



From ISO 8583 to 20022: Modernizing the card payment messaging standard

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Need for revisit of Cards Payments messaging standardization

Globally, we are seeing an explosion of electronic retail payments driven by a jump in card usage,¹ which is now as simple as a tap of a card or wearable token. This growth is expected to continue, attracting various bad actors and leading to an increase in fraud paybacks across the value chain.²

At the same time, laypeople can fail to appreciate how complex and difficult it is to connect disparate payment systems around the world — that, ensure payment system interoperability — until they experience impediments. Historically, the elements that supported automated, real-time payment authorization were the various electronic payment messaging systems and their corresponding standards. Developed decades ago, the ISO 8583 messaging standard has been the key driver for card-based payments.

While ISO 8583 continues to provide a framework, it has limitations in its support of modern digital payments.

The expansion of new payment products and technologies drives the need for a more flexible and expandable messaging standard that handles richer data. While ISO 8583 allows for some flexibility, it is not always able to pass along enough information for modern use cases. As they work to modernize payment systems, many governments and the financial sector are looking to address some of these issues by using the ISO 20022 standard.

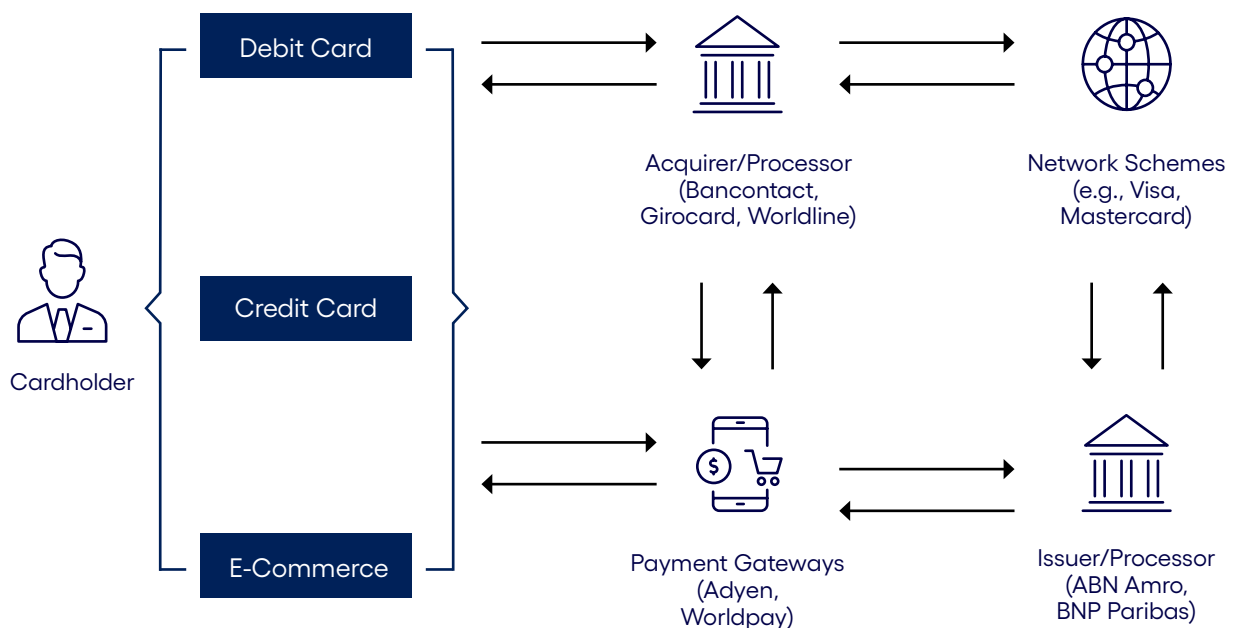
¹ <https://www.mastercard.com/news/eemea/en/newsroom/press-releases/press-releases/en/2022/august/mastercard-new-payments-index-2022-consumers-in-mena-embrace-digital-payments/>

² Report from study done by LexisNexis Risk Solutions 'Fraud and Digital Payments Study in High-Growth Markets'

Governments and regulators across the world are critical stakeholders with firsthand experience in the journey from evolution to realization of ISO 20022 in the context of cross-border payments. This period, when the cross-border payment migration to ISO 20022 is at full steam, offers the momentum to overcome current challenges in the next big payment streams for various customer bases.

The landscape of card-based payments is already filled with multiple parties before considering authorization, payment and settlement flows.

Stakeholders in card-based payments



How the two standards stack up?

The International Standards Organization has published the relevant ISO 20022 version for card payments.

Standards overview

| ISO 8583 | ISO 20022 |
|---|--|
| In use since the 1980s to support card-based financial transactions. Used by card issuers, financial institutions, acquirers and merchants. | First published in 2004 and driven by the introduction of Extensible Markup Language (XML) |
| Uses a bitmap format, with each data element assigned a specific position indicator in a control field. | Uses XML. The second edition includes the use of Abstract Syntax Notation One (ASN.1). |
| Still the dominant legacy standard but also widely customized, leading to variants and associated complexity. | Introduces common language with the ability to contain far more detailed and richer data. |

The limitations of ISO 8583 suggest the wisdom of adopting the ISO 20022 standardization.

- **Limited data capacity:** ISO 8583 has a fixed data field structure and limited data capacity, which make it difficult to accommodate new data elements and messages beyond basic payment transactions. As financial services become more complex, stakeholders need a messaging standard that can support additional data elements and messages.
- **Lack of flexibility:** ISO 8583 is a rigid and inflexible standard that does not allow for easy customization or modifications to meet specific business needs. This can result in limitations on innovation and product development. ISO 8583 is not specific about how a given field is represented, so it can have a numeric field represented as a sequence of ASCII, EBCDIC, BCD or other character sets. Variable length fields have prefixes specifying length, but how this information is represented is not defined and different vendors use different representations (i.e., BCD, EBCDIC, binary value).
- **Inefficient processing:** The fixed field structure of ISO 8583 can lead to inefficient processing of transactions, as it can result in redundant data transmission and processing. This can result in slower transaction processing times and higher costs.
- **Compatibility issues:** As the financial industry moves towards adopting new messaging standards like ISO 20022, the compatibility between ISO 8583 and newer standards can become a challenge. This can result in interoperability issues between different systems and networks, leading to delays and higher costs.
- **Inability to meet regulatory requirements:** With the increasing regulatory requirements in the financial industry, ISO 8583 may not be able to meet all the necessary compliance requirements, leading to potential risks and penalties.

Benefits to stakeholders

A movement to new standards will benefit stakeholders across the payment value stream in different ways.

Payment Schemes

- Enabling newer revenue models
- Reduction in fraud payback charges
- Enabling cross-scheme capabilities with account-based payments

Issuers/Acquirers

- Reduction in complexity within technology landscape
- Standardization across payment streams
- Better dispute management

Merchants

- Potential benefits from more harmonized reporting
- Possibilities for new trends on customer behavior

Customers

Would not notice difference

Challenges for various stakeholders

At same time, any movement to new standards will present unique challenges across the payment value stream.

Payment Schemes

- Creation of a level playing field could result in increased competition
- High implementation and migration costs in period where both standards need to be supported

Issuers/Acquirers

- Will have higher cost of operation during migration
- Some may decide not to embrace the change and move out of the market

Merchants

Likely to suffer from an increase of prices in the period of both standards in the market

Customers

Merchant price increases would get passed on to customers

Enabling newer use-case

Such a transition will enable newer use-case, an example of which is to transfer money from an Account to Card with below payment characteristics.

- Both debtor and creditor are individuals.
- The transfer takes place cross-border and ends with funds being settled in an account linked to the card. The card can be linked to a demand deposit account, a pre-paid card account or even a credit card.
- The payment may or may not be in the domiciled currency of the account.

Such a use case becomes possible due to richer data elements and more streamlined messaging across the landscape, leading to benefits, opportunities and challenges.



Where does Market stand?

Considering the complexity and extended journey for such a migration, various stakeholders are preparing in their own ways.

International Standards Organization

The International Organization for Standardization (from which we get the ISO abbreviation) has been continuously updating the relevant messages with input from working groups representing various business domains, including primarily the terminal-to-acquirer domain via the Card Payment Exchange (CAPE) driven by nexo standards³, and the acquirer-to-issuer domain via Acquirer-to-Issuer Card Messages (ATICA).⁴ The European Union spearheaded the efforts on ATICA standards, but the working group now includes industry participants from around the world.

ISO integrating ATICA messaging was driven by three primary goals:

- Billions of consumers rely on card and associated retail payment instruments, and it was imperative to include them in ISO 20022 adoption efforts around payment infrastructure modernization efforts
- Enabling rich data in this domain is not expected to negatively impact authorization speed
- Ensuring interoperability across networks and to existing ISO 8583 standards is beneficial

The Registration Management Group is promoting and supporting the involvement of financial services actors to facilitate the registration and maintenance of high quality, globally relevant ISO 20022 messaging for the exchange of information. They have enabled a new set of maintenance processes to cater to the potential for a high number of change requests in the initial period of ISO 20022 card messages standardization.⁵

Regulators

At the European level, progress has been made by the European Cards Stakeholders Group. This is in accordance with the vision of Single Euro Payments Area (SEPA), wherein SEPA Cards Standards⁶ are published to enable card payment standardization and promote interoperability of card transactions in a secure environment throughout the SEPA region.

Big Payment schemes

Visa supports the ISO 20022 messaging standard⁷ by using DPS Forward to channel network traffic through a single connection. Combining DPS Forward APIs with the ISO 20022 API from Visa enables its customers to build a full-service digital solution.

Mastercard is now leveraging the ISO 20022 standard for payment methods as part of its Mastercard Track Decision Engine.⁸ This has enabled Mastercard to move to newer standards in more of its digital offerings as part of its Mastercard Digital Enablement Service.⁹

Independent Software Vendor

In their roles as issuers, acquirers and processors of card-based payments, financial institutions rely on independent software vendors (ISVs) such as ACI, FIS and Fiserv to provide products that handle industry standards and enable network connectivity to various payment schemes. These ISVs are enabling their products to support ATICA and CAPE messages in preparation for future adoption of ISO 20022 in the card payments domain.

These efforts by ISVs are allowing the broadening of product offerings to a complete payment offering by bringing both account-to-account and card-based payments under one umbrella.

³ https://www.nexo-standards.org/sites/default/files/cardpaymentsmessageusageguide_6.0.pdf

⁴ https://www.iso20022.org/sites/default/files/documents/D7/ISO20022_BusinessAreas.pdf

⁵ https://www.iso20022.org/sites/default/files/documents/D7/ISO20022_RMG_Newsletter_April2018_0.pdf

⁶ <https://www.e-csg.eu/scs-volume>

⁷ Visa Developer - DPS Forward

⁸ Release history | Mastercard Track™ Decision Engine | Mastercard Developers

⁹ Mastercard Digital Enablement Service (MDES) | Mastercard Developers

Our point of view on the migration

Considering the complexity of the migration, there has been no mandate in any of the countries towards standardization of the ISO 20022 framework. In the European Union, a detailed study by the European Cards Stakeholders Group led only to the recommendation of having a market-driven approach to an ISO 20022 migration¹⁰.

In our view, the transition to ISO 20022 can happen in parallel and in a different point-to-point connection in the entire ecosystem. These could be in the below sequence:

- Acquirer to Payment Scheme
- Payment Scheme to Issuer
- Clearing and Settlement
- Terminals to Acquirer

Considering this transition will be a long endeavor, translation capabilities between existing ISO 8583 and ISO 20022 systems must be available in different places.

In summary, given the challenges and benefits for various stakeholders, different countries must look at soft nudging towards standardization and revisit the entire migration with a fresh lens towards creating a robust and uniform modern payment infrastructure.

¹⁰ https://www.ecb.europa.eu/paym/groups/erpb/shared/pdf/5th-ERPb-meeting/7a.CSG_A2I_Processing_Study.pdf?2744430f68b46c2aeec599b0daf824b6

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