International Securities Services Association

ISO 20022 INTEROPERABILITY AND APIs - FINDINGS FROM THE ISSA WORKING GROUP MEMBERS CONSULTATION AND DIALOGUE PAPER

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Foreword

The ISSA Working Group (WG) on ISO 20022 is delighted to present this new consultation paper. In June 2022 the WG interrogated the member firms involved in the Asset Servicing and ISO 20022 WGs, assessing the benefits for the industry from adopting a more standardized approach to APIs and from leveraging the ISO 20022 standard above other potential standards and/or data models. The WG used highly targeted use cases to explore in depth whether there is a strong business case for the industry to align on common standards for specific API components (data model, security and identity, design practices or technical features such as response codes, paging, etc.). These use cases focused on Corporate Actions given the results of ISSA's previous papers and surveys which identified this area as an opportunity.

The questions that were answered focused on:

- The importance of APIs to your current roadmap, the focal areas for these in terms of both functional and counterparty interaction and the level of investment going into these areas
- Assess the business drivers for APIs focus and areas of opportunity in Corporate Actions flows
- Further insights around different approaches that the industry could take to accelerate adoption and standardization, if this is the core recommendation

The resulting paper is a summary of the findings from the Working Group review which addresses the five key areas of:

- Use of APIs
- Focus on Corporate Actions
- Current use cases
- Standardization, education, convincing
- Recommendations and next steps

Target Audience

This paper is addressed to market intermediaries, such as custodian banks, clearers, brokers as well as to asset managers, issuers, industry associations, financial market infrastructures specifically such as CSDs, exchanges and CCPs, regulators and FinTech providers.

Acknowledgements

This report is the result of efforts by a team of experts drawn from ISSA Operating Committee members and other ISSA participating firms. Special thanks go to the authors and the participating firms listed in the Appendix. The ISSA Executive Board wishes to thank all supporters for their contributions.

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1. Introduction

This paper presumes that the audience is aware of ISO 20022 and the various routes to adoption as discussed in previous ISSA papers on the topic and the opportunities and challenges that are present. This is not the primer but rather a deeper dive into options that should improve the client experience and reduce risk and cost within the industry.

The focus of the Working Group was to pick up on the recommendations from the 2021 ISO 20022 Survey, and consider in more depth the focus on APIs and the business case for using ISO 20022 standards as the industry expands the use of APIs. The Working Group members examined the current usage trends in APIs by their respective firms, where these are currently focused, the data models being used and whether these are being driven to replace or complement existing messaging channels. The goal was to use these insights to recommend how the focus of API developments could be aligned with a common standard and whether ISO 20022 would prove to have an advantage over other standards.

The WG also reviewed the original survey's recommendation that Corporate Actions would be an ideal use case for standardized ISO 20022 API developments. The approach was to consider the merits in more depth and lay out a recommendation for a more detailed industry study to prove that use of ISO 20022 APIs would materially enhance industry performance in this area.

Finally, the WG looked to give some clear recommendations for the ISSA membership for API developments, for consideration and consultation and to form the next set of priorities for this Working Group.

2. Use of APIs

Current API Development Focus

The WG looked at existing focus of API developments by the WG members and the feedback showed that there is a concentration of existing and planned developments between two pairs of market participants:

1. Local Custody (LC) - Global Custody (GC)
2. Custodians (Local or Global) - Asset Managers (AM)

The Group found it logical that these would be the dominant channels since there is a heavy overlap in terms of processing models and systems between these layers and the most frequent interactions. The more active channel between GC and LC participants is where functional duplication and interdependencies for synchronising a largely common set of data around a common real-time view is the most acute in the End to end (E2E) value chain. Custodians are under pressure to enhance real-time data accuracy, and hence are keen to reduce any delay between these layers.

The Group debated whether the interaction between the GC and LC participants should be a preferred focus for development of APIs. In the view of the WG driving expansion of APIs into the core model to increasingly synchronise these two sets of records should be the primary focus in the short to medium term.

This is supported by the evidence gathered as the predominant focus on API development is coming from the GC community both to enhance their own communication and servicing with their LC provider and to enhance servicing and communication to their clients.

The flow into Asset Managers is also a key focus for API development – where custodians are interfacing and linking more heavily with the AM platform providers including third party or in-house middle office platforms. There is also a clear demand for more real-time data to update Investment Book of Record (IBORs) and this is driving significant API development.

Increasingly the WG members are also expanding their focus on 3rd party vendor interactions. Data vendors are now offering solutions on the cloud holding current and historical data, allowing firms to reduce the data storage on in-house systems while also accessing far broader data sets. This may be a sign of a changing model. As observed in the ISSA Asset Servicing WG there maybe limits to these interactions as one of the key challenges remain that GC and LCs are expected to validate against official primary market sources (e.g. Exchanges, CSDs, issuers) and that in most cases data vendors are not commercially inclined to accept liability on CA data accuracy/timeliness (even though they source it from the very same official sources) so APIs may need to be built to the primary sources.

The WG also examined which functional areas the firms focus their development on. The priority focus for existing API developments is clearly centred on Corporate Actions and Proxy Voting with the benefits of far more timely reconciliation

of positions and status of open trades. Settlement & Reconciliations (for status confirmation and exception management) and Client Reporting (account holdings and custody reports) also areas of high development focus. There are a few clear drivers for this - including the shortening of settlement cycles and impact of CSDR regulation and late settlement penalties - that motivate more timely identification of mis-matches and resolution of errors. In addition, for Asset Managers a desire for alignment of IBOR positions with their custodian chain and a move towards more real-time position reconciliation with their service providers drives the demand. It was noted that APIs can be developed as hybrid or multi-purpose e.g. carrying Corporate Actions, Reconciliations and settlement data together.

The WG also considered future areas of API development and where budgets are being directed in the years ahead. Within FMIs there is a growing view that APIs could allow more efficient and cost effective communication between FMIs and the issuers and onwards to the custodians which are a logical extension to the priority of the Corporate Action use case and that the WG would support the issuers and CSDs exploring.

The WG is also seeing a rise in the development focus for Taxes, Account Opening, Foreign Exchange and Issuer/IPA connectivity. These are largely manual/ Non-STP (for example the use of MT 599 and unstructured attachments for account opening) or even un-messaged and the findings of the WG points to a clear focus to target these areas in the coming years. Account opening and Know your customer(KYC) has considerable focus and this talks to the heavy lack of structured messaging and growing importance of agile client onboarding.

The WG believes that the creation of unique APIs is being driven by the number of discrete reports and processes in account onboarding such as KYC, Tax Forms, Trade/Custody Agreements and Standard Instructions. Whereas for things such as Settlements and Corporate Actions it is the number of steps in the lifecycle where an exchange of information takes place. In identifying use cases for API deployment, the WG's opinion is that the opportunity is greatest in areas where there are frequent exchanges of data, with a premium on real time data (or at least high frequency updates) and sequential manual steps taken in a holistic process. All three aspects do not need to be present simultaneously to create a business case but where all three are present these are likely to be the ones with highest value to the client and provider.

API Data Models

In relation to which data models are being used to build the APIs the WG views were evenly split between in-house data models and ISO 20022. Logically one might expect ISO to dominate due to the flow-through of messaging, but it is clear that most firms are simply linking to their existing data models rather than look to pioneer in ISO 20022 as that flow-through may not be present in the same structure to the next actor in the chain. The industry needs to understand the development models for APIs and how these leverage any translation versus going from the core database, or how these may evolve if a full push towards ISO 20022 is taken.

This highlights the need for standardization, as the evidence points to the fact that a significant proportion of firms are developing bespoke APIs based on their proprietary data models for specific services for a client. This will add to the cost of

maintenance and interoperability throughout the industry. Additionally this may reduce the adoption of the API as a tool to improve service and reduce risk if there are a multiplicity of APIs, perhaps providing the same services, for a client to adopt.

The WG can see why this has occurred, time to market to satisfy demand and the relative ease of developing APIs. But this fragmentation will have a long-term impact on the efficiency of the market. The WG believes that a number of generic industry APIs can address the majority of use cases especially if built using ISO 20022 business models and syntax.

The vast majority of the firms are developing APIs on the back of client demand and increasing efficiency with their custodian partners. Market developments, regulation and maintaining their competitive offering are pushing some firms to adopt APIs but proactive adoption is the key driver. The roll out of API services is driven by demand for self-servicing options for clients and reducing manual client service reporting and validations, and to a lesser extent for enabling other core operations processing automation.

Considering the drivers and the use cases in aggregate, the WG's belief is that there are a number of generic elements to the demand for APIs, some are driven by client or regulatory demand and some are generated from efficiency for service provider.

Client and regulatory factors:

- Clients are increasingly demanding real time views of their positions to enable both timely liquidity management and an updated IBOR position as well as visibility on elective events and shorter election times.
- Clients are also looking for APIs to satisfy cross-functional activity across the management of their portfolio not just the traditional verticals but also Regtech and ESG are some burgeoning use cases.
- The use of APIs also carries service differentials that may not be accommodated by ISO15022 such as the use of chatbots for digital enquiries.
- Where there are consequences for failing trade settlement, real-time access to trade data allows for rapid identification and resolution or errors, and fail optimization and cover.
- Delivering real time APIs could reduce the need for client EOD reconciliation.

Efficiency factors:

- Custodians spend significant effort responding to information request emails and this could be replaced by API and chatbot channels.
- The need to be seen to be able to respond to client requests rapidly to maintain and increase market share.
- There are other areas such as Corporate Action elections where the use of APIs may enhance the levels of digitalization of inputs and outputs in areas where SWIFT adoption/automation is lower.
- There is a belief that APIs will drive headcount savings in addition to those noted in the first bullet.

APIs as a Preferred Channel

The WG examined whether APIs are being developed as an additional channel or as replacement for existing messaging. The view of the WG is that all firms would continue to use the existing messaging channels and 5 Series messages for core

activities in the short to medium term. Firms are more focused on using APIs as an extension to existing messaging channels rather than a replacement of the current ones, and additionally as a preferred channel for areas lacking any existing standardized communication. An example of this could include the move to frictionless processes linking with the comments on the UTI (trade lineage) and Common Domain model (translation and standardisation).

Some firms are also using them as a viable contingency model and hence as a means to increasing the operational resilience. However, there is little evidence of firms, in the short term, being driven by a view that adoption of APIs will replace current messaging.

Investment Prioritisation

When questioned about the expenditure on APIs a substantial majority of the WG saw this as a material priority for investment spend and only a small number were spending more on initiatives such as ESG or DLT. In the opinion of the WG an industry wide adoption of standards would both reduce the investment needed but also increase the likelihood that APIs are sustained over a longer period.

Challenges for API Adoption

In respect to the challenges around API adoption, three came out most strongly:

- Lack of Standardization
- Not enough in-house expertise
- Not a clear tangible business case defined and hence no budget

The WG supports the deployment of standards finding and have repeated the call for them throughout this document. The lack of in house expertise is probably a function of the relative newness of the solutions and the complexity of plumbing into a legacy infrastructure, where success may be defined by the number of resources who understand both the legacy and the API components. The other friction of the grey area around lack of business case and on budget access should be possible to resolve (especially as the roll out of APIs is a budgetary priority according to many firms). When put together these two aspects rise as a key theme. The industry has to go beyond simple standards and ensure that the WG is highlighting benefits in the E2E models as well. As highlighted above opportunities for a compelling business case exist.

Finally, the WG also pointed out the change needed in the business model for client-provider communications. Today most communication happen in push mode (the provider sends the information to the client when available or at specific times respecting an SLA) whereby APIs are by nature in pull mode (the client requests for the information). The costs are therefore distributed between the consumer of the data and the provider of the data. In this context, will providers, for instance custodians, bear the cost of both the request and the response flows or will the client, for example an asset manager have to consider the costs of calling the data?

3. Focus on the Corporate Actions

The WG focused on Corporate Actions, as a means to testing out the case that ISO 20022 can enhance existing models. While this is not meant to indicate that this is the only area of potential focus, the intent was to assess whether there is a strong case for the industry to focus on a change to ISO 20022 for this area, and what learnings could be taken in terms of the assessment approach and business case structure.

The Asset Servicing WG has executed a number of surveys over the years and this section of the ISO 20022 survey utilised some of that prior knowledge to establish a base line. Corporate Actions 2021: Key Survey Findings is the resource that was referenced to provide a level field of knowledge. The focus thereafter was what problem, with additional data elements and real time access, would be solved using APIs.

There were three main problems that came through in the analysis, with a slight majority of the WG believing that "Manual data sourcing" and "Manual event processing" are the two top areas of focus - with "contradictory information from different sources" being a close third. Other areas which were mentioned in the debate were tax elements on event elections and election responses.

In the view of the WG with respect to Issuer Announcements ISO 20022 based APIs need a combination of other changes to be totally effective:

- Issuers publish in the ISO 20022 format (or other format) which allows less "interpretation" along the value change.
- APIs can help to provide an more flexible communication chain, not predicated by messaging, which may increase take up and reduce misunderstandings.
- APIs could enable a real time interaction with data vendors especially for amendments to announcements.
- Data utility should/could push to move towards pushing issuers to improve the data quality.
- Issuer Agents could do more to standardize the process and push CSD changes to standardize formats

There was unanimous agreement that API adoption could reduce manual processing. The second major area of benefits was with the communication with customers and service providers, including the use in chatbots and "pull requests". These two were followed by the reduction of operational risk in its various guises as a significant benefit.

As seen above the resolution of the problems in Corporate Actions will require more than APIs and other solutions identified by the work the ISSA Corporate Actions WG has done: sourcing data directly from the issuers was seen as the optimal additional solution to be added to a comprehensive solution, with a suggestion that this could be sourced from a common data ledger. The deployment of RPA/Robotics and Machine Learning Artificial intelligence were also seen as bringing opportunity to the CA market, which would not be necessary if the sourcing was improved. The addition of data fields for additional features (specifically exotic ones) was also seen as a possibility.

The vast majority of CA Survey respondents highlighted that timeliness and accuracy would both be improved significantly with data completeness and relevance also improving through the use of APIs. Given that timeliness and accuracy are amongst the most common concerns of customers and risk managers the fact the these are believed to be significantly improved probably justifies an investment in the large scale adoption of a modular and common solution and therefore standardized formats.

As part of the business case justification, the WG debated what costs they thought could be cut using an API based service. It was agreed that the cost of manual communications with customers and service providers and the reduction in headcount were the highest opportunities to reduce cost. However, the sourcing, scrubbing and enrichment of the data was also seen as a large cost reduction driver. The reduction of reputational and compensation costs was not seen to be such a big driver of savings, although the speed of information flow could be significantly increased, which should allow errors to be seen quicker and resolved faster.

Building on from the cost justification the Group also reviewed the benefits that could be attributed to API based services. The debate clustered around the known benefits of APIs for Corporate Actions, real-time, granular services, fast to market and delivery of on demand data.

The WG also debated which API functions for corporate action processing firms would prioritise in offering their clients. The most important offering for clients was “Corporate Actions search with criteria (e.g. by event type, ISINS, event periods, key dates)”. This was followed by a clear majority of the WG favouring three more functions: “Expected positions at ex-date and/or record date”, “Uninstructed balances/positions close to market/response deadline dates” and “Account holding report (for a given account holding assets impacted by an event)”. The WG felt that these four functions are key to removing staff from being “humans acting as APIs” and allowing a higher degree of self service by the clients and reducing risk. The other options were around static data sets and asset history which - as the paper notes above - are not prime use cases for the attributes of an API as they are necessarily static.

The WG considered the event categories that would benefit most from having an API based service, they believe that all events should be serviced by APIs. The Group considered how the industry could prioritise a roadmap of development establishing the best test cases. Cash Dividends were narrowly favoured as the best test case with Exchange and Tender Offers, Dividend Options (with rights distribution) slightly behind. The WG agree that the simplest API to build and test would be Cash Dividends, but believes once executed the more complex cases should be tested to ratify the flexibility of the data load.

The WG also looked at which parts of the CA lifecycle would benefit most from APIs. Announcements were the favoured use case with Elections and Instructing a very close second and Entitlement Communication a credible third. The WG rationale was that these are high volume client interactions, which have urgency, complexity and large amounts of changing data flow during a CA event.

There is a strong desire for having APIs support end to end processing. There was strong agreement that APIs can increase timeliness, announcements or notifications and this is where the industry should focus. The WG also notes a use case where the US depository, DTCC is developing APIs for voluntary reorganisation instructions as a service for its participants to send Corporate Actions instructions data to DTCC and receive back an automated instruction status confirmation. In this instance, there are tangible benefits of the API adoption such as risk reduction by eliminating manual input and improve efficiency.

4. Standardization, Education, Convincing

The WG feels that ISO 20022 is the best option for standardizing APIs. This is mainly driven by its Interoperability with ISO messaging (20022 & 15022), and the ISO 20022 methodology which by design is easily extended to API creation, and the richness of the data dictionary. There is evidence that many firms have managed to create APIs from the ISO dictionary only adding few new elements (for example for reference data = REDA) which suggests that this hypothesis is correct.

Some concerns exist about whether ISO 20022 is the best choice for standardization of API. These include whether ISO might not be able to change at the same pace during a period of digital transformation, the fact that adoption is presently low in securities messaging, and confusion about what ISO is versus JSON/XML. The WG agrees that these concerns have merit but education here is essential to dispel some of the confusion and as the payments sector moves to ISO 20022 the messages will be increasing in usage.

Equally challenging but potentially harder to solve are the observations that for wide-spread adoption of standardized APIs two concerns must be overcome:

- Guarantee that there will be the flexibility to add new data fields to APIs, and it will not be difficult to do so if they are standardized.
- That the lack of a versioning strategy (which has to be decided and adopted) can be overcome.

Standardized business standards and data model could decrease long term industry costs by reducing/avoiding proliferation of bespoke bilateral API (the older readers may remember the securities industry before ISO15022 standards). Common technical standards for such elements as data protection and security would also increase the industry wide benefits. In addition, the value of API standardization must be explained to strategy and product managers and they must be convinced. This effort must be supported by firm's IT leaders and developers to resonate within a company.

Who should drive the effort is not clear, the regulators will only drive change over a long period of time. SWIFT has the knowledge but is not considered neutral in this context and so the WG believes that associations such as ISSA should push the industry consensus.

5. Recommendations and Next Steps

The WG has made a number of recommendations based on this review of APIs and the case for ISO 20022.
These are:

- To focus on the channel between GC and LC in terms of pushing new standards. This is the area with the most alignment of data models and processes is therefore a good area to accelerate the take-up and buy-in to standard APIs.
- That firms should also engage with their AM clients to raise awareness of this initiative and generate buy-in from all stakeholders.
- The industry conducts a formal data driven review of CA lifecycle to understand areas that need improvement, that are problematic and the underlying reasons for this, and identify if these improvements can be addressed by API adoption.
- Market participants work on set of generic API resources that can address the majority of identified use cases especially if built using existing data models and data dictionaries such as those offered by ISO 20222
- That the industry adopts a standardized core set of APIs in the near term as the lack of standardization will add cost of maintenance and interoperability and might reduce the pace of adoption of APIs. This will require thinking through all aspects of design, maintenance and parity compliance and how it aligns with the SMPG remit.
- The industry does a review of the potential for API standards in Tax, Account Opening and FX as these are clearly new emerging areas of interest to the industry.
- API implementations should focus on areas where there are frequent exchanges of data or in areas where there are no messaging standards (that are actually used), or in areas where non-STP communications (phone calls, emails, free format messages) prevail.
- A three step questioning approach is used when building a business case for APIs: (1) what are the most pressing use cases where APIs are perhaps the best or only solution? (2) what are the tangible benefits of implementing an API? (3) What are the costs of implementation at both the client and provider sides?

As the next steps the WG:

- Calls for an industry dialogue on the merits of this paper and welcomes comments on it from industry experts and associations. Please send comments or requests for a meeting to colin.parry.issa@six-group.com
- Will start a data driven review of the review of CA lifecycle to understand areas that need improvement, that are problematic and the underlying reasons for this, and identify if these improvements can be addressed by API adoption.

Appendix: Working Group Members

The following individuals have contributed significantly to authoring the final report:

Working Group Members acting as Authors	Organisation
Denis Andrejew	Deutsche Bank
Jyi-chen Chueh	Standard Chartered Bank
Jonathan Ehrenfeld	SWIFT
Giles Elliott	TATA Consultancy Services Limited
Nicholas Hamilton	J.P. Morgan
Goerge Harris	FIS Global
Didier Hermans	SWIFT
Mazda Hewitt	UBS
Vinod Jain	AITE NOVARICA GROUP
Sofie Janssen	The Bank of New York Mellon Corporation
Satyananda Kumar	Tata Consultancy Services Ltd
Jean-Paul Lambotte	Euroclear
Robin Leary	Citibank
Quinnie Luong	Fidelity Corporate Actions Solutions
Satish Maramreddy	Citigroup
Bill Meenaghan	S&P Global / IHS Markit
John Andrew O'Brien	Citi Europe Plc
Colin Parry	ISSA
Daphne Ratliff	FIS Global
Priya Sharma	Clearstream
Les Turner	Broadridge Financial Solutions
Ankush Zutshi	IHS Markit