

BARDEHLE
PAGENBERG



Blockchain & Illicit trade

Matthieu Hug, CEO @ Tilkal

AGENDA

- **Illicit trade in supply chains**
- **Modern supply chains & traceability**
- **Blockchain: why and where it fits**
- **Example of Tilkal**
- **Take aways**

ILLICIT TRADE : A MULTI FACETED ISSUE



Violation of property

- physical property
- intellectual property
- Smuggling and tax fraud



Violation of regulations

- Health & physical security
- Pollution, deforestation
- Slavery & child labor



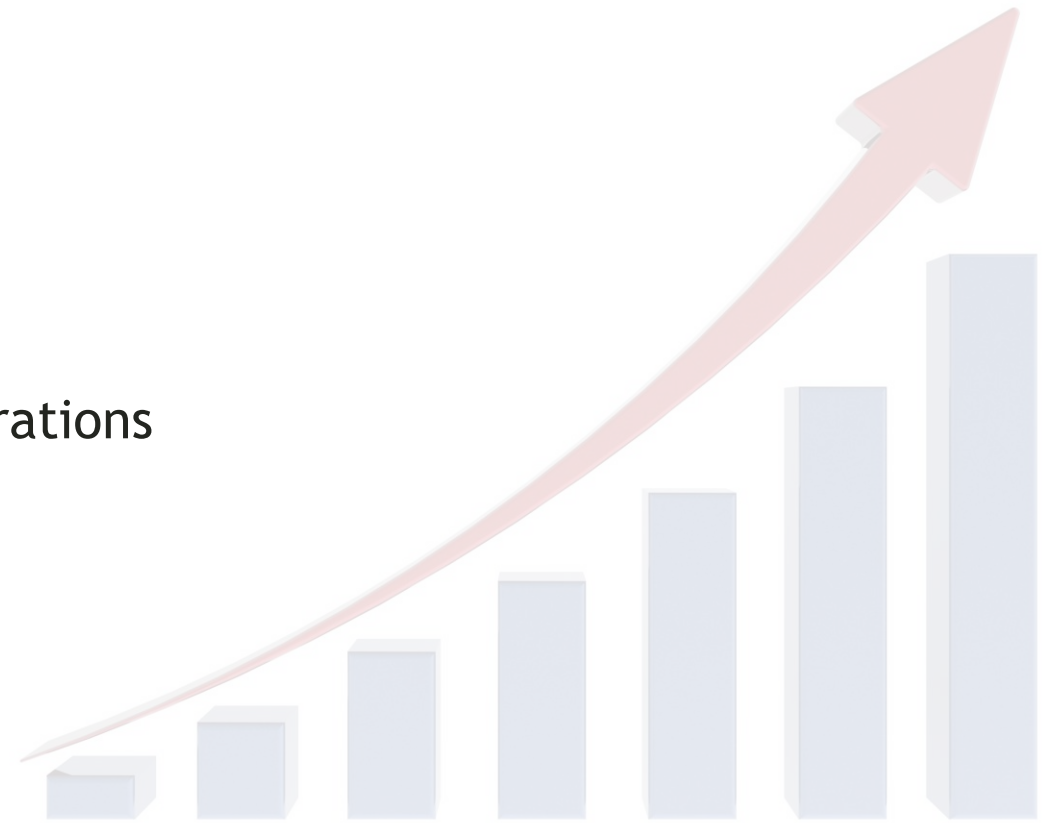
Violation of commercial contracts

- Parallel imports
- Authorized sellers selling to unauthorized channels

**Organization of the sale of products to the public
in violation of the law**

A GLIMPSE AT THE SIZE OF ILLICIT TRADE

- **\$1 trillion to \$2 trillions per year (*)**
 - France GDP in 2004
- **x5 000 in 10 years (**)**
 - counterfeited articles seized by EU custom administrations
 - cases increased x10
- **Boosted by digital platforms**
 - 6,000 listings removed by Facebook every 5 days
 - 114 millions websites taken down by Alibaba
- **> 25% illicit trade products are dangerous for health and safety**
- **Illicit trade used to be a consequence of criminality, it has become its purpose**



(*) projected value for 2015 by International Chamber of Commerce

(**) 2015 Situation Report on Counterfeiting in the European Union, Europe & UN-OHIM, April 2015

ILLICIT TRADE HAPPENS AT ANY STAGES OF SUPPLY CHAINS

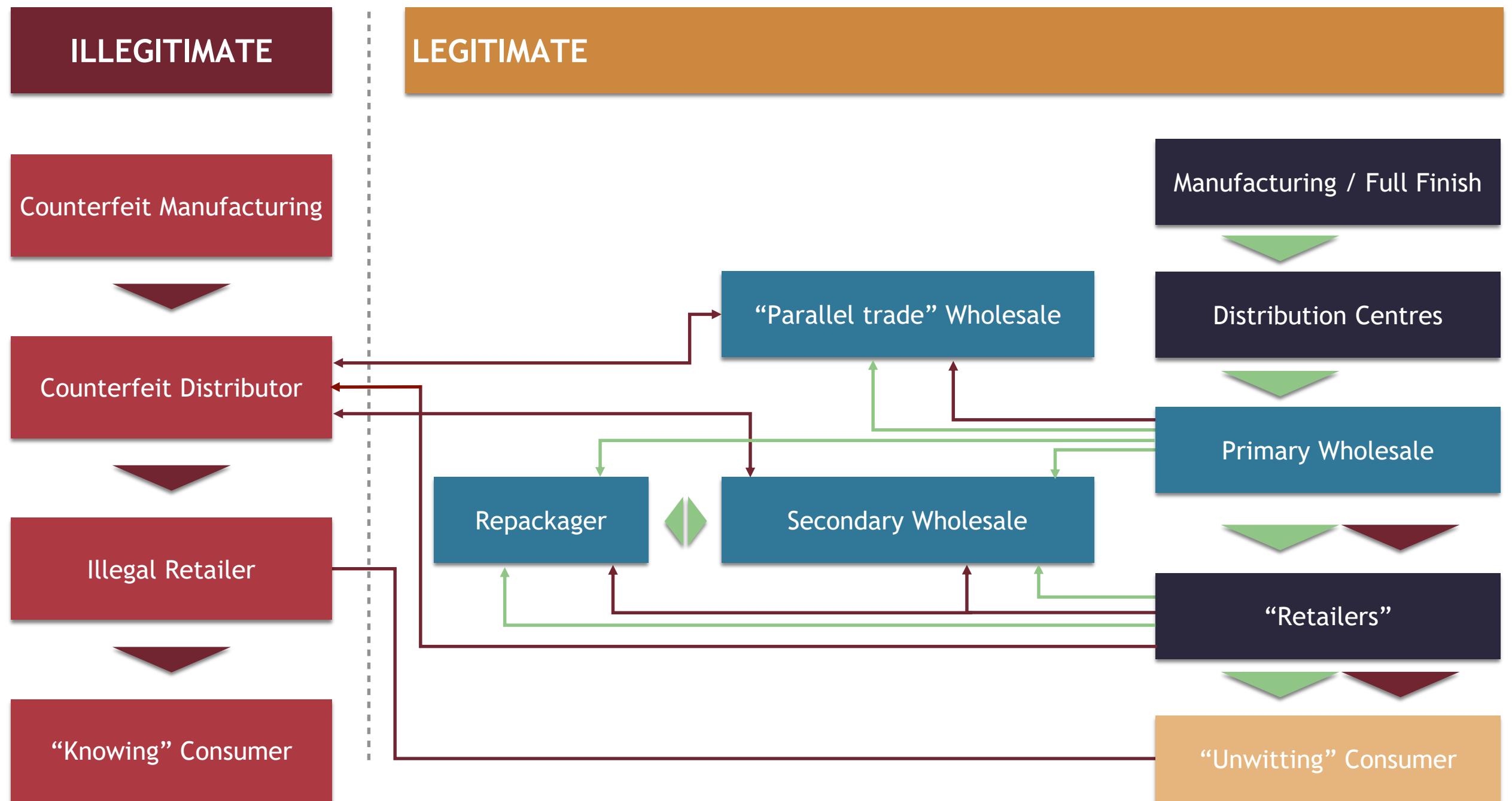


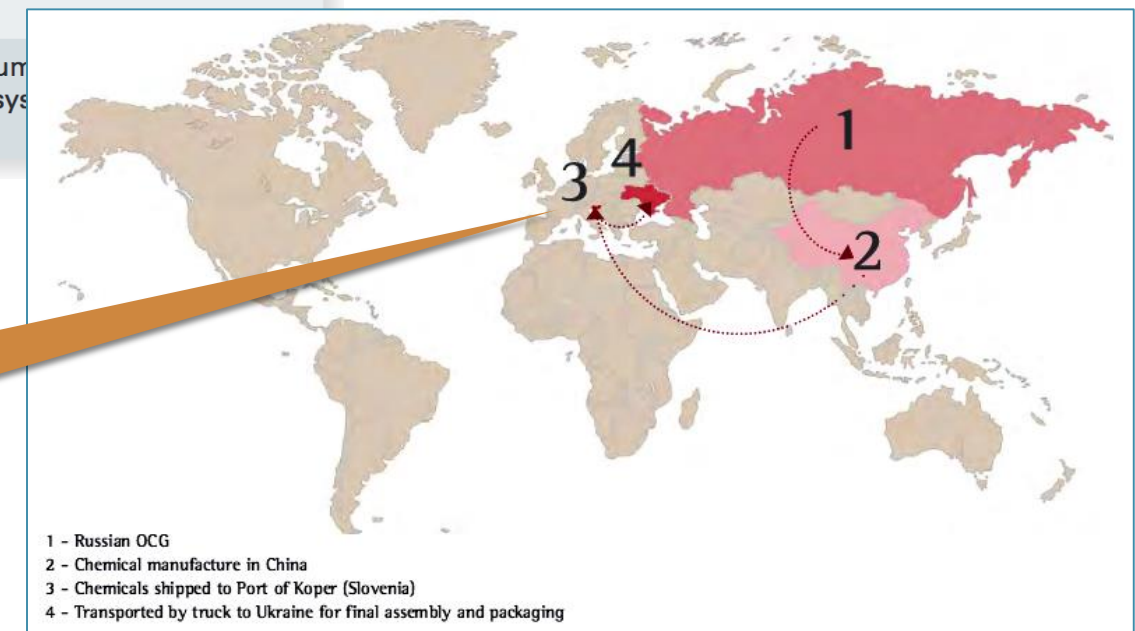
Diagram source: 2015 Situation Report on Counterfeiting in the European Union, Europe & UN-OHIM, April 2015

90% OF PRODUCT REFERENCES WORLDWIDE (*)

Table 1: The diverse nature of illicitly produced goods (select categories)

Automotive	Scooters, engines, engine parts, body panels, air bags, windscreens, tires, bearings, shock absorbers, suspension and steering components, automatic belt tensioners, spark plugs, disc brake pads, clutch plates, oil, filters, oil pumps, water pumps, chassis parts, engine components, lighting products, belts, hoses, wiper blades, grilles, gasket materials, rings, interior trim, brake fluid, sealing products, wheels, hubs, anti-freeze, windshield wiper fluid
Chemicals/pesticides	Insecticides, herbicides, fungicides, non-stick coatings
Consumer electronics	Computer components (monitors, casing, hard drives), computer equipment, webcams, remote control devices, mobile phones, TVs, CD and DVD players, loudspeakers, cameras, headsets, USB adaptors, shavers, hair dryers, irons, mixers, blenders, pressure cookers, kettles, deep fryers, lighting appliances, smoke detectors, clocks
Electrical components	Components used in power distribution and transformers, switchgears, motors and generators, gas, and hydraulic turbines and turbine generator sets, relays, contacts, timers, circuit breakers, fuses, distribution boards and wiring accessories, batteries
Food, drink and agricultural products	Fruit (kiwis), conserved vegetables, milk powder, butter, ghee, baby food, instant coffee, alcohol, drinks, candy/sweets, hi-breed corn seeds
Pharmaceuticals	Medicines used for treating cancer, HIV, malaria, osteoporosis, diabetes, hypertension, cholesterol, cardiovascular disease, obesity, infectious diseases, Alzheimer's disease, prostate disease, erectile dysfunction, asthma and fungal infections; antibiotics, anti psychotic products, steroids, anti inflammatory tablets, pain killers, cough medicines, hormones, and vitamins; treatments for hair and weight loss.
Tobacco	Cigarettes, cigars, and snuff
Toiletry and other household products	Home and personal care products, including shampoos, detergents, fine fragrances, perfumation products, skin care products, deodorants, toothpaste, dental care products, shaving systems, shoe polish; non-prescription medicine

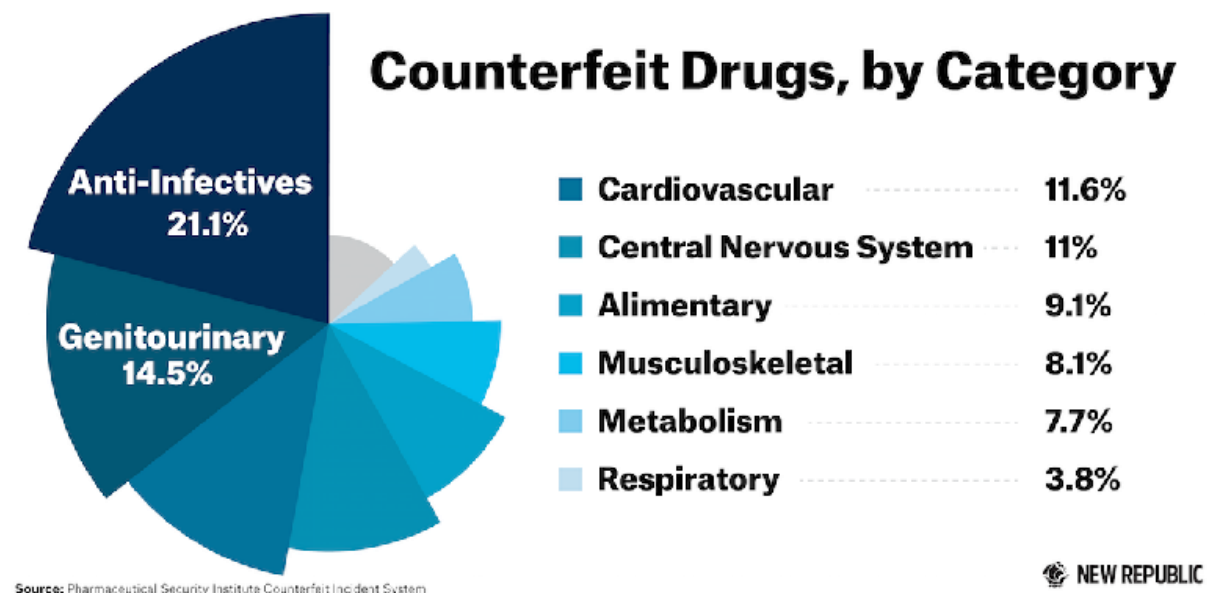
Even waste is concerned
currently the fastest growing illicit trade in Europe (**)



EXAMPLE OF PHARMA: A GLOBAL HEALTH ISSUE



source: IRACM, 2016



- **counterfeit medicines: USD 200 billions in yearly sales (*)**
 - Loss for the pharmaceuticals industry in Europe: about 10 billions € / year (**)
- **62% of online medicines sales, 97% of online stores (*)**
- **700,000 to 1,000,000 death each year**

(*) source: Lilly, 2016

(**) Rapport de l'Office de l'Union européenne pour la propriété intellectuelle, publié jeudi 29 septembre

EXAMPLE OF INFANT MILK: A PROMISE FOR LIFE?

- **2008: China milk scandal**
 - Melamine in infant formula
 - 6 infants died and 54,000 hospitalized
- **2013: second milk scandal**
 - Repackaged Hero Group formula mixed with tainted milk
- **2016: third milk scandal**
 - 65,000 cans of fake Similac seized (*)

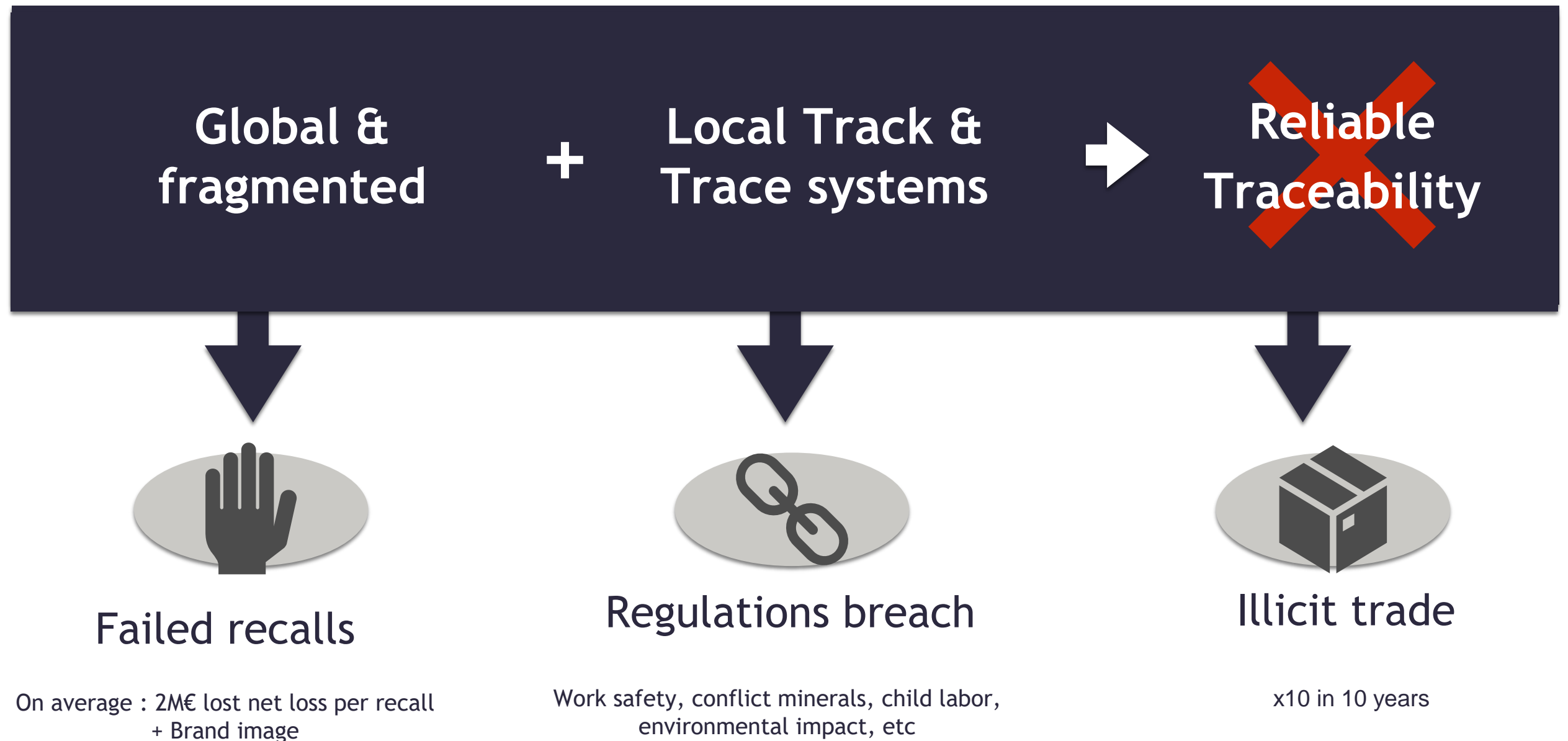


(*) source UBS via Wall Street Journal (August 2, 2016)

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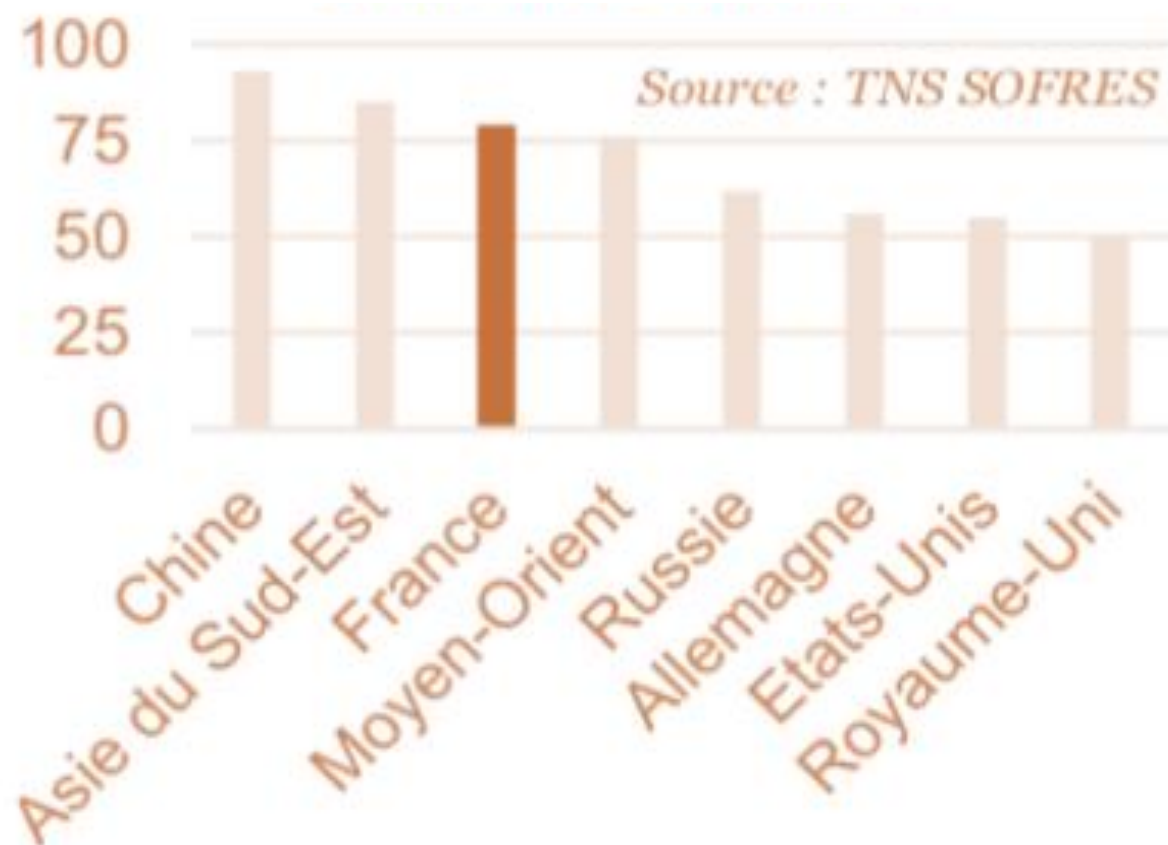
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ROOT CAUSE: END-TO-END TRACEABILITY DOES NOT EXIST IN MODERN SUPPLY CHAINS

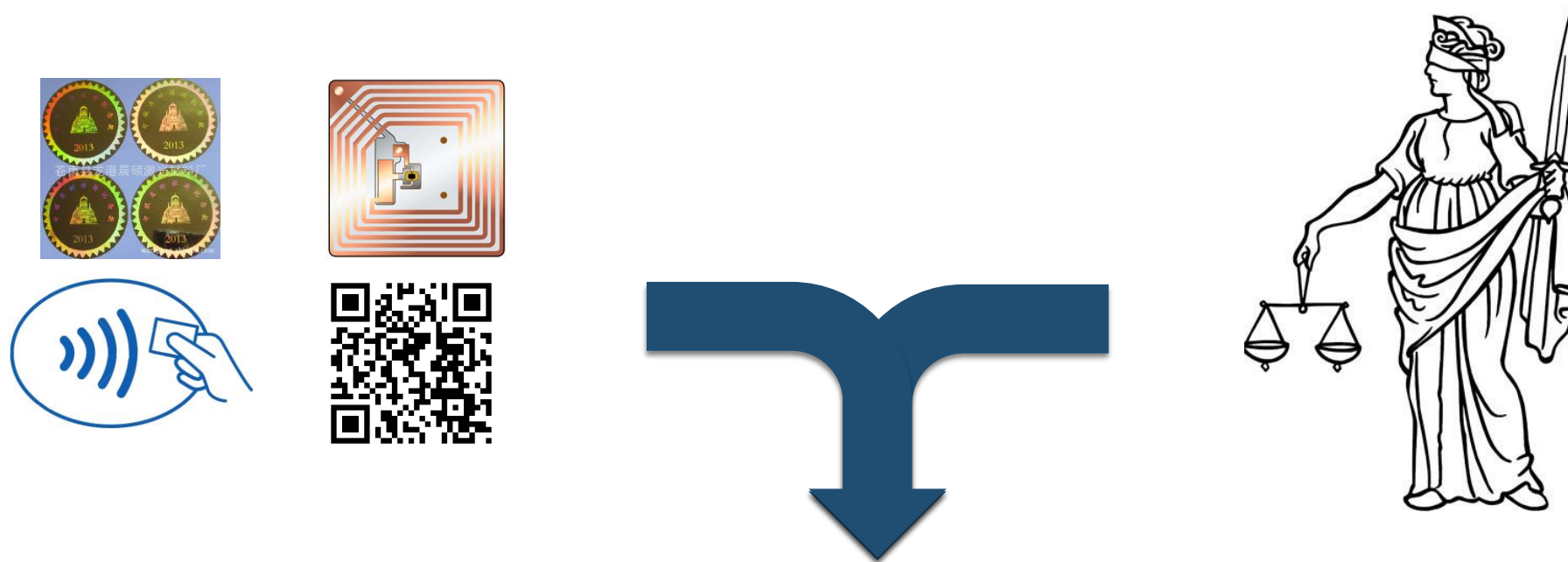


MISCONDUCT OF A FEW FEEDS CONSUMERS' SUSPICION, IMPACTING ALL BRANDS (EX: FOOD INDUSTRY)

% of consumers who think products they buy are negatively impacting their health



TRADITIONAL APPROACHES ARE NECESSARY, BUT CANNOT MATCH THE SCALE OF THE ISSUE



The Economist Intelligence Unit

PART OF THE **GROWTH CROSSINGS** SERIES

A report from The Economist Intelligence Unit

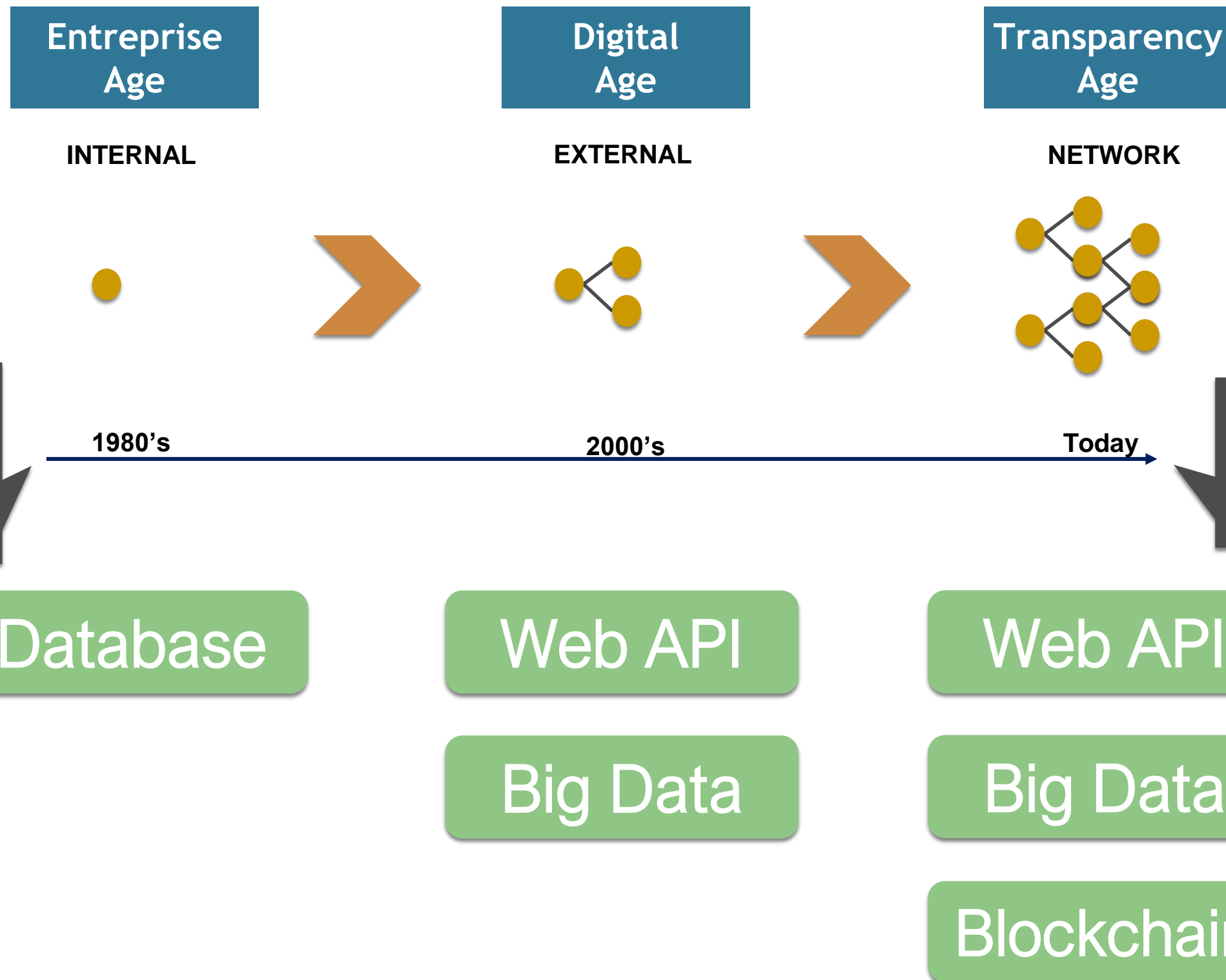
Rebooting supply chains

Shorter, smarter and more sustainable?

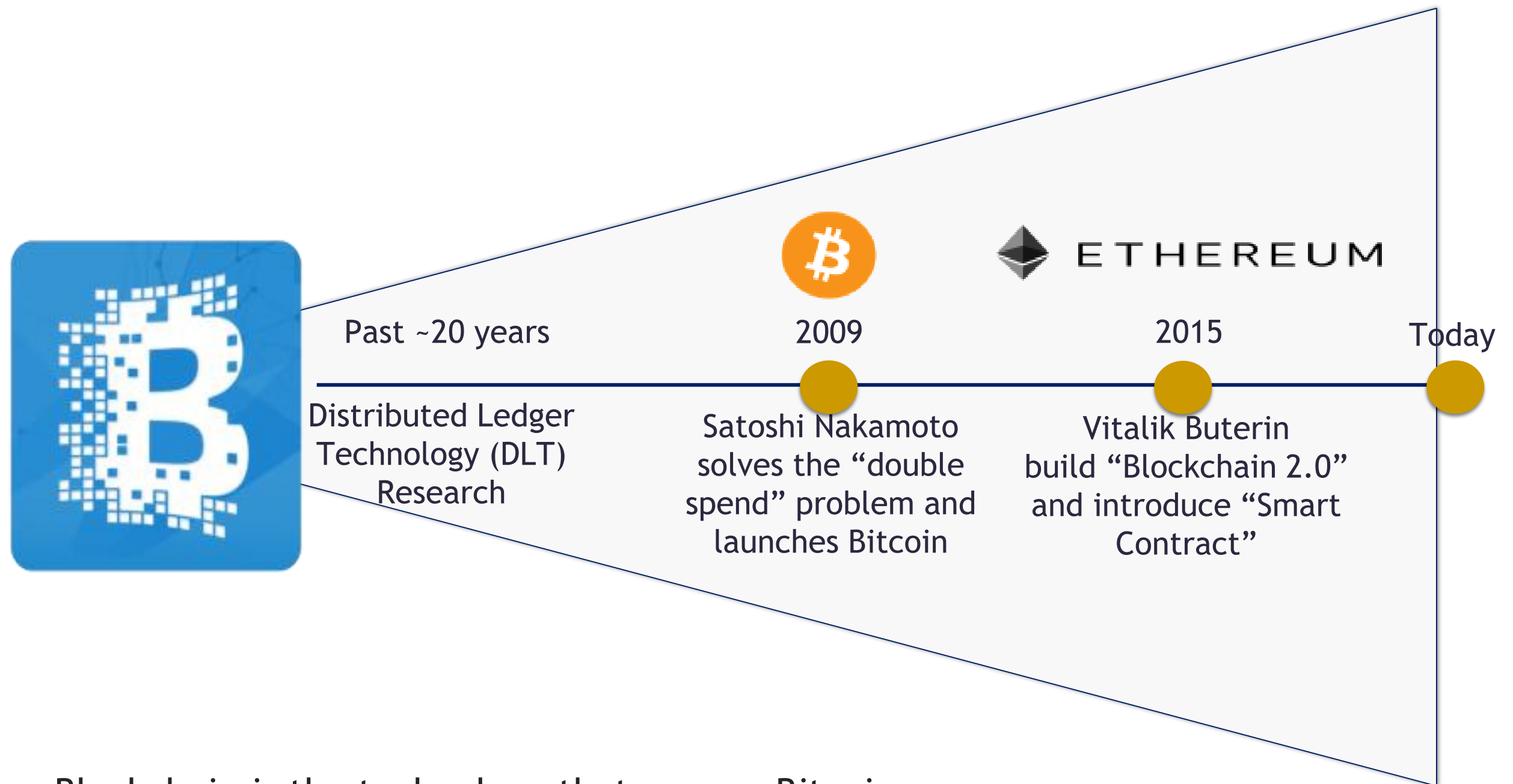
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A LITTLE BIT OF HISTORY



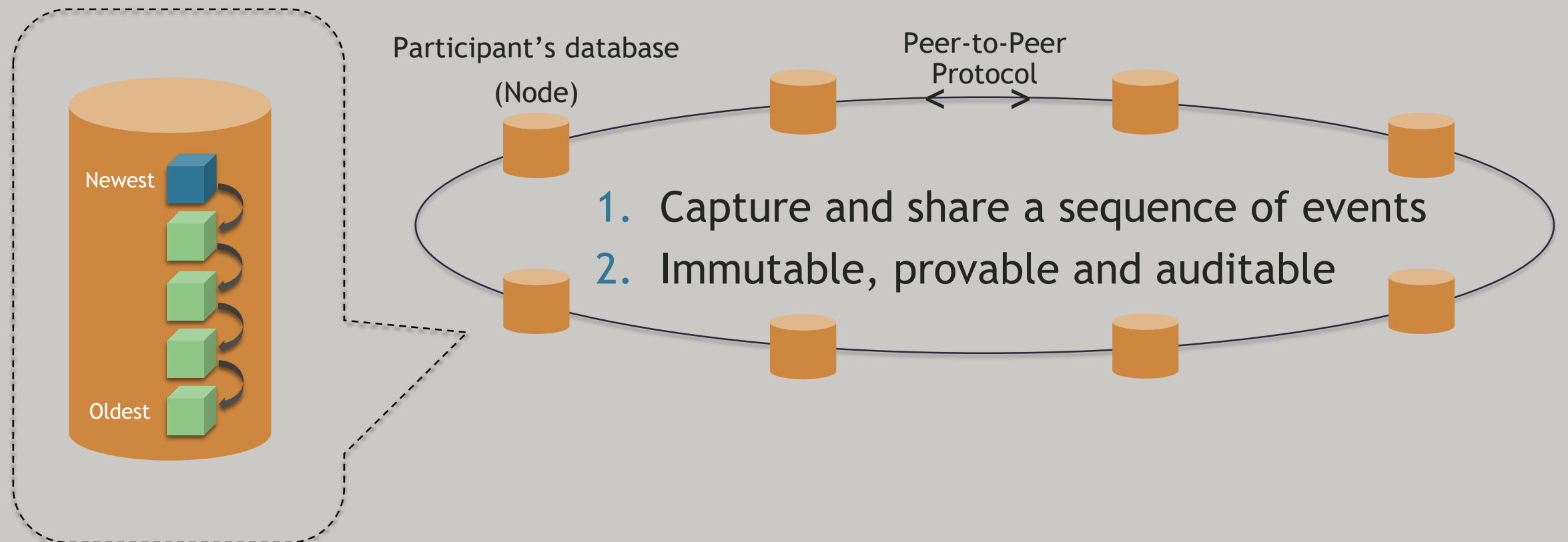
A QUICK HISTORY OF BLOCKCHAIN



- Blockchain is the technology that powers Bitcoin
 - Market cap (January 15, 2017): \$234bn
- Regulators and states are seriously looking into it (e.g. IMF, Japan, Russia ...)

WHAT IS BLOCKCHAIN?

Blockchain = Database + Protocol



**It allows multiple parties to share auditable information
even if they don't trust each other
without putting a single party in charge of all the data**

WHAT CAN YOU DO WITH IT?

Blockchain

Capture a sequence of events
Immutable, transparent and auditable

+ Digital token

Manage asset transfer
(e.g. cryptocurrencies)



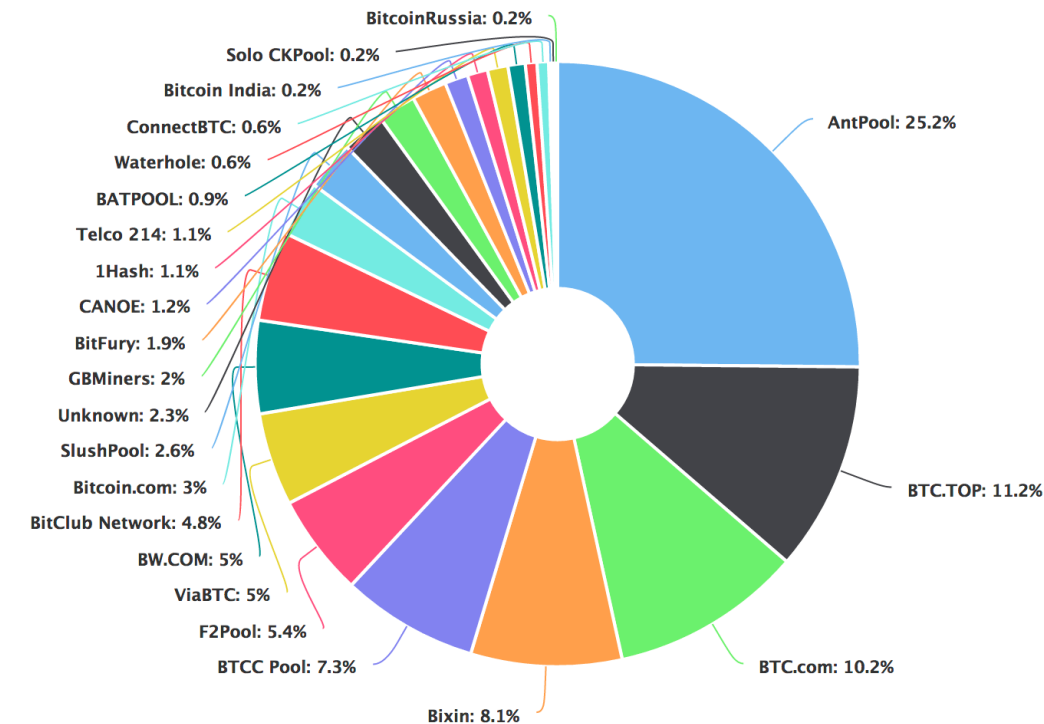
+ Programmatic Triggers (terribly named “Smart Contracts”)

Automate transfer based on captured events
(e.g. payment triggers shipment, SLAs, ...)

PUBLIC OR PRIVATE?

- **Public**

- Nobody controls the network... really?
- Governance?
- Trust in transactions despite untrustable stakeholders imply to slow down the network
 - 7 transactions / sec on bitcoin



- **Private**

- Known control by a limited number of stakeholders
- Contractual governance
- Interconnection of networks will become a question
- Much faster networks are possible

FROM A BIRD'S EYE VIEW, A PROMISING MATCH

Lack of
information

Need to
implement trust

Supply chains

Organizes
data sharing

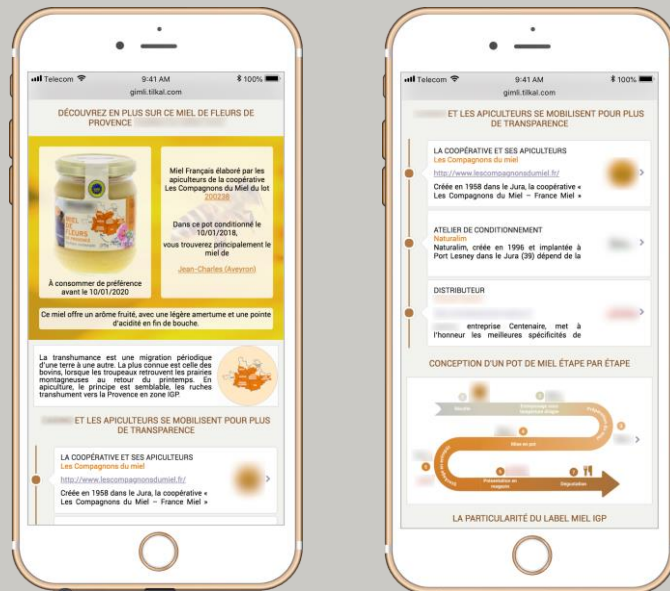
Provides
auditability

Blockchain

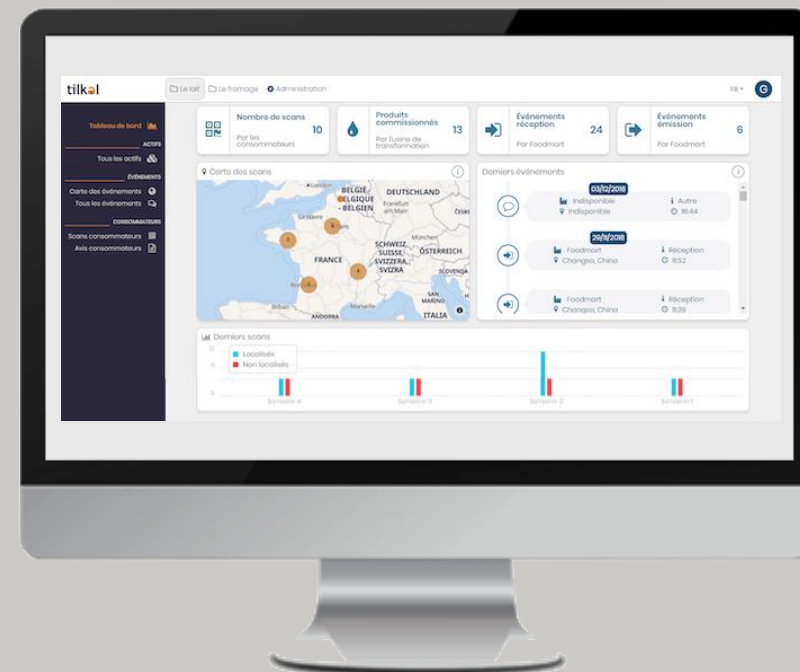
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THE TILKAL PLATFORM: REAL-TIME TRANSPARENCY AND TRACEABILITY



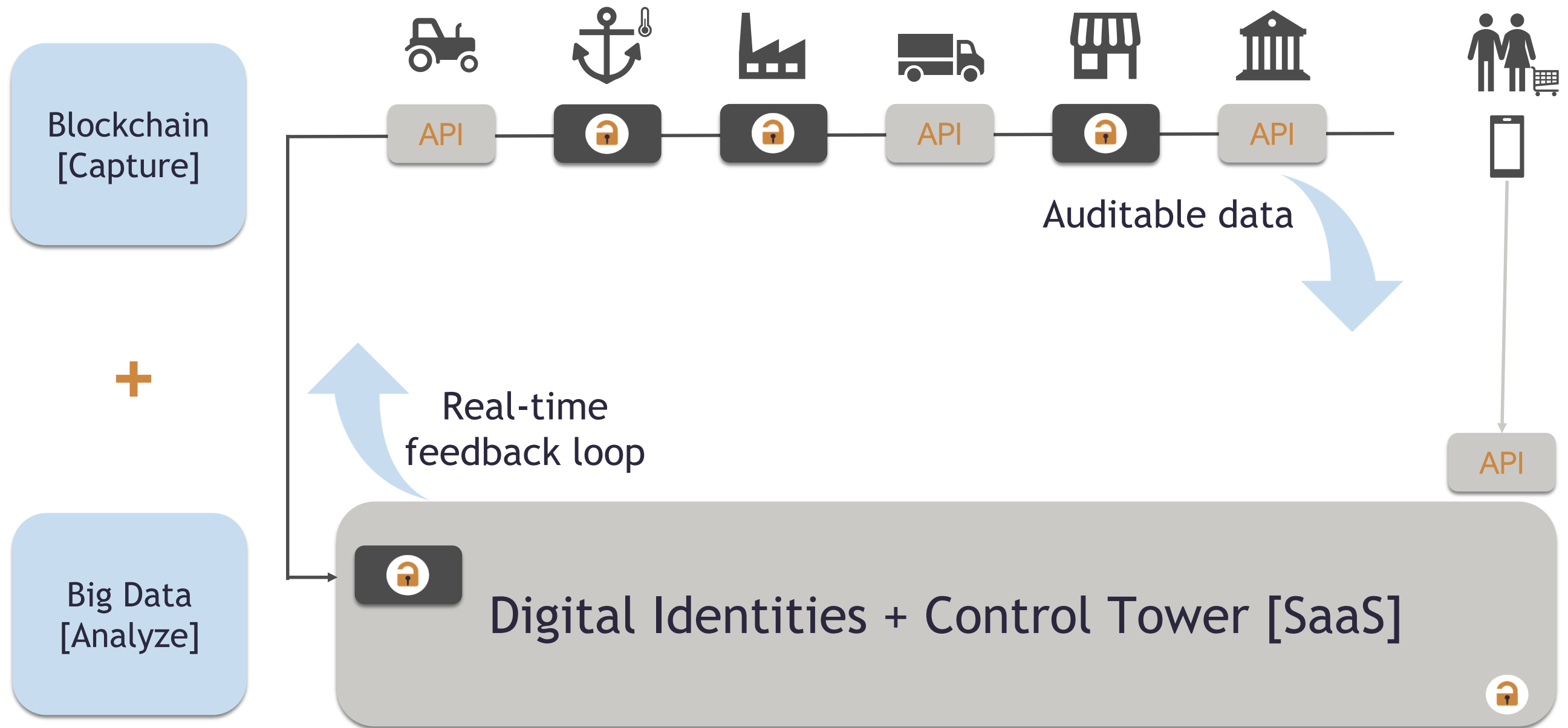
Digital Identities
From unproven claims to
transparency



Control Tower
From fragmented supply chain to
traceability

HOW DOES IT WORK?

BLOCKCHAIN + API + BIG DATA



Tilkal Blockchain Node
hosted by participant

15+ INDEPENDENT NETWORK NODES, 7 SUPPLY CHAINS, 12 PRODUCT REFERENCES IN PRODUCTION



Casino - Own brand
3 verticals: honey, eggs, poultry

Transparency & promotion
of local production (France) and quality



Manufacturer - Baby food

Counterfeit prevention
Consumer trust

CONFIDENTIAL

- Manufacturer
- Warehouses (China/HK)
- Wholesalers (China/HK)

Retailer - Own brands

High-end pork meat traceability
& origin

CONFIDENTIAL

- Large retailer
- Large cooperative
- Animal food supplier

Pharma - food supplement
to fight major child death cause

Goods trafficking prevention



- Clinics & dispensaries in Benin



In production

TYPICAL BUSINESS PROBLEMS: MULTIPLE PARTIES, REAL-TIME FLOW, NEED FOR PROOF



Product Traceability

Trusted transparency

Product origin, impact, usage

Parallel import, repackaging

End-to-end traceability against illicit trade

Visibility across supply chain

localization / availability / sale / expiry date vs stock

Cooperative, end to end product recall

Real-time and auditable recalls



Multi-party Process

GETTING STARTED: FOCUS ON AN ACHIEVABLE 1ST STEP AND EXPAND



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FROM A TECHNICAL COMPONENT TO A BUSINESS SOLUTION

- Nobody can address the supply chain problems alone
- Sharing data is the key although confidentiality must be addressed
- **Network neutrality is paramount**
 - Technically blockchain properties (immutability, proof, auditability) rely on having a shared and neutral network
 - Business: to involve stakeholders, everyone shall get value from sharing data
- **Involving the end user is a part of the solution**
 - Through transparency or other benefit
- **Be careful with**
 - Business models too complex to be understood
 - “Smart contracts” as immutable programs may not be enterprise friendly

MORE QUESTIONS

- **What about « false » data?**
 - Data is the raw material
 - The question is what information you derive from it.
- **What governance for the network?**
- **What about interoperability of networks?**

KEY TAKE AWAYS

- Demand for transparency and illicit trade are two sides of the same coin.
- Blockchain is the adequate technology towards the end game: transparency and control.
- At core a business transformation: sharing and leveraging industrial data in a fair, practical and efficient way.
- *PS: trust whoever as a technology provider, but a European provider*



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