



UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Course Introduction*

*Stefano Bonini, PhD*

*08 January 2021*

# Information

---

- **Lecturer:** Stefano Bonini
- **Email:** [stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)
- **Site:** <https://sboninifi.ariel.ctu.unimi.it/v5/Home/>
- **Classes:** Monday & Friday: 8,30 to 10,30 am (till 19 March)
- **Where:** Microsoft Teams: **dhvi6u9**
- **Assessment methods:**
  - 50% Project Work & in Class Presentation
  - 50% Oral Exam
- **Office Hours:** request by **email**, to be delivered via Teams
- **Teaching Tools:**
  - Lecturer Handouts
  - Financial Newspaper
  - Regulatory Position Papers

# Assessment methods: Rules

---

- \* **Project Work & in class Presentation – 50% Final Mark**
  - \* Essay on a FinTech Player – it is possible to deliver a group work composed by maximum 2 people – due date 08 March
    - \* everyone should email me a confirmation of:
      - \* belonging to a group (if any)
      - \* FinTech chosen
    - \* 10 Minutes Presentation the following classes
- \* **Oral Exam - 50% Final Mark**



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
*stefano.bonini1@unimi.it*



UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Digital Transformation in the financial sector*

*Stefano Bonini, PhD*

*08 January 2021*

# Fintech: what is it?

---

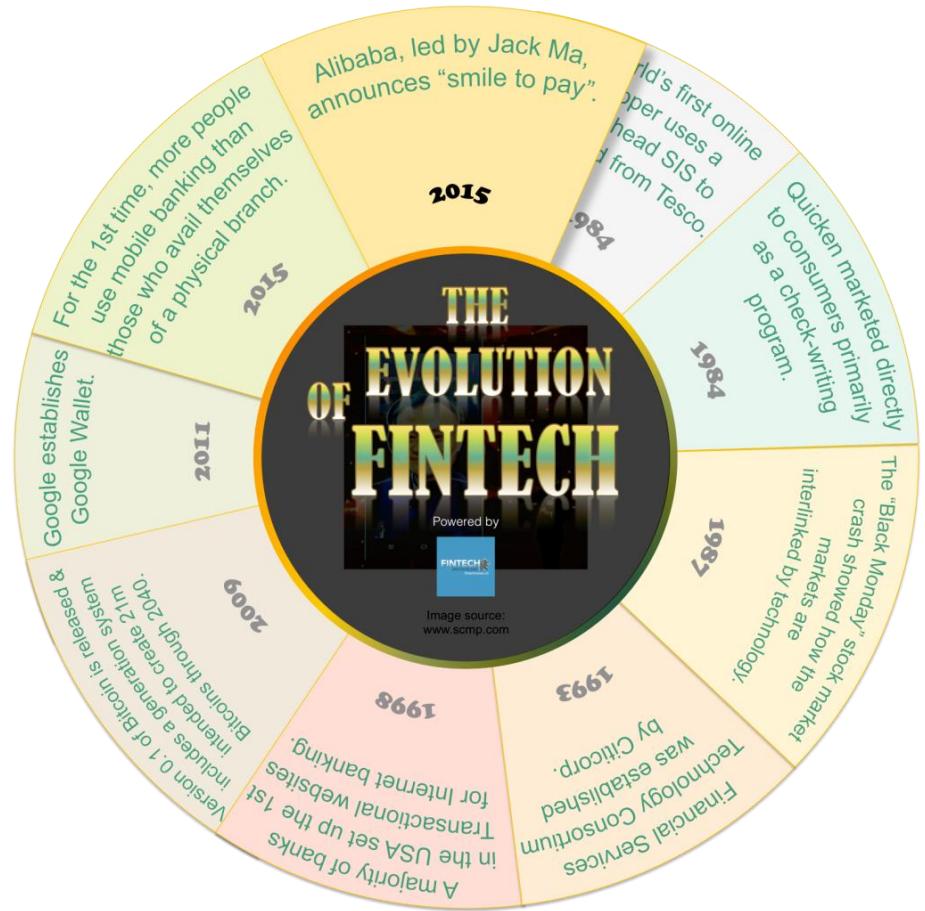
“FinTech is the abbreviation for Financial Technology, namely the application of technology to the delivery of financing, payment, investment and consulting services, which has become a powerful driver of innovation in the financial services market.”

Source: Bank of Italy

# Fintech: what is it?

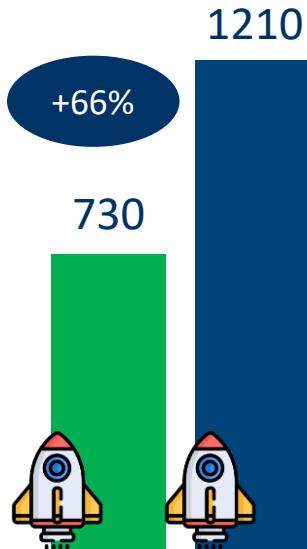
“Fintech is a very broad sector with a long history. Most people hear fintech and think about the latest mobile app which can help them pay for their morning coffee without ever swiping a card or touching currency. But technology has always played a key role in the financial sector in ways that most people take for granted and might not ever see. In examining the timeline of fintech developments, the last 65 years paint a picture of continued innovation and evolution.”

Sources: Forbes, 2015 and NYT



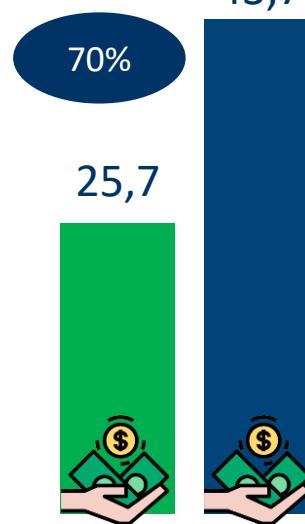
# Startup Fintech & Insurtech

The Number of startup



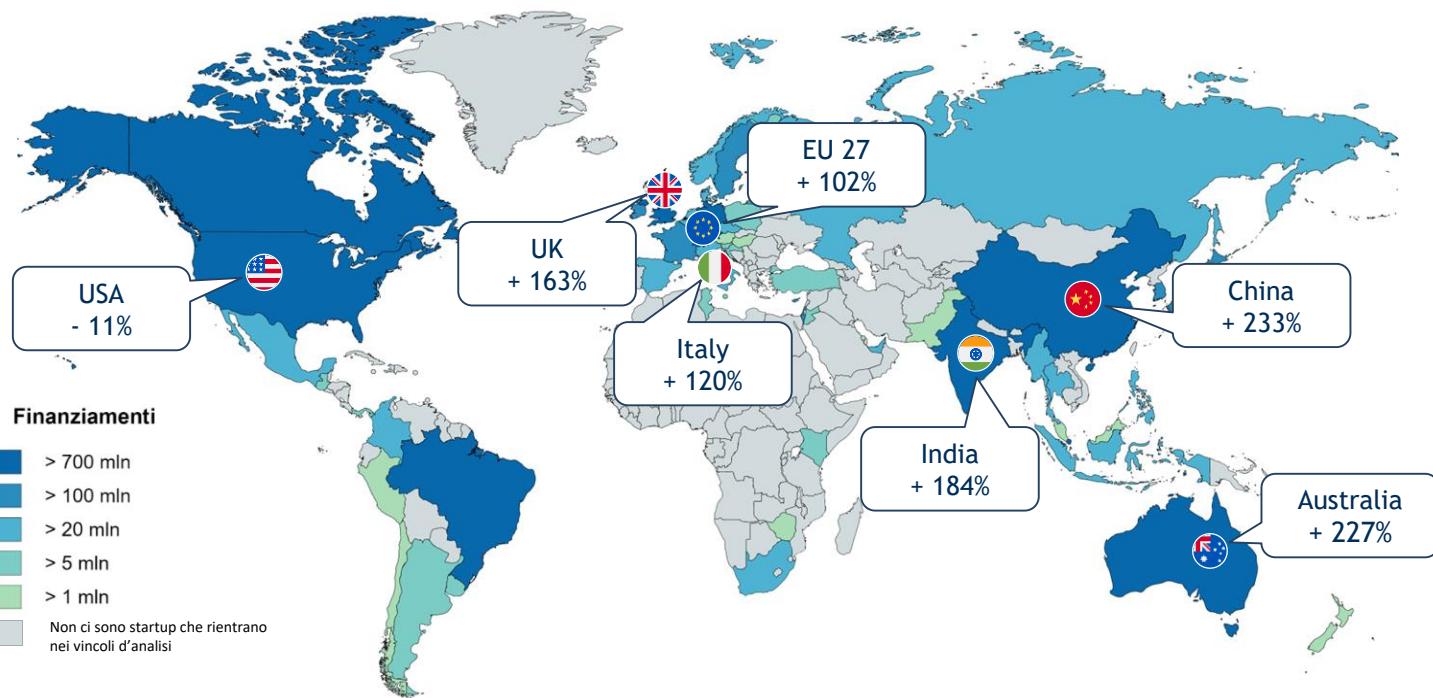
2016 2018

Total Funds  
(billions of dollars)



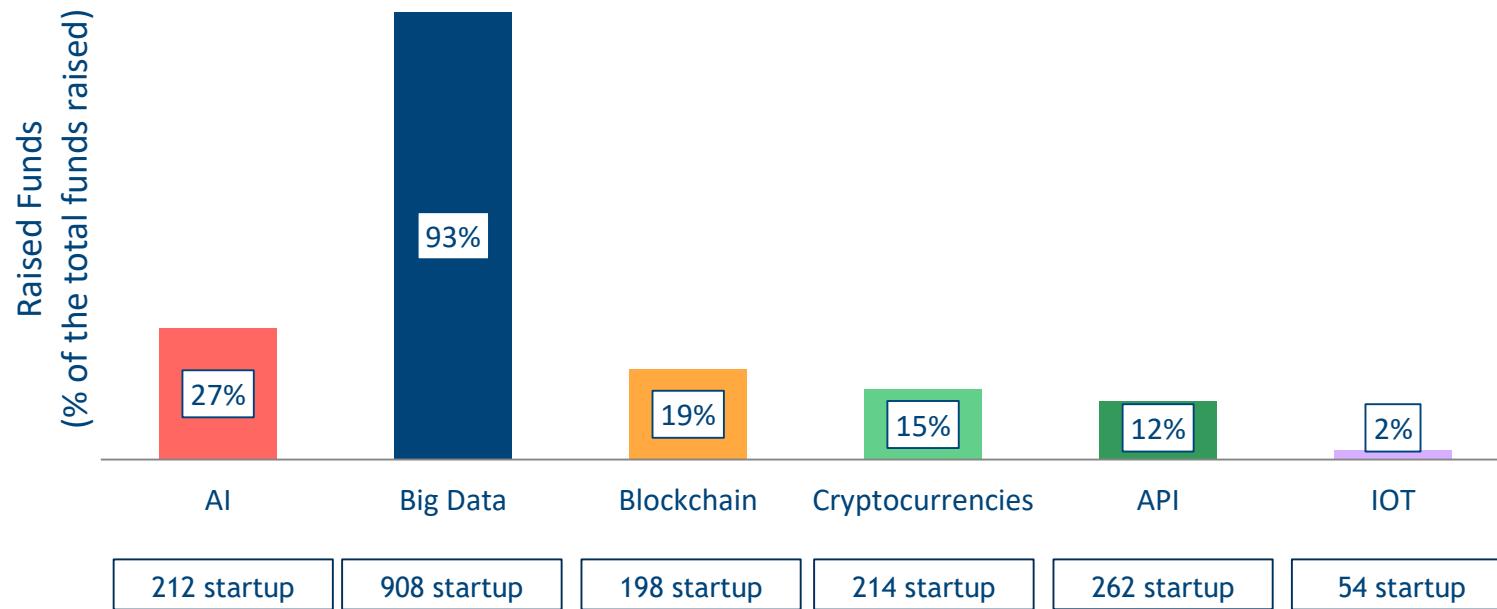
2016 2018

# Geographical distribution of raised funds



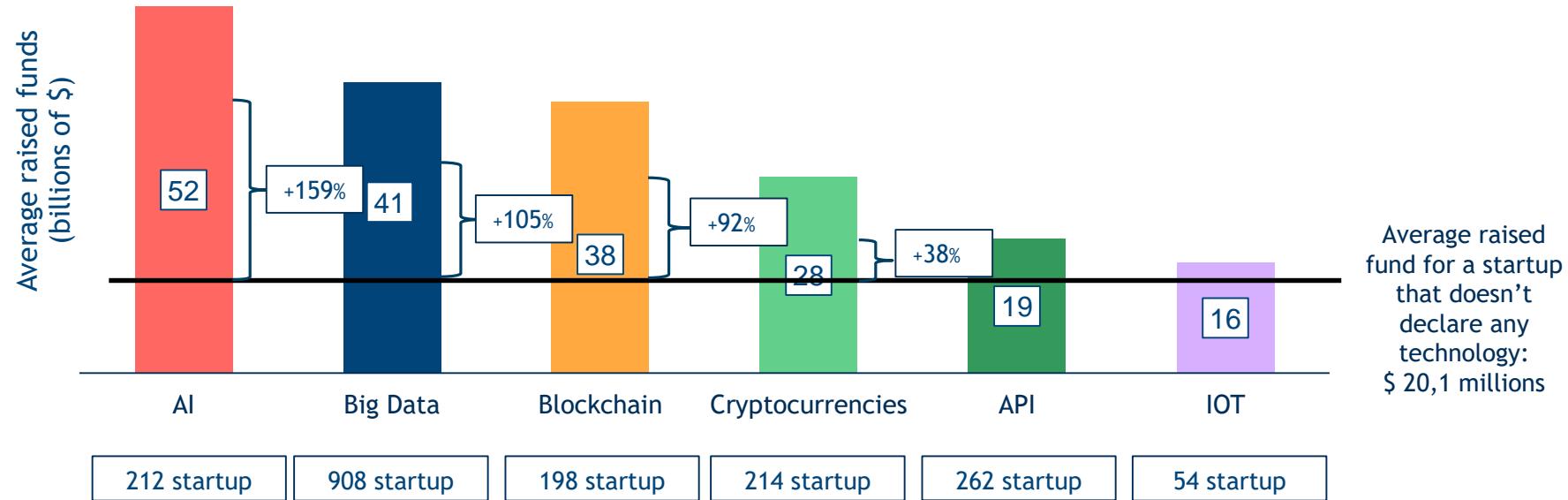
Sample: 1.210 startup, 43,7 billions of \$

# Technologies adopted



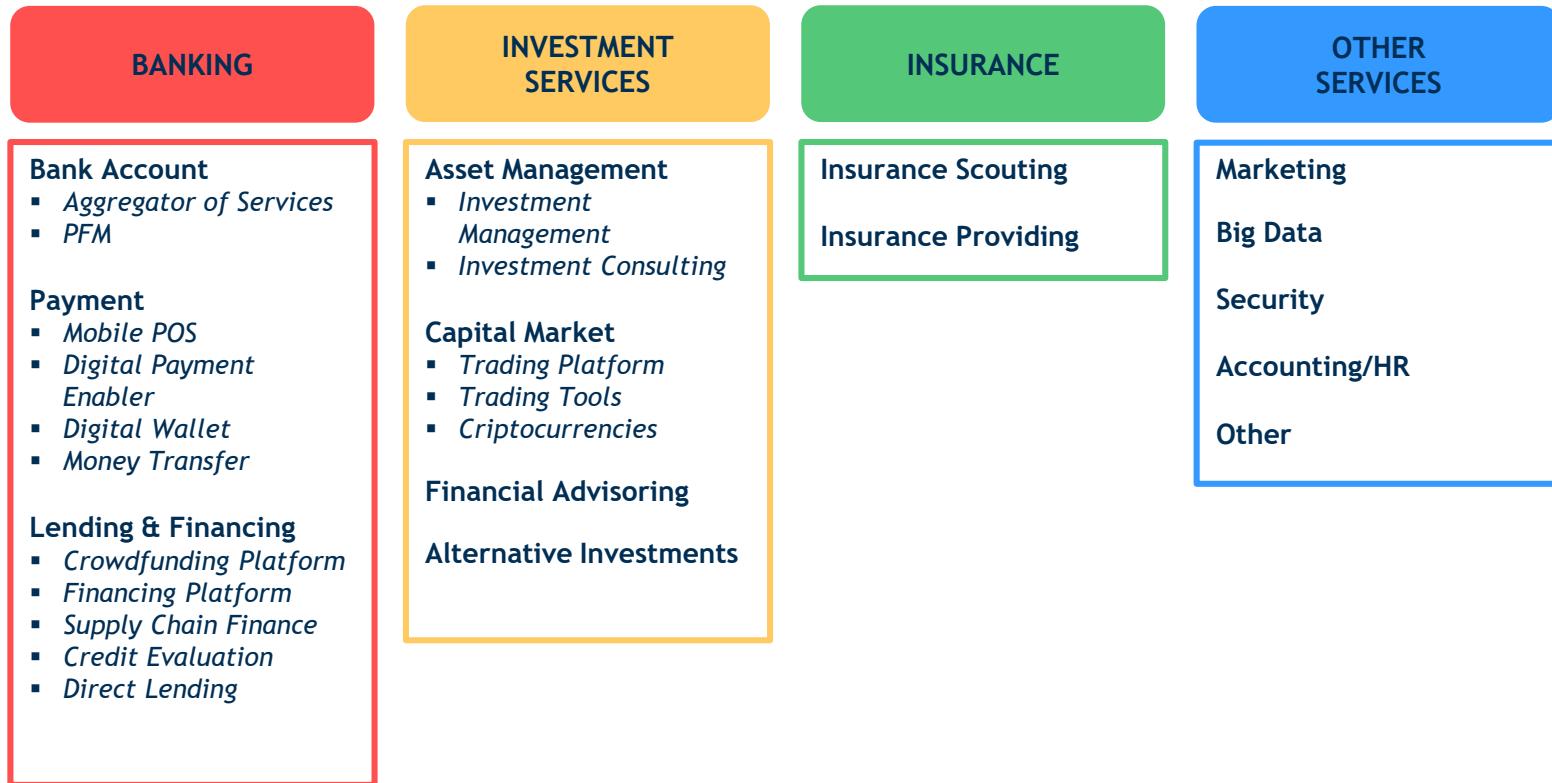
Base: 40,6 billions of \$

# Technologies adopted

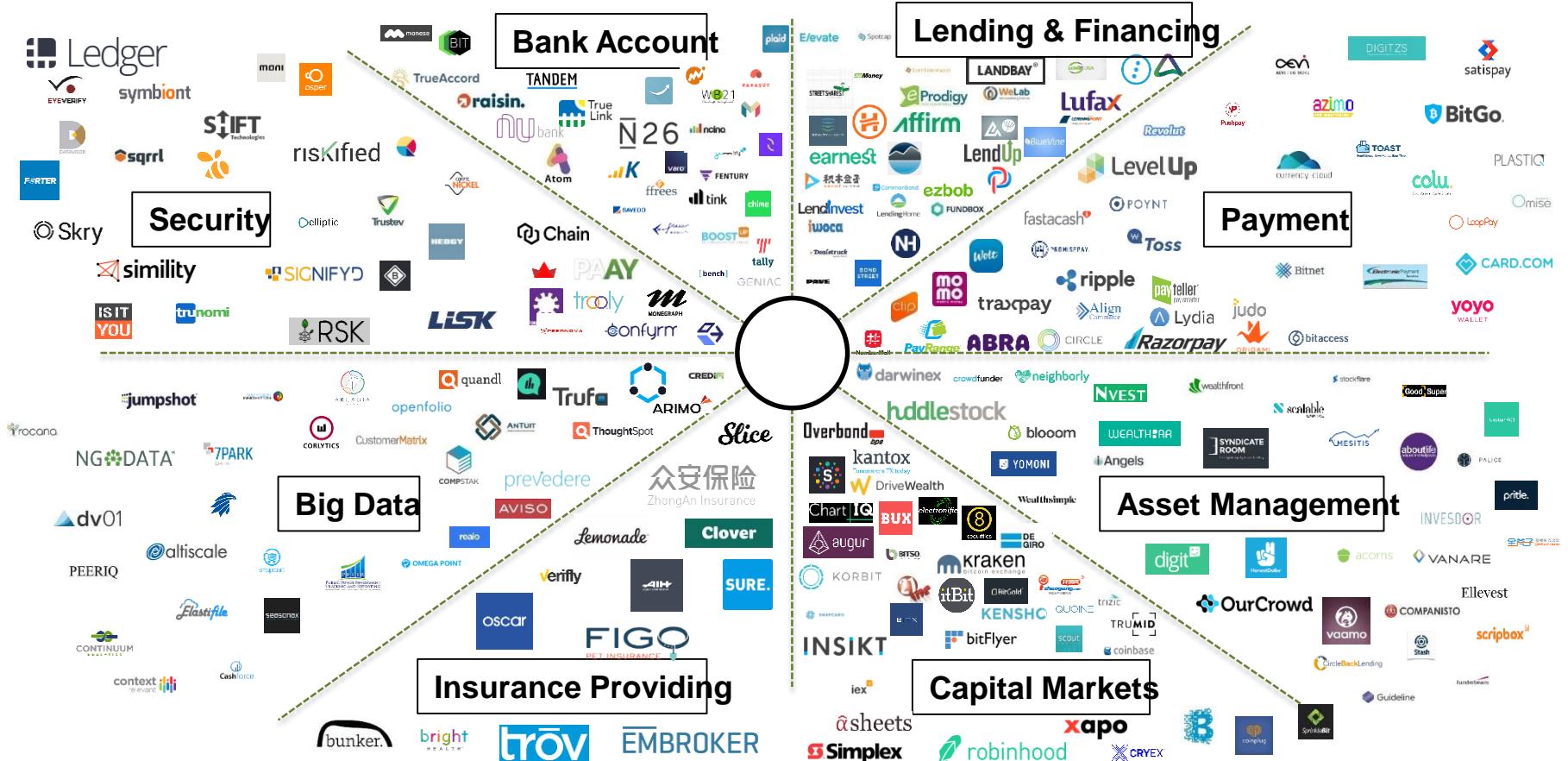


Sample: 1.059 startup, 40,6 billions of \$

# Fintech startup sectors

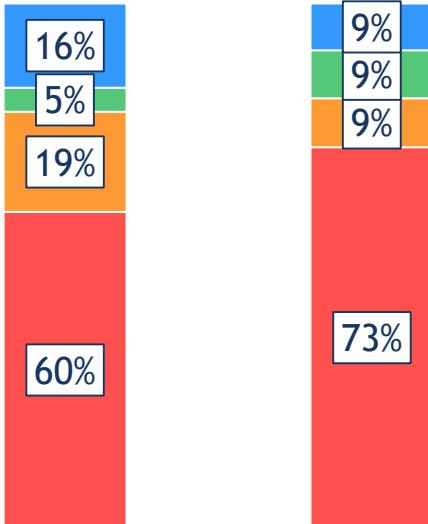


# Fintech startup sectors



# Fintech startup sectors

Nel 2016



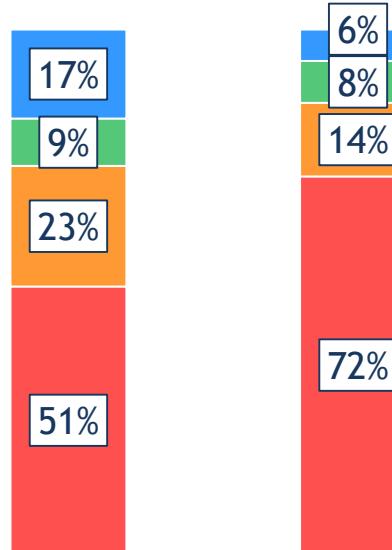
Number of startup

Base: 730 startup

Raised Funds

Base: 25,7 billions of dollars

Nel 2018



Number of startup

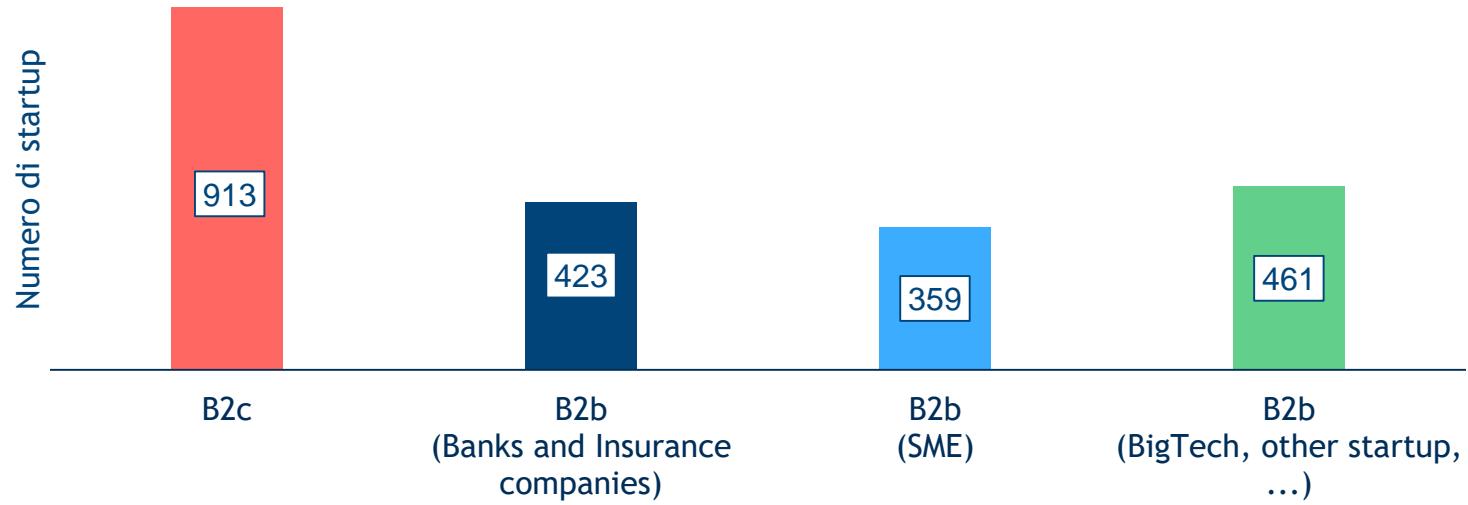
Base: 1210 startup

Raised Funds

Base: 43,7 billions of dollars

- Other Services
- Insurance Services
- Investment Services
- Banking Services

# Target client of Fintech startup



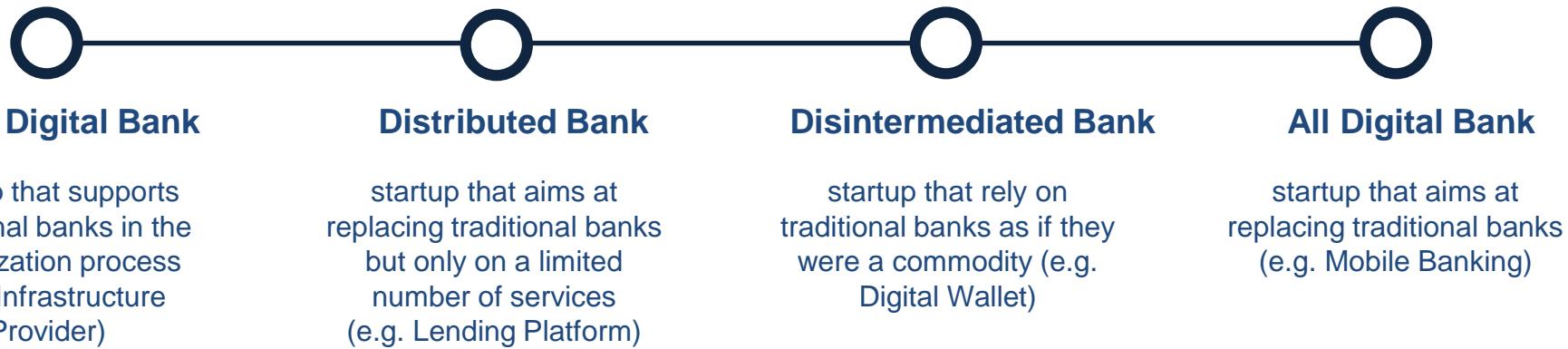
Sample: 1.210 startup, 43,7 billions of \$

# Barriers to innovation

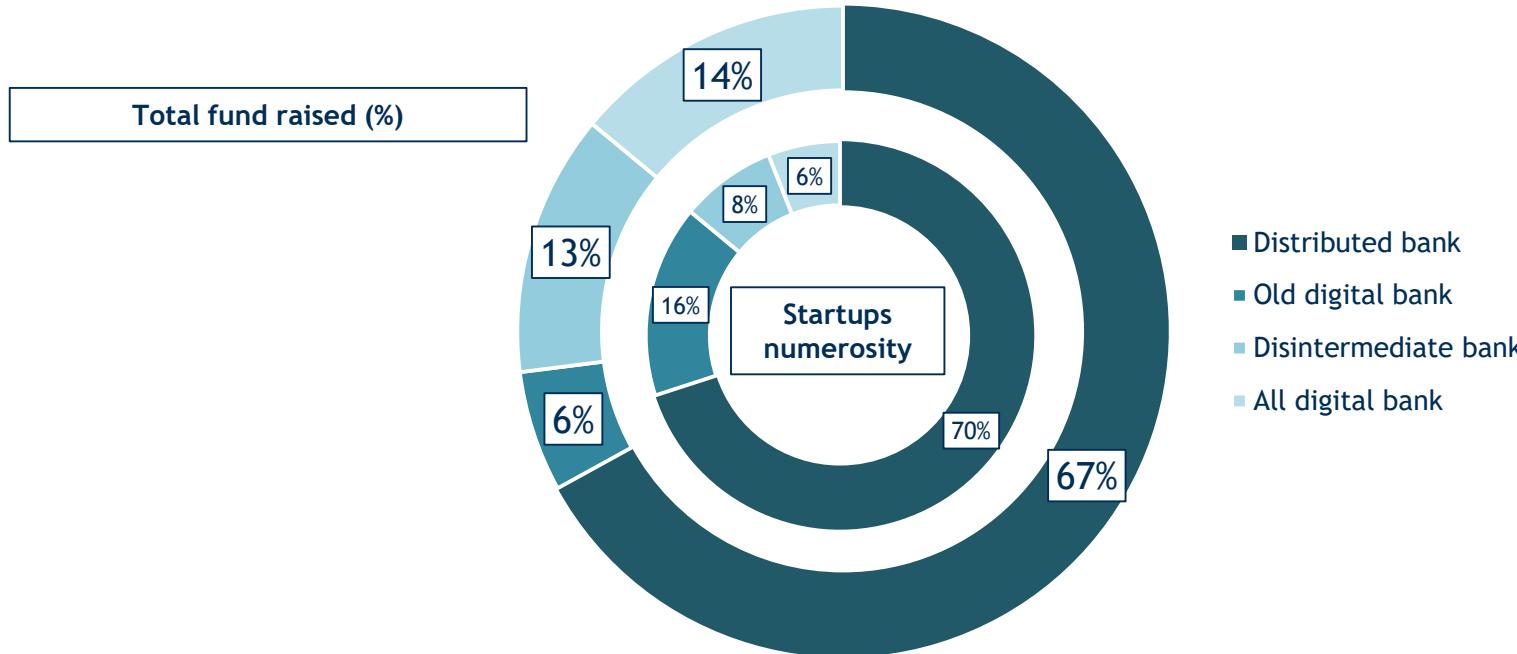
---

- Higher priority to other issues (e.g. NPL)
- Low investment possibilities
- Uncertainty of returns from investment in Fintech projects
- Legacy systems hard to be changed
- Low innovation culture

# Relationship with incumbents



# Relationship with incumbents



Sample: 1.210 startup, 43,7 billions of \$

# Old Digital Bank



Startup operating in a “old digital bank” scenario are for example those offering infrastructures for incumbents.

For instance, **Digital Asset offers** offers **Blockchain** solutions that help bank in transactions and conversions between digital and traditional currency.

Tot funds raised: **107,2 M\$**

# Distributed Bank



Startup operating in a “distributed bank” scenario don’t want to substitute completely traditional players, but enter in specific segments.

For instance, **October** offers a platform that allows investors to lend money directly to SMEs.

Tot funds raised: **271,6 M\$**

# Disintermediated Bank



Startup operating in a “disintermediated bank” scenario rely on traditional banks as if they were commodities.

**Curve** for instance allows to collect in a single card, “Curve Mastercard”, all the credit card and account of a user. Starting from this, it is able to offer other services such as rewards, historical record and so on.

Tot funds raised: 12,0 M\$

## All Digital Bank

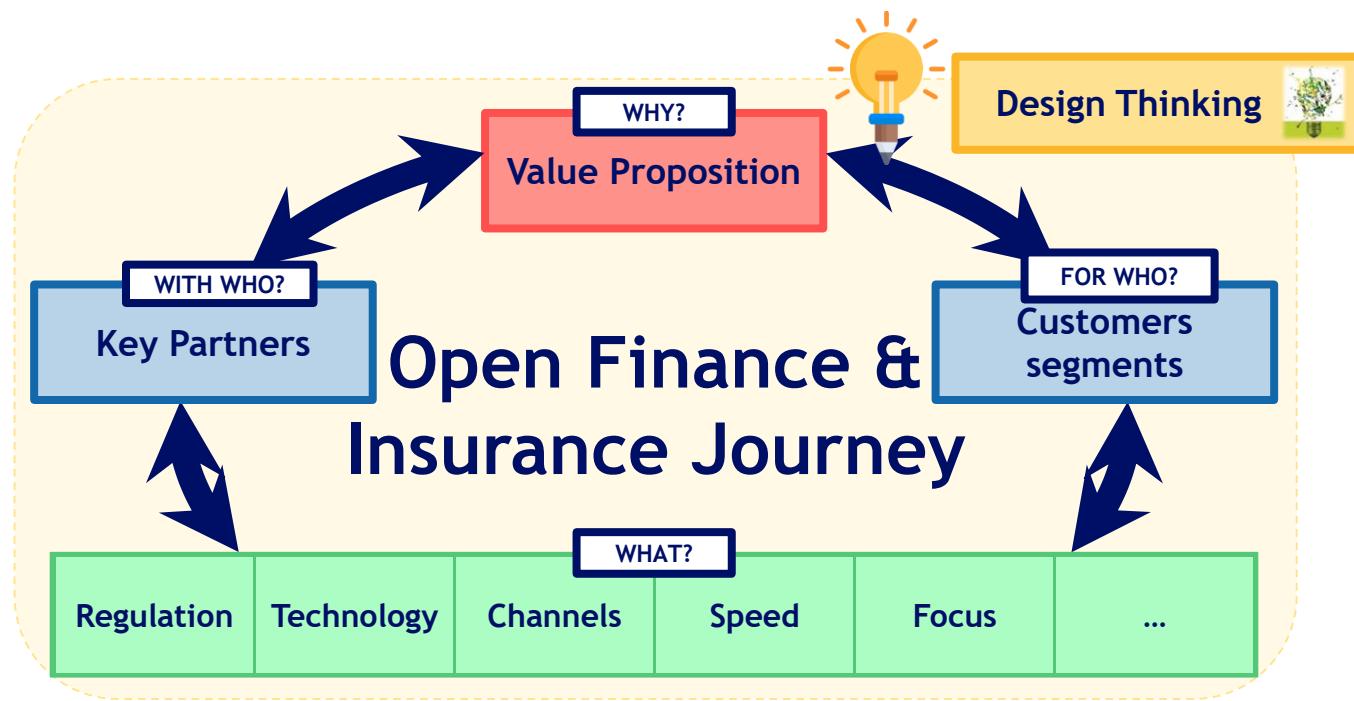


Startup operating in a “all digital bank” scenario aim at substituting traditional players.

**Atom Bank** for instance is a startup offering digitally and from mobile a wide selection of financial products and services, such as investment opportunities, mortgages and lendings to banks.

Tot funds raised: 512,1 M\$

# Open Finance & Insurance Journey





“The **IBM Open Banking Platform** is a software suite that helps accelerate a financial institution’s digital transformation through modular tools based on industry standards. An initial area of focus for the Open Banking Platform is the revised Payment Services Directive or PSD2.”

Source: [ibm.com](http://ibm.com)

Stefano Bonini, PhD



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# Open Finance & Insurance Journey



**TESOBE** is the Berlin-based software company behind the **Open Bank Project**, the leading open source API solution for banks. TESOBE assists banks in executing effective API strategies by providing a proven API-platform supported by an active community of developers and partners.

Source: [openbankproject.com](http://openbankproject.com)

Stefano Bonini, PhD



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# Open Finance & Insurance Journey

BBVA | API\_Market

**API Market** is a global and open API platform that lets you easily access financial solutions and seamlessly implement them in your company.

You will be able to manage, control and analyse payments, verify identity of a **BBVA client**, notify your users of their operations, access segmented purchasing patterns and many other things.

Source: [bbvaapimarket.com](http://bbvaapimarket.com)

Stefano Bonini, PhD



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# Open Finance & Insurance Journey



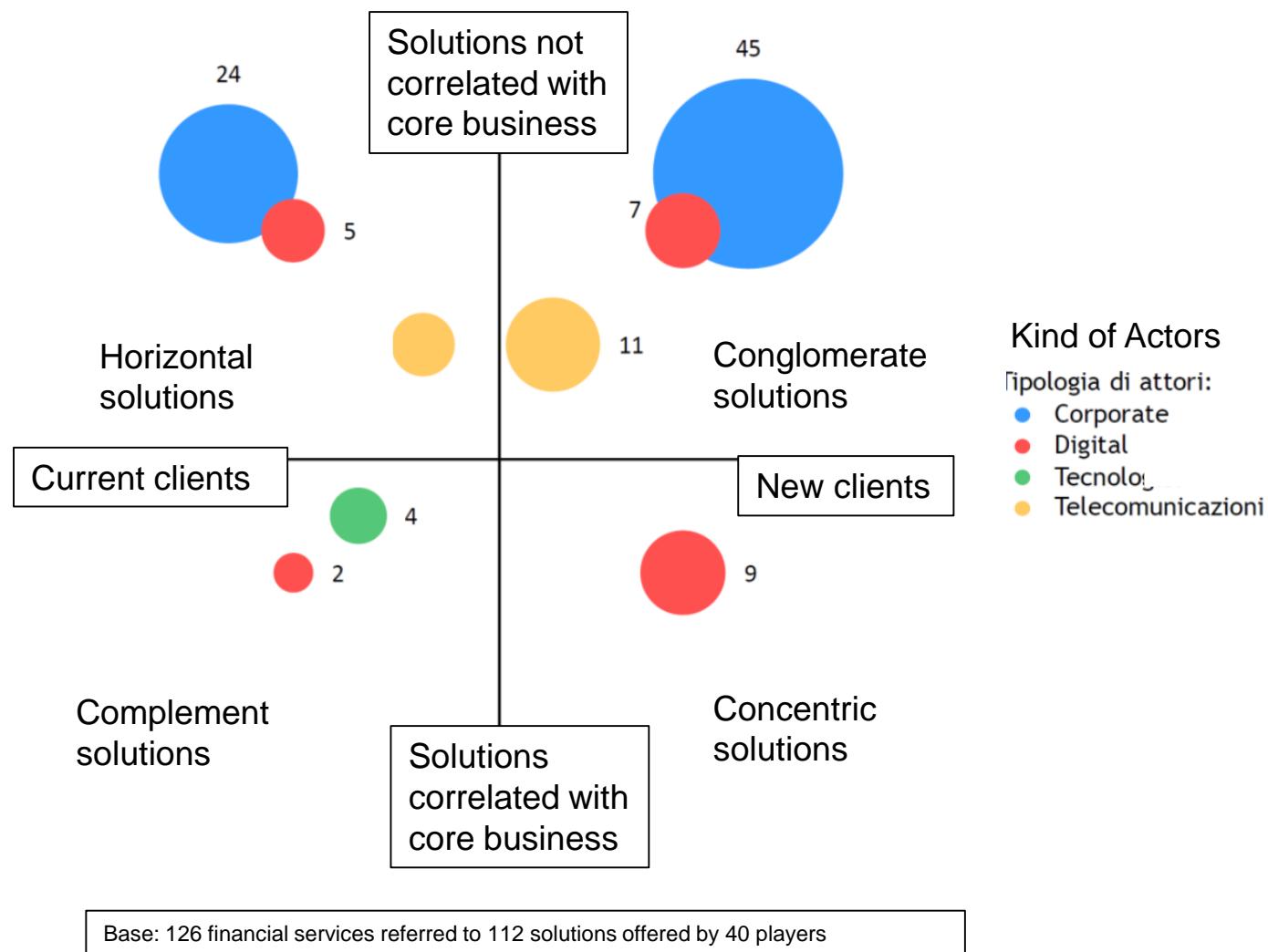
“The **Fabrick Platform** [...] works as an enabling infrastructure for banking services that go behind the mere PSD2 compliance: from a payments gateway to a supply chain engine, from smart banking to the multiple account aggregation, from crowdfunding to investment services.”

Source: fabrick.com

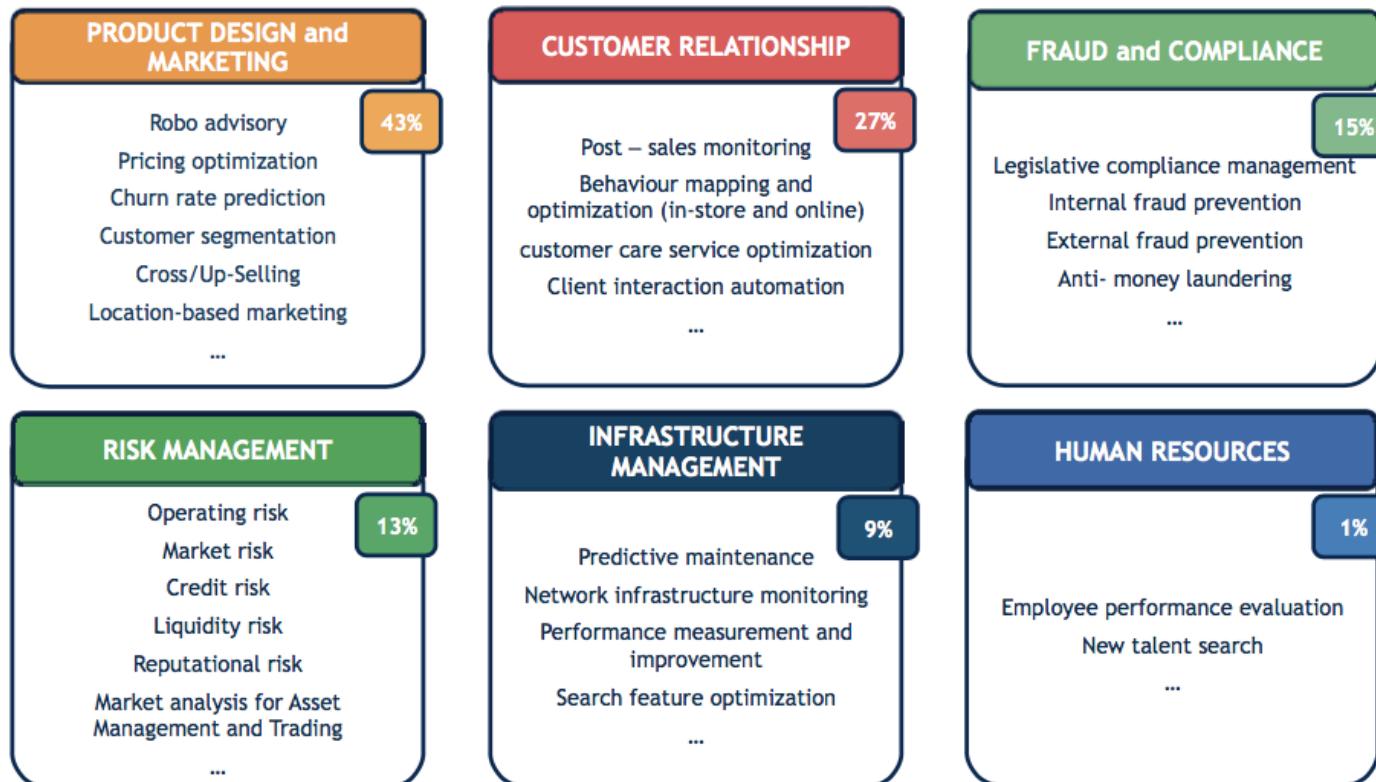
Stefano Bonini, PhD



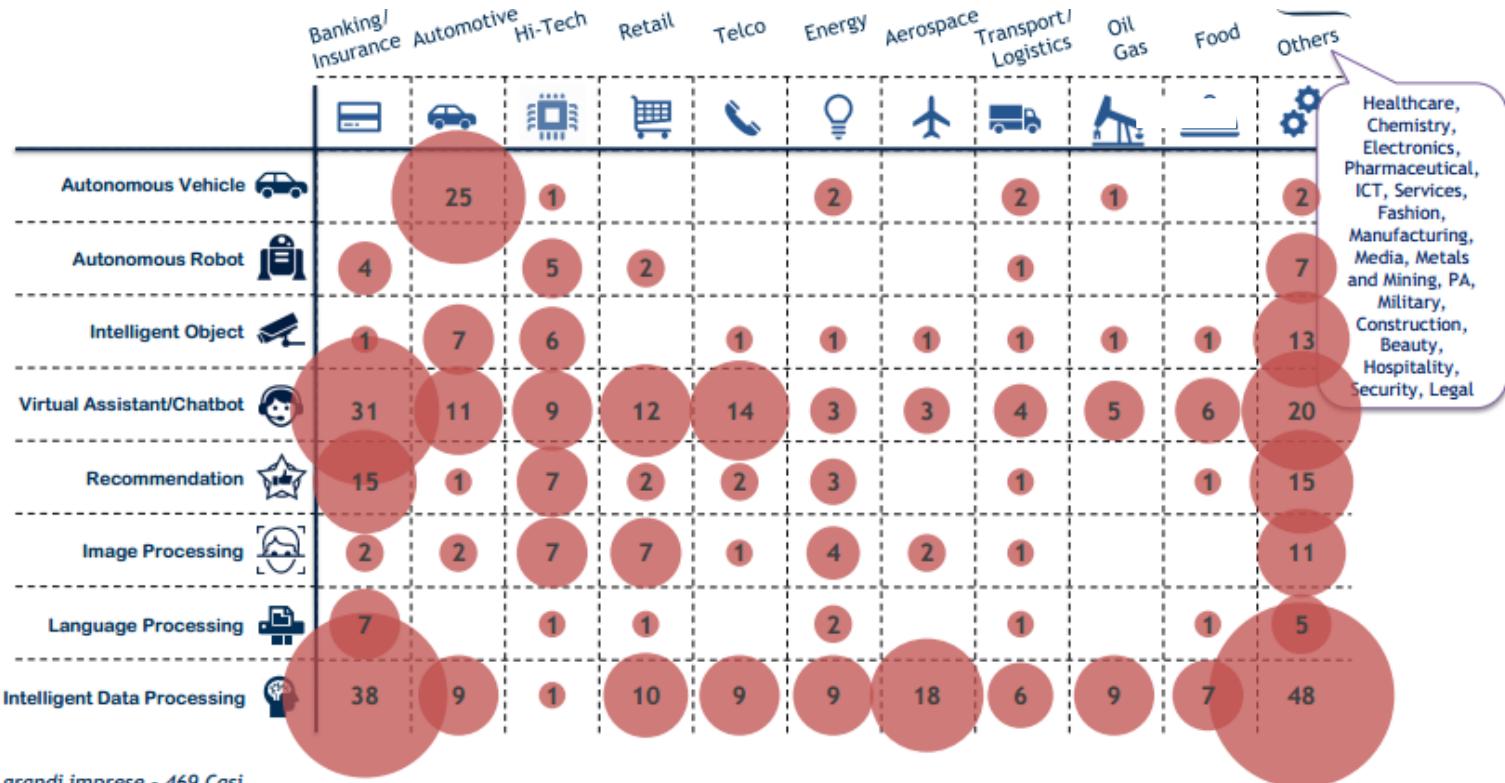
UNIVERSITÀ  
DEGLI STUDI  
DI MILANO



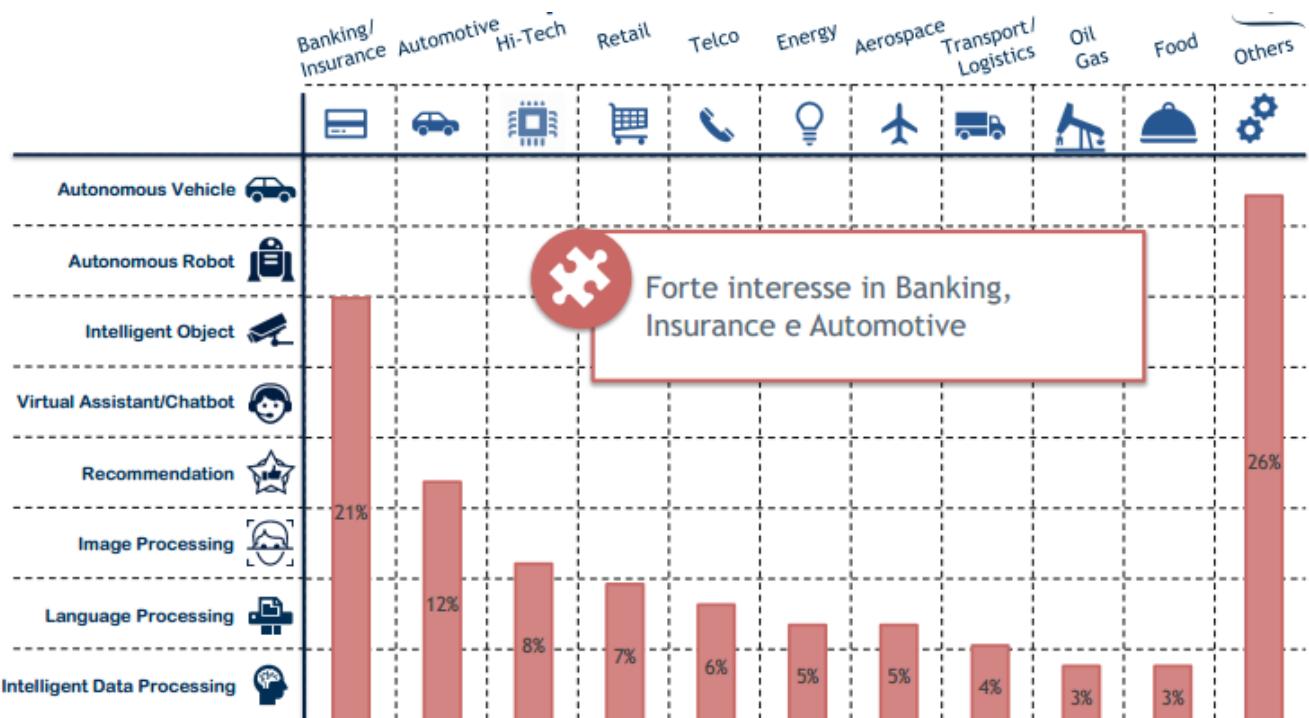
# Big Data Analytics in Finance



# Use of AI by sector

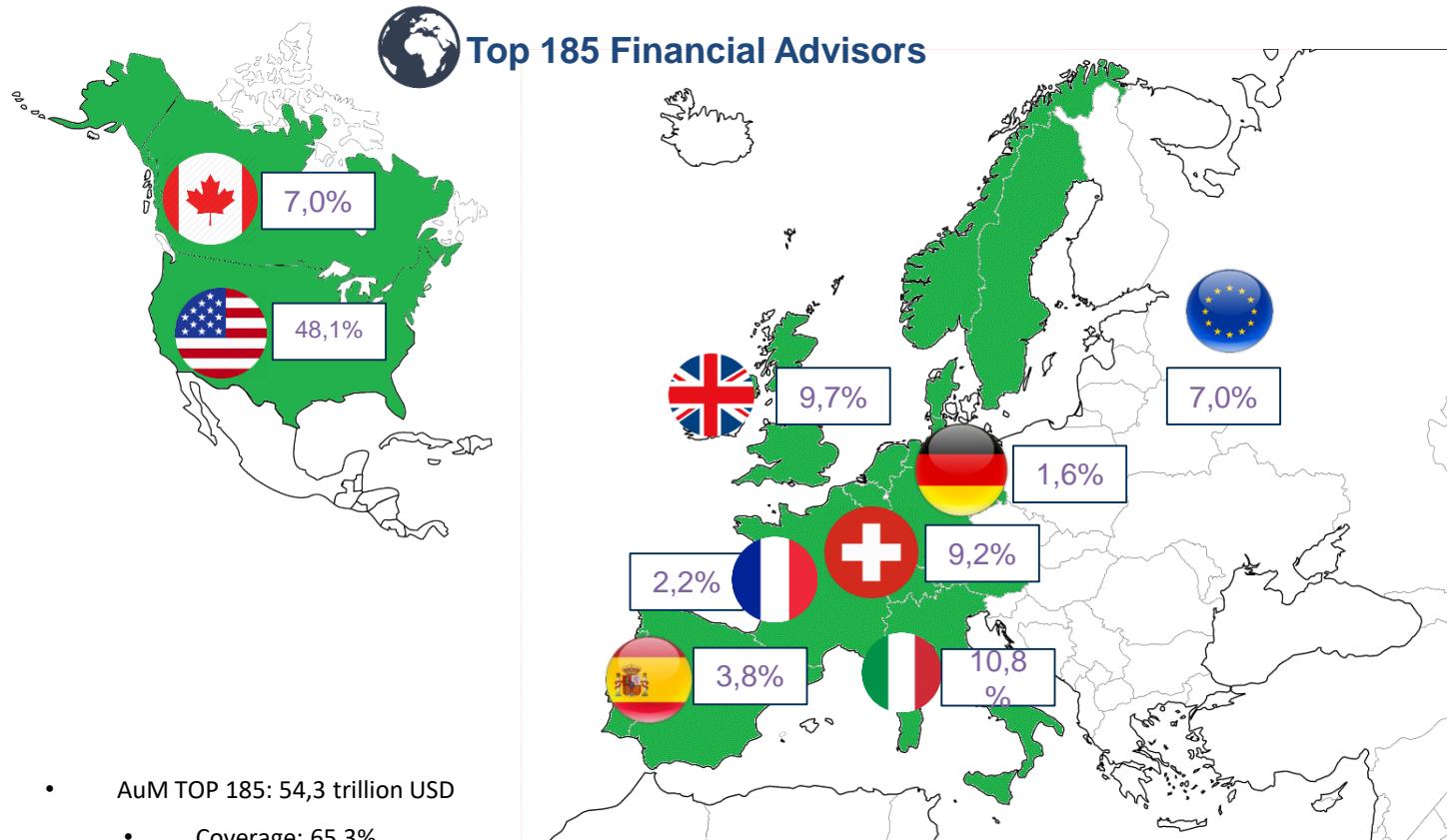


# Machine Learning and Deep Learning



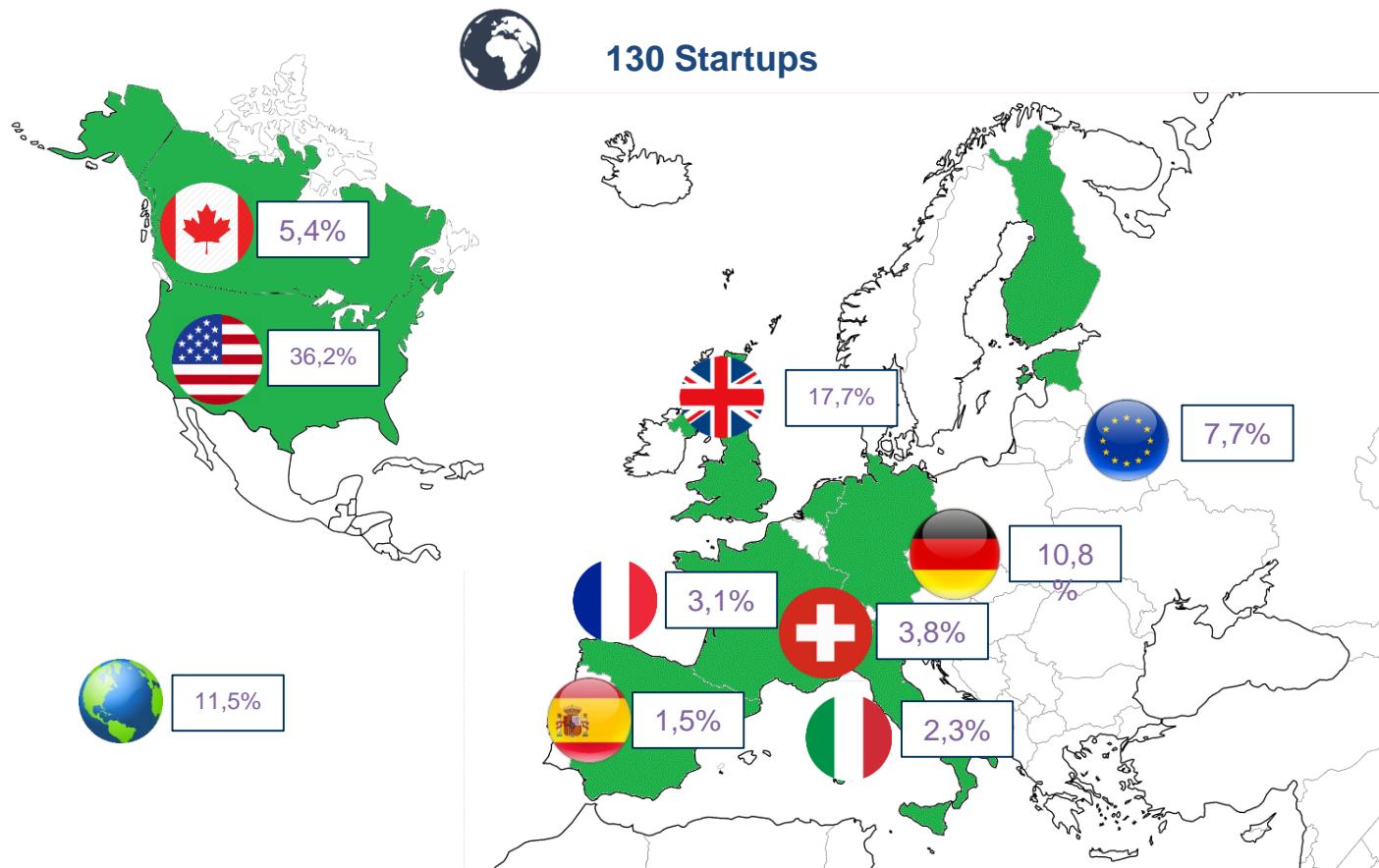
Sample: 721 big companies – 469 cases

# Robo Advisoring Incumbent

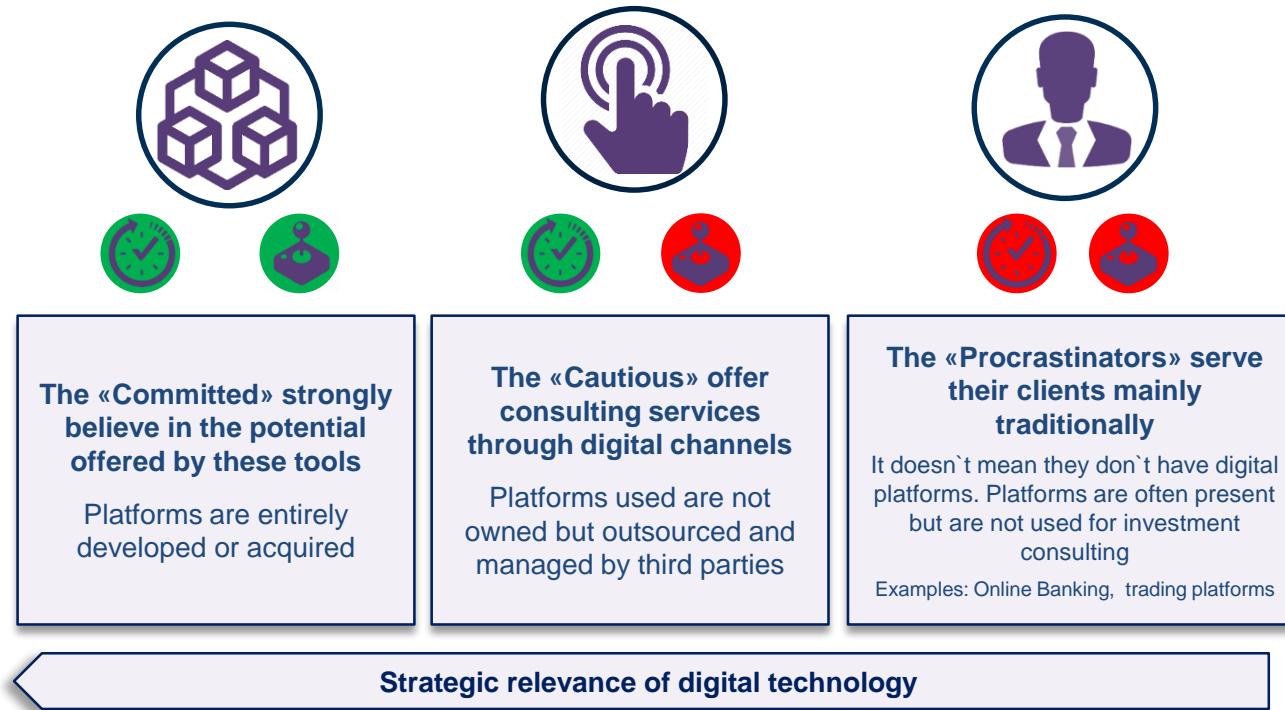


- AuM TOP 185: 54,3 trillion USD
  - Coverage: 65,3%

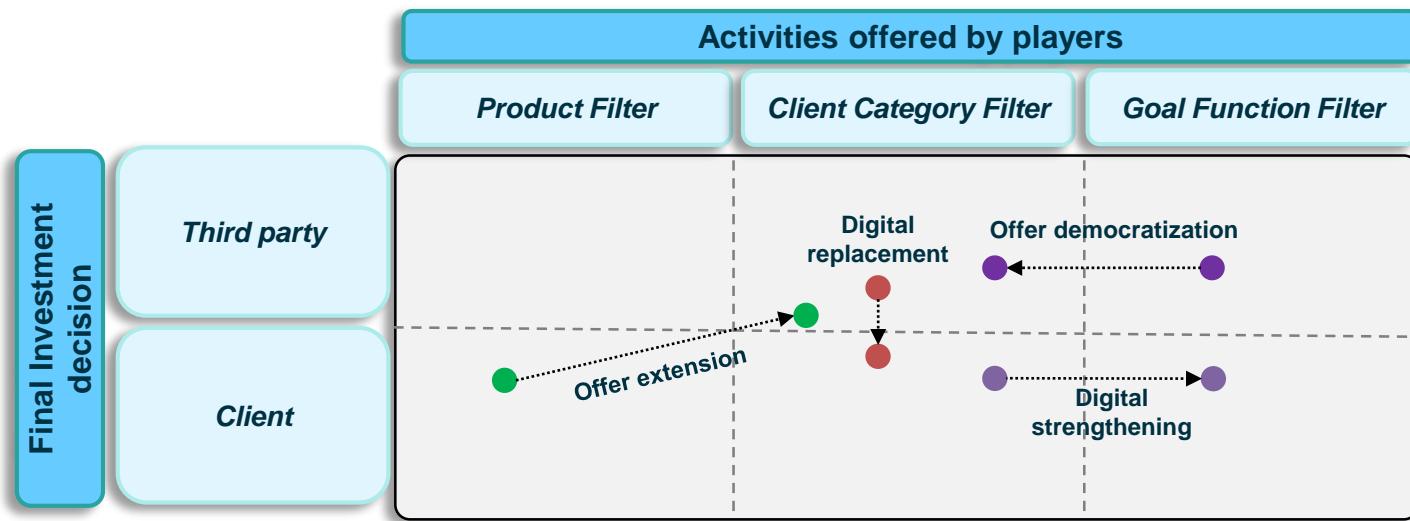
# Robo Advisoring Startup



# How are Incumbents and Startups positioned?



# What strategies are in place as regards digital technology?



# What types of offers and services are digital-technology related?

2 macro-categories of “Committed”



ONLINE  
ADVISOR



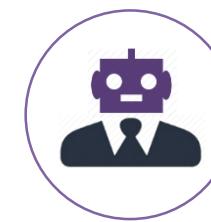
ROBO4STRATEGY  
ADVISOR



ROBO4HUMAN  
ADVISOR



HUMAN4ROBO  
ADVISOR



ROBO  
ADVISOR

**HUMAN-BASED  
PLATFORMS**

**17 INCUMBENTS\***

**45 STARTUPS\*\***

**ROBO-BASED PLATFORMS**

**5 INCUMBENTS\***

**35 STARTUPS\*\***

*Automation Level*

\* One platform is being launched \*\* Only startups with B2C offer are considered here



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
*stefano.bonini1@unimi.it*



UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Digital Lending*

*Stefano Bonini, PhD*

*11 January 2021*

# Fintech: what is it?

“FinTech is the abbreviation for Financial Technology, namely the application of technology to the delivery of financing, payment, investment and consulting services, which has become a powerful driver of innovation in the financial services market.”

Source: Bank of Italy

Stefano Bonini, PhD



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# Agenda

---

1. Banks and Digital Lending
2. P2P Lending Platforms
3. Credit Scoring

# Agenda

---

1. Banks and Digital Lending
2. P2P Lending Platforms
3. Credit Scoring

# Old and New

---

3-6-3

3-1-0

# Old and New

3-6-3

Raise deposits at  
3%  
lend at 6 %  
play golf after 3  
PM

3-1-0

# Old and New

3-6-3

Raise deposits at  
3%  
lend at 6 %  
play golf after 3  
PM

3-1-0

3 minutes to decide,  
1 minute to transfer the  
money **0** human touch  
*(Ant Financial)*

# Fast food got even faster



# A quick definition

Digital lending refers to using **online**, digital platforms to originate loans directly to customers, usually **consumers** and **small to mid-size enterprises**.

Online loan origination platforms may **automate** some or all components of loan applications, such as electronic data and document capture, automated underwriting and e-signatures.

**Advanced analytic** models automate credit decisions for faster, **more precise and targeted** underwriting.

# Loan categories

- Student loans
- Mortgages
- Commercial real-estate loans
- SME loans
- ...

# Automatized processes

- Applications
- Instant credit decisions
- Document uploads
- Electronic loan agreement signature
- Direct communication to customer service
- ...

# Drivers

---

- Customer expectations
- “Low quality” of traditional lending
- Technology
- Regulation

# Drivers

- Customer expectations
- “Low quality” of traditional lending
- Technology
- Regulation

Customer are becoming digitally savvy

Lower need of human Interaction

Request of personalization

24/7 needs: *In US online retail, purchasing and browsing peaks between 10:00 PM and midnight, with one in ten online shoppers still busy buying things between midnight and 3 AM.*

# Drivers

- Customer expectations
  - “Low quality” of traditional lending
  - Technology
  - Regulation
- Slow process
- Low perceived transparency
- Low predictability of result  
(accepted / rejected)
- Low efficiency

# Drivers

- Customer expectations
- “Low quality” of traditional lending
- Technology
- Regulation

High Smartphone use

Huge supply of Data created and collected by new devices

*Hourly transaction data of Walmart is 67 times bigger in volume than the total content contained in all books in the U.S. Library of Congress, the largest library in the world*

Biometrics, Blockchain, IoT...

# Drivers

- Customer expectations
- “Low quality” of traditional lending
- Technology
- Regulation

E.g., the European Union’s Second Payments Services Directive (PSD2) allows consumers to pay directly from their accounts, rather than having to send their credit or debit card payments through a third party such as Visa or MasterCard

API are gaining a central role

# Digital Lending Pros & Cons

- Better customer experience
- Higher efficiency / Less errors -> lower transaction costs
- Possibility to serve non-traditional bank customers
- Possibility for banks to enter (or re-enter) in new businesses
- Cyber Risk
- Trust issues

# Competition or Cooperation?



Incumbent

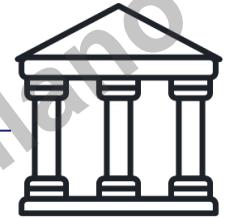


Independent Fintech startup



Partnership

# Incumbent advantages



- Higher experience
- Bigger customer base
- Trust
- Higher expertise in credit risk management
- Possibility to guarantee lower IR to borrowers
- Higher economic power for developing technology

# Startup advantages



- Faster
- No legacy systems
- Higher efficiency

# Partnership



- Technological Partnership
- Referral Model

# Partnership



- Technological Partnership
- Referral Model

**White label solutions** enable banks to offer a branded end-to-end digital lending solution to their customers without investing in infrastructure or technology creation around the solution.

The banks maintain full control over the origination process.

# Partnership



- Technological Partnership
- Referral Model

This approach has several benefits for **banks**:

- Implementation cost is quite low compared to having the bank develop a solution in-house
- Banks can increase their brand value with current and potential customers.

# Partnership



- Technological Partnership
- Referral Model

This approach has several benefits for **banks**:

- Bank can quickly customize the platform to fit their lending practices and adapt to future changes.
- The bank can gain in efficiency, guaranteeing at the same time customer satisfaction

# Partnership



- Technological Partnership
- Referral Model

By partnering with banks, **startups** can access to the bank customer base, gain deep financial services experience and familiarity with the regulatory environment

# Partnership



- Technological Partnership
- Referral Model

There are two types of referral models:

## **Inbound referrals**

Non-bank lenders originate assets and sell them to banks.

# Partnership



- Technological Partnership
- Referral Model

There are two types of referral models:

## **Outbound referrals**

Banks refer customers who fall outside their product offerings or credit parameters to a digital, non-bank lender to provide a possible alternative lending product that fits the customer's need

# Partnership



- Technological Partnership
- Referral Model

There are two types of referral models:

## **Outbound referrals**

Referring banks in an outbound referral can typically place parameters on the types of loans and the pricing a non-bank referral partner can charge their customers.

# Partnership



- Technological Partnership
- Referral Model

There are two types of referral models:

## **Outbound referrals**

Some referral models also offer co-branded loans, where banks or Fintech startups offer customers each other's products

# Partnership



- Technological Partnership
- Referral Model

There are two types of referral models:

## **Outbound referrals**

The advantage for banks is that outbound referral models bring additional revenue from referral fees, with very low up-front investment

# Partnership



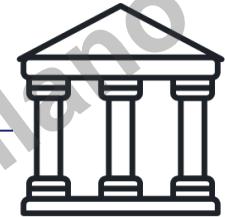
- Technological Partnership
- Referral Model

There are two types of referral models:

## **Outbound referrals**

For customers that the bank cannot service, a referral allows that bank to meet the customer's need by offering an alternative option while maintaining its existing customer relationship (deposits accounts, etc.).

# Case Study 1



**Darien Rowayton Bank of Connecticut** has evolved from a traditional community bank to a national online lending entity with customers in all US states.

The online student lending business, operating under the brand name Laurel Road, uses proprietary technology to streamline and fully digitize loan processes.

The student lending platform was built by the bank's team of 15 developers, augmented by outside contractors as needed.

# Case Study 1



Laurel Road initially used a third-party vendor's platform to manage the student loan application process but determined that it needed to elevate its customer experience beyond what the third-party platform could offer.

“We will use outside third parties where a digital capability is a

commodity or an industry standard.

But where we think we can build a competitive advantage, we'll invest in our own technologies.”

(George Sclavos, CFO, *Darien Rowayton Bank*)

# Case Study 2



“We didn’t have any avenues for education lending in general [...] we didn’t want to encourage our customers to look outside of the bank because we didn’t offer the solutions they need.”

*(Lisa Brubaker, senior vice president, WSFS Bank)*

**WSFS Bank** in 2013 adopted the **LendKey** lending platform for originating student loans.

This partnership approach enabled WSFS bank to quickly deliver a program to market that uses the bank’s underwriting criteria and standards. The bank keeps the asset on its balance sheet and LendKey services the loan.

# Case Study 2



Borrowers have two way to find WSFS Bank loans offering:

- They can visit the LendKey online marketplace, which is open to anyone, and be offered a buffet of choices that match their needs (among which WSFS Bank)
- They can go to the WSFS Bank website and click on Education Lending, where the LendKey offering is available under the bank's own brand (white label platform)

Applicants can receive a credit decision within a day, as long as they have provided the necessary supporting documents.

# Agenda

---

1. Banks and Digital Lending
2. P2P Lending Platforms
3. Credit Scoring

# Several names...

Marketplace lending

Social lending

Peer-to-peer (p2p) lending

Peer-to-business (p2b) lending

Direct lending

Crowd-lending

Loan-based crowdfunding

Lending-based crowdfunding

debt-based crowdfunding

Fintech credit

...

# Definition

**Peer-to-Peer (P2P) lending** can be defined as a “financial exchange” that occurs directly between individuals without a direct intermediation of a traditional financial institution

# Brief history of P2P lending

Peer-to-peer lending communities can be traced back to **1630s**, years in which were first born the so-called **Friendly Societies** in Britain.

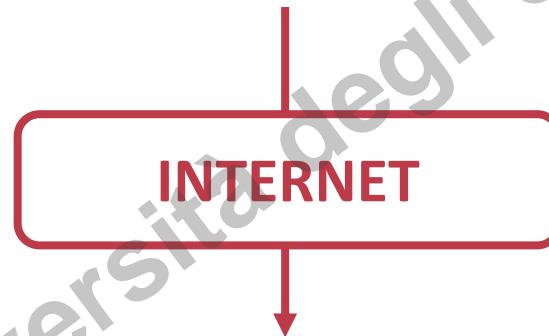
# Brief history of P2P lending

Peer-to-peer lending communities can be traced back to **1630s**, years in which were first born the so-called **Friendly Societies** in Britain.

In **2005** in UK appears **Zopa**, the oldest P2P platform and still nowaday the biggest in Europe. Until today has distributed more than 700 millions of £ in loans.

# Brief history of P2P lending

Peer-to-peer lending communities can be traced back to **1630s**, years in which were first born the so-called **Friendly Societies** in Britain.



In **2005** in UK appears **Zopa**, the oldest P2P platform and still nowaday the biggest in Europe. Until today has distributed more than 700 millions of £ in loans.

# Some data

USA, UK and China are the countries where the phenomenon is most active.

In China, in 2018, were active more than 4000 platforms.  
Always in China, in 2017 nearly 100 b\$ of loans where issued.

# Crowdfunding and P2P lending

P2P is an example of Crowdfunding, an innovative way of Financing.

There are different forms of crowdfunding, which can be classified as follows:

- 1. Donation/philanthropic crowdfunding**
- 2. Reward/commercial crowdfunding** (e.g. artistic ideas)
- 3. Royalty crowdfunding** (reward is monetary and consists in sharing the profits or revenues connected with the investment, but without any claim over the property of the project or over the reimbursement of capital)

# Crowdfunding and P2P lending

4. **Crowdinvesting** (the financing operation is for investment purposes, thus it is associated with a remuneration)

This category includes:

- a. Equity-based crowdfunding
- b. Lending-based crowdfunding
- c. Invoice trading

# The Platform Paradigma

A Platform is an intermediary between entities belonging to two or more different groups (*two-sided or multi-sided markets*)

(Tirole et al. 2003)

Platforms can be:

**Analogical**: e.g. newspaper

**Digital**: e.g. social network

In this second case, platform is the ensemble of technologies allowing multiple users to be constantly connected and perform different activities

# The Platform Paradigma

## **Network Effect:**

the higher the number (and interaction) of users, the higher the value of the platform and the perceived utility by the platform community

# The Platform Paradigma

P2P lending is like other platform-based markets (such as AirBnB, Hotels.com, etc.), which enable buyers and sellers of heterogeneous goods and services to trade, with prices determined ultimately by demand and supply, through auction processes or fixed price offers.

# The Platform Paradigma

However, there are some differences:

- P2P operators provide their own quality assessment of the product (loan) being offered - which is a form of financial advice.
- P2P operators manage (over several years) the subsequent physical delivery to the purchaser (investor) of the obligations (interest and principal repayments) of the vendor (borrower)
- P2P operators provide purchasers with account management (financial) services other financial services

# Drivers

- Credit Crunch
- Low Interest Rate environment
- Lower trust in traditional financial system
- Higher access to the WEB
- Need of more economic solutions for financing
- Geographical reasons

# Kind of loans

## Personal Loans

- General Loans
- Student Loans
- Mortgages
- ...

## Business Loans

- New equipment
- New buildings
- ...

## Other:

- World poverty reduction loans
- Family and friends loans
- Loans to the platform

# Kind of loans

## Personal Loans

Usually short maturity and low principal

P2P Lending platform usually allows to be financed at lower cost, with more flexibility

It is also a possibility to consolidate different debt positions in a single one

LendingClub: <https://www.lendingclub.com/>



# Kind of loans

## Business Loans

Usually longer maturity and higher principal than personal loans

P2P Lending platform usually do not ask for a collateral or for a long *track record*, so it is a good solution for startups

Funding Circle: <https://www.fundingcircle.com/uk/>



# Kind of loans

## Other Loans: World poverty reduction loans

Loans are disbursed to citizens of third world countries, mainly to entrepreneurs given their higher ability to repay the loan.

It is not the borrowers directly who ask the loan: between the lender and the borrower there is usually an intermediary called Field Partner that is responsible for searching for local entrepreneurs with interesting business ideas and in need of funding.

The online platform screens the Field Partners.

# Kind of loans

## Other Loans: Family and Friends loans

These types of loans are disbursed from one family member to another family member and they are usually run by the same rules that govern regular loans.

Family members have first to agree on the interest rate. Once this is set, the online platform intervenes to institutionalize the loan.

National Family Mortgage: [www.nationalfamilymortgage.com/](http://www.nationalfamilymortgage.com/)



# Common steps

There are certain steps that are in common among all P2P lending platforms:

1. Both investors and borrowers subscribe in the platform
2. Investors and borrowers' information are verified and to each borrower is assigned a **credit score**
3. The loan request is displayed on the platform, specifying all the conditions related to it

# Common steps

4. Investors can decide **where to invest**: they can do that on their own or they can leave this step to the platform, only providing for some desired characteristics. The **interest rate** can be either provided by the platform, or decided by investors themselves
5. The platform rules the money transactions between borrowers and lenders and intervenes in case there are delays in payments
6. Money is deposited on a physical bank account

# Matching and Pricing

There are mainly two ways for matching lenders and borrowers and define consequently the Interest Rate:

1. Direct / Active model
2. Diffuse / Passive Model

# Matching and Pricing

## Direct / Active model

Each investor selects the loan, according to the information given. Investors also decide the amount to lend to each borrower.

This mechanism is more similar to the traditional crowdfunding campaigns, but it is very time-consuming for investors and it does not assure the right diversification.

There is also the possibility that some borrowers can be only satisfied partially, because of not being selected by any investor

# Matching and Pricing

## Direct / Active model

The pricing method is based on **reverse auctions**.

Lenders set their minimum interest rate and borrower their maximum interest rate and the matching is when there is a correspondence.

All investors can see it and decide for a certain interest rate to offer, knowing that the higher it is, the lower is the possibility to finance the loan, because only the lowest ones will be selected and offered to the borrower.

# Matching and Pricing

## Diffuse / Passive model

The platform has an active role in both selecting loans applications and matching borrowers and lenders: it collects money from investors and allocates it on several loans, considering the guidelines given by investors - who can decide the amount to lend, the expected return and the risk appetite.

The platform minimizes risks thanks to diversification. Borrowers obtain money in short time and the platform has a high probability that every borrower gets its request of funds

# Matching and Pricing

## Diffuse / Passive model

Considering the pricing, in this case the platform sets the interest rates and then combine the loans according to the risk and return required by the lender.

Where there are imbalances, the platform adjusts the interest rates.

Another possibility: from one hand borrowers set a maximum interest rate, and on the other hand lenders set a minimum (not on the same loan, but on all loans offered by the platform) and the platform matches compatible bids and offers

# Matching and Pricing

Among retail-oriented P2P Lending Platform, more than 95% in US and 75% in Europe apply the Passive Model.

Copyright Università degli Studi di Milano

# Fees

P2P lending platforms require the payment of commissions:

Applied to the **borrower**:

1. Application Fee: usually a fixed amount to be paid when the borrower ask for a loan, independently on the result of the application
2. Origination fee: proportional to the risk and dimension of the loan
3. Service Fee: periodical commissions to cover the administrative services (loan repayment)

# Fees

P2P lending platforms require the payment of commissions:

Applied to the **lender**:

1. Service Fee: periodical commissions to cover the administrative services (loan repayment)
2. Other Services Fees: a fee to be paid in case the lender uses other services

# Other features

Some P2P lending platform provide further possibilities:

1. Some platforms provide also a secondary market where lenders can buy or sell loans, issued to borrowers on the platform, from or to other lenders, increasing in this way the liquidity of the instruments.
2. Some platforms have capabilities and expertise in credit risk management and debt recovery.

# Some «typical» data

**Loan Principal:** 1000\$ - 1 million of \$

**Maturity:** few month – 5 years

**Fees:** 0.5% - 2.0%

# Some «typical» data

## Loan distribution per Risk profile

Low risk  
Medium risk  
High risk

profilo di rischio	2018 (marzo)	2017	2016
prudente	30%	24%	14%
bilanciato	33%	31%	28%
aggressivo	37%	45%	58%
	100%	100%	100%

# Some «typical» data

## Consumer - Loan distribution per Risk profile

Low risk  
Medium risk  
High risk

profilo di rischio	2018 (marzo)	2017	2016
prudente	30%	24%	14%
bilanciato	33%	31%	28%
aggressivo	37%	45%	58%
	100%	100%	100%

# Some «typical» data

## Consumer - Loan Interest Rate per Risk profile

Low risk  
Medium risk  
High risk

profilo di rischio	tasso di interesse
prudente	3.90%-5.85%
bilanciato	6.57%-7.45%
aggressivo	8.75%-10.35%
<i>TAN medio pagato dal crowd-borrower</i>	<b>6.80%</b>

# Some «typical» data

## Business - Loan Interest Rate per Risk profile

Low risk  
Medium risk  
High risk

profilo di rischio	tasso di interesse
prudente	4.78%
bilanciato	6.17%
aggressivo	8.48%
<i>TAN medio pagato dal borrower</i>	<i>6.38%</i>

# Business Model

P2P lending platform operate mainly with one of the following business models:

1. Client Segregated Account model
2. Notary model
3. Balance Sheet model
4. Guaranteed Return model

# Business Model

P2P lending platform operate mainly with one of the following business models:

1. Client Segregated Account model
2. Notary model
3. Balance Sheet model
4. Guaranteed Return model

**DISINTERMEDIATION**

**NEW INTERMEDIATION**

# Business Model

## Client Segregated Account model



Source:  
CONSOB

# Business Model

## Client Segregated Account model



The platform enable the connection between lender and borrower, without participate to the transaction.

The platform only assess a credit rating for the borrower and publishes the request on the website.

Source: CONSOB

# Business Model

## Client Segregated Account model



Once the request for a loan is accepted by (one or more) lender, and the total amount requested by the borrower is reached, the platform manages the cash flows.

Source: CONSOB

# Business Model

## Client Segregated Account model



Cash flow converge in an account not managed by the platform, called *client segregated account*, in a third party institution.

Source: CONSOB

# Business Model

## Client Segregated Account model



In case the platform defaults, it can't use the clients' money.  
On the other hand, the lenders run all the credit risk.

Source: CONSOB

# Business Model

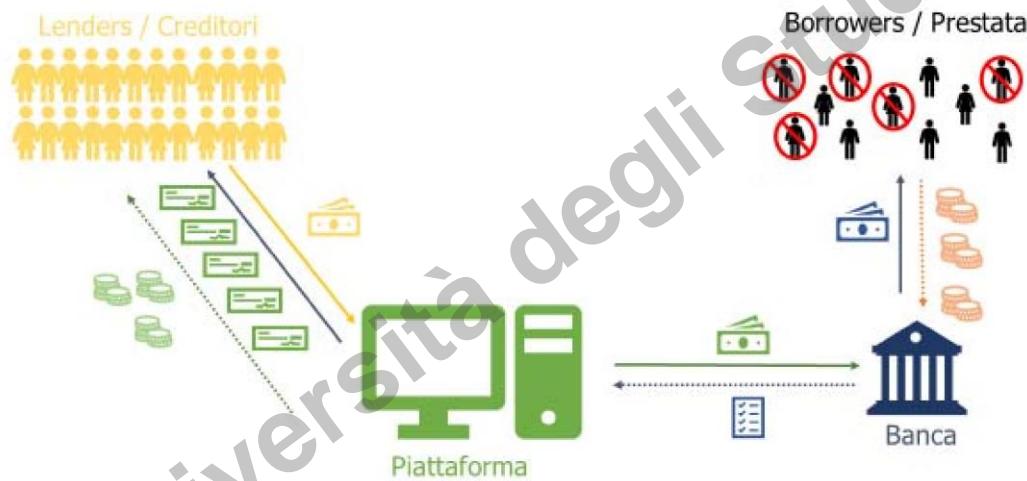
## Notary model



Source:  
CONSOB

# Business Model

## Notary model

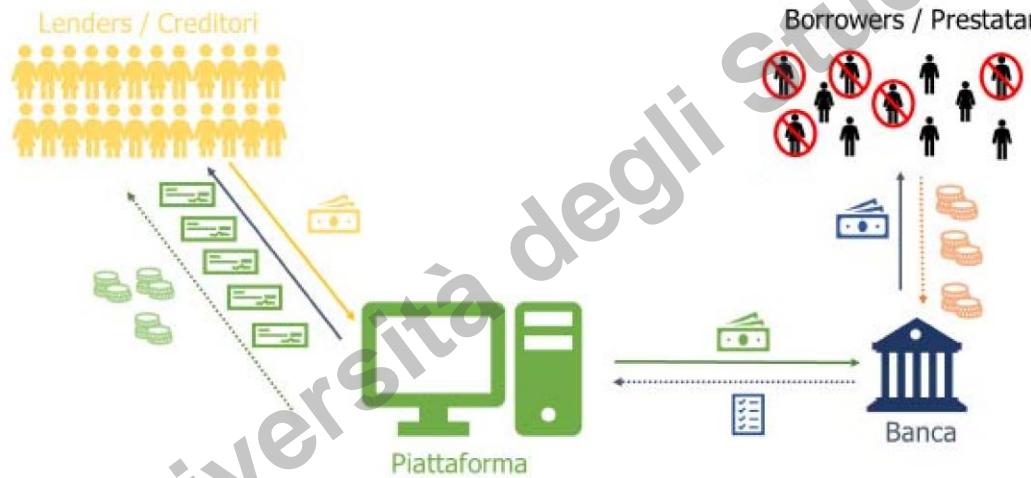


In this case, the loan is materially issued by a third party bank. The first part of the process is common to the previous model, but once the requested amount is reached, it is a bank that gives immediately a loan to the borrower.

Source: CONSOB

# Business Model

## Notary model

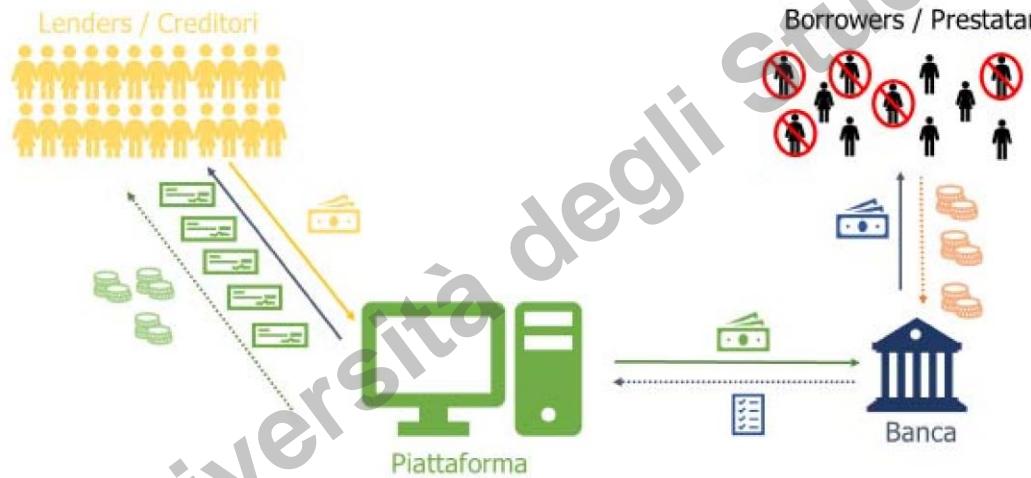


However, the platform agrees with the bank to buy, in very few days, the loan from the bank, thanks to *notes* issued to the platform lenders.

Source: CONSOB

# Business Model

## Notary model



Neither in this case the platform bears the credit risk: if the borrower does not repay the debt, is the lender that suffers the loss.

Source: CONSOB

# Business Model

## Balance Sheet model

Similar to the Notary model, but in this case the platform buys the loan from the bank with its own resources, that raised issuing debt securities.

The platform indeed raises money with debt securities at a certain cost and invest this money in (usually) short-term loans.

The platform gains an Interest Rate Margin and bears the credit risk.

# Business Model

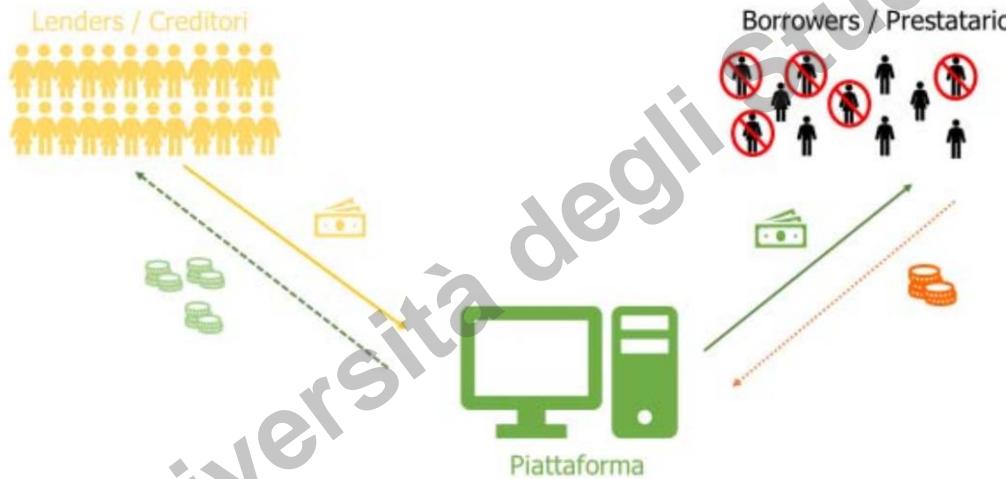
## Guaranteed Return model



Source: CONSOB

# Business Model

## Guaranteed Return model



In this case, the platform really plays the role of intermediary. The platform raises money from lenders and decides how give the resources to the borrowers (always considering the risk propensity of lenders).

Source: CONSOB

# Business Model

## Guaranteed Return model



In this case, the platform directly issues the loan and guarantees a minimum return to the lenders.

The platform bears the credit risk and has to maintain a guarantee fund in order to pay the promised return to the lenders.

Source: CONSOB

# Guarantee measures

Platforms can set different levels of protection for the lenders from credit risk:

- 1. Unsecured Platform**
- 2. Secured Platform:** collateral from the borrower
- 3. Protected Platform:** guarantee fund

# Pros and Cons of P2P Lending

There are Pros & Cons associated to P2P Lending:

## For Lenders:

- Higher Interest Rate
- New diversification possibility
- Lower transaction costs
  
- Credit Risk
- Risk of low transparency of fees
- Information Asymmetry (risk that credit scoring of borrower is not correct)

# Pros and Cons of P2P Lending

There are Pros & Cons associated to P2P Lending:

## For Borrowers:

- Lower Interest Rate
- Collateral not always needed
- Access to credit even for small amounts
- Possibility to access to credit also for unbanked and underbanked consumers
  
- Risk of receiving a wrong credit score
- Risk of low transparency of fees
- Inherent competition

# Pros and Cons of P2P Lending

There are Pros & Cons associated to P2P Lending:

## For Borrowers:

- Lower Interest Rate
- Collateral not always needed
- Access to credit even for small amounts
- Possibility to access to credit also for unbanked and underbanked consumers

Lower  
Financial  
Exclusion

- Risk of receiving a wrong credit score
- Risk of low transparency of fees
- Inherent competition

# Pros and Cons of P2P Lending

There are other issues specific of P2P Lending Platforms:

Most P2P Lending Platform raises funds with “**All Or Nothing**” campaigns, meaning that some good projects are not financed because the amount requested by borrower is not met.

Sometimes there is not enough transparency on screening process of borrowers (platforms in any case have to find a balance on how many projects accept - high availability versus low overall quality)

# Agenda

---

1. Banks and Digital Lending
2. P2P Lending Platforms
3. Credit Scoring

# Credit Scoring

Credit Scoring is an important step in the process of lending:

1. For the platform, that has to guarantee an overall good quality of borrowers' projects available on the platform website
2. For the lender, that needs to understand the risk s/he is going to face
3. For the borrower, in order to be able to finance her/his project at a reasonable cost

# Traditional Credit Scoring

## Credit Scoring for Consumers

Fair Isaac was founded in 1956 as one of the first analytical companies offering retail credit scoring services in the US. Its well-known **FICO score** (ranging between 300 and 850) was used by banks and financial institutions as a key-decision instrument.

# Traditional Credit Scoring

## Credit Scoring for Consumers

The valuation was based on:

- Credit history (35%)
- Income (30%)
- Length of Credit History (15%)
- Kinds of loan previously requested (10%)
- Kind of loan requested (10%)

# Traditional Credit Scoring

## Credit Scoring for Businesses

Edward Altman has pioneered the use of accounting ratios to predict default. In 1968, he developed what has become known as the Z-score.

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5$$

X<sub>1</sub> : Working capital/Total assets

X<sub>2</sub> : Retained earnings/Total assets

X<sub>3</sub> : Earnings before interest and taxes/Total assets

X<sub>4</sub> : Market value of equity/Book value of total liabilities

X<sub>5</sub> : Sales/Total assets

# Drivers

Fintech in the Lending sector started looking with attention to the credit scoring business, for several reasons:

- New technologies available, such as AI
- New sources of data, such as those from social media
- Regulation (PSD2)

# Hard vs Soft Data

Traditionally, credit scoring model used **hard data**, such as accounting ratios or structured financial data.

New credit scoring models are introducing the use of **soft data**, such as non structured and non-financial data.

New players use significantly soft data, being often hard data available only to traditional and regulated players.

# Pros & Cons

- New credit scoring models have both pros and cons:
- New digital technologies and Machine Learning tools make credit scoring faster and more efficient, fostering financial inclusion
- Certain players, such as BigTech, rely on huge amounts of data:

BigTech firms' marketplace allows for observing the sales trend and cash flows of **businesses** active in their e-commerce space.

BigTech companies that offer payment services to **consumers** can leverage transaction data to acquire more accurate information about consumption behavior and income stream.

# Pros & Cons

- Good pricing of loans even without a secondary market
- Reduction of Information Asymmetry
- Risk of using wrong sources of data
- Risk of discrimination issues in ML code
- Risk of using old data
- Risk of opaqueness of the software

# Bibliography

- Óskarsdóttir, M., Bravo, C., Sarraute, C., Vanthienen, J., & Baesens, B. (2019). The value of big data for credit scoring: Enhancing financial inclusion using mobile phone data and social network analytics. *Applied Soft Computing*, 74, 26-39.
- Il peer to peer lending: aspetti operativi e opportunità per aziende e investitori – Roberto De Luca, Nicola Lucido – Fondazione Nazionale dei Commercialisti
- The state of Digital lending - American Bankers Association
- Digital Lending – BCG 2018
- Digital Lending: Is It Alternative Lending Revolution? – Ravikumar et al., 2019
- Omarini, A. E. (2018). Peer-to-peer lending: business model analysis and the platform dilemma.

# Bibliography

- Marketplace lending: Verso nuove forme di intermediazione finanziaria?  
Sciarrone Alibrandi, G. Borello, R. Ferretti, F. Lenoci, E. Macchiavello, F. Mattassoglio, F. Panisi (\*) – CONSOB
- Óskarsdóttir, M., Bravo, C., Sarraute, C., Vanthienen, J., & Baesens, B. (2019). The value of big data for credit scoring: Enhancing financial inclusion using mobile phone data and social network analytics. *Applied Soft Computing*, 74, 26-39.
- Risk Management and Financial Institutions – John C. Hull



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
[stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)



UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Credit Risk*

*Stefano Bonini, PhD*

*25 January 2021*

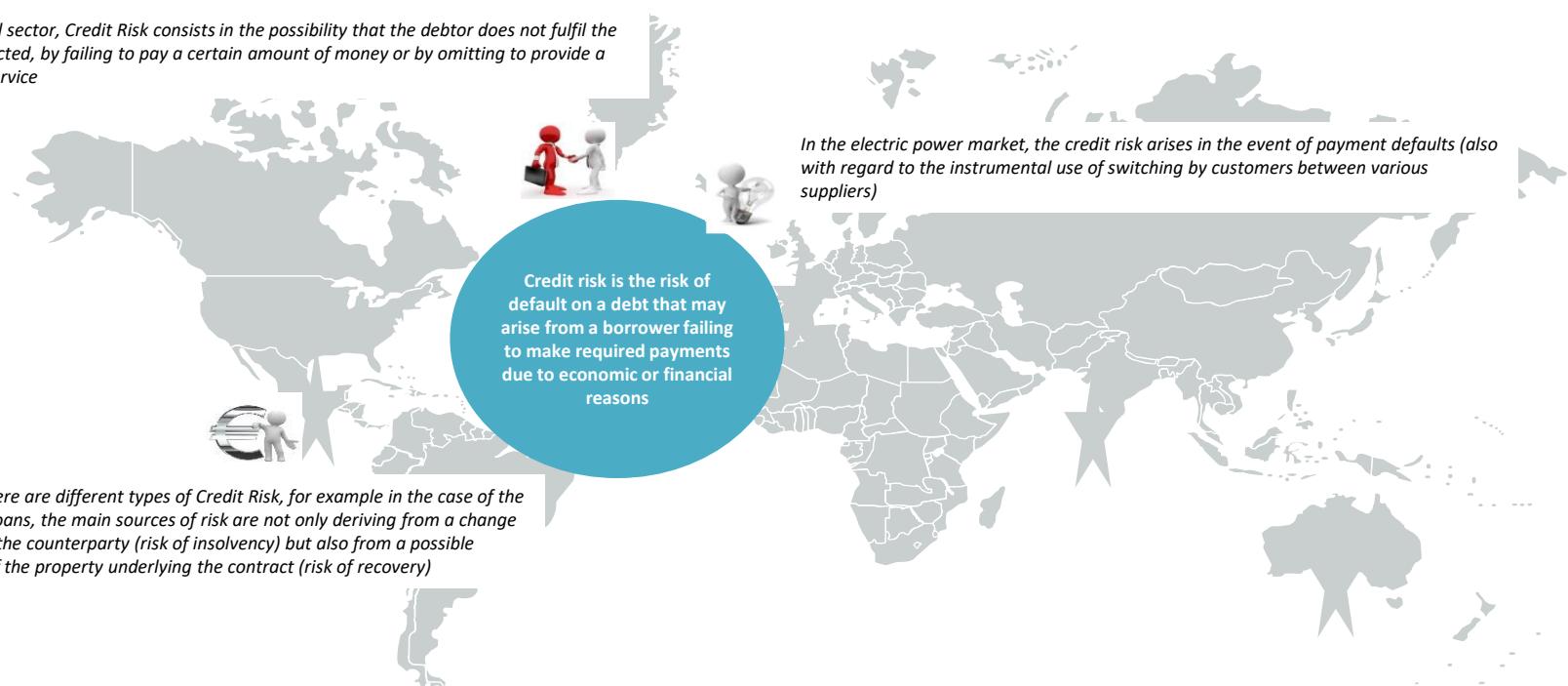


# CREDIT RISK DEFINITION

## EXAMPLES IN THE INDUSTRIAL SECTORS MOST EXPOSED

The assessment of customer credit risk is one of the most critical issues in strategic and economic decisions for companies operating in different business sectors

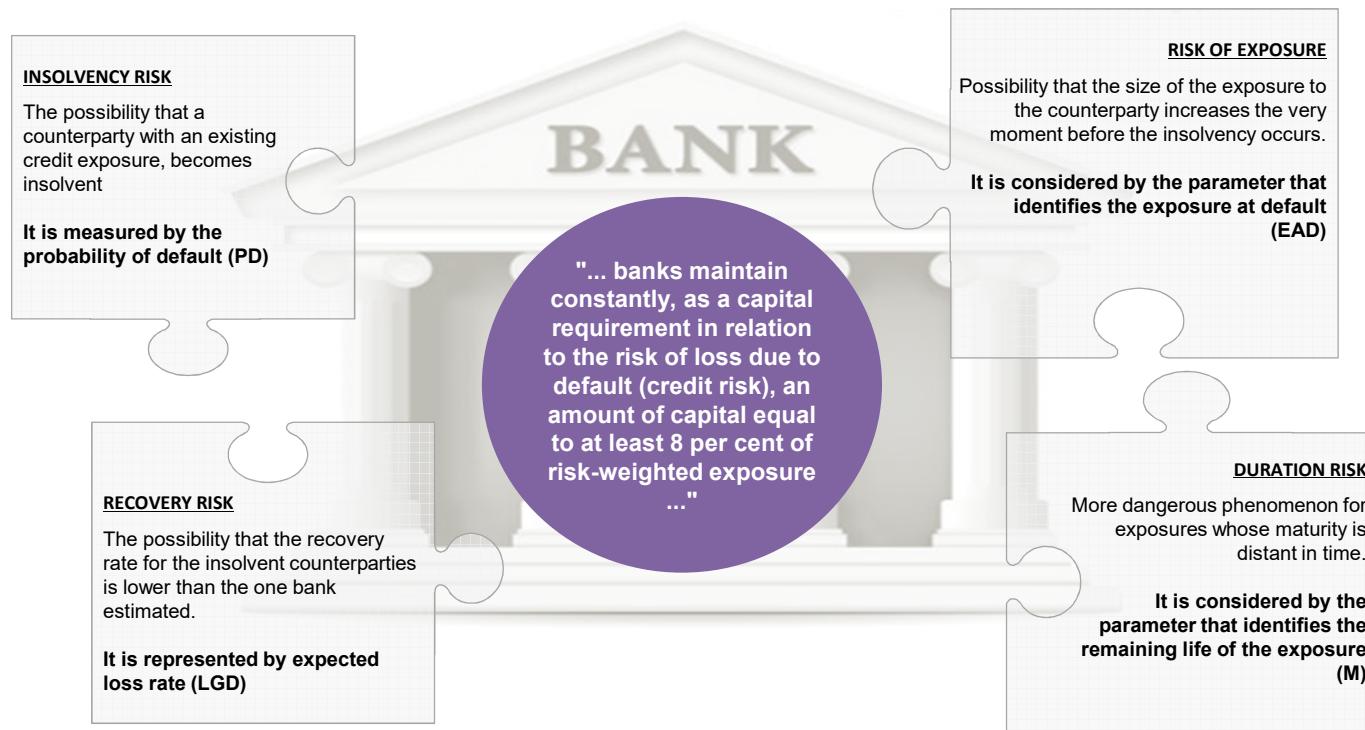
*In the commercial sector, Credit Risk consists in the possibility that the debtor does not fulfil the obligation contracted, by failing to pay a certain amount of money or by omitting to provide a specific agreed service*



# CREDIT RISK DEFINITION (1 OF 2)

## REGULATORY FRAMEWORK IN BANKING

Credit Risk calculation pertains all assets of the financial statements, except for the trading and intangible assets, some off-balance sheet accounting items, net of any real or personal guarantees



## CREDIT RISK DEFINITION (2 OF 2)

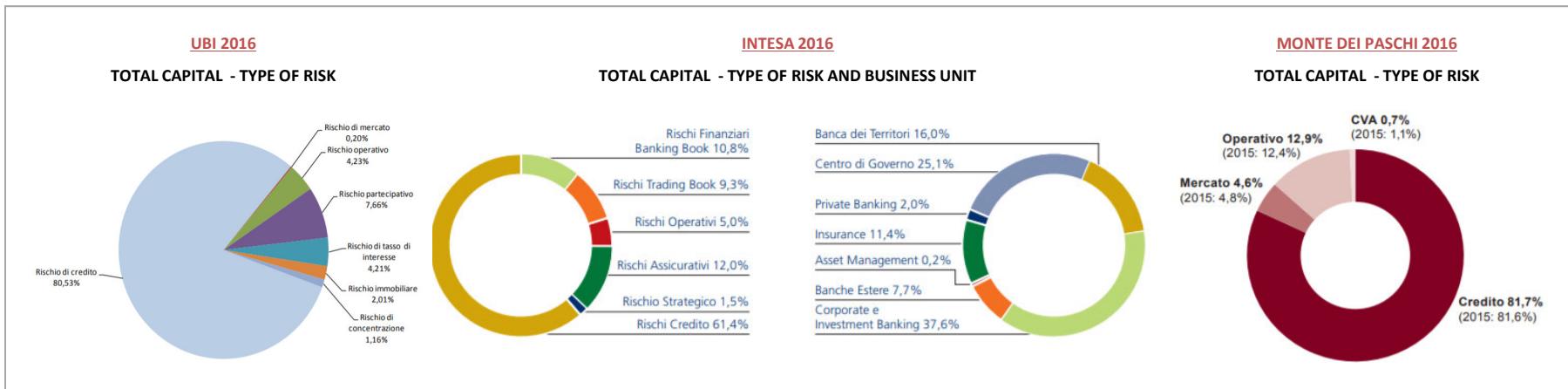
### REGULATORY FRAMEWORK IN BANKING

Credit Risk calculation pertains all assets of the financial statements, except for the trading and intangible assets, some off-balance sheet accounting items, net of any real or personal guarantees

*The Italian Banking Sector is mainly composed by:*

- Commercial Bank Business Model
- Stable Funding with high level of retail fund raising
- Low Leverage ratio
- Relatively low Capital Ratios

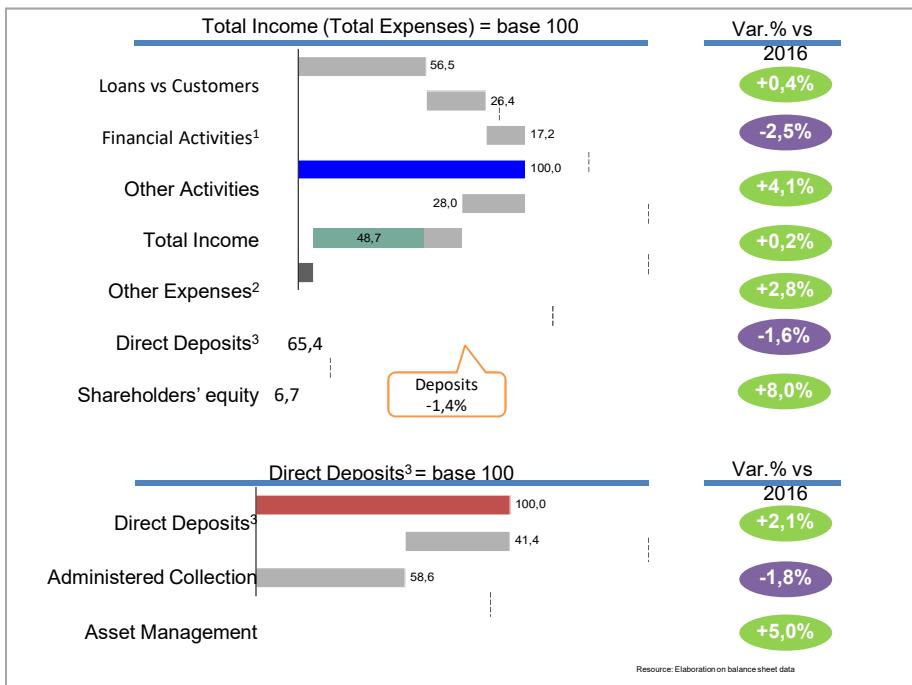
*Credit risk is the main component in the composition of RWA, both for banks with higher capitalization than in smaller ones*



# CREDIT IMPACT ON BALANCE SHEET (1 OF 2)

## BALANCE SHEET ANALYSIS

**Loans are still struggling to grow, Deposits are falling, while the volume of managed savings continues to increase**

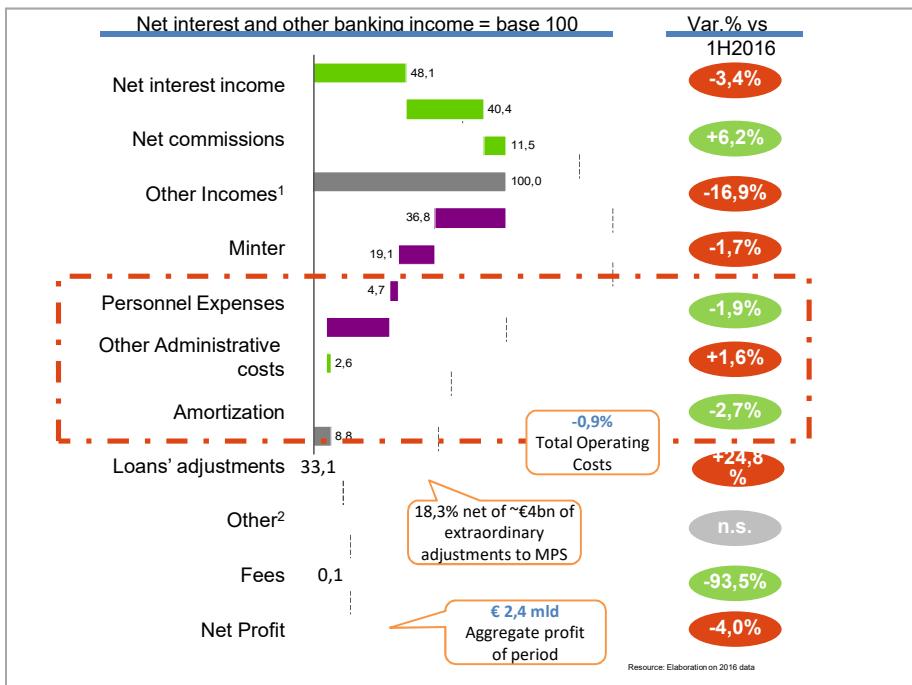


- The total stock of loans in the sample analyzed remained almost unchanged, if not slightly down (-0.5%) if we consider the impact of the acquisitions made in the first half of the year. However, the significant disposals of Deteriorated Loans in progress give good reason to hope for a return to growth in lending, as demonstrated by the trend of some players who are already at an advanced stage of NPL management operations (es. ISP, CA, UCG).
- The amount of Financial Assets decreased, instead, mainly as a result of the search for income to offset the costs of budget redevelopment operations
- In contrast to last year's trend, Direct Deposits worsened: in fact, this time the decline in bonds was not offset by an increase in the volume of deposits. The main causes include the drive to convert direct funding into asset management (which continues to increase, driving growth in indirect funding) and the lower commercial effectiveness of many of the players involved in reorganization and restructuring operations
- Thanks to the profits achieved by many players in the first half of the year, **shareholders' equity** improved. The growth is amplified by the low profitability of last year and by the benefits of the Badwill of the recent M&A operations

## CREDIT IMPACT ON BALANCE SHEET (2 OF 2)

### BALANCE SHEET ANALYSIS

Revenues decreased, Costs remained stable (although slightly down) and Adjustments continued to affect overall profitability



- All the players in the sample analyzed continued to suffer on the Revenue side, down overall by 1.7% compared to 1H2016, mainly due to the contraction in **Net interest income** (still penalized by low interest rates and more careful credit granting policies). **Net commissions**, on the other hand, increased (accounting for 40% of revenues), thanks to good performance commissions that benefited from both the growth of asset management products and the good performance of financial markets
- Operating costs** fell slightly (-0,9%), reflecting the continuous efforts made by banks to improve operating efficiency
- The strong growth in **Credit Adjustments** compared to 1H2016 is partly justified by the fact that in 2016 (the year in which the Loan Loss Ratio reached over 50%) most of the Adjustments took place in the second half of the year. In addition, the figure is affected by ~€4 billion of Adjustments made by MPS in connection with the restructuring plan of the MEF. Nevertheless, 2017 is also emerging as a year of great "cleaning" of the balance sheets, also as a result of the numerous disposals of Impaired Loans
- Taking into account half of the **M&A Badwill** (see methodological note at the beginning of the document), the result is an aggregate profit for the period of €2.4 billion. Although there is a decrease compared to 1H2016, it should be remembered that in 2016 the Italian banking system closed with a loss.

# CREDIT CYCLE (1 OF 2)

## CHALLENGES AFTER THE CRISIS AND OPPORTUNITIES

The recent economic crisis led to a shrinking in credit disbursement by financial institutions to the real economy. Therefore, it proved necessary to optimize the credit process

- The credit supply tightening and the decrease in demand for loans due to the 'intensification of market pressures led to a decline in the growth of bank loans
- In the near future, an increase in Non - performing loans is expected resulting from both the decreased value of real estate and collaterals and the general economic slowdown
- The credit risk index (non-performing loans / total loans) is growing inverting the positive trend registered for the previous years
- Consequently, the economic crisis triggered an increase in the interest rates volatility and credit spreads, parameters both used to measure the goodness and the value of the loan portfolio



- Improved knowledge of customers creditworthiness
- Creating individual strategies and supplying products that suit to each customer's risk profile.
- Improving the monitoring of the customer status to promptly detect signs of deterioration
- Increased involvement of the Risk Management
- Increase customer retention by ensuring the protection of corporate assets

## CREDIT CYCLE (2 OF 2)

### CHALLENGES AFTER THE CRISIS AND OPPORTUNITIES

For each of the four phases of the credit cycle, it is possible to undertake a number of actions aimed at its optimization



# PARAMETERS AND CREDIT RISK MEASUREMENT APPROACHES (1 OF 3)

## OVERVIEW ON RISK METRICS

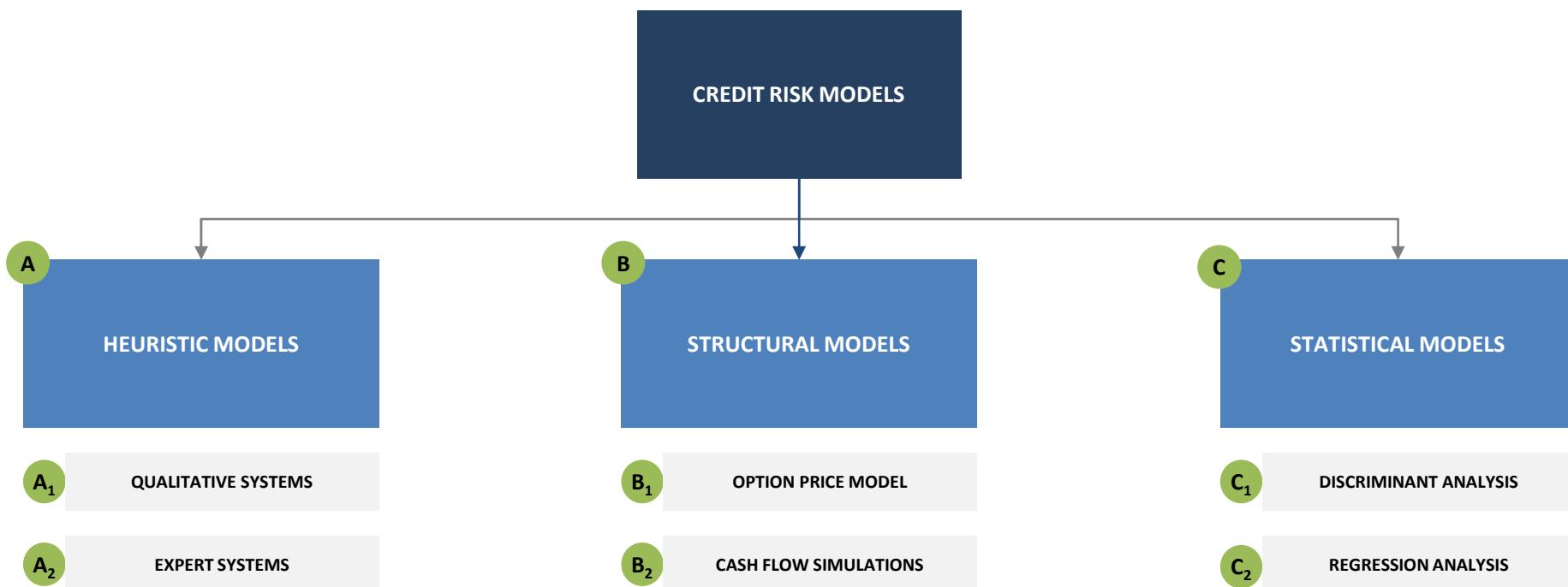
Basel 2 laid the foundation for a more accurate estimate of the losses that could arise from credit exposures; in order to do so, it introduced four fundamental components of risk

PARAMETERS	DEFINITION	FOCUS
PROBABILITY OF DEFAULT (PD)	<ul style="list-style-type: none"><li><b>Default probabilities</b>, i.e. the probability that the borrower does not fulfill its obligations towards the creditor within a one-year time horizon.</li></ul>	<ul style="list-style-type: none"><li>Choices on segmentation and definition of default consistent with Group practices</li><li>The Design of the model and the definition of a clear calibration philosophy allow to develop a model that is robust and compliant with the rules</li></ul>
LOSS GIVEN DEFAULT (LGD)	<ul style="list-style-type: none"><li><b>Loss given default</b>, is the loss rate experienced by a lender on a credit exposure if the borrower defaults</li></ul>	<ul style="list-style-type: none"><li>Workout Process mapping in order to estimate a robust model consistent with different management practices of the Non- Performing loans</li><li>Creation and certification of LGD estimation dataset</li><li>Management and treatment of collaterals</li></ul>
EXPOSURE AT DEFAULT (EAD)	<ul style="list-style-type: none"><li><b>Exposure expected at the moment of default</b></li></ul>	<ul style="list-style-type: none"><li>Inclusion of a <i>Roll-Out</i> validation EAD Model (only first validation of PD and LGD)</li><li>Initial preparation of the Assessment to measure the level of exposure at default</li></ul>
MATURITY (M)	<ul style="list-style-type: none"><li><b>Remaining life of the exposure</b> (parameter related only to corporate exposure) that takes into account the "duration of exposure"</li></ul>	<ul style="list-style-type: none"><li>Maturity affects the pricing risk adjusted in the issuing phase</li></ul>

## PARAMETERS AND CREDIT RISK MEASUREMENT APPROACHES (2 OF 3)

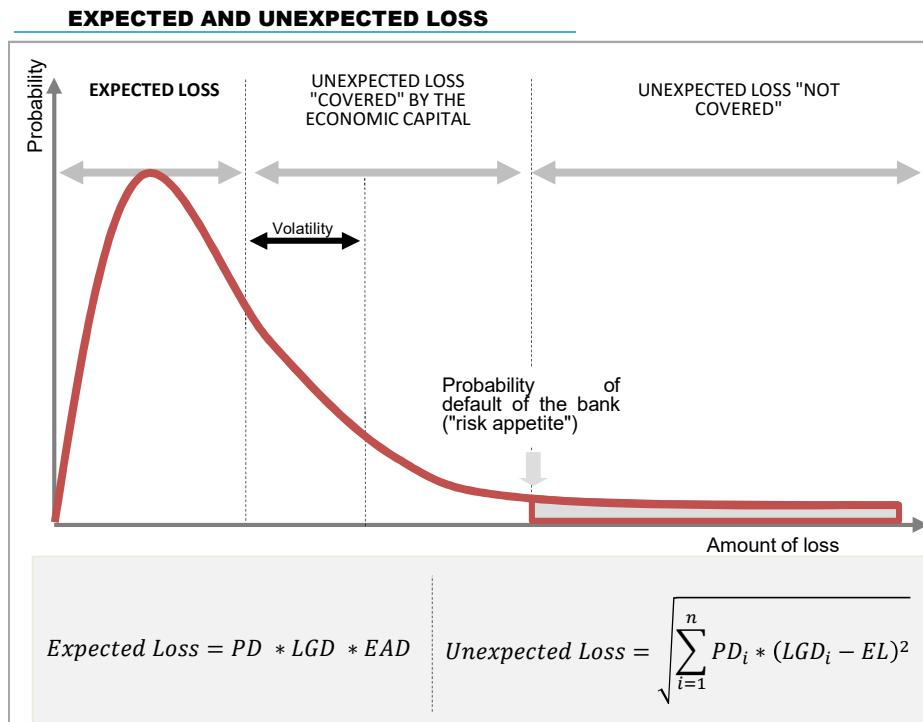
### MEASUREMENT APPROACHES

For the definition of models for credit quality it is possible to choose between different types of approaches



# PARAMETERS AND CREDIT RISK MEASUREMENT APPROACHES (3 OF 3) FROM EXPECTED TO UNEXPECTED LOSS

The estimation of the Unexpected Loss requires additional parameters and models in addition to PD, LGD and EAD. The four main models are CreditMetrics, PortfolioManager, CreditPortfolioView and CreditRisk+



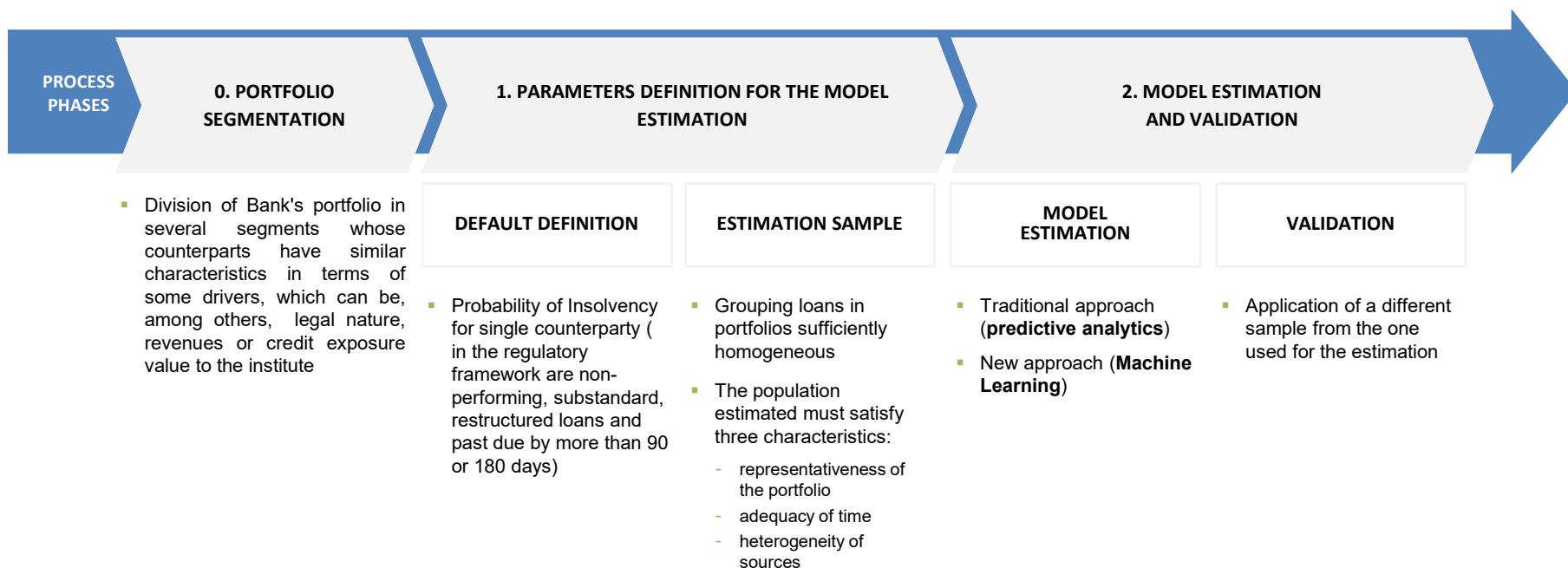
## DESCRIPTION

- The **Expected Loss** (calculated on single transaction) represents the **loss** that a bank **expects to face** for a credit or for a loan portfolio and, therefore, **does not represent a real risk**
  - ✓ It is usually covered in the issuing phase through the **pricing and balance sheet provisions**
- The **Unexpected Loss** (calculated for the whole portfolio) is the **systemic component and specific credit risk** and measure the degree of variability in the rate of loss with respect to its expected value. It **therefore represents the actual size of the risk.**
  - It is usually covered by the **Capital (CAR – Capital at Risk)**

# STATISTIC BASED RATING SYSTEM DEVELOPMENT

## PROBABILITY OF DEFAULT MODEL ESTIMATION

The process of development of a rating system is divided into two main phases: defining the parameters for the estimation and prediction and model estimation...

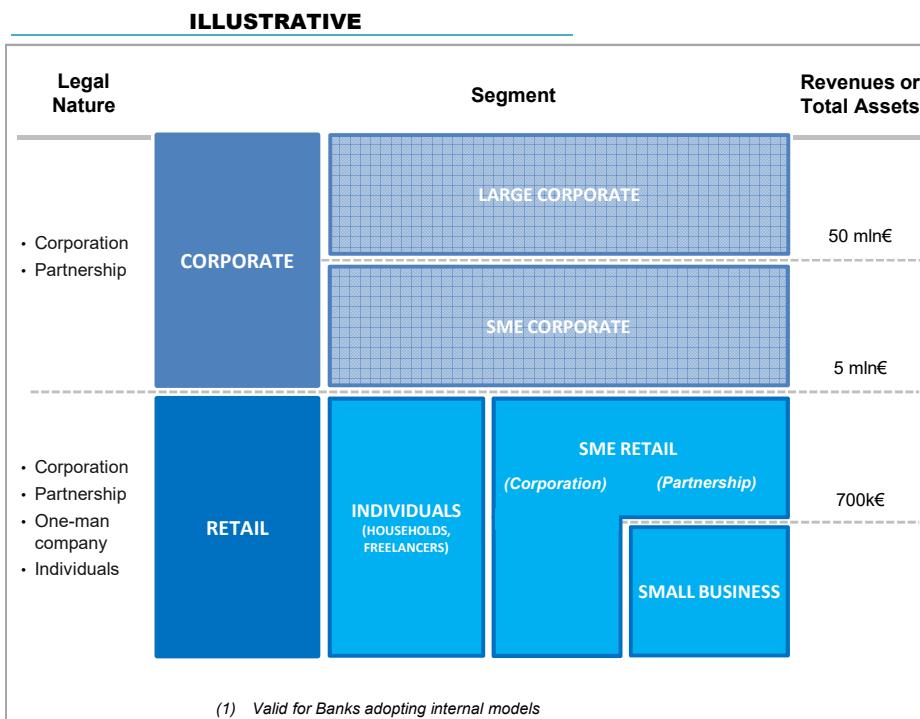


# PORTFOLIO SEGMENTATION

## MARKET BEST PRACTICE



Upstream of the PD model estimation process it is necessary to divide Bank's portfolio, going to distribute the counterparties into segments based on similar characteristics in terms of specific drivers



### RATIONAL

- Segmentation rules are called "**safeguarding**", as much as possible, the "**coherence**" with **management** segmentation of the **Banking Group**, as well as with credit processes and taking into account the findings of the **supervisory regulations** on Regulatory segmentation for reporting purposes
- These rules verify both the size and the legal nature of the counterparty
- The size of any **economic Groups** is usually not considered for segmentation purposes, but is incorporated in the rating estimation model entering downstream of the statistical calculation process, in order to take into account **Group's influence** on individual counterparty

# PARAMETERS DEFINITION FOR THE MODEL ESTIMATION ESTIMATION SAMPLE



The Sample used for the Estimation should present the main features of the whole Portfolio, temporal adequacy and heterogeneity of sources

FEATURES	DESCRIPTION	REGULATION
<b>REPRESENTATIVENESS</b>	<ul style="list-style-type: none"><li>Selection of both defaulted and performing counterparties, building a <b>large and representative sample</b> of the universe of counterparties to classify</li><li>Balancing the operational characteristics of the two groups</li><li>Annual Evaluation</li></ul>	"The population of exposures used to estimate [...] should be equal, or at least comparable with the real case shown by the bank" <sup>(1)</sup>
<b>MINIMUM LENGTH</b>	<ul style="list-style-type: none"><li>Minimum length of the historical period of observations for PD estimation:<ul style="list-style-type: none"><li><b>5 years</b> for retail exposures</li><li><b>7 years</b> for corporate exposures</li></ul></li></ul>	"The number of exposures in the sample and the period taken in consideration for the quantification of risk parameters must be sufficient to ensure the robustness of the estimations" <sup>(2)</sup>
<b>HETEROGENEITY</b>	<ul style="list-style-type: none"><li>Possibility to use external databases, only in case adjustments are used to make the estimations consistent with the definition of the Basel 2</li></ul>	"banks that use external data [...] show that the definitions of default and loss taken for the construction of the dataset are consistent with this Chapter [...]" (2)

(1) See BCBS 107, *International Convergence of Capital Measurement and Capital Standards, Part II, Chapter III, Section H, paragraph 7*  
(2) See Circular 263/06, *Title II, Chapter 1, Section IV, paragraph 2*

# MODEL ESTIMATION

## OVERVIEW ON ESTIMATION PROCESS



The development of the model for the estimation of the probability of default can be divided into 4 main phases: definition of indicators, univariate analysis, multivariate analysis and definition of the final model

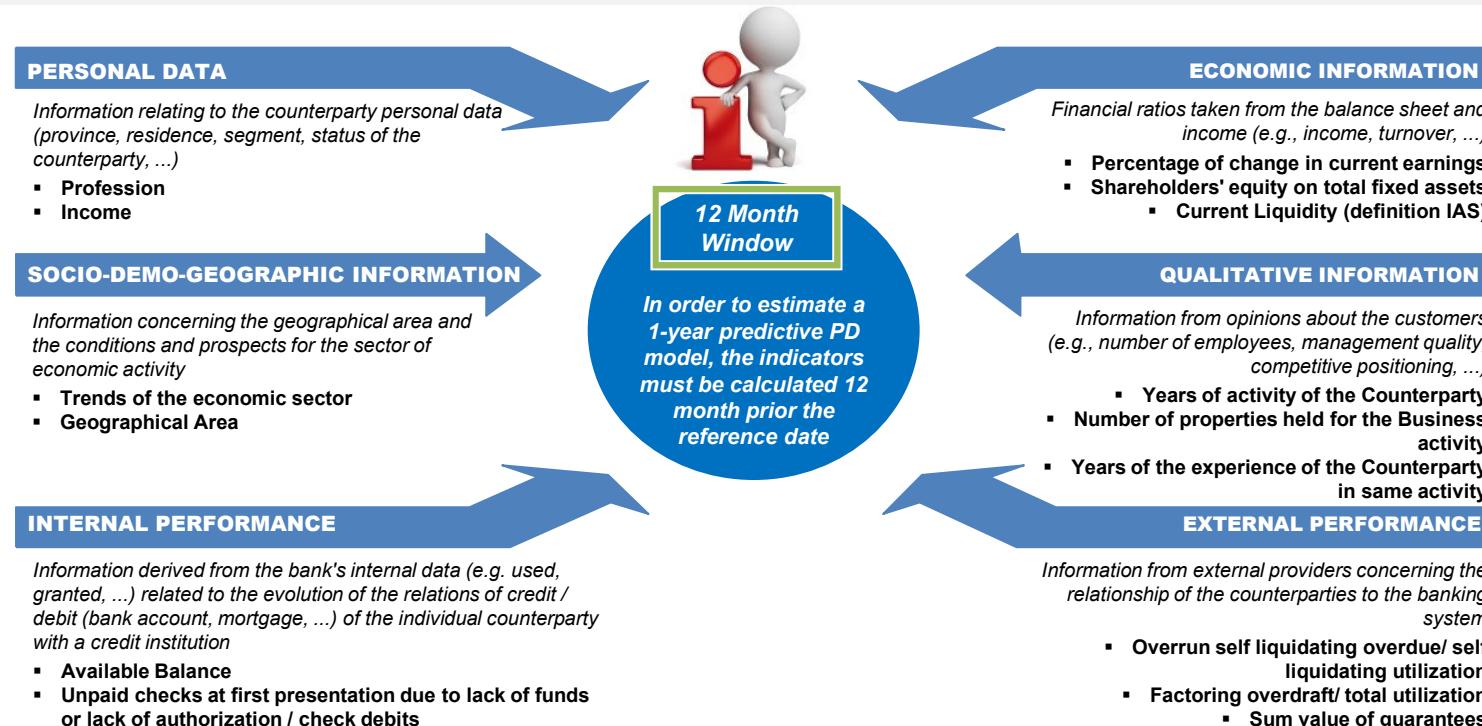
PHASES	MAIN ACTIVITIES
LONG LIST OF INDICATORS	<ul style="list-style-type: none"><li>▪ LONG LIST OF INDICATORS PROVIDED BY THE CREDIT MANAGEMENT</li></ul>
UNIVARIATE ANALYSIS	<ul style="list-style-type: none"><li>▪ MANAGEMENT OF ABNORMAL VALUES FOR INDICATORS WITHOUT NATURAL DOMAIN AND INDETERMINATE FORMS</li><li>▪ UNIVARIATE ANALYSIS ON CONTINUOUS INDICATORS</li><li>▪ MANAGEMENT OF MISSING VALUES</li><li>▪ UNIVARIATE LOGISTIC REGRESSION ANALYSIS</li></ul>
MULTIVARIATE ANALYSIS	<ul style="list-style-type: none"><li>▪ ANALYSIS OF CORRELATION AND MULTICOLLINEARITY</li><li>▪ MULTIVARIATE LOGISTIC REGRESSION ANALYSIS</li><li>▪ IDENTIFICATION OF INDICATORS THAT DEFINE THE FINAL MODEL</li></ul>
FINAL MODEL	<ul style="list-style-type: none"><li>▪ MODEL CALIBRATION</li><li>▪ MODEL VALIDATION</li></ul>

# MODEL ESTIMATION

## LONG LIST OF INDICATORS



The information for the development of a rating model are based on multiple information areas, from where the indicators are calculated 12 month prior the reference date



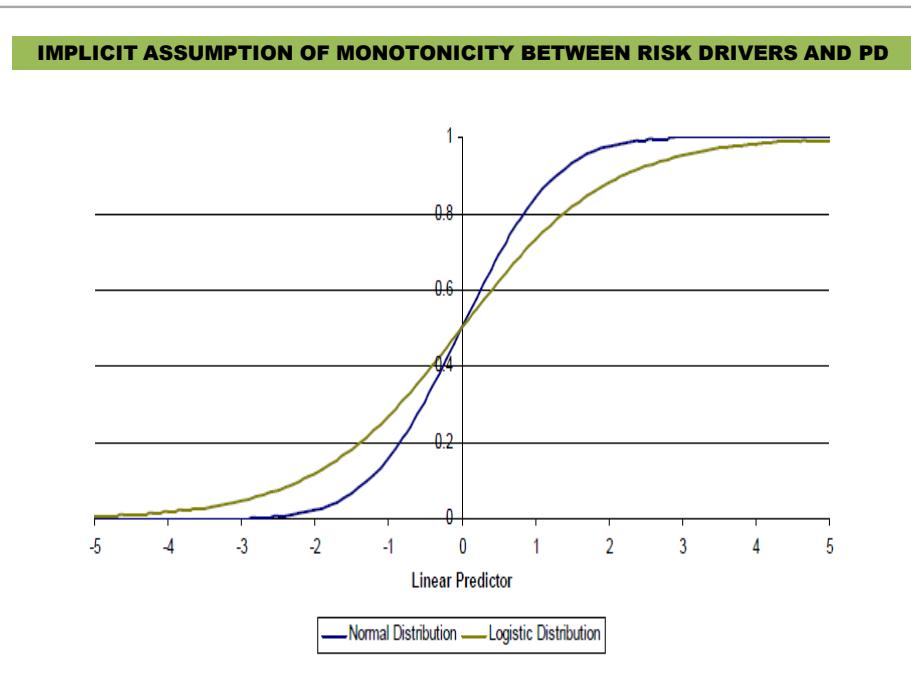
# MODEL ESTIMATION

## FOCUS ON REGRESSION ANALYSIS (1 OF 2)



Regression analysis is the standard method to describe the relationship between a binary dependent variable and one or more independent variables

### LOGIT VS. PROBIT LINK FUNCTION



### DESCRIPTION

- Regression Analysis is the standard method to describe a dependent relationship between a binary variable and different risk drivers:  

$$PD_i(S_i) = P(I_i=1 | S_i) = F(K_i^T \beta)$$
- It is established a linear relationship between scores and risk factors  

$$S = \beta_0 + \beta_1 K_1 + \beta_2 K_2 + \dots + \beta_n K_n$$
- The calculated scores S are then translated into PD through a link function  

$$PD(S) = f(S)$$
- Using the logistic distribution the **Logit models** is developed as below:  

$$PD_i(S_i) = P(I_i=1 | S_i) = e^{(K_i^T \beta)} / (1 + e^{(K_i^T \beta)})$$

If  $F(\cdot)$  is a Gaussian Distribution we have

$$PD_i(S_i) = P(I_i=1 | S_i) = \Phi(K_i^T \beta)$$
- as in a **Probit Model**

<ul style="list-style-type: none"> <li><math>S</math> = debtor score</li> <li><math>K</math> = principal data (risk drivers, factors)</li> <li><math>\beta</math> = coefficients</li> </ul>	<ul style="list-style-type: none"> <li>(weights) Default Indicators</li> </ul>
	$I = \begin{cases} 1, & \text{Default} \\ 0, & \text{no Default} \end{cases}$

## MODEL ESTIMATION FOCUS ON REGRESSION ANALYSIS (2 OF 2)



One can alternatively extend regression models by introducing the concept of logarithm (logistic regression)

Definition of a threshold value  $\theta_i$  satisfying the following equation

$$I_i = \begin{cases} 1 & \text{if } y_i = K_i^T \beta + \varepsilon_i > \theta_i \\ 0 & \text{if } y_i = K_i^T \beta + \varepsilon_i \leq \theta_i \end{cases}$$

Where:

- $y_i$  is unknown
- $I_i$  is known
- $\theta_i$  is not observable

The error term follows the distribution  $F(\cdot)$ . The distribution hypothesis for the error term determines the specification of the logit model:

$$\begin{aligned} PD(S_i) &= P(I_i = 1|S_i) = P(y_i \leq \theta_i) == P(\varepsilon_i \leq \theta_i - K_i^T \beta) = \\ &= F(\theta_i - K_i^T \beta) = F(K_i^T \beta) \end{aligned}$$

With a constant  $\theta$  and including  $\beta$

*By reformulating the regression equation an alternative interpretation of the logistic regression can be derived:*

$$\ln\left(\frac{PD(S_i)}{1 - PD(S_i)}\right) = K_i^T \beta$$

ODDS RATIO

Logistic Regression models the logarithm of the odds as the linear combination of the risk drivers

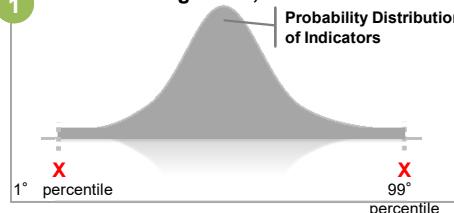
# MODEL ESTIMATION

## OUTLIERS AND INDETERMINATE FORMS, CONTINUOUS INDICATORS, MISSING VALUES



The univariate analysis is based over the management of three main topics: outliers, univariate performance and missing values incidence

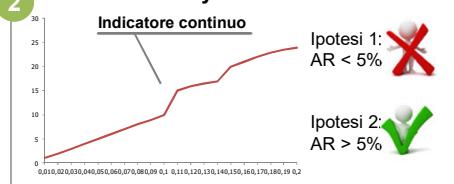
### 1 Outlier management, for indicators without natural domain, and indeterminate forms



- Indicators estimation may require interventions due to the presence of outliers:
  - outliers**, outside the range of values of the indicator definition or otherwise not in line with the range of expected values
  - indeterminate forms** arising from ratios as 0/0



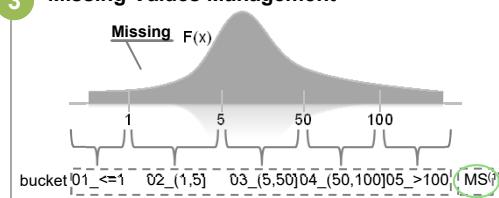
### 2 Univariate Analysis on continuous indicators



- Continuous indicators are subjected to performance test using continuous logistic regression in order to provide an indication of the ability of the indicator to predict the default event



### 3 Missing Values Management



- Absence of information (missing), indicator discretization. Indicator and missing values are led back to a limited number of labels
- Where missing are a relevant part of the distribution, the indicator should be rejected, because it couldn't be predictive of the default event



# MODEL ESTIMATION

## LOGISTIC REGRESSIVE UNIVARIATE ANALYSIS



The univariate analysis is based over the management of three main topics: outliers, univariate performance and missing values incidence

### LOGISTIC REGRESSIVE UNIVARIATE ANALYSIS

CONTINUOUS INDICATOR							
	Graph	Exp Sign	Beta Sign	P-value	AR	Notes	Chosen
1		+	+	8,3%	10,6%	Not monotonous and P-value under 5%	
2		-	+	0,2%	32,2%	Inconsistent with Credit Sense	
3		-	-	1,2%	25,8%		
DISCRETE INDICATOR							
1	Bucket	#	# default	%	% default	Notes	Chosen
01_missing	4.000	45		7,5%	1,1%		
02_0	20.000	1000		37,7%	5,0%		
03_(0,1]	10.000	700		18,9%	7,0%		
04_(1,2]	13.000	1100		24,5%	8,5%		
05_>2	6.000	1.300		11,4%	21,7%		
2	Bucket	#	# default	%	% default	Notes	Chosen
01_missing	4.000	45		26,4%	1,1%		
02_[0,1]	2.000	120		13,2%	6,0%		
03_(1,5]	150	22		1,0%	14,7%	Not Monotonous Default Rates and inconsistent estimates in terms of included population	
04_(5,26]	3.000	100		19,8%	3,3%		
05_>25	6.000	400		39,6%	6,7%		

### CRITERIA

- The Univariate Analysis Purpose is the individuation of the best indicators in terms of statistical significance and consistency with the credit sense of the variable
- In particular, evaluating
  - ✓ Risk Monotonous trend
  - ✓ Statistical significance (p-value < 5%)
  - ✓ Predictiveness (AR > 5%)
  - ✓ Consistency with the credit sense
- From the results of the analysis discrete indicator bucket are aggregate as necessary



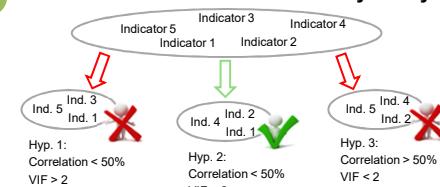
# MODEL ESTIMATION

## CORRELATION, MULTIVARIATE ANALYSIS AND FINAL MODEL IDENTIFICATION



The univariate analysis is based over the management of three main topics: outliers, univariate performance and missing values incidence

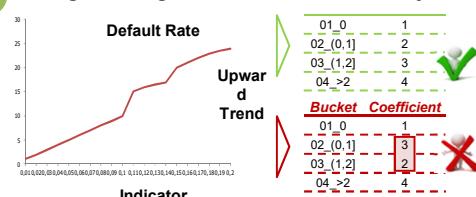
### 1 Correlation and Multicollinearity Analysis



- From the list of eligible indicators, are identified **groups of variable**
- The **drivers** for the identification of such sets are
  - Low correlation** between the indicator of the each set
  - Absence of multicollinearity** in the set of variable
  - Informative heterogeneity** between identified variable (different areas)



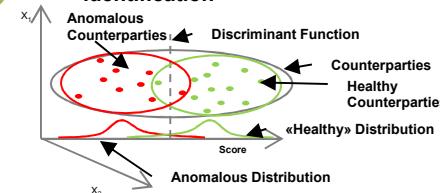
### 2 Logistic Regressive Multivariate Analysis



- The sets of indicators are subjected to **multivariate logistic regression** to verify their global predictive power and the statistical significance of each element, through:
  - Accuracy Ratio**
  - P-Value**
  - Consistent Coefficient**

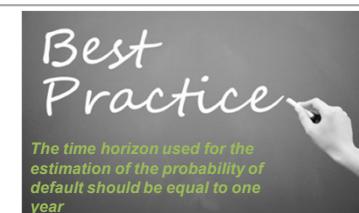


### 3 Final model Indicator identification



- The rating models allow an assessment of the counterparties under analysis in order to discriminate between "healthy" and "anomalous" counterparties, calculating a Score which identifies the "state of health", solvency and repayment capacity:

- ✓ **High Score:**  
"Probabilistically"  
solvent
- ✓ **Low Score:**  
with a good chance  
insolvent

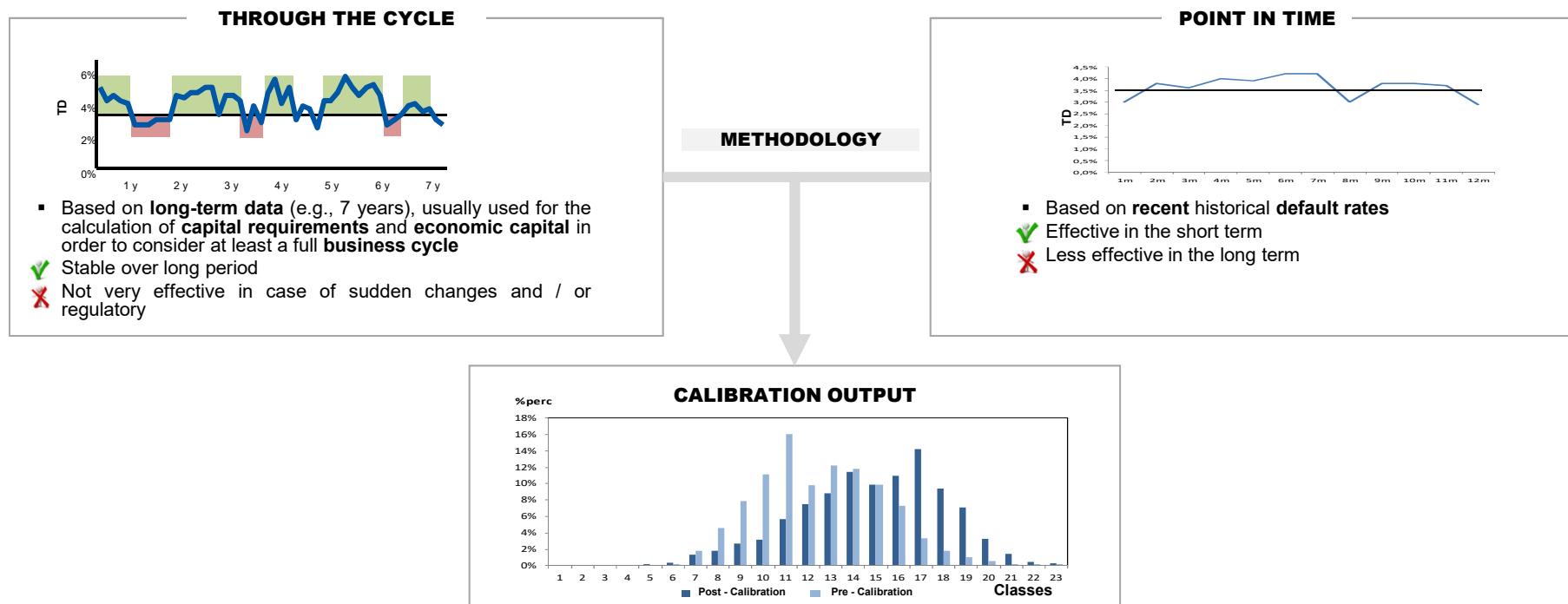


# MODEL ESTIMATION

## MODEL CALIBRATION (1 OF 2)



The calibration of rating models is carried out to map the obtained PD to a theoretical one and can be done through different approaches: Through the Cycle or Point in Time

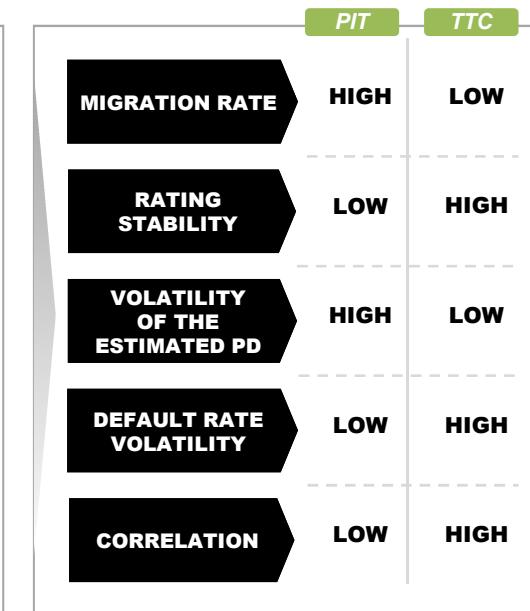
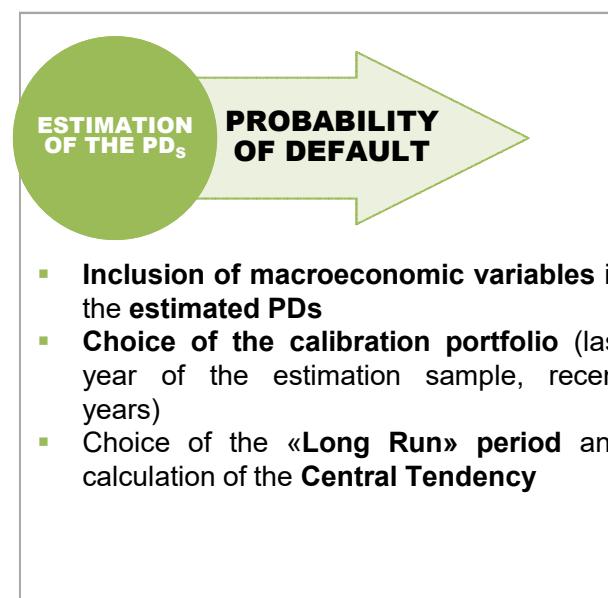
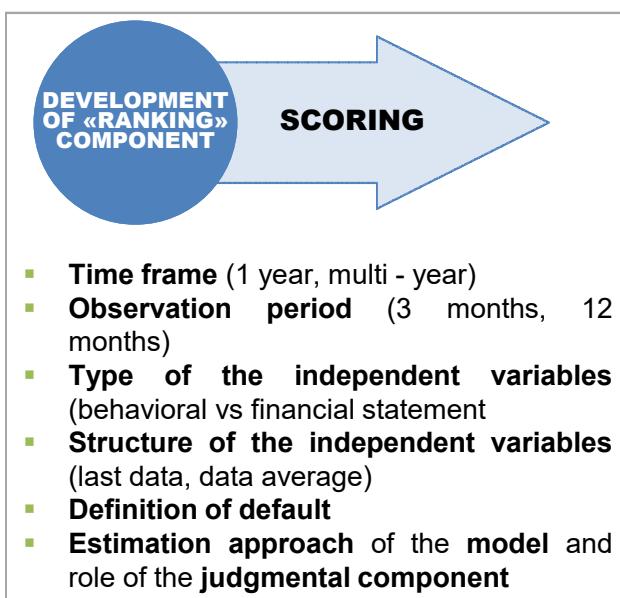


# MODEL ESTIMATION

## MODEL CALIBRATION (2 OF 2) – SCORING AND CALIBRATION APPROACH



The objective of the Regulator, as confirmed by the recent Consultation Paper, is to increase the emphasis on the calibration for the estimation of the PDs, according to the underlying rating model



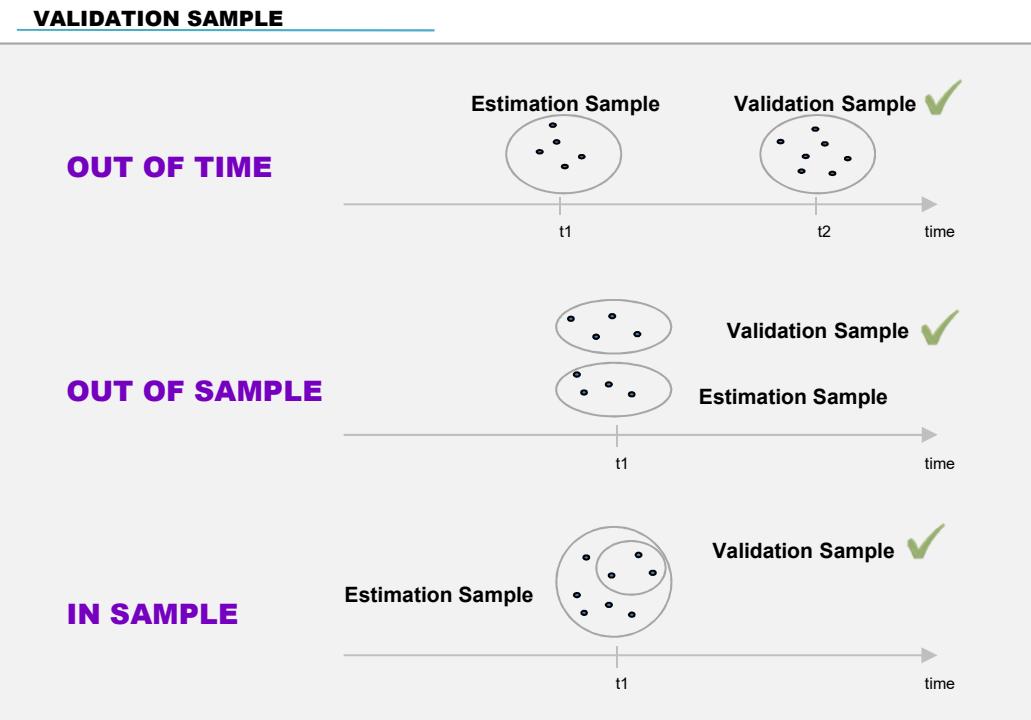
*The calibration approach does not have to modify the «estimated» riskiness of a portfolio but at the same time, it has to make it not volatile and stable, in order to minimize phenomena of migration within classes*

# MODEL VALIDATION (1 OF 5)

## VALIDATION SAMPLE



In order to validate the obtained models, it is necessary to verify the performance on an independent sample



### CRITERIA

- The evaluation of the predictive power of a model is made through an independent sample with
  - ✓ A different time period (**out of time validation**)
  - ✓ An independent sample (**out of sample validation**)
  - ✓ A portion of the sample, that has not been used in the estimation phase (**in sample validation**)
- The choice between the approaches depends on the availability of data and the portfolio age



# MODEL VALIDATION (2 OF 5)

## VALIDATION ANALYSIS



Model Validation first takes place during the estimation of the models by the Risk Management department and it is then carried out by the Internal Validation function through backtesting analysis

- Model Validation is based on **Quantitative** and **Qualitative** aspects
- **Backtesting** <sup>(1)</sup>
  - Aimed to the evaluation of the global quality of the estimated model
  - Compares the estimates on past observation to future events, and can be classified in the following analysis

**Discriminatory Power analysis**

**Calibration Test**

**Stability Test**

<b>ANALYSIS</b>	<b>DESCRIPTION</b>	<b>HOW TO MEASURE</b>
<b>DISCRIMINATORY POWER ANALYSIS</b>	<ul style="list-style-type: none"><li>▪ Ability of the rating model to order counterparties based on their actual credit quality (ordinal ranking)</li></ul>	<ul style="list-style-type: none"><li>▪ Accuracy Ratio</li><li>▪ Misclassification Rate</li><li>▪ Kolmogorov-Smirnov</li><li>▪ Mean Difference e Divergence Statistic</li></ul>
<b>CALIBRATION TEST</b>	<ul style="list-style-type: none"><li>▪ Evaluation of the distance between the estimated PDs and observed default rates for each rating class</li><li>▪ It is important to assess its randomic and systematic nature:<ul style="list-style-type: none"><li>– the presence of a systematic underestimation of PD compared to the actual risk is a critical factor for banks and supervisors</li></ul></li></ul>	<ul style="list-style-type: none"><li>▪ Binomial Test</li><li>▪ chi-square Test</li><li>▪ Normality Tests</li></ul>
<b>STABILITY TEST</b>	<ul style="list-style-type: none"><li>▪ Analysis of the Risk Drivers used in the model, to justify any deterioration in the portfolio credit quality<ul style="list-style-type: none"><li>– given the assumption on the statistical models that the future reflect the past, the risk drivers statistical properties can support the verification of the ratings stability over time</li></ul></li></ul>	<ul style="list-style-type: none"><li>▪ Population Stability Index (PSI)</li><li>▪ Transition Matrix</li></ul>

(1) Working Paper 14 - Studies on the Validation of Internal Rating Systems (BIS)

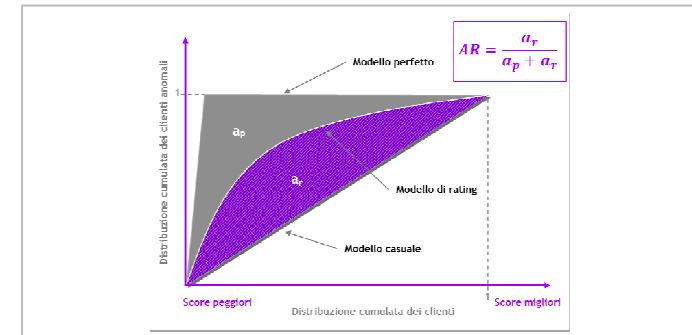
# MODEL VALIDATION (3 OF 5)

## DISCRIMINATORY POWER ANALYSIS



The discriminating power of a PD model expresses its ability of distinguishing, ex-ante, the defaulted counterparties from the performing ones, and can be evaluated by graphical and synthetic indicators...

### *Graphical and Synthetic Indicators*



### ACCURACY RATIO

- One of the measures of the discriminatory power is the **Accuracy Ratio (AR)** and the underlying area, the **ROC curve (AUROC)**
- Debtors are sorted in ascending order, according to the credit score
- Hypothesis: credit quality and credit score are directly proportional
- **AR Properties:**
  - Random Model: AR = 0
  - Perfect Forecast: AR = 1
  - Rating Model: AR between 0 and 1

		Observed Status	
		Default	Non - Default
Score	Estimated Default	- 1 - Correct Forecast (HR or Sensitivity)	- 3 - Wrong Forecast (FAR or Type-2 Error)
	Estimated Non Default	- 4 - Wrong Forecast (Type-1 Error)	- 2 - Correct Forecast (Specificity)

### MISCLASSIFICATION RATE

- The **Misclassification Rate (MR)** is equal to the sum of Type-1 and Type-2 Errors
- The **MR** takes percentage values from 0 (i.e. absence of errors of both types) and 100 (i.e. total absence of correctly classified subjects)

# MODEL VALIDATION (4 OF 5)

## CALIBRATION TEST – BINOMIAL TEST



In rating model calibration analysis, the binomial test is used to verify if the Probability of Default for a rating class is not consistent with the observed average rate

### Binomial Test

- The binomial test is based on the following assumption:
  - $H_0$  : the probability of default estimated for a rating class is correct
  - $H_1$  : the probability of default estimated for a rating class is under/overestimated
- The **one tailed** binomial test is defined as the existence of a difference on the relative frequency between two groups determining which of these two is the highest/lowest
- The **two tailed** binomial test is defined as the difference of the frequencies not considering which is the highest/lowest

**Binomial Test  $\alpha=5\%$**

		Upper Limit Test		Performance	
		Default Number $\leq b^{-1}(95\%)$		OK	
		Default Number $> b^{-1}(95\%)$		KO	
		Lower Limit Test		Performance	
		Default Number $\geq b^{-1}(5\%)$		OK	
		Default Number $< b^{-1}(5\%)$		KO	

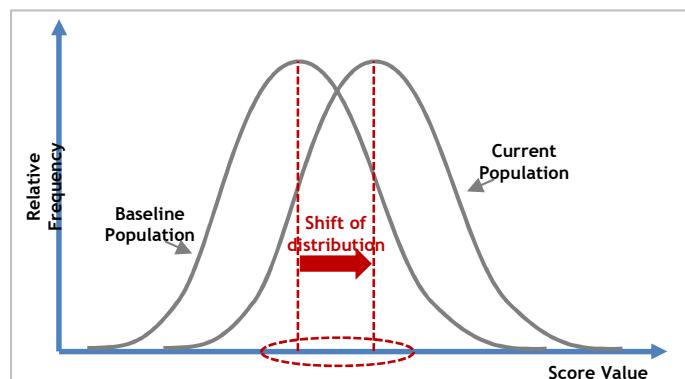
  

Rating Class	N° Counterparties	%	Default number	Default Rate	Class Average PD	Binomial Test $\alpha=1\%$			Binomial Test $\alpha=5\%$		
						Highest	Lowest	Two Tails	Highest	Lowest	Two Tails
1	4.244	7.49%	2	0.05%	0.07%	OK	OK	OK	OK	OK	OK
2	5.361	9.47%	6	0.11%	0.17%	OK	OK	OK	OK	OK	OK
3	6.111	10.79%	21	0.34%	0.36%	OK	OK	OK	OK	OK	OK
4	6.933	12.24%	51	0.74%	0.71%	OK	OK	OK	OK	OK	OK
5	6.330	11.18%	71	1.12%	1.25%	OK	OK	OK	OK	OK	OK
6	5.997	10.59%	125	2.08%	2.05%	OK	OK	OK	OK	OK	OK
7	5.768	10.19%	175	3.03%	3.36%	OK	OK	OK	OK	OK	OK
8	5.196	9.18%	267	5.14%	5.59%	OK	OK	OK	OK	OK	OK
9	4.151	7.33%	407	9.80%	9.28%	OK	OK	OK	OK	OK	OK
10	3.508	6.19%	601	17.13%	16.09%	OK	OK	OK	KO	OK	KO
11	2.945	5.20%	1.065	36.16%	38.23%	OK	OK	OK	OK	KO	KO

# MODEL VALIDATION (5 OF 5) STABILITY ANALYSIS



The discriminatory power of a PD model expresses its capability to discriminate, ex-ante, not-defaulted counterparties from the defaulted ones and can be evaluated through graphical and synthetics indicators



## POPULATION STABILITY INDEX (PSI)

- The Population Stability Index (PSI) compares the **observed population distribution** among the **different model rating classes** in two different instants
- The model is considered stable whether it preserves his discriminatory power through time
- Particularly, the PSI measures the potential distribution shift on the two instants
- If the shift is substantial, the indicator is recalculated on singles variables

Fitch Global Corporate Finance One-Year Transition Rates — 2010 (%)									
	AAA	AA	A	BBB	BB	B	CCC to C	D	Total
AAA	93.33	6.67	0.00	0.00	0.00	0.00	0.00	0.00	100.00
AA	0.00	90.00	10.00	0.00	0.00	0.00	0.00	0.00	100.00
A	0.00	0.70	93.73	5.29	0.28	0.00	0.00	0.00	100.00
BBB	0.00	0.00	1.41	96.71	1.88	0.00	0.00	0.00	100.00
BB	0.00	0.00	0.00	7.74	88.10	3.87	0.30	0.00	100.00
B	0.00	0.00	0.00	0.00	7.67	88.18	3.83	0.32	100.00
CCC to C	0.00	0.00	0.00	0.00	18.18	31.82	27.27	22.73	100.00

Source: Fitch.

## TRANSITION MATRIX

- The **Transition matrix** indicates the likelihood that a counterparty of a certain rating class, will move to a different one:
  - ✓ **Persistency Rate:** fraction of counterparties where the rating class does not change
  - ✓ **Migration Rate:** fraction of counterparties that moves to a different rating class



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
*stefano.bonini1@unimi.it*



UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Innovative Payments*

*Stefano Bonini, PhD*

*29 January 2021*



# Agenda



- The Digital Payments
- The New Digital Payment framework
- The innovation trends in the payment industry

# Digital Payment methods: payment card

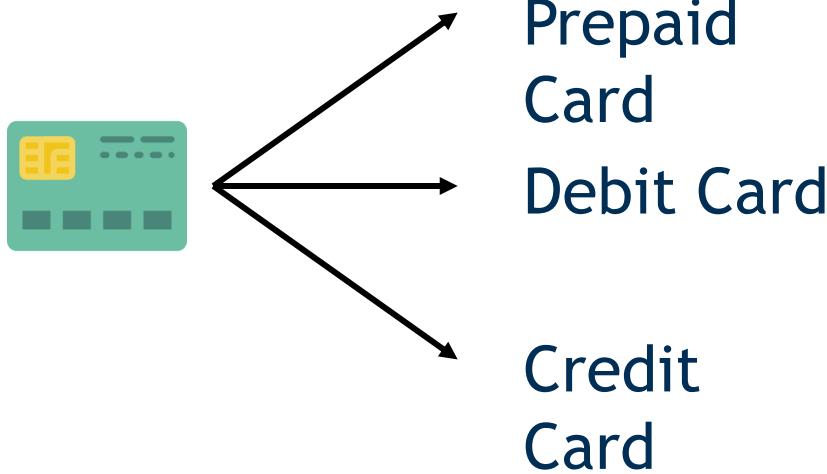
---



Payment Cards allow payments to be made at merchants equipped with POS (Point-of-Sale) terminals, payments at ATM terminals, payments on eCommerce sites (through virtual POS).

They can be issued by authorized parties such as Banks, Financial Intermediaries, Payment Institutions, Electronic Money Institutes.

# Digital Payment methods: types of payment card

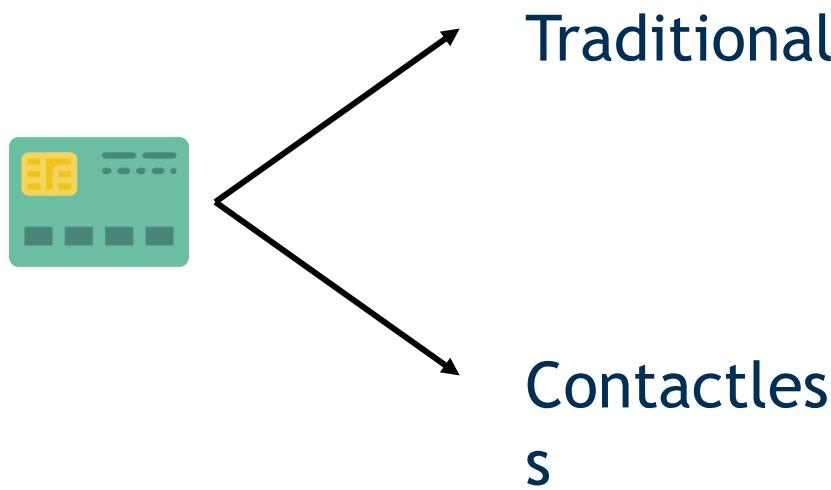


Top-up before expenditure; money in prepaid card are called e-money

The expense is immediately charged to the related bank account

The expenses are charged at the end of the month

# Digital Payment methods: payment card technologies

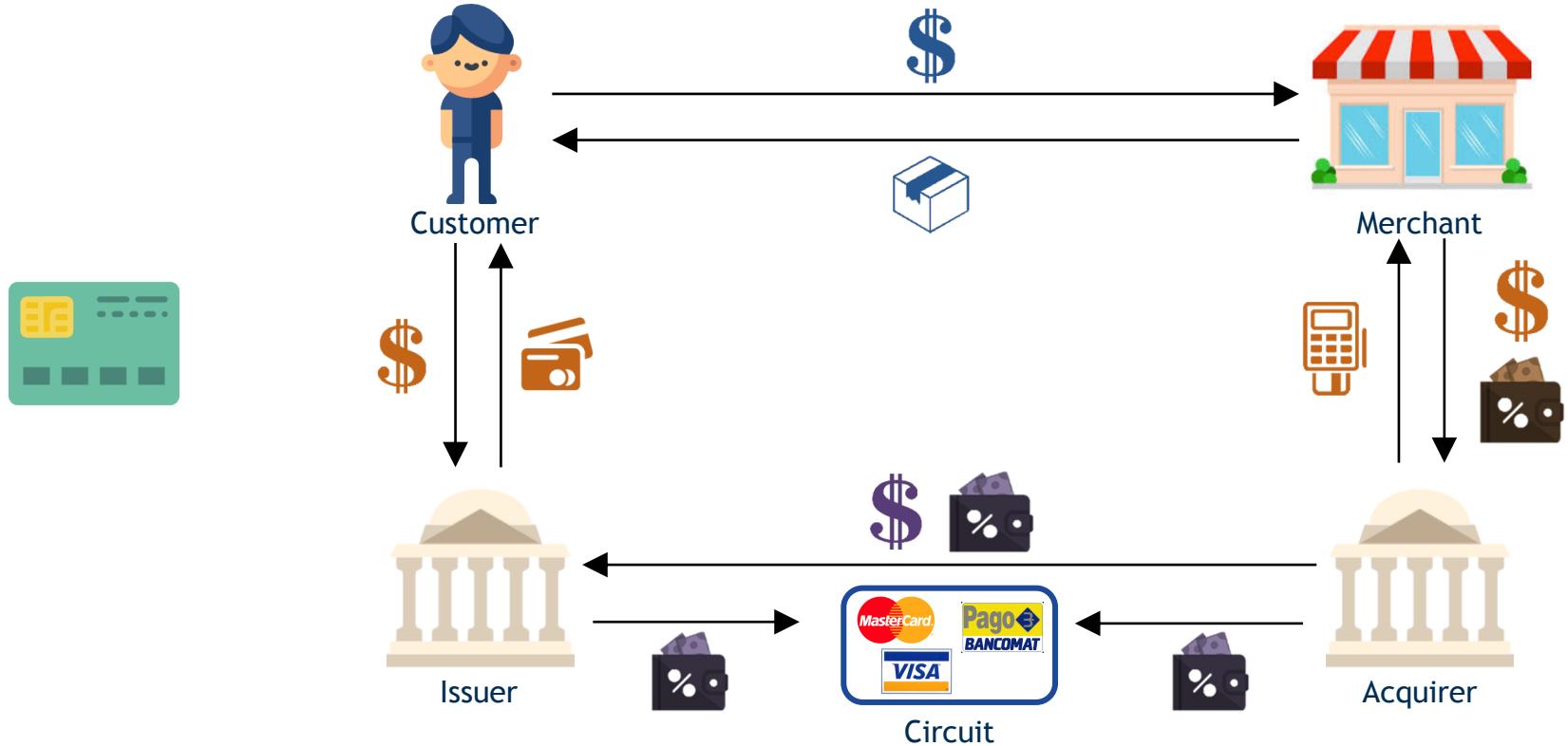


It uses technologies based on magnetic stripe or on chip

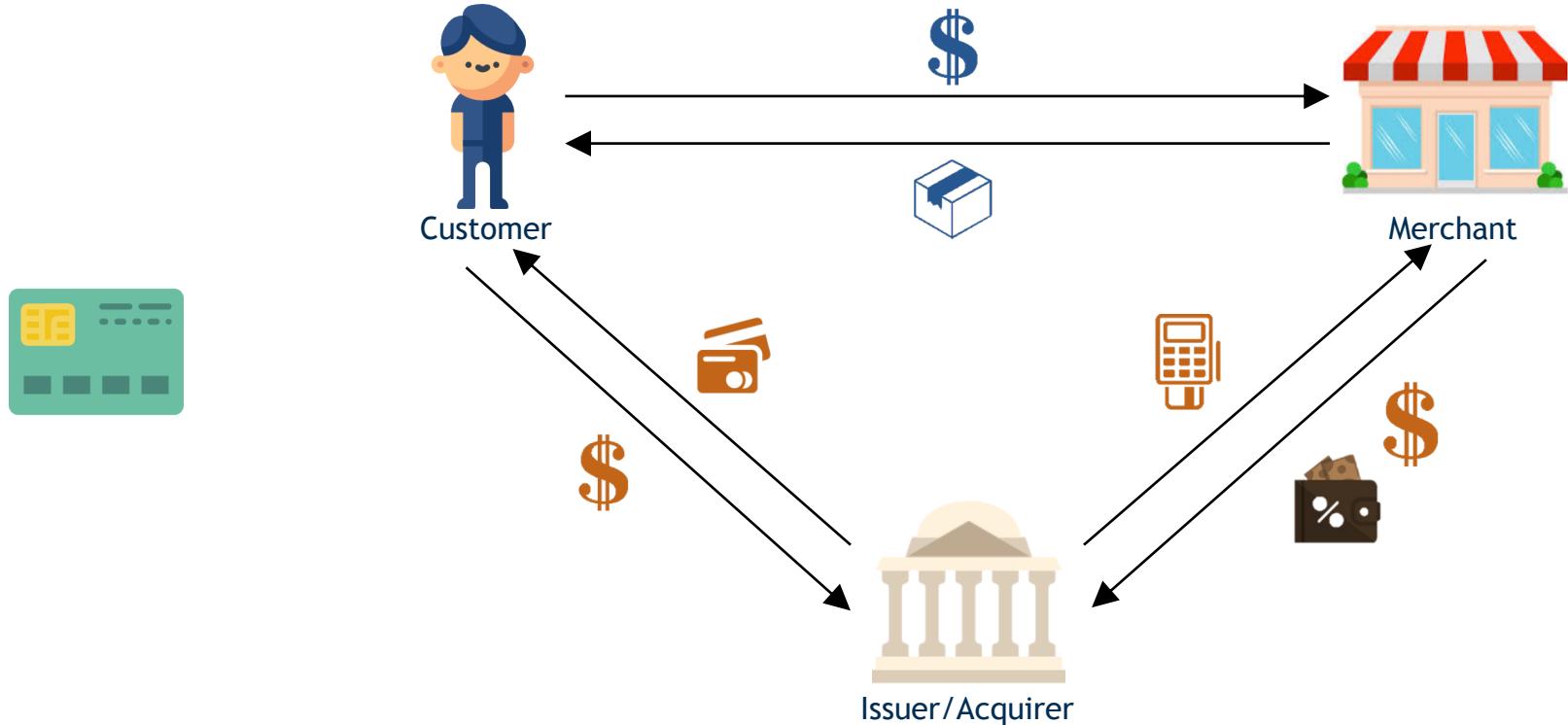
It can be used to pay by holding the card near the contactless-enabled POS terminal; under 25€ there's no need to digit the PIN of the card



# Digital Payment methods: 4 party scheme



# Digital Payment methods: 3 party scheme

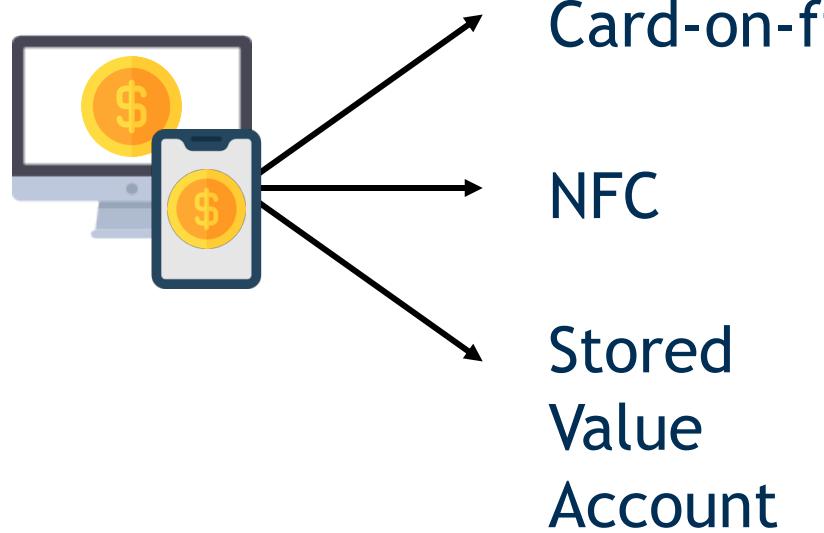


# Digital Payment methods: electronic wallets



Online/Mobile Wallets can store different payment methods (cards, bank accounts) and money (e-money). They can be used to pay both offline and online.

# Digital Payment methods: types of electronic wallets

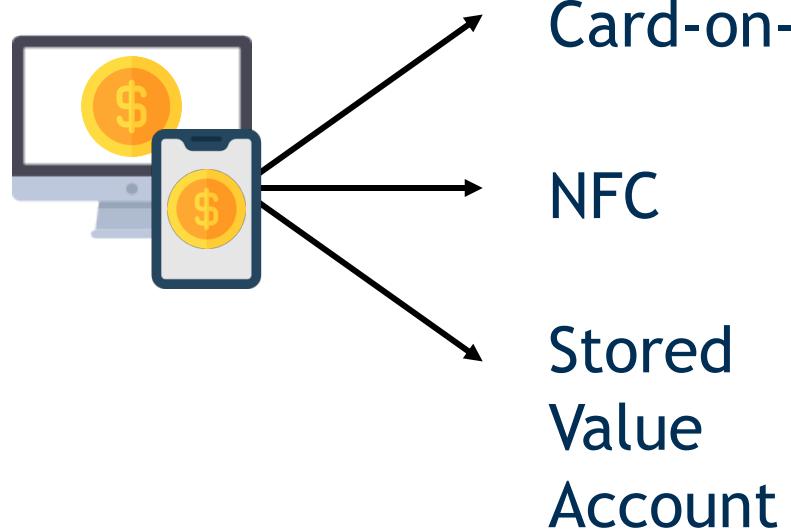


Cards data are stored by the wallet provider, in order to reuse it easily

Wallets that emulate the card and offer the possibility to pay contactless without the card

Wallets store e-money that can be topped-up through bank account or card

# Digital Payment methods: types of electronic wallets



Card-on-file

NFC

Stored  
Value  
Account

amazon

enjoy





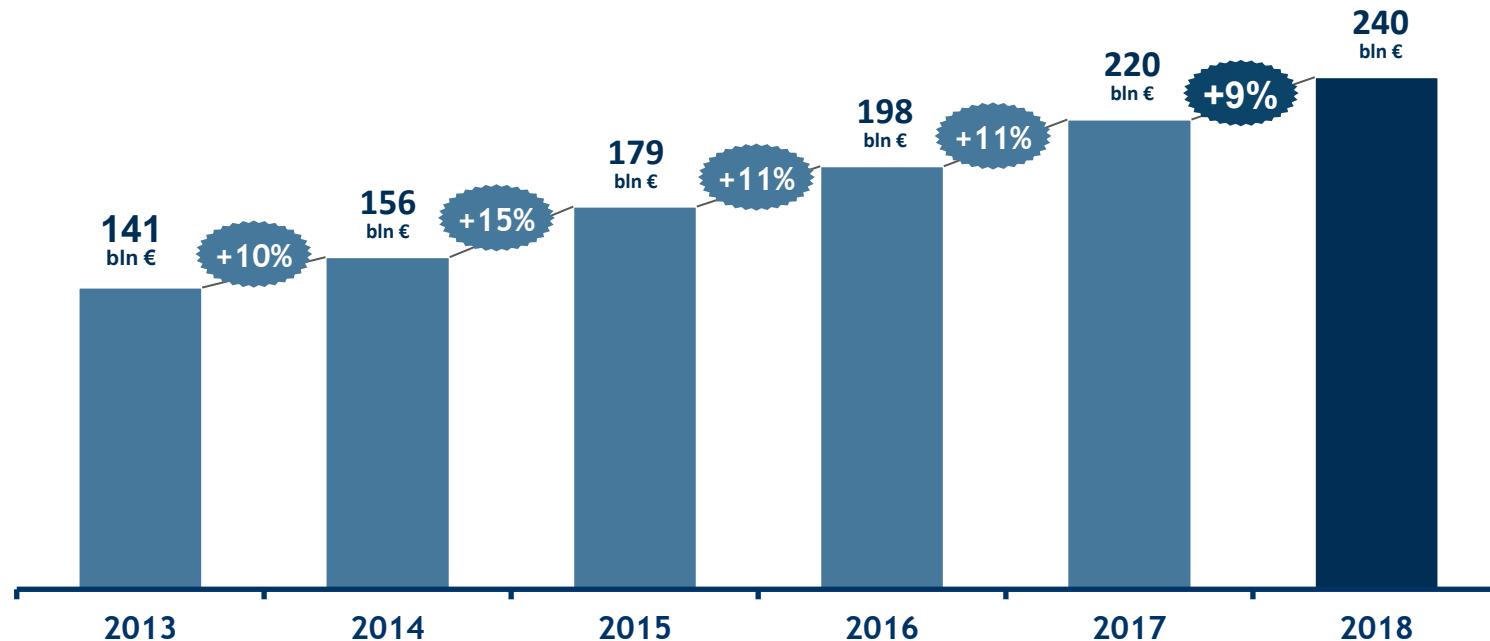
# Agenda

- The Digital Payments
- The New Digital Payment framework
- The innovation trends in the payment industry

# Digital Payments in Italy



Total volume of Digital Payments (2013-2018)

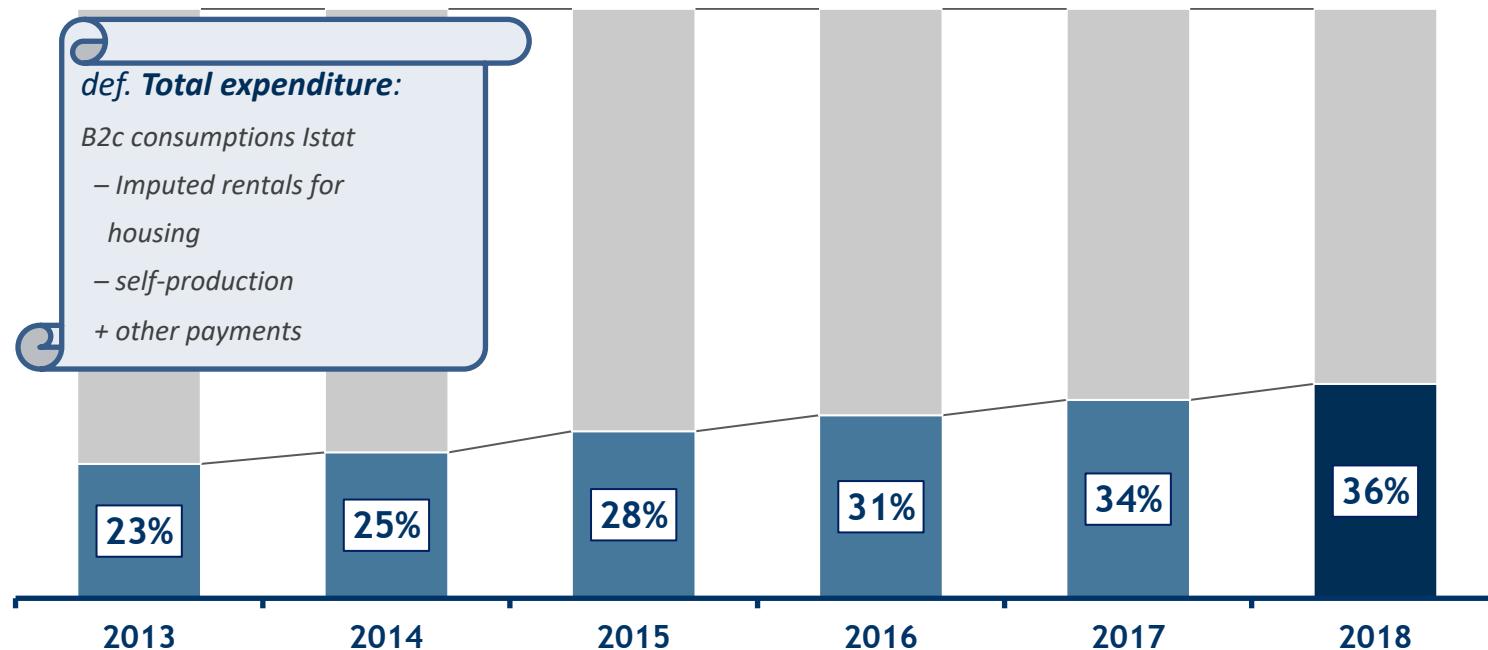


Source: Osservatorio processing

# Digital Payments in Italy



Penetration of the card payments on the total expenditure of the Italian households (2013-2018)

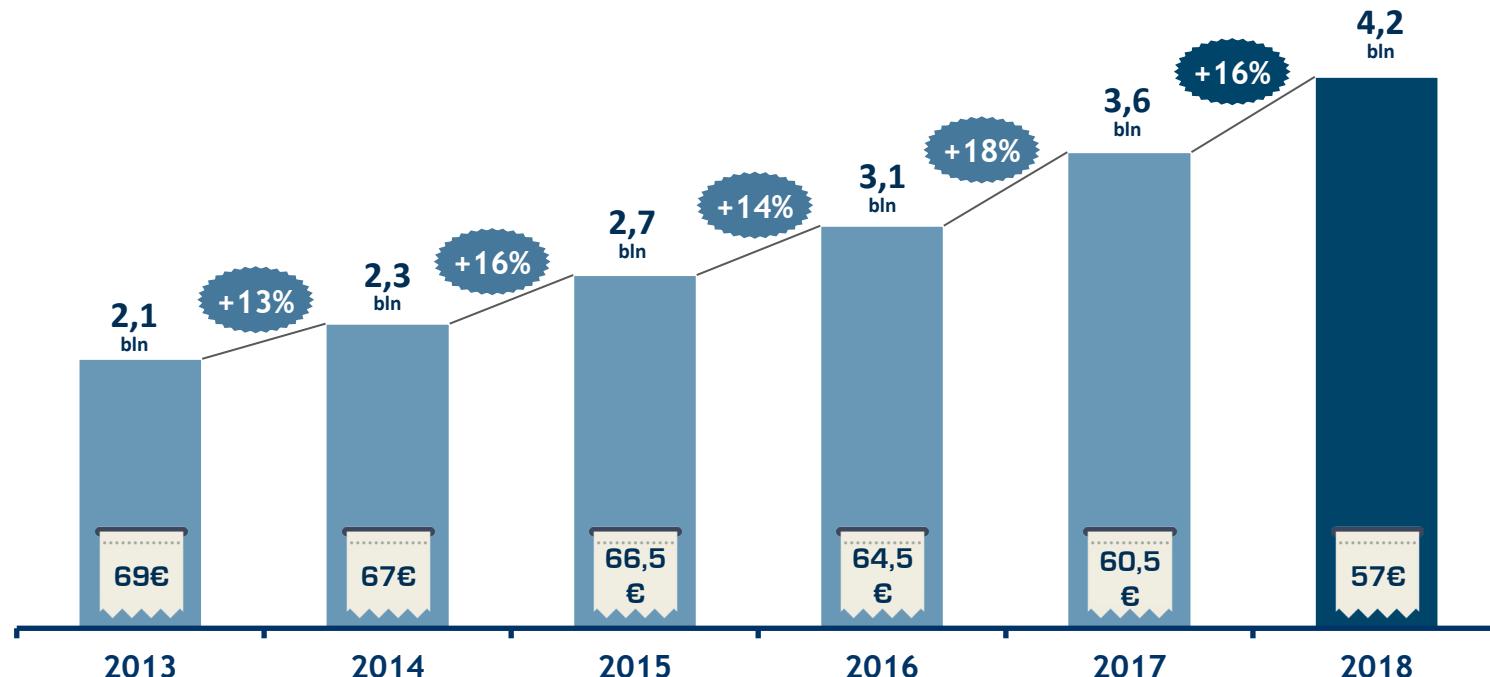


Source: Osservatorio processing on Istat data

# Digital Payments in Italy

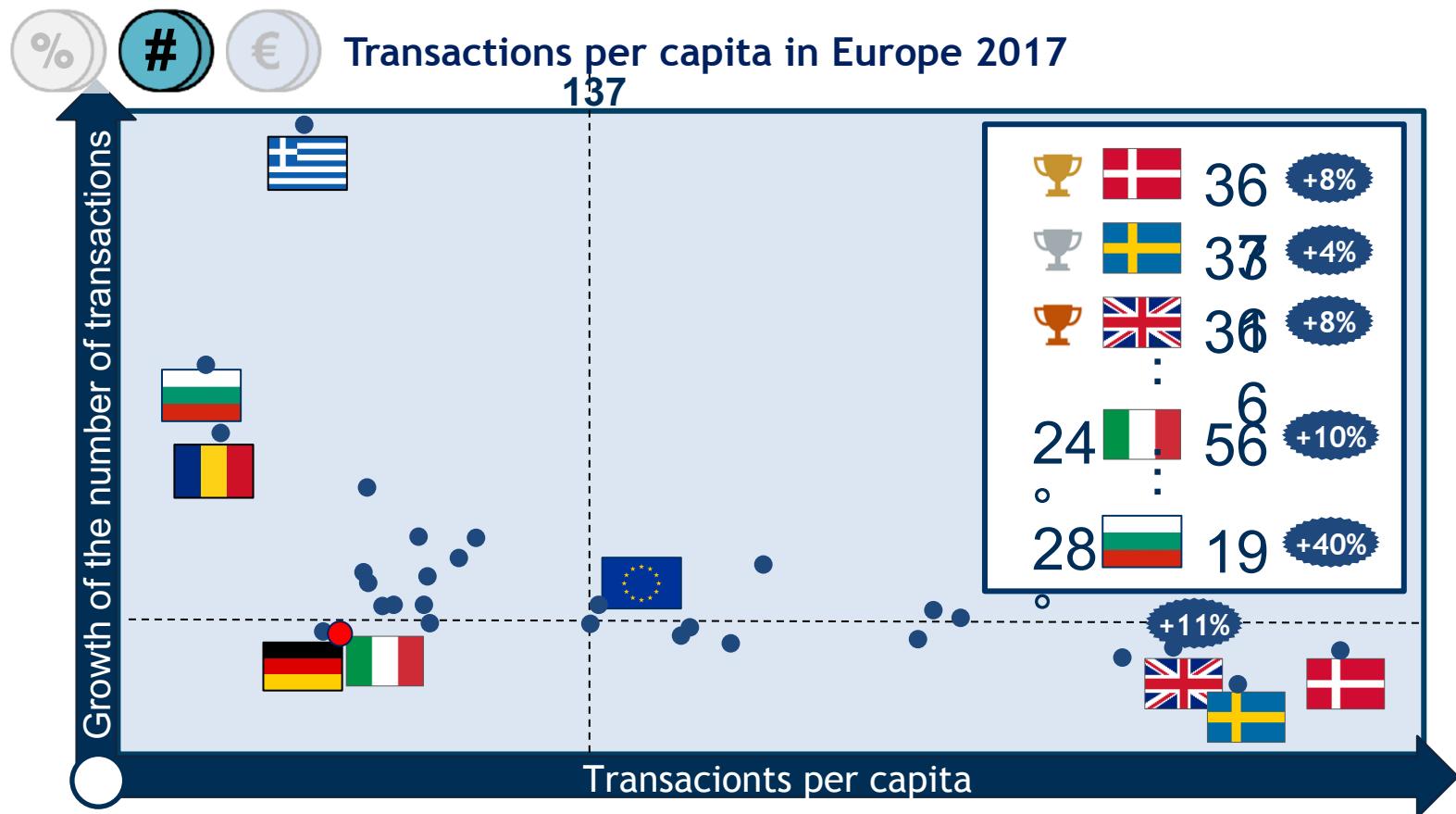


## Digital Payments transactions (2013-2018)

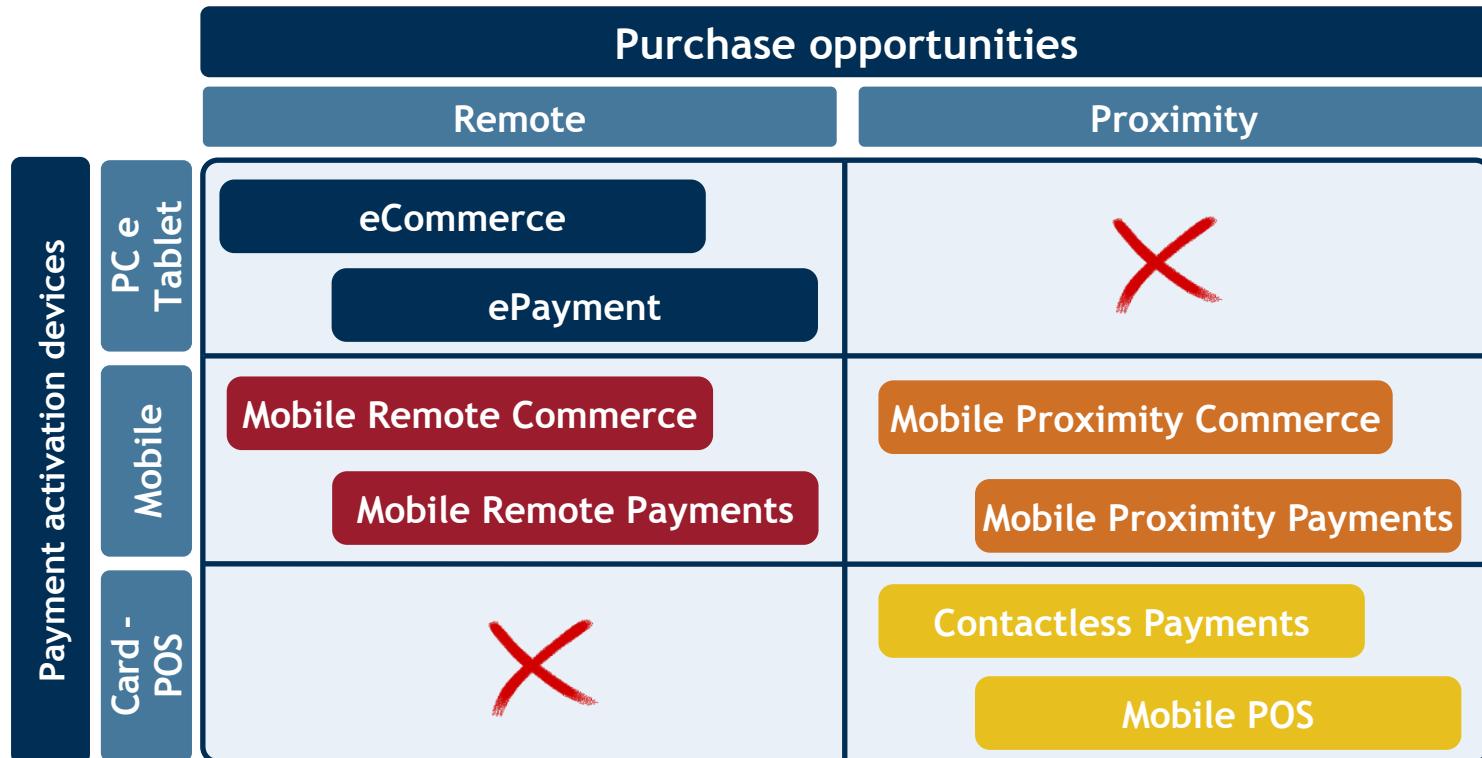


Source: Osservatorio processing

# Digital Payments in Italy



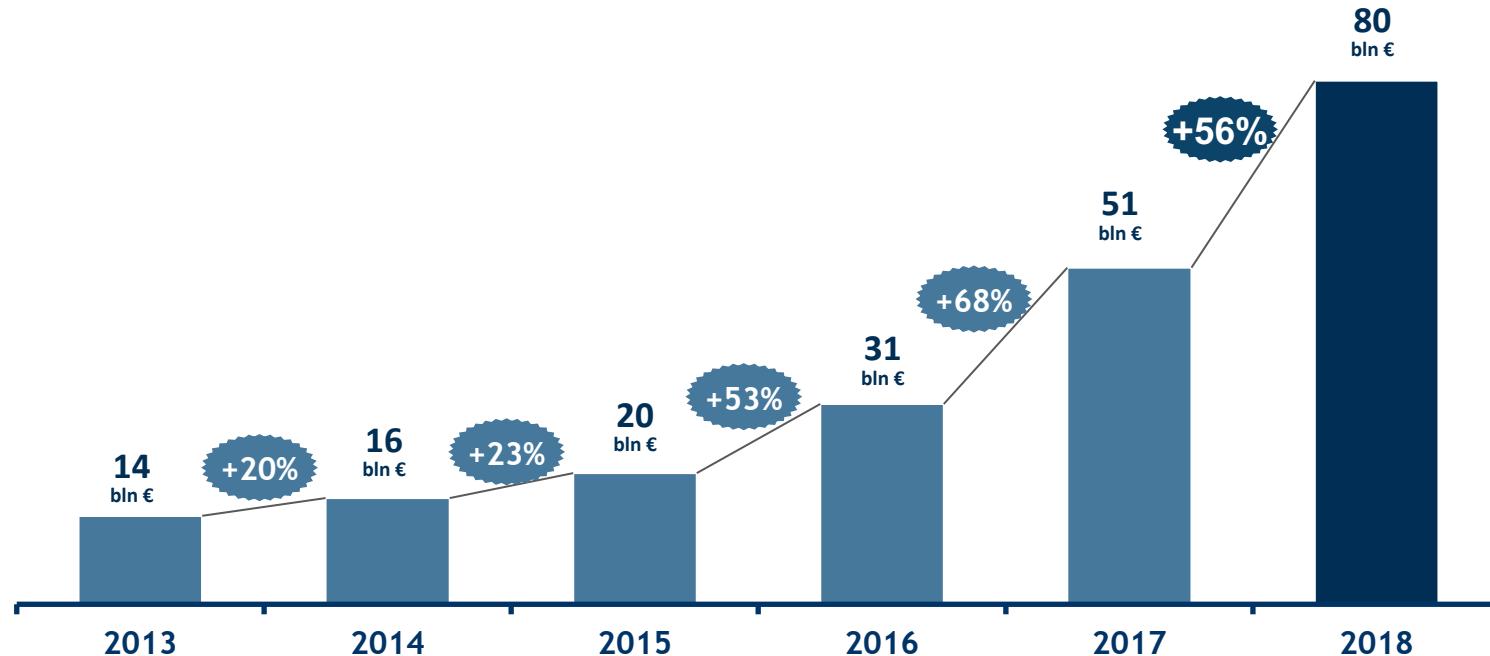
# New Digital Payments



# New Digital Payments



Total volume of New Digital Payments (2013-2018)

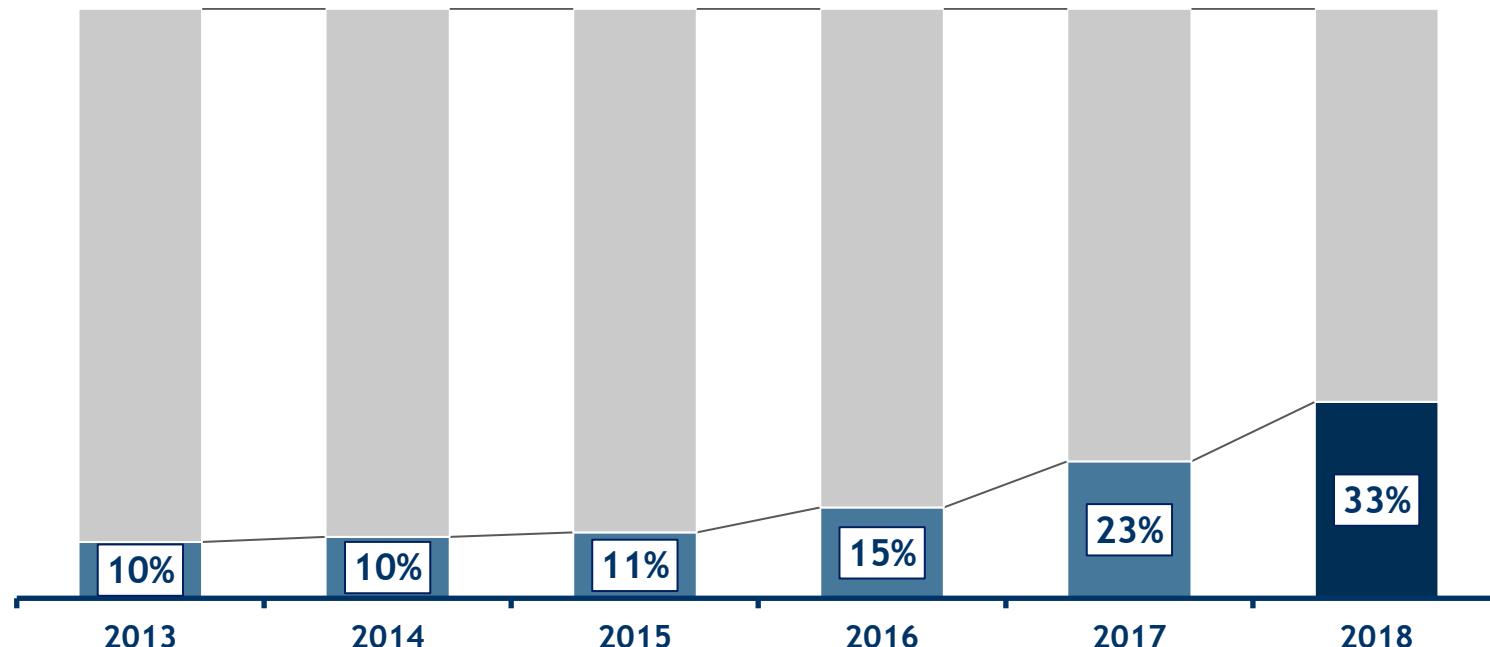


Source: Osservatorio processing

# New Digital Payments



New Digital Payments penetration on the total of Digital Payments (2013-2018)

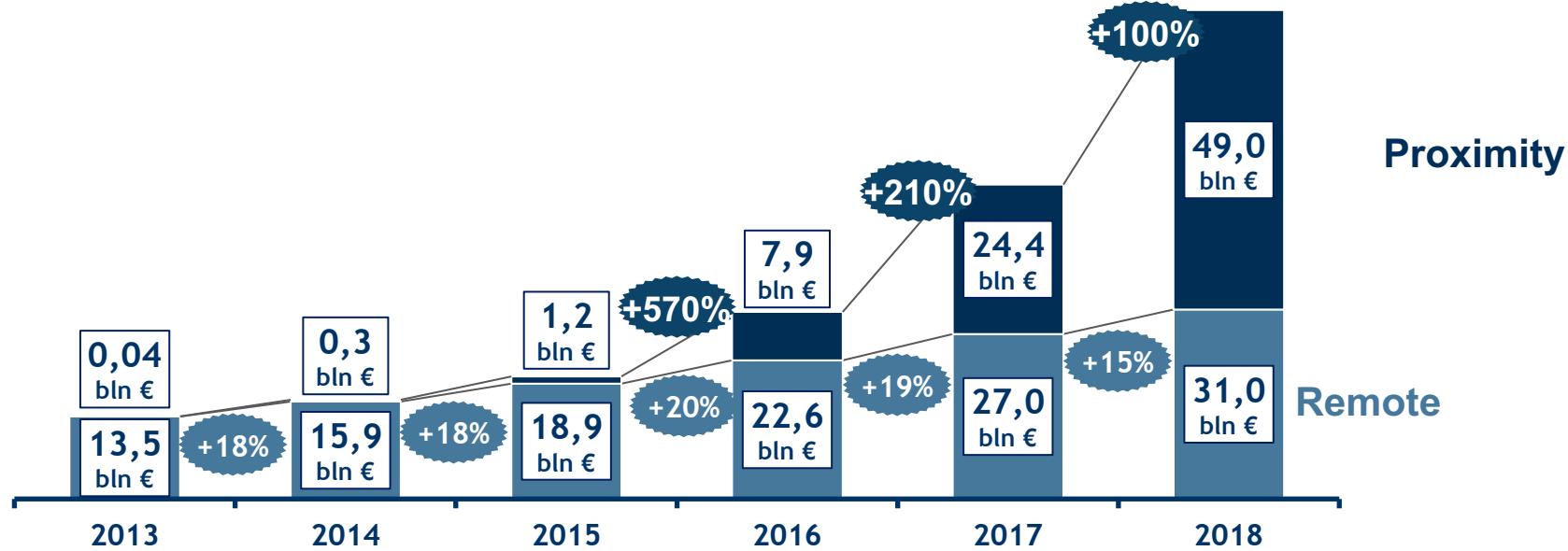


Source: Osservatorio processing

# New Digital Payments: Remote vs Proximity

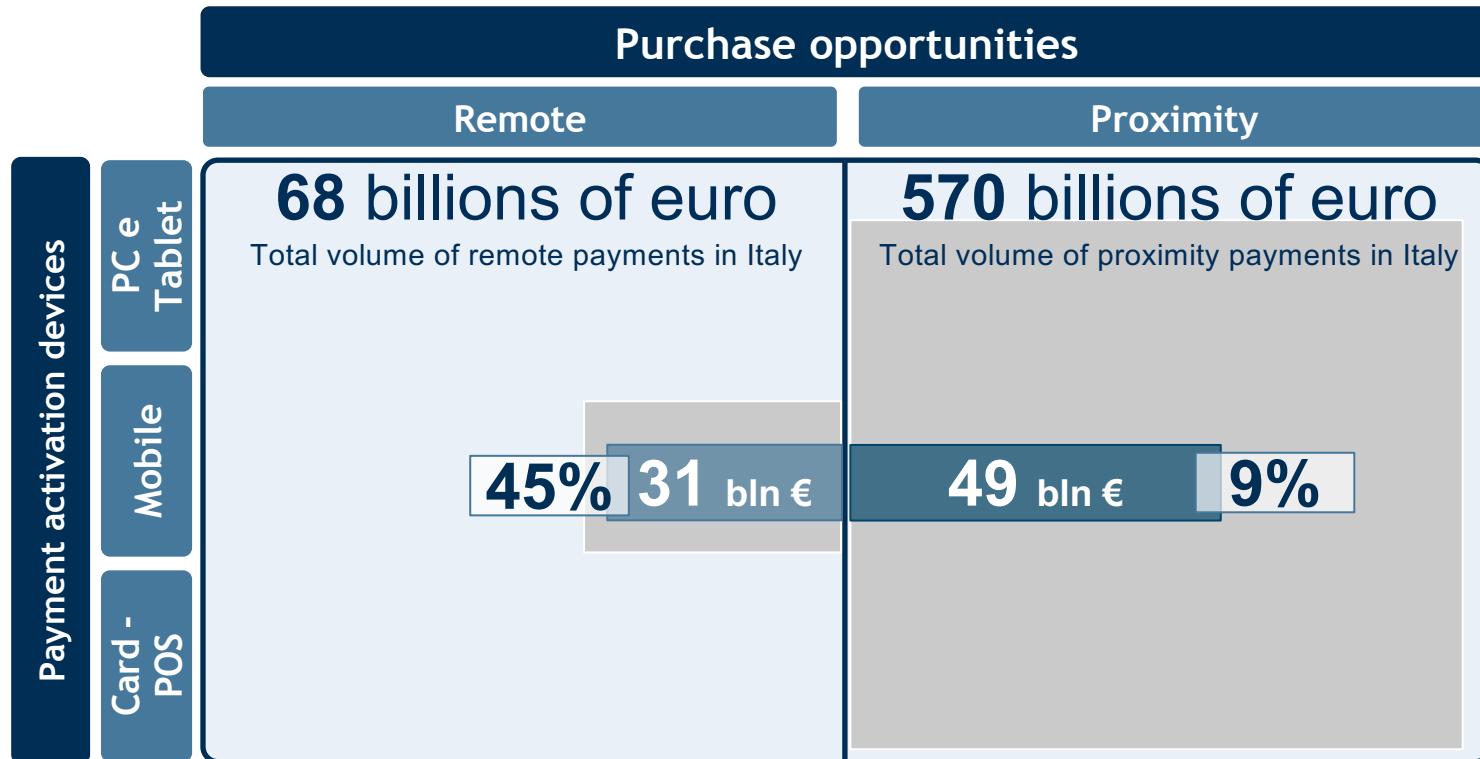


## Total volume of New Digital Payments: Remote vs Proximity (2013-2018)



Source: Osservatorio processing

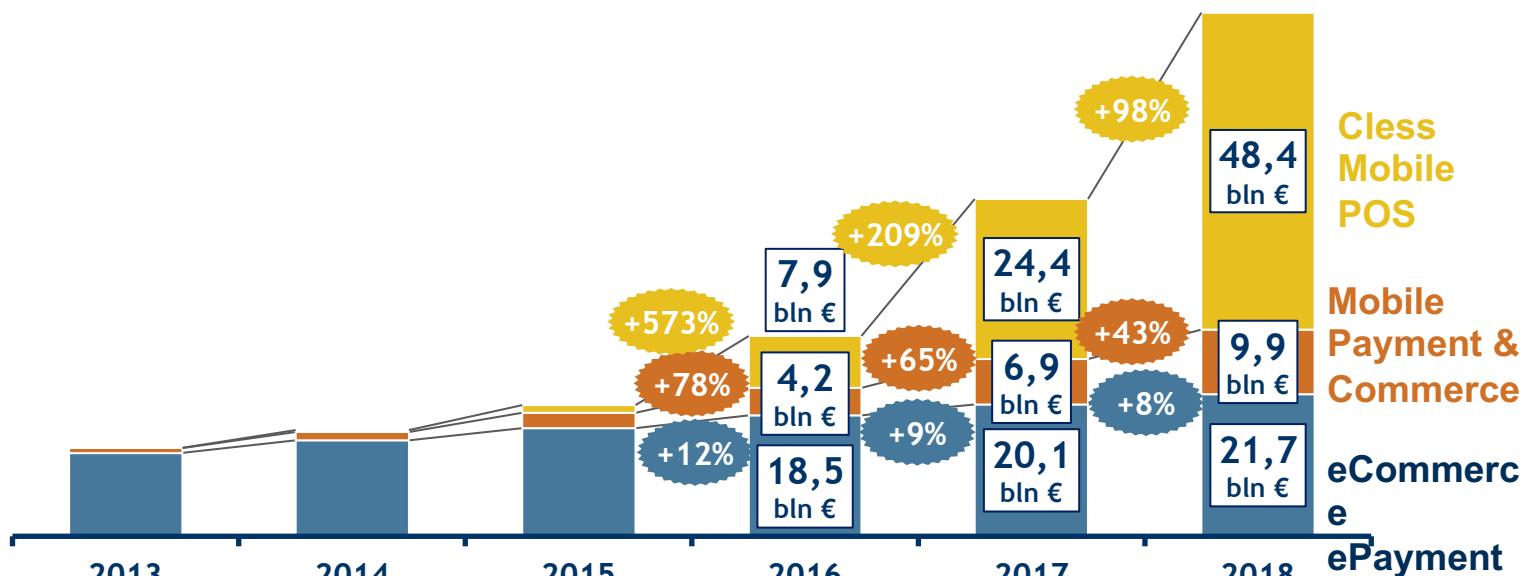
# New Digital Payments

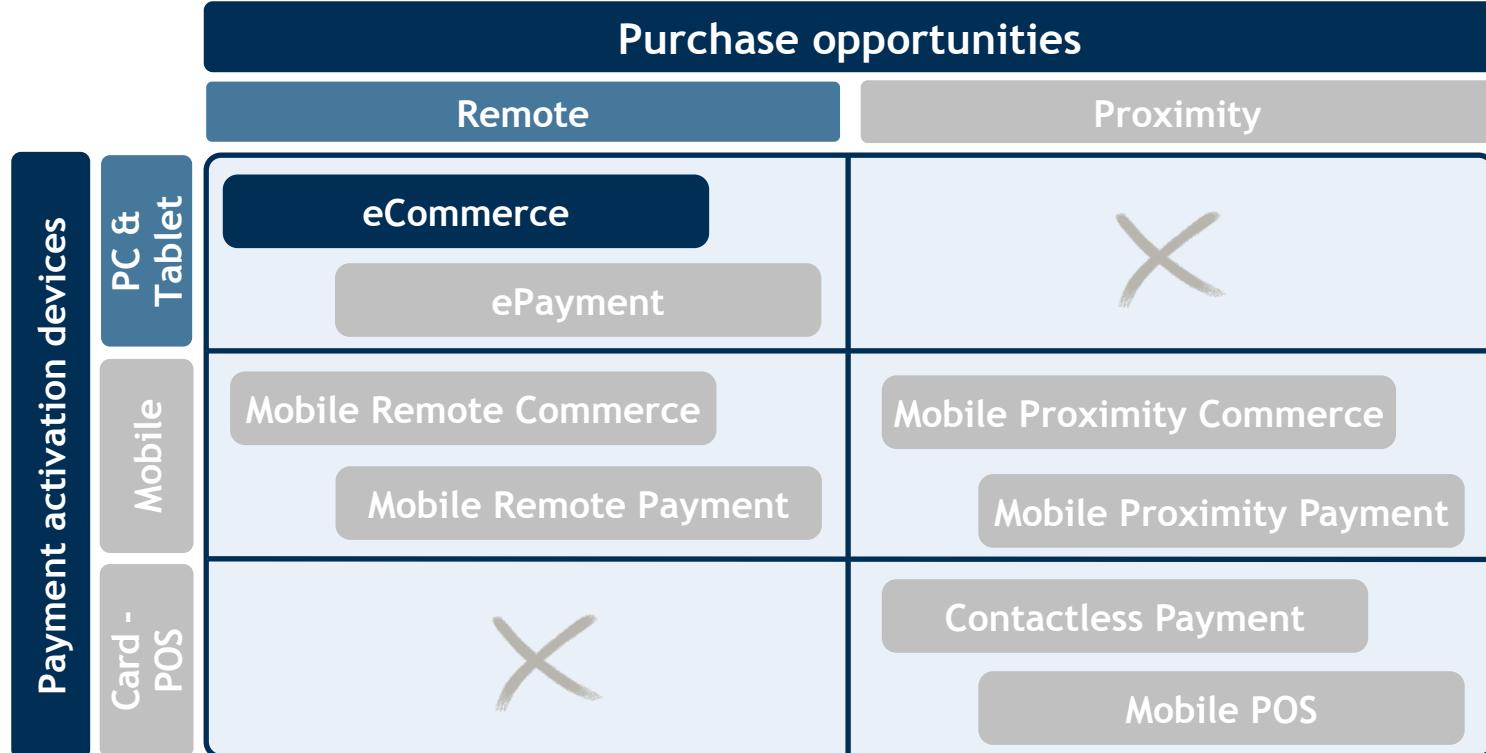


# New Digital Payments



Total volume of New Digital Payment:  
PC, Mobile, Card-POS  
(2013-2018)







includes online purchases (via PC or Tablet) of products and services, in which the payment is concluded with a payment card or an electronic wallet

# eCommerce



## Secure Payment Info

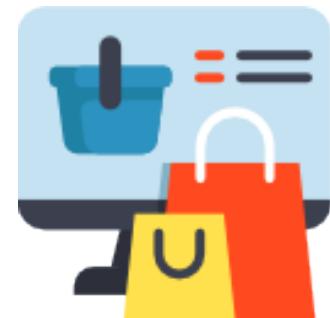
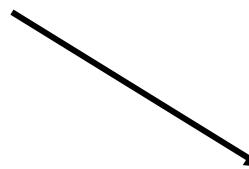


Name (as it appears on your card)

Card number (no dashes or spaces)

Expiration date  
 01 – January  2013

Security code (3 on back, Amex: 4 on front)



WorldPay  
55 Mansell Street  
E1 8AN London

**1.00 €** ^

Sofort Transaction ID  
17286-130419-5AB4D0D3-A4E4 [\(?\)](#)

Reference  
SN12345 000772SFT025096450  
WPMEU651SC76 23.03.2018



17286-130419-5AB4D0D3-A4E4

Deutsche Bank

Your bank (or login method)  
mobileTan / photoTAN / iTan - Login

Branch (three-digit)  
**414**

Account (seven-digit)  
**0123456**

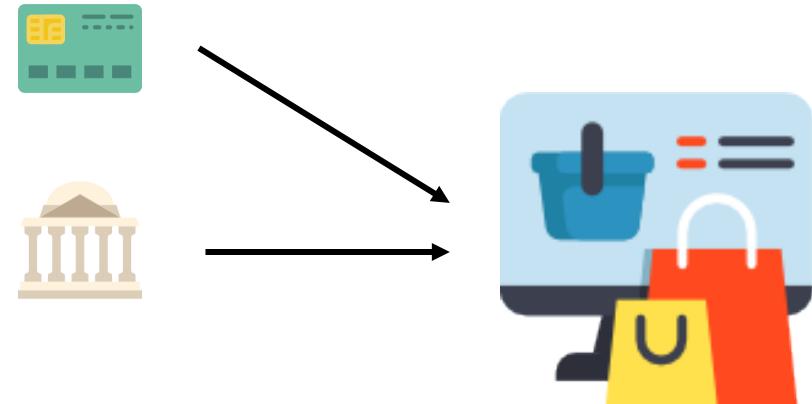
Sub-account (two-digit)  
**00**

PIN (five-digit)  
**\*\*\*\*\***

After entering your login details, we check whether your account covers the amount to be transferred (verification of sufficient funds) and whether any transactions with Sofort you issued from your account in the last 30 days, if applicable, were successful.

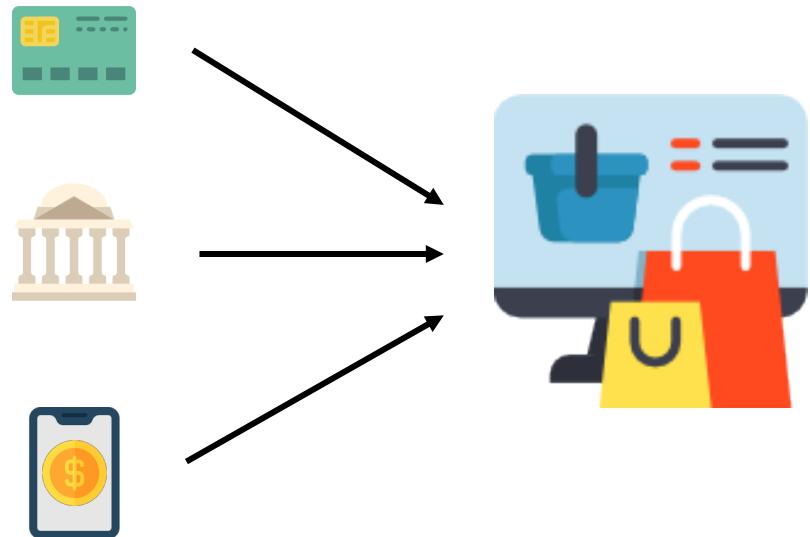
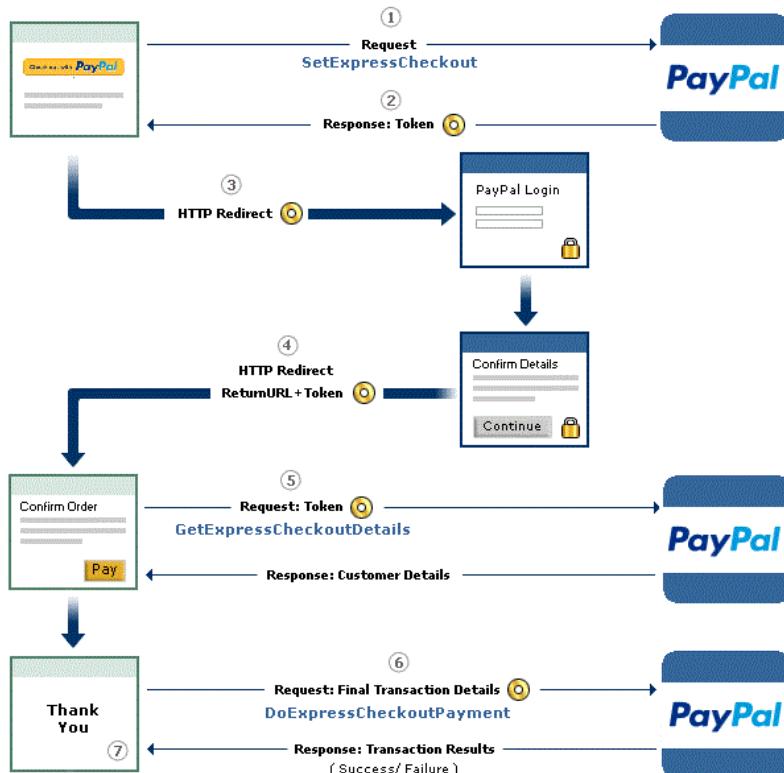
Our [Privacy policy](#) applies

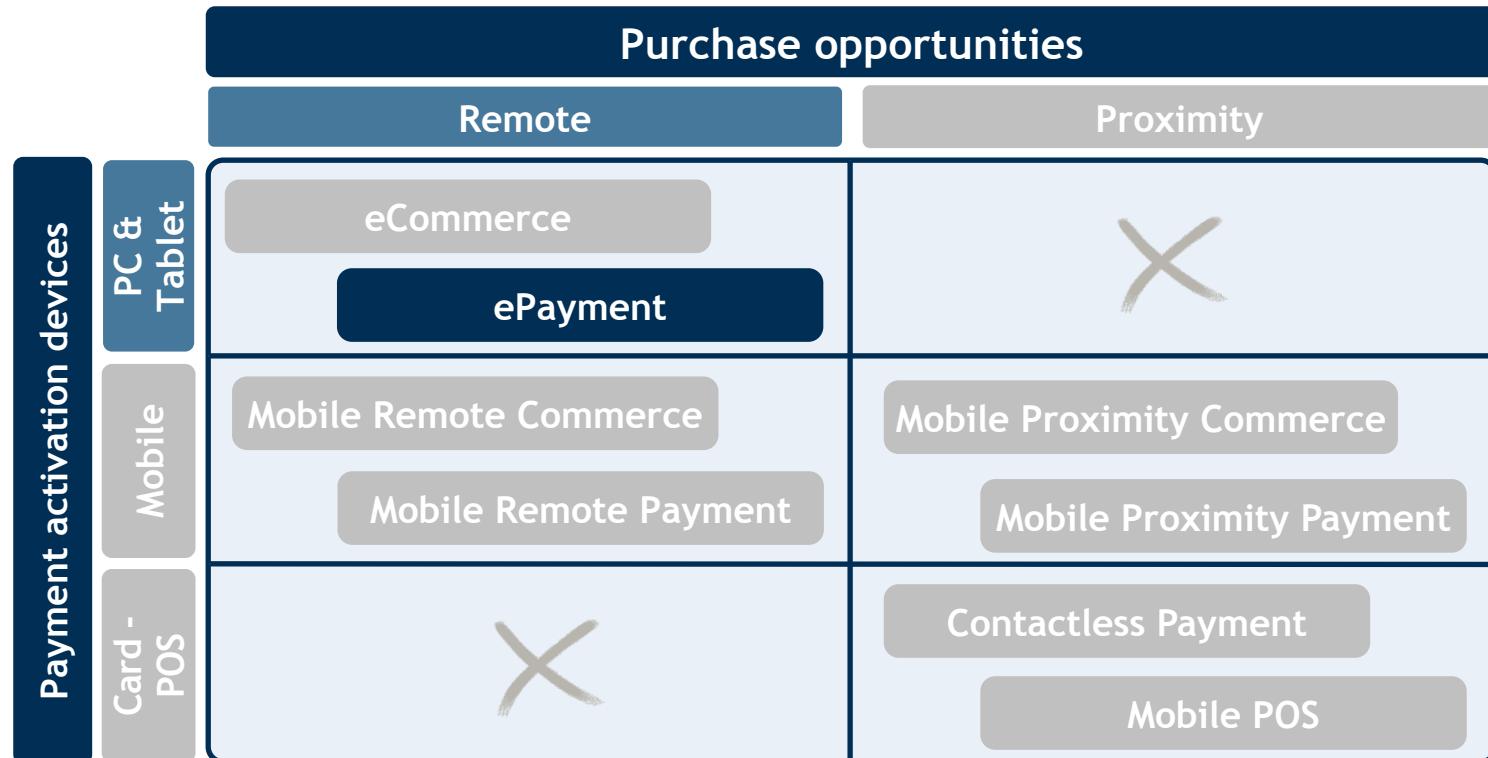
**Next**

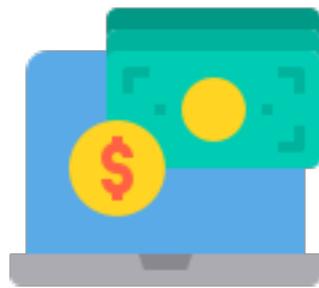


# eCommerce

Legend: ➔ Web Flow ➔ API Call ⚡ Token

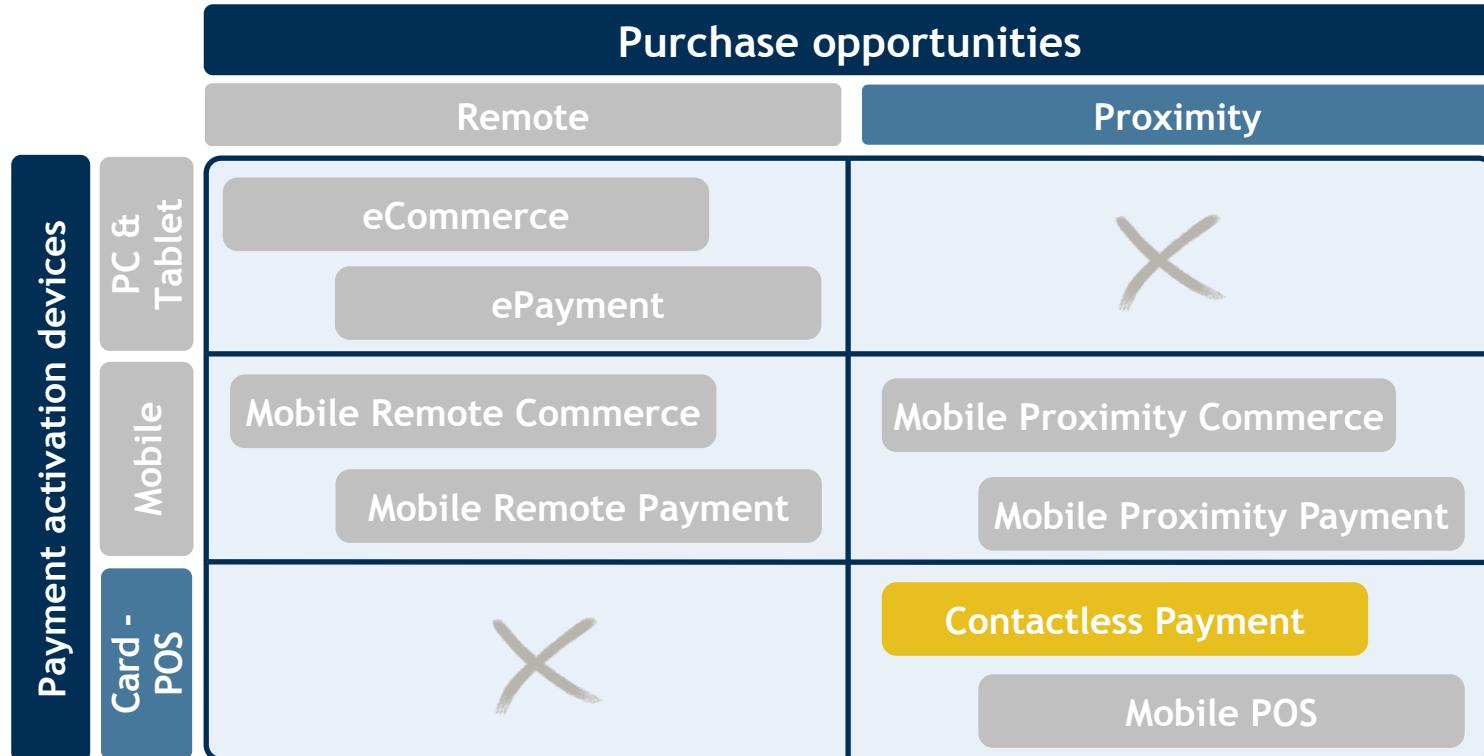




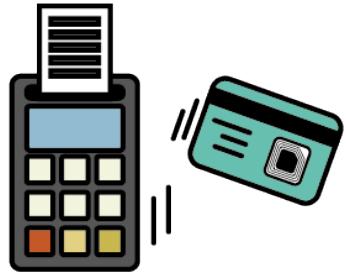


includes **top-up payments**  
(subscriptions, telephone credit, online  
games, etc.), **bills, taxes and fines**  
through **online systems** (via PC or Tablet)  
with **payment cards** or an **electronic wallet**

# Contactless Payment

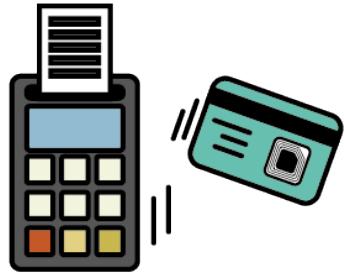


# Contactless Payment



includes payments made with cards  
(debit, credit or prepaid) equipped with  
RFId tags in contactless mode.

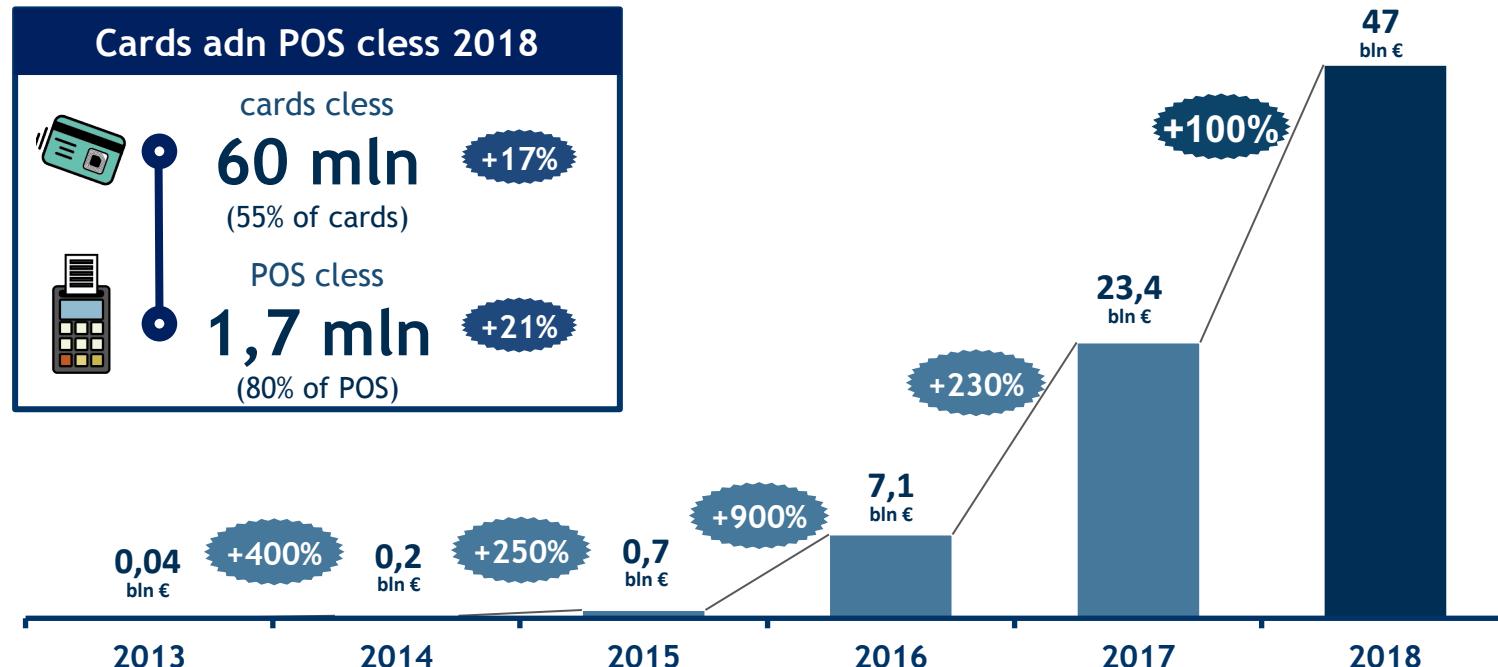
# Contactless Payment



# Contactless

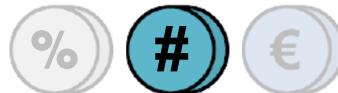


## Total volume of contactless payments (2013-2018)

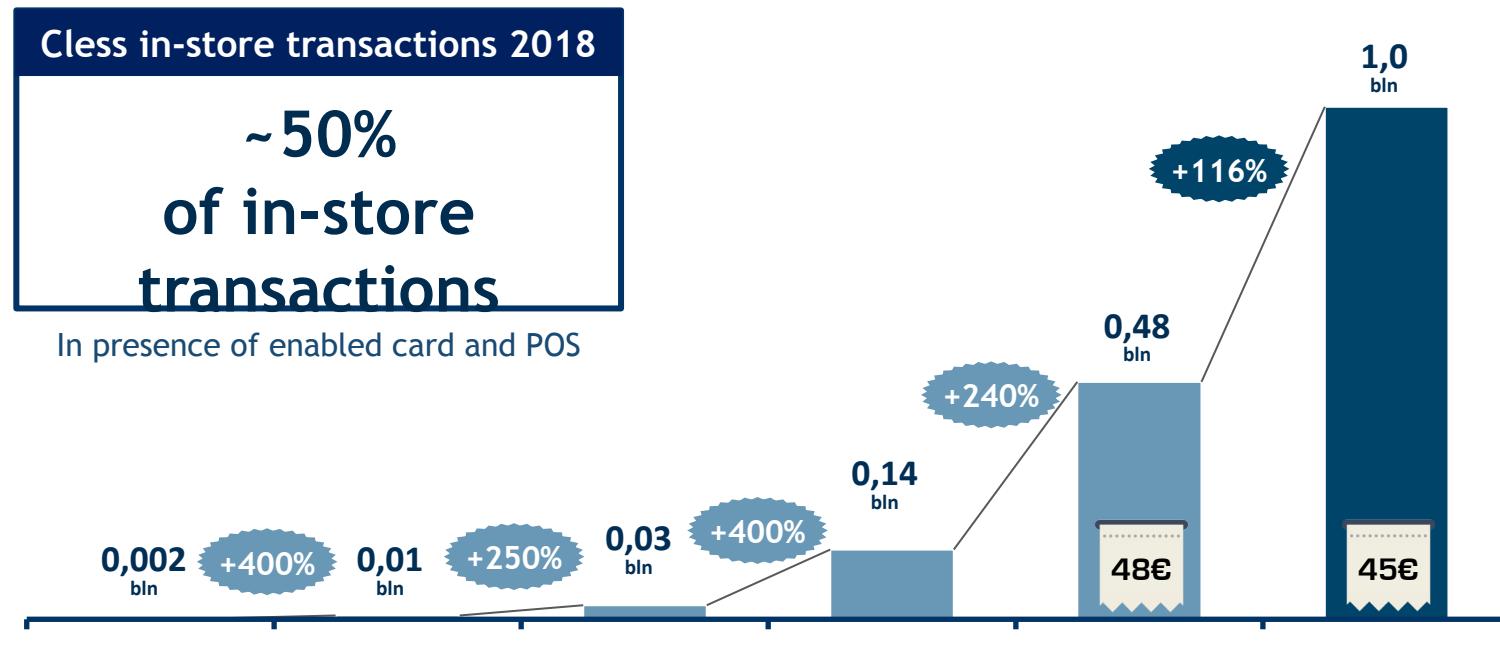


Source: Osservatorio processing

# Contactless



## Contactless transactions (2013-2018)

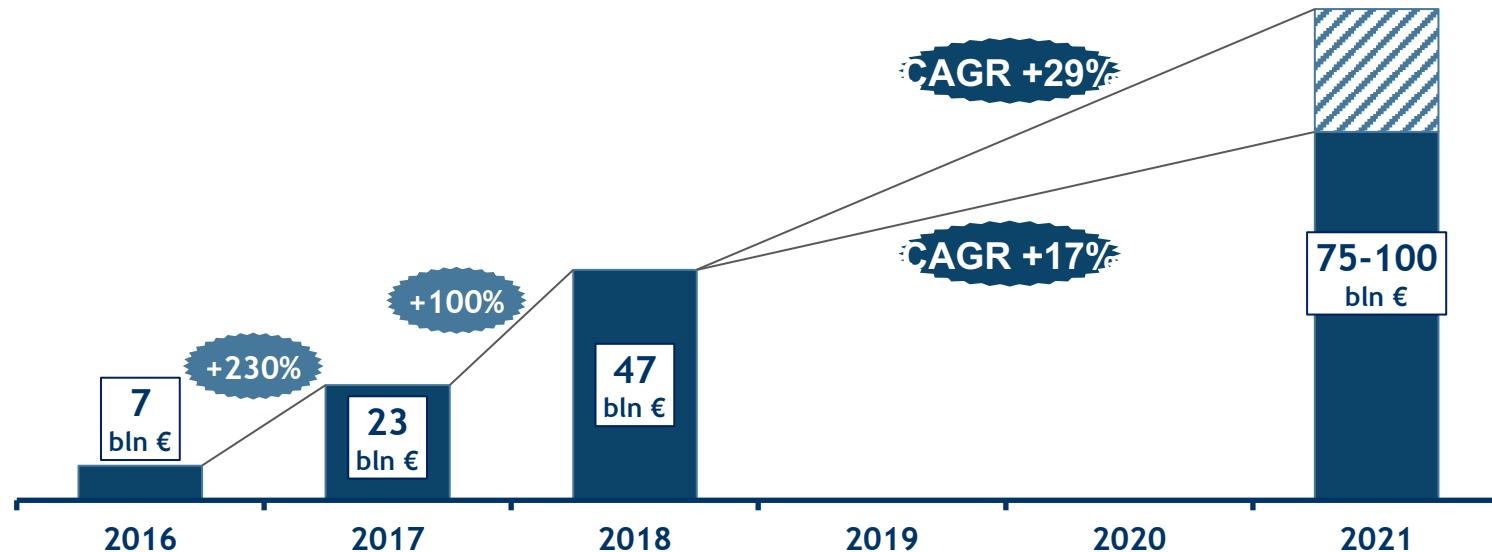


Source: Osservatorio processing

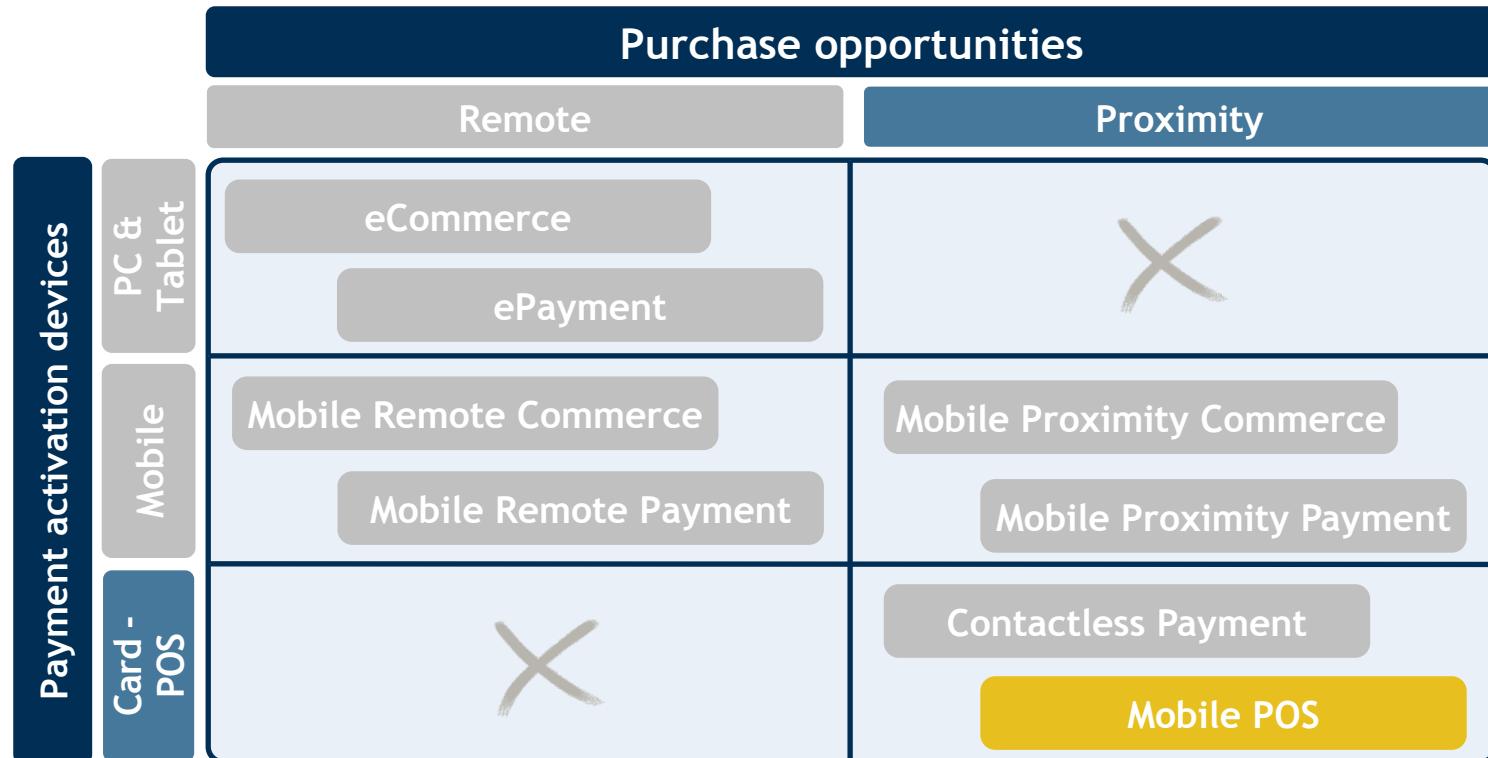
# Contactless



## Contactless payments growth estimate (2016-2021)



Source: Osservatorio processing



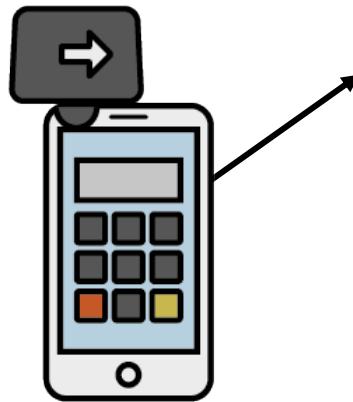
# Mobile POS

---



include payments made to hardware and software solutions that transform the mobile phone in a tool to accept card payments.

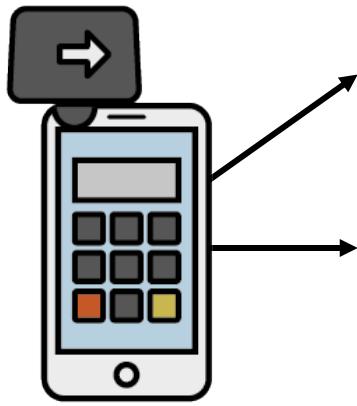
# Mobile POS



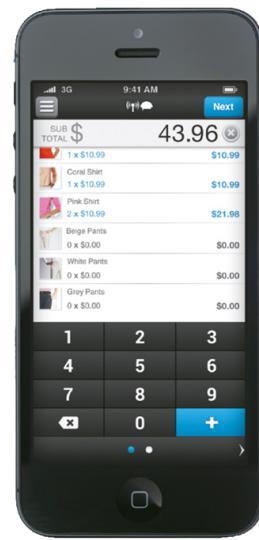
Aux Plug-i



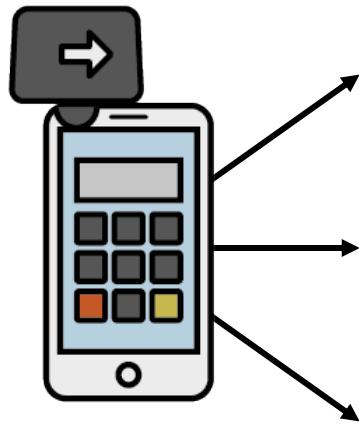
# Mobile POS



Aux Plug-in  
Bluetooth



# Mobile POS



Aux Plug-in

Bluetooth

Android  
NFC  
Smartphon  
e



# Mobile POS



## Total volume on Mobile POS (2013-2018)

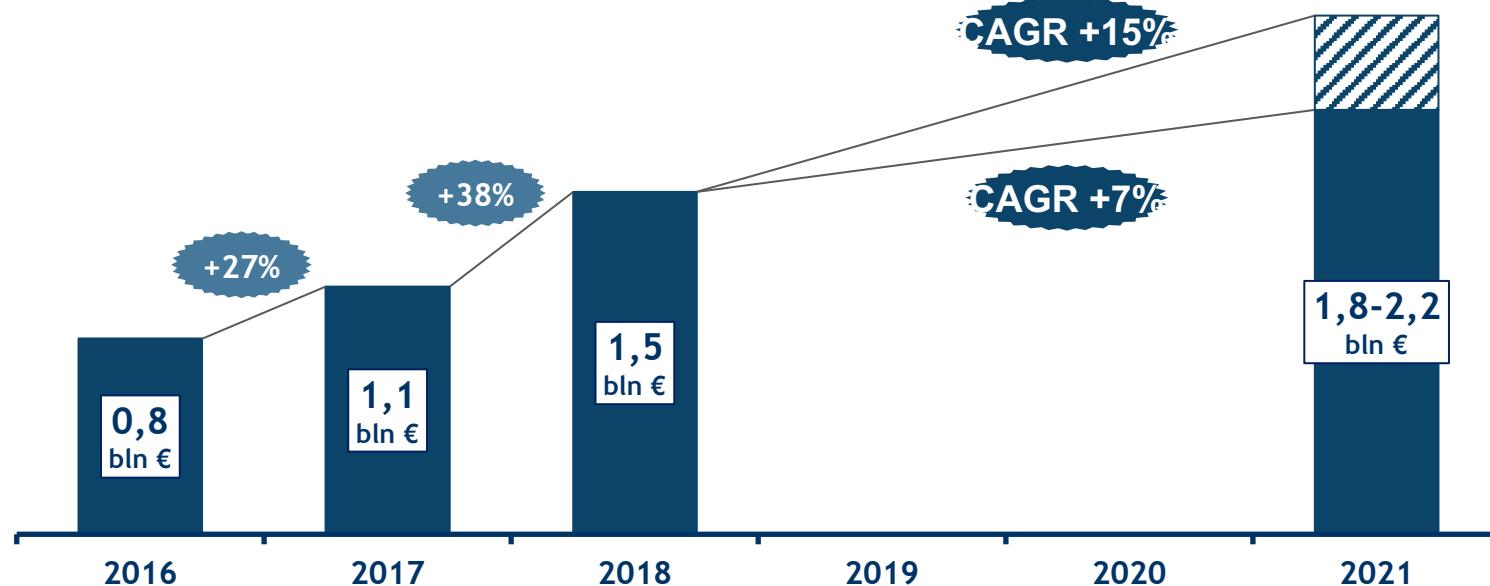


Source: Osservatorio processing

# Mobile POS

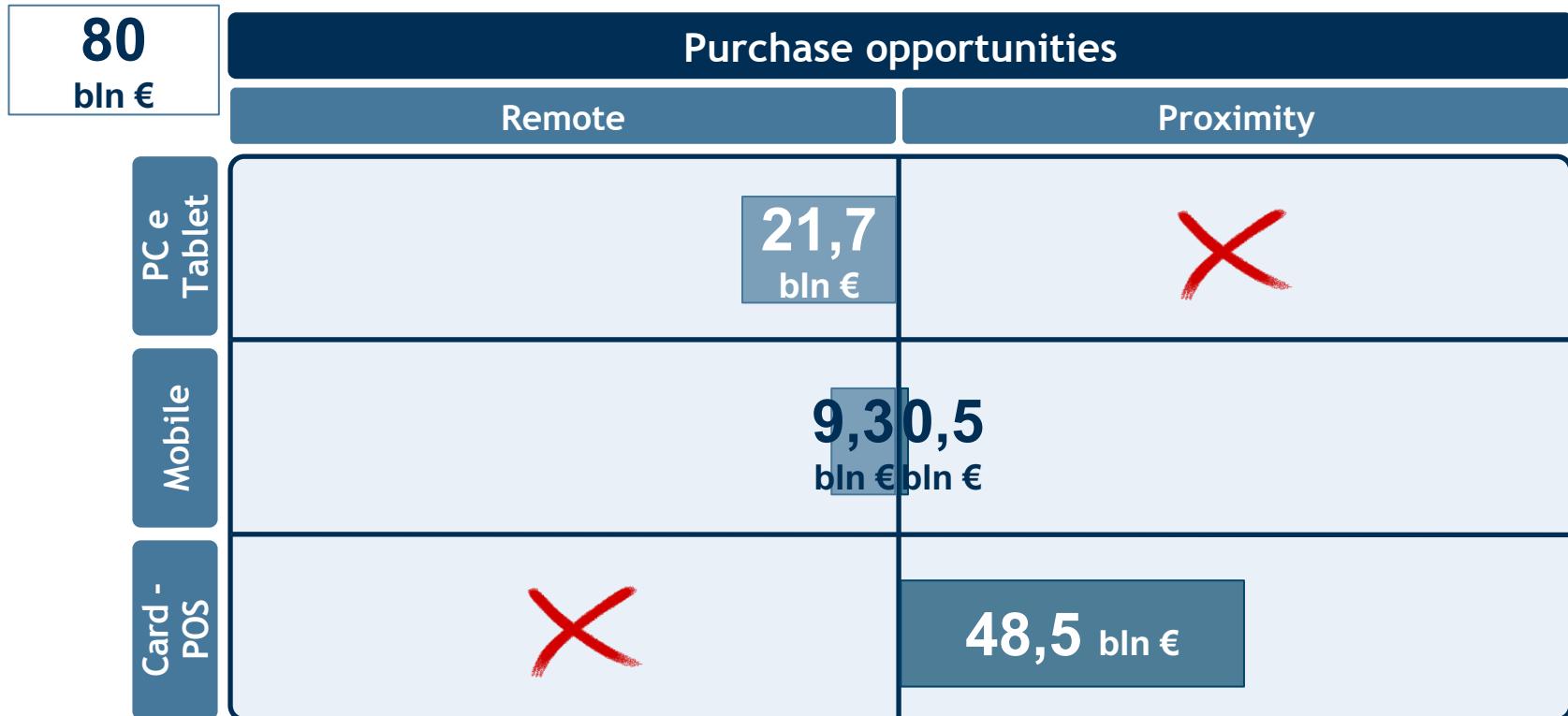


Growth estimate of total volume on Mobile POS  
(2016-2021)

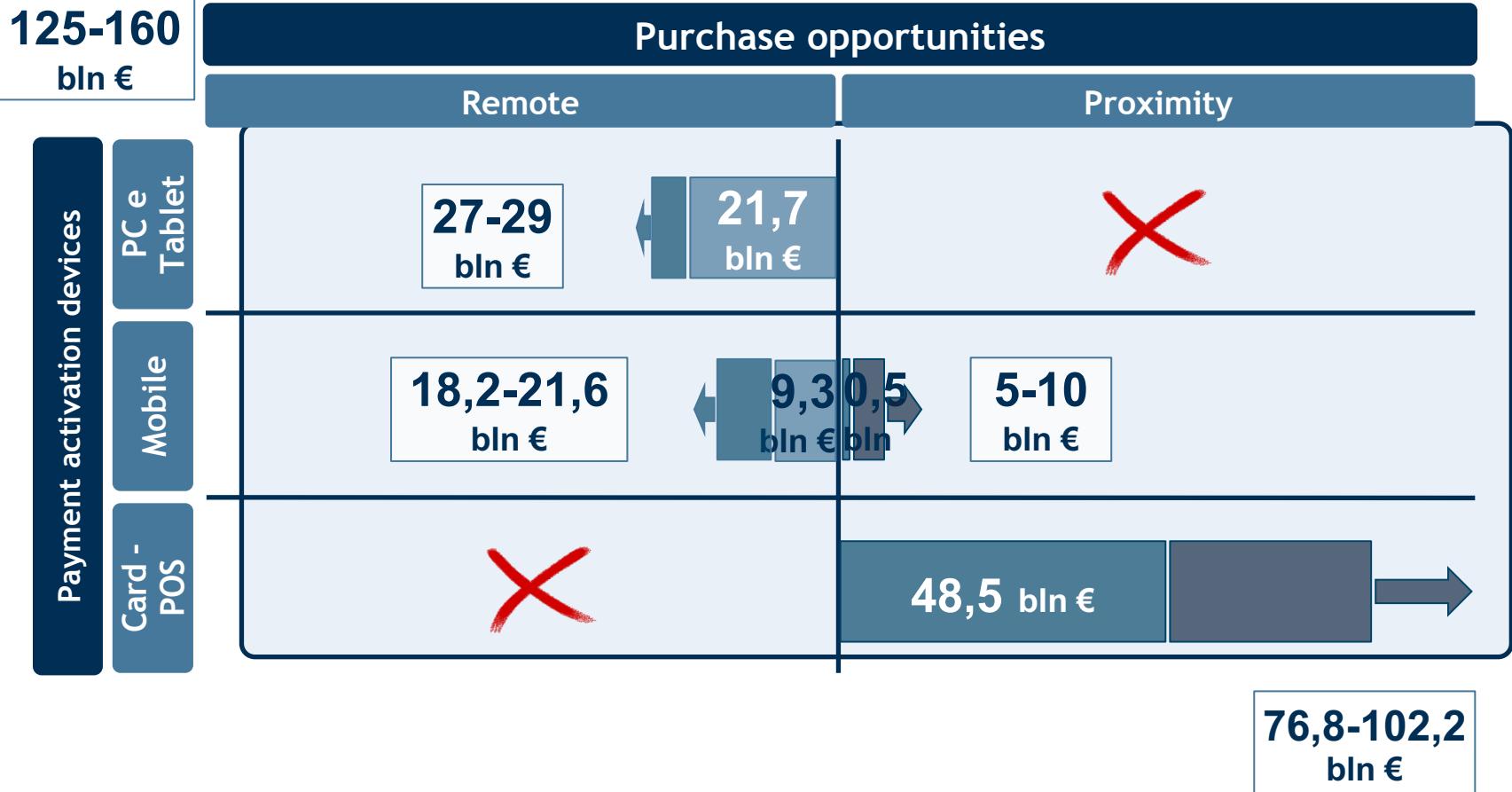


Source: Osservatorio processing

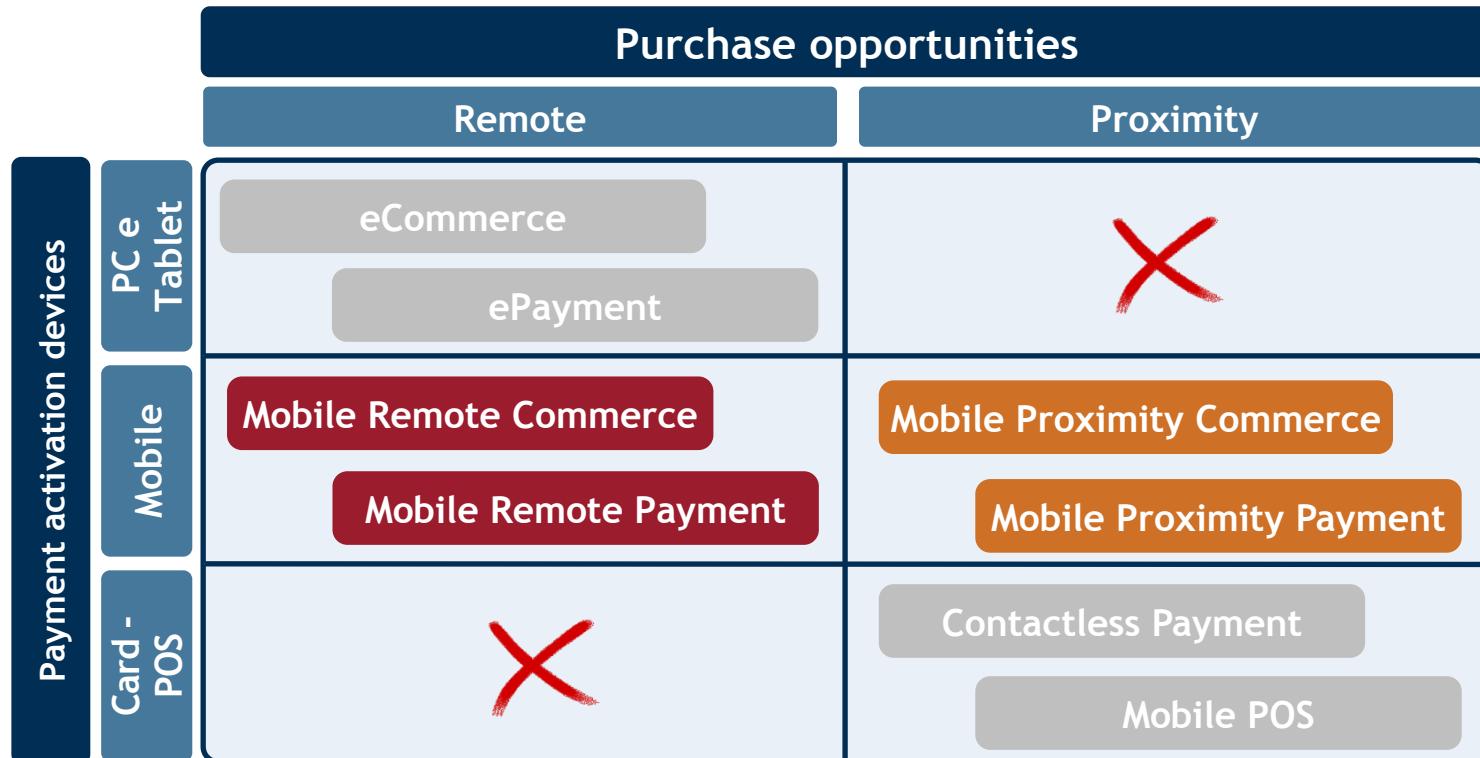
# New Digital Payments



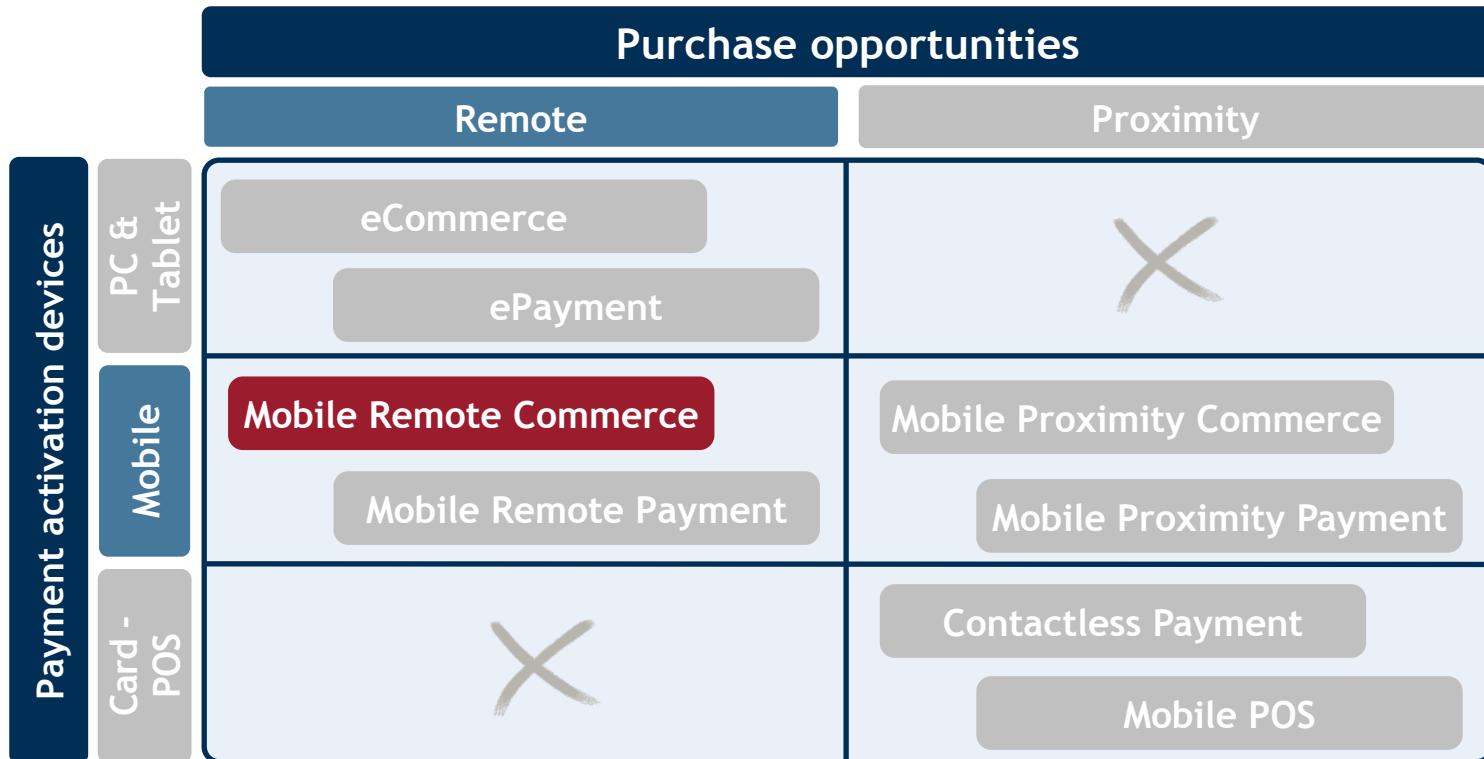
# New Digital Payments

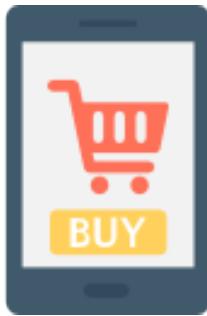


# New Digital Payments



# Mobile Remote Commerce



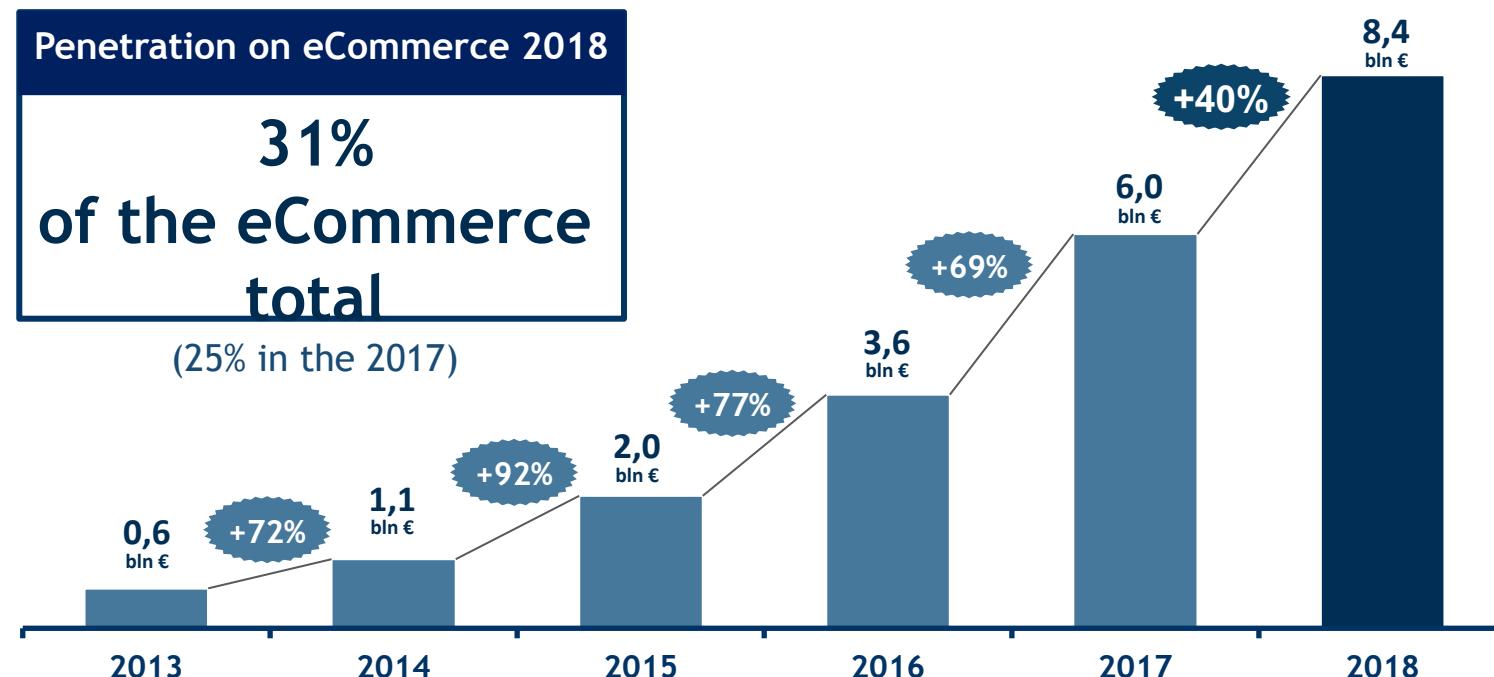


includes purchases through Mobile site or Mobile app of goods and services in which the entire purchase process takes place through this channel; payment is made with a payment card or an electronic wallet

# Mobile Remote Commerce



Total volume of Mobile Commerce (2013-2018)



Source: Osservatorio processing on Oss. eCommerce B2c data

# Mobile Remote Commerce

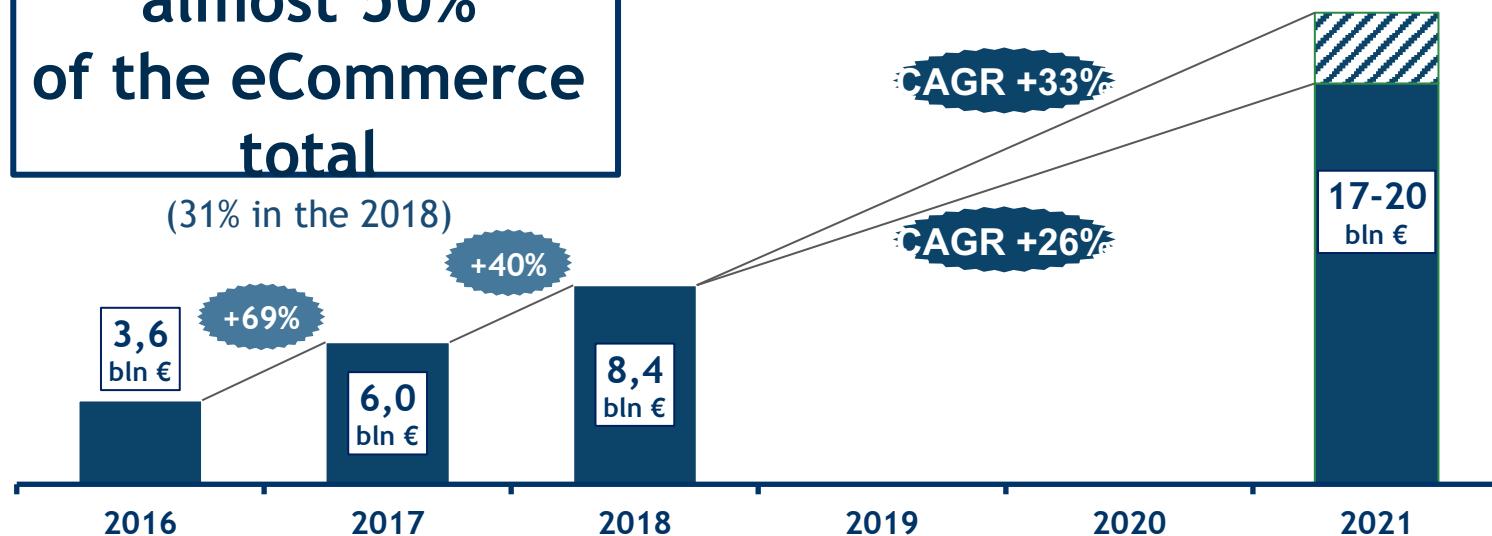


Growth estimate of the total volume of Mobile Commerce  
(2016-2021)

Penetration on eCommerce 2021

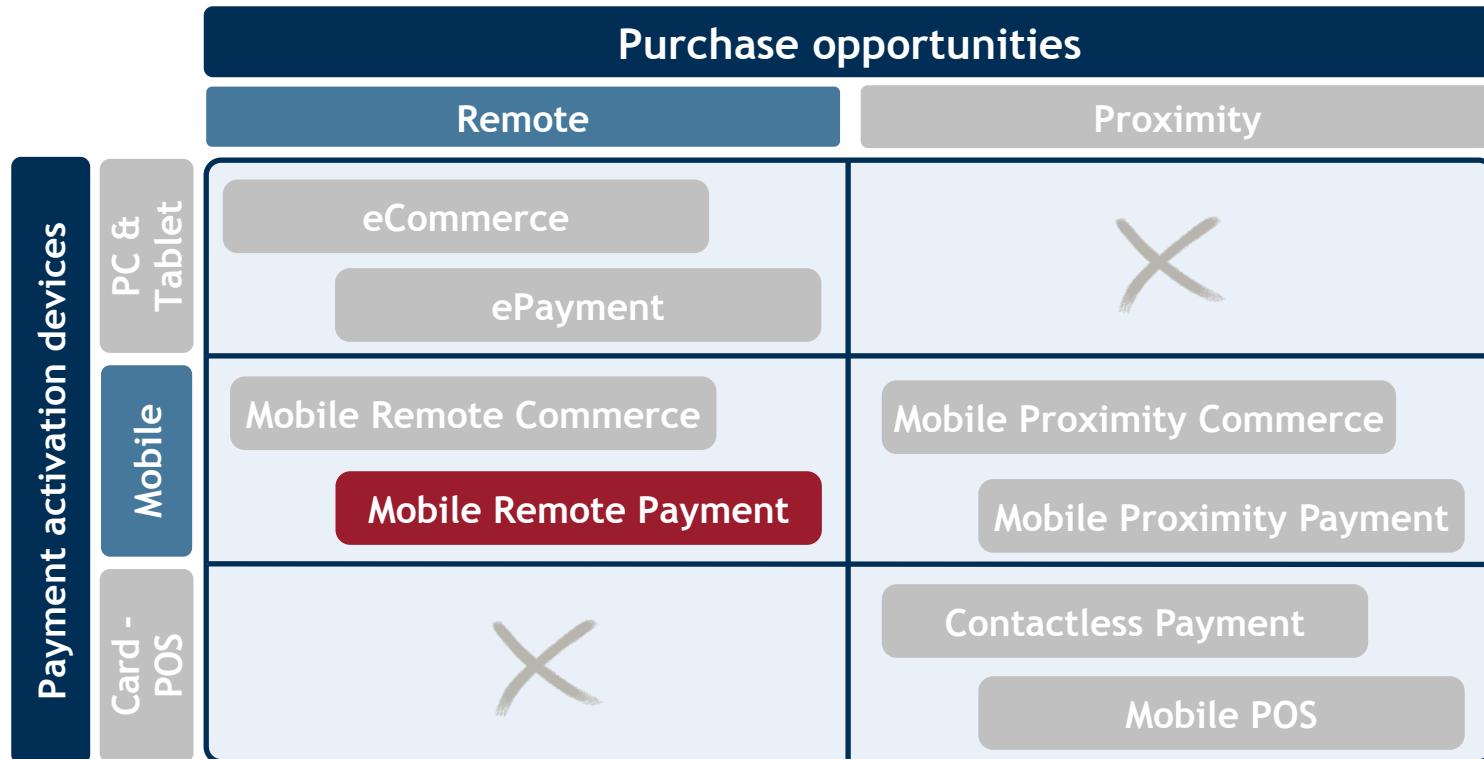
almost 50%  
of the eCommerce  
total

(31% in the 2018)



Source: Osservatorio processing on Oss. eCommerce B2c data

# Mobile Remote Payment



# Mobile Remote Payment

---



includes payments for telephone top-ups, utility bills, parking, transport tickets, car rentals, taxis, etc. via mobile phone; payment is made with a payment card or an electronic wallet

# Mobile Remote Payment









## APP ATM MILANO

Puoi acquistare:

- Biglietto singolo urbano: € 1,50
- Biglietto giornaliero urbano: € 4,50
- Biglietto singolo Rho Fieramilano: € 2,50
- Andata/ritorno Rho Fieramilano: € 5,00
- Biglietto singolo Assago Milanofiori Forum: € 2,50.



## SMS AL 48444

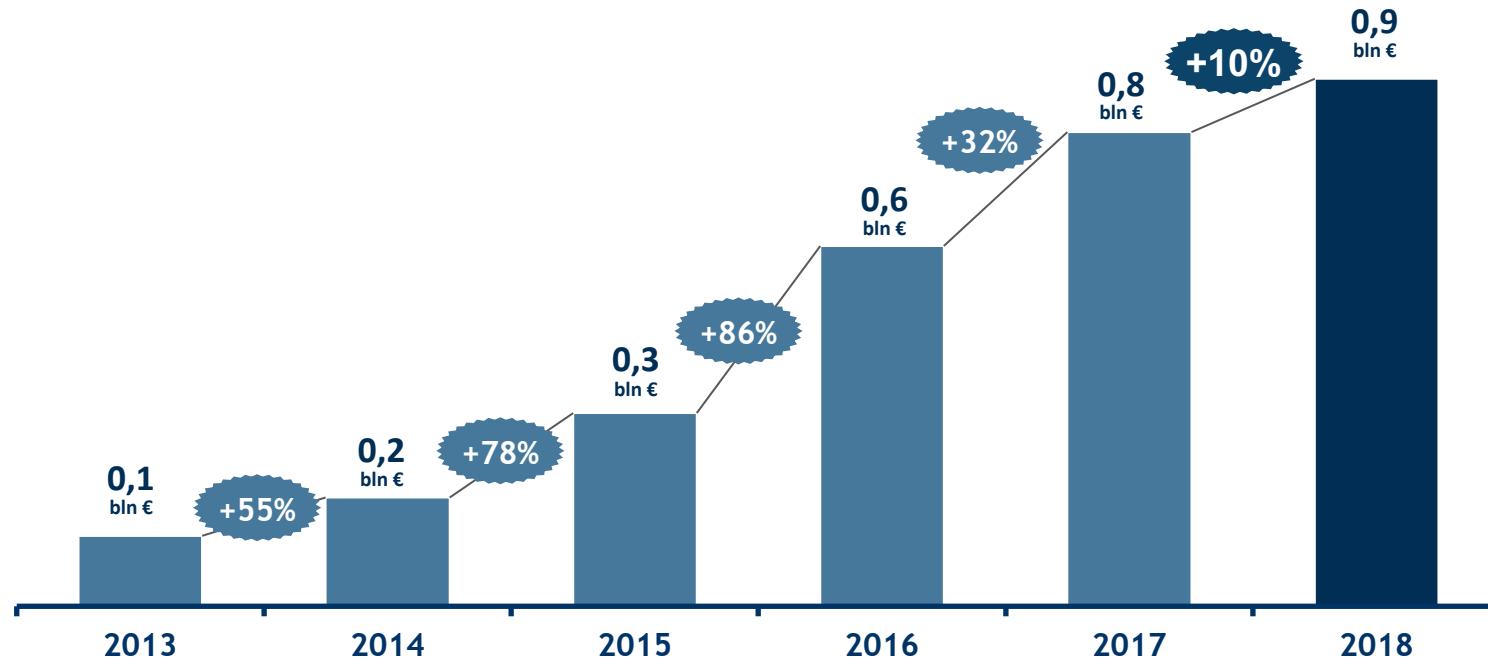
Scrivi ATM per acquistare un biglietto singolo urbano da € 1,50.  
Scrivi FIERA per acquistare un biglietto singolo per Rho Fieramilano da € 2,50.

L'importo totale (biglietto + SMS\*) viene scalato direttamente dal conto o credito telefonico. La convalida del biglietto è contestuale all'acquisto.  
\*Il costo dell'SMS varia a seconda del proprio operatore telefonico.

# Mobile Remote Payments



Total volume of Mobile Remote Payments (2013-2018)

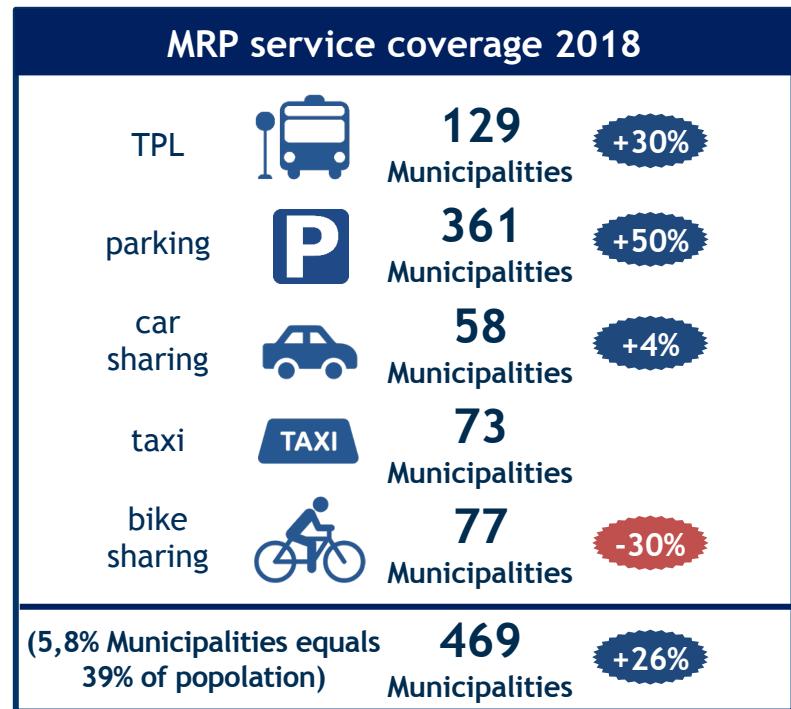
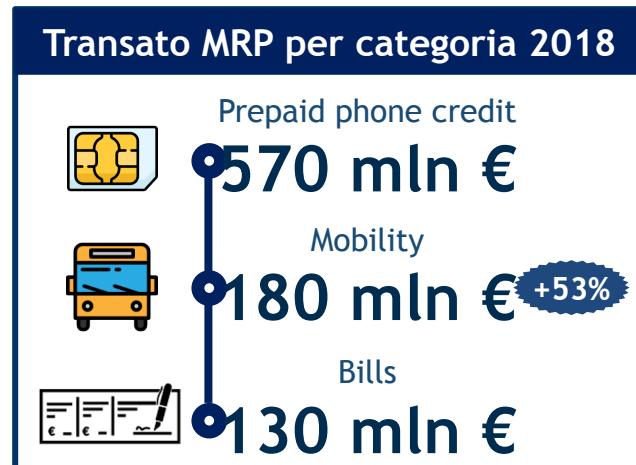


Source: Osservatorio processing

# Mobile Remote Payments



## Total volume of Mobile Remote Payments (2013-2018)

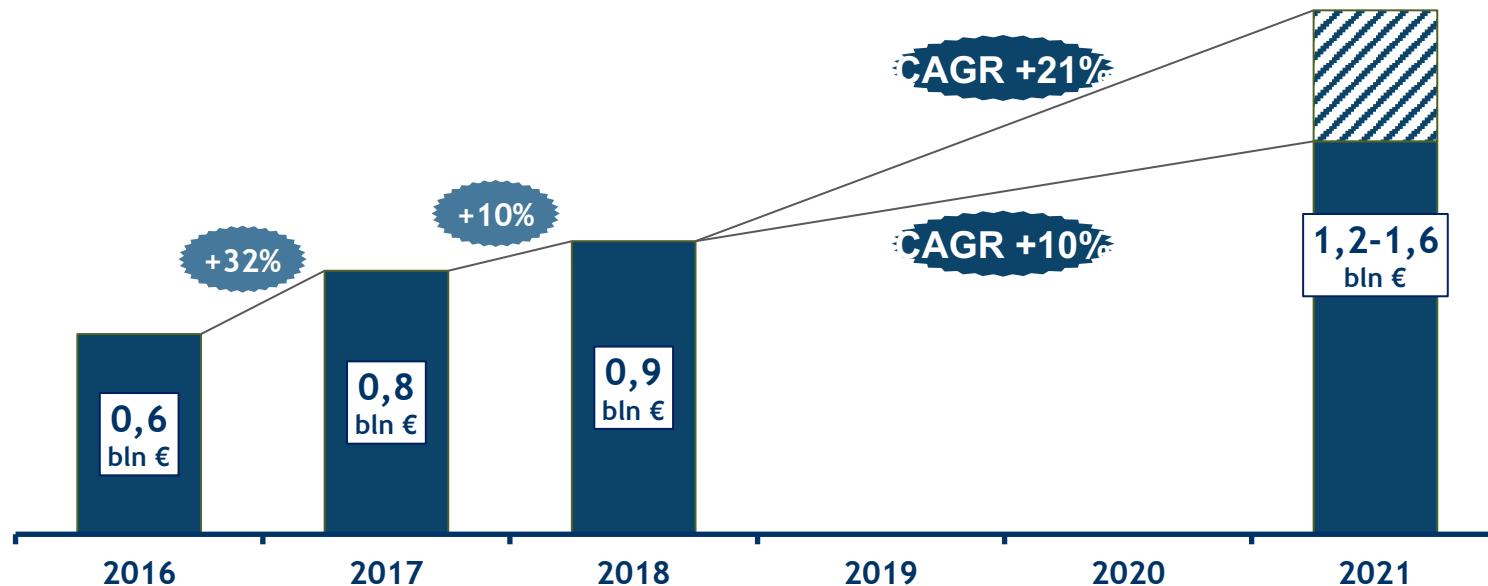


Source: Osservatorio processing

# Mobile Remote Payments

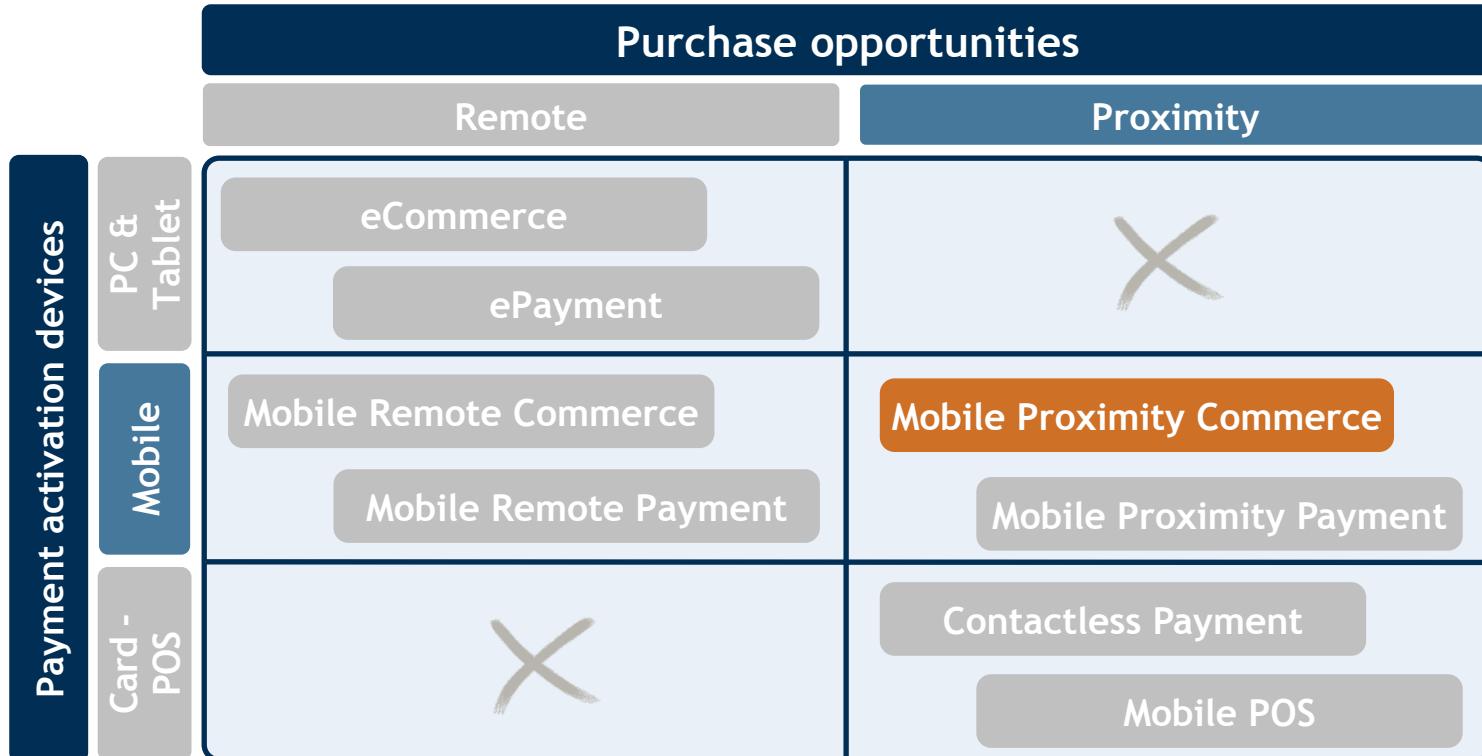


Growth estimate of Mobile Remote Payments  
(2016-2021)



Source: Osservatorio processing on Oss. eCommerce B2c data

# Mobile Proximity Commerce

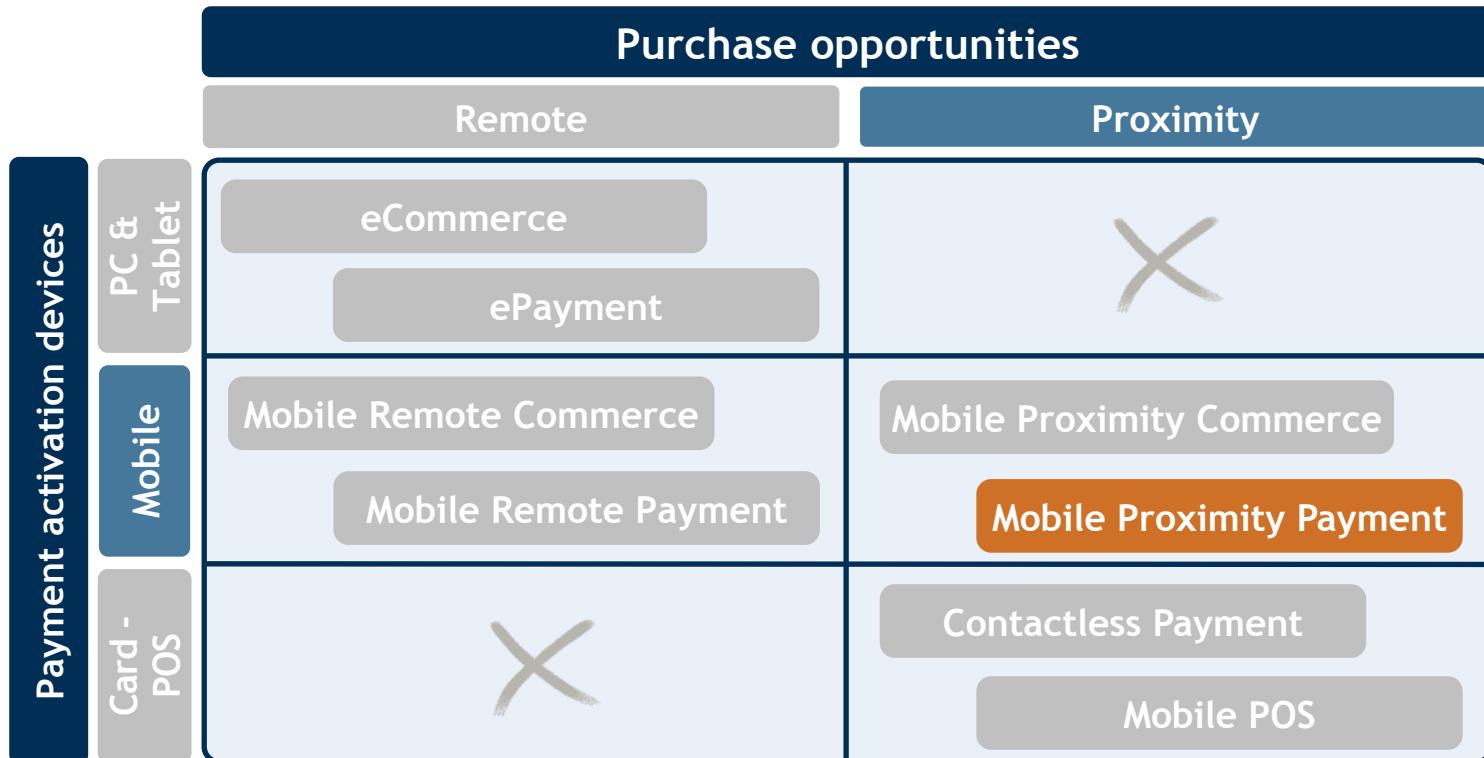


# Mobile Proximity Commerce



includes services supporting the shopping experience at physical stores such as, for example, the possibility of using **coupons** and **loyalty** services or consulting **information** via smartphone

# Mobile Proximity Payment

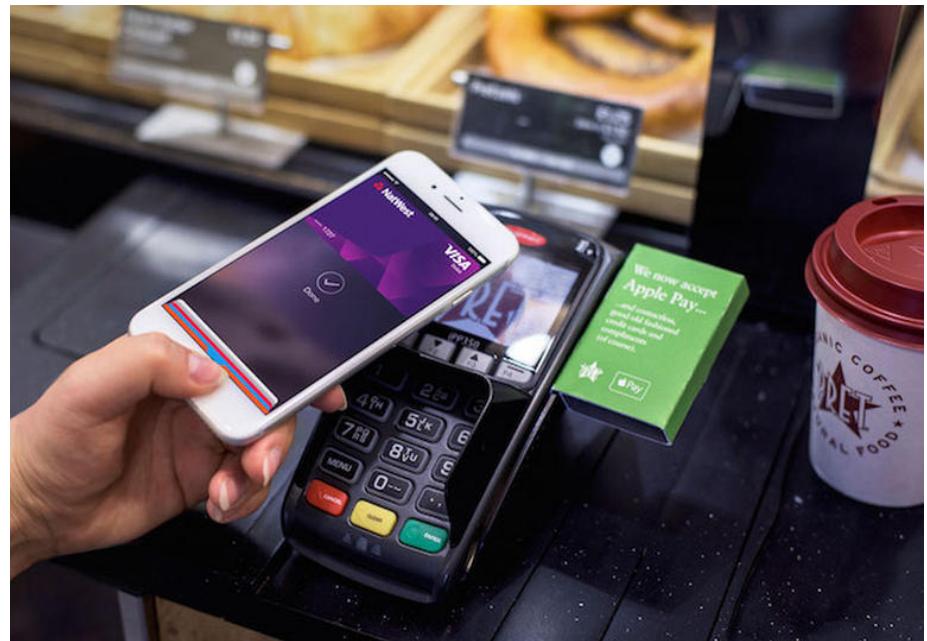
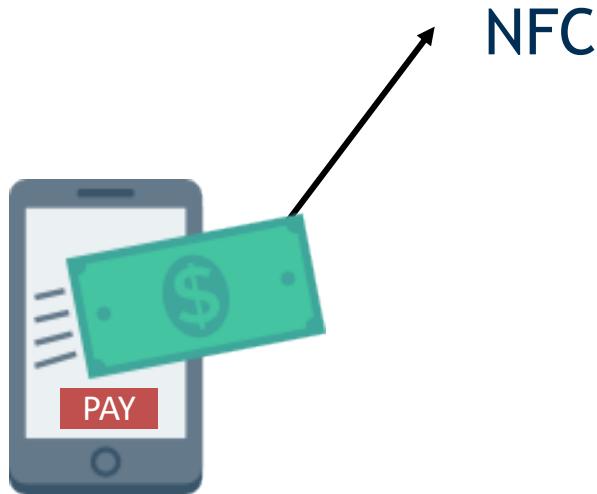


# Mobile Proximity Payment

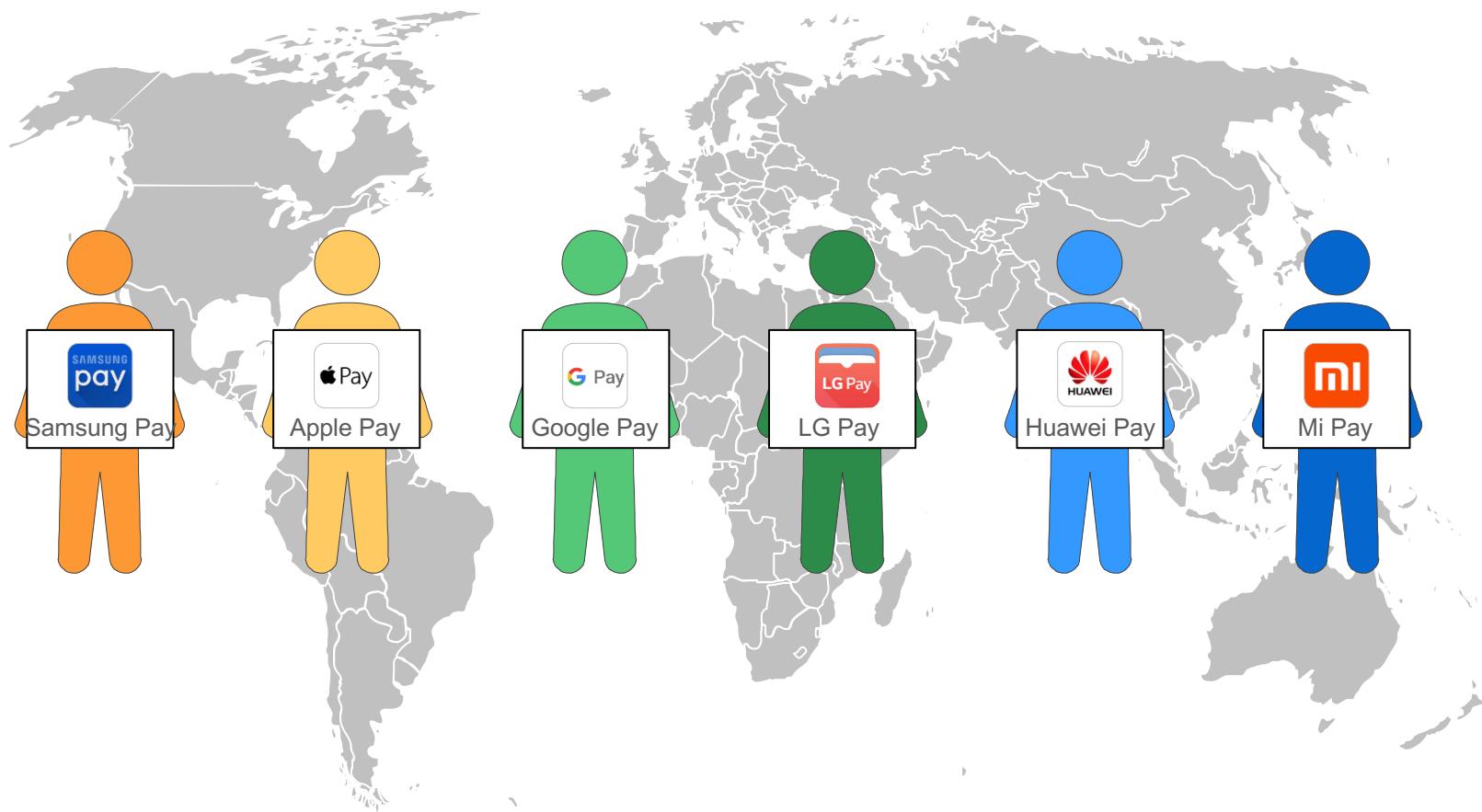


includes payments at points of sale via mobile phone (through proximity technologies such as qr code, geolocation or NFC technology) through a payment card, an electronic wallet or the bank account

# Mobile Proximity Payment



# The X-Pays



# Importance of communication



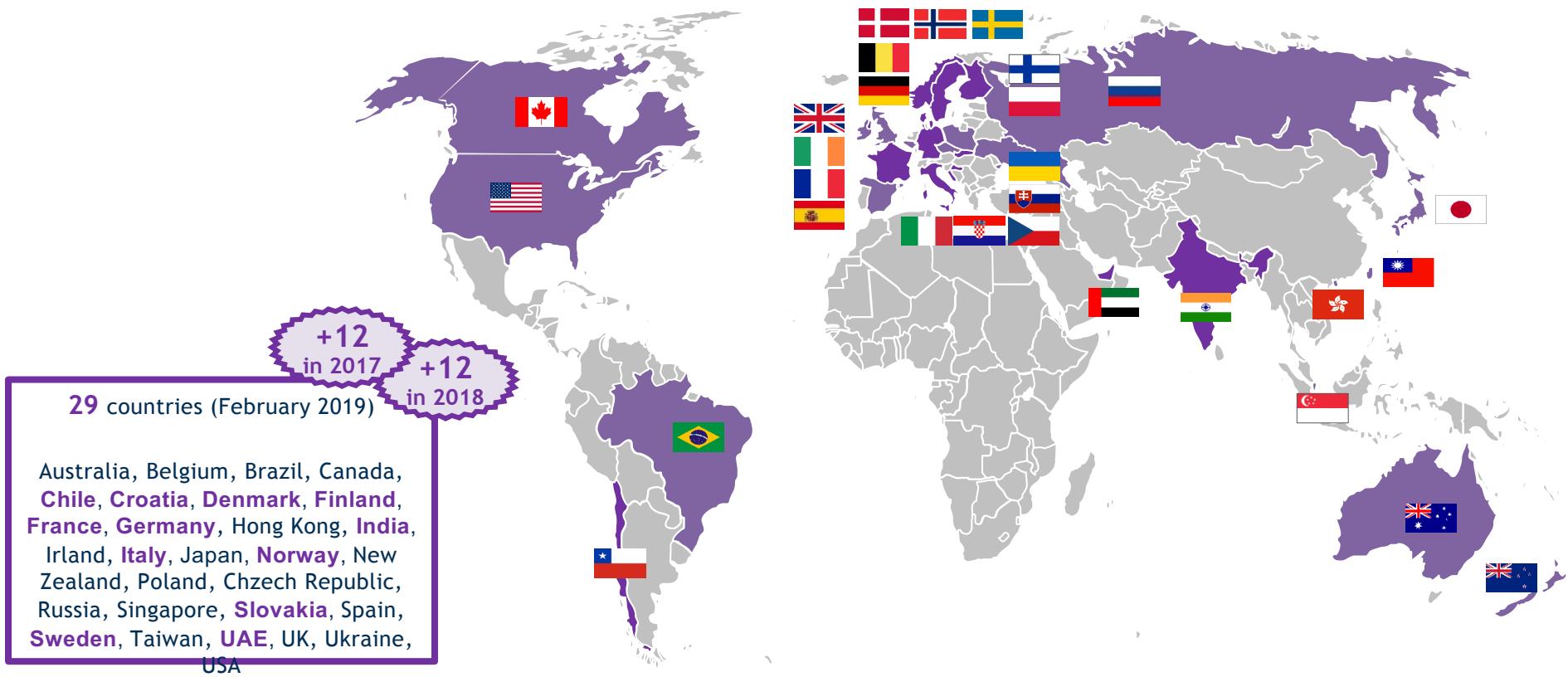
# Apple Pay's international diffusion



# Samsung Pay's international diffusion



# Google Pay's international diffusion



Stefano Bonini, PhD



UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# The X-Pay diffusion

## Legend:

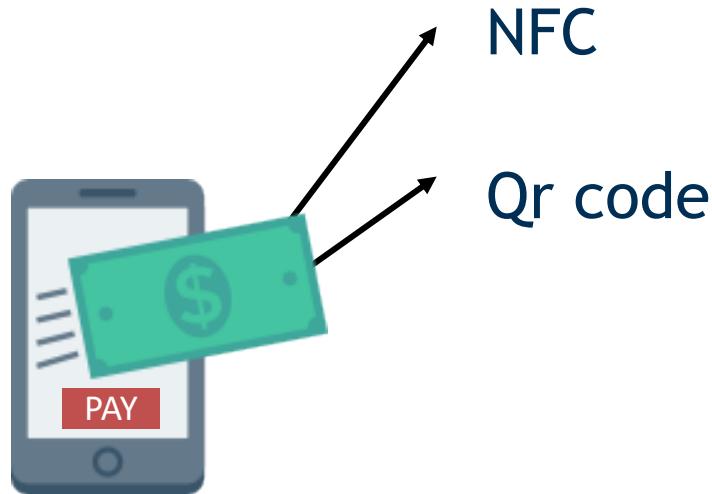
4 X-Pays	2 X-Pays
3 X-Pays	1 X-Pay

40 countries (February 2019)

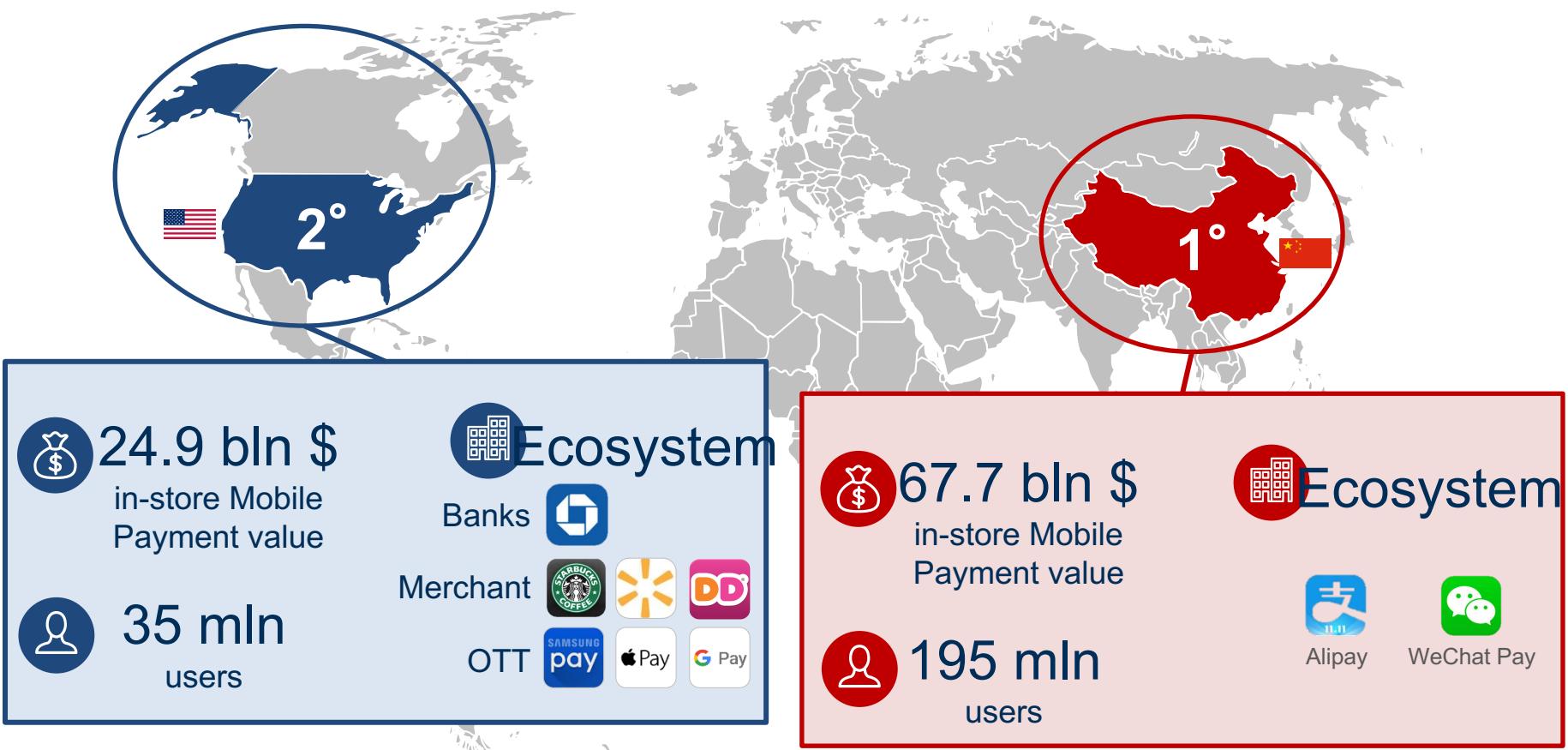
- **2 countries:** China, Russia
- **13 countries:** Australia, Brazil, Canada, France, Hong Kong, Italy, Singapore, Spain, Sweden, Taiwan, UAE, UK, USA
- **13 countries:** Belgium, Denmark, Finland, Germany, India, Ireland, Japan, Norway, New Zealand, Poland, South Korea, Switzerland, Ukraine
- **12 countries:** Belarus, Chile, Croatia, Kazakhstan, Malaysia, Mexico, Porto Rico, Czech Republic, Slovakia, South Africa, Thailand, Vietnam



# Mobile Proximity Payment



# The Mobile Payment giants: USA vs Cina



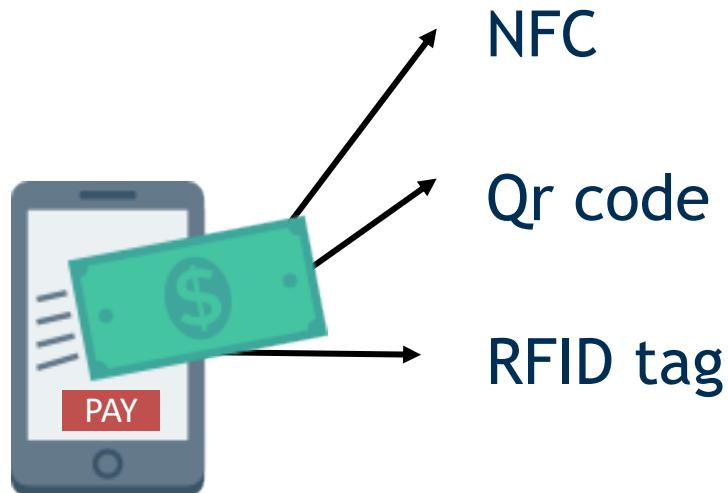
In

# WECHAT

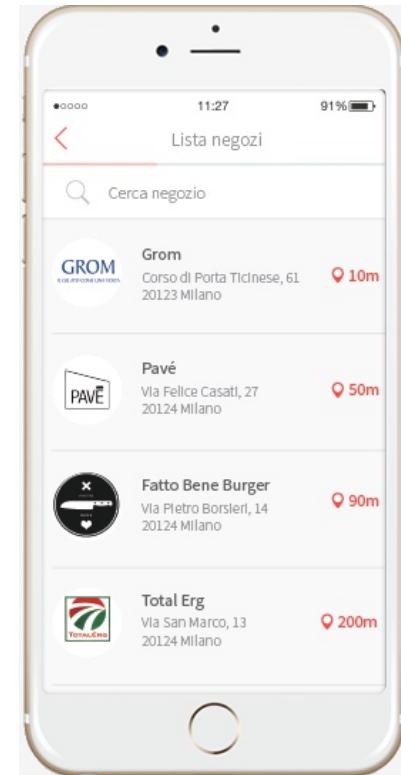
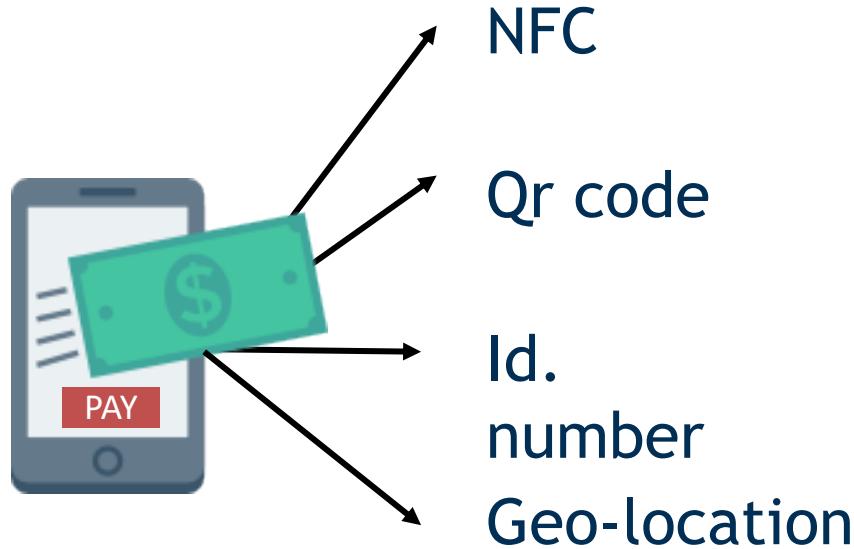
L'esempio lampante è WeChat.



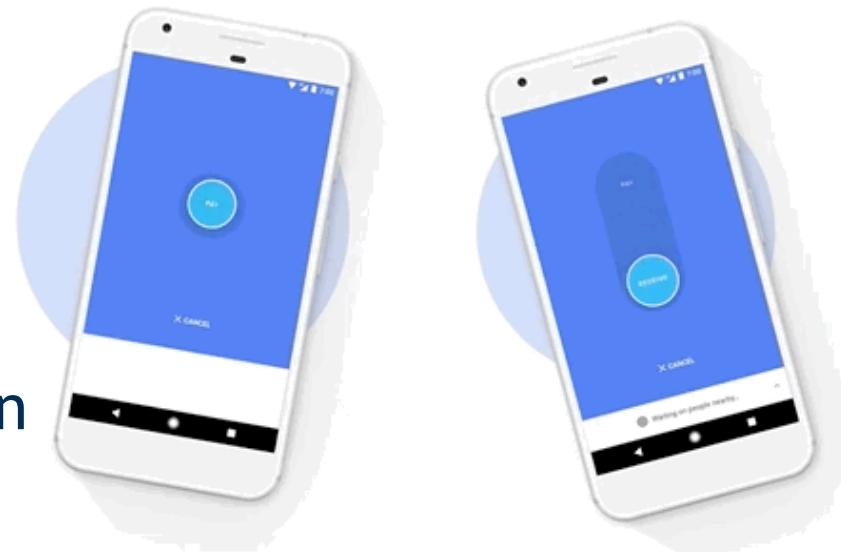
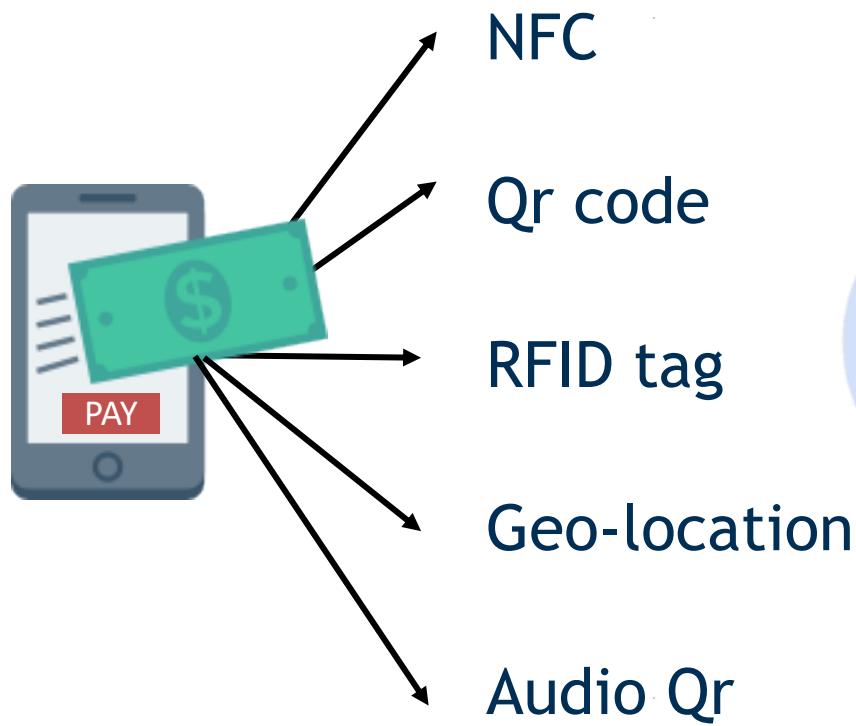
# Mobile Proximity Payment



# Mobile Proximity Payment



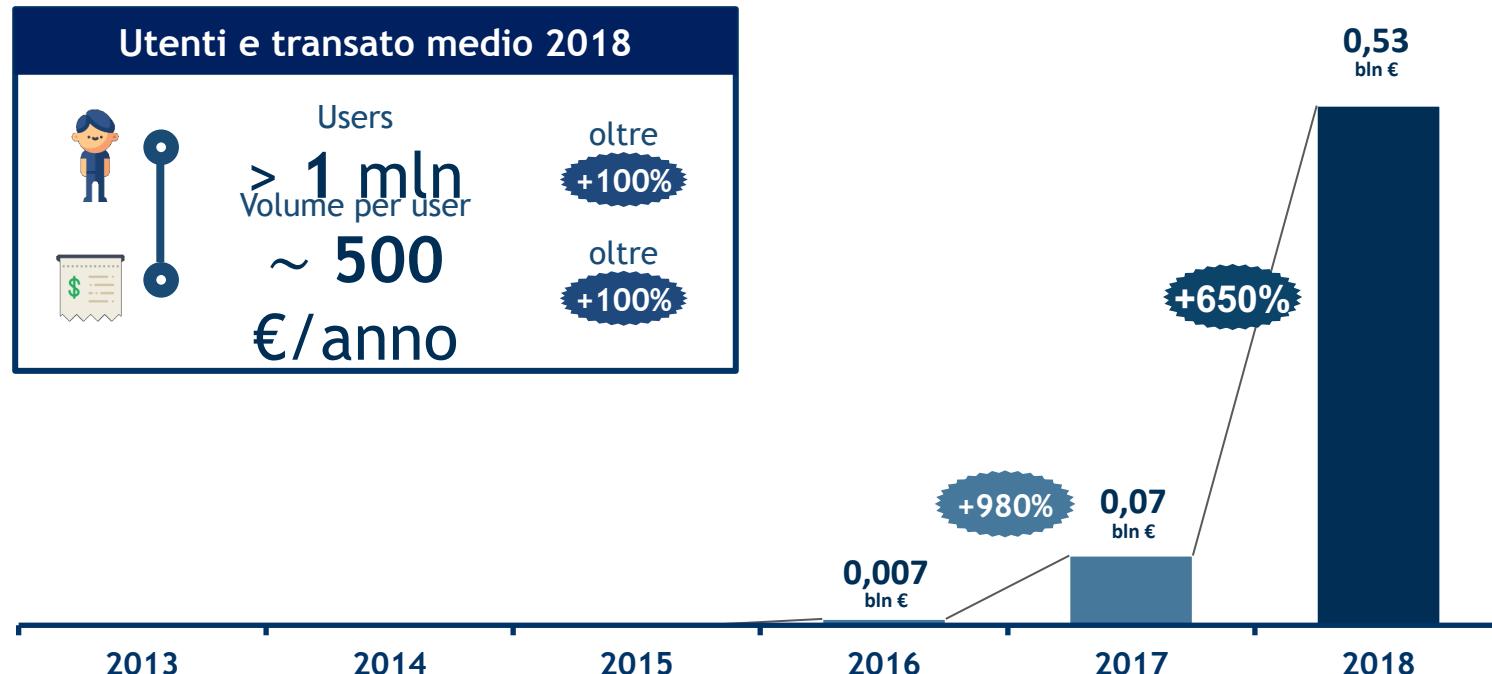
# Mobile Proximity Payment



# Mobile Proximity Payments



## Total volume of Mobile Proximity Payments (2013-2018)

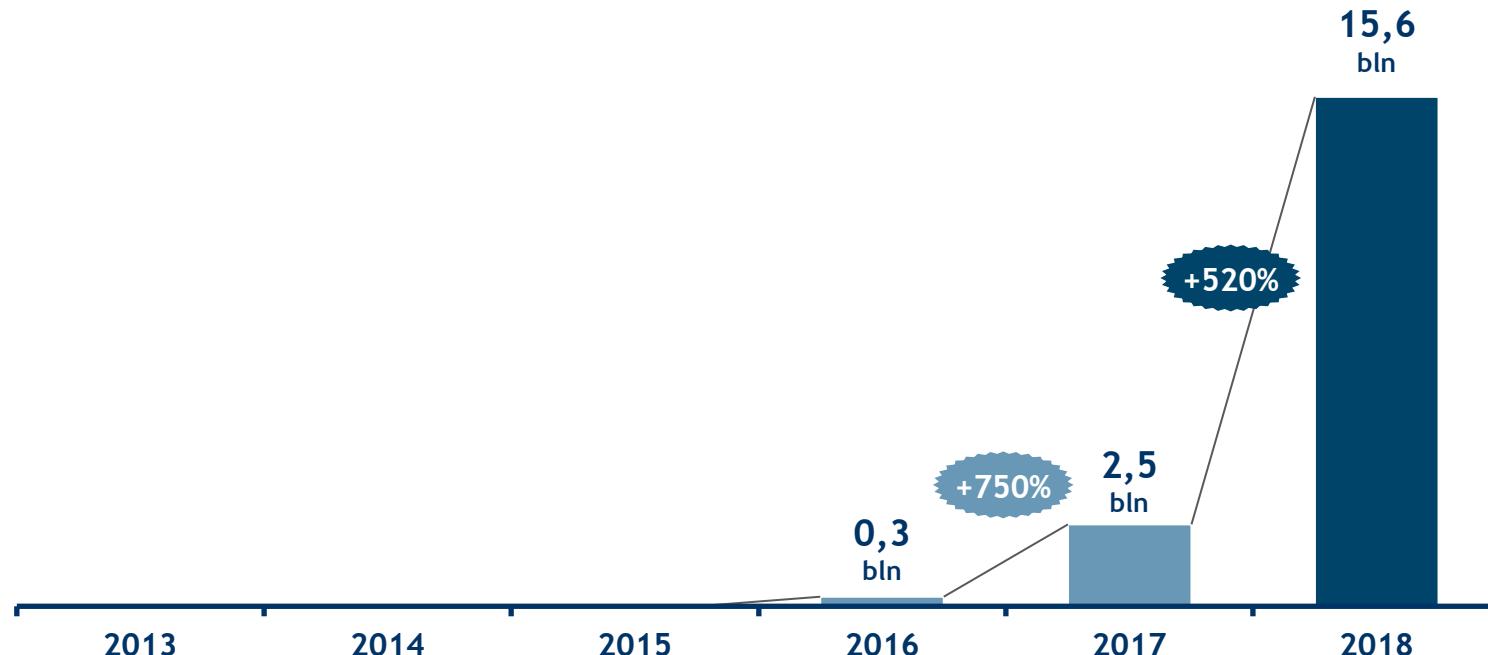


Source: Osservatorio processing

# Mobile Proximity Payments



Mobile Proximity Payment transactions (2013-2018)

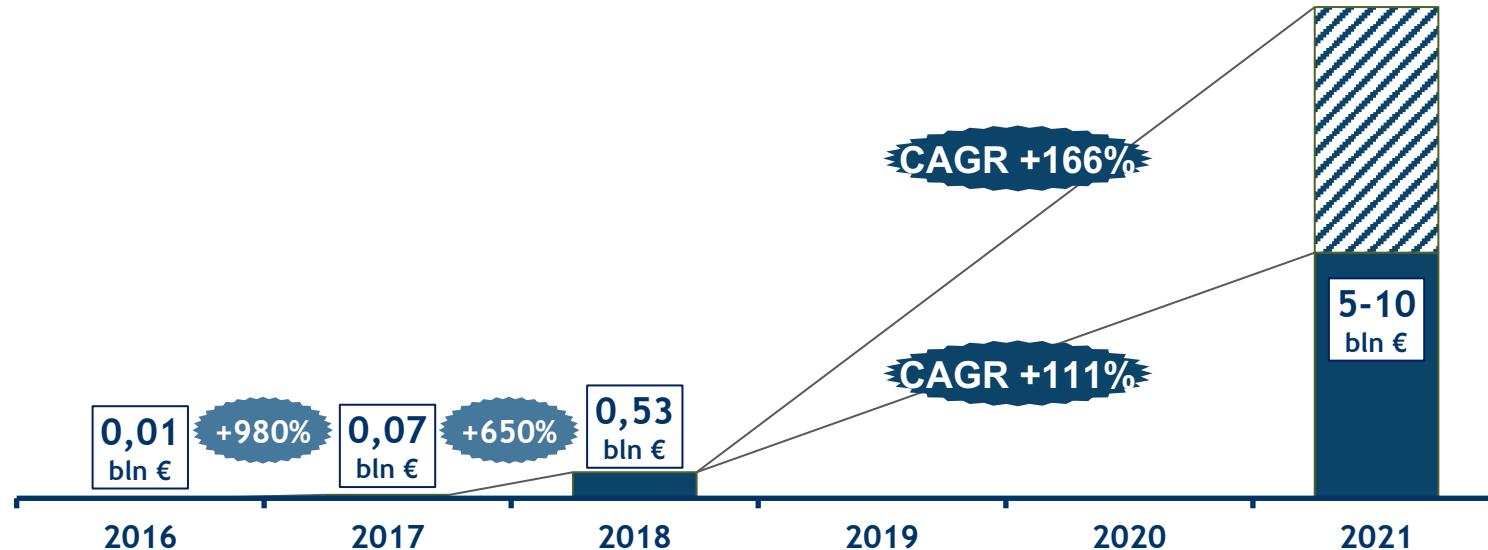


Source: Osservatorio processing

# Mobile Proximity Payments



Growth estimate of Mobile Proximity Payments total volume (2016-2021)



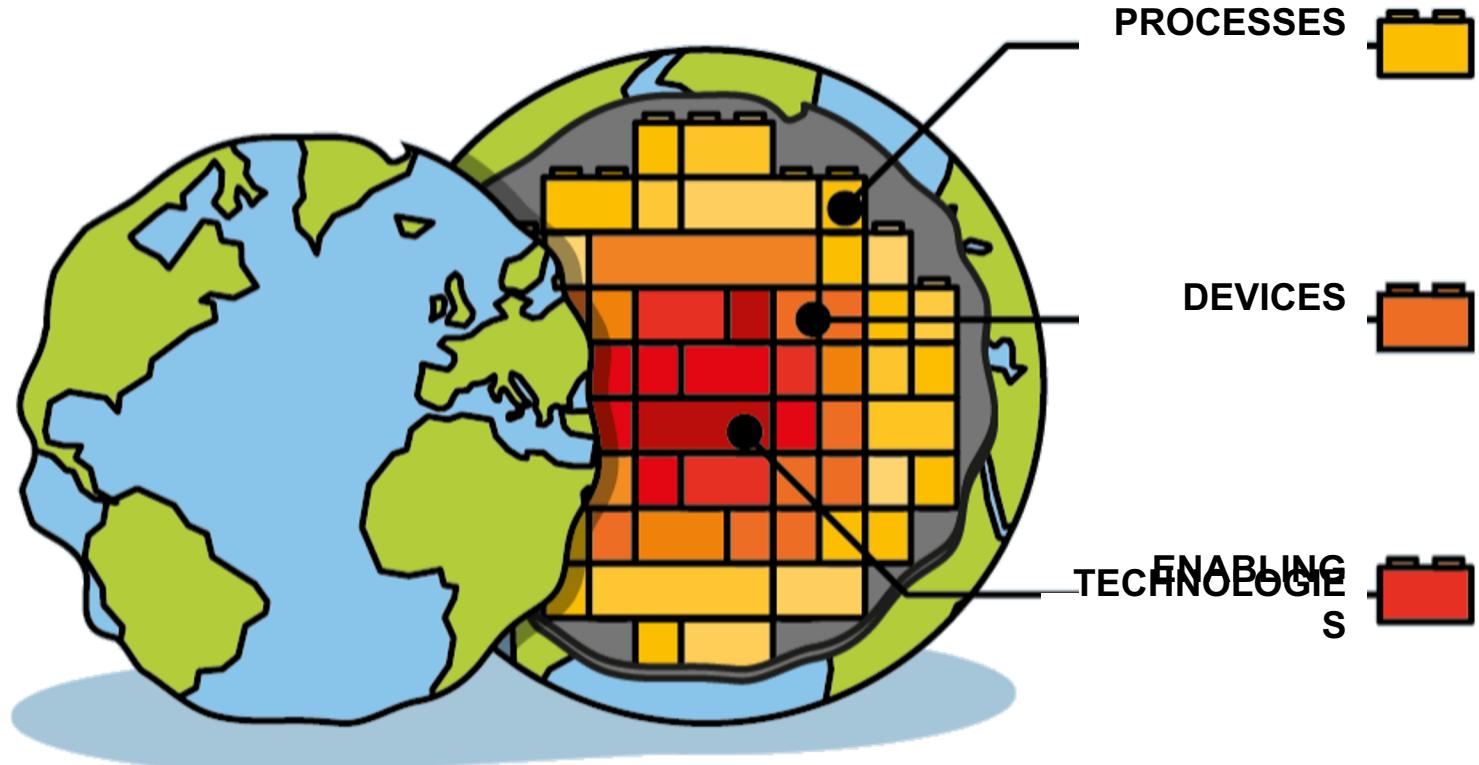
Source: Osservatorio processing



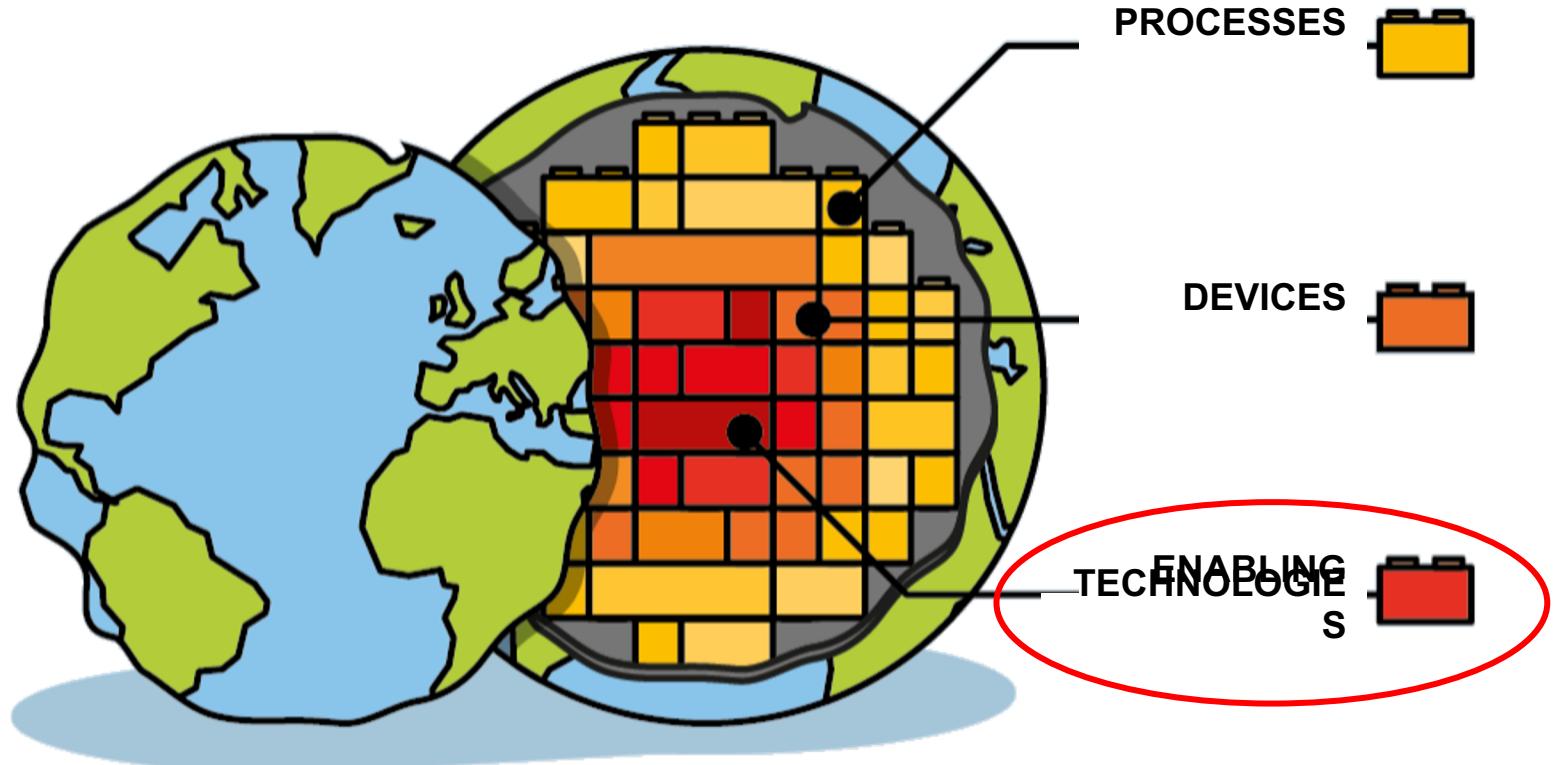
# Agenda

- The Digital Payments
- The New Digital Payment framework
- The innovation trends in the payment industry

# Innovative Trends



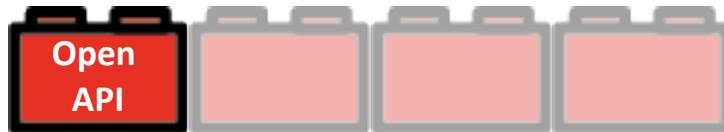
# Innovative Trends



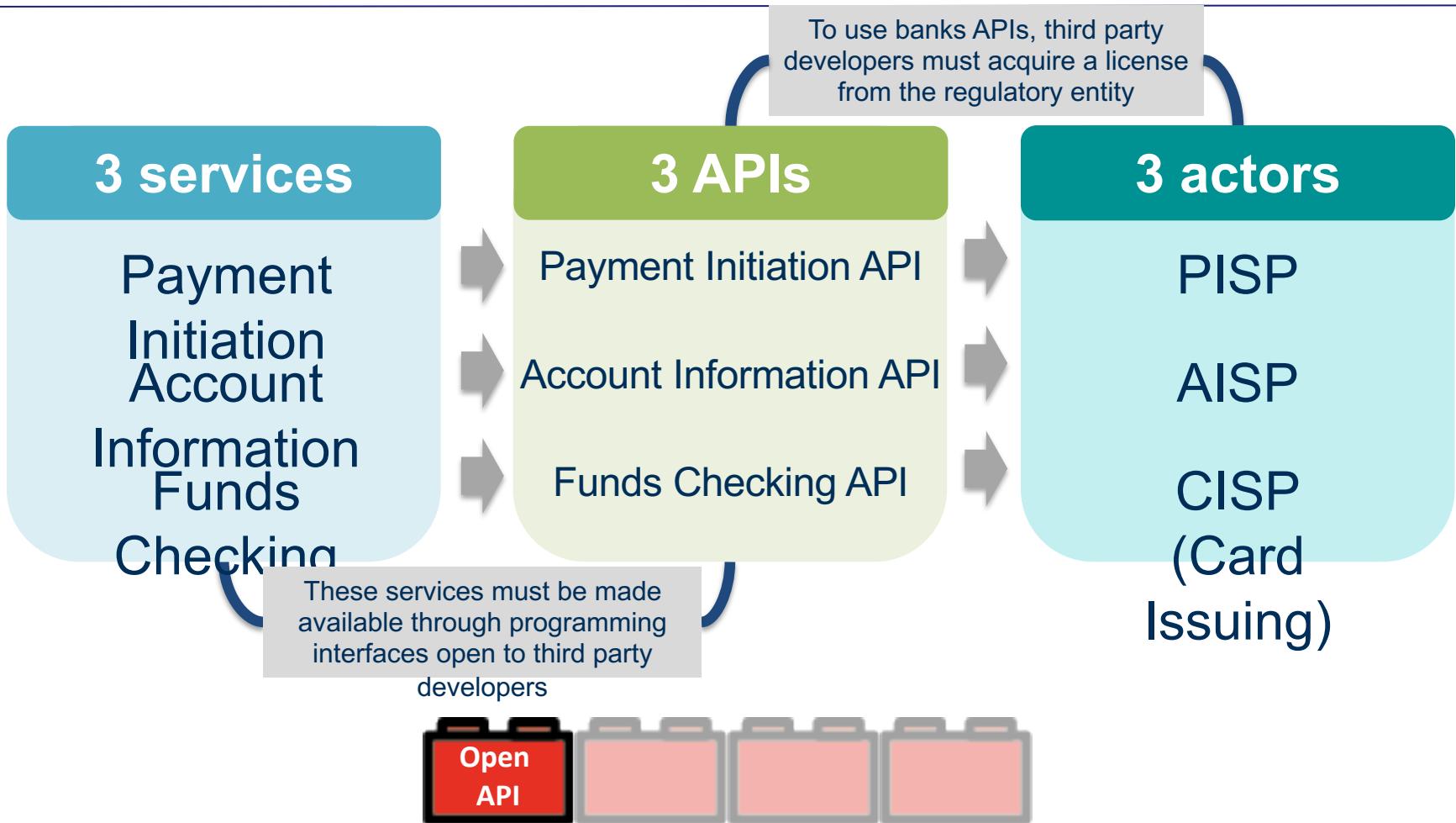
# A new legislation that opens up the competition



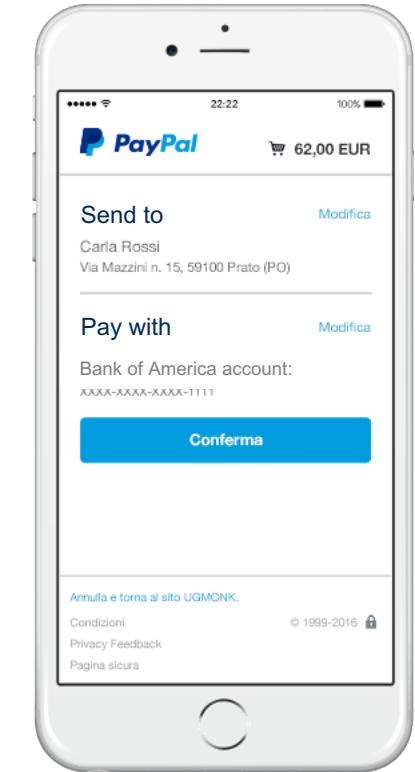
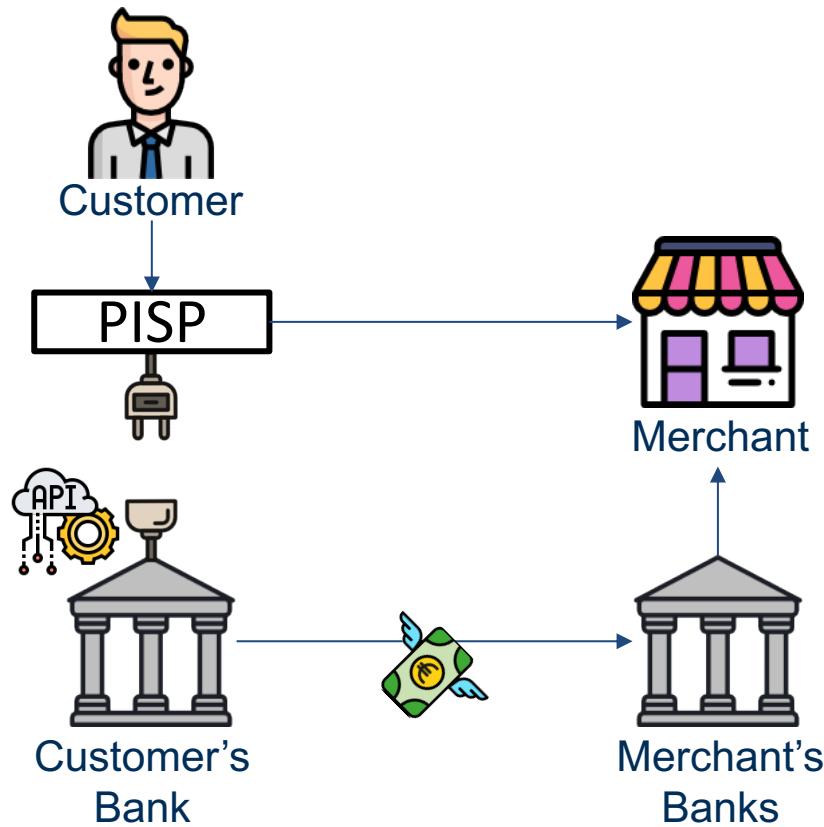
From the 14<sup>th</sup> of September in Europe the PSD2 regulation obliges all the banks to share the financial and payment data of the customers with third party providers



# The new ecosystem



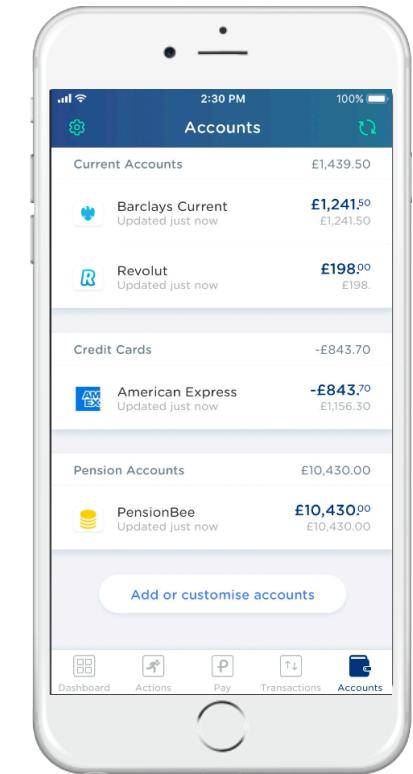
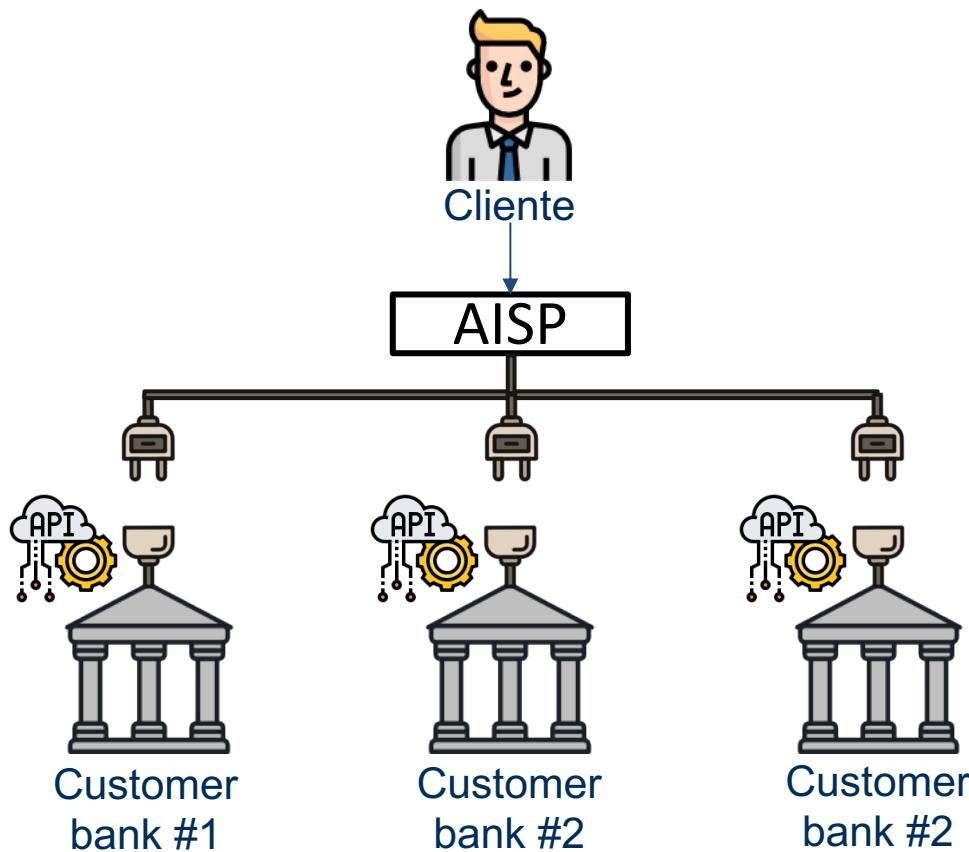
# Payment Initiation: how it works



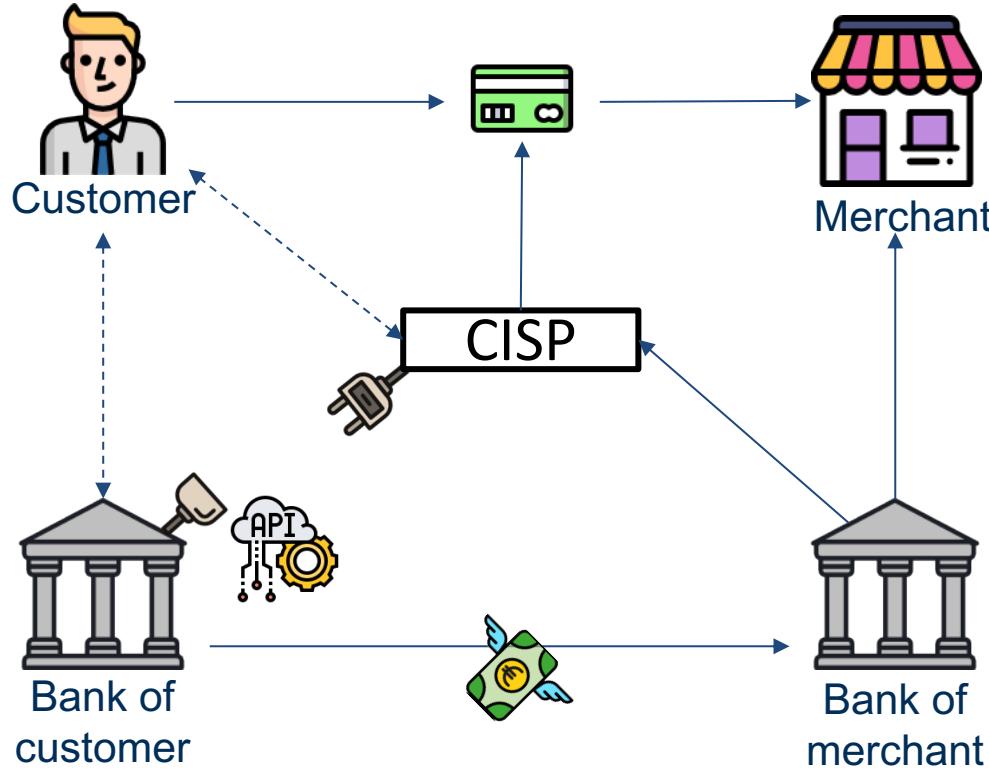
Attention!

PayPal is used just to picture the functioning of PISPs.  
It actually works taking money from the connected card/bank account  
and transferring them to the PayPal account of the merchant.

# Account Information: how it works



# Funds Checking: how it works



# What banks fear

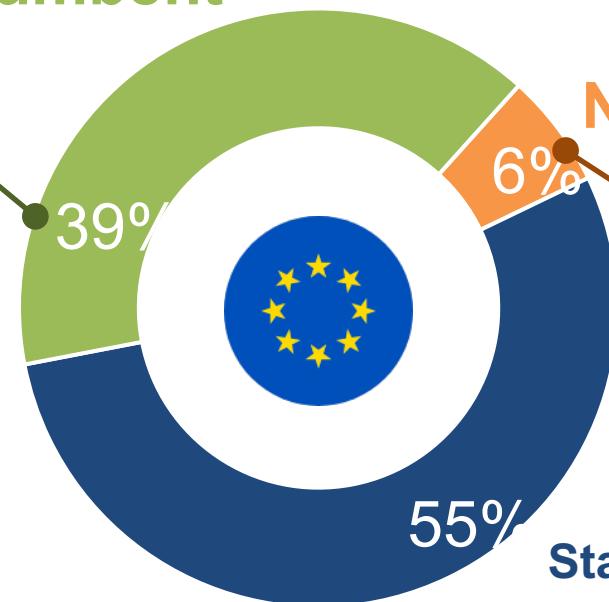


# Who asked for the PISP/AISP licence?

Incumbent

## Incumbent focus

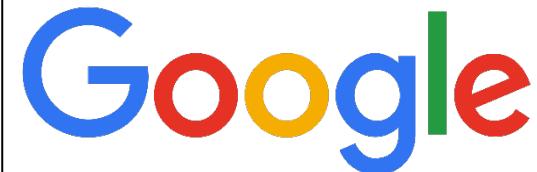
Payment Company	12%
Financial Services	8%
Accounting	6%
Account Aggregation	5%
API provider	4%
Finance IT provider	3%
Marketing & Loyalty	1%



NewCo

## Parent company

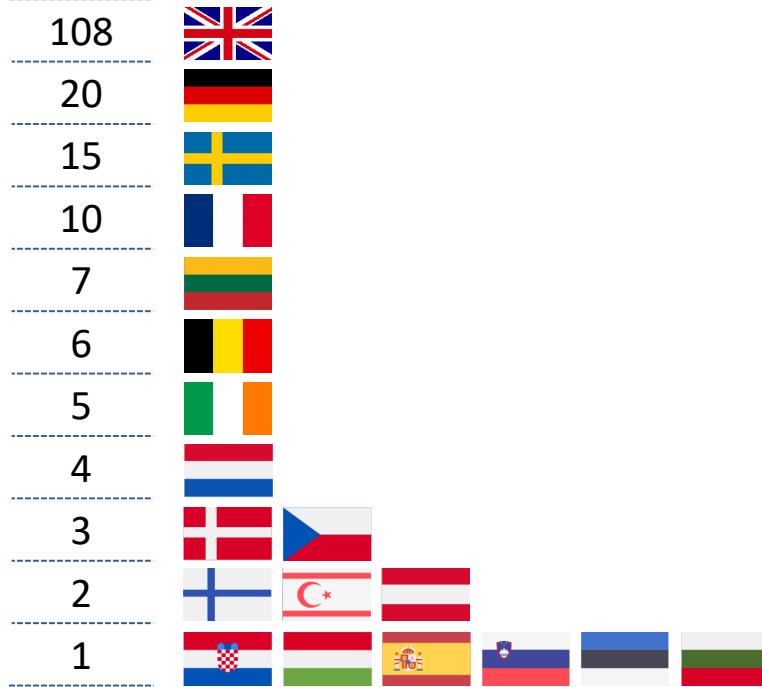
Financial Services	5%
Altro	1%



Base: 193 players

# Where do company ask for license?

#Startups



Took licences in more than one country:

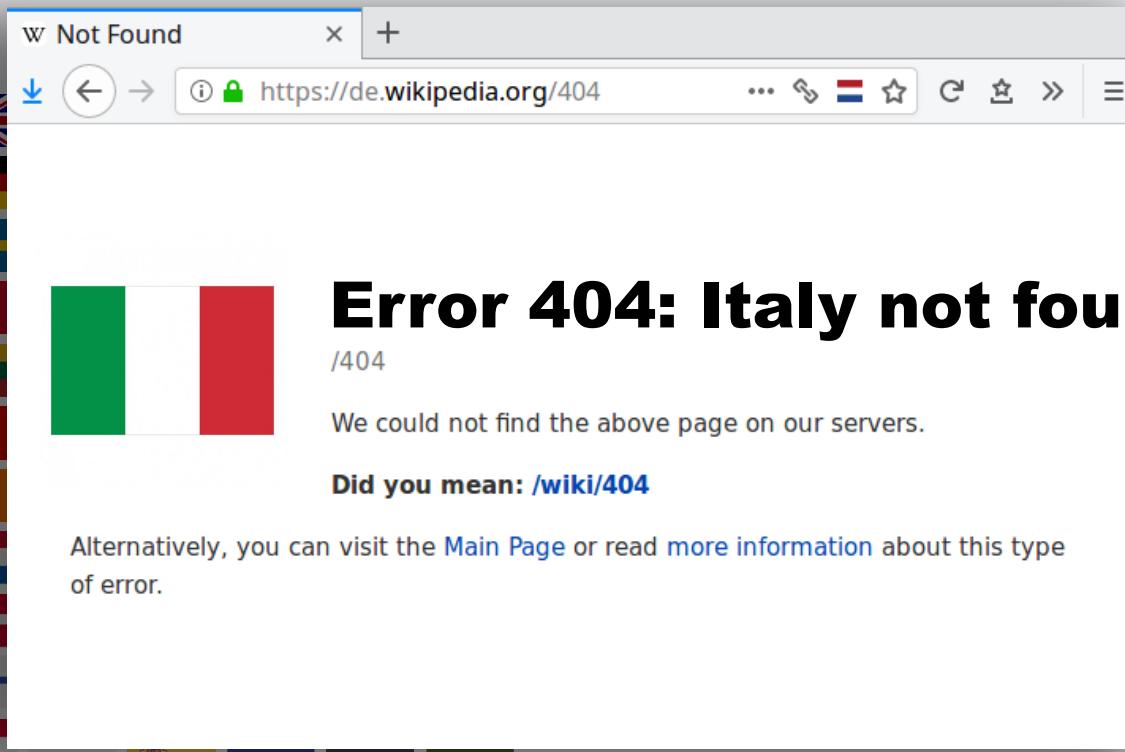
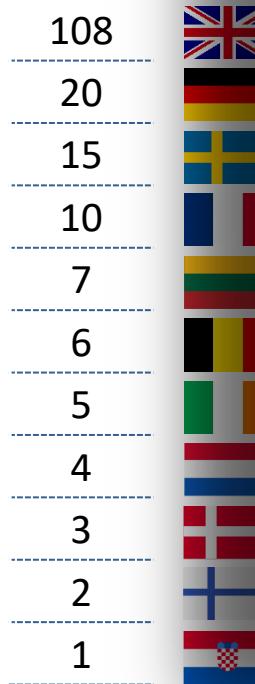


**Revolut**  
**stripe**

Base: 193 players

# Where do company ask for license?

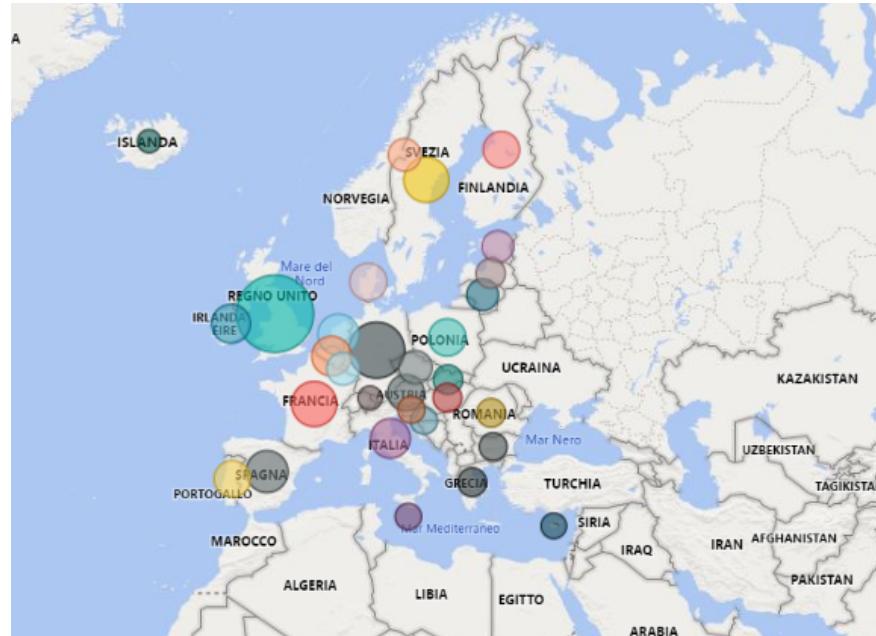
#Startups



Base: 193 players

# Where do these companies operate?

1. UK: 137
2. Germany: 73
3. France: 59
3. Sweden: 59
4. Spain: 55
5. Netherlands: 54
6. Belgium: 52
6. Italy: 52



**25**  
companies  
are active in  
all EU  
countries

# A new wave of startups



## currensea

**Currensea** offers its users a debit card (linked to their existing UK bank accounts) which can be used to pay in other currencies with very low exchange rates.

The card is completely free: there are no commissions on purchases or ATM withdrawals.

To register and use the service, you just need to insert a few pieces of information and after 3-5 days, you receive the debit card by mail.

- Startup
- Founded in 2017
- Funding: N.B.
- License released: 19/07/19

Headquarter



User:



Core Business

Proximity Payment

Remote Payments



API for:

Proximity Payment

Remote Payments

# A new wave of startups



In addition to the classic services of Account Aggregators, Youtility offers insights on the customer's utility bills: it identifies payments made to utility providers (energy, gas, water, telephone network...) calculates the average expense and compares it with the average expense of similar households. EventIt also allows the customer to switch operators/suppliers directly in-app, comparing available offers and rates.

- Startup
- Founded in 2016
- Funding: N.B.
- License released: 24/08/18

Headquarter



User:



Core Business

Account Aggregation

Savings



API for:

Account Aggregation

Savings

# A new wave of startups



## CreditLadder

Tenants can link their bank accounts to Creditladder to keep track of all the rent payments they made (also considering the timing). The app will compute and provide the user with a credit score that can be used to demonstrate their fact-based trustworthiness. On the other hand, landlords and real estate agents can use the platform to keep payments under control and, in case of delays, send in-app reminders to the tenant.

- Startup
- Founded in 2016
- Funding: £900k
- License released: 15/11/18

### Headquarter



### Core Business

Credit Tating



### API for:

Account Aggregation

Credit Rating

# A new wave of startups

## Transaction connect

Transaction Connect is a marketing suite that collects data about users' proximity purchases. With the use of this service, customers will not have to carry their loyalty card or show QR codes at the checkout, as each purchase is immediately recognized and the customer rewarded. The data collected is used to create a SaaS-based KYC service for international shopping malls and retail companies designed to improve marketing strategy.

- Startup
- Founded in 2016
- Funding: 1.5M€
- License released: 13/12/18

Headquarter



User:



Core Business

Account Aggregation

Loyalty



API for:

Account Aggregation

Loyalty

# Enabling Technologies: Artificial Intelligence

The set of software and hardware components and techniques that are part of Artificial Intelligence. They allow you to interpret payment data and facilitate back office management and user interface improvement.

Back office systems



Business Intelligence



Fraud reduction

Front office systems



Customer care



Marketing



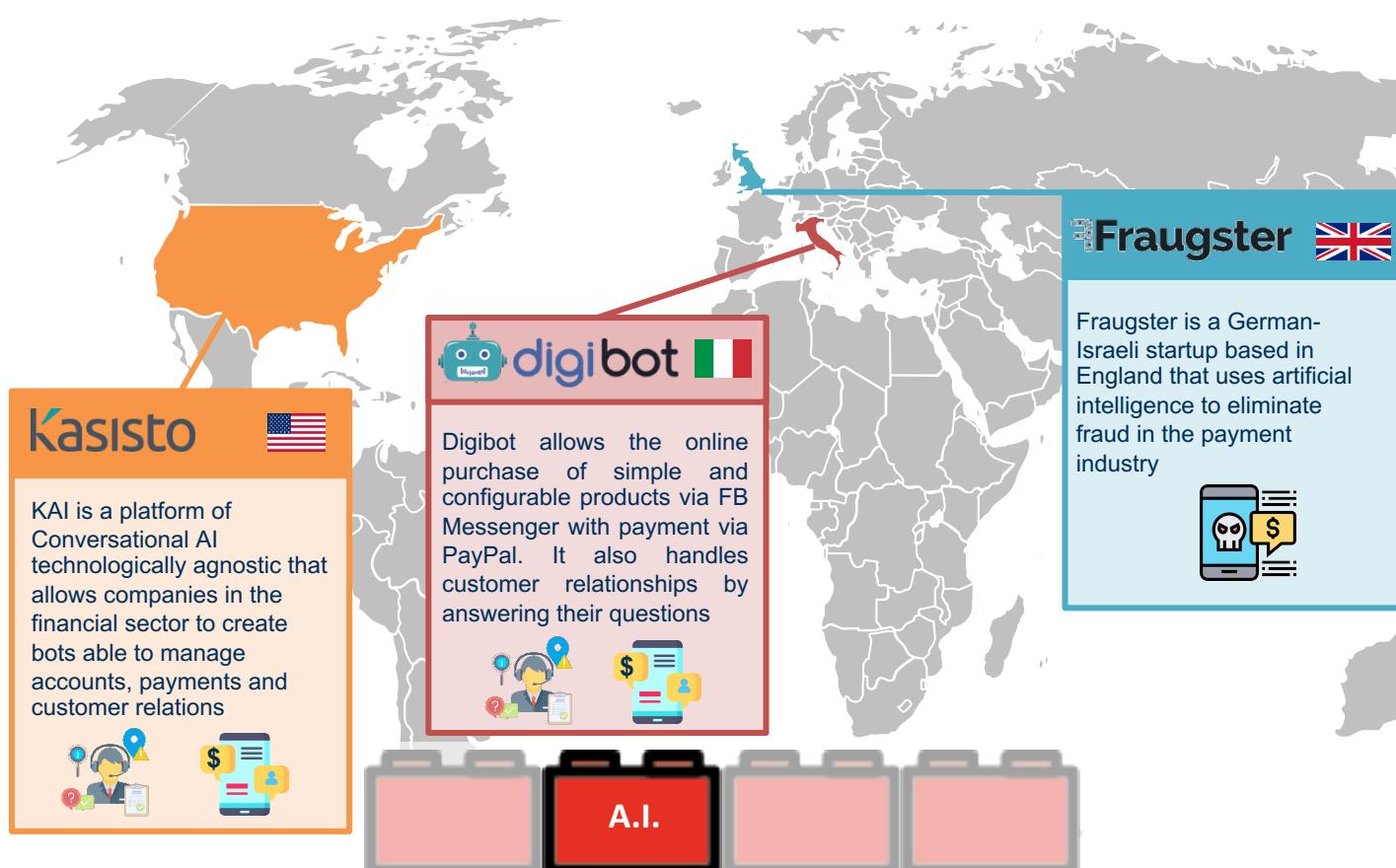
Payments



94



# Some Artificial Intelligence international cases



# Enabling Technologies: Instant Payment

The European Payment Council - on 21 November 2017 - launched the SCT Inst Scheme system, more commonly known as Instant Payment, in 34 countries. It is an instant transfer solution that allows you to transfer funds in less than 10 seconds, 24 hours a day, 365 days a year.

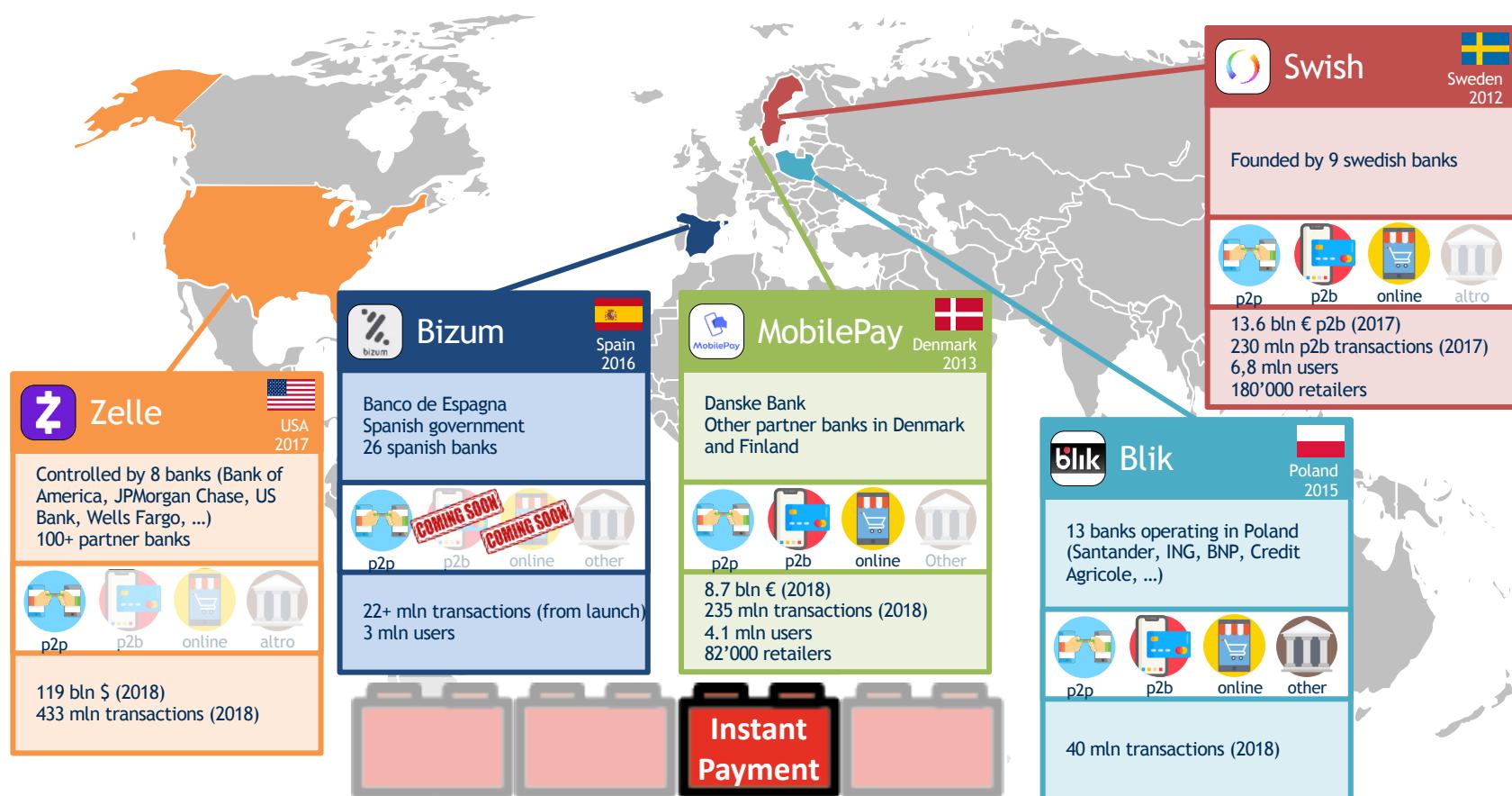
On EBA's RT1 platform



5 million transactions in  
the first 11 months of the  
service's life



# Some international account-based solutions



# Enabling Technologies: Blockchain

The blockchain technology is based on the decentralization of authority and control, on the automation of processes and on data integrity, things that make it potentially applicable to different use cases, many still to be explored

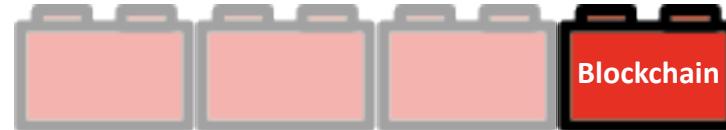
## Public platform evolution



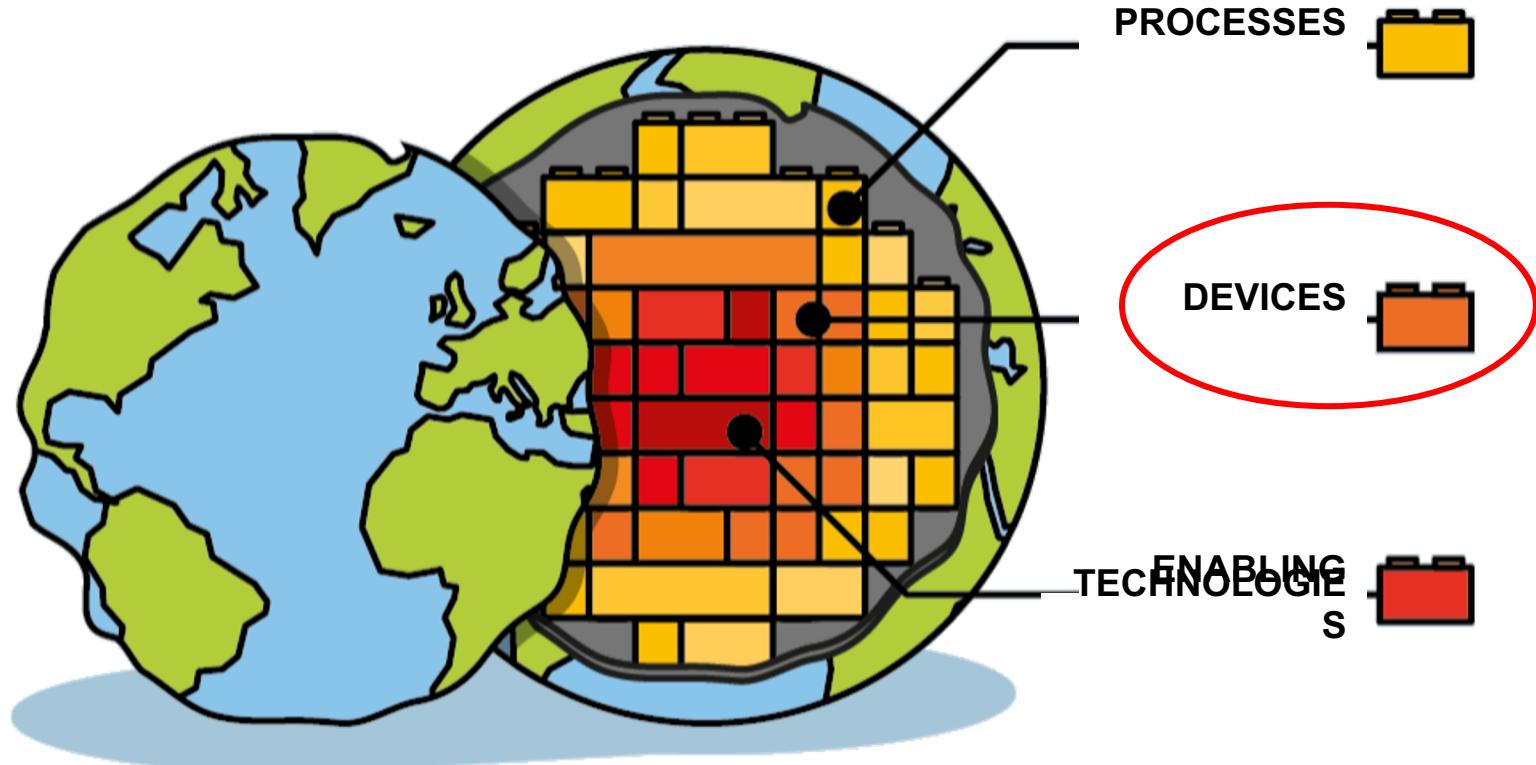
Lightning network is trying to make daily payments with Bitcoin possible

## New solutions based on blockchain

Telegram has raised \$ 1.7 billion from institutional investors to build the Telegram Open Network



# Innovative Trends



# Devices: Smart Objects

Thanks to the development of the Internet of Things, payments can be made through other types of instruments appropriately connected to each other and to the Internet, smart objects.

Wearable



Smart Objects

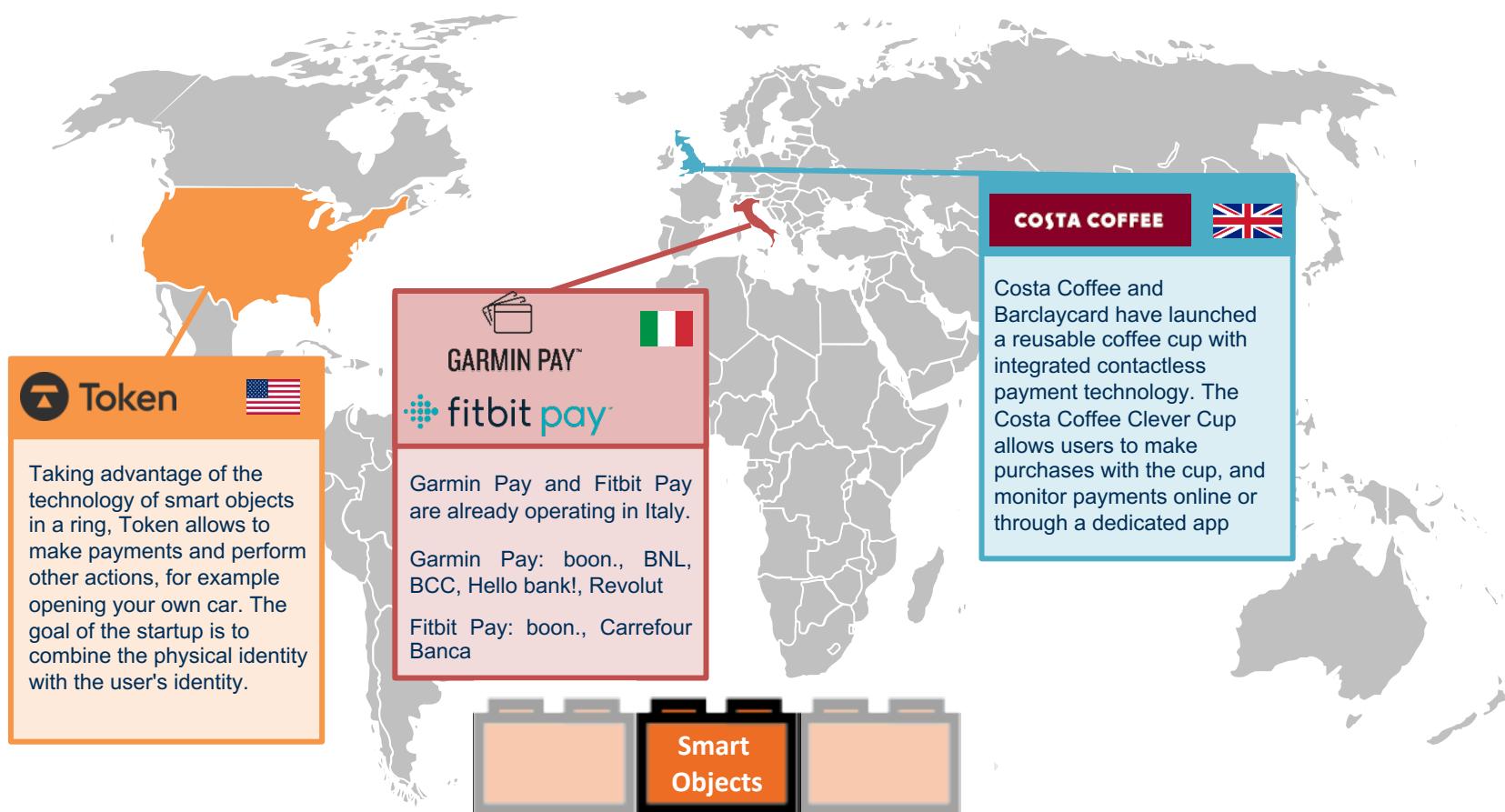
Connected car



Smart home



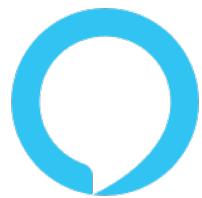
# Some Smart Objects international cases



# Devices: Voice Assistants

Voice assistants allow you to make purchases or payments simply by talking. The combination of this new devices with other components will enable many new services, changing the user experience of the customer

Voice Assistants



Alexa



Bixby



Cortana



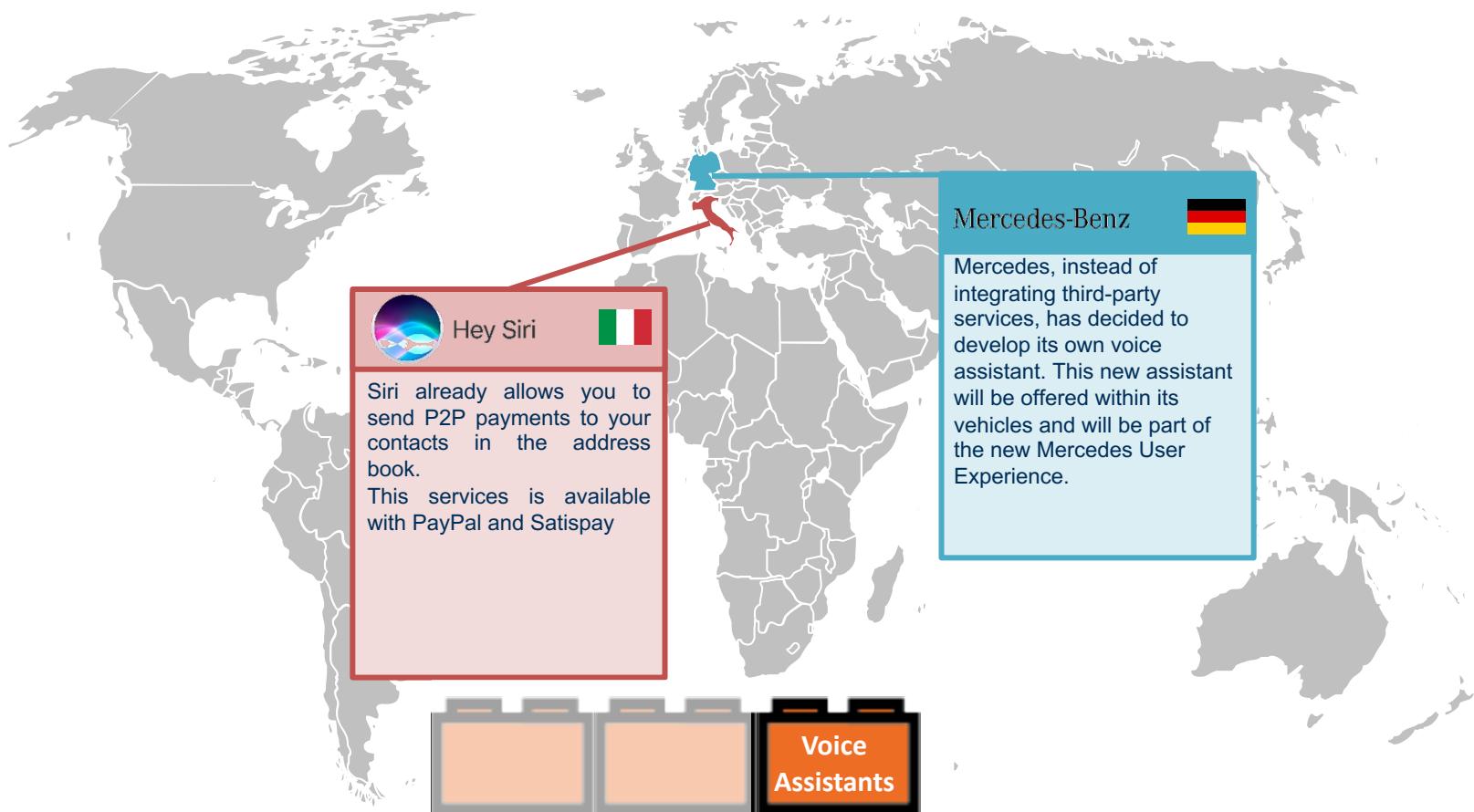
Google  
Home



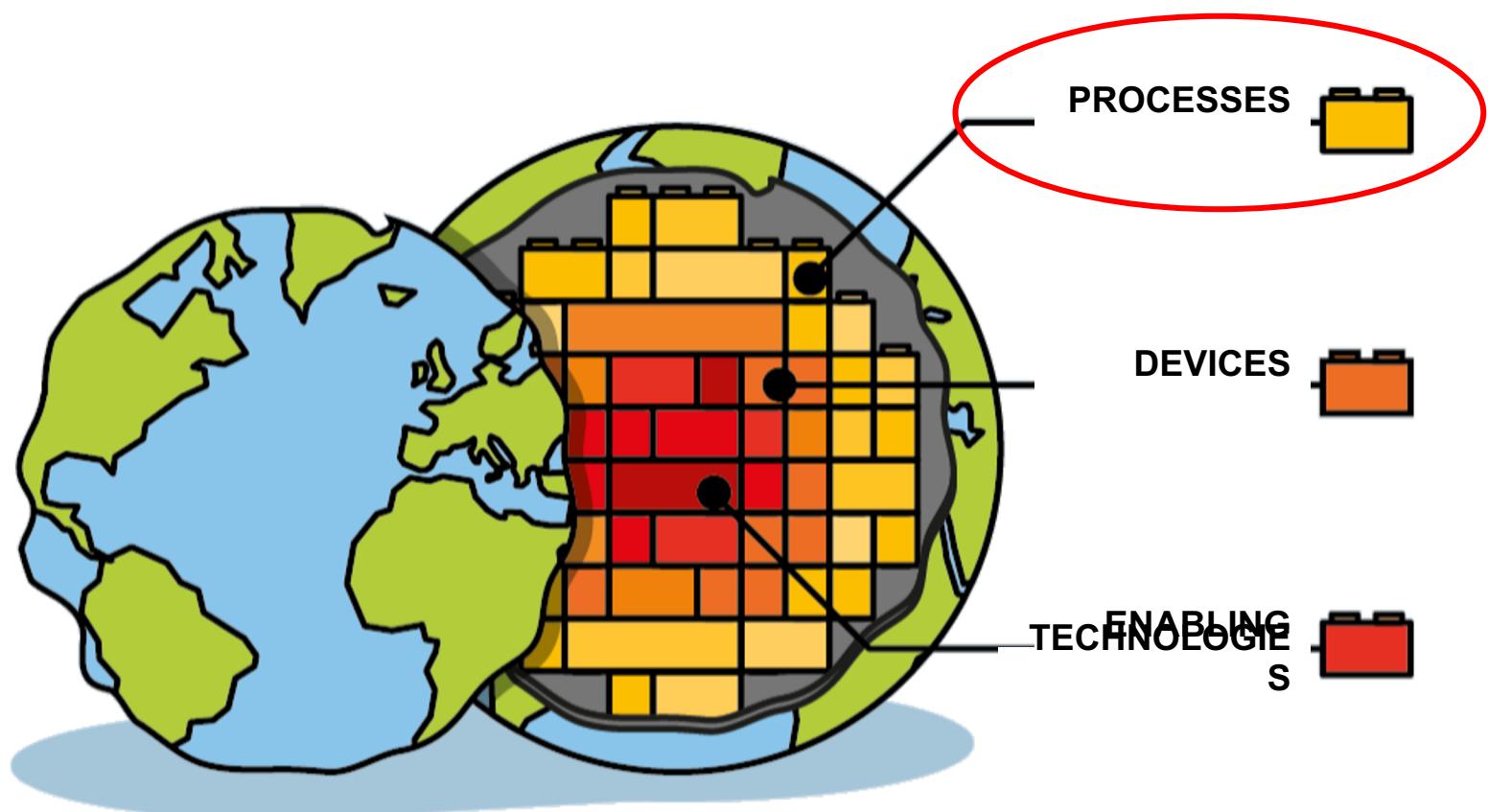
Siri



# Some Voice Assistants international cases



# Innovative Trends



# Processes: Purchase and Payment

The payment process becomes only a part of an all-round purchasing process, that involves any channel (physical, mobile, online...) and can also include product selection phases.

Checkoutless



Invisible Payments



OmniPayment

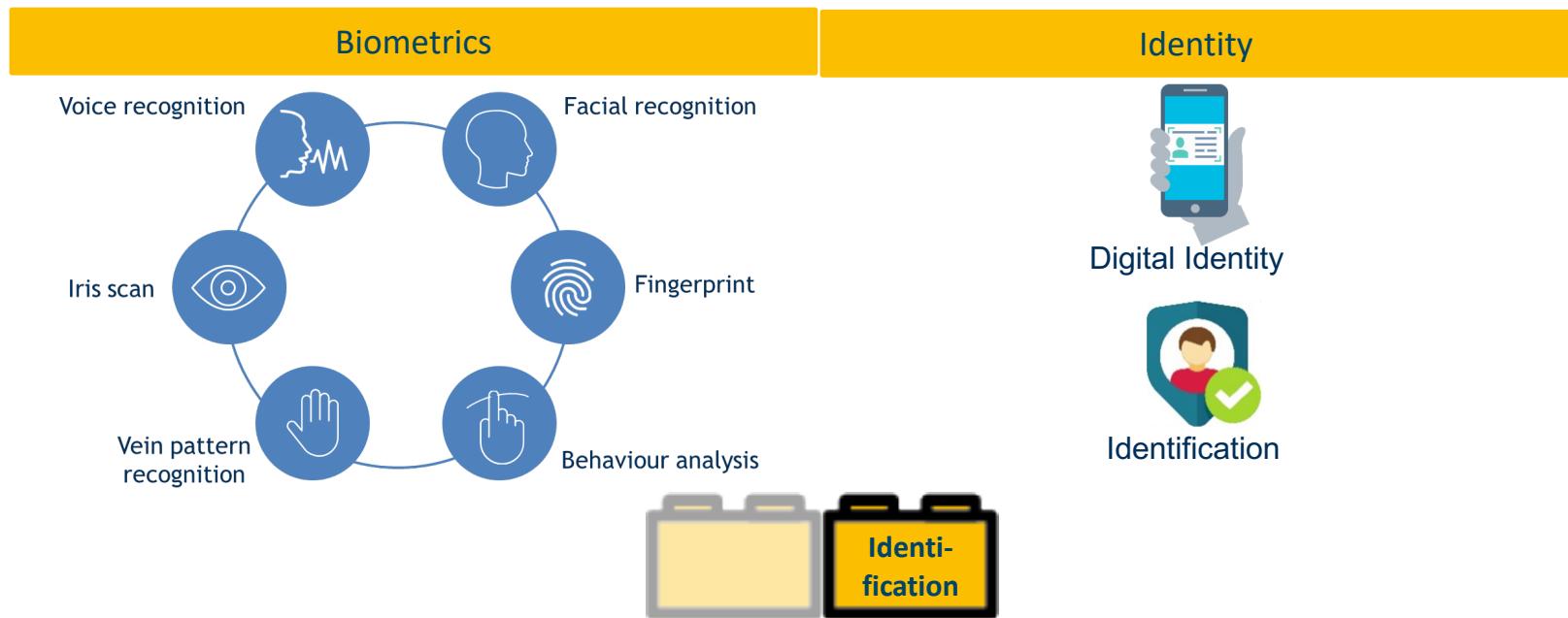


# Some Purchase and Payment international cases



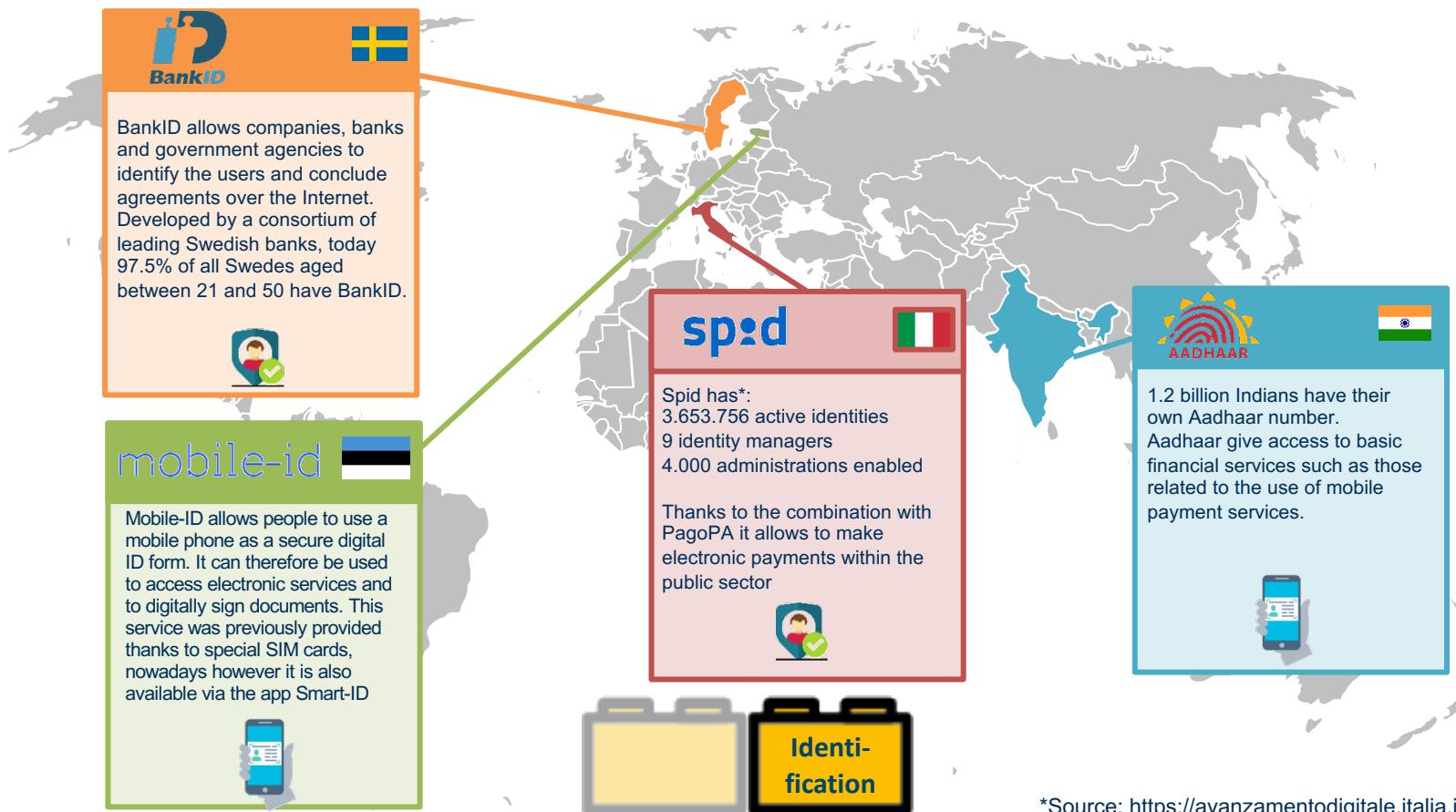
# Processes: Identification

Recognizing a person uniquely allows the start of a transaction, whether online or in-store. The more the identification process becomes simple and secure for users and merchants, the more successful these solutions will be.

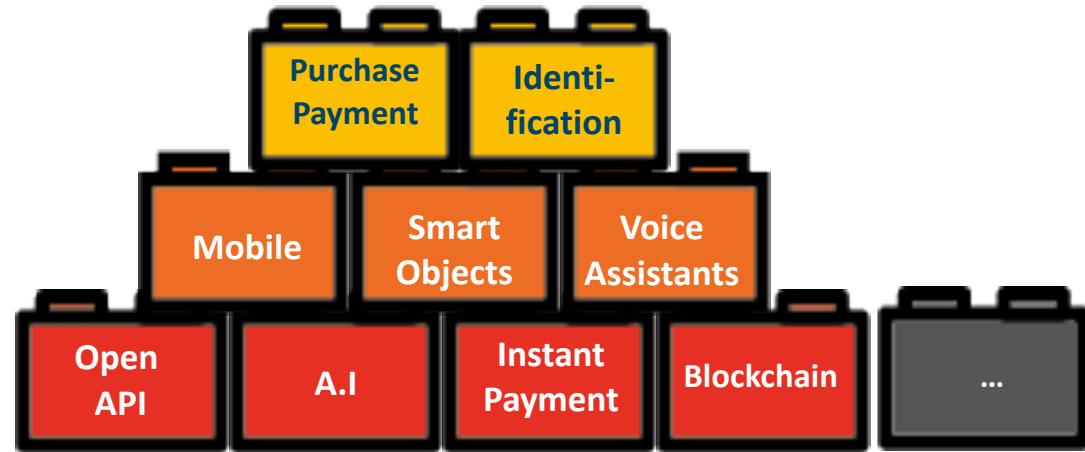




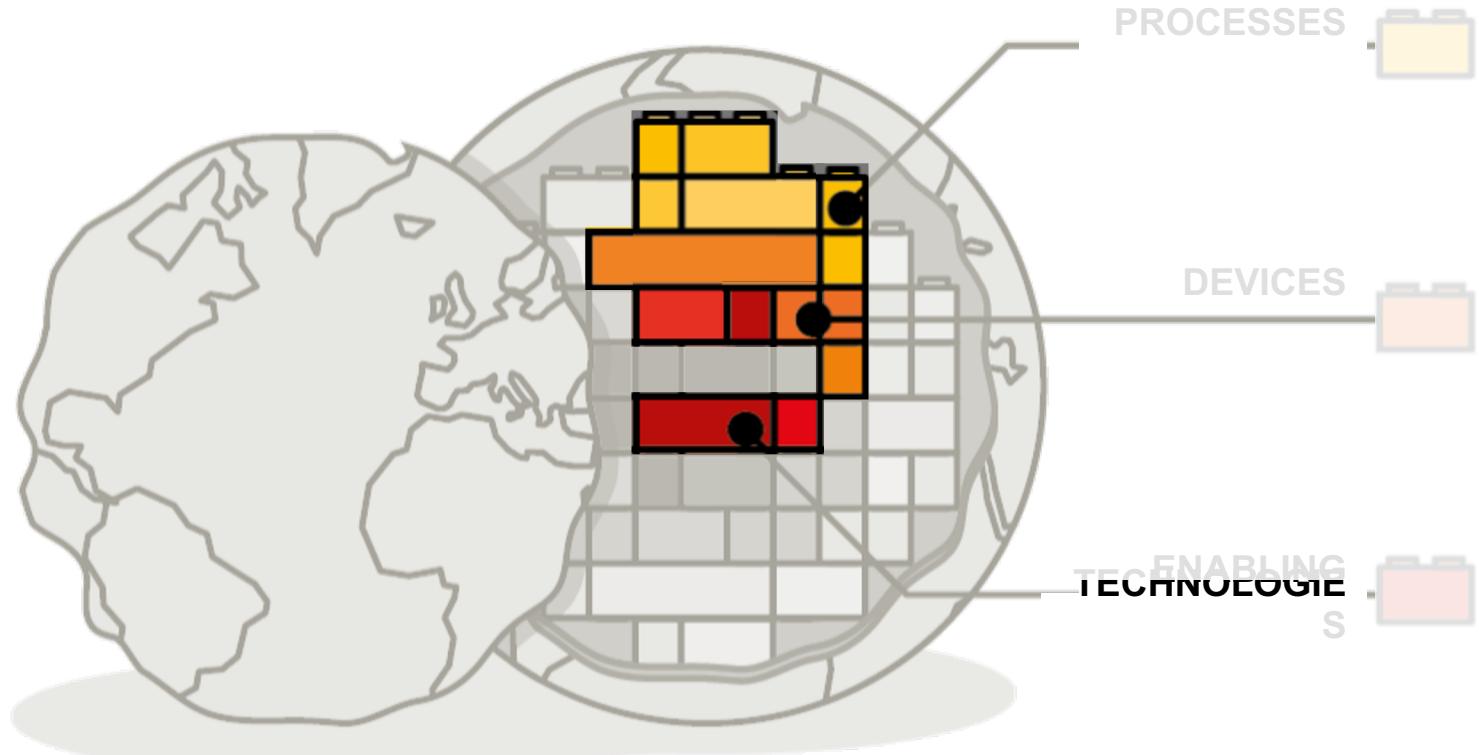
# Some Identification international cases



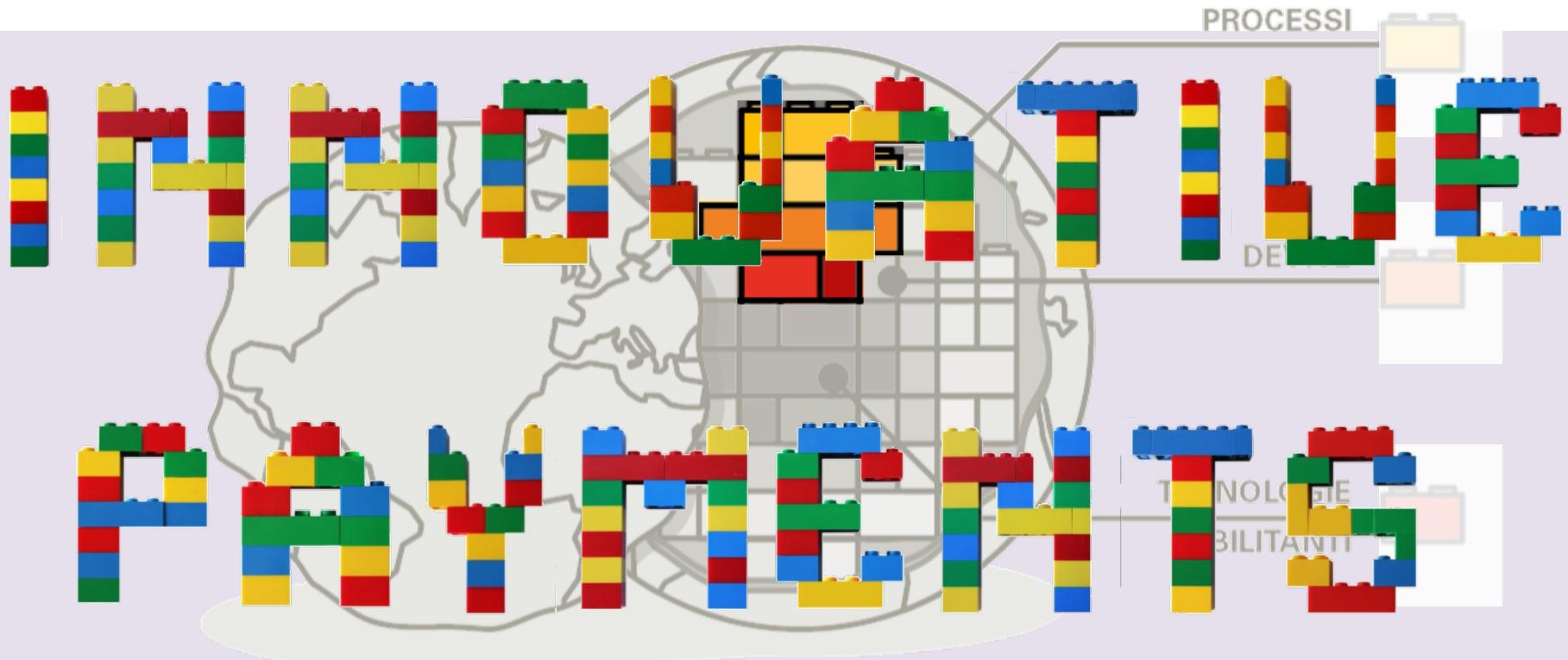
# The components of the payment innovations



# The possible combinations of the components



# The possible combinations of the components





UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
[stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)





UNIVERSITÀ DEGLI STUDI  
DI MILANO

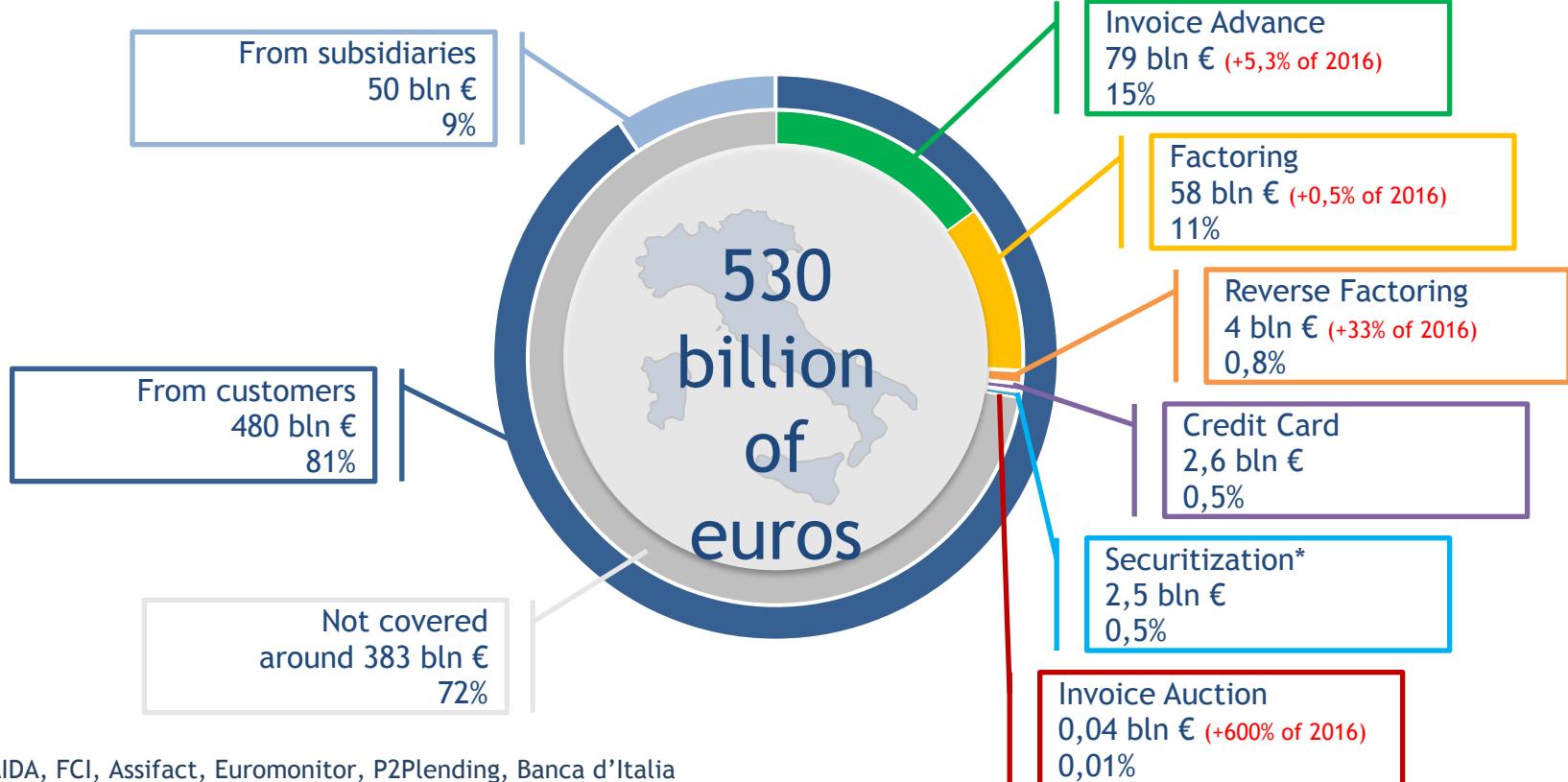
# FinTech Industry

*Supply Chain Finance*

*Stefano Bonini, PhD*  
*08 February 2021*

# SCF Market in Italy

## Account Receivables at 31/12/2017

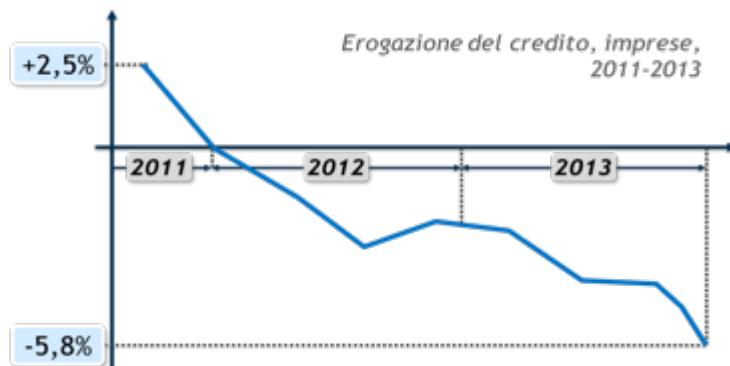


Source: AIDA, FCI, Assifact, Euromonitor, P2Plending, Banca d'Italia

# The financial scenario

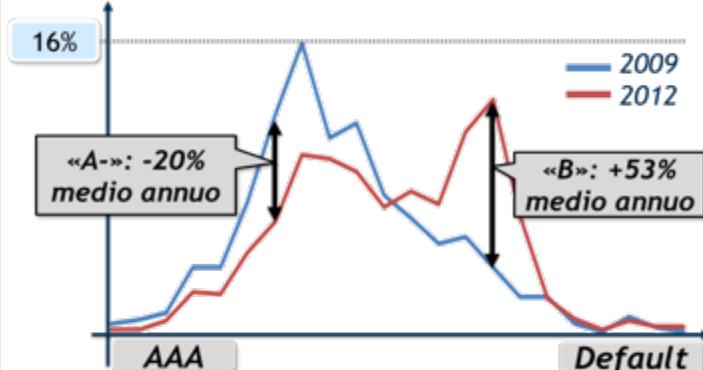
From the 2008 economic and financial crisis we observed a restriction of the credit granting criteria and a deterioration of companies' financial ratings

The financial crisis reduced the availability of the banking system, which adopted more restrictive criteria



*The value of «Bank loans granted to companies in Italy», calculated as a percentage change over a 12-month horizon - Source: Banca d'Italia - Economic Bulletin, January 2014*

The economic crisis worsened companies creditworthiness, in particular on lower ratings



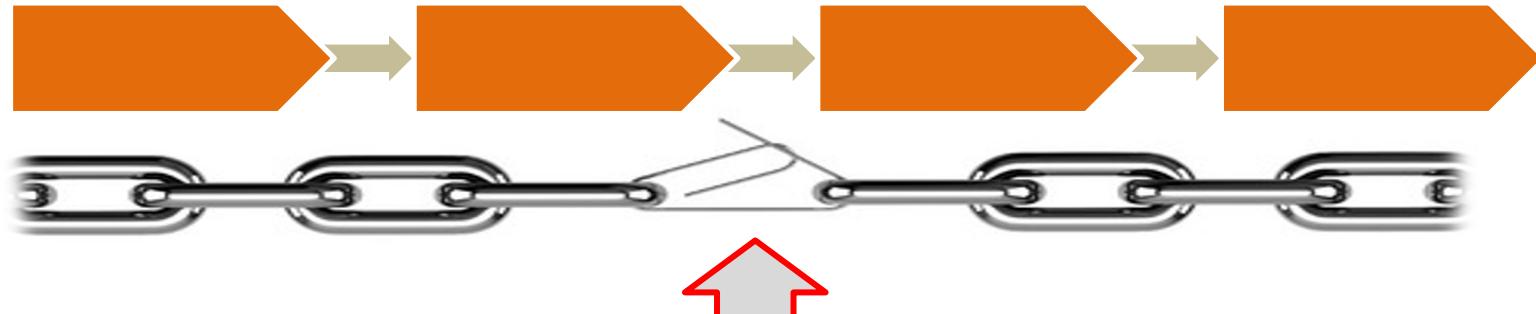
*S&P's Ratings - EMEA; comparison between rating collected in 31/03/2009 and in 30/06/2012 - values in the callout are CAGR; Sample: N\_2009: 473, N\_2012: 821 - Source: Global Ratings Reporting Group*

Companies' risk grows; costs and difficulties in obtaining bank credit increase, directly affecting the business cycle duration. Also the Quantitative Easing policies introduced in the last years have not yet succeeded in reaching all companies, in particular SMEs

# Supply Chain implications

The weakness of an actor in the supply chain becomes a potential source of risk for all the others, including the most robust, because they may lose valuable partners, hardly replaceable

Supply Chain: a "chain" aimed at producing value



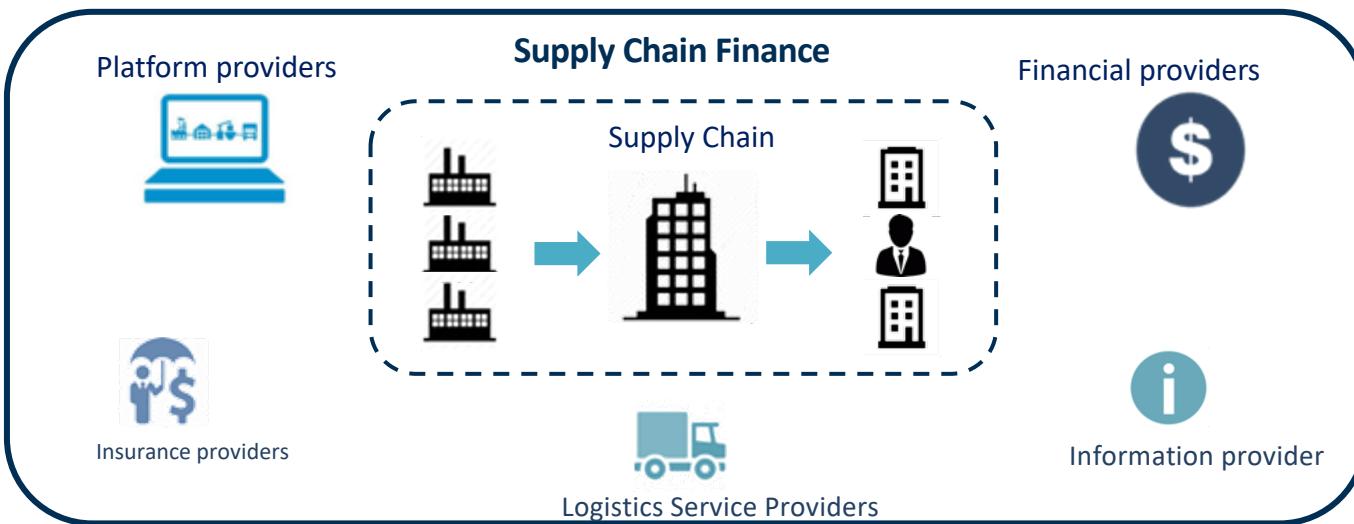
*Companies cease their activities even if they have orders to be fulfilled, because they don't have the liquidity needed to work*

Degenerate phenomenon which triggers, through a domino effect, unforeseeable consequences and problems even on solid suppliers and customers, who suddenly find themselves without a business partner

# Supply Chain Finance

## SUPPLY CHAIN FINANCE

*Supply Chain Finance (SCF) means increasing efficiency and effectiveness of inter-company financial flows by implementing innovative solutions that exploit the knowledge of dynamics and relationships in the supply chain, adopting a broader perspective*



# Supply Chain Finance Some *insights on the phenomenon*



**Amid Carillion Catastrophe, Suppliers Panic With Payments In Limbo**

By PYMNTS ·   
Posted on January 16, 2018



*One of the main general contractors in UK went into liquidation after (ab)using Supply Chain Finance, with a chain effect to the supply base*

# Supply Chain Finance *Some insights on the phenomenon*

## One year later: **Toys R Us'** fatal journey through Chapter 11

Retail Dive - 18 set 2018

By assets, **Toys R Us** is the third-largest retail bankruptcy ever, behind ... Suppliers to **Toys R Us** clammed up following the reports that **Toys R Us** had hired financial advisers, creating a run ... and failing to buy **Toys R Us'** Canadian unit together with hundreds of U.S. .... Marketing Dive · Supply Chain Dive ...



## **Toys R Us** collapse highlights fragility of **supply chain finance**

Financial Times - 6 nov 2017

The most wonderful time of the year? For **US** retailers, the holiday shopping season is more likely the most nervous. Hammered by ...

# Supply Chain Finance *Some insights on the phenomenon*

---



## Astaldi files for protection from creditors

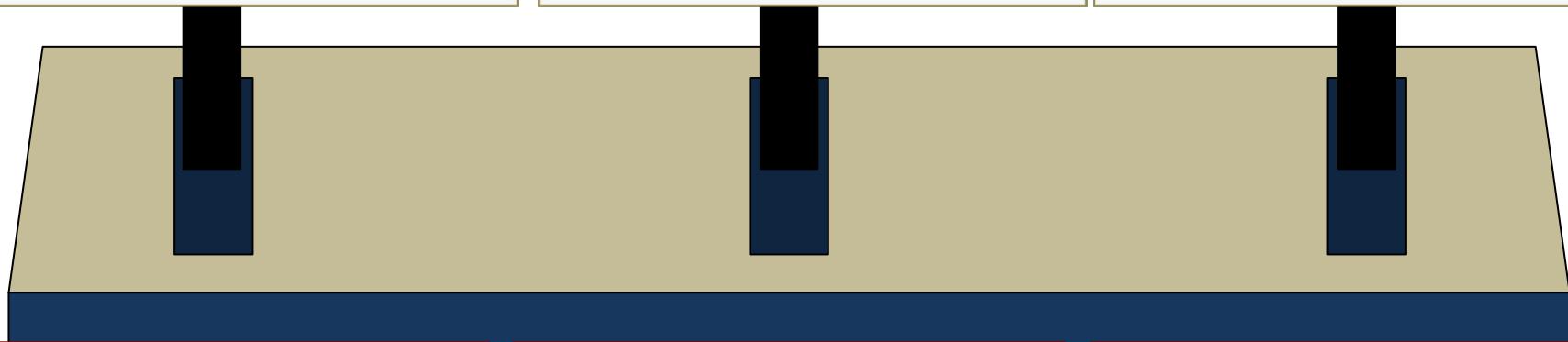
Italian-based contractor Astaldi has applied to the Court of Rome for protection from its creditors following a delay in the sale of the Yavuz Sultan Selim Bridge – formerly known as the Third Bosphorus Bridge – in Turkey.

# Supply Chain Finance: Levers for creating value

Easier access to short term financing

Lower cost of financing

Lower NOWC need

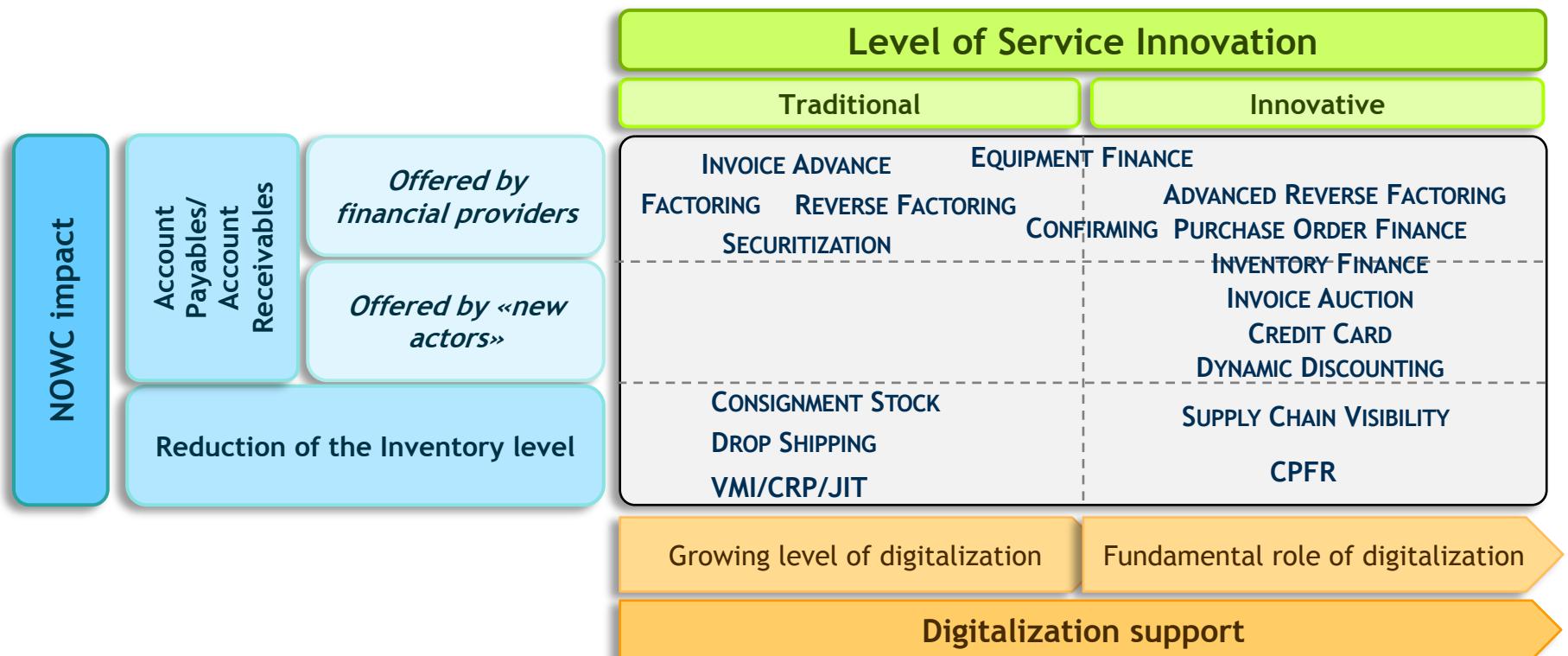


... better conditions and agreements enable new subjects to access short term financing

... better information and transparency improve rating reliability, thus reducing operational costs and the need for deep financial analysis

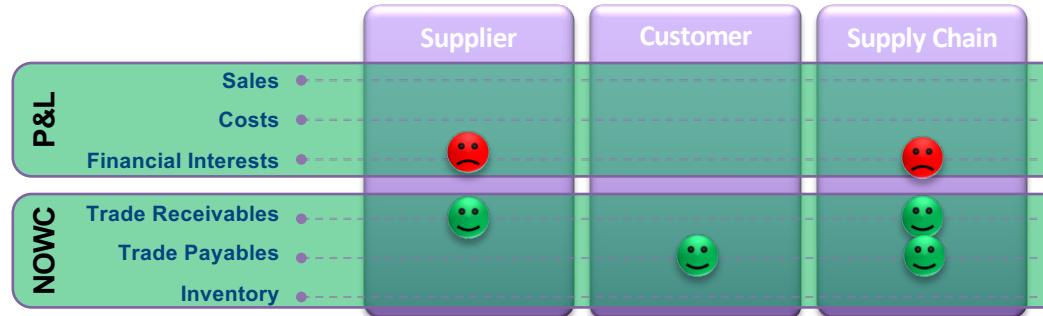
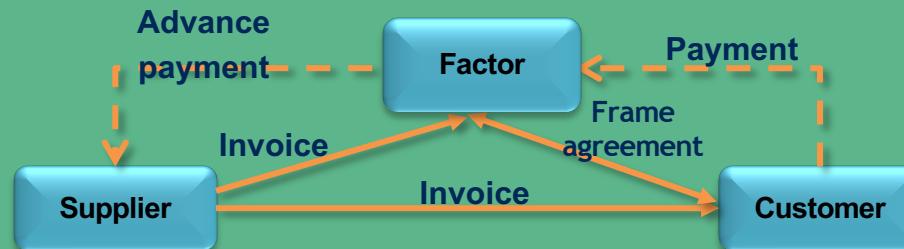
... with the same service level, NOWC is reduced and/or reallocated basing on financial needs and capabilities of each Supply Chain node

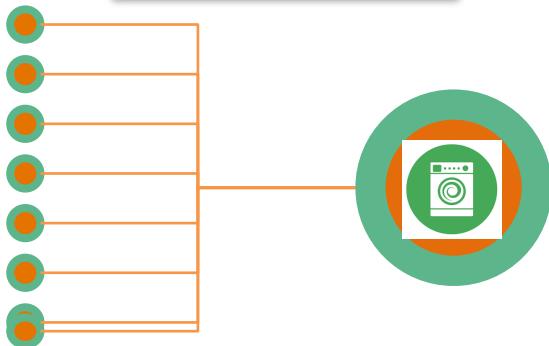
# Supply Chain Finance solutions



# Supply Chain Finance solutions

## Reverse Factoring





Household Appliances

Washing machines, refrigerators

20 billion Euro (world)

Comerio (Varese)

*Enable access to short term financing at good conditions for stable and reliable suppliers*

- Subsidiary of world leader, 26.000 employees, factories in many European countries
- Electronic invoicing platform managed by an external provider and connected to the financial partner
- Suppliers can decide autonomously which invoices to discount and when, at pre-agreed conditions

## **DIGITAL REVERSE FACTORING**



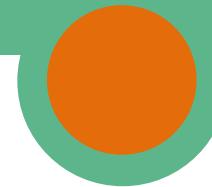
**STAFF**  
INTERNATIONAL

Help!



	Fashion
	High fashion apparel
	300 million Euro
	Breganze (Vicenza)

*Enable access to credit at low cost to the best suppliers*



- Part of the OTB group (Diesel), focused on the high-end segment.
- More than 300 highly specialized small Italian suppliers with very difficult access to credit

## **ADVANCED REVERSE FACTORING**



Incentive to improvement  
for the suppliers

Guaranteed and low cost  
access to credit

- Staff International selects the best suppliers on the base of its Vendor Rating and shared this information with the financial partner
- Selected suppliers can discount their invoices to Staff International at a pre-agreed low rate, guaranteed by Staff International

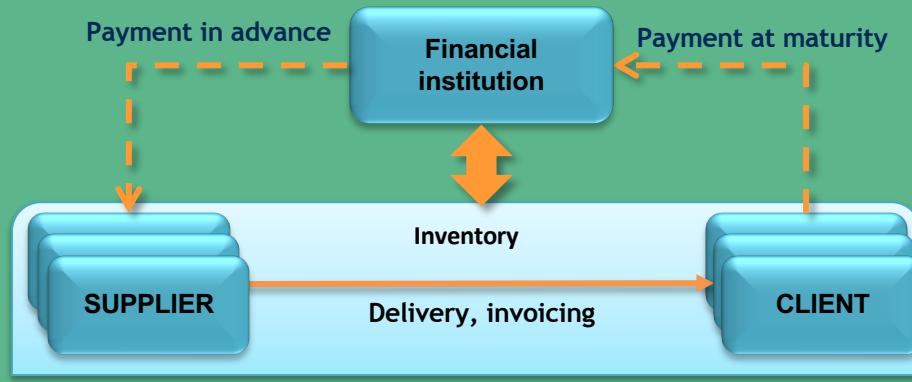
Support to strategic  
specialized suppliers



Customers highly attractive for banks (good rating) with many small suppliers

# Supply Chain Finance solutions

## *Inventory Finance*



- The financial institution provides a loan to cover the value of the inventory
- The inventory serves as collateral, a third party (e.g. logistic service provider) may be involved
- The risk of insolvency is managed by selecting solid and continuative relationships

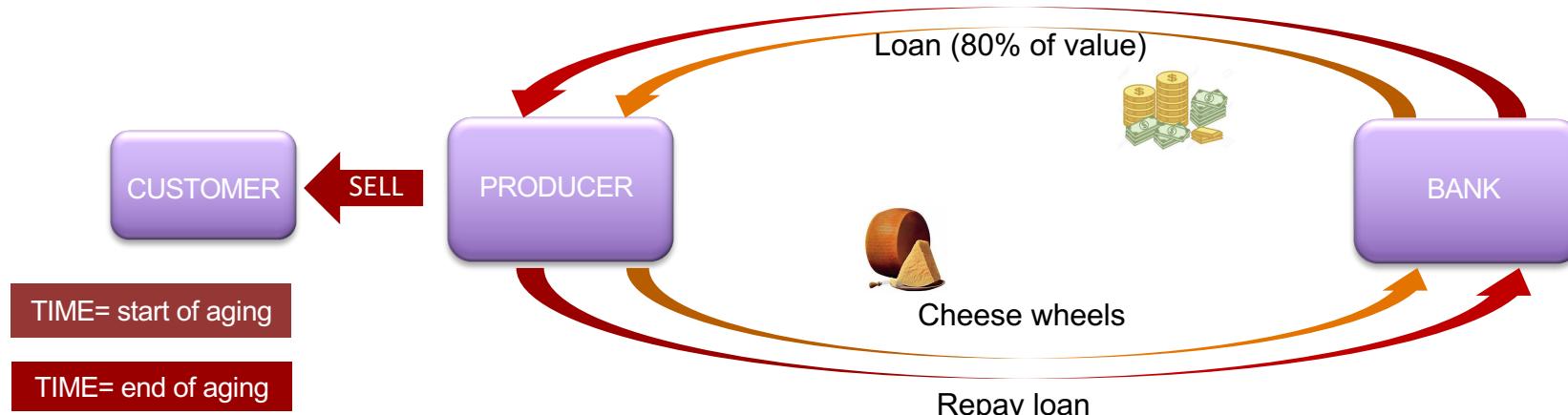
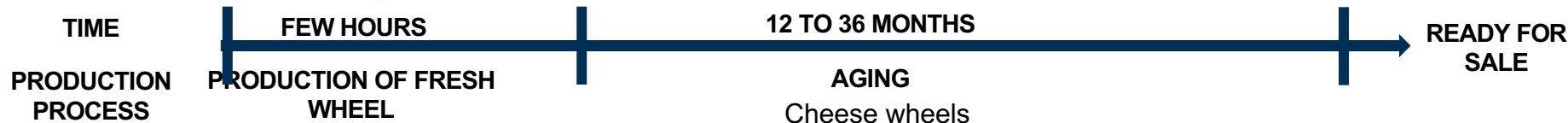
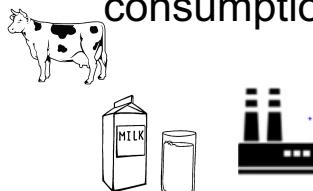
# Inventory Finance

- The bank provides a loan to sustain the cost of inventories and faces the following risks:
  - Information asymmetry: the bank has no direct information on the inventory status and value
    - This can be mitigated by a trusted third party that takes control of the inventory and provides information to the bank
    - Alternatively, inventory can be identified and monitored through certificates, labels, RFId, IoT, etc.
  - Funding risk: the bank has no certainty that the loan is used to cover the inventory
    - When a third party or an identification system is in place, funding is provided proportionally to the goods and they can be sold only after repaying the loan
  - Resale risk: the bank has no certainty that in case of insolvency the inventory can be sold to recover the value
    - If goods have a clear market value, with a broad customer base, and are not easily perishable, this risk is mitigated
    - Alternatively, the existence of consolidated market relationships (e.g. long term contracts) also reduce the risk
- A particular version of inventory finance implies the sales of goods to a third party, which will then sell to the customer, taking ownership of the inventory and thus reducing the NOWC of the supplier

# Parmigiano Reggiano



- 1.9 Million tons of milk transformed
- 3.65 Million of wheels produced in 2017
- Approx 3,000 breeders and 335 cheese makers
- 1.3 billion € value at production, 2.2 billion € value at consumption



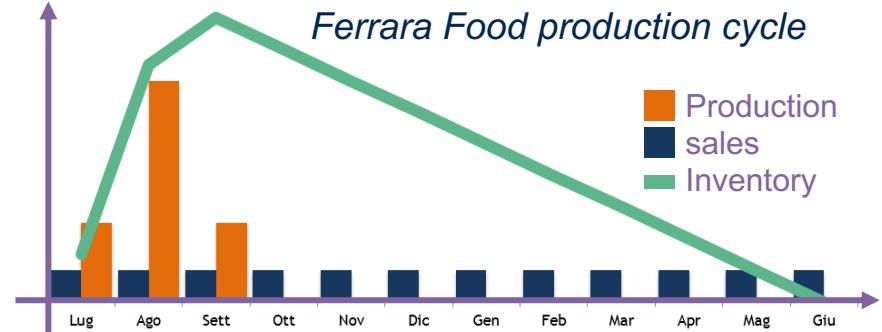
The Bank does not take property of the goods but hold them as a pledge until the Producer pays back the loan. In case the Producer does not pay, the Bank takes property of the goods and sells them



*Need to align cash inflows and outflows to reduce net operating working capital*

- Purchasing of raw materials and processing concentrated in 3 summer months,
- Sales to producers of tomato-based products distributed during the whole year

	Agri-Food
	Fresh Tomato Processing
	29 Million Euro
	Argenta (Ferrara)



## INVENTORY FINANCE



Alignment of cash in-  
and outflows

Strong reduction of  
working capital need

The financial partner pays in advance the cost of raw materials (fresh tomato) to suppliers.

Every time a customer pays Ferrara Food, the financial partners retains a share to recover the credit, until it expires

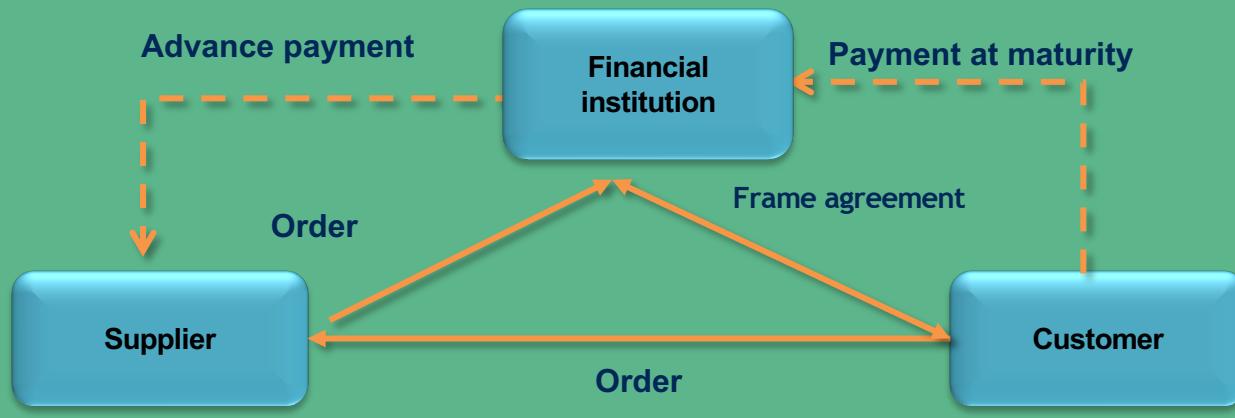
Suppliers are paid quickly and on time



The company is economically sound and robust, with good and continuous customer relationships, but needs to anticipate the purchase of the whole raw materials

# Supply Chain Finance solutions

## Purchase Order Finance



- In industries with very long production cycles, suppliers need financing before delivering the goods (e.g. before invoicing)
- Customers agree with financial institutions to provide early financing to suppliers using e.g. purchase orders as collateral
- The amount of financing is generally only a portion of the value of the order
- The risk is higher compared to other solutions

# Heineken

## SUPPLY CHAIN HEINEKEN

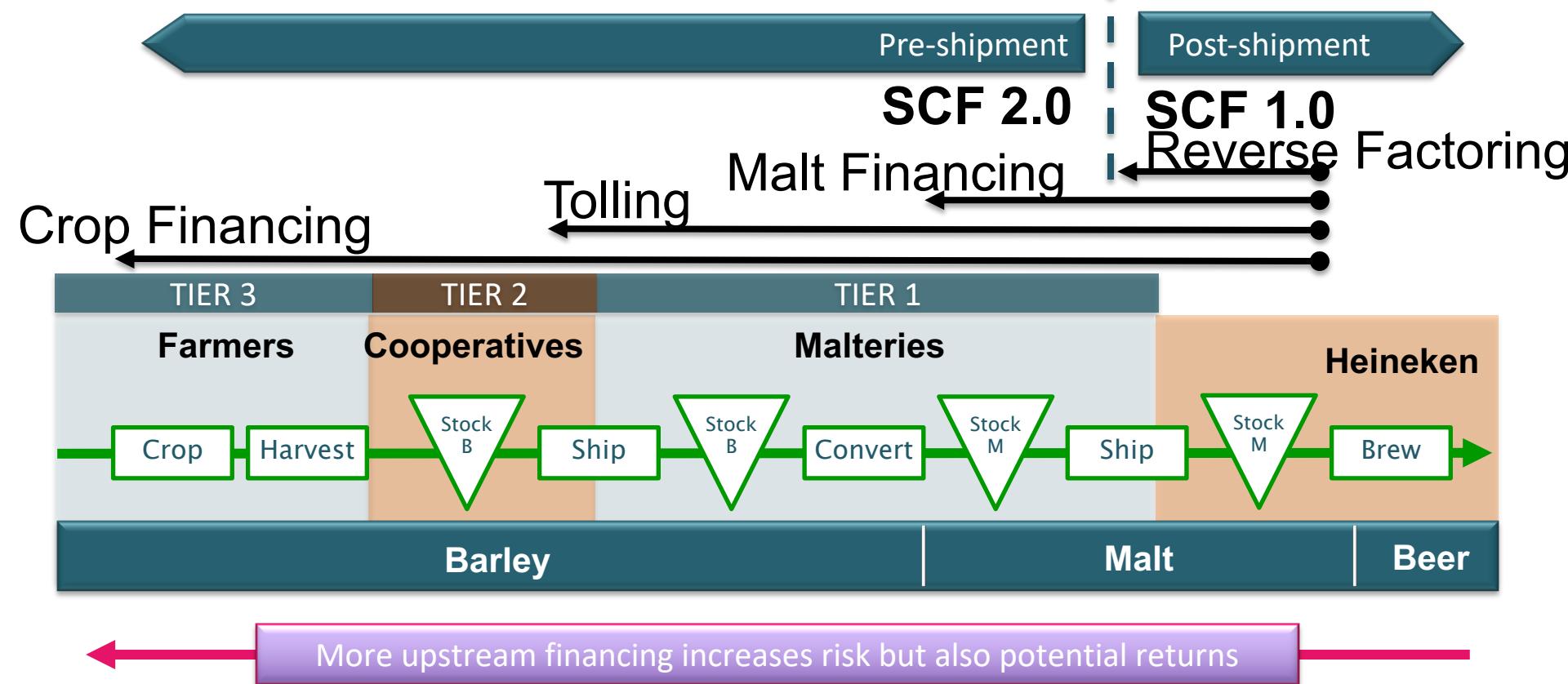


# Heineken

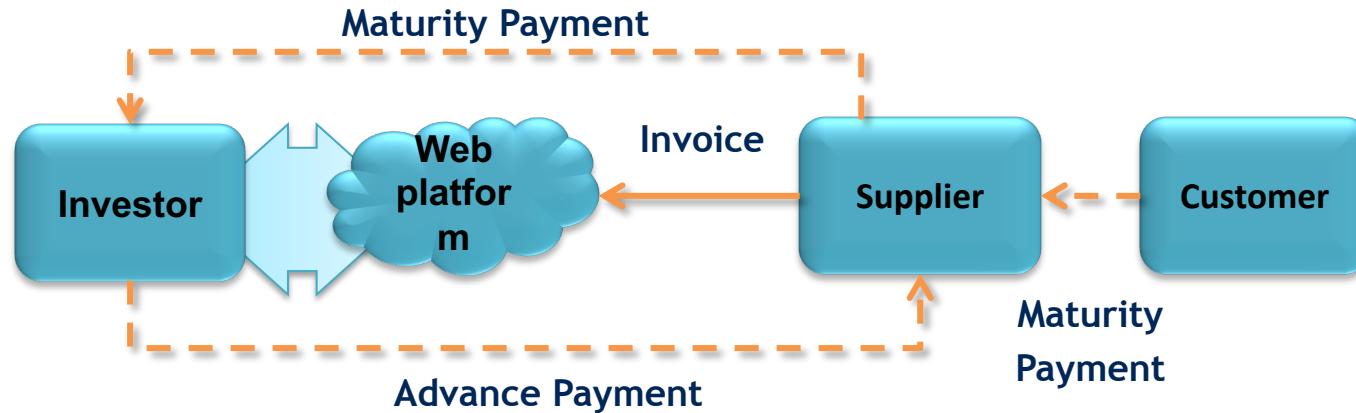
## SUPPLY CHAIN HEINEKEN



# Heineken



# Invoice Auction



- Suppliers upload their invoices to be financed on a Web Platform
- Investors (both institutional and private) can bid an offer
- The best offer (i.e. with the lowest discount) wins the invoice



Paper

Packaging

<5 mln Euro

Peschiera Borromeo (Milano)

*Obtain short term finance to support daily activities*



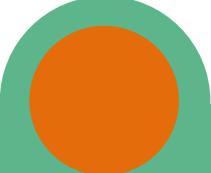
- New-co funded in 2014
- Average invoices: 5.000-20.000 Euro
- No access to traditional credit

## ***INVOICE AUCTION***

Quick access to liquidity  
with no fixed costs

C2C improvement  
without losing business  
opportunities

Altaquota sells its invoices on the invoice trading marketplace



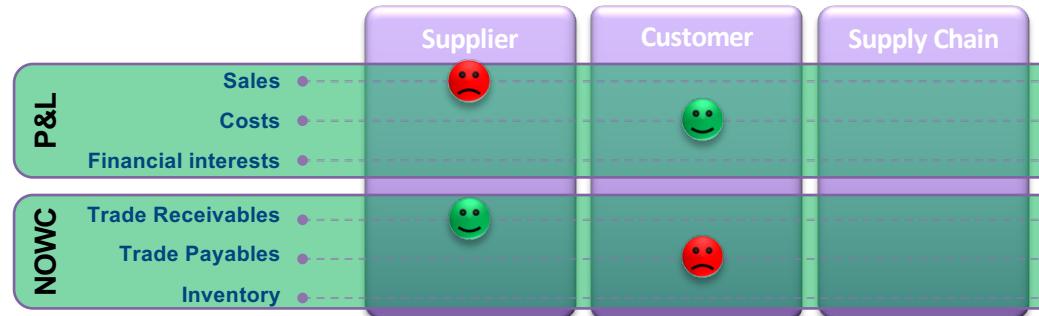
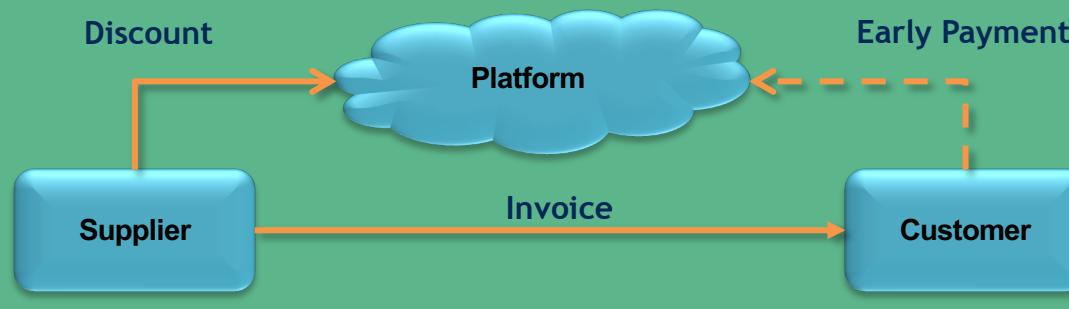
Ability to accept also  
large orders



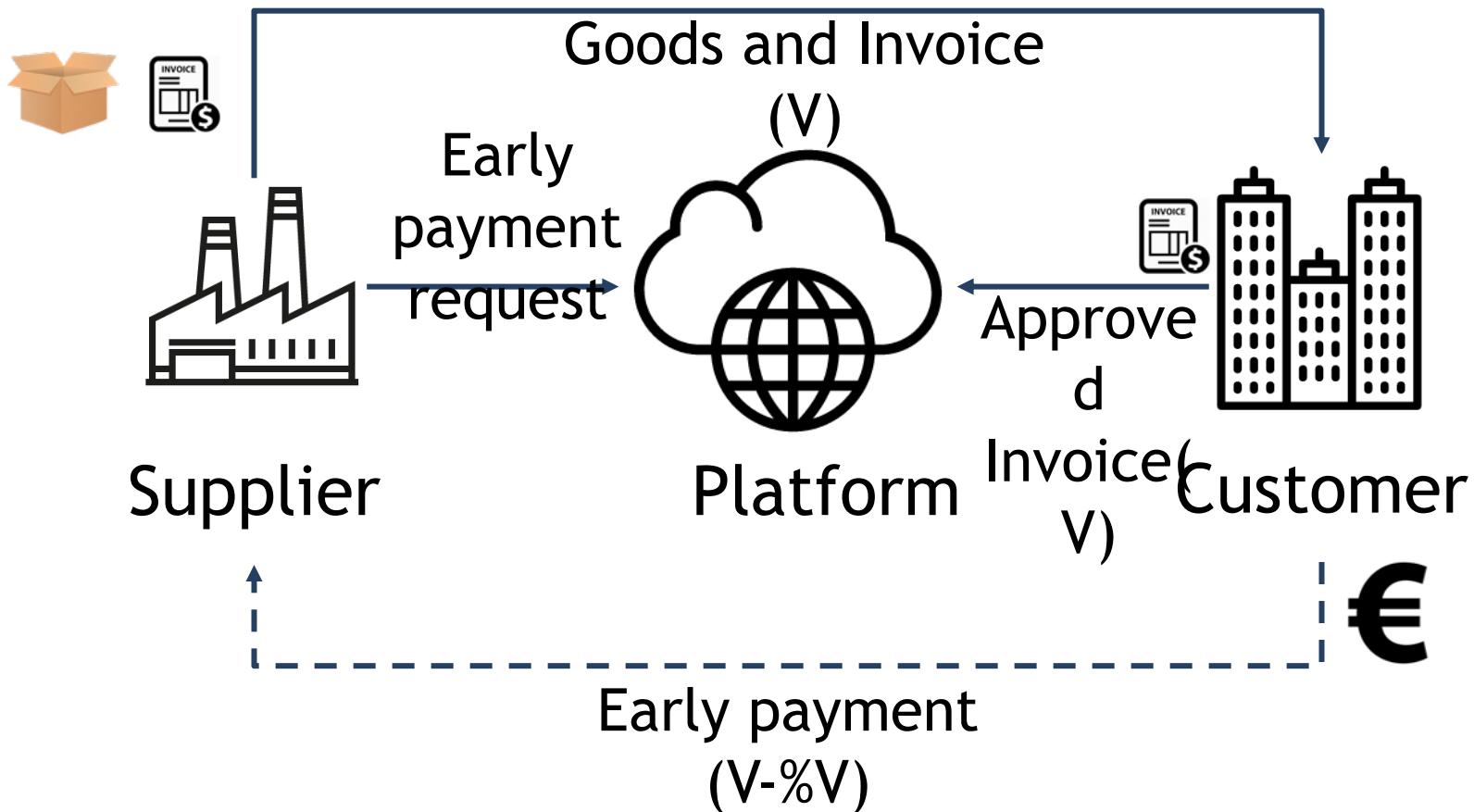
Companies with no alternative sources of short term financing, who need quick liquidity to support operations, limited value of the single invoice

# Supply Chain Finance solutions

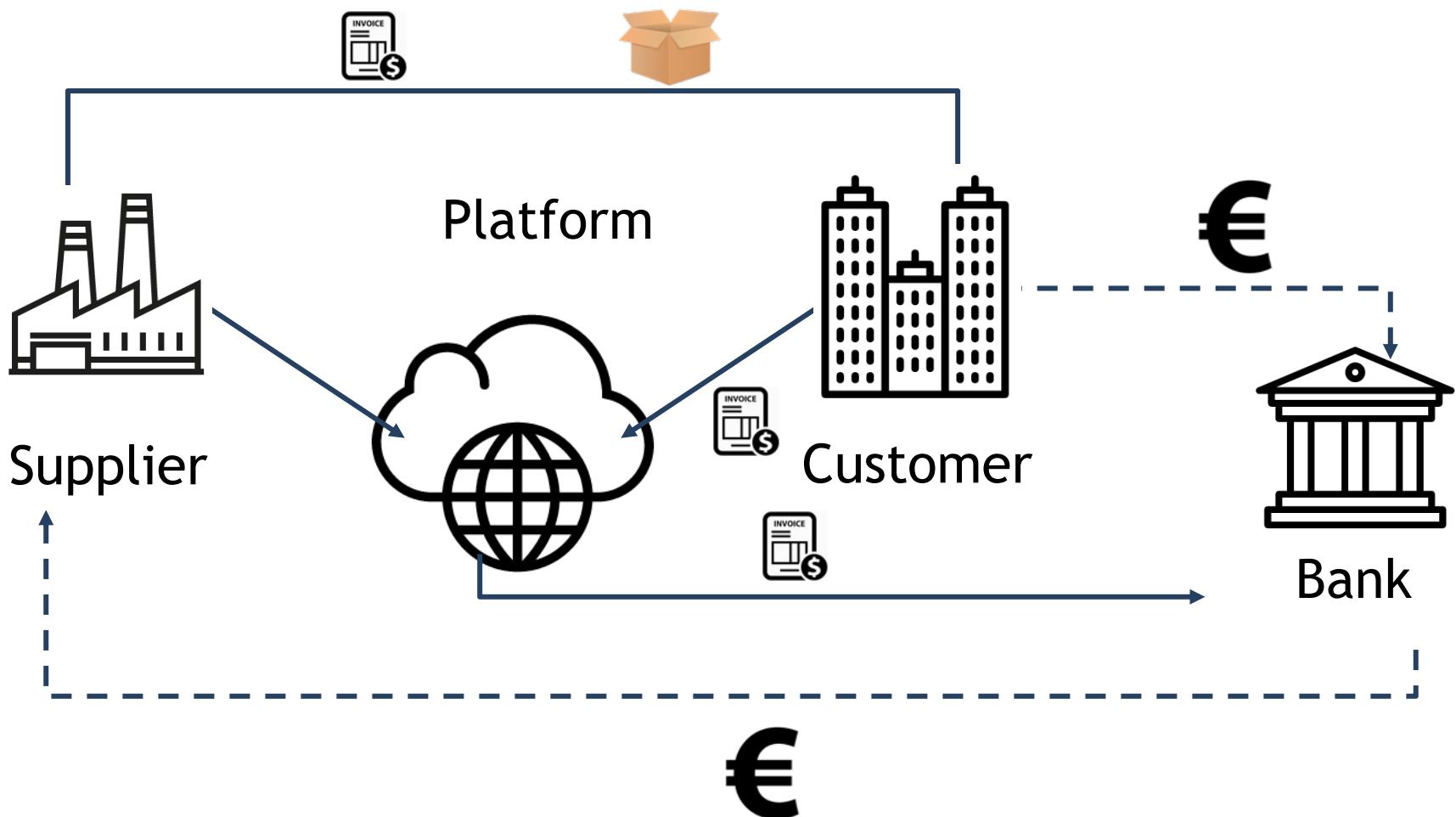
## *Dynamic Discounting*



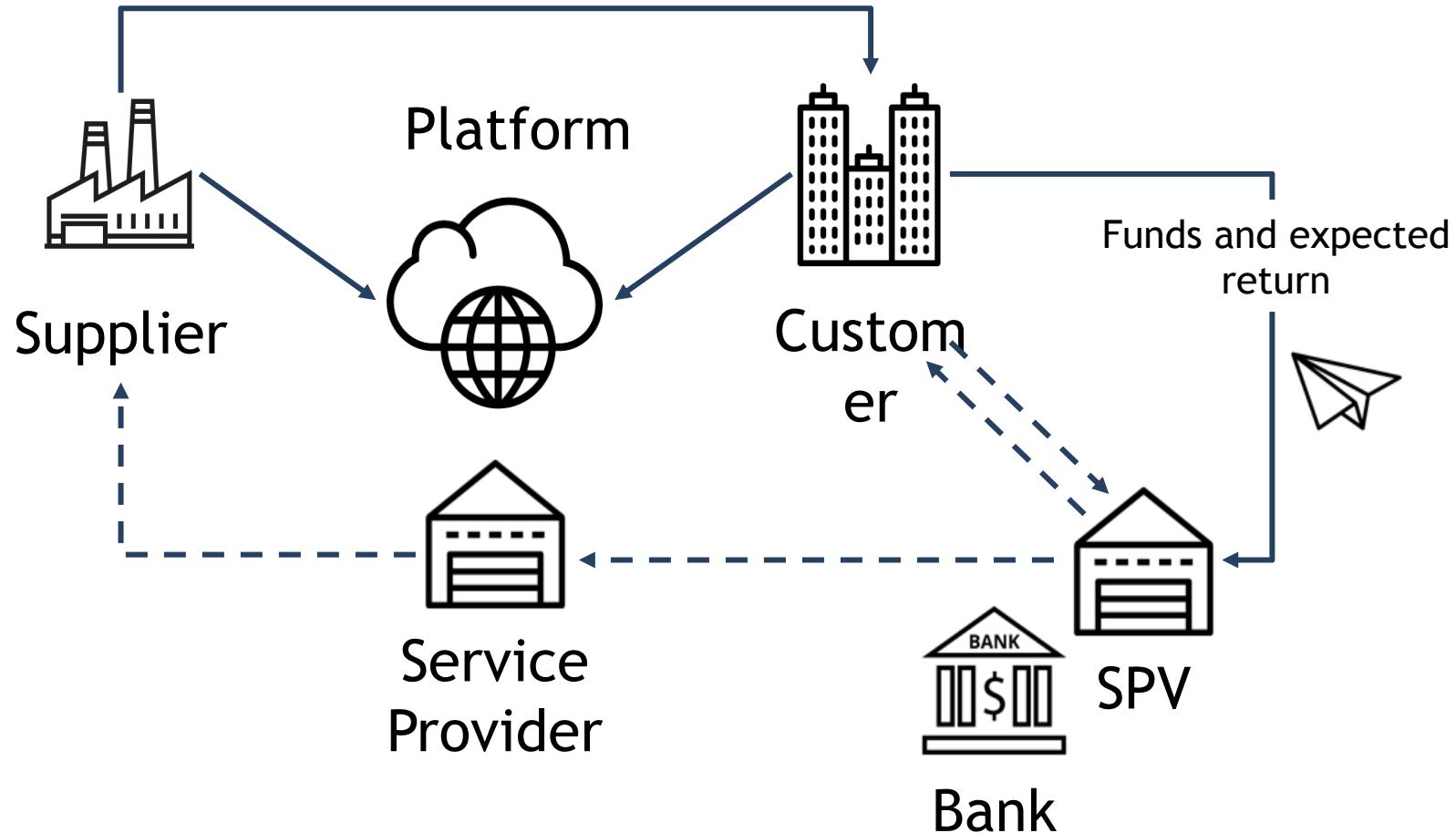
# Basic Dynamic Discounting



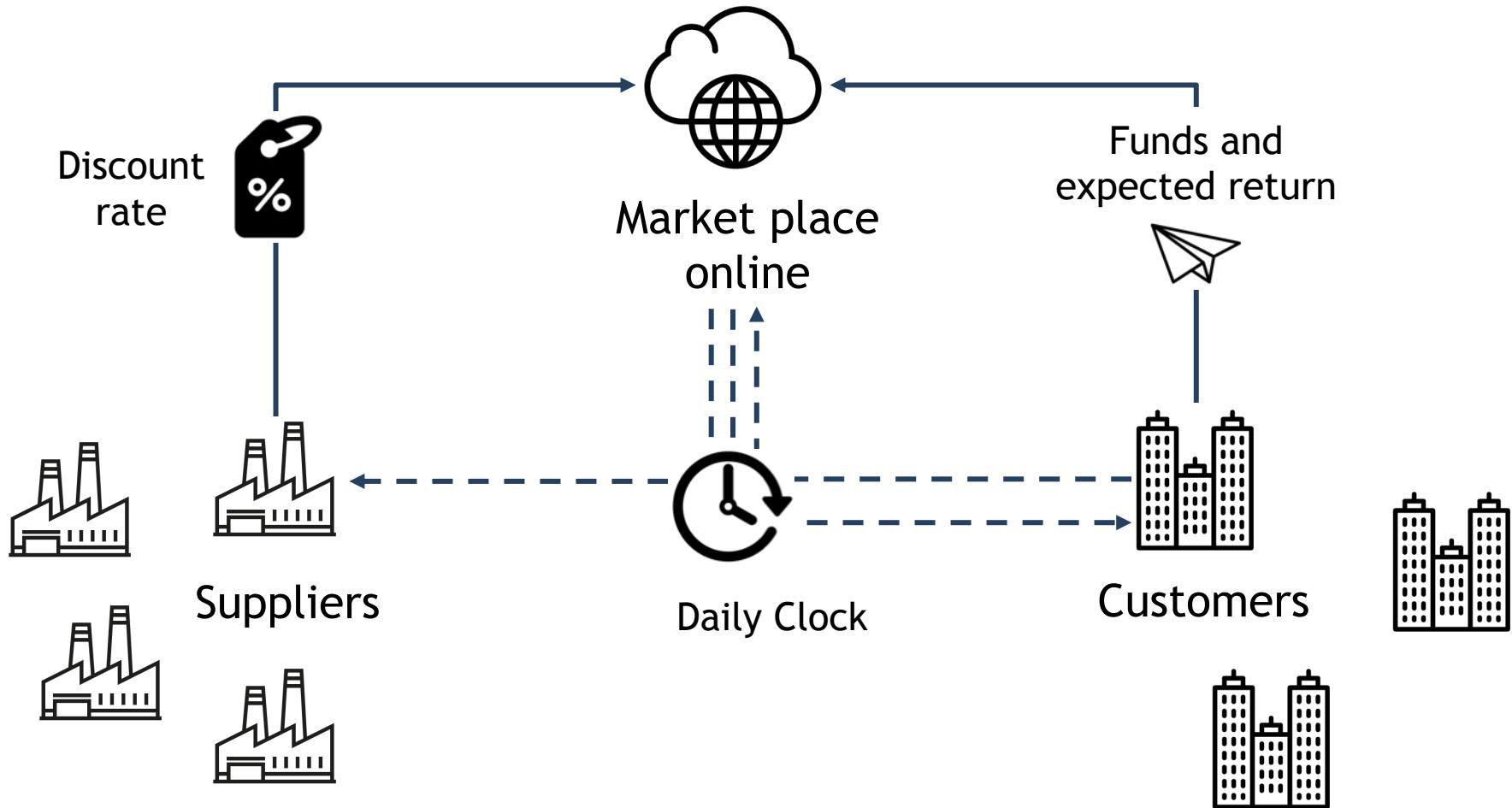
# Dynamic Discounting 3rd party financier



# Dynamic Discounting with Special Purpose Vehicle

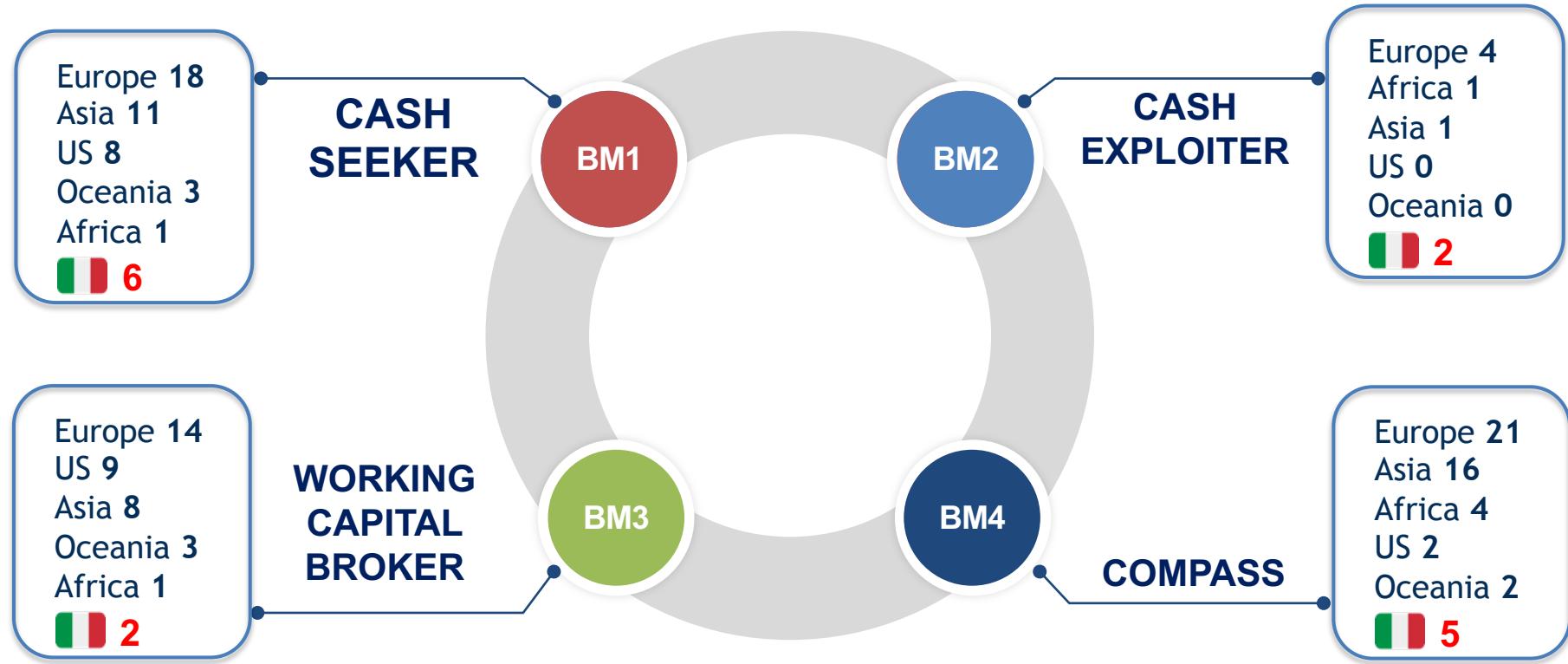


# Dynamic Discounting with marketplace



# Supply Chain Finance start-up

## Business Model



# Supply Chain Finance start-up

## Business Model 1: *CASH SEEKER*



*Business match between financial demand and offer, using channels different from the bank one, to obviate the lack of supply chain liquidity*



*Existing solutions to new actors + supply chain profiling + risk mitigation*



*# Supplier (creditor)  
# Private and Institutional Investors  
# Buyer (debtor)*



*Invoice Auction  
Invoice Advance  
Short-term loan*

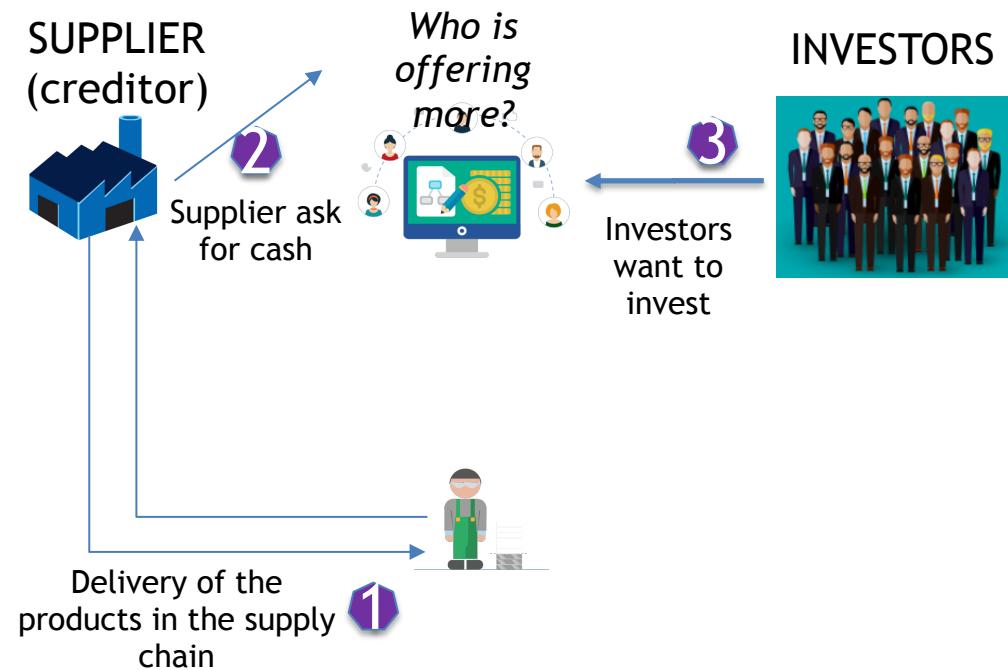


# Supply Chain Finance start-up

## Business Model 1: *CASH SEEKER*

### BM1: Cash Seeker

ALTERNATIVE FINANCE



# Supply Chain Finance start-up

## Business Model 2: *CASH EXPLOITER*



*Exploit supply chain liquidity already existing in the supply chain, to get a more efficient management among actors*



*Process automation and enabling role, to be fast and convenient*



# Supplier (creditor)  
# Buyer (debtor)



DYNAMIC DISCOUNTING



# Supply Chain Finance start-up

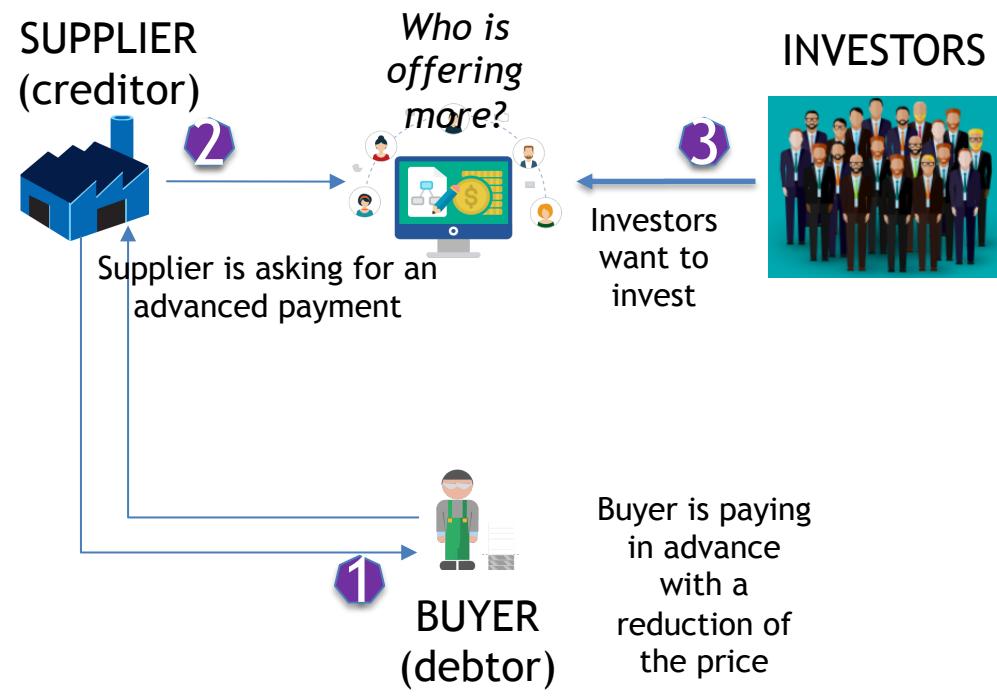
## Business Model 2: *CASH EXPLOITER*

### BM1: Cash Seeker

ALTERNATIVE FINANCE

### BM2: Cash Exploiter

ALTERNATIVE FINANCE



# Supply Chain Finance start-up

## Business Model 3: **WORKING CAPITAL BROKER**



*Provide systematically companies with short term liquidity through traditional solutions, offered by new institutional investors*



*Credit assignment done through technologies, combining invoices/inventories and with an ad hoc selection of the investors*



# Financier  
# Supplier (creditor)  
# Buyer (debtor)



**FACTORING, REVERSE FACTORING,  
INVENTORY FINANCE**



# Supply Chain Finance start-up

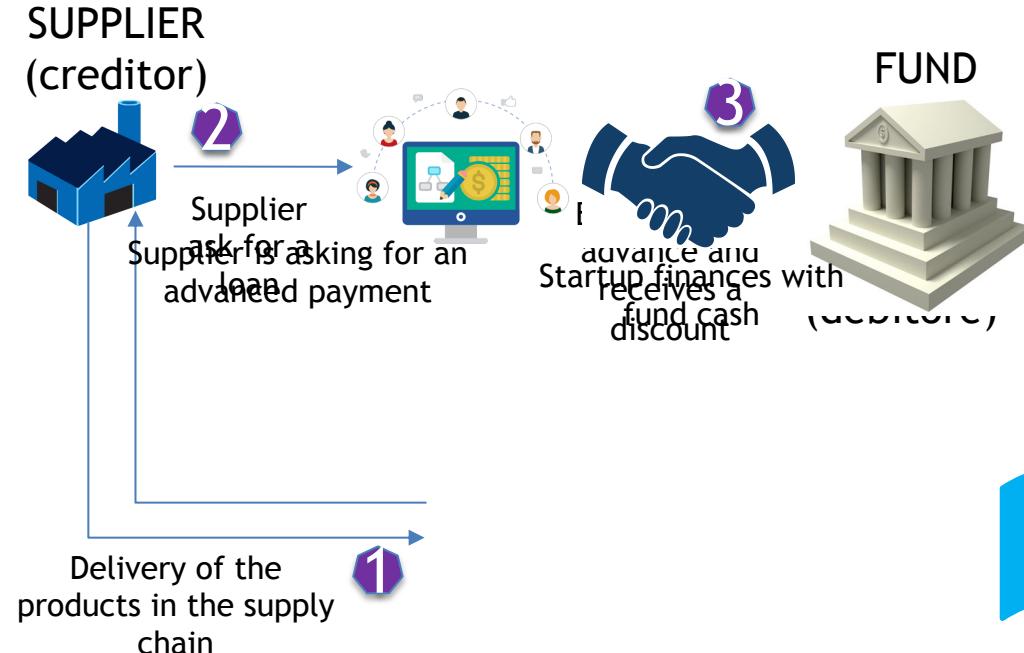
## Business Model 3: **WORKING CAPITAL BROKER**

BM1: Cash  
Seeker

ALTERNATIVE  
FINANCE

BM2: Cash  
Exploiter

ALTERNATIVE  
FINANCE



BM3: Working  
Capital Broker

PARTNERSHIPS WITH  
CONSOLIDATED  
COMPANIES

# Supply Chain Finance start-up

## Business Model 4: *COMPASS*



*Provide innovative tools to mitigate information asymmetries along the supply chain, thanks to a simplification of the credit worthiness evaluation, thus optimizing the cash flow management*



BOTH  
DEMAND  
AND  
OFFER



*Offer information to all the supply chain actors through innovative algorithms  
Democratize SCF offer*



# Aleatory



CREDIT WORTHINESS, BENCHMARK OF  
SOLUTIONS, CASH FLOW OPTIMIZATION



# Supply Chain Finance start-up

## Business Model 4: *COMPASS*

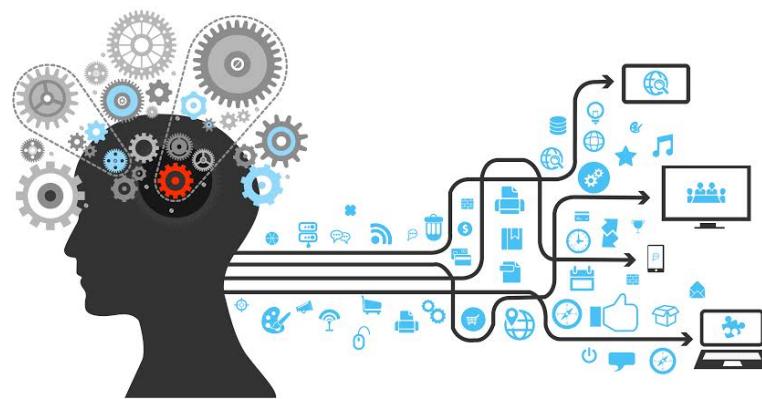
BM1: Cash  
Seeker

ALTERNATIVE  
FINANCE

BM2: Cash  
Exploiter

ALTERNATIVE  
FINANCE

# VARIABLE



CREDIT RATING EVALUATION  
FUNDING OPTIONS COMPARISON  
CASH FLOW MANAGEMENT

BM4:

PARTNERSHIPS  
WITH START-UPS AND  
CONSOLIDATED  
COMPANIES

BM3: Working  
Capital Broker

PARTNERSHIPS WITH  
CONSOLIDATED  
COMPANIES



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
[stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)





UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*The role of regulation*

*Stefano Bonini, PhD*

*11 February 2021*

# OUR AIM TODAY

- 1. Awareness of the regulatory environment  
and of the role of regulation in FinTech**
- 2. Framework on how to deal with regulators  
when engaging in a FinTech Business**

# WHY THE RULES

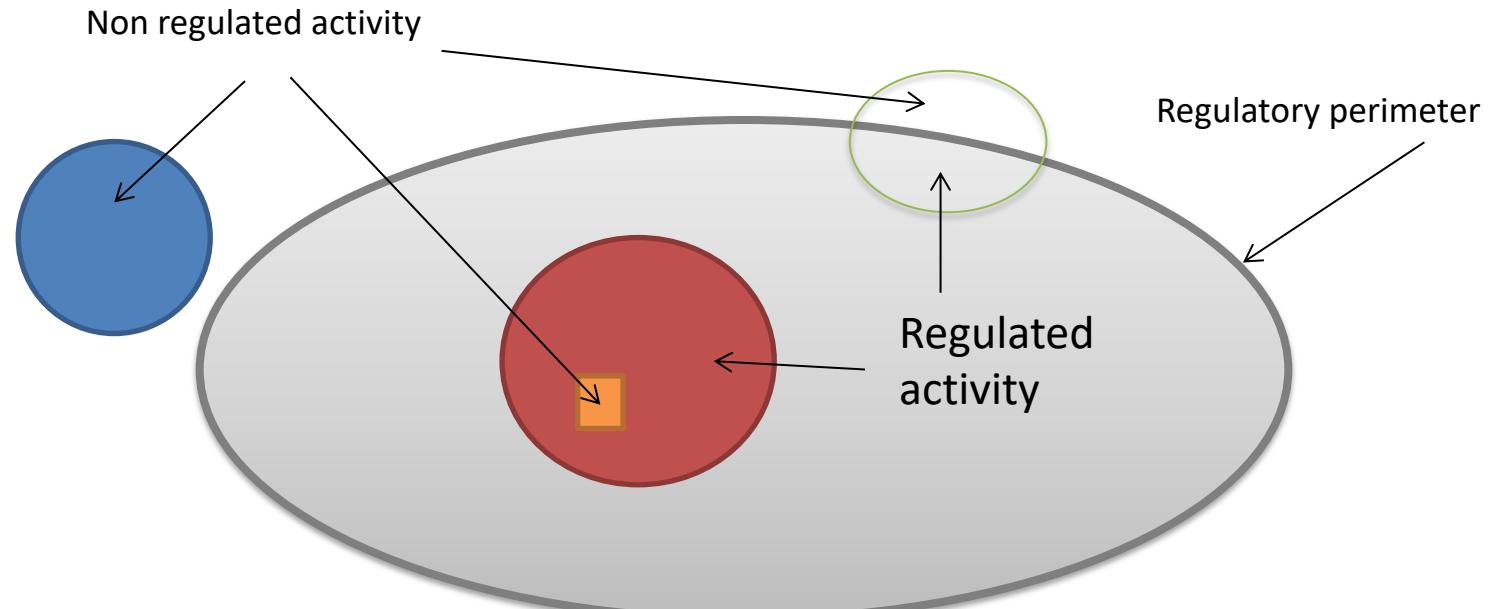
1. Legal certainty of transactions
2. Protect stakeholders
3. Public good

# THE REGULATORY PERIMETER

**Regulated financial services fall within the so called regulatory perimeter**

- What is the regulatory perimeter?
- Which is the purpose of the regulatory perimeter?
- What happens outside the regulatory perimeter?
- How do I understand whether a given service falls inside or outside the regulatory perimeter?
- Is the regulatory perimeter always the same?

# THE REGULATORY PERIMETER



# THE REGULATORY PERIMETER

## What is regulated:

- Licensing
- Corporate governance and internal controls
- Risk management and financial soundness
- Crisis management
- Customers' protection
- Data protection
- Anti money laundering

*Enforcement might be allotted to more than one authority/regulator*

# FINTECH AND RULES

**FinTech might face difficulties in fitting in the regulatory framework:**

- Rules are neutral vis-à-vis technology but were not thought of having in mind FinTech
- It might be uncertain whether some FinTech activities fall within or outside (or across) the regulatory perimeter
- Different rules in different jurisdictions
- Fintech might challenge a regulatory environment based on jurisdictions

# FINTECH AND RULES

**Rules are also an opportunity for FinTech:**

- RegTech
- SupTech
- Machine executable rules

# FINTECH AND RULES

## What do regulators do?

- Monitor FinTech
- If an ad hoc regulation is needed → adopt new rules
  - Same business, same risks, same rules
  - Level playing field
  - Where possible, international or EU standards
- Enter into an informal dialogue with FinTech firms or set up a regulatory sandbox

# HOW TO DEAL WITH REGULATORS

Key points to be kept in mind:

- Different perspectives
- Different vocabulary and ways to frame issues
- Different academic and professional background



It is necessary to engage in a dialogue



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
[stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)





UNIVERSITÀ DEGLI STUDI  
DI MILANO

# FinTech Industry

*Pagantis & ScalaPay*

*Stefano Bonini, PhD*

*15 February 2021*



- **Buy now, pay later**
- With Pagantis, you can buy what you love today and pay in flexible instalments. **100% online, instant & paperless.**

<https://www.pagantis.com/business/>

- **Sell more by offering instalment payments**
- Find out how LiuJo increased their average basket size by 42%.

<https://www.scalapay.com/en/merchant>

- Paganbtis Operates in Spain, Portugal, France & Italy, is it Regulated?



YES



- by the **y the Bank of Spain.**

**We offer consumer financing** for e-Commerce, with a differential value in the market based on immediate online approval through its proprietary platform, which has been developed leveraging the company's expertise in data science, technology, regulatory compliance, and finance.

- Scapapay Operates in Italy, France, Germany & UK, is it Regulated?



NO

**Pay in 3 instalments, without interest**

**Receive your order immediately and split your payment in 3 monthly instalments without interest**



UNIVERSITÀ DEGLI STUDI  
DI MILANO

Thank You

*FinTech Industry*  
[stefano.bonini1@unimi.it](mailto:stefano.bonini1@unimi.it)



Corinna Scatena

Chief Legal & Compliance Officer, and  
Strategic Partnerships

Payxpert  
[corinna.scatena@payxpert.com](mailto:corinna.scatena@payxpert.com)

February 2021

PayXpert's ambition is to offer **the best payment experience** to buyers and sellers alike.

We strive to be your partner of choice thanks to the innovation and added value we create in and around the payment experience.

- Unrivaled payment gateway, focused on optimizing your conversions
- Business Intelligence and Data Management modules
- The best POS/ mPOS Software, featuring incredible value-added options
- Alternative payment options, opening your business to new audiences
- Top of the line POS Hardware
- Seamless Merchant Support,
- Enjoy unified commerce through our omnichannel platform



#### CUSTOMER FOCUS

We believe that a satisfied customer is a loyal customer, and the basis of mutual success. We strive to be close to our customers, to understand their business and their needs, and to deliver custom solutions.



#### EXCELLENCE

We use skills and expertise to exceed expectations in everything we do, for the satisfaction of our customers, partners, and employees.



#### INNOVATION

We believe in making things better. We develop products and services to address your needs.

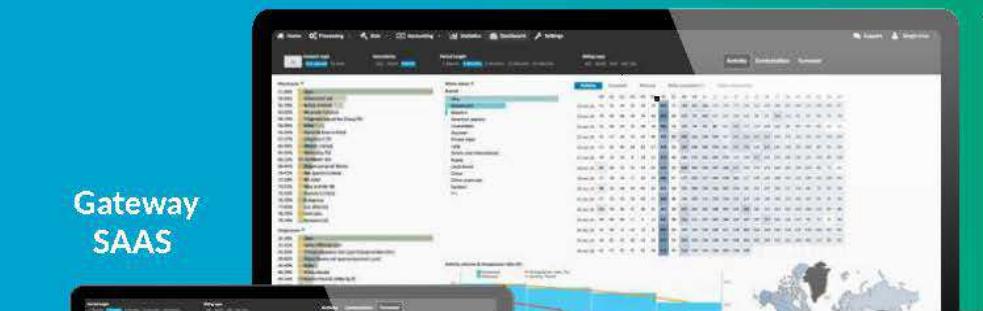


#### INTERNATIONAL DRIVE

We understand the added value we get from being multicultural and diverse. We strongly believe that diverse experiences and fields of knowledge, merged with deep professionalism and expertise, can produce amazing results and profound changes.

# BRINGING ADDED VALUE IN AND AROUND THE PAYMENT EXPERIENCE

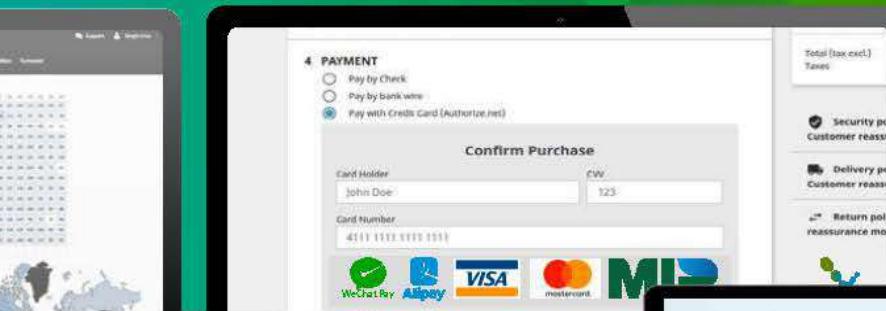
White Label Solutions



Gateway  
SAAS



mPOS



Acquiring Solutions



Antifraud



Payment Cards



POS

**payxpert**

It pays to choose the right partner.



Consulting

Value Added  
Services

## OUR SOLUTION

A single payments platform to accept payments anywhere, on any device.



## Products

### Online Payments

Everything you need to receive payments online

### Pay by Link

Send a link to your customers

### Point of Sale (POS)

In-store payments and terminals

### Chinese Payments

We offer these payments methods for your enterprise improvement in China

### Marketplaces & platforms

Flexible payment solution for platforms and marketplaces

### Omnichannel commerce

Create the best customer experiences on any channel

### Technology

A state-of-the-art payments platform focused on optimizing your sales and revenues.

## Features

### Global Acquiring

Local payment connections around the world

### Payment Methods

Offer key payment methods anywhere in the world

### Risk Management

Protect your business using data

### Sales Optimisation

Optimize payments for more revenue

### Business Intelligence

Data-rich payments and customer insights from all channels and locations

### Data Management

A global view of your payment operations, to take informed decisions and actions to reach your full business's potential.

### Tokenization

From card to token in 1 click. More security for your business, better user experience for your customers

# PayXpert is offering:



- International and diversified **Cross-Border Acquiring**,
- A solution allowing to use and reconcile **Multiple Acquirers**
- First-class **European Gateway** (SaaS + White Label),
- First-class **Digital payment expertise** for medium to high volume merchants,
- As a **One Stop Shop** but with agile approach where clients buy what they need and want
- First-class **Smart POS and Smart Apps** (with smart Terminal Management System),
- **Value-added services** that we will develop in-house or aggregate from partners,

=> Where Each brick will become part of an **ecosystem**

# The Regulatory European Landscape for Fintech

# What is Fintech?



## Fintech

*“Technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.”*

*Financial Stability Board*

Fintech has the potential to:

- increase efficiency and reduce costs
- improve access to, and delivery of, financial services
- enhance the customer experience
- create markets in new and innovative financial services products

It also poses risks, including:

- money laundering
- cyber-security
- consumer protection
- data privacy



*Fintech is already delivering significant benefits to consumers and investors, to financial services firms and financial market infrastructure, and to financial stability and financial inclusion.*

*However, the increasing use of fintech solutions and emerging technologies also brings risks, to which regulators and supervisors are responding.*

Fintech encompasses a wide range of financial services and products that intersect with technology. These include:

- peer-to-peer (or P2P) platforms
- lending
- online payments
- foreign exchange services
- digital wallets and e-money
- insurance
- automated or robo investment advice
- artificial intelligence (AI)
- big data analytics
- Blockchain
- crypto-currencies and many more.

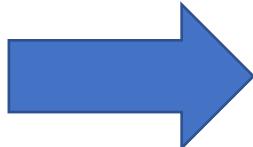
*While the products and services offered can be different, they all make use of new technology to: provide traditional financial services in a more cost-effective, accessible and consumer-friendly way, while facilitating the expansion of innovative financial products and services.*

The growth of fintech and the expansion of non-financial companies into the heavily regulated financial sector has resulted in a growing need for regulators, the fintech community and the financial services industry, to engage fully with developments in this area.

**Do Fintech companies apply for a  
Banking licence?**

**Is there a unique Fintech licence?**

# I am a Fintech company. What authorization do I need?



it depends from the **Business model**

Fintech business models are diverse and may – depending on their structure – require authorization by the national Financial Supervisory Authority



The provision of payment services, financial services, and conducting of banking or insurance business without authorization is a criminal offence.



## Example: payments product.

Whether or not the company needs authorization depends on how the payment handling is executed and which contracts it is based on.

In general, : if the company (service provider) takes possession of client money it will probably require authorization for payment services or for electronic money (e-money) business.

If the company simply provides the technology, without being itself involved in the execution of the payment handling (which is performed by a payment service provider acting as a cooperation partner), the provider may benefit from the exemption that exists for technical service providers.

## What are regulated payment services?

The provision of those services is subject to a number of activity-based rules. These include:

- ✓ conditions for access to services,
- ✓ transparency of conditions and information requirements for payment services,
- ✓ clients' consent,
- ✓ providers' liabilities,
- ✓ execution time and value date,
- ✓ data protection,
- ✓ operational and security risks,
- ✓ incidence reporting and authentication procedures.

Authorised providers of payment services include payment institutions, electronic money (e-money) institutions and credit institutions. All of them are subject to their own entity-based rules. In particular:

A **payment institution** is defined in Article 4 of PSD2 as a legal person that has been granted authorisation to provide and execute payment services.

These institutions are subject to obligations regarding initial capital, ongoing own funds, control of shareholding, internal control, mechanisms to safeguard clients' funds, data protection, business continuity and the handling of incidents and complaints, etc.

## What are regulated payment services?

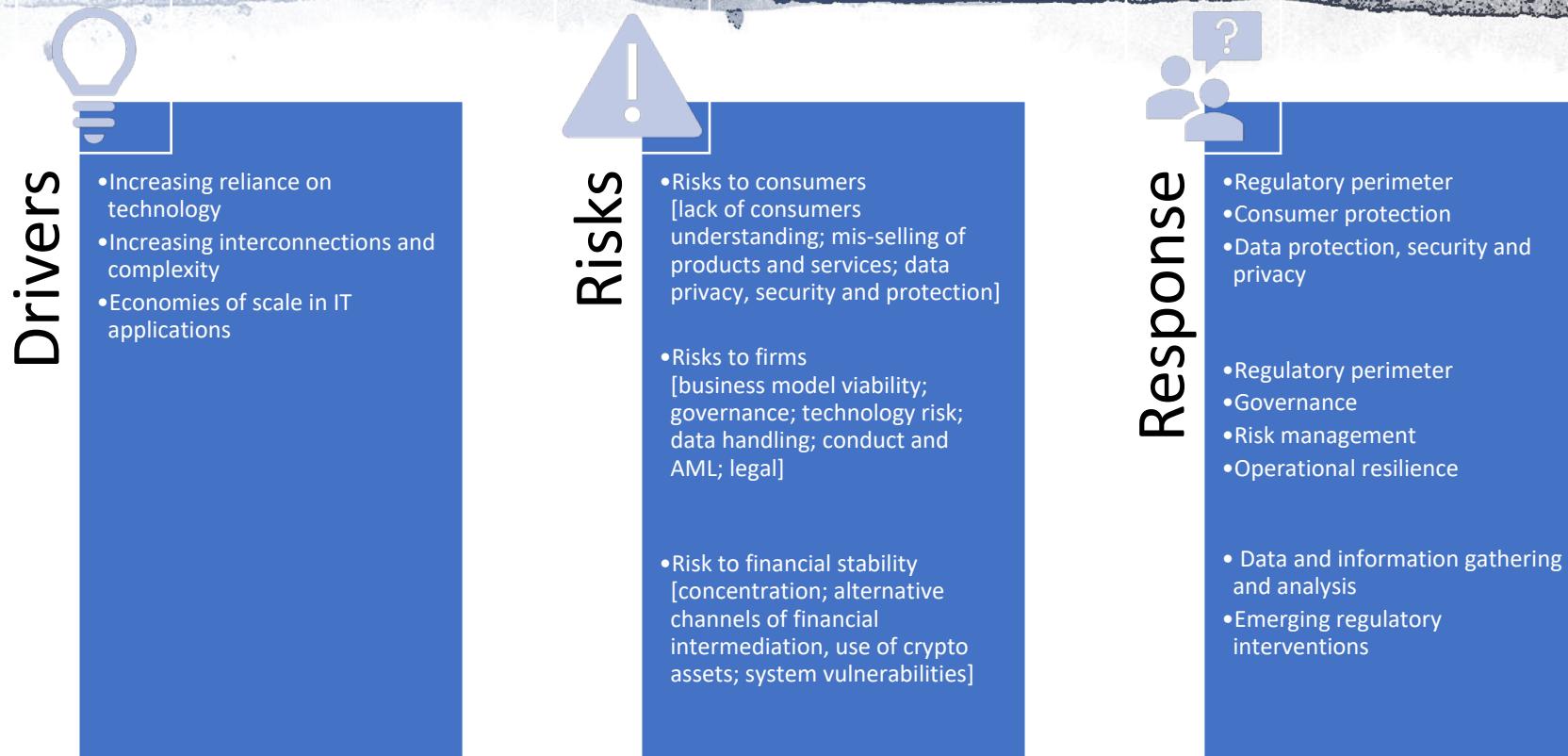
An **e-money institution** is defined in Article 2 of Directive 2005/60/EC (E-money Directive) as a legal person that has been granted authorisation to issue electronic money. This is defined as electronically (including magnetically) stored monetary value, as represented by a claim on the issuer, which is issued on receipt of funds for the purpose of making payment transactions, and which is accepted by a natural or legal person other than the electronic money issuer. **Unlike payment institutions, which do not issue any means for payments**, e-money institutions do issue claims, in exchange for cash which is used to process payments.

As a result, e-money institutions are subject to stricter requirements in terms of initial capital and own funds. They must also satisfy strict requirements for investment of the funds received in exchange for e-money and to ensure the redeemability, at any moment and at par value, of the monetary value of the electronic money held.

The regulatory and supervisory response to fintech has evolved through 3 stages.



# The regulatory and supervisory response to fintech has evolved through 3 stages



## The regulatory and supervisory response to fintech has evolved through 3 stages

1. Initially, the response was to focus on the benefits of fintech and on supporting the growth and adoption of new fintech solutions.  
Regulatory intervention was limited to little more than fine-tuning to take account of the impact of fintech on the ways in which financial services were provided.
2. In the second stage, regulators and supervisors began to worry increasingly about the risks arising from fintech. These risks can be characterized as risks to:
  - Consumers and investors;
  - Financial services firms; and
  - Financial stability
3. In the third stage, regulators and supervisors have been taking specific actions in response to these risks.  
This has included the development of international standards, the implementation of increasingly detailed and prescriptive national rules and guidance and shifts in supervisory priorities.

# Implications for firms

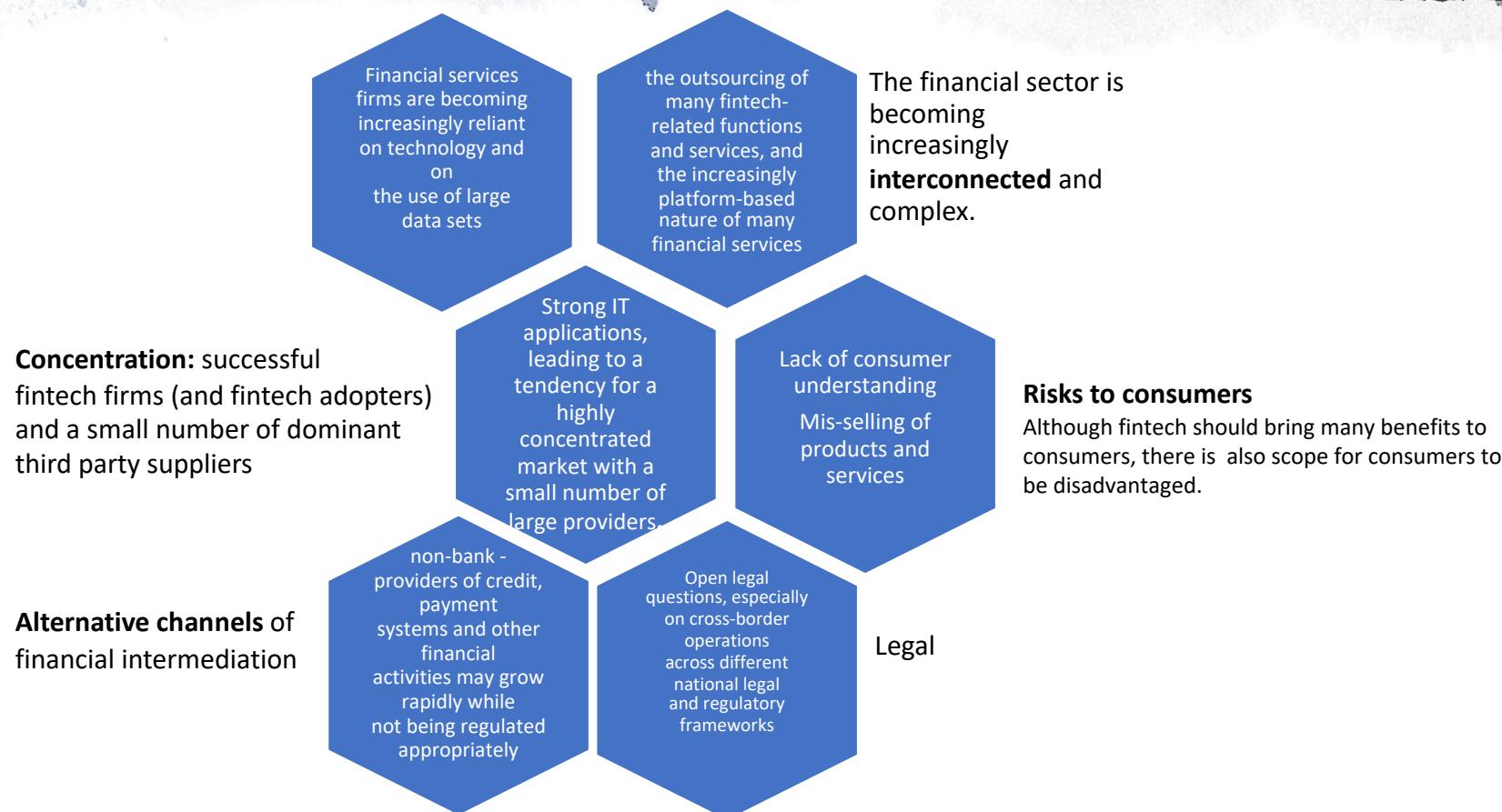
Firms in the fintech space – established financial institutions, non-financial corporates and start-ups – need to address the changes in regulation and supervision into their strategies, business planning, governance and risk management.



# Fintech risks

Regulators and supervisors have identified risks arising from 3 main fintech-related drivers:

- 1.increasing reliance of financial services firms on technology
- 2.increasing interconnectedness within the financial sector
- 3.greater concentration



# Regulation and Supervision

Fintech is moving rapidly 'under the regulatory radar' and is attracting growing regulatory responses and supervisory scrutiny.

- Many sets of fintech-related international principles and standards
- Slower implementation of these principles at national level
- Some countries have introduced very detailed regulations in some specific areas
- Financial services firms need to be able to demonstrate that they are in compliance with the growing fintech-related regulatory requirements AND that they have considered and taken into account the various risks posed by fintech
- Fintech firms shall adopt a proactive response to emerging risks and to evolving regulation and supervision, not a purely reactive response

# EUROPEAN SUPERVISORY FRAMEWORK

## European System of Financial Supervision (ESFS)

The main objective of the **ESFS** is to ensure that the rules applicable to the financial sector are adequately implemented in order to **preserve financial stability and to promote confidence in the financial system** as a whole and provide sufficient **protection for financial consumers**.

This system consists of the three European Supervisory Authorities (ESAs)

- European Securities and Markets Authority (ESMA) and
- the European Banking Authority (EBA) based in Paris,
- the European Insurance and Occupational Pensions Authority (EIOPA) based in Frankfurt
- the European Systemic Risk Board (ESRB)
- the Joint Committee of the ESAs, and
- the national competent or supervisory authorities of each Member State.

→ National supervisory authorities are in charge of supervising individual financial institutions

→ ESAs is in charge to improve the functioning of the internal market by ensuring appropriate, efficient and harmonized European regulation and supervision.

Along with the two other European Supervisory Authorities, EBA and EIOPA, ESMA forms part of the Joint Committee which works to ensure cross-sectoral consistency and joint positions in the area of supervision of financial conglomerates and on other cross-sectoral issues.

# EBA – European Banking Authority



*The EBA is an independent EU Authority which works to ensure effective and consistent prudential regulation and supervision across the European banking sector.*

Website: <https://eba.europa.eu/>

Its overall objectives:

- to maintain **financial stability** in the EU and
- to **safeguard** the integrity, efficiency and orderly functioning of the **banking sector**.

Its main task:

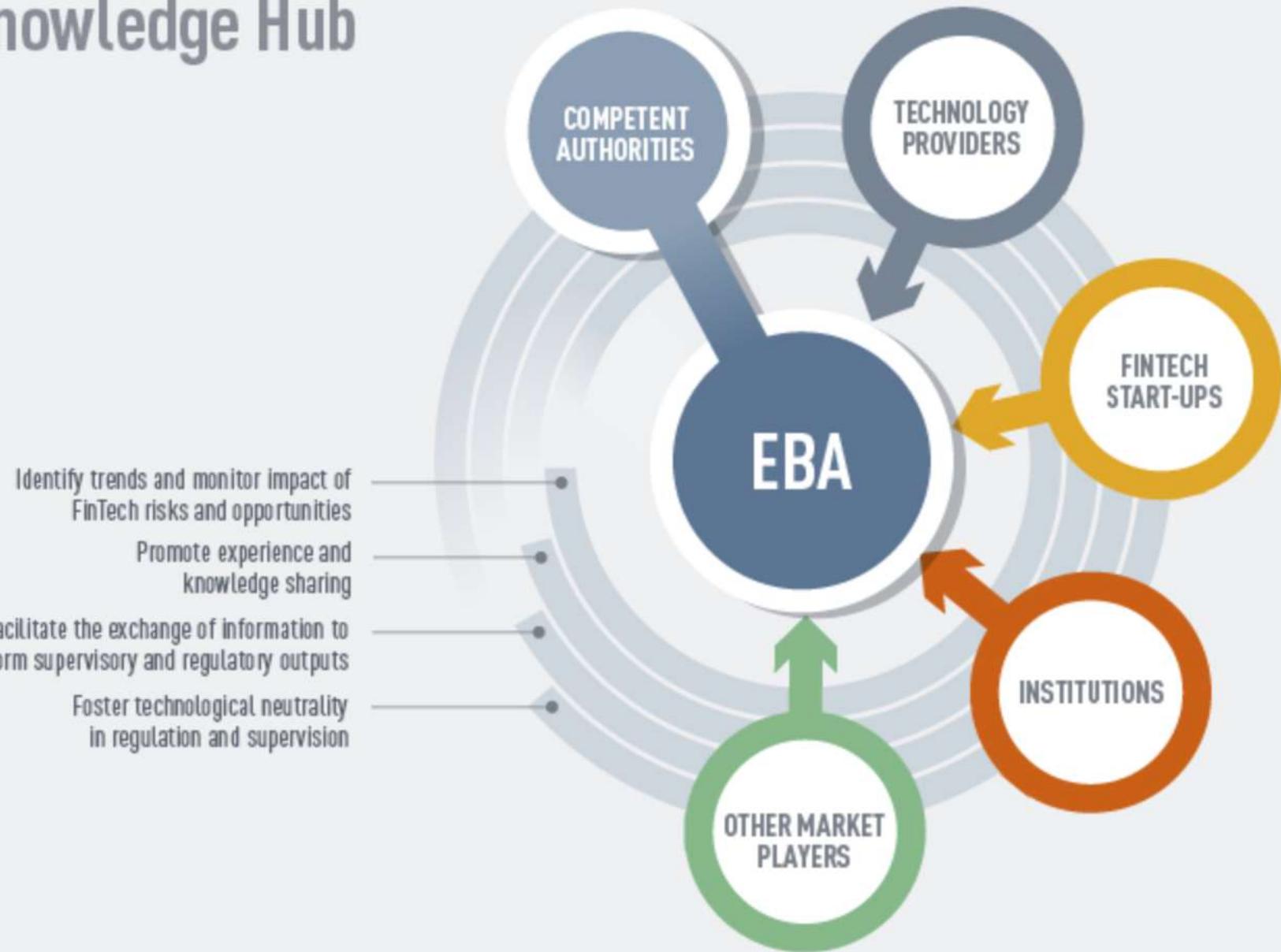
to contribute to the creation of the European Single Rulebook in banking , through the adoption of **binding Technical Standards (BTS)** and **Guidelines**, whose objective is to provide a single set of **harmonized prudential rules** for financial institutions throughout the EU.

The Binding Technical Standards are legal acts which specify particular aspects of an EU legislative text (Directive or Regulation) and aim at ensuring consistent harmonization in specific areas. The EBA develops draft BTS which are finally endorsed and adopted by the European Commission. Contrary to other documents such as Guidelines or Recommendations, the **BTS are legally binding and directly applicable in all Member States**.

Other tasks set out in the EBA's mandate include:

- investigating alleged incorrect or insufficient application of EU law by national authorities
- taking decisions directed at individual competent authorities or financial institutions in emergency situations
- mediating to resolve disagreements between competent authorities in cross-border situations
- **acting as an independent advisory body to the European Parliament, the Council or the Commission.**
- taking a leading role in promoting transparency, simplicity and fairness in the market for consumer financial products or services across the internal market.

# EBA FinTech Knowledge Hub



"The EBA's Knowledge Hub wishes to ensure that EU supervisors share best practices and adopt a technologically neutral approach to the application of new technologies in the financial sector. This will help facilitate innovation and scalability across the single market."

The EBA is constantly engaged in relevant international initiatives to promote supervisory and regulatory consistency in responding to new and borderless technologies.

**Legal basis**  
Article 9(2) of the EBA's Founding Regulation imposes a duty on the EBA to monitor new and existing financial activities. This obligation extends to all areas of the EBA's competence, including in the field of activities of credit institutions, financial conglomerates, investment firms, payment institutions, and electronic money institutions. In this context, the EBA has published the FinTech Roadmap.

# EBA FinTech

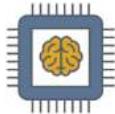
WORK PROGRAMME 2019-2020



## TECHNOLOGY-ENABLED INNOVATIONS



Cloud



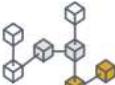
AI and Big Data analytics



RegTech / SupTech



Open Banking / APIs



DLT

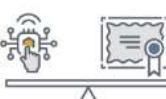
## AREAS OF REGULATORY FOCUS



Innovation facilitators



Regulatory obstacles to innovation



Licensing and perimeter



Crypto-assets



Operational resilience and cyber security

## ONGOING ACTIVITY



## Publications on Financial Innovation and Initiatives

- European Forum for Innovation Facilitators (EFIG)

<https://esas-joint-committee.europa.eu/efif/efif-homepage>

The EFIG was established further to the January 2019 **Joint ESA (European Supervisory Authorities) report on regulatory sandboxes and innovation hubs** which identified a need for action to promote greater coordination and cooperation between innovation facilitators to support the scaling up of FinTech across the single market.

- The EBA's Knowledge Hub

<https://eba.europa.eu/financial-innovation-and-fintech/fintech-knowledge-hub>

The FinTech Knowledge Hub will build on experience and knowledge of competent authorities and will interact with similar EU and national initiatives (e.g. the European Commission's FinTech Lab), covering the monitoring of the impact of FinTech on the whole financial ecosystem and supervisory knowledge sharing.

- EBA'S Fintech Roadmap [published 15.03.2018]

<https://eba.europa.eu/eba-publishes-its-roadmap-on-fintech>

The Roadmap sets out the establishment of a FinTech Knowledge Hub to enhance knowledge sharing and foster technological neutrality in regulatory and supervisory approaches.

\*'FinTech' is defined at the EU and international standard-setting levels as 'technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services'.

EBA'S Fintech Roadmap:  
<https://eba.europa.eu/sites/default/documents/files/documents/10180/1919160/79d2cbc6-ce28-482a-9291-34cfba8e0c02/EBA%20FinTech%20Roadmap.pdf>

Glossary for Financial Innovation:  
<https://eba.europa.eu/sites/default/documents/files/documents/10180/2270404/72036f35-beac-4d44-acf1-2875c12b709e/Glossary%20for%20Financial%20Innovation.pdf>

## Abbreviations and glossary

---

ADR	alternative dispute resolution
AMLD	Anti-Money Laundering Directive (Directive 2015/849/EU)
AML/CFT	anti-money laundering and countering the financing of terrorism
AI	artificial intelligence
BCBS	Basel Committee on Banking Supervision
BSG	Banking Stakeholder Group
BigTech	large globally active technology firms
CDD	customer due diligence
CRD	Capital Requirements Directive (Directive 2013/36/EU)
DLT	distributed ledger technology
EBA	European Banking Authority
eIDAS Regulation	Regulation on electronic identification and trust services for electronic transactions in the internal market (Regulation (EU) No 910/2014)
EIOPA	European Insurance and Occupational Pensions Authority
ESAs	European Supervisory Authorities (the EBA, EIOPA, and ESMA)
ESMA	European Securities and Markets Authority
FinTech	financial technology as defined in footnote 1
FinTech firm	a firm as defined in footnote 4
FSB	Financial Stability Board
FATF	Financial Action Task Force
GDPR	General Data Protection Regulation (Regulation (EU) No 2016/679)
ICT	information and communication technology
Innovation hub	a scheme as defined in footnote 11
Institution	credit institution, <sup>13</sup> payment institution, <sup>14</sup> electronic money institution <sup>15</sup>
KYC	know your customer
ML/TF	money laundering/terrorist financing
PSD2	Payment Services Directive 2 (Directive 2015/2366/EU)
RegTech	regulatory technology
Regulatory sandbox	a scheme as defined in footnote 10
RTS	regulatory technical standards
SREP	Supervisory Review and Evaluation Process
Technology provider	a person as defined in footnote 12
VC	virtual currency

# List of European National Supervisory Authorities

- Austria (Finanzmarktaufsicht – FMA)
- Belgium (NBB)
- Bulgaria (Bulgarian National Bank)
- Croatia (Croatian National Bank)
- Cyprus (Central Bank of Cyprus)
- Czech Republic (Czech National Bank – CNB)
- Denmark (Finanstilsynet)
- Estonia (Estonian Financial Supervision Authority)
- Finland (Finanssivalvonta)
- France (Autorite de controle prudentiel)
- Germany (BaFin)
- Greece (Bank of Greece)
- Hungary (Central Bank of Hungary)
- Iceland (Financial Supervisory Authority – Fjarmalaeftirliti)
- Ireland (Central Bank of Ireland)
- Italy (Banca d'Italia)
- Latvia (Finanšu un kapitāla tirgus komisija)
- Liechtenstein (Finanzmarktaufsicht Liechtenstein)
- Lithuania (Central Bank of Lithuania)
- Luxembourg (CSSF)
- Malta (Maltese Financial Services Authority)
- Netherlands (De Nederlandsche Bank NV)
- Norway (Finanstilsynet)
- Poland (Polish Financial Supervision Authority)
- Portugal (Banco de Portugal)
- Romania (National Bank of Romania)
- Slovak Republic (Central Bank of Slovakia)
- Slovenia (Bank of Slovenia)
- Spain (Banco de Espana)
- Sweden (Finansinspektionen)
- **United Kingdom (Bank of England - Prudential Regulation Authority)**



12 Endeavour Square  
London  
E20 1JN

Tel: +44(0)20 7066 1000  
Fax: +44(0)20 7066 1099  
[www.fca.org.uk](http://www.fca.org.uk)

9 July 2020

Dear CEO

**Portfolio strategy letter for payment services firms and e-money issuers**

**We expect you to act to prevent harm to your customers**

In our [2020/21 Business Plan](#), we announced that the risks to consumers in the payment services sector are an FCA priority requiring supervisory focus and intervention. Payment services firms include payments institutions (PIs) and e-money institutions (EMIs). In this letter, we set out the actions we expect you to take to prevent harm to your customers by ensuring you are compliant with your regulatory obligations across six key areas.

In light of the issues presented by the coronavirus (Covid-19) pandemic, addressing any weaknesses in these key areas is an important priority. We have therefore also published our [feedback statement](#) and [finalised guidance](#) following a short [consultation](#). The guidance provides additional direction for firms to meet their safeguarding requirements and it outlines the FCA's expectation of firms to put in place more robust plans for winding down, so that customer funds can be returned in a timely manner.

We expect you to consider and discuss these key areas and additional guidance with your fellow Directors and/or Board and agree what further action you should take to

UK FCA published a letter for CEOs:  
it contains a list of expectations on payment services firms.

KEY areas:

Safeguarding,  
Prudential risk management,  
Financial crime,  
Financial promotions and consumer communications,  
Governance & oversight,  
Records management & reporting.  
[And a reminder on Brexit]

# Lesson from Wirecard

- It offers payments solutions: provider of outsourcing and white label solutions for electronic payment transactions
- missing 1.9bn euros: *Wirecard AG's long-time auditors, Ernst & Young, accused their client of "an elaborate and sophisticated fraud". They refused to sign off 2019 financial report.*
- UK FCA froze e-money accounts and payments transactions supported by Wirecard for a short time – to prevent client funds from being misused
- As (disaster) effect → merchants and SMEs not getting paid, and consumers being unable to access their funds to make payments.
- Many of Wirecard's customers are **other Fintechs** for whom Wirecard holds e-money accounts or processes payment transactions, **which were unable to serve their own customers**

Fintech companies should examine their contingency plans and act to make their operations and business models more resilient and flexible

# Lesson from Wirecard

- The payments industry important entities such as Wirecard covering the majority of the market.
- Fintechs , merchants and other users of payment and e-money processors are called to action.
- If their business model is dependent on third parties (such as Wirecard), contingency and business continuity plans are necessary in the event of short, medium term or permanent outages.
- Operational resilience
- Some payments equivalent of the EU Bank Recovery and Resolution Directive might be proposed by regulators, to require payment providers to prepare recovery plans to overcome insolvency or operational distress.

**Fintech companies should examine their contingency plans** and act to make their operations and business models more resilient and flexible

# The EU Payment Services Directive 2015/2366/EU (PSD2)

## A snapshot on the PSD2

In 2013, The European Commission proposed to review the existing EU Payment Services Directive, issuing the Directive 2015/2366/EU (PSD2) to modernize it and to take account of new types of payment services.

The **revised EU Payment Services Directive (PSD2)** is the first step in a journey towards a **more collaborative and open financial ecosystem**, came into effect on **13 January 2018** and applies to banks and payment service providers within the European Economic Area (EEA) with the goal of making payments safer for customers, increase consumer protection, and foster innovation and competition. The organizations involved in the covered payment and financial processes covered by PSD2 must comply with the Regulatory Technical Standards (RTS) **within the timeframe set out by the European Banking Authority (EBA)**.

Without prejudice to the date of application of the PSD2, the task of implementing several of the provisions of the PSD2 has been delegated to the European Banking Authority (EBA) and a different date of application is foreseen for the new security measures – **strong customer authentication** and standards for secure communication – including Third Party Payment (TPP) communication through APIs.

## **Article 1 - Subject matter**

*This Directive establishes the rules in accordance with which Member States shall distinguish between the following categories of payment service provider:*

- (a) credit institutions;*
- (b) electronic money institutions;*
- (c) post office giro institutions which are entitled under national law to provide payment services;*
- (d) payment institutions;*

**'payment institution'** means a legal person that has been granted authorisation in accordance with Article 11 to provide and execute payment services throughout the Union;

**'payment service provider'** means a body referred to in Article 1(1)

**'payment initiation service'** means a service to initiate a payment order at the request of the payment service user with respect to a payment account held at another payment service provider;

**'account information service'** means an online service to provide consolidated information on one or more payment accounts held by the payment service user with either another payment service provider or with more than one payment service provider;

## **TPP – Third party payment service provider**

A payment institution which can act as:

### **AISP**

#### **Account information service provider**

Aggregation of online information for multiple payment accounts in order to offer a consolidated view of finances and avoid multiple website visits and logins

### **PISP**

#### **Payment initiation service provider**

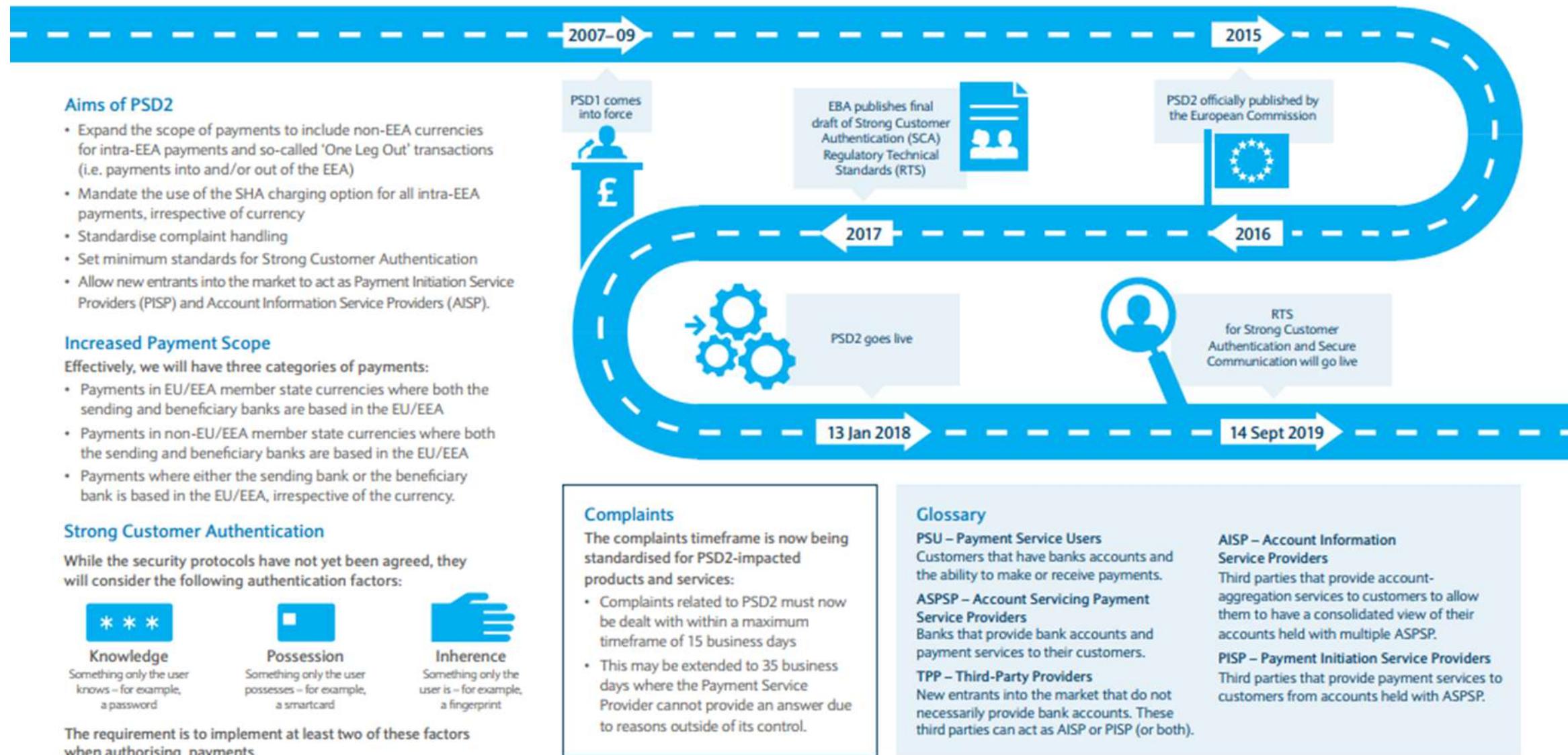
Facilitation of online banking to make a payment

### **ASPSP**

#### **Account servicing payment service provider**

Responsible for maintenance of the customer's payment account, The ASPSP must provide the AISP or PISP with a secure communication channel allowing access to the payment account if the account holder has authorised it.

PSD2 aims to bring about increased competition, greater transparency and security across the European payments landscape. Our roadmap takes a look at the aims, authentication requirements and complaints timeframe.



## OPEN BANKING: the access to financial information.

PSD2 allows licensed startups direct access to customers data down to the level of account transactions.

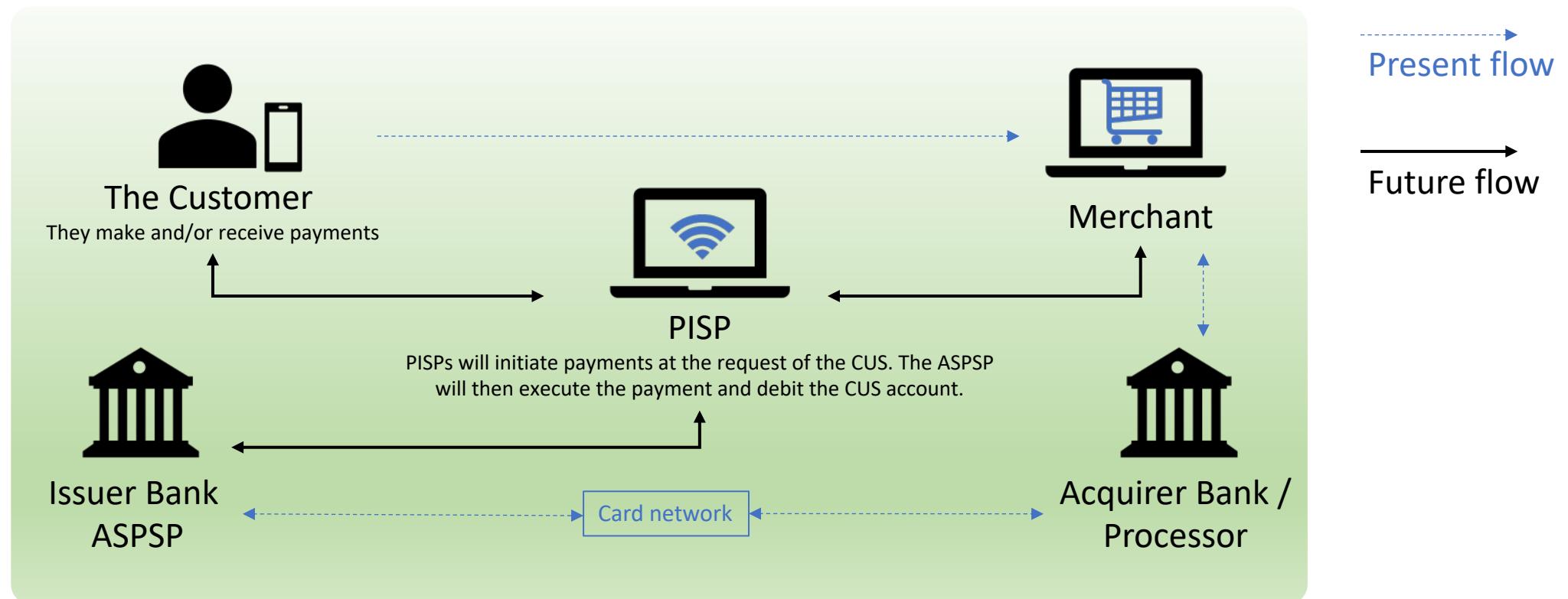
***Open banking*** has opened the gate to new financial technology products and companies.

The term *Open Banking* refer to the following:

- The use of open application programme interfaces (APIs) that enable third-party developers to create apps and services around a financial institution.
- Increased and secure financial transparency for account holders.
- The use of open-source technology to achieve the above.
- API Working Groups, non-profits created to facilitate for the task.

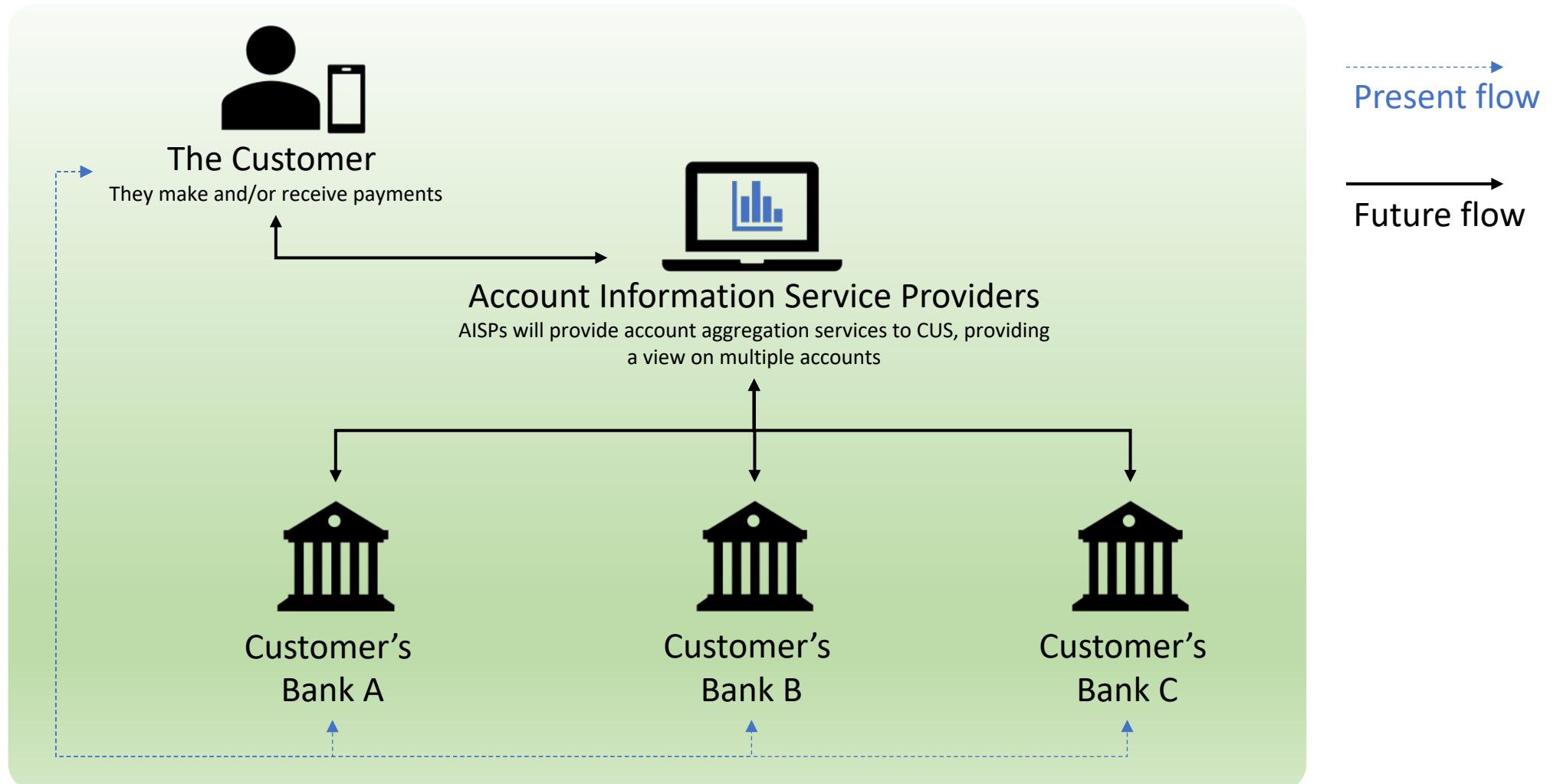
## SNAPSHOT:

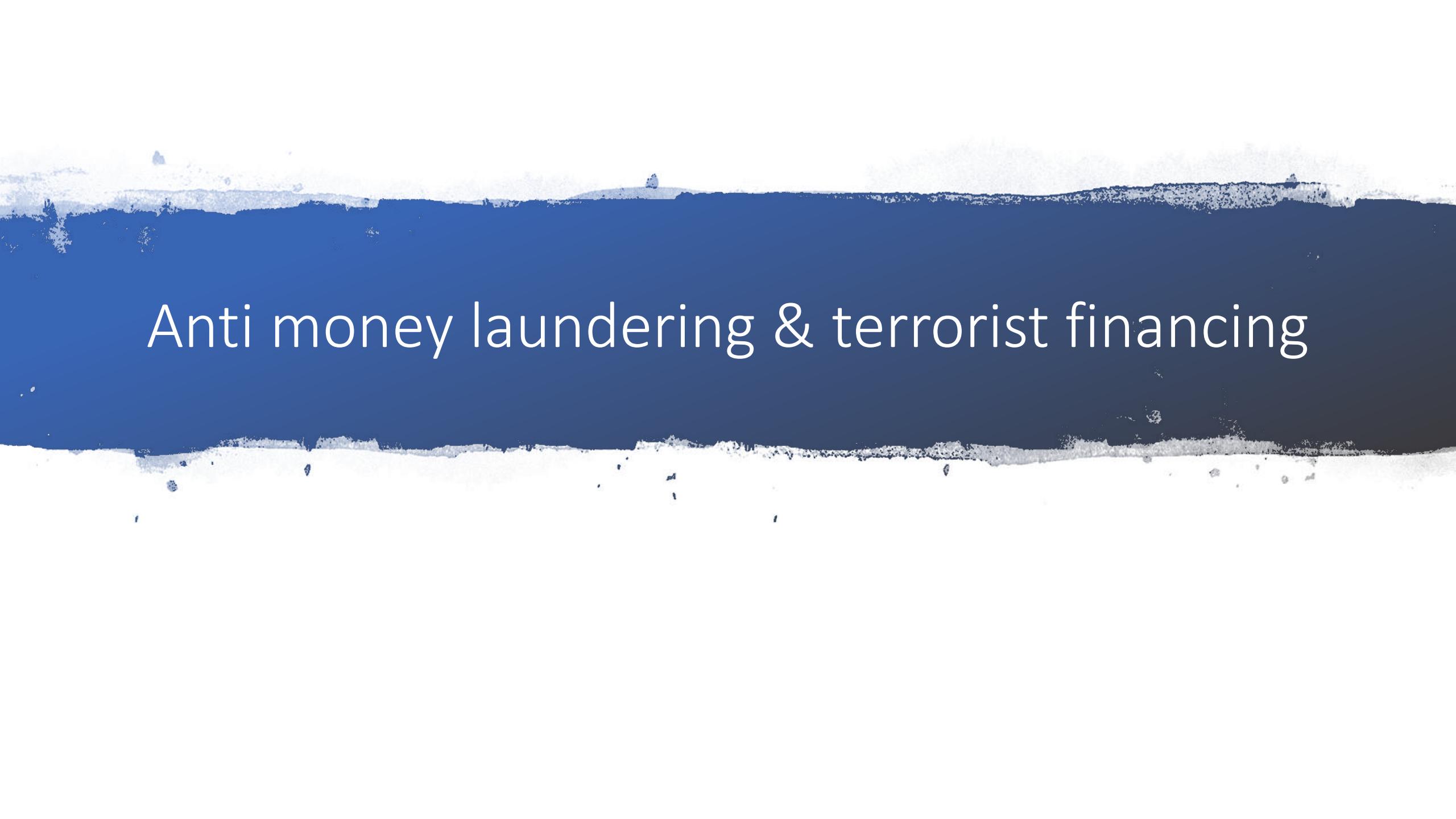
A PISP will be able to initiate payments on behalf of a customer from the customer's account with a bank (the ASPSP).



*Big retailers, such as Amazon, can become PISP, making the payment flow even simpler.*

An AISP provides details on transactions and balances, and accesses account information.



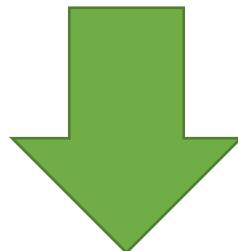


Anti money laundering & terrorist financing

# Anti Money Laundering Requirements



- Proceeds of Crime Act 2002 (POCA 2002)
- The Money Laundering, Terrorist Financing and Transfer of Funds Regulations 2017 (MLR 2017)
- Terrorism Act 2000 & 2006 (TA 2000 & TA 2006)
- EU Anti-Money Laundering Directives – 5 AMLD & **NEW!** 6 AMLD
- Transposition into the national (each Member State's) legislation
- UK: **no longer applicable**



BASED ON FATF 40 RECOMMENDATIONS, INTERNATIONAL STANDARDS, GUIDELINES...



# What is money laundering? Definition.

- *The goal of a large number of criminal acts is to generate a profit for the individual or group that carries out the act. Money laundering is the processing of these criminal proceeds to disguise their illegal origin. (...) Criminals do this by disguising the sources, changing the form, or moving the funds to a place where they are less likely to attract attention.*
- <https://www.fatf-gafi.org/faq/moneylaundering/>
- Simply put, money laundering is the process of making dirty money look clean.

# What is terrorist financing? Definition.

- A person may commit terrorist financing if they are involved in the following:
  - Fundraising, which covers inviting other people to provide money, or other property, to support terrorism.
  - Use and possession, which covers using money, or other property, for the purpose of terrorism.
  - Funding arrangements, if a person knowingly enters into an arrangement where they provide funding for terrorists.
- **The definition of terrorist financing means all dealings with funds or property which are likely to be used for the purposes of terrorism (even if the funds are clean in origin!).**

### **Money Laundering**

- **Source**, money earned from crime
- **Concealment** of source
- **Legalise** earning from crime
- **Aim** is PROFIT
- **Closed Loop**, Money laundered remains/comes back to owner

### **Terrorist Financing**

- **Source**, Legal & Illegal Funds
- **Aim** to carry out subversive activities
- **Open Loop** as Money is spent and does not remain with original contributor of funds

# ML v. TF - Main differences

# What is required of Payments Institution?

---

**Customer identification and ongoing monitoring**

---

**Sanction Screening**

---

**Adequate internal policies, procedures & controls in place**

---

**Regular and on-going employee training**

---

**Record keeping**

---

**Designated Compliance Officer and MLRO in place**

---

**Independent audit function**

# Offences

- Tipping off
- Failure to disclose suspicious activity
- Involvement in arrangement for facilitating/raising/using/disguising funds for criminal activity
- Failure to effectively prevent ML/TF
- Transferring or converting property (assets of any kind), knowing that it is the product of criminal activity

# Penalties

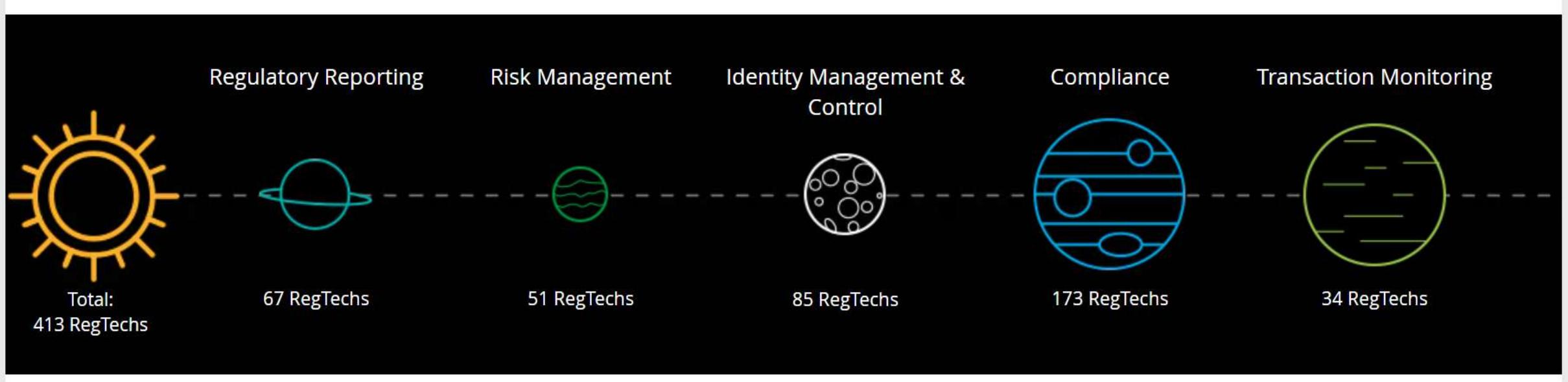
- COMPANY
  - Reputation damage
  - Lawsuits
  - Fines (sky is the limit!)
  - Freezing/confiscation of assets
  - License suspended/revoked

## INDIVIDUALS

- Disciplinary action
- Lawsuits
- Fines
- Inprisonment
- Freezing & confiscation of assets

# The Regtech Universe

RegTech promises to disrupt the regulatory landscape by providing technologically advanced solutions to the ever increasing demands of compliance within the financial industry.



Source: <https://www2.deloitte.com/lu/en/pages/technology/articles/regtech-companies-compliance.html>

[About us](#)[Firms](#)[Markets](#)[Consumers](#)[News](#)[Publications](#)

[Home](#) / [Firms](#) / [Gabriel](#)

# Gabriel

First published: 04/05/2016 | Last updated: 05/02/2021 | [See all updates](#)

Gabriel is our online system for collecting and storing regulatory data from firms.

It is being replaced by our new system RegData during the months ahead. If your firm has already been moved to RegData, go to the [RegData](#) page.

**Please see the changes to [regulatory reporting deadlines](#) due to coronavirus (Covid-19).**

Use Gabriel to:

[Print Page](#)[Share page](#)

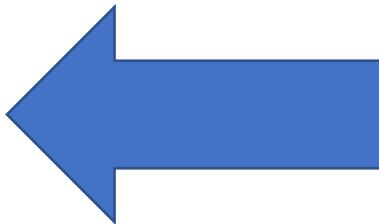
## In this section

[Registration](#)[Latest news](#)[Gabriel help and FAQs](#)[Managing your account](#)[Online training](#)

## Using RegData

As with Gabriel, you can use the RegData system to:

- submit regulatory data
- view a tailored schedule of your reporting requirements
- view all your submissions in one place
- print data items



RegData is built with more flexible technology so we can fix issues faster and continue to improve the user experience.

## Resources

Refer to our [resources](#) page for user guides and explainer videos to guide you through every aspect of the system.

If you haven't yet moved to RegData, find out how you can prepare your firm for the move.

In the future, we will:

- publish technical guides and the details of any system upgrades
- keep firms regularly updated on developments via our website and other communications channels, including Regulation Round-up

# Firm Schedule – Reporting Period

Click the due date hyperlink to view and edit data items or click [+] to expand the return to show data items. [More](#)

Future returns are subject to change, e.g. as a result of changes in the firm's permissions or to FCA or PRA P

Return Due Date	Reporting Period Start	Reporting Period End
<a href="#">+ Return due 01/03/2021</a>	01/07/2020	31/12/2020
<a href="#">+ Return due 31/03/2021</a>	01/10/2020	31/12/2020
<a href="#">+ Return due 30/04/2021</a>	01/01/2020	31/12/2020
<a href="#">+ Return due 30/04/2021</a>	01/01/2021	31/03/2021
<a href="#">+ Return due 30/06/2021</a>	01/01/2021	31/03/2021
<a href="#">+ Return due 02/08/2021</a>	01/04/2021	30/06/2021
<a href="#">+ Return due 31/08/2021</a>	01/01/2021	30/06/2021
<a href="#">+ Return due 30/09/2021</a>	01/04/2021	30/06/2021
<a href="#">+ Return due 01/11/2021</a>	01/07/2021	30/09/2021
<a href="#">+ Return due 31/12/2021</a>	01/07/2021	30/09/2021
<a href="#">+ Return due 31/01/2022</a>	01/10/2021	31/12/2021
<a href="#">+ Return due 11/02/2022</a>	01/01/2021	31/12/2021
<a href="#">+ Return due 28/02/2022</a>	01/07/2021	31/12/2021
<a href="#">+ Return due 31/03/2022</a>	01/10/2021	31/12/2021
<a href="#">+ Return due 02/05/2022</a>	01/01/2021	31/12/2021
<a href="#">+ Return due 02/05/2022</a>	01/01/2022	31/03/2022
<a href="#">+ Return due 30/06/2022</a>	01/01/2022	31/03/2022

A snapshot on all the reporting deadlines to one authority along 1 year.

Every Business Unit collaborates with Compliance, where needed, to make sure that the data submitted are correct.

# Fintech and the role of Legal Counsel in Fintech companies

- 
- Advise on the legality of a proposed business model, often implying disruption. (bank regulations vs FinTech proposals).
  - Advise on the applicability of different regulations for specific businesses.
  - Help companies with the complex and time-consuming registration requirements with regulatory agencies.
  - Help companies to understand the regulatory context in which their bank partners are operating. This allows the FinTech to speak to the real bank challenges surrounding a solution, and to partner with the bank to refine the solution as needed.
  - Help with the design of RegTech products, specifically focused at helping banks to address regulatory challenges like Anti-Money Laundering, sanctions checking, customer due diligence, reporting, stress tests, and transparency.
  - Advise on specific regulations impacting product design (for example cyber security and privacy requirements for products and services in a particular jurisdiction) and product offer.
  - Represent company when things go wrong.

For some FinTech companies the need may be as little as a confirmation that they are not directly impacted by regulation, and that they are not partnering with banks in highly regulated activities. At the other extreme, it may be worth hiring a regulatory expert on a fractional basis to join the team. But for most FinTech firms, consulting with and retaining regulatory counsel now will have several benefits:

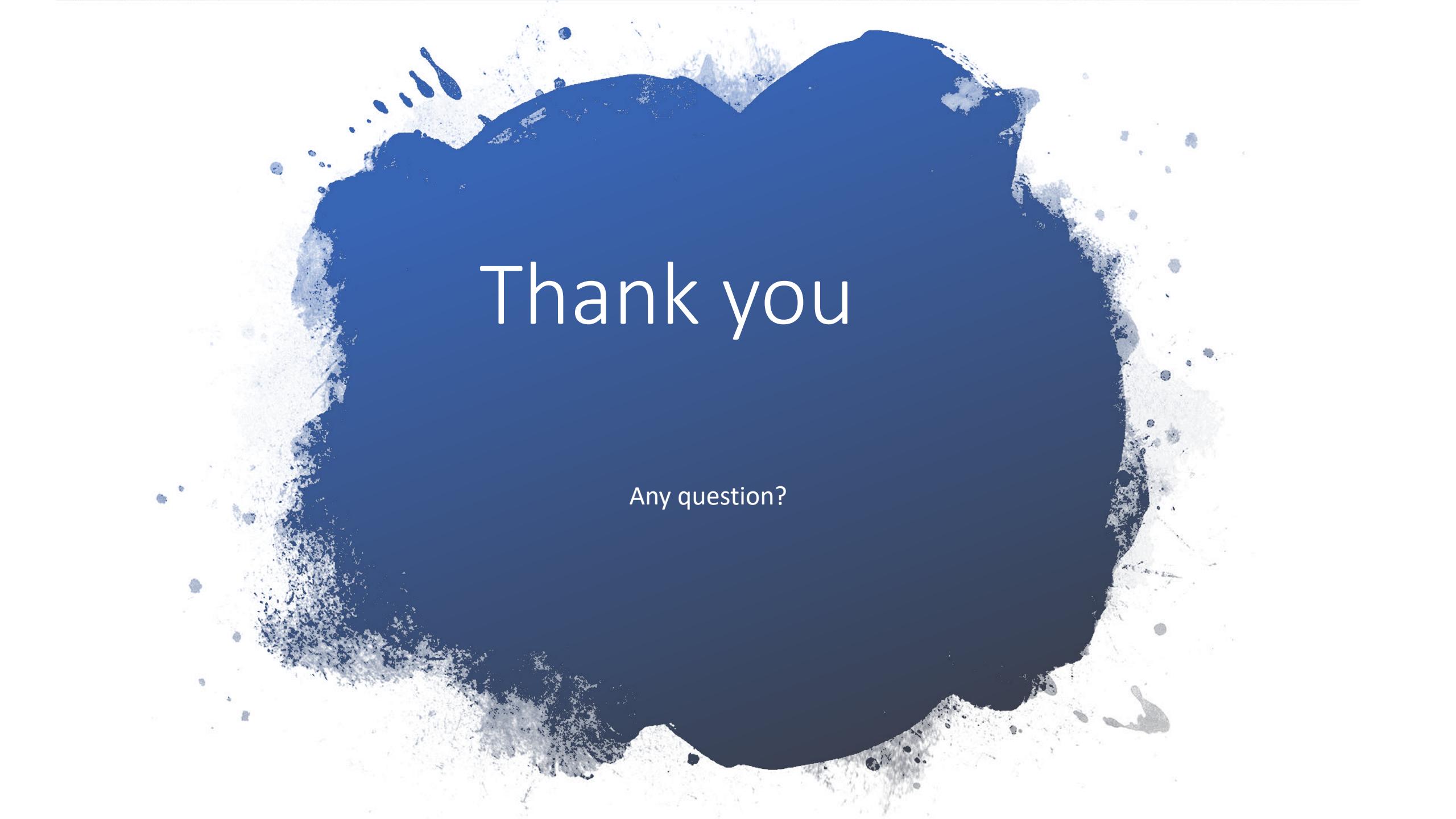
- Significantly reduce the risk that the FinTech itself falls foul of regulators.
- Provide the understanding necessary for a FinTech to take into account bank regulations when designing holistic solutions for a bank.
- Represent a FinTech when regulatory questions arise.
- Provide legal support in regulation-related litigation.

# Legal groundwork

- Passporting licence
- Are there any reporting requirements in terms of X country jurisdiction's laws, rules or regulations, to which Bank may be subject in the exercise of its EU passporting rights in accepting deposits from the public?
- Local rules (regulations, laws, binding guidelines) adopted in the interest of the general good
- (Conclusion of a distance contract: local rules and host country rules. Is it possible to conclude a distance contract between a consumer and a business offering financial services by electronic means? (approving relevant terms and conditions online, accepting specific product). What is needed? (Regulation on Consumer Credit, Distance selling regulation)
- Specific Product Rules (e.g. debit cards, Mastercard and Visa rules, Payments Processing rules)
- Procedures in place to handle customer journey and customer's life events.
- Rules for provision to customers in specific jurisdiction of periodical statements of accounts, transaction reports, etc. Format allowed etc.
- Communication with customers, channels of communication, which ones allowed, language requirements.
- All compulsory legal documents required. How, when and why making documents available to customers.
- Reporting requirements.
- **Anti-money laundering/ combating the funding of terrorism** : In providing services cross-border without a permanent establishment laundering legislation. What are the requirements that the

# Compliance Activities

- 
- Main point of contact with regulators
  - Policy creation and maintenance
  - Advisory
  - Oversight
  - Monitoring
  - Licencing and Authorisation
  - Training
  - Assurance/Reporting
  - Risk assessment
  - AML and Anti Financial Crime tools
  - Annual Compliance Plan



# Thank you

Any question?