

INT.



The **Power of Open Banking** coupled with Artificial Intelligence

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and its impact on
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.01 Open Banking and its impact on Consumers and Banks

01.1 Background

With the advent of General Data Protection Regulation on the 14th of April, 2016, to enforce Data Protection rights of consumers and Small and Medium Enterprises (SMEs), banks around the EU and the European Economic Area were in a quandary due to the following challenges:

- *The new regulations brought in many new requirements. It's was the EU legislators' firm intent to increase the accountability of any person/organization/businesses processing personal data*
- *It is a very process-driven regulation and inflexible*
- *Very tangible and visible/verifiable functions and steps needed to be realized*
- *Increased fines and sanctions on entities in non-compliance of the GDPR*

The background of the slide features a dark blue gradient. In the center, there is a faint, semi-transparent image of a hand holding a smartphone. Overlaid on this and the background are several circular icons, each containing a white dollar sign (\$).

The crux of the problem at hand for these banks was that GDPR ensured consumer data was now in the ownership of natural persons and they had the right to decide how their data was to be used, and not the bank. At the same time, the attitude that was prevalent for the past decade was that data was the new oil and through data banks could draw invaluable insights. Furthermore, being in possession of consumer data meant that the bank could derive both predictive and prescriptive projections for the consumption of their products, vis-à-vis consumers.

Also, since banks were facing pressure from emerging financial technology startups (FinTechs), new and additional business models had to be thought up and implemented quickly such as freemium, monetization of data, white-labeling of banking and payment applications, or the cross-selling of complementary products.

The answer to the problem was staring at their face since concepts such as Open Innovation and Open Data had already been existing, driven by ideas that were counter to secrecy and silo mentalities of traditional Corporates (which the banks till then entirely were so). However, an EU directive to give consumers of banks financial freedom and at the same time, protection, was the final straw that definitively pushed banks towards this direction in a manner which nobody had predicted before. So what was it exactly that changed the paradigm of banking forever and that too globally? The answer is explained over the next couple of sections.

01.2 The Birth of Open Banking

The answer to the last question is Open Banking. It was introduced on the 13th of January, 2018, in the form of PSD2, by the EU for the European Economic Area. By then, there were already shifting sands in terms of attitude towards the issue of data ownership illustrated by regulations such as GDPR and concepts such as the open data movement.

The banks turned into financial service platforms, from being mere intermediaries between depositors and lenders, technically implemented through Banking as a Service-concept and it offers incumbent financial giants (mind you - not just banks) the opportunity to partner with FinTechs rather than compete with them.



01.3 The Benefit for Third-party Companies

Third-party Companies and TPPs (who are actually FinTechs) have faced multiple obstacles (from banks that did not want to share their data and previous Regulations/directives) that have prevented them from offering large scale solutions in the different countries of the European Union.

Another salient objective of introducing the rules of PSD2 was to level the field between all players – old and new. The entry of new players in the market (the TPPs) and facilitation of their success in adding further value to consumer data for consumers, through data from banks (the old and well established players), enhanced competition towards the benefit of the consumer who always needed better, faster and cheaper financial services.

In return, the TPPs had simply comply with the same rules as traditional payment service providers and these rules pertained to:

- *Registration*
- *Authorization*
- *and Supervision by competent authorities*



01.4 The Rights of the Consumer

Before we delve into the nitty gritty of Open Banking, let's not forget the consumer for the consumer and their data was in the centre of it all, so there are 2 core concepts to remember in relation to their data ownership:

- *They alone would decide who gets to do what with their data*
- *How long would someone have access to that data*

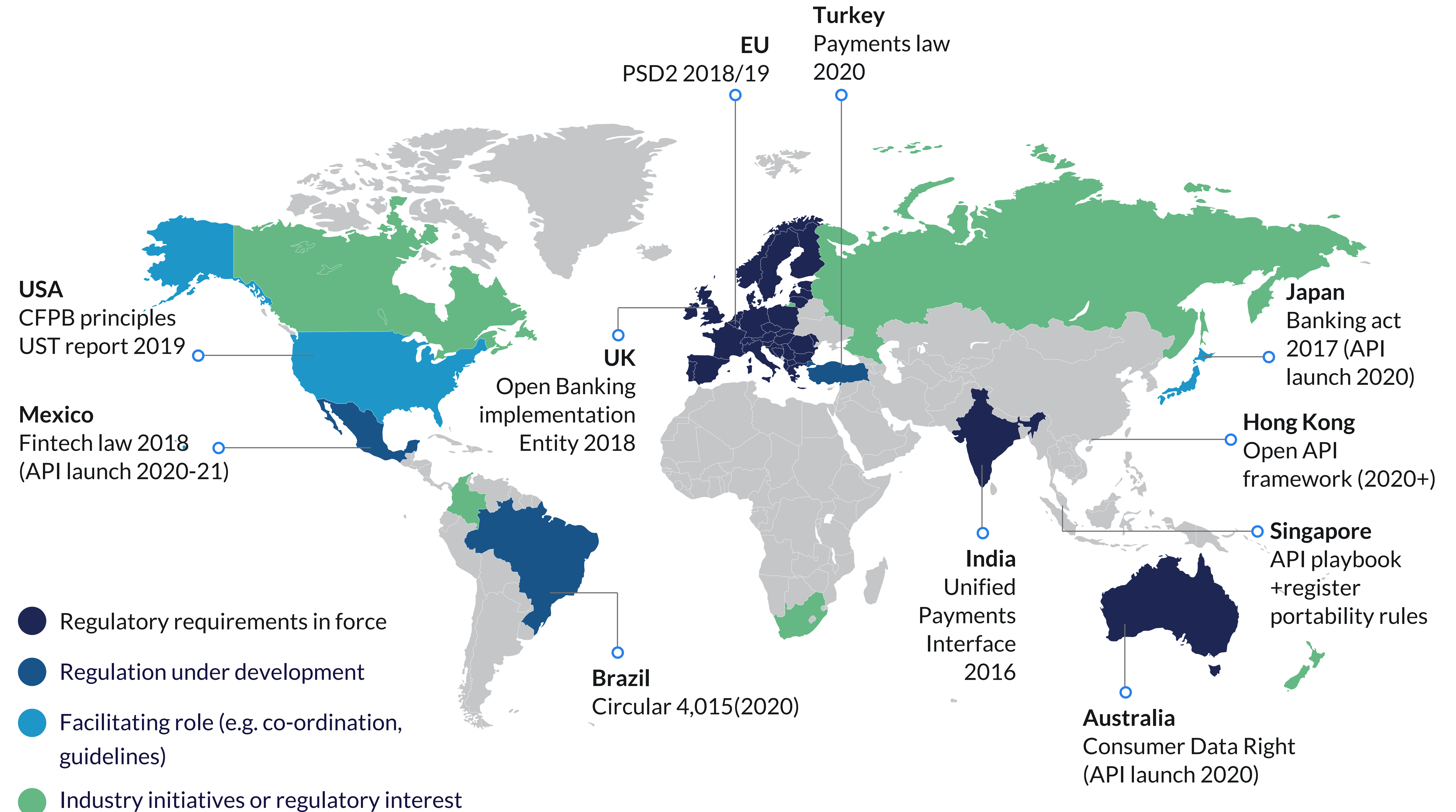


Diagram 1: FinTech Frameworks around the globe (Source:BBVA)

01.5 The Indian Connection

Till now, we have discussed what Open Banking has meant for the EU however Open Banking is energizing economies in all continents as of today. One of its success stories is from India.

Quoting Wikipedia directly, the Unified Payments Interface (UPI) is an instant real-time payment system developed by National Payments Corporation of India (NPCI) facilitating inter-bank peer-to-peer (P2P) and person-to-merchant (P2M) transactions. It is the most successful and widely used example of Banking 4.0 seen in India. The interface is regulated by the Reserve Bank of India (RBI) and works by instantly transferring funds between two bank accounts on a mobile platform.

regulated space, and—perhaps most importantly—a mechanism to operationalize individuals' control over their personal data.

To further elaborate, the 'India Stack' consists of four layers of infrastructure and standards: (i) digital identity; (ii) an interoperable payments interface; (iii) digitalization of documentation and verification; and (iv) a consent layer. The precept of the security for the India Stack is derived from a very simple; it is not the third parties who are trusted but the NPCI. The National Payments Corporation of India (NPCI) is a non-profit set up by the Government of India to facilitate digital payments. They facilitate many payment existing schemes (like IMPS, BBPS, FASTag,

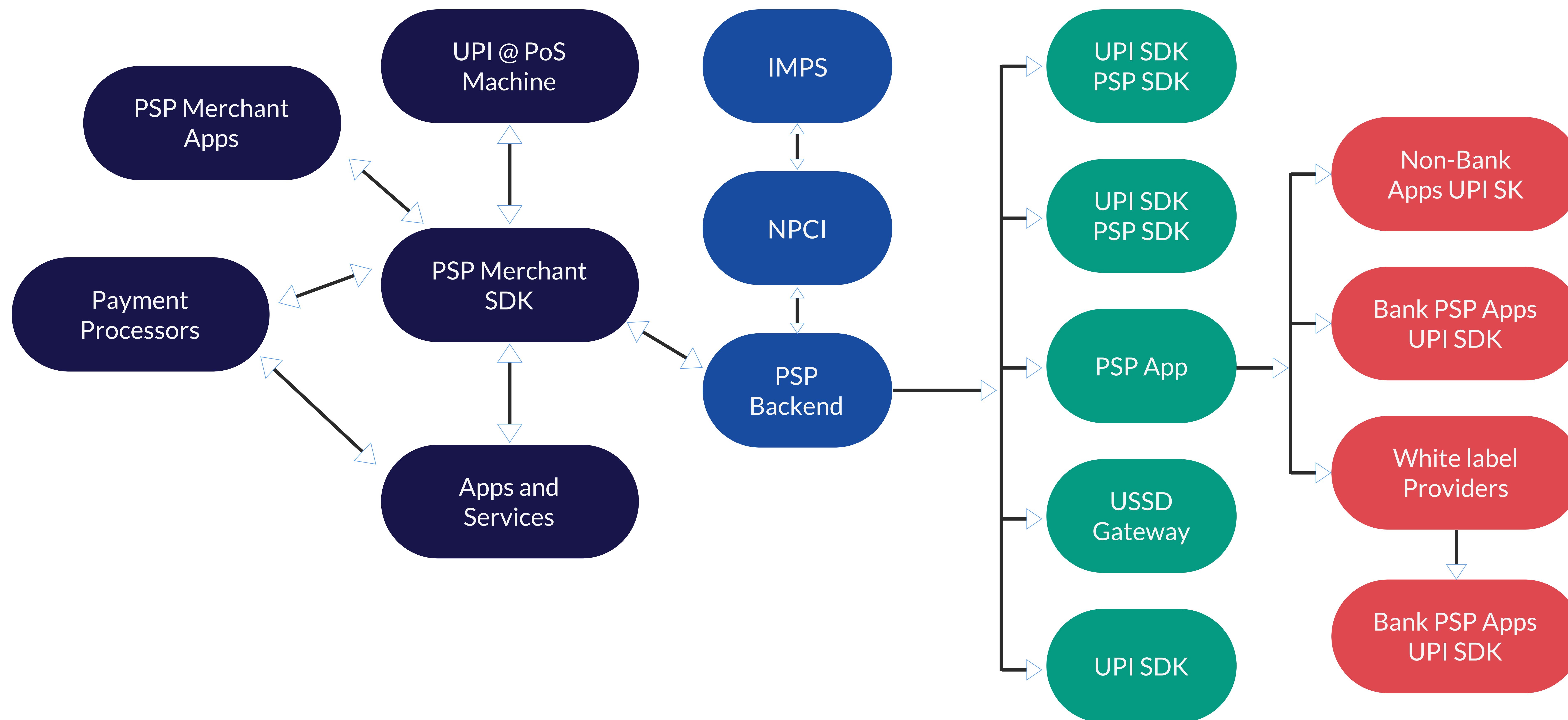


Diagram 2: A high level architecture of the UPI ecosystem (Source: hasGeek)

In financial year 2021, ₹41 trillion worth of money was exchanged on UPI platform, that is 2.8 times the value of debit and credit card payment at point of sale (POS) terminals and 20 times the value of digital wallet and prepaid instruments in India. In December, 2019, Google had whole heartedly praised the Indian Unified Payment Interface system and wanted the US Federal Bank to adopt it for America in its localised form. Just yesterday, the NPCI International Payments Ltd (NIPL), the international arm of the National Payment Corporation of India (NPCI) has partnered with Mashreq, one of the leading financial institutions in the UAE, to offer acceptance of the Unified Payments Interface (UPI) in the UAE.

Top 5 UPI apps in Feb 2021

(Note: Number of transactions in brackets)

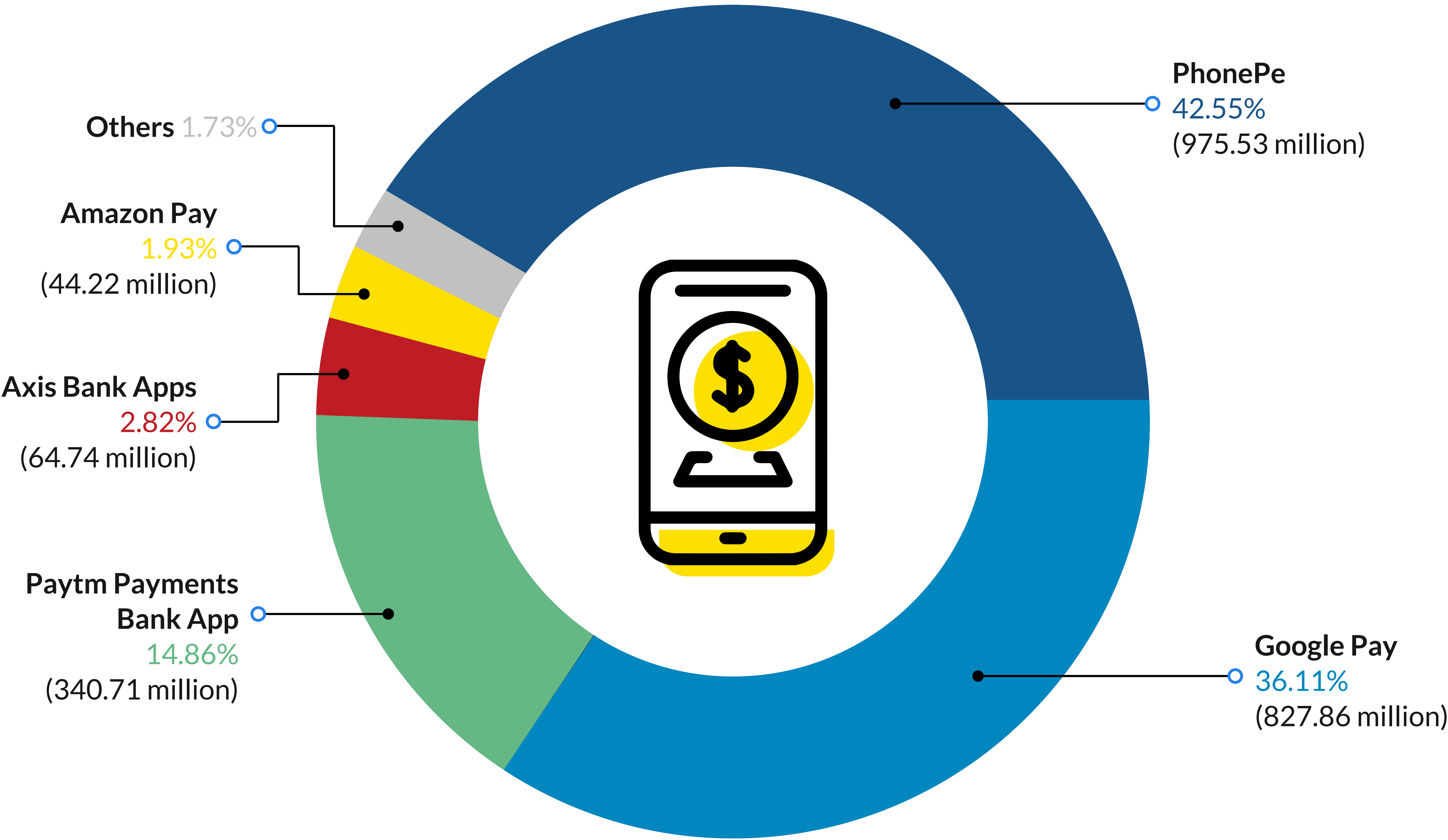


Diagram 3: Popularity of UPI apps in India and their market share (Source: Economic Times Tech)

01.6 Summary

To summarise, banks around the world had to evolve to continue their primacy in the financial ecosystem which now had players competing with banks and this directly was to benefit their consumers. In many countries around the world, it would be governments that would continue pushing banks towards Open Banking - for instance, by 1 July 2020, all Australian banks will be required to have implemented open banking for all products recommended in their Farrell report. Similarly, the customer/consumer will now have a growing number of options on their fingertips for protecting and growing their money.

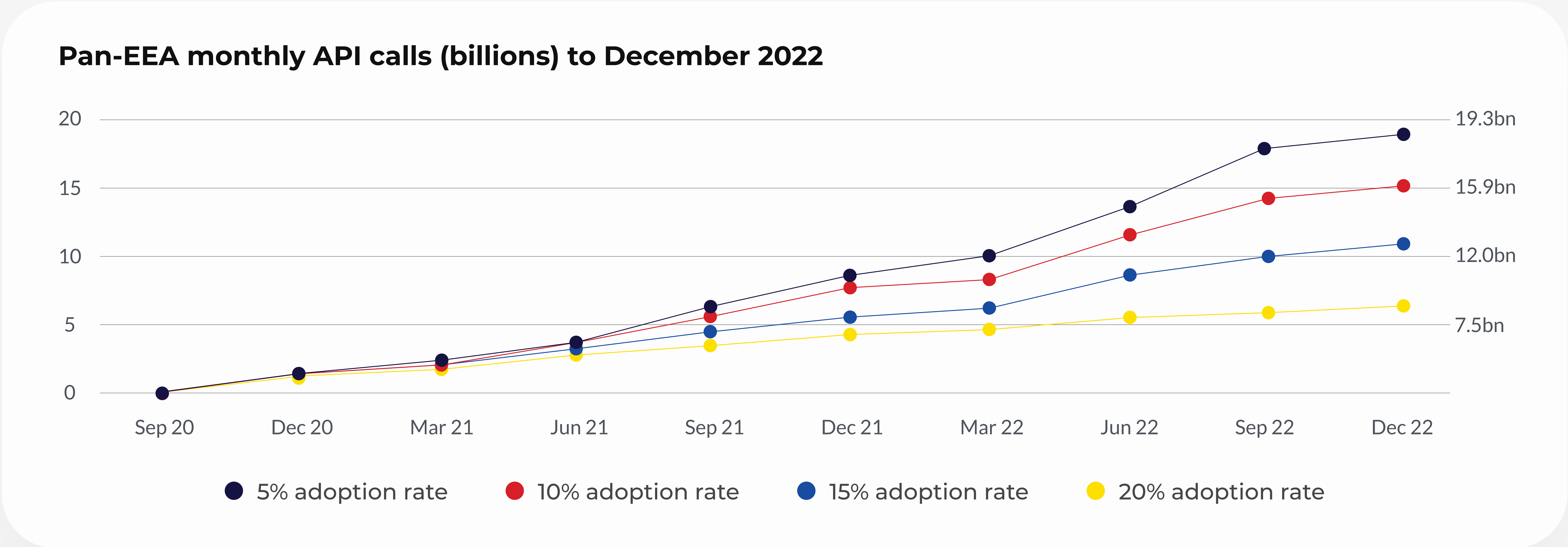


Diagram 4: the Growth of Open Banking in terms of API Calls in the EEA and Projections

.02 Nitty gritty of Open Banking

02.1 Well, how does it work exactly?

There could be essentially 4 categories of parties to the question of Open Banking related data:

- Consumers of the bank
- Banks
- Other SMEs that Consumers use
- Third Party Payment Services Providers (TPPs)

PSD2 regulates and harmonizes two types of services: on one hand we have, the **Payment Initiation Services (PIS)**; and **Account Information Services (AIS)** on the other hand.

Account Information Services (AIS) include the collection and storage of information from a customer's different bank accounts in a single place allowing customers to have a global view of their financial situation and easily analyze their expenses and financial needs (that single place could communicate with a single software application through APIs).

Meanwhile, in *Payment Initiation Services (PIS)* other providers facilitate the use of online banking to make payments online. These services help to initiate a payment from the consumer's account to the merchant's account by creating an interface to bridge both accounts, filling in the information needed for the bank transfer (amount of the transaction, account number, message) and informing the store of the transaction. PSD2 also allows clients to make payments to a third party from a bank's app using any of the client's accounts (whether they belong to this entity or not).

02.2 Protection of Consumer data

Protection for the consumer is primarily a construct of what is known as Strong Customer Authentication (SCA). This involves the use of two authentication factors for bank operations that were not previously required, including payments and access to accounts online or via apps. Continuing with the example of online purchases, customers will notice changes in the way they authorize their purchases, primarily in the authentication factors they use, with reinforced authentication in the level of security by default (you may have heard of 3-D Secure), and neither static written information on the card (card number, expiration date and CVV) nor stored banking passwords will be any longer considered a valid factor for authentication.

02.3 APIs

Since Open Banking allows consumers to have control over their own data and the power to share it with whichever company they want; financial institutions need systems that can easily understand, sort, and act on data that is being supplied to them, real-time and autonomously if possible. This is why Open Banking espouses the use of powerful open application programming interfaces (APIs) that enable third-party developers to build applications and services around the financial institution, for quick data interchange between banks, FinTechs, merchants and naturally, the consumer.

While in most cases, the APIs belong to the bank and the financial institutions (including FinTechs) who are the custodians of the data, they are designed and documented to support PSD2 or other country-specific governmental Open Banking regulations which govern them.

One great aspect of monetization of Open Banking is that these organisations vie to create the most functional/fastest and secure APIs so that 3rd party service solution providers find it feasible and viable to adopt their API(s) over those of other banks/institutions. In the event they are not able to do so, they use 3rd party APIs from vendors who sell them through marketplaces with different subscription options. Banks, financial institutions and FinTechs, will require a time tested and reliable development team to develop or apply incremental improvements for their API requirements. We at INT. develop Open Banking APIs.

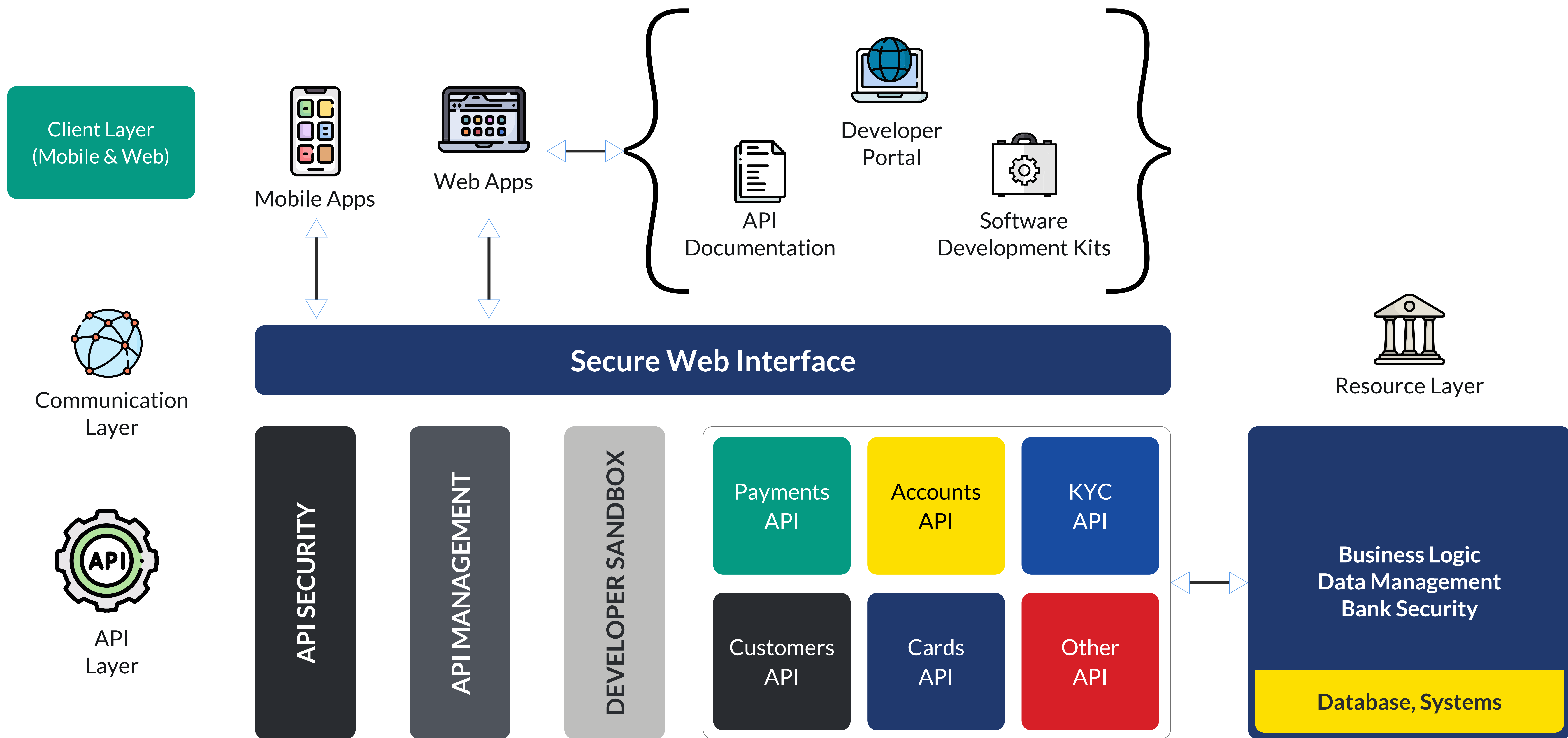


Diagram 5: The Open Banking Architecture (Source: Aite Group)

.03 Cognitive Banking meets Open Banking

03.1 How does Cognitive Banking help Open Banking

In pursuit of faster, smarter and cheaper banking solutions and products for their clients and customers, banks are now pursuing the integration of emerging technologies such as Combinatorial Computing and Reinforcement learning (they had already introduced Machine Learning (ML) to their processes for over a decade now). However, we shall stick to the application of AI to banking or rather the muse of this article, Open Banking.

Banks are already sitting on big data due to years of operations and with the advent of computing the availability of data has become far more real-time (fast data). However, in a world where the business of

banking is extremely competitive, banks, as any viable business would, will want to decrease their time to make quick and major changes to their business logic by actioning this data that they have with the help of AI systems for reducing operational costs, improving customer experience, and creating more robust risk management. Naturally, banks that do this - are the ones who stand to gain the most.

A question - we would want to ask ourselves what's the relationship between Open and Cognitive Banking and what's in it for banks, customers and third parties? Well, now that Banks are being compelled to open up their databases to third-party access, the actions that these third parties undertake generate an even more copious amount of data and this data needs to be analysed for rich insights not only in an automated manner but also autonomously so that mind-boggling

numbers can quickly be processed for the benefit of banks and customers alike. If you are still not convinced, consider the example of India with a population of 1.3 billion people. Potentially over 80% of this population can take up the products and services offered by Open Banking here and again, where numbers are astronomical, we will inevitably need artificial intelligence to step in.

To summarise, while the problems that can be solved by AI are the same for regular banking operations and Open Banking, the scale of the problems to be solved in case of the latter, far exceeds the one for regular banking. For instance from Diagram 4, illustrated above, the EEA is projecting 7.5 billion API calls for September 2021. Can we imagine the amount of data those API calls would generate and with that data, the amount of analytical opportunities that would arise?

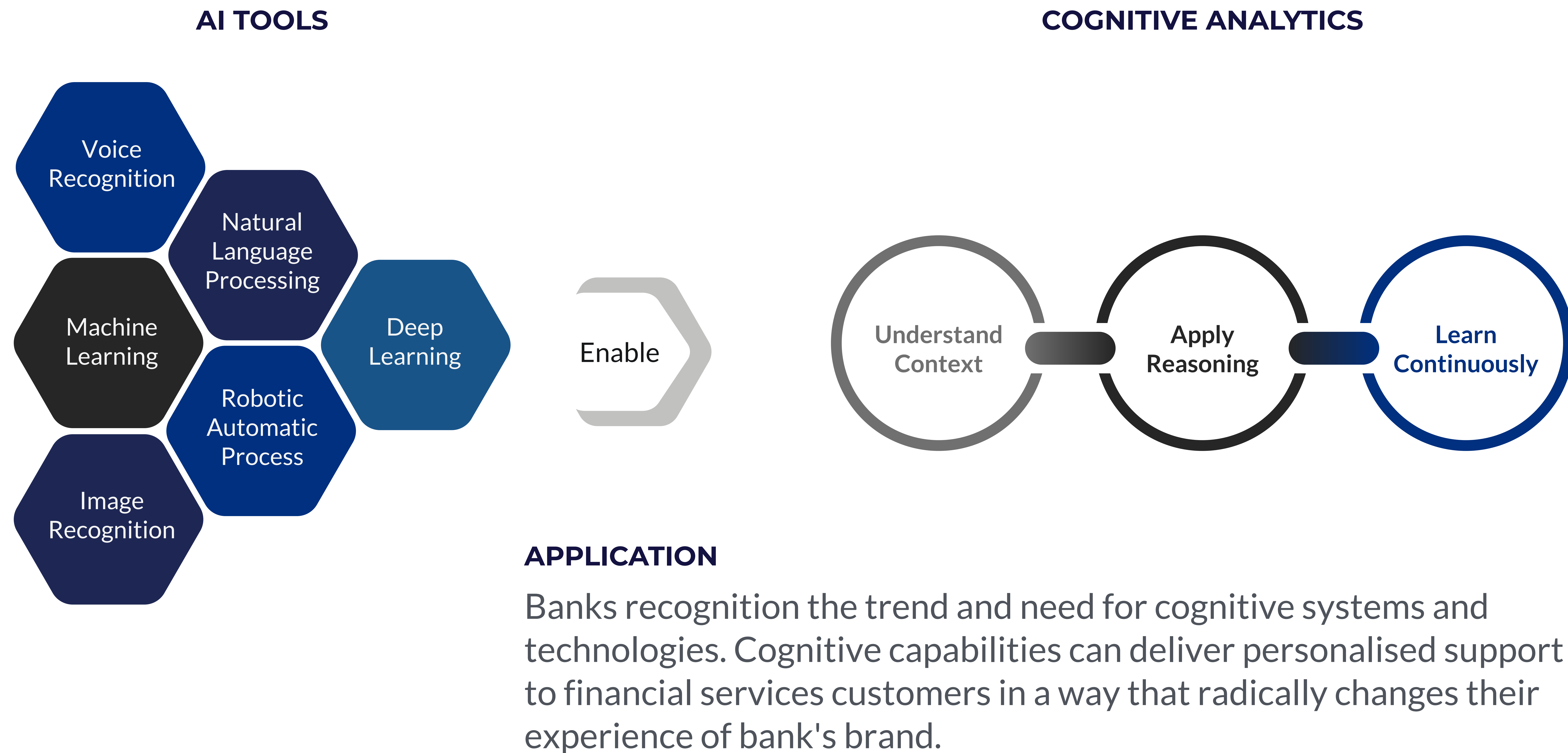


Diagram 6: Existing AI Tools that Banks use to facilitate adoption of Cognitive trends in the market

03.2 What is AI?

Realizing that not all readers may be well acquainted with the world of Artificial Intelligence (AI) (by the way Google's AI helped me write this document with predictions given in a timely manner), I like to define AI for us here:

“Artificial Intelligence is typically defined as the ability of a machine to perform cognitive functions we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem solving, and even exercising creativity”

- McKinsey & Co, Executive's guide to AI

Artificial Intelligence in Banking

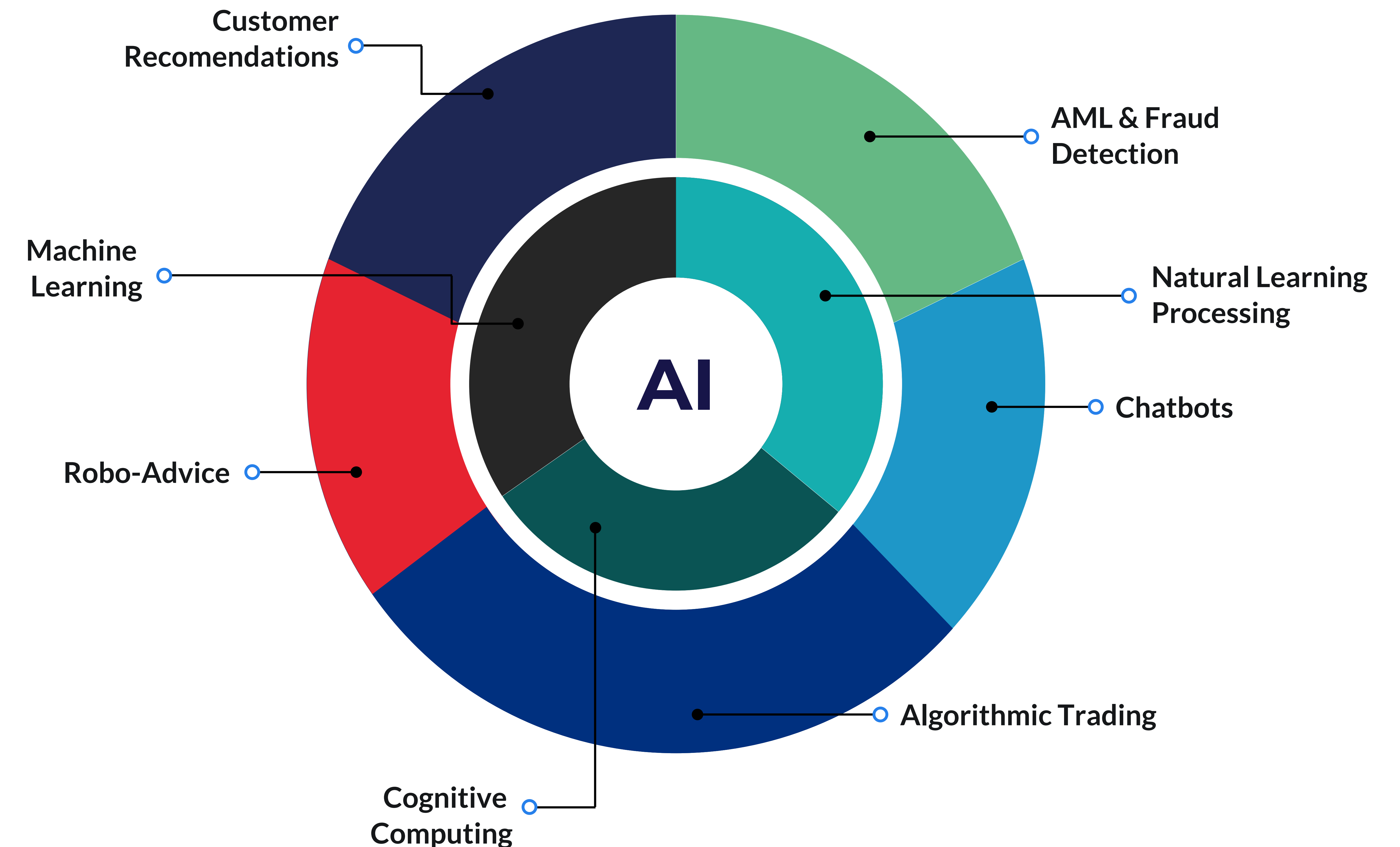


Diagram 8: Cognitive Banking today (Source: Capco)

03.2 Use Cases

As we can observe from the above definition, AI is a polysemous term, encompassing a multitude of realities and flavors, which may be relevant or redundant depending on the user and the stakeholders along with the situation.

Rather, we should focus on the practicality that AI offers in terms of the use cases that we can organise into three categories, highlighting the potential areas of opportunities for the banking sector.

01

Enhancing customer interaction and experience: e.g., chatbots, voice banking, robo-advice, customer service improvement, biometric authentication and authorisation, customer segmentation (e.g., by customized website to ensure that most relevant offer is presented), targeted customer offers;

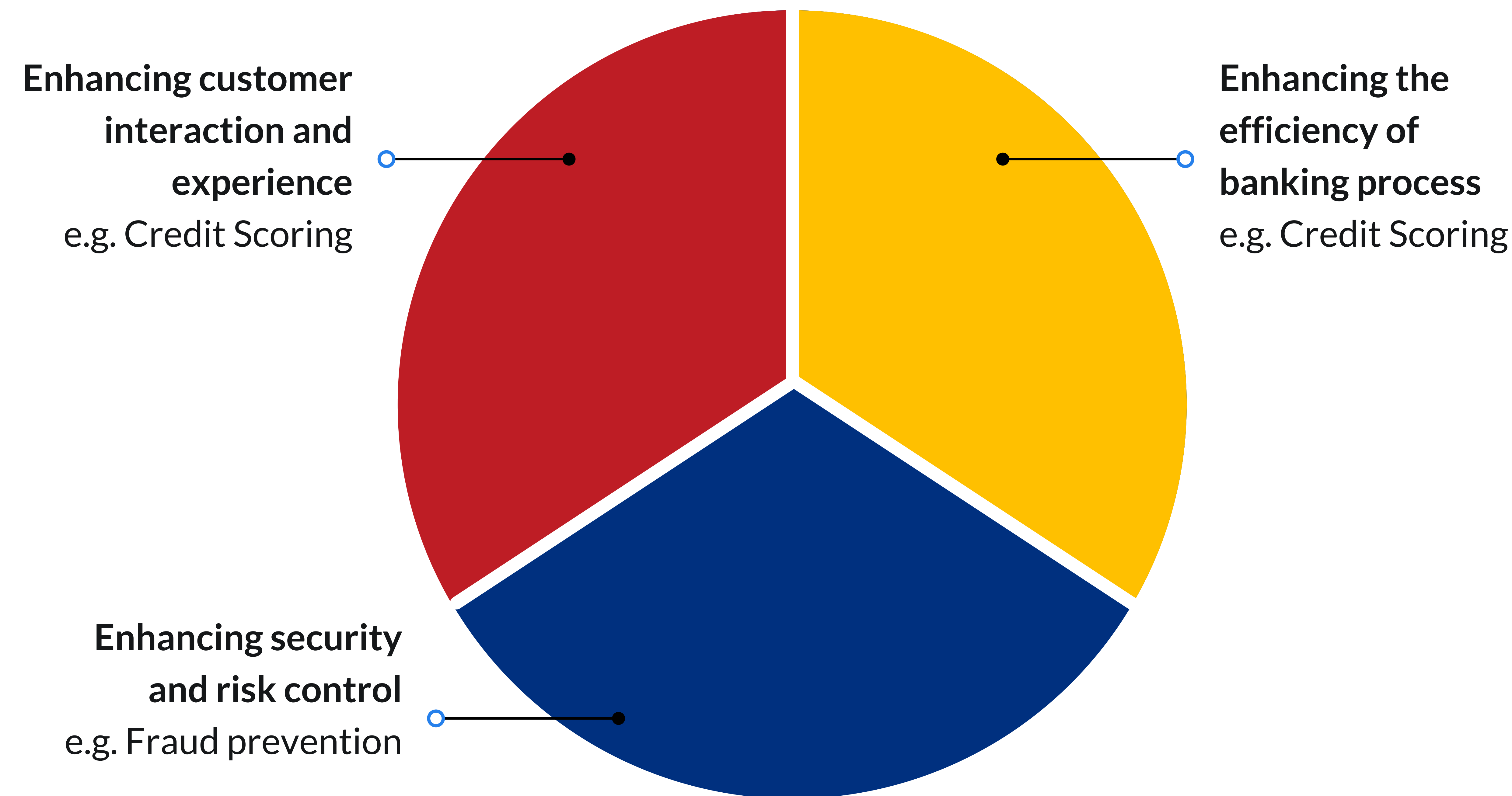
02

Enhancing the efficiency of banking processes: e.g., process automation/optimisation, reporting, predictive maintenance in IT, complaints management, document classification, automated data extraction, KYC (Know-Your Customer) document processing, credit scoring, etc;

03

Enhancing security and risk control: e.g., enhanced risk control, compliance monitoring, any kind of anomaly detection, AML (Anti-Money Laundering) detection and monitoring, system capacity limit prediction, support of data quality assurance, fraud prevention, payment transaction monitoring, cyber risk prevention.

AI in the banking sector: Use cases



An additional category of opportunity for AI in the banking sector is the creation of new business opportunities and the generation of new sources of revenues: e.g., personal finance management, investment analysis, asset allocation, lead generation (e.g., through customer demand analysis, transactional analytics, client network analysis, etc.), churn reduction etc.

Diagram 7: Use Cases of AI in Banking (Source: www.ebf.eu)



.04 Conclusion

To conclude, let us appreciate the fact that Open Banking is the quintessence of Banking 4.0 and is here to stay as consumers who are one of the biggest stakeholders who drive innovation, will continuously and voraciously lap up all the incremental improvements that come their way and thus exponentially increase their adoption of the latest technologies that the vanguards of financial technology, will introduce. We can further extrapolate that notion, that coupled with emerging technologies, Open Banking will itself experience a paradigm shift. Hence, the final chapter in the story of Open Banking has not yet been written as there's a lot more to come and we at INT. will continue playing our part for the years to come.



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