

Data, frameworks, and financial instrument identification

Use of the Financial Instrument Global Identification (FIGI) standard

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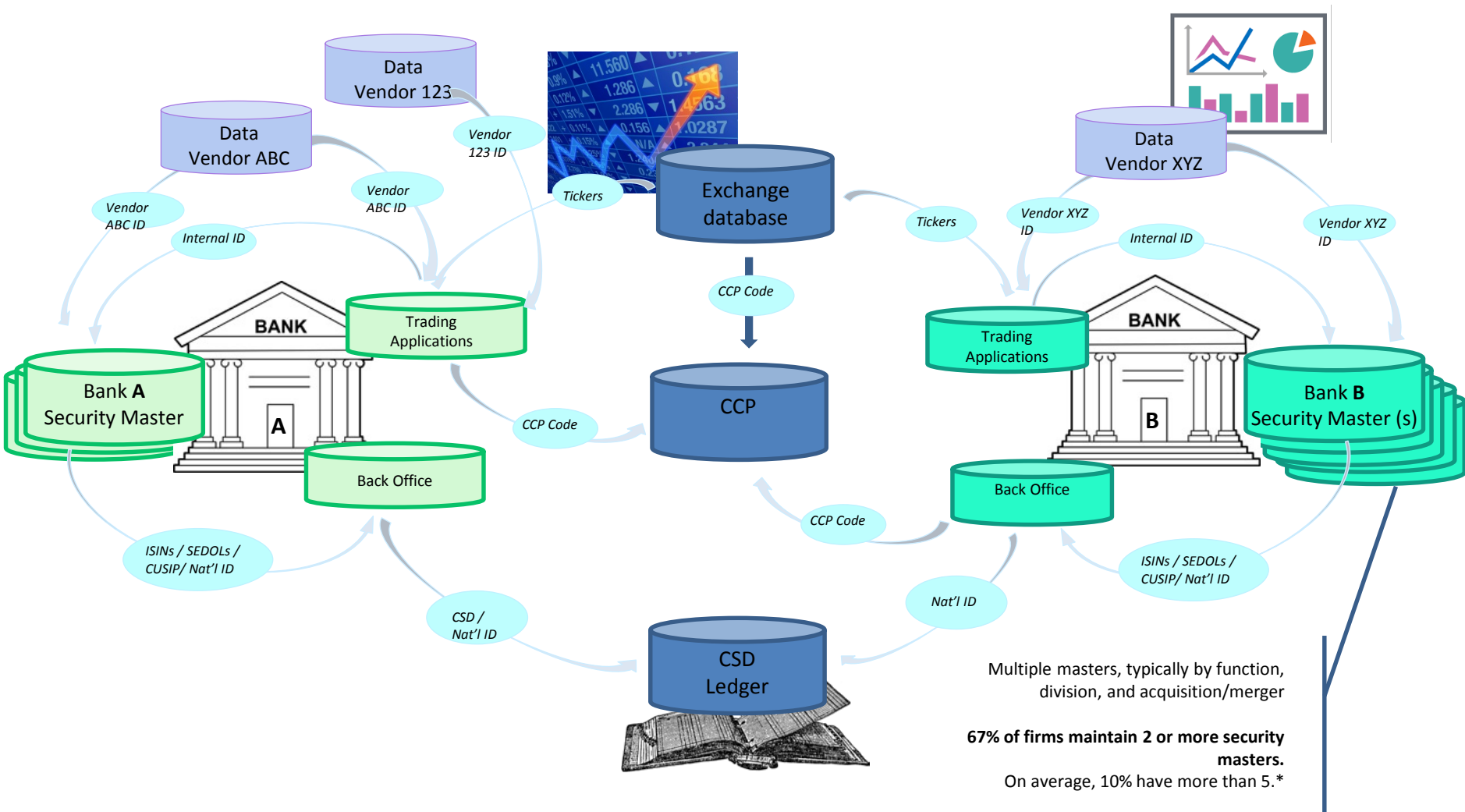
Challenge

- Global, cross-jurisdictional, cross-functional view
- Multiple identifiers exist for a single financial instrument and differ based on;
 - Asset type
 - Legacy embeddedness
 - Exchange/Venue
 - Vendor
 - Market / jurisdiction
 - Functional use (front/mid/back office)
 -and so on, most on organic generation/growth

What does this challenge look like?

data interchange complexity

Simplified example of data flow in trading and settlement process

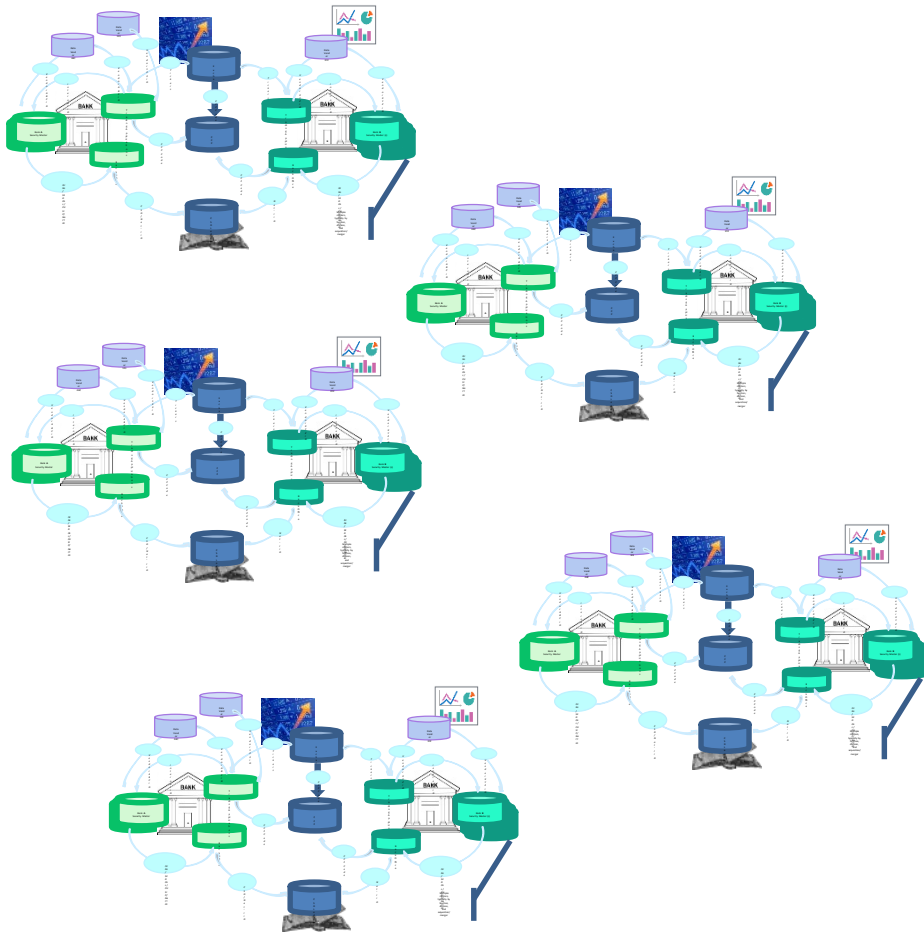


*TABB Group report; "Building a Framework for Innovation and Interoperability," March 2017 (survey of over 200 global data professionals)

simple answer....

“Just use one ID...”

Not so simple....



- Multiple contexts; some ID's infer more (i.e. 'tickers' typically specific to one exchange, national ID to one market, international ID's non-specific)
 - Specific inferred data drives different processes and routing
- Multiple markets, all with different national standards (both by venue and jurisdiction)
- Embedded codes in different legacy systems (i.e. Trading systems built around specific 'tickers')
- Akin to trying to solve multiple electrical plug standards by converting to single plug standard;
 - Good, *in theory*, but practical implications:
 - Embedded manufacturer and consumer base (legacy)
 - Significant 'conversion cost'
 - Politics – which one 'wins'?

So, the problem statement....

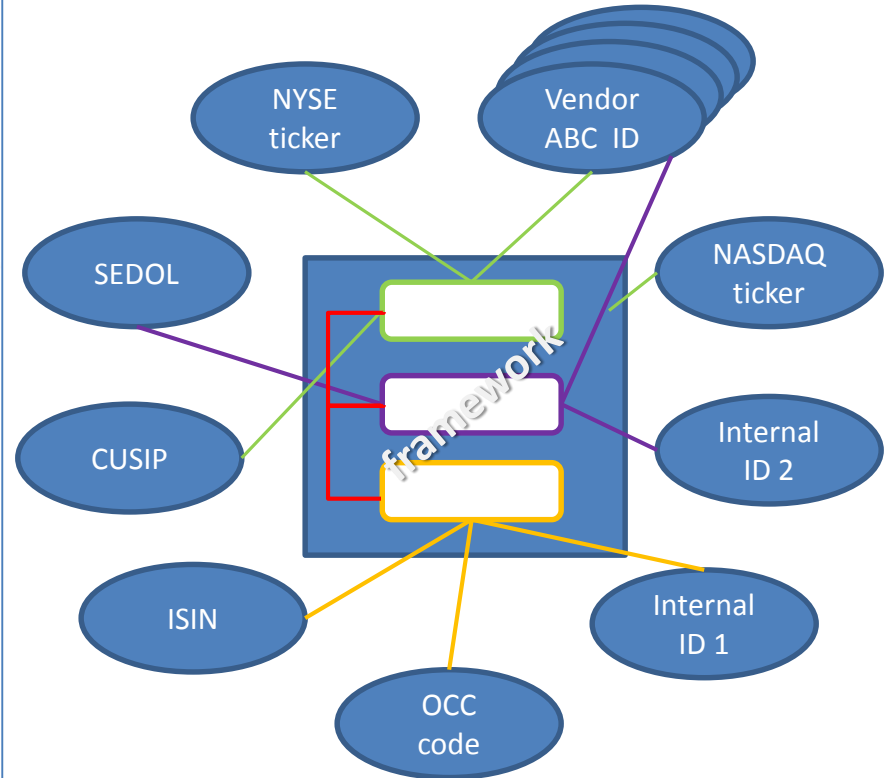
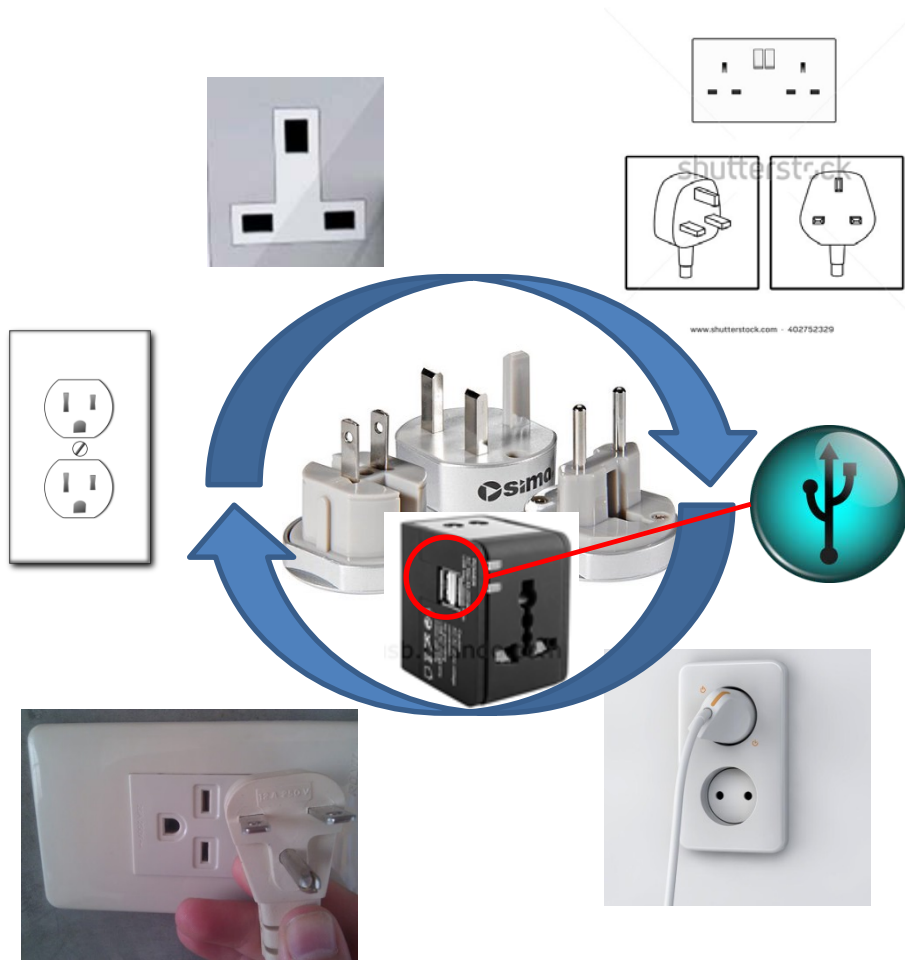
How to define something '**atomically**' *as well as* in **various contexts**, yet maintain **provenance, integrity, accuracy and quality**?

- Water
 - Easy to represent chemically as H_2O as atomic 'concept'
 - But H_2O doesn't indicate if it exists as ice, water vapor or liquid (**context/state**). Also sub-varieties; i.e. snow, slush, etc
 - Also: "aqua" vs "water" (language translation)
 - Also: 'Eskimo' Inuktitut (single language nuances); multiple words for ice and snow in different contexts
- Biological taxonomy versus language use;
 - 'Cow' is a cow. So is a 'calf.' Bull, Heifer, Steer.
 - Proper term is 'Cattle' or 'bovine' but many use the terms (cow, etc) interchangeably **unless the nuance matters to them**
- Each instance is 'fungible' with the other – via **transformation** but how do you model that in a representative data model?
 - This is a basic problem with most traditional data approaches in financial services
 - No fault, but **traditional** approaches have taken a '**human language understanding**' approach
 - Mix of technology limitations and lack of understand about data
 - Rise of ontology (the science) and metadata (the tool for implementation) as a **new solution**
- Instrument identification is a specific example where these issues present themselves in financial services
 - Concept of equity share for Firm XYZ
 - Exists in many 'forms' (contexts)
 - Change of one ID can force a **cascading effect** especially where 'intelligence' is embedded, threatening data quality

How to address?

Use a framework

A **metadata** framework can act as an adapter, and is **extensible** for new innovations



FIGI in use as a framework

Example; Thai Beverage PCL Common Stock

'Primary' issued in Singapore as foreign share

*Exists in **33** different tradeable forms*

*Quoted on global venues in **5** different currencies*

*Tradeable in **14** different jurisdictions/countries (on and off-exchange inclusive)*

Deutsche Borse-specific listing also traded on Tradegate (MTF)

Symbology;

***33** different unique exchange-based tickers*

***3** different ISINs (due to some uniqueness of Thailand issuance)*

***4** different SEDOLs*

Plus; CINS, Singapore ID (Y92), Common Code, WPK ID, other vendor codes, internal codes, and other national IDs

*In all, between **50-100 different identifiers** for the "same" common stock, with **no** specific relationship between any two identifiers or the associated descriptive data (i.e. each identifier is effectively its own 'island')*

Data related to Thai Beverage PCL; Singapore Exchange ID Y92

Name	Ticker	Bloomberg Exchange Code	MIC	Operating MIC	country	Exchange name or description	FIGI	FIGI Composite	Share Class	Quote currency	ISIN	SEDOL	Common Code
THAI BEVERAGE PCL	THBEV	SP	XSES	XSES	SG	SINGAPORE EXCHANGE	BBG000BQ6ZN0	BBG000BQ6Z96	BBG001S7LTY7	SGD	TH0902010014	B15F664	025638794
THAI BEVERAGE PCL	TBVPF	US				Composite to tie all US listings to	BBG000R7J995	BBG000R7J995	BBG001S7LTY7	USD	TH0902010014	B18R1R3	025638794
THAI BEVERAGE PCL	TBVPF	PQ	OTCM	OTCM	US	OTC PINK MARKETPLACE	BBG000R7JFW5	BBG000R7J995	BBG001S7LTY7	USD	TH0902010014	B18R1R3	025638794
THAI BEVERAGE PCL	TBVPF	UV	OTC	FINR	US	OTC BULLETIN BOARD - OTHER OTC	BBG000R7JGH0	BBG000R7J995	BBG001S7LTY7	USD	TH0902010014	B18R1R3	025638794
THAI BEVERAGE PCL	T6W	GR				Composite to tie all German listings to	BBG000RJ6W38	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	GF	XFRA	XFRA	DE	DEUTSCHE BOERSE AG	BBG000RJ6W64	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	GD	XDUS	XDUS	DE	BOERSE DUESSELDORF	BBG000RJ6WQ3	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	GS	XSTU	XSTU	DE	BOERSE STUTT GART	BBG000RJ6X63	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	GM	XMUN	XMUN	DE	BOERSE MUENCHEN	BBG000RJ6XJ9	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	GB	XBER	XBER	DE	BOERSE BERLIN	BBG000RJ6XM5	BBG000RJ6W38	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	TH	XGAT	TGAT	DE	Tradegate BBG000RJ6W64 Ref FIGI BBG000RJ6W38 REF Composite	BBG00H300Z64	BBG00H300Z55	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	THBEV	SW				Composite to tie Swiss legacy listings	BBG006TLWKM4	BBG006TLWKM4	BBG001S7LTY7	CHF	TH0902010014	B1054Z0	025638794
THAI BEVERAGE PCL	THBEV	BW	XBRN	XBRN	CH	BX SWISS AG	BBG006TLWKT7	BBG006TLWKM4	BBG001S7LTY7	CHF	TH0902010014	B1054Z0	025638794
THAI BEVERAGE PCL	THBEVEUR	XB	BOAT	BOAT	GB	CINNOBER BOAT	BBG007254XH5	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XI			IT	BORSAITALOTC	BBG007254XJ3	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XH			HU	BUDAPEST OTC	BBG007254XK1	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XF			IE	DUBLIN SE OTC	BBG007254XM9	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XD			DE	DEUTSCHE OTC	BBG007254XN8	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XE	XSMP	XSMP	GB	SMARTPOOL	BBG007254XP6	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XJ			SI	LJUB SE OTC	BBG007254XQ5	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XL			GB	LONDON SE OTC	BBG007254XR4	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XG			SE	NGM OTC	BBG007254XS3	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XO	XOPV	XSTO	SE	OTC PUBLICATION VENUE	BBG007254XT2	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XN			NO	OSLO OTC	BBG007254XV9	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XP			GB	PLUS MKT OTC	BBG007254XW8	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XS			DE	STUTTGRT OTC	BBG007254XY6	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XA			AT	CEESEG OTC	BBG007254XZ5	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XT	HOTC	ASEX	GR	HELLENIC EXCHANGE OTC MARKET	BBG007254Y10	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XW			CH	SIX Off-exchange	BBG007254Y29	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XU				Bulgaria OTC	BBG007254Y38	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	XV	BOTC	BCXE	GB	OFF EXCHANGE IDENTIFIER FOR OTC TRADES REPORTED TO BATS EUROPE	BBG007254Y56	BBG007254XG6	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	THBEVEUR	EU			GB	EUROPEAN Composite for any potention Eurozone listings	BBG007254Y74	BBG007254Y65	BBG001S7LTY7	EUR	TH0902010014		025638794
THAI BEVERAGE PCL	T6W	GZ	MUND	XMUN	DE	BOERSE MUENCHEN - MARKET MAKER MUNICH - FREIVERKEHR MARKT	BBG00FGX08K6	BBG00FGX08G1	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	T6W	QT	XOTX	XDUS	DE	BOERSE DUESSELDORF - QUOTRIX	BBG00G7BW612	BBG00G7BW5Z7	BBG001S7LTY7	EUR	TH0902010014	B15T6J9	025638794
THAI BEVERAGE PCL	TB	XBKK	XBKK		TH	STOCK EXCHANGE OF THAILAND	BBG000BFYD61	BBG000BFYD61	BBG001S7LTY7	THB	TH0902010006		
THAI BEVERAGE PCL-NVDR	TB	XBKK	XBKK		TH	STOCK EXCHANGE OF THAILAND	BBG000BX8K01	BBG000BX8K01	BBG001S7LTY7	THB	TH0902010R15		
THAI BEVERAGE PCL-FOREIGN	TB	XBKK	XBKK		TH	STOCK EXCHANGE OF THAILAND	BBG000BX8JR5	BBG000R7J995	BBG001S7LTY7	THB	TH0902010014		

Diving into one example

Additional FIGIs included in metadata for MTF listings

FIGI	Exchange name or description	FIGI Composite	Quote currency	Share Class	Primary currency	ISIN	SEDOL	Common Code		
BBG00H300Z54	Tradegate	BBG00H300Z55	EUR	BBG001S7LTY7	THB	TH0902010014	B15T6J9	025638794	BBG000RJ6WG4	Ref FIGI
									BBG000RJ6W38	REF Composite
BBG000RJ6WG4	DEUTSCHE BOERSE AG	BBG000RJ6W38	EUR	BBG001S7LTY7	THB	TH0902010014	B15T6J9	025638794		

'Ticker' level has exchange

Depending on context of use, metadata related to a certain FIGI will vary. Data here is not exhaustive, but simple example for illustration

'Composite' level has specific market currency

'Share Class' level has only has issue currency

FIGIs can be self-referential;

- 'children' that dive into more specific related metadata reference any and all 'parents' that have less related metadata to satisfy other contextual uses.
- Alternate representations (i.e. an MTF listing of an 'official' listing)

Key points

- Metadata, **framework** approach
 - Actual ‘identifier’ is semantically meaningless and permanent (does not change, i.e. due to simple corporate actions, other situations)
 - Standard includes the metadata, not just the identifier
- Official **standard** of the Object Management Group (omg.org), an independent, international, technology standards consortium (no restrictions on membership)
 - Specialists in technical solutions, data, and ontologies
- **Open data**; no ‘cost recovery’, no fee or license for use, access to data or documentation
- Based on new data principles around metadata, relationships and ontologies
- Does not replace existing identification systems; Is meant to **unify and enhance** those systems (‘universal adapter’)
- Fully accessible via **OpenFIGI.com** (no restrictions)

Regulatory and Industry Benefits

- Data **Management** and Quality
 - Ability to properly associate different legacy identification systems based on different sets of metadata without individually mapping every dataset
 - Provides methodology for aggregation of data across jurisdictions, silos, functional areas
 - Provides methodology for ‘apples to apples’ comparison of financial instruments based on context
- System **interoperability**
 - Enables integration of legacy systems to new development through use of metadata extensions without requiring data model changes in legacy systems or enforcing legacy models on new development
 - Metadata management of multiple security masters within a single firm (see TABB Group Report; “Building a Framework for Innovation and Interoperability” – May 8, 2017; <http://tabbforum.com/opinions/standards-would-ease-market-data-pain-spur-innovation>)
- **Standards** interoperability
 - Can incorporate any data points within metadata, regardless of origin
 - Can be utilized in ISO15022/ISO20022, FIX, FIBO, etc
 - standard and jurisdictionally independent
- Quickly **adapt** to market changes via metadata extensions without need to update the standard
- Based in **Open Data**
 - Freely available, no direct cost recovery on identifier and primary related metadata or services to access that data
 - Expectation that data is output of normal course of business for a provider, but allows for value-add services as long as core data is available separately and remains open
 - Provide Regulators a non-fee liable methodology for collecting financial instrument related data
- Open **governance** framework
 - Any firm can seek to become a Certified Provider (akin to an LOU in the GLEIF model)
 - Especially relevant for ‘specialists’ in specific, more esoteric asset types (such as commodities)

Challenges

- **Data, as a discipline, is still 'young'**
 - Lack of expertise throughout the industry, especially in decision-making roles
 - Embedded legacy solutions, methods and decision making
- **Misperceptions**
 - FIGI viewed as an 'identifier' versus framework (*related to above issue about data expertise*)
 - Some data vendors view FIGI as a 'competitive' product and actively market against its use
 - Some view as 'Bloomberg' solution, versus 'OMG standard'
 - Encountered resistance within ISO process, chiefly from representatives from institutions that issue identifiers
 - Also some USA/European politics at play
- Differing views on 'standards organization'
 - Object Management Group is well known, but mainly in specific circles (akin to IEEE or W3C) vs an organization like ISO
 - Financial Services Regulators are not as well versed in standards organizations other than ISO
- **Regulatory inclusion**
 - Benefit to be included in regulation, but wish to avoid "mandates" for use
 - USA-based Regulators have been clear about desire to avoid mandates; how to encourage adoption?
- **Certified Providers** and gaps in coverage (non-covered assets and more granular 'children')
 - Primary data sources (exchanges, etc) so far have preferred to send data and receive back FIGI vs becoming Certified Provider themselves
 - There are gaps in coverage and jurisdictional nuance without more CP's with 'specialist' knowledge
- Adoption and maturity
 - Included by 137 data vendors worldwide, but with varying levels of support/promotion
 - Over 400 non-Bloomberg financial firms have adopted and use to varying levels, in addition to direct Bloomberg clients

ANSI / SPRING collaboration

- Support and input from both standards organizations
- Agreement on use, approach, and enhancements can feed into Object Management Group and encourage wider use
- Use within country infrastructures alongside legacy methodologies can help ease extra-jurisdictional data management and reconciliation (low-hanging fruit, PoC)
- Re-introduce to ISO, if value found in national PoC analysis