

A DIGITAL TRANSFORMATION BRIEF: BUSINESS REPORTING IN THE FOURTH INDUSTRIAL REVOLUTION



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FOREWORD

IMA® (Institute of Management Accountants) is a global association that has been an innovator and first mover in the world of nonfinancial performance measures, digital technologies, and “data”—governance, analytics, and delivery. IMA is a co-founder of the XBRL (eXtensible Business Reporting Language) standard, a founder of the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and an active voting member of the International Federation of Accountants (IFAC) and the International Integrated Reporting Council (IIRC). As a former CFO of a major telecom and now CEO of a global organization, I strongly support the call to action and sense of urgency in this paper to use open data standards, taxonomies, digital delivery technologies, and guidance to enable more connected and less fragmented reporting. These technologies can modernize corporate reporting by eliminating inefficient, inconsistent formatting and streamline the most informative data from source to user. Nothing less than more actionable, relevant, and trustworthy data is at stake to enrich ethically sound individuals, organizations, capital markets, and society at large. •

Jeffrey C. Thomson, CMA, CSCA, CAE

President and CEO, IMA



FOREWORD

This paper calls for a data revolution!

Climate change is transforming the way in which citizens, consumers, investors, regulators, and other stakeholders expect companies to report. No longer are financial reports considered sufficient. Nonfinancial or prefinancial information is now recognized as imperative to more broadly assess value formation and inform stakeholders. At the same time, digitalization—the Fourth Industrial Revolution—has transformed and continues to transform global markets. The intersection of these disruptions will substantially change the way corporate reporting addresses the value paradigm required in the 21st Century.

A plethora of measurement methods and standards has emerged to measure nonfinancial data. Some methods are aligned, some fragmented, and some contradictory. A great deal of work is being done to address this, such as the Corporate Reporting Dialogue’s Better Alignment Project. Under the auspices of the International Integrated Reporting Council, it has made significant progress in defining alignment.

While alignment is vitally important, it needs to be supplemented with 21st Century technology to fully enable the efficiencies, clarity, and certainty necessary to rebuild trust in global markets and market participants, and to address the challenges of the emerging technological disruptions and climate change.

Developments in machine learning, for example, will transform reporting, oversight, auditing, and monitoring systems. That will improve accessibility, clarity, measurement, and quality, thereby facilitating comparability and enabling the liberation of data currently locked in siloed reports, formats, and platforms.

This paper outlines the data revolution needed to provide trustworthy, auditable, accessible, and

machine-readable information that is automatically updated using open data standards (such as XBRL or eXtensible Business Reporting Language) and the creation of a global taxonomy registry and an open taxonomy innovation platform.

One possible addition could be the creation of a global technology-based matching engine to match funders and researchers in the important area of data analytics, which could supplement the initiatives outlined in this paper.

These developments, along with alignment, will enhance the measurement of value creation and enable business model sustainability comparisons, which are currently difficult to achieve. It will facilitate auditability of nonfinancial information and therefore enhance and facilitate the adoption of integrated reporting globally.

This paper outlines impacts and opportunities for sustainability practitioners, accounting professionals, regulators, investors, and other users of corporate reporting. The accounting and compliance professionals who master the critical data in internal and external reports that drive the business will be invaluable in the Fourth Industrial Revolution.

This important paper is an exciting solutions-based contribution to the discussion on how the much-needed data revolution could be achieved. •

Jane Diplock, AO (Officer of the Order of Australia)

Chair, Governance and Nominations Committee,
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EXECUTIVE SUMMARY

Every organization wants and expects a clean bill of health in their corporate compliance and reporting.

The World Economic Forum has asserted that we are entering the “Fourth Industrial Revolution,” as emerging technologies and unprecedented connectivity blur the boundaries between people and the digital and physical worlds.¹

At the heart of this digital transformation for finance and accounting teams is the potential for information technology and open data standards to reduce lags and latencies in business reporting and compliance processes. Data standards, such as the XBRL (eXtensible Business Reporting Language) standard, and innovations such as blockchain, cloud computing, and natural language processing can increase efficiency,

underpin new competitive opportunities, and, notably, ensure auditable data, readying entities for the Fourth Industrial Revolution.

Regulated entities, wherever they are in the world, have been subject to an increasing amount of fragmented regulatory regime changes, legislation, reviews, and queries. The ramifications of failing to satisfy the reporting demands of regulators are costly: penalties, undesirable news coverage, the cloud of operating under an MRIA (Matter Requiring Immediate Attention), or, in some cases, suspension of operating licenses.

The fragmented and divergent regulatory ecosystem is a core challenge often associated with material compliance risks and costs. The last decade has seen local regulators around the world ask for more information and toughen compliance



¹ Klaus Schwab, “The Fourth Industrial Revolution: what it means, how to respond,” World Economic Forum, January 14, 2016, www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.

requirements for filing entities. This shift demands a tech- and data-driven approach for monitoring activities, with machine-readable data and the power of computer algorithms to run checks, keep records, and systemize processes.

The U.S. Securities & Exchange Commission (SEC) has stated that on any given day, as much as 85% of the documents and XBRL data visited in the SEC’s Electronic Data Gathering, Analysis, and Retrieval system (EDGAR) is done so by bots. Technologies and computing have dramatically increased processing speeds and volumes of information sent between entities and regulators. The acceleration of analysis of critical data provides substantial economies of scale and competitive advantages.

The International Federation of Accountants (IFAC) estimates fragmented regulations cost the financial industry sector alone \$780 billion annually.² IDC has predicted that worldwide data will grow 61% per year, from 33 zettabytes to 175 zettabytes by 2025.³ In another recent study, IBM estimated annual costs incurred from low-quality data in the United States alone in 2016 reached \$3.1 trillion. These staggering numbers highlight the critical need for accounting and compliance professionals and processes to transform in order to overcome these challenges—and do so fast.

Accounting and compliance will remain relevant

in this new age only if we connect the data dots so that critical financial, nonfinancial, and other emerging forms of external reporting (EER) are collectively accurate, auditable, complete, consistent, and fit for purpose.

Given the pressures of managing a multitude of regulations coupled with the risk of material fines and the growing cost of managing it all, the costs and risks of compliance and reporting are real.

Over the past 18 months, Workiva, provider of the world’s leading connected reporting and compliance platform, conducted an in-depth United Kingdom banking entity research study to better understand the challenges faced by regulated entities in the areas of risk, cost and resource management, efficiency, compliance, and reporting-yielded results universally relevant to all industries. The banking study involved assessment of all major statutory reporting platforms, forms, and the regulatory compliance ecosystem. The insights gleaned around compliance practice commonalities and recurring issues faced by entities across different sectors and geographies highlighted potential optimization opportunities across the end-to-end compliance process to achieve a holistic and integrated outcome.

One message is clear: Forward-thinking accounting and compliance professionals will implement solutions where mundane repetitive tasks, such as data entry that is standardized and of low-level complexity, will be automated. The automation will allow these professionals to focus on value-added business activities such as strategic business support and growth. Providing better data for statutory reporting and compliance is a shared commitment that calls for a collaborative data revolution.

In this paper, we make a bold statement that the accounting and compliance professionals who master the critical data in internal and external reports that drive the business will be invaluable in the Fourth Industrial Revolution. •



² “Fragmented Financial Regulation: A \$780 Billion Tax on the Global Economy,” IFAC, April 11, 2018, www.ifac.org/knowledge-gateway/contributing-global-economy/discussion/fragmented-financial-regulation-780-billion.

³ David Reinsel, John Gantz, and John Rydning, *The Digitization of the World From Edge to Core*, IDC, November 2018, www.seagate.com/files/www-content/our-story/trends/files/idc-seagate-dataage-whitepaper.pdf.

INTRODUCTION

Government agencies and regulatory authorities are under increasing pressure to reduce the costs of compliance, both to create economic conditions for business growth and capital allocation and to reduce operating expenses that are typically funded by treasury departments that must do more with less.

In regulatory and statutory reporting, only two moments really matter: the moment of data creation and the moment a piece of data is used. The technological processes around these two moments are referred to as “RegTech” for regulatory technology and “SupTech” for supervisory technology. More specifically, RegTech means the enhanced management of regulatory reporting and compliance processes through technology. Following this definition, the term “RegData” refers to the individual data points that an entity submits to a regulatory agency to comply with disclosure requirements. SupTech means tech-enabled supervision, review of inspections, and data analysis by regulatory agencies.

As noted by the *OECD Regulatory Compliance Cost Assessment Guidance*,

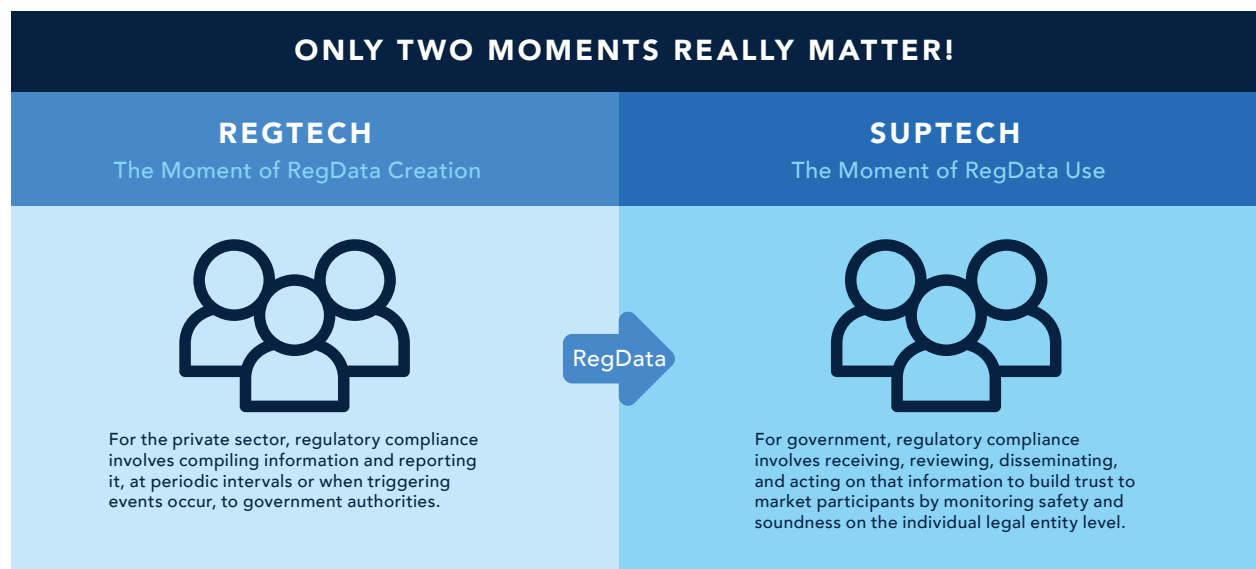
compliance costs are incurred by both regulatory authorities and regulated entities.⁴

Regulatory authorities incur costs for publishing, administering, monitoring, and enforcing regulations, including the costs of:

- Developing and implementing licensing or registration systems.
- Assessing and approving applications.
- Processing renewals.
- Implementing inspection or auditing systems.
- Implementing systems for sanctions for noncompliance.

Meanwhile, regulated entities incur costs to comply with regulatory and information obligations, defined as obligations to provide statutory information and data to regulators or designated third parties, or to have information readily available for inspection or supply upon request by a regulatory examiner. Additionally, many regulated entities must retain unique capabilities to satisfy obligations for a multitude of regulatory formats and bodies.

This fragmented and divergent regulatory ecosystem is a core issue associated with existing compliance and statutory reporting costs and risks. •



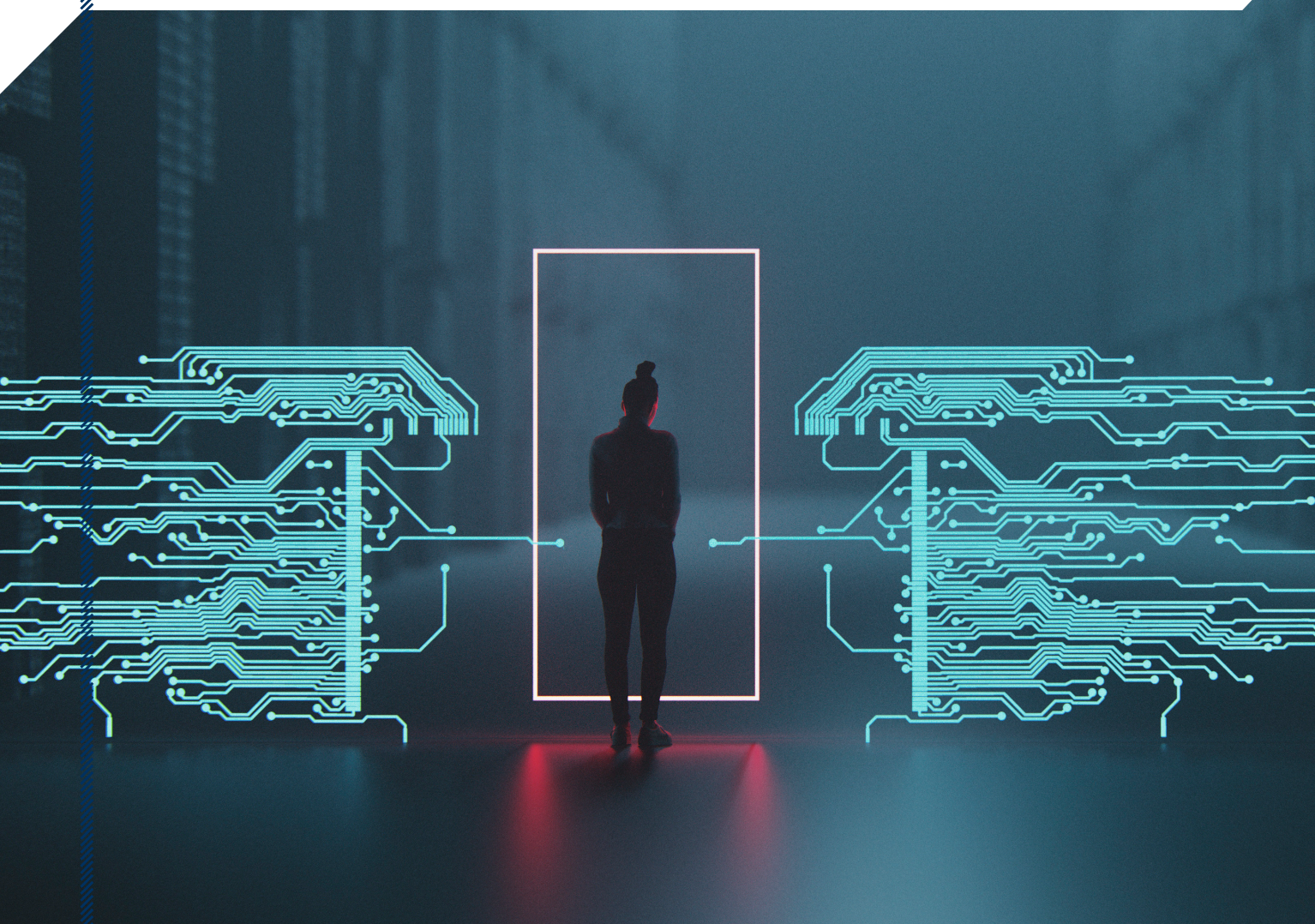
⁴ OECD, *OECD Regulatory Compliance Cost Assessment Guidance*, 2014, www.oecd.org/gov/regulatory-policy/compliance-costs.htm.

Fragmentation and Divergence Challenges

The purpose of this paper is not to exhaustively address the spectrum of issues and solutions for easing these fragmentation and divergence issues. It identifies key issues with an intent of stimulating dialogue between regulators, standard setters, regulated entities, preparers, multilateral organizations, accounting bodies, and other stakeholders across a specific regulatory ecosystem to collaborate in establishing best practices, value-

enhancing goals, and a path for shaping the future of the statutory reporting and compliance ecosystem.

In a recent in-depth research study designed to understand the key challenges for regulated entities and gain a holistic view of their compliance, reporting, and monitoring requirements, Workiva uncovered the real challenges a regulated entity faces while satisfying regulatory reporting and disclosure requirements. •



Research Study Overview

Workiva conducted a comprehensive in-depth study of a compliance microsystem, namely the banking sector of the United Kingdom (U.K.). It involved compiling, documenting, and assessing all major regulated data (RegData) submissions platforms and forms within the U.K. banking sector compliance framework. The study highlighted the nuances of all elements and interactions across various stakeholders for banks in the U.K. in satisfying regulatory compliance.

U.K. banks report to at least 10 regulators via 14 submissions platforms, and information is

spread across more than 300 forms using at least seven data formats and more than six modes of submission with differing periodicity and frequency (see Figure 1). This starts to shed light on the level of complexity and the variables involved with the regulatory and compliance framework. With these outcomes, the impetus to transition to a cohesive and simplified compliance ecosystem is apparent.

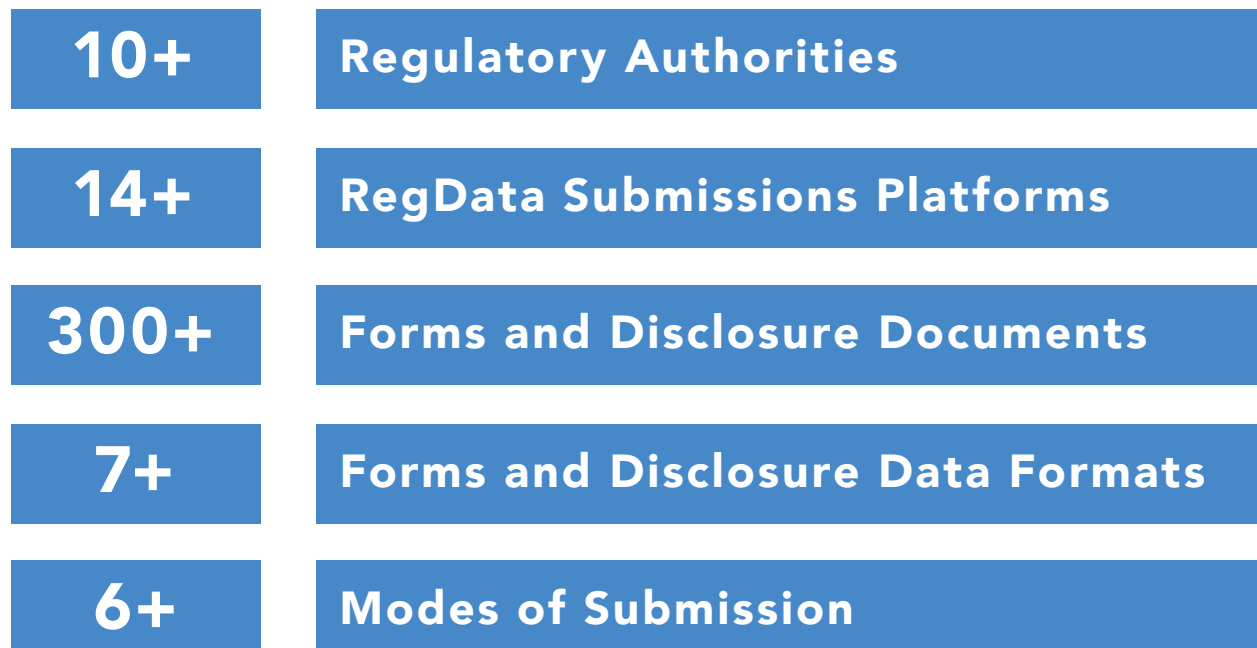
The key fragmentation issues in statutory reporting in the RegData ecosystem are outlined in the following pages. They are the main

challenges to accounting and compliance professionals in the Fourth Industrial Revolution.

RegData ecosystem fragmentation

The RegData ecosystem is fragmented at various levels and variables, including data formats, modes of submission, data definitions for certain common elements, business rules, access controls, and validations for similar reporting elements across different forms and regulators. We have classified the fragmentation under six headings.

FIGURE 1: THE U.K. BANKING SECTOR COMPLIANCE FRAMEWORK BY THE NUMBERS



1 REGDATA PROCESS

We all know that output from one system is input into another system. The flows and interfaces between input, throughput, and output across various systems are not aligned and often require manual intervention to ensure that the output of one system is reprocessed in the necessary format to be validated for submission to the next system (see Figure 2). It is further connected to multiple output reports, where the need to ensure a single source of truth is

essential. For example, the data from a regulated entity’s enterprise resource planning (ERP) software needs to be compiled and repackaged in order to meet a regulator’s “form” and “data format” requirements for filing submissions.

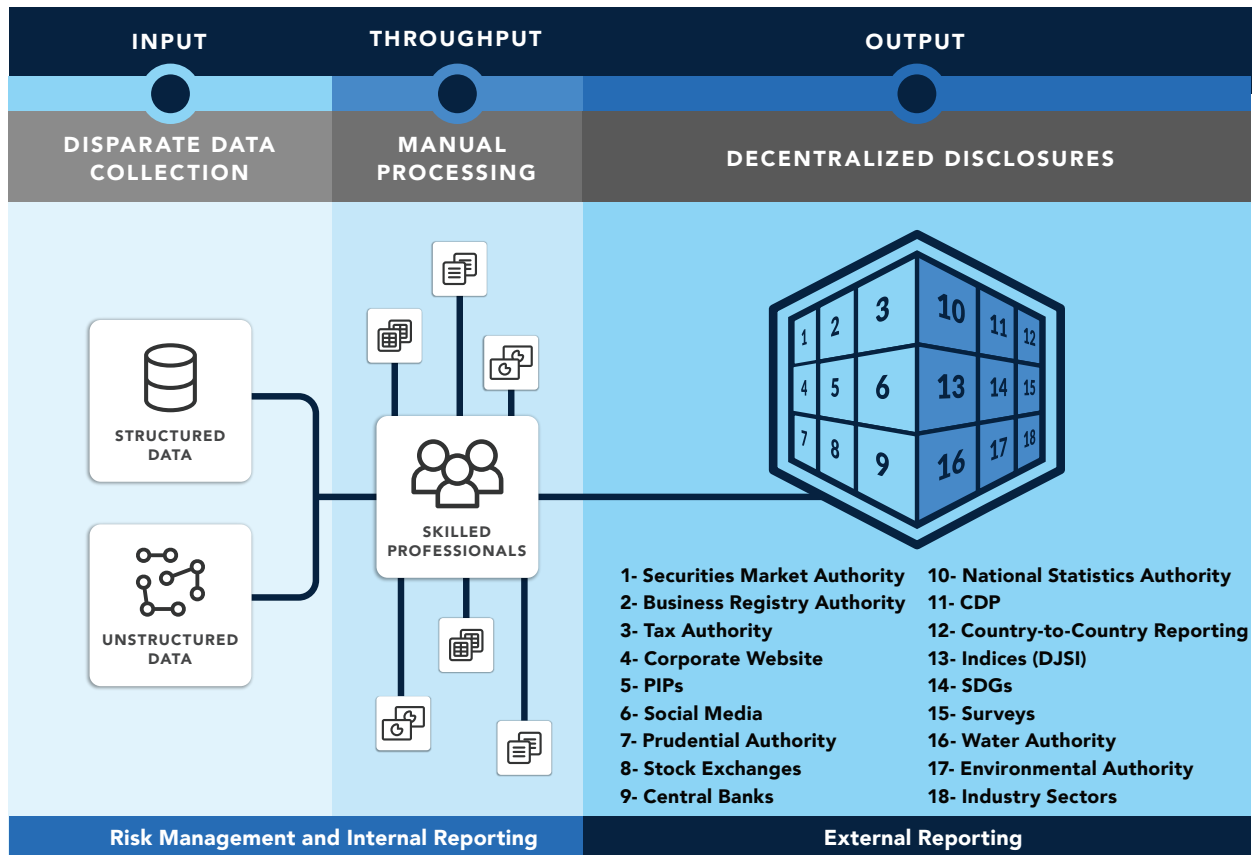
Seamless integration between these internal and external interfaces depends on codified standards for data generation, validation, and sharing.

2 DATA TYPES

This is the most common

area of fragmentation. Data held in an ERP system consists of one type, which often must be converted into a different type in order to be transmitted into another system. Different regulators require the same information in their specific formats or data types. Surprisingly, some individual regulators call for the same information in different forms and in different data formats. The assembling, dismantling, and repackaging of data in the required format can cause compliance issues

FIGURE 2: REGULATORY REPORTING AND COMPLIANCE FRAGMENTED ECOSYSTEM



and unintentional information errors when filing.

Adoption of common codified standards for machine-readable data creation and exchange across all stakeholders within the compliance ecosystem will result in a giant leap toward coherence in the RegData flow.

3 STANDARDS AND SUPPORTING DOCUMENTS

Regulators adopt unique standards, data definitions, and business validation rules for similar RegData elements. A lack of cohesion in standards across regulators results in higher entity and regulatory costs in terms of time and resources. It also weakens auditability of information disseminated to a multitude of regulators and increases risks due to increased subjectivity, differences in interpretations, misinformation, and inadvertent partial compliance or noncompliance.

The solution requires a collaborative multi-stakeholder approach with regulators, governments, regulated entities, accounting bodies, software vendors, advisory firms, data aggregators, and accounting and compliance professionals to establish global, uniform, and harmonious principles and rules for data processing and information exchange, underpinned by a strong governance framework.

4 TECHNICAL STANDARDS

Different regulators have different access controls,

validation rules, and data format specifications. These differences increase the complexity within a compliance ecosystem.

Standardization and harmonization of technical standards will smooth how data sets flow across stakeholders and provide further assurance on the accuracy and reliability of the data.

5 SUBMISSION MODES

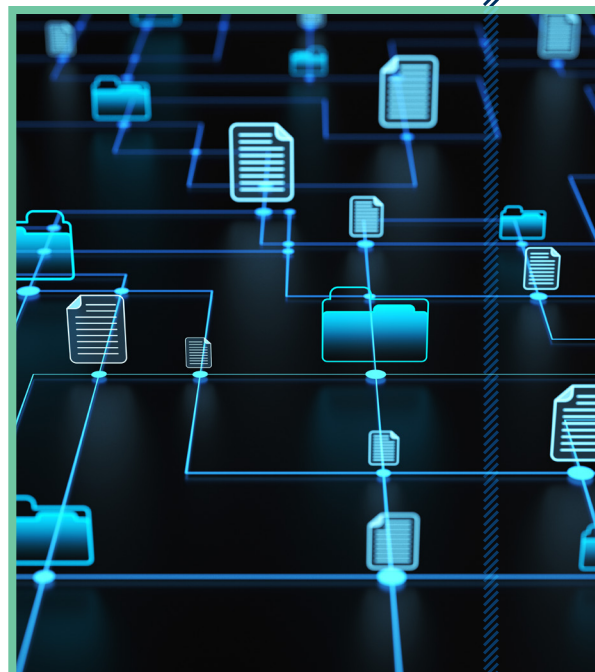
The modes of regulatory information submission differ for different forms and types of information. This creates additional hurdles both in creating standardized last-mile reporting validation rules and in creating seamless integration across internal and external systems.

A unified platform or repository for submission of information by regulated entities and for the subsequent collection of information by regulators, investors, and other stakeholders will make the RegData flows more robust and reliable.

6 DATA DEFINITIONS

Data definition fragmentation is more prevalent when reporting the same information to multiple regulators. The fragmentation occurs from the lack of clarity in communication and the lack of a single set of standards and definitions across multiple regulators. It is not uncommon to find differences in interpretation of the definition of various data

elements among regulators. This naturally lends itself to an increased risk of misstatement and miscommunication and a corresponding increase in regulated entities' compliance costs for having to maintain multiple variants of the same



data items (from entities having to validate each time they submit to the various regulators).

Collaborative communication, harmonization of standards and data definitions, and submission of information to a single repository would reduce fragmentation issues due to data definitions.

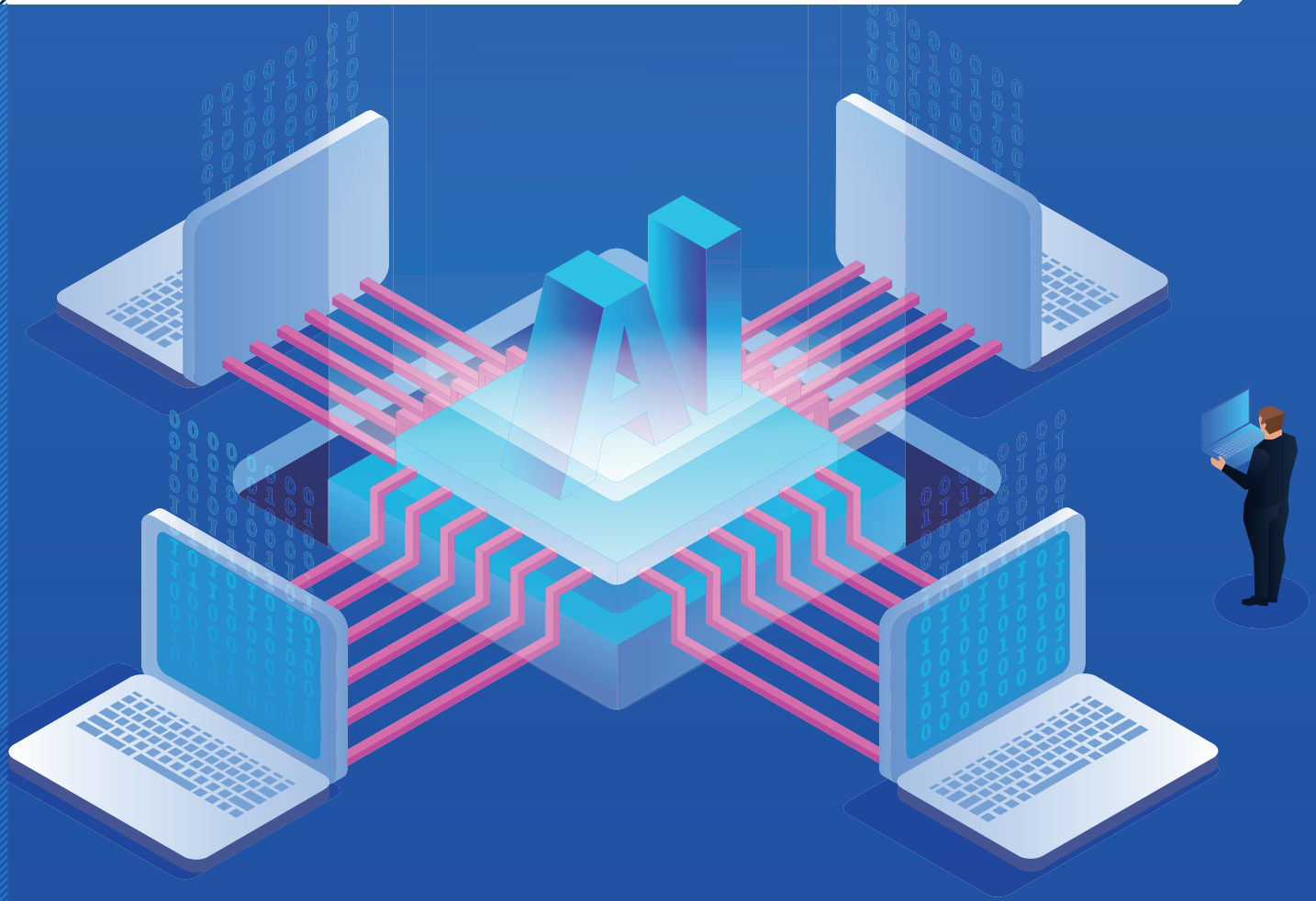
The aforementioned fragmentation challenges increase the need to rely on machine-readable data systems for compliance. Efficient compliance requires digital transformation and adoption of both RegTech and SupTech. •

The Need for a RegData Revolution

At the heart of the Fourth Industrial Revolution, in this paper's context, is the need to ignite the next generation of RegTech and SupTech innovations—machine learning as a path toward true artificial intelligence (AI). AI will enable quantum improvement for an entity's reporting process as well as transform regulatory monitoring systems to attain wider coverage and achieve higher quality. To do this, we

need auditable data—and lots of it. Presently, data is often closely coupled to specific applications. Keeping data for emerging forms of external reporting (EER) locked in static software platforms is no longer sustainable.

A recent study by the European Commission Directorate-General for Financial Stability, Financial Services and Capital Markets Union (DG FISMA) showed that the main compliance cost contributors



are fragmented requirements (see Figure 3).

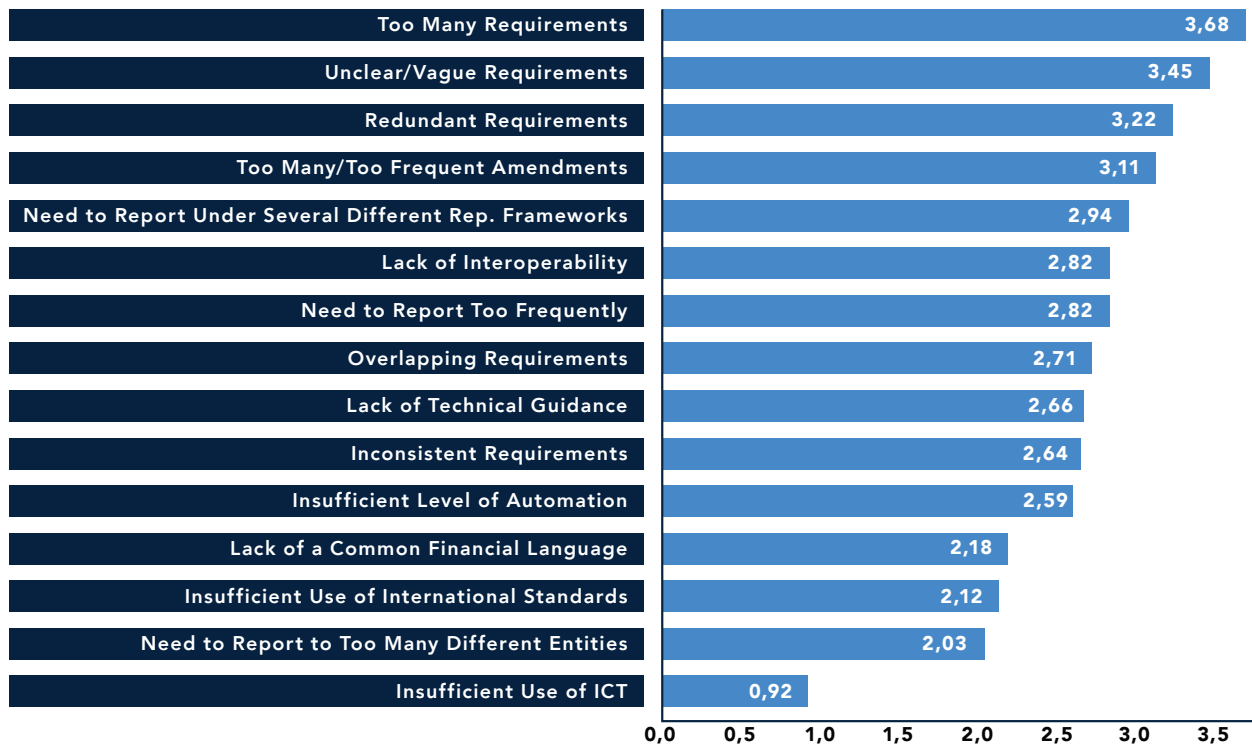
The number of reporting requirements and frameworks, and an insufficient level of automation are among key fragmentation issues, leading to fragmented data sources and formats. The recording and reporting of assets including cash and property have grounded commerce since ancient times. Data recording has seen the likes of clay tablets, papyrus, vellum, paper, and bytes. The most notable innovation during the centuries of recordkeeping is computerization, which transferred the recording process from paper to bytes.

The evolution of regulatory reporting includes moving from paper-based hard copies and PDF versions with limited interactive features to

digital publications with simulated page turning, web-based collections of information, and digital downloads of report sections. The wide range of formats directly influences stakeholders' ability to locate, extract, and analyze information necessary for decision making.

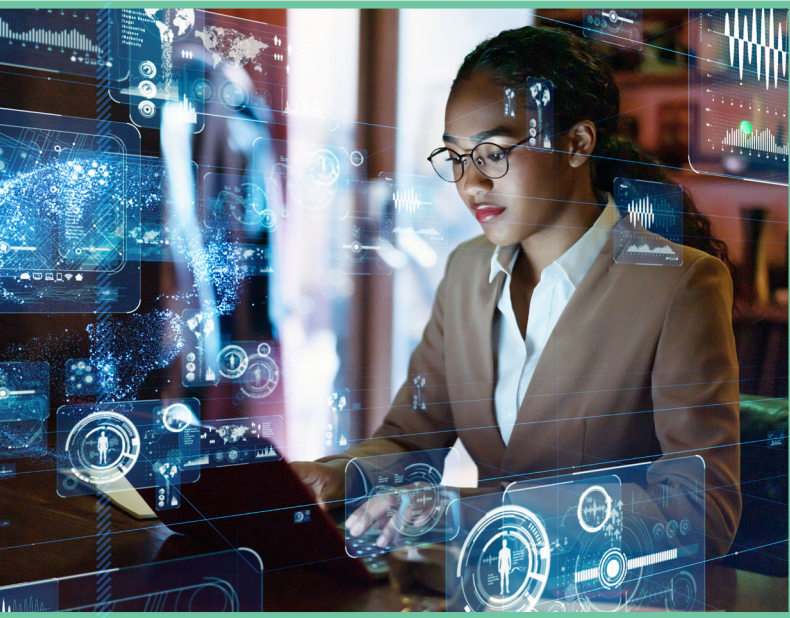
In 1978, VisiCalc introduced the first spreadsheet allowing accountants to transition from paper-based ledgers to digital ledgers.⁵ In the early 1990s, few had heard of the internet let alone had an inkling of the disruption it would bring to the accounting profession. Technology is increasing the speed and dynamic nature of the accounting and compliance profession, fundamentally changing the way we store, create, and submit RegData.

FIGURE 3: COMPLIANCE COST CONTRIBUTORS



Source: European Commission, "REFIT--making EU law simpler and less costly," 2012, ec.europa.eu/info/law/law-making-process/evaluating-and-improving-existing-laws/refit-making-eu-law-simpler-and-less-costly_en.

⁵ Christopher Mims, "40 Years Later, Lessons From the Rise and Quick Decline of the First 'Killer App'," *The Wall Street Journal*, July 13, 2019, www.wsj.com/articles/40-years-later-lessons-from-the-rise-and-quick-decline-of-the-first-killer-app-11562990402.



interpretation by regulators, investors, or other stakeholders.

Regulated entities, governments, and regulatory authorities are increasingly beginning to recognize the need to discard information processing and reporting ways of the past. They are seeing the need to leave behind inflexible paper-based documents or proprietary digital data formats and embrace open data standards, such as the XBRL (eXtensible Business Reporting Language) standard and those set by SDMX (Statistical Data and Metadata eXchange). The benefits of such a move include streamlining regulatory reporting requirements to not only reduce the burden on industry but also ease the administrative and compliance oversight for regulators and ensure greater transparency, as detailed by The Center for Open Data Enterprise in its *Open Data Transition Report*.⁶

This new breed of reporting is poised to disrupt information production from both an information technology and a data governance perspective. The shared commitment for better data for statutory reporting and compliance calls for a collaborative data revolution. •

Paper documents, HTML reports, and PDF files require manual information extraction and data entry into software for users' decision-making needs—a time-consuming, error-prone, inefficient, and costly process. Contrast that with machine-readable RegData, which is easily and quickly consumed by software tools and search engines, freeing time for value-added analysis and

Technology is **fundamentally changing** the way data is created and stored

Automation and efficiency

1980s — 1990s — 2000s — 2010s — 2020

Desktop computing

ERP becomes data backbone

Business intelligence

Big Data and cloud computing

Automation and modernization

⁶ The Center for Open Data Enterprise, *Open Data Transition Report*, October 2016, reports.opendataenterprise.org/transition-report.pdf.

The Aim of the Data Revolution

At its most basic, the aim is trustworthy, auditable, accessible, and machine-readable information that is relevant to user groups, timely, and automatically updated. This transformation depends on strong coherent data governance around all business reporting data and compliance frameworks.

The accounting and compliance professions, in both the private and public sector, will need to continuously reinvent their business reporting

processes and oversight functions with connected technology at the core. Failing to do so will result in some watching from the sidelines as the profession is disrupted by individuals, organizations, and regulatory authorities proficient with digital transformation innovations. The drivers for change will come from three groups: (1) regulatory authorities; (2) accounting and compliance professionals; and (3) standard setters and policy makers.



Are regulatory authorities ready for the data revolution?

Regulators around the world are demanding greater use of structured, open-source (nonproprietary), and machine-readable data in company reporting. For example, the U.S. Securities & Exchange Commission requires public companies to include XBRL “structured financial data” in annual and quarterly reports, allowing investors to automate extraction of the entity’s filed information in current and prior years, as well as information from other companies or industry averages.

The XBRL format is the international open-source, royalty-free data standard designed specifically for digital reporting of financial, nonfinancial, performance, or other EER and compliance information. The XBRL format provides a unique, machine-readable tag for individual disclosures within statutory reports.

Another extended example of the XBRL mandate is shown with the Japan Financial Services Agency (JFSA). JFSA has established an ambitious plan to put SupTech to use in improving the sophistication and efficiency of its supervision activities.⁷ The agency wants



to use innovative digital initiatives to improve information collection, accumulation, and analysis, and reduce duplicative work.

For example, there are current overlaps between the information collected by the Bank of Japan and JFSA. A secure, standardized system for sharing this data would improve efficiency for all stakeholder groups. How is JFSA planning to do this?

To achieve the desired transformation, JFSA plans to better use granular structured XBRL data by collecting and sharing certain detailed data between regulated institutions and their supervisors. The goal is to facilitate a more data-driven approach to regulation that positively impacts the Japanese economy.

Additionally, JFSA plans to introduce robotic process automation (RPA) to replace a range of arduous data sorting, aggregation, and analysis tasks undertaken manually by examiners. RPA is perhaps both the most innovative and the most challenging proposal put forward by a global regulator for the management of granular structured data collection. It is an ambitious plan to enable efficient, integrated, and in-depth financial regulatory monitoring.

Other securities regulators, stock exchanges, business registries, and taxing authorities

READY OR NOT: REGULATORY AUTHORITIES

The pace of change in this industrial revolution requires that a regulator quickly spot risks, identify emerging market trends, and understand how emerging financial products and evolving market conditions are affecting investors and the economy within and outside their borders. This need to proactively sharpen regulatory analysis and foresight requires a data revolution. Tweaking the edges is no longer an option.

⁷ Japan Financial Services Agency, *Status of digitalization efforts in financial monitoring*, June 2019, www.fsa.go.jp/en/news/2019/20190703_joubun/01.pdf.

(including Australia, Brazil, Canada, China, Denmark, Finland, Germany, India, Israel, Japan, the Netherlands, Singapore, South Korea, Spain, and the U.K.) already require XBRL filings. In addition, the European Securities and Markets Authority (ESMA) mandates Inline XBRL for its European Single Electronic Format (ESEF) taxonomy. This change, effective for annual reports ending on or after January 1, 2020, affected more than 5,000 European Union (EU) issuers.

Are accounting and compliance professionals ready for the data revolution?

The RegData-centric approach inevitably puts more emphasis on data management and

data governance for accounting and compliance professionals.

Regulatory reporting is no longer a siloed activity. Changes within the compliance and reporting environment create the need for holistic, connected compliance monitoring and reporting. The specific implementation of the RegData life cycle will vary significantly by regulated entity. It will depend on the nature of the data, its system disparity (enterprise RegData is often housed in dozens of different sources, data types, and formats), the quantity of data, and the way the information is consumed. Accounting and compliance professionals need to contribute their unique skills at every stage of the RegData life cycle to ensure data is machine-readable, auditable, and

READY OR NOT: ACCOUNTING AND COMPLIANCE PROFESSIONALS

In a world where change is the new constant, it is more and more important to transcend day-to-day management in order to imagine and define the future.

When exploring a change in scope and expectations for accounting and compliance professionals, we must consider readiness for the changes expected. The changes in the Fourth Industrial Revolution are externally driven, as in other industrial revolutions, but unique in the speed and scope of transformation in both business and information ecosystems. Accounting and compliance professionals will remain relevant only to the extent that they can adapt to changing expectations and needs. It will mean teaming experienced professionals with tech-savvy and increasingly flexible developing professionals to get the best out of both types of skill sets.

Ultimately, digital transformation will result in

three types of accounting professionals:

1. **Those proactively embracing change**, staying at the forefront of developing new tools and techniques to contribute positively, and providing value-added insight in all spheres of the business ecosystem.
2. **Those who adapt and learn as they go**, upskilling in real time as changes are in play.
3. **Those left behind** wondering what happened to their professional value and why their skills have become redundant.

Change is inevitable. The forward-thinking accounting and compliance professionals must prepare for changes and play an even more active role in data governance. The fast-changing transactional and business landscape demands fundamental alterations in the way we work. The answer is a paradigm shift in the development of future-ready skills coupled with a data revolution.

fit for purpose through this revolution and beyond.

Gone are the days when the role of accountants and finance professionals mainly revolved uniquely around accounts and financial reporting. Today's accounting and compliance professionals are expected to provide business value contributing far beyond their original scope of work. They are called upon to provide their insights—dependent on the quality of the underlying data processed by accounting—apply their knowledge and experience, partner on business strategy, and support the business to achieve targets. They are

also depended on to develop mechanisms of review and monitoring (and often conduct that monitoring) to measure business performance, offering real-time advice on pivots to avert surprises. The pace and scale of change taking place around stakeholders coupled with the increasing availability of tools and techniques, such as machine-readable data, cloud computing, AI, machine learning, business analytics, Big Data, blockchain, and distributed ledgers, provide the means to effectively adapt to new key management and strategic roles.

Are standard setters and policy makers ready for a RegData revolution?

In order to enable efficient stakeholder access to reporting taxonomies, taxonomies of authoritative Generally Accepted Accounting Principles (GAAP), or other reporting frameworks and standards, we need a digital structural overhaul for affected standard setters. To ensure that codified content accurately represents standards and reporting requirements, we need to develop a robust global registry of structured taxonomies and open technical standards to enable a regulatory ecosystem fit for purpose in this new age.

Standard setters are already developing supporting programs for their structured machine-readable programs. For instance, the U.S. GAAP standard setter, the Financial Accounting Standards Board (FASB), developed the FASB *Accounting Standards Codification*⁸ Research System (Codification Research System) to streamline research processes.⁸

Codification of authoritative and nonauthoritative standards and frameworks are expected to:

1. Reduce the amount of time and effort required to solve research issues for standard setters and other stakeholders.



⁸ FASB, "Project Updates: FASB *Accounting Standards Codification*," July 1, 2009, www.fasb.org/jsp/FASB/FASBContent_C/ProjectUpdatePage&cid=900000011088.



2. Mitigate the risk of noncompliance through consistent use of the codified standards and supporting literature, all of which are integrated into commercial products and services.
3. Ensure accurate and real-time codification updates that are then seamlessly integrated into commercial products and services.
4. Assist standard setters and other stakeholders with their research and convergence projects.

Standard setters and policy makers are increasingly calling for collaborative stakeholder engagement of regulators, governments, regulated entities, software vendors, and accounting and compliance professionals in order to develop global, consistent, harmonious principles, and rules for data processing and information exchange.

To illustrate this in action, the European Commission considers its responsibility a shared one. It published the European Commission's regulatory fitness and performance (REFIT) in 2012 to encourage better regulatory programs

(i.e., smart regulation).⁹ REFIT is primarily aimed at ensuring EU legislation delivers meaningful outcomes effectively, efficiently, and at minimal cost. REFIT is intended to keep EU laws simple, to remove unnecessary burdens, and to adapt existing legislation without compromising overarching policy objectives. The REFIT platform allows national authorities, citizens, and other stakeholders to make suggestions for commission consideration in improving EU legislation to further reduce compliance costs on regulated entities and regulatory authorities without losing efficacy.

Standard setters will experience increasing integration of information flows between standard setters and regulated entities in the new business ecosystem. This prompts the need to establish harmonious machine-readable data standards, align benchmarks, and share global best practices to attain the maximum benefit with minimal information and communication governance throughout the ecosystem. •

READY OR NOT: STANDARD SETTERS AND POLICY MAKERS

Now more than ever, standard setters and policy makers have a vital role to play in establishing clear enforceable boundaries within the business reporting ecosystems, as well as stimulating economic and positive societal change while preventing ecosystem failures. Business regulations and the associated reporting processes are the plinth, enabling government economic oversight, social policy setting, and taxation administration. The practical and operational challenges in innovating the data systems and tools within government bodies and the statutory frameworks to achieve new optimized outcomes will require a data revolution.

⁹ European Commission, 2012.

A Path to a Data Revolution

Achieving RegTech and SupTech for the new Digital Age requires cross-stakeholder collaboration to establish and align on a transformed ecosystem.

The effectiveness of RegData is directly dependent on a regulated entity's ability to connect people, processes, and technologies to produce the desired outcomes that meet the new industrial age needs. At the heart of this transformation is the need for both a Global Intelligent Taxonomy Registry (GITaR) and a Collaborative Open Taxonomy Innovation Platform (CoTIP) capturing all financial, nonfinancial, performance, EER, and compliance information in machine-readable data formats.

Establishing a common approach for exchanging and reusing RegData across the ecosystem would be a major step toward achieving lower compliance costs and reducing risks. This will realistically only be possible via a collaborative multi-stakeholder solution.

The question remains: What path should we take?

A railcar has little value until the rails are laid. Digital transformation also requires two basic elements before this train can leave the station: a GITaR and a CoTIP.

The global nature of this solution would ensure that information could not result in different knowledge simply because of the choice of software application. An effective global taxonomy ecosystem rests on building several core components (see Figure 4).

The GITaR is a collection of data elements (a library of taxonomies, not reported information) for critical financial, nonfinancial, and other emerging forms of external reporting to regulatory authorities, with unambiguous, consistent, and objective data definitions. It is based on consistent and aligned data-flow standards throughout business and global compliance ecosystems and may be reported by regulated business entities to multiple regulated bodies or third parties.

These data elements are classified and defined based on a predefined structure and aligned with requirements across multiple regulators (through an agnostic data creation and sharing mechanism).

**"I have a dream for the Web [in which computers] become capable of analyzing all the data on the Web—the content, links, and transactions between people and computers."
—Tim Berners-Lee**

The CoTIP is a space to create, collate, and share taxonomies in an industry-wide common central repository. The platform would help market registrants to consistently use the right taxonomy and to harmonize data definitions to enable enhanced efficient exchange of electronic machine-readable RegData across all the stakeholders in the compliance ecosystems.

A GITaR, which would include a Structured Data Taxonomy Accredited Registry, and a CoTIP for public good would allow stakeholders to actively verify that they are using the right taxonomy to enable enhanced, unambiguous exchanges of electronic machine-readable data to multiple regulatory authorities.

This vision is based on automating and sharing metadata terms across Internet of Things (IoT) applications. The declaration of schemas in metadata registries advances this vision by

providing a common approach for the discovery, understanding, and exchange of semantics. Yet many registry issues remain unclear, and ideas vary regarding their scope and purpose. We believe the focus is clear: a GiTaR and a CoTIP are needed to tackle critical financial, ESG (environmental, social, and governance), nonfinancial, and other emerging forms of external reporting.

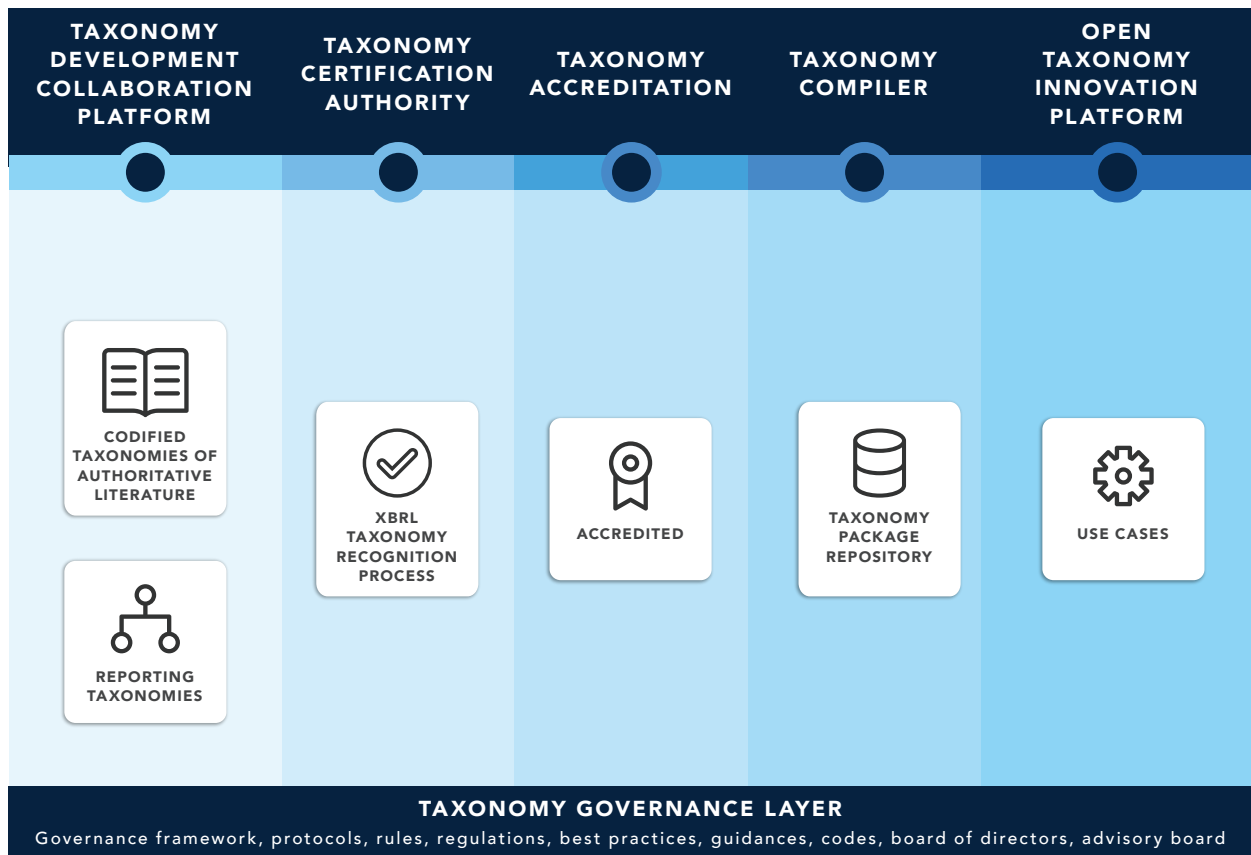
The GiTaR and CoTIP provide mechanisms to collaborate and create shared context. Regulators, multilateral organizations, educators, social groups, software developers, and companies (or preparers) could all benefit in the following ways:

Regulators could use intelligent digital taxonomy registries to compare one regulator’s filing quality with other regulators (e.g., ESMA and JFSA) in terms of transparency as well as leading and lagging indicators by jurisdiction, which would enable faster identification of gaps. Sharing gaps

and opportunities with lawmakers could allow for more adaptive, real-time lawmaking in ESG matters, both on a regulatory and legislative basis. Regulators could also access this global knowledge to identify gaps in existing legislation, irrespective of comparative findings.

Multilateral organizations could use the intelligent taxonomy digital registries to identify best-in-class policies, encourage transparency, and identify leading and lagging indicators by jurisdiction, enabling opportunities or gaps to be identified more efficiently and effectively. This could allow collaboration with other multilateral organizations or public stakeholder bodies to develop adaptive and real-time integrated policies or new laws or amendments in matters of mutual interest. Public sector stakeholders could also access this global knowledge to identify gaps in legislation.

FIGURE 4: COMPONENTS OF A GLOBAL TAXONOMY ECOSYSTEM



Educators could use intelligent digital registries to identify areas of research on ESG topical areas, gaps, or needs as well as using the registry and innovation lab to conduct aspects of the research itself.

Social groups could use the intelligent digital registry library to understand the standards in place. From there, they could then independently analyze and understand reporting entities as part of their efforts to promote social change. Consider how an environmental group could use this intelligent digital registry library to identify new ESG topical areas needing their focus to raise public awareness and promote positive social change.

Software developers could use the digitally intelligent registries and accredited taxonomies to underpin application programming interfaces or software as a service (SaaS) development to provide the latest and greatest tools for reporting and filing submissions. Solutions could allow SaaS customers to benchmark themselves against best practices or alternative practices around the world. It could also lead to voluntary

disclosure improvements, which could prompt regulatory changes.

Companies or preparers could identify and implement best practices in a cost-effective and efficient manner by:

- Sharing key terms and definitions for environmental and social issues within a sector so that their reporting and auditing frameworks align.
- Working with stakeholders to address challenges associated with AI and to coin language to make AI more inclusive and accessible.
- Sharing best practices for how to re-skill workers whose jobs are displaced or eliminated through automation.
- Creating consistent metrics for reporting on carbon emissions. For example, some airlines currently report carbon emissions per flight, while others report emissions per passenger or by revenue.
- Using input for the countries, markets, and sectors in which an entity operates to identify common approaches and partners once smart automation is added. •



A Strong Commitment and Executive Leadership from Stakeholders

Change on the scale required for the Fourth Industrial Revolution requires strong executive leadership and support from all stakeholders to achieve development of a global reporting framework. The key stakeholders are shown in Figure 5.

A global reporting framework provides regulatory authorities and regulated entities with an unequivocal, cost-effective, secure, and adaptable method for the exchange of machine-

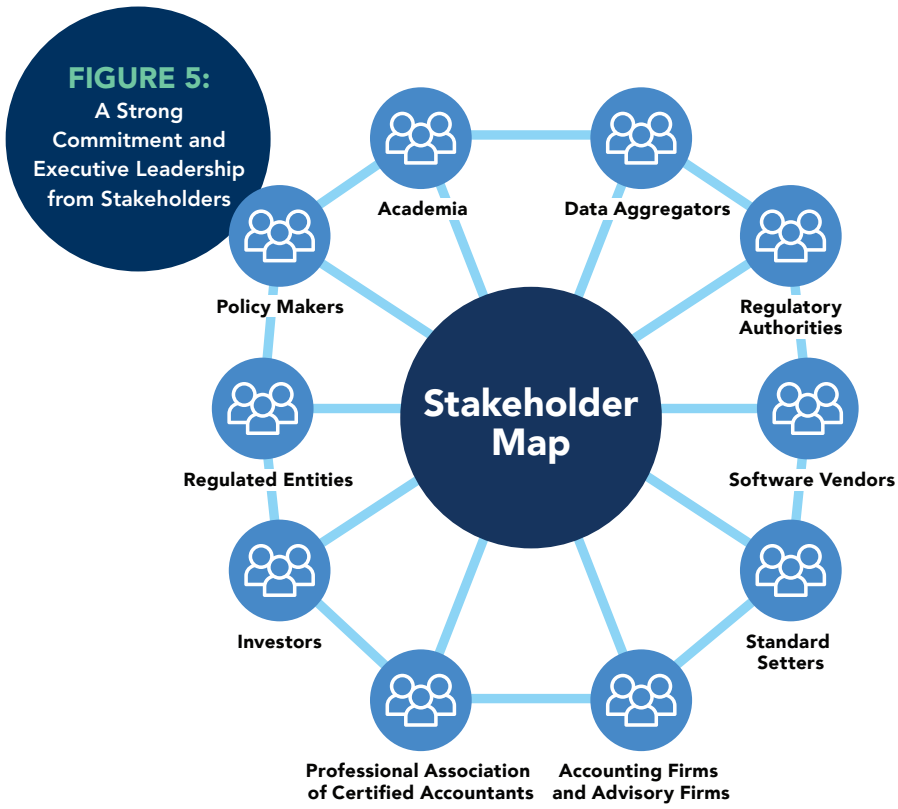
readable business information between regulated entities and regulatory authorities. This centralized platform for digital regulatory reporting across an ecosystem provides end-to-end benefits while still managing the need for local, state, federal, and other reporting. (For example, several U.S. states collect local government financial statistics, as compilations of this data at the local level may lack the timeliness and consistency of audited RegData reports.) Validation automation in

RegData is the second area of efficiency gain where software programs can take advantage of information filed in XBRL format to validate information and detect fraud faster.

As regulations and oversight expand but reporting timelines shrink, digitization of the reporting supply chain is a necessity. To accomplish their missions, regulatory oversight authorities need reliable, consistent, and accurate RegData from the regulated entities they supervise.

Taxonomies accredited by the GITaR exist to ensure harmonization of data definitions in the library of reporting frameworks. Efficiency in gathering business and financial information using XBRL/SDMX can be achieved by having regulated entities create one report to meet multiple regulatory requirements from multiple government agencies.

Taxonomy development models the meaning of business information in a form comprehensible by computer applications (i.e., a formal description of concepts, terms, and relationships within a given knowledge domain) and takes strong commitment from leadership in both the public and private sectors. •



Call to Action

Global market participants can realize financial and nonmonetary benefits by furthering the goal of building reporting systems that bring the right information from its source within an individual organization seamlessly to investors, regulators, policy makers, and other users. Each stakeholder along this information chain can further this digital transformation by:

- Establishing a stakeholder task force committed to the digital transformation of regulatory reporting.
- Ensuring standard setters, framework developers, and best practices are committed to the repository as the authority of digital taxonomies for industry bodies of knowledge around reporting and compliance.
- Preparing a high-level solution blueprint for implementing a global digital framework within products. Using a high-level understanding of the regulatory ecosystem and its scope with a view to assessing the value that digital transformation programs provide to both policy makers and regulatory authorities.
- Ensuring software vendors and service providers develop a prototype implementation to test mapping and lodgment of the reporting requirements. •

CONCLUSION

Data is the lifeblood for regulated entities, standard setters, policy makers, investors, and other stakeholders. The quality of the raw material is key to the credibility and sustainability of our profession. Without high-quality, timely, and machine-readable data, we cannot know how much carbon a company pollutes, how much natural capital a country has available for economic development, what companies are trading, and whether demand for a product is expanding or being disrupted.

The overall condition of data assets is directly dependent on a company's ability to connect people, processes, lines of business, and technologies. It requires that all of these things work together to produce the desired outcomes that make data fit for its intended purpose.

In this increasingly complex world, regulated entities are increasingly integrated and affected by the regulatory environment and vice versa. The leaders of tomorrow will be those who understand data and the impact of the information quicker, acting upon it in the most efficient way, using all tools, techniques, and processes available in this new industrial age. Leaders will need to establish an entity-wide integrated sustainable business strategy and adopt a single set of integrated controls and compliance monitoring mechanisms that satisfy regulators, auditors, and the business operation. They will be inspiring enablers of the digital transformation, rather than taskmasters, and will help their organizations to manage internal and external variables with agility and dynamism.

The audit profession is undergoing an

unprecedented level of public scrutiny. Data governance initiatives can be driven by the need to improve data quality. With new regulatory requirements for enhanced statutory audit reports, no entity wants to risk weak data governance being the cause for a Key Audit Matter (KAM), as set out in International Standard on Auditing 701.¹⁰ For competitive economies, the true benefits will be realized only by cross-government initiatives addressing multiple stakeholders—in other words, providing leadership.

The accounting and compliance professionals who master the critical data in internal and external reports that drive the business will be invaluable in the Fourth Industrial Revolution.

Digital transformation in the Fourth Industrial Revolution is not a new term, but its impact is being felt across industries in an unprecedented manner. It is, therefore, not surprising that business reporting, accounting, and auditing are the next lines that must adapt to the digital data revolution. Accounting and compliance professionals are uniquely poised to take advantage of this digital transformation—possibly more so than any other profession. •



For more information, please visit imanet.org/thought_leadership.

¹⁰ International Auditing and Assurance Standards Board, *Determining and Communicating Key Audit Matters*, July 6, 2016, www.iaasb.org/publications/determining-and-communicating-key-audit-matters-4.