

Topic 1.4: Digital Finance Landscape

A Map of Digital Finance

Joerg Osterrieder

Digital Finance

2025

What You Will Learn in This Topic

By the end of this section, you will be able to:

1. **Visualize** the full scope of digital finance as an interconnected ecosystem
2. **Understand** how different sectors connect and depend on each other
3. **Locate** any innovation within the landscape framework
4. **Distinguish** between infrastructure and application layers
5. **Navigate** the six core sectors of digital finance
6. **Anticipate** where emerging categories are heading

Why a Map Matters

Without structure, digital finance seems like “a collection of cool things.”
A map lets you see patterns, gaps, and connections.

What You Should Already Know:

- Basic understanding of traditional finance
- The concept of financial friction
- FinTech vs. Crypto/DeFi philosophies
- How trust operates in financial systems

From Previous Topics:

- T1.1: Money as trust infrastructure
- T1.2: Financial friction points
- T1.3: Two approaches to innovation

Key Concepts to Review:

- **Friction** = opportunity for innovation
- **Intermediation** vs. disintermediation
- **Rails** = the underlying infrastructure
- **UX** = user experience layer

Mental Model

Think of digital finance like a city:

Sectors = neighborhoods

Infrastructure = roads and utilities

Applications = buildings and businesses

How We Organize Digital Finance

Three Organizing Principles:

1. **By Function:** What problem does it solve?
2. **By Technology:** What rails does it use?
3. **By User:** Who benefits?

The Six Core Sectors:

1. Payments
2. Lending
3. Trading & Exchanges
4. Investing & Wealth Management
5. Insurance
6. Banking Infrastructure

Key Insight:

- Every sector exists in both FinTech and Crypto/DeFi forms
- Infrastructure underlies all sectors
- Sectors interconnect and depend on each other
- Emerging categories blur sector boundaries

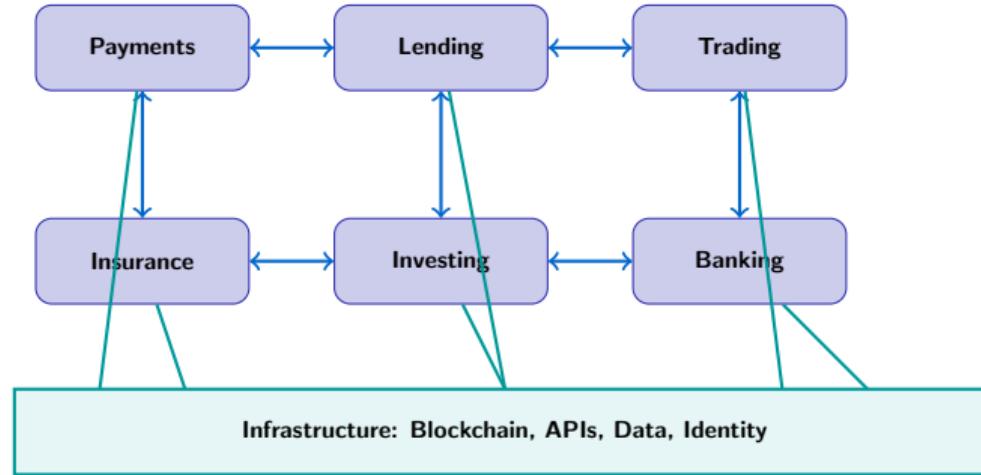
Framework Value

This framework lets you place ANY digital finance innovation in context and understand its relationships.

First-Time Learner Note

We'll explore each sector in detail – don't try to memorize everything now. Just get the big picture of

The Digital Finance Landscape



Key observation: All sectors are interconnected. A payment enables a trade, which may fund a loan, which may provide collateral for insurance.

Sector 1: Payments

What it covers:

- Person-to-person (P2P)
- Consumer-to-business (C2B)
- Business-to-business (B2B)
- Cross-border remittances
- Point-of-sale systems
- Digital wallets

Key friction addressed:

Speed, cost, convenience

FinTech examples:

- Venmo, Zelle, Cash App
- Stripe, Square, Adyen
- Wise, Remitly

Crypto examples:

- Bitcoin Lightning
- USDC/USDT transfers
- Solana Pay

Simple Examples You Know

P2P: Venmo, PayPal sending money to friends

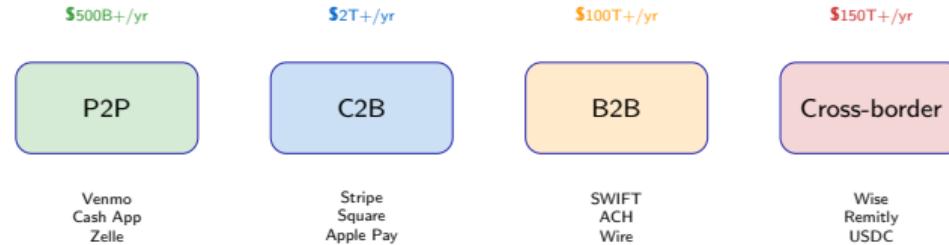
C2B: Apple Pay at Starbucks, buying online

Cross-border: Sending money home to family abroad

Coming in Day 2

Deep dive into payment infrastructure, rails, and the future of money movement.

Payments: The Foundation of Finance



Why Payments Matter Most:

- Entry point for most users into digital finance
- Highest transaction volume of any sector
- Foundation for all other financial activities
- Fastest innovation cycle



FinTech Approach:

- Better UX on existing rails
- Instant P2P (funded by float)
- Lower merchant fees
- Mobile-first experience

Crypto Approach:

- New settlement layer
- 24/7/365 availability
- Borderless by design
- Programmable payments

Sector 2: Lending

What it covers:

- Consumer lending
- SMB lending
- Peer-to-peer lending
- Buy-now-pay-later (BNPL)
- Collateralized lending
- Flash loans

Key friction addressed:

Access, speed, cost of credit

FinTech examples:

- LendingClub, Upstart
- Affirm, Klarna, Afterpay
- Kabbage, Funding Circle

Crypto examples:

- Aave, Compound
- MakerDAO (DAI)
- Liquity, Euler

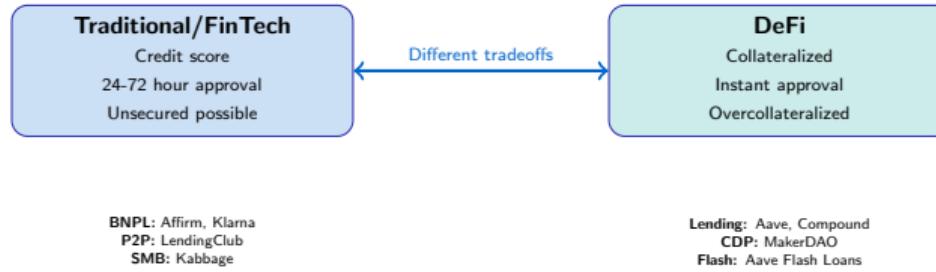
Embedded Finance Example

Buy Now, Pay Later at checkout – Klarna, Afterpay, Affirm built into shopping sites. No credit card needed, split purchases into installments.

Others: Insurance when booking a flight, loans offered at car dealerships.

Coming in Days 2 & 4

Platform-based lending (Day 2), DeFi lending protocols (Day 4).



Key Innovation: Alternative credit scoring (FinTech) and trustless collateral (DeFi) both expand access to credit beyond traditional banks.

The Fastest-Growing Lending Category

How BNPL Works:

1. Customer selects BNPL at checkout
2. BNPL provider pays merchant (minus fee)
3. Customer pays BNPL in 4-6 installments
4. Often 0% APR if paid on time

Major Players:

- Affirm (US)
- Klarna (Europe)
- Afterpay (Australia/Block)

Why It's Disrupting Credit Cards:

- Transparent fees
- No compound interest
- Instant approval
- Popular with Gen Z/Millennials

Risk Factor

Defaults rising as interest rates increase. Regulatory scrutiny growing. Credit reporting rules changing.

Sector 3: Trading & Exchanges

What it covers:

- Stock trading
- Crypto exchanges
- Derivatives
- Forex
- NFT marketplaces
- Tokenized assets

Key friction addressed:

Access, fees, transparency

FinTech examples:

- Robinhood, Webull, eToro
- Interactive Brokers
- Public, Alpaca

Crypto examples:

- Uniswap, Curve, Balancer
- dYdX, GMX
- OpenSea, Blur

Sector Boundaries are Fluid

Many companies span multiple sectors – PayPal does payments AND lending AND crypto. Uber offers both payment services and driver banking. This overlap is a feature, not a bug.

Coming in Days 3 & 4

Decentralized exchanges and AMMs (Days 3-4), trading mechanics.

Trading: CEX vs. DEX

Volume: \$50B+/day

Volume: \$5B+/day

Centralized (CEX)

- Order book model
- Custody by exchange
- KYC required
- Fiat on/off ramps

Coinbase, Binance, Kraken

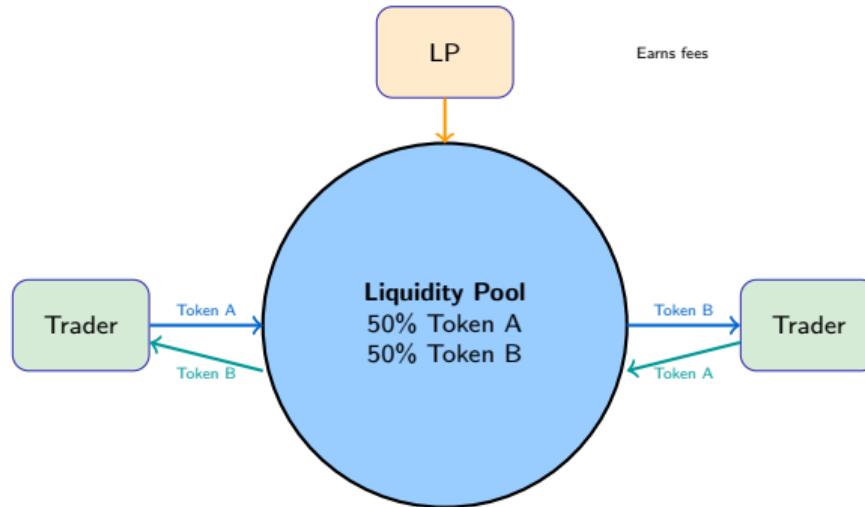
Decentralized (DEX)

- AMM or order book
- Self-custody
- Permissionless
- On-chain only

Uniswap, Curve, dYdX

Key Distinction: CEX = convenience and fiat access; DEX = self-custody and permissionless trading.

How DEXs Work Without Order Books



Formula: $x \times y = k$ (constant product)

Liquidity providers deposit assets, earn trading fees. Prices adjust automatically based on supply/demand.

Sector 4: Investing & Wealth Management

What it covers:

- Robo-advisors
- Fractional investing
- Micro-investing
- Alternative investments
- Portfolio management
- Yield aggregation

Key friction addressed:

Minimums, expertise, access

FinTech examples:

- Betterment, Wealthfront
- Acorns, Stash
- Fundrise, Republic

Crypto examples:

- Yearn Finance
- Index Coop
- Enzyme Finance

Fractional Ownership Revolution

Tokenization lets you own 1% of a Picasso painting, or \$100 worth of a commercial building. Previously, you needed millions to invest in real estate or art. Now, accessible to anyone.

Coming in Days 2 & 4

Robo-advisors and platform finance (Day 2), DeFi yield strategies (Day 4).

Investing: Robo-Advisors Democratized Wealth Management

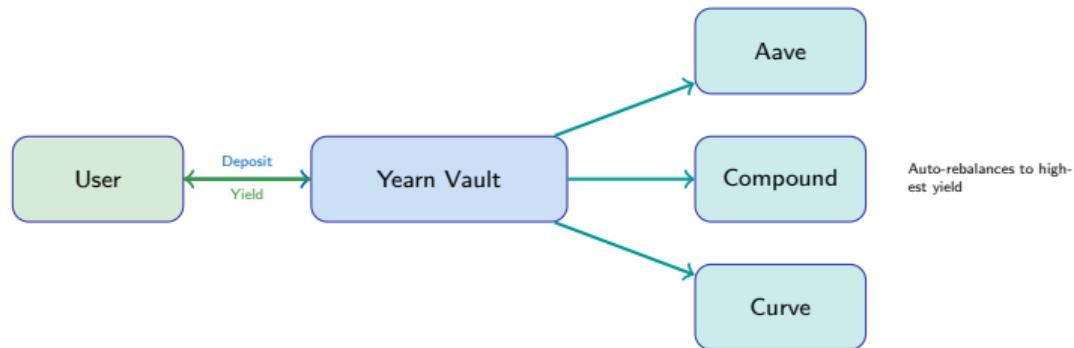


How Robo-Advisors Work:

1. User completes risk questionnaire
2. Algorithm builds diversified ETF portfolio
3. Automatic tax-loss harvesting
4. Continuous rebalancing

Impact: Brought professional-grade portfolio management to anyone with \$5 to invest.

Yearn Finance and Yield Aggregation



Key Innovation: Automated strategies that optimize yield across multiple DeFi protocols. User deposits once, algorithm does the rest.

Risk Warning

Smart contract risk, impermanent loss, protocol risk compound across strategies.

Sector 5: Insurance

What it covers:

- InsurTech platforms
- Parametric insurance
- Peer-to-peer insurance
- Embedded insurance
- Smart contract coverage

Key friction addressed:

Cost, claims, access, transparency

FinTech examples:

- Lemonade, Root
- Oscar, Hippo
- Metromile

Crypto examples:

- Nexus Mutual
- Cover Protocol
- InsurAce

Coming in Day 5

Insurance technology, parametric insurance, and DeFi coverage.

Traditional Insurance Pain Points:

- Slow claims processing (weeks)
- Opaque pricing
- High overhead costs
- Adversarial relationship
- One-size-fits-all products

InsurTech Solutions:

- AI-powered instant claims
- Transparent algorithms
- Digital-first operations
- Behavioral data pricing

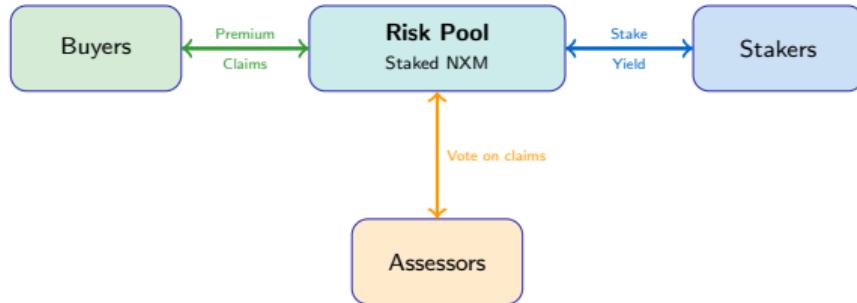
Case Study: Lemonade

- 90-second sign-up
- 3-minute claims (AI-powered)
- Giveback model: unused premiums to charity
- \$50M+ in claims paid via bot

Parametric Insurance:

- Payout triggered by event, not claim
- Example: Flight delay = automatic payment
- Eliminates claims process entirely

Nexus Mutual: Decentralized Insurance



What It Covers:

- Smart contract failures (hacks, bugs)
- Protocol insolvency
- Oracle manipulation

Paid Out: \$15M+ in claims from DeFi exploits

Sector 6: Banking Infrastructure

What it covers:

- Neobanks
- Banking-as-a-Service (BaaS)
- Core banking platforms
- Open banking APIs
- Account aggregation

Key friction addressed:

Fees, UX, bundling, access

FinTech examples:

- Chime, N26, Revolut
- Plaid, MX, Yodlee
- Synapse, Unit, Treasury Prime

Crypto parallels:

- Self-custody wallets
- Account abstraction (ERC-4337)
- On-chain identity

Neobank Examples You Might Know

No branches: Revolut, N26, Chime, Monzo – banks with no physical branches, app-only

vs. Traditional: Deutsche Bank, Chase, HSBC with thousands of branches worldwide

Coming in Day 2

Platform finance, open banking, and the future of banking infrastructure.

Mobile-First Digital Banks

What Makes a Neobank:

- No physical branches
- Mobile app as primary interface
- Lower fees (no branch overhead)
- Modern UX design
- Rapid feature deployment

Major Players:

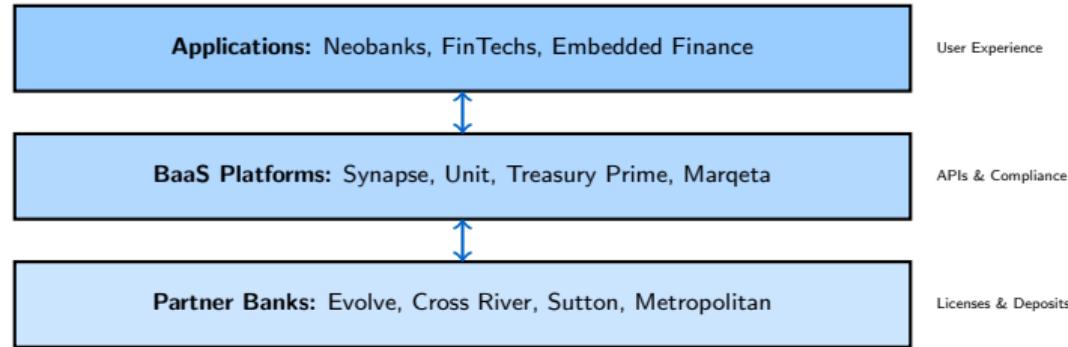
- **US:** Chime (14M+ users)
- **Europe:** N26, Revolut
- **Brazil:** Nubank (70M+ users)
- **UK:** Monzo, Starling

How They Work:

1. Partner bank holds deposits (FDIC insured)
2. Neobank provides UX layer
3. Revenue from interchange, premium tiers
4. Lower CAC through viral growth

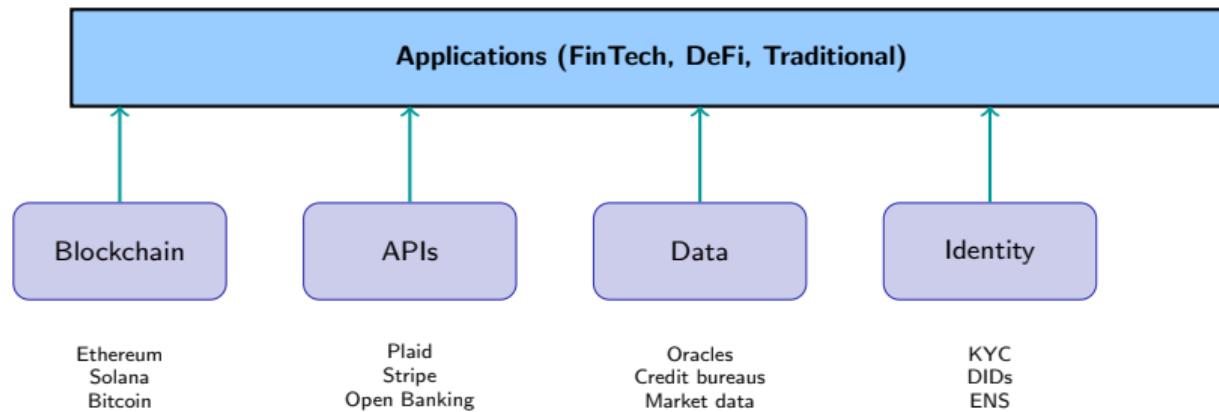
Key Insight

Neobanks unbundle traditional banks, offering better UX for specific use cases while still using regulated banking infrastructure.



What BaaS Enables:

- Any company can offer banking features via API
- No bank charter required
- Compliance handled by BaaS platform
- Examples: Shopify Balance, Uber driver accounts, company expense cards



Key insight: All applications build on shared infrastructure.
Understanding the infrastructure helps you understand what's possible.

Purpose in Digital Finance:

- Settlement layer for value transfer
- Trustless execution environment
- Immutable record keeping
- Programmable money (smart contracts)

Key Networks:

- **Bitcoin:** Store of value, payments
- **Ethereum:** Smart contracts, DeFi
- **Solana:** High-speed transactions
- **Layer 2s:** Scaling solutions

Why It Matters:

- Enables trustless, permissionless finance
- 24/7/365 operation
- Global by default
- Composable building blocks

Trade-off

Decentralization vs. Scalability vs. Security

Different chains make different choices.

What APIs Enable:

- Connect apps to bank data
- Initiate payments programmatically
- Verify identity and accounts
- Aggregate financial data

Simple Example

How does Uber show your bank balance without being your bank? APIs – secure data pipes between apps. Uber uses Plaid API to connect to your bank safely.

Key Players:

- **Plaid:** Account connectivity
- **Stripe:** Payment processing
- **MX:** Financial data
- **Yodlee:** Account aggregation

Open Banking Regulation:

- PSD2 (Europe): Mandated API access
- US: Market-driven (Plaid, etc.)
- UK: Open Banking Standard
- Australia: CDR framework

Impact

APIs are the “picks and shovels” of FinTech. Every major FinTech app relies on API infrastructure.

Data Infrastructure:

- **Oracles:** Bring off-chain data on-chain
- **Credit bureaus:** Traditional scoring
- **Market data:** Prices, rates, feeds
- **Alternative data:** Social, behavioral

Key Oracle: Chainlink

- Price feeds for DeFi
- \$75B+ TVL secured
- Critical infrastructure

Identity Infrastructure:

- **KYC/AML:** Regulatory compliance
- **DIDs:** Decentralized identifiers
- **ENS:** Ethereum Name Service
- **Verifiable credentials:** Portable identity

The Identity Challenge

How do we enable privacy while meeting regulatory requirements? This remains an unsolved problem at scale.

Tokenization:

- Real estate tokens
- Art and collectibles
- Carbon credits
- Securities tokenization

DAOs:

- Decentralized governance
- Treasury management
- Collective investing

CBDCs:

- Central Bank Digital Currencies
- Government-issued digital money
- Wholesale vs. retail

Simple Framing

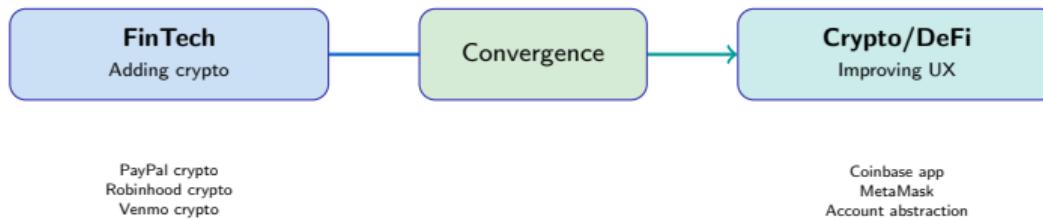
Think of CBDC as government-issued digital cash – like having euro notes, but digital and issued directly by the central bank instead of commercial banks.

AI + Finance:

- Algorithmic credit scoring
- Fraud detection
- Automated advising
- Predictive analytics

Coming in Days 5 & 6

The Lines Are Blurring



Discussion Questions:

- Will the distinction between FinTech and DeFi disappear?
- What determines which approach wins for a given use case?
- How should traditional banks respond?

Exercise: Place These in the Landscape

Innovation Examples:

1. Wise (cross-border payments)
2. Aave (lending protocol)
3. Robinhood (stock trading)
4. Lemonade (insurance)
5. Chime (neobank)
6. Yearn Finance (yield)

For Each, Identify:

- Which sector?
- FinTech or Crypto/DeFi?
- What friction does it address?
- What infrastructure does it use?
- Who benefits most?

Goal

Practice using the landscape framework to quickly categorize and understand any digital finance innovation you encounter.

Key Takeaways from the Landscape

The Six Sectors:

1. **Payments:** Moving money
2. **Lending:** Access to credit
3. **Trading:** Market access
4. **Investing:** Wealth building
5. **Insurance:** Risk management
6. **Banking:** Account infrastructure

Two Philosophies:

- FinTech: Better UX, existing rails
- Crypto/DeFi: New rails, new rules

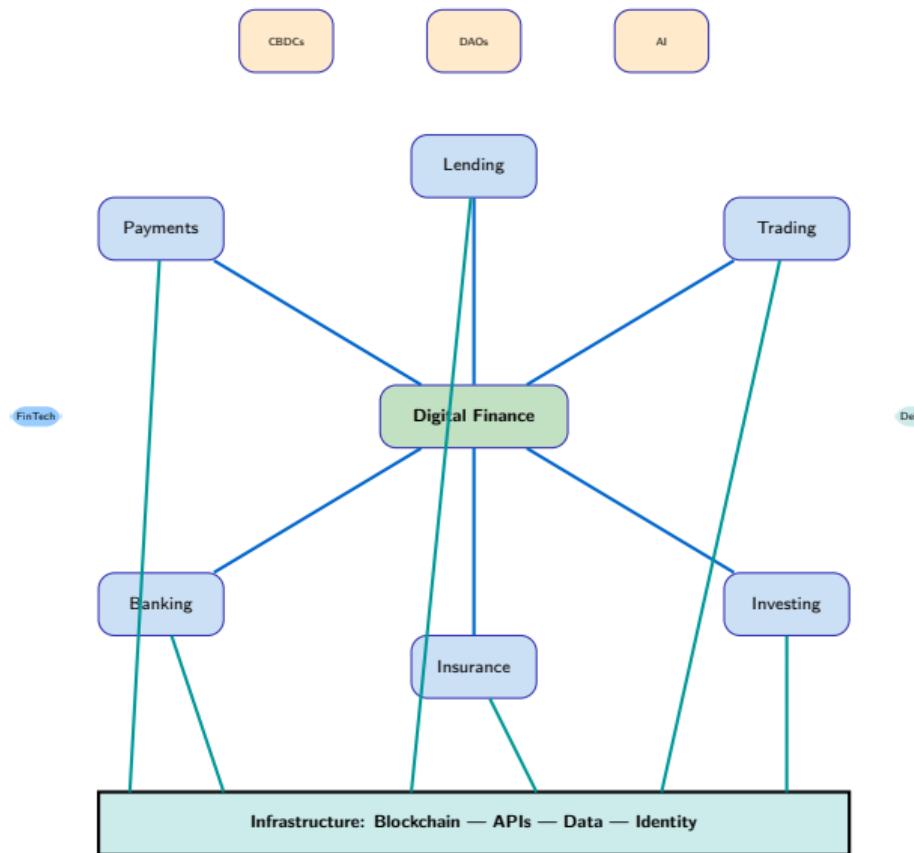
Shared Infrastructure:

- Blockchain networks
- APIs and open banking
- Data systems and oracles
- Identity infrastructure

Central Question

For any given use case: Should we improve existing infrastructure or build new infrastructure?

Concept Map: The Digital Finance Ecosystem



Key Terms and Definitions (Part 1)

Sectors:

- Neobank** Digital-first bank with no physical branches
- BNPL** Buy Now, Pay Later installment lending
- Robo-advisor** Algorithm-driven investment management
- InsurTech** Technology-enabled insurance innovation
- DEX** Decentralized exchange using smart contracts
- CEX** Centralized exchange with custodial model

Business Models:

- BaaS** Banking-as-a-Service API platforms
- Embedded Finance** Financial services in non-financial apps
- Open Banking** API access to bank data (regulated)
- AMM** Automated Market Maker for DEX trading
- Yield Aggregator** Auto-optimizing DeFi returns

Key Terms and Definitions (Part 2)

Infrastructure:

- Oracle** Service bringing off-chain data on-chain
- KYC** Know Your Customer identity verification
- DID** Decentralized Identifier for portable identity
- ENS** Ethereum Name Service (human-readable addresses)
- Layer 2** Scaling solution built on top of Layer 1

Emerging Concepts:

- Tokenization** Representing assets as blockchain tokens
- DAO** Decentralized Autonomous Organization
- CBDC** Central Bank Digital Currency
- Composability** “Money legos” – combining DeFi protocols
- Account Abstraction** Smart contract wallets (ERC-4337)

Why Terms Matter

The landscape has its own vocabulary. Mastering these terms lets you navigate industry discussions, research, and opportunities.

Myths vs. Reality in Digital Finance

Myth 1: “FinTech and DeFi are competing”

Reality: They often complement each other. Many companies use both approaches.

Myth 2: “Neobanks are replacing traditional banks”

Reality: Most neobanks partner WITH banks for licensing and deposits.

Myth 3: “DeFi is only for speculation”

Reality: DeFi includes lending, insurance, and infrastructure – not just trading.

Myth 4: “Blockchain = cryptocurrency”

Reality: Blockchain is infrastructure; crypto is one application.

Myth 5: “Digital finance is unregulated”

Reality: FinTech is heavily regulated; DeFi regulation is evolving rapidly.

Myth 6: “The landscape is fixed”

Reality: New categories emerge constantly. The map evolves.

Quiz Question (ID: 3)

Which FinTech company category represents mobile-first digital banks with no physical branches?

- A. Payment processors
- B. Neobanks
- C. Robo-advisors
- D. InsurTech

Quiz Question (ID: 3)

Which FinTech company category represents mobile-first digital banks with no physical branches?

- A. Payment processors
- B. Neobanks
- C. Robo-advisors
- D. InsurTech

Answer: B – Neobanks

Explanation: Neobanks (like Chime, N26, Revolut, and Nubank) are digital-first banks that operate primarily or exclusively through mobile apps without physical branch networks. They still use traditional banking infrastructure and are licensed banks, but offer better user experience, lower fees, and modern features compared to traditional banks.

Quiz Question (ID: 8)

What is the primary friction that payment sector innovations address?

- A. Investment returns
- B. Speed, cost, and convenience of money movement**
- C. Insurance claims processing
- D. Credit scoring accuracy

Answer: B – Payment innovations target speed (3-5 day international transfers), cost (especially cross-border), and convenience (limited hours, geographic restrictions).

Quiz Question (ID: 16)

What is the convergence trend described in the landscape overview?

- A. All financial companies are becoming exactly the same
- B. FinTech adds crypto features while crypto improves UX, blurring lines**
- C. Traditional banks are completely disappearing
- D. Cash is being eliminated worldwide

Answer: B – Despite convergence, the underlying philosophical differences remain distinct.

Platform Finance: How FinTech Reshapes Financial Services

We'll explore:

- How platforms create value through network effects
- Open banking and API-based innovation
- Neobanks and the unbundling of finance
- Platform business models

Preparation:

- Think: What financial apps do you use daily?
- Optional: Read about payment rails (ACH, SWIFT, card networks)
- Consider: Which sectors interest you most for deeper exploration?

Preview

Day 2 goes deep on the FinTech side of the landscape – how platforms, APIs, and network effects are transforming traditional financial services.

Further Reading:

- Nakamoto, S. (2008). "Bitcoin: A Peer-to-Peer Electronic Cash System"
- World Bank Global Findex Database
- BIS Papers on payments and digital currencies
- CB Insights FinTech 250 annual report

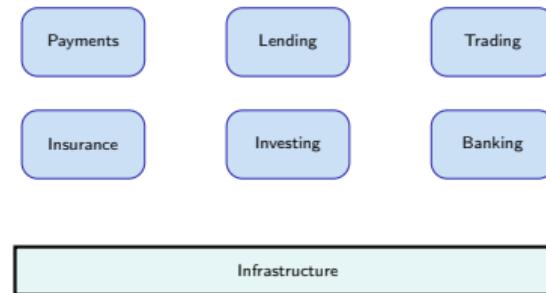
Industry Sources:

- DeFi Llama (TVL tracking): defillama.com
- The Block (industry news): theblock.co
- Fintech Nexus (conferences): fintechnexus.com

Concepts to Review:

- The six sectors of digital finance
- Infrastructure layer components
- FinTech vs. Crypto/DeFi distinction
- Emerging categories: tokenization, DAOs, CBDCs, AI

Questions and Discussion



Contact: Joerg Osterrieder
Topic: T1.4 – Landscape Overview