feeding the minds that feed the world

The ABC’s of Food Traceability

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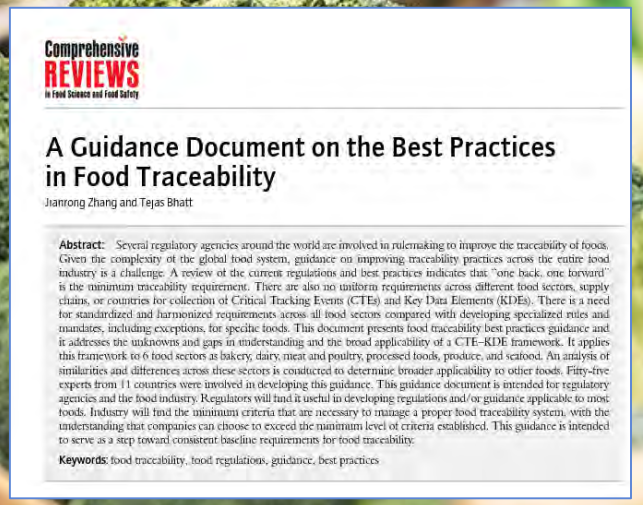
Global Food Traceability Center

What we do – The Global Food Traceability Center (GFTC)

The technology-agnostic, authoritative voice on food traceability.

- Standard development and extension for multiple use cases (co-convener of the Global Dialogue on Seafood Traceability, 'GDST')
- Best practices and guidance documentation
- Implementation and Compliance Tools
- Technical convenings and pilots
- Education, training and workshops
- Marketing, outreach, and communication

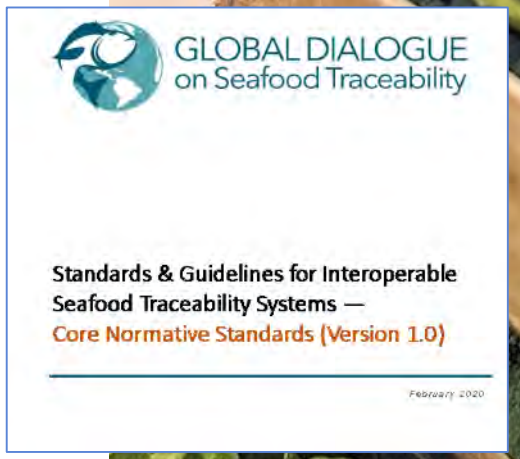

Comprehensive REVIEWS in Food Science and Food Safety

A Guidance Document on the Best Practices in Food Traceability

Jianrong Zhang and Tejas Bhatt

Abstract: Several regulatory agencies around the world are involved in rulemaking to improve the traceability of foods. Given the complexity of the global food system, guidance on improving traceability practices across the entire food industry is a challenge. A review of the current regulations and best practices indicates that "one back, one forward" is the minimum traceability requirement. There are also no uniform requirements across different food sectors, supply chains, or countries for collection of Critical Tracking Events (CTEs) and Key Data Elements (KDEs). There is a need for standardized and harmonized requirements across all food sectors compared with developing specialized rules and mandates, including exceptions, for specific foods. This document presents food traceability best practices guidance and it addresses the unknowns and gaps in understanding and the broad applicability of a CTE–KDE framework. It applies this framework to 6 food sectors as bakery, dairy, meat and poultry, processed foods, produce, and seafood. An analysis of similarities and differences across these sectors is conducted to determine broader applicability to other foods. Fifty-five experts from 11 countries were involved in developing this guidance. This guidance document is intended for regulatory agencies and the food industry. Regulators will find it useful in developing regulations and/or guidance applicable to most foods. Industry will find the minimum criteria that are necessary to manage a proper food traceability system, with the understanding that companies can choose to exceed the minimum level of criteria established. This guidance is intended to serve as a step toward consistent baseline requirements for food traceability.

Keywords: food traceability, food regulations, guidance, best practices


GLOBAL DIALOGUE on Seafood Traceability

Standards & Guidelines for Interoperable Seafood Traceability Systems —
Core Normative Standards (Version 1.0)

February 2020

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Learning Objectives

Core Takeaways

1. Understand foundational traceability concepts of critical tracking events/key data elements
2. Learn the core components of the Draft Rule
3. Explore roles and responsibilities of impacted entities
4. IFT Resources

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Traceability Fundamentals

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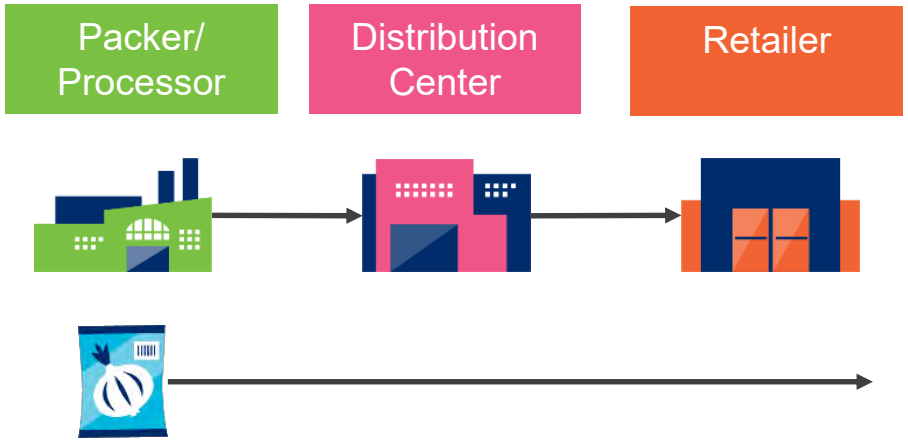
What is Traceability?

Traceability is the systematic ability to trace the path of food ingredients and/or finished products throughout their entire life cycle, by means of previously captured and stored records consisting of Critical Tracking Events (CTEs) and Key Data Elements (KDEs).

Use Cases:

- Food Safety/Quality
- Supply Chain Visibility/Efficiency
- Sustainability
- Authenticity
- Marketing



Critical Tracking Events	**Transform – Create Finished Goods**	**Receive**	**Deplete**
Key Data Elements	When? What [Input]? What [Output]? Where? Why?	When? What? Where? Why?	When? What? Where? Why?

Example: Using a CTE/KDE matrix to define Data Requirements

CTE	Catch	Land/Sell	Process	Import (optional)	Sell	Dispose
Who	Operator	Buyer	Processor	Importer	Retailer	Retailer
What	Raw Fish	Raw Fish	Finished Goods	Fish	Saleable Fish	Fish Waste
Where	Vessel, Country, Catch Area	Port Code, Country, Destination	Plant, Country	Port, Source, Destination	Retail DC, Retail Store	Retail DC, Retail Store
When	Harvest Dates	Land Date, Sell Date	Production Date/Time, Expiration	Ship, Receipt Date	Receipt, Ship Date	Dispose Date
Why	Gear Type	Receipt, Shipment	Storage Type	Receipt, Shipment	Receiving, Shipping	Dispose

What impedes effective traceability?

Traceability Challenges

- Highly complex integrated global supply chains built for efficiency
- Overlapping & inconsistent global regulatory landscape
- Incompatible technology solutions
- Initial & on-going hardware & software investment

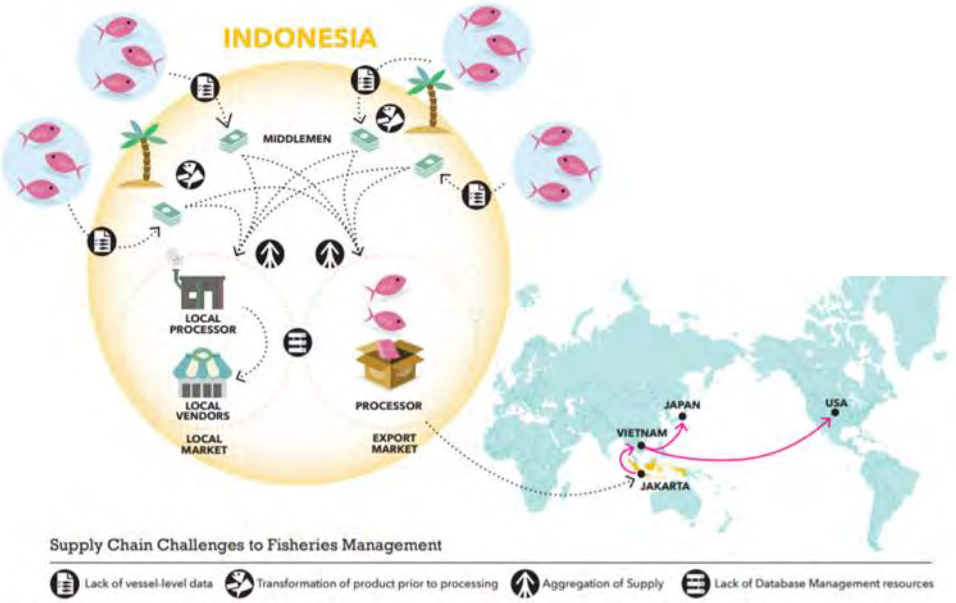


Image source: Future of Fish. Making Sense of Wild Seafood Supply Chains. A report created for The Nature Conservancy. 2015.

What is a solution? Interoperability

Interoperability as Key Traceability Mechanism

- **Interoperability** is the extent to which systems can exchange data and interpret that shared data.

- Key components of interoperability
  - **Globally unique identification**
  - Data capture and sharing ***standards***
  - Tech agnostic solutions

- Interoperability enables End-to-End Traceability

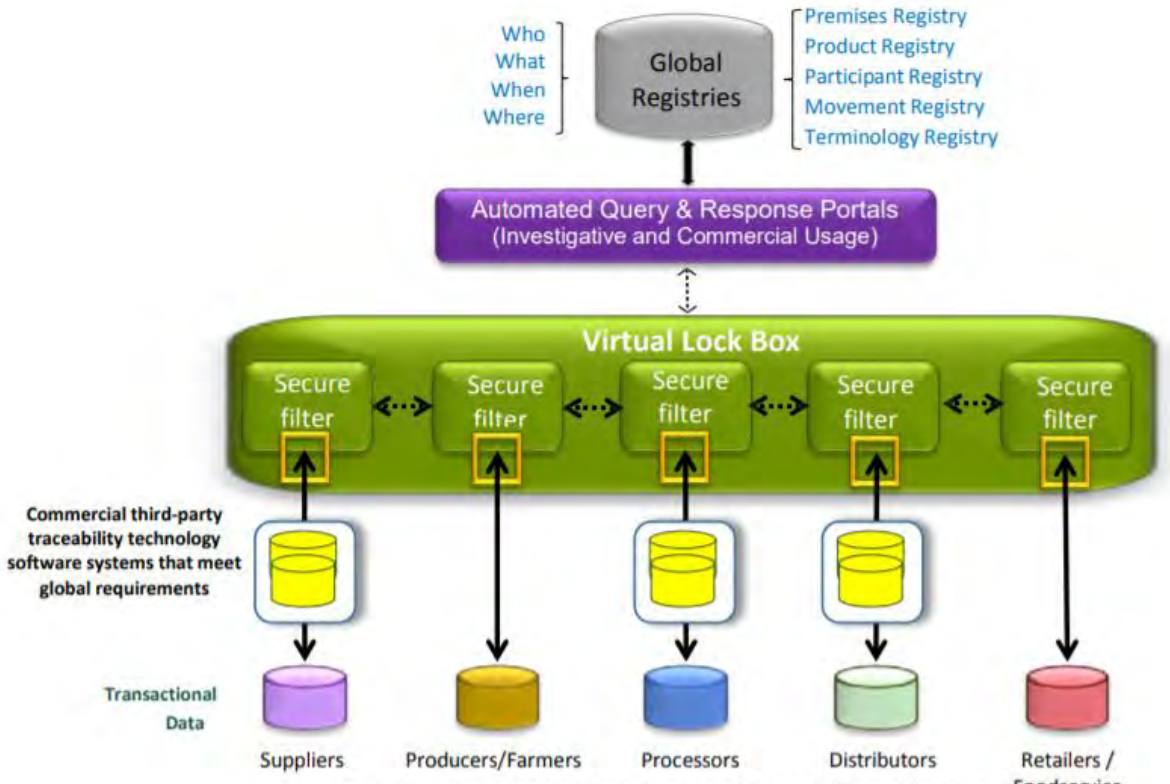


Figure 2 – Strawmodel of the interoperable traceability architecture.

Image source: Bhatt T, Gooch M, editors. 2017. Specifications to implement a technology architecture for enabling interoperable food traceability. Chicago: Global Food Traceability Center, Institute of Food Technologists. Available from: http://www.ift.org/gftc/resources.aspx

GS1 Methodology Enables End-to-end Interoperable Traceability

Design the traceability system

- Step 1: Set the traceability scope and objectives
- Step 2: Gather the traceability information requirements
- Step 3: Analyse the business process
- Step 4: Define the identification requirements
- Step 5: Define the traceability data requirements
- Step 6: Design the traceability data repository functions
- Step 7: Design the traceability data usage functions

Build the traceability system

- Step 8: Perform gap analysis ('as is' versus 'to be')
- Step 9: Establish the components of the traceability system
- Step 10: Testing and piloting

Deploy and use the traceability system

- Step 11: Roll-out
- Step 12: Documentation and training
- Step 13: Monitoring and maintenance

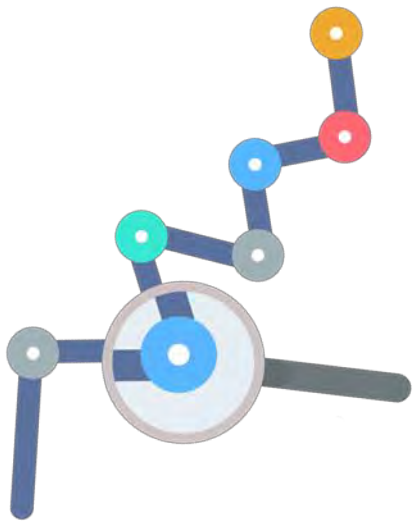


Image Source: *GS1 Global Traceability Standard Release 2.0, Figure C-1*

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FSMA Section 204 Regulation

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Section 204 & What It Means for You

Why a new proposed rule?

Shorten Outbreak Response Time

- **Clarify and preserve transmission of key data elements** associated with **certain foods** that have a **documented history of outbreaks** so impacted parties and the FDA have access **within 24 hours**
- Modernize **data capture** and **transmission** in recognition of our **new digital reality**
- Ultimately, reduce the incidence and impact of foodborne illness in the US

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Food Traceability Rule Overview

*Rule aims to **enhance speed of recalls** by improving record keeping for foods associated with a history of outbreaks.*

Full Name

- *Requirements for Additional Traceability Records for Certain Foods*

Authority from 3 US Laws

- Food Safety Modernization Act
- Food, Drug, and Cosmetics Act
- Public Health Services Act

Goals

- Improve public health
- Shorten FDA response time
- Move industry forward

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Proposed FDA Food Traceability Rule Components

Builds upon fundamental traceability concepts

- **Food Traceability List**
  - "High-risk" foods subject to enhanced recordkeeping requirements
- **Critical Tracking Events**
  - Defined CTEs with kill step exemption
- **Key Data Elements**
  - Data requirements for given defined CTEs
- **Traceability Program Records**
  - Description, list of foods, and lot code assignment
- **Additional Requirements**
  - 24-hour turnaround for traceability records and sortable electronic spreadsheet to FDA

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What are the "Certain Foods"?

Listed foods identified through a risk ranking model using outbreak data from the last 20 years.

Draft Rule Listed Foods	
Cheeses, other than hard cheeses	Sprouts
Shell eggs	Tomatoes
Nut butter	Tropical tree fruits
Cucumbers	Fruits and Vegetables (fresh-cut)
Herbs (fresh)	Finfish, including smoked finfish
Leafy greens, including fresh-cut leafy greens	Crustaceans
Melons	Mollusks, bivalves
Peppers	Ready-to-eat deli salads

Source: https://www.fda.gov/food/food-safety-modernization-act-fsma/food-traceability-list

When Will The Proposed Rule Go Into Effect?

Image Source: FDA photo by Michael J. Ermarth. Available from: https://www.flickr.com/photos/fdaphotos/5957953510/in/album-72157625347255653/

Rule finalization and compliance will be <u>2024 at the earliest</u>

- *Federal Register Publication Date:* September 23, 2020
- *Final Rule: Expected Publication November 2022*
- *Effective Date:* 60 days after publication of the final rule
- *Compliance date:* 2 years after the effective date

IFT Resources

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Resources: Education and Training Examples

Online Courses

- Demystifying Traceability

Webcasts

- The ABCs of Traceability with the Global Language of Business
- Best Practices in Food Traceability for the Processed Food Sector
- Calculating the Payback from Seafood Traceability
- Global Food Traceability Systems: Today and Near Future
- Food Traceability Important for Food Safety Imperative for Food Defense

IFT*NEXT* Podcast

- Food Safety Experts on Recalls, COVID-19, Traceability, and more
- Food Manufacturing in the time of COVID-19
- Food Traceability and Blockchain Technology: Revolutionizing Food Security

Textbook Contributions

- Food Traceability (Springer)
- Food Safety Engineering (Springer)

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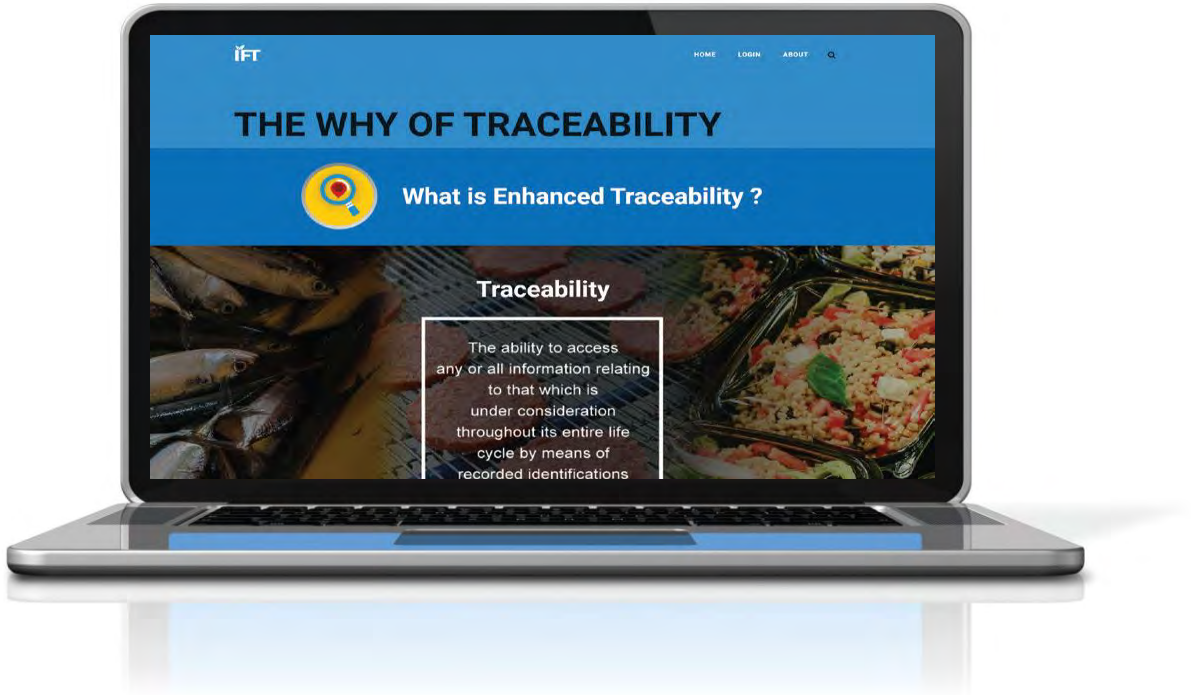
Demystifying Traceability Online Course

- Discover why's and how's of traceability
- Understand core KDE/CTE concepts of traceability
- Evaluate your current Traceability Plan
- Improve your Traceability Plan
- Learn more technical aspects of traceability, such as information technology or industry standards



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Thank you!

Questions and Comments?