



ธนาคารแห่งประเทศไทย
BANK OF THAILAND

Digital Finance Conference 2023

Presentation

The Rise of Embedded Finance and Digital Banking



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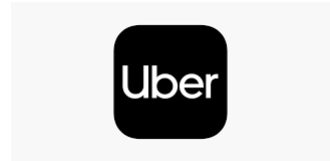
Part 1: Embedded Finance

What is embedded finance?

Put simply is where financial services become an integral part of a user journey. No need to navigate to a new webpage or got to a different provider, the new financial element becomes part of the user journey fabric.

Banks would still be needed but under a different business model. No longer building products and pushing out, but embedding core financial functions at the optimum point of acquisition, at a lower cost, a higher conversion rate and without the need to build a one-to-one relationship.

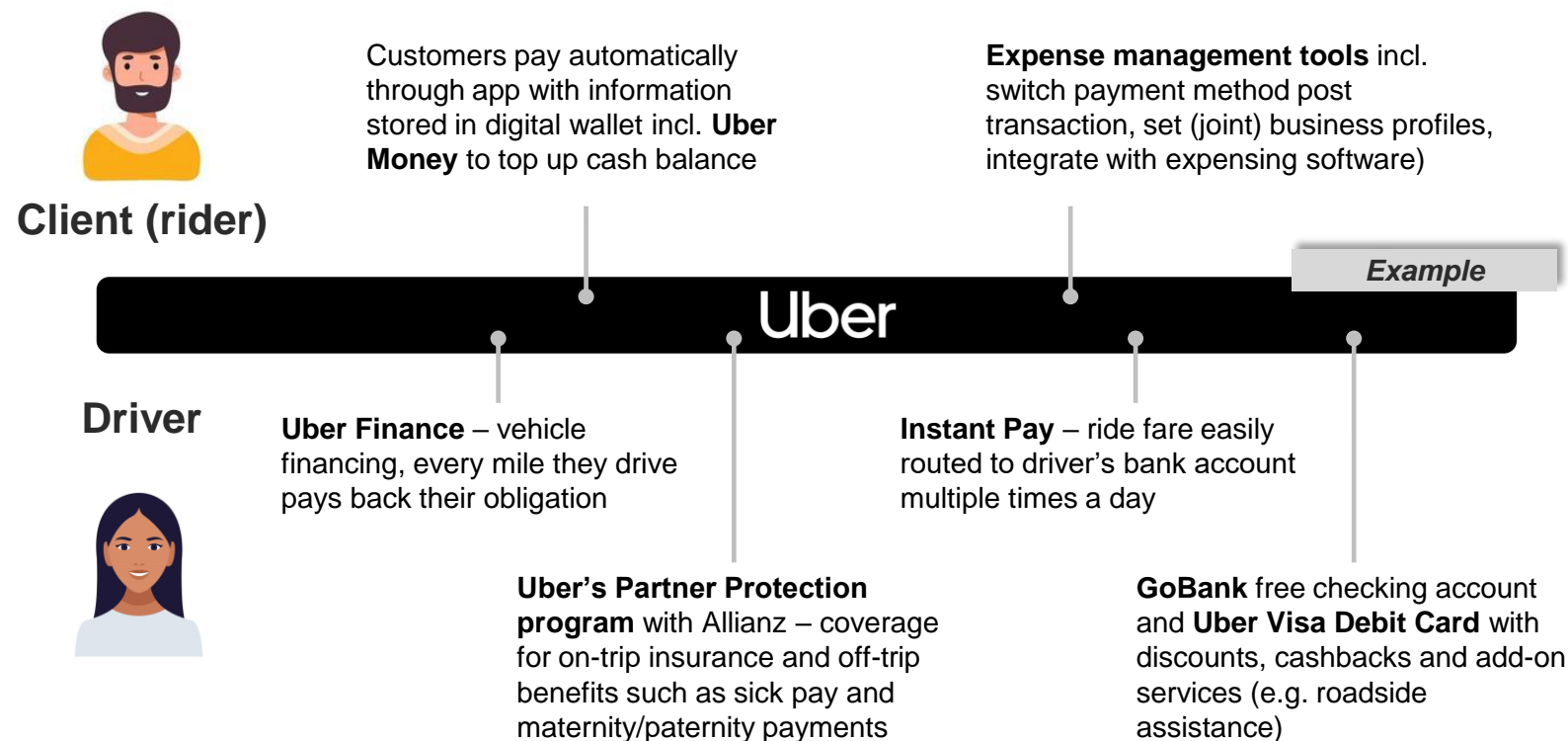
Banks will need to choose an embedded finance path or a path where they increase their relevance to their clients in a meaningful way through financial health or other experiences



Embedded finance seamlessly integrates financial services into the end user experience in the context of B2B2C

Embedded finance concept

Frictionless value exchange between platforms and customers



Finextra

Dec 2021

Embedded finance has taken the financial world by storm, and its growth is likely to continue well into 2023.

crunchbase news

Jan 2022

We will see continued growth in embedded financial services beyond where the trend started in payments with embedded lending, insurance and capital markets businesses.

AMERICAN BANKER

Jan 2022

Embedded banking started to gain steam in 2021 and will likely continue to do so in the year ahead.

BUSINESS INSIDER

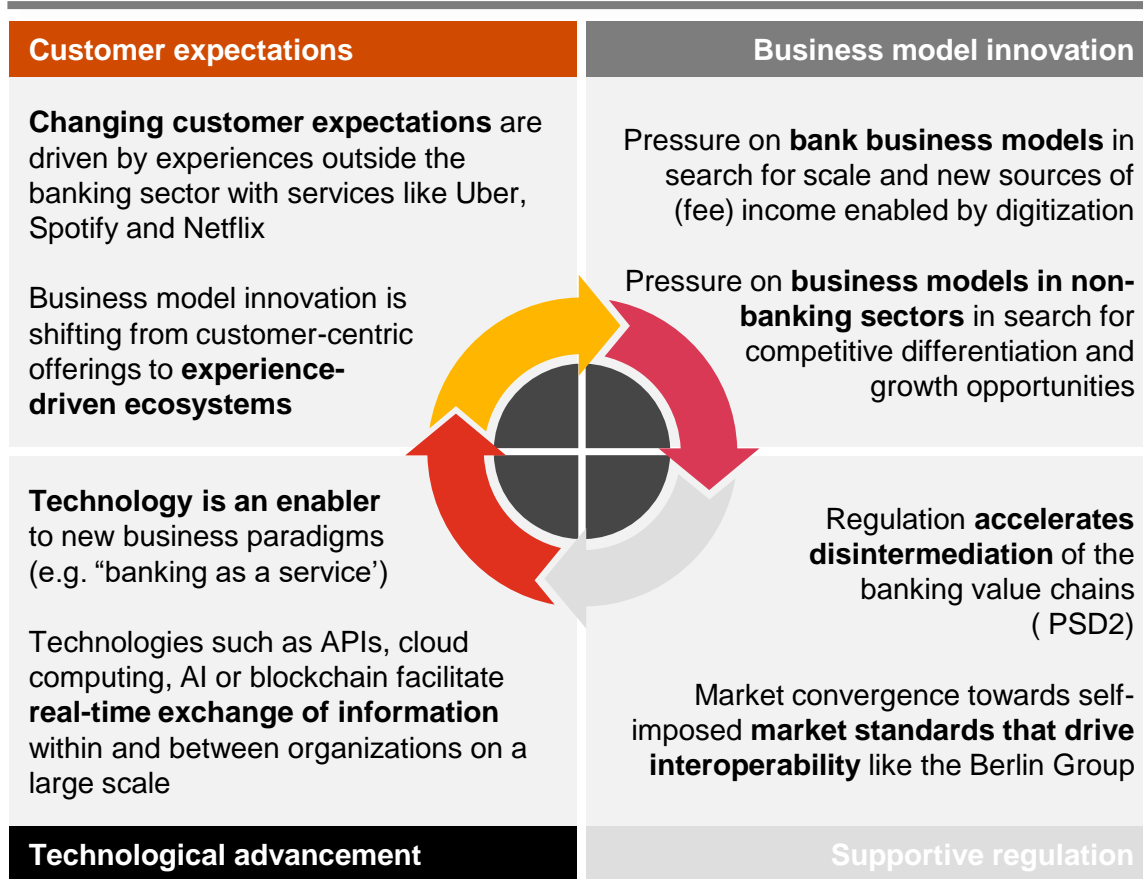
Jan 2022

Crypto, the next evolution of embedded finance, and the creator economy are among the top trends for behind-the-scenes fintechs in 2022/2023.

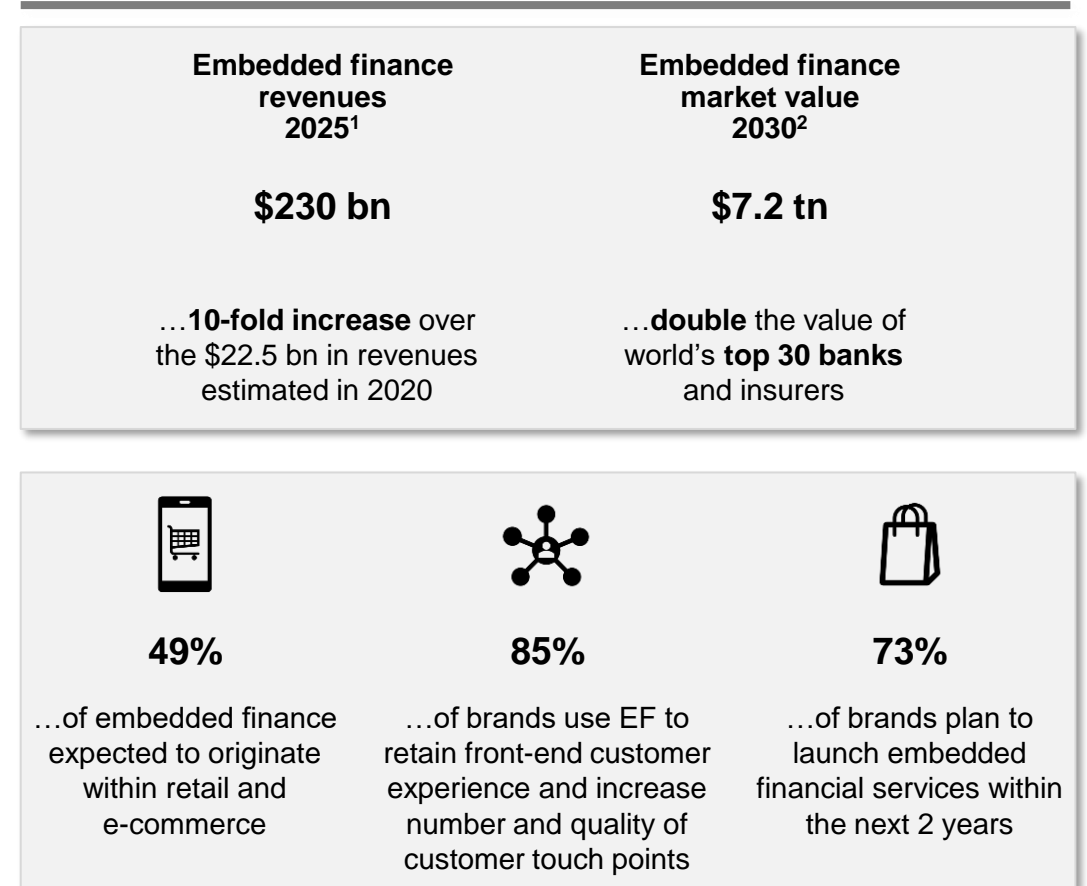
With remarkable growth, the value of the embedded finance market is expected to exceed \$7 trillion by 2030

Market potential

Key market drivers



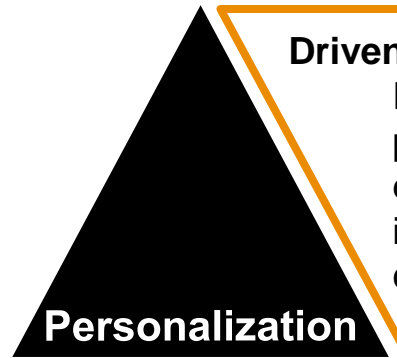
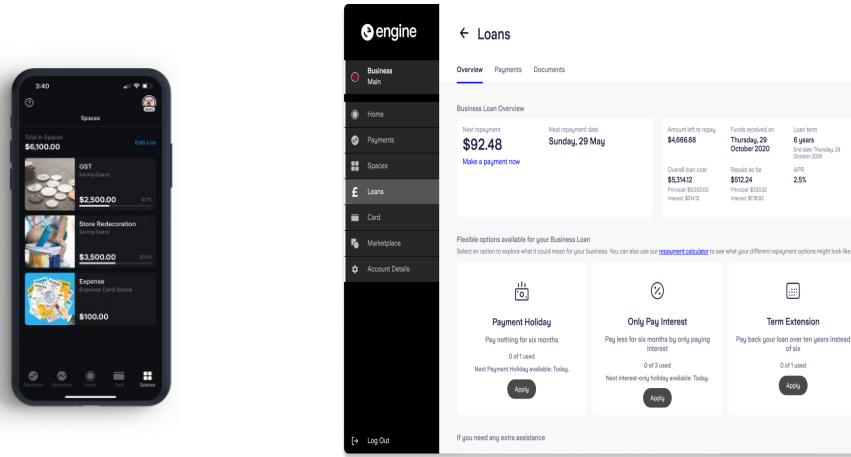
Embedded finance (“EF”) market forecast



1) Lightyear Capital; 2) Simon Torrance analysis, quoted in reports by Dealroom; Informa, Reuters, PitchBook, Statista, OpenPayd
 Source: Strategy& analysis based on publicly available sources

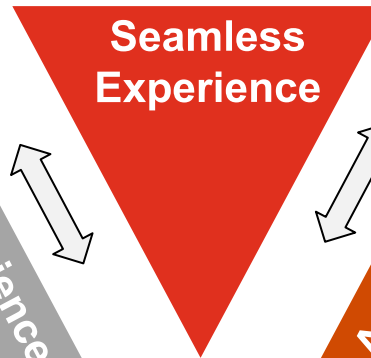
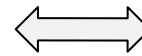
End users benefit from a seamless, integrated experience and increased value-add

Benefits for clients



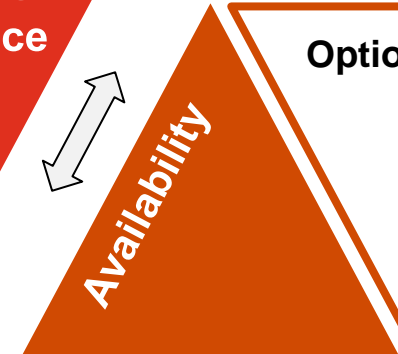
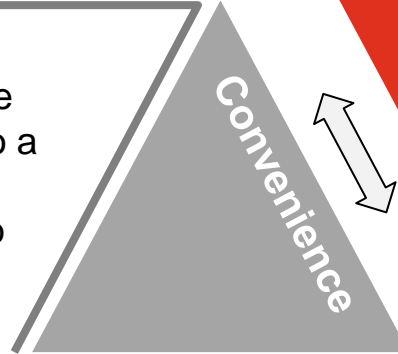
Driven by a highly personalized experience

Embedded finance offerings rely on and facilitate a more personalized experience, with extensive integration into a consumer's needs and lifestyle. Retailers and financial institutions will proactively identify relevant options for a customer and surface them seamlessly



The easiest option

Embedded finance offerings provide fast, easy, and ubiquitous access to a financial product, without any of the usual friction, allowing customers to focus on their priorities and not on seeking and procuring a financial product

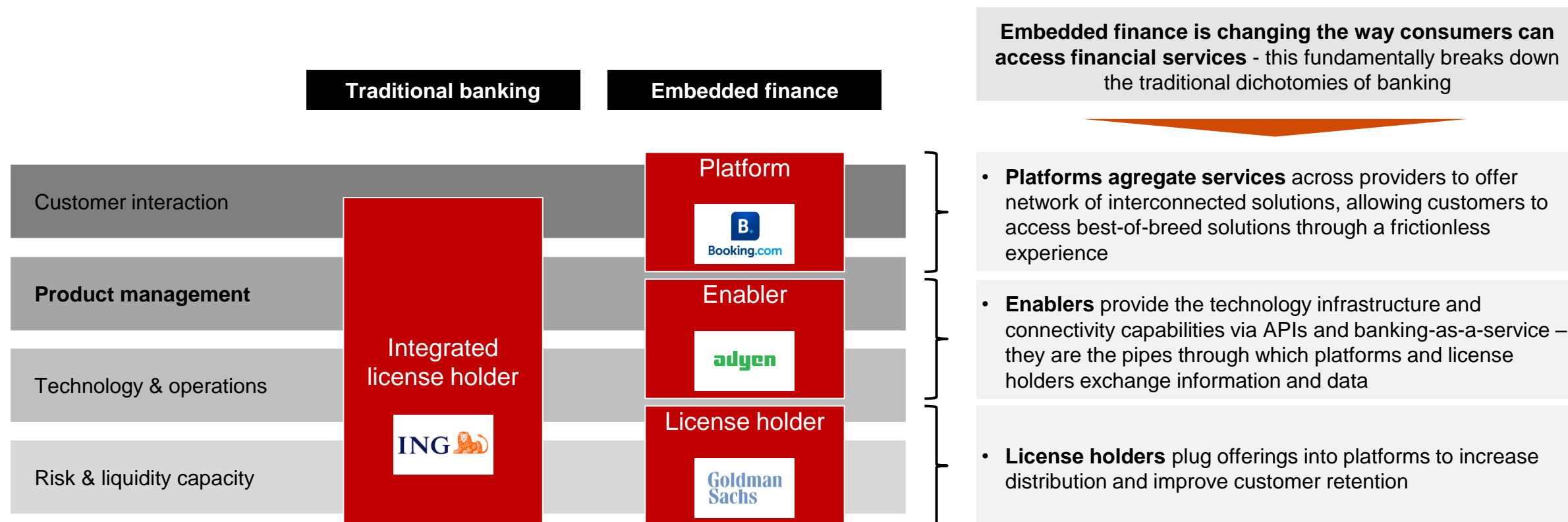


Options available at the right time and place

Legacy financial products require a consumer or salesperson to identify the need for the product and seek it out. Embedded finance makes these options available at the right time and place for a customer

Delivering embedded financial services disintegrates the value chain – 3 distinct roles are evolving

Shifting role of banks



Contextualized financial services, technical interoperability, and access to a wider breadth of products and data, will **force banks to re-evaluate how they position their value proposition**

The race to deliver integrated financial offerings through embedded finance is attracting Tech players

Big tech companies are moving into financial services

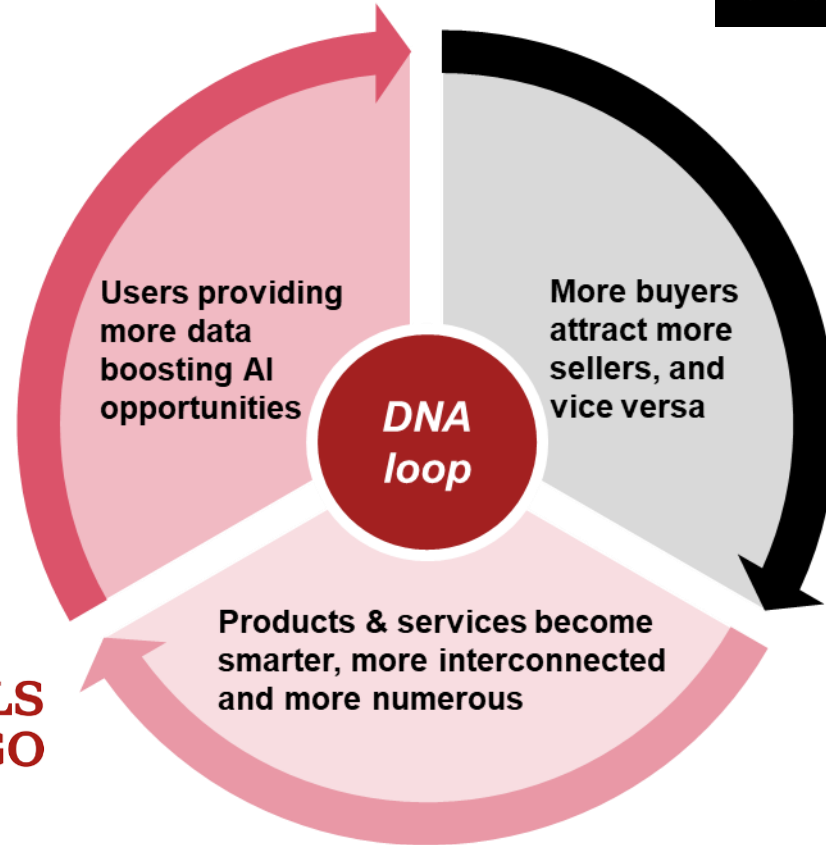


Apple's financial services business has more than \$10 billion in deposits and is now one of the largest neobanks in the world

Embedded Products

- Pay
- Cash
- Card
- Pay Later
- Savings
- Care+
- Tap/Pay

Providers/Partners



X (previously Twitter) has the ambition to become a super-app platform that incorporates audio, video, messaging, payments/banking – creating a global marketplace for ideas, goods, services, and opportunities

TheVerge

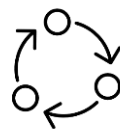
Jul 2023

Musk has also been open about his vision for making X a place where money flows. Musk said there was a “transformative opportunity in payments.”
 “From an information standpoint, not a huge difference between, say, just sending a direct message and sending a payment,” he said.
 “They are basically the same thing. In principle, you can use a direct messaging stack for payments. And so that’s definitely a direction we’re going to go in, enabling people on Twitter to be able to send money anywhere in the world instantly and in real time.” Later, he described some ideas that sounded an awful lot like making Twitter a bank.

Financial institutions that create ecosystems around specific use cases will become dominant as innovation is driven by Tech

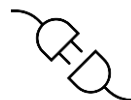
Change drivers for Banks

- Financial institutions must understand the technology that is changing the way consumers can access financial services as well as their preferences for doing so.
- Software is fundamentally breaking down the traditional dichotomies of retail banking and consumer lending.
- Contextualized financial services, technical interoperability, and access to a wider breadth of products and data, will force banks to re-evaluate how they position their value proposition.



Contextualization

Consumers will look for digital experiences where value exchange is completely masked, seamless and integrated. Brands will facilitate these experiences, and financial institutions will power them.



Interoperability

Consumers will expect that all of their financial services, and particularly, the underlying data will be transferable and acted upon across financial institutions.



Democratization

Basic banking products will be simple to bring to market, and consumers will have access to traditionally more complex products; illiquid assets will also become increasingly liquid through data.

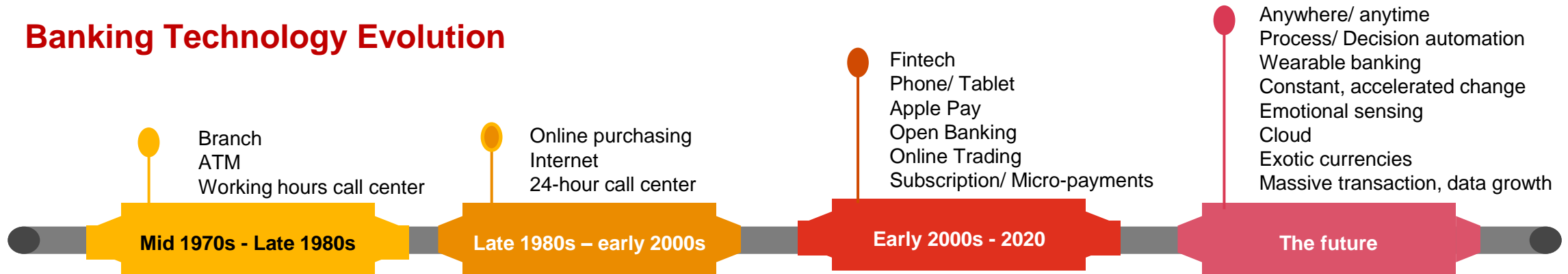


Community

With such wide access to financial products and services, consumers will gravitate towards companies that serve additional needs, and where they can interact with like-minded consumers.

While innovations in technology are driving digital banking, most banks' existing banking systems are not able to keep pace nor leverage technology innovations

Banking Technology Evolution



The time is now to evaluate and migrate to modern digital core



Pressure from challenger banks

Major, mid-sized and challenger banks are, or will soon be, using the modern organic digital core, opening a several-year lead in digital experience.



High cost of upgrading

The cost of changing legacy core to compete digitally is more expensive than migrating to an organic digital core platform.



Demand for contactless interactions

COVID-19 has forever changed the way customers bank; they are now demanding remote, contactless interactions.



Monetisation opportunities

Opportunities to monetise IT assets and partner (instead of compete) with challenger banks/fintechs is occurring now.



A losing battle

Evolving legacy core is ultimately a losing battle, encumbering bank's performance and survival:

- Agility freezes
- Operational costs become uncompetitive
- Risks increase



New capabilities

The rate and scale of change is increasing requiring unique capabilities only delivered by organic digital core:

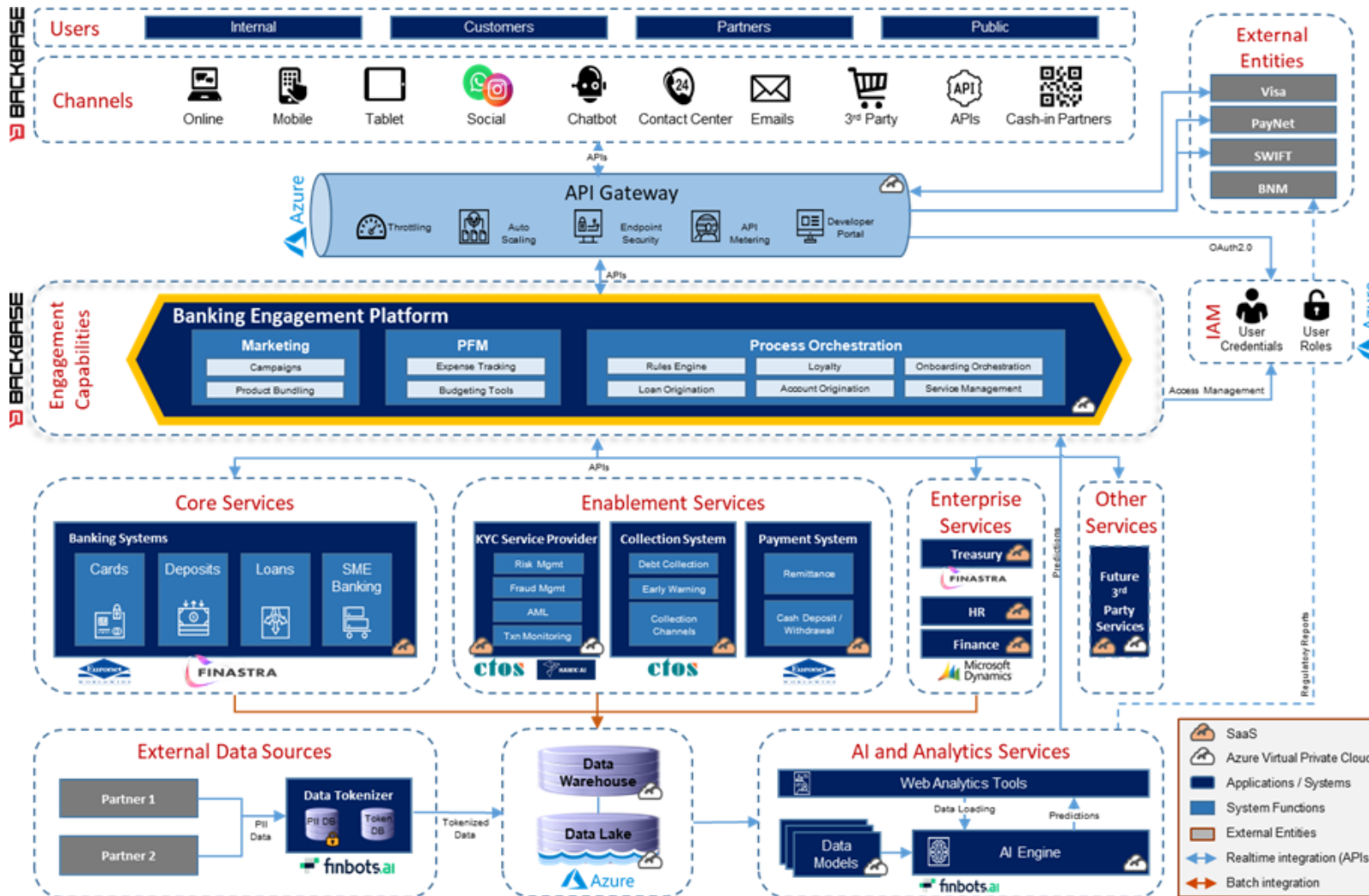
- Cloud native
- Data-driven
- Robust, lean API gateways
- Granular microservices
- Transaction-level downstreaming
- Extensible data model

Source: IDC & Thought Machine Infobrief (2020)

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To provide embedded financial services, banks require a modern, digital, scalable architecture

Modern Digital Banking Architecture



Key Highlights

Modular Architecture

- **Hub & Spoke based:**
 - **Hyper-personalised User Experience:** enabled through centralized customer engagement platform and AI engine
 - **Leading-edge Fintech Partners:** Realtime integrated core banking and enterprise functions
- **Fully cloud-native:** All systems are cloud-based deployed on MS Azure.

Scale with business growth

- Ability to **easily add** new DB products/services.
- **Microservice**-based architecture with application deployed using containerisation techniques.

Data-driven, AI-enabled Automation

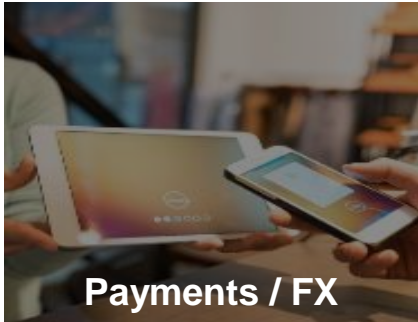
- **AI & Machine Learning:** High degree of **automation enabled by AI** (customer onboarding, credit decisioning, cross-selling, etc.)
- **Secure Data Sharing Platform:** Purpose-built **security** and audit capabilities for **data collaboration** with only **tokenized data** being visible in DB (no PII)

Cohesively integrated ecosystem

- **Robust integration architecture** enabling real-time integration through **APIs**.
- **Open-banking** ready foundational capabilities with ISO20022 compliance from inception.
- **Composable UX** leveraging modular underlying microservices.

Embedded finance propositions for Retail and Private Banking clients

Embedded finance examples



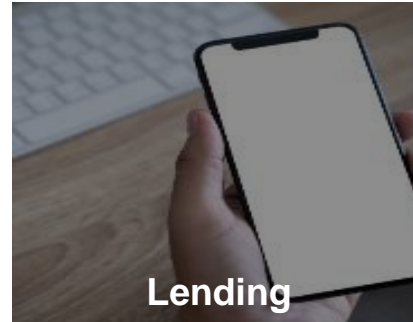
Payments / FX

Embedded payments (card or account-based) connect and save a payment methods for later use in digital wallets
1-click payments offer convenience and speed and thus reduce drop-out rates
Range of FX solutions and providers integrated into commerce interfaces (e.g. on the spot FX quotes)



BNPL

“Buy now, pay later” (BNPL) offering provided during checkout process typically allows for monthly or weekly installments with no interest
Often without “hard” credit checks and with a seamless user experience, simple terms
Innovative solutions beyond e-commerce e.g. healthcare payment plans or invoice financing



Lending

Introduces data-driven lending decisions to simplify application process and payout
Builds-in flexibility into loan repayments – e.g. flexible payment schedules that match installments to financial inflows (adjust frequency and value of installments)



Insurance

Clients can purchase insurance directly at point of sale (e.g. travel insurance bought at time of booking)
Innovative data-driven insurance offerings (e.g. parametric, geolocation based, pay-per-day)
Faster claims processing – Blink’s proactive approach
Hopper allows to freeze price for a small fee



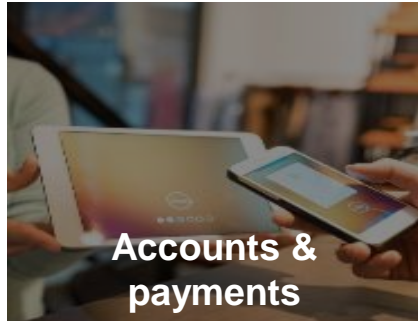
Investments

Embedded wealth mgmt. simplifies the savings/ investment process (e.g. rounding up purchases and investing them in pre-defined portfolios)
Fractional share technology connects customers with the markets with minimums as low as \$1 lowering barriers for everyday consumers



Embedded finance propositions for SMEs and Corporates

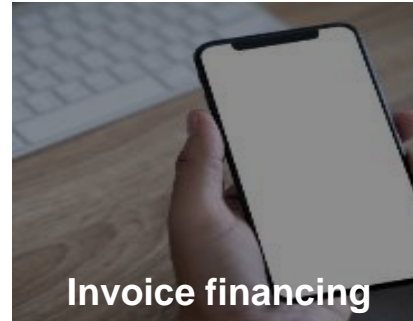
Embedded finance examples



Banking services offered by non-banks are designed to replace traditional checking or savings accounts
Examples include accounts and debit card from ride-hailing platforms - drivers get paid faster for rides
Shopify encourages small business owners to set up a separate bank account for their company, rather than use their personal accounts



Companies like Shopify offer business loans by using data about the seller's revenue rather than credit checks.
Repayments can also be scheduled as a percentage of sales
Pay-per-use models to replace asset ownership and leasing



Allows to offer businesses longer payment terms while taking away credit risk from sellers and improving their working capital
For example, B2B marketplaces offer 30-90 days credit to buyers while suppliers get paid right after order is made (marketplace takes on credit risk)



Currency risk protection embedded within invoices
Embedded currency and cross-border payment options as part of B2B marketplaces (FX purchase-to-payment)
Embedded FX management plans e.g. within cloud accounting software (invoice data pulled to assess firm's payment behavior and offer real-life currency decisions)



Insurance can be embedded in the broader offering to businesses
For example, embedded insurance for gig and shared economy partners – drivers accident and hospitalization insurance, Covid-19 insurance, home contents insurance



Source: PwC Strategy& analysis

PwC SEA Consulting: Recent experience on a page



Core Banking Replacement



Architecture Modernisation



Technology Strategy & Architecture Modernisation



Architecture Modernisation



Technology Operations Optimisation and Core Banking Replacement



IT Strategy & Technology Architecture



Digital Banking Setup



Retail Banking Divestiture Support



Digital Banking License Application



Digital Banking License Application



Digital Banking Transformation



Digital Banking Platform



Digital Banking Platform



Digital Banking Platform



Digital Platform

PwC SEA Consulting Overview

Building Neobanks

- Advising consortia with their digital banking license applications across South East Asia
- Developing strategies, business cases and building digital banking operating models, technology platforms and ecosystems

Digitizing traditional banks

- Modernising and digitising legacy architectures and platforms
- Implementing next generation banking platforms
- Project and MVP planning design and execution support
- Helping banks transition to the cloud to build scalable and future proof architectures

Vendor partnerships



- Deep partnerships with cloud providers including Azure
- Global partnerships and experience with market leading core platform vendor
- Current certifications and investing in training and SEA COE capability
- Extensive accelerators and assets built through multiple successful engagements with partners across the globe

Part 2: Digital Banking

| Engine by Starling

Starling Bank is one of the world's **pioneering digital banks** based in the UK.

Utilised

3.9 million customers, including over 500,000 business accounts - the bank has achieved 9.4% business banking marketshare in 5 years.

Loved

We've been voted "Best Bank" by the consumer organisation, Which?, for three successive years, and we sit at the top of the CMA's service quality index for personal and business banking.

Profitable

Starling is the first UK digital bank to post profits, this year we recorded a pre-tax profit of £195m, a 6x increase from last year's figure.



How Starling is pioneering digital-first journeys while prioritising **human experiences**

No branches

Digital-first banking with extensive features and self-serve capabilities. Ensuring helpful and delightful customer experiences.

Human agents

Exceptionally trained customer service agents, available 24/7, with no chat bots or IVRs.

Culture of trust

Staff members across teams are trusted to manage their time, embody our values and deliver excellence.



The challenge

Traditional banks need to
keep up and innovate to
deliver **for customers
today.**



Our philosophy

But transformation has to
extend beyond customer
channels **to the core.**



How technology enables the experiences that **customers expect**

Personalisation

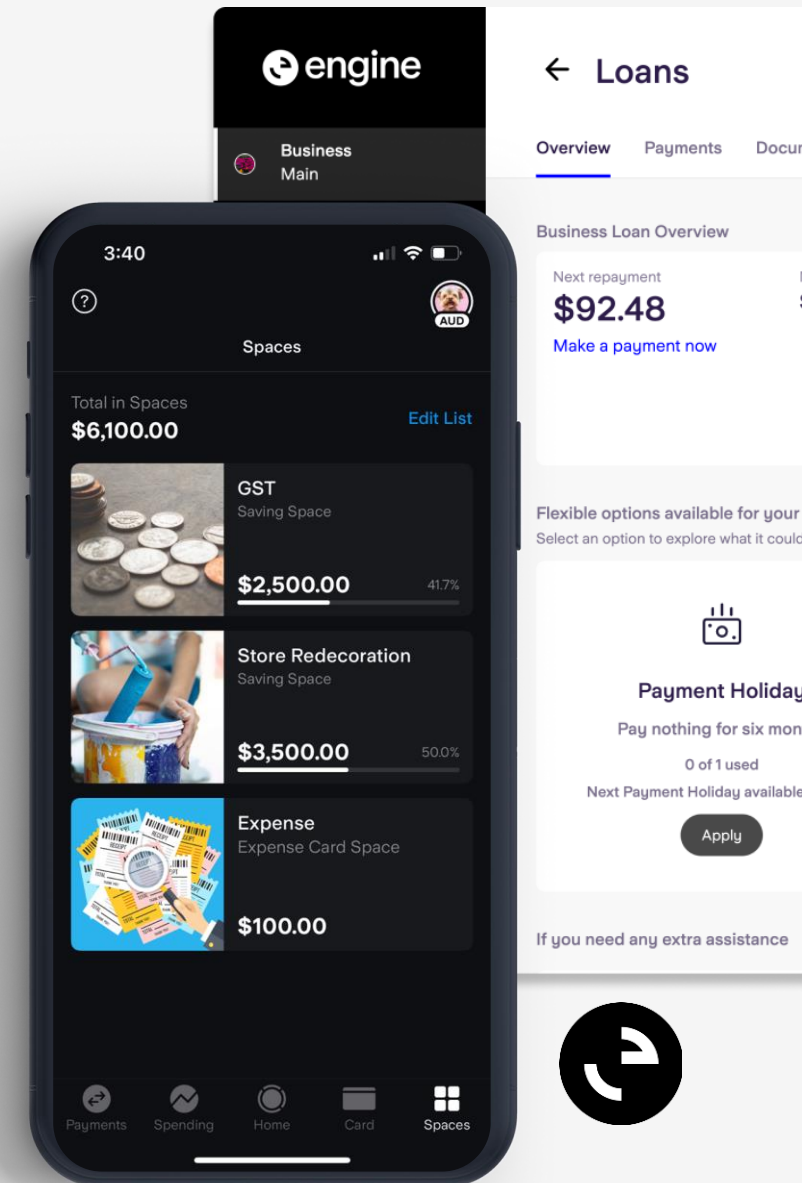
Products and the customer experience can be highly personalised and work for different customer types.

Real-time to the core

Payments, cards and round-ups through to accounting package integrations, so customers always know how they are doing.

Simple consistency

Clear and effective journeys, with shared experiences across product types and business lines.



| Engine by Starling

Engine is the **cloud-native, modular,** banking platform that powers Starling Bank.

Engine delivers a **functionally-rich set of capabilities** to run a highly competitive and cost-effective digital bank.

Born in the cloud and delivered as a fully-managed service, the platform is modular, entirely API-based and a proven technology at scale.

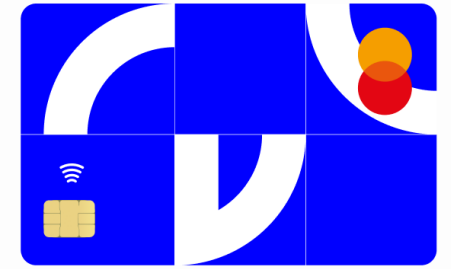
Engine simplifies core banking **Software as a Service** delivery by offering a complete set of composable digital features and capabilities that can be configured rapidly.

The platform is designed for banks to deliver digitally-native banking experiences to customers, increase operational efficiency and **lower the risk and cost of digital transformation.**

Outstanding Actions

Person

- Identity Documents Not Required
- Identity Video Not Required
- Personal Information Not Required
- Proof of Address Not Required
- Tax Declaration Not Required
- Immigration Status Not Required



James Street



Online Payment Code

[View](#)

Card Details

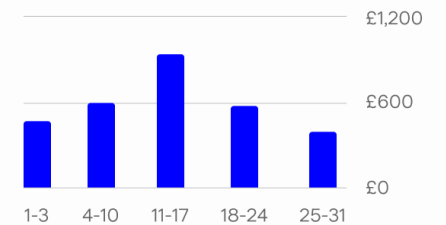
Card Controls

Cancel & Replace Card

PIN Reminder

Spent this month

£2,587.00



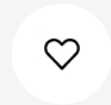
| Engine by Starling

Engine is **proven to deliver** on what matters for banks.



Cost Base

Get the cost base of a digital bank with delightful mobile self-service journeys.



Engagement

Have industry-leading usage and retention rates with personalised experiences.



Reliability

Achieve the highest levels of availability with stability and scale built-in.



Innovation

Deliver constant improvements with upgrades, new features and experiences.



Compliance

Be compliant by design with clear controls for risk and regulatory compliance.

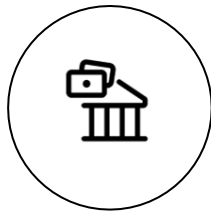


Speed to market

Enable the rapid launch of new services with a breadth of products and features immediately available.

| Engine by Starling

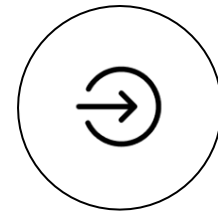
Engine can power a range of **digital transformation** projects.



Start a
greenfield
bank



Launch a
new line of
business



Replatform
your existing
business

What makes the Engine By Starling platform **different**?



Bank-built

Engine powers a multi-award winning UK digital bank meaning you'll benefit from fine-tuned operational processes developed over the course of 7 years. Engine is built by people who really 'get' banking. We've done this before and we want a genuine partnership with clients.



Simple Architecture

Engine's APIs are what we like to call "generic but granular". With Engine, you get far more than vanilla banking products- rich with digital features and flexible enough that you can create your own innovative journeys.



Built for change

As a SaaS offering Engine is constantly improving and evolving. We continue to develop, iterate and innovate the platform, so that you can focus on running your bank. We make multiple changes every day, meaning the platform is built for and is made for change.



More than a core

Engine comes out of the box, with pre-integrated components that you need to run a bank. From the core ledger through to card processing, contact centre and more, Engine operates as a single cohesive system, improving speed to market and operational efficiency.