



GRAIN

DISCOVERY

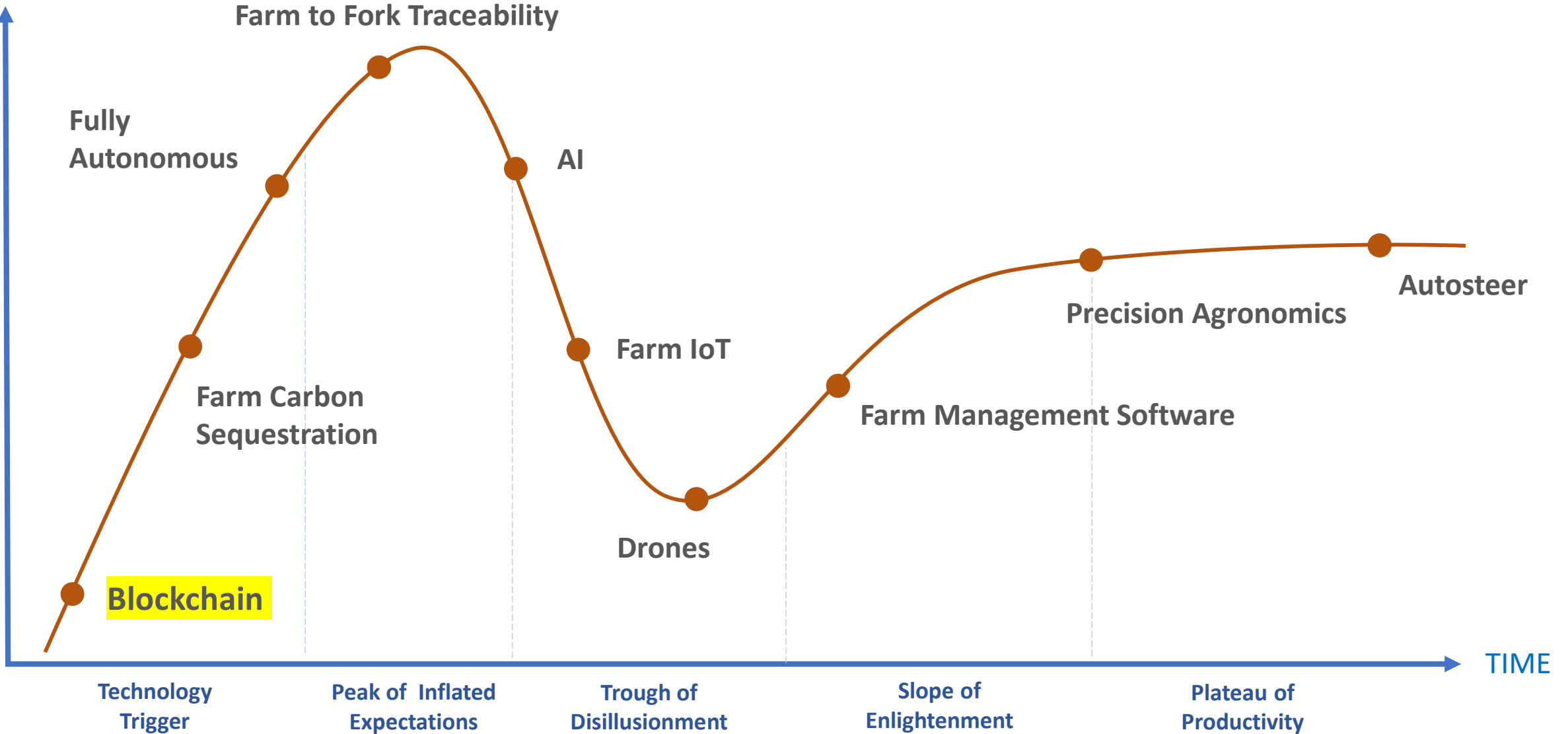
Blockchain in Agriculture

Rory O'Sullivan



Ag Innovation Hype Cycle

EXPECTATIONS



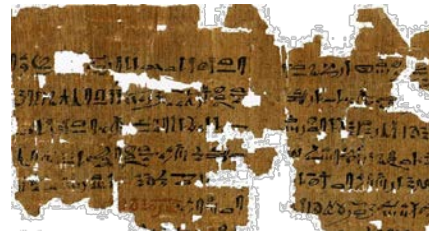


What is blockchain

- An online ledger for **record keeping** and data **sharing**



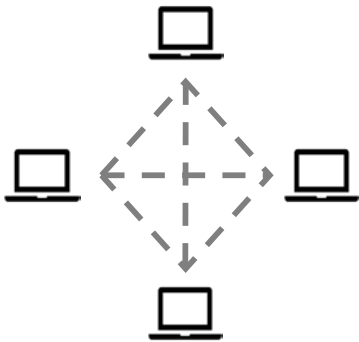
Clay Tablets
3000 BC



Papyrus
1000 BC



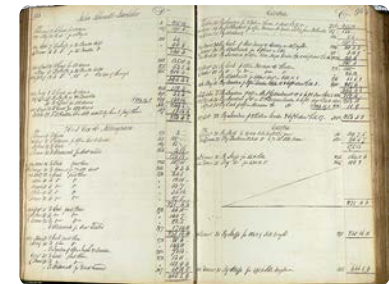
Tally Sticks
5th Century



Distributed Ledger
Now !

		Sun-Jul 16	Mon-Jul 17	Tue-Jul 18	Wed-Jul 19	Thu-Jul 20	Fri-Jul 21	Sat-Jul 22
1	80%	100%	100%	100%	100%	100%	100%	100%
2	(Morning)							
3	Spent 5+ hours	Yes	Yes	Yes	Yes	Yes	Half	Yes
4	Meditate for 20 minutes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Take responsible	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Review project plans	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Review today's email	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	(Anytime)							
9	100 reps any body weight exercise	Yes	No	Yes	Yes	Yes	Yes	Yes
10	Comm and check in meet	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	Listen to an audiobook	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	No snacks other than 7 days	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	No internet usage	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	(Evening)							
15	Turn off screens 1 hour before bed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	Time with Terry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	Plan tomorrow	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	Pray at the end of each day	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	Also check 7 indicators	Yes	Yes	Yes	No	Yes	Half	Yes
20								

Spreadsheets
1980's



Double Entry
14th Century





What is blockchain

- An online ledger for **record keeping** and data **sharing**
- New data is added in "**blocks**" "**chained**" to previous data entries - providing a record which cannot be altered



**Certified Seed
Contract**



**Agronomic
Rotations**



**Sale
Contract**

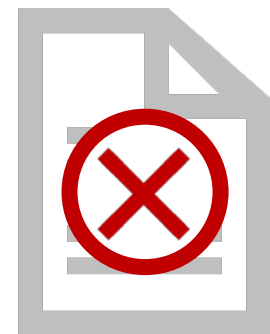
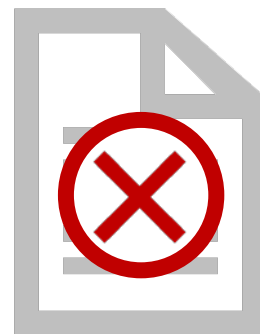


**Purchase
Contract**



What is blockchain

- An online ledger for **record keeping** and data **sharing**
- New data is added in "**blocks**" "**chained**" to previous data entries - providing a record which cannot be altered
- Retain **ownership and control of your data**, elect to share when beneficial



**Certified Seed
Contract**

**Agronomic
Rotations**

**Sale
Contract**

**Purchase
Contract**



What is blockchain

- An online ledger for **record keeping** and data **sharing**
- New data is added in "**blocks**" "**chained**" to previous data entries - providing a record which cannot be altered
- Retain **ownership and control of your data**, elect to share when beneficial
- Not a singular technology – part of a larger **digital ecosystem**
- Does not **replace legacy systems**



Blockchain is NOT Bitcoin!

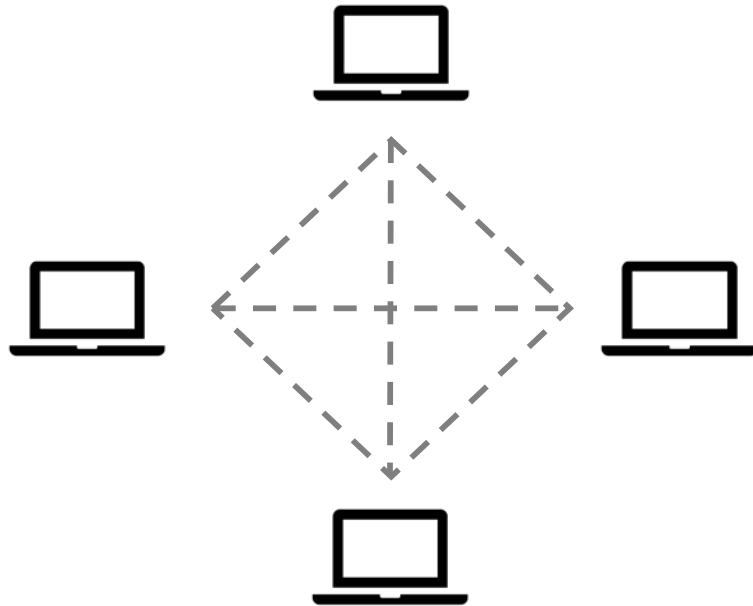
- Bitcoin is a digital currency
- Anyone can buy & sell, ownership digitally transferred
- Blockchain is the tech enabling transactions to take place in a secure and trusted manner between anonymous parties





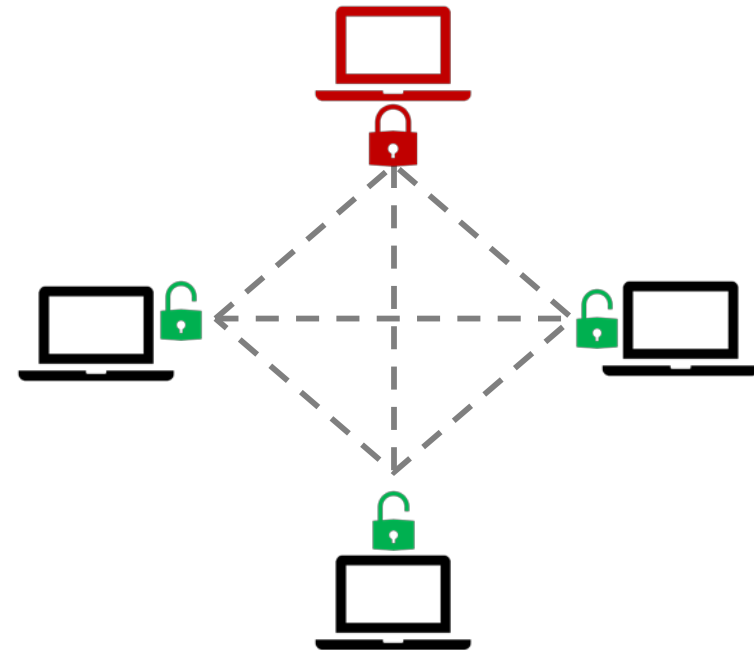
Two types of blockchains

PUBLIC NETWORK



- Permission less
- Open network - all devices can access
- Ledger is shared and transparent
- E.g. Bitcoin

PRIVATE NETWORK



- Permissioned
- User has to be permitted to access the network
- Access to data determined by your role
- Ideal for supply chains



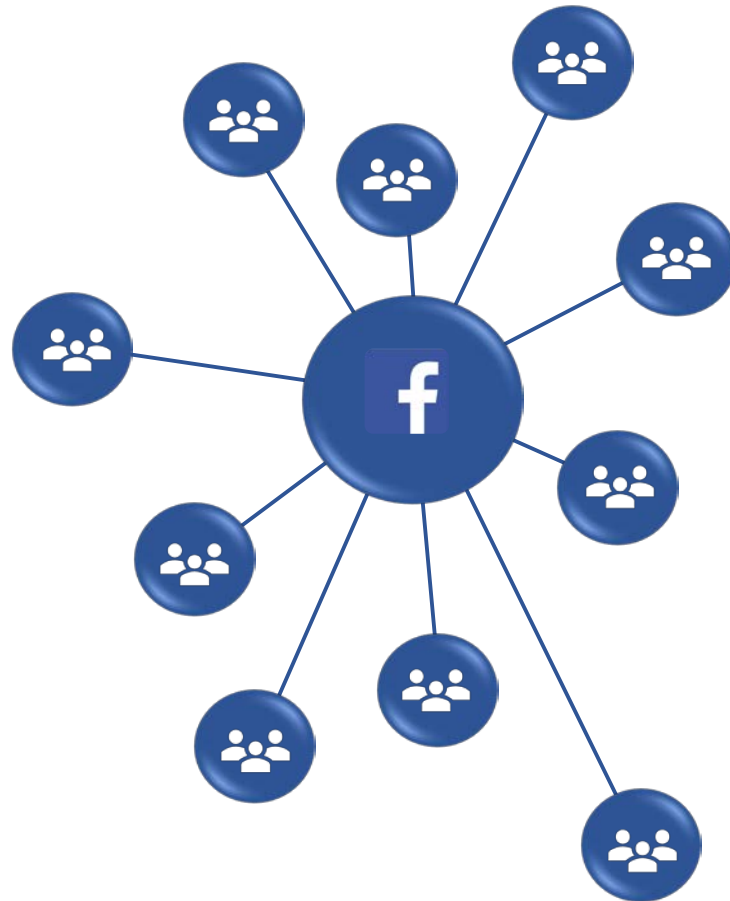
Business Networks

No Network



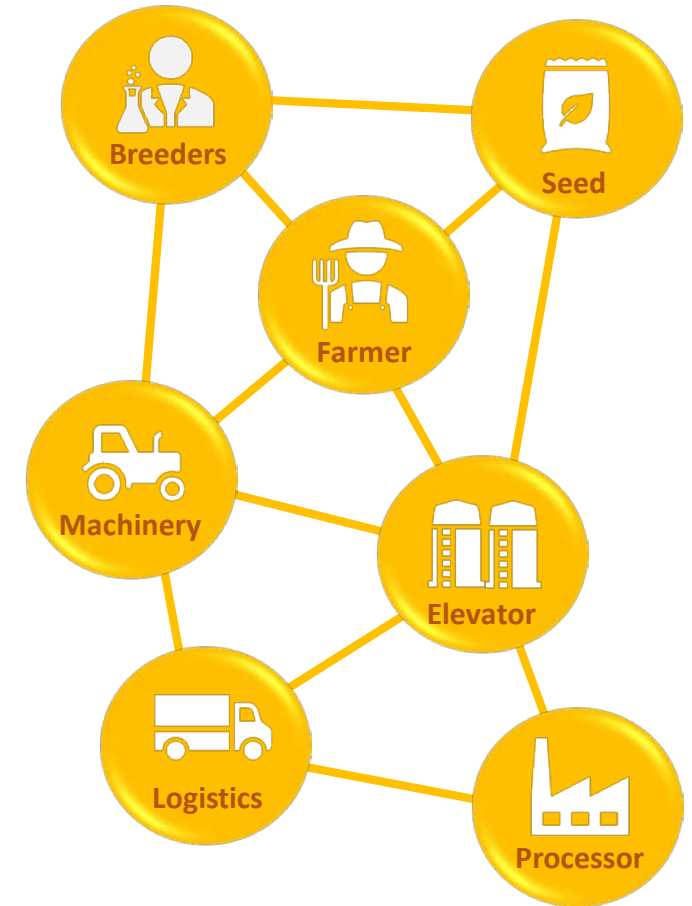
Supply Chain
Participants

Centralized



Overseen by
single authority

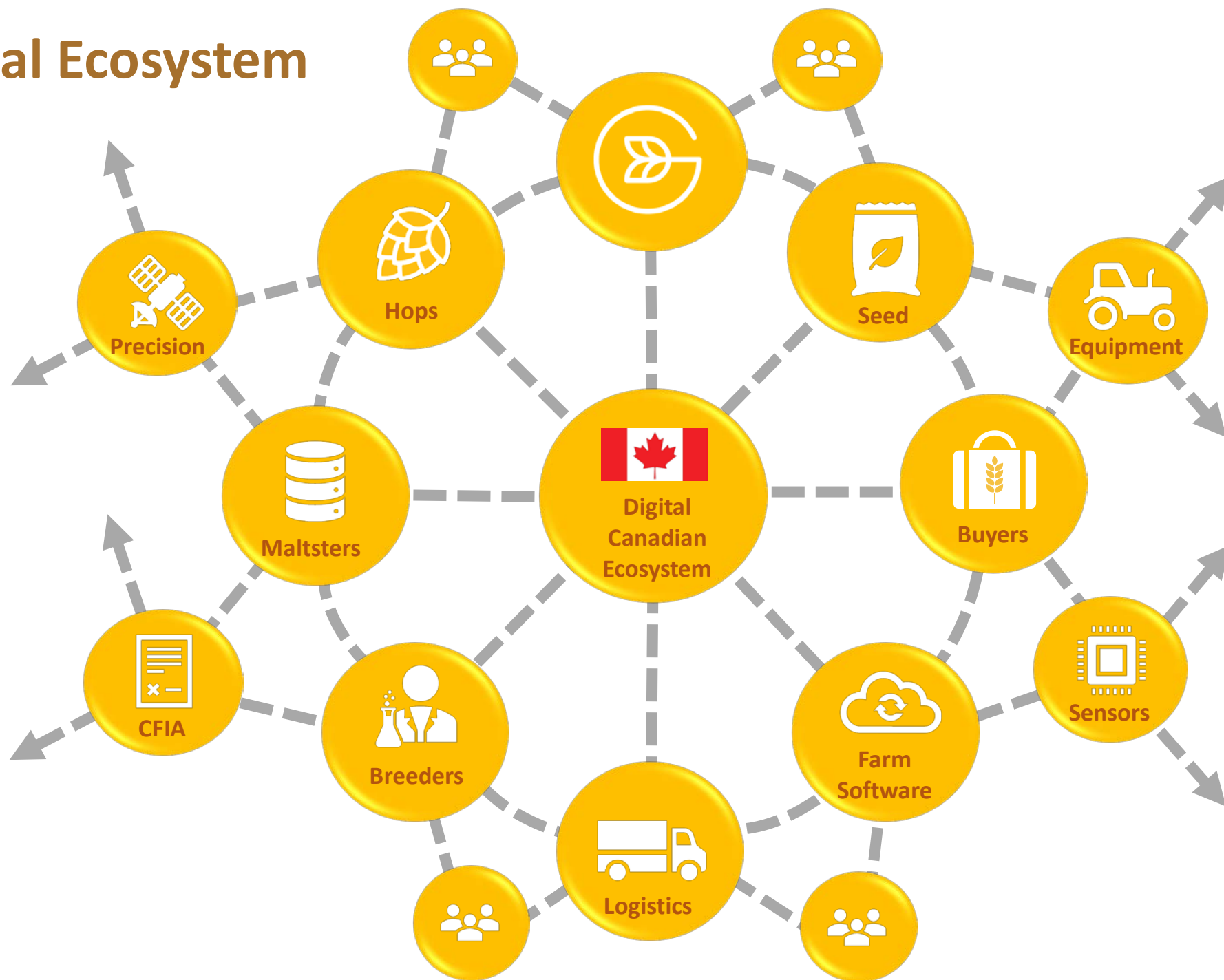
Distributed



Each participant equal
user on Blockchain



Digital Ecosystem





Identity Preserved Soybeans – Private Blockchain

PLANT BREEDER

SEED GROWER

SEED AUTHORITY

IP GROWER

ELEVATOR PROCESSOR

GOVT CERTIFICATION

BUYER

FINAL CONSUMER



Seed Genetics

Planted Area

Seed Certification

Pre & Post Harvest Data

Storage

CIPRS Certification

Manufacturing Details



Yield & Production

Feedback Data Loop

Fraud Detection

Agronomic

Storage

Logistics

Processing

Logistics

Sustainability Certification



Identity Preserved Soybeans – Private Blockchain

PLANT BREEDER

SEED GROWER

SEED AUTHORITY

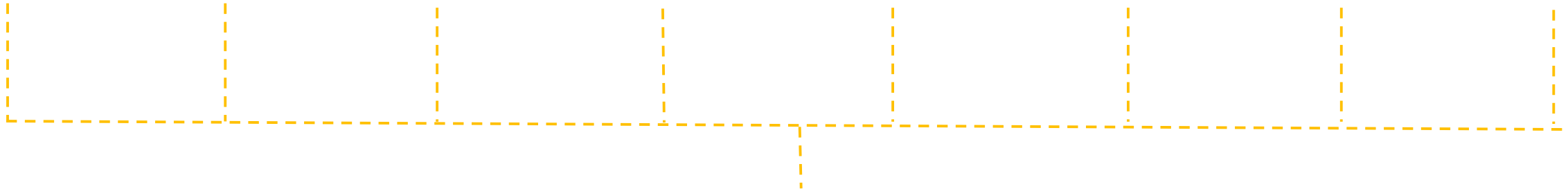
IP GROWER

ELEVATOR PROCESSOR

GOVT CERTIFICATION

BUYER

FINAL CONSUMER



SINGLE UNIFIED LEDGER



Benefits



DATA TRANSPARENCY

- Distributed ledgers / no single user controls it
- All members in the network have access to the same “version of truth”



SECURITY

- Transactions verified by consensus / cannot be modified
- You select what data to be shared

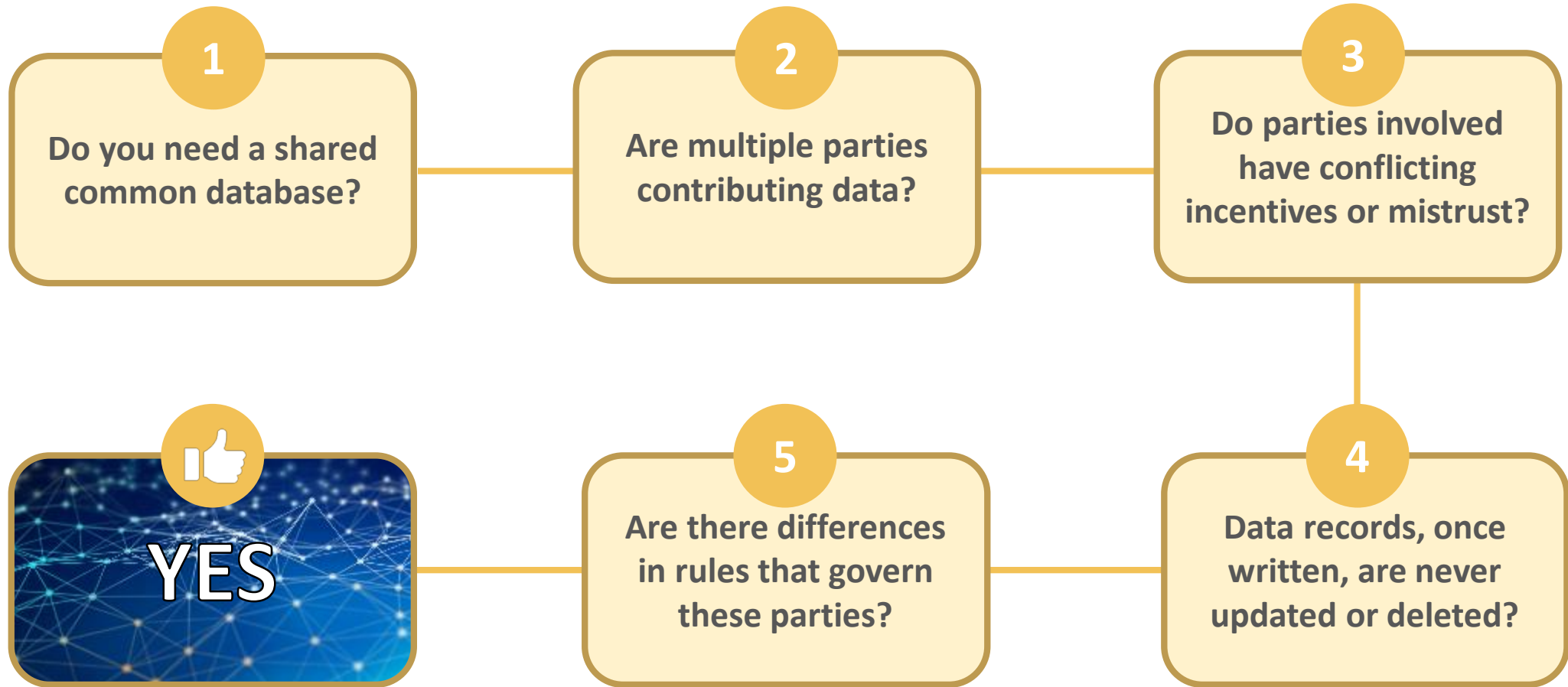


SMART CONTRACTS

- Self executes
- Handles enforcement / payment / agreements



Would blockchain benefit me?





BLOCKCHAIN IN AGRICULTURE





Next Generation of Traceability

- Tracing barley from certified seed to consumer
- Data inputted or scanned via app and shared on one ledger
- Customer scans QR code on label & “digital passport” is revealed
- Opportunity for differentiation
- Decommoditise the commodity – exact a premium

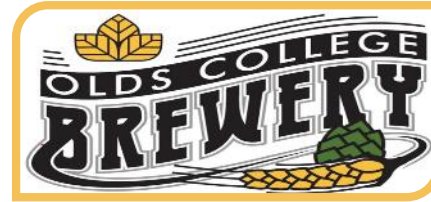




Beer Digital Passport



CONSUMER



BREWING

- **Brewer:** Olds College Brewery
- **Brew Date:** 18th Feb 2020
- **Product:** Homestead Feast Lager



MALTING

- **Maltster:** Red Shed Malting
- **Malting Date:** 6th Jan 2020
- **Batch:** DJU-19



CERTIFIED SEED

- **Breeder:** University of Saskatchewan
- **Variety:** CDC Copeland
- **CSGA:** 1419-9-182961



FARMER

- **Grower:** Olds College Farm
- **Location:** Olds, AB
- **Plant:** 24th May 2019
- **Harvest:** 29th Sep 2019



HOPS

- **Grown:** Abbotsford, BC
- **Variety:** Sasquatch
- **Plant:** 18th May 2019
- **Harvest:** 5th Sep 2019



First of their kind pilots continue in 2020



IP Soy

Digitizing paperwork



Malt Barley

Supply Chain Traceability



Hemp Seed

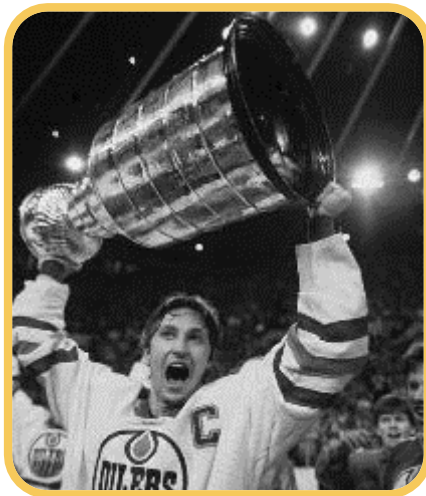
Supply Chain Traceability





Key Takeaways

1. Cusp of rapid growth in online technology
2. Supply Chain first “successful” adopters of blockchain
3. Industry in transition – stay ahead of the technology curve



Skate to where the puck is going to be, not where it has been

Wayne “The Great One” Gretzky



GRAIN

DISCOVERY



Picton & Toronto



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Join the Journey...



Soybean Variety: OAC Kent

Location: Guelph, Ontario

The very start of the tofu journey is the soybean! Developed by Dr Istvan Rajcan from Ontario Agricultural College (OAC) at the University of Guelph, the variety is registered for sale in Canada by CFIA (Canadian Food Inspection Agency).

i About OAC Kent

Fun Fact: OAC Kent was awarded the prestigious "Seed of the Year" award in 2008 and still remains one of the most popular food grade soybean imported into Japan!

i

It All Starts with Certified Seed

SEND A TIP!