

**To:** [fsb@fsb.org](mailto:fsb@fsb.org)

**Subject:** FSB Thematic Peer Review on Implementation of the LEI

**Date:** September 21, 2018

We are pleased to respond to the Financial Stability Board's (FSB's) thematic review of the implementation of the global Legal Entity Identifier (LEI) initiative.

The FSB's review is intended to evaluate the approaches and strategies used by FSB members to implement the LEI, including adoption for regulatory requirements; assess whether current levels and rates of LEI adoption are sufficient to support the ongoing and projected needs (particularly financial stability objectives) of FSB members; identify the challenges to advancing the implementation and use of the LEI; and make recommendations to address common challenges.

The objective of the review is to evaluate the progress made by FSB members – both national authorities and international bodies in response to the G20 Leaders' 2012 call for "global adoption of the LEI to support authorities and market participants in identifying and managing financial risks".

Following is our response. Please feel free to contact the principal author, Allan D. Grody, for any needed clarification or other matters.

Respectfully,



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## **Progress to date**

The FSB has overseen the establishment of the LEI code structure, format and reference data; the technical and operational setup and startup of the Global LEI System (GLEIS); and the governance framework for operating and overseeing the LEI initiative. More specifically, significant progress has been made in:

- the completion of the governance framework endorsed by the G20 that consists of the Regulatory Oversight Committee (ROC), a committee made up of representatives of seventy (70) members of the FSB; the Global LEI Foundation (GLEIF) consisting of sixteen (16) industry participants organized as the operational arm and governing Board of the Global LEI System (GLEIS); thirty-two (32) federated Local Operating Units (LOUs) responsible for LEI issuance globally including four (4) more LOUs in various stages of accreditation; and four (4) Registration Agents that assist legal entities in accessing the network of LOUs;
- the definition of a LEI code construction standard (ISO 17422) overseen by the International Standards Organization (ISO);
- the definition of reference data to be associated with the LEI code ('business card' information);
- the issuance of LEI codes and accumulation of reference data on 1,260,541 legal entities as of month-end August 2018;
- the issuance of LEI codes and enrichment of reference data to identify international/foreign branches
- the initiation of mapping of ISIN (International Securities Identification Number) codes to LEIs

Further progress has been made on the issuance of LEI codes and collection of relationship reference data on direct and ultimate parents of legal entities (begun May, 2017):

- agreement on the definition of legal entity relationships (ultimate and immediate parents of legal entities) to comport with the relationships identified in accounting rules associated with consolidation of financial records for financial statement reporting purposes (GARP and IFRS accounting rules);
- the issuance of 141,694 ultimate and immediate parent entities representing 83,652 unique legal entities registered with LEIs as of month-end August 2018;
- the identification of 1,066,405 legal entities as of month-end August 2018 that have not recorded a LEI by invoking exception reasons allowed by the ROC

## **Still to do**

As significant as is the progress made, the adoption of the LEI by itself is but one of many technical components necessary to aggregate financial transactions to enable the management of financial risk. While the LEI is one of the most critical data components of a financial transaction, a comprehensive set of data identification and data element standards is required to achieve the long sought means to efficiently aggregate data for analyzing any single firm's enterprise risk and, ultimately, multiple firms' systemic risk.

Financial stability measures observed through risk analysis and enabled by risk management is and has always been the objective set by the G20 in establishing the FSB and in initiating identity and data element standards. As such the LEI initiative cannot stand by itself as it is but one component of a financial transaction. The LEI initiative must, therefore, be observed in the context of the other global data initiatives of the FSB and its members: the unique transaction identifier (UTI); the unique product identifier (UPI); the international security identification number (ISIN); and the OTC common data elements (CDEs) initiative.

Beyond the completion of these standards initiatives is the need to complete legal entity hierarchies under account consolidation rules and implement the Bank for International Settlements (BIS) data aggregation initiative known as BCBS239 (Principles for effective risk data aggregation and risk reporting). Without completion of these efforts the adoption of the LEI code alone cannot meet the FSB's objectives.

Toward this end the FSB awaits further input from consultations still outstanding that directly impact the global LEI initiative:

- ROC's consultation on corporate actions and data history (26 July 2017) [https://www.leiroc.org/publications/gls/roc\\_20170726-1.pdf](https://www.leiroc.org/publications/gls/roc_20170726-1.pdf)
- ROC's consultation on fund relationships (September 2017) [https://www.leiroc.org/publications/gls/roc\\_20170926-1.copy-1.pdf](https://www.leiroc.org/publications/gls/roc_20170926-1.copy-1.pdf)
- FSB's Governance arrangements for the unique product identifier (UPI): key criteria and functions (3 Oct 2017) <http://www.fsb.org/2017/10/governance-arrangements-for-the-unique-product-identifier-upi-key-criteria-and-functions/>
- FSB's Governance framework for the UPI (26 April 2018) <http://www.fsb.org/wp-content/uploads/P260418-1.pdf>
- FSB's Governance arrangements and implementation plan for the UTI (2 January 2018) <http://www.fsb.org/2018/01/fsb-publishes-governance-arrangements-and-implementation-plan-for-the-unique-transaction-identifier-uti/>
- Feasibility study on approaches to aggregate OTC derivatives data (19 September 2014) [http://www.fsb.org/wp-content/uploads/r\\_140919.pdf](http://www.fsb.org/wp-content/uploads/r_140919.pdf)
- CPMI/IOSCO's Governance arrangements for critical OTC derivatives data elements (other than UTI and UPI) (16 August 2018) <https://www.bis.org/cpmi/publ/d182.htm>

### **Request for feedback**

The FSB has invited feedback from financial institutions, industry and consumer associations plus other stakeholders on implementation of the LEI. As requested, this could include comments on:

- identifiers used by financial institutions for legal entities established in their jurisdiction or in foreign jurisdictions, and the extent to which they are mapped to the LEI;
- awareness and adoption of the LEI in their jurisdiction, especially the existence or prospect of any market-driven or voluntary adoption of the LEI by market participants;
- types of private sector uses of the LEI (e.g. to implement risk management frameworks, support financial integrity, reduce operational risks, or support higher quality and more accurate financial data) as well as the benefits measured or anticipated from such uses (including any quantification of the benefits, to the extent possible);
- challenges and costs faced in acquiring and maintaining LEIs;
- **main obstacles faced by market participants to adoption and implementation of the LEI; and**
- **ways to promote further adoption of the LEI, including specific areas where increased LEI uses would be the most favorable from a cost-benefit perspective.**

We have chosen to focus our response on the last two items of the FSB's requested comments (highlighted above) in that it allows a critical assessment of the LEI initiative itself, rather than how to populate more LEIs. Our response includes comments on the ROCs and the GLEIFs activities to date, an important component of the continued success of the global LEI initiative. While these activities were specifically identified by the FSB to be left out of the FSB's survey and other activities associated with the thematic review we believe illuminating the totality of activities of the LEI initiative is critical to moving forward in meeting the FSB's financial stability objective.

## Overview of feedback

Segmenting the work of analyzing the global LEI initiative in the way the thematic review has been organized (regulators surveying financial institutions that they oversee, the ROC reviewing its own operational policies, and the GLEIF assessing its own systems and operations and that of its LOU partners) will not, in our opinion, assure a thorough understanding of the reasons preventing full adaption of the LEI.

Also, in requesting comments solely on its review of the LEI, the FSB has isolated its comments on the LEI from the other standards initiatives identified above. This approach only reinforces the continuation of a 'silo' approach to solving what is an integrated, enterprise-wide and global problem. Such silo-based thinking and resulting solutions has in the past led regulators and the financial industry to systems architectures wherein each silo is connected to another through a myriad of connections within the legacy concept of interoperability.

Interoperability has been the overriding architecture of financial systems and financial infrastructure for nearly seven decades. It is a legacy concept reinforced by regulators' acceptance of industry best practices which, by its very nature is backward looking. These best practices are reinforced by industry trade associations that are, again by its very nature, a mechanism to build consensus amongst its members, assuring a 'least common denominator' approach to responses to regulators consultations. That assures the prevalence of a legacy mindset, although not intended, as the operative mechanism in their guidance to regulators about data, operations, technology and infrastructure. To be sure, not all such trade associations are inhibited in this way and two stand out, the International Swaps and Derivatives Association and the Enterprise Data Management Council, perhaps because their members' activities have been the most vilified in this current round of regulations.

A grand scheme supporting further interoperability appears to be happening again. Literally hundreds of regulatory-enabled, costly intermediary operational entities, each formed to handle a single component of newly envisioned infrastructure while the global standards initiative and distributed technologies presents opportunities for redefinition of these intermediaries' roles. Not only is this burdening the financial industry with significant new costs it is also perpetuating the costly and risk-prone matching (mapping) concept associated with interoperability of proprietary data sets. The mapping concept is also prevalent across the many silo business units of financial enterprises, between these business units and their external software and data vendors, and amongst regulators. To this later point the GLEIF and the Data Coalition recently studied the number of different legal identities used in just one sovereign jurisdiction, the U.S., and found fifty (50) distinct manifestations of legal entity codes.

What is wrong with sustaining the mapping process that is the anchor of interoperability? Mapping requires matching different computer readable identity codes of products and entities and different definitions of data elements. These mapping (matching) processes use dictionaries, much like the process of translating speaking and written languages. These dictionaries (computerized tables) map each code and its associated definition that is used by systems at financial firms, or business silo within a firm, to each different code or definition used by a Financial Market Utility (FMU), a software or data vendor, or a regulator. There are literally hundreds of standardized and proprietary codes. If these tables were static, as language dictionaries are, it would not be much of a problem, except that the entries in the tables are always changing, and changing at different times within each firm, at each software and data vendor, at each regulator and, at times, incorrectly changing.

This mapping and interoperability model is still being embedded into regulators and the industry's digital long term future even though new technologies such as distributed ledgers, smart contracts, artificial intelligence and machine learning needs singular data standards to be effective. The replacement of the costly interoperability and mapping architecture of financial infrastructure, within financial enterprises and across financial enterprises, is in sight through the FSB's many global data standards initiatives. However, the framework for its replacement over time and the business case for it is nowhere in sight.

With distributed technologies and global data standards as an enabler, the interoperability model needs to be reviewed for replacement over time with the long sought after straight-through-processing (STP) model. The LEI is the first significant step toward that objective. A longer term planning effort leveraging the global data standards initiative should be initiated. The FSB, the G-SIBs and the systemically important FMUs need to be engaged to determine how to lower industry costs and enable financial stability. The BIS, as the standards setter for operational risk capital requirements, has a role to play as well and should be at the table.

### **Specific responses**

More specifics on the main obstacles faced by market participants to adoption and implementation of the LEI; and ways to promote further adoption of the LEI, including specific areas where increased LEI uses would be the most favorable from a cost-benefit perspective follows:

#### **Significant categories of financial market participants have yet to register or renew LEIs**

Missing segments of the universe of potential LEI registrants are significant - sovereign, municipal and provincial governments and corporate securities issuing entities. Also uncounted numbers of financial institutions and financial counterparties are left out by sovereign regulators who fail to compel acquiring a LEI or that promulgate statutes that ask entities only to use an LEI 'if readily available' or 'if entity already has one'. Of significance, there is no formal estimate for the total universe of LEIs that would need to be registered by financial participants. This is an area of exploration we assume will be covered through the Supervisors survey as part of this thematic review.

Lapsed LEIs, as of month-end August, stands at 198,719, which is 15.8% of the 1,260,541 registered LEIs as of that date. As the number of new LEIs registered increases the percent of lapsed LEIs (failure of a registrant to renew a LEI at its annual renewal date) has decreased from its high all-time highs of 30% the absolute number has slowly risen each month to new highs. Renewals of LEIs and particularly of those LEIs registered in the last quarter of 2017 which leapt to a monthly average of 127,281 from the 7,476 monthly average from the prior three quarters of 2017 is coming due for annual renewal in the last quarter of 2018. If lapsed LEI rates continue to increase it would be concerning owing to their ability to thwart proper funding of the LEI initiative and the potential to dilute the quality of reference data.

#### **Account consolidation principles for parent/ultimate parent is the beginning of a long, yet unspecified journey to translate this effort into meaningful hierarchies of risk and control.**

Hierarchical ownership information following accounting consolidation rules for financial statement reporting has been accepted by regulators as a first step toward aggregating financial data associated with the unique legal entity identifier.

If it is to be useful and accepted by industry members this hierarchical ownership information must be extrapolated into hierarchies for monitoring risk. Different configurations of LEI hierarchies will be critical to meet industry and regulatory objectives for aggregating data to accommodate common risk mitigation methods of systemic risk management; enterprise risk management; counterparty risk management; credit limit setting; market trading limit setting; concentration risk; stress parameter exposures; and other yet to be determined LEI hierarchies.

If this root hierarchical ownership information is not accurate it will be the Achilles heel in this bold initiative to use the LEI for aggregating financial transactions for risk management purposes.

Whether these reconfigurations of the hierarchies are to be left to each individual sovereign regulator and/or individual financial enterprise remains to be decided. However, without a standard for such other hierarchies the usefulness of the new data standards regime for systemic risk analysis will be put at risk if different aggregation techniques are allowed. The FSB should be sponsoring a framework consultation on development of acceptable universal hierarchies for systemic risk aggregation and embracing the Big 4 accounting firms to help in developing this framework.

One of the Big 4 accounting firms has been approved as a Registration Authority to register LEIs on behalf of the Swiss markets and operate the Swiss Legal Entity Identifier service as a LOU. Expanding the use of such a trusted professional organization to validate official source documents, provide timely awareness of corporate reorganizations and monitor renewals would be a major step in assuring high quality, timely updated LEI data.

A further role for the Big 4 would be to assure that the correct hierarchies of LEIs are entered into the GLEIS following the required financial statement account consolidation reporting rules. To this point the GLEIF reports that upwards of 70% of parent/ultimate parent information placed into the GLEIS by legal entity registrants through LOUs are not completely validated. Rather the data is recorded as registrants enter or report it. A trusted at-source 'second pair of eyes' would remedy this problem.

The Big 4 as Registration Agents can provide assurance of privacy both as a trusted advisor and through technical means. Such technical means could be as the keeper of private keys for authentication, and for assurances of approved redactions through encryption. As noted above this may be necessary to compel not-yet-participating legal entities; parents of legal entities not covered by financial regulations or resident in privacy jurisdictions; and parents of legal entities already issued an LEI to come forward.

### **The industry's collective action problem has now been transformed into regulator's collective action problem**

Originally thought of as the industry's collective action problem, regulators participation and collaboration is now the key to meaningful progress in so far as LEI adaption is concerned. The FSB, as the highest-level bully pulpit for regulatory initiatives, is seen as the solution to this collective action problem of regulators. Compelling regulation is the only way to assure every affected party commits to the long game to get global data standards done, or it will never get done.

Some U.S. legislators have declared America's sovereignty from the FSB's broad initiatives related to global financial regulatory standards, but not adhering to global data standards should be off the table. It is the most important set of global standards and should not be seen as threatening any sovereign country, or independent regulator that may have concerns of maintaining sovereignty over its financial institutions. When implemented it will allow regulators to see risks building up in their own jurisdictions and at global financial institutions.

For financial institutions, it will spur technology innovation through finally removing data translation and reconciliation processes that impose unnecessary operational risk, impede straight-through processing and adds significant costs to the global financial industry and to their own firms.

### **There is no global coordination at an operating level of all the silos of standards setters to see this effort through**

To implement such a fundamental rethink of data standards, the time is now to initiate a higher level government/private sector initiative, focused on the largest global financial institutions and their home country regulators. Representatives of every financial regulator (there are twelve of them) of the largest

bank financial institutions (there are 30 G-SIBs) and Systemically Important FMUs (there are eight such entities currently identified in the US) should sit around the same table and get on with this task in an organized, integrated way. That table should be sponsored by the Financial Stability Board (FSB) which has initiated global transparency standards and, most recently, promoted this review of the LEI initiative.

To accelerate the data standards agenda a capital reduction incentive can be offered. Regulators could reduce the banks' operational risk capital requirement, contingent on the G-SIBs' collective action to establish plans and agreements to implement common data standards throughout their own enterprises and to compel their clients and data vendors to communicate exclusively to them through use of these data standards. Like the giants of global commercial trade, the G-SIBs interact with almost all of the global supply chain participants in the financial industry.

G-SIBs can be offered a capital reduction incentive of as much as 20% for operational risk mitigation, such incentive already available through insurance or other risk transfer mechanisms, as originally proposed by the BIS in its Basel II mandate. It would seem reasonable to provide such an incentive to a data standards initiative as it is a means to eliminate operational risk, rather than just transfer it.

It would seem easier to have 12 regulators compel LEI adoption by 30 G-SIBs and 8 Systemically Important FMUs than to depend on upwards of 200 regulators, each at their own pace, some in privacy jurisdictions, to compel global adoption as is the case today.

### **The new technologies of distributed networked ledgers and smart contracts can only work effectively with data standards**

New technologies now available have attracted the attention of world regulators who are voicing interest in seeing themselves as nodes on a distributed ledger system storing financial transactions for regulatory reporting populated by financial firms. They are actively encouraging and funding pilot systems toward this objective.

In the US the Office of the Controller of the Currency (OCC) set out parameters to charter new forms of emerging technology driven banks (FinTech companies). The CFTC set the stage for studying technological game changing Distributed Ledger Technology (DLT) and Smart Contract technology by organizing a LabTech initiative. In the UK regulators have organized a regulatory 'sand box' to allow pilots of these and other new technologies. These initiatives are world-wide, embracing regulators such as those in Singapore, Hong Kong and Australia. Regulators believe that new technologies can revolutionize the oversight of the financial industry and dramatically reduce costs of industry infrastructure and individual firm's costs by automating manually intensive processes.

While it has been recognized that the benefit of DLT is maximized by the use of Smart Contracts it is less understood that the same data and process standards needed in financial systems applications is also needed in Smart Contracts. Smart Contracts are an amalgam of standardized data associated with a standardized transaction processing software application. A purchaser and seller, or payer and receiver, and their agents must agree on the details of the Smart Contract in advance as the representation of the data components of the financial transaction.

Smart Contracts cannot work efficiently if the transaction being transmitted in digital form is not the same investment/contract nor counterparty expected by the receiver. Solving this problem through an "off chain" solution (meaning to represent already validated data as an addressable node on the distributed ledger) is a stop gap solution. It is a way of perpetuating existing infrastructure that supports the cumbersome process of validating non-standard data through multiple mappings across multiple silo business structures. A better

solution to this problem is to store and update a single secure copy of standard contract and product data elements and identity codes addressable as DLT nodes for all to use in creating financial transactions. Such investment and contract data is already captured in the EU through its Financial Information Reference Data System (FIRDS). Financial market participant data is already captured in the GLEIS.

It should be noted that while DLT and Smart Contracts are the buzz words of the day, these techniques of distributed networked ledgers and objects containing data and process (Smart Contracts) have been available and in use for a decade or more. Also identity and product identifiers and their associated reference data, and catalogues of critical data elements and their definitions has been available for decades. What is truly different today is the global effort underway by the FSB and amongst EU, UK, US and other regulators to standardize data on a universal level, thus enabling the technology to be effective across multiple implementations. This then ensures the realization of implementation economies of scale.

### **STP is facilitated through adaption of data standards**

STP, described as the means to completely automate the lifecycle of a financial transaction, has been the unfulfilled vision of the financial services industry for decades. Without computers knowing the precise digital fingerprint of a financial transaction, too many automated processes fail, manual reconciliation processes intervene, delays in payment occurs, risk is increased and the STP vision remains unfulfilled. Regulators, faced with aggregating all this non-conforming data cannot see that which they are mandated to oversee.

Straight-through-processing for the financial services industry had long been viewed from the perspective of the life-cycle of financial transactions – creating machine readable prospectuses, financial product contracts and entity formation templates and documents; automating corporate event reporting at source; developing standardized universal product, customer, counterparty and financial participant identifiers and associated referential information; creating standards for transaction and market information for trading, settlement, payment, custody and bookkeeping; creating standards for client and counterparty interactive messaging, confirmation and statement processing; and, finally, standards for financial and regulatory reporting.

STP has never been realized, due in part to delays caused by the mapping and reconciliation process. These delays are built in to the myriad of interconnected networks that make up the global financial industry's technology and communications ecosystem. Throughout the ecosystem it is necessary to reconcile a financial market participant's identity and the transactions' data elements at each intermediate data handoff point operated by FMUs and throughout vulnerable legacy systems at its end receiving points, at financial institutions and at regulators. In contrast, the vision for DLT is a single ledger used by all in the financial supply chain; the use of cryptography where appropriate for common yet anonymous identity management; and mathematical computations for confirming the validity of a transaction.

Now new to the discussion of STP is a focus on STP for regulatory reporting. This is unlike XBRL's wide acceptance for a myriad of financial account statement reporting requirements where documents have been translated into machine readable taxonomies. This regulatory STP focuses is on the requirements for granular financial transaction information to be reported to regulators. Initiated by the RegTech council, a global forum for regulators, regulated firms and technology firms, the council's initial focus is on making regulators' rules machine readable. This would allow financial institutions to access and unpack legally written documents into meaningful technology language. This can then be made to correspond to operational impacts and, ultimately, to financial transactions that flow from these operational areas into regulatory transaction reporting.

## **Cost savings from implementing identification standards and harmonized data components across the infrastructure of finance is in the US \$250 billion range—a cost saving study is necessary**

IT and operations expenditure in capital markets is currently close to US\$100-150 billion per year among banks. On top of that, post-trade and securities servicing fees are in the region of US \$100 billion.<sup>1</sup> By largely eliminating the reconciliation of the non-standard data found in data bases that exist across business silos and third-party institutions some significant part of these costs can be recaptured and brought to the bottom line. Another estimate describes full standardization of data in wholesale and corporate banking could achieve cost savings in the region of US \$250 billion per annum<sup>2</sup>.

In other estimates, that of large financial institutions annual costs for data management, detailed spending categories that could be eliminated through data standards was estimated at US \$2 billion per firm.<sup>3</sup> With 134 domestic and global systematically important financial institutions, the industry cost savings estimate at US \$268 billion is in the same range of these other estimates. Finally, still another estimate is of an annual spend of US \$4 billion per large financial institution for increased compliance costs associated with new regulations.<sup>4</sup> Some large part of this expenditure is surely associated with data and the technology associated with data management.

Obviously a more definitive estimate of a cost savings business case is in order. The FSB would be a natural party to suggest the G-SIBs offer up their own costs anonymously. To this end the FSB should cause to be developed a framework consultation where a cost template identifying cost saving areas impacted from data standardization would be developed.

### **Almost all the data elements found in financial transactions are subject to standardization**

Most financial transactions are populated with previously identified and validated data available in stored data bases prior to being organized in a financial transaction. Only variable data such as price, quantity, time, rate, day convention, par or notional value are populated as first time data elements at transaction origination time. Collectively, these data are referred to as Critical Data Elements (CDEs). Most have already been identified, categorized and standardized through FSB's data standards initiatives and similar efforts of the EU regulators.

The identity and reference data components of financial transactions are the financial material that are used in different configurations to represent different products, and aligned to represent different market participants acting in different capacities across the financial supply chain. Financial transactions can thus be thought of as an assemblage of these identifiers and data elements to uniquely identify the transaction as a specific product bought or used by a specific business entity. It is analogous to assembling specific

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<sup>1</sup> Euroclear (2016) 'Blockchain in capital markets —

The prize and the journey', Oliver Wyman, February, available at: <http://www.oliverwyman.com/content/dam/oliverwyman/global/en/2016/feb/BlockChain-In-Capital-Markets.pdf>, p. 20 (accessed 20th September, 2018).

<sup>2</sup> Chan, K. K. and Milne, A. (2013), 'The global legal entity identifier system: Will it deliver?' 12th August, available at: <https://ssrn.com/abstract=2325889>, p. 32 (accessed 20th September, 2018).

<sup>3</sup> Grody, A. D., Hughes, P. J. and Reiningger, D. (2015) 'Final report on global identification standards for counterparties and other financial market participants', Journal of Risk Management in Financial Institutions — Special Issue on Counterparty Risk, Vol. 5, No. 2, available at: <https://ssrn.com/abstract=2016874> p. 62, (accessed 20th September, 2018).

<sup>4</sup> White & Case (2016) 'RegTech rising: Automating regulation for financial institutions', available at: <http://www.whitecase.com/sites/whitecase/files/files/download/publications/RegTech-thought-leadership.pdf>, p. 1 (accessed 20<sup>th</sup> September, 2018).

component items of a commercial product and designating its manufacturer. The difference is that the commercial product is tangible and visible, the financial transaction is completely digital.

Groupings of interrelated market-specific interactors, usually grouped by trading market, country or product, have settled on a minimum set of standard identifiers - product data sets, reference data variations and communications protocols that they collectively accede to. However, there are no global standards of this type to operate within a global financial system. This limitation inhibits the timely flow of financial transactions via computerized means between financial counterparties, across the financial supply chain, and to regulators. It complicates the aggregation of financial transactions for performance and risk management of a single enterprise and makes it nearly impossible in any timely way to aggregate transaction data across multiple financial enterprises for systemic risk analysis.

As can be seen the LEI is but one of many components of a financial transaction that is necessary to be standardized in order to fulfill the FSB's mandate from the G20 of global adoption of the LEI to support authorities and market participants in identifying and managing financial risks. Starting here, with this review of the LEI project, the FSB should now lay out the next phase framework for playing the long game necessary to identify and manage financial risk.

### **RegTech and FinTech needs DataTech**

The technology of the future that is thought capable of revolutionizing financial institutions and its regulators is already here. It is oversimplified in the descriptive words FinTech (Financial technology) and RegTech (Regulatory technology). But without the underlying platform of standardized, quality data (DataTech) very little of the significant long term benefit of risk mitigation and cost savings will be realized from this new technology. Without DataTech, FinTech and RegTech will only add other layers of technology to the already complicated interconnected infrastructure of finance.

One need only look to the evolution of the Internet with its revolutionary concepts of distributed communication that fundamentally changed how the world and its financial institutions communicate. Similarly DLT is promising to fundamentally change how financial institutions store and report information, but only if it can become a common good as with the Internet.

The Internet's early value proposition was a standard machine communications protocol for reaching other networked computers and unique and standardized domain and email identities for the businesses and people connected to the Internet through these computers. However, the adherents to the new technology of DLT are focused on standards for communications, interoperability and permissioning protocols, less on unique identity. Without unique identities, both for transacting entities and investment or contract identities, assuring what is conveyed through DLT networks and by whom will be thwarted.

Without identity and product standards industry members will continue to build point solutions for single assets or single functions, adding to the complexity of interoperability and transaction matching. This is exactly the situation we now have with the complex infrastructure (the plumbing) of finance where hundreds of financial market utilities and thousands of silo based business units reconcile multiple identities of the same entities and products in order to support interoperability.