

Experiences from the Dutch instant payment project: From 0 to 289 million in one year

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Abstract In May 2015 the leading Dutch banks announced their ambition to offer instant payments (IP) to the Dutch market in four years. The complex and innovative programme, led by the Dutch Payments Association, delivered, in mid-2019, a new IP infrastructure that has now become one of the fastest growing IP environments, with over 289 million

interbank IP transactions processed in its first year (April 2019–March 2020). This paper looks back on that period and focuses on the elements that, in our view, were important to the successful introduction of this new payments infrastructure. The challenges, dilemmas and the rationale for the decision of the Dutch banking community to organise the IP project are described. The journey towards achieving all the set goals by means of a clear joint effort from the Dutch payments community was intense and rewarding. IP is expected to become the new normal for SEPA payments in the years to come, provided that some hurdles to full interoperability and reachability in SEPA will be overcome. This paper aims to share insights that may be useful to other parties that are considering introducing IP or that want to push a similar transition from conventional credit transfers towards a 24/7 available, interbank IP backbone (See figure 1 for actual transaction volumes on this new IP backbone).

KEYWORDS: instant payments, interbank project, payments infrastructure, Dutch Payments Association, Netherlands, De Nederlandsche Bank, real-time payments, ISO20022, faster payments, EPC, TIPS, ECB, EPC SCT Inst Rulebook, SEPA Credit Transfer

SETTING THE SCENE — THE DUTCH PAYMENTS LANDSCAPE AND PROGRAMME APPROACH

In order to understand the Dutch approach to the implementation of IP, it is important to understand the Dutch payment landscape that prevailed when the decision was taken, in early 2015.

The Dutch have a history of being at the forefront of payment innovations. The Netherlands' dense population of

17 million people is supported by a high penetration rate of high-speed Internet for households; this has contributed to the almost full migration from paper to digitally initiated payments. Electronic banking for households had already been introduced in the early 1990s. Currently, less than 1 per cent of the Dutch credit transfers (NL SCT initiation) are paper based, whereas cheques were already completely phased out back in 2002, when the euro was introduced.

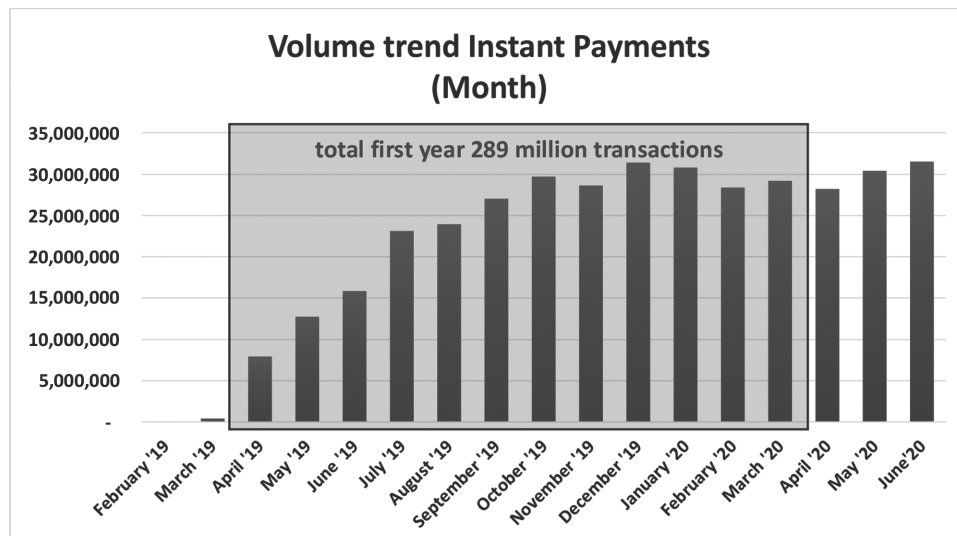


Figure 1: Interbank Dutch IP transaction volumes since market introduction

Card payments in retail populated 45 per cent of all point of sale (POS) transactions in 2014 — growing to over 65 per cent in 2019.

Ease of use, broad support by banks and attractive pricing of debit cards, direct debit, credit transfer and the e-payment method iDEAL have been the important building blocks of the high level of transformation towards digital payment methods. The iDEAL payment method,¹ introduced in October 2005 as an online direct payment guarantee whose ease of use was quickly recognised and embraced in full by the Dutch public and merchants, has been the e-commerce payment market leader for over a decade. The payment instrument is in effect a push payment triggered at the check-out by the merchant towards the buyer supported by an underlying irrevocable SEPA Credit Transfer (SCT). The debtor bank offers via the creditor bank the e-commerce merchant instant payment guarantee and is available for both merchants and customers 24/7 real time. On the buyer's side it taps into his or her online banking environment, inclusive of all security aspects, providing a feeling of comfort and trust for the payer. The guaranteed amount is withdrawn directly from the account. This ease of use and its clear advantages for both parties have been the reason for its continued leading market share in e-commerce payments in The Netherlands.

In 2014 many Dutch banks were already offering 24/7 intrabank credit transfers, transferring funds in seconds for 'on-us' accounts. The average availability of home banking channels is over 99 per cent. The interbank clearing, however, was based on batch clearing and was open on Target days only. As such, the credit transfer *interbank* offering was at best a same-day payment within hours. All in all, the Dutch market had become accustomed to doing their payments digitally, by card, online or mobile, and was used to high-quality service in terms of speed and uptime.

In 2014 several developments came together, prompting the largest banks in

The Netherlands to undertake a feasibility study with regard to IP:

- Technology — improving smartphone developments and data-processing capabilities
- Culture — the mindset of the millennials: 'I expect it now'
- Market demand — retail merchants wanted to receive their POS turnover funds 24/7 (same day/next day regardless of the weekend)
- Europe — a call for action from the European Central Bank (ECB) in November 2014 to implement IP
- Competition — the market position would be strengthened, keeping payment service providers (PSPs) in line with the move to the 24/7 economy.

The Dutch feasibility study was concluded in early 2015, with a positive advice for a giro payment solution and a clear vision that IP would become 'the new normal'. A giro solution was favoured over a cards solution owing to a better future fit in international developments (globally, the world was moving towards ISO 20022/XML) and owing to the expectation that given the less complex value chain, it would foster innovation better; Blockchain technology was considered not mature enough, in terms of both robustness and speed, to support 'the new normal'. An upgrade of the existing giro solution was disregarded as the existing batch set-up would deliver at best a transaction speed three to five times the speed of card transactions, resulting in a mismatch with the requirements of the 24/7 instant economy.

From the outset — taking into account similar endeavours in other countries — it was clear that it would take several years to deliver an IP infrastructure to the market and that it would be a costly investment for all parties involved. Therefore, board commitment from the front-running banks was critical and was secured before communicating the ambitious goal of

delivering a completely new infrastructure to the market in four years.

Given the length of the programme, in addition to securing board commitment, it was considered important to ensure that stakeholders were involved from the start. A specific stakeholder board was set up, composed of consumer organisations, corporate representatives, governmental bodies and pension funds, industry players, clearing houses, etc. This board was informed periodically, on average six times a year, about the progress made. At times specific feedback was requested and incorporated, for example with respect to possible uses case and implementation aspects. Biannually, the MOB² (Dutch national equivalent of the ERPB) received a progress report pertaining to the status of the programme.

The stakeholder involvement and transparency of the Dutch Payments Association with regard to the status of the programme have proven to be highly beneficial, as stakeholders embraced the ambition from the start and were also instrumental in the soft landing of the launch of IP. And in turn they embedded the Dutch vision and input into the European equivalent, the European Retail Payments Board (ERPB), which had IP also as an important topic on the agenda. The Dutch stakeholders had one important consideration for the national programme: at the start of the service, the quality of its service should be at par with other payment service offerings at the time, thereby ruling out up front any idea of a beta implementation.

In terms of market approach, the view from the start was that IP would become the ‘new normal’ in the belief that customers — and, as a result, businesses — would expect to be serviced instantly, 24/7 from their banks and that this would open up new opportunities for all parties involved.

To that extent five design principles for the new infrastructure were set:

1. Single transfers based on SEPA principles³
2. Payment received within (max) 5 seconds, 24/7 availability every day of the year
3. Initial use via mobile and Internet banking channels; other channels to be added later
4. A level playing field ensured via an open infrastructure
5. Focus on the Dutch market while safeguarding pan-European interoperability

Several comments are relevant in this respect. The maximum execution time was derived from the check-out experience for cards at POS; this led to the requirement that the funds should be available for the recipient within (max) 5 seconds, but preferably even less.

The programme’s focus was on delivering a complete working infrastructure composed of three layers: a product layer (to ensure a uniform customer experience towards the market), a clearing layer and a settlement layer. The service offering to the market, any overlay services, branding, etc. were scoped out, as this was regarded as competitive space. PSPs wanted the freedom to determine their own offering towards their customer base (Figure 2).

Given that, in principle, the infrastructure should cater to all market segments, even though consumers would be the primary target, the infrastructure would have to be able to support both a high transaction volume (set at 1 billion transactions annually) and high-value transactions (no maximum limit⁴), in order to be able to address the needs of all future service offerings. The choice was to build for the long run.

The leading banks, ABN AMRO, ING, Rabobank and De Volksbank, that had committed to the Dutch IP programme from the start, would safeguard sufficient reach in the Dutch market, covering more than 90 per cent of all current accounts, a critical

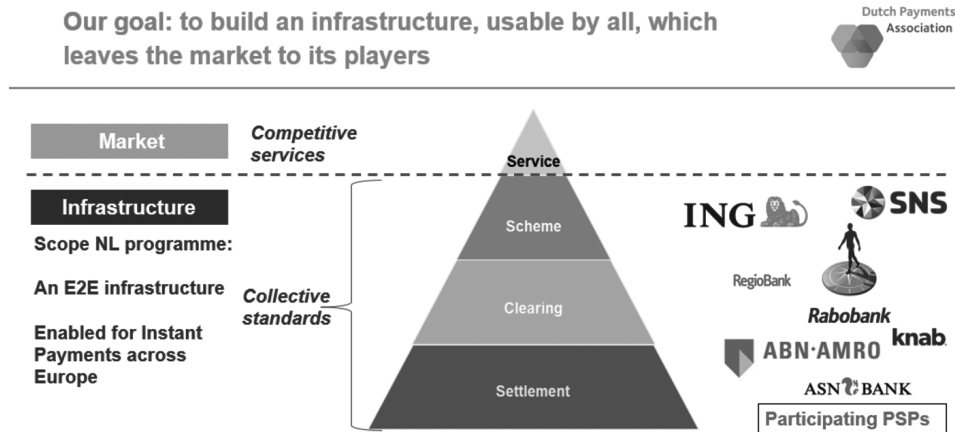


Figure 2: Scope Dutch instant payments programme

prerequisite to allow for an attractive product offering.⁵

The shared principle was that *all online and mobile-initiated credit transfers would become instant payment transactions*. There was no goal to phase out existing systems or to migrate to other products. This was left to the market. Participation in the IP programme by other banks or PSPs was entirely optional, and, therefore, the existing credit transfer infrastructure would remain in place alongside the new infrastructure. In the course of the programme one additional (challenger) bank signed up. The five banks and their seven brands that joined forces in realising the new instant payment infrastructure were ING, ABN AMRO, Rabobank, SNS, ASN, RegioBank and Knab.

The Dutch commitment to the market was clear and simple: offer 24/7 IP to all customers using mobile and online banking channels as of May 2019, the scheduled start date.

PRODUCT NL DESIGN

By mid-2015 the starting points for the interbank IP programme were outlined. The participating banks committed to have IP operational in (the first half of) 2019 and support the essential requirements. The five important elements as set and agreed in the exploratory phase and publicly shared with

the MOB (Dutch national equivalent of the ERPB) were the basis for the further product design.

An important shared principle was that real-time payments would become the ‘new normal’, which, in due course, should be to able to replace SCT processing for the greater part. The programme’s goal was thus to design, build and deliver a new infrastructure that could process mass transaction volumes. This was opposed to the approach where real-time payments are an additional payment instrument, mostly used in person-to-person (mobile-initiated) payments.

At that time, the set-up of the EPC SCT Inst Rulebook was still work in progress. The outline of the EPC SCT Inst Rulebook was known in general, but would not be formally set until November 2016. This timeline conflicted with the delivery time promised by the Dutch banks, which required the finalisation of more detailed business and operational requirements ultimately in Q2 2016 in order to be able to begin building the infrastructure on time.

IP are based on the immediate, irrevocable and full availability of funds for the beneficiary. While in Europe the EPC set out to deliver the rulebook, leaving clearing and settlement specifications to the market, the Dutch programme was of the opinion that the PSPs would benefit most from an integral approach where product

design (EPC Rulebook) and clearing and settlement specifications were developed in one hand. During the programme it became increasingly clear that clearing and settlement (per payment transaction) are fully intertwined with the product requirements. An open mind was kept to input from market players and service providers, among others, via an open market consultation of the full requirements suite. This open market consultation, where any party could join and offer comments, proved extremely useful. It was executed in the first half of 2016 and, among others, confirmed that the speed of the transaction was less of an issue for the service providers in the market to provide than originally anticipated. To determine the necessary requirements, three work streams, which aligned their progress continuously, were set up to work in parallel, each staffed with employees of the participating banks.

Product

The first step was to define the payers/payee's benefits. The identified benefits were then pitched before a panel of payments innovators and/or digital experts, not working at a bank in a 'Dragons' Den' setting.⁶ It was believed that this would result in a better understanding of what the perceived advantages of real-time payments could be from an end-user perspective. One of the insights was that the immediate receiving and direct availability of the funds for the beneficiary were considered the main advantage. The 'Dragons Den' helped to sharpen the end-user requirements, for instance with regard to speed and confirmations. To put it all in perspective, the challengers saw the introduction of real-time payments as 'getting on par with the 24/7 economy and services'; a promising infrastructure full of unknown potential.

As mentioned earlier, the stakeholders — organised in the Payment Stakeholder Forum of the Dutch Payments Association — were

very much involved in the product definition process. They were asked what opportunities they could foresee when real-time payments were available and what possible effect real-time payments could have on their business. This was done in workshops and captured in visuals (See graphics A1 and A2). The following years proved that these visuals of the opportunities and impact of the introduction of real-time payments were valuable communicators. They were made public and reused by the stakeholders in their feedback to their communities and reference groups.

The product definition process led to two complementary sets of NL credit transfers:

1. NL Instant Payment (main characteristics)
 - a. maximum execution time 5 seconds (funds available on the beneficiary account)
 - b. no maximum amount (in the standard, each bank may set its own maximum per payment channel/customer)
 - c. 24/7 available, for all mobile and online initiated transactions
 - d. confirmation of payment to the payee — optional
2. NL Instant Payment-Not Time Critical (IP-NTC)

same as above with one difference; no reject time-out

These IP-NTC transactions are, in principle, processed in the same way and along the same timeline as the standard instant payment. But in the eventuality where the timeline cannot be met these transactions are not rejected and sent back to the originator bank, but they are buffered and processed as soon as possible. This creates the opportunity to use the 24/7 availability of the IP infrastructure also for processing payments that, by nature, do not have the need to be always certain of the maximum of 5 seconds timeline or else are rejected. One of the use cases for this is the processing of standing orders.

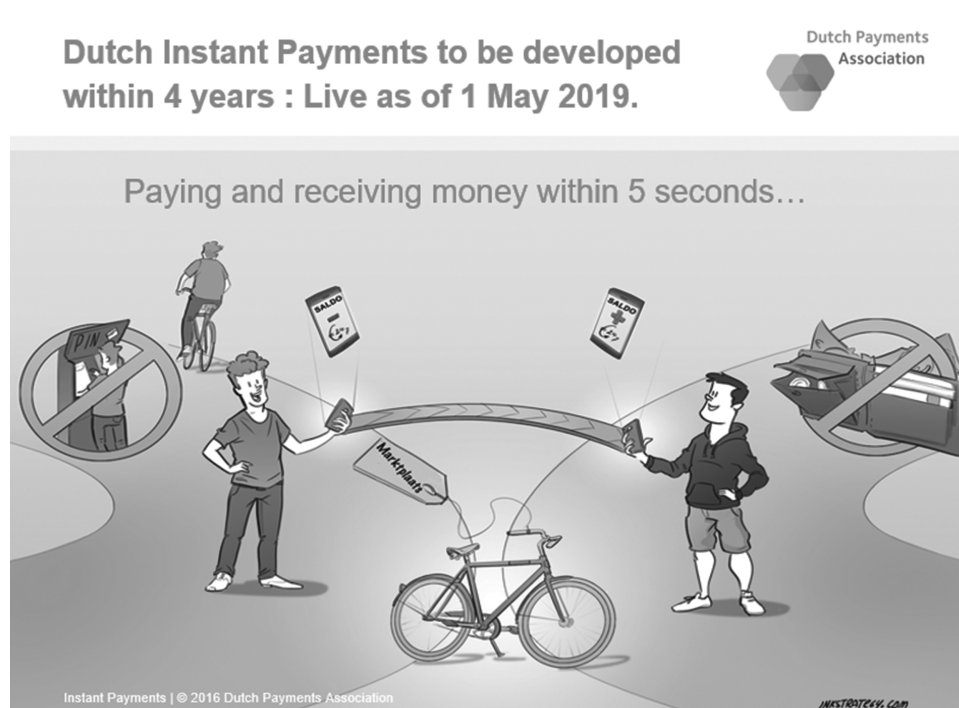


Figure A1: Instant payments will support person-2-person payments instead of cash (commitment shared at the start of the programme)

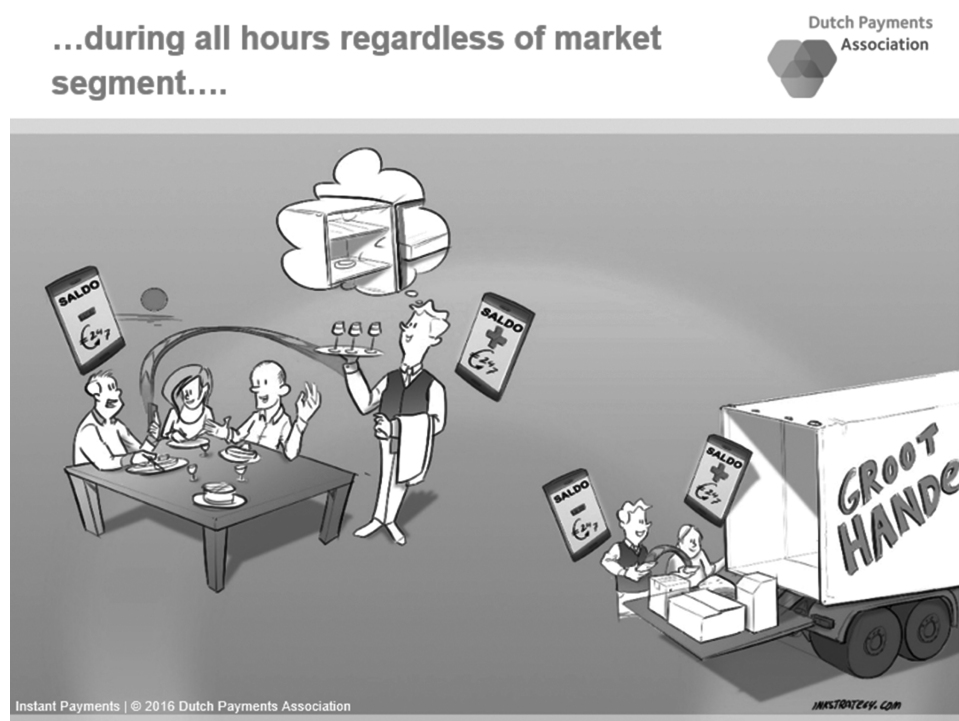


Figure A2: Instant payments will support both person-2-person payments as well as business-2-business, at any time (commitment shared at the start of the programme)

Clearing

In real-time payments processing, the transaction data and the settlement are strongly intertwined. During the course of the programme, it became increasingly clear that the liquidity requirements would largely determine the clearing set-up. All real-time payments would have to be processed end-to-end as single transactions. With that as a reference, once the choice was made for the settlement model (see section Settlement), the clearing work stream could take a deep dive into the interbank messaging for the new IP infrastructure. The experts worked intensively on determining which point in the transaction chain should and could be the one and final 'point of no return'; when was the transaction to be considered irrevocable? This, especially in the case when the final confirmation of the transaction status could (in exceptional situations) not be communicated to the originator bank, but the funds were already released to the beneficiary. Other topics that needed much attention and discussion were operational recovery after incidents (incident management), how to ensure uptime in regard to the need for service windows or how to handle the transaction volume in regard to the desired uptime. At the time, no facts were available on the costs related to having a real-time credit transfer infrastructure operational. Especially the 24/7 (no downtime) requirement and fully automated exception handling and the impact on the interbank specifications were unknown territories. The requirements and solutions were discussed several times in the course of the programme, continuously balancing between the ambitious requirements, on the one hand, and the market demand versus the cost implications, on the other.

Settlement

The 'classic' operational separation between clearing and settlement of a payment

transaction is not present in real-time payments; each transaction needs to be cleared and settled individually within the 5 seconds between initiation (acceptance of the payment order) and the availability for the beneficiary. The effect of this bond is that IP has a very direct impact on the liquidity management consequences; the volatility of real-time payments requires aligned (fully automated) and flexible liquidity monitoring and funding around the clock, even at night and on weekends. The pre-funded liquidity pool, whereby the payout of the instant payment is guaranteed to the beneficiary bank by means of a reservation in the pre-funded liquidity pool of the initiating bank, needs to be sufficiently funded per bank, and is ring fenced from all other 'liquidity pools' so as to safeguard the availability of the infrastructure as a whole. Being able to monitor and update the banks' liquidity pool even on weekends leads to the Dutch request to extend the Target2 opening hours on weekends and on banking holidays.

The three work streams worked out the first set of detailed requirements by the end of 2015, and this remained the solid basis for the development during the following phases. The instant payment programme set-up and decision-making structure made sure that these three sets were and stayed in sync during the further realisation of the new NL IP infrastructure. Strict version management and approval at the steering committee level ensured that all involved were committed to and informed of the same set of specifications at all times.

Compliance with the EPC SCT Inst Rulebook was a precondition from the start. The requirements discussed and agreed by the programme by early 2016, based on the 'new normal' design principle, proved to be a good reference for the Dutch support and input on the EPC SCT Inst Rulebook, which was published in November 2016. This was especially in view of the fact that the EPC Rulebook limited itself to the product layer, while the Dutch requirements

were, at the time the rulebook was discussed, already finalised and also contained the clearing and settlement impact.

To fulfil the obligations of the SEPA regulation, compliance with a European (interoperable) standard is mandatory. As it turned out, the EPC SCT Inst Rulebook took a different position on two requirements, in terms of what the Dutch programme believed to be important; the Dutch maximum processing time is limited to 5 seconds (versus the EPC 10 seconds), and with respect to the maximum amount the Dutch set no operational limit per transaction, whereas the EPC decided to start with a maximum limit of €15,000.⁷ The Dutch banks agreed that the maximum amount per transaction could be set by the payers bank. The payers bank covers each IP transaction in full and settles it directly with the payees bank. The payees bank can therefore without any liquidity risk, make any amount, directly available to the payee. This was considered a key success factor for –future– corporate use. As a result no maximum scheme amount was considered required nor necessary. This proved to be no issue, as within any EPC Rulebook it is permitted to offer better service, as long as it does not hinder other EPC SCT Inst adherents.

Market introduction

The introduction of large-scale IP in The Netherlands started in February/March 2019, and, gradually, the number of participating banks and active accounts was increased (see next chapter for programme approach). Since then more than 289 million IP have been processed (interbank) in The Netherlands (status March 2020). The participating banks have each made their own choice to offer IP by default, at no additional charge to consumers. This was in line with the approach of front-runner bank ABN AMRO, which introduced IP via EBA clearing in November 2017 to its customers

without an additional charge compared with ‘classic’ SCT, thereby making IP the ‘de facto’ new standard for SCT. With a mere 17 million inhabitants, The Netherlands now processes more IP than any other euro country. Daily volumes can peak to 2 million interbank transactions on a busy day. IP have truly become the new normal in The Netherlands, in less than a year after go-live. This was communicated on a relatively low key to the market (retail payment users) via press releases and customer-to-bank communication.

A look at the market uptake of IP across European countries shows that The Netherlands has reached its first year 17 transactions/capita (intra-bank trx excluded); it took the UK seven years, Sweden five years and Denmark two years to get there.⁸

The processing of an instant payment is fully automated; when the receiving bank is reachable, the transaction is processed as an instant payment. If the payee’s bank is not reachable for the payer’s bank, the transaction is processed as a standard SCT. This goes for both non-reachable banks in The Netherlands as well as in SEPA. The payer is usually notified if the payee’s bank is not reachable for SEPA Instant, so as to manage expectations.

A big change in payment behaviour is not visible yet. This was to be expected as online and mobile intra-bank payments were processed real time 24/7 before the introduction of IP. The fact that now interbank credit transfers are also processed instantly is adopted by the average payment user as a logical next step. When asked, both customers and businesses indicated they valued the ability to pay directly and at any time with an instant payment. Gradually, the general public will become increasingly aware of and accustomed to having all (single) payments in real time. This will most likely lead to them adapting their expectations; payments are always possible. And the instant transfer of funds, at all times day and night, will most likely lead to more

and more just in time payments, both from consumers and business customers.

Further developments

Developments are expected on two fronts. First, the banks will offer more and more to their business customers the possibility to process bulk payments via the IP infrastructure. This bypasses the cut-off times and offers payment possibilities outside the present business day payment windows. Furthermore, large payment users, corporate treasurers, e-commerce companies, home-delivery services and others can and will make use of the business opportunities IP with its 24/7 service and immediate availability of funds for the beneficiary offer.

CHALLENGES AND CONSIDERATIONS IN THE VARIOUS PHASES OF THE PROGRAMME

The Dutch banks committed in May 2015 to the delivery of the IP infrastructure in four years. To achieve that goal the programme, led by the Dutch Banking Association, defined a high-level phasing up front. This phasing proved to be the guiding principle throughout the programme:

- Design phase — one year to complete
- Build phase — two years to complete
- Infrastructure Ready, one year to test and implement

The planning of the Dutch proved challenging as the discussion in Europe on the standard that would facilitate the IP infrastructure was still ongoing and had not reached a conclusion until November 2016, when the EPC Rulebook SCT Instant was published and there was clear guidance from the market players, facilitated by the ECB, on most important clearing and settlement aspects (illustrated in the green bars in Figure 3).

In the Design phase several interbank work streams, coordinated by the project of the Dutch Payment Association, began in parallel to determine the overall design and set the requirements for all aspects of the infrastructure: product, clearing and settlement. The effect of simultaneous work streams, rather than taking a stepped approach was that initial issues from all angles were caught early on and discussed in overlying combined sessions, providing a harmonised view of what the infrastructure should support. The jointly agreed high-level solutions would then be worked out in more detail in the individual work streams. In

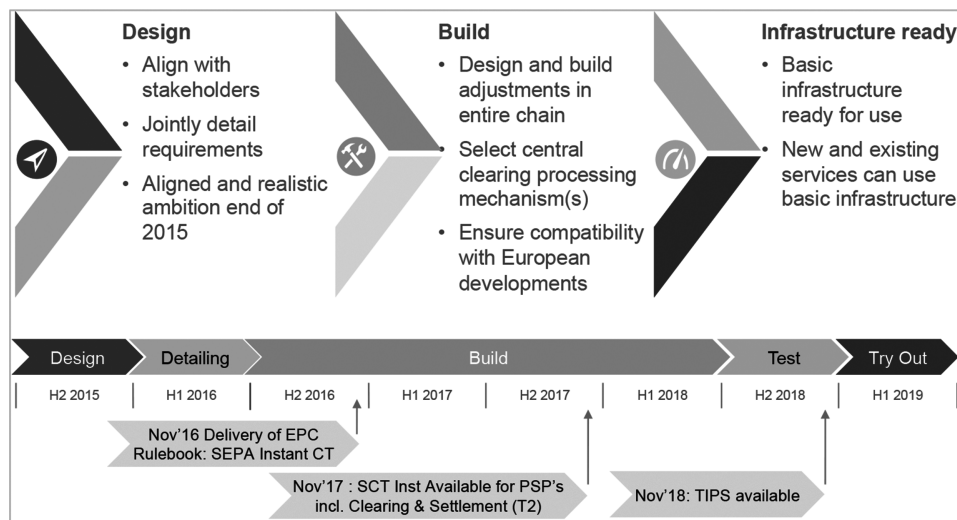


Figure 3: Dutch overall timeline versus availability of EU rulebooks and infrastructure

terms of support, all work streams had their own 'project lead' and a business analyst/documentalist to support the outcome. A rigorous review/documentation process proved to be important in supporting the pace of and consistency across the work streams. The programme was at all times the 'master' in terms of documentation in order to ensure that the common understanding was unambiguously documented.

The set-up proved to be successful as the final version (1.0) requirements were approved in early 2016 and allowed the programme to begin with the necessary next steps: banks could begin with their part of the build, and a decision on the clearing set-up was required to ensure that the infrastructures of the banks could be connected.

With regard to the clearing set-up, the Dutch banks preferred to be able to select their own clearing house under the assumption that interoperability on a pan-European level would be organised by the market and knowing this position was backed by the ECB. The Dutch position, similar to that of the ECB, was that the existing SEPA interoperability should be leveraged upon, whereby one connection to an automated clearing house (ACH) of choice should be sufficient for any PSP to reach all participants. This would support a level playing field between smaller and larger PSPs. The ECB had, in late 2015, set up a special working group to determine the principles for clearing and settlement. This working group concluded in Q2 2016 that all communities should use the same credit risk mitigation model to avoid additional risks. Interoperability, however, proved to be much more difficult than anticipated, one of the challenges being that from a legal perspective not all positions were equal in the various SEPA countries, thereby hindering the use of the 'technical account', which was instrumental in the desired clearing and settlement interoperability solution.

Meanwhile, the individual selection process of the Dutch banks led, at the end of 2016, to two ACHs being selected to support the Dutch banks: equensWorldline and EBA Clearing. In mid-2017, taking into account the end result of the complex discussion relating to interoperability and what constitutes a uniform pan-European clearing settlement mechanism, it became clear that several connections per bank would be required in order to safeguard 'reach' in the SEPA zone for any bank. As such, the decision on how to ensure reach within Europe was scoped out of the programme and left to the individual banks, in the full understanding that the development of EU reach would take more time and that some banks were more internationally focused than others. The programme concentrated on the initial promise: delivering IP to the Dutch market, while safeguarding interoperability, but now purely from a technical perspective.

Some elaboration to understand the interoperability discussion in Europe is in order. Several aspects trigger this discussion:

1. The SEPA introduction, whereby ACHs made connections to many other ACHs, had taught an important lesson as not all connections were economically viable; as such, ACHs were prudent in their connections for IP and took into consideration their customers' concrete demand for such connections.
2. There were several difficulties in supporting a common clearing mechanism, mainly relating to the common use of the technical account — the shadow account at the clearing house, which would be the bookkeeper and main control instrument for IP settlement. The harmonised set-up proved to be difficult given the various legal restrictions in the countries. Waiting for applicable regulation to be adapted would seriously delay the implementation.

3. The ECB had introduced the technical account to be part of their ASI6RealTime Target2 release in November 2017. Some PSPs and countries at the forefront of implementing IP, The Netherlands among them, had started building on the basis of this settlement solution.
4. As IP was and is an optional scheme in SEPA, there was no regulatory push to have a fully SEPA interoperable set-up ready at a certain point in time.

Meanwhile, in mid-2017 the ECB announced TIPS (Target Instant Payments Settlement) alongside the already identified Target2 solution. This solution was to be delivered one year later to the market in November 2018. To be fully reachable for all SCT Inst transactions in SEPA, an adhering bank needs, directly or indirectly, a (liquidity) link to each SCT Inst offering clearing and settlement mechanisms (CSMs). Also TIPS was unable to provide the 24/7 liquidity guarantee between banks connected for SCT Inst via different CSMs. And no clearing and settlement party to date nor TIPS has all SCT Inst adherent banks connected directly or indirectly, leaving European reach fragmented. All parties involved, however, are aware of the issue at hand and are working hard to solve the interoperability issues to ensure full European reach soon.⁹

This European discussion on (liquidity) interoperability took place while the Dutch banks were already building the infrastructural elements. The programme organisation at the Dutch Payments Association had by then reduced to a core team of several full-time equivalents (FTEs), while the staffing at the banks grew exponentially. The programme focused on monitoring the progress made, principally by individual banks, and paying special attention to the ACHs they selected, given that they were a crucial partner in realising the interbank connectivity.

In early 2018 the programme prepared for the final Infrastructure Ready phase,

consisting of two important elements: testing and implementation. The steering committee position and view were that the service should be top-notch from the start; no room for beta launches. Given the real-time nature of the infrastructure, there would be little to no room for errors, and automated exception handling was considered important. That led to the decision to introduce programme-controlled bank-to-bank testing, that is, from the initiating bank via the clearing mechanism(s) to the receiving bank and back, while settling real time. This would allow all parties to validate the results from a customer perspective while verifying the internal processing and booking/reconciliation. A master test plan was drafted along with a clear set of test use cases that all were required to test, both as initiating bank and as receiving bank. The initial timeline was to complete these tests in five months — beginning with a period of functional testing (inclusive of repair) and followed by a longer period of stress and disaster recovery testing (inclusive of repair). The set-up of the brand-new connections between banks and their ACH proved a bit more time consuming than anticipated, but all in all, the functional testing period was carried out according to plan and proved to be valuable, especially relating to the non-happy message flow and responses.

The non-functional testing¹⁰ proved to be quite a challenge. Not only were all parties required to have a relevant testing environment comparable to the production environment, but these test environments could not be reserved for IP exclusively for a long time as the environment was also in demand by other projects within the banks. Setting up stress or load testing (up to 70 per cent of the required volume load was tested bank to bank) proved to be especially challenging, given that any test result was worthwhile, only if all parties were successful in simultaneous participation. If any party had to withdraw for some reason, the test was immediately less successful

for all the other parties involved, though usually still relevant up to a point. Although time consuming, these non-functional tests proved to be extremely valuable for all. Given the real-time nature of the payment, any hiccup in the system could lead to long queues, causing processing delays or leading to infrastructure downtime. Much was learned from both the load testing and the disaster recovery tests (ie bringing one bank's system down for X time and bringing it up again). The additional two months that were needed to complete these end-to-end non-functional tests proved to be the main success factor for the qualitative launch of the production environment, curing many operational teething problems in the test environment.

The implementation and launch of the IP infrastructure followed a similar approach. The Dutch banks decided to launch IP as the 'new normal'. Each bank decided for itself how to introduce it to the market and at what cost it would be made available to its customers. The only agreement made within the programme was that all transfers initiated by online and mobile channels would become IP - by default. This promise was made to the market and required the IP infrastructure to be able and support serious transaction volumes from the start. As such,

a big bang launch was considered too risky. Rather a stepped implementation, whereby the infrastructure would gradually process more and more traffic, was preferred. All participating banks were asked to develop some form of 'tap' (pinching off mechanism), whereby they could regulate the growth of the traffic (initiation side) on the new infrastructure.

After an initial period of functional 'testing' in the production environment, the taps were gradually opened (see the following graph), and extra transaction volume was added to the new IP infrastructure. Before opening up each extra volume step ('tap') an explicit Go/No Go from the programme board was required to make sure that the quality of service with all parties was guaranteed and that all were comfortable with the next step. This in turn ensured that the customer experience was safeguarded end to end, and meant that one of the important deliverables was catered to: to offer a reliable service from day one with a high speed and a high uptime. During the implementation phase the overall end-to-end requirement (maximum of 5 seconds until crediting) was met >98 per cent (today > 99.8), and the overall availability (banks and CSM's) scored >98.5 per cent (today >99.9 per cent). The stakeholders responded with great appreciation to this

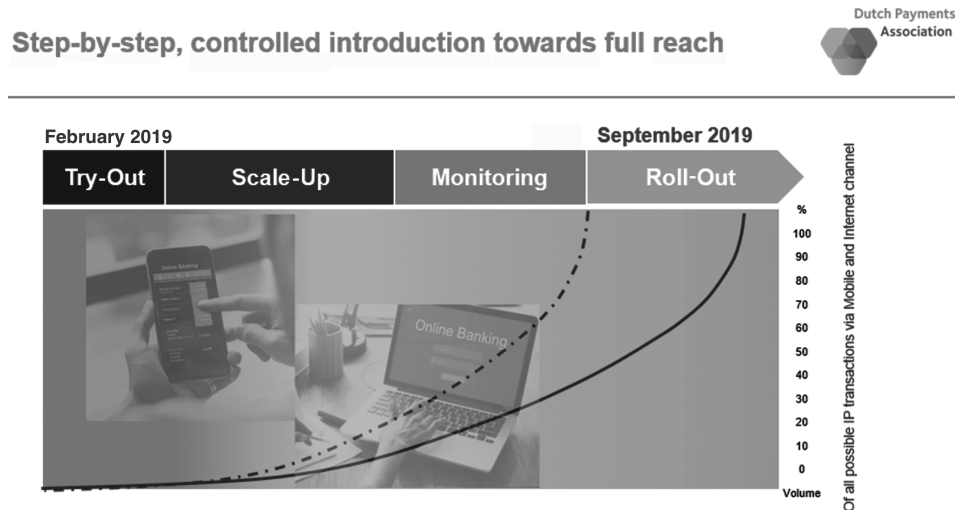


Figure 4: Detail planning market introduction with stretched Roll-Out phase

high-quality implementation, and the Dutch market adopted IP in a jiffy, as if it had always been there.

The four years of planning as set at the start was executed without any major changes. All major milestones were reached in time. Each participant delivered its part as discussed and set in and steered by the overall programme (see Figure 3). The only adaptation that was made to the original planning concerned the implementation phase (see Figure 4). The planned gradual roll-out was stretched from four to eight months to cater to a controlled operational scale-up of all parties in the payment chain.

CROSS-COUNTRY CONSIDERATIONS

Starting point

The development and introduction of IP in Europe needed to be compliant with the SEPA regulation. This requires that a (core) euro-payment instrument that is offered in one of the EU countries (after a maximum of three years) be available in the majority of the EU countries and at the majority of payment system providers. The need in The Netherlands for a swift start to the development of a new payment infrastructure, on the one hand, with a lead time of four years, and this EU requirement created a dilemma: start developing domestically with the risk that the result would require adaptation to the EPC standards once set or wait for the EPC standards and start the developments when these would be available? True to form, the Dutch worked out a compromise: they would start and draw up their own requirements, ensuring that they would be in full alignment with the (to be started) creation of the SCT Inst rulebook by the EPC later. This approach was found to be very helpful for several reasons:

1. It created a platform for the Dutch banks, working together to build the new IP infrastructure, to discuss and agree on all aspects of IP in detail from the start;
2. The outcome of our national discussions was input for the development of the EPC SCT Inst Rulebook and vice versa, and the differences proved to be limited;
3. It supported the need for solving the need for immediate settlement per transaction on a European (SEPA) scale.

Exchanging cross-country views

In addition to the EPC working blocks, in which Dutch representatives participated, the programme and banks felt the strong need to learn from and have a more in-depth understanding of the views of other countries that were considering developing and introducing IP or had already done so, both in the euro zone and in the non-euro zone in Europe. The goal was to get more references and validate the views and opinions discussed in the national programme. Instrumental in this were webinars in which representatives from a country presented their views and considerations on IP to other participating countries. These country webinars were held with United Kingdom, Italy, Denmark, Sweden, Poland and Belgium.

There was keen interest in the Dutch view and in those of the other countries. The webinar proved a good instrument, offering all banks the opportunity to tune in with large groups of participants, with the benefit of hearing the input directly and being able to ask specifics. The recorded sessions proved very helpful in the development of the requirements as all banks had access to exactly the same information.

A significant takeaway was that countries had as yet no shared view on the future of IP; would it become the new normal and along with it an unavoidable substantial investment in a new, robust infrastructure, or should it rather be an add-on product, ie a feature allowing for person-to-person (mobile) payments? Feedback received on the Dutch ambition was that in due course all countries saw 'the new normal' as the end game, but the opinions on the timeline varied substantially. The received input on product, clearing and settlement proved to be extremely valuable

to validate the NL requirements. The lack of a clear business case alongside the expected high costs of supporting 24/7 availability, both for investments and for running costs, fuelled the differences in opinion.

The value of instant (or real-time) payments was and is mainly that it is part of the overall change to the 24/7 economy. A community approach, covering sending and receiving real-time payments, to set up the basic infrastructure was a common denominator and, as such, supported the Dutch approach. The question as to what business or societal value the introduction of IP would represent remained unanswered.

IP soon became one of the main debatable topics after the finalisation of SEPA. Many payment events such as SIBOS, EBAday, ECB conferences and commercial seminars had the topic on their agenda in the last five years. Bilateral contacts, for instance with France, Belgium, Finland and others, allowed for sharing of valuable information. This flow of information and networking helped to fine-tune the IP requirements, ultimately captured and formalised in the EPC SCT Inst Rulebook.

SEPA reachability

SEPA interoperability is still hindered by lack of liquidity interoperability between ACHs. The EPC Rulebooks do not prescribe the operational processing rules for any of their schemes and therefore not for SCT Instant either. Immediate and irrevocable settlement guarantee is, by nature, required for a real-time payment. Although reaching true SEPA-wide reach is, in principle, guaranteed by the use of the same EPC SCT Inst standard, the lack of settlement interoperability hinders effective SEPA compliance. To achieve full SEPA-wide interoperability the SEPA-wide liquidity issue needs to be solved.⁹

CLOSING REMARKS

Setting up the IP infrastructure in The Netherlands in time and now processing

over 30 million intrabank IP transactions per month could be done, first and foremost, with the full and upfront board commitment and deployment of the best resources of the participating banks, working together under the guidance of the Dutch Payments Association. A clear plan with high-level milestones proved to be an instrumental guideline. That and the shared belief that the new normal in our modern economy will be the ability to pay digitally as easily, quickly and to an unlimited extent as (in principle) with cash, for both proximity and remote use cases was the basis for this successful endeavour. Although achieving full SEPA reach for IP is still on its way, the Dutch banks are ready.

References and Notes

1. For more information on iDEAL see: iDEAL. (n.d.) available at: <https://www.ideal.nl/en/> (accessed 21st March, 2020)
2. MOB = the Netherlands' national equivalent of the European Retail Payments Board (ERPB).
3. At the time no decision had been made as to which SEPA instrument was best suited to support IP.
4. Taking the UK experience into account, where at the time the threshold had only recently been raised to 100,000 sterling pounds and discussions were under way to raise the threshold further.
5. As the aim was setting the 'new normal' for credit transfers, cooperation to cover the majority of the market from the start with a standard that is open to all potential participants was one of the leading principles.
6. Wikipedia. (n.d.) 'Dragons' Den (British TV programme)', available at: [https://en.wikipedia.org/wiki/Dragons%27_Den_\(British_TV_programme\)](https://en.wikipedia.org/wiki/Dragons%27_Den_(British_TV_programme)) (accessed 5th March, 2020).
7. EPC maximum per transaction increased to €100.000 as of 1 July 2020. <https://www.regulationtomorrow.com/eu/amendment-to-the-maximum-amount-per-sct-inst-transaction-to-100000-euros/#:~:text=On%2010%20September%202019%2C%20the,as%20of%201%20July%202020> (accessed: 4th February, 2021).
8. BIS. (March 2020) 'BIS quarterly review', p. 29 graph B.2.
9. The ECB has issued a press release to that effect on 24 July 2020: taking steps to ensure a pan-European reach of IP by the end of 2021 as all PSP's should be reachable via TIPS. Simultaneously, it opens up TIPS further, to support also ACH processing, thereby ensuring SEPA-wide IP interoperability by November 2021 for all those PSP's adhering to SEPA CT Inst Rulebook.
10. Connectivity, performance and recovery processes.