paymentsnz

DISCUSSION PAPER

Re-mastering payments messaging

A study of New Zealand's strategic opportunity to adopt the ISO 20022 payments messaging standard

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Foreword

There are many reasons why New Zealand is the best country in the world to live in. Aside from the obvious natural and cultural reasons, one understated benefit is the efficiency and reliability of our payment systems. As Kiwis go about their daily lives, they're mostly unaware of the payments machine working in the background and how good it really is. Due to the efficiency and reliability of that payments machine, New Zealand boasts one of the highest penetrations per capita of electronic payments in the world and this has far-reaching economic benefits. This is something to be proud of.

Our local banks and industry service providers have worked cooperatively over many years to develop a payment system infrastructure that is innovative and enables the efficient functioning of our economy. Because of that cooperation, we have not suffered from the interoperability and inefficiency issues that many other jurisdictions have.

But as our economy evolves, so too should our payment systems. And in this time of unprecedented digital change, New Zealand has an opportunity to take stock and reflect on how these shifts in technology and customer behaviour might impact our own payment systems. At Payments NZ we have started our own 'taking stock' exercise by embarking on a strategic initiative called Payments Direction. This initiative has been set up to examine global trends and issues in order to take a view on the future of our payments ecosystem and to determine the work we will need to do to retain New Zealand's standing as having world-class payment systems.

This discussion paper will inform the Payments Direction initiative and is the first in a series of papers that focus on trends and issues in the payments ecosystem, including hot topics such as messaging standards and real-time payments.

We have started the series by looking at messaging standards as they have been at the heart of our success in building interoperable payment systems and should not be underestimated for the value they can unlock across the whole payments value chain. Messaging standards define the electronic information, data and digital content used to process payments, as well as what information can be made available to and used by customers. They also set the boundaries of how flexible those in the payments community can be when innovating, both independently and collectively, and how they can use the wealth of electronic information available.

In New Zealand we use a payments messaging standard called BACHO, which has been around for more than 50 years. It has served us well, but in today's digital era it is encumbered with too many issues and innovation constraints to enable our payment systems to evolve and thrive. I believe it is now time to evolve our messaging standard to better meet the demands now expected of a modern and intelligent national payment system.

So what could take the place of BACHO? ISO 20022. There is a clear worldwide trend towards modernising messaging standards and ISO 20022 has become the world's most widely adopted and future-proofed modern messaging standard. ISO 20022 is an enabler to achieve a wider range of strategic outcomes and commercial opportunities. This is because it supports an intelligent payment system environment that can be information rich, digital, flexible, interoperable, operationally efficient, and innovative.

This paper will take you on a payments messaging journey of discovery. I encourage you to take the time to learn about the strategic outcomes and opportunities that can be unlocked with ISO 20022. We set out 20 Potential Use Cases and provide examples that demonstrate the value of upgrading our messaging standard.

As we move toward making decisions about the future of our payment systems, it is important that we understand and debate the type of environment we want to create. For that reason, this discussion paper *Re-mastering payments messaging* is intentionally thought provoking and while the reader should not consider adoption of ISO 20022 as a given, we hope that it will stimulate debate on the key strategic issues and opportunities for the future of payment messaging standards.

Given the size of the opportunity, I would encourage you to consider this discussion paper and participate in shaping the future of New Zealand's payment systems by sharing your views via our website or by emailing us at connect@paymentsnz.co.nz.

Steve Wiggins
Chief Executive, Payments NZ

Executive summary

The ability to make and receive payments is fundamental to the functioning of every economy. At the core of efficient payment systems is the payments messaging standard (messaging standard), which defines what information can be conveyed about a payment. Messaging standards range from legacy formats, which impose strict rules and constraints about the information that can be transmitted, through to modern, rich, interoperable and flexible digital messaging standards.

New Zealand (NZ) currently uses BACHO[1], a 50-year-old messaging standard that is now poorly suited to a world where:

- new technology emphasises the power of information;
- our primary touch points with customers and businesses are digital;
- access to new markets has propelled cross-border payment flows;
- the historical boundaries between specialist business areas have become less rigid; and
- financial service processes and value chains often span different business and geographic areas.

BACHO struggles to facilitate the full flow of financial information across the payments value chain, often leading to the required information about a payment being separated from the payments message itself. This inhibits the delivery of intelligent, fully integrated financial services across pre-payment, payment and post-payment activities. Over the long term BACHO will constrain innovation, impose ongoing structural costs, reduce international competitiveness, and increase payment system rigidity. In sum, this increases the risk of payments processing becoming a low value add and low margin utility business.

Moving NZ into a modern, innovative and efficient digital payments environment will require our payments community to establish a strategy to modernise our messaging standard. ISO 20022 is the globally accepted and widely adopted modern messaging standard and its potential adoption in NZ represents a significant strategic opportunity. This paper provides a detailed assessment of this opportunity.

It is tempting to think about ISO 20022 as a technical standard, but if serious consideration of this standard rests principally on technical justifications, then we will have missed the point. ISO 20022 is an enabler that can allow the NZ payments community to achieve a wide range of strategic and innovative business outcomes.

ISO 20022 enables intelligent messaging in an increasingly digitised financial services environment. It offers the ability to develop well-structured but flexible messages that unify many existing formats by standardising financial information into a logical and rich format. It allows information about a payment to be re-used (in part or full) as it is passed from party to party through the value chain. This is an important and critical feature to enhance domestic and global interoperability.

To fully appreciate the long-term strategic potential of NZ adopting ISO 20022 it is important to consider the scope of strategic outcomes that could be achieved. These include:

- Adding rich remittance data within payments messages in a way that unlocks savings and revenue opportunities for banks, financial institutions and business customers.
- Enabling information rich payments to become a core element within a bank's digital strategy.

1 BACHO stands for Bankers' Association Clearing House Organisation.

- Unlocking straight through processing efficiencies and cost savings by aligning and integrating the messaging standard with bank and corporate core systems, which increasingly use ISO 20022.
- Facilitating the movement of financial information from end to end, allowing banks and stakeholders to get adjacent to customers along the full length of the value chain and to offer them new information-based services.
- Providing flexibility to Participants[2] and therefore enabling innovation.
- Containing or lowering regulatory costs by bundling compliance related information within payments messages.
- Reducing the friction associated with cross-border payments and helping promote international trade through the exchange of standardised financial information.
- Having a vehicle for the easy deployment of future improvements, making it simpler and quicker to modernise payment systems.

The NZ payments community is comparatively very late in starting its consideration of the strategic opportunities ISO 20022 presents. NZ is the only member of the International Council of Payment Association Chief Executives (ICPACE)[3] without an active ISO 20022 work programme. At least a dozen jurisdictions/countries around the world have already implemented ISO 20022 (including all of Europe), with as many again working on implementation. However, being comparatively late has its advantages. We can leverage the experience, skills and knowledge of those who were early adopters by better understanding the lessons learned and by replicating the technology platforms successfully used elsewhere. In addition, we can have high levels of certainty that ISO 20022 is the world's best practice messaging standard.

It is ultimately up to any community of potential ISO 20022 users, such as Payments NZ Participants and Members[4], to determine the business needs, processes and customer demands they would like the standard to assist them with. However, it is clear from the work completed to date that:

- Long-term strategic benefits confirm the potential for NZ to adopt ISO 20022. It would create an intelligent digital information environment that both helps prevent the payments function from being marginalised and enables Participants to pursue digital information-based innovation and commercial opportunities.
- There is little to be gained from deferring consideration of ISO 20022 adoption. The current constraints imposed by BACHO will continue to grow over time as new technology and industry innovations advance at an escalating pace.
- The most advantageous way for industry adoption of ISO 20022 to occur is to obtain agreement on the strategic outcomes the community of users wants ISO 20022 to help them achieve. Consultation will be instrumental to gaining that agreement.

This paper:

1. Provides a detailed assessment of NZ's strategic opportunity in adopting ISO 20022.
2. Examines two specific ISO 20022 standards and a select number of payment scenarios, focusing on the payments message and the end-to-end flow and interoperability of financial information across the value chain.
3. Concludes there is sufficient evidence to suggest it would be strategically advantageous to adopt ISO 20022.

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2 Participants are organisations that are permitted to exchange payments directly with other Participants and have acceded to Payments NZ's rules.

3 ICPACE includes payment associations from NZ, Australia, UK, Ireland, USA, Canada and South Africa.

4 Members are organisations that have paid membership fees to belong to the Payments NZ Membership Programme.

4. Recommends the NZ payments community undertake further and more detailed evaluation of the strategic outcomes they would like ISO 20022 to achieve.
5. Sets out a comprehensive baseline against which consultation and dialogue can take place to establish a firm view within the payments community on the value in adopting this standard.

While this paper is focused on payments messaging and specific types of payments in particular, it is important to keep in mind that ISO 20022 goes well beyond payments. ISO 20022 covers the entire financial services industry (of which payments is only one part), providing a common language for all financial communications around the globe whatever the business, communication network or jurisdiction.[5]

5 This paper is sponsored by the Bulk Electronic Clearing System Management Committee as is part of Payments NZ's Board approved 2015 work programme.

Opening observations

Industry momentum

In recent years there has been a significant amount of international payments industry momentum in favour of ISO 20022. The implementation approach taken by each country or region that has adopted ISO 20022 is unique to the needs of their individual markets. The implementation strategies vary from a 'big bang' approach, where the entire market is required to go live at the same time and on the same date, to a phased introduction where old and new standards coexist for a period of time.

The vast majority of implementations around the globe are being completed as part of a broader payments strategy. The reason for this is because ISO 20022 is a means to a strategic end, not an end in itself. Having a clear strategy at the outset is critical for future success. Appendix one (see page 29) contains additional ISO 20022 background information and implementation challenges.

The promoters of ISO 20022 acknowledge the initial take-up of the standard has been slower than anticipated. The primary reason for this relates to concerns over the relatively high cost of migration versus less tangible long term strategic benefits. Recently momentum has increased as payments communities have better understood the strategic benefits of the standard. In particular, banks and other financial institutions have focused on how they can use ISO 20022 to digitise their payments business to realise service and revenue opportunities and respond to competitive pressures.

The two jurisdictions most similar to NZ with respect to ISO 20022 adoption appear to be Canada and South Africa. Both of these countries are replacing legacy proprietary file formats for their electronic funds transfer systems with ISO 20022, as opposed to using ISO 20022 in brand new systems. This situation has strong parallels to NZ.

In the context of NZ, Australia is the other ISO 20022 jurisdiction worth mentioning. Australia is adopting ISO 20022 for their New Payments Platform (NPP)[6]. Global experience shows the case for adopting ISO 20022 is comparatively straightforward for a greenfield new system development, such as the NPP. Australia does not yet have any plans to replace their legacy proprietary file format for other payment types. However, there is a significant opportunity for NZ to leverage the schema developed in Australia for the NPP. If both Australia and New Zealand adopt ISO 20022 payment standards there would be significant trans-Tasman interoperability benefits as well as economy of scale advantages, particularly for the 'big four' banks who operate on both sides of the Tasman.

As NZ's trading partners progressively move to ISO 20022 it will become increasingly difficult for NZ to support the resulting financial flows due to a lack of global interoperability in messaging standards. Our consideration of ISO 20022 comes at a time when we can take account of the experience of others that have adopted the standard ahead of us. In the European Union (EU), banks and payment systems have just adopted ISO 20022 as a result of a mandate from the Single European Payments Authority (SEPA). This has helped build a significant amount of global knowledge and experience, and also widens global interoperability benefits.

Being able to reflect on the lessons learned elsewhere gives us a powerful advantage in deciding on the best course of action in NZ. If we decide to adopt the standard we can leverage the

6 The New Payments Platform is a programme of work to produce new infrastructure for real time low value payments.

collateral developed in those other jurisdictions. This leveraging advantage is articulated clearly in the 2014 research by Lipis Advisors on *ISO 20022 Implementation Best Practices* (available at www.cdnpay.ca/imis15/eng/initiatives/ISO_20022_ICPACE_Research.aspx) sponsored and funded by ICPACE.

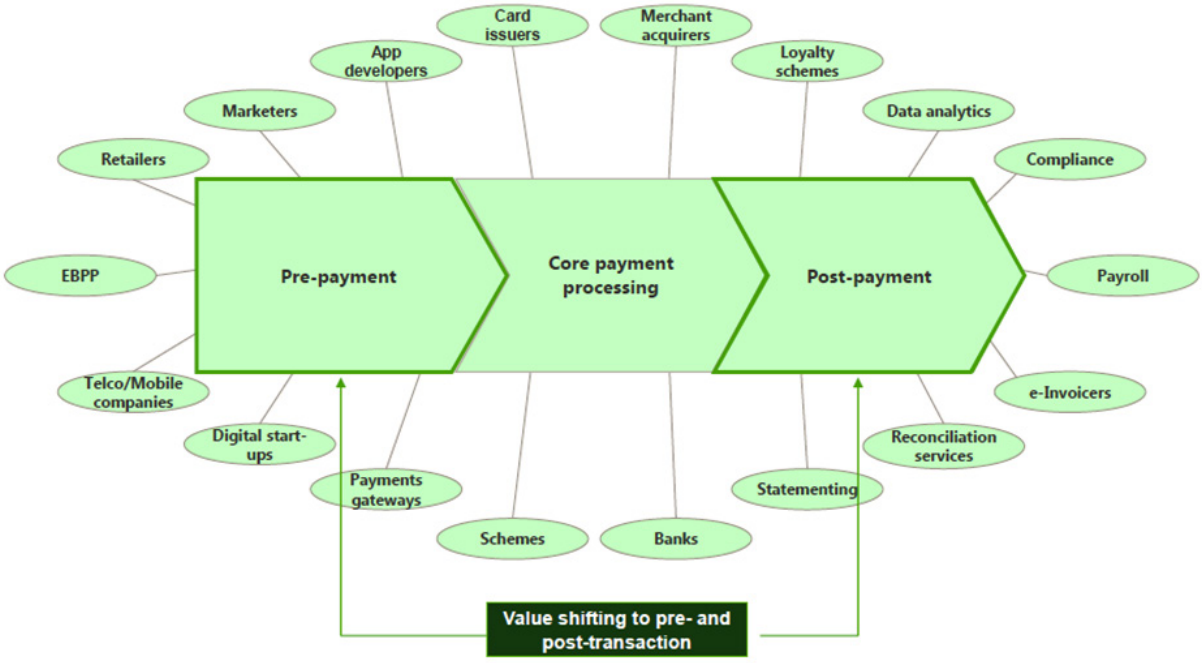
Extending the payments value chain

In every industry the chain of activities performed to deliver a product or service to market (the value chain) evolves over time. That is especially true in banking and financial services where traditional boundaries are changing at an unprecedented rate. New market entrants are beginning to disrupt customer service offerings. In addition to the core payment processing function, the value chain is extending to include more pre- and post-payment services.

The core payments processing function is at risk of becoming a utility business. However, consumers are placing a high degree of value on the services that occur before and after the core payment processing function. They do this because pre- and post-payment services are often 'intelligent' and integrated with other associated activities. In short, they contain information relevant to the consumer.

Figure 1 illustrates how the chain is extending and how value is increasing in the pre- and post-payment services areas.

FIGURE 1: PRE- AND POST-PAYMENT VALUE CHAIN



SOURCE: Deloitte for Australian Payments Council Presentation, 2014.

Under NZ's current BACHO messaging standard, those offering pre- and post-payment services (including Participants and other third parties) develop separate offerings from the limited base transactional information that is available. The BACHO messaging standard imposes constraints on how new entrants and existing providers offer the consumer integrated digital services as the consumer travels the pre-payment, payment and post-payment value chain.

However, if NZ was to adopt ISO 20022 it would be significantly easier to get adjacent to the consumer and offer new information based services. Banks and payment processers could offer a greater range of pre- and post-payment services and develop partnerships with others who wish to do so. Consumers would have the ability to choose from a wider range of rich and integrated payment services. In addition, banks and payment processors could achieve higher levels of automation and straight through processing. Such an outcome is possible because ISO 20022 can transfer rich information using a single, common, global language for all financial communications whatever the business domain, the communication network and whoever the counter-party is.

Conclusion

Global momentum towards ISO 20022 is increasing as members of various payments communities are awakening to the benefits the standard can deliver. Specifically, the functionality enabled by IS0 20022 helps:

- increase interoperability,
- reduce payment processing fragmentation,
- deliver digital payment based services,
- create operational efficiencies,
- provide a platform for easier future change and innovation, and
- support unlocking high value-add integrated services.

Against that backdrop we present our analysis of the strategic opportunity of ISO 20022. Our analysis is based on desk research only. ISO 20022's benefits extend beyond payments as its potential scope can encompass all financial services (e.g. treasury, cash management, superannuation, etc) and the interoperability between these different financial services. However, our analysis is primarily focused on the payments instruments that fall under the banner of the Bulk Electronic Clearing System (BECS)[7]. These include direct debits and credits, cheques and the BACHO file format standard. Appendix two (see page 33) provides a full description of the scope and limitations of the research and the methodology used to produce this paper.

7 BECS is one of four clearing systems governed by Payments NZ.

Strategic assessment

Global influences on payments messaging

Economic activity now takes place in a world where:

- Having data and information on commerce and payments is a critical strategic advantage.
- The interchange of goods and services, ideas and other aspects of culture are being integrated across national boundaries.
- Regulators want more and better information on the propriety of domestic and international financial flows.
- There is a growing expectation that business processes will be automated and produce ongoing efficiencies.
- Rapid technological change and innovation support increased connectedness.

In this section we look at the environmental trends that have emerged in light of the above global influences. We go on to consider the resulting business needs and strategic drivers for adopting ISO 20022.

Global influence: Data and information

Environmental trend

Big data and the power of insight:

- Information based commercial value propositions.
- Automated customer targeting.

Resulting strategic drivers

- Need for quality data inputs.
- Need for increased processing capability, data warehousing and effective knowledge management systems.
- Need for integrated information in usable and interoperable data formats.

ISO 20022 strategic solutions

- Ability to converge data about the payment into the payments message.
- Ability to ensure detailed payments remittance information travels with the payment, such as the reason for the payment.
- Ability to use consistent messaging standards over the entire value chain to ease the flow and improve the usability of information.
- Ability to unlock potential for new information-based value propositions.

Global influence: Globalisation

Environmental trend

Ever increasing integration:

- The rise of international supply chains, multinational corporations and global business models, the reduction of import/export trade barriers, increasing regional harmonisation (e.g. EU), international liberalisation of capital, and consumerism beyond borders (e.g. purchasing goods online from other countries).

Resulting strategic drivers

- Need for domestic markets to operate efficiently with the rest of the world, particularly with respect to the movement of money and the associated information about the transaction (global interoperability).
- Need for scalability and ease of cross-border financial access to markets (according to McKinsey, global cross-border trade flows are expected to rise at 8% per annum[8]).

ISO 20022 strategic solutions

- Ability to use the de facto global standard for payments clearing and settlement.
- Ability to develop and align domestic standards with international standards.
- Ability for corporates to leverage already pre-defined standalone remittance standards within the ISO 20022 framework (which flow through into the payments messages). This has the potential to allow trading partners to exchange uniform remittance information.
- Ability to bring financial institutions and their customers closer together both domestically and internationally as NZ's international markets expand and diversify. For example, in the future Australia and NZ could share and exchange interoperable payments files.

8 Source: McKinsey & Company (November 2014) *The future of global payments*. Available at www.mckinsey.com/insights/financial_services/the_future_of_global_payments

Global influence: Increasing regulatory and compliance requirements

Environmental trend

Obligation to screen, disclose and explain:

- Regulators and other stakeholders are seeking higher quality information on payments and parties to the payment.

Resulting strategic drivers

- Need to evolve business processes over time with greater ease and lower costs in order to meet regulatory requirements.
- Need to generate easily accessible information about the parties to the payment.
- Need to reduce domestic quirks and to harmonise with the rest of the world to help meet global regulatory requirements.

ISO 20022 strategic solutions

- Ability to use the flexibility of ISO 20022 to meet current and emerging regulatory requirements or guidelines and to do this with greater ease and less cost.
- Ability for stakeholders to achieve certainty on their compliance with regulatory requirements, especially as those requirements change over time.
- Ability to introduce more effective compliance and risk management mechanisms by leveraging rich information on the payment. For example, ISO 20022 messaging would support the referencing and authentication of payments as well as the ability to carry full originator and receiver information.

Global influence: Business process automation and operational efficiency

Environmental trend

The drive for productivity and straight through processing:

- High levels of automation via straight through processing.
- Perpetual drive for productivity and operational savings.

Resulting strategic drivers

- Need for useable information to support straight through processing.
- Need for automated financial reconciliation to replace manual processing.
- Need for modern platforms to drive productivity and savings and to overcome legacy constraints.

ISO 20022 strategic solutions

- Ability to overcome the legacy separation of the payment and related financial information.
- Ability to exchange more and better-structured remittance information that reflects the needs of all payments stakeholders.
- Ability for data to be carried consistently through all channels, creating value for all parties in the value chain, enabling straight through processing and allowing increased automated reconciliation of incoming payments with outstanding invoices.
- Ability to achieve productivity gains from consistent processing of remittance information. This leads to improved data quality, optimised cash flow from faster business cycles, improved forecasting, reduced errors and exception handling, and minimised technical challenges.
- Ability for financial institutions to provide additional information based value added services.
- Ability to support easier payment tracking, issue resolution and system reconciliation (e.g. extended referencing for both customers and financial institutions).
- Ability to accommodate complex business scenarios (e.g. inclusion of additional third party customers and financial institutions).
- Ability to reduce disputes and customer queries through better managed payment instructions and mandates, and better referencing.
- Ability to reduce architectural complexity for financial institutions as standards across systems and applications are aligned.
- Ability to migrate legacy systems to ISO 20022 centric (or friendly) new platforms and architectures with relative ease and to achieve ease of implementation and savings as XML is universally accepted by the software industry with readily available skill sets, tools and products.

Global influence: Technological connectedness

Environmental trend

Real time connected networks:

- People, businesses, organisations and governments are increasingly connected in real time networks.

Resulting strategic drivers

- Need for speed of response.
- Need for availability of system time.
- Need for standardisation to allow 'communication and transmission'.
- Need for connectivity to enable networks to function.

ISO 20022 strategic solutions

- Ability to use ISO 20022 messaging standards across different channels, payment processes and payment instruments with relative ease.
- Ability to reuse and recycle ISO 20022 messages in the standardised XML format into other business processes.
- Ability to use ISO 20022 messages to indicate the speed/ priority of payment.

Global influence: Pace of technological change and innovation

Environmental trend

An increasing pace of technological change and innovation:

- High levels of disruption occurring in established industries.
- Increasing rate of innovation.

Resulting strategic drivers

- Need to be able to evolve and innovate quickly.
- Need for flexible and agile systems and platforms to support evolution.
- Need to be able to unlock new value propositions with ease.
- Need to overcome legacy constraints to establish modern platforms to drive efficiencies and savings.
- Need to produce collective and individual innovation in payments.

ISO 20022 strategic solutions

- Ability to launch new products and value propositions on the back of ISO 20022's richer information set and structured remittance information.
- Ability to reduce the time to market for new service offerings. The flexibility of ISO 20022 would allow the introduction and leverage of new data elements on the standard message without having to wait for the slowest adopter.
- Ability to address legacy system complexity, e.g. using ISO 20022 for a financial institution's internal financial processing.
- Ability to increase innovation capabilities by providing flexibility and adaptability.
- Ability to achieve quicker turn-around in payment system enhancements and innovation due to the wide range of software providers, IT solutions, large amounts of off-the-shelf software options, and high levels of XML IT expertise (both locally and internationally).

Conclusion

The trends and business needs outlined above speak to a future that will require a fundamentally different approach to payments messaging. In that future all members of the payments community will require more flexible business solutions to allow them to adapt to rapidly changing circumstances with minimum disruption and cost. Our current legacy standard, BACHO, will not permit the NZ payments community to fully take advantage of these trends. As a result, the community will potentially be left with messaging arrangements that fall well short of what is required to support a continually evolving digital economy. ISO 20022 on the other hand provides a platform that will enable the payments community to make the most of the opportunities that lie ahead.

Potential Strategic Outcomes and Potential Use Cases

ISO 20022 provides an incredibly flexible and intelligent messaging platform. That flexibility presents users of this standard with the opportunity to address a wide range of business needs, processes and customer demands in different ways. Because of its flexibility, ISO 20022 is best thought of as a future-proofed vehicle to achieve other strategic and business outcomes, rather than just a technical standard.

In the Lipis Advisors' research paper *ISO 20022 Implementation Best Practices* the authors concluded:

> *"The first step in getting an industry on board with the standard is identifying a need or problem that ISO 20022 can help address. Whether it is the updating of an old system, the creation of an entirely new system, a desire for faster payment processing or decreased operational/settlement risk, enhanced remittance information, or the need for new or improved products or services, the adoption of ISO 20022 is never the end goal; it is a tool that can help a system or organization achieve a goal. Getting this last point across is essential, and often the most difficult initial hurdle that needs to be overcome. Although many stakeholders are aware of ISO 20022, knowledge of how it works and what it can help an industry achieve is usually low. Therefore, educating industry stakeholders on how utilizing ISO 20022 can help achieve a certain end(s), or how it can address a specific problem is extremely important from the outset. Some interviewees told us that without this education (for which outside experts and consultants are often brought in), these initial business discussions can turn into complicated technical discussions that can distract attention from the task of establishing how ISO 20022 can (or cannot) help achieve a concrete business goal. An understanding of how ISO 20022 works can help address specific needs or problems across the broad market. Some of the benefits of ISO 20022 may be realized by using proprietary XML messages instead, but the value of ISO 20022 is in using standardized, reusable messages."*[9]

The community of potential ISO 20022 users is best placed to determine how they will leverage this intelligent messaging standard to best effect. In making that decision, the community should have absolute clarity on what strategic outcomes they would like to achieve by adopting ISO 20022. That in turn helps determine what business processes, data and information are required in the standard.

In NZ, one possible approach to the adoption of ISO 20022 is to tie it to those situations where the standard does at least one of the following:

- Addresses a clear business and/or service need.
- Acts as an enabler for other business purposes and requirements, such as assisting with the delivery of digital strategies and services based on those strategies.
- Enables Participants and payments stakeholders to leverage new business offerings and opportunities.
- Prevents the payments function from being marginalised as a low value utility service.
- Allows regulatory needs to be addressed more efficiently.

We have prepared nine 'Potential Strategic Outcomes' and twenty 'Potential Use Cases' to help illustrate the long-term strategic potential of adopting ISO 20022 in NZ. It is important to emphasise these are an illustrative rather than a recommended set of strategic outcomes and use cases.

With the exception of 'Migration of Existing Capabilities' directly below, each of the nine 'Potential Strategic Outcomes' and twenty 'Potential Use Cases' (PUC) represent a current gap in NZ's current payments capability.

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9 Source: Lipis Advisors, *ISO 20022 Implementation Best Practices.* Available at www.cdnpay.ca/imis15/eng/initiatives/ISO_20022_ICPACE_Research.aspx

1. Migration of existing capabilities

Potential Strategic Outcome

Avoid disruption and unforeseen loss of functionality by ensuring that, as a minimum, all existing legacy functions are migrated to the new standard.

Potential Use Case

PUC01 That, as a minimum, the existing legacy 160 character BACHO messaging standard is fully migrated into the new ISO 20022 messaging standard.

2. Rich business remittance information

Potential Strategic Outcome

Enable business process efficiencies by adding rich remittance data within the payments message, thereby unlocking Participant and payment stakeholder savings and revenue opportunities.

Potential Use Cases

PUC02 Enable straight through processing and automated reconciliation by including rich remittance information, such as the reason for the payment. Examples of that information could include:

- Contract number (e.g. contract, policy, authority or agreement reference number).
- Invoice number.
- Originator details (e.g. enabling more space in the payments message for payments reference details, such as being able to write a full name, email address, etc).
- A customer number assigned by the receiver of the remittance information.
- The date associated with the referred document (e.g. date of invoice issue).
- Purchase order number.

PUC03 Provide the opportunity for automated straight through processing of payments with variations or exceptions (which are often the hardest to reconcile). Examples may include:

- The amount of money in the original remitted document.
- The application of an agreed discount to the amount due.
- The adjusted amount actually paid.
- Full or partial payment.
- A reason code for the adjusted amount.

3. Enable value-added services

Potential Strategic Outcome

Unlock new service and revenue opportunities for Participants and payments stakeholders by enabling the exchange of information associated with the payment.

Potential Use Cases

PUC 04 Include an internet URL address within the payments message, enabling the recipient(s) to go to a website to obtain additional information about the transaction or to facilitate additional commercial activity.

PUC 05 Include notification instructions enabling post-payment communications that can be acted upon by a party upon payment completion. For example, enabling automatically

generated emails or texts sent by the biller to their customer. Alternatively, enabling communication from the bank to the beneficiary or the beneficiary's representative (in a similar way as the notification rules for Same Day Cleared Payments do today).

PUC 06 Provide the ability to include lengthy free form remittance information. For example, allowing 2000 characters within the payments message for remitters to use for communication associated with the payment and other commercial offerings.

PUC 07 Extend the concept of rich remittance information further still by enabling the invoice itself to be carried within the payments message, thereby enabling Participants or payments stakeholders to unlock Electronic Bill Payment and Presentment commercial opportunities.

PUC 08 Revolutionise electronic bank account statements by enabling customers to access rich post-payment transactional information on the origin, nature and associated information about the payment. This would enable Participants to offer tiered commercial offerings on bank account statement services.

4. Enabling efficient regulatory compliance via rich payments information

Potential Strategic Outcome

Reduce Participant and payment stakeholders' regulatory compliance costs by containing compliance related information or triggers within the payments message.

Potential Use Case

PUC 09 Include specific information within the payments message that is required or is relevant to regulatory compliance regimes from the Financial Action Task Force, Anti-Money Laundering regulations, and the Foreign Account Tax Compliance Act, etc.

5. Use of identifiers to improve interoperability and streamline operations

Potential Strategic Outcome

Develop building blocks for customer connectivity and low friction payments to open opportunities for how NZ continues to modernise its payment systems.

Potential Use Cases

PUC 10 Improve future domestic and international interoperability by including internationally recognised financial institution identifier codes in the payments message, such as the International Bank Account Number (IBAN).

PUC 11 Differentiate and uniquely identify certain payment types, such as salary payments, to enable the development of more accurate debt affordability profiles.

PUC 12 Enable Participants and payments stakeholders to develop new 'payment by proxy' commercial service offerings by including a range of structured customer identifying data points (such as a mobile phone number or email address) within the payments message. The payment instruction tied to these proxy identifiers would be mapped to the correct bank account number so the payment can be routed accordingly. This would enable new person-to-person payments value propositions to be brought to market.

PUC 13 Add a unique identification number to each transaction, assigned by the originating Participant, to facilitate payment tracing and efficient customer service queries.

6. Payments time, speed and priority

Potential Strategic Outcome

Facilitate the future efficiency of NZ's payment systems by enabling the development of new time, speed, priority and intelligent payment scenarios.

Potential Use Cases

PUC 14 Facilitate customer management of the timing of intraday payments by allowing the customer to specify the exact release time for the payment on a given day. As the length of the BECS payments pipeline shortens, there will be increased customer demand to manage the exact timing of when payments are made. For example, a customer may wish to preload a payment instruction effective at 8pm on a given day.

PUC 15 Create dynamic payments by establishing conditional customer payment instructions and mandates. This would allow new cash management services and tools to be brought to market. A customer could use the cash management tool to create a conditional dynamic payment instruction instructing their bank to make a payment subject to customer defined pre-requisites. For example, if it is between the 18th and 21st of March, salary has been received and their account balance is over $20,000, then make XYZ payment.

PUC 16 Facilitate the development of a new near-real time payment instrument within BECS by including an 'immediate priority' indicator within the payments message. That would allow the payment to be processed with urgency into the SBI system, and posted with priority once received (e.g. a 'fast-as-you-can' BECS/SBI batched payment as a near-real time alternative to developing a whole real time payment system).

7. Modernising existing electronic credit and debit payment instruments

Potential Strategic Outcome

Use a modern messaging standard to enable the evolution and modernisation of existing electronic payment instruments.

Potential Use Cases

PUC 17 The current main electronic credit payment instruments of Automatic Payments, Bill Payments and Direct Credits could be streamlined and replaced by one generic 'electronic credit' push payment. The payments message carries rich customer instruction information to tailor the payment to the customer's instructions, which may result in replicating the current electronic credit payment instruments, or may be some hybrid or new version of an electronic credit.

PUC 18 The current Direct Debit payments instrument is either replaced or complemented by a new e-invoice standing order payment request. This would allow a biller or business to submit a pre-loaded payment request to a customer. The customer would then review and authorise the payment, debiting their account and crediting the biller's account. This adds a new option for initiating payments, which puts more control in the hands of the customer, while businesses have a new option to initiate prompt payments (for both one-offs and reoccurring) that are pre-linked to their accounting systems. The article 'SEPA: Banks discontinue direct debits in favour of automatic e-invoice standing order' (available at http://eeiplatform.com/14570/sepa-impacts-b2c-e-invoicing-northern-europe/) contains a detailed example of how Scandinavian banks are replacing direct debits with automatic e-invoice standing orders.

8. Global interoperability and cross-border payments

Potential Strategic Outcome

Ease of domestic trade with international counterparts, multinational corporations and global banks via the exchange of standardised financial information.

Potential Use Case

PUC 19 Use internationally recognised and widely adopted pre-defined ISO 20022 schemas to facilitate cross-border trade, increasing straight through processing and reducing points of trade friction.

(Note: PUC 10 regarding IBAN account numbers would also fit in this global interoperability section.)

Also, to see the ISO 20022 global adoption map go to www.iso20022.org/adoption.page.

9. Greenfield new payment system developments

Potential Strategic Outcome

Use a modern messaging standard when building new modern payment systems (as opposed to migrating from old systems).

Potential Use Case

PUC 20 While not central to the scope of this document, if the industry elected to build a new payment system, such as the NPP being developed in Australia, the adoption of ISO 20022 would avoid introducing legacy constraints into that new system.

(Note: PUC 15 and 16 are two alternative approaches for meeting the same faster payments business need).

An example of intelligent payments messaging in action

The impact of ISO 20022 stems from the intelligent payments functionality it supports. This functionality turns the relatively simple act of moving money from one party to another into a dynamic and efficient process that enables a wide range of rich pre-payment, payment and post-payment services to be offered.

On the next page we set out an expansive scenario that draws on the above Potential Use Cases. We present this scenario to illustrate the intelligent payments functionality at work and to demonstrate the potential practical reach of a new messaging standard.

The scenario is for illustrative purposes and is intentionally somewhat broad. It focuses on a domestic market transaction from the perspective of the customer (Helen) and the retailer (Urban Motor Bikes Ltd). BACHO would not support this scenario.

The scenario is not exhaustive as it only focuses on some potential changes to the customer experience. Also, as it is based on a domestic market transaction, the scenario does not reflect the significant global and corporate interoperability benefits of ISO 20022. In addition, it is a customer-facing scenario and it does not reflect any of the internal operational efficiencies and flexibility that would be experienced by Participants.

Example: Helen and Urban Motor Bikes Ltd

Helen wants to buy a scooter from Urban Motor Bikes. She test rode a bike in the weekend and likes it. Helen calls Urban Motor Bikes and says she thinks she wants to buy one but they should make her a good offer.

Mark, the sales person, wants to close the deal quickly. Mark creates an offer for Helen in his invoicing system which includes a 10% discount if the scooter is purchased by Thursday and an extra offer of a helmet at a heavily discounted price.

Mark logs into the company's online banking and imports the full details of his conditional offer (**PUC 02** – straight through processing) into the bank's payments portal (**PUC 02** – rich remittance information). In addition, Mark adds URL links (**PUC 04** – internet URLs) to product and warranty information and requests Helen receives a notification text from the bank (**PUC 05** - notification).

Urban Motor Bikes' bank creates a standing order payment request (**PUC 18** – new payment instruments). However, Mark does not know Helen's bank account number so Urban Motor Bikes' bank looks up Helen's mobile number (from the payments request) on the proxy database (**PUC 12** – proxy mapping) and maps the payment to Helen's correct account. The bank then sends the standing order request to Helen's bank.

Helen's bank sends her a text saying she has received a legitimate payments request (**PUC 05** – notification). Helen clicks through the link in the text, logs into her banking app and reviews the standing order payment request. The payment request includes a free form message from Mark (**PUC 06** - free form remittance information) and a URL link to details of the helmet and warranty information.

Helen decides to accept the deal presented by Mark but she needs to wait until payday on Thursday before she is able to make the payment as she has a few other commitments to meet that day too, like her rent!

Helen creates a dynamic conditional payment mandate (**PUC 15** – dynamic payment mandates) in her bank provided cash-management tool. The request tells the bank to pay Helen's rent as soon as her salary is received into her account and, if her account balance is over $5,000, to accept the discounted standing order payment request from Urban Motor Bikes.

The bank recognises the salary payment (**PUC 11** – payments identifiers) and the conditions of Helen's dynamic payments mandate are met and the payment is made to Urban Motor Bikes on time.

The company's accounting system is integrated with the online banking and uses the rich remittance information to automatically reconcile the discount (**PUC 03** – straight through processing), registers the additional helmet purchase (**PUC 03** – straight through processing of exceptions) and sends an after-hours automated text to Helen confirming payment.

On Friday morning Helen turns on her phone to see the purchase has been made. Helen logs on to her banking app and reviews her statement (**PUC 08** - rich bank account statements) to confirm the payment included the discount and the helmet. Mark arrives at work and his system provides him a notification of the purchase. He calls Helen (personal touch) and she goes into the shop and then rides away on her new scooter.

New Zealand current state

We now turn to NZ's current state looking specifically at Settlement Before Interchange (SBI) for inter-Participant bilateral clearing, Participants and BACHO. The bulk electronic payment instruments considered in our current state analysis are:

- Direct Credits
- Bill Payments
- Automatic Payments
- Direct Debits
- Cheques (the electronic payments message exchanged between Participants to settle money and exchange information for bank statements and not the cheque or its image)

While ISO 20022 can be used for other payment instruments, such as SWIFT MT messages, cards or mobile payments, these are considered to be out of scope for the purposes of this analysis. However, the benefits of ISO 20022 are not limited to these in-scope payment instruments. ISO 20022 helps create an end-to-end holistic payments platform that is not constrained by traditional payment instrument categorisations or boundaries.

Settlement Before Interchange

Introduced in February 2012, the SBI system uses ISO 20022 messaging standards. Each batch of payments submitted into the SBI system uses .pacs ISO 20022 messaging to exchange payment files and settlement information between SWIFT, Participants and the Exchange Settlement Account System (ESAS)[10].

SBI current state summary:

- ISO 20022 is already used for inter-Participant clearing and settlement through SBI.
- The file transfer standard used to settle SBI transactions is managed by the BECS Management Committee.

Participants

Around the world established financial service providers and banks face significant legacy system challenges and constraints as they attempt to modify those systems to respond to a rapidly changing financial services landscape. The same is true in NZ.

All Participants are executing digital strategies and, as a part of this, many existing Participants are making substantial investments and running major change programmes to upgrade core systems to overcome legacy system constraints.

Without knowing the specifics of the core systems used by our Participants, it is very probable their upgraded or planned systems are ISO 20022 centric, or at least easily compatible. The implication is there is very likely to be a window of opportunity for Participants to integrate ISO 20022 messaging standards and processes into their investment and change management plans.

Participant current state summary:

- The replacement of core legacy systems is a key focus for Participants.
- Upgraded core systems are very likely to be ISO 20022 centric or compatible, which creates a window of opportunity to integrate ISO 20022 messaging standards and processes.

10 ESAS is a settlement system operated by the Reserve Bank of New Zealand.

BACHO payments file

BACHO is the current file standard used by all Participants. All payments information exchanged between Participants for the payment instruments previously mentioned is contained in this file standard. The file has a fixed length of 160 characters in which all information required to process the payment is contained. The BACHO standard is currently owned and managed by Payments NZ and falls under the direct responsibility of the BECS Management Committee.

Prior to the establishment of SBI in February 2012, both the BACHO and QC file formats were in use. The introduction of the SBI system allowed the consolidation to only one file format – BACHO.

The primary problem with BACHO is its inflexibility. It was first created in the 1960s at a time when the world of payments was relatively stable. Only three major changes have occurred to BACHO in the past 50 years, all of which occurred in the late 1990s or early 2000s. Each of these changes resulted from a major industry initiative:

- Electronic dishonours.
- Cheque imaging.
- Introduction of the direct debit instrument.

The introduction of the direct debit instrument provides a stark illustration of BACHO's lack of flexibility. When this instrument was introduced a new direct debit initiator code had to be added into the BACHO record. However, there was insufficient space to do so in the BACHO standard. A work-around solution was created using 'packs decimal field compression'. This is a compression technique to squeeze two characters into a space designed to only fit one character. This compression technique now causes some processing complications as Participants have to pack and unpack data to/from these fields using out-dated computing techniques.

The BACHO format determines the type of information that is carried with the payment, e.g. type of payment, debit or credit, value, date, remittance information, etc. From a customer perspective, BACHO provides customers with three fields, each with room for 12 characters, for their reference or remittance information. Customers populate these free form fields with codes, invoice numbers and other relevant unique identifiers when they create their payment instruction. These customer-entered identifiers are then carried by the BACHO file between Participants through the SBI system. Customers use their unique identifiers to assist in linking up the payment detailed on their bank statement to other more detailed information about the payment, e.g. the invoice, reconciling accounts, attempts at straight through processing, etc.

The limited remittance/reference information carried with the payment forces other important information about the payment to be carried via other means. This leads to information about the payment being separated from the payment itself. This separation results in the commoditisation of payments with other information based value added services being performed elsewhere, often by third parties. As signalled earlier, this is a key strategic issue for the payments community.

Unsurprisingly, the BACHO file format is also the key determinant of what information is put on bank statements. Transaction-based information on bank statements is generally lifted out of the data contained in the BACHO file. As a result, bank statements are relatively static with limited dynamic opportunities. Accordingly, the ability for banks to provide customers with rich transactional information is very limited.

Somewhat ironically, several Participants already use ISO 20022 for many of their internal payments processing functions and they have to 'dumb down' the payments information to fit it into the BACHO format.

Any future innovation or change to any information carried in the BACHO file is likely to be very challenging, costly, slow and expensive.

BACHO current state summary:

- The BACHO file format is an antiquated legacy file format.
- Excluding cards and MT high value payments, the BACHO file format is used to conduct most electronic payments in NZ, including the majority of bills paid and salaries.
- From the customer's perspective, BACHO imposes significant constraints on how much information about the payment is carried in the payments message.
- BACHO imposes significant constraints on the information contained in bank statements.
- BACHO constrains innovation at many points along the value chain.

Adoption SWOT analysis

In this section we look at the strengths, weaknesses, opportunities and threats associated with NZ adopting ISO 20022. Previous sections of this document have already indicated the nature of the strengths and opportunities. Table 1 expands on these strengths and opportunities and also presents the weaknesses and threats associated with NZ's payments community adopting ISO 20022.

TABLE 1: SWOT ANALYSIS – ABILITY TO CREATE AN INTELLIGENT MESSAGING ENVIRONMENT USING ISO 20022

Strengths	Weaknesses
• High domestic penetration of electronic payments. • SBI is easily able to carry ISO 20022 messages and already uses the standard. • Only one file format (BACHO) to migrate. • Proven track record of industry self-driven macro change. • Ability to leverage other jurisdiction's/ organisation's skills and experiences, including SWIFT (NZ has high levels of SWIFT usage), Australia, Canada and South Africa. • Some Participants already use ISO 20022 internally to varying degrees.	• Difficulty of getting major change agreed without regulatory pressure or mandate, as there is a tendency to focus on short to medium term initiatives. • Current lack of an agreed long term payments industry strategy or roadmap. • Differing levels of Participant internal ISO 20022 usage and strategies create differing motivation levels. • Constraints and complexities of some Participant's legacy systems. • Potentially low levels of collective industry understanding and knowledge of ISO 20022.
Opportunities	**Threats**
• Strongly aligned with those banks wishing to provide digital based information services. • ISO 20022 provides the vehicle to introduce other changes (i.e. any one of the Potential Use Cases set out above). • Starting consideration later than the rest of world provides opportunities to learn from their experiences and gives us the ability to 'work smart' and reduce the change impact (e.g. by leveraging Australia's ISO 20022 work). • Desire for Participants to get adjacent to customers in pre- and post-payments areas and provide new value propositions and service offerings.	• Crowded short term work and regulatory programmes compete for attention with longer term strategic issues, such as ISO 20022. • Preconceived notion of high costs of adoption before full analysis completed. • Possible high cost of adoption. • Viewing ISO 20022 as a technical standard instead of as a vehicle to achieve strategic outcomes. • ISO 20022 will require Participants to invest in enabling capabilities which are difficult to quantify in a business case. • The "if it ain't broke don't fix it" mindset. • Participant's work programmes are already full and locked in, e.g. industry changes already planned out until the end of 2016. • Some Participant parent banks might want to wait and see what happens with Australia's NPP before making investment in NZ payments infrastructure.

Adoption options assessment

Table 2 below sets out the range of options for the adoption of ISO 20022, ranked from low effort/impact to high effort/impact. The table presents two end points: 'kicking the can down the road' by doing nothing at one end and migrating BACHO to ISO 20022 and bringing remittance data and other data into that change programme at the other end. The table presents the high level pros and cons of these two end points and the options that lie between them.

TABLE 2: OPTION ANALYSIS

Option	Description	Pros	Cons
1 Do nothing	Do not consider ISO 20022 adoption at all.	• Minor: No effort required.	• Major: Ignores long-term strategic opportunities and consequences.
2 Defer consideration	Agree to defer consideration of ISO 20022 until a later date.	• Minor: No effort required in short term.	• Mid: Current legacy constraints continue to grow. • Minor: Migration would require long implementation period and deferring just delays the end point. • Mid: Miss key opportunity to integrate a position on messaging standards and rich information into the Payments NZ Payments Direction initiative.[11]
3 Decide to retain status quo and keep BACHO	Consider ISO 20022 but decide not to adopt it in foreseeable future.	• Minor: Has position certainty. • Minor: No effort required.	• Major: Locks in the legacy constraints of the current file format. • Major: Miss many strategic long-term opportunities. • Mid: Miss key opportunity to integrate a position on messaging standards and rich information into the Payments NZ Payments Direction initiative.
4 Explore other modern file formats (other than ISO 20022)	Undertake assessment of all modern file formats including ISO 20022 to identify best standard.	• Mid: Creates certainty the identified standard is the best fit for NZ.	• Mid: Potentially unnecessary effort given a clear global trend for ISO 20022 as the front runner (and to deviate from this trend threatens global interoperability proposition). • Mid: Focuses on tactical issues (what) and not strategic issues (why).

11 The Payments NZ Payments Direction initiative will, among other things, result in a consolidated future view of payments systems, payments products and payments organisations.

Option	Description	Pros	Cons
5 Migrate only BACHO into ISO 20022 as-is	Adopt ISO 20022 by mapping BACHO directly into it, without introducing any other additional changes.	• Mid: Some operational benefits to Participants when interchanging payments files. • Mid: Comparatively simple migration. • Major: Potential first phase to establish an ISO 20022 base into which subsequent future phases (e.g. options 6 and 7 below) can be added to. • Mid: Opportunity to up-skill industry and gain experience before tackling more significant change in subsequent phases.	• Major: Fails to unlock the majority of the benefits of adopting ISO 20022, i.e. affects operations between Participants but no new customer facing value proposition or changes. • Major: Would be limited justification to take this option if this was the end-point and there was no further work programme beyond it.
6 Migrate BACHO and introduce remittance data	Option 5 above plus add new capability to carry remittance information.	• Major: Unlocks a significant amount of new value, including acting as an enabler for Participants and other payments stakeholders to gain efficiencies and savings and provide new information based services. • Major: Achieves the key enabling strategic benefit of merging the payment with the rich information about the payment. • Major: Enables Participants to provide value add information into bank statements. • Mid: Ability to leverage other already-developed and internationally recognised remittance standards. • Mid: Helps prevent electronic payments from becoming a commodity where value added financial services are provided elsewhere, often by third parties.	• Major: High levels of potential change, flowing right through to customers. • Major: Potential cost and effort.
7 Migrate BACHO, introduce remittance data and other data	Option 5 and 6 above plus additional information in line with the agreed strategic outcomes.	• As per option 6. • Major: Maximises full set of benefits in line with any agreed strategic outcomes.	• As per option 6 but incrementally greater.

Conclusions

From the research undertaken to date and presented in this paper, we have drawn eight conclusions.

1. **Adopting ISO 20022 would provide significant long term strategic benefits and would help create an intelligent, digitalised payments environment.**

   BACHO is out-dated, constrains innovation and hinders financial service providers' and banks' attempts to meet new market and customer demands. Adopting ISO 20022 would enable a wide range of strategic outcomes to be achieved. These strategic outcomes are likely to include the characteristics of enabling innovation and being: information rich, digital, flexible, interoperable, and efficient.

2. **NZ is well positioned to adopt ISO 20022 but there are challenges.**

   The NZ payments community is well organised and well coordinated, especially when compared to other jurisdictions. This means we are well placed to seriously examine the adoption of ISO 20022.

   There are some material challenges to overcome, including agreeing the desired strategic outcomes that are sought, and obtaining industry approval and funding.

3. **A modern messaging standard can help prevent the payments function from being marginalised**

   Without the ability to provide customers with intelligent payments functionality, the forces of disintermediation and disruption in the finance and banking industry are likely to see the payment function become increasingly like a utility: reliable and predictable but with low value add. The result is the high value add and high margin services will increasingly be provided by third parties. Existing stakeholders in the payments community will be progressively separated from their customers as that process unfolds and will be less able to get adjacent to customers as they traverse an extended payments value chain.

4. **Adoption of ISO 20022 enables information based innovation and commercial opportunities.**

   While the ISO 20022 standard itself is not a commercial vehicle, it is highly likely to enable Participants and other stakeholders to pursue a wide range of information based innovations, services and commercial opportunities. In particular, ISO 20022 should allow Participants and others to leverage data rich information to open up other predictive, knowledge derived and information based commercial opportunities.

5. **Little benefit in delaying consideration**

   The NZ payments industry is comparatively late in commencing its strategic considerations with respect to ISO 20022. The current constraints posed by BACHO will continue to grow over time as new technology driven innovations and advancements continue at an escalating pace.

   Starting the process of detailed evaluation now makes sense because if a decision is made to adopt, the resulting implementation will not be quick. Moving to ISO 20022 is likely to be a multi-year project and will require a high level of coordination across the wider payments community.

6. **ISO 20022 is the preferred messaging standard**

Global evidence clearly points to ISO 20022 being the preferred payments messaging standard. In addition to the many other benefits ISO 20022 delivers, it is the best standard to deliver global interoperability and economies of scale benefits. Other jurisdictions that have undertaken option assessments have found ISO 20022 is their preferred standard. There would be little benefit in undertaking an option assessment of other messaging standards.

7. **The right approach is to focus on strategic outcomes**

Implementing ISO 20022 is not an end-point in itself; ISO 20022 is the means to achieve other desired strategic outcomes. In the absence of a regulatory mandate to implement ISO 20022 (such as in Australia or Europe), the best way for an industry to adopt the standard is to establish a wider strategic framework with clear strategic outcomes. We believe the payments community should first focus on that wider strategic picture and not on the detail of ISO 20022 or the business case to implement it.

8. **Consultation will be required on desired long term strategic outcomes**

ISO 20022 is predominantly an enabler capable of delivering a set of strategic outcomes. Deciding on those outcomes requires consultation with Participants and other stakeholders. The NZ payments community should undertake a consultation process to establish the set of strategic outcomes they would like ISO 20022 to help achieve. As a tool to draw out preferred outcomes, the consultation process could include an evaluation of the Potential Strategic Outcomes and Potential Use Cases detailed in this paper. Only once consultation has established this set of strategic outcomes will it be possible to assess what it would take to implement ISO 20022.

Appendix one: ISO 20022 background

Brief introduction to ISO 20022

Over the years the finance industry has created a number of messaging standards in response to the need for automation and to improve interoperability between the systems of different stakeholders. These messaging standards were specific to specialist areas and each area developed its own practices and formats. As the traditional boundaries between the different business domains became less rigid, the differing messaging standards became increasingly complex to facilitate the flow of information along the entire value chain.

ISO 20022 is a response by the international standards community to overcome these increasingly complex interoperability challenges and to deliver a set of messaging standards with commonality across all business processes. The ISO 20022 organisation describes ISO 20022 as *''a single, common 'language' for all financial communications, whatever the business domain, the communication network and the counterparty (other financial institutions, clients, suppliers and market infrastructures).''* [12]

ISO 20022 emerged in the early 2000s with the growth of internet protocol networking and the emergence of XML as the de facto coding system. The ISO 20022 standard offered a common way of using many different XML.dialects. ISO 20022's methodology for building messaging standards is based on the concept of three separate layers:

1. A business layer to develop and maintain well-structured messages. This covers the business processes and concepts and how they relate to one another.
2. A messaging layer to unify the many existing messaging standards. This provides logical messages or message models where a description of the information needed for a business activity to take place is organised in message components with syntax agnostic elements. A key feature is these components are reused across all messages from different business areas or organisations.
3. A syntax layer to provide the physical representation of the logical messages. XML (eXtensible Mark-up Language) is the primary syntax that is used.

All of the content described above is stored in a common repository, where the financial message definitions are categorised into well-recognised functional domains. These domains, or business areas, are uniquely identified by four-character codes called business area codes. As all of these business areas use the same ISO 20022 language they are all technically capable of talking to each other. Some examples include:

- pain: Payments Initiation (e.g. corporate-to-banks for generating payments)
- pacs: Payments Clearing and Settlement (e.g. used by Payments NZ's SBI system)
- camt: Cash Management
- setr: Securities Trades
- sese: Securities Settlement
- acmt: Account Management
- tsmt: Trade Services Management

12 Source: ISO 20022 website, 'Frequently Asked Questions'. Available at www.iso20022.org/faq.page

Importantly, ISO 20022 also provides:

- An ISO 20022 Dictionary to help the financial community align and do business by providing concise definitions for common business concepts.
- No licensing costs, which means ISO 20022 messages are free for anyone to implement on any network.
- A technical syntax (XML), which enjoys high levels of support from software platforms and tools. The standard is also designed to allow the use of other syntaxes as new requirements emerge.
- ISO 20022 XML schemas, which provide a high level of business validation, reducing the risk of sending or receiving incorrect data.
- An open source standard allowing the contribution of new content, provided contributors follow the procedures set out by the standard's managing body.

Why ISO 20022?

As ISO 20022 is not the only modern payments standard available that a payments community could adopt, it is worth examining this paper's assumption that ISO 20022 is the preferred payments message standard.

As we are relatively late in establishing a strategy with respect to messaging standards, we have the comparative advantage of having higher levels of certainty on what constitutes global best practice. One of the key reasons for proposing ISO 20022 as the preferred messaging standard to adopt is the clear and universal trend of other jurisdictions adopting it as their chosen messaging standard. Given that global interoperability is a key benefit, if NZ was to deviate from this global trend it would miss out on these significant benefits. Other leverage points supporting ISO 20022 as the preferred messaging standard include:

- ISO 20022 is an open source standard, with no licensing costs.
- Significant global IT expertise has been built up around ISO 20022.
- Many 'off the shelf' software packages are available to support ISO 20022 adoption.
- NZ is very SWIFT centric. While ISO 20022 is not SWIFT's standard, it is SWIFT's standard of choice and SWIFT is therefore developing many of their future strategies and innovations based on it. Other global influencers, such as the World Bank, also support the adoption of ISO 20022.
- NZ has already commenced its ISO 20022 journey as the SBI system uses ISO 20022 .pacs messages. In addition, many existing Participants already use ISO 20022 in their internal business processes and systems, including both large global corporate banks and some domestically based banks. This represents significant economies of scale and end-to-end straight through processing opportunities.
- Globally, many corporate customers are introducing ISO 20022 as the standard to exchange payments information with their bank.
- Over the very long term, the payments industry's use of ISO 20022 might expand to include cards, mobile and also replace MT message standards.

Other jurisdictions have undertaken option assessments and have found that ISO 20022 is their preferred choice. For example, the Canadian Payments Association (who are replacing their equivalent of our BACHO format) undertook an assessment of the available technical messaging standards. They assessed the available options for messaging standards against three guiding principles (below) and found ISO 20022 was the only standard that met all three principles:

1. payment agnostic (i.e. the standard can be used for various types of payments);
2. supports remittance data and payment information together in the same message; and
3. is aligned and interoperable with international standards.

In summary, while an option assessment could potentially be undertaken, it is virtually a foregone conclusion that ISO 20022 would be the preferred modern global standard suitable for NZ to adopt.

Challenges of adopting ISO 20022

Obtaining approval to implement

Global experiences indicate establishing a clear business case for migrating from BACHO to ISO 20022 is likely to be the most material hurdle, as there may be significant costs to Participants, and potentially other stakeholders, that need to be incurred to realise a set of strategic benefits.

These benefits accrue over the long term and are more difficult to quantify compared to shorter-term effort and costs. Accordingly, obtaining approval for NZ to adopt ISO 20022 may not be straightforward, though we doubt the approval process is insurmountable.

The Lipis Advisors research paper *ISO 20022 Implementation Best Practices* sets out the key advantages and disadvantages of adopting ISO 20022, as reported by the sample of international interviewees. A summary of the advantages and disadvantages is set out in Table 3, from the most commonly referenced to the least commonly referenced.

TABLE 3: REPORTED ADVANTAGES AND DISADVANTAGES OF ISO 20022 ADOPTION

Advantages	Disadvantages
Global interoperability	Difficult to build business case
Rich remittance data	Different implementations
Uniform and reusable messages	Large messages need bandwidth
Politically neutral	
IT tool availability	
Low cost after investment	
Strategic platform for innovation	

Our assessment is the advantage of ISO 20022 being more politically neutral would be less relevant in the NZ context. Similarly, the reported disadvantage of different implementations would be a more significant issue in the European context than would be the case in NZ.

Technical considerations

The technical hurdles fall into 3 broad categories: performance and bandwidth, technical infrastructure architecture, and skills.

1. **Performance and bandwidth**

   XML is the technical syntax employed by ISO 20022 and is associated with:

   - increased processing capability to parse the XML messages;
   - increased bandwidth, due to metadata being carried with the actual business data; and

- increased storage requirements to store the data in a form compatible with XML software tools.

This means users may need extra storage capacity. These challenges are being overcome with time and ever-increasing computing power. New XML encoding standards and compression techniques have also been developed that claim to dramatically improve the performance, network efficiency and power consumption of applications that use XML.

2. **Technical infrastructure architecture**

The adoption of ISO 20022 will necessitate a close examination of the technical infrastructure architecture that is deployed.

Unix-based server platforms are better suited to adopt ISO 20022 and use XML.

Those using mainframe technology would face more challenges, although the availability of Java and XML tools for mainframe platforms has increased tremendously over the past years. Those legacy application systems that are not compatible with XML would need to make use of a message middleware layer or an enterprise information bus to provide the XML interface and feed the business data into or receive the same from the application system.

3. **Skills**

ISO 20022 and XML have acquired a vast number of productivity tools, and due to its common use around the world, there is a well-established skills base. It is therefore not expected that a lack of skills would be a key challenge to address. However, in the NZ context, it is possible some expertise may have to be imported.

Appendix two: Purpose, objectives, scope and methodology

Purpose

The purpose of this study is to provide:

- A strategic assessment and analysis of the opportunity in adopting the ISO 20022 messaging standard, including the potential replacement of the current messaging standard, BACHO.
- A comprehensive strategic baseline upon which the payments community can evaluate whether ISO 20022 should be adopted as its messaging standard.

Objectives

The objectives of the study are to:

- Apply a global context and the most relevant global lessons learned and insights into the domestic NZ situation.
- Establish a view on the sustainability, suitability and value of the NZ payments community adopting ISO 20022.
- Identify the key strategic benefits and challenges of NZ adopting ISO 20022 as its messaging standard.
- Provide a baseline for industry consideration of NZ adopting ISO 20022.
- Increase the collective NZ knowledge of ISO 20022 by providing an informative and educational overview at a business level.

Scope

Business area

ISO 20022 is used to support a wide range of financial activity, including the exchange of financial related information in industries other than payments. However, for the purposes of this study, the following ISO 20022 standards areas are in or out of scope.

In scope:

- pain: Payments Initiation (e.g. corporate-to-banks for generating payments)
- pacs: Payments Clearing and Settlement (e.g. used by the SBI system)

Out of scope:

- camt: Cash Management
- setr: Securities Trades
- sese: Securities Settlement
- acmt: Account Management
- tsmt: Trade Services Management

Payment instruments

ISO 20022 can be used for many different payment instruments and messaging solutions. For the purposes of this study, the following payment instruments and scenarios are in or out of scope.

In scope:

- All BECS payment instruments (all 'source codes') including Direct Debits, Direct Credits, Automatic Payments and Bill Payments and any future evolution or future version of these electronic payment instruments.
- Cheques (for the inter-Participant interchange of the payments record and settlement).
- The BACHO file format standard.

While the scope focuses on the payments message, the scope also includes strategic consideration of the end-to-end flow and interoperability of financial information through the whole value chain. For example, with respect to a given transaction(s) we are interested in what financial information is (or could be) transmitted through the whole value chain, including the payments message. One of ISO 20022's core offerings is end-to-end financial interoperability along the whole value chain (and not just the payments portion).

Unless explicitly stated to the contrary, all other references to ISO 20022 used in the paper are made in the context of the in-scope messaging standards, and payments scenarios mentioned above.

Out of scope:

- The SBI system on the basis SBI already uses ISO 20022 .pacs messages.
- Cards based Point of Sale (e.g. debit cards).
- High Value Clearing System (e.g. MT103s, MT202s, and MT205s).

The Study

The scope of the study is to:

- Identify and review the most relevant international materials and apply their most applicable content to the NZ context.
- Identify key strategic benefits, challenges and potential uses of ISO 20022 in NZ.
- Provide a high level overview of ISO 20022 both in the global context and in NZ.
- Provide an analysis of, and establish an initial position on, the strategic opportunity of NZ adopting ISO 20022.

The following issues are explicitly out of scope of the work completed to date:

- Any direct recommendation on whether or not NZ should adopt ISO 20022. Extensive consultation with Participants and other parties along with further analysis would need to be undertaken before such a recommendation could be made. Widespread 'buy-in' would be required before adoption would be successful.
- Any detailed consideration of how ISO 20022 could be implemented (other than identifying a high level spectrum of options).
- Technical aspects and considerations of ISO 20022 (other than a brief description of what ISO 20022 actually is).
- Any recommendations on how the payments community should consider the strategic outcomes that could be achieved by adopting ISO 20022 as a strategic enabler.

Methodology

The analysis contained in this paper is based on secondary desk research only.

A vast amount of material is available on ISO 20022. As this is not a technical assessment of the standard, technical material was not considered in any substantive way. A stringent filter was applied to identify the most useful non-technical material to consider. That filter is based on:

- The use of the 80:20 rule. As this is an initial opportunity assessment further work will be required to develop, refine and agree NZ's position. Research stopped at the point where there was sufficient relevant material obtained to meet the objectives of the study. By implication, not all possible materials have been exhaustively researched.
- A preference for recent and relevant high quality research over research material of a lesser quality.
- The extent to which the material either applies to or could apply to NZ and the scope of this study. For example, greater emphasis was placed on material dealing with the replacement of legacy messaging formats and not on the use of ISO 20022 in brand new systems.

Based on these criteria, the study placed heavy emphasis on:

- The Lipis Advisors 2014 research on *ISO 20022 Implementation Best Practices* (available at www.cdnpay.ca/imis15/eng/initiatives/ISO_20022_ICPACE_Research.aspx). That research paper focuses on implementation once the decision to migrate has been made. However, it still contains many useful insights which have been blended through this study.
- The Canadian Payments Association's *ISO 20022 Strategy and Approach* board papers on replacing their legacy file formats with ISO 20022 (provided in confidence, with permission to utilise their generic strategic thinking and content where applicable to NZ). Refer to ''ISO 20022 - An overview'' (available at www.cdnpay.ca/imis15/eng/Publications/News/eng/res/ns/ISO_20022_overview.aspx) for an extensive set of publically available information.
- The Payments Association of South Africa's *Future-Proofing Our Electronic Fund Transfer Systems Through the Adoption of World-Class Inter-Operability Standards: Strategic Business Imperative for Migrating to ISO 20022 Standard* (also provided in confidence, with permission to utilise their generic strategic thinking and content where applicable to NZ).
- The CGI Group Ltd's 2014 White Paper *The Drive to Electronic Remittance Exchange in Business-to-Business Payment Automation* (availllable at www.cgi.com/sites/default/files/white-papers/cgi-drive-to-electronic-remittance-b2b-payment-automation.pdf).

The study placed light emphasis on:

- The Federal Reserve Bank (USA)'s *Payment Systems Improvement – Public Consultation Paper* and associated documents. Refer to http://fedpaymentsimprovement.org
- ISO 20022 organisation, refer to http://www.ISO20022.org/

Notable material not considered in any detail or used extensively in this study included:

- Australia's adoption of ISO 20022 as a part of its building of the New Payments Platform (NPP). The NPP is a greenfield development without legacy constraints whereas this study is concerned with replacing legacy messaging standards for existing payments instruments.
- SEPA's mass adoption of ISO 20022 across all EU countries and banks. This was on the basis the strategic drivers and business reasons for adopting ISO 20022 differ greatly to NZ due to the EU's unique regional characteristics and the resulting SEPA imposed mandates to adopt ISO 20022.

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