

# Standardisation put to the test: How reference data standards have evolved in an era of unprecedented regulatory and technological change

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## ABSTRACT

*Reference data standards are the backbone to financial markets, providing a single source of truth for security and entity identification that is universally accessible whether market participants are working with equities, fixed income or derivatives. That reliability and consistency are constantly challenged by the forces of regulatory and technological change, which have pushed standards bodies and national numbering agencies around the world to continually innovate around existing standards and press forwards to develop new ones that meet the evolving needs of the marketplace. This paper chronicles the refinement of existing standards and the development of new standards over the last decade, spotlighting the evolution of the international securities identification number*

*(ISIN) to identify derivatives in the post Markets in Financial Instruments Directive II (MiFID II) marketplace, the development of the legal entity identifier (LEI) in response to the failure of Lehman Brothers, the growing use of existing standards in the blockchain ecosystem and the ongoing development of a standardised approach to syndicated loan identification.*

**Keywords:** CUSIP Global Services, CUSIP, reference data, standards, S&P Global Market Intelligence, American Bankers Association, ABA, LEI, ISIN, FISN, CFI, GMEI, ANNA, MiFID, ISO, Dodd–Frank, regulation, financial reform, GLEIF, Blockchain, AnaCredit

## INTRODUCTION

The last decade of seemingly constant regulatory change, rapid-fire technological development and worldwide focus on financial markets transparency has tested the flexibility of financial reference data standards. The idea of a flexible standard may sound counterintuitive. The value of a standard is, after all, directly proportional to its longevity as a single source of truth. To achieve that longevity, although, standards bodies have had to continually refine their processes, add new inputs and improve



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their delivery mechanisms to ensure that the underlying standard remains viable as the world around it changes.

This paper will demonstrate how that delicate balance between stability and evolution has been maintained as critical reference data standards have been tested by major regulatory changes. It will also outline current and future regulatory challenges and the work being done today to ensure that the data backbone of efficient financial markets maintains its strength.

### **MARKETS IN FINANCIAL INSTRUMENTS DIRECTIVE II: THE SKY DID NOT FALL**

We will start with everyone's favourite topic: the sweeping set of European financial markets reforms known as the Markets in Financial Instruments Directive II (MiFID II). Right up until the 3rd January, 2018, implementation date of MiFID II, journalists, traders, analysts and other market watchers were warning of potentially cataclysmic shocks to global fixed income and derivatives markets stemming from the new regulations. On 1st January, 2018, the *Financial Times* published an ominous warning<sup>1</sup>: 'Few can predict how the market will adapt . . . Some participants could stay away from the market until the market establishes a normalised state . . .'<sup>2</sup>

The concern, of course, was that the introduction of the new regulation, which was designed to strengthen investor protection and improve the functioning of financial markets by making them more efficient, resilient and transparent,<sup>3</sup> would also create several new administrative hurdles for market participants. Among the specific requirements raising the most concern were those focused on pre- and post-trade reporting for non-equity and equity-like instruments.

This meant any bonds, derivatives, exchange-traded funds (ETFs), structured

finance products and several other instruments would require near real-time data on price quotes in the pre-trade and post-trade environment. It also meant that a host of accompanying information about the underlying securities would have to be inextricably linked to each security throughout the trade process so that each transaction could be easily tracked and monitored by traders, counterparties and regulators.

To achieve this level of transparency, in 2016, the European Securities and Markets Authority (ESMA) mandated the use of four International Organization for Standardization (ISO) standards to capture several aspects including legal entity identification, financial instrument identification and financial instrument classification.<sup>4</sup> Chief among these was the long-established international securities identification number (ISIN), which is a unique identification code applied to publicly traded securities. The mandate also called for the use of the classification of financial instruments (CFI), financial instrument short name (FISN) and legal entity identifier (LEI). All these would be shared along with every trade reported by trading venues (see Figure 1 outlining the structure of these codes).

That was an entirely new wrinkle to work into trading workflows and would require modifications or accelerated implementation of ISO standards to satisfy the requirements under MiFID II. ISINs, for example, had been around for a long time. The standard was first launched in 1981 and gained widespread use in 1990, when it was endorsed by the ISO. While the ISIN had become the standard for identifying securities from more than 120 different nations in a simple 12-digit alphanumeric code, it had not been purpose-built as a derivatives trade identifier. Still, its longevity, proven flexibility and widespread recognition among market participants made it the ideal foundation for a purpose-built derivatives identifier.

ISO COUNTRY CODE	LOCAL IDENTIFIER (CUSIP)	CHECK	ISIN Identifier
US	023135106	7	US0231351067

**Example:** Air Canada Inc - Class A Shares

ISO COUNTRY CODE	LOCAL IDENTIFIER (CUSIP)	CHECK	ISIN Identifier
CA	008911703	4	CA0089117034

**Example:** Cryptolab Capital (Cayman) Ltd

ISO COUNTRY CODE	LOCAL IDENTIFIER (CINS)	CHECK	ISIN Identifier
KY	G3165B1	2	KYG3165B1032

Figure 1 The international securities identification number deconstructed

Notes: CA, Canada; CINS, CUSIP International Numbering System; CUSIP, Committee on Uniform Security Identification Procedures; ISIN, international securities identification number; ISO, International Organization for Standardization; KY, Cayman Islands; US, United States of America.

Source: CUSIP Global Services.

To achieve the goals laid out by European regulators, the ISIN needed to be able to support near real-time allocation of identifiers upon request by a user, support the multiple taxonomies of definitions and descriptive data for over-the-counter (OTC) derivatives and integrate directly with trading and order management systems used in the derivatives markets.

The task of enhancing the existing ISIN standard to meet the unique needs of the derivatives market fell to the Association of National Numbering Agencies (ANNA), which is a global association of national numbering agencies and the registration authority for the ISIN. In April 2017 — just seven months before the MiFID II mandate was set to go into effect — ANNA launched a subsidiary called the Derivatives Service Bureau (DSB) to focus exclusively

on creating ISINs for OTC derivatives. By November of that year, the DSB had launched real-time ISINs for derivatives.<sup>5</sup>

The process ANNA followed to refine the ISIN for use as an OTC derivatives identifier included a great deal of upfront work and industry collaboration to define the attributes within the ISIN record for each OTC asset class. That basic schema included a combination of industry-agreed product definitions and variable attributes provided by the requestor.

This process was not without challenges. Building a universally accessible, interoperable platform that works across languages and geographies, creating the hierarchy framework that allows the ISIN to accurately identify a derivative, when that derivative itself is made up of several assets that have ISINs themselves, and getting the

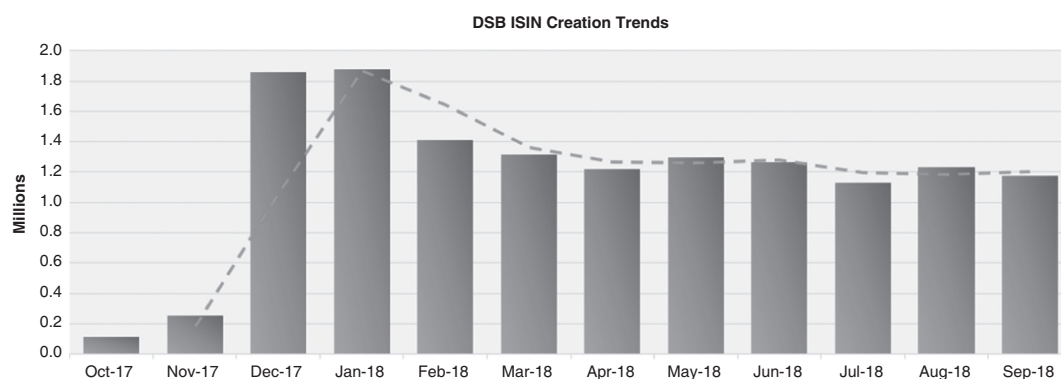


Figure 2 Derivatives Service Bureau international securities identification number creation trends  
Source: ANNA Derivatives Service Bureau.<sup>9</sup>

industry to align on fee models were all challenges that needed to be overcome in the evolution of the ISIN standard.

When the dust settled, although, none of the worst fears of MiFID were realised. In the first five days of trading under MiFID II, trading volume in European interest rate swaps was up 104 per cent over the previous year, according to the fixed income and derivatives trading platform, Tradeweb.<sup>6</sup> The trend continued, with Tradeweb reporting<sup>7</sup> that average daily notional volume in rates derivatives on its multilateral trading facilities (MTFs) roughly doubled in each of the first three quarters of 2018.

Ultimately, the requirement that trading venues disclose to regulators which instruments they have traded each day using ISINs has ushered in a new era of transparency into the derivatives markets. According to the DSB, over 14 million ISINs for derivatives were created in its first year in operation (see Figure 2).<sup>8</sup> By requiring ISINs to be assigned to each individual financial instrument that is traded on any given day, the new regulations introduced a level of pre- and post-trade transparency that never previously existed in OTC derivatives. That has improved transparency and — despite the fears and

hand-wringing of the marketplace leading up to the mandate — led to increased liquidity in the derivatives markets.

The story of the ISIN for OTC derivatives is a good example of how reference data standards have continually evolved in response to regulation. Another comes from MiFID II's American cousin, Dodd-Frank.

### LEGAL ENTITY IDENTIFIER: CREATING A NEW STANDARD

Sometimes an existing standard can be customised to address a new market need. Sometimes a new one needs to be created from scratch. The latter was the case in response to the financial crisis of 2008. At the time, exposures to troubled or failed firms sent ripple effects throughout the financial markets, bringing terms like 'single name exposure' and 'too big to fail' to the forefront of public consciousness. Determined to never again be hobbled by the inability to get a complete picture of systemic risk, global regulators breathed a renewed sense of purpose into the industry's push for a global LEI that would clearly connect key reference information to enable clear identification of legal entities participating in financial transactions.

This was not a new challenge in 2008. The industry had been grappling for years with the idea of creating a standardised identifier at the entity level, similar to what the ISIN did for financial instruments. While market participants had been near unanimous in acknowledging the demand for such a code, views on how to create a solution were equally fractured. As a result, previous attempts, such as the international business entity identifier (IBEI), never gained the necessary traction. Stumbling blocks ranged from an inability to coalesce around a single standard to disagreement over the operational model and the lack of a willing entity to assume the responsibilities of the registration authority.

That all changed with Dodd–Frank and its creation of the Office of Financial Research, which was tasked with improving the quality of financial data available to policymakers. This mission led to a comprehensive study conducted by the Financial Stability Board (FSB), who, in 2012, published the landmark report ‘A Global Entity Identifier for Financial Markets’,<sup>10</sup> which established the framework for the development of an identification standard that could help the financial industry, regulators and policymakers trace exposures and connections across the financial system. That ultimately led to the development of a group called the Regulatory Oversight Committee (ROC), which consists of 71 public authorities and 19 observers from more than 50 countries, established in 2013, to coordinate and oversee the development of a global LEI system.

This catalysed the adoption of a 20-character, alphanumeric code based on the ISO standard 17442, which created a universal code for identifying the ownership structure of entities around the world, answering the basic but critical questions: Who is who, and who owns whom?

As is the case with the creation of any new standard — let alone one that

is being spurred by the federal government and developed by a global network of contributors — adopting the technical standard was the easy part. The challenges came in reaching an agreement on how best to manage the system, how to drive industry adoption and how to make it globally accessible.

Ultimately, the global LEI system was designed as a federated system overseen by the Global Legal Entity Identifier Foundation (GLEIF) and managed by local operating units (LOUs) who are on the ground in different regions of the world to administer LEIs and maintain regional databases. The process is overseen by the ROC.

As an example of how this plays out in the United States, the Depository Trust & Clearing Corporation (DTCC) created a utility called the global markets entity identifier (GMEI) utility, which serves as the LOU for all US entities. US-domiciled companies can request an LEI directly through the GMEI interface, or, through a partnership with CUSIP Global Services, they can automatically apply for an LEI when they are requesting a CUSIP ID for a new security offering. This federated model, which relies upon collaboration between a global network of numbering agencies, utilities and other partners, has made it possible for LEI issuance to quickly build momentum.

To date, 1,326,222 LEIs have been issued through the new system.<sup>11</sup> The standard has also continued to build momentum globally, becoming a key component of the final MiFID II mandate and — as of November 2019 — the Reserve Bank of India has made the LEI mandatory for all market participants regulated by the central bank.<sup>12</sup> Figure 3 breaks out the total LEI volume by issuer through December 2018. It shows that the vast majority of LEI issuance so far has come from the GMEI utility operated by the DTCC, followed by the WM Datenservice LEI portal, which is one

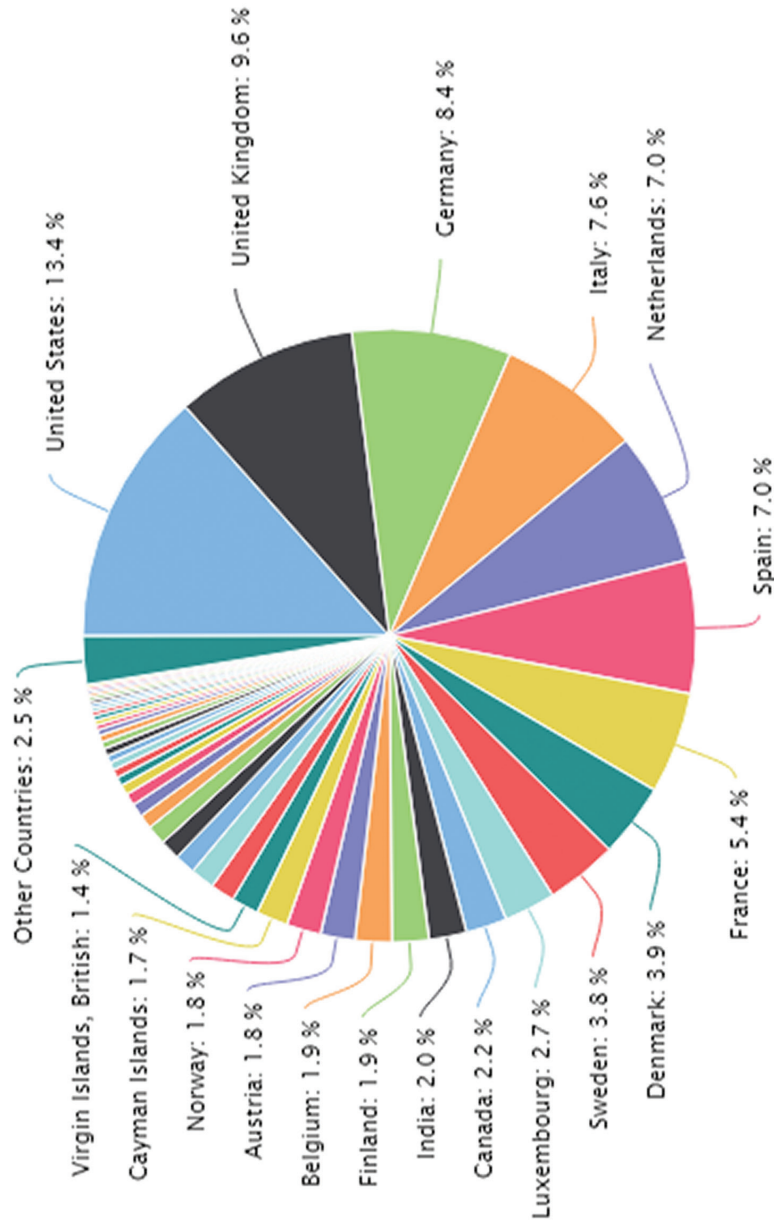


Figure 3 Total legal entity identifier volume by issuer  
 Notes: LEI, legal entity identifier; LOU, local operating unit.  
 Source: Global Legal Entity Identifier Foundation.

of Europe's leading agencies for the allocation of LEIs.

In all these examples, the LEI is being used for its original intended purpose of identifying unique legal entities. There are, however, other use cases where the underlying LEI schema could be leveraged for different purposes. For example, the LEI ROC has published a detailed set of guidelines<sup>13</sup> for assigning LEIs to people. Specifically, the guidelines prescribe the use of an LEI for 'individuals acting in a business capacity'. This can include individuals acting as financial intermediaries who have the legal right to enter independently into legal contracts on behalf of a business.

The memo goes to great lengths to explain that LEIs should not be granted to private individuals acting in a non-professional capacity. But one cannot help but wonder what other uses may be in store for the LEI down the road. As the world continues to wrestle with identity reconciliation challenges in virtually every industry, ranging from health care to scientific research to consumer products, the concept of broad-based expansion of existing and new ISO standards is not so hard to imagine.

While these examples of the expansion of the ISIN and the continued growth of the LEI illustrate evolutionary approaches to reference data standardisation, there are also some more revolutionary approaches currently in the works.

## **PREPARING FOR THE BLOCKCHAIN FUTURE**

Blockchain has become the financial services industry's favourite buzzword. In the space of about two years, blockchain has captivated everyone with its promise of more efficient back-office operations. As firms big and small explore its potential, however, it becomes more apparent that blockchain will require some modification

before it is ready for prime time as the backbone of capital markets infrastructure.

First, some basic facts about the role of blockchain in financial markets. In its simplest possible form, blockchain is a digital platform for recording and verifying transactions on a distributed ledger. Because it is decentralised and theoretically lives forever digitally, the blockchain record provides a standardised accounting of all touch points in any transaction. That means contracts, financial transactions, bills of lading, property titles and tax filings that are the defining structures of our economic system could be seamlessly digitised and recorded forever in an open, distributed ledger. Manual, paper-intensive transaction processes that are prone to error could be replaced by near-instantaneous and unambiguous records of truth in this type of blockchain-based or distributed-ledger environment.

While, in theory, that sounds like a perfect recipe for upending legacy reference data standards with new blockchain-based alternatives, it has not been the case — quite the opposite in fact. Established standards are starting to bridge the gap between the promise and capability of blockchain.

One promising example of this phenomenon is unfolding right now through a collaboration between Templum Markets and CUSIP Global Services to assign CUSIP identifiers to all tokenised asset offerings (TAOs) traded on Templum's blockchain-based platform.<sup>14</sup> By assigning CUSIP IDs to digital assets, Templum was able to tap into the existing financial markets infrastructure for identifying, tracking and trading securities, making all terms and conditions, bid and offer prices and trading history transparent and universally accessible through traditional data vendors such as Refinitiv and Bloomberg.

This approach has also helped to bring Templum's TAOs into compliance with current regulatory requirements for issuing new securities. By pairing the existing

reference data standard with its blockchain-based workflow, Templum has already been able to bring marquee digital offerings to market, such as the recently launched tokenised offering of the St. Regis Aspen Resort,<sup>15</sup> which has created an entirely new way to invest in real estate.

Other examples of this collaborative approach to pairing existing standards with new technologies are showing up in several pockets of the financial services industry. In the world of trade clearing and settlement, the Australian Securities Exchange (ASX) has launched an ambitious project to replace its legacy clearing and settlement system with a distributed ledger-based alternative. Notably, the exchange simultaneously created an ISO 20022 Technical Committee to ensure that messaging protocols used on the new platform are consistent with existing industry standards, including ISIN (ISO 6166).<sup>16</sup>

As blockchain continues its rapid evolution in financial markets, it is becoming increasingly clear that existing reference data standards will play a critical role in its practical functionality in use cases ranging from new securities issuance to trading and clearing.

### **THE QUEST FOR TRANSPARENCY IN ALL CORNERS OF THE MARKETS**

Despite the constant expansion of reference data standards into legacy and new asset classes to address the twin forces of regulatory and technological change, there are still some corners of the marketplace that have standardised reference data taxonomies. One of these is the European syndicated loan market. While ISINs have been allocated by banks on an ad hoc basis to certain loans, there is no consistent cross-market process in place to apply these identifiers to all loans. Primarily, ISINs are being allocated to leveraged loans, but very few

investment-grade loans receive the same treatment.<sup>17</sup>

The European Central Bank (ECB) is trying to change that with its AnaCredit initiative.<sup>18</sup> With this programme, the ECB hopes to create a new dataset with detailed information on all individual bank loans in the European economic area.

Like all the examples outlined in this paper, the best intentions of the AnaCredit initiative must also be weighed against the practical realities of implementing a blanket standard on any asset class. Currently, numbering agencies, data vendors, banks and loan market industry associations are hard at work hammering out the details of what a unilateral application of the ISIN or some other standard might look like in various real-world scenarios. Unfortunately, unlike the situation that played out with the ISIN for derivatives, whereby ESMA mandated the use of specific standards, the AnaCredit initiative has been a bit vague in its push for standardisation. The ECB specifies the need to develop a standard loan identifier for syndicated loans, but it stops short of determining which identifier should be used for the task. While the industry has typically relied on the ISIN for this task, the lack of a clear mandate to apply the ISIN for this task has resulted in some confusion that will ultimately slow the adoption process.

### **THE CRITICAL ROLE OF STANDARDS BODIES**

F. Scott Fitzgerald once wrote ‘The test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function’.<sup>19</sup> That pretty much sums up the challenge confronting standards bodies and national numbering agencies as they manage the delicate balance of maintaining reference data standards but also accommodate the constant evolution of financial markets.



Ultimately, the ability to maintain a viable reference data standard in this market requires constantly finding new ways to apply that standard to new asset classes, deliver the standard to market participants as technology platforms and delivery mechanisms change and manage the data collection process to ensure that the standard keeps pace with the changing demands. As evidenced in this paper, there are several different routes to achieving that goal, but all of them require strong collaboration between the industry, regulators and standards bodies and numbering agencies. It is also critical that all constituencies involved recognise the need for universally accessible and interoperable standards that do not overlap with one another.

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