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Corporate Actions

Special Report

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Editor's Letter

The Big Picture

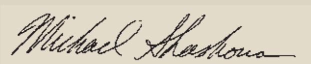
Considering rules and standards that have an impact on corporate actions processing, it appears that BCBS 239 is having a greater effect than the legal entity identifier (LEI) or ISO messaging formats, according to experts in the field who took part in the Virtual Roundtable featured in this report.

BCBS 239 sets out principles for risk data aggregation, as Will Dolan, head of Fidelity ActionsXchange, observes. Corporate actions have to be included in risk considerations, notes Arno Wilhelm of SIX Financial Information, adding that corporate actions should be managed more at the entity level, rather than the instrument level.

This is surprising, since the Roundtable panelists, overall, do not regard the LEI as being that critical for corporate actions. In their view, other identifiers—such as ISIN/SEDOL/CUSIP—are more important, as SEB's Christine Strandberg points out. In the messaging realm, ISO 20022 is now well underway, but its implementation will be a multi-year process. Whatever effects were going to be felt have already been determined.

If anything, the overall message you will find in this report is that corporate actions should be thought of on a macro, overarching level, with less concern for the devilish details. Firms still have to get those details right, but the risk management perspective seems to be the way that industry experts suggest looking at corporate actions now.

Yours sincerely,



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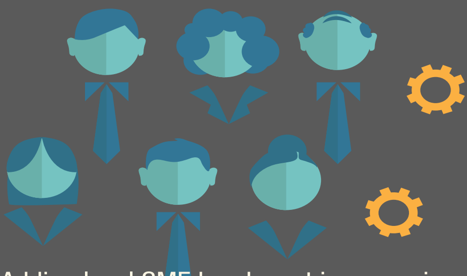

Adding local SME headcount is expensive, and automation has its limits.

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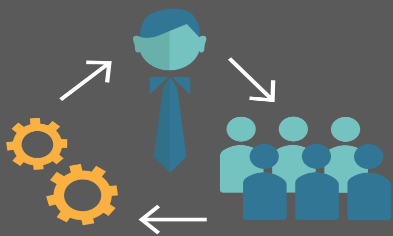

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News Review

SGX Upgrades Corporate Actions

The Singapore Exchange (SGX) has changed its SGXNews corporate actions information-delivery service and SGXNet data-entry portal from a PDF distribution operation to a standardized, structured data-submission offering, which sends information through an interactive issuer dashboard, according to Peter Shen, product development lead, market data and access, at SGX.

The new SGXNet portal, launched on March 24, operates using the ISO 15022 standard for corporate actions messaging, he says. Those filing corporate actions for distribution through the portal—as required in regulations—may only submit them in PDF file format if they complete an ISO template form along with it, including key MT564 qualifiers and indicators that the templates can present upfront when distributing the notice.

The MT564 messaging service on Swift's network operates using the ISO 15022 standard.

Michael Shashoua

ICBC Financial Services Uses XSP to Adopt ISO 20022

Industrial and Commercial Bank of China Financial Services (ICBCFS) has begun using SunGard's XSPrisa software-as-a-service (SaaS) offering to process corporate actions in ISO 20022, as part of its preparations for the Depository Trust and Clearing Corporation's (DTCC) transition to the standard.

Until now, ICBCFS has used XSPrisa to process DTCC's computer-to-computer facility (CCF) files for corporate actions. ICBCFS has now chosen to adopt ISO 20022 to help it prepare for the changes the DTCC is making to its corporate actions systems, and because it believes the enhanced data elements of the ISO standard will help to mitigate risk and improve straight-through processing (STP).

ICBCFS's transition to ISO 20022 involved creating a parallel test environment, where XSP consumed the corporate actions data uploaded by ICBCFS, so end-users could conduct a series of comparisons, ensuring the legacy DTCC files contained the same data and quality of announcements as the new ISO 20022 formats, says Brendan Farrell, New York-based executive vice president, general manager, of SunGard's XSP business.

Nicholas Hamilton

Markit Plans Relaunch of Corporate Actions Service

Data services provider Markit plans to launch a new platform for its Markit Corporate Actions service by the end of June, near the one-year anniversary of its acquisition of the business. Markit acquired the previously named Global Corporate Actions Validation Service from the Depository Trust & Clearing Corporation (DTCC) in June 2013.

The service will move from being a mainframe to a web-based system, further expanding its capacity and the data sources available through the platform, according to Brian Okupski, managing director and head of Markit Corporate Actions. "It's our version of the engine, all on the new technology," he says.

Markit has also built and opened more service centers to power the service, adding a fourth in Dallas in October, to others in Shanghai, London and New York, allowing 24-hour coverage worldwide, available in 20 different languages, according to Okupski.

Markit Corporate Actions currently has more than 70 firms as users, but the latest technological improvements create the potential to expand its reach to hundreds more, says Okupski.

The service's content, he notes, is agnostic and not biased towards the company's own feeds, allowing users to choose from sources such as SIX Financial Information, DTCC and Interactive Data.

Michael Shashoua

NYSE Plans Corporate Actions Data Change

NYSE Group made changes to its service and pricing for users of its corporate actions data in September. Ticker notices now include full corporate actions information from NYSE's Arca Equities platform, which covers more than 1,300 exchange-traded products. Ex-dividend information for these Arca exchange-traded products have been added to its Ex-Date reports.

Daily corporate actions and Ex-Data reports now include dividend declaration frequency and dividend breakdowns.

Dolan to Lead Fidelity ActionsXchange

Will Dolan has been named as the new head of corporate actions information provider Fidelity ActionsXchange. Dolan reports to Janice Morris, executive vice-president and head of the advanced electronic market solutions unit at Fidelity Institutional.

Previously, Dolan was senior vice-president, brokerage products, in the Fidelity Institutional division of Fidelity Investments, and he has also held a senior role at Knight Capital Group.

Virtual Roundtable

Corporate Actions: Raising Standards

Inside Reference Data gathers together leading data management professionals to discuss the impact of risk management in the form of data aggregation principles and identifiers on corporate actions processing, and progress being made with messaging, timeliness and data governance

How have the BCBS 239 risk data aggregation principles changed what is expected from corporate actions data to support compliance with their guidance?

Will Dolan, head of Fidelity ActionsXchange: The 14 principles of Basel Committee on Banking Supervision (BCBS) 239 demonstrate how regulatory agendas have evolved beyond the post-crisis systemic financial risk assessments and now include a broader view of risk across all key business functions of the organization. These principles make it very clear that the risk aggregation process must include operational risk, which places a much sharper focus on corporate actions, as this area continues to represent a key source of risk and related loss exposure. Compliance with the broader BCBS risk and exposure assessments will require that firms pay specific attention to practices that improve the quality of corporate actions data they access, reduce their exposure to more manual activities in processing corporate actions and focus on technology initiatives that improve the overall level of straight-through processing (STP), which supports the lifecycle of corporate actions processing.

On an ongoing basis, firms will need be able to demonstrate that from the initial corporate actions market announcement, through the election and entitlement process, they are accessing consistent, highly accurate, and timely information about the event within a tightly integrated and highly automated process.

Arno Wilhelm, head of product management, reference data, SIX Financial Information: BCBS 239 starts with: 'One of the most significant lessons learned from the global financial crisis that began in 2007 was that banks' information technology and data architectures were inadequate to support the broad management of financial risks. Many banks lacked the ability to aggregate risk exposures and identify concentrations quickly and accurately at the bank group level, across business lines and between legal entities.'

From a data viewpoint, this means that risk must be aggregated correctly at a bank group level, using data from all relevant business units. To accomplish this, unique identification of counterparties, issuers and other entities is required along with the securities, funds and other financial

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instruments that comprise the bank's positions and transactions. The effect of this requirement is that internationally standardized identifiers for institutions and legal entities will receive a tremendous amount of attention—both in initial identification and set-up and on an ongoing basis as corporate actions impact the entities themselves. This is a significant change, as corporate actions have traditionally been focused on the instrument level rather than on the

"The BCBS principles make it clear that the risk aggregation process must include operational risk, which places a much sharper focus on corporate actions"

Will Dolan, Fidelity ActionsXchange

entity level. We suspect that this will also greatly influence how entity-level corporate actions are communicated and represented electronically, as financial institutions will need to ensure consistent treatment across business units, data repositories and IT systems.

Max Yankelevich, CEO, WorkFusion: Every regulation requires institutions to report more data more frequently. BCBS 239 is no exception, calling for more robust entity-level corporate actions data. The real question is, how will institutions increase their corporate actions processing capacity to comply? We believe that a crowd computing platform that uses human work from SMEs and crowdsourced workers to teach algorithms is the way to achieve this.

How is the legal entity identifier (LEI) influencing the monitoring of corporate actions?

Dolan: ActionsXchange has actively monitored the LEI as it has progressed from its initial Dodd-Frank regulatory mandate, achieving global support from the G20, and its present state as one of the most promising initiatives in the evolution of global standards. The initial benefit is the improved ability to monitor the impact of specific issuer-level corporate actions on a broader related entity basis. The combination of

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complex corporate structures, expanded use of derivatives and the need for improved transparency on related liability and obligation guarantees, will eventually require firms to assess corporate actions on this broader entity basis. As market adoption of the LEI expands, we believe corporate action announcements should incorporate reference to certain entity and hierarchy information that will be part of the LEI reference data.

The second area that the LEI is likely to influence in the monitoring of corporate actions is the opportunity to mandate more consistent and timely reporting of corporate actions information across the globe by the issuers themselves. For many years, the industry has been promoting the need for global issuers to make more widely available to the market

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Sponsored Statement

An Automated Assembly Line for Corporate Actions

Despite automation advances in the processing of corporate actions, financial businesses are still struggling to increase the timeliness and accuracy and decrease the cost of covering corporate actions (splits, dividends, mergers, name changes, etc.). The mandate of BCBS 239 is only magnifying the problem and, in the best of cases, unlocks corporate funding to solve it. Given recent improvements from automation and outsourcing, from where will the next wave of technical and operational innovation come?

A growing number of leading-edge financial data providers and institutions have already spotted the wave and are riding it. The wave is called crowd computing, which combines machine learning with human workers in automated cloud-based workflows to perform knowledge work. In a crowd computing-enabled data operation, subject matter experts (SMEs) design the optimal process (e.g. source corporate actions data), and an intelligent software platform delegates small, manual tasks within the process to global, on-demand crowdsourced workers. Just as each Google search improves search algorithms, each task performed by a crowd-sourced worker improves the algorithms of a crowd computing platform. What results is the seamless transformation of a siloed, expensive traditional process into a high-speed, highly automated corporate actions assembly line. Crowd computing will have the same transformational impact on data operations as the robotic assembly line had on manufacturing.

Standard Practice

In less than two years, crowd computing will be standard practice for finding and structuring corporate actions data including any and all entity (e.g., LEI) or instrument identifiers (e.g., CUSIP) and data governance principles. The top data vendors and institutions are already leveraging crowd computing software-as-a-service (SaaS) platforms to reap competitive benefits.

To articulate the benefits of crowd computing, corporate actions can be categorized into equities and harder to track exotic instruments. Problems within each category arise in both

WorkFusion

in-house and outsourced processing operations.

In-house human resources dedicated to equities corporate actions are squandered on what is ultimately, in practice, the gathering and structuring of facts. Does it make sense to book an ER surgeon to treat a paper cut? Would you pay a PhD chemist to mix gasoline and oil for your weed-whacker? Would your doorbell sound any sweeter if you hired Taylor Swift to ring it? No, no, and no. The prospect of using highly paid and trained SMEs to handle anything other than the most advanced exceptions in processing corporate actions is every bit as much of an over-kill. SMEs can be better deployed on other more complex work that drives revenue. Hiring specialized in-house resources with unique language capabilities to cover exotic instruments simply isn't cost-effective or even affordable for most businesses.

Outsourcing either of these operations causes different problems. Outsourcing equities corporate actions results in overcapacity during activity troughs and undercapacity during spikes, and both situations result in speed, efficiency, and quality losses—sometimes all three. Outsourcing the coverage of exotics is difficult because few vendors have the variety of language capabilities required to tackle "long tail" overseas corporate actions.

Crowd computing solves each of these four unique problems by providing an entirely output-based pricing model and by drawing resources from the virtually unlimited supply of internet-enabled, on-demand workers around the world. Cisco estimates that 48% of the world's population will have internet access by 2017, and MBO Partners reported that half of the US workforce will be freelance by 2020. The combination of web connectivity and online workers creates a vastly faster, more cost-effective way to execute all but the most analytically challenging data work. Fast and affordable access to a veritable world of human judgment also creates the ideal training environment for "active learning" or machine learning technology. Using crowdsourced workers to constantly train and correct algorithms is the path to unprecedented levels of automation. Even as document formats and regulatory structures change, active learning algorithms are re-taught by crowdsourced workers who acclimate to these changes.

While the demands of BCBS 239, LEI mapping and reference data populating are burdensome for the financial industry, the new methods of work and new technology born of this burden will ultimately create a stronger, healthier financial system, and crowd computing will likely be the crowning achievement of this period of transformation.

Max Yankelevich, CEO, chief architect and co-founder, WorkFusion

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highly standardized corporate actions announcement communications. The benefits of this standardized communication have been demonstrated in recent XBRL-based ADR corporate actions issuer announcement pilot programs run in the US market. While this standardized issuer announcement pilot was widely viewed as successful, it has not moved beyond this initial phase due to the voluntary nature of this reporting. As the LEI matures, we believe that the required reporting by the issues of certain corporate action events has some promise as a catalyst for a global standard originally envisioned under XBRL-based Direct Issue to Investor Communication pilots.

Christine Strandberg, product manager, transaction banking, SEB: In my opinion, the LEI has a limited influence on corporate actions even though it will ease identification of issuers. The ISIN/SEDOL/CUSIP remains the key identifier in corporate actions. But for events that may mean financial difficulties, linking all the securities issued by the company worldwide via the LEI should increase investors' ability to predict market price changes and additional events.

> "At the current stage of development… there is a long way to go before universal coverage is achieved and effective corporate actions monitoring is possible"
>
> *Arno Wilhelm, SIX Financial Information*

Wilhelm: As a means of uniquely identifying legal entities on a global basis, the LEI will ideally facilitate maintenance of entity data, which by definition encompasses changes reported by corporate actions. But to reach that ideal, the LEI must be implemented completely on a global basis. At the current stage of development, following encouragement by regulators in Europe and the US, hundreds of thousands of LEIs have been issued, but there is a long way to go before universal coverage is achieved and effective corporate actions monitoring is possible.

Yankelevich: We haven't carried out formal research on this, but based on what we've heard at conferences, fewer institutions than expected are using the LEI. Most of our financial industry customers tell us the LEI is just another identifier that links an action to the right entity. The mapping of LEIs to existing identifiers has certainly created a lot of work for many of our customers, which is a common workflow on our platform.

Is the industry seeing progress in updating messaging standards for corporate actions?

Dolan: We have definitely seen substantial progress in the evolution of messaging standards for corporate actions, particularly the introduction of ISO 20022, as well as increasing market focus on committing to Standard Market Practice Guidelines (SMPG) across global markets. The more granular detail in the ISO 20022 standard, combined with a renewed commitment by the markets to voluntary adoption of market practices, will have significant impact in improving STP rates and corresponding reduction in risk and costs. With that said, adoption of 20022 remains a key challenge to firms and we see some progress, particularly as global CSDs migrate to this protocol, but much more needs to be done to encourage movement from ISO 15022 to ISO 20022 messaging. Maintaining multiple standards in the interim will remain a major challenge to the industry.

Strandberg: The pace of changes to the messaging standards has certainly decreased; this may be interpreted as standards maturity. However, compliance with the standards is another matter and one the industry is still working on. Usage of narrative remains high, including incorrect usage. Becoming more compliant with existing standards is unfortunately a more difficult business case than a mandatory standards change.

"The pace of changes to the messaging standards has certainly decreased [but] compliance with the standards is another matter and one the industry is still working on"

Christine Strandberg, SEB

Wilhelm: There are two aspects of this conversation: the evolution of standardized corporate actions within a particular standard and the incremental evolution from legacy standards, such as ISO 15022, to more recent standards, such as ISO 20022.

The updating of corporate actions processing within a messaging standard, be it ISO 15022 or ISO 20022, follows a similar pattern: the standards experts contribute the same business input and requirements to the standards-setting bodies—Swift in the case of ISO 15022 and the International Organization for Standardization itself in the case of ISO 20022—and market practices are developed within the Securities Market Practice Group for both standards families. In practice, this means standards are evolved in such a way that the

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Sponsored Statement

Building Long-Term Value in Corporate Actions Solutions

In the current climate where corporate mandates are directed at improving operating margins, many firms have targeted more narrowly focused corporate actions projects that address an immediate need to reduce operational costs. While these projects may deliver the short-term results required, there are other factors that firms should consider to sustain long-term corporate actions operational efficiency, risk reduction, and increase customer satisfaction. These strategic opportunities require a view of the costs and risks in supporting corporate actions over the life cycle of the event, and can deliver improvements across all areas of a firm impacted by these events, including operations, middle- and front-office areas.

Key Challenges

Event complexity, the expanded influence of derivatives, changes in market infrastructure and settlement practices, and the lack of global standards and inconsistent market practices are among the key factors affecting a firm's existing capacity to support corporate actions. The need to address these issues in an environment where access to resources remains constrained will ultimately be unsustainable from a long-term risk and cost perspective without the greater adoption of comprehensive, automated solutions supporting the corporate actions process.

We believe that firms looking to implement fundamental changes to their existing processes and controls through increased event life cycle automation have the best opportunity to manage the issues challenging their current operations and service delivery.

Opportunities

From the initial process of capturing announcement activity, automation solutions should be evaluated in terms of their capacity to generate timely, complete and accurate information that can be leveraged throughout the life cycle of a trade, including operations, settlement, trading and portfolio activities.

Access to consistent, validated announcement sources that deliver highly flexible data transformation capabilities, advanced matching logic and detailed exception reporting deliver promising solutions to address firm-wide needs for corporate actions information in a transparent and trusted manner. Ensuring access to this enhanced information is also an essential prerequisite in supporting a firm's ability to deliver high levels of straight-through processing. With today's complex event and entitlement structures, accessing high-quality and comprehensive announcement coverage is key to avoiding both the cost and risk of manual reconciliation and exception processes introduced by the variety of counterparties involved in the corporate actions process.

Even today, once the announcements are captured we continue to see significant manual processing downstream to disseminate critical corporate actions information. Many firms support these processes through a variety of manual, highly fragmented and often spreadsheet-dependent communication. With critical customer facing election communication and entitlement processes at stake, lack of automation presents a substantial risk to a firm in terms of loss exposure, as well as overall customer satisfaction.

Implementing technology solutions that deliver notification and response technology—including highly intelligent workflow processes, configurable dashboards and intuitive end-user functionality—can significantly reduce overall risk. This technology has also been proven to yield material improvement in client satisfaction with the corporate actions process as a direct result of delivering clearer communication and an improved end-user experience.

Conclusion

Despite increasing complexity, cost and risk in the current servicing models, corporate actions operating areas are often constrained by the inability to access funding for projects supporting the transformation of existing operational support models. Evaluating the opportunities to reduce cost and address risk from a broader asset, portfolio and customer-servicing perspective are important considerations for firms looking to achieve long-term and sustainable value.

As the trend toward outsourcing continues, organizations can look to firms like ActionsXchange to support their pursuit of a fully automated corporate actions solution. With dedicated expertise, a focus on the ever-changing global securities landscape, and consistent technical upgrades to keep up with the pace of market structure changes, outsourcing should be a key consideration when looking for a solution.

Will Dolan, head of Fidelity ActionsXchange

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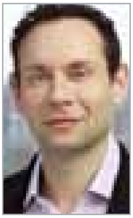

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families remain interoperable so that messages can be exchanged globally between markets based on ISO 15022 and others based on ISO 20022, and vice versa. Specifically, standards-setting bodies and market practice organizations usually make a special effort to keep both standards families aligned.

With regard to migrating corporate actions processing from legacy standards like ISO 15022 (or domestic, or even proprietary, standards) to the latest ISO 20022 standard, progress is largely driven by regulatory initiatives and infrastructure renewal. Such migrations therefore tend to be confined to the sphere of such regulation and infrastructure offerings. The Japan Securities Depository Center (JASDEC) in Japan and the Depository Trust & Clearing Corporation (DTCC) in the US are two cases in point. While more advanced standards offer new technologies, business processes and methodologies, XML schema technology and UML modelling, there is rarely a business case for such a technology-driven or methodology-driven migration so it is uncommon that a highly automated business process in a legacy standard is migrated to a more recent standard such as ISO 20022.

In either case, such evolutions are a process that requires careful planning and implementation, and generally extend over many years.

Yankelevich: The industry is being asked to update just about everything and it sounds like ISO 20022 isn't at the top of the list of burning updates for most institutions. It has certainly been hailed as an innovation on paper. If there were a "silver bullet" solution to quickly and cheaply migrating messaging within an institution, there would be better adoption. We'd like to collab-

> "Using on-demand, output-based, global crowdsourced workers for both equities and 'long tail' instruments has unleashed a new wave of speed in the industry"
>
> *Max Yankelevich, WorkFusion*

orate with a few businesses on building out a workflow for this on WorkFusion.

Is the industry seeing progress in getting more timeliness in corporate actions reporting?

Dolan: With access to improved technology and the broader adoption of market standards, definite progress is being made in addressing latency in the announcement of corporate actions events. However, it is increasingly difficult to separate discussion on the improved timeliness of corporate actions reporting from the need to ensure the information is also complete and validated. With the impact of increased global tax and other cross-border jurisdictional issues, what were once viewed as very simple corporate actions events can now present an extremely complex set of entitlement options, exclusions and qualifications. With these factors continuing to influence the growth in complex events, access to validated corporate actions announcements has become even more critical to manage risk and end-client satisfaction with the process.

Strandberg: A number of markets and account servicers provide timely and automated reporting of mandatory/standard events, but there are many exceptions. Central securities depositories and stock exchanges are key providers, but cannot be used as the only source—not even the "golden copy" source in some markets—leading to continued need for scrubbing and validation, with the resulting lag between issuer announcement and event notifications from account servicers.

Christine Strandberg, SEB

Wilhelm: Absolutely, the industry is seeing progress. Adoption of standards combined with improved data management technologies and data governance practices certainly come into play, but market demand for more timely delivery is also a huge factor. In response to the latter, SIX Financial Information's corporate actions service has provided incremental 15-minute updates for several years now.

Yankelevich: Using on-demand, output-based, global crowdsourced workers for both equities and "long tail" instruments has unleashed a new wave of speed in the industry. It's dramatically less expensive to increase the scale of processing actions. Machine-learning algorithms that automate work by watching these crowd workers perform manual tasks will generate the next wave of significant increases in speed and accuracy.

Virtual Roundtable

How can data governance ideas or plans improve the handling of corporate actions data, or how are they already doing so?

Strandberg: This is difficult to say, since there are different models and many more different corporate actions systems. In my opinion, since corporate actions start with the issuer (or offerer, as the case may be) and flows through the chain of intermediaries to the investor, an individual institution's data governance model can only do so much.

Wilhelm: Standardization is the cornerstone of all data governance, as it allows for automated comparison of data from disparate sources (counterparty, custodian or vendor) and ultimately for automated downstream processing. This holds true for all reference data, not just for corporate actions. But as the use of standard corporate actions messages grows—both at the instrument and entity levels—the ability of the market to automate corporate actions processing will follow.

Another piece of the puzzle is being able to cross-reference from one ID scheme to another. This is obviously important at the security level—especially for cross-border transactions—but it is equally important at the entity level for seamless corporate actions processing. One example would be cross-referencing LEIs with Global Intermediary Identification Numbers (GIINs).

We have always been strong proponents of producing the best-quality corporate actions at the security level as well as at the entity level, so that whatever process is followed, corporate actions messages and their corresponding actions can be successfully handled and applied.

Yankelevich: The fact is that no single business will ever be able to hire the headcount required to transform the handling of corporate actions. The days of solving problems by adding scale through full-time equivalents are over. The biggest idea in corporate actions today is crowd computing: the programmatic combination of crowdsourcing and machine learning to drive incremental automation. It's going to have as big an impact on corporate actions as it will on the financial data industry in general—maybe even bigger.

"We have always been strong proponents of producing the best-quality corporate actions at the security level as well as at the entity level"

Arno Wilhelm, SIX Financial Information

Call to Action

Jyi-chen Chueh, director, group product management, investors and intermediaries services, transaction banking at Standard Chartered, tells *Inside Reference Data* that cloud computing's benefits for corporate actions processing are yet to be proven

Jyi-chen Chueh, Standard Bank

Which part of the corporate actions life cycle is the industry most reluctant to manage in a cloud or hosted environment?
Cloud computing for corporate actions is still in its very early stages. Its viability will depend on whether it brings added value through cost reduction, better standardized content or improved timeliness. In the context of an industry common-hosted utility, anything that pertains to client data is unlikely to be included due to its highly confidential and sensitive nature.

What challenges do firms face when they seek to automate entitlement calculation and posting?
Many custodians, including Standard Chartered, are actually already supporting automated entitlement calculations, projections and postings. To achieve this, we had to address challenges related to complex scenarios such as elective events with currency options or rights issues. Withholding tax calculation is another challenging area as it requires customization based on clients' respective tax profiles.

What has been the most significant innovation in recent years that has helped financial firms to increase automation of corporate actions processing?
The shift from ISO 7075 to ISO 15022 was a great catalyst for corporate actions automation. It enabled further standards adoption among industry participants and empowered forums such as the Securities Market Practice Group to establish harmonized practices. This shift started in the US and Europe, but the pace of automation in Asia has increasingly been catching up over the past few years.

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