Anatomy of a World-Class Standards Body:
The Origins and Future of the CUSIP System[*]

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Abstract:

This brief article gives some background on the development of CUSIP numbers and discusses the disadvantages of fragmentation if an alternative identification system is introduced.

Keywords: CUSIP numbers; Financial standards setting

As financial market complexity increases and data proliferate, tools to assist financial institutions and members of the research community in organizing a dizzying array of financial information are more important than ever. The familiar ticker symbol, assigned to each stock, facilitates matching when, for example, information from two different datasets is combined. CUSIP numbers are similar to ticker symbols, but they exist for all securities, not just stocks. Both ticker symbols and CUSIP numbers have the advantage that they are not subject to change when a company changes its name (Apple was once Apple Computer, but the ticker stayed as AAPL), and they are easier to match than using names ("Apple, Inc.", for example, does not match with "Apple"). Ticker symbols would be less useful if they changed whenever companies changed names, or if Apple were known by both AAPL and APPL. CUSIP numbers differ from tickers in another important regard: each security is assigned a CUSIP number that has never been used before, whereas a ticker symbol can and does get reused: C is now used for Citigroup, Inc., but was once used for Chrysler. The CUSIP number for Apple's common stock is 037833 10 0, with the first six characters identifying the issuer and the last two identifying a unique instrument from that issuer (the ninth character is a mathematical check digit). The CUSIP system employs an alphabetical

[*] The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of their organizations or employers.

slotting system for the issuers. For example, animal health-care company Zoetis is assigned 98978V 10 3 for its common stock, whereas the aforementioned issuer code for Apple is 037833. Letters were introduced to allow for 26 extra opportunities to keep the first 6-digit numbers in alphabetic order.

Most of the financial industry recognizes CUSIP as the instrument identification standard that is widely used in financial markets. When researching securities or combining data from multiple sources, CUSIP is often the identifier of choice due to its comprehensiveness and reliability. But CUSIP is much more than just an identifier. The CUSIP number itself should be viewed as an outcome of a deliberative process. And it is this process that enables all participants to better understand and fully manage the complexities of the business agreements that drive the financial industry.

To provide some clarity around this notion of shared understanding among financial industry participants, one must recognize that the financial instruments we use to raise capital, manage risk, and provide stability to the markets are themselves the result of a series of complex business negotiations. These negotiations among lawyers, bankers, and business executives define critical parameters related to payments and reinvestment. They establish the terms for redemption and priority. And they specify the legal rights and contractual obligations of the parties involved in the full lifecycle of a financial instrument.

The 2020 CUSIP Global Services Survey conducted on behalf of the American Bankers Association (ABA) demonstrated that the overwhelming majority of the financial industry (some 87 percent), including asset managers, broker-dealers, banks, insurance companies, and market authorities have adopted the CUSIP identifier as their primary key.[1] More importantly, these same entities indicate that they rely on CUSIP Global Services (CGS) data files for issuer information, descriptive data, and other content necessary to conduct day-to-day business. In many ways, the underlying task of our globally interconnected financial markets is to manage this complexity. Today, CUSIP is accepted as the common denominator for settlement and relied on as the foundational building block for efficient market operations. But it wasn't always this way.

The CUSIP system was born out of turmoil. It began as an industry-led working group (the Committee on Uniform Securities Identification Procedures) under the auspices of the American Bankers Association in the fall of 1964. It was convened to expedite trading and to rescue an industry that was near chaos when the increase in trading volumes clashed with fragmented technology, inhibiting the efficient management of cash flows between buyers and sellers. In these pivotal moments, US financial markets became overwhelmed. Securities went undelivered. Payments weren't transferred in a timely manner. Records were lost. Brokerage firms were under pressure. And the New York Stock Exchange had to close for part of each week to allow back-office operations to catch up with the pace of record trading.

[1] We thank CUSIP Global Services for providing access to this survey.

Four years later the CUSIP system was born. It was created based on the key requirements of simplicity, flexibility, and extensibility, all supported by a transparent governance process – administered by CGS. As SEC Chairman Hamer Budge described at the initiation of the standard, "CUSIP provides the foundation to improve the speed and accuracy in the processing of securities and transactions."

Trusted Global Partners

The past five decades have been a period of innovation and growth for the CUSIP standard. CGS has emerged as a key player in the world of financial content standards. CGS is recognized as the National Numbering Agency for the US and several other regions around the world. It is a founding member of the Association of National Numbering Agencies (ANNA), the entity that manages the International Standard Identification Number (ISIN) to facilitate efficient cross-border trading. As part of ANNA, CGS helped develop the Classification of Financial Instruments (CFI) standard and was a driving force behind the creation of the Derivative Service Bureau (DSB). The market has responded by awarding CGS with an 85% favorability rating according to the ABA survey, consistent recognition as delivering fit-for-purpose content, and a year-after-year growth in customer satisfaction.

CGS was instrumental in the development of the Legal Entity Identification (LEI) standard and is working to ensure stringent risk management between issuers and entities. It is an active partner with market authorities like the National Association of Insurance Commissioners and the Municipal Securities Rulemaking Board to promote transparency in markets and expand identification confidence into new asset classes and geographies. As new instruments have been introduced to the market, CGS has extended its identification and descriptive services capabilities to incorporate these asset classes (e.g., mutual funds, syndicated loans, equity options, hedge funds, and private placements) into the CUSIP identification system.

The historical perspective behind CUSIP becomes an important case study about the value of standards and the importance of industry-wide collaboration in the new world of interconnected global financial processes. Over the past few years there have been conversations that suggest that the industry is forgetting the hard-won lessons of the recent past. There have been proposals that seek to introduce competing identification standards into the process. This is alarming because any proposal to adopt an overlapping instrument identifier is a move backwards to a bad history of multiple standards that do little more than consume valuable resources and drive up costs – including the cost in matching, merging, and utilizing data from multiple sources using different standards. Ultimately, the confusion introduced by a proliferation of identifiers increases risks for all market participants. And the market agrees. As part of that same customer survey for the ABA, almost 80% of the industry indicated that there was absolutely no appetite for an additional identifier within their institution.

Standards-setting processes can be used as a mechanism for gaining marketplace advantage.[2] This creates a risk that commercial considerations motivating the introduction of new standards supersede the benefits such standards create for their end users There is a big cost to fragmentation in terms of mapping errors, duplicative processes, and marketplace confusion. The market underscores this reality. When surveyed, over sixty percent of the industry estimated the cost of pivoting from CUSIP to be anywhere from significant to extreme for their firm. This is the reason why CUSIP is so widely used for trading, post-trade processing, settlement, and record keeping as a primary key identifier. In addition to creating costs, delays, and operational risk, fragmentation inhibits the ability of market authorities to analyze systematic risk.

The Importance of Identity Resolution

Financial institutions and regulators share a common data management problem. Content that is extracted from prospectuses, official statements, term sheets, disclosure statements, and other issuance documents is legally precise when it is delivered by CUSIP but is transformed, modified, and renamed during its lifecycle. This evolution results in the use of common words that mean different things, and the expression of common concepts using a variety of words. The problem is exacerbated when seeking to align front-office systems with back-office legal processes because the terms used in the front office do not always capture critical nuances that are needed to meet legal obligations in the back office.

The essence of this problem is technology fragmentation. Financial institutions have aligned data from multiple security master files to hundreds of systems that use instrument-level information for trade confirmation, settlement, valuation, and reporting. Each of these systems are driven by proprietary data models. Firms link these systems together using internal identification keys. Resolution is difficult because these identifiers are embedded into systems and processes – and because the meaning of the concepts behind the identifiers have often been modified to meet specific objectives.

The outcome is altered data, both in identity and meaning to make the information work for specific applications. And, because these applications are linked, the incongruence of the content becomes a significant liability across the process chain. The problem is magnified because of the limitations of relational technology, which was primarily designed for efficient data processing, not for understanding complex data relationships. The underlying truth is that firms are supporting many thousands of tables, many with conflicting column names and all with relationships that must be explicitly structured. Financial institutions spend significant effort moving data from one place to another. They invest countless man hours reconciling data and its meaning. And changes are frequently difficult to implement due to a fear of disrupting critical processes at the applications level.

[2] See R. Ranganathan, J. Chen, and A. Ghosh, 2020, "Shaping Ecosystem Rules: How Interdependencies Affect Firms' Shaping Success" University of Texas, University of Florida, and Tilberg University working paper.

Instrument Identification vs Data Integration

The reality described above leads to confusion among some industry participants on the differences between instrument identification (which is addressed by CUSIP) and data integration – which is the process of combining data from different sources into a unified view for business consumption.

The issue of instrument identification is a known challenge. Many financial institutions operate in business silos where technology is fragmented, and data are independently managed. Internal identifiers exist across all these systems. There are scores of source systems, data warehouses, risk analytics systems, and reference data management repositories that would all need to be updated and kept synchronized with each other if CUSIP numbers were replaced. Market participants reinforce the seriousness of the fragmentation dilemma with 78 percent of ABA survey respondents indicating serious disruption if there was a change away from using the CUSIP identifier as the foundation for clearing and settlement. The problem for most is not the lack of a common key for identification, but rather the costs and complexities associated with the mapping of legacy infrastructures that use a combination of internal and external identifiers.

Furthermore, the resolution of identifiers is not presently viewed as a significant problem for most financial institutions. They are skilled at mapping symbology from multiple vendors and numbering agencies. They maintain multiple security identifiers in cross reference tables based on asset class and function for trading, settlement, pricing, matching, and database mapping. The introduction of yet another identifier, however, would include serious investment in inventory discovery, impact analysis, configuration management, meaning resolution, specification changes, updates to APIs, and the management of a whole suite of testing cycles. And since most firms have already aligned their internal identification schemes with CUSIP (and ISIN) for communication with external counterparties, there is little appetite for making such a conversion.

This reality does not minimize the very real problem of data integration across disparate repositories. The process of ensuring a unified view of data is challenging because content can have different data structures, definitions, and contextual meanings. The integration challenge is compounded because many firms are supporting dozens of systems of record serving various operational processes and independent lines of business. This process of reconciling glossaries that reflect the local "business language" of bespoke applications is complex and best accomplished using modeling processes and content standards that describe what the data mean as well as how concepts are connected. This is a big challenge for the industry to address.

Looking Forward

The world of financial data has gone through a plethora of significant challenges. We weathered the paper crisis of the 1960s. We condensed settlement processes and coalesced around the objective of straight-through processing. The rise of multiple listings gave us some pause over trading

equivalency. And the Global Financial Crisis of 2008 revealed the problems of high frequency trading and opened our eyes to the intractable realities of linked risk across globally interconnected markets. The standards process has been a beacon of reference data stability through it all.

CUSIP was created as a foundational baseline for identifying financial instruments. The trustees that advise and the management that operates CGS have standardized the process for collecting and validating primary source documents. The federated process of linking up national numbering agencies pioneered by CUSIP is an example of a standards process that works. It was created on request by the industry to solve a real and growing problem. The stakeholders worked diligently to implement collaboration across markets, and while there are still challenges associated with esoteric and OTC instruments, the CUSIP process has thrived for decades by adapting to changing market conditions.

This is a model to be celebrated and replicated because there are still some real issues to address. The industry must continue to focus on better management of the issuance supply chain and the adoption of new standards for both meaning and business rules. We would be well served to focus our attention on proper name space management to support data integration and to capitalize on the opportunities associated with the distributed ledger.

The clear message of the financial industry to the standards organizations is to look forward. We need to coalesce around established standards processes and gear up to address new challenges of global interconnectivity, market transparency, and systemic risk. We need to step up to the partnership opportunities associated with flexible reporting and machine-executable business rules. CUSIP Global Services and the American Bankers Association are committed to doing their part. Both financial institutions and regulators are at risk if we allow the standards process to be managed only by a few insiders. We are at risk if we become complacent about the significant changes that come with enhanced complexity. We are at risk if we aren't transparent about intent. We are at risk if we take our collective eye off the importance of interconnectivity across globally linked processes.

As a final point, we are concerned that engagement in the standards processes is waning and suggest the need for dedication to revitalize these efforts. Firms need to allocate young talent to engage in the debate. We are reinforcing our support of the process and invite you to be part of this collaborative effort. Now is the opportune moment to step up and enhance the baseline standards for both identification and unambiguous shared meaning. It is essential in the age of systemic risk and the core task of any world-class standards body.