WHITE PAPER

A modular ecosystem for payment services

The benefits of a modular payment platform for issuers to compete in a digital market of ever-increasing consumer demands

nets

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Introduction

The payments industry is moving faster than ever. The rise in consumer needs and expectations continuously challenge issuers to deliver new and innovative services to stay relevant. The proliferation of payments requires issuers to respond fast as payments become increasingly more seamless and integrated into everything we do.

For many incumbents, keeping up with the pace of FinTechs and born-digital challengers may seem like an unfair game. Legacy platforms cause issuers headaches and technology debt increases year by year. Nevertheless, the recipe for success for both established players and newcomers is similar – to embrace collaboration, partnerships and ecosystem thinking. The complexity is enormous, and few – if any – can win on their own. A modular ecosystem is required.

Today's digital payment solutions are as trustworthy and easy to use as any born-digital service

Payments are simple on the outside yet complex on the inside

Outsiders to the payment industry are often taken by surprise by the complexity that lies beneath the surface of the intuitive, low-friction payment services we all use daily. Today's digital payment solutions are as trustworthy and easy to use as any born-digital service. However, removing that top layer of user-friendly varnish reveals a complex payment landscape built on decades of changing consumer needs, rule sets, and regulatory requirements.

Successful payment solutions orchestrate this complexity and hides it from the consumer. Behind the scene, billions of payments are processed at the speed of light, and advanced analytics engines relentlessly crunch transaction information to expose fraudsters, mitigate erroneous payment transactions, and elegantly reinstating status quo when things go wrong. The consumer has a frictionless payment experience and is unaware of the underlying power of the ecosystem.

It is more challenging than ever for issuers to stay in their sweet spot

Issuers guide consumers safely and securely through their daily payment activities. Their foremost objective is to deliver a smooth experience and stay invisible to the consumer. Issuers hence find their sweet spot where consumer expectation meets payment complexity. Or where deep understanding of payment and customer needs for convenience meet payment processes and technology. Since credit card payments took off in the 1960s, life as an issuer has been challenging, and it is not getting any easier.

Over the decades, the underlying structures of payments have changed slowly whilst payment knowledge and technology have also matured steadily. Issuers could keep up with consumer demands and stay within their sweet spot with limited technology investments. New payment products and services were simply added to existing banking platforms, and the platforms consequently gradually grew them out of shape. For example, anti-fraud functionality was typically added via simple rule sets piggybacking the transaction switch data store, and product configurability was managed via database scripting in the back office - or in the best case exposed via simple green screens. Which is now light years away from today's expectations of self-service and intelligent systems predicting the consumer's next action.

Monolith systems, now spanning both payments and traditional banking, grew larger and beyond manageable complexity. New technologies, such as big data platforms and analytics engines, proved a better match for innovative data intensive products.

The road to legacy transformation can be long, risky, and full of compromises

Today, many issuers are suffering from legacy technology platforms that reached their limits many years ago and have inevitably proven too inflexible to deliver on consumer needs. Fortunately, with great challenges come great innovation, and new architecture paradigms have been coined to mitigate legacy shortcomings.

Some issuers have applied multi-speed architectures to combine existing and new technologies. By introducing supplementary modern and more flexible technologies on top of a contained legacy estate, issuers can deliver on customer experience faster.

Others issuers have launched legacy replacement programmes - breaking monoliths into micro-service architectures for increased manageability and low-cost scaling. Decomposition methods take many forms – from wrapping undocumented legacy code in modern interfaces to redoing everything from scratch, piece by piece. All good and welcomed initiatives but also lengthy and complex. Multiple simultaneously moving parts make it almost impossible to maintain even a minimal innovating pace during the transformation. Paying off technology bebt tis painful, time consuming, and costly.

> If not carefully scoped and planned, legacy system detangling often impairs innovation during transformation

The temptation to leapfrog legacy barriers

Technology renewal cannot happen overnight, yet issuers cannot afford to wait for a lengthy legacy transformation to be completed before launching new services to market. Their challenge is how to digitise and innovate while the technology change is taking place. Issuers need ways to avoid major efforts detangling their legacy estate as such efforts in themselves add limited value. They need ways to "leapfrog their legacy barriers."

One approach to overcoming this issue is to jump directly to a new platform following an all-in-one approach as offered by some vendors. An all-in-one approach rips out and replaces critical parts of the issuer's value chain. Systems are exchanged, products and processes are adjusted, but the transformation does not necessarily lead to a better long-term situation. Issuers risk ending up in vendor lock-ins, becoming dependent on vendor roadmap innovation with limited manoeuvrability to innovate fast and with preferred partners.

> While it may sound attractive to be able to start over afresh and leave all complexity behind, the reality is that it is a path full of trade-offs

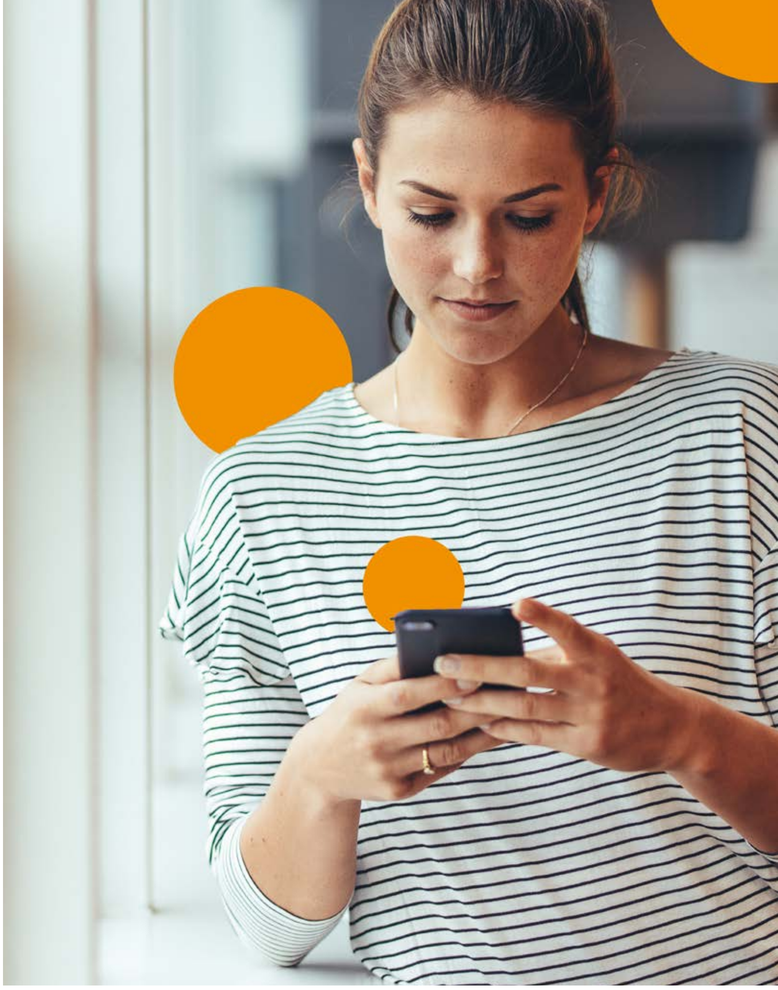
While vendor roadmaps are of high value for compliance and legislative updates, roadmap items are otherwise often commodity features that allows the issuer to follow trail rather than to take lead. When it comes to feature innovation beyond commodity, roadmap delivery is generally directly linked to the depth of the issuer's pockets. Hence, getting in front of the innovation curve does not come with the product license itself but requires the issuer's willingness to invest further in the vendor. Vendor dependency consequently increases, and "joint roadmap innovation" (the term commonly used) often implies the issuer giving up intellectual property rights, sharing innovation with competitors, and being charged an additional recurring license fee for the new feature.

Even worse, the new vendor platform may in fact be based on technologies much alike the ones the issuer is struggling to abandon. It is not uncommon that vendor solutions implement multi-speed architectures consisting of a wrapped legacy core and accompanying satellite applications delivering on digital capabilities. What may seem attractive and modern can suffer from very real monolith shortcomings severely limiting product flexibility and time to market.

Ultimately, putting all one's eggs in a single basket with an inflexible vendor is a dangerous path for any issuer. The progress is in fact an illusion - it represents a horizontal move in the innovation landscape rather than the needed vertical leap sought for in the first place. The product and process redesign involved in the transformation will provide value, however, there are more efficient and intuitive ways to create value with less effort and at lower risk.

Avoid the pitfalls by combining your own assets within a modular digital ecosystem

Issuers can avoid the many pitfalls by carefully considering how a vendor's platform will enable the issuer's own assets, namely their payment knowledge, market insight, and consumer understanding. The value of these assets will be maximised through a renewed understanding of the roles of issuers and vendors in the payment landscape. The understanding differs from traditional customer-vendor relationships by applying modular ecosystem thinking where multiple partners collaborate openly to unleash innovation power and drive true consumer centric solutions.



According to Gartner, a digital ecosystem is "an interdependent group of actors (enterprises, people, things) sharing standardized digital platforms to achieve a mutually beneficial purpose."[1]

In the context of payments, an ecosystem can similarly be defined as an independent group of actors in the payment value chain who collaborate in a standardised way to deliver a coherent customer experience. As such, payment ecosystem thinking is about realising the following:

- **although issuers share many perspectives on payments, they differentiate on customer segments, markets, and products offerings, and;**
- **no single vendor system can possibly deliver the best of *all* payment technology to all issuers meeting *all* consumer expectations.**

Buying into modular payment ecosystem thinking means that an issuer can freely choose payment technologies from different vendors and have these technologies collaborate in the most optimal way.

[1] Gartner_CIO_Agenda_2017.pdf

Three steps to engage with new partners

To realise the benefits of modular ecosystem thinking, issuers should prioritise three characteristics when engaging with vendors or new partners:

1 **Understand what role the vendor or partner takes in the ecosystem.** A vendor may take multiple positions and hence simplify the overall vendor landscape for the issuer as fewer vendors will be needed in total. However, a multi-role position may on the other hand imply internal conflicting preferences and priorities inside the vendor organisation, leading to inefficiencies and impaired delivery power.

2 **Evaluate each vendor's ability to serve as a true sparring partner for the issuer.** An ecosystem is a synergy game, so ecosystem thinking must be just a prevalent at the vendor as is the case at the issuer. The vendor must be ready to share their expertise openly and honestly for the issuer to take the right decisions. Sometimes the best thing for the issuer is to deselect the vendor and engage elsewhere for a more optimal fit for a specific service, and this should be welcomed and supported by the vendor. Also, the vendor must add to the issuer's own expertise and not just echo issuer viewpoints. The vendor must be capable of challenging the overall thinking and position of the issuer, and hence be chosen for the ability to deliver superior insights from, e.g., more advanced markets and concrete delivery experience. As a trusted advisor, the vendor must be able to walk to talk. An ecosystem partner is much more than a traditional outsourcing partner.

3 **Capability of vendors to adopt a modular approach** by which services and products can be delivered to replace or extend parts of the issuer solution landscape. The obvious analogy to the modular approach is that of Lego bricks which combine in endless ways into amazing constructions. The modular approach represents a similar type of construction challenge, however with fewer but larger modules of less simple shapes. And shapes in fact play a central role for the issuer to understand, as – continuing the analogy – shapes are to Lego bricks what configurability is to payment solutions.

Configurability provides flexibility, but endless configurability should not be a priority of the issuer. Where lack of configurability can force an issuer to adopt to vendor modules that may not be the best fit, too much configurability will create confusion and inevitably increase complexity. When options are too many, configuration becomes a development discipline much alike that of domain specific programming languages. It will require extensive training and cost to build up and maintain the ability to manage the solution. Issuers should therefore be careful not to be blinded by the vendor who offers the highest level of configurability but look for those who can balance flexibility and complexity in a simple way. The right balance can come via pre-configurability, i.e., where the vendor delivers products and services that both comply with standard profiles but do so without compromising adaptability to issuer needs. In other words, issuers should look for modules that are highly flexible on the inside but simple and easy to understand on the outside.

Issuers engaged in modular ecosystems will never lag behind

While it may seem like a bold statement, its rationale is clear. Highly modular landscapes offer clear divide-and-conquer advantages over the less modular. These advantages translate into superior agility at both business and technology levels. In a truly modular landscape, each module can be independently developed, improved, or replaced. The modular ecosystem is hence future-proofed as it can be continuously improved without putting the overall ecosystem reliability and stability at risk.

In a highly modular landscape, a challenge with the consumer experience where a business process needs tweaking is easily isolated to single modules where reconfiguration or even module replacement is in fact a manageable task. On the contrary, with legacy monoliths even small changes often have unintended side effects. Small changes grow big and since risk consequently increases sometimes only mandatory compliance and legislative changes are allowed for the system. The cost of technical change surpasses the business value of the change, and technology debt becomes the dominant factor. In other words, technology must be an enabler of the business and never an inhibitor, and that is exactly the promise of modularity.

An issuer should rightfully consider technical details to be the concern of the vendor. After all, the issuer partners with a vendor to release own potential to focus on business value and consumer experience. Business agility should clearly be the issuer's key concern, but technically driven shortcomings of the lesser modular offerings nevertheless deserves issuer awareness.

Regardless a modular approach, technology under-investing will inevitably lead to legacy debt if not managed on an ongoing basis. This is equally true for all actors in the payment ecosystem – issuers, vendors and partners. In lesser-modular landscapes, debt accumulates additively across larger parts of the landscape, and changing or renewing single technical libraries may require large waterfall upgrades and complete regression testing.

This is time consuming, costly, and puts business development on hold. The willingness to continuously invest in managing technology is not attractive, and this is a key reason for systems to grow out of shape.

Highly modular landscapes offer a completely different way to manage technology debt. The technology of each module can be considered individually, and technical driven updates can be implemented and rolled out gradually across the landscape. Technology investments bundle easier with business-driven improvements making the removal of technology debt an everyday concern. Large technology renewal programmes become redundant for the modular vendor, allowing for exclusive focus on business deliveries. The issuer no longer needs to worry about future upgrade activities – or even reimplementation activities – when vendors announce upcoming major version upgrades.

Embracing ecosystem thinking

> The real-time platform is our reliable backbone for modular mix-and-match integration of issuer services, Nets services, and 3rd party services

Modular ecosystems enable issuers to compose tailored offerings based on best fit products and services, and issuers buy their ticket into the ecosystem by choosing the right vendors. These vendors must clearly understand their role in the payments value chain, they must be an open and honest sparring partner for the issuer, and – not the least – they must deliver modular payment solutions.

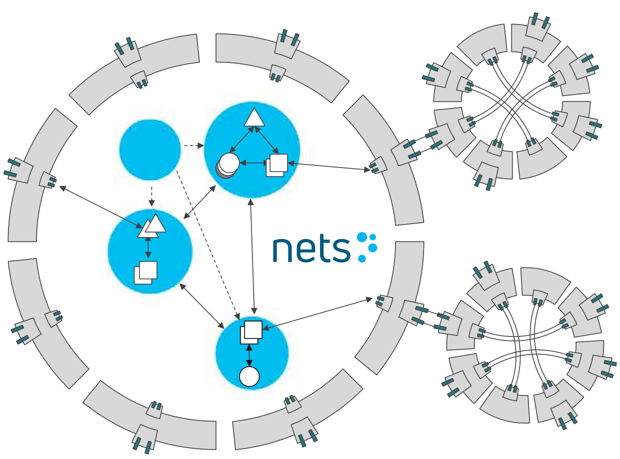
Nets embraces and delivers payment solutions that support the modular ecosystem approach. We deliver open solutions with modules designed to work together in a seamless and pre-integrated way. We use state-of-the-art technology to deliver services of uncompromisable stability and scalability and expose easy-to-implement modularised capabilities for transaction processing, PSD2 compliant authentication, fraud management tools, consumer finance, cardholder management (for consumers and corporates) and transaction dispute management APIs via our flexible, reliable, and scalable processing platform.

The heart of our offerings is an API-driven real-time transaction processing front-end built on microservices, modern high-availability technologies, and open data models that are easy to understand. The real-time platform is our reliable backbone for modular mix-and-match integration of issuer services, Nets services, and 3rd party services. It allows issuers to design an operating model that improves speed-to-market, differentiates on customer experience, and reduces cost-to-serve.

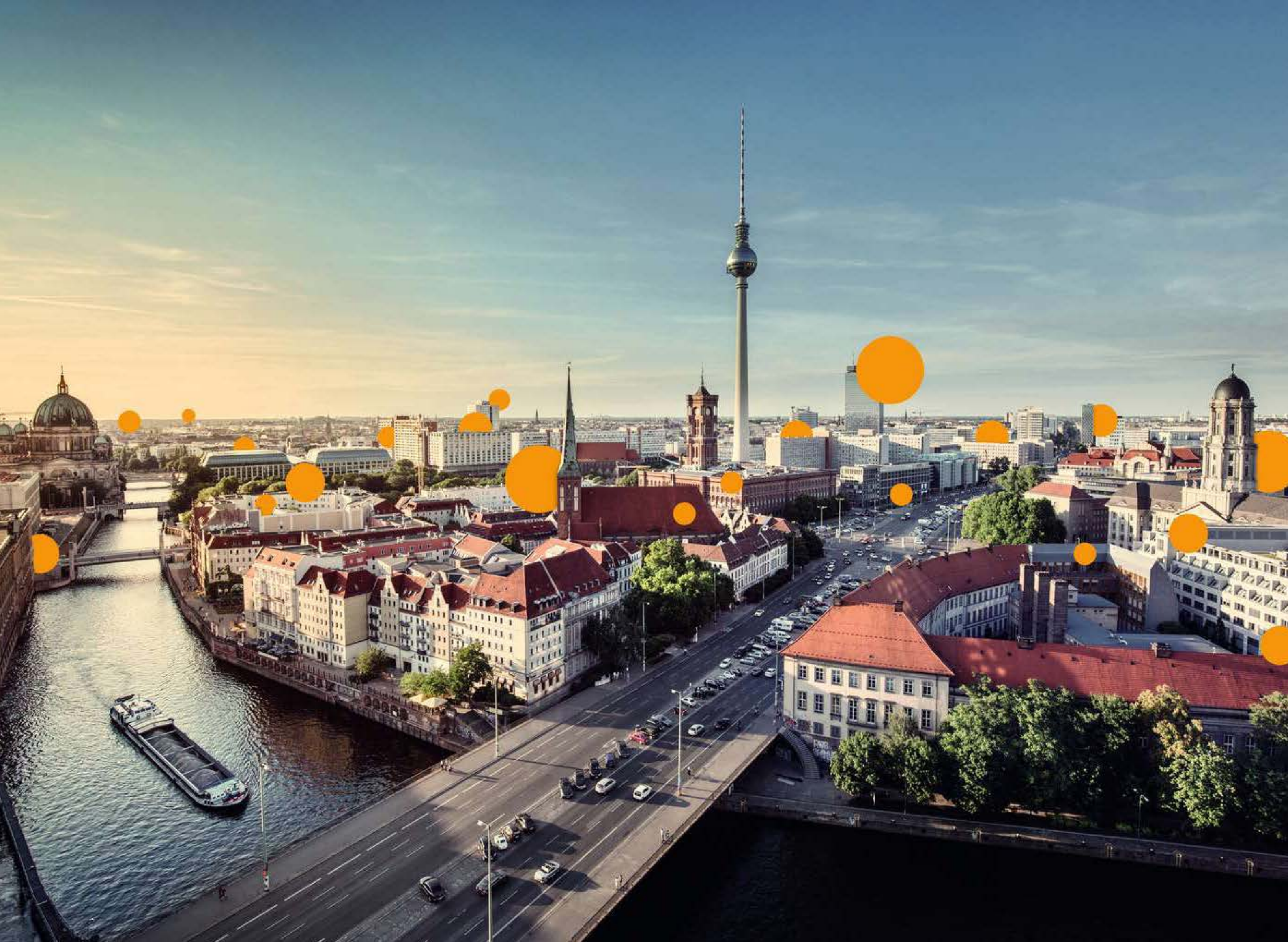
The processing platform is Nets focal point for gathering important data elements from our product modules that can then be used for effective real-time communication with the consumer. The result is a seamless, secure and digital first mobile consumer experience. For example, a consumer can receive approval for a card, instantly receive a virtual card and enrol that card in their preferred mobile wallet in order to start using the card immediately. As an in-payment value-added experience the consumer could even donate to a preferred non-profit organisation or support the green economy by adding a carbon offset to their payment to compensate for the carbon footprint of their purchase.

With Nets as their partnering vendor, issuers can tailor services exactly to engage the consumer according to their own preferences and lifestyle by virtue of the switch to a modular ecosystem.

Nets' modular processing platform constitutes the centre piece of the payment ecosystem: modern, open and scalable



Regardless internal technology state, Issuer and 3rd party services can integrate into Nets processing platform



First steps towards a modular payment ecosystem

Understand the value of your own assets. Your own assets may have served you well in the past, and some of them are likely also key to your future success. Make sure to understand how these assets can be enabled in the broader digital ecosystem.

Realise the value of ecosystem thinking. The modular ecosystem approach is future-proofed and offers long-term flexibility without compromising reliability and stability.

Choose the right vendors and partners. You must evaluate vendors and partners on their ability to drive and support your payment ecosystem, so that costly legacy modernisation pitfalls can be avoided.

For more information about Nets' modular platform and systems, please contact Mark Cleary, Head of Business Development, Nets Issuer & eSecurity Services: mclea@nets.eu

About Nets

At Nets, we see easier products and solutions as the foundation for growth and progress – both in commerce and society. Nets is a leading provider of digital payment services and related technology solutions in Europe with headquarters in Copenhagen, Denmark, and 4,100 employees located in various European countries. We help financial institutions, businesses and merchants make tomorrow a little easier for their customers by enabling seamless payment experiences through modern, flexible and innovative payment solutions and digital services - while always delivering unrivalled security and stability.

Powering payment solutions for an easier tomorrow.

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