

Managed issuance

Phygital, tailored personalization experiences



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Payment card trends

for 2024 and beyond

Elevating every payment experience

Creating the perfect payment card.

Around the world, consumers are blending the convenience, security and flexibility of different payment methods in a single physical and digital experience—the phygital payment.

Phygital experiences often place the payment card at the heart of their offering. New research from Payments Cards and Mobile shows that European consumers are using cards more than ever before after the pandemic. In 2022, the number of payment cards in circulation across Europe grew by 20 percent more than the long-term average, at 5 percent, while spending on cards shot up by 16 percent—more than three times the long-term average.¹ Research from Visa and The Strawhecker Group in the United States confirms this isn't just a European trend—65 percent of US consumers polled by Visa² said they preferred using cards to pay, both online and in-store.

The personalization process may seem straightforward, where a card body is completed with all customer identifying information. Still, hundreds of opportunities exist to enhance and optimize the payment experience. It could be that you want to project a sleek, modern image through flat personalization, or are looking to create a sociallyconscious payment card to help make payments more inclusive, or hundreds of other options. No matter how you personalize your card, these details can be crucial to fulfilling your goals.

Personalization is about more than just the payment card. How you choose to personalize other parts of the experience can impact the entire issuance process. Tailored, full-color card carriers and envelopes to premium, high-end unboxing experiences, and digital solutions to enhance your processes. All of this and more is possible—with the right partner.

Innovative digital services and technologies complement your physical issuance solutions—for a genuinely phygital experience across the entire issuance journey. For our client's employees, phygital experiences mean seamless process integration for online service monitoring, easy configuration of cards, optimized fulfillment, and management of service parameters. For end customers, their online banking experiences are powered by issuance data. Our clients' customers also enjoy the convenience and freedom DIY terminals or portals provide to configure and customize their unique payment cards.



¹ https://www.paymentscardsandmobile.com/phygital-payments-are-here-are-you-ready/

² https://www.paymentscardsandmobile.com/phygital-payments-are-here-are-you-ready/

Managed issuance in brief.

There are several steps to consider so that, together, we set up a smooth managed issuance process. G+D's experience and expertise ensures we can get every part of this journey right—first time:

02 01

Issuance enablement

- EMV profile, data, and key management covering requirements from all common global and domestic payment schemes.
- Issuance enablers provide onboarding wizards for smooth enrolment of card programs.

Card personalization

- Card personalization from graphical designs.
- Selection of materials, printing techniques, and

- basic alphanumeric to fully individualized and colored
- finishing options to make your payment card shine.

Digital issuance enhancements

Digital issuance

• Digital interfaces for online configuration and reporting.

Card personalization

• Enable customers to choose their card design and receive a digital card display instantly.

03

Card carrier and welcome experiences

- Carrier personalization from simple welcome letters to fully individualized and color-printed contents.
- Fulfillment from simple flyers with terms & conditions to fully individualized and colorprinted customer booklets.
- Individual packaging options, specialized for dedicated target groups.
- Gifting and premium packaging solutions.

04

PIN provisioning

- Customizable physical PIN mailers covering both print and delivery.
- Innovative digital and ePIN solutions.

05

Issuance logistics

• Delivery services with dedicated turnaround and management of various logistics channels, including postal fee management and digital track & trace.

Neobank

- Spot services for immediate response to short-term card requests.
- · Campaign management.
- Data analytics services.

Card carrier and welcome experiences

• Enhance printed material with digital augmented experiences.

PIN provisioning

• Digital PIN issuance, either through SMS or inside the customers' banking app.

Issuance logistics

 Notification and activation services for customer card fulfillment.

Setting up for success

Issuance enablement and logistics.

Creating, managing, and monitoring supply chains and fulfillment is critical to any successful issuance process, especially when working with different printing methods, finishes, and personalization techniques for our customers' various needs.

Issuance enablement

As circumstances change, banks need flexibility to adapt their production processes or customizations to meet requirements. For example, a bank may affix a temporary sticker to the payment card with an offer for new customers. If that offer is changed, banks need to be able to cancel or amend that sticker to ensure customers do not receive incorrect information.

As a fully managed service, G+D's card personalization suite provides its clients with a full-featured Issuance Portal to manage card, carrier, and packaging production, printing, and distribution on a self-serve basis. As an issuance enabler, our issuance portal provides interfaces for online configuration and reporting. The portal offers stock updates, in-depth

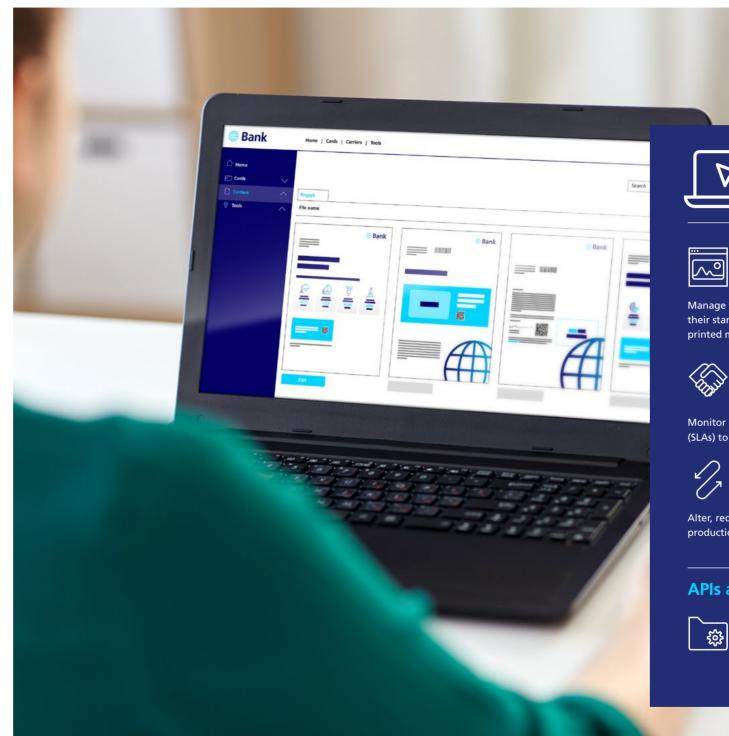
reporting and forecasting, and the ability to configure and manage all issuance and production processes.

Issuance logistics

Our issuance logistics solutions support the effective creation of the physical card and PIN mailer, and its successful fulfillment. We offer:

- Complete logistics services for card and PIN delivery
- A dedicated SLA
- Return mail processing
- Collection of expired cards
- Optimization of your supply chain for printed collateral
- Customer Managed Inventory or Vendor Managed Inventory

In addition, we provide consulting for any aspect of personalized card issuance and the industrialization of banks' business processes. Our service specialists are the ideal partners for tailoring a specialized service portfolio to the needs of your cardholders. Based on our vast experience, we can ensure efficient, effective delivery of almost any desired end-user experience.





Manage the design and layout of their standard cards, carriers and printed materials.



campaigns.

Monitor service-level agreements



(SLAs) to ensure on-time delivery.



Alter, redirect or cancel production quickly and easily. Access digital delivery channels for service enhancement, card activation and digital wallet integration.

Real-time reporting and analytics to

view stock levels and card status updates.

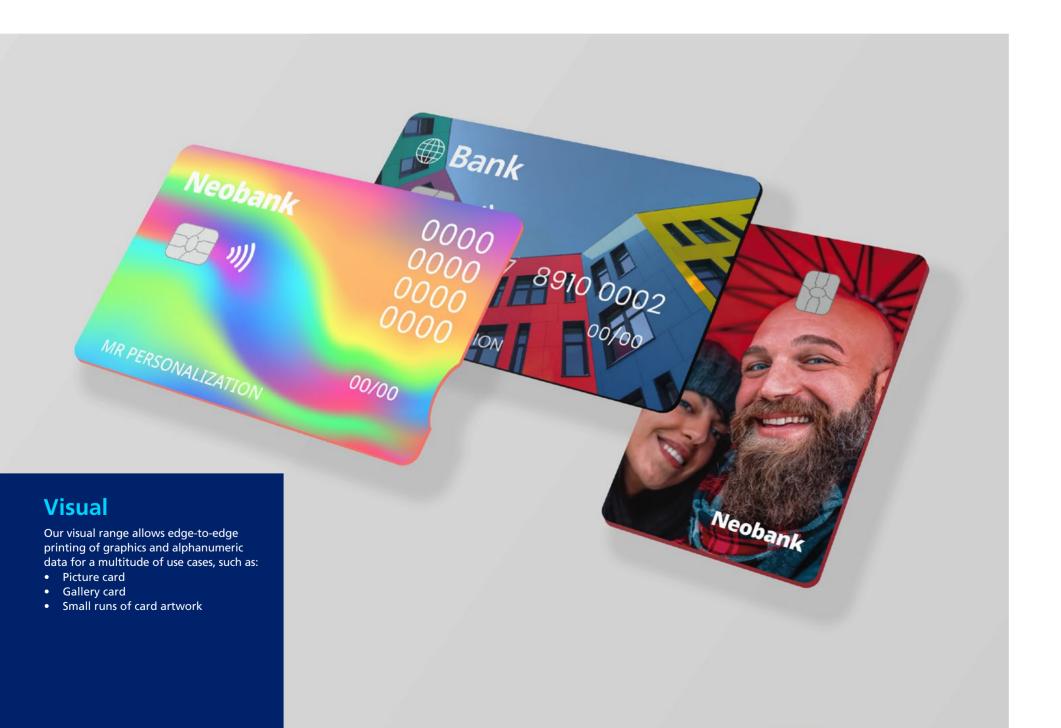
APIs and SDKs



For complete customization and integration of card issuance services into your current digital estate, we offer a suite of APIs and SDKs with full plug and play connectivity.

Taking right approach

Choose the level of design complexity that meets your needs.











Classic

Our Classic option offers full personalization of alphanumeric data and allows a vast range of layout options:

- Horizontal or vertical orientation
- Various text fonts and sizes
- Front and back designs
- Black and white cards

Classic+

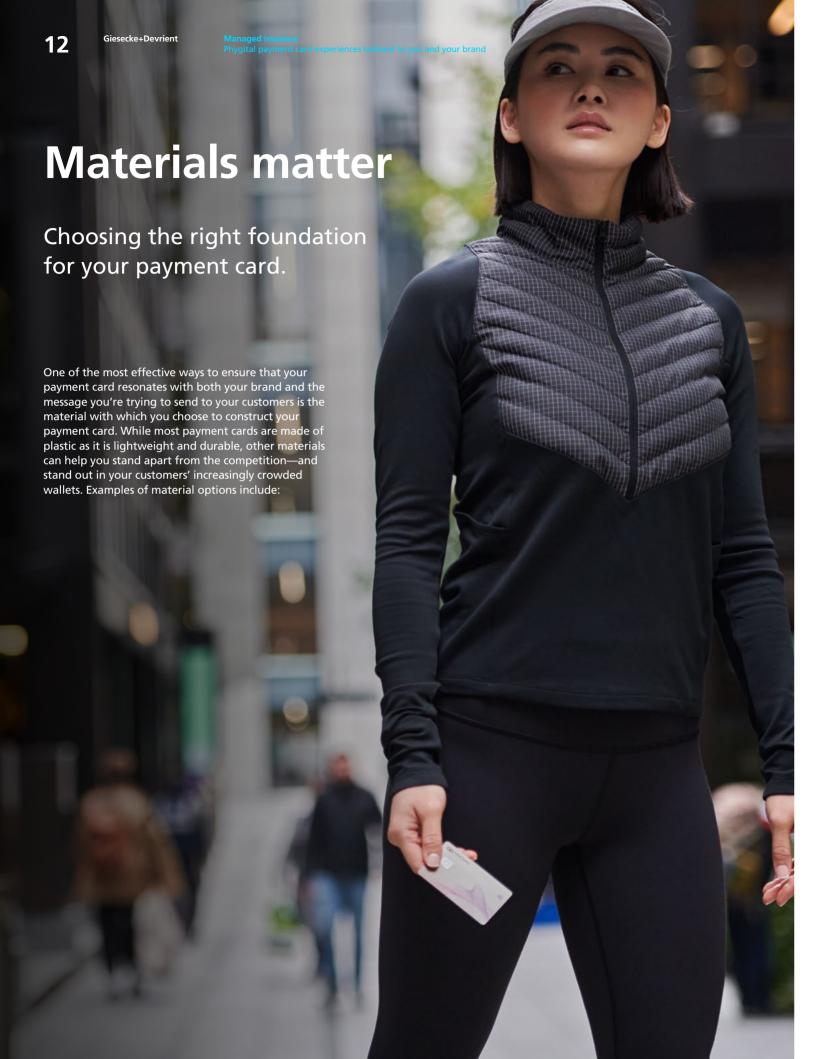
As well as the range of options available for our Classic card, the Classic+ range adds the following options:

- Logos
- Images
- CMYK color
- Fluorescent color
- Transparent card body
- Tactile patterns

Visual+

A Visual+ customized card begins with choosing card edge color, tactile elements, metallic design elements and many other parts of the physical card makeup. This approach is the most complex in terms of design, finishing and materials, and will enable you to create a truly unique card that stands out in today's crowded payments market.







Metal cards

Offer your customers a premium payment experience with metal cards. Metal cards have a fascinating appearance and feel, and an especially distinctive sound. They express esteem, value, and preferred status for your most valuable customers.



PVC cards

Our standard payment cards, made of durable and resilient plastic materials. White PVC cards are reliable, customizable, and affordable. They offer excellent mechanical and RFID properties with the highest design flexibility. This material can work with the most detailed combinations of finishes and other effects.



PLA cards

Establish your eco-credentials with card bodies made from 100% bioplastic—PLA. Our Convego® Natural card bodies are just as strong and durable as regular plastic and will ensure your customers understand your commitment to more sustainable practices by avoiding petrochemical-based plastics.



rPVC cards

Convego® Recycled cards offer a card body made from 100% recycled plastic, so your payment card can act as validation and reassurance for your customers of your sustainability strategies and ESG ambitions.



Ocean plastic cards

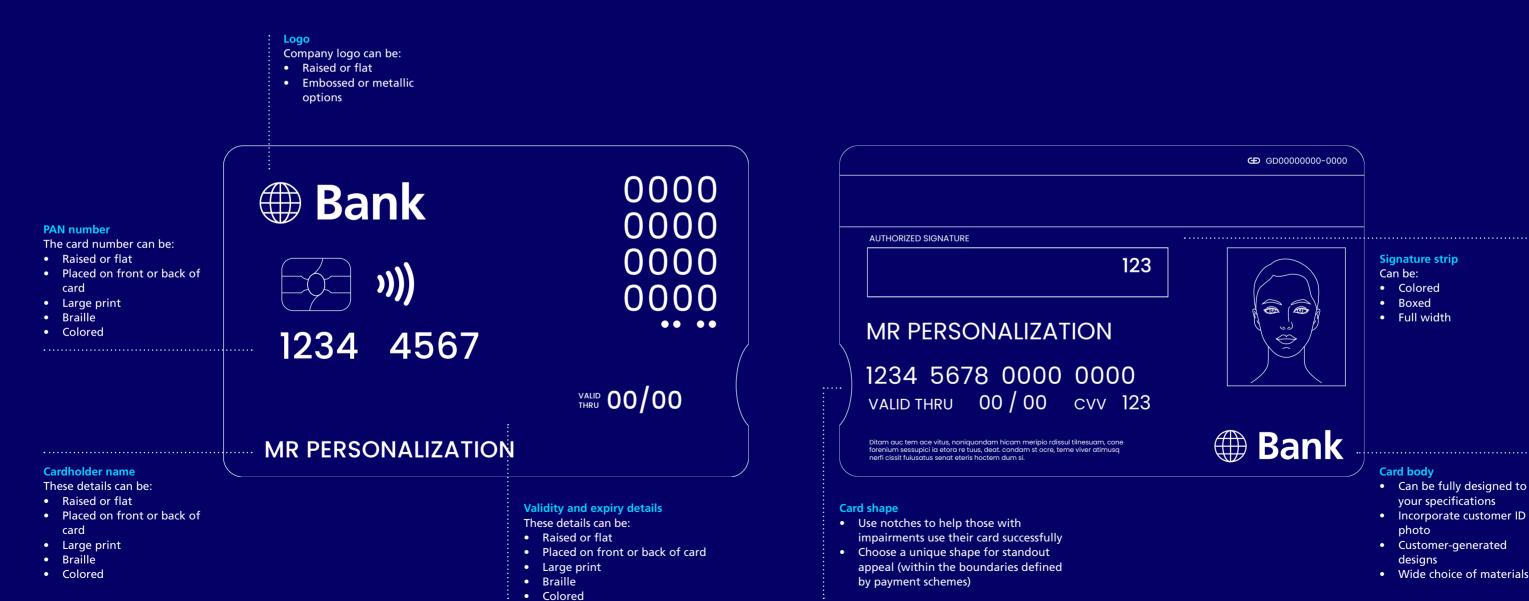
Convego® Parley Ocean was born from an agreement with the environmental organization Parley for the Oceans. This lifestyle ocean plastic card places the power for change in the hands of your customer—as the card body is made from 80% recycled material, 60% of which is sourced from waste plastics gathered from coastal and ocean sources. More than just a payment card, Convego® Parley Ocean is a daily reminder of our commitment to save the oceans.

*Please note: Not all printing techniques and finishes are available with all materials. We can help you choose the right combination of materials and printing to create the impression you want to make.

Card personalization possibilities

Tailor your card body to match your brand, your customers and your business. Nearly every part of the card body can be impacted by personalization – and every component has multiple possibilities.

Here are just some of the ways in which your card personalization can be customized:



Card personalization technologies

The right personalization technology to make the right first impression.

Personalization technologies

In the early days of card production, embossing alpha-numeric information into the plastic material of the card was the standard approach. Today, embossing is just one of many ways to bring your card to life. Each method of printing offers different benefits and advantages:

The benefits of flat personalization

Three reasons why flat personalization options make sense for you—and your customers:



Stylish, sophisticated appearance

A sleek, flat appearance feels modern, sophisticated, and more of a prestige experience than standard embossed payment cards. It's an eyecatching look that will make your card stand out.



Increased durability

Frequent use of cards in terminals and storage in wallets can quickly take a toll on traditional embossed cards. Flat personalization ensures your card remains sharp and easy to read throughout its lifetime.

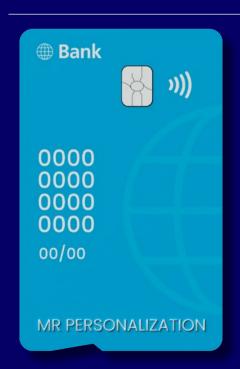


Unlocks elevated card creativity

The additional design opportunities offered by flat personalization allow a range of opportunities to let your brand creativity shine—all while still remaining compliant with card scheme guidelines.

Raised printing techniques

These techniques offer a pleasing "raised" tactile effect that give your cards a sense of depth and presence that show your designs off to their best effect.





Embossing

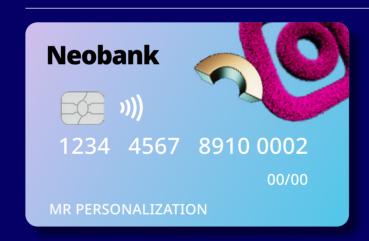
This technique involves physically pressing the personalization information (PAN number, customer name, etc.) into the card body material so that it stands out. This embossing is the usually covered in a metal-effect color to contrast against the card design. One limitation of embossing is that the devices used to create the indentations are fixed, so there's little option to vary the position of various elements on the cards.



3D Printing

3D printing achieves a similar effect as embossing, but in a completely different way. In 3D printing, the card body is created in a series of thin layers—printed in a 3D printer, and the raised areas of the design and personalization are created through layer additions. This can be more precise than embossing, and achieve a more intricate, raised design.

Flat personalization techniques





Thermo-sublimation A part of the 4-color ribbon

is heated at the print head to separate the color from the substrate, which is then transferred onto the card in a gaseous state. Each of the 4 color segments (CMYK) is detached from the ribbon and transferred to the card.



Thermo-transfer

This is one of the most common ways to print a card. A printhead is placed in contact with the surface of a card. The printhead applies heat to the ribbon to print monochrome or CMYK colors onto the card.



Thermo-retransfer

A digital printing refinement where the image is first printed onto a carrier material before being transferred to a card.



Lase

Lasers are used to engrave text and images below the surface of a card on a special receptive material. This enables flat, crisp, high-quality vector images and fonts. Also, as the printing happens below the surface.

the images are unaffected by moisture or erosion.



Drop-on demand (DoD) inkjet Drop on Demand (DoD) uses special printheads to create very fine droplets of ink specifically where required. Using a UV light, the ink cures quickly, so there's no need to apply a topcoat, meaning the cards are quick to produce while still allowing the fine control needed for complex artwork or photography.

Temporary additional information for flat personalization cards

Ensure your customers see key messages or offers with unique peel-off stickers that can be applied to cards at point of personalization. These stickers can by dynamically printed, so can be individualized to specific customer groupings.

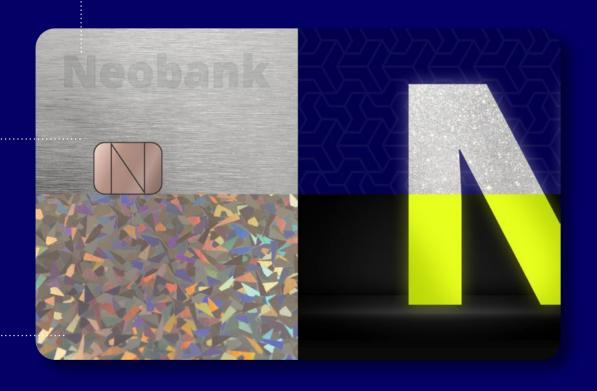


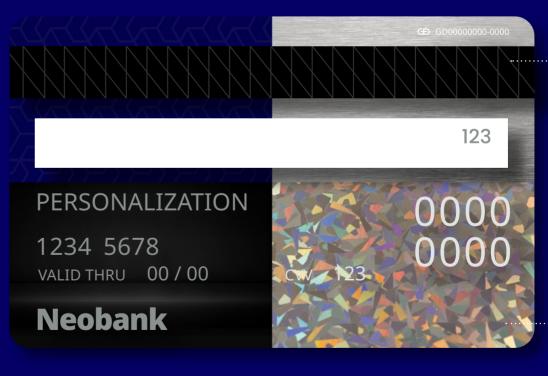
Card finishing options

Add that perfect finishing touch to your payment card and make every payment moment shine.

After material and personalization choices, you can add further customization to your cards by leveraging our wide range of finishing options. Nearly every part of the card can be refined to match your brand and your customers. While not every option is available with every card, our G+D design experts will help you combine options to create an engaging and compelling payment card design that will "wow" any customer.

- Ink finishing effects
- Fluorescent
- Lenticular effects
- Scented inks
- Sparkling effects
- PearlescentMirror effects
- Thermo-sensitive





Magstripe Customize your card's magstripe with vibrant colors, or even full bleed print (coming soon) to ensure every part of your card echoes your brand.

Imprinting effects These details can be:

Metallic foil

Card module

Laser engraving
Custom tape

Colored substrate Colored metal

- Rich textures
- Eye-catching colors
- Holographic finishes

Validity and expiry details Ensure your card stands out from any angle with Convego® Colored Core. Choose a complementary or contrasting color to the card's front or back from our wide range of options.

Personalize every part of the issuance journey

Enhanced design possibilities.

Even with the wealth of personalization options available for your payment card, you might be looking for something even more striking and unique, something that truly throws a spotlight on your brand and your relationships with your customers. In that instance there are a few more options for you to explore:

Wearables

When is a card not a card? When it's on your wrist! Choose from a host of different personalization options to transform your payment card into wearable technology. In the world of payments, user experiences can always be improved. What if that payment experience could always be within your customers' reach, totally seamless and not even needing a pocket?

The solution's compact form factor is designed to answer a huge variety of emerging user experiences. With custom design and your own creativity, it can be integrated into almost any everyday object: a piece of clothing, an item of jewellery, the heel of a shoe, even a child's teddy bear at the fairground. There's no limit to its potential—because there are no limits to where a customer might need seamless, convenient payments.



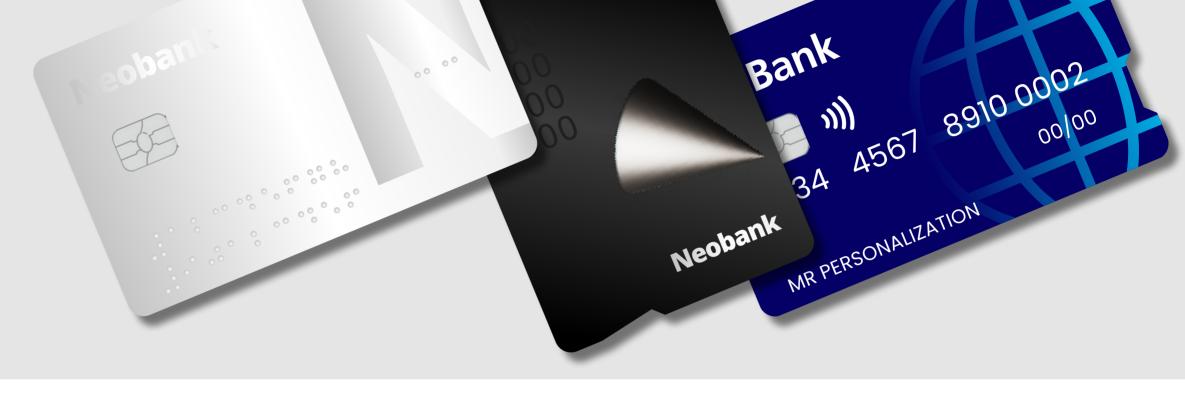
Convego® Labs -Co-creation for next-level innovation Convego® Labs is G+D's global innovation incubator and concept prototyping space. It empowers our clients to create stand-out payment cards and other form factors, turning turn ideas into reality. We merge skilled craftsmanship with state-of-the-art production tools to create and accelerate solutions for our customers. It offers our clients a unique opportunity to put their ideas to the test with smart, innovative prototyping. Bringing together top-of-the-line production methods with market understanding and design thinking, our cross-functional group of experts in research, design, materials, electronics, engineering and marketing can work towards solutions available

nowhere else in the payment card market.

Visual personalization at a glance

nces tailored to you and your brand

How your cards come together.



With so many personalization options and finishing effects to choose from, it can be daunting to understand what's even possible.

We've created this table for reference, and our consultants are standing by ready to help you make the right choice to make your payment card—and your brand—truly stand out.

Feature of Technology	Embossing (with back indent)	Thermo-Transfer	Thermo-Transfer (Durable)	Thermo-Sublimation	Thermo-Retransfer	Drop On Demand Inkjet (DOD)	Laser	3D Printing
Appearance	Raised			Flat				Raised
Element position	Fixed			Variable				
Element size	Fixed			Variable				
Font and font size	Fixed			Variable				
Image/Graphics	No			Yes				
Colors	Monochrome, Silver, Gold (metallic)	Monochrome, Silver, Gold (metallic)	Black, White, Silver, Gold (metallic)	СМҮК	CMYK, White, Silver, Gold (metallic)	CMYK, White	Black, Grey	CMYK, White
Front / Back	Front			Both				Front
Edge-to-Edge	No					Yes	1	lo
Durability	Permanent	Overlay required	Permanent	Overlay required		Permanent, opt. Varnish	Permanent	Permanent, opt. Varnish
Complexity	1	2	3	4	5	3	1	5
Availability			Entrust only			Yes		

Card fulfillment solutions

Turn the formal card letter to a first impression that sticks, a welcome experience as desired. Packaging a product, whether it's delivery of a new card, or supplying your customer with a replacement, plays a significant part in conveying your brand and its message. It's an opportunity to set the tone of your relationship and demonstrate to your customer that they are valued.



Our range of card fulfillment options



Card-only shipment

Multiple card shipments to a single location—such as a bank branch.



Card letter

The traditional card carrier approach, with the card attached to a personalized letter.



Card presenter

Sleek card presentation folder that lets your payment card and brand stand out.



Card booklet

Combine card fulfillment with a booklet of useful personal information.



Card package retail

Packaging open loop prepaid cards for retailers to display at POS.



Card package

A variety of packaging options to enhance your fulfillment journey.







Card fulfillment solutions from G+D



Reinforce brand messaging

Whether you want to cement your brand as an innovator, as eco-friendly or any other messaging, packaging can help bring that feeling to life.



Reflect your customers' lifestyles

Provide an unboxing and welcome experience that reflects your customers' values and lifestyles, demonstrating that you understand their needs and make them feel valued from their very first interaction.



Surprise and delight

Offer your customers an unexpected gift or unusual look and feel to make that first unboxing experience memorable.

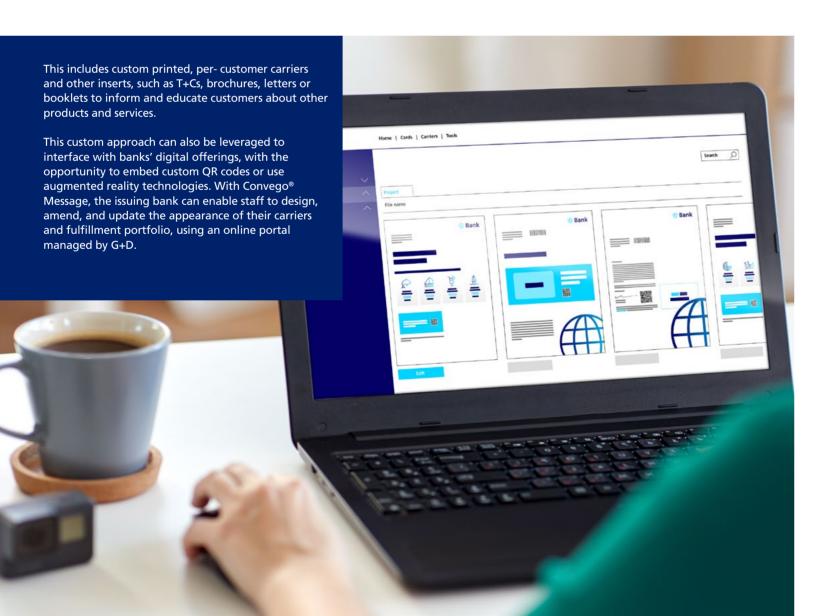


Ensure retention

Customers often don't absorb or understand everything that they receive along with their cards. Making this material stand out helps to ensure its consumed and understood effectively.

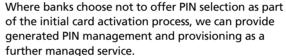
Convego® Message in brief

Banks can use G+D's Convego® Message solution to leverage the rich data they already possess about their customer to create micro-targeted, personalized carriers and inserts – all printed on demand.



PIN provisioning

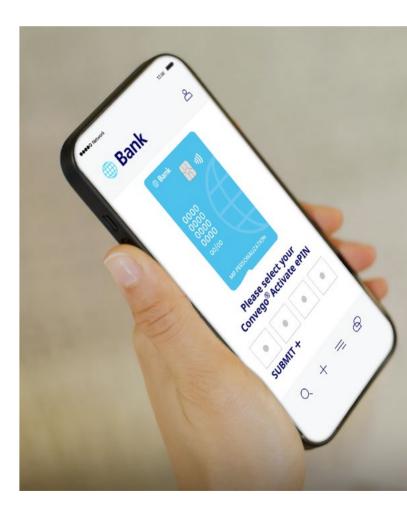
Ensuring efficiency in every part of the customer journey.



The "PIN letter" is an additional opportunity to establish brand in the mind of the customer, provide reassurance and direction as to next steps, and also potentially inform customers of additional products or services that may be of interest. G+D can offer the same level of customization and personalization to the PIN mailing as it does for the carrier:

- Convego® Message support for additional inserts.
- QR code for digital enhancements
- Security options to disguise the mailing, preventing interception and fraud
- PIN concealment with peel or scratch-off panels.
- Inclusion of additional booklets, leaflets, or other material
- Various folding and paper stock options to align with brand
- Full color branding opportunities
- ePIN solution for efficient, secure, digital delivery and activation of PINs





Phygital and digital issuance solutions working together to create an elevated for both the customer and the issuing bank.



Card creation

Create and personalize the perfect payment card for your program.



Customercreated cards

Enable your customers to create a payment card design they'll genuinely love.



Automated onboarding

Self-onboarding and self-serve instant card printing – anywhere.



Digital card display

Give your customers instant access to a digital version of their payment card.



Digital carrier enhancements

Enhance printed materials with the power of vibrant digital communications.



Real-time updates

Keep your customers informed throughout their issuance journey.



Tailored card carriers

Richly personalized and individualized card carriers for every customer.



Customer messaging

Rich phygital messaging experiences enhance the issuance journey.



Self-serve card printing

Enable quick printing of payment cards wherever your customers need.



Instant PIN delivery

Enable customers to quickly request, view or manage PINs anywhere.



In-branch card printing

Elevate your in-branch customer experience with instant card issuance.



Accelerated activation

Accelerate your customers' path to first use.



Enabling digital payments

Enable EMV payments in your digital wallet.



Payment credentials management

Enable customers to monitor and manage their digital payment credentials.



Passwordless authentication

Powerful, invisible multi-factor authentication that feels as simple as a single touch.



Eco-innovative payment solutions

Sustainable card, issuance and digital payment solutions.



One-tap authentication

Effortless activation and authentication with just one tap of your card.

Onboard / Issue / Activate / Use

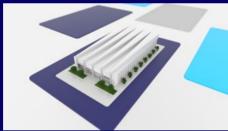
The physical card issuance process – daily industrial operation

Every one of our global personalization centers follows this step-by-step process to protect your customers' data, ensure quick turnaround times, and eliminate errors and wastage.





1. Digital: The customer onboards, and then receives a digital card display while their physical card is being created.



2. Request: The personalization factory receives a Request Entry from the bank. At this point the process starts.



3. Receipt: The order is received by our secure DMZ.



7. Production: The cards go into production—a multi-step process including: encoding magnetic strip, embossing or flat printing personalization details, and quality checks.



8. Card carrier: The finished card is then affixed to its pre-personalized card carrier, which is then sealed into an envelope before emerging from the personalization



countries - G+D has a presence on every continent

every year

400_m



4. Assignment and data generation: The order is then transferred to the Production office who carry out data generation to create EMV profiles, and a job ticket is created.



5. Card collection: The blank cards are then collected from the secure vault and counted to ensure correct number have been collected.



6. Production setup: The order is then passed to the operator who sets up in line production.



9. Logistics: The envelopes are then sorted for mail, boxed, and readied for dispatch.



10. Delivery: Following our secure loading protocol, the cards are dispatched to cardholders.

Why G+D is your right partner for managing card issuance

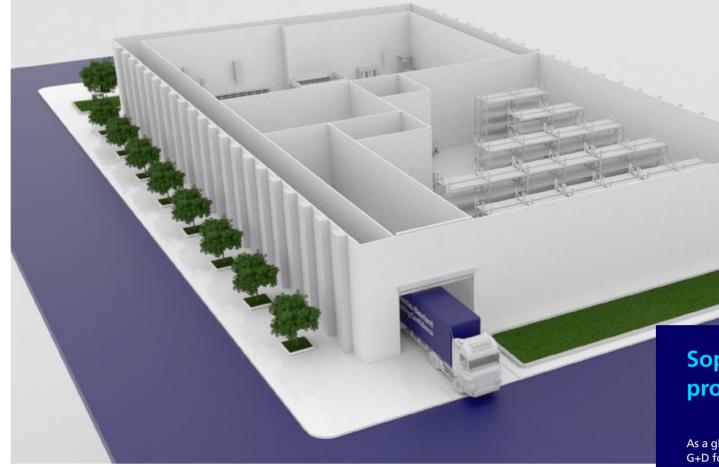
With over 170 years of passion for securing and enabling payments, G+D works with hundreds of card issuers and has strong relationships with banks and other financial services businesses on every continent of the world.

We have drawn on this wealth of experience and our unique market understanding to create a suite of physical and digital issuance solutions that offer true personalization and customization to match multichannel customer needs. Our position as market and technology leader allows us to guickly navigate complex partner relationships from processing partners to VISA and Mastercard. This allows quick deployment with fewer resource requirements and a quicker testing cycle. Our position as preferred partners of international schemes and our participation in global industry forums allows us to understand mandates, technology changes, and new features first and more thoroughly than other providers, offering our clients first mover advantage in many cases.

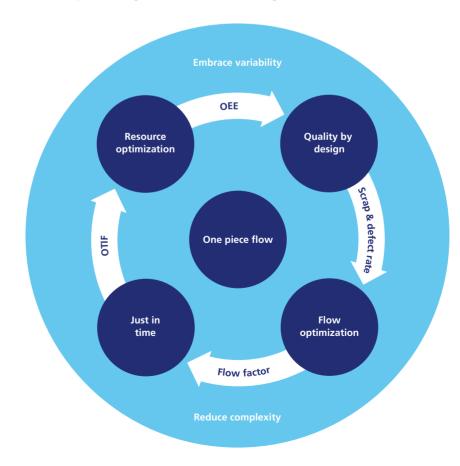
As technology develops, we are ideally placed to help banks adapt to changes. By integrating the payment card chip's lifecycle into the personalization setup, we can easily update chips to work with the latest technology, enabling the reuse of existing stock and a flexible approach during any technology migration – leading to a smooth migration.

We have worked with card-issuing clients worldwide in various capacities, from technology partners and core card production to overflow capacity and business continuity (BCP) support for in-house personalization centers operated by banks. So, whatever level of service you need, we can help. Our depth of expertise, drawn from our own COS and app development, ensures that our consultative approach to partnership offers genuine value to our card-issuing clients. We can configure solutions quickly and efficiently, work with our partners' internal resources, and liaise with third parties such as payment processors to quickly troubleshoot any issues and rapidly identify root causes.

Owning our own proprietary personalization tools gives us independence from any third-party supplier and enables faster response to change requests.



G+D operating model for managed issuance services



Sophisticated production principles

As a global high-volume card manufacturer, G+D follows the latest and most efficient service delivery model, as this diagram indicates. We use two key KPIs to monitor the success of our production operation:



Overall equipment efficiency (OEE): Measured by levels of utilization,

productivity, and quality. We strive for an industrial optimum of 85%, which is supported by our lean principle in effect for operating card issuance production centers.

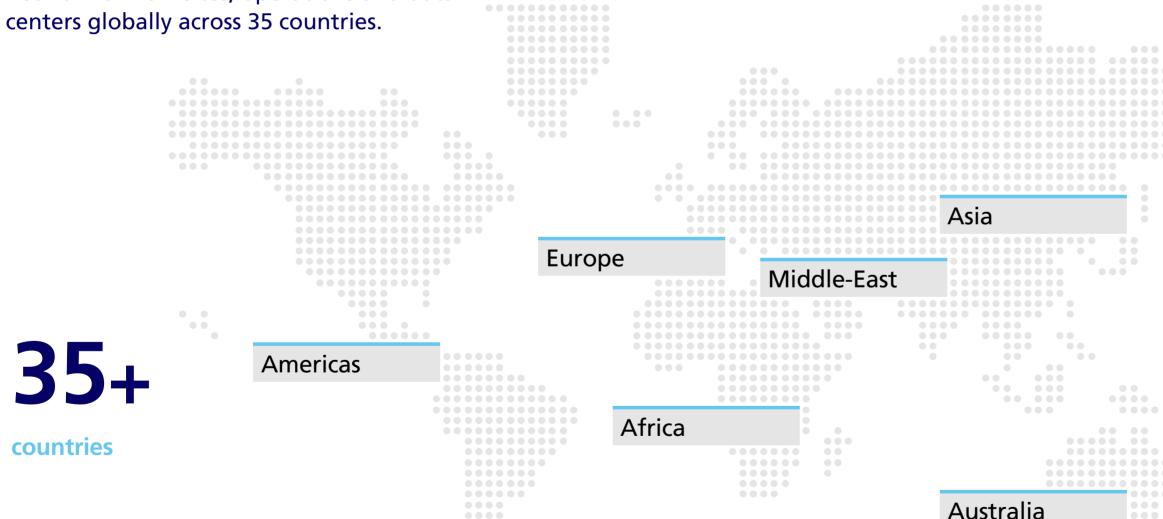


On time and in full (OTIF):

A measure of how effective our logistics and supply chain are at satisfying our customer. Again, expressed as a percentage of how many of our customers' orders arrived on time, at the right place, and of the expected quality. We also strive to have this metric as close to 100% as we can.

G+D has a trusted network of local representatives and partners with a resilient network of R&D sites, operations and data centers globally across 35 countries.

tal payment card experiences tailored to you and your brand



Learn more

For a conversation about delivering phygital experiences to your customers, contact epayments@gi-de.com

G+D PayTech is a global leader in payment solutions, providing innovative, customized offerings such as payment card and issuance services that blend the digital and physical. This includes card issuing and activation services that enable clients to activate cards online and use their cards securely as soon as they receive them. We provide a single service touchpoint that enables banks to effectively combine physical and digital customer journeys according to their needs. Our G+D Convego® offering is an ecosystem of products and solutions that orchestrate convenient customer experience across physical and digital banking and payments.

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About Giesecke+Devrient

Giesecke+Devrient (G+D) is a global SecurityTech company headquartered in Munich, Germany. G+D makes the lives of billions of people more secure. The company shapes trust in the digital age, with built-in security technology in three segments: Digital Security, Financial Platforms and Currency Technology.

G+D was founded in 1852 and today has a workforce of more than 14,000 employees. In the fiscal year 2022, the company generated a turnover of 2.53 billion euros. G+D is represented by 123 subsidiaries and joint ventures in 40 countries. Further information: www.gi-de.com.

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