



About **IBM Food Trust**

www.ibm.com/food

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What is Food Trust?

Food from across the world is available to consumers today, regardless of the season, location, or environment. However, the greater options and accessibility are accompanied by increasing complexity in the food supply chain.

With growing data and lengthening ecosystems within the industry, the importance of trust weighs heavier than ever before.

From the farmer, processor, retailer, to the consumer, IBM Food Trust™ uses trust to build transparency. The blockchain solution is working to ensure that transparency enables the expanding food system.

With capabilities to enable safer food, longer product shelf lives, reduced waste, faster traceability, and better access to shared information, IBM Food Trust empowers you to meet the new standard for transparency and trust.

The solution provides authorized users with immediate access to actionable food supply chain data—from farm to store and, ultimately, the consumer. The complete history and current location of any food item, along with its accompanying information (i.e. certifications, test data, temperature data) can be readily available in seconds.



Food Trust provides your organization with a set of integrated modules to address the increased complexity and build trust in the industry.

Supply chain efficiencies

Operate using smarter processes across a shared food system by identifying process inefficiencies, leveraging data insights for demand forecasting, scaling with automation, and optimizing your business for continuous growth.

Brand story

Empower consumers, retailers, manufacturers, suppliers, and producers with confidence and trust in companies that they purchase and consume their food from.

Food freshness

Gain unprecedented visibility into supply chain data for valuable insights and analysis, identifying inefficiencies and ensuring quality of goods sold.

Food safety

Securely trace products in seconds to mitigate waste, cross-contamination, and spread of foodborne illness.

Food fraud

Enable full transparency by digitizing transaction records and storing them in a decentralized and immutable manner, eliminating the opportunity for fraud across the food system.

Reduce waste

Share and manage data across the food supply chain, helping to increase efficiency, reduce product loss, and optimize your ecosystem.

Sustainability

Digitize essential certificates and documents to optimize information management, certify provenance, and ensure authenticity.

Food Trust with blockchain



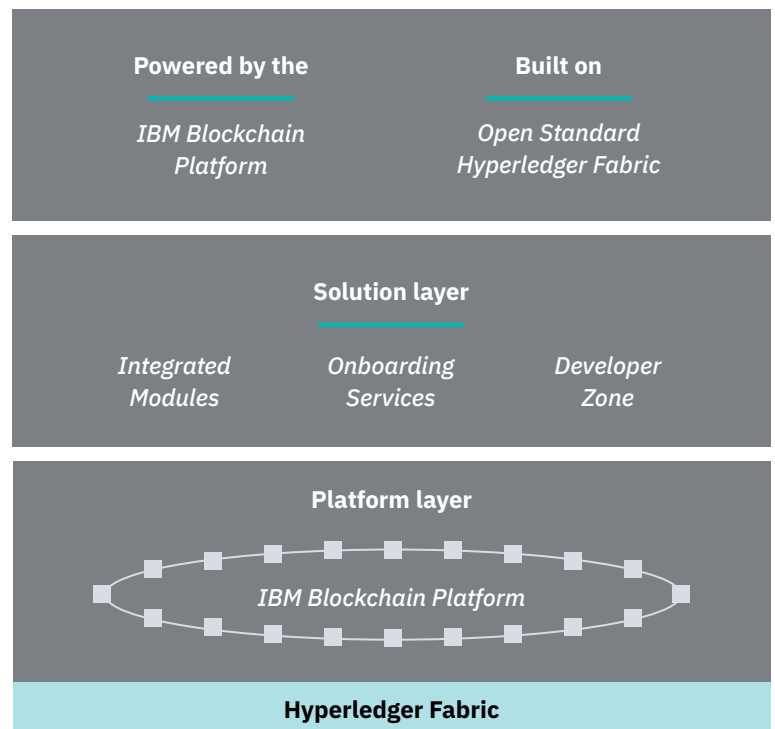
IBM Food Trust combines supply chain modules with blockchain core functions, delivering business value to the food ecosystem from the combination of governance, standards and interoperability, and technology.

The solution provides participants with a permission-based, shared view of food ecosystem information, allowing convenient data publishing and controlled sharing of information. To achieve this goal, the Food Trust solution enables participants to enter and control access to their encrypted blockchain data.

In doing so, transaction partners can only access the data they are permitted to view. Permissioned data access is an integral part of the core solution. Access controls ensure that the organization that owns the data maintains full control over who can access it on the network.

Users can quickly locate items from the supply chain, in real time, by querying food product identifiers such as Global Trade Item Number (GTIN) or Universal Product Code (UPC), using the product name, and filtering on dates.

All data is stored on blockchain ledgers, protected with the highest level of commercially-available, tamper-resistant encryption.



Module-based approach

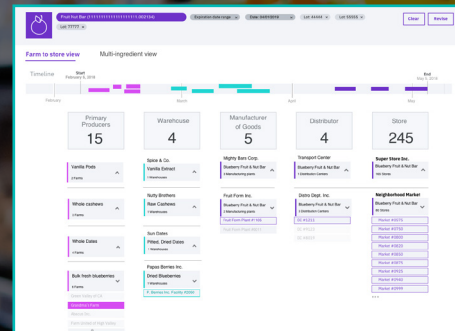
*IBM Food Trust's integrated **set of modules** addresses various pain points and needs in the food industry.*

Trace

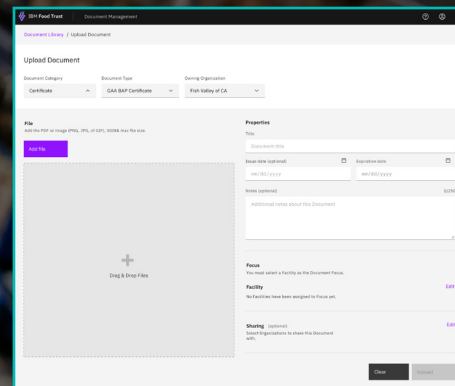
Provide the provenance of your product through immediate access to end-to-end data. The Trace module also shows real-time location and status, and allows expedited product recalls.

Documents

Upload, manage, edit, and share any type of document along your supply chain. The Documents module helps optimize efficiency for information management, certify provenance, and ensure authenticity.



Trace



Documents

Module-based approach

Documents

Is there one place for my certificates and documents?

Can my partners and I safely share documents along the supply chain?

With the Documents module, any type of supply chain associated document can be uploaded and shared simply.

Certificates and related documents can help verify that a facility is properly inspected, that livestock have been treated according to law, that a supplier is legally able to do business, and that a farm is certified as conforming to industry standards.

These documents, however, can be issued by agencies or organizations with differing and overlapping authority, with different jurisdictions, and with widely varying time windows of validity. Verifying that certificates are complete, valid, and current is complicated by their abundance, complexity, and variety.

To simplify this task, Food Trust offers a holistic approach with the Documents module to help store, track, and share all documents.

Users are able to upload and manage the organization's facility certificates, as well as other business-enabling documents, such as authorizations, licenses, inspection results, and more. Choose from a template of fields, customize the type of document, and tag by product identifiers for easy search and viewing. Conflicting or outdated certificates can be easily flagged for review. This serves both suppliers, who are looking to share documents to prove compliance, and retailers, who want to know the compliance status of their suppliers.

The screenshot displays the 'IBM Food Trust' Document Management interface. The main heading is 'Document Library / Upload Document'. Below this, there are three dropdown menus for 'Document Category' (set to 'Certificate'), 'Document Type' (set to 'GAA BAP Certificate'), and 'Owning Organization' (set to 'Fish Valley of CA').

The 'File' section includes instructions: 'Add the PDF or image (PNG, JPG, or GIF), 500kb max file size.' and an 'Add File' button. Below this is a large dashed box for file upload with a plus sign and the text 'Drag & Drop Files'.

The 'Properties' section contains several fields:

- Title:** Document title
- Issue date (optional):** mm/dd/yyyy
- Expiration date:** mm/dd/yyyy
- Notes (optional):** Additional notes about this Document (0/250)
- Focus:** You must select a Facility as the Document Focus.
- Facility:** No Facilities have been assigned to Focus yet. (Edit)
- Sharing (optional):** Select Organizations to share this Document with. (Edit)

At the bottom right, there are 'Clear' and 'Upload' buttons.

Module-based approach

Data entry

Each member organization owns its data on the blockchain network and maintains full control over who can access different data elements. All data is made accessible only as data owners grant permission to share relevant records.

Solution software adapters can provide automated data import from existing data stores (such as SAP) to leverage existing business records, including inventory lists, order records, and supplier information.

For network administrators already managing complex information environments, the IBM Food Trust Connector API is designed to automate the integration of legacy system data and network data.

Data connector application programming interfaces (APIs) allow enterprise IT teams to efficiently upload supply chain data from existing data stores to their IBM Food Trust network for seamless integration of data from enterprise systems to an IBM Food Trust solution network. Smaller organizations can onboard data through an easy-to-use web experience.

SOE users automatically upload transaction data to the solution network, based on the organization's data specifications.

Once an enterprise has joined and onboarded, its users and SOE accounts can interact with the network in several ways:

- **Employ user-friendly interfaces for desktop or mobile use.**
- **Use the Documents module to upload regulation and inspection documents for sharing with food supply chain partners.**
- **Use the customized interface to view and manage data that has been shared by business partners.**

Note: GS1 registration is not required to use IBM Food Trust. However, for companies who have registered with GS1, IBM Food Trust supports continued use of existing enterprise IDs.



Enterprises use the IBM Food Trust solution to upload or programmatically send four key data elements:

1 Supply chain events

2 Transactions

3 Master data

4 Certificate data

Visit the **Developer Zone** to learn about the data upload process and more: <https://github.com/IBM/IFT-Developer-Zone/wiki>

Food Trust

Core-blockchain capabilities

Our blockchain solution establishes a trusted and permissioned environment for food transactions, where all participants can collaborate in a secure and purposeful way.

Essential components of an open blockchain cloud-based solution include:

APIs

- IBM Food Trust is developing a rich set of APIs to deepen the ecosystem and grow its value for our members and partners.
- APIs serve as the programmatic version of the UI-based Food Trust modules, so trusted data can be used in a self-developed environment.
- APIs can also be used for 3rd party integration, such as inventory tracking, consumer apps, supply chain management apps, temperature monitoring, and industry group applications.

Trust Anchors

- Trust Anchors are participants of the Food Trust network, such as retailers and food suppliers, that are collectively responsible for maintaining integrity of the shared ledger and assisting on meeting security, as well as privacy and permission guarantees.

Smart contracts

- Any IBM Food Trust participant can install a peer and instantiate a smart contract in a private channel between two or more specific network members, in order to automate Supply Chain Decision making.
- Smart contracts use pre-defined business rules / pre-agreed terms with transaction partners and reduce extraneous dispute resolutions needed based on trusted and immutable data.
- Every party involved in running the smart contract has to have their own peer. Smart contracts run in a private channel where only the parties interested in maintaining the contract have access, as data in that channel is unencrypted.

Remote deployment

- As part of Trust Anchor Channel or Private Channel, members can deploy their peer remotely in preferred cloud or on-premises environment, using IBM Blockchain Platform for IBM Cloud Private.



Food Trust

Governance Model

The Governance Model includes fundamental policies that enable a collaborative ecosystem and ensures all participants are held to the highest standards, while receiving value.

The Advisory Council, comprised of a range of industry representatives, helps set the rules of engagement and leads accountability in adhering to the governance agreement for the blockchain community, ensuring that the solution benefits all. The council formally reviews and ensures the policies meet the needs and values of the global Food Trust community across various segments, sizes, geographies, and more.

As a participating member, IBM does not own any data uploaded by users onto the network and cannot use or share data for commercial or other purposes.

A secure ecosystem and a trusted community

Every participant is vetted to confirm their identity and ensure that all operate on the ecosystem's principles. This means that your experience with fellow community members is as trustworthy as your experience with the network itself.

Interoperability... and beyond

Because it is built on the open-standard, open-governance Linux Hyperledger Fabric, IBM Food Trust can connect to the systems and programs you have today, and can scale with you to connect to new blockchain and non-blockchain networks in the future.

Data that you upload, own, and control

You're in full control of the data you share on IBM Food Trust. And, as the owner of the data, you determine what you share, when you share it, and who gets to see it.

Guard against collusion

The trust model of the solution describes the set of guarantees that reinforces the security, privacy, and integrity in a network of widely diverse participants. Our model promotes collective responsibility, while guarding against collusion, maintaining the integrity of the network.

Guiding the future of the food ecosystem

Everyone has their unique business needs. The Food Trust Advisory Council ensures that all of these needs are met—and that the solution continually evolves to provide participants with value well into the future. The end goal: to reduce friction points by creating a trusted and transparent food system.

The Food Trust Governance Model is continually re-evaluated and updated based on expansion of the solution, member needs, technology innovation, and regulatory changes.

Network and data security

“How is security handled?”

“How is data handled?”

As with any distributed network that relies on encryption and controlled access for vital record-keeping, there will be questions.

Those answers will make the difference between a system worth implementing and one that presents a danger to the enterprise.

IBM Food Trust provides the highest level of commercially-available, tamper-resistant protection for food transaction data, employing the security benefits of the underlying IBM Blockchain Platform and Hyperledger Fabric.

Hyperledger Fabric requires no proof-of-work or other processor-intensive computations to guarantee the legitimacy and permanence of network transactions, and features a thoroughly permissioned network. The owner of the data controls who can see it on a Hyperledger Fabric network.



From a network and data security point of view, your IT personnel can take the following steps to understand and prepare your environment:

- Identify relevant supply-chain processes.
- Identify users, including automated users of the solution.
- Estimate and assign technical resources.
- Access the security needs of each user, including external stakeholders, and initiate security clearances and other security processes.

Onboarding and support

Onboarding onto IBM Food Trust requires uploading data about your product lifecycle, from harvesting, to manufacturing, to transportation by item, location, and purchase order.

*To get started on the solution, there is no need to know blockchain. We work with data you are already using and with standards that you already know. **It starts with you and your data.***

Which onboarding and support options are available?

- **Self-Guided Onboarding**
Onboard independently using self-service education and community forum.
- **Virtually-Guided Onboarding**
Interact with experts in pre-defined education modules and for additional questions.
- **Assisted Onboarding**
Receive a dedicated expert to guide you through the full onboarding experience.
- **Standard Support**
Access the digital support portal with enhanced transparency into ticket resolution, and receive assistance by preferred method: chat, email, forum, or phone.

Which data can be added into IBM Food Trust?

- **Master data** describe organization facility locations and trade items, and are expected to be largely static.
- **Business transactions** include purchase orders, advance shipping notices, and receipt confirmations.
- **EPCIS events** correspond to the GS1 EPCIS standard that describe real world events happening across your supply chain.
- **Certificate data** describe facility certificates, such as audit dates and scores, and expiration dates.
- **Payload data** include additional food related data (i.e. temperature, humidity) that can be linked to EPCIS events data to enrich insights into the supply chain.

What are the ways to integrate my data?

- Automation
- Excel upload
- XML upload
- Direct data entry

Building your team

Joining the Food Trust ecosystem begins with signing up online and purchasing the most appropriate plans for your organization. Enrollment in a solution network includes the creation of accounts for both human users and systems of engagement (SOE) users.



Once you have access to the solution, you will onboard your organization by building and authorizing a team to register and integrate pertinent information of data.

The IBM Food Trust solution assigns predefined roles that grant users authorization to execute specific network tasks on behalf of their organization.

Assigning roles enables account administrators to easily control the level of access provided to each individual user in their organization. When onboarding new users to the solution, an account administrator must assign a role to each user.

Onboarding to the Food Trust ecosystem:

- Prepare your supply chain expert(s) and data expert(s)
- Identifying your facilities and products
- Defining your product scenarios
- Uploading data and setting up permissions

Team roles include:

Account owner

User can manage organization account settings and subscriptions.

Account administrator

User can add, delete, and modify users and can modify organization settings.

Onboarding team member

User(s) can create product scenarios and upload data.

Why Food Trust?

Blockchain solutions require more than the technology for adoption and impact within companies and throughout industries. IBM Food Trust is not only built on a secure and reliable platform, but also recognizes the critical factors for collaboration and action of all in the food system.

[The 5 Pillars of IBM Food Trust](#) explores the fundamental facets equally important in achieving an effective blockchain solution:

Business value

Companies participating in the ecosystem are able to do so in a way that aligns to their business values. Every party has a role to play in the food system; consequently, each participant receives a unique benefit to their organization.

Ecosystem

Food companies are the main actors spearheading change in their industry. Committed and innovative brands are providing the insights to make an impact and driving the momentum to usher in a new era of trust and transparency.

Governance Model

Those adopting the technology should be defining how it works for them and be comfortable using the solution. The Governance Model guides the use of the solution by the players, including data ownership, access, and permissions.

Standards & interoperability

Companies are investing in technology that allows users to leverage and learn from other technologies. Food Trust is committed to global standards and interoperability with other companies and vendors to promote adoption in the long term.

Technology

Organizations rely on our technology to provide consistent, reliable, and secure access to data and insights. Additionally, all the pillars are shaping how we move forward in building the technology.

The 5 Pillars are what created the only enterprise-class blockchain solution for the food system today.



Join now

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Try the solution

[See it in action](#)

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