

Follow-up analysis for the HSG Task Force on Distributed Ledger Technologies (DLT-TF) on Issuer Corporate Actions Golden Copy

1. Introduction

The Advisory Group on Market Infrastructures for Securities and Collateral (AMI-SeCo), at its meeting on the 4th and 5th of July 2017, approved the forward looking plan for activities of the HSG DLT-TF and requested to concentrate efforts on: 1) assessing potential use cases for DLT application to securities post-trading in the areas of shareholder registration, corporate actions and taxation processing; 2) contributing to the definition of standards to ensure an interoperable use of DLT arrangements and their interaction with systems based on current mainstream technologies; and 3) designing governance frameworks that may facilitate the adoption of DLTs across different institutions in a non-discriminatory basis, if such new tools should prove to be safe and to yield efficiency gains.

One question under discussion in the TF is whether the area of corporate actions processing is a promising area for the development of a DLT solution. Corporate actions processing is a type of processing that is perceived as being complex, risky, and to involve significant manual processing. Hence it is an important candidate for review as to whether technological innovations such as DLT can help.

This note is currently a living document that, starting from a written record of the discussion held on the topic of corporate actions (CAs) at the DLT-TF meeting on 17th August 2017, aims to describe reflections and suggestions of DLT-TF members in relation to the specific use case of a distributed ledger for corporate actions reference data golden copies.

DLT-TF members agreed that the ideal situation for the market would be one where every issuer (or its agent) is responsible for announcing all its corporate events by means of standardised, electronically readable, consistently formatted messages, and assumes liability for their accuracy and correctness. Many diverse parties with different interests are involved in the corporate actions process. The type of information required by users of corporate action information for trading purposes are different from that required for custody processing purposes.

The ultimate goal would be to allow all intermediaries to receive such information and to consider it as golden copy with no need for data scraping and translation by data vendors.

A common view could not be reached on: (1) whether current arrangements for the announcement of corporate actions are sufficient to reach the ideal outcome, and (2) to what extent technological innovation could facilitate such standardised information sharing.

2. Current situation

When discussing event reference data related to corporate actions, there are a number of characteristics to bear in mind. Firstly, corporate actions can form part of the original terms and conditions of the security,

or can be as a result of events during the lifecycle of a security (**predictable** vs. **unpredictable** events). Secondly, they can be events that require no decision by the end investor, or they can be events that require a choice, or they can be events where there is an option for the end investor to make a choice (**mandatory events**, **mandatory events with choice**, and **voluntary events** respectively). Thirdly, we should note that event types differ between **equities** and **fixed income instruments**. Finally, in the context of activity within T2S, we can distinguish between corporate actions for which the entity is acting as **issuer CSD** versus corporate actions where the entity is acting as **investor CSD** (additional details are provided in Annex 1).

Currently, information concerning corporate events has to pass through a number of different proprietary systems in order to be transmitted from issuer to end investor. Information normally enters this chain of intermediation in a non-standardised, semi-manual manner, and leaves it at the end investor in a similar fashion. The steps in between these two end points are more adapted for STP, but still involve multiple proprietary systems – each with their own maintenance costs, as well as the costs of multiple data feeds and data scrubbing tools.

2.1 Use of standards

Standards¹ exist for processing corporate actions and for distributing corporate actions information for custody processing purposes, but there is not full compliance with them. The industry working groups have developed and agreed more than 120 standards for corporate actions processing and more than 30 standards for general meetings. In addition, the T2S community of stakeholders has developed another set of 59 standards for the processing of corporate actions on flows, i.e. pending transactions, in T2S, which are based on the market corporate action standards². This is a proof of the divergences that required harmonisation and standardisation.

A key question is what the underlying reasons for non-compliance are. Possible answers to this are lack of incentives (for example, for issuers and issuer agents) and inappropriateness of standards (as designed for custody, but not for trading).

The concept of golden copy³ is already available in today market standards. An ISO 20022 messaging standard is available for issuers to communicate corporate actions to their issuer CSD(s) and to allow that the process be automated downstream along the chain of intermediaries. In some markets, issuer CSDs currently receive information directly from issuers or from their agents, who are obliged to input such data in predefined format via CSD proprietary interfaces. The CAJWG standards are also built around the principles of a golden source, and of standardized, electronic information through the chain to the last intermediary.

However, that is not always the case: in the German market, issuers often bypass the issuer CSD and provide their information to banks. Information agents, i.a. in the UK, also provide services to distribute information directly from issuers in different European markets to investors without necessarily referring

¹ See business process standards agreed among market participants in the Corporate Actions Joint Working Group (CAJWG) and T2S standards for processing of corporate actions on flows (T2S harmonisation activity 6).

² EPTF Report, page 28

³ Golden copy refers to a set of information that describes a particular corporate event and gives intermediaries some information on the way to process such event.

to intermediaries. Furthermore, in some markets issuers simply do not want to bear the liability connected with possible errors when formatting their legal documents into ISO messages that could be used as golden source for corporate action processing. Although issuers were involved in the definition of the ISO standard, they are often reluctant to be liable if the market receives inaccurate information. As the issue of liability is by definition conflictual because liability in case of mistakes cannot be eliminated but only shifted, the key point appears to be the definition of well-functioning and efficient processes that would decrease the necessity for any involved party to worry about liability.

Issuers have also an inadequate incentive to invest resources in the provision of accurate information, since data vendors fill this gap upon receipt of fees from financial market participants rather than from the issuer. Some DLT-TF members expressed the view that the European market has sufficient standards to allow efficient processing of corporate actions using current technologies and the issue is one of suboptimal compliance.

The CAJWG defined market standards for corporate actions processing focussing on categories of corporate action, rather than on individual event types. This can mean that there is still variance on an event type level, with differences in definitions on this level introducing complexity. DLT-TF members agreed that high granularity of standards is a key element to allow any innovative technological solution to bring efficiency gains in the area of corporate actions processing.

In any case, compliance with existing standards is a major issue, and it may be the case that different interpretations are given on how a given corporate event should be processed even if in compliance with defined standards.

2.2 Current processes and information flow between different actors

Corporate actions have both legal and operational dimensions. This duality leads to there being a wide range of possible event types that are not determined primarily by operational constraints but rather by the specific legal framework of the legal jurisdiction governing a given security. This creates significant complexity in their current processing. As such, before examining the impact of potential DLT solutions on current processes, a brief overview of what current processes are in terms of the handling of corporate actions is useful.

3. Role of technological innovation in facilitating information sharing: DLT use case description and possible impact

3.1 Issues identified and potential solutions based on DLT adoption

A DLT solution, like any other efficient process to allow communication of corporate events, could possibly reassure issuers imputing standardised data by guaranteeing that any tampering of information can be audited and such evidence can be used to avoid the ensuing liability.

Another key topic however is one of compliance with standards that are already available. If the issuer CSD does not control that data is in line with business rules, compliance with a standard could be harder to achieve. However, the community of users of a distributed ledger could check the format of the information upon validation and therefore induce use of agreed standards. Some TF members highlighted the possibility that problems we have today with non-compliance with standards will be multiplied in DLT world because, in some aspects of corporate processing, we would need to start from scratch. To which extent current standards would need to be revised in the case of DLT adoption is still to be ascertained.

Another key aspect, which is not necessarily linked to innovation, is that of transparency. Transparency of information broadcasted by issuers (or their agents), such as in the case of public distributed ledgers, might increase the level of public scrutiny on announcement practices of its originator and possibly foster compliance. However, any non-DLT publicly accessible source of information might be equally effective in this respect.

The TF discussion highlighted possible issues linked to network effect. TF members suggested that a network to pass information to be used in the processing of corporate action would likely scale, but it is necessary to assess whether any specific type of DLT provides the right tool.

Information on corporate actions processing currently flows vertically, with many intermediaries involved in data scraping and scrubbing. A horizontal flow of information would increase efficiency and make the provision of some services related with data management redundant. However, a first step of implementing a CA information golden copy based on DLT naturally isolates the information flow from its processing in the custody chain. The CA data shall not only be linked to the registry, but also be able to reconcile against the data propagated in the traditional way. Investors could therefore have the option to connect either via the DLT or via their CSD or custodian to get information concerning corporate actions.

The needs of the post-trade industry are likely different from those of front offices and exchanges. Whereas the former need detailed and absolutely accurate information, the latter appreciate speed and are eager for real-time information, even when not certified, as soon as it may affect market prices. Moreover, the starting point of the corporate action process is an issuer. Individual issuers initiate only a few corporate actions a year, so they have limited incentives to develop new processes. Accordingly, the role of issuer agents (including registrars and IPAs) is key; there is a need to get views from these parties.

3.2 Pre-conditions for successful adoption of DLT based technology

Identified pre-conditions required for successful adoption of technology service based on new technologies are:

1) Standards

- Existence of necessary standards, compliance with standards and incentives for compliance with standards.

- Standards relate both to business process standards (such as the CAJWG standards) and messaging standards (such as ISO standards).
- Today there are problems in compliance with standards. For a DLT mechanism to work, a solution needs to be found to the problem of non-compliance.

2) Potential benefits of new technology

- The new technology has to offer major improvements over existing technology. With relation to distribution of corporate action information, the benefits could be speed / accessibility / reliability of information. It is not clear, however, that there will be a major improvement over the current situation: today a golden copy can be placed on a website; any golden copy is necessarily incomplete, as it will not contain all relevant operational information (such as the deadlines of intermediaries).

3) Network effect

- The new technology has to have a “network effect” so that (past a tipping point) market participants have an incentive to use the technology

4) Interoperability

- There needs to be interoperability (i) between any new DLT environment and the existing environment, and (ii) between all the new DLT environments. If there is no interoperability between the new DLT environment and the existing environment, then the DLT solution will lead to fragmentation and few actors will have an incentive to use it.

5) Legal framework

- Clarity on liability (if information on the ledger is incorrect).

An innovative solution, possibly based on DLT, should be forward-looking, not backward-looking (i.e. looking to change processes, rather than just improving current processes). Delivery of a DLT solution can be evolutionary i.e. short-term, limited, pragmatic steps followed by a transition period towards a long-term vision. A possible first step is for all CSDs on T2S to put a golden copy of all corporate actions on a ledger.

T2S CSDs would share a DLT for the Corporate Actions event reference data. The issuers and/or their agents would enter the event data into the DLT. The DLT would publish that information to Issuer CSD clients, Investor CSDs and their clients, and onwards to the intermediaries in the custody chain. The immutability of the DLT records, in combination with the consensus mechanism, would ensure corrections are both sourced from and agreed by the community of users, while providing a way to track versions of the data when changes are made.

Within T2S, CSDs have links and such links indirectly connect also CSD participants. A DLT solution could be assessed that would distribute information across CSDs and allow the latter to channel it down to their participants. CSDs or their participants could possibly work on such solution that would allow distribution of information down the chain of intermediaries without proliferation of multiple and inconsistent sources of information.

Distributed ledgers are unlikely to contain all information needed to process corporate actions. That may require interfacing with external systems and the cost of mixing processes based on different technologies needs to be considered.

3.3 DLT-enabled processes

The DLT-enabled model discussed below makes the following assumptions:

- 1) The DLT is used purely for the storage and transmission of corporate event data; it does not directly also conduct other functions (i.e. no transmission of voting instructions, settlement of securities, custody of assets etc.)
- 2) The DLT complements the T2S platform, which remains responsible for all aspects related to settlement.
- 3) Custody holdings in a given security are not directly known by the DLT.
- 4) Participation in the DLT spans from the issuer to end investors, rather than being limited to a subset of the intermediaries (i.e. membership is not limited to CSDs and financial institutions.)
- 5) Corporate events, from a legal standpoint, remain diverse and can be bespoke. Legal jurisdiction could be any of the 28 Member States of the EU (or potentially even further afield.)
- 6) Issuer CSD-centric, collaborative solution as the basis, with access by Investor CSDs and financial intermediaries involved in the custody chain.

We could envisage a system where corporate action reference data is stored in records on the DLT. These records would be first created at securities setup for predictable events documented in the prospectus of the issue, while additional corporate actions throughout the lifecycle of a security would form updates to this original record.

We would envisage issuers or the agents of issuers inputting these data themselves, with a validation role being played by the issuer CSD of their choice. Consensus protocols would operate between the CSD participants in the DLT. CSDs (both issuer and investor) and custodians would be responsible for distributing this information submitted to the DLT by the issuer to their participants or customers with a position in the security. If golden copy solution for corporate actions will be leveraged for voting, investors would also play a role by either participating in the event or delegating voting powers to a representative (“proxy”).

In terms of event processing, the process would remain as it is today. In other words, custodians and investor CSDs would remain responsible for collecting feedback from beneficial owners where necessary and transmitting this information up the custody chain to the issuer CSD/issuer, and the issuer CSD would be responsible for the ultimate processing of the corporate event in its books, updating the relevant positions in its accounts which then cascade through the custody chain.

We would envisage the information stored on the golden copy being publicly available. We would imagine the DLT would possess an API which could be leveraged by third parties to present public facing offerings to investors (i.e. for example ISIN or trade ticker search), or indeed by CSDs or banks to create push services to inform their account holders of corporate events involving assets under custody.

While one might envisage predictable corporate actions becoming entirely automated via smart contracts at DLT setup, in this context this is unlikely. This is mainly due to the fact that the DLT envisaged here does not have direct sight on the custody holdings of the members, and so settlement instructions to transfer cash or securities proceeds to end investors are not possible by the DLT itself.

A more likely circumstance would be that the CSDs could automate their systems to query the DLT for standard corporate actions affecting specific ISINs they have under custody, and then provide the settlement via T2S.

There is a synergy between this topic and the DLT-TF follow-up work on the shareholder transparency process related with registration, with an overall goal of facilitating the end-to-end corporate actions process in a way that links investor data to issuers independently of the custody chain. This moves the industry practice from its current model of separate processing to a model with identical processing in all entities.

3.4 Challenges and opportunities

Opportunities

A solution of this nature would simplify the transmission of information related to a corporate action from issuer to investor. It would also reduce costs throughout the industry in terms of having to maintain individual records of this data and reconcile with other institutions, potentially also leading to improvements in data quality and accuracy.

An additional benefit of this solution is that it is evolutionary in nature; in an initial stage the system is being used to generalise access to the corporate action reference data, as opposed to shape standardisation of corporate action event types and processing. This is useful in the sense that such a solution could be implemented in parallel to the work undertaken by the HSG in these latter fields.

For the purpose of adoption (but also for existing) of standards, “smart contract templates” could facilitate the expansion of the standardisation of event types and their reference data⁴. These could reconcile the duality between legal and operational aspects of corporate events. By inputting values in a pre-specified template agreed among industry participants with regard to a particular corporate event, the issuer would be able to see that information translated into legal prose and verify that it is in line with what its intention. Once validated by the issuer, the same information would be automatically translated into formatted messages that include or relevant parameters financial intermediaries need to process the event. For new types of CAs, such a template would have to become part of the common innovation process rather than an after-the-fact effort by CSDs and custodians.

Information on a corporate action may also be relevant to other securities. However, this data may not be passed from one intermediary to another, especially if one part of the chain has no holdings in the related security. Hence, a golden copy that propagates identical data to all intermediaries regardless of holdings creates an opportunity for greater STP rate where today there may be gaps and/or manual processing.

Challenges

We should note that DLT does not change the fact that corporate actions have both legal and operational dimensions. As such, while a rigid interface that limits input options for information on the DLT may be useful from an operational processing perspective, it would likely lead to the continuation of complex and bespoke corporate action events, which would not be represented accurately via the information stored on

⁴ See Clack, Bakshi and Braine (2016) “Smart Contract Templates: foundations, design landscape and research directions” <https://arxiv.org/pdf/1608.00771.pdf>

the DLT. We therefore suggest that the DLT must be able to store or link to information that could be free format, and that greater standardisation of corporate event types be dealt with rather through regulation and industry harmonisation efforts than through a technological solution.

There is a generic point to the effect that standards build on standards. It is very difficult, or impossible, to build standards to cater for cases of non-compliance with other standards. If issuers or their agents do not comply with CA standards today, why would they for a DLT? In fact, the incentives to do so may include an audit trail on the data they themselves are liable for, and the possibility to remove processing inefficiencies that increase their costs.

Governance around validation and the consensus protocol is also a key challenge. Points to discuss in this area include what steps issuer CSDs should take to validate the data and introduce it into the DLT; what process governs changes or updates to the data on the chain; and what dispute resolution process would be envisaged.

Communication channels are a further challenge. In the case of events with choice or voluntary events for example, the existence of the above outlined DLT system would still require another system to communicate the wishes of the investors to the issuers for settlement to be effectuated. Moreover, each intermediary may have to provide separate processing information to their clients, in addition to the information on the DLT, which would require interaction both with the data on the DLT and proprietary systems.

From an operational perspective, conflicts can arise if there is communication/instructing outside of the custody chain. This means that there has to be a principle that all significant communication goes through the custody chain. The CAJWG and JWGGM standards are built on this principle, whereas for the recast of Shareholder Rights Directive the relevant information regarding shareholder identity must be transmitted directly by the intermediary who holds the requested information to the company or to a third party nominated by the company.

Finally, a greater level of clarity is required as to what role third party data vendors, third-party stock registration and transfer services, as well as proxy voting providers may have were such a DLT solution to come into existence.

4. Assessment and way forward

CSD representatives in the TF have expressed their interest in conceptualising and assessing a possible DLT solution for corporate actions information flow, to determine whether it could be superior to a centralised solution although noting that no such solution currently exists. The topic needs a dialogue between the TF and issuers / issuers' agents at a later stage once the concept is more concrete.

Distributed Ledger Technology is a suitable solution when it needs to be ensured that a wide range of parties have access to the same information and can contribute to assessing its validity. The benefits of DLT in this context include easy access to reliable quality information, with a certainty that it has not changed, or conversely transparent visibility on what has changed. Cryptographic hashes can be used to ensure document versioning history against the data stored in the DLT, providing better control over liability and claims. Finally, it has the ability to expand the concept towards the processing itself with the adoption of further elements such as smart contract and related templates.

5. Proposals to the HSG

To be completed on further discussion in the Task Force.

HSG members are invited to:

- **Provide feedback on the use case study; and**
- **Provide guidance on possible further work ahead of the next AMI-SeCo meeting.**

Annex 1: Setup and communication of corporate events

Setup of initial predictable events with issuer CSDs

Predictable events are normally communicated to issuer CSDs by the issuer or the issuer agent during the initial setup of the security. The method for doing so is not standardised, and while issuers in general do not have direct access to SWIFT to provide information, their agents generally do. It should also be noted that issuers who do not have access to SWIFT can still communicate using ISO standards. Information submission normally takes place through either:

- the submission of the prospectus by the issuer / issuer agent;
- the completion of an electronic / paper form detailing the corporate actions

Information is then entered into CSD systems in a semi-manual process.

Setup of unpredictable events with issuer CSDs

Issuers or their agents are expected to communicate information concerning the corporate event to their domestic CSD, who will proceed to inform those entities that hold the securities on the books of the CSD. The terms and conditions of the event will normally be made available by the CSD upon request from investors. Proprietary solutions to collect such information also exist, such as WM in Germany, Exchange Data International (EDI), and Thomson Reuters Data Scope.

In the context of unpredictable events, we should note also that we can distinguish between **events initiated by the issuer**, and **events initiated by third parties**. Clearly, there are problems in relation with events initiated by third parties, but these events are probably not the focus on any first step analysis.

Communication of events to investors via investor CSDs

Once the information has been input into the issuer CSD, they will inform those participants with a holding in the issue of the corporate action. Ideally this is conducted via ISO 15022 (MT564) or 20022 (seev) formatted SWIFT messages, although it could still involve unformatted messages or email/fax.

Informed participants in turn inform their underlying customers and so on through the custody chain until the account of the end investor is reached. Global custodians and ICSDs may refer not only to information from their own depository concerning the corporate event but may also collect additional data from specialised data vendors or data feeds, and then “scrub” the data to validate it and to determine how conflicts between different sources shall be resolved.

Information will be passed through this intermediation chain until it reaches an end investor. In the case of accounts of natural persons at retail banks, this final communication step is still mainly conducted via paper mail, although proprietary communication tools of the retail bank in question may exist. In the case of corporate investors or fund managers, again the majority of communication is likely to be conducted via email, fax or proprietary interfaces.

In the case of events with choice, the intermediation chain works in reverse, with end investors instructing their bank, and so forth up through the custody chain until the information reaches the issuer CSD (and the issuer or its agent, where necessary). This circumstance would also be the case for proxy voting events, as well as for the transfer of end beneficial owner data necessary for the processing of events, for example tax certificates.

Some corporate actions may require specific bespoke paperwork to be completed by end investors. In such case, this paperwork is similarly transmitted through all intermediaries in the custody chain from issuer to end investor and back, which can again increase complexity and manual flows.

Additional considerations

We should also note that there is a certain level of cyclicity in the volume of corporate events, determined by macroeconomic factors such as interest rate changes and the performance of economies. For example, since the financial crisis there has been a significant rise in defaulting securities, creating in turn a significant rise in corporate actions. In this case there may be communication not directly between the CSD and the issuer, but rather between the CSD and trustees, who are usually lawyers appointed to defend the interests of the investors. This again can create a conflict between the legal and operational aspects of corporate action processing.

As another example, in low interest environments, companies may seek to restructure their debt to gain more preferential interest rates on their financing. This can lead to increased volumes of unpredictable corporate actions.

As a final point, innovations of new legal vehicles lead to the creation of new event types. While the operational processes involved in such new corporate actions may be in keeping with the standards described of the CAJWG, generally, when these events are first created, their processing is conducted manually. Such events then become more automated as usage becomes more widespread. A current example of this process is increased use of “Schemes of Arrangement” under UK law. These can create complexity by introducing new and highly intricate bespoke corporate events into the processing for a security. Novel events naturally create difficulties in operational standardisation and result in more manual processing through a given chain of intermediaries.