



MDA Journal

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Model Driven Architecture:
Applying MDA to Enterprise
Computing

**The ISO 2022 Common Global Implementation (CGI)
Streamlining Corporate-Bank Connectivity**

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The ISO 2022 payment and cash management messages aim to streamline electronic communication between banks and corporate customers. This objective received a boost recently with the definition of a “Common Global Implementation” of ISO 2022, an effort by major global banks, corporates, ERP vendors, and SWIFT.

Background: The Growth of ERP-Generated Electronic Payments

The growth of electronic payment networks enables corporate customers of banks (called “corporates” in payments lingo) to initiate payments electronically from their ERP systems for accounts payable, payroll, and so on. Payment messages flow from the originator’s ERP system to the originator’s bank, then to the beneficiary’s bank, and finally to the beneficiary’s ERP system.

Figure 1 illustrates one common usage scenario, whereby a bank’s corporate customer initiates electronic payments from accounts payable in order to pay suppliers; in a minority, but increasing number of cases, the beneficiary’s accounts receivable is subsequently updated electronically.

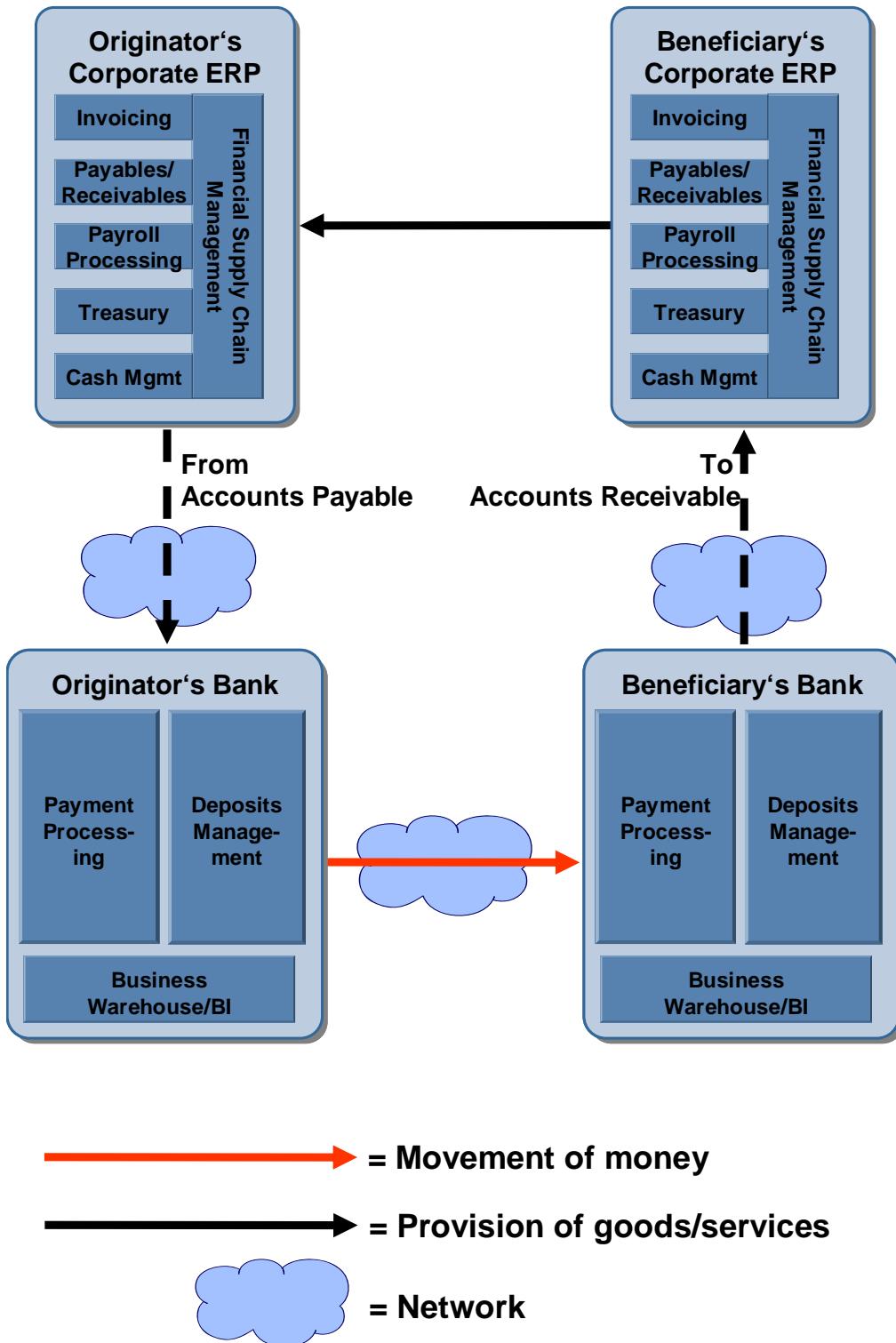


Figure 1. Initiating an Electronic Payment from Accounts Payable

The Business Problem: Pain Points for the Corporate Customer

While ERP-generated electronic payment based on corporate-bank connectivity is a powerful concept, corporates have had to deal with growing pains that ISO 20022 was designed to address.

Multiple Kinds of Payment Instruments

There are a number of different kinds of payment instruments, including payments made via ACH (Automated Clearing House), check outsourcing, cross-border payments, drafts, wires, and special high value payments. Traditionally, corporates have had to use different message formats for the different instruments, with each message having its peculiar setup and maintenance requirements

Multiple Bank Relationships

Large corporates have multiple bank relationships, a trend that has grown in the wake of the global financial crisis as companies seek to avoid “putting too many eggs in one basket.”

It's not uncommon for large companies to have ten or fifteen bank relationships; some of the largest companies have 100 or more. Some banks have proprietary payment message formats or make proprietary extensions to standard formats, all of which multiplies the setup and maintenance burden on the corporate.

Regional Differences

Different regions of the world have maintained different standards for payment messages, or have specific usage rules for standardized message formats.

The Onboarding Problem

The complexity resulting from these complicating factors means that it has been typical for it to take several months of intensive work to get a corporate onboarded¹ to one bank and much more time to get a corporate onboarded to multiple banks. Ongoing maintenance costs for large corporates can run as high as \$500 K per year.

Addressing the Problem: ISO 20022 Payment Messages

To understand where the CGI fits in, it helps to understand some basics about ISO 20022 payment messages.

Background

In 2003, four organizations with a history of defining standards for the financial services industry decided to pool their efforts to create a next generation set of electronic payments messages using an XML-based format. The four organizations that signed a memorandum of understanding were

- Interactive Financial eXchange Forum (IFX www.ifxforum.com)
- Society for Worldwide Interbank Financial Telecommunication (SWIFT www.swift.com)
- Transaction Workflow Innovation Standards Team (TWIST www.twiststandards.org)
- Open Applications Group (OAGi www.oagi.org)

This common effort was dubbed “IST Harmonization” or “ISTH.” (OAGi didn't make it into the ISTH acronym.)

¹ “Onboarded” in this context means connected to the bank with production messages (not just test messages) flowing successfully between the corporate and the bank.

In the same time frame, a number of standards bodies active in the financial services sector were putting together a project to align their work under the auspices of ISO's financial services standards committee (Technical Committee 68, aka TC68). In 2004 ISO released the ISO 20022 standard, which defined a common methodology for defining electronic financial messages and laid out the structure of a common repository as well as procedures for administering the repository. SWIFT was contracted to administer the repository.

The IST Harmonization effort signed on to the ISO 20022 project, and contributed the first submission to the new repository, a set of payment messages called the "Payment Kernel."

Achievements

It took some time for the new payment messages to gain traction, as corporates had concerns about making big changes, despite the problems that they were having. The early adopters tended to be corporates that were going through some major change for some other reason, such as implementing a merger or consolidating the management of all of their payments into what is sometimes called a "payments factory."

Over the past two years the major global banks have been rolling out implementations quite aggressively, and the number of corporate adopters is growing. There is now substantial momentum behind the ISO 20022 payment messages.

The fact that all of the big global banks, SWIFT, and a number of large corporates have decided to get behind ISO 20022 payment messages provides value in its own right by gradually cutting down the number of message formats that corporates have to deal with.

One of the key design goals of the ISO 20022 payment messages was to have the same message for all of the different kinds of payment instruments. Indeed, ISO 20022 has one message for initiating a credit transfer, covering all of the instruments listed above. It eliminates the need for the corporate side to package up the same basic payment information differently for different instruments. The ISO 20022 message data indicates the instrument kind, and the bank on the receiving end processes the message accordingly. (There is also a message to initiate a direct debit.)

It's also worth noting that the European Payments Council, which is administering the Single European Payment Area (SEPA) initiative, defined a constrained profile of the ISO 20022 messages for its standardized, vanilla credit transfer and direct debit instruments.

Gaps

Although the advent of the ISO 20022 payment messages was a positive development, some issues emerged:

- The messages have hundreds of fields in order to deal with many contingencies, some of which occur infrequently. This creates more complexity than is warranted for the vast majority of payments, which are quite straightforward in principle.
- In many cases the standard designates a field as optional, but there was a clear danger that banks' practices might diverge as to what conditions required the optional field to be filled.
- There are a number of cases where a message field is supposed to carry a code of some sort, but the standard is silent as to the set of valid codes for the field.
- Banks need some place to put their specialized information that allows them to differentiate through value-added services, without undermining the agreements embodied in the standard.

Addressing the Gaps: The Common Global Implementation (CGI)

The CGI is the product of an unprecedented level of collaboration among the large global banks, SWIFT, key corporates, and ERP vendors. In many ways, CGI is a logical development, moved

along by many of the same people who were key to defining the ISO 20022 messages. They agreed where the most important gaps lay and resolved to deal with them.

The CGI is not a new version of the ISO 20022 standard, however. It is an agreement among a finite set of parties that there will be a well-known implementation of ISO 20022 called the Common Global Implementation that has the parties' imprimatur. It is based on Version 3 of the ISO 20022 payment messages. It will not be the only implementation of ISO 20022, since it does not focus on purely domestic or single payment instrument environments, but over time it should become the dominant way that the ISO 20022 payment messages are used.

Messages Covered So Far

The CGI is an ongoing effort that so far has released results² for the ISO 20022 *Customer Credit Transfer Initiation* message and the *Customer Payment Status Report* message. The Payment Status Report message apprises the corporate as to the status of a credit transfer or direct debit that was initiated via the Credit Transfer Initiation or Direct Debit Initiation message.

Narrowing the Fields and Defining Code Sets

The CGI designates a fraction of the ISO 20022 payment message fields as lying within its scope. Within that scope, it reaches agreement as to valid codes, the meaning of each valid code, and the conditions under which a field stipulated to be optional by ISO 20022 must be filled. Fields that are out of CGI's scope are designated "Not Used."

Overpopulation

The CGI includes an agreement that if a Not Used field is populated in a message that a bank receives, the bank will not stop processing the message even if the bank does not use the field.

In a sense, this provision is a refinement or corollary of a key ISO 20022 payment message principle that, if more fields are populated than are required for the given payment instrument, the result is benign. This makes things easier on the corporate, with the receiving bank taking on the task of distinguishing between needed and unneeded data.

Collaborative Space vs. Competitive Space: Agreeing on the Boundaries

The CGI also designates certain fields within its scope as being for information whose contents will be determined via bilateral agreements between banks and corporates. Banks can use these fields for value-added services or to satisfy a unique requirement of a corporate or set of corporates.

In essence, then, the CGI parties are agreeing on common usage and interpretation of a subset of the ISO 20022 message fields within the CGI scope, defining that as the collaborative space, and explicitly not agreeing on the content of another designated set of fields within the CGI scope, defining that as the competitive space.

The CGI, thus, is a prime example of the notion of co-opetition. The global banks decided that agreement on the boundaries between the collaborative space and competitive space will drive adoption of ISO 20022 and grow the corporate-bank connectivity market, and they will compete for a share of a larger market.

CGI and Semantic Interoperability

Since I have written extensively on semantic interoperability issues in the pages of MDA Journal, I would be remiss if I did not comment on where the CGI fits into that picture.

Certainly by tightening up the agreements among the parties as to how the message fields are populated and as to the meaning of the data that populates them, the CGI improves semantic interoperability. However, the agreements are contained in spreadsheets that, for the most part,

² See <https://www.swiftcommunity.net/communities/288/detail> and click on the "Documents" link.

are intended to be read by humans but not consumed by machine. In other words, the agreements are not encoded in machine-readable metadata.

The recognition of this remaining gap is not a criticism of the CGI or of the organizations and people behind it. They have done a great job with the tools available to them. Standards and tools are just beginning to fill the semantic metadata void.

The ISO 20022 core standard that governs how messages are defined is in the process of being updated to be able to include more kinds of machine-readable semantic metadata. Tools are starting to emerge that help to populate data and message specifications with semantic metadata, and these tools are designed to exploit that metadata to make integration easier. The resulting boost in the level of semantic interoperability will be yet another step to help integration analysts who have to map payment and cash management messages to ERP-specific formats, legacy country-specific, and bank-specific formats, and so on.

Next CGI Steps: Country-Specifics, Direct Debits, and Cash Management

After the CGI released its results for Credit Transfer Initiation and Payment Status Report messages, it went to work on country-specific rules. Some fields are specifically set aside for country-specific information, and some fields that are used globally must be handled differently based on the relevant country. The first country-specific work that the CGI has undertaken is for Brazil, Argentina, and Chile.

Later, the CGI will address the ISO 20022 Customer Direct Debit Initiation message. The following step will be to extend the CGI to the ISO 20022 Cash Management messages, which allow corporates to get reports of intraday and end-of-day account balances as well as booked and pending entries.

Conclusion: Economic Impact

The number of wholesale electronic payment transactions – that is, electronic payments by organizations rather than by consumers – surpassed ten billion in 2008, with a compound annual growth rate of 18 percent.³ With such volumes and growth rates, every improvement in interoperability is a win for the global economy and presents financial opportunities at multiple points in the payments network. Thus, the economic ramifications of the CGI are potentially large.

Any further progress achieved by encoding the kinds of decisions the CGI makes in machine readable metadata and by unleashing new tools capable of using such metadata, also has a sizeable economic potential.

David Frankel has 30 years of experience in the software industry as a technical strategist, architect, and programmer. He is recognized as a pioneer and international authority on the subject of model-driven systems. He has published two books and dozens of trade press articles, and has co-authored a number of industry standards, including the new version of the ISO 20022 core standard.

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³ Source: Estimates from Celent, Federal Reserve, and NACHA, as consolidated in *Benefits of B2B Payments: (Finally Leaving the Paper Check Behind)*, a paper published by Sungard Avantgard Insights, 2008.

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