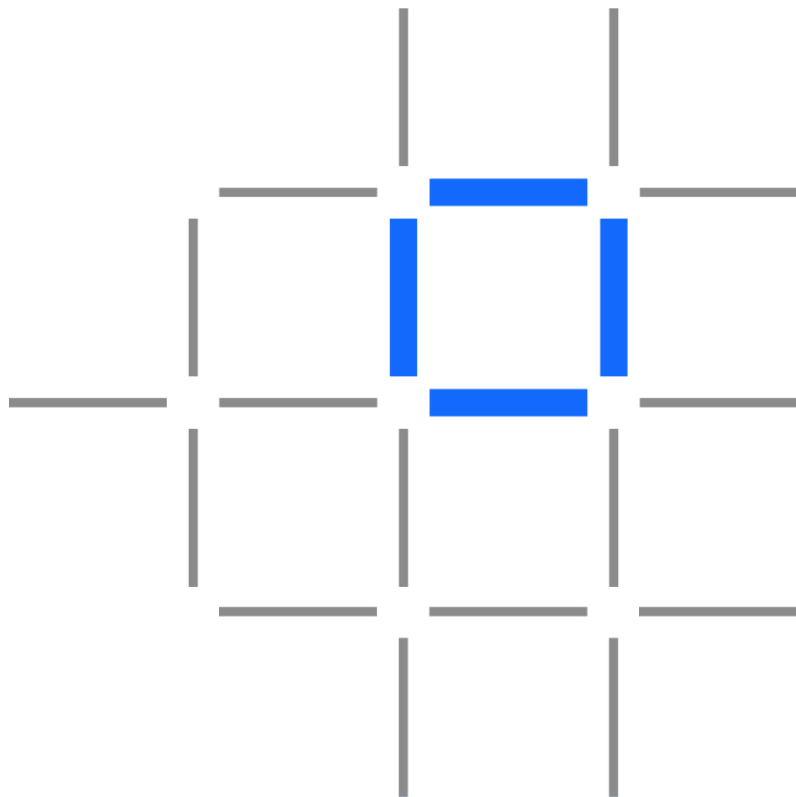# Blockchain for Business (Demystified)
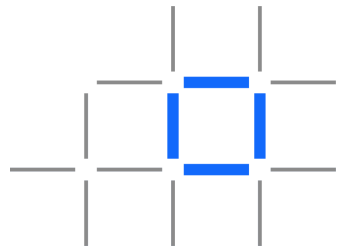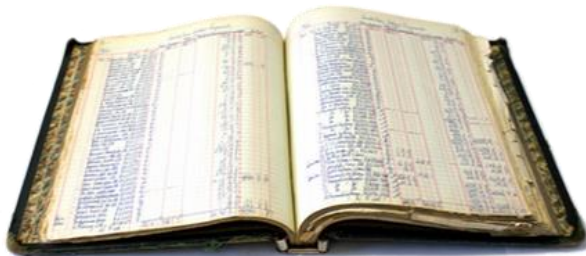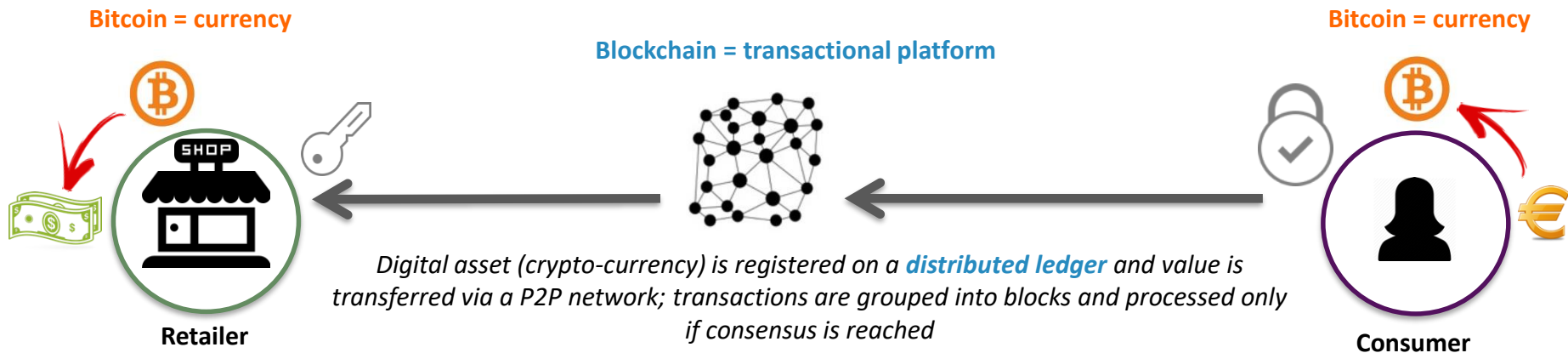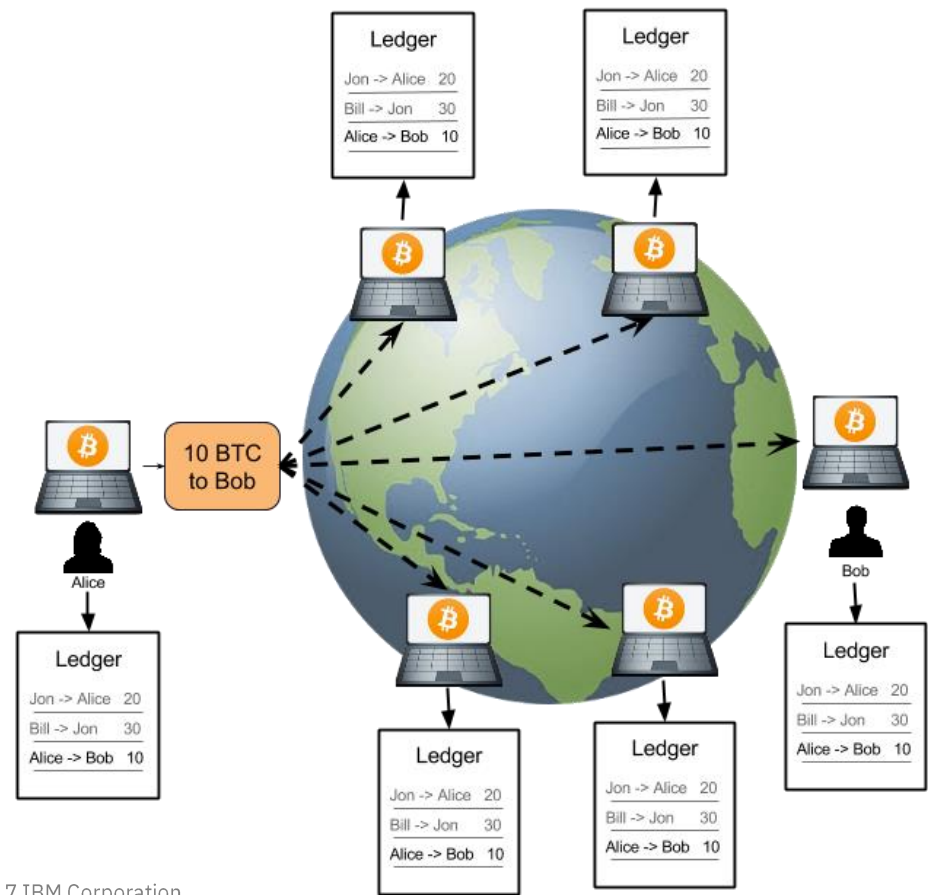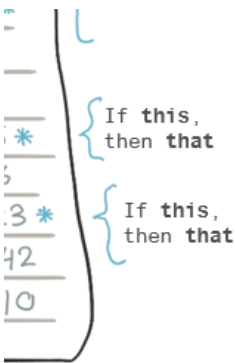
Luca Comparini
IBM France, Blockchain Leader

Relationship between Bitcoin and Blockchain

Bitcoin = currency

Blockchain = transactional platform

Bitcoin = currency

Retailer

Consumer

Digital asset (crypto-currency) is registered on a distributed ledger and value is transferred via a P2P network; transactions are grouped into blocks and processed only if consensus is reached

Distributed ledger = Decentralized Trust

Smart Contracts

Insights based on 500+ engagement

Trade Finance	Pre and Post Trade	Complex Risk Coverage
Identity/ Know your customer (KYC)	Unlisted Securities/ Private Equity Funds	Music Industry
Medicated Health Data Exchange	Fraud/ Compliance Registry	Distributed Energy/ Carbon Credit
Supply Chain	Food Safety	Provenance/ Traceability

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#1 energy consumption: PoW vs other consensus algorithms

Bitcoin's current estimated annual electricity consumption* (TWh)	32.36
Annualized global mining revenues	$11,322,523,149
Annualized estimated global mining costs	$1,618,129,306
Country closest to Bitcoin in terms of electricity consumption	Serbia
Estimated electricity used over the previous day (KWh)	88,664,620
Implied Watts per GH/s	0.297
Total Network Hashrate in PH/s (1,000,000 GH/s)	12,551
Electricity consumed per transaction (KWh)	250.00
Number of U.S. households that could be powered by Bitcoin	2,996,536
Number of U.S. households powered for 1 day by the electricity consumed for a single transaction	8.45
Bitcoin's electricity consumption as a percentage of the world's electricity consumption	0.14%
Annual carbon footprint (kt of CO_2)	16016.2
Carbon footprint per transaction (kg of CO_2)	123.73

#2 Incentives for peers: token vs convergence of interests

Permission-less

Design points:
- Public network with no 3rd parties
- Trustless environment
- "Censorship-Resistance"

Consensus:
- Protocol assumes open networks
- **Incentives intrinsic to platform**

Permissioned

Design points:
- Private / Semi-private network
- Actors known / knowable
- Regulated Industries

Consensus:
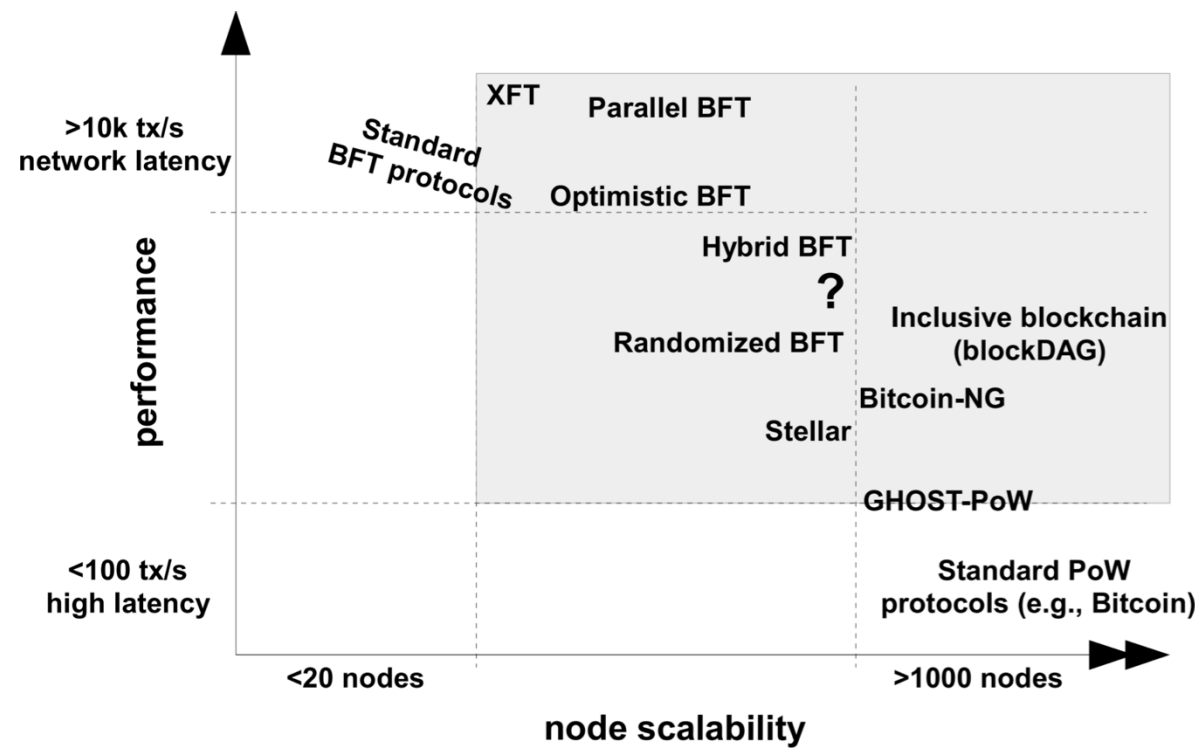- Protocol assumes known actors
- **Incentives extrinsic to platform**

#3 Mining vs Modular Consensus Algorithms

PoW mining is designed for open networks
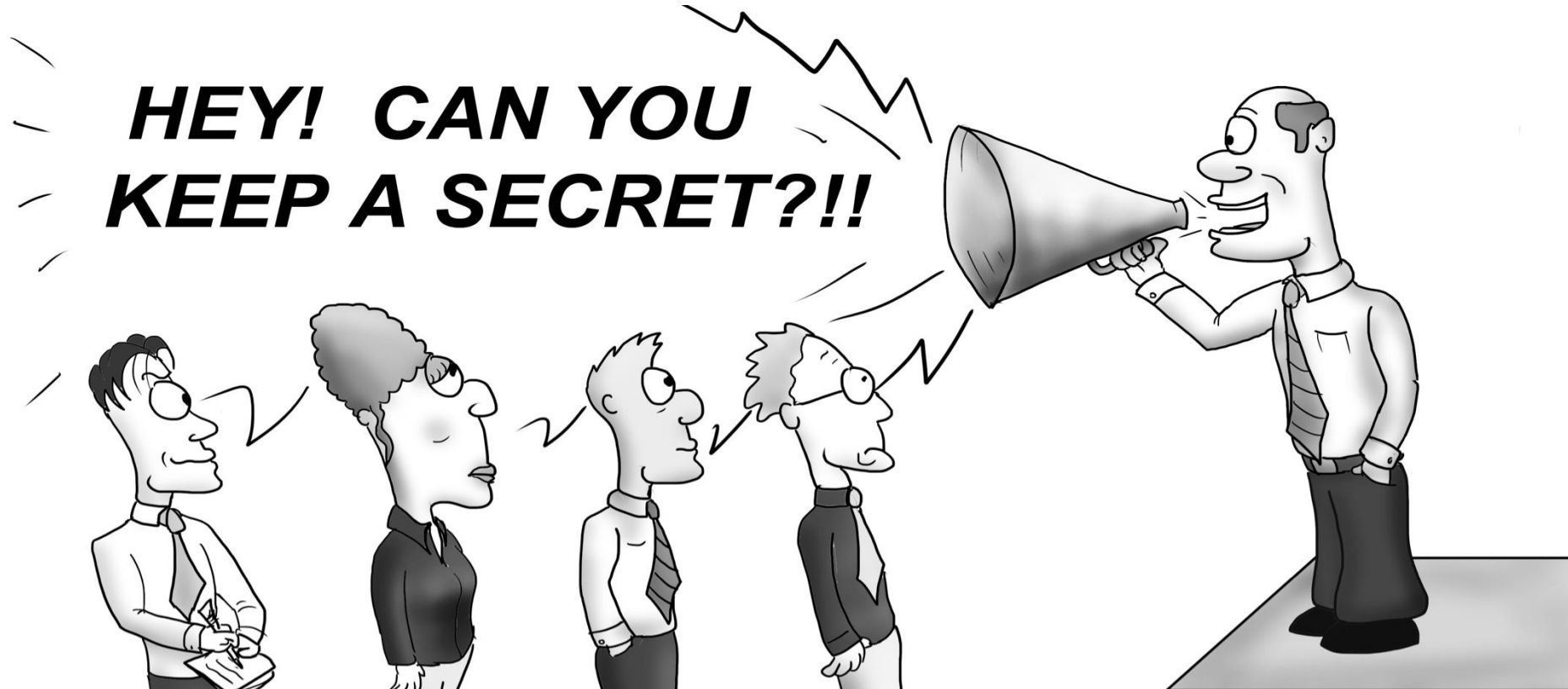and makes no sense when participants have permissions

#4 Scalability trade-off: network size vs performance

Marko Vukolić
The Quest for Scalable Blockchain Fabric, Proof-of-Work vs. BFT Replication
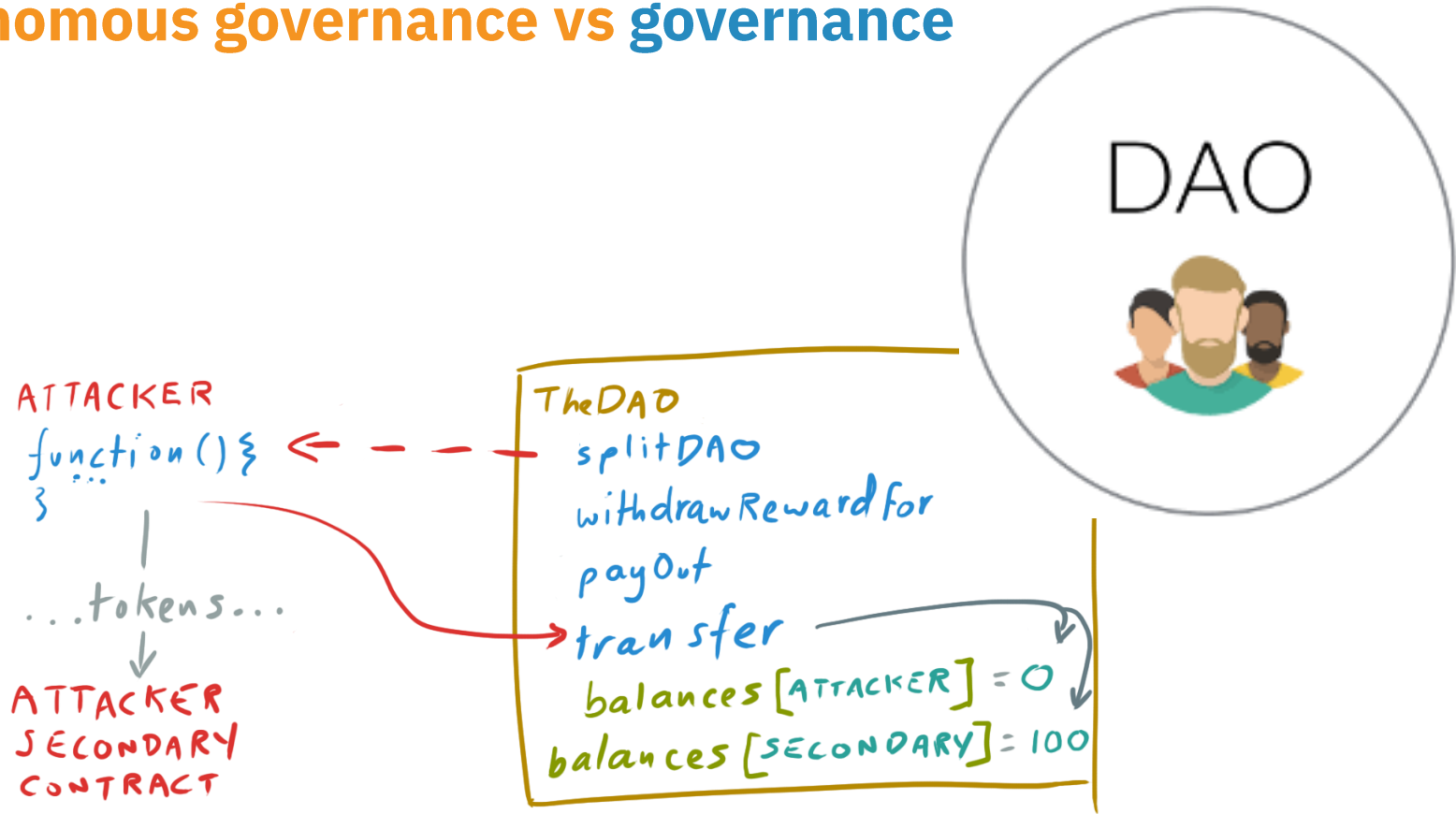
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#5 Transparence vs divergence of interests
(confidentiality & privacy)

#6 No more trusted parties? Really?

What about
Oracles, Mining pools, Exchanges and
Core developers?

#7 Autonomous governance vs governance

ATTACKER

function ( ) {
...
}

...tokens...

ATTACKER
SECONDARY
CONTRACT

TheDAO
splitDAO
withdrawRewardfor
payOut
transfer
balances [ATTACKER] = 0
balances [SECONDARY] = 100

#8 Revolution vs Evolution

Disruption or empowerment for existing systems and ERPs?

Blockchain is rather seen as an additional trusted data source for Ecosystem-wide systems / ERPs

#9 the journey to industrialization: MVP vs MVE

Minimum Viable Product vs Minimum Viable Ecosystem
"Blockchain is a team-sport"

#10 Positioning IBM and Hyperledger (150+ members)

Fabric V1.0: released July 2017, with the contribution of 159 developers from **27 organizations**

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Some examples

Trade Finance	Pre and Post Trade	Complex Risk Coverage
Digital Trade Chain, MIZUHO, NATIXIS, TRAFIGURA	DTCC, CLS Fundamental to FX, JPX TOKYO STOCK EXCHANGE, Bolsa Comercio SANTIAGO	AIG, Standard Chartered

Identity/ Know your customer (KYC)	Unlisted Securities/ Private Equity Funds	Music Industry
SECUREKEY, Crédit Mutuel ARKEA, DIACC	NORTHERN TRUST, BORSA ITALIANA, SBI GROUP SBI証券	PRS for MUSIC, sacem, ascap

Medicated Health Data Exchange	Fraud/ Compliance Registry	Distributed Energy/ Carbon Credit
FDA	دبـي الذكية SMART DUBAI	TenneT, ENERGY BLOCKCHAIN LABS

Supply Chain	Food Safety	Provenance/ Traceability
MÆRSK, PSA The World's Port of Call	Walmart, Driscoll's Only the Finest Berries, Tyson, McLANE, Dole, Kroger, Nestlé, Unilever, gsf golden state foods, Mc	everledger

Thanks

Luca Comparini
IBM France, Blockchain Leader

www.ibm.com/blockchain

developer.ibm.com/blockchain

www.hyperledger.org

Experts
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Solutions
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