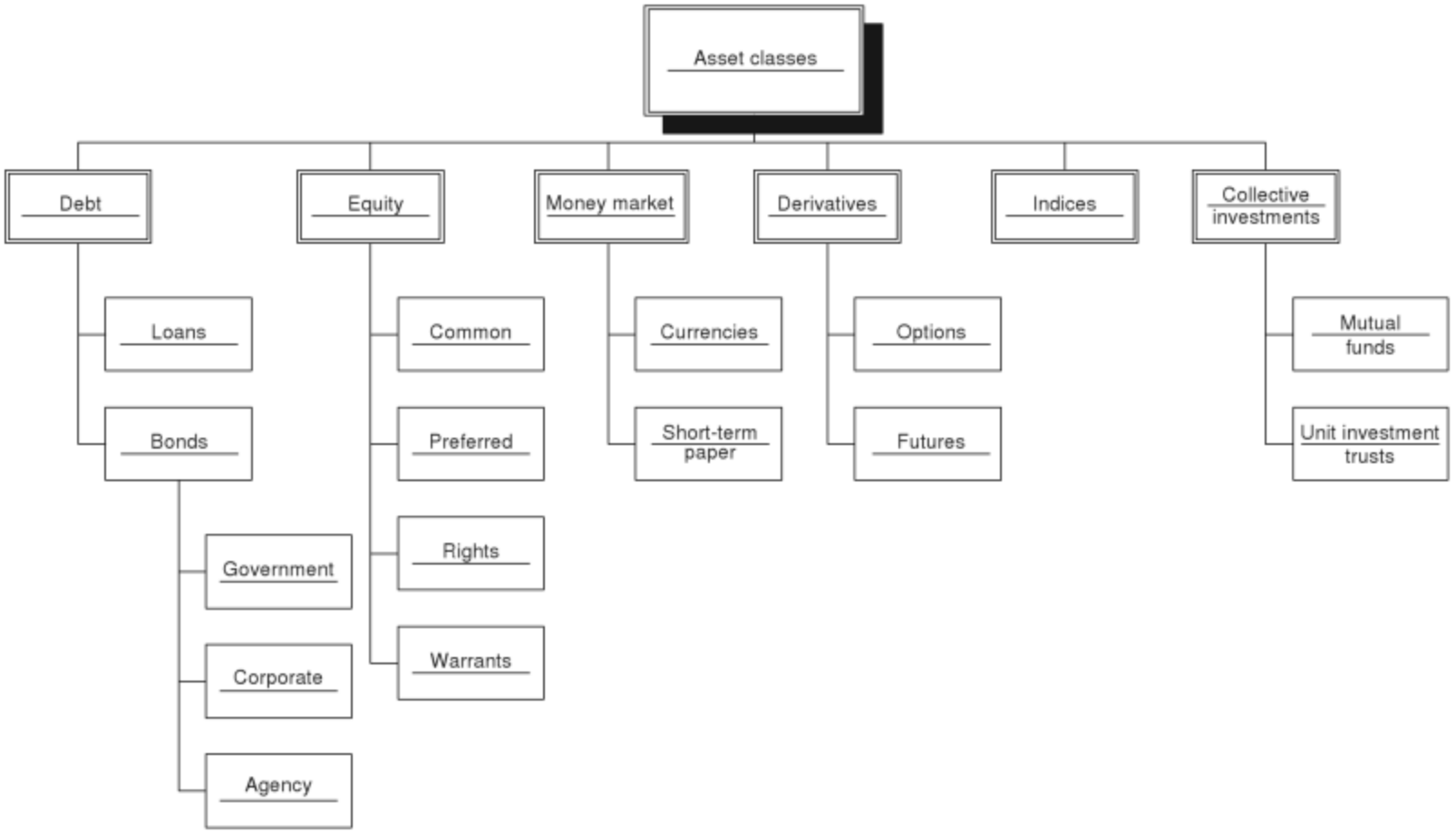
NYU | TANDON SCHOOL OF ENGINEERING

FRE-GY 7831 Topics in Financial & Rick Engineering
Financial Analysis & Big Data

Market Data Explained

- Working with global capital markets can be bewildering experience. One of the bigger challenges analysts and other professionals encounter over the course of their career is:
  - The volume of traded securities
  - Complexity of the content (over 500 statistical facts at least)
- 3 characteristics of market data: *Entities, Attributes* and *Relationships.*


Thomson ONE
Market Views
Company Views
Screening & Analysis
Tools & Tips
Overviews
News & Corporate Events
Corporate Governance
Price Chart
Fundamentals
Estimates
Debt Overview
Deals
Share Ownership
Research
Filings
Officers & Directors
Symbol/Name
TWTR-US
Go
Market
ALL COUNTRIES
Company Overview
Company Overview
TWITTER, INC. (New York:TWTR)
PRIMARY QUOTE
Public Profile
Private Profile
Suite 900 1355 Market Street, SAN FRANCISCO, California - CA 94103, UNITED STATES
+1 415 222-9670
http://twitter.com
Sector (ICB) Software & Computer Services
Subsector (ICB) Internet
CUSIP 90184L102
SEDOL BFLR866
SIC Code 7375
Auditor PricewaterhouseCoopers LLP
Employees 3,638
Fiscal Year End 12/31/14
Financial Summary
Full Summary
Last Twelve Months as of 12/31/14
12/31/14 (A)
12/31/15 (E)
12/31/16 (E)
Sales (MM) 1,403 1,403 2,378 3,622
Growth 111.0 111.0 69.5 52.4
Gross Profit (MM) 957 957 - -
Margin 68.2 68.2 73.3 74.9
EBITDA (MM) (336) (336) 586 1,042
Margin (24.0) (24.0) 24.6 28.8
EBIT (MM) (544) (544) 309 679
Margin (38.8) (38.8) 13.0 18.7
Net Income (MM) (578) (578) 258 583
Margin (41.2) (41.2) 10.9 16.1
EPS (0.96) (0.96) 0.38 0.81
Growth (72.0) (72.0) (139.7) 113.3
Free Cash Flow 82 82 - -
Currency: USD
Source: Worldscope, IBES
Market Data
Price (04/02/15 04:00:00 PM*) 50.42
Change -0.05 (-0.10%)
Volume 13,423,909
52 Wk Range 55.99- 29.51
Consolidated Market Cap** 32,664 (MM)
Dividend Yield 0.00%
Business Description
Twitter, Inc. (Twitter) is a global platform for public self-expression and conversation in real time. It is a real-time platform, where any user can create a Tweet and any user can follow other users.Viewers can see photos, videos and conversations directly in Tweets to get the whole story at a glance, and all in one place. It offers Twitter apps for phones, tablets and computers. It generates its advertising revenue primarily from the sale of its three Promoted Products: Promoted Tweets, Promoted Accounts and Promoted Trends. Its users include millions of people from around the world, as well as influential individuals and organizations, such as government officials, celebrities, athletes, journalists, sports teams, media outlets and brands. In April 2014, it acquired Gnip Inc. In June 2014, Twitter Inc acquired Namo Media Inc. Effective August 1, 2014, Twitter Inc acquired Lectorius Inc. In August 2014, New York REIT Inc. announced the acquisition of Twitter's headquarters.
Company Links
Home Page
Key Ratios
All Ratios
Last Twelve Months as of 12/31/14*
12/31/14 (A)
12/31/15 (E)
12/31/16 (E)
Enterprise Value/Sales 21.8 15.0 12.9 8.5
Enterprise Value/EBITDA NEG NEG 52.3 29.4
Enterprise Value/EBIT NEG NEG 99.3 45.1
Total Debt/Enterprise Value 0.1 0.1 - -
Total Debt/EBITDA NEG NEG 2.7 1.5
EBITDA/Interest Expense (9.9) (9.9) 17.2 30.7
EBITDA-Capital Expenditures/ Interest Expense (15.8) (15.8) 11.3 24.7
EBIT/Interest Expense (16.0) (16.0) 9.1 20.0

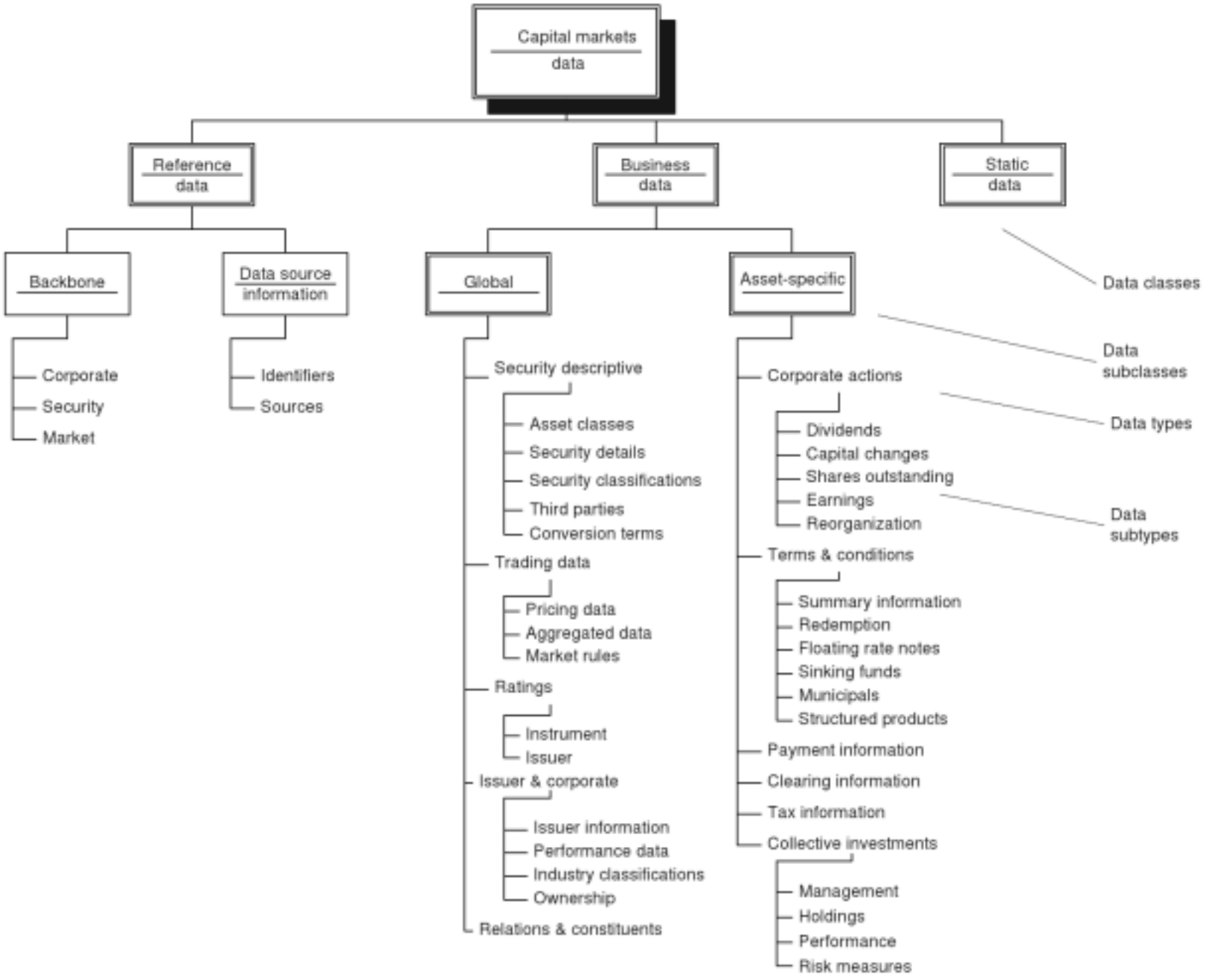


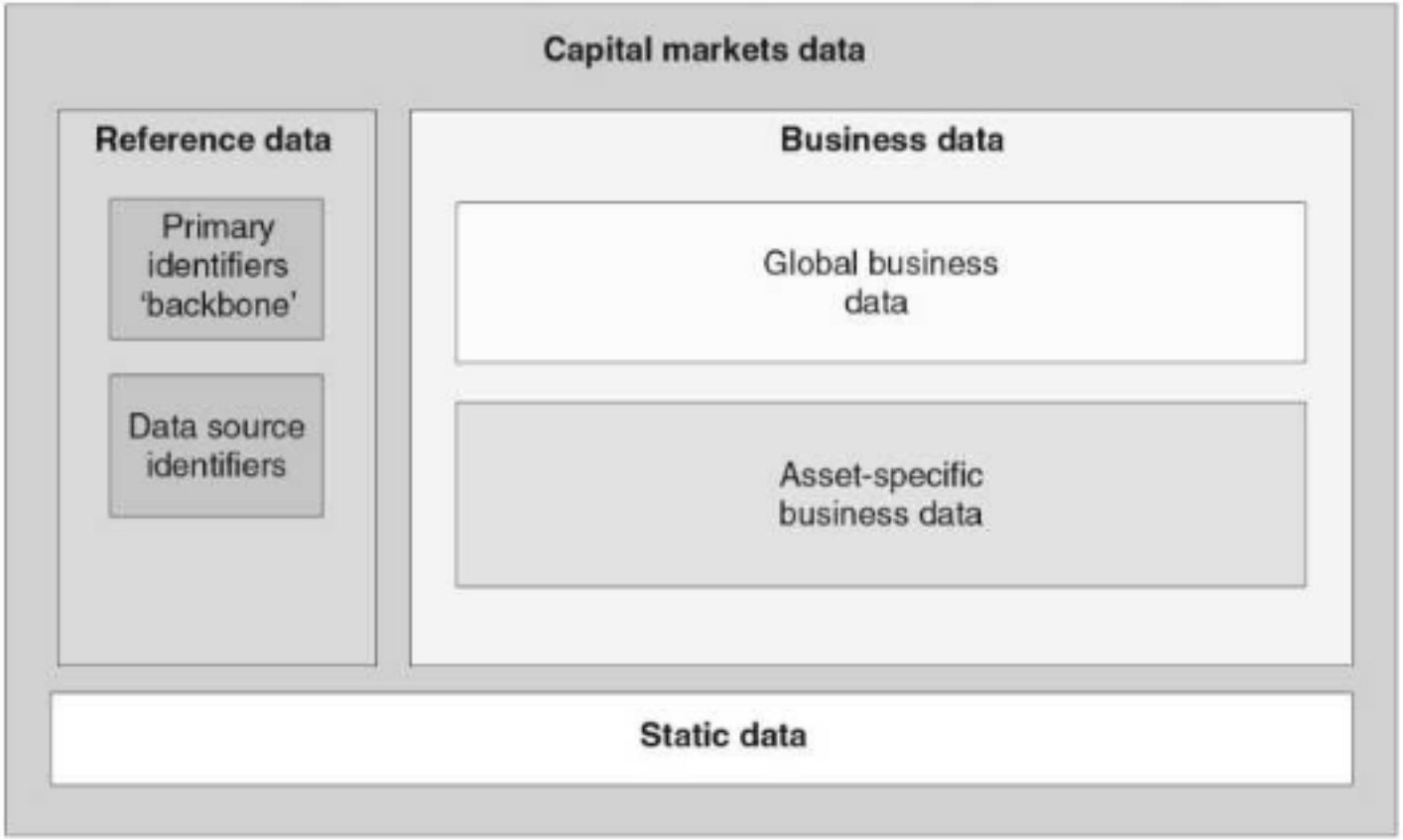
- Data types – information associated with individual financial instruments classified into logical groups or categories. These provide a shorthand manner in which to refer to a series of attributes sharing a common business relevance (also referred to as domains).
  - There are three fundamental data types, each of which is made up of one or more data subtypes.

- Reference data: defined as information that described each corporate organization, the securities it issues and the markets on which the securities are quoted and traded. Reference data has two main components:
  - Identifiers.
  - Basic descriptive information.

- Business data:
  - Global business data types, comprising
    - Security descriptive data
    - Market data
    - Issue & Corporate data
  - Asset-specific business data types, comprising
    - Corporate actions
    - Terms and conditions
    - Relations/constituents
    - Payment information
    - Clearing information
    - Tax information

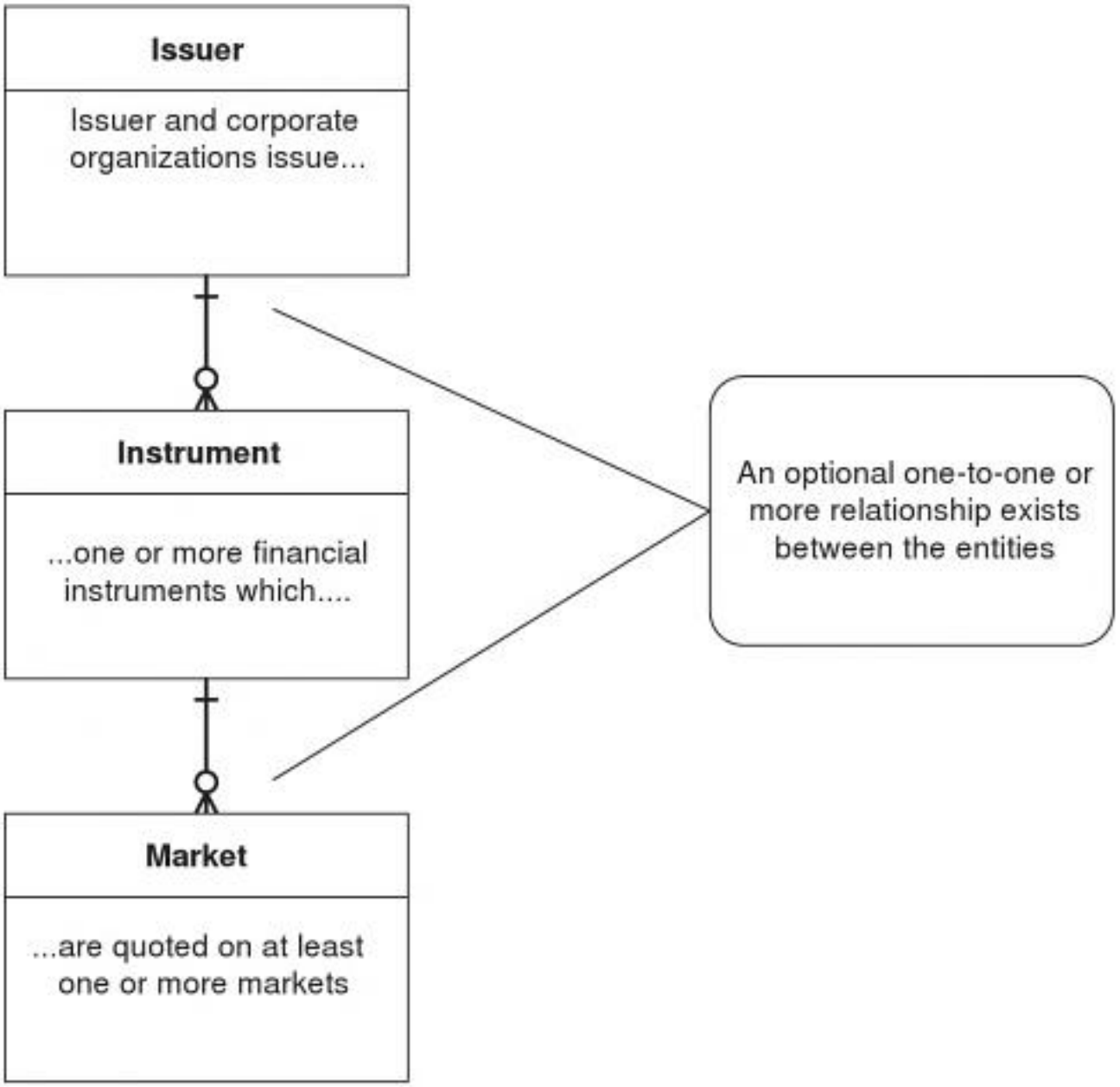
- Static data: also referred to in the industry as “domain tables” and “list of values”, amongst other terms. Static data provides a means for cross-referencing numeric and other coded values to a meaningful definition.


Capital markets data
Reference data
Business data
Static data
Backbone
Data source information
Global
Asset-specific
Data classes
Corporate
Security
Market
Identifiers
Sources
Security descriptive
Asset classes
Security details
Security classifications
Third parties
Conversion terms
Trading data
Pricing data
Aggregated data
Market rules
Ratings
Instrument
Issuer
Issuer & corporate
Issuer information
Performance data
Industry classifications
Ownership
Relations & constituents
Corporate actions
Data subclasses
Dividends
Capital changes
Shares outstanding
Earnings
Reorganization
Data types
Data subtypes
Terms & conditions
Summary information
Redemption
Floating rate notes
Sinking funds
Municipals
Structured products
Payment information
Clearing information
Tax information
Collective investments
Management
Holdings
Performance
Risk measures


Capital markets data
Reference data
Primary identifiers 'backbone'
Data source identifiers
Business data
Global business data
Asset-specific business data
Static data

Reference data logic

- Corporate organizations issue one or more securities of various types that are quotes on one or more market (such as stock exchanges) by one or more market participants.
  - Example1: NYSE:IBM & NASDAQ:IBM
    - IBM is listed on the NYSE. However, IBM can trade on the NYSE, the Nasdaq, and various electronic exchanges, such as Direct Edge or BATS or various other platforms.
  - NYSE:SU & TSX:SU
    - Suncor (SU) is an actual dual listing in two different countries. Suncor is listed in Toronto. Given the large amount of American money invested in Canadian energy, it probably made sense to list a sponsored ADR (*American Depositary Receipt)*. Sponsored just means the company chose to have its stock trade in the US as an ADR; the stock in the US and Canada are equivalent in terms of rights; the only difference is the currency the stock trades in.

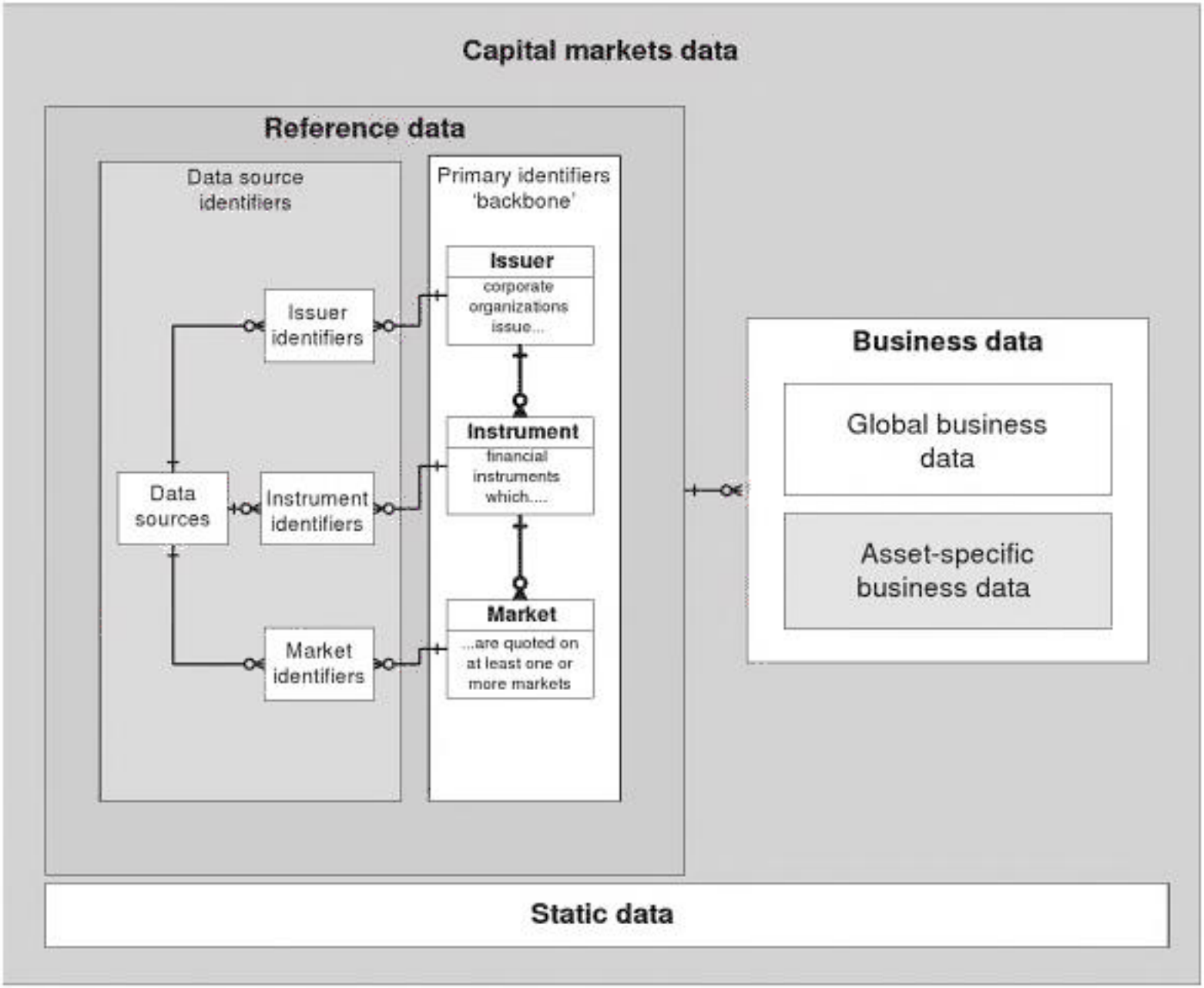

Issuer
Issuer and corporate organizations issue...
Instrument
...one or more financial instruments which....
Market
...are quoted on at least one or more markets
An optional one-to-one or more relationship exists between the entities

Reference data components

- Reference data is defined as the set of attributes that perform two very specific functions:
  - They provide unique identification (at the issuer, instrument and market levels).
  - They provide basic descriptive information that fully defines the individual data items identified by the unique identification.
- Reference data class can be broken into 2 subclasses:
  - Primary keys – usefully thought of as a backbone, this subclass contains a universe of identifiers that is independent from any one coding standard.
  - Data source identifiers – the universe of coding schemes and other forms of identification cross-reference to the primary keys.

Framework Backbone

- Issuer identifier
- Instrument identifier
- Market identifier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Data source identifiers
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corporate organizations issue...
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financial instruments which....
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Instrument identifiers

Code type	Associated geography	Comments
CUSIP	United states and North America	Widely used, issued and managed by Standard & Poor's on behalf of the American Banker's Association
Common	Europe	
ISIN	International	
Valoren	Switzerland, Europe	Issued and managed by Telekurs SA; both domestic values and international values are issued
Wert	Germany, Europe	Official clearing code for Germany
SICOVAM	France, Europe	
Euroclear	Europe	
Various	Australia, Austria, Belgium, Brazil, Denmark, Hong Kong, Italy, Luxembourg, Malaysia, Netherlands, Norway, Spain, Sweden	Independently issued and managed coding schemes issued by official national numbering agencies

Reference Data		
	Symbol	CUSIP
Class A	GOOGL	38259P508
Class C	GOOG	38259P706

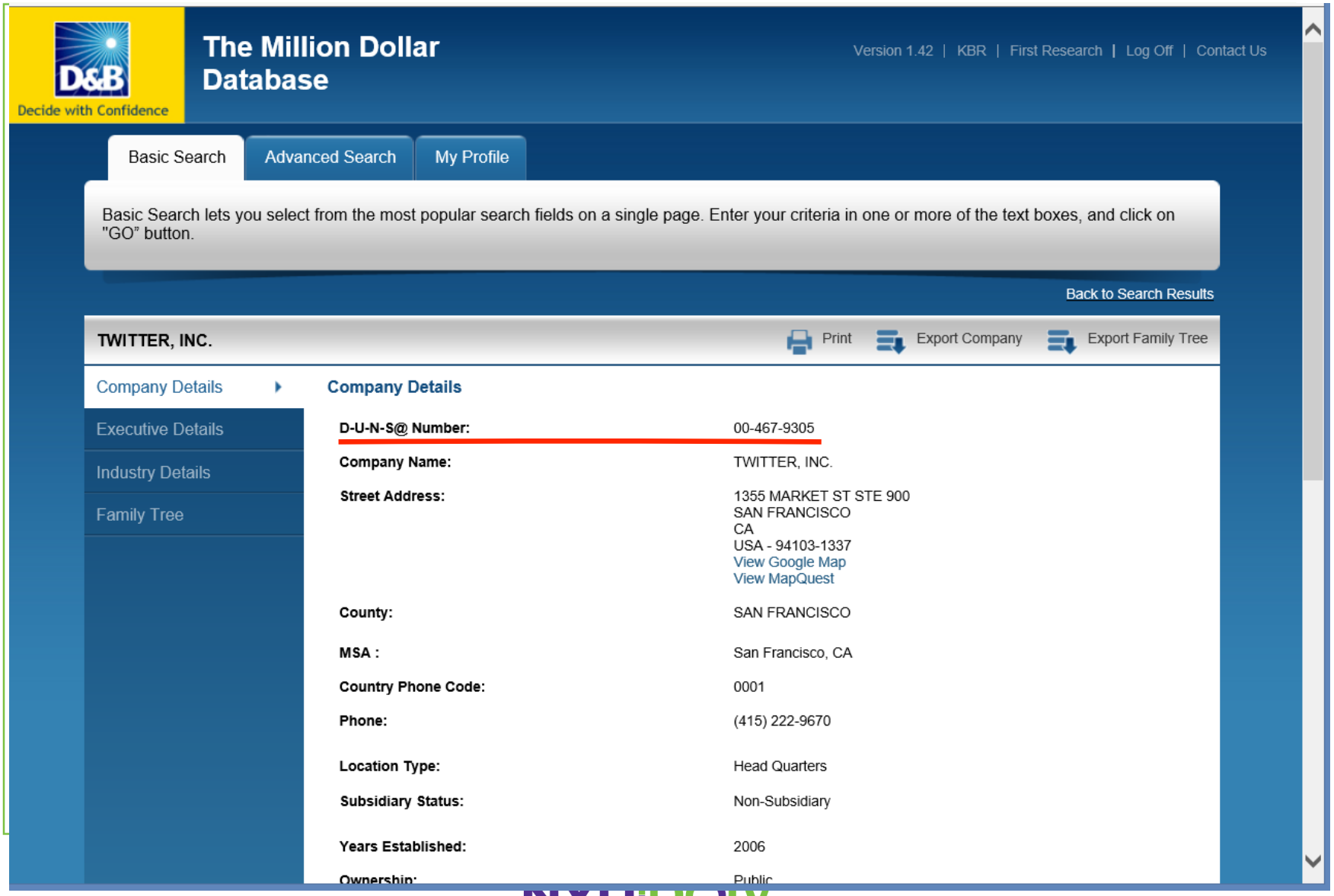
Issuer

Market identifiers

- Ticker symbols – alphanumeric symbols issued and managed by exchanges.
- QUICK codes – used in Japan
- SEDOL codes – issued by the London Stock Exchange.
- RIC – Reuters Instrument Code.

Issue identifiers

- DUNS number – issued by Dunn & Bradstreet, this identifies registered corporations globally and is pretty much the closest to an accepted global standard.
- Bloomberg Company identifier
- CUSIP6 – the first six characters of the CUSIP symbol identify issuers.
- Reuters Organization identifier


D&B
Decide with Confidence
The Million Dollar Database
Version 1.42 | KBR | First Research | Log Off | Contact Us
Basic Search
Advanced Search
My Profile
Basic Search lets you select from the most popular search fields on a single page. Enter your criteria in one or more of the text boxes, and click on "GO" button.
Back to Search Results
TWITTER, INC.
Print
Export Company
Export Family Tree
Company Details
Executive Details
Industry Details
Family Tree
Company Details
D-U-N-S@ Number: 00-467-9305
Company Name: TWITTER, INC.
Street Address: 1355 MARKET ST STE 900
SAN FRANCISCO
CA
USA - 94103-1337
View Google Map
View MapQuest
County: SAN FRANCISCO
MSA : San Francisco, CA
Country Phone Code: 0001
Phone: (415) 222-9670
Location Type: Head Quarters
Subsidiary Status: Non-Subsidiary
Years Established: 2006
Ownership: Public

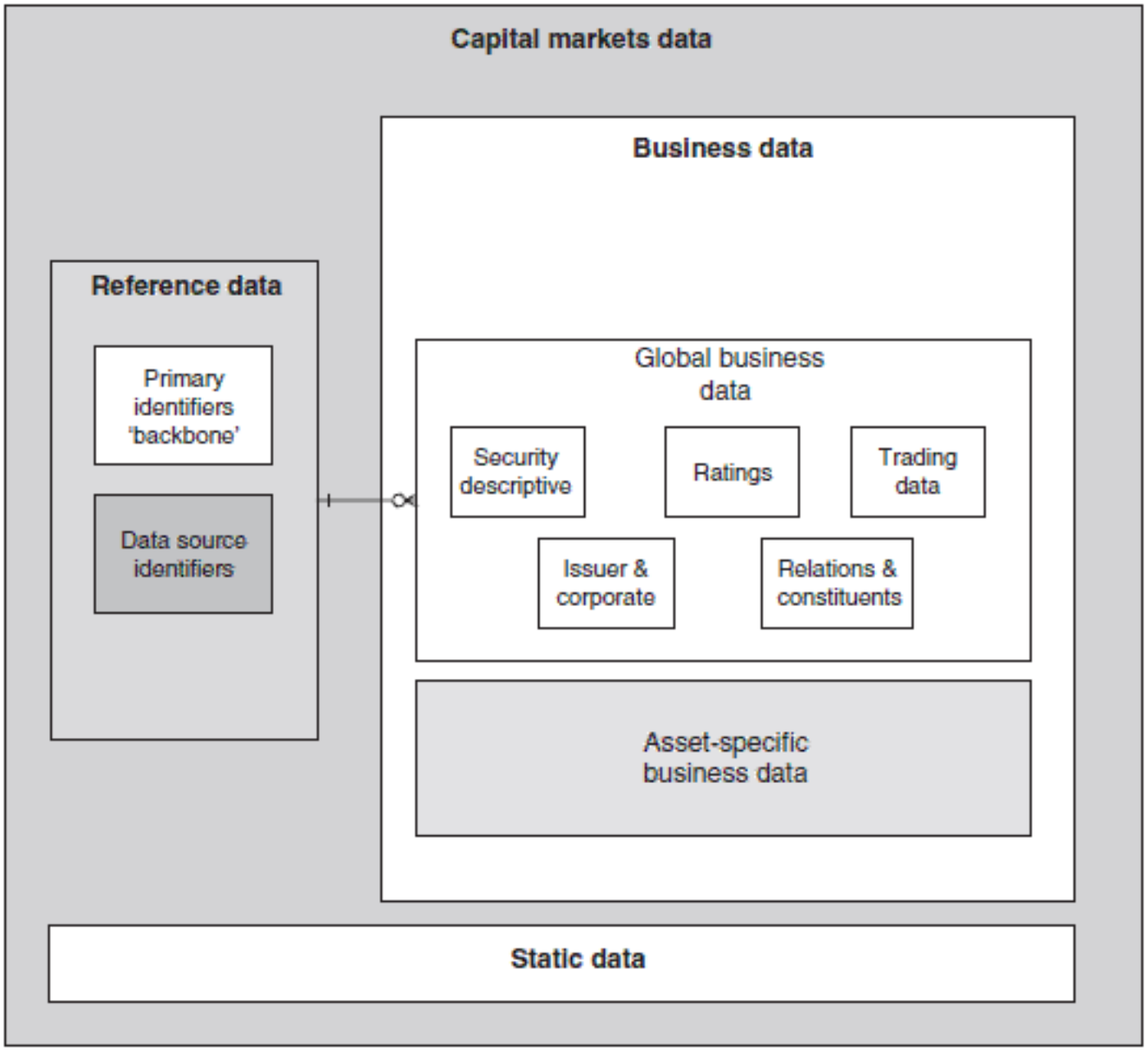
- Business Data
  - Where reference data has a very specific definition and scope, business data refers to a much broader universe of context. So the business data class contains the largest number of logical attributes.
  - The two large classes of business data are:
    - Global business data
    - Asset-specific business data

Global Business Data

- ***Security descriptive data*** – the information that provides detailed definition and description of a particular instrument.
- ***Trading data*** – information (predominantly pricing) generated by global capital markets on a daily and intraday basis related to the exchange of financial instruments between counterparties.
- ***Ratings*** – evaluation of financial instruments and their issuers by recognized ratings agencies.
- ***Issuer & corporate information*** – information that describes the corporate entity and its business performance.
- ***Relations & constituents*** – detailed information on the constituents of securities made up of or related to one or more underlying securities and ownership interests.

Asset-specific business data

- ***Corporate actions*** – announcements and other business events that materially affect the structure and/or value of a security.
- ***Terms & conditions*** – these provide the details on the legal structure of financial securities and the conditions and schedule under which they may be exercised.
- ***Payment information*** – many securities and bonds in particular, include guaranteed cash flows to holders made in a wide variety of manners.
- ***Collective investment details –*** related to funds asset class.
- ***Clearing information*** – closely related to the trading global data type. This subtype records information to the post-trade processing of transactions, ensuring that buy and sell orders are matched and confirmed.
- ***Tax information*** – this subtype records the tax information that is related to the sale of securities.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Trading data
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Asset-specific business data
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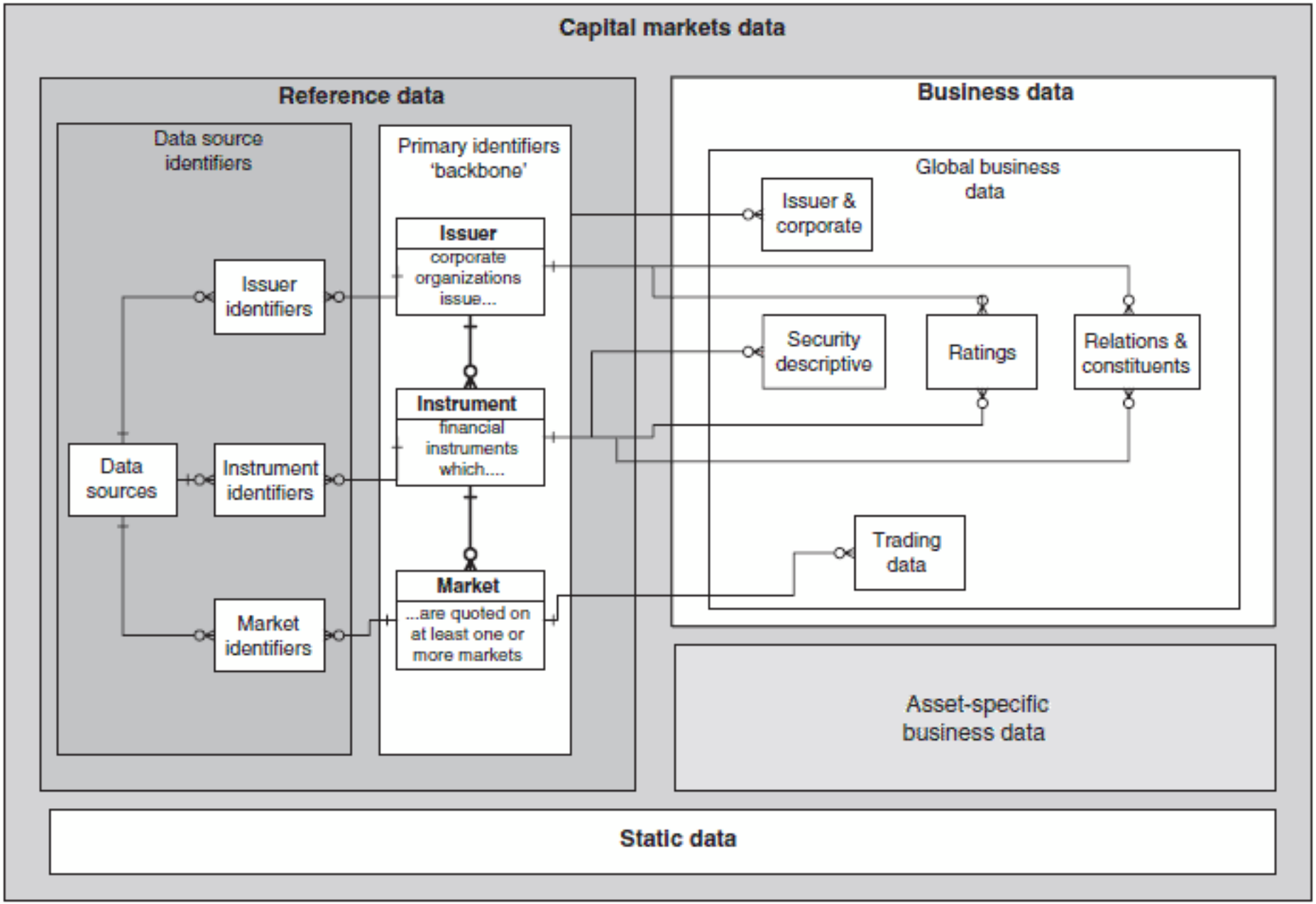
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Security descriptive
Ratings
Relations & constituents
Trading data
Asset-specific business data
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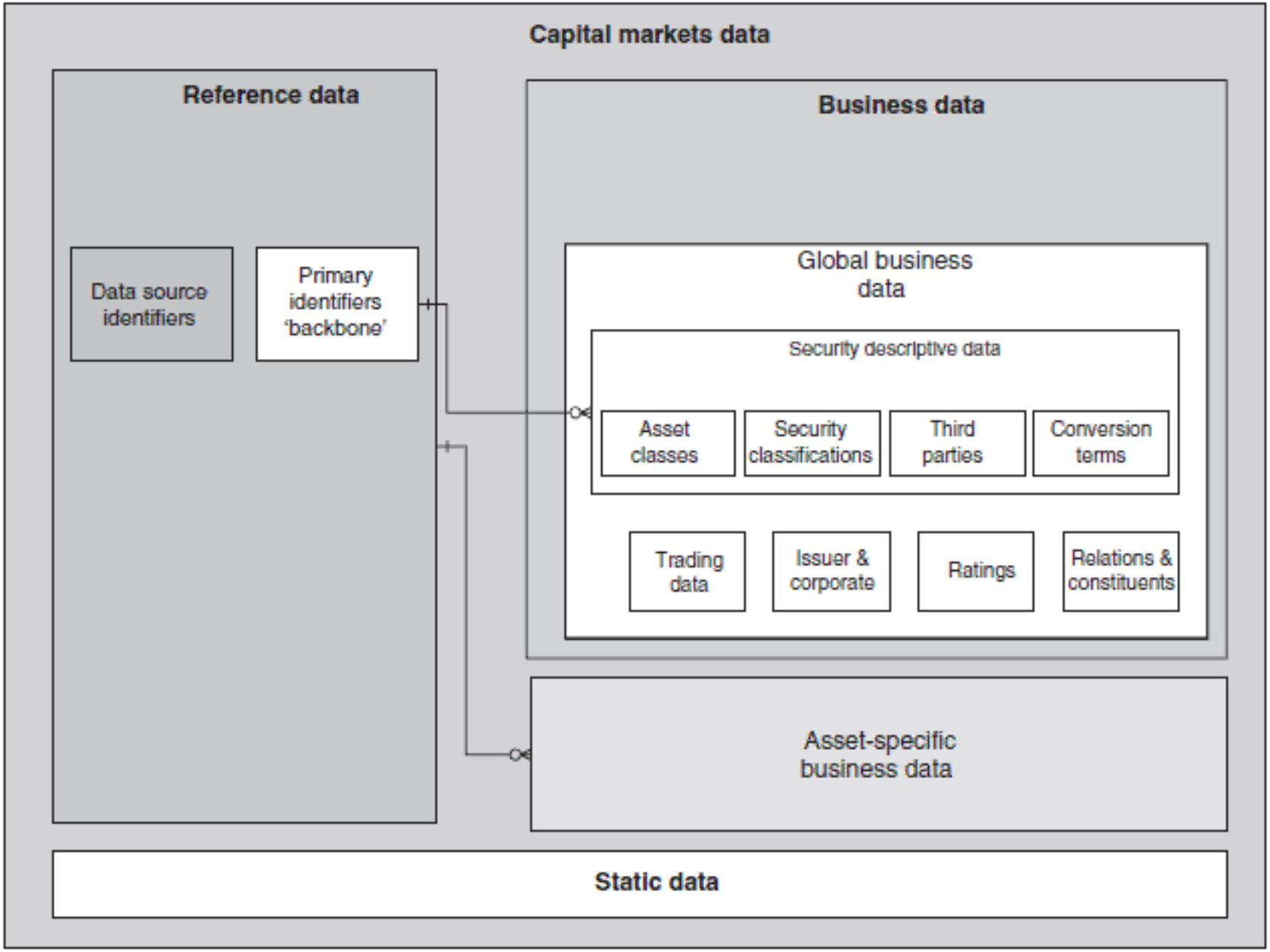
- **Security Descriptive Data**
  - Security details
  - Asset class data
    - Debt
    - Equity
    - Money Market
    - Derivatives
    - Indices
    - Collective investments
  - Security features
  - Security classification schemes
  - Third parties
  - Conversion terms

Asset classes	Asset subclasses	Attributes
Equities	Common stock Preferred stock Rights Warrants	• Reference data • Multiple identifier types • Security descriptive data • Pricing and derived data • Corporate actions • Issuer data
Debt/fixed income	Corporate Government Agency Municipal Structured products Floating rate notes	• Reference data • Multiple identifier types • Security descriptive data • Pricing and derived data • Terms and conditions • Issuer data
Derivatives	Options Futures	• Reference data • Descriptive data • Pricing and derived data • Underlying instruments/ constituents • Corporate actions
Money market	Foreign exchange, spot Foreign exchange, forwards Deposits Interbank rates Commercial paper Bankers acceptances Swaps	• Reference data • Pricing and derived data such as yields • Underlying benchmarks
Collective investments/funds	Mutual funds Unit investment trusts Money market funds Exchange traded funds	• Reference data • Pricing and related derived data • Collective investment details • Constituents and weightings • Corporate actions
Indices	Exchanges Agencies Bonds Geographic markets	• Reference data • Multiple identifier types • Pricing and related derived data • Constituents and weightings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Reference data
Data source identifiers
Primary identifiers 'backbone'
Business data
Global business data
Security descriptive data
Asset classes
Security classifications
Third parties
Conversion terms
Trading data
Issuer & corporate
Ratings
Relations & constituents
Asset-specific business data
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Third-party information

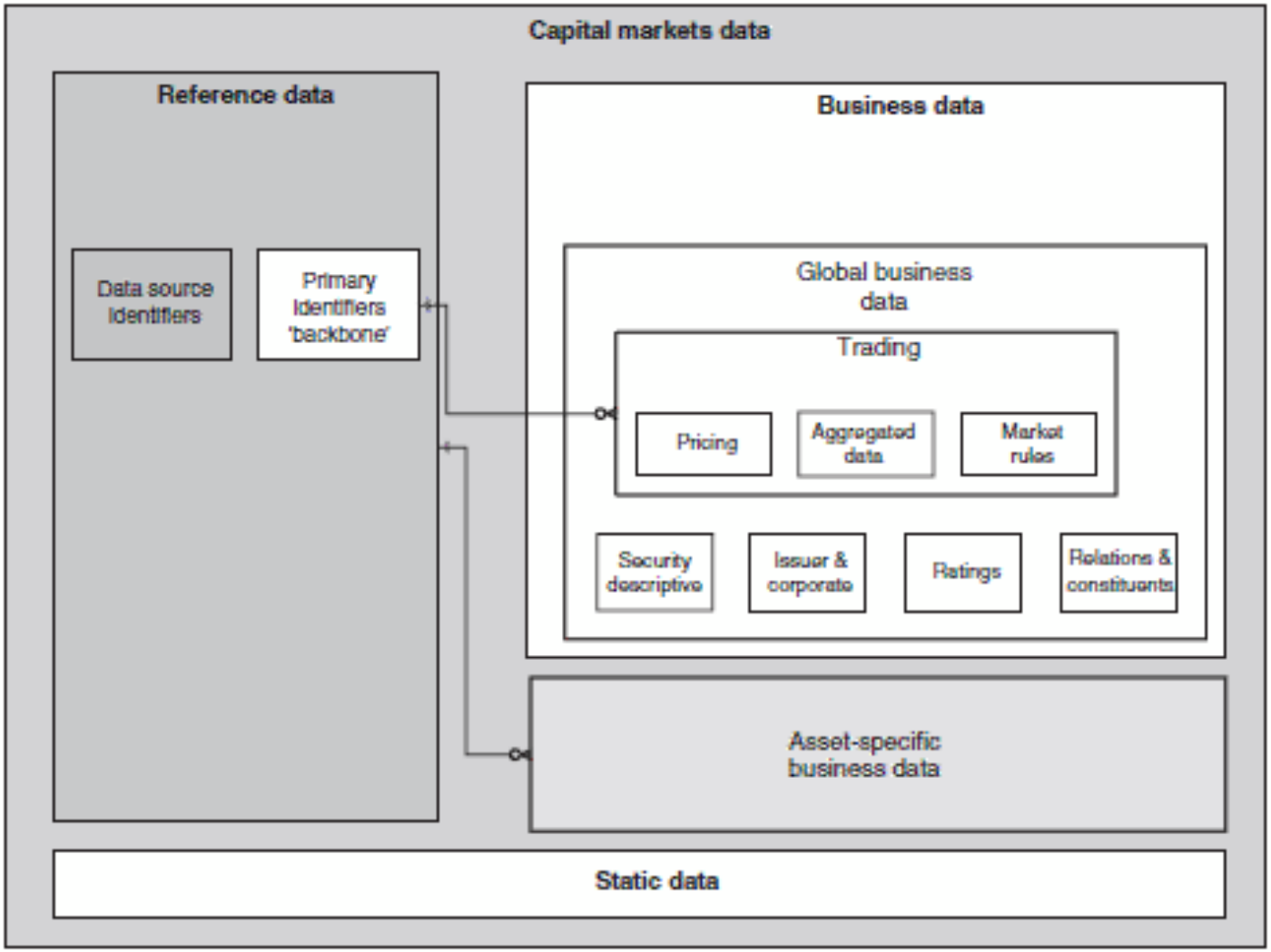
- Lead manager/underwriter
- Co-manager
- Trustee
- Counsel
- Paying agent
- Re-marketing agent
- Tender agent
- Transfer agent
- Registrar
- Escrow agent
- Financial advisor
- Clearing agent
- Information agent

Conversion terms

- **Three principal concepts**
  - Conversion terms – providing details related to the terms under which the conversion can be exercised.
  - Conversion events – providing a historical record of when conversions occur, as well as recording the schedule on when they may take place in future.
  - Conversion details – additional information (typically in free-form text) associated with a particular event.

Trading Data

- **Pricing data** – attributes that indicate the economic value placed on an individual security by participants in the market. It has two subtypes:
  - **End of day** – pricing values recorded at the end of day to provide a benchmark for a variety of functions.
  - **Time and sales** – time-indexed records of pricing values and counterparties recorded over the course of the trading day.
- **Time and sales data** – at the most specific level are details related to each individual trade, recording the time of the transaction and the details related to the sale (block size, execution price, bid and ask prices at time of execution, etc.)
- **Aggregated data** – much data is aggregated and calculated across the market. Examples includes indices, total volume, number of advancers and decliners.
- **Market rules** – information that described the manner in which the market operates and the conventions that are followed.



End-of-day pricing

- **Trade facts –** the universe of statistical facts that are used to communicate the value of the security, such as open price, high price, low price, bid price, ask price, last price, close price and volume.
- **Trade value** – the actual observed value for the associated trade fact.
- **Date** - all pricing data is date-relevant
- **Time** - the time of date at which a trade value was produced.
- **Frequency** - the periodicity on which the trade values are collected, such as tick-by-tick, daily, weekly, monthly, quarterly and yearly.
- **Price type** - the convention, if any, under which the price is quoted, such as
  - nominal quote, **not committed**
  - Quoted with interest **committed NYSE**

Reference Data			Business Data									
			Valuation Measures									
	Symbol	CUSIP	Market Cap (intraday)	Enterprise Value	Trailing P/E	Forward P/E	PEG Ratio	Price/Sales	Price/Book	Enterprise Value/Revenue	Enterprise Value/EBITDA	
Class A	GOOGL	38259P508	373.95B	322.83B	28.99	18.07	1.24	5.51	3.79	4.75	16.17	
Class C	GOOG	38259P706	366.69B	316.28B	28.45	18.44	1.35	5.41	3.72	4.66	15.85	
			Stock Price History									
	Symbol	CUSIP	Beta	52-Week Change	52-Week High	52-Week Low	50-Day Moving Average	200-Day Moving Average				
Class A	GOOGL	38259P508	0.77	8.49%	615.05	503	566.61	569.99				
Class C	GOOG	38259P706	1.17	N/A	604.83	502.8	556.3	560.55				
			Share Statistics									
	Symbol	CUSIP	Avg Vol (3 month)	Avg Vol (10 day)	Shares Outstanding	Float	% Held by Insiders	% Held by Institutions	Shares Short (as of 10/15/14)	Short Ratio (as of 10/15/14)	Short % of Float (as of 10/15/14)	Shares Short (prior month)
Class A	GOOGL	38259P508	1,838,580	1,745,860	678.36M	572.24M	0.23%	83.80%	2.68M	1.4	0.50%	2.54M
Class C	GOOG	38259P706	1,734,660	1,561,090	678.36M	572.24M	0.19%	31.90%	2.11M	1.1	N/A	2.00M

Aggregated data

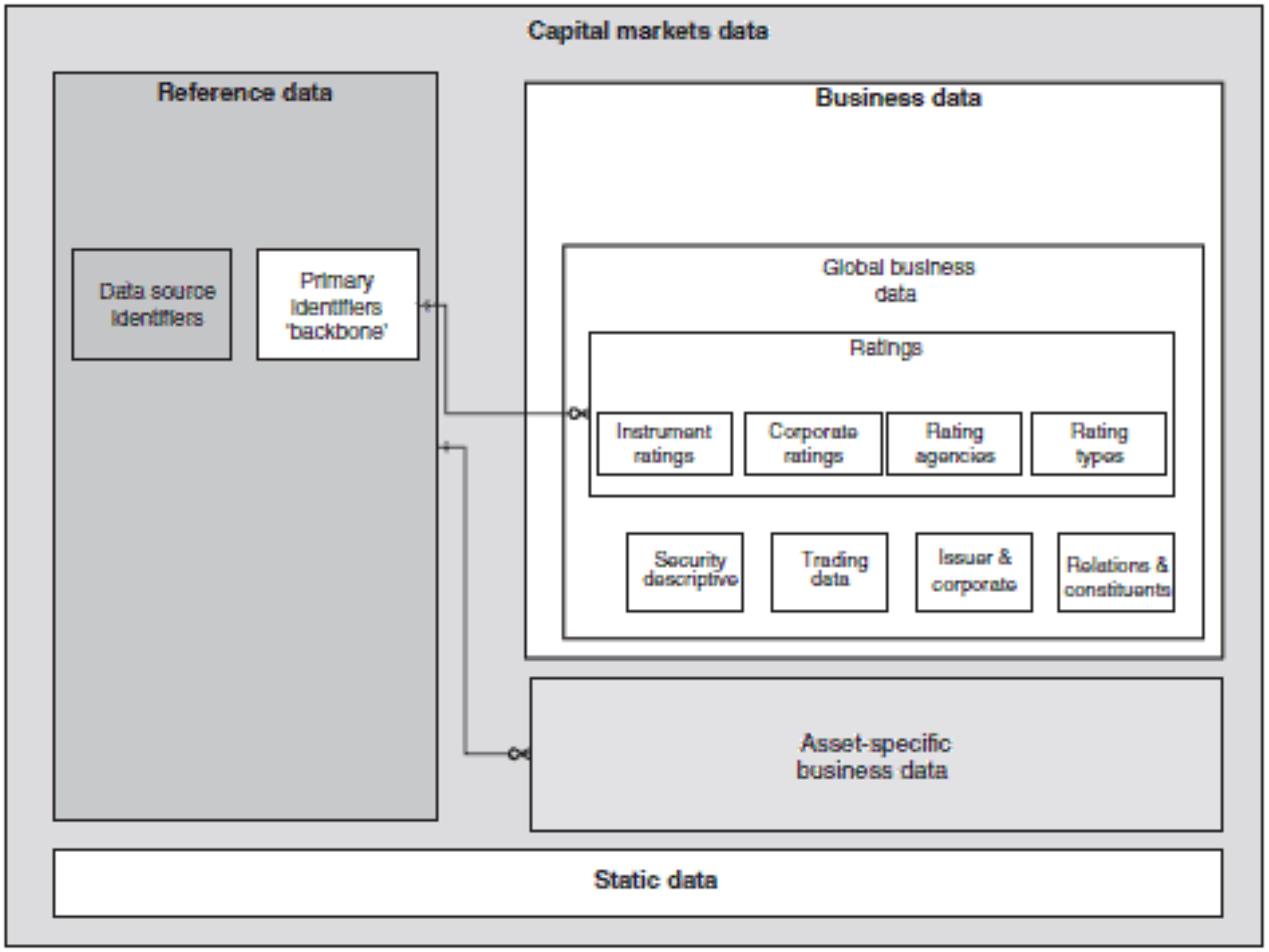
- ***Total market volume***
- ***Total market turnover***
- ***Number of advancing securities***
- ***Number of declining securities***
- ***Number unchanged***
- ***Number of trades executed.***

Market rules

- **Trading calendars –** details on when the market operates, including the days of the week and times of day.
- **Holiday calendars**
- **Settlement conventions**
- **Regulatory details**

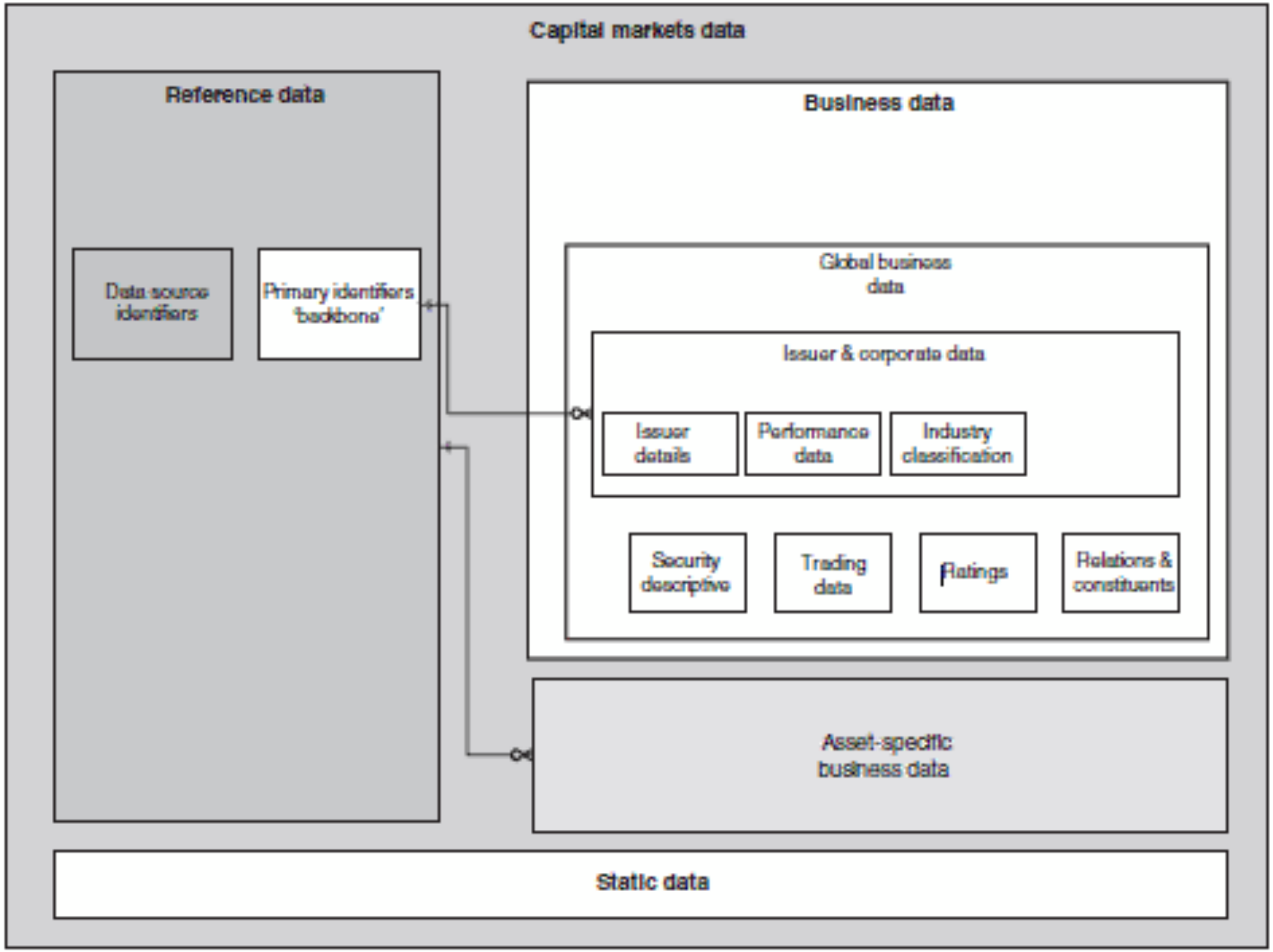
Ratings

- Ratings are issued at two levels:
  - Security – evaluation of the security and associated risk.
    - The actual rating as issued by the various agencies
    - Whether the security has been placed on a watch-list
    - Reviewed ratings
  - Corporate – an assessment of the creditworthiness of the issuer.



Issuer & Corporate Data

- **Issuer details**
  - Corporate name
  - Geographic incorporation
  - Address details
  - Key personnel
- **Performance data**
  - Balance sheets
  - Cash flow statements
  - Income statements
  - Corporate financial ratios
- **Industry classifications**
- **Ownership details**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Reference data
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Issuer details
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Trading data
Ratings
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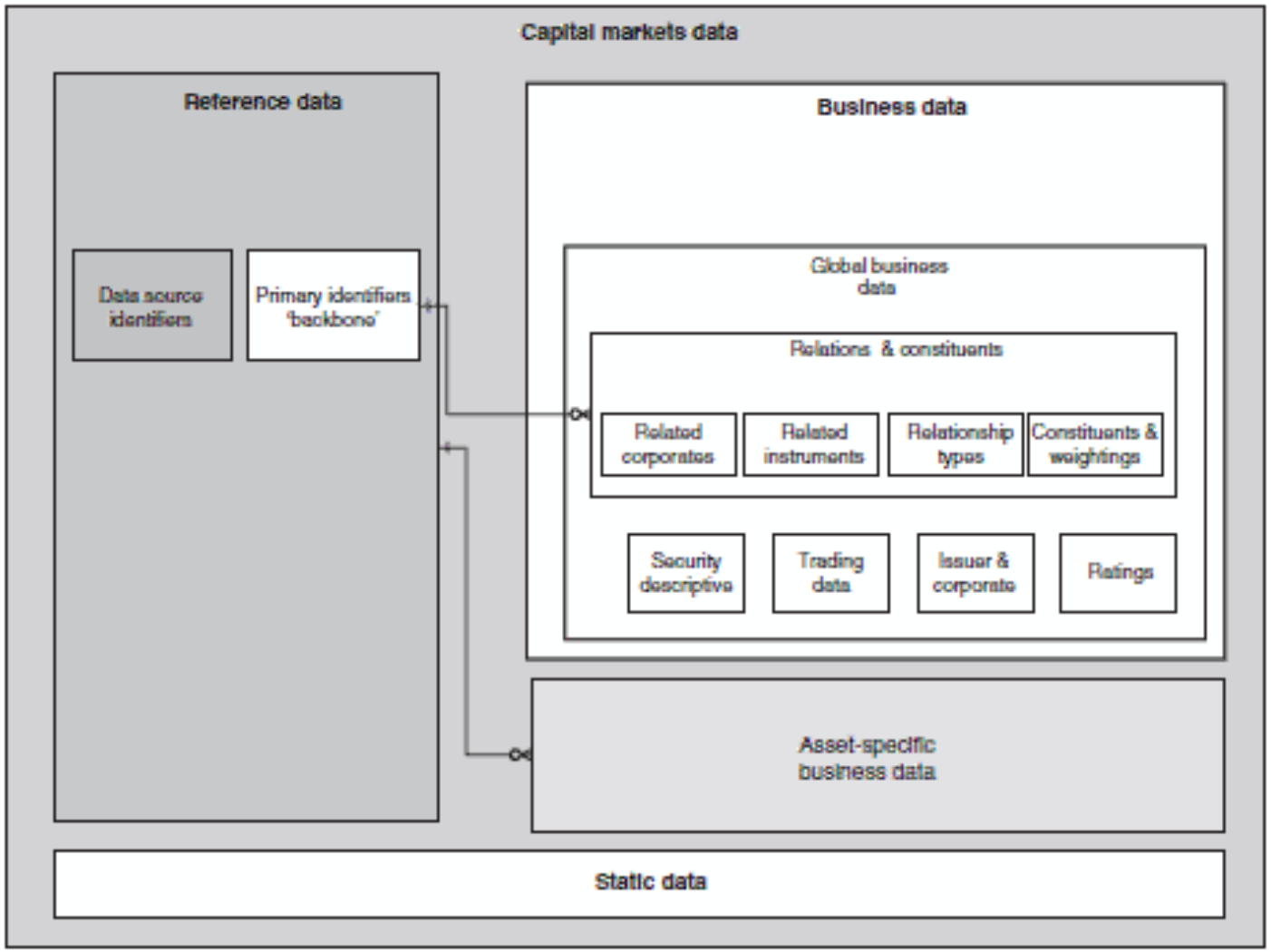
- **Balance Sheets**
  - Asset details
  - Liabilities
  - Issuer equity
  - Reserves
  - Investments
- **Cash Flows**
  - Financing
  - Cash flow details
- **Income Statements**
  - Revenue details
  - Expense details
- **Financial ratios**
  - Ratio type
  - Ratio value

Industry classifications

- Standard Industrial Classification (SIC)
- Morgan Stanley Capital International (MSCI)
- GICS (The Global Industry Classification Standard)
- Dow Jones STOXX Industrial Classification
- ICB Benchmark (FTSE/Dow Jones).

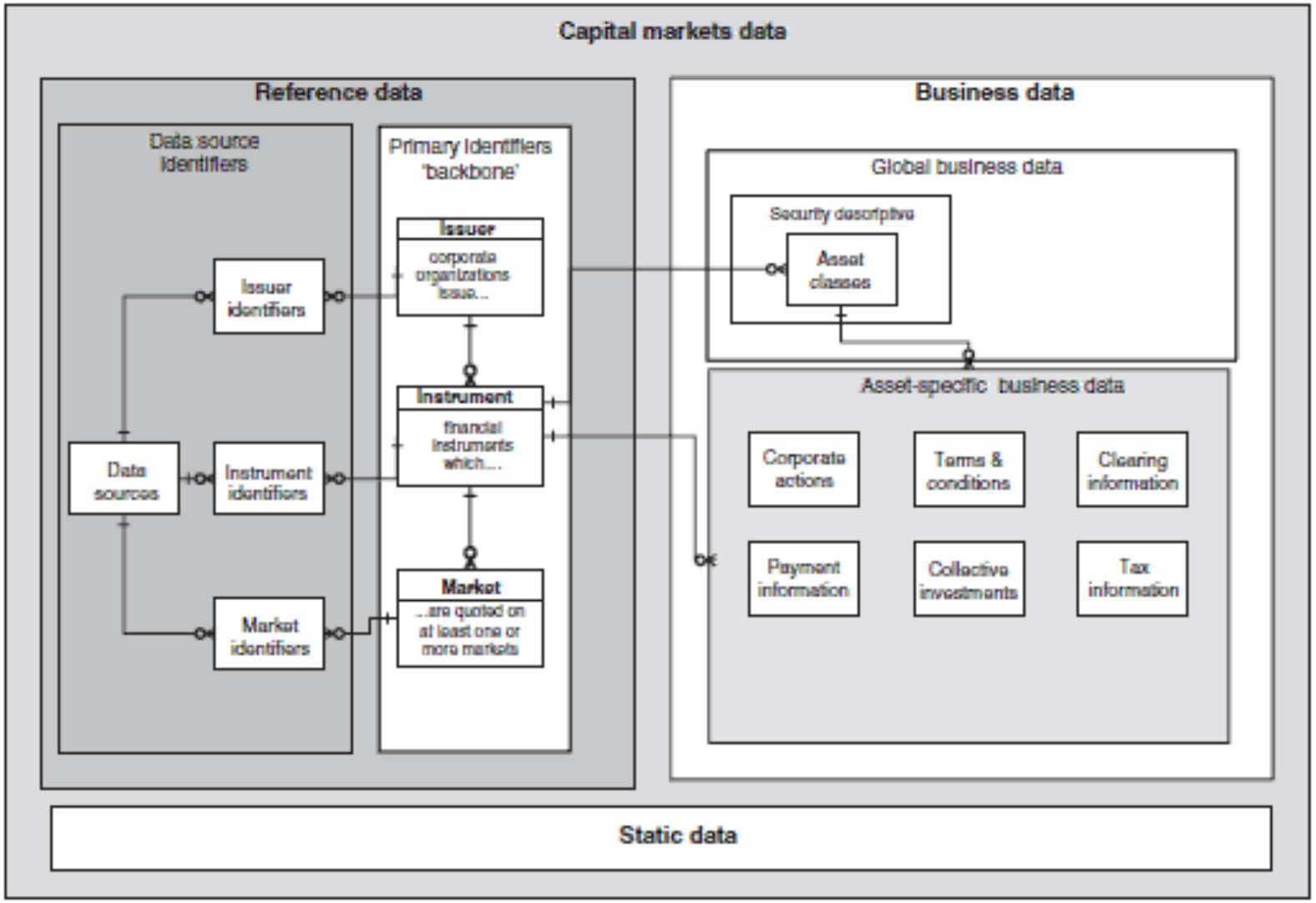
Relations and Constituents

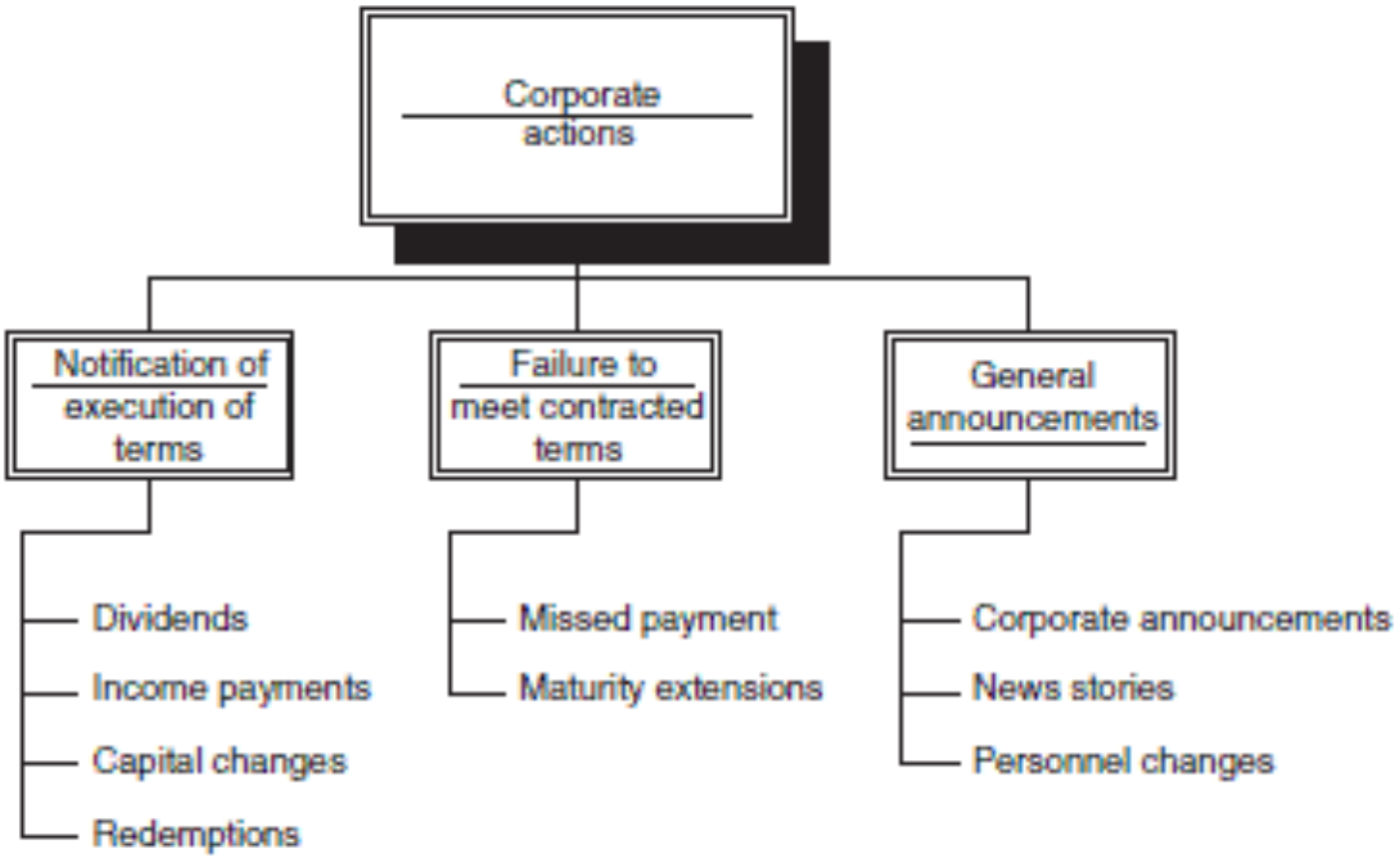
- These relationships occur at two levels:
  - Issuer level – identifying corporate ownership and holdings
  - Instrument level – providing records of constituents & weightings.
- Corporate ownership and holdings
  - Wholly owned subsidiary
  - Minority interest
  - Joint venture.
- Security relations/constituents & weightings
  - Funds
  - Indices
  - Basket securities

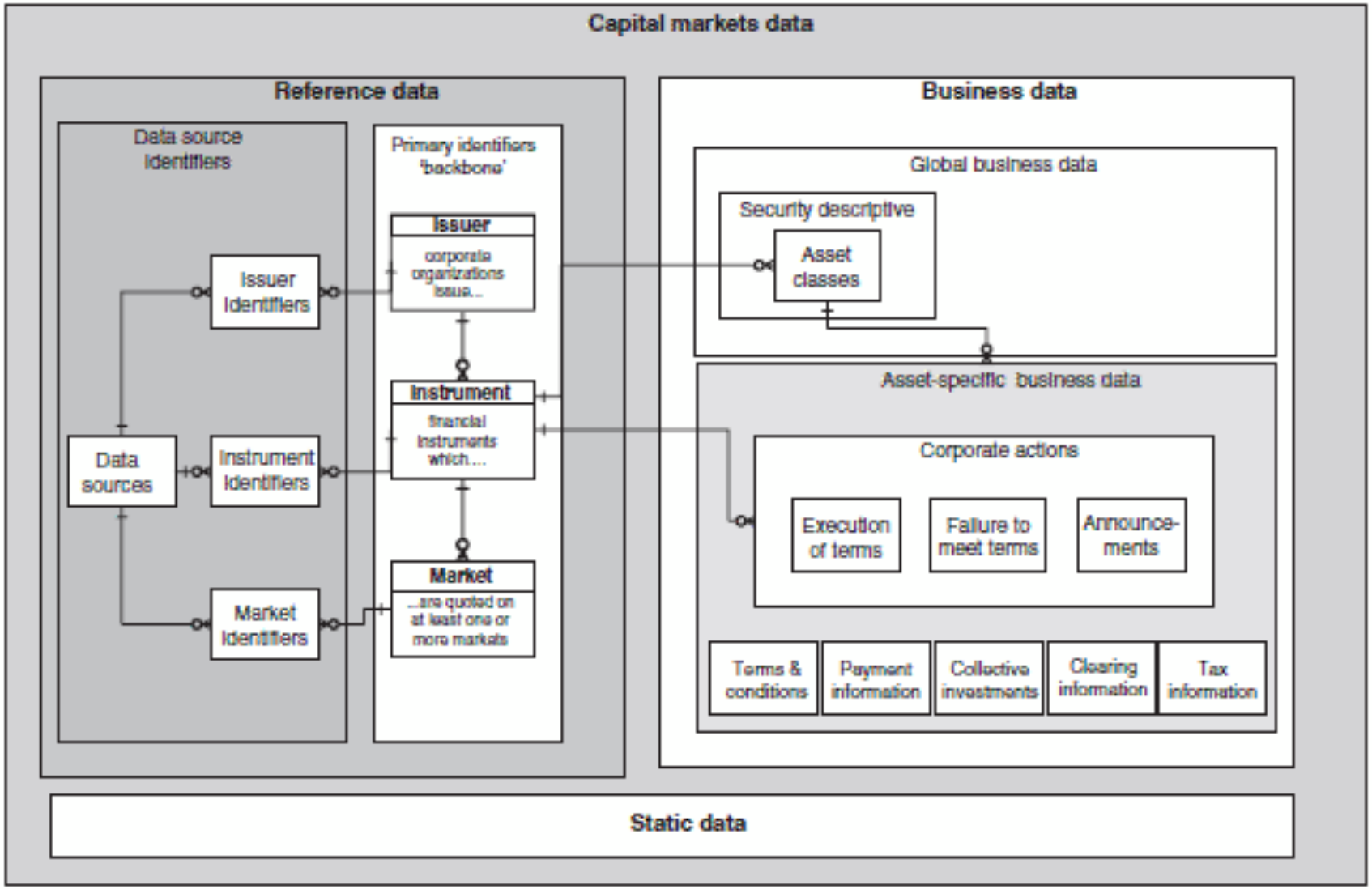


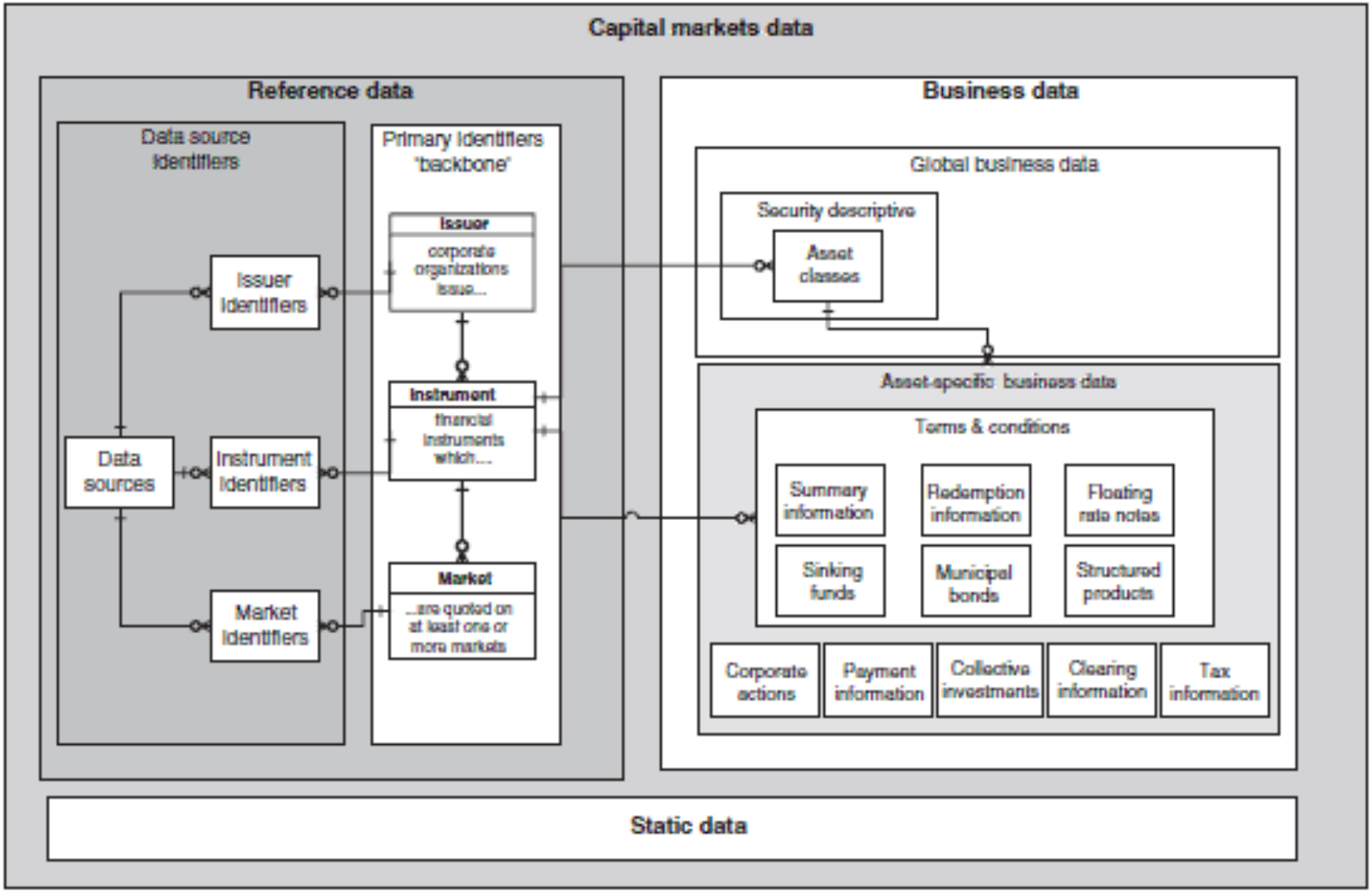
Asset-specific business data

- ***Corporate actions –*** business events and announcements that have a material impact on holders of the associated financial instruments
- ***Terms & conditions –*** the defining legal terms, events and details associated with securities (primarily fixed income)
- ***Payment information –*** contracted terms, events and details associated with the income stream associated with securities
- ***Collective investment details –*** this covers the information related to securities, such as mutual funds, that are made up of other securities
- ***Clearing information –*** information related to the clearing and settlement rules associated with securities
- ***Tax information –*** details on the tax treatment related to securities.

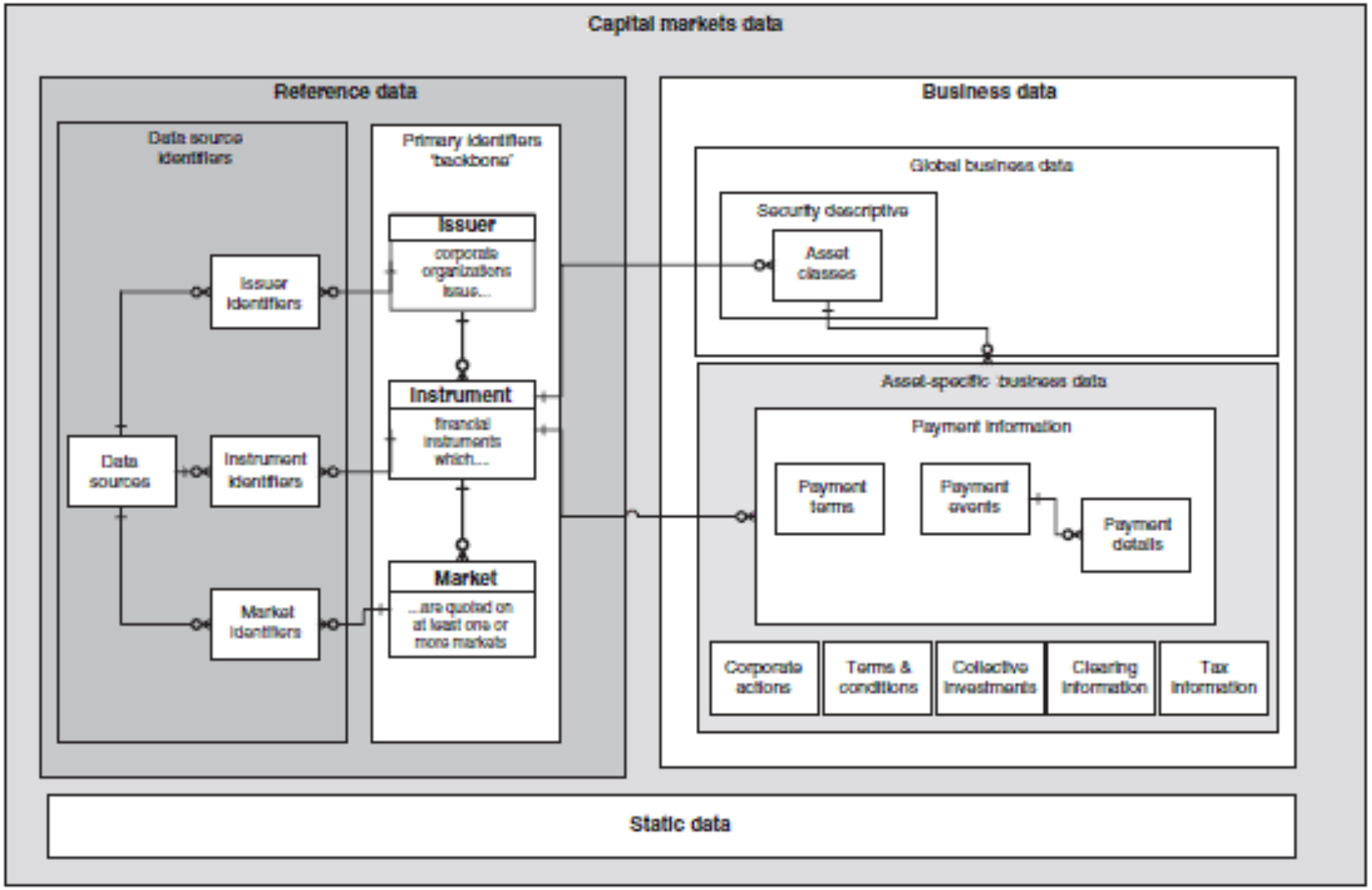


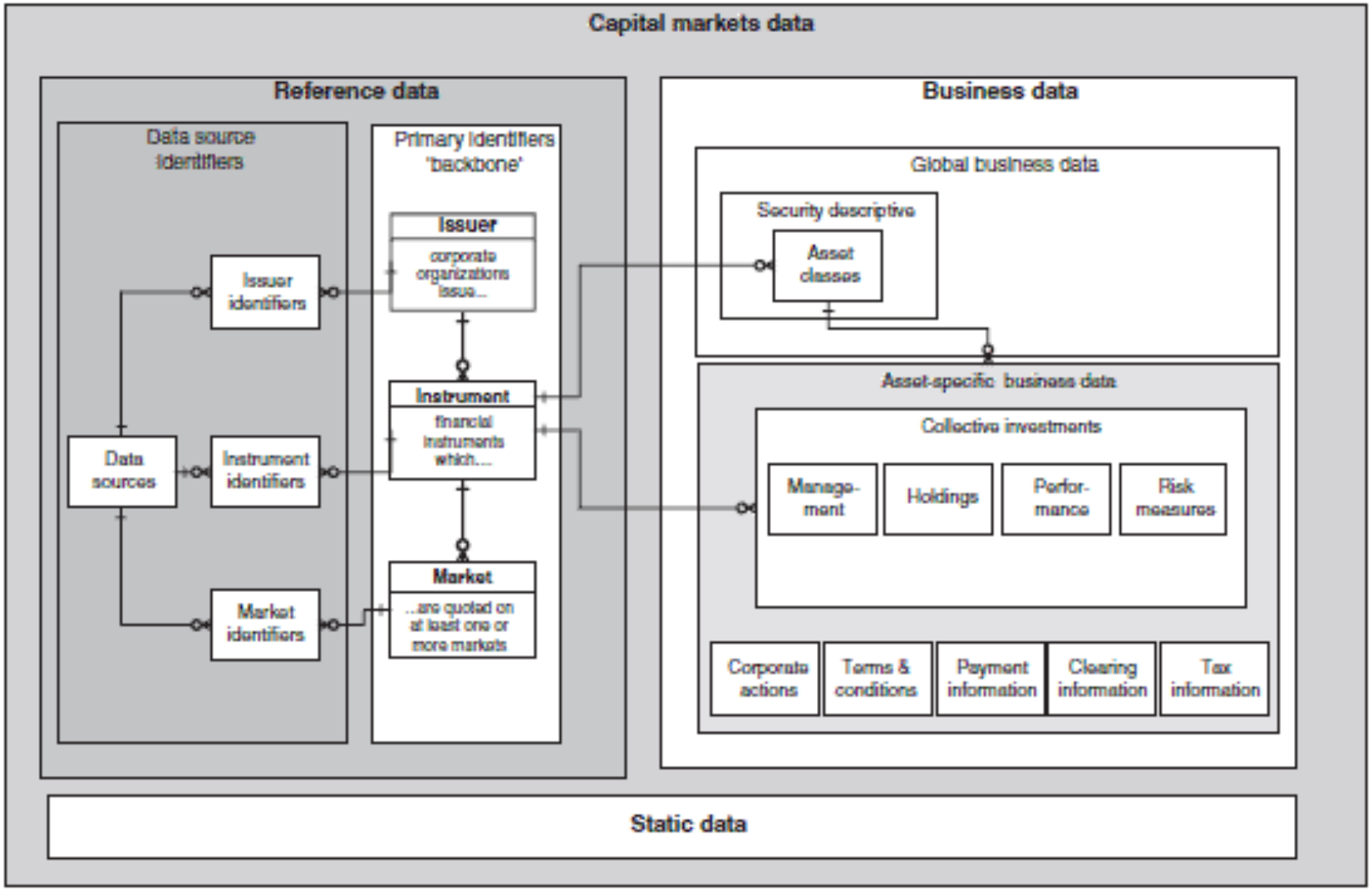

Corporate actions
Notification of execution of terms
Failure to meet contracted terms
General announcements
Dividends
Income payments
Capital changes
Redemptions
Missed payment
Maturity extensions
Corporate announcements
News stories
Personnel changes




Capital markets data
Reference data
Data source identifiers
Primary identifiers 'backbone'
Issuer identifiers
Issuer
corporate organizations issue...
Instrument
financial instruments which....
Market
...are quoted on at least one or more markets
Data sources
Instrument identifiers
Market identifiers
Business data
Global business data
Security descriptive
Asset classes
Asset-specific business data
Terms & conditions
Summary information
Redemption information
Floating rate notes
Sinking funds
Municipal bonds
Structured products
Corporate actions
Payment information
Collective investments
Clearing information
Tax information
Static data

	Terms	Details	Events
Summary information	✔	✔	
Redemption information	✔	✔	✔
Floating rate notes	✔	✔	✔
Sinking funds	✔	✔	✔
Municipal bonds	✔	✔	
Structured products	✔	✔	




Capital markets data
Reference data
Data source identifiers
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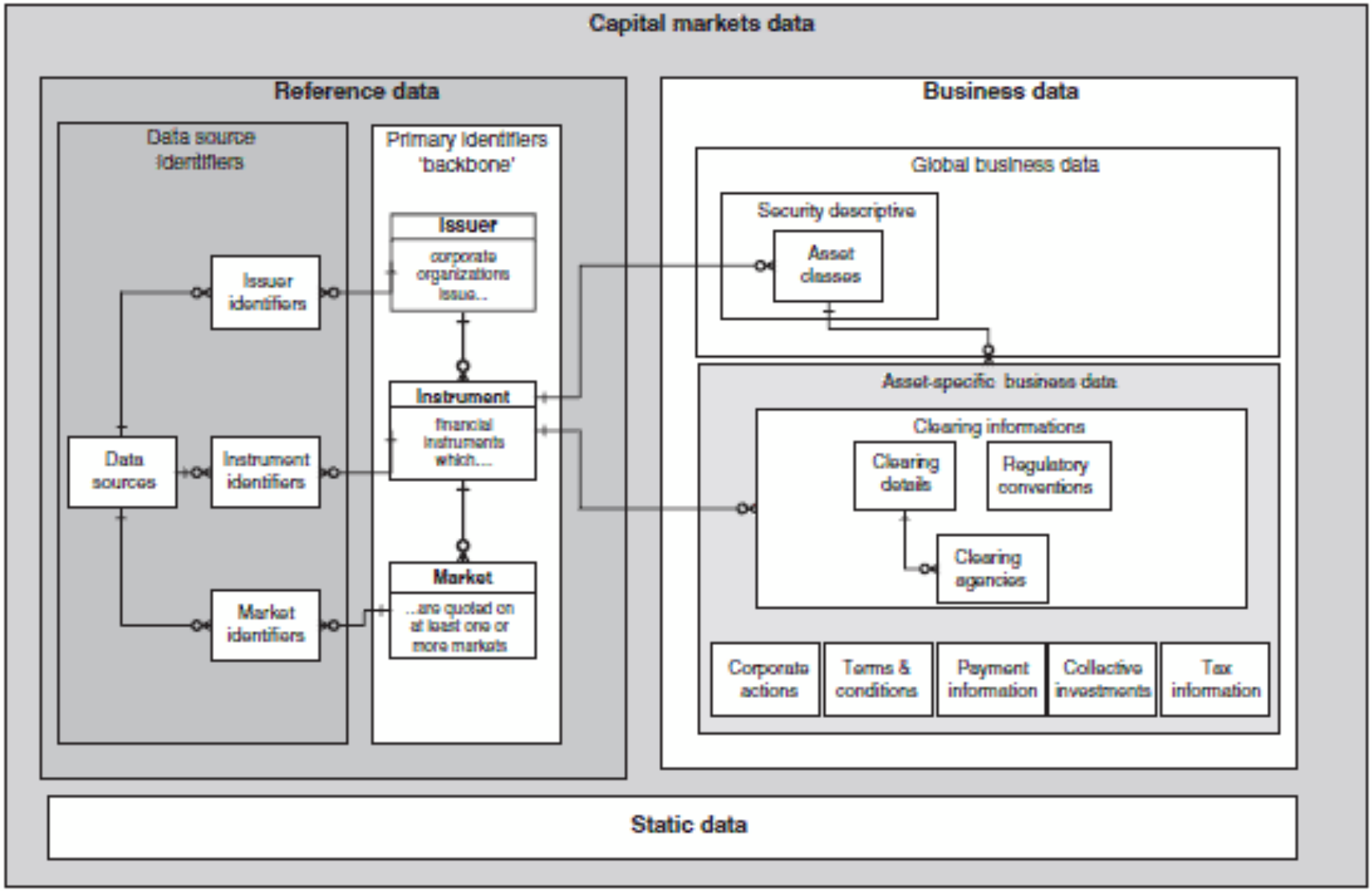
Data sources
Instrument identifiers
Market identifiers
Primary identifiers 'backbone'
Issuer
corporate organizations issue...
Instrument
financial instruments which...
Market
...are quoted on at least one or more markets
Business data
Global business data
Security descriptive
Asset classes
Asset-specific business data
Collective investments
Manage-ment
Holdings
Perfor-mance
Risk measures
Corporate actions
Terms & conditions
Payment information
Clearing information
Tax information
Static data


Capital markets data
Reference data
Data source identifiers
Primary identifiers 'backbone'
Issuer identifiers
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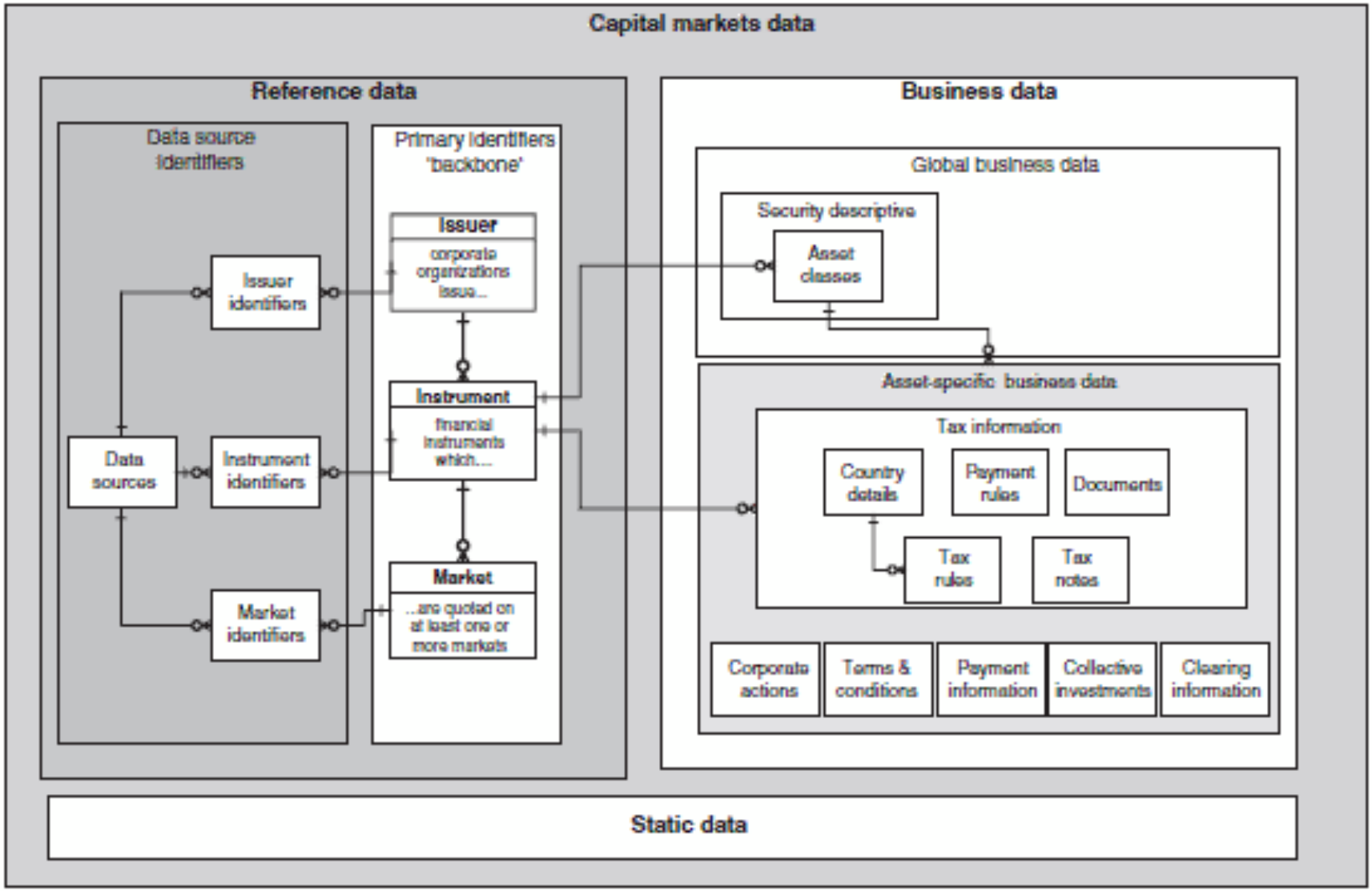
Instrument
financial instruments which....
Data sources
Instrument identifiers
Market
...are quoted on at least one or more markets
Market identifiers
Business data
Global business data
Security descriptive
Asset classes
Asset-specific business data
Clearing informations
Clearing details
Regulatory conventions
Clearing agencies
Corporate actions
Terms & conditions
Payment information
Collective investments
Tax information
Static data



Static Data

- Also known as 'domain data' or 'lookup data', this class of market data provides definitions to code values used on all datafeed services. Coded values are routinely used in order to minimize space and support processing efficiency. As a result, for any given code value there needs to be a corresponding definition held elsewhere in what is commonly referred to as a 'lookup table'.
- Static data falls into two categories:
  - Global static data – this provides industry-accepted definitions and coding values. Many data sources carry these standard values in addition to their own proprietary representations
  - Data type-specific – values used only within a single data type. These vary considerably between data sources, all of which represent data content in a different format, thereby further increasing the complexity.

Global static data

- Currency codes – three-character ISO standard currency code values and their associated textual definition.
- Country codes – both two- and three-character ISO standard country codes are typically used.
- Market & exchange codes – a common international standard called the Marketing Identification Code (MIC) has recently become available and is seeing increasing usage.
- Industry classifications – over and above vendor classification schemes, there are a number in use, including (among others) the Standard Industrial Classification (SIC) and Morgan Stanley Capital International (MSCI).

Data type-specific

- The second category of static data is very diverse. Different data services deliver data content in different ways. Where one feed uses a code value and associated static data, another provides the definition as part of the content. The support for static data is assumed to be in line with the other content provided by the data source.

The Bloomberg API (BLPAPI)

- The Bloomberg API (BLPAPI) is a set of freely available software development kits (SDKs) that allow software developers to create applications that consume market data. The BLPAPI interface powers global market data distribution to desktops, workgroups and enterprise applications and is used daily by more than 100,000 Bloomberg customers.

- This API is part of Bloomberg's Open Market Data Initiative, which is focused on creating open standards for market data, covering symbology, programming interfaces, data schemas, and eventually, protocols.

Overview of the Bloomberg API

- 24x7 programmatic access to data from the Bloomberg Data Center for use in customer applications.
- Provide streaming real-time and delayed data, reference data, historical data, and intraday data.
- Uses an event-driven model. The interface is thread-safe and thread-aware, giving applications the ability to utilize multiple processors efficiently.
- Supports run-time downloadable schemas for the services it provides, and it provides methods to query these schemas at runtime.
- Is the interface to the Bloomberg Platform, B-PIPE, Server API and Desktop API.

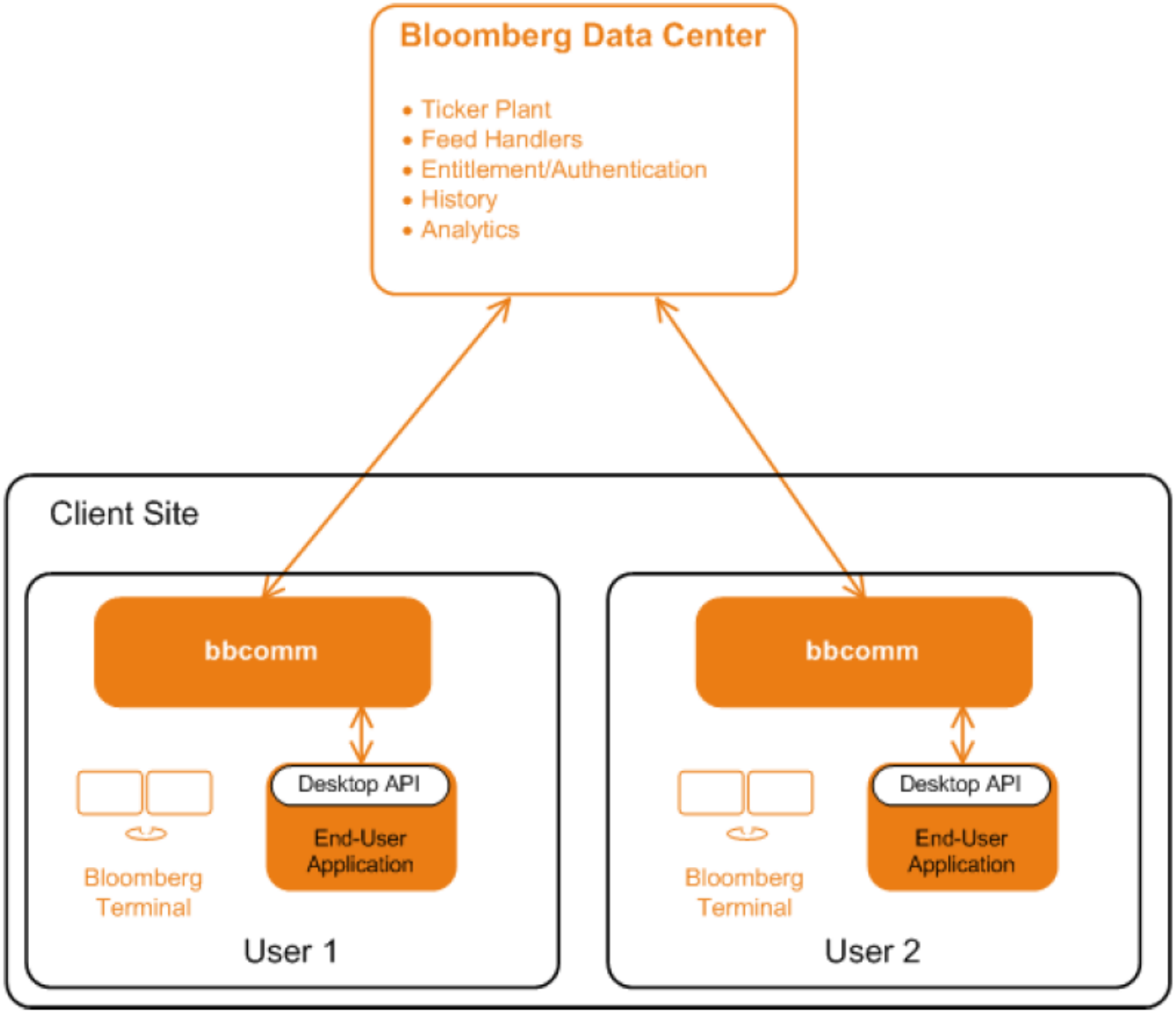
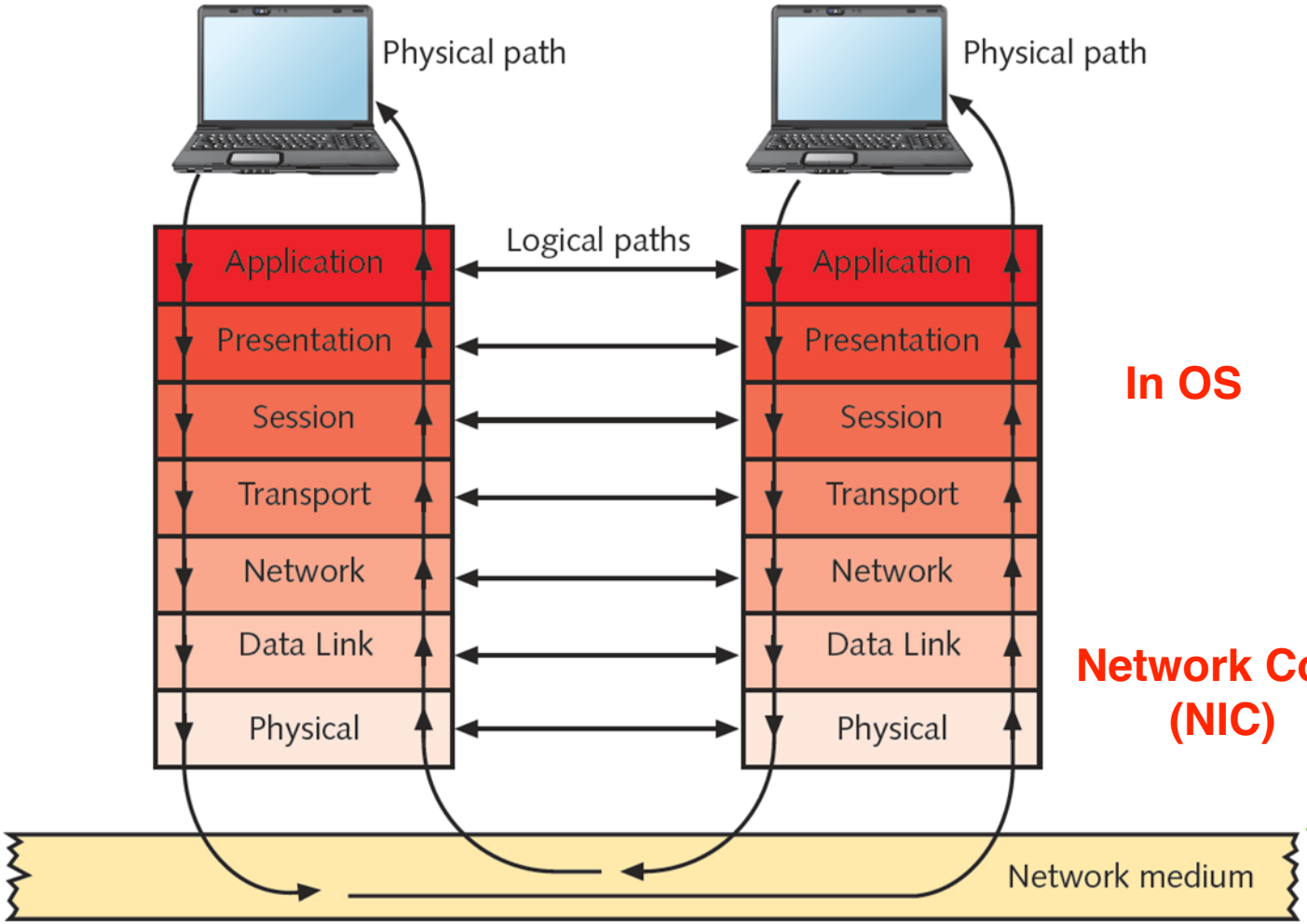


Figure 1-3: The Desktop API

Flow of data through network



In OS

Network Cord (NIC)

Sockets and Ports

- Processes assigned unique port numbers
- Process's socket
  - Port number plus host machine's IP address
- Port numbers
  - Simplify TCP/IP communications
  - Ensures data transmitted correctly
- Example
  - Telnet port number: 23
  - IPv4 host address: 10.43.3.87
  - Socket address: 10.43.3.87:23

Typical Application Structure

- The Bloomberg API object model contains a small number of key objects which applications use to request, receive and interpret data.
  - An application creates a **Session** object to manage its connection with the Bloomberg infrastructure.
  - Using the **Session** object, an application creates a **Service** object and then opens each Bloomberg service that it will use.
    - Individual requests for data (via a **Request** object) .
    - A subscription for ongoing data updates (via a **Subscription** object).
  - The customer application obtains **Event** objects for the **Session** and then extracts from each **Event** object one or more **Message** objects containing the Bloomberg data.

Receiving market data from BLPAPI

- Request/Response mode for historical data
  - Session session(sessionOptions);
  - session.start();
  - session.openService("//blp/refdata");
  - Service refDataService = session.getService("//blp/refdata");
  - Request request = refDataService.createRequest("HistoricalDataRequest");
  - session.sendRequest(request);
- Subscription mode for real-time data
  - Session session(sessionOptions, sessionEventHandler);
  - session.start();
  - session.openService("//blp/mktdata");
  - SubscriptionList subscriptions;
  - subscriptions.add(security, fields, options, CorrelationId((char *)security));
  - session.subscribe(subscriptions);

VRINGO INC Equity | BHL | Related Functions Menu | Message

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36) MS Office Integration
37) Alerts
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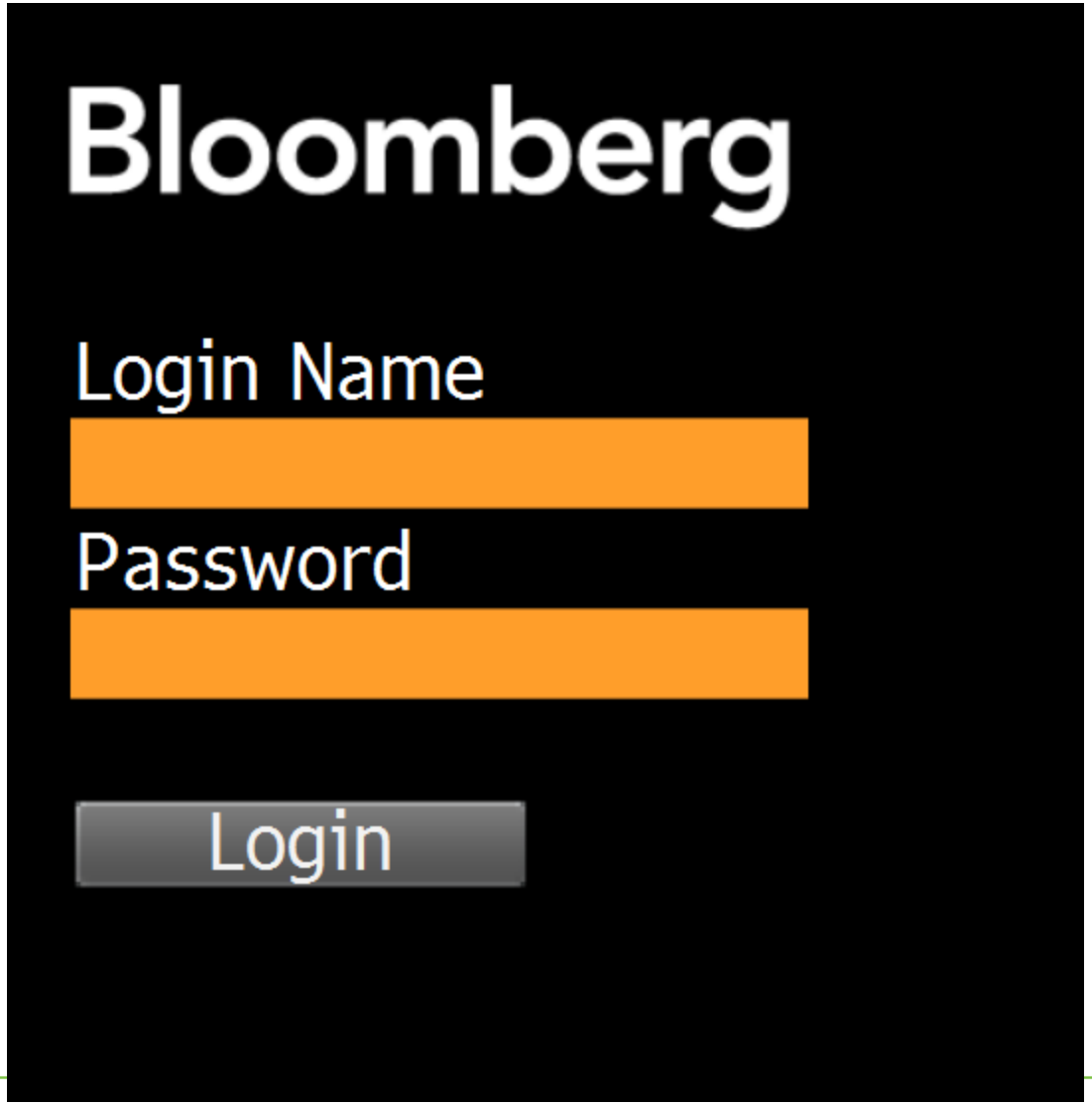
39) Offerings & Services
40) Tips & Tricks

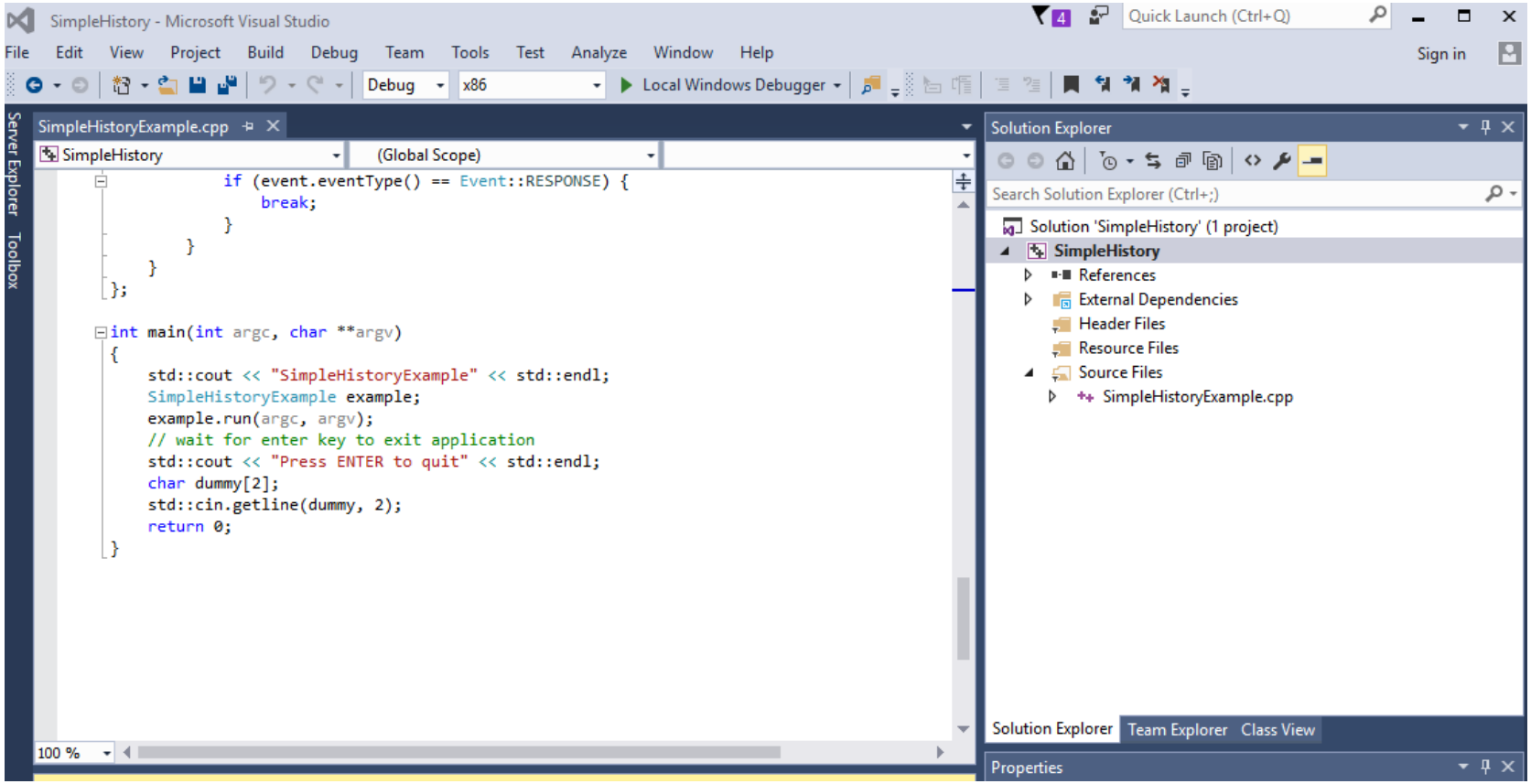
Did you know?
All functions are organized onto a hierarchy of menus based on market sector and common workflows. See more >>

What Function Do You Need Right NOW?

FFM <GO>


Bloomberg
Login Name
Password
Login

Create SimpleHistoryProject



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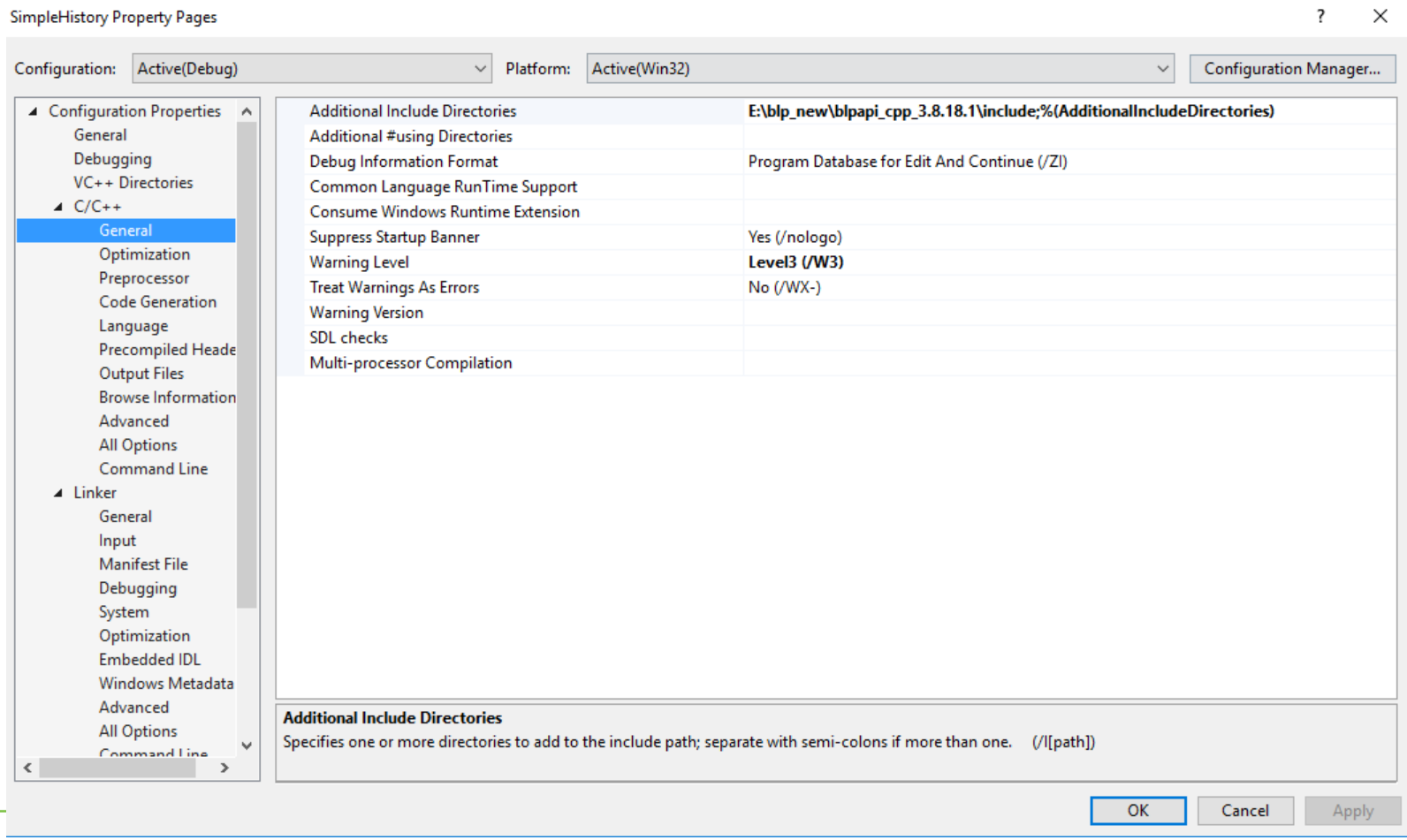
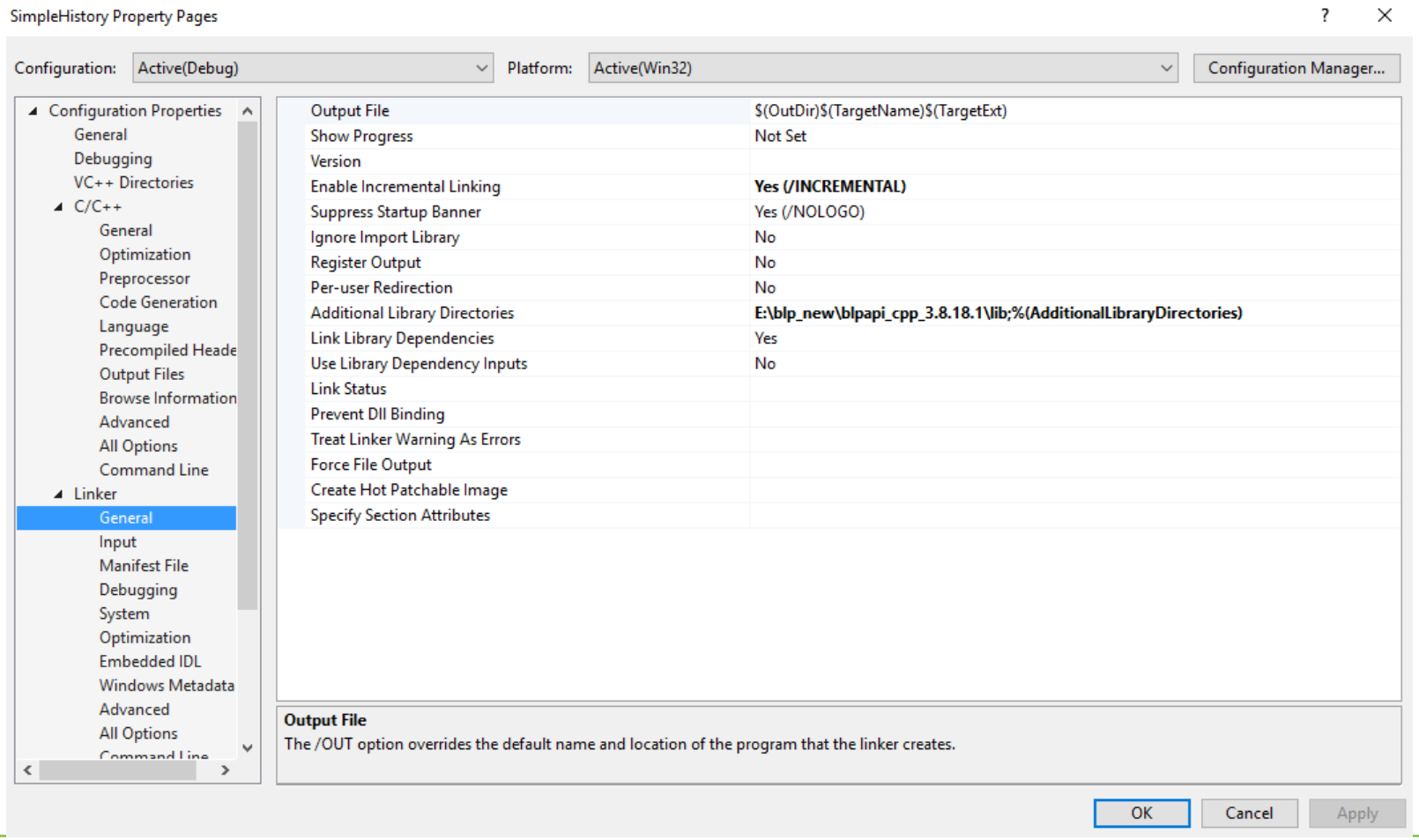
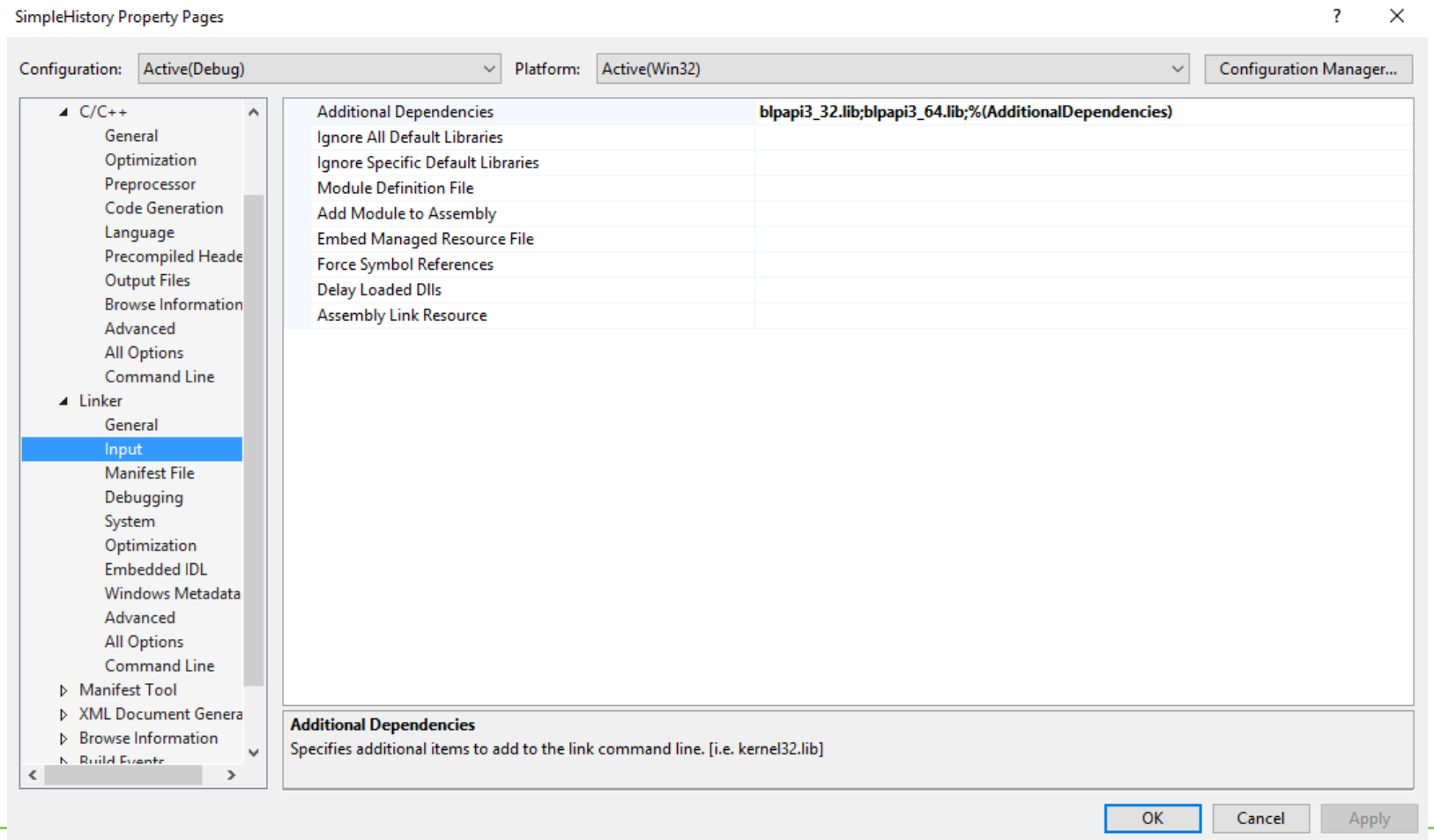
Add BLP include file directory



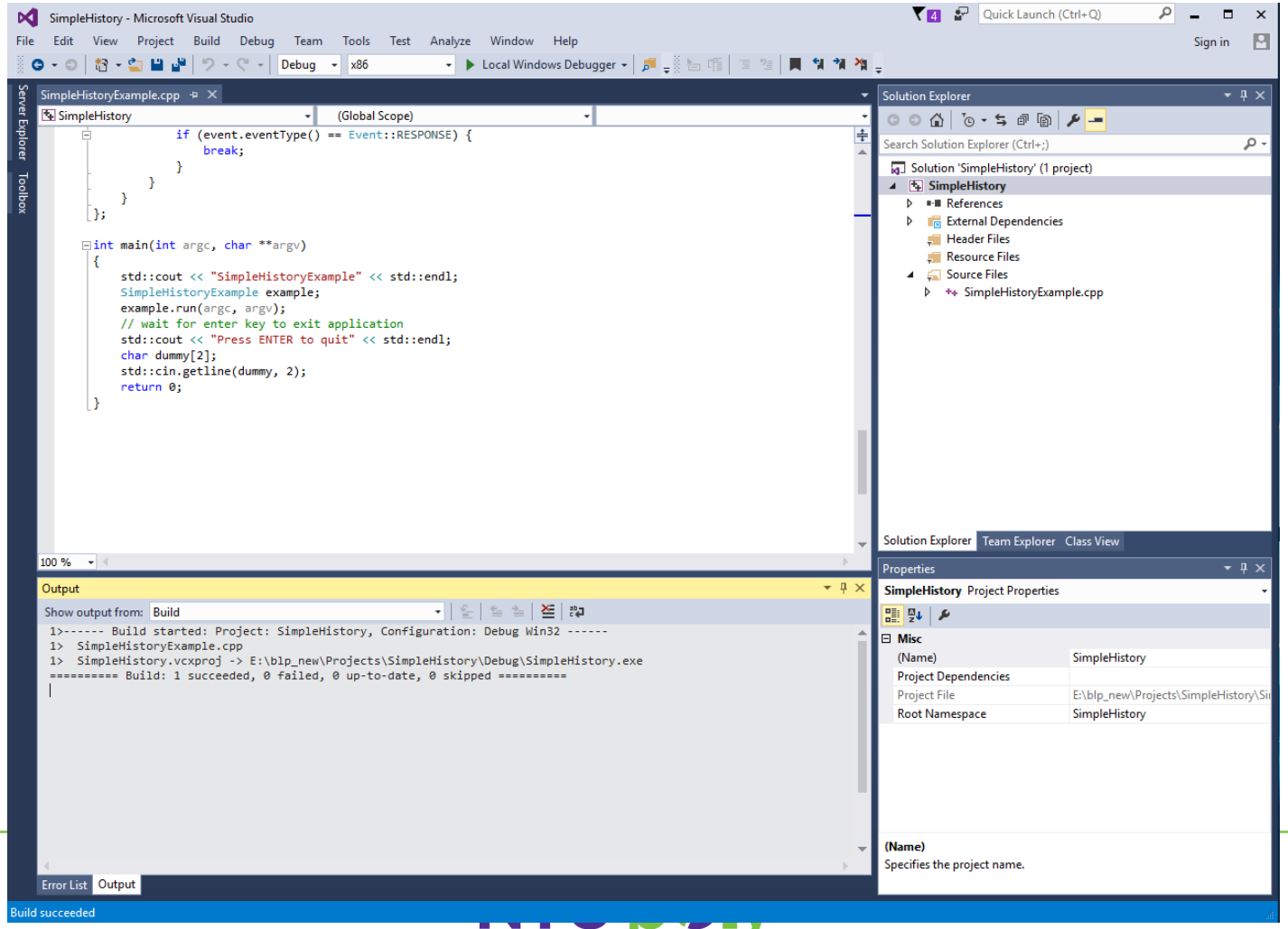
Add BLP library



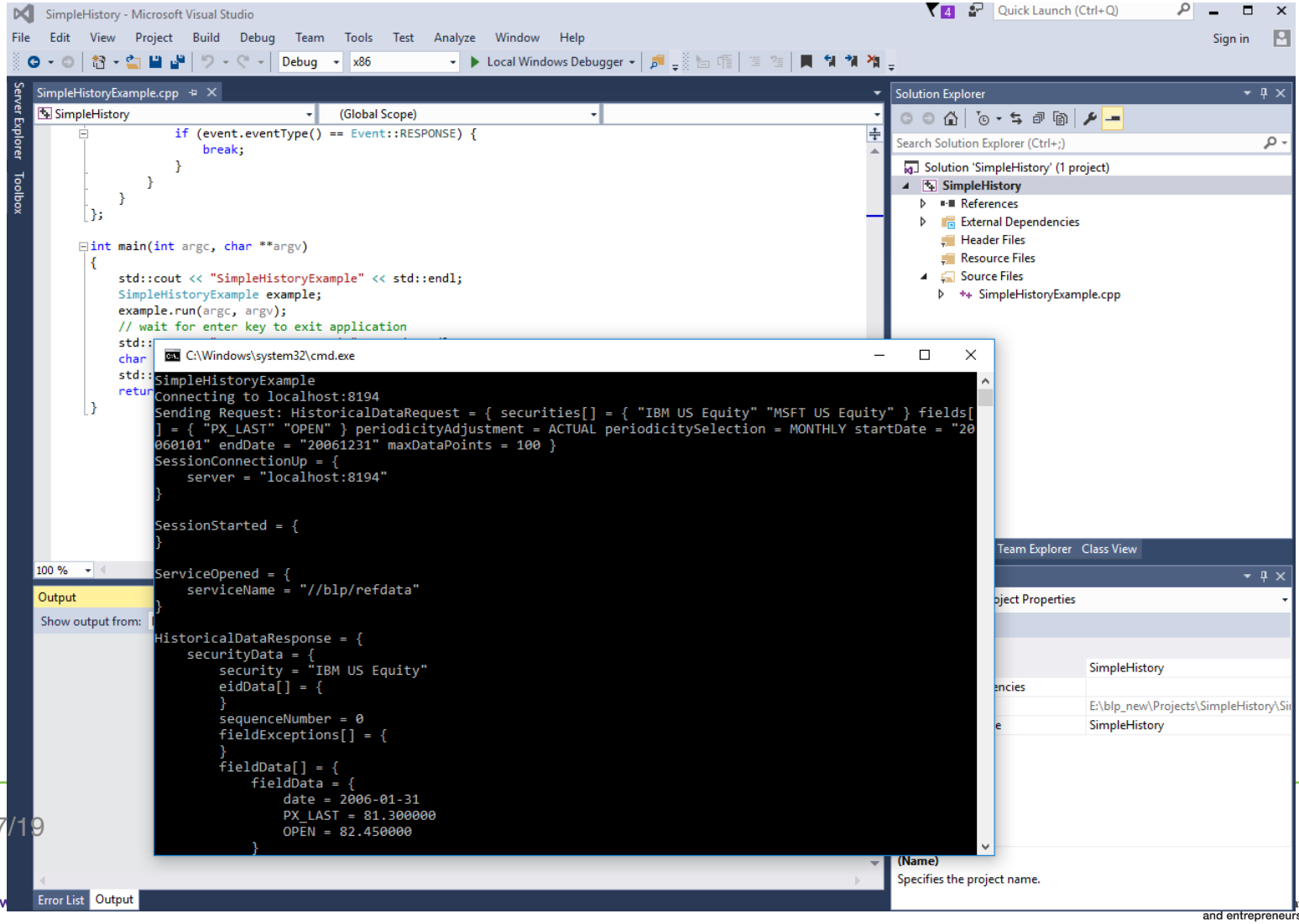
Specify BLP library for your program



Build your program



Run your program



RealTime.cpp

BLPAPI examples to walk through

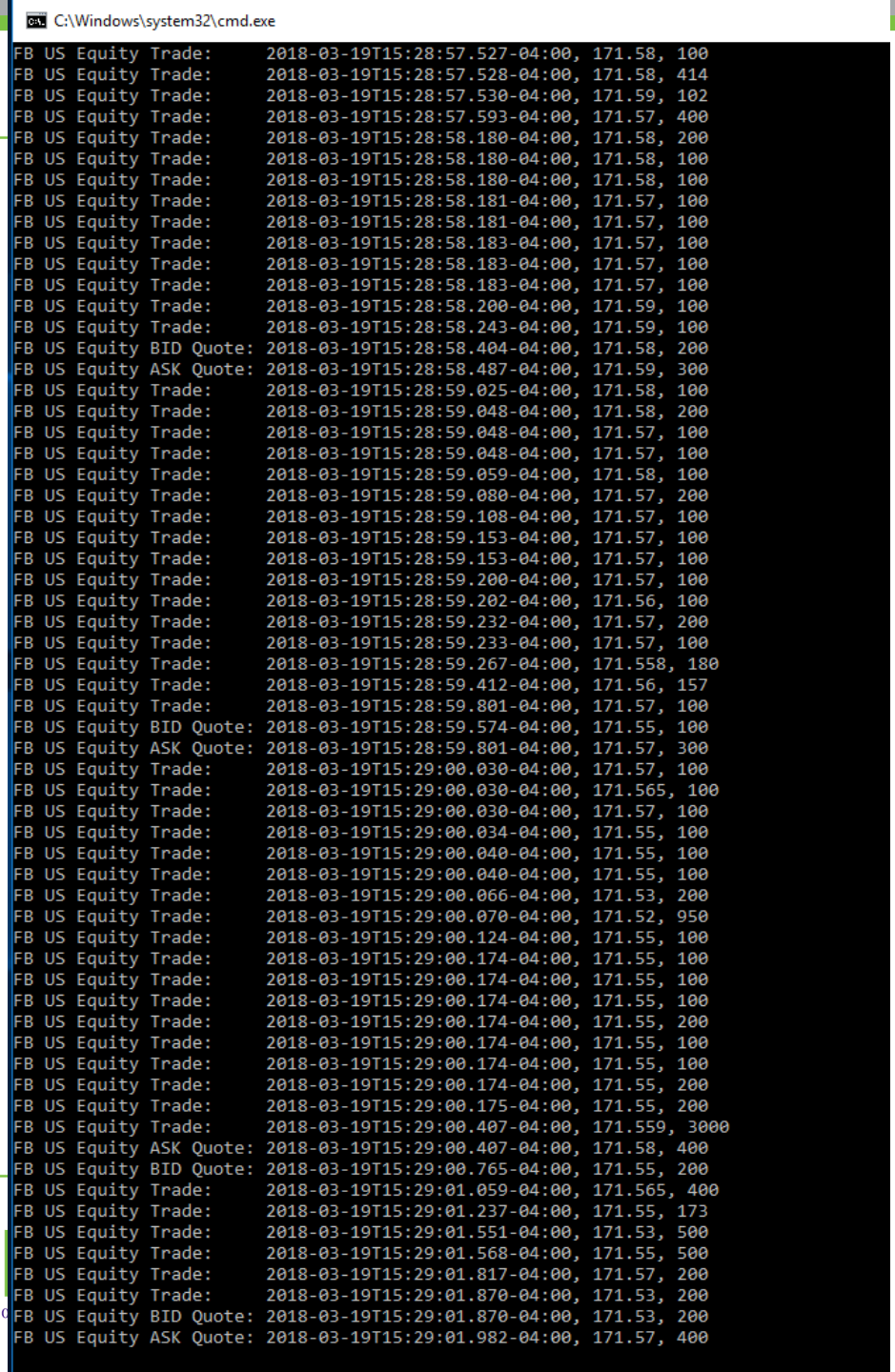
- Request/Response mode for historical data
  - SimpleHistoryExample.cpp
- Subscription mode for real-time data
  - RealTime.cpp

Homework Assignment 1

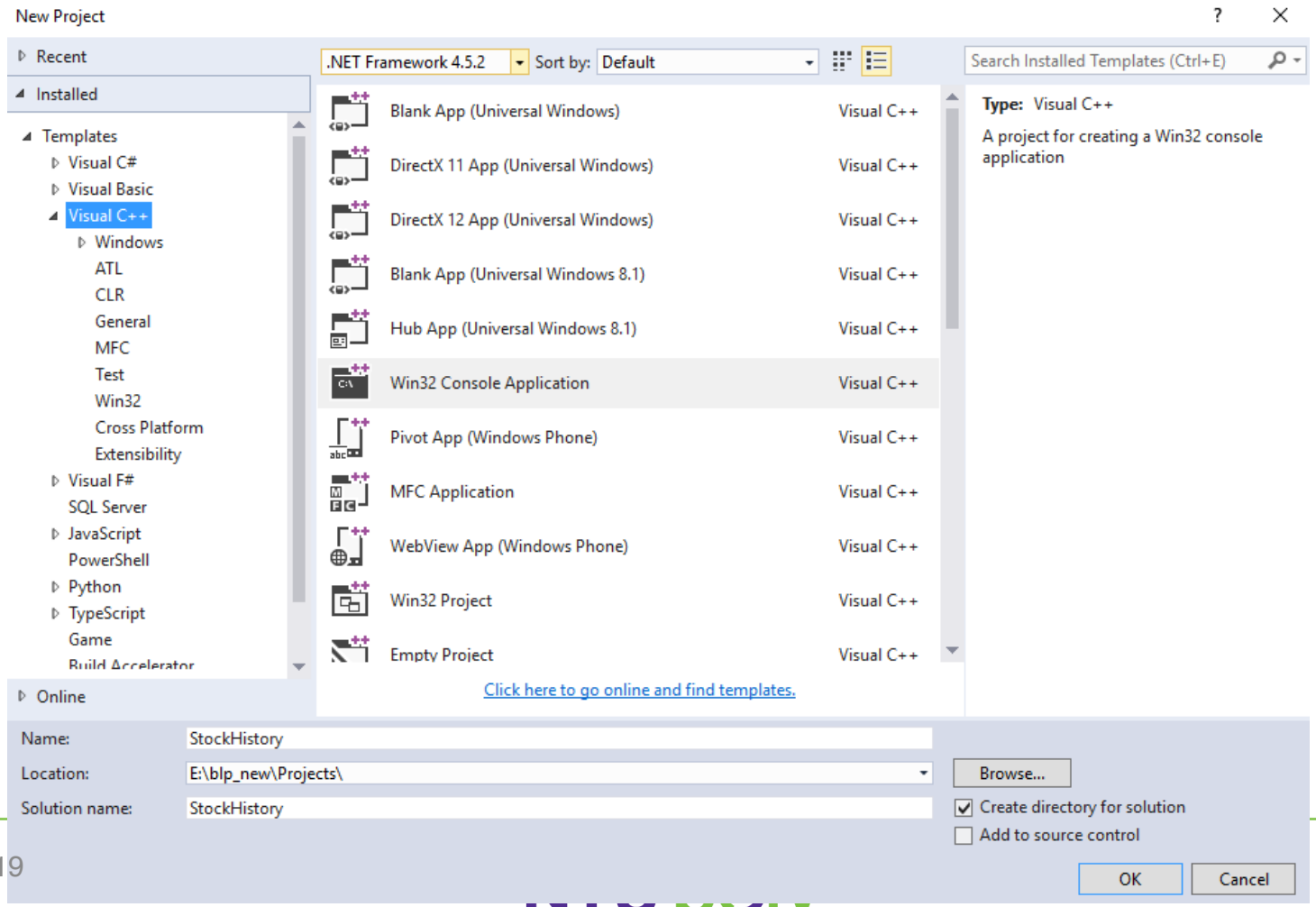
- Modify the Bloomberg API program SimpleHistoryExample.cpp to
  1) Add the following fields for market data retrieval:
     - Daily Volume
     - High Price
     - Low Price
  2) Change the startDate to 1st day of the year and endDate to today.
  3) Write the historical data you collect into a file instead of on screen.

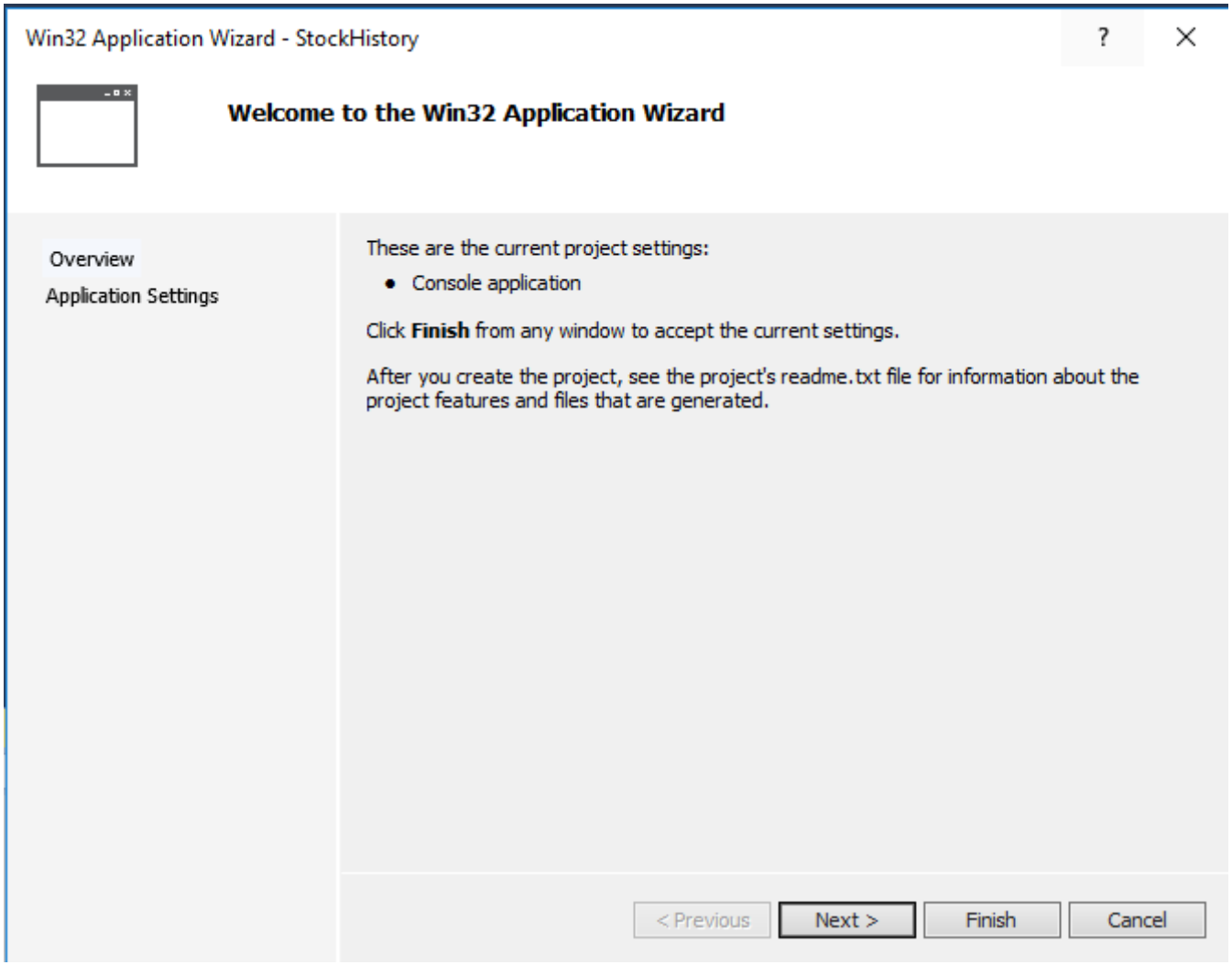
Homework Assignment 2

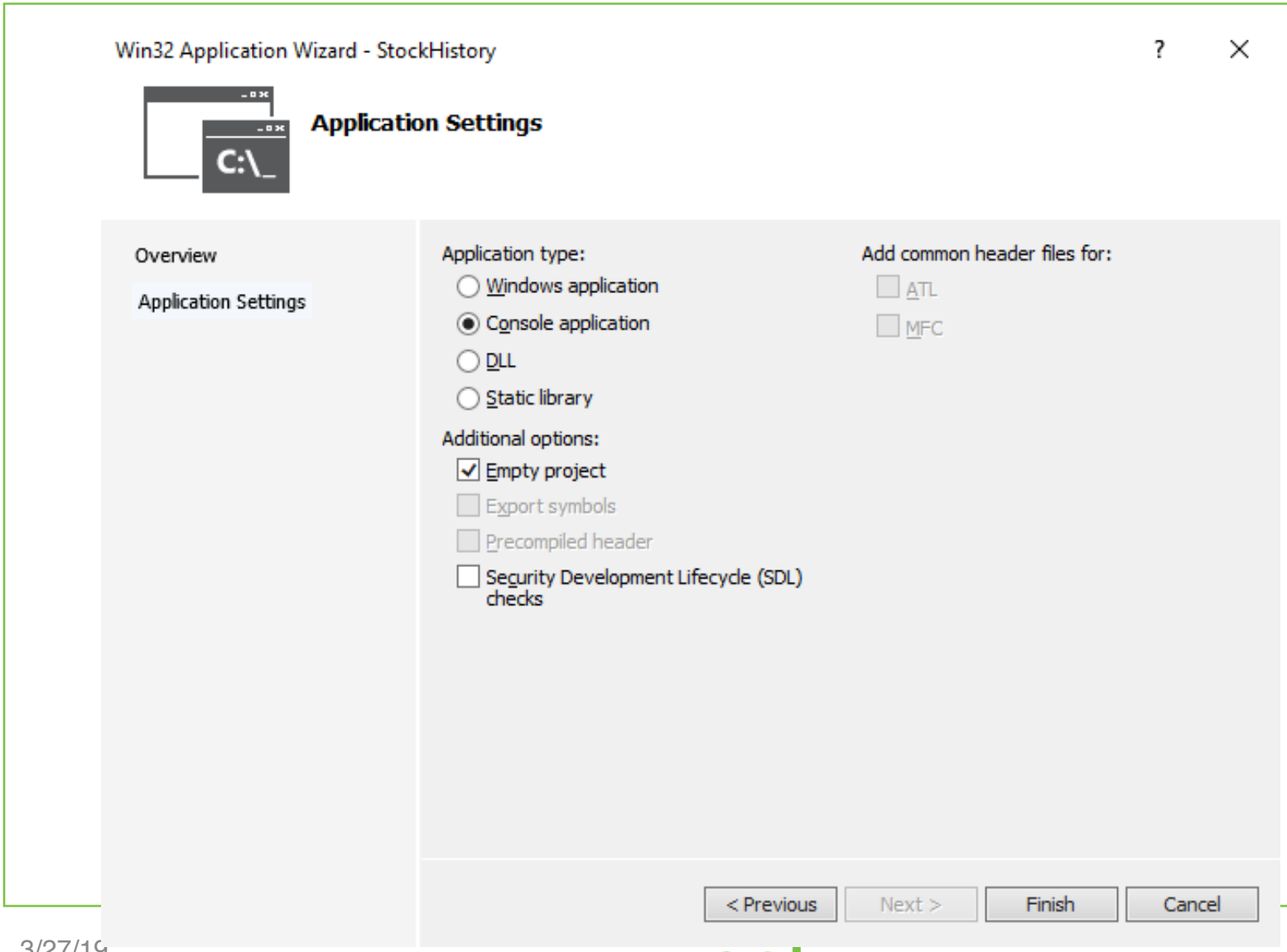
- Modify the Bloomberg API program RealTime.cpp to add
  1) To retrieve Ask side of real-time quotes: ask price and ask size of each quote.
  2) Write the real-time data you collect into a file in addition to what shown on screen.

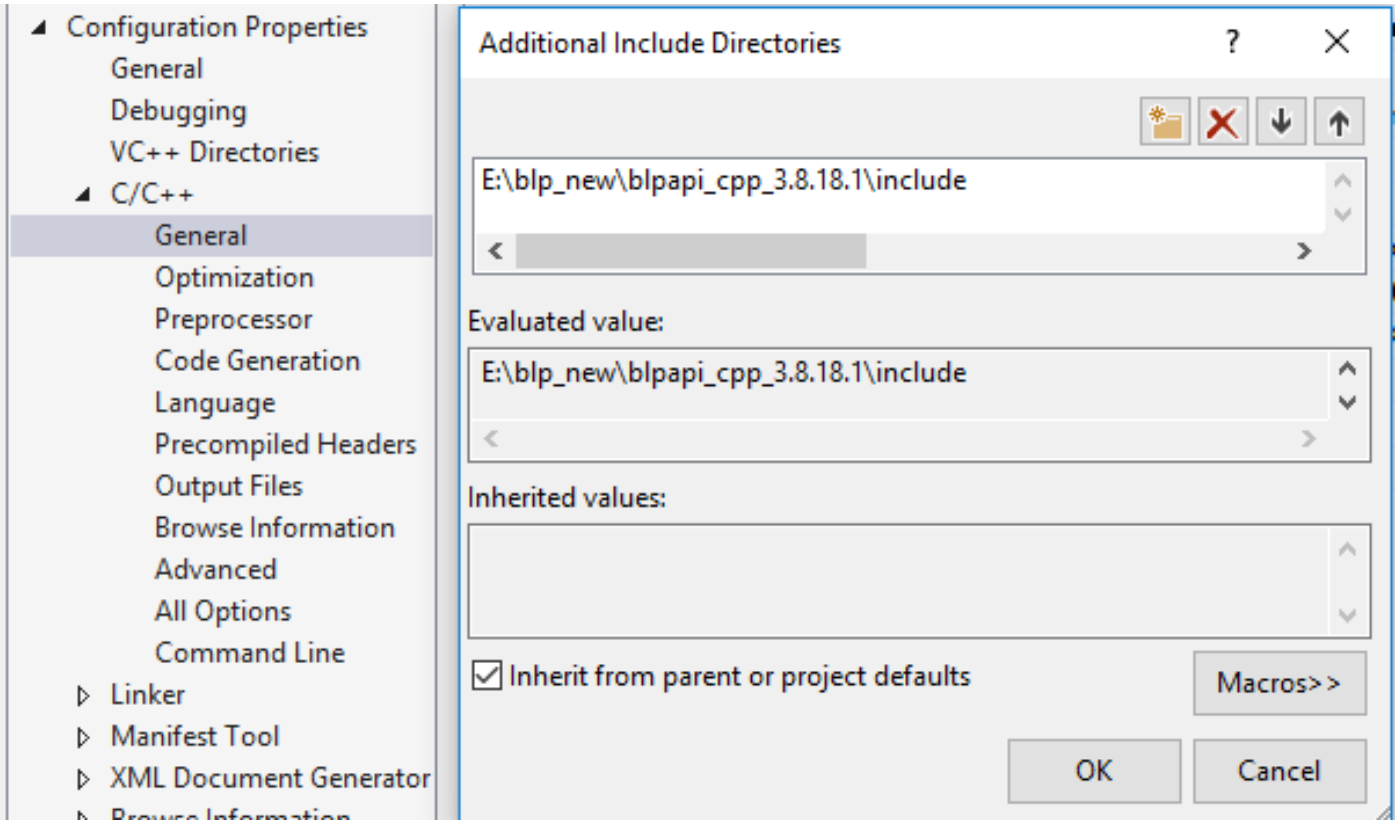


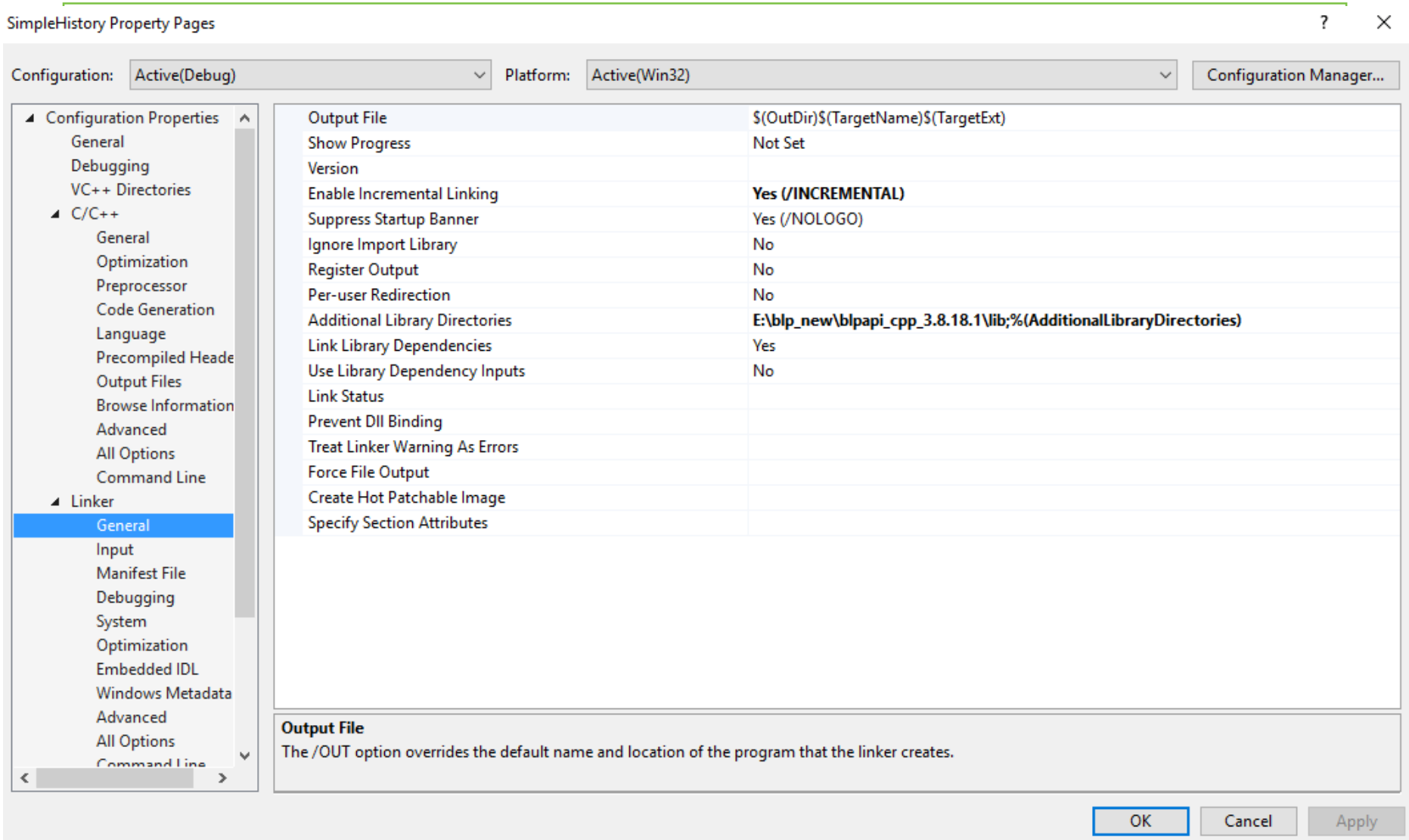
Homework - StockHistory

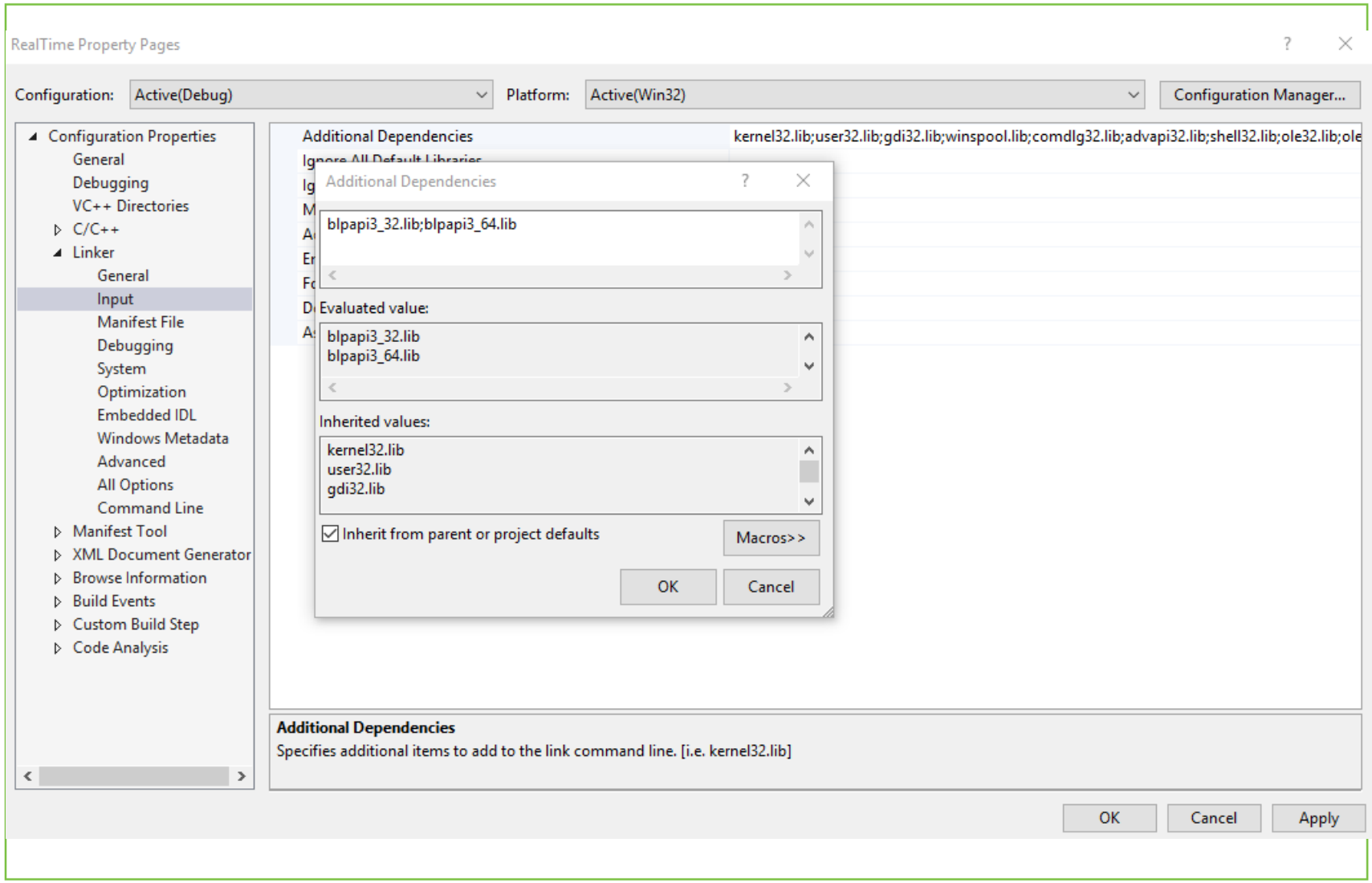



Win32 Application Wizard - StockHistory
?
Welcome to the Win32 Application Wizard
Overview
Application Settings
These are the current project settings:
Console application
Click Finish from any window to accept the current settings.
After you create the project, see the project's readme.txt file for information about the project features and files that are generated.
< Previous
Next >
Finish
Cancel


Win32 Application Wizard - StockHistory
Application Settings
Overview
Application Settings
Application type:
Windows application
Console application
DLL
Static library
Additional options:
Empty project
Export symbols
Precompiled header
Security Development Lifecycle (SDL) checks
Add common header files for:
ATL
MFC
< Previous
Next >
Finish
Cancel


Configuration Properties
General
Debugging
VC++ Directories
C/C++
General
Optimization
Preprocessor
Code Generation
Language
Precompiled Headers
Output Files
Browse Information
Advanced
All Options
Command Line
Linker
Manifest Tool
XML Document Generator
Additional Include Directories
E:\blp_new\blpapi_cpp_3.8.18.1\include
Evaluated value:
E:\blp_new\blpapi_cpp_3.8.18.1\include
Inherited values:
Inherit from parent or project defaults
Macros>>
OK
Cancel


SimpleHistory Property Pages
Configuration: Active(Debug)
Platform: Active(Win32)
Configuration Manager...
Configuration Properties
General
Debugging
VC++ Directories
C/C++
General
Optimization
Preprocessor
Code Generation
Language
Precompiled Heade
Output Files
Browse Information
Advanced
All Options
Command Line
Linker
General
Input
Manifest File
Debugging
System
Optimization
Embedded IDL
Windows Metadata
Advanced
All Options
Output File $(OutDir)$(TargetName)$(TargetExt)
Show Progress Not Set
Version
Enable Incremental Linking Yes (/INCREMENTAL)
Suppress Startup Banner Yes (/NOLOGO)
Ignore Import Library No
Register Output No
Per-user Redirection No
Additional Library Directories E:\blp_new\blpapi_cpp_3.8.18.1\lib;%(AdditionalLibraryDirectories)
Link Library Dependencies Yes
Use Library Dependency Inputs No
Link Status
Prevent Dll Binding
Treat Linker Warning As Errors
Force File Output
Create Hot Patchable Image
Specify Section Attributes
Output File
The /OUT option overrides the default name and location of the program that the linker creates.
OK
Cancel
Apply


RealTime Property Pages
Configuration: Active(Debug)
Platform: Active(Win32)
Configuration Manager...
Configuration Properties
General
Debugging
VC++ Directories
C/C++
Linker
General
Input
Manifest File
Debugging
System
Optimization
Embedded IDL
Windows Metadata
Advanced
All Options
Command Line
Manifest Tool
XML Document Generator
Browse Information
Build Events
Custom Build Step
Code Analysis
Additional Dependencies
kernel32.lib;user32.lib;gdi32.lib;winspool.lib;comdlg32.lib;advapi32.lib;shell32.lib;ole32.lib;ole
Additional Dependencies
blpapi3_32.lib;blpapi3_64.lib
Evaluated value:
blpapi3_32.lib
blpapi3_64.lib
Inherited values:
kernel32.lib
user32.lib
gdi32.lib
Inherit from parent or project defaults
Macros>>
OK
Cancel
Additional Dependencies
Specifies additional items to add to the link command line. [i.e. kernel32.lib]
OK
Cancel
Apply

References

- Market Data Explained: A Practical Guide to Global Capital Markets Information. (The Elsevier and Mondo Visione World Capital Markets), Mark Alvarez, Butterworth-Heinemann, 2006, ISBN-10: 0750680555
- Bloomberg API, www.bloomberglabs.com/api/libraries
- Bloomberg API, Version 3.x, Developer's Guide, June 30, 2014 Version 2.54, bloomberglabs.com/content/uploads/sites/2/2014/07/blpapi-developers-guide-2.54.pdf.
- Programming the Bloomberg Open API using C++ Real-Time Data with Subscriptions, holowczak.com/bloomberg-api-cpp-win32-subscriptions.