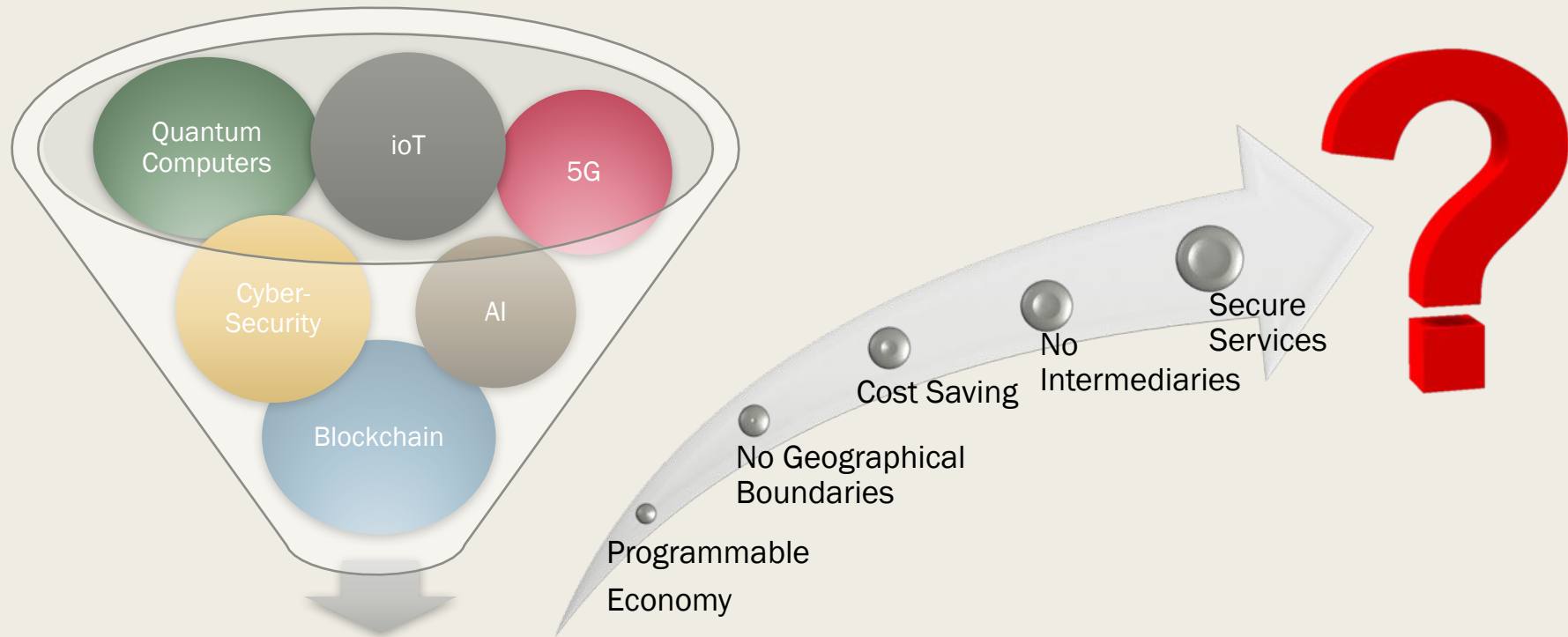


The Cornerstone of the 4th Industrial Revolution

Francisco Canós
September 2017

4th Industrial Revolution



4th Industrial Revolution:
Digital Era

Blockchain: Definition

- A Blockchain, also known as a distributed ledger, is a new type of financial database whose records operate like transferable financial instruments
- Records are digital assets.
- Digital assets are controlled by participants
- Each participant maintains a set of private keys
- Transaction is done between two parties that have to sign it with its private keys



Blockchain basics: Codification – Encryption & Integrity



Martin E. Hellman, left, and Whitfield Diffie in 1977. Source: Chuck Painter/Stanford News Service NYTimes

- **CODIFICATION:** from “human” language to “computer” language

0 -> Binary: 011 0000

- **ENCRYPTION:** make content access a great deal of difficulty (logarithm (elliptical) functions)

$$X = \log Y_{\alpha} \text{ mod } q$$

Y from X -> 400 operations

X from Y -> 10^{30} operations

- **INTEGRITY:** raise a flag if content has been changed (hashing)

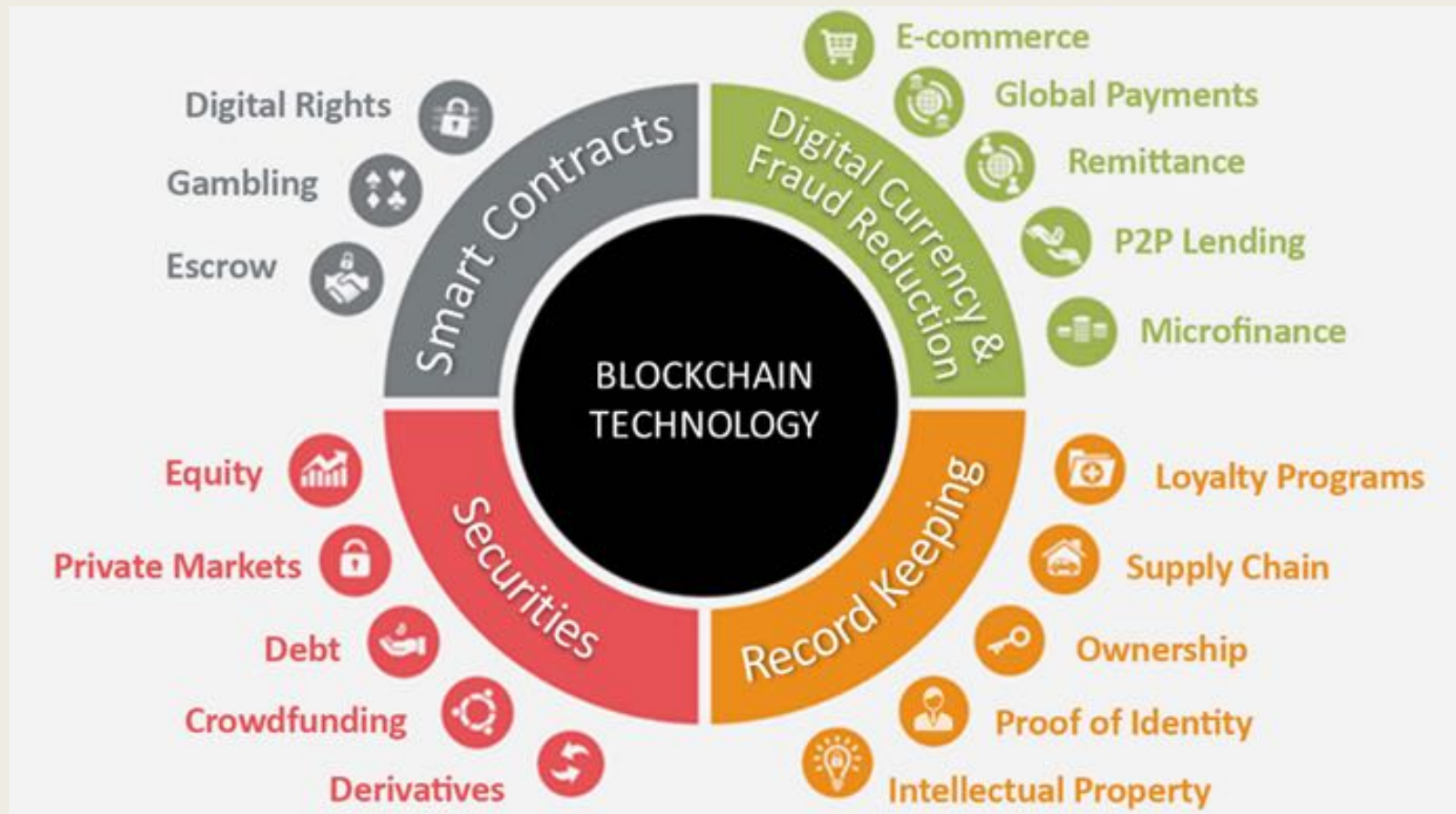
“Blockchain impact in Banking”

B98d4e82d294b3fa630f161a33bbd9c307e79d4ab2d69e01a7541ae999357f6f

“blockchain impact in Banking”

51137777e28bf149d8f915133374a5a2d5b599abdaef7c80247085aeaad3fbd3

Blockchain: Main applications

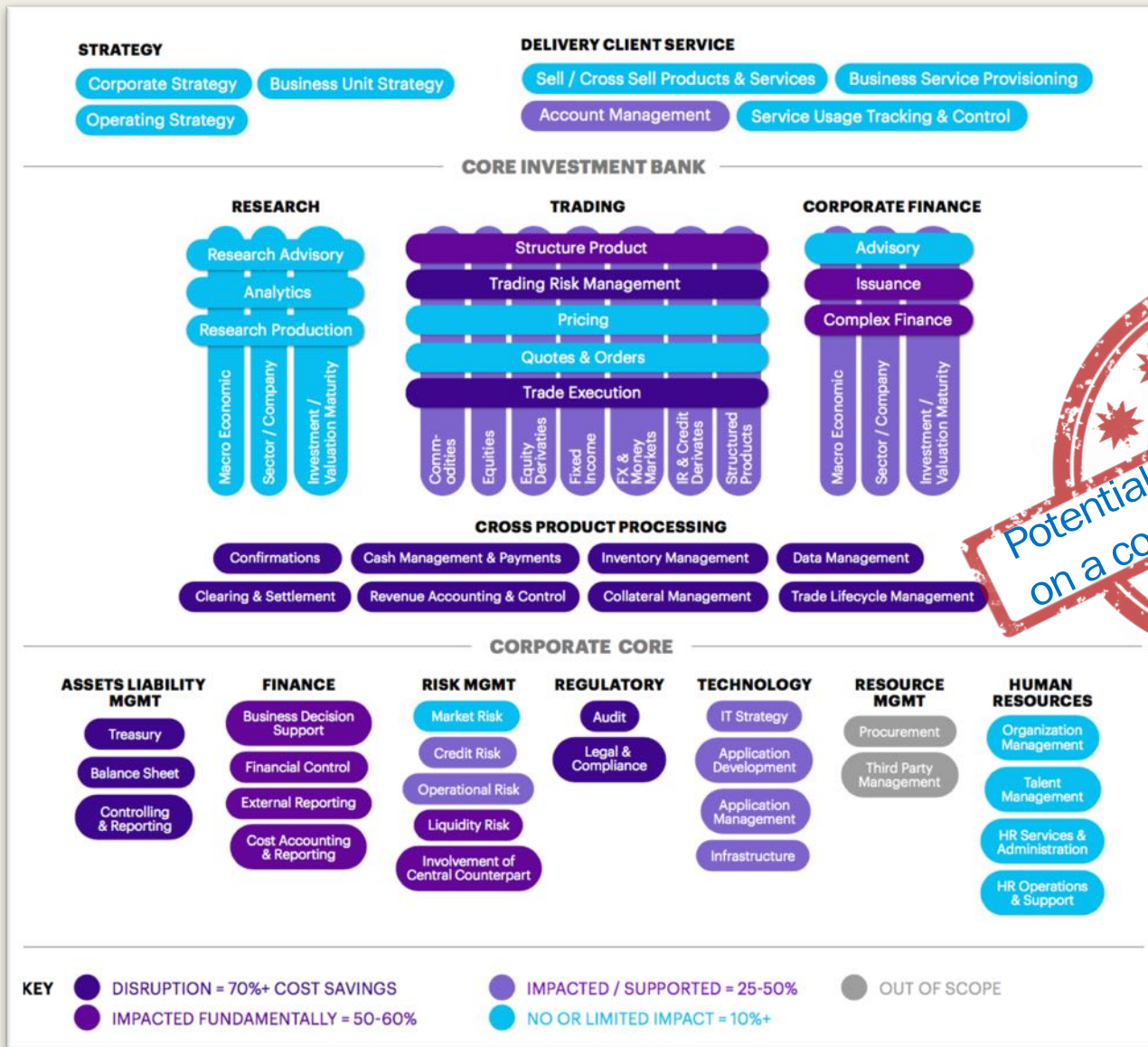


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SWOT ANALYSIS

STRENGTHS (+)	WEAKNESSES (-)
<ul style="list-style-type: none"> • Distributed resilience and control • Decentralized network • Open source • Security and modern cryptography • Asset provenance • Native asset creation • Dynamic and fluid value exchange 	<ul style="list-style-type: none"> • Lack of ledger interoperability • Customer unfamiliarity and poor user experience • Lack of intraledger and interledger governance • Lack of hardened/tested technology • Limitation of smart contract code programming model • Wallet and key management • Poor tooling and poor developer user experience • Skills scarcity and cost • Immature scalability
OPPORTUNITIES (+)	THREATS (-)
<ul style="list-style-type: none"> • Reduced transaction cost • Business process acceleration and efficiency • Reduced fraud • Reduced systemic risk • Monetary democratization • New business-model enablement • Application rationalization and redundancy 	<ul style="list-style-type: none"> • Legal jurisdictional barriers • Politics and hostile nation-state actors • Technology failures • Institutional adoption barriers • Divergent blockchains • Ledger conflicts/competition • Poor governance

Blockchain: Impact in Banking



Forecasting the future



\$3,16 Trillion by 2030



MARKETS
Citigroup to Tap Nasdaq for Blockchain Payment Technology
Companies are working with Chain Inc. to link Citigroup's business payments services to Nasdaq's blockchain platform

DELTA
RESERVE YA >

NUESTRAS OFERTAS A EE.UU. EMPIEZAN A PARTIR DE 680€

MARKETS
TAX REPORT
Helping Employees Recover from Harvey...

What's going on in Spain?

- Spain is fast emerging as a major player in innovation in industries such as aerospace, renewable energies, water treatment, food and agriculture, biotechnology, information and communication technologies, and manufacturing. ([M.I.T. MISTI Programs](#))



Thanks

**Change is the law of life,
And those who look only to
the past or present are
certain to miss the future.**

- John F. Kennedy

