



TORONTO
16 - 19 Oct 2017



Lunch & Learn: FinTech - Innovative banking



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Better than a thousand days of
diligent study is one day with a
great teacher.

Japanese proverb



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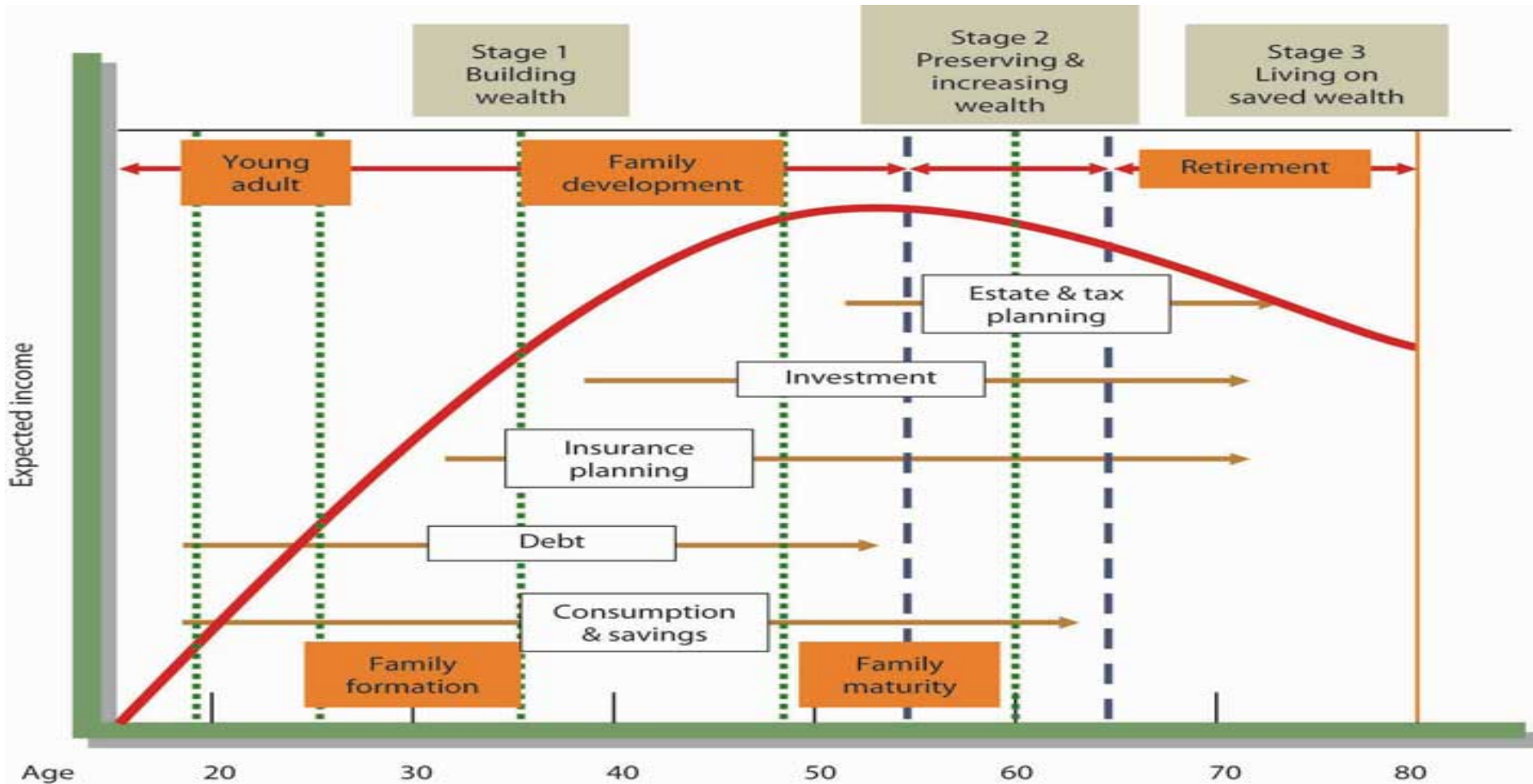
What is finance?

Financial Services

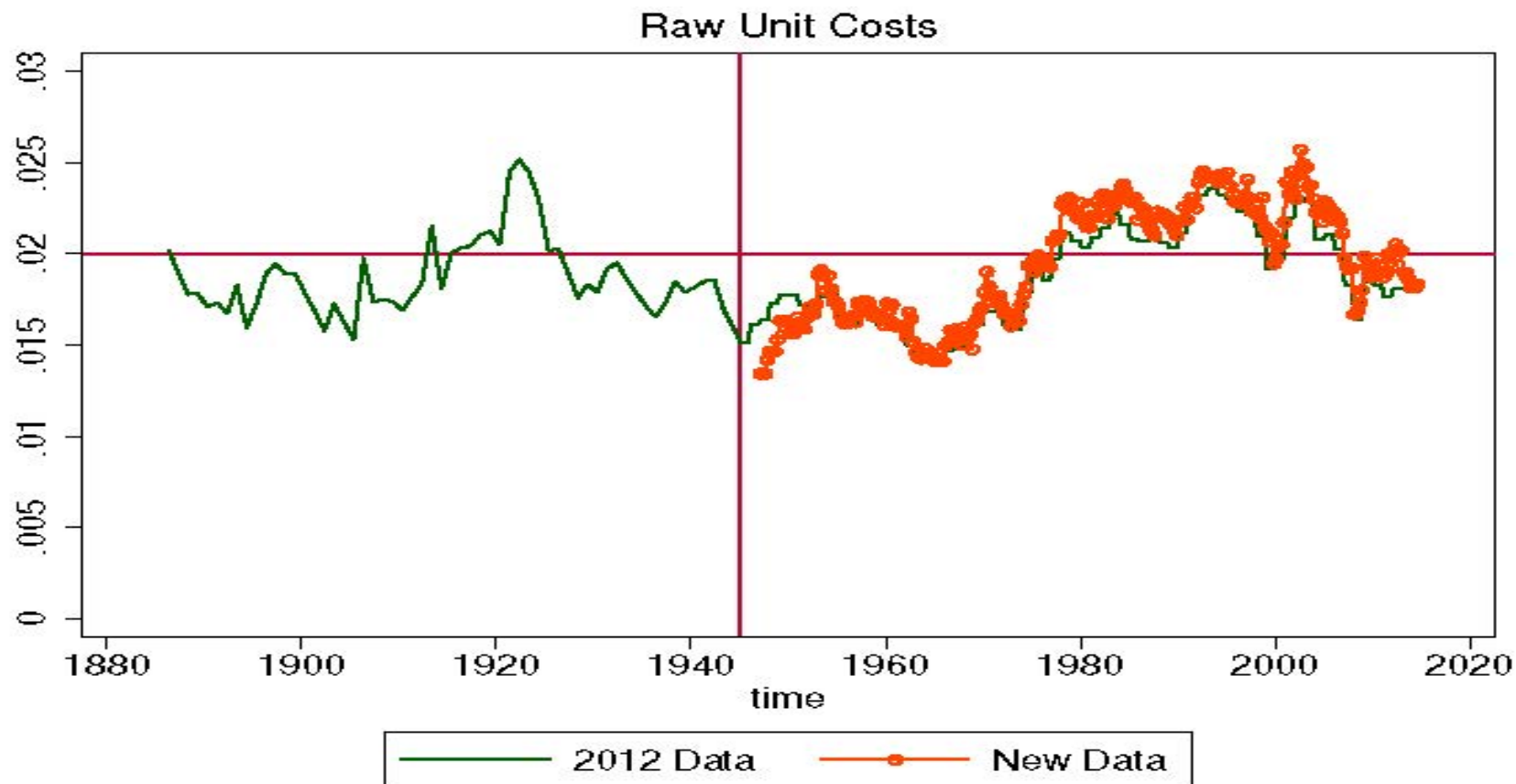
Retail/Commercial Banking	Investment Banking	Markets Infrastructure	Asset Management	Insurance
Depository	Investment Banking	Exchanges	Mutual Funds	Life
Lending	Sales & Trading	Custody/Clearing	Mandates	Property & Casualty
Non-Depository Credit Institutions	Underwriting	Stocks	Alternatives	Accident & Health
Domestic Payments	Structured Finance	Commodities	Wealth Management	Specialty
International Payments	Prime Brokerage	Foreign Exchange	Trust Services	Reinsurance
Remittances		Futures & Options		Brokerage

What should finance help us with?

To manage the complexities and risks of our lives



How much does finance cost?



Philippon (2016): “[I]t costs two cents per year to create and maintain one dollar of intermediated financial asset.”

Over the course of the last 130 years!

Why does finance remain so expensive? Not enough technology?

Perhaps financial service industry does not benefit from advances in computing and telecommunication technologies?



Why does finance remain so expensive? Lack of talent?

It does not attract smart, rigorously-trained, hard-working people who can make it more efficient?

Why do banks want physics and maths grads?

May 6, 2015 under [Career advice](#), [Graduate](#) | [0 Comments](#)

So you want a job in banking and finance. Why is it that recruiters appear to want you to have a degree in mathematics, computing or physics? What have atoms and the theory of relativity got to do with stocks and shares? We attempt to explain...



OK, it's inefficient, but the benefits of finance exceed the costs?

THE JOURNAL OF FINANCE • VOL. LXX, NO. 4 • AUGUST 2015

Presidential Address: Does Finance Benefit Society?

LUIGI ZINGALES*

ABSTRACT

Academics' view of the benefits of finance vastly exceeds societal perception. This dissonance is at least partly explained by an underappreciation by academia of how, without proper rules, finance can easily degenerate into a rent-seeking activity. I outline what finance academics can do, from a research point of view and from an educational point of view, to promote good finance and minimize the bad.

The rise of Fintech:

Unbundling and getting rid of costly legacy

Marc Andreessen: “We have a chance to rebuild the system. **Financial transactions are just numbers; it’s just information.** You shouldn’t need 100,000 people and prime Manhattan real estate and giant data centers full of mainframe computers from the 1970s to give you the ability to do an online payment.”

“You would not today, starting from scratch, invent any of these financial businesses in the same way. To me, it’s all about **unbundling the banks**. There are regulatory arbitrage opportunities every step of the way. If the regulators are going to regulate banks, then **you’ll have nonbank entities that spring up to do the things that banks can’t do.**”

Andreessen on Finance: ‘We Can Reinvent the Entire Thing’ Bloomberg Finance, October 7, 2014

The rise of Fintech:

A structural change

- **Trust:** Loss of trust in large financial institutions after the global financial crisis; gain in trust by technology companies
- **Technology:** Three key digital technologies introduced during 2006-2008 - **blockchain** (2008), mobile phones (2007) and cloud computing (2006)
- **Talent:** Leaving big banks (which the regulators are turning into utilities) and going into fintech start-ups
- **Financing:** Availability of ample financing seeking positive yield in a zero-interest-rate environment

The rise of Fintech:

Key Digital Technologies and DIY Finance

- **Mobile phones:** iPhone was introduced in 2007. Mobile phones free the users of financial services from having to go to fixed service locations. DIY banking/insurance/payments
- **Blockchain:** Bitcoin blockchain was introduced in 2008. Blockchain frees both users and providers of financial services from having to maintain and protect multiple ledgers of transactions/records/contracts. DIY money/capital/assets
- **Cloud computing:** Amazon Web Services introduced in 2006. Cloud computing frees providers of financial services from having fixed-location IT/computing/data services. DIY trading/investing

Fintech in UK Banking:

Loss of trust

- People used to be loyal to traditional high street banks because **they thought bigger institutions were safer**. However, this mindset is changing
- Traditional banking was discredited by a series of scandals – LIBOR, FX fixing, mis-selling of products
- The business model for high street banks was reformed after the financial crisis of 2008, when the UK Government had to prop up the banking system with a massive £1 trillion
- Legislative reform led to improved competition within the banking sector. According to Savings Champion, over 1 million retail customers have already taken advantage of easier switching.
- The EU and UK Governments provide deposit guarantees relating to the risk of bank failures. In the UK this is provided by the Financial Services Compensation Scheme (FSCS)

Fintech in UK Banking: Challenger Banks

The Challenger landscape



Digitally Focused Challengers

The Digitally Focused Challengers are the newest additions to the Challenger landscape, each offering the promise of personalisation and of course technology, as key differentiators. The Digitally Focused Challengers also intend to partner with other businesses and some have even used customer crowdfunding to further their expansion.

The Big Five

The high street is led by a small group of retail banks along with mutuals, where Nationwide is the dominant player. Throughout the report, the 'Big Five' banks referred to are HSBC, Barclays Bank, Lloyds Bank, The Royal Bank of Scotland and the UK subsidiary of Santander.

Larger Challengers

The Larger Challengers are typically longer established. Two of them are relatively new in terms of branding, but have inherited relatively large portfolios of loans and advances to customers.

*Nationwide is one of the largest providers of mortgages in the UK, but considers itself a Challenger in terms of current accounts.

† Data for Nationwide, First Direct, Bank of Ireland UK and Charter Savings are not included in our analysis.

Smaller Challengers

The Smaller Challengers have typically been incorporated in the past five to ten years and were backed by private equity through their initial growth phase. Five of them are listed banks.

Large Retailers

The large existing retailers have entered the financial services market offering unsecured products and savings accounts. Tesco and M&S have expanded their offering with products such as current accounts and mortgages, thus further challenging the big banks.

Mobile Banks:

Gamification

Initial impetus: Vast popularity of personal mobile devices with touch user interface

Services: Very limited, technology-enabled, highly personalized; offered in levels

Engagement: Continuous

Design: Dynamic and engaging

Gratification: Points and virtual tokens

Platforms: Proprietary API with good support or open API with a large community

User acquisition: Online via partners, platforms, ads

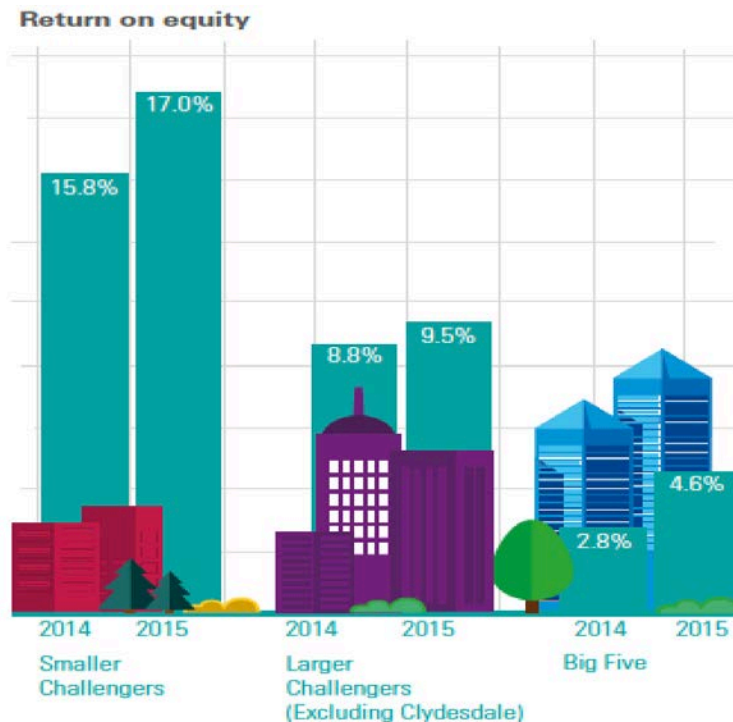
Monetization: Installation fees, subscription fees, fees for content beyond basic, mobile ads, sale of metadata



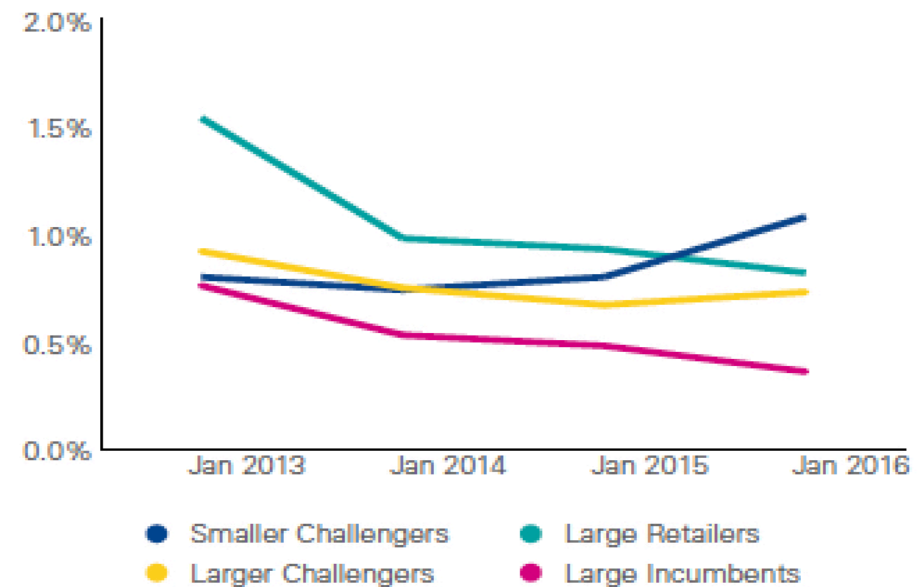
Mobile Banks:

Business strategy

- **Advantages:** No brick and mortar costs, much more profitable
- **Disadvantages:** Higher costs of financing and customer acquisition compared to incumbents (gap is really widening)



Growing cost for Challengers to attract new customers vs continued reduction for incumbents



Fintech in Data Infrastructure:

Blockchain

Let's describe what blockchain is without using jargon

Hash

Crypto

Fork

Block

Token Proof of Work

Digital Signature

Miner

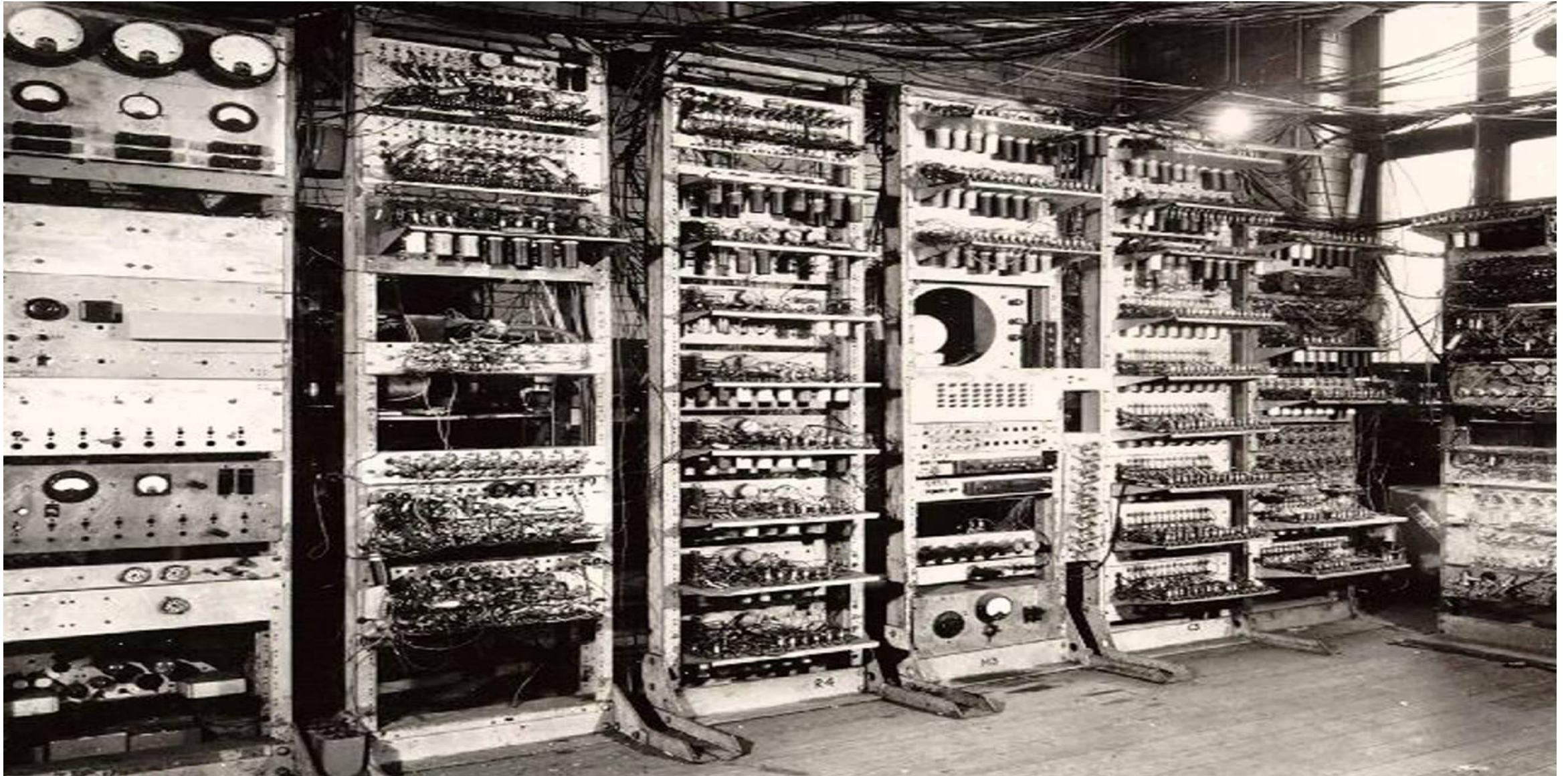
Distributed Ledger

Elliptical Curve

Smart Contract

Consensus

Blockchain is a computer – a finite-state machine



Fintech in Data Infrastructure:

Blockchain

It is not a very good computer:

- It is very slow – takes MINUTES to complete a change of state
- It is very expensive – can use A LOT of power
- It is not always exact – NOT SURE what the next state is

Fintech in Data Infrastructure:

Blockchain

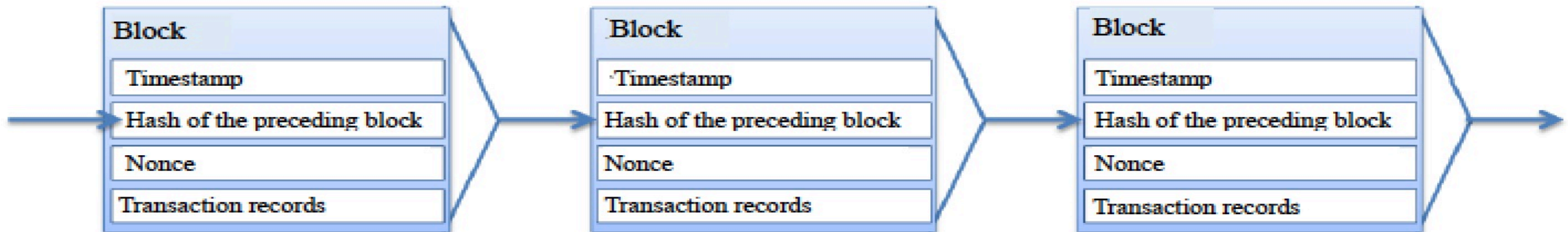
But, it is a truly global computer:

- It is NEITHER a physical machine NOR a virtual machine
- It CANNOT be shut down or reset by anyone (it can fork)
- It is natively OBJECT-ORIENTED, verifiable and auditable

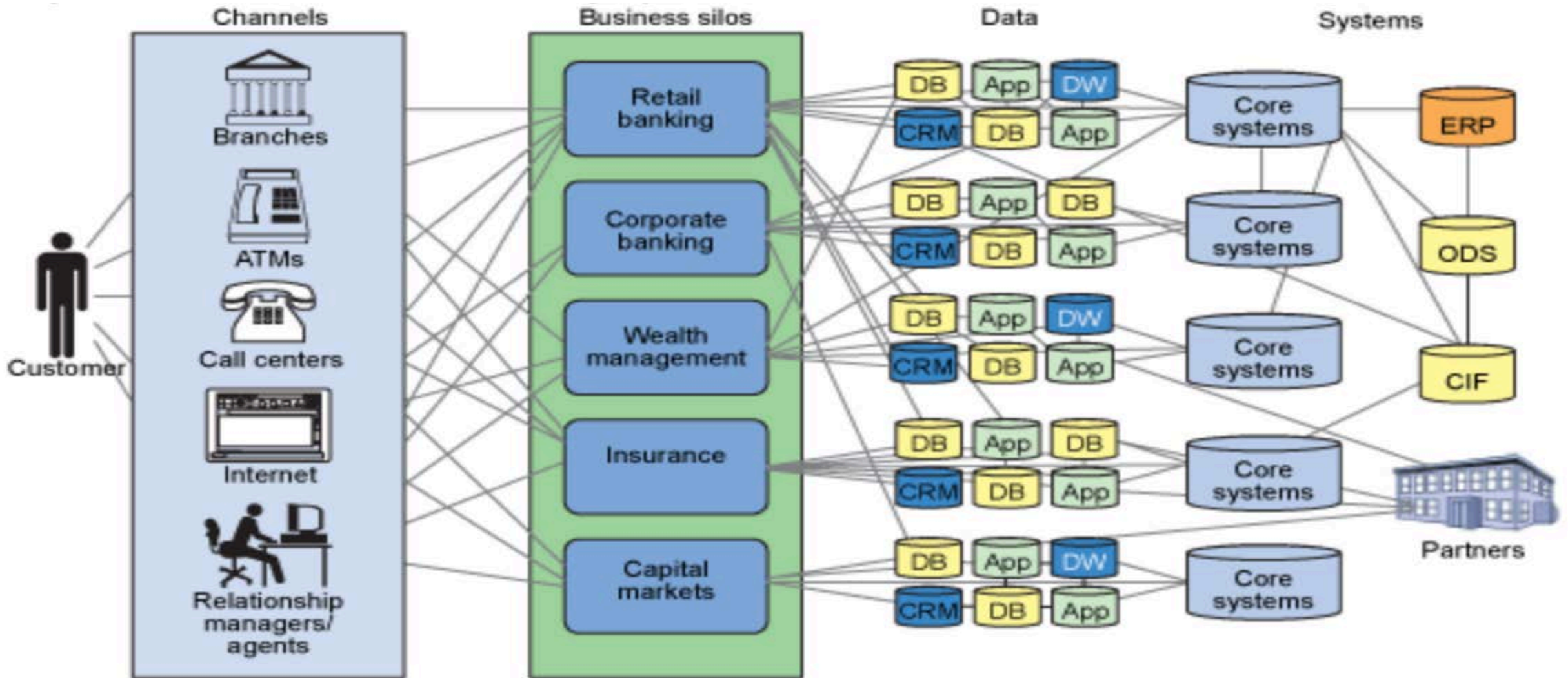
There are many such computers: Bitcoin, Ethereum, Ripple...

Essentials of Blockchain

- A processed block modifies the **state of a blockchain**
- For a block to be processed, **computations** need to take place
- These computations are triggered by **transactions**
- Transactions involve the **exchange** of “value” – tokens, coins, etc.
- Each processed/validated block contains:

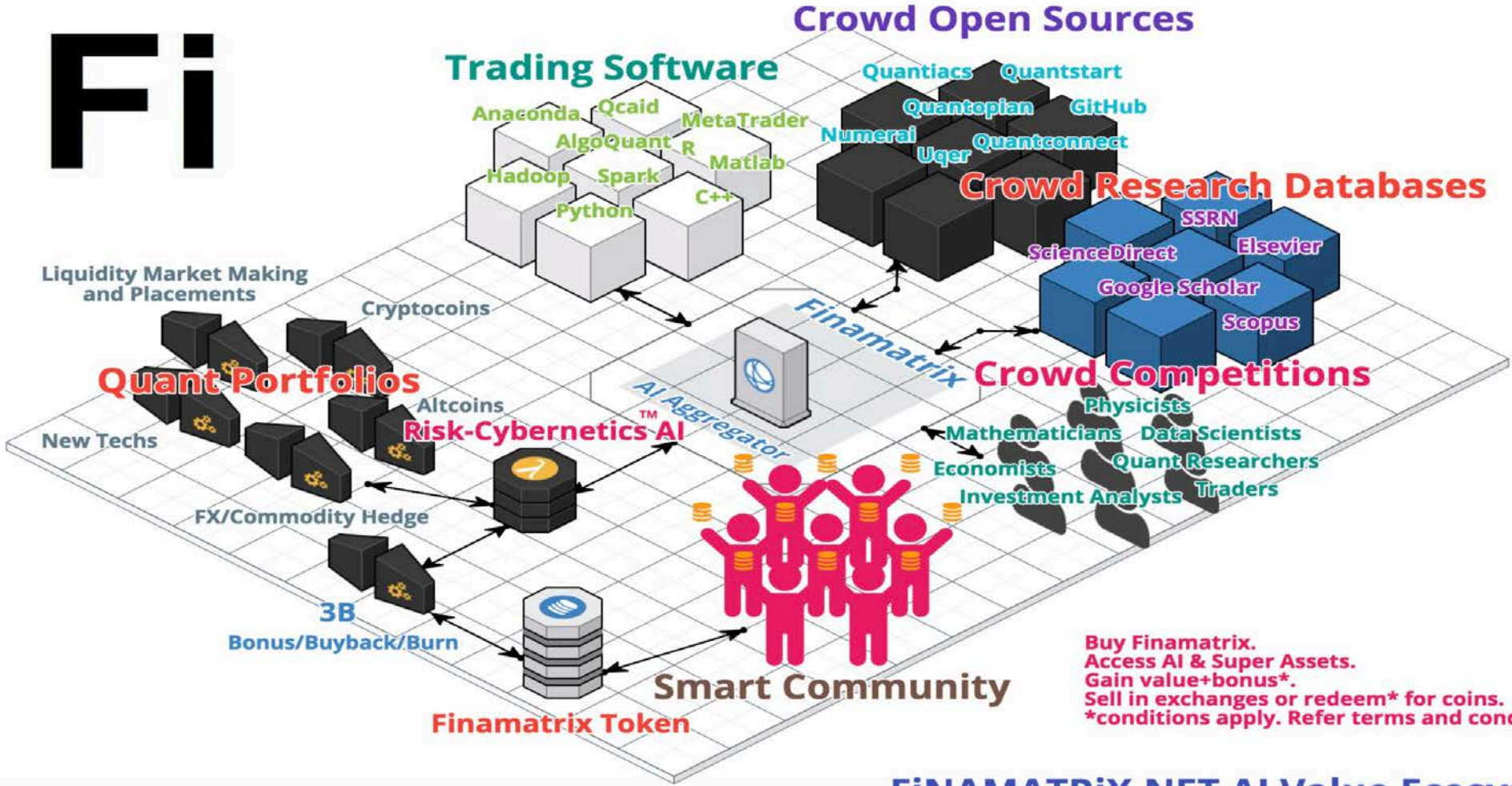


What computing technology will Blockchain replace? - Servers



Fintech in Capital Markets:

Crowd in the Cloud



Regtech on the Cloud

BENEFITS OF REGTECH

SHORT-TERM BENEFITS



Reduced cost of compliance



Sustainable and scalable solutions



Advanced data analytics



Risk and control convergence

LONG-TERM BENEFITS



Positive customer experience



Increased market stability



Improved governance



Enhanced regulatory reporting



Questions