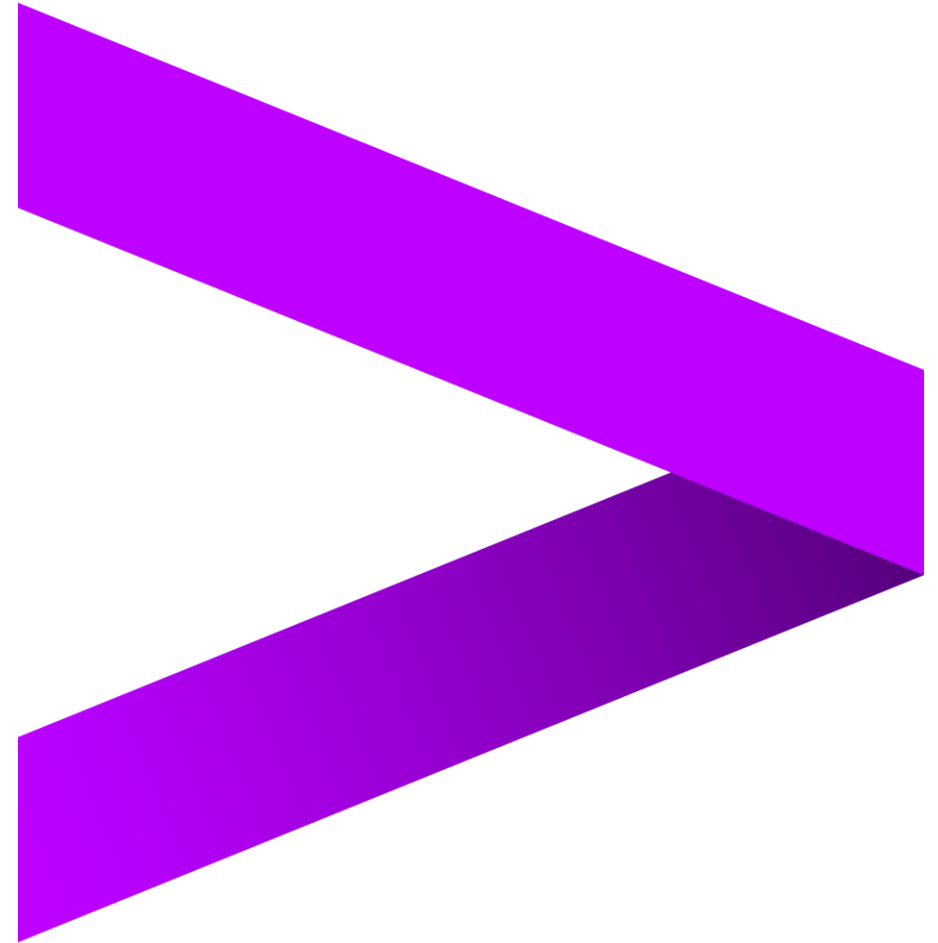# BLOCKCHAIN & SUPPLY CHAIN

SUPPLY CHAIN
VISION 2025

accenture consulting

INTRODUCTION

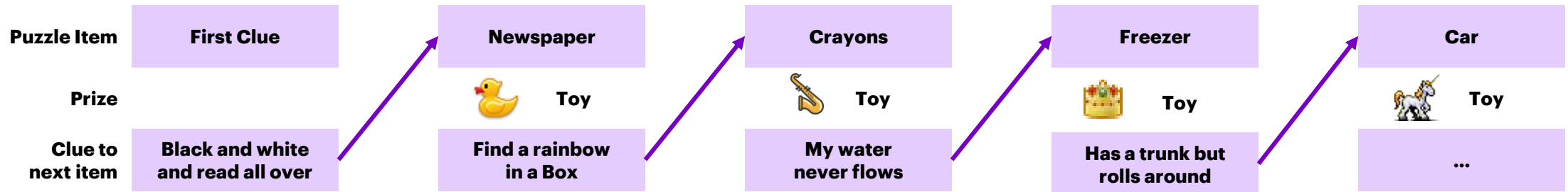## JOSEPH FRANCIS

Innovation & Thought Leadership Accenture

Client Focus

- **Blockchain in OM & Logistics**
- **Blockchain in Media**
- **Blockchain in Research**
- **Blockchain in Device as a Service**
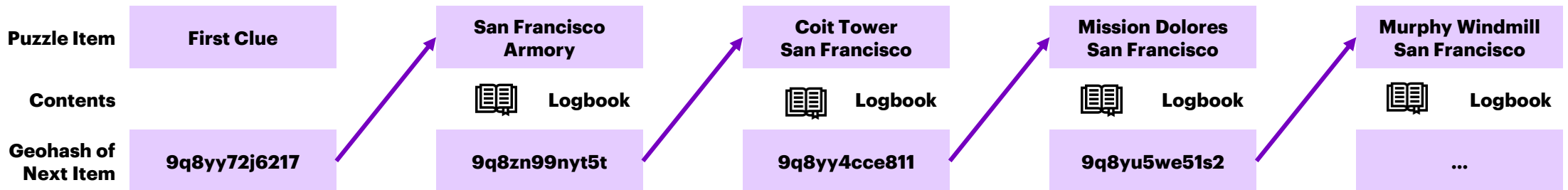- **Blockchain in MRO**

A LITTLE HISTORY:
TREASURE AND SCAVENGER HUNTING

Do you remember playing the old children's games of "Treasure Hunt" or "Scavenger Hunt"

Puzzle Item	**First Clue**	**Newspaper**	**Crayons**	**Freezer**	**Car**
Prize		🦆 Toy	🎷 Toy	👑 Toy	🦄 Toy
Clue to next item	**Black and white and read all over**	**Find a rainbow in a Box**	**My water never flows**	**Has a trunk but rolls around**	**...**

Or have you ever done 'Geo-Caching'?

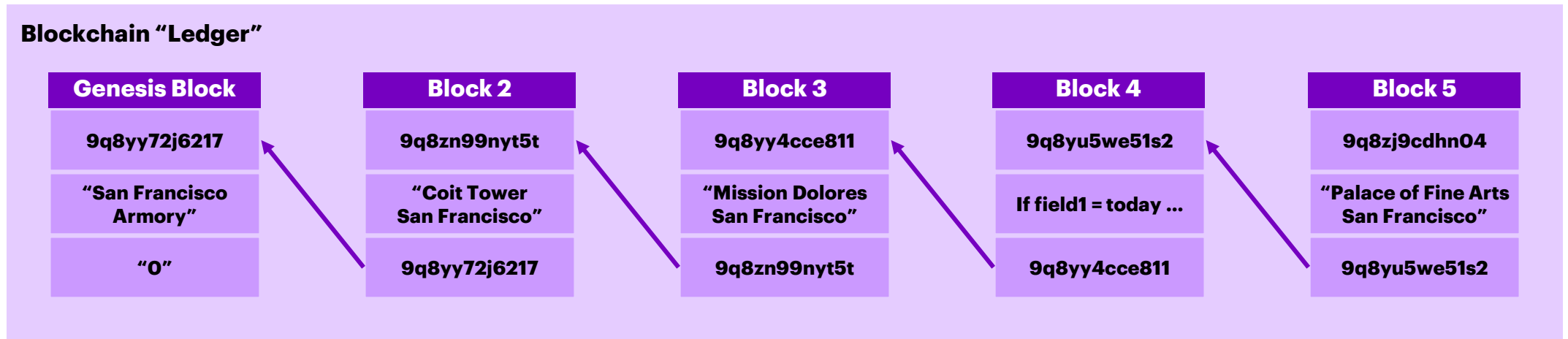|				
Puzzle Item	**First Clue**	**San Francisco Armory**	**Coit Tower San Francisco**	**Mission Dolores San Francisco**	**Murphy Windmill San Francisco**
Contents		📖 Logbook	📖 Logbook	📖 Logbook	📖 Logbook
Geohash of Next Item	**9q8yy72j6217**	**9q8zn99nyt5t**	**9q8yy4cce811**	**9q8yu5we51s2**	**...**

Then you probably already understand **blockchain**.

BLOCKCHAIN BLOCKS
STORING AND SHARING DATA

A 'hash' is a 'digital fingerprint' that is mathematically generated from the unique block contents.

Blockchain "Ledger"

	Genesis Block	Block 2	Block 3	Block 4	Block 5
Hash Key of Block	9q8yy72j6217	9q8zn99nyt5t	9q8yy4cce811	9q8yu5we51s2	9q8zj9cdhn04
Data	"San Francisco Armory"	"Coit Tower San Francisco"	"Mission Dolores San Francisco"	If field1 = today ...	"Palace of Fine Arts San Francisco"
Previous Block Hash	"0"	9q8yy72j6217	9q8zn99nyt5t	9q8yy4cce811	9q8yu5we51s2

BLOCK ELEMENTS
Each new block stores elements including the prior block key, the current block data, and a hashkey of entire block.

BLOCKHAIN LEDGER
A collection of linked blocks which extends over time as participants add data.

GROWING THE CHAIN
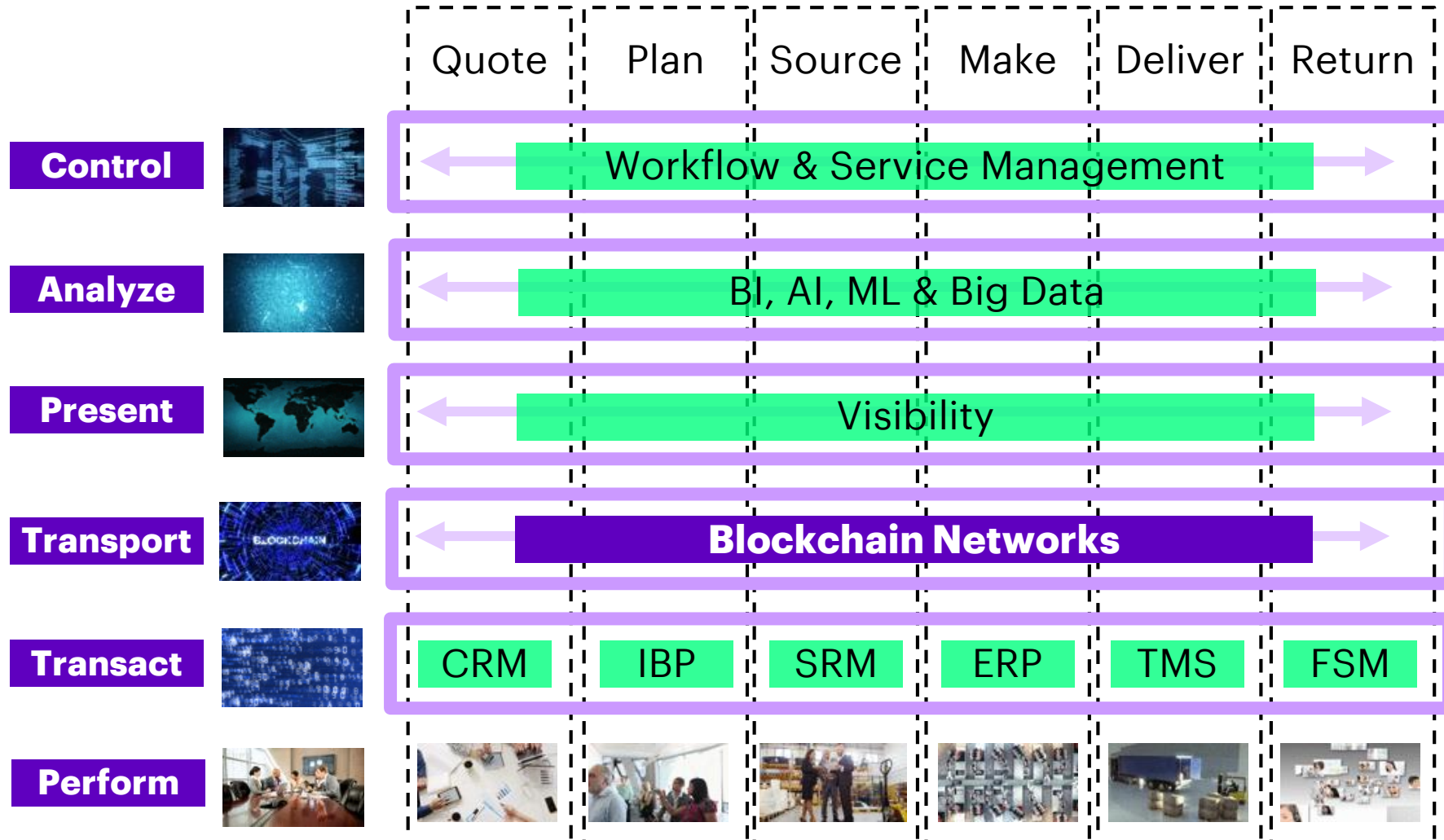Participants extend the chain with new blocks and **broadcast** the results to the blockchain network.

BLOCKCHAIN NETWORK
Groups of participants who share blocks of a blockchain across decentralized nodes.

BLOCKCHAIN AND SUPPLY CHAIN 2025: ALIGNED, AUTOMATED, AUTONOMOUS

	Quote	Plan	Source	Make	Deliver	Return
Control	Workflow & Service Management					
Analyze	BI, AI, ML & Big Data					
Present	Visibility					
Transport	Blockchain Networks					
Transact	CRM	IBP	SRM	ERP	TMS	FSM
Perform						

- Autonomous Sense & Tune
- SCM **cross-supply chain**

- Adaptive Analytics
- Data **cross-supply chain**

- E2E Supply Chain View
- Visibility **cross-supply chain**

- Immutable Secure Journal
- Inter-Enterprise data flow

- Execution Automation
- Intra-enterprise data flow

- Machine-Human Interaction
- IOT & Robotic Automation

THE CIRCLE OF APPS

Supply Chain will become increasingly dominated by **blockchain-mediated** integration among technology providers in the form of **apps**

We will see the emergence of true **Gartner Stage 5 Maturity** extended supply chains with deeply shared data, technology, and control assets

The first wave of technology is already here:

enabling technology is arriving – analytics, benchmarking, and control-tower
planning technology is arriving – S&OP and planning for source, deliver, and make
deliver technology is arriving for logistics, routing, and order controls
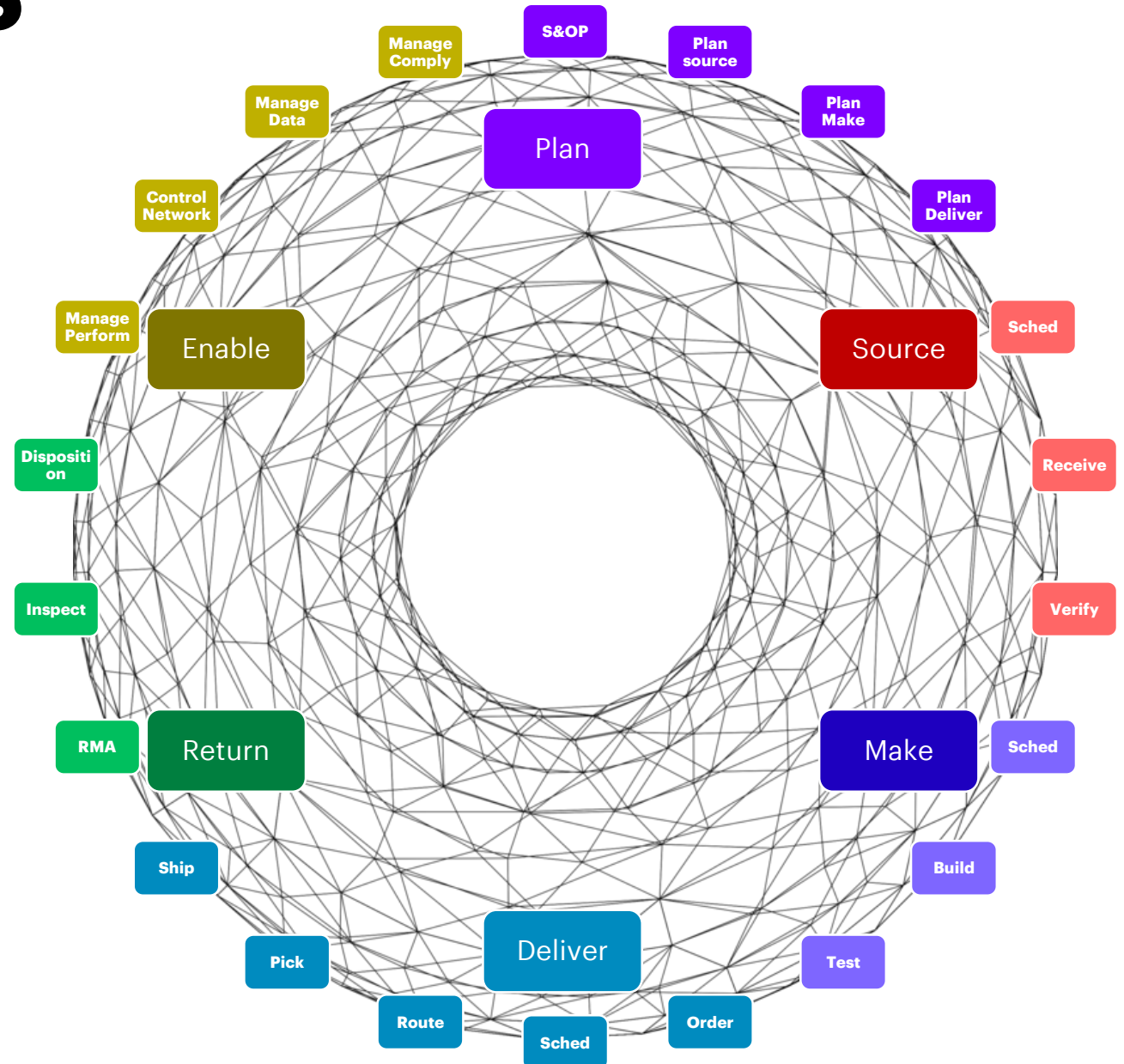
USE CASE 2025
NEW SUPPLY CHAIN MODELS

2018: Common models **improved** and **networked** via **Blockchain**

Build to Stock
Plan-driven execution driven by aggregated demand and supply models

Build to Order
Order-driven execution aligned with fine-grained demand and fulfilment models

Engineer to Order
Requirements-driven execution aligned with complex validation and execution

Reverse Logistics
MRO, Convenience, or defective returns, cost management and recovery

2025: New models **supported** and **managed** via **Blockchain**

Device as a Service
Supply chains with no transfer of ownership, and extended field inventory requiring detailed tracking and management
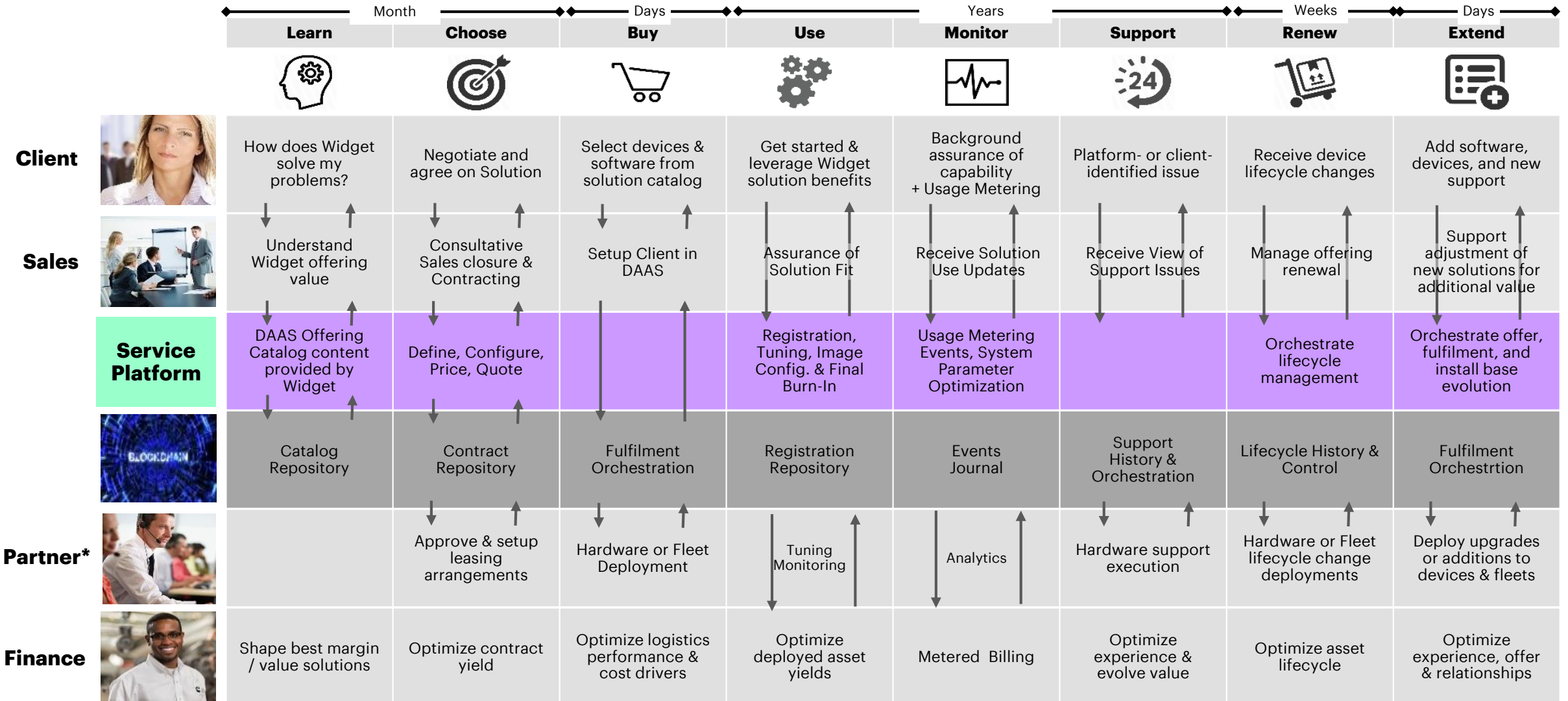
Build to Service
Orderless supply chains focused on pure service-level attainment, based on CPFR-like total data visibility

Circular Supply Chain
Closed-loop supply chain systems focused on maximizing recoverability of inventory at all stages of production

USE CASE 2025
DEVICE AS A SERVICE

	Learn (Month)	Choose (Days)	Buy	Use	Monitor (Years)	Support	Renew (Weeks)	Extend (Days)
Client	How does Widget solve my problems?	Negotiate and agree on Solution	Select devices & software from solution catalog	Get started & leverage Widget solution benefits	Background assurance of capability + Usage Metering	Platform- or client-identified issue	Receive device lifecycle changes	Add software, devices, and new support
Sales	Understand Widget offering value	Consultative Sales closure & Contracting	Setup Client in DAAS	Assurance of Solution Fit	Receive Solution Use Updates	Receive View of Support Issues	Manage offering renewal	Support adjustment of new solutions for additional value
Service Platform	DAAS Offering Catalog content provided by Widget	Define, Configure, Price, Quote		Registration, Tuning, Image Config. & Final Burn-In	Usage Metering Events, System Parameter Optimization		Orchestrate lifecycle management	Orchestrate offer, fulfilment, and install base evolution
	Catalog Repository	Contract Repository	Fulfilment Orchestration	Registration Repository	Events Journal	Support History & Orchestration	Lifecycle History & Control	Fulfilment Orchestrtion
Partner*		Approve & setup leasing arrangements	Hardware or Fleet Deployment	Tuning Monitoring	Analytics	Hardware support execution	Hardware or Fleet lifecycle change deployments	Deploy upgrades or additions to devices & fleets
Finance	Shape best margin / value solutions	Optimize contract yield	Optimize logistics performance & cost drivers	Optimize deployed asset yields	Metered Billing	Optimize experience & evolve value	Optimize asset lifecycle	Optimize experience, offer & relationships

USE CASE 2025
OLD LOGISTICS MODELS

1PL
Owner/Operator for Long- and Short-Haul logistics, or a warehouse facility operator – "Uber" for Logistics, Billions in play of new capability development

2PL
Collection of Owner/Operators operating as a brand with focus on consistent value of performance - The era of "Elastic Freight and Warehousing"

3PL
Groups of freight & logistics services operating in aggregate as a complete function - Mature market, consolidation, lack of transformative changes

4PL – or Lead Logistics
Orchestrator/Manager of multiple 3PL services, focused on cross-organization optimization – lack of leading edge investments, lagging "best of breed"

Blockchain enabled

Blockchain enabled

Needs Blockchain

Needs Blockchain

USE CASE 2025
LEADING EDGE LOGISTICS

5PL – Complete Supply Chains

Complete Supply Chain ownership, including assets, from raw material to finished goods, network design, optimization, management, and orchestration of 3PL or 4PL groups with a heavy layer of technology – via **Blockchain** - to manage the full complexity of the end-to-end supply chains crossing multiple industries.

IMPL – Integrated Multi Party Logistics

Disaggregation of supply chain freight management. With technology adapting to new freight capabilities quickly. Deep planning integration. Deep and wide technology-enabled visibility via control via **Blockchain**. Operationally, advanced analytics and robotic process automation focusing staff on exceptions management.

spotlight

LI & FUNG   consumer goods design, development, sourcing, and logistics

spotlight

amazon   "deliver with Amazon"

GETTING TO 2025: ACCEPTANCE

Blockchain provokes legitimate questions, as any new technology should

1 I ALREADY HAVE <SOMETHING>

- *EDI, API, Portals, Email, Voice, Spreadsheets*
- *No unified, secure, scalable data strategy*

2 BLOCKCHAIN WON'T SCALE

- *We will generate petabytes of data daily*
- *Blockchain can't handle transaction volume*

3 IT'S A TERRIBLE DATABASE

- *It's difficult to search*
- *Prior transactions can't be edited*

4 YOU MUST HAVE STANDARDS

- *There must be a common language*
- *Masses of data but no semantics*

5 AREN'T SMART CONTRACTS DANGEROUS?

- *DAO Meltdown and Bitcoin hacking*
- *What do I do about runaway transactions*

6 MAKE MY DATA PUBLIC?

- *I don't want my competitors to see my activity*
- *Sets us up for hacking no matter what I feel*

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I ALREADY HAVE <IT> FOR SUPPLY CHAIN

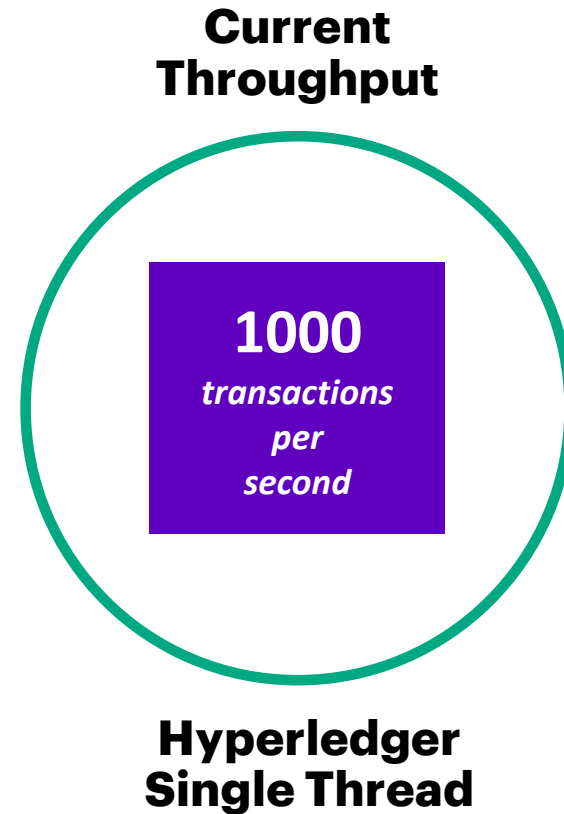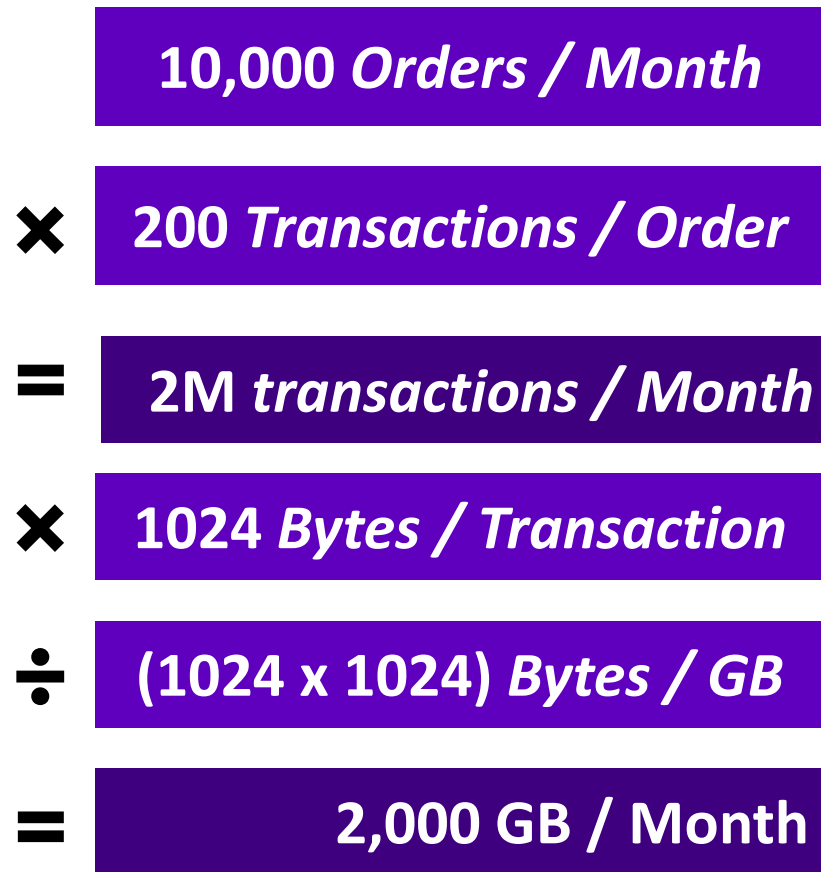## You have many technologies for supply chain data, none for secure, immutable sharing

EDI

API

Portal

Email

Voice

Paper

What doesn't blockchain do better than these technologies?
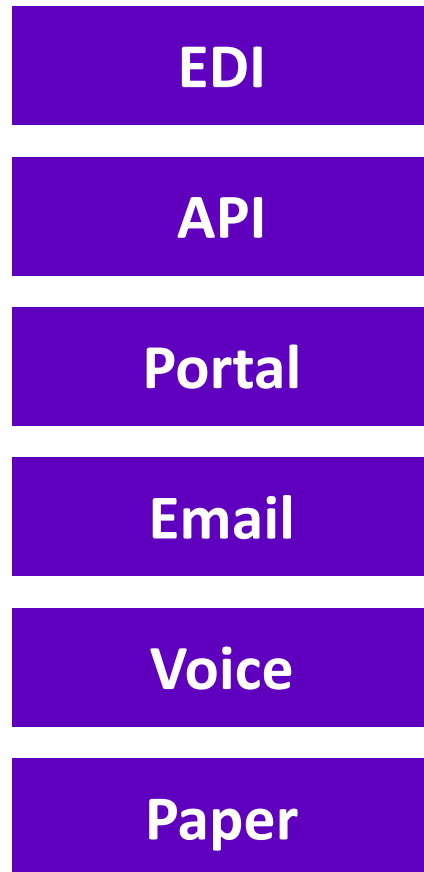
A Single Model
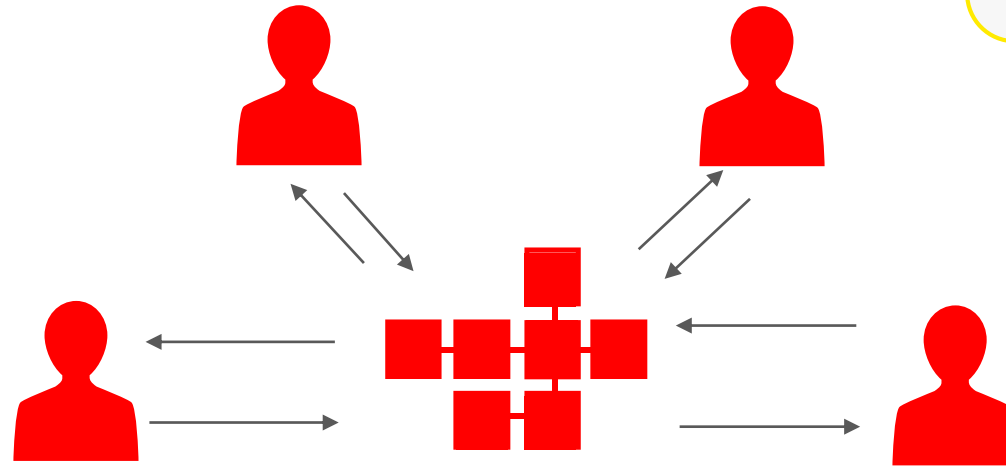
Mutualized Supply Chain Data

BLOCKCHAIN WON'T SCALE

You already have vast quantities of data exchanged. Blockchain handles it easily.

	10,000 *Orders / Month*
×	**200 *Transactions / Order***
=	**2M *transactions / Month***
×	**1024 *Bytes / Transaction***
÷	**(1024 x 1024) *Bytes / GB***
=	**2,000 GB / Month**

Current Throughput

1000 *transactions per second*

Hyperledger Single Thread

Key Question: What fraction of "YouTube" is that?

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IT'S A TERRIBLE DATABASE!

Good for some things, bad for others. Let's use the right database for the right purpose.

	Quote	Plan	Source	Make	Deliver	Return	
Control	Workflow / SCSM						**Event Queue**
Analyze	AI / ML / Analytics						**Neural Models**
Present	Visibility						**Graph DB**
Transport	Blockchain Networks						**Blockchain**
Transact	CRM	IBP	SRM	ERP	TMS	FSM	**RDBMS - SQL**
Perform							
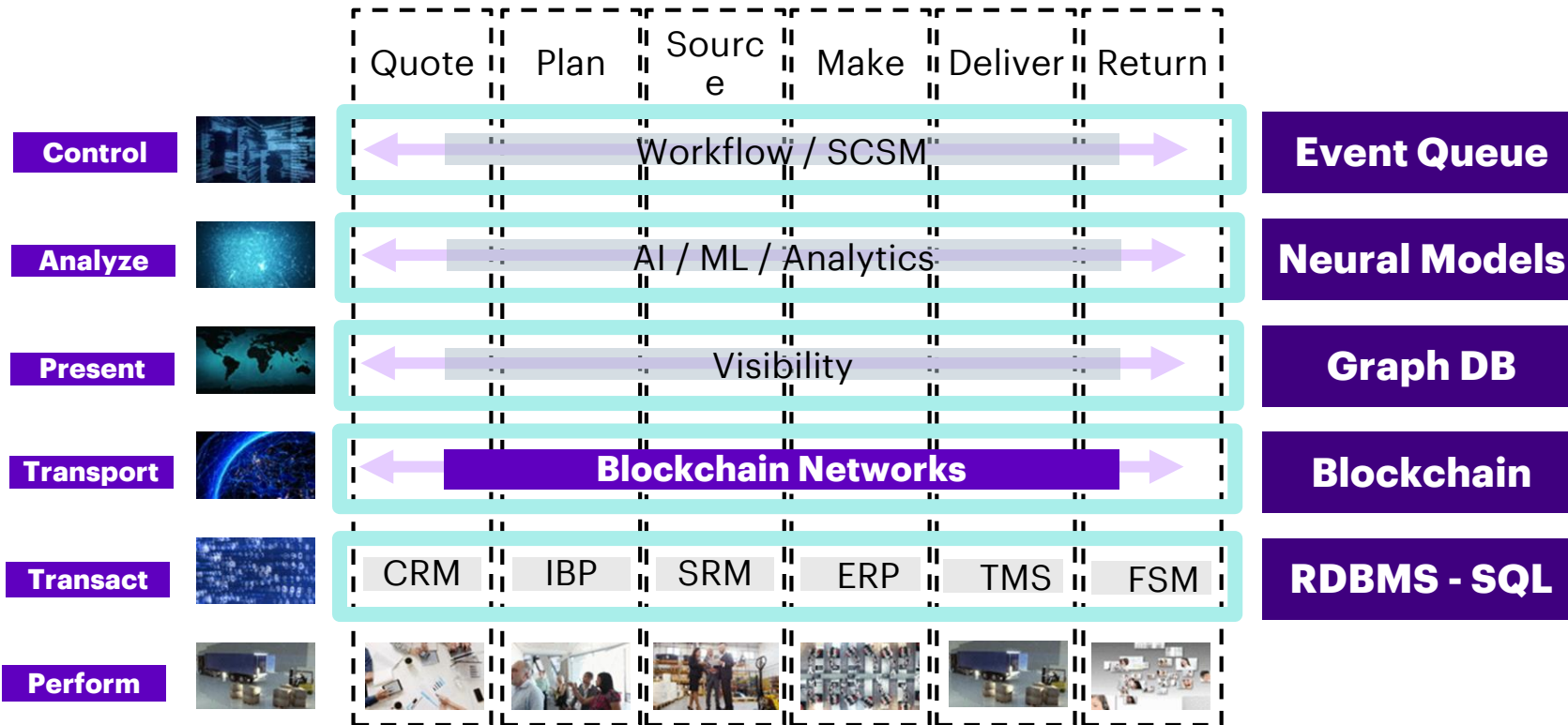
Not being able to edit is a feature, not a bug.

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YOU MUST HAVE STANDARDS.

Correct. There are at least 4 in common use to choose from.

ANSI X.12

- American National Standards Insti... "EDI" Standard
- 20-30 years old
- Millions of Implementations
- 900+ transactions covering all aspects of supply chain
- Native support in most ERP systems

UN EDIFACT

- International counterpart to ANSI X.1...
- 20-30 years old
- Millions of Implementations
- 900+ transactions covering all aspects of supply chain
- Native support in most ERP systems

GS1 - EPCIS

- Consortium Based
- Covers Lifecycle Tracking of Mater...
- Rich transaction models
- Complements other models
- Useful for software & hardware entitlement
- BOM Management
- Repair

GS1 - Rosettanet

- Consortium Based counterpart to ANSI X.12
- 10-20 years old
- Tens of Thousands of Implementations
- Also models complex business logic

SMART CONTRACTS?

## Best for transaction and data validation. Remember the DAO.
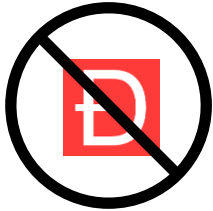
PAY THE INVOICE

- *Best Done with local programming*
- *Keep under ordinary Financial Controls*
- *May be ready one day – not now*
- *Keep accounting and communication Separate*

CHECK THE INVOICE

- *Invoice amounts match smart contract logic & calculations*
- *Match between Contract, PO, Receipt*
- *Could be blockchain generated – but is it crucial to do so?*
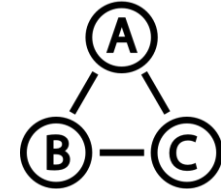
CHECK THE ORDER

- *Does the part number exist in the contract / catalogue*
- *Are the dates, times, addresses, quantities valid and sensible*
- *Are we within contractual limits?*

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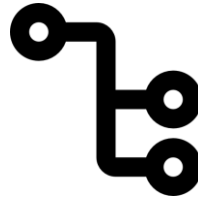# MAKE MY DATA PUBLIC?

## Private blockchains, private channels, masked data are the way to go.

447-886-332

XXX-886-XXX

☑ **PRIVATE BLOCKCHAIN**

☑ **PRIVATE CHANNELS**

☑ **MASKED DATA**

- *Only connect to permissioned nodes*
- *Self-Validated or consensus validation with trusted third parties*
- *Can limit to header-only exchanges*

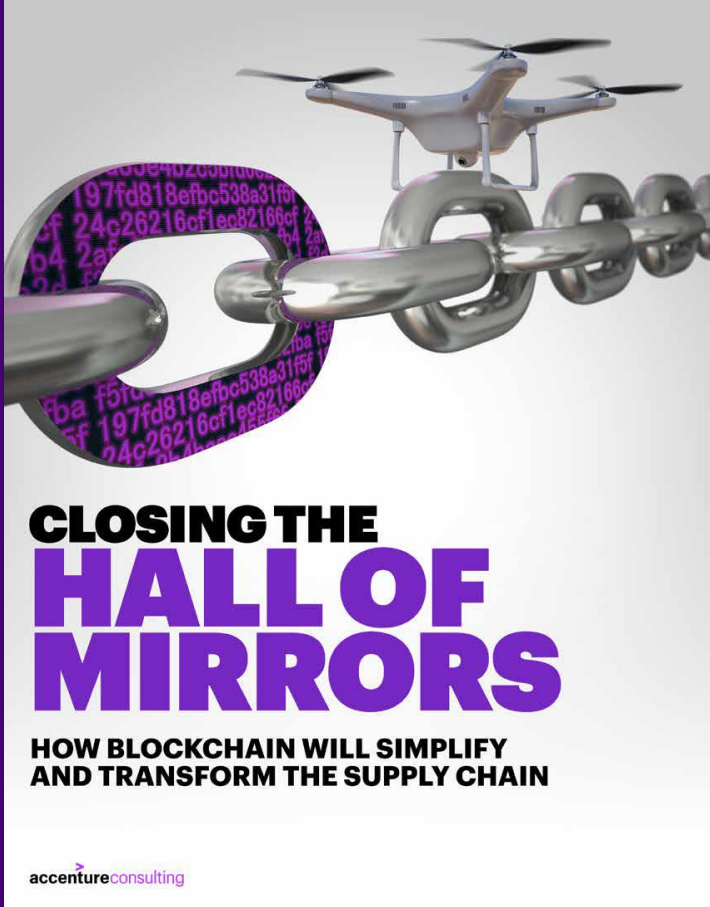- *Hyperledger 'channel' allows for further partitioning of shared data to targeted channels within a node connection*
- *One or more recipients permissioned for each block written within a private blockchain*
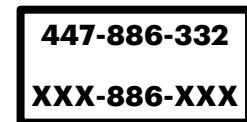
- *Shared data for analytic purposes can be field-masked*
- *Either with original block write, by smart contract, or via trusted third party aggregators*

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FURTHER READING

CLOSING THE
HALL OF MIRRORS

HOW BLOCKCHAIN WILL SIMPLIFY
AND TRANSFORM THE SUPPLY CHAIN

accentureconsulting

https://www.accenture.com/us-en/insight-blockchain-supply-chain

accentureconsulting