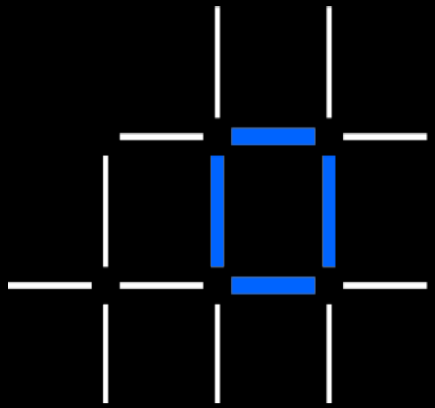
Rethinking Enterprises, Ecosystems and Economies with Blockchains



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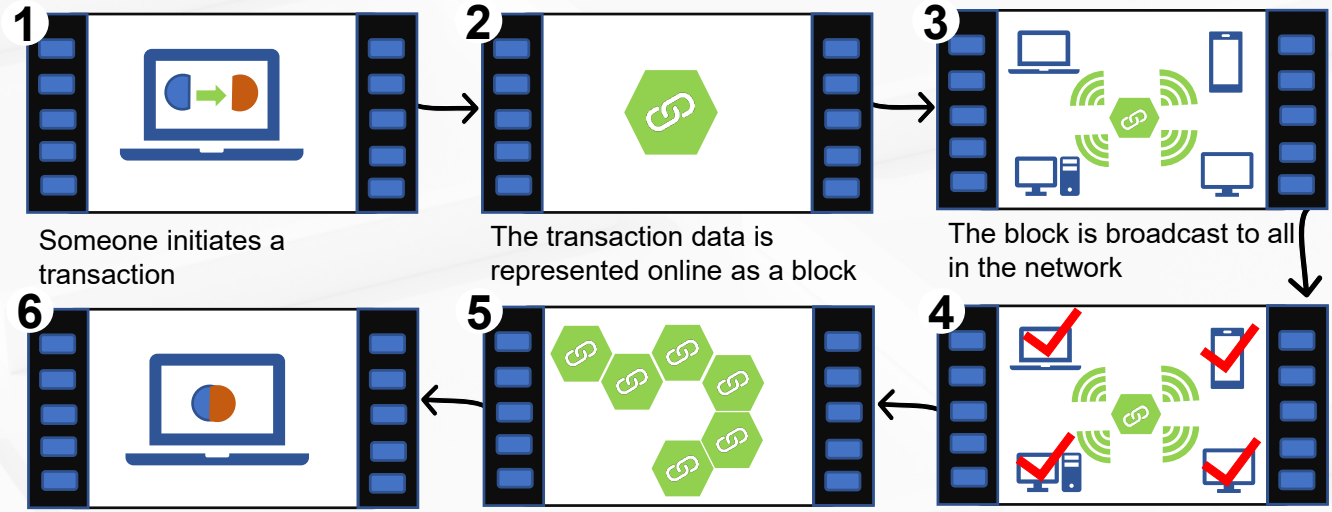
Blockchain works by creating a distributed ledger (system of record) across a peer to peer network without the need for a central/third party




Imagine a world where government services are co-created in an open, trusted and transparent ecosystem

Blockchain will revolutionize how government services are created, bundled and governed . . .

Co-created services

Disparate, top down service delivery processes will be replaced by a seamless process that empowers citizens and governments to co-create the types of services citizens want and need.

Self governed services

Centralized government control will be replaced by oversight of self regulated service delivery ecosystems.

Integrated services

Centralized systems and disparate data silos will be replaced by a shared distributed data base that provides a secure and immutable version of the truth that is open to use by all ecosystems stakeholders.

In the digital age, government service transformation is rooted in mounting data requirements …

Accessibility

As the societal value from data grows, the need for Government to ensure that data is **easily accessible**, **free to use** and **available** in a consumable format is mounting.

Security

As cyber attacks on Government agencies increase, the need for Government to **protect data and safeguard privacy** is rising.

Integrity

As the demand for access to government data grows, the need for government to ensure that citizens can **trust** the data and easily **innovate** with it is growing.

More often than not, these data requirements are currently not addressed. . .

Accessibility:

- **Silos -** Data often exists in silos and across multiple systems making it difficult to access and reconcile.
- **Standards -** Conflicting formats, standards and structures make it difficult to innovate.

Security:

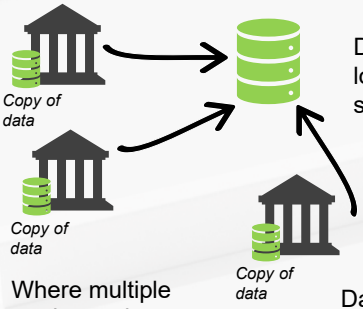
- **Cyber -** Data sharing increases vulnerability to cyber attacks, corruption and misuse making it harder to trust
- **Privacy -** Opening data outside the control of Government increases privacy concerns making it harder for advocates to champion

Integrity:

- **Accuracy -** A lack of assurance that data is accurate and from a trusted source undermines its usability
- **Trust** – The absence of a single source of the truth hinders innovation.

Blockchain helps overcome traditional barriers to data sharing and collaboration

Data Challenges



Data is locked in silos

Where multiple parties and transactions are involved, stakeholders in the network often lack trust in the accuracy and source of the data

Data access is narrowly restricted to government stakeholders to ensure privacy and security

Blockchain Solution

Data stored in a common **format, standard and structure** and available via Open APIs

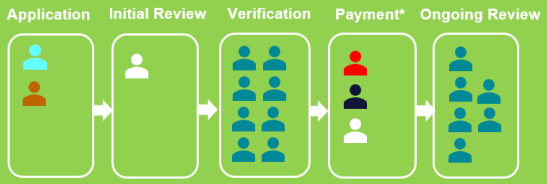
Data permission settings and **encryption** grants access to a wide array of approved parties within a network

Contracts and transactions between two or more approved parties are recorded in a ***quick, verifiable and permanent manner***

Perform ‘business as usual’ and unlock new value e.g. Social Services

Current Welfare System

Process of applying, verifying and paying welfare is complex involving dozens of stakeholders across government levels

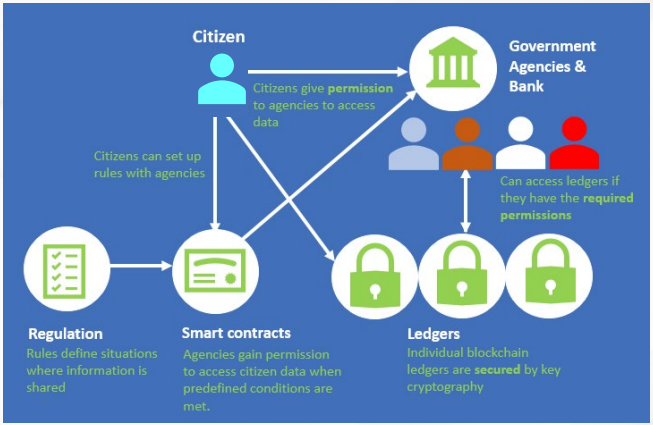


- Citizen
- Local Dept. of Social Services
- County Dept. of Social Services
- State or national system, agency, or database involved
- * Bank (external)

Each party maintains a trusted version of data in their proprietary database

Digitized Welfare System - with Blockchain

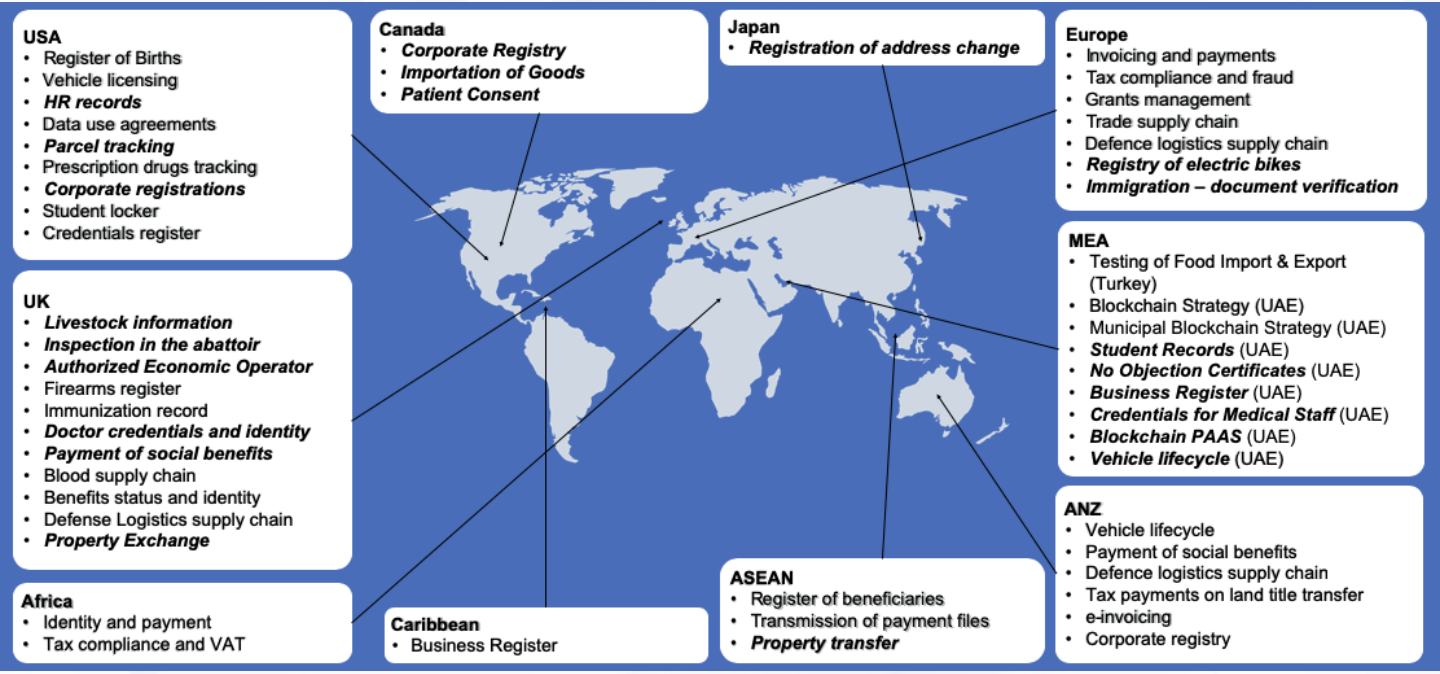
Blockchain network ensures social services are distributed in a secure, trusted and efficient environment



Benefits:

- Single view of citizen across agencies
- Fraud is eliminated
- Empowers citizens to say who has access to their data
- More accurate records build trust across stakeholders
- Faster processes & updates

Some Blockchain projects in Government



How Blockchain can help

Fraud prevention and compliance

☐ **Challenges**

Fraud, information privacy abuse and accidental data exposure plague government data transactions. Siloed legacy systems and processes within government result in multiple versions of multi-user data sets.

In the absence of a single version of the truth, the risk of fraud and difficulty in ensuring compliance increases each time a data set is accessed because there is no way to distinguish between correct and incorrect entries.

☐ **Solutions:** IBM Blockchain creates a shared and trusted ledger that sequentially appends cryptographically secure data. The ledger is only accessible to trusted parties, giving government administrators the assurance that they're working with data that's up-to-date, accurate and nearly impossible to manipulate.

How Blockchain can help

Identity services

Challenges

From licensure to passports to publicly funded medical services, establishing and verifying identity is vitally important for both citizens and government agencies themselves. The financial and personnel costs of providing rigorous identity services, though, are enormous.

The great need for identification documents and verification of existing credentials arises partly from the difficulty in linking enough verifiable personal data on which to base any kind of government-issued identification. What sounds like a simple task is complicated by records in different formats, of varying provenance, and containing sometimes-conflicting data.

Solutions: IBM Blockchain enables government agencies to create a single, trustworthy collection of digital identity documents. These documents make it easier for government officials to reconcile data conflicts and provide citizens with control over their own identity.

How Blockchain can help

Asset registration

Challenges

We rely on government to accurately record and track our homes, businesses, cars and more, verifying ownership and ensuring smooth financial transactions. Accurate and accessible registries are crucial to engender trust and transparency in government.

Despite this need, today's registries suffer from slow, duplicative processes and an over reliance on error-prone, incomplete and manual data entry.

Solutions: IBM Blockchain enables government agencies to increase the accuracy and efficiency of publicly held records by linking ownership of an asset to a single, shared ledger without disrupting existing registry data.

French National Council of Clerks of Commercial Courts streamlines the management of commercial and corporate registry

The office represents clerks of the commercial and corporate registry in 134 offices nationwide. These offices must rely on each other to share information as it comes in and make updates when a business lifecycle event warrants it.

"This project, which is the result of an autonomous initiative between clerks of commercial courts and IBM, is the continuation of our efforts to be pioneers in the adoption of innovative technologies, to strengthen the quality of the public service provided by the commercial justice system, dedicated to the expectations and requirements of today's multipolar and interconnected economic world."

Sophie Jonval, President

How Blockchain can help

Supply chain

☐ **Challenges**

Whether it's the replacement of a street sign, an emergency generator or vital engine part, the ability to track and trace where an object is in the supply chain is vital within large-scale government purchasing systems.

Limited visibility can lead to waste either through over-ordering or a failure to anticipate shortages. Late delivery can lead to significant losses across government – from municipal services to military operations.

☐ **Solutions:** IBM Blockchain makes the precise location of an object — and its accompanying digitized documentation — part of a traceable permanent record giving government full visibility of the supply chain.

How well we know our food?

Only 1 in 4 consumers trust today's food ecosystem.

Food Safety	Supply Chain Inefficiency	Food Waste	Food Fraud
			
1 out of 10 people get sick each year, and **420,000** die from foodborne illness	**80%** of CPGs business are partially or entirely paper-based	**1 / 3** of fresh food is thrown out because it is considered unacceptable	**1 in 5** seafood samples mislabeled worldwide (43% mislabeled in NYC)

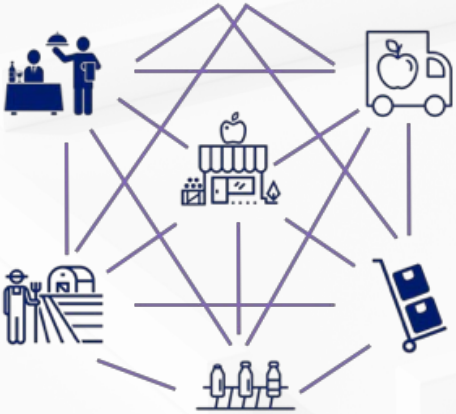
The root of these issues, and many others, are the lack of trust and transparency

Today's complex food supply web is inefficient and is not enabled to provide transparency or trust

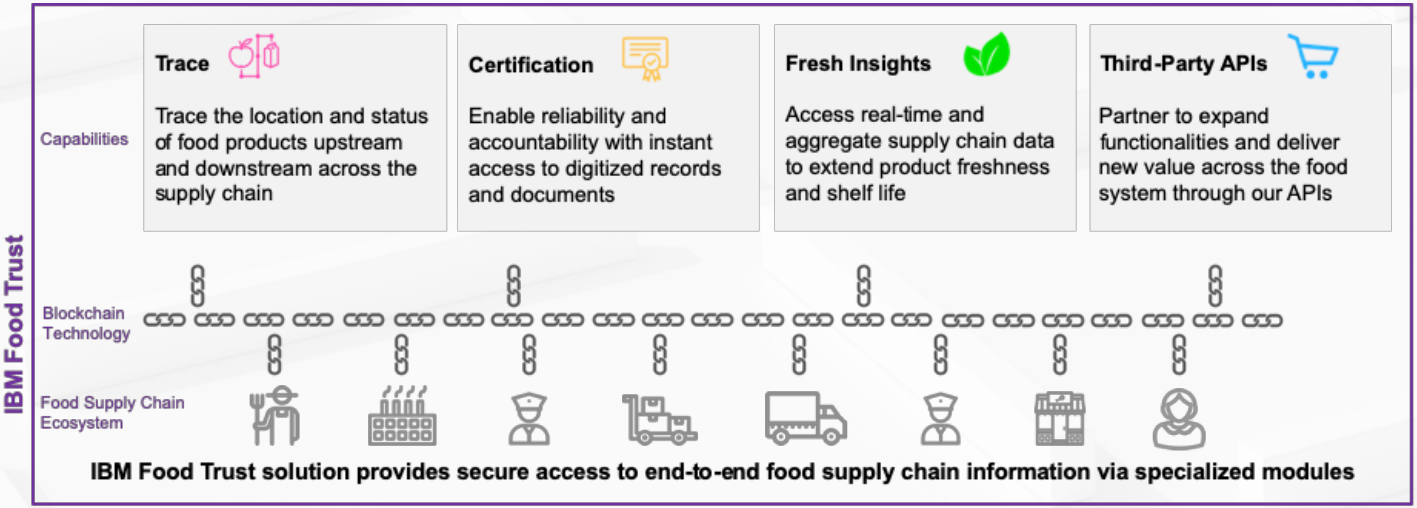
The Problem:

- **Data is siloed** within each company and accessing it requires a request and time
- Exchange of information takes place between a pair of partners; to get information from a distant partner may require **intermediaries**, time, resources
- Most transactions are still **paper-based**, creating inefficiencies and opportunities for fraud
- Because everyone maintains their own record of transactions, **differences** take time and resources to reconcile

The food industry today



IBM Food Trust leverages blockchain to address a range of pain points in the food ecosystem



Sample Clients

Value of the interconnected Food Trust network

Certification Bodies

- **Reduce fraudulent certificates**
- **Increase renewal speed**

Regulators

- **Identify contamination quickly**
- **Reduce unnecessary testing**

Food Manufacturers

- Build loyalty and engagement
- Manage inventory in real-time
- Automate & reduce manual certificate management
- Instill trust between retailers, suppliers & customers

Wholesalers / Distributors

- Manage inventory in real-time
- Conduct targeted recalls
- Enable internal data sharing

Food Logistics

- Manage inventory in real-time
- Enhance ability to meet compliance standards
- Reduce manual processes

Food Retailers

- Strengthens consumer relationship and increase brand loyalty
- Assure customers food is safe
- Conduct targeted recalls
- Extend shelf-life

Consumers

- Understand and trust their food better
- Learn about and act on recalls quickly
- Reduce food fraud victimization

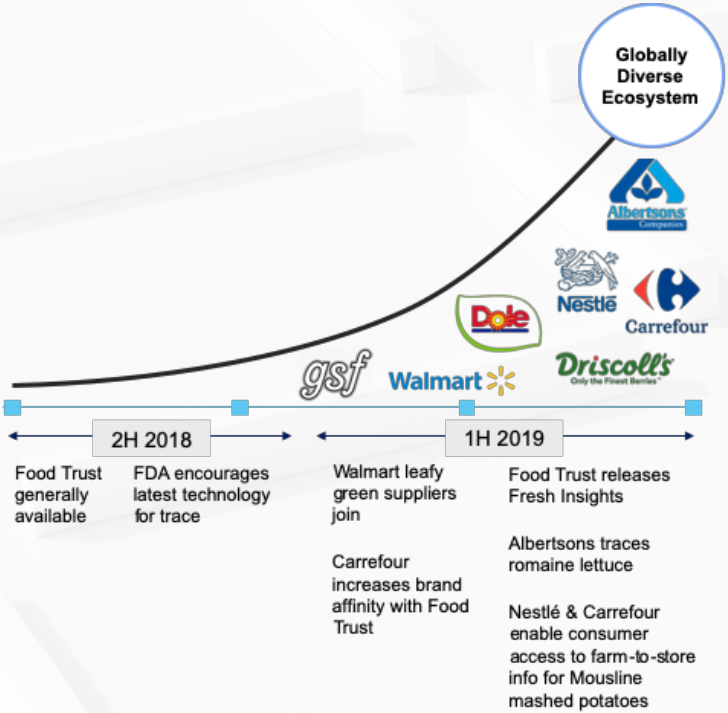
Growers

- Prove sustainable growth practices
- Satisfy compliance requirements and connect with consumers
- During a recall, show that farm is not source of contamination
- Ease of connectivity to the downstream supply chain

Food Service

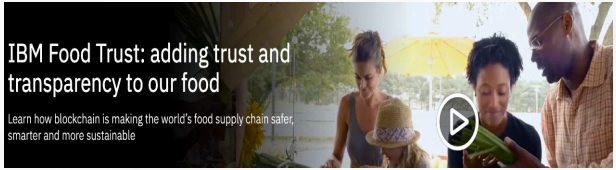
- Certify food sourcing practices
- Ensure safe food
- Reduce food waste

IBM Food Trust momentum



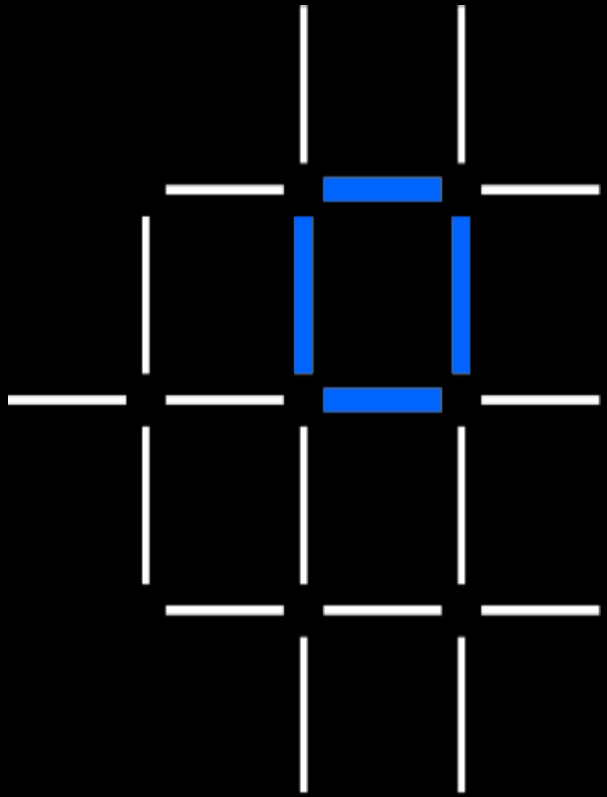
Today, we are in full production with a growing ecosystem:

- Global, diverse and extensive member network on the Food Trust ecosystem
- 9M+ transactions representing over 7K products
- 5M+ food products on retail shelves
- 500K traces conducted to date
- Top 4 Food Retailers in US on platform



https://www.ibm.com/blockchain/solutions/food-trust

Thank you



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