues & Trends

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This part of the syllabus will be the most fluid and hence may be updated on a more regular basis. A candidate should demonstrate that he or she has a robust grasp of some of the key issues and associated trends that are influencing the development and evolution of the market and reference data industry.

4.1 Market Regulation and Market Structure

A candidate should demonstrate a broad understanding of how market structures are changing and why. They should have a robust high level appreciation of key government regulations and their impact on the market and reference data industry.

4.1.1 THE US MARKETS

A candidate should have a broad understanding of how the U.S. Securities and Exchange Commission (SEC) regulates the U.S. equities markets and how the Commodity Futures Trading Commission (CFTC) regulates the futures markets - with special attention to how this impacts market data. They should understand the key elements of the recent regulations with particular focus on how this affects market data, and they should understand how the U.S. regulations and markets have changed in recent years, including:

- The Dodd Frank Act - including the Office of Financial Research
- FATCA – The Foreign Account Tax Compliance Act
- SEC Reg NMS (National Market System)
- SEC Reg SCI (Systems Compliance and Integrity)
- SEC Reg SHO (Short Selling)

4.1.2 THE EUROPEAN UNION

A candidate should understand the recent changes in EU regulation; they should understand the changing face of the European Equities Markets including:

- The roles, interactions and areas of responsibility of supra-national regulators (ESMA) and national regulators (FCA, AMF, BaFIN, etc.)
- The impact on 'National' Exchanges
- The role of Multilateral Trading Facilities
- The impact and consequences of market fragmentation
- The general concept of 'Best Execution'
- The concept of a European Consolidated Tape
- EU Competition Law – including recent reviews, e.g. proprietary symbologies

A candidate should be familiar with:

- AIFMD (Alternative Investment Fund Management Directive)
- EMIR (European Market Infrastructure Regulation)
- MIFID (Markets in Financial Instruments Directive) I and II
- MIFIR (Markets in Financial Instruments Regulation)
- MAD (Market Abuse Directive I and II)
- Solvency II

4.1.3 GLOBAL

A candidate should understand at a high level some of the broader global regulation of the financial markets, taking special note of how this might affect market and reference data. Including:

- Basel II and III and BCBS 239 (Basel Committee on Banking Supervision)
- IFRS – The International Financial Reporting Standards

A candidate should have a broad appreciation for of how regulation is dealt with outside of Europe and the U.S. – for example, how the regulatory framework in Asia Pacific is different from the U.S. and EU. Also who the main regulators are in major centers such as Hong Kong, Singapore, Japan and Australia.

A candidate should have a broad appreciation of key structural changes in Asia Pacific including M&A activity.

4.2 Commercial, Contractual, Economic and Political

A candidate should be able to demonstrate a broad understanding of some of the key and recent debates surrounding market and reference data, including:

- The debate on what is the optimum “unit of count” for data contracts;
- The debate on intellectual property rights (*ownership*) for data, including redistribution of data and derived data;
- The contentious issue of data “audits”
- The development of non-display application use of market data;
- The increasing use of outsourcing and/or off shoring for market data admin functions;
- The relevance and impact of the increasing use of service level agreements (SLAs) in the delivery and ongoing support of market data services.

A candidate should be able to demonstrate a broad grasp of some of the macroeconomic factors affecting our industry, including:

- The origins and impacts of the “credit crisis/crunch”;
- The origins of the “LIBOR scandal” and how this has affected the interbank lending rates data landscape;
- Hedge funds – their role in the markets and how they use data;
- How a growing interest in ‘Socially Responsible Investing’ (SRI) is affecting demands on market data services;
- The flash crash – what happened and why might it concern us;
- High frequency trading and fast markets – why do politicians care;
- Quantitative easing – what is it and why does it matter;
- China – stock connect and other issues;
- Cross continent collaborations between exchanges;
- Eurozone – fragmentation, instability and implications;
- Economic sanctions – e.g. OFAC list.

5

Appendix

Candidates should make a point of researching the following organizations to understand their broad product and service offerings and the basic background to their organizations.

5.1 General Data & Service Providers

- Agencia Estado
- Associated Press
- Axon Financial Systems
- Ballintrae Market Data Services
- Barchart
- Bloomberg
- BST America (and AG)
- Datawatch
- DTCC
- Evalueserve
- Exchange Audits
- Exchange Data International
- Factset
- Fidessa
- Fitch
- FTSE (Russell)
- Interactive Data Corporation
- Interfax
- IRESS
- Quick
- Markit
- MDSL
- MicroRose
- Moodys
- Morningstar
- MSCI
- Nikkei
- Platts
- RIMES
- S&P Capital IQ
- S&P Credit Ratings
- S&P Dow Jones Indices
- Screen INFOmatch
- Six Financial
- Sungard
- SuperDerivatives (ICE)
- The Roberts Group
- Thomson Reuters
- VWD
- Xinhua News

5.2 Exchanges

- ASX Australian Securities Exchange
- Amman Stock Exchange
- BATS Global Markets
- BMF Bovespa
- Bolsas y Mercados Espanoles (BME)
- Boerse Stuttgart
- Budapest Stock Exchange
- Bursa Malaysia
- Canadian Securities Exchange
- Casablanca Stock Exchange
- Chi-X Australia/Canada
- Chicago Board Options Exchange
- CME Group
- Deutsche Börse Group (Eurex)
- Egypt for Information Distribution
- Euronext
- HKEx (LME)
- ICE Intercontinental Exchange(NYSE)
- ISE International Securities Exchange
- JPX (Japanese Exchanges)
- Johannesburg Stock Exchange
- Kazakhstan Stock Exchange
- Korea Exchange
- Kuwait Stock Exchange
- London Stock Exchange Group (MTS)
- Luxembourg Stock Exchange
- Moscow Exchange
- Nairobi Securities Exchange
- Nasdaq
- Nigerian Stock Exchange
- OneChicago
- OPRA
- Oslo Bors
- Qatar Exchange
- SGX Singapore Exchange Group
- SIX Swiss Exchange (Exfeed)
- Stock Exchange of Thailand
- TMX
- Ukrainian Exchange
- Vienna Boerse

5.3 Non Exchange Trading Venues

- BGC Partners
- CURRENEX
- GFI Group
- ICAP (EBS)
- MarketAxess
- Tullett Prebon Information
- Tradeweb
- Tradition

5.4 Technology AND SYSTEM Providers

- Activ Financial
- Arcontech
- BT
- CenturyLink Technology
- CISCO
- Equinix
- Exegy
- Fixnetix
- HP
- IBM
- Intel
- IPC
- KX
- Microsoft
- Novasparks
- Oracle
- SAP (Sybase)
- Solace Systems
- Solarflare
- SR Labs
- TIBCO

5.5 EDM System and Related Service Providers

- AIM Software
- Asset Control
- Bloomberg PolarLake
- Eagle Systems
- GoldenSource
- IGATE (Cap Gemini)
- Markit EDM
- SmartStream



About FISD

FISD is a global neutral forum that has served the financial information industry for more than 20 years. Our 150+ global member companies recognize that market data distribution and efficient trade execution require a high level of consistent and predictable service - all of which are dependent on the close cooperation of many independent organizations and systems. Industry stakeholders support FISD as the forum of choice to identify and resolve the business and technical issues that affect the administration, distribution and utilization of market data.

Agenda

The FISD agenda encompasses the wide range of commercial, technical, and regulatory issues that face the financial information industry. The specific events, working groups, and activities that FISD offers will change over time in response to member needs and the changing business environment; but key subject areas include:

- Commercial policies for market & reference data
- Legal & contractual issues
- Market data administration - data permissioning, usage reporting, billing & auditing
- Legislative & regulatory developments that affect the creation and usage of financial information
- Real-time data processing & connectivity
- Indexes - the creation, distribution & usage of index information
- Communications, product management & service delivery practices
- Data standards and best practices
- Data management
- Intellectual property issues & data piracy
- Human resources, organizational, & professional development

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