EDHEC BUSINESS SCHOOL

INNOVATIONS IN FINANCE

LECTURE 1 : PAST, PRESENT & FUTURE

Make an impact

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INTRODUCTION

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WELCOME TO « INNOVATIONS IN FINANCE »

- Patrice Bouché, Financial Specialist for almost 30 years.
  - Degree in Actuarial Sciences and Risk Management
  - Dealing Room professionnal
    - Sales and structuration for french banks, working on corporate and institutionnal desks
  - Chief Investment Officer (Family Office in Geneva)
  - Structuration of a private bank in Mauritius
    - ALM, Advisory, Fx Options Trading, Crypto Fund
  - Founder of an IT company specialised in Finance, in 2017.
  - Founder of KowiKan, Financial company whose aim is to help people manage money and investments.

OUR GOAL : UNDERSTAND THE FUTURE OF FINANCE

How do you manage your money ?

COURSE STRUCTURE & WHAT TO EXPECT

- Content :
  - 5 Lecture Sessions (2h each) – Theory & insights
  - 3 Practical Sessions (2h each) – Hands-on applications
  - 2 Virtual Q&A Sessions (2h each) – Live problem-solving
- Assessments:
  - Oral Evaluation in Class
  - Final exam (with MCQ + practical case)

➔A mix of theoretical and applied learning : Participation is key

LEARNING OBJECTIVES

- **Knowledge (know/understand):**
  - Understand how fintech addresses real-world financial pain points
  - Grasp the foundations of emerging financial technologies (AI, blockchain, APIs)

- **Skills (be able to):**
  - Evaluate fintech business models and regulatory contexts
  - Apply new technologies to solve practical finance challenges
  - Compare traditional vs. innovative financial practices
  - Analyze and present financial innovation case studies

➔Curiosity, creativity and critical thinking will be rewarded

WHY INNOVATION MATTERS IN FINANCE

- Finance has always been a backbone of societies (trade, risk-sharing, growth).
- Innovations in finance are not just about profit but about *enabling economic and social progress*.

PAST, PRESENT & FUTURE

When do you think the first financial innovation happened ?

A. 20 years ago with Blockchain
B. 70 years ago with credit cards
C. 5,000 years ago in Mesopotamia

SESSION 1 OBJECTIVES

- Explore the historical evolution of financial innovation
- Identify inefficiencies in traditional finance systems
- Understand the drivers of fintech innovation
- Discover the way we can understand financial innovations
- Start thinking like a financial innovator

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HISTORICAL PERSPECTIVE

How Finance Evolves

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FROM LEDGER TO BLOCKCHAIN: A CONTINUOUS EVOLUTION

Ancient Times	Renaissance	19th Century	1950s	1970s	1990s	2009
Clay tablets for loans in Mesopotamia	Double-entry bookkeeping in Italy	Telegraph wires for market info	First credit cards (Diners Club)	SWIFT & ATM networks	Online banking & e-trading platforms	Bitcoin

- 2010s-Now : Fintech boom (AI, API,s, neobanks, DeFi,…)

EARLY FINTECH: CLAY TABLETS AND BANKING

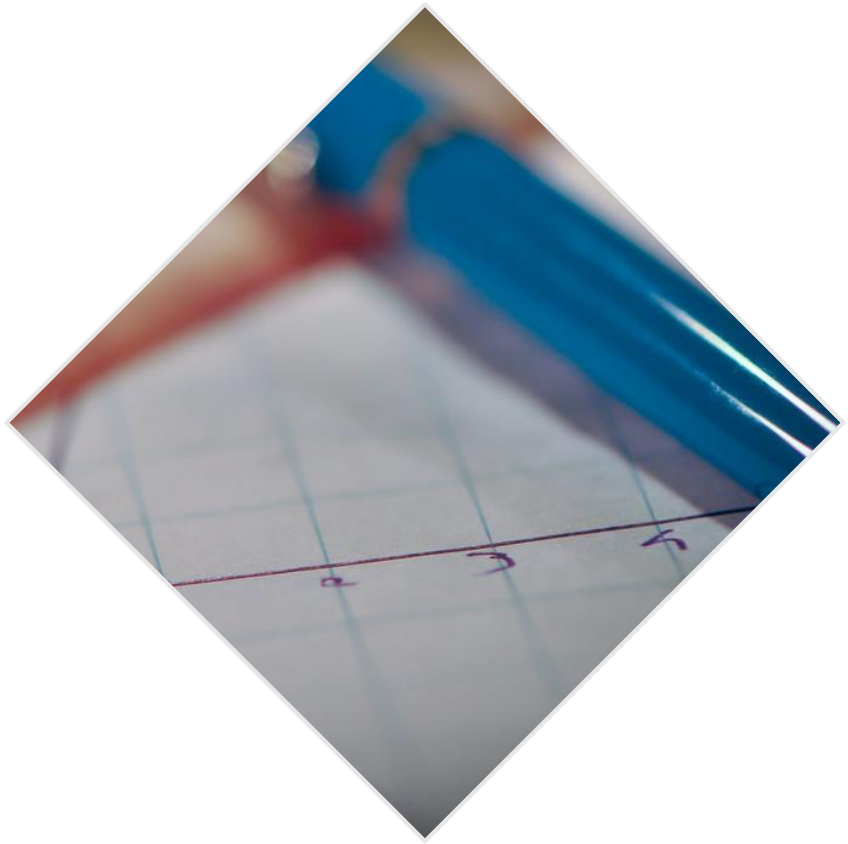
- Around 2000 BCE, in ancient Mesopotamia, the first forms of banking emerged in temples and palaces.
  - Clay tablets were used as promissory notes and contracts, recording deposits, loans, and interest payments.
  - Temples acted as financial institutions, facilitating lending and secure storage for merchants and farmers.
- This system introduced foundational financial concepts like credit, interest, and record-keeping — early pillars of modern finance.

EARLY FINTECH: ROTHSCHILD AND CARRIER PIGEONS

- During the Battle of Austerlitz (1805), Nathan Rothschild used carrier pigeons to receive early news from the continent.
  - This communication edge allowed him to gain crucial information about Napoleon's victory before others in London.
  - With this advantage, he made strategic trades on British government bonds, anticipating market reactions.
- This episode is one of the earliest examples of leveraging information speed for financial gain — a precursor to modern fintech innovations like high-frequency trading.

THE BIRTH OF OPTION PRICING – BLACK & SCHOLES (1973)

- In 1973, Fischer Black and Myron Scholes published a groundbreaking model to price options, later extended by Robert Merton.
  - Before this, options were traded, but pricing was inconsistent, often based on intuition rather than rigorous methods.
  - The Black–Scholes formula introduced a systematic way to value options using probability, volatility, and time — turning derivatives into a science.
- This innovation transformed financial markets, fueling the rise of modern derivatives trading and risk management.
- Just like algorithms power today's fintech platforms, Black–Scholes was a **mathematical breakthrough that unlocked new markets**



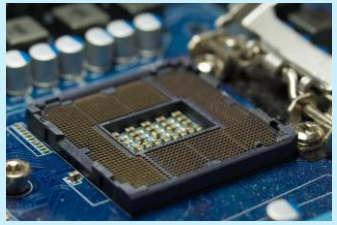
EARLY FINTECH

- Fintech is not a disruption : it's only the latest wave in a (very) long evolution

- What do all these innovations have in common?

WHY HAS FINANCE ALWAYS EVOLVED?

Tech Driven Innovation



- Rothschild's use of carrier pigeons (1805) — early communication technology leveraged for financial advantage.
- Telegraph and ticker tape (19th century) — speeding up information flow for traders.
- Blockchain to handle with international money transfer (Ripple)

Need Driven Innovation

- Ancient Mesopotamian clay tablets (c. 2000 BCE) — record-keeping to support loans and trade.
- Check writing in Renaissance Europe — need for secure and transferable payment methods.
- Buy Now – Pay Later to boost sales (Younited)

Regulation Driven Innovation

- Glass-Steagall Act (1933) — leading to new financial products outside commercial banking.
- Post-2008 financial crisis reforms — emergence of RegTech to comply with complex regulations.
- Digital KYB (DotFile)

- Key Point : the three often interact

CASE STUDY : THE RISE OF CREDIT CARDS

- Problem: Cash-based transactions were insecure and inefficient
- Solution: 1950 – Diners Club launches first credit card in NYC
- Result: Mass adoption and creation of an entire consumer credit infrastructure
- Impact: Payment systems, credit scoring, data-driven lending

CASE STUDY : HIGH-FREQUENCY TRADING

- Problem: Traditional stock trading was too slow to exploit tiny price differences between markets. Opportunities for arbitrage existed, but humans and legacy systems couldn’t act fast enough.
- Solution: Deployment of high-speed algorithms and co-location (servers placed directly next to exchange servers) to execute trades in microseconds.
- Result: Firms captured arbitrage profits by buying low in one market and selling high in another almost instantly. Liquidity increased, and bid-ask spreads narrowed.
- Impact:
  - Redefined competition in trading: speed became the decisive edge.
  - Raised ethical and regulatory concerns over fairness and market manipulation.
  - Inspired global regulation (e.g., MiFID II in Europe, SEC scrutiny in the US).

CASE STUDY : BITCOIN

- **Problem**
  - Traditional finance relies on intermediaries (banks, governments).
  - 2008 crisis exposed fragility and mistrust in centralized systems.
  - Digital payments existed but faced the *double-spending problem*.
- **Solution**
  - Bitcoin whitepaper (Satoshi Nakamoto, 2008).
  - Blockchain + Proof of Work: secure, decentralized transaction validation.
  - Fixed supply (21 million coins) ensuring digital scarcity.
- **Result**
  - First functioning peer-to-peer electronic cash system.
  - Enabled global transfers without banks or central authority.
  - Rapid adoption by early tech communities and investors.
- **Impact**
  - Sparked cryptocurrency and blockchain revolution.
  - Inspired thousands of fintech innovations and Central Bank Digital Currency (CBDC) projects.
  - Ongoing debates on regulation, energy use, and role of money.

IS FINTECH REALLY “NEW”?

- At the end of this historical part, we could ask one question :
  - What does “innovation” mean in finance:
    - new tech,
    - new thinking?

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TRADITIONAL FINANCE

Main Pain Points

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ONBOARDING IN TRADITIONAL FINANCE

- **Lengthy paperwork** (IDs, proof of address, signatures)
- **In-person branch visits required**
- **Waiting days/weeks for account activation**
- **Poor UX:** multiple forms, redundant data entry

CROSS-BORDER PAYMENTS

- Slow (2–5 days via SWIFT),
- Expensive (high fees, FX spreads)
- Opaque (hard to track).
- Multiple middlemen (correspondent banks, clearinghouses) increase costs.

LOAN APPROVAL FOR A STARTUP

- Long approval process (weeks/months)
- Heavy collateral requirements
- Limited credit scoring for new businesses
- Bankers risk-averse → High rejection rate

TRANSPARENCY & TRUST

- Hidden fees
- Complex products
- Scandals (e.g., LIBOR manipulation,…).

SLOW INNOVATION & LEGACY SYSTEMS

- Old IT infrastructures (mainframes, COBOL code) make banks slow to innovate.
- Ten of thousands of employees, thousands of branches…

FRICTION EVERYWHERE: THE LIMITS OF TRADITIONAL FINANCE

- **High Costs** :
  - Legacy systems, fees, inefficiencies
- **Slow Processes :**
  - Manual KYC, long onboarding
- **Limited Access :**
  - Unbanked/underbanked, developing markets
- **Lack of Transparency :**
  - Hidden fees, product complexity
- **Customer Experience Gaps :**
  - Paperwork, delays, lack of personalization

1.4 BILLION PEOPLE REMAIN UNBANKED (WORLD BANK 2021)

- Lack of access hinders saving, borrowing, and basic financial security.
- Unbanked populations rely heavily on **cash**, making them more vulnerable to theft, fraud, and economic shocks.
- Barriers include **lack of documentation**, **geographical remoteness**, **digital illiteracy**, and **gender inequality**.
- Women represent a disproportionate share of the unbanked in many regions.
- Fintech solutions (e.g., mobile money, digital wallets) are key to improving financial inclusion :
  - Financial inclusion supports entrepreneurship and business growth.
  - Financial inclusion empowers women.
  - Financial inclusion helps build resilience for people and businesses vulnerable to climate change and natural disasters.

SMES & LENDING: WHEN TRADITIONAL MODELS FALL SHORT

📌 The Problem: Outdated Credit Models

- Traditional banks use **rigid credit scoring models** based on historical financial statements and collateral.
- These models **fail to assess** many SMEs, especially in emerging markets or early-stage businesses.
- Manual processes and conservative risk appetite lead to:
  - ❌ **Slow loan approvals**
  - ❌ **High rejection rates**
  - ❌ **Lack of access to growth capital**

💡 Fintech's Solution

- Leverage **alternative data** (e.g. sales, invoices, digital payments, social signals).
- Use **AI/ML algorithms** to provide **dynamic risk scoring**.
- Offer **real-time credit decisions** via fully digital platforms.

INVESTING: HIGH BARRIERS FOR SMALL INVESTORS

📌 The Problem: Limited Access to Investing

- Traditional investment channels are often designed for **wealthy or institutional clients**.
- **High minimums**, **management fees**, and **intermediary layers** discourage small investors.
- Many lack the **financial education** to confidently access financial markets.
- Consequences:
  - ❌ **Low participation** in wealth-building assets
  - ❌ **Missed long-term growth opportunities**
  - ❌ **Over-reliance on low-yield savings products**

💡 Fintech's Solution

- **Fractional investing** makes it possible to invest in stocks, ETFs, real estate, and even art with small amounts.
- **Robo-advisors** provide automated, low-cost portfolio management.
- **Educational apps** and **gamified experiences** help build financial literacy.
- Use of **mobile-first platforms** to reach younger and underbanked users globally.

WORKSHOP – IDENTIFY A FINANCIAL PAIN POINT

- You will form pairs and list 1 or 2 pain points you've personally faced

- **On this example answer the followings :**
  - Was it costly? Slow? Unfair? Confusing?
  - Could a digital solution have improved it?

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TYPES OF FINTECH INNOVATION

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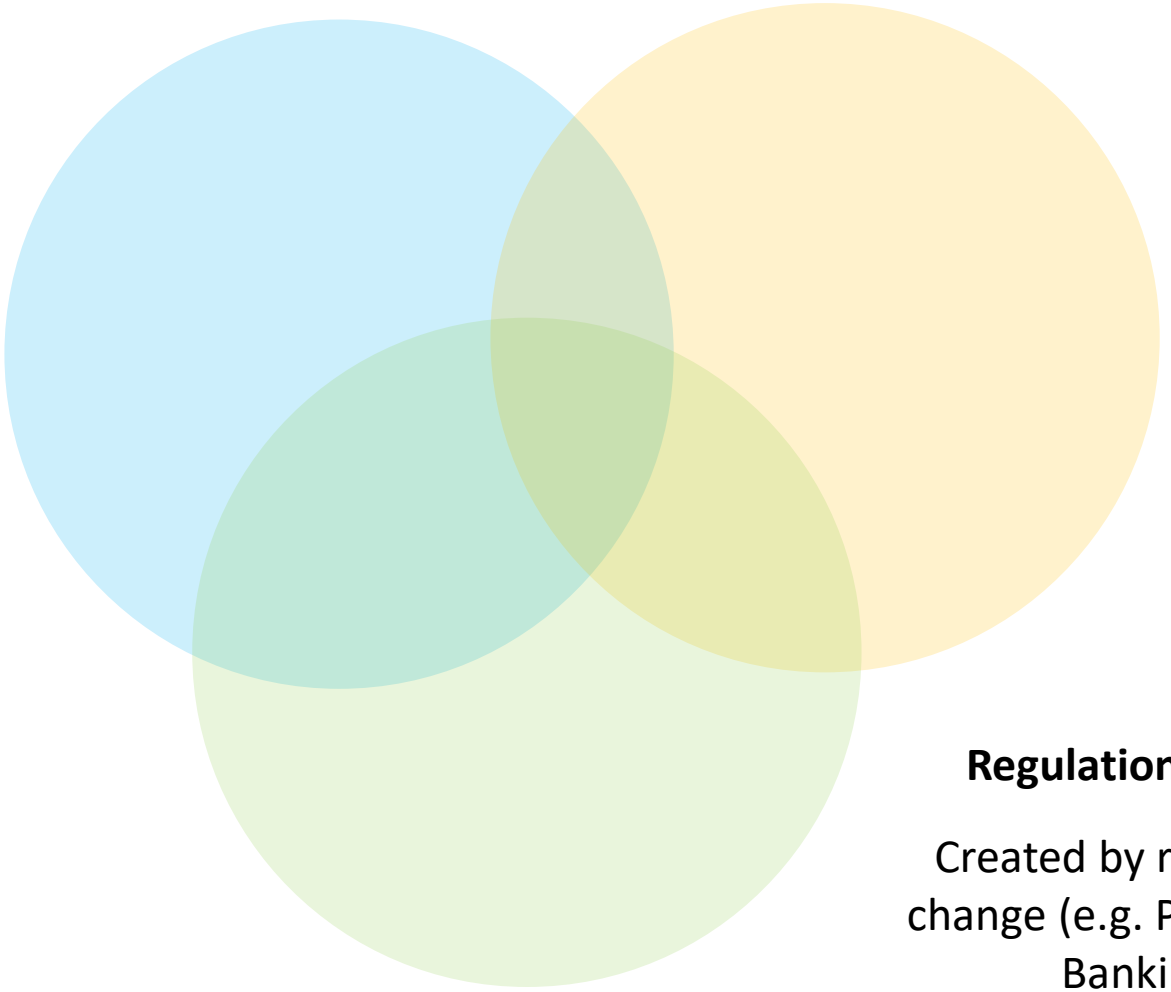
MAPPING FINANCIAL INNOVATION: A TYPOLOGY

Technology-Driven

Enabled by new tech (AI, APIs, Blockchain)



Need-Driven

Solves client frictions or market inefficiencies

Regulation-Driven

Created by regulatory change (e.g. PSD2, Open Banking)

TECHNOLOGY AT THE CORE

- Key Tech : Key Fintechs :
  - **AI/ML**: Robo-advisors, fraud detection
  - **Blockchain**: Smart contracts, tokenized assets
  - **APIs**: Embedded finance, neobank-as-a-service

  Powens Customer Stories
  - **Mobile**: M-Pesa, Revolut

- **Characteristics:**
  - Scalable
  - Disruptive
  - Needs strong engineering.

Wealthfront
Betterment
Chainalysis
stripe
PLAID
Linxo
pennylane
LEDGER
AGICAP
Revolut

EXAMPLE : AGICAP X SWAN

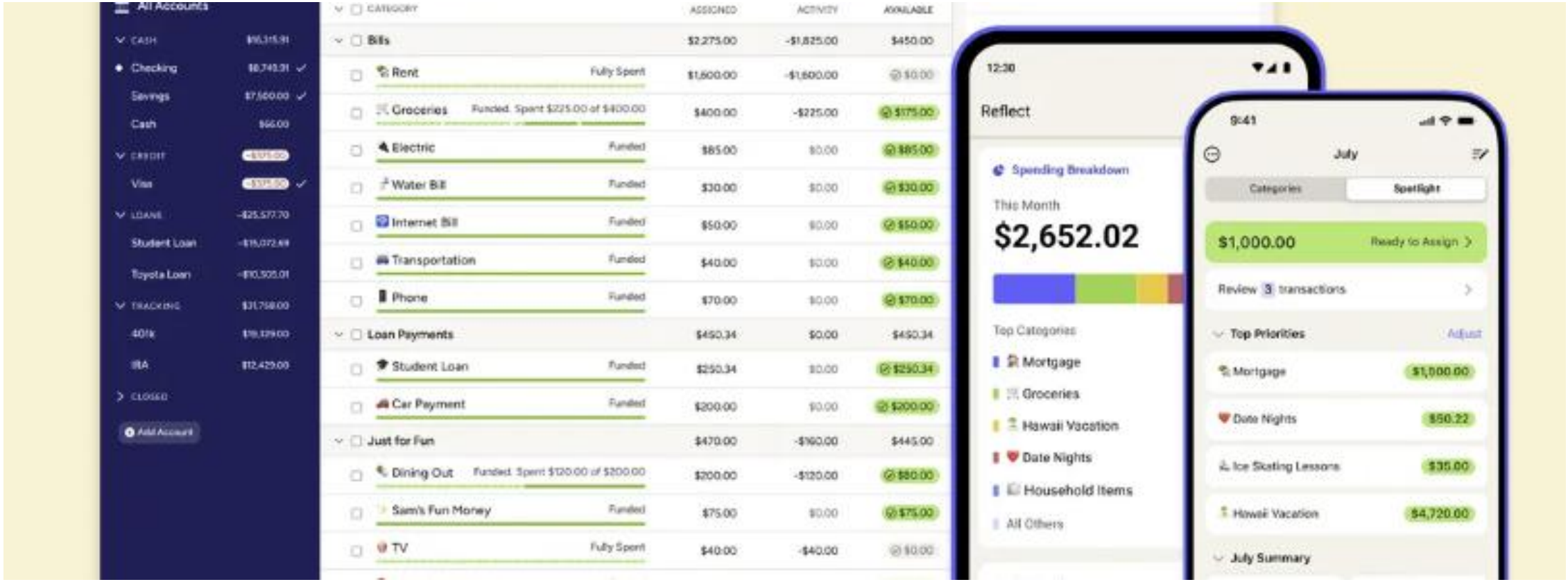
INNOVATION FROM THE CUSTOMER'S PAIN

- Solve people's pain:
  - **Credit Access**: Buy-now-pay-later
  - **Financial Planning**: Budgeting apps
  - **SMEs**: Invoice financing
  - **Cross-border Transfers**

- **Characteristics:**
  - Scalable
  - Disruptive
  - built with industry pain or user-centric vision.

YOUNITED
Klarna.
affirm
mint
YNAB.
TRADE REPUBLIC
Qonto
WISE

EXAMPLE : YNAB YOU NEED A BUDGET



RULES THAT SPARK INNOVATION

- Regulations and what they enabled :
  - **PSD2 & Open Banking (EU)** : Aggregators, neobanks, personal finance apps
  - **Regulatory Sandboxes** : Fintech testing in the UK, Singapore, UAE
  - **Crypto & DeFi Regulation** : New players in capital markets
  - **Data Privacy Laws (GDPR, CCPA)** : Secure identity and consent solutions

dotfile onfido

- **Characteristics:**
  - Key topic : Finance is regulated
  - Compliance and legal shifts open space for new entrants.

Comply Advantage

Conformitee

BUSINESS MODEL INNOVATION

- New ways of monetizing finance beyond traditional fees.
  - **Robinhood** → commission-free trading, revenue via Paiement For Ordre Flow
  - **Klarna** → free consumer credit, monetized via merchant fees
  - Freemium apps like **Revolut** → basic free, premium subscription tiers

Robinhood

Klarna.

Revolut

DISTRIBUTION DRIVEN INNOVATION

- Meeting customers where they are (not in bank branches)
  - Embedded finance in e-commerce → **Shopify Capital, Apple Pay**
  - Superapps (**WeChat, Grab**) → finance inside everyday apps

WECHAT : SUPERAPP INCLUDING PAIEMENTS

SOCIAL & ETHICAL INNOVATION

- Demand for responsible, sustainable finance.
  - Aspiration → fossil-free banking
  - ESG robo-advisors
  - Inclusive finance for women and migrants

GreenFi

Patapia

Revolut

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FRAMEWORK FOR UNDERSTANDING INNOVATION

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A SIMPLE FRAMEWORK TO ANALYZE FINTECH INNOVATION

- To understand a financial innovation, ask:
  1. What is the financial pain point?
  2. Who is the target user?
  3. What is the proposed solution?
  4. What technology enables it?
  5. What is the regulatory context?
  6. What is the adoption curve or impact?

➔ Use this checklist to break down any innovation – past, present, or future.

STEP-BY-STEP BREAKDOWN

- Let’s look at each component:
  - **Pain Point** → A real-world financial inefficiency, exclusion, cost, or risk
  - **Target User** → Individuals, SMEs, banks, unbanked populations, etc.
  - **Solution** → What product/service is offered to solve the pain point
  - **Technology** → AI, blockchain, APIs, mobile tech, biometrics, etc.
  - **Regulatory Factors** → Compliance, KYC/AML, data protection, financial licenses
  - **Adoption & Impact** → How fast users adopt it, and what changes for the system

CASE STUDY: M-PESA (KENYA)

M-Pesa is a mobile phone-based money transfer, payment, and micro-financing service launched in Kenya in 2007 by Vodafone. It allows users to deposit, withdraw, send money, and pay for goods and services using simple SMS technology—no bank account or internet connection required. M-Pesa quickly became a vital tool for financial inclusion, especially in rural and underserved communities, and has since expanded to multiple countries. By transforming mobile phones into wallets, it revolutionized how millions of people access financial services.

- **Pain Point**: Lack of banking infrastructure in rural areas
- **Target User**: Unbanked and underbanked populations in Kenya
- **Solution**: Mobile phone-based money transfer and payment system
- **Technology**: SMS-based mobile payment platform
- **Regulatory Context**: Backed by the Kenyan Central Bank, light regulation initially
- **Adoption Curve**: Fast adoption → >70% of adult population uses it

CASE STUDY: REVOLUT (UK)

Revolut is a UK-based neobank launched in 2015 that offers global banking services through a mobile app. It provides multi-currency accounts, real-time currency exchange, crypto trading, budgeting tools, and stock investments—all in one platform. Revolut targets digital-savvy consumers and travelers, emphasizing low fees, transparency, and user control. By leveraging APIs, real-time analytics, and a mobile-first experience, Revolut challenges traditional banks with a fast, flexible, and borderless financial ecosystem.

Revolut

- **Pain Point:** Expensive FX fees and lack of financial flexibility abroad
- **Target User:** Young professionals, travelers, digital natives
- **Solution:** Borderless bank account with free FX, spending control, crypto features
- **Technology:** API-based banking, mobile-first UX
- **Regulatory Context:** Started with e-money license, then banking license in EU
- **Adoption Curve:** >60 million users globally, “super-app” ambition

CASE STUDY: ROBINHOOD (US)

Robinhood was launched in the US in 2013 with a bold promise: to democratize finance by eliminating brokerage fees and making investing accessible to everyone. Through its mobile-first, easy-to-use platform, it attracted millions of young retail investors, many of them first-time traders. Robinhood's rise reflects both the disruptive power of fintech and the challenges that come with innovation, from gamification risks to heightened regulatory scrutiny.

Robinhood

- **Pain Point**: Retail investors faced high brokerage fees and barriers to entry in stock trading.
- **Target User**: Young retail investors, beginners in the US.
- **Solution**: Commission-free stock & crypto trading app with simplified UX.
- **Technology**: Mobile app, API-driven order execution, gamified interface.
- **Regulatory Context**: SEC & FINRA oversight; scrutiny after GameStop saga for payment-for-order-flow practices.
- **Adoption Curve**: Explosive growth from 2013 to 2021, then increased regulatory oversight and user churn.

CASE STUDY: QONTO (FRANCE)

Qonto is a French neobank founded in 2016 with the mission to simplify business banking for entrepreneurs, freelancers, and SMEs. Traditional banks often overlooked this segment, offering clunky tools and slow processes. By leveraging digital platforms and open banking, Qonto built a user-friendly solution for expense management, invoicing, and team collaboration, quickly positioning itself as a leader in European business banking.

Qonto

- **Pain Point**: SMEs and freelancers faced poor banking UX, slow processes, and limited tools for expense & team management.
- **Target User**: Startups, SMEs, freelancers in France.
- **Solution**: Digital-first business banking with invoicing, expense management, cards, and multi-user access.
- **Technology**: Mobile-first UX, APIs, open banking integration.
- **Regulatory Context**: PSD2-compliant, French e-money license, operates under EU regulatory frameworks.
- **Adoption Curve**: Rapid growth since 2016 → +400k clients, strong adoption among entrepreneurs.

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WRAP-UP

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KEY TAKEAWAYS FROM TODAY

- Finance has always evolved through innovation , from double-entry bookkeeping to blockchain.
- Traditional finance faces pain points: inefficiencies, exclusion, lack of transparency.
- Fintech innovations arise from three drivers:
  - Technology (e.g., AI, APIs)
  - Market needs (e.g., inclusion, UX)
  - Regulatory shifts (e.g., PSD2, sandboxes)
  - But it's not forgotten to imagine other disruptions (Business models, distribution,…)
- The fintech ecosystem is diverse and dynamic — we will explore it in depth.

➔ *Before next class: Think of a fintech app you use. Which pain point does it solve?*

PAST, PRESENT & FUTURE

Which of the following best illustrates that innovation has always been a core part of financial systems?

A. The creation of blockchain in 2008
B. The invention of credit cards in the 1950s
C. The use of clay tablets for accounting in Mesopotamia
D. The rise of robo-advisors after 2010

PAST, PRESENT & FUTURE

Which of the following is not typically cited as a pain point of traditional financial systems?

A. High cost of access
B. Over-personalization
C. Lack of financial inclusion
D. Inefficient processes

PAST, PRESENT & FUTURE

What is the main characteristic of embedded finance?

A. Offering financial services through mobile-only banks
B. Integrating financial services into non-financial apps or platforms
C. Using blockchain for identity verification
D. Replacing central banks in money issuance

PAST, PRESENT & FUTURE

According to the framework discussed, fintech innovations often begin by:

A. Disrupting central bank operations
B. Reducing government regulation
C. Solving a specific customer pain point
D. Building decentralized networks first

PAST, PRESENT & FUTURE

Which of the following fintechs is best known for solving the pain point of high FX fees for international transfers?

A. Stripe
B. Klarna
C. M-Pesa
D. Wise (formerly TransferWise)

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