July 20, 2020

Division of Dockets Management (HFA–305)
Food and Drug Administration,
5630 Fishers Lane, Rm. 1061
Rockville, MD 20852

Re: **Initial Comments** of AIM North America on: **Docket folder FDA-1995-N-0062. Food Standards: General Principles and Food Standards Modernization A Proposed Rule by the Food Safety and Inspection Service and the Food and Drug Administration on 05/20/2005 re-opened for Comments until July 20, 2020**

To Whom It May Concern:

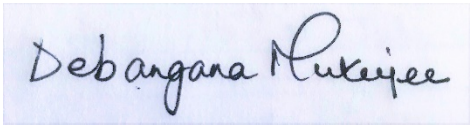
We are pleased to submit the enclosed comments regarding the above referenced docket and regulatory information number which appeared in Federal Register Federal Register, Volume 85, Number 35, pages 10107-1011.

These comments were prepared by members of the AIM North America Food Safety Committee, all of whom are subject matter experts of the design and application on automatic identification technology including barcode, RFID, RTLS, IoT, etc. AIM North America is an industry trade association that represents the providers and users of technologies, systems, and services that capture, manage, and integrate accurate data into larger information systems that improve processes enterprise-wide.

AIM North America is a chapter of AIM, Inc. With an uncompromised reputation as a global authority for nearly 50 years, AIM, Inc. takes pride in its proven value as an unbiased resource and industry leader. AIM, Inc. acts as the administrator of the U.S. Technical Advisory Group (TAG) to ISO/IEC JTC 1/SC31 for all standardization in AIDC. See Appendix A. Most barcode and RFID standards in ISO today originated in or were contributed by AIM.

AIM North America is an advocate for standards development and advocacy of AIDC technologies appreciates this opportunity to submit comments in response to the Food and Drug Administration's (FDA) Notice in the above-captioned docket, seeking comment on the agency's approach to the modernization of food safety, including development of the anticipated Blueprint for a New Era of Smarter Food Safety.

Sincerely yours,



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INTRODUCTION AND SUMMARY

Consumers have long been interested in finding easier ways to identify healthful foods by looking at the labels when food shopping. Claims are quick signals for consumers about what benefits a food or beverage they choose might have, and they can also encourage the food industry to reformulate products to improve their healthy qualities.

The goals of food standards modernization are to:

- Protect consumers against economic adulteration;
- Maintain the basic nature, essential characteristics and nutritional integrity of food; and
- Promote industry innovation by giving manufacturers the flexibility to produce healthier foods.

At the public meeting on the Nutrition Innovation Strategy, held in July 2018, and in comments submitted to the public meeting docket, stakeholders expressed general support for the FDA and the USDA continuing their work to finalize the proposed rule. However, due to changes that have occurred in manufacturing, food technology, market trends, nutrition science and technology the FDA is solicitating comments for this effort.

To meet the FDA's objective of protecting consumers against economic adulteration and promoting healthier food choices it is paramount that consumers have confidence in the integrity of their food and access to complete nutritional information.

We would like to refer the FDA and USDA to FMI & Label Insights study from consumers in 2018. Their key findings

- Transparency Valued: Almost all consumers (93 percent) continue to say it is important for brands and manufacturers to provide detailed information about what is in food and how it's made, compared to 94 percent in the 2016 Label Insight study. In addition, the vast majority of shoppers in 2018 (74 percent compared to 39 percent) say they would switch from the brand they usually buy to another brand that provides more in-depth product information, beyond what is on the physical label.
- Consumer Confusion: About two-thirds of shoppers sometimes or always find themselves confused about the ingredients listed on a package, despite saying they are informed after reading a product label.

AIM North America strongly believes that the manner to address these concerns in through standards adoption and leveraging new technologies. AIM North America supports FDA's focus on technology-driven food traceability and the connection to the digital supply chain to provide the consumer will access to accurate reliable data to support the nutrition facts panel and agency claims such as organic or non GMO.

As far as selecting a healthier diet per a study completed by Albert Heijn[1] the crucial ingredient our nutrition labels lack is transparency and traceability. Many of us strive to eat a healthy diet, but we are missing quality information about where our food comes from. In this study oranges were traced from Brazil to the consumers connecting the famers directly with the consumers. This provided a bridge to where the food was sourced from and the actual ingredients in the juice. Our globalized food system allows food to be grown anywhere that has the right climate, before it is then picked, packed, shipped and finally trucked to wherever customers want to buy it. To get juice that tastes the same from one week to the next, a company might mix oranges from different farms and harvests to achieve a precise sweet/sour balance. The modern food system gives us access to unprecedented variety, but also, when we prefer it, exceptional sameness.

The downside is that long and convoluted food chains can obscure where produce comes from to the point where diners may not know which fish or animal species they are actually eating.

"That single package of ground beef can be coming from hundreds of different sources," says Alexis Bateman, the director of the Responsible Supply Chain Lab at the MIT Center for Transportation and Logistics. "In the seafood industry, there's a lot of actual fraud…so people want to make sure it's the right fish." [2]

Recently, people have been realizing there is something lacking from their diets: quality information. Tech Enabled Traceability can bridge this gap between sourcing and consumers.

As a global organization dedicated to developing interoperable technical guidance and ISO standards, we support the collaborative standards development process. To that end, we feel that the FDA must specify the following minimum elements required for traceability.

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[1] https://www.foodnavigator.com/Article/2019/03/01/Reaping-the-fruits-of-blockchain-How-Albert-Heijn-links-orange-grove-to-shopping-basket

[2] https://ctl.mit.edu/news/follow-food-crucial-ingredient-our-diet-lacks

- To enable the consumer transparency that a food safety culture is built on, multiple data carriers on a pack should be converged, that is, reducing the number of on-pack symbols. The proliferation of barcodes and other methods of identification on products and things causes confusion to consumers and trading partners, who expect a seamless experience of connecting products and things to relevant experiences in the digital world.
- Provide supply chain security from point of origin to point of consumption enabling consumer trust in their product selection by collecting critical tracking events from production and tying product certifications such as organic or sustainably caught directly to the item.
- Provide seamless access to expanded digital product master data containing product content, nutritional information and allergens.

AIM North America encourages FDA to adopt policies to facilitate the use of technology to address these challenges by requiring or incentivizing the use of global unique identifiers that can be used to trace each end-consumption item; specifying the minimum content to be tied to global unique identifiers; requiring the use of technology to electronically and easily capture and share required information; and connecting to the digital twin containing product master data, With enhanced, technology-driven data management and automation, we can greatly improve the quality and availability of data in the supply chain, action food safety issues quicker and with more precision, reduce food waste, and build more transparency between trading partners and end consumers.

Food Safety

Increasingly globalized, complex supply chains have resulted in less visibility into food sourcing for customers and regulators. These trends are driving the need for digital transformation through the adoption of technology to bring automation, integrity and data management solutions to supply chain traceability. Digital and sensor technology can enhance the ability to identify, respond to, and prevent food safety issues such as outbreaks. For example, the time it takes to identify the source of a contaminated food product can be drastically reduced compared to the status quo processes for recalls. Given recent food incidents, the use of digital technology has become even more needed, as it can help to make full product data accessible throughout every stage of the food supply chain in the event of a recall.

Currently this level of sophistication is not reflected in the relevant global standards. When performing a survey of ISO Food Standards as well as other standardization groups one finds the following as an example of the current requirements: ISO 22005:2007 (confirmed 2016) Traceability in the feed and food chain defines, “Traceability systems should be able to document the history of the product and/or locate a product in the feed and food chain. Traceability systems

contribute to the search for the cause of nonconformity and the ability to withdraw and/or recall products if necessary. Traceability systems can improve appropriate use and reliability of information, effectiveness and productivity of the organization." While this is good sound advice, it is not a sufficient technical basis on which to build a ubiquitous, interoperable food traceability system. ISO 22000 Food Management Systems, Harmonized Gap, Codex all contain a similar level of detail.

Power of Connected Supply Chain

COMMENTS

A. Ubiquitous Global Food Traceability

The federal government should adopt standards to set the baseline content – or data points – needed to facilitate a food supply chain that is both visible and actionable. These standards should require such baseline content to be physically tied to each item entering the food supply chain in a manner that can be digitally captured. By establishing universal baseline requirements, each supply chain participant should be able to collect and share the same information (e.g. unique identifier, lot/batch, etc.) regardless of the technology or platform used.

AIM North America has had a long partnership with GS1 and several of the GS1 specifications have been vetted through the ISO standardization process which ensure global collaboration. AIM North America recommends that the FDA ensures Food Traceability is backed by ISO specifications that are more likely to be adopted by the global community. See Appendix B.

AIM North America recommends that the FDA addresses the following issues in laying the foundation for ubiquitous traceability: 1) FDA/USDA data elements required to recall a product 2) Globally Unique Identification 3) Common data carrier attributes 4) Core set of events to be tracked with minimum viable data elements 5) Global access to interoperable data repositories 6) Digitally signed data carriers

1) FDA/USDA data elements required for traceability
Regulatory agencies need to decide what data elements are required to identify an item in the supply chain, this requirement will normalize the identification across data carriers. An example could be Global Trade Item Number (GTIN), Lot/Batch Number, Serial Number and Relevant date code. We encourage the FDA to set this requirement as soon as feasible as it will provide a guidepost for solution developers.

2) Globally Unique Identification

The ISO/IEC 15459 standard establishes a common framework for the identification of assets in the supply chain including the method whereas entities can apply to be issuing agencies.

Data carriers are encoded in such a way that you can identify the numbering authority used to interpret the data. Per the specification data carriers, either optical or RF, have a code that indicates that the data following should be interpreted by the issuing agency rules. For example, UPC-A, EAN, Databar are always interpreted by GS1 standards. In addition to the GS1, the European Health Industry, Universal Postal Union, and Dun and Bradstreet are examples of other issuing agencies.

AIM North America's recommendation to the FDA that any issuing organization in the global traceability be a registered numbering authority. An example of a non-unique numbering authority would be some of the state cattle associations. They issue a number to farmers to sell their beef under and that number is recorded when the beef is sold at auction. However, since there is no requirement for uniqueness Iowa numbers could be duplicated with Indiana numbers making it difficult to identify original source.

3) Common Data Carriers attributes

Today there are a number of voluntary industry guidelines; i.e. Produce Traceability Initiative, GS1 US Foodservice Traceability Initiative, calling out the use of varying data carriers including GS1-128, U.P.C., GS1 DataMatrix, ITF14, GS1 Databar, QR code, and digital watermarking.

AIM North America recommends the alignment of minimum set of data attributes to be contained within the data carrier, ideally this set would be aligned with the data elements required to withdraw a product from market. For instance: GTIN, or Lot/Batch or Serial Number and/or Expiration Date (or another relevant date). Standardization of the data attributes is critical to successfully locating products in the supply chain for recall or other purposes. Co-location of different data contained in data carriers on the package for the same purpose can introduce complexity and errors in the system. For instance, the Drug Supply Chain Security Act (DSCSA) compels a DataMatrix be contained on the package containing GTIN, Lot, Expiry Date and SN. Another data carrier containing a GTIN and SN for the purposes of traceability introduces complexity and errors. If the standardized minimal data elements are not present in the data carrier some means outside the normal process flow will be needed to acquire them adding friction and cost into the supply chain.

As an alternate approach, a globally unique identifier could be contained in the data carrier with all sub classifying data attributes. Below is a table illustrating this point – the left column

specifies the business objective and the next 2 columns compare a data rich data carrier with a GTIN.

Table outlining features that are enabled with enhanced item attributes

Feature	GTIN	GTIN+LOT, Serial Number, & Expiry Date
Traceable	Not without other manual intervention	Yes
Additional Data required beyond GTIN		Yes
Product Recall	Not without other manual intervention	Lot/Batch or Serial Number
Anti-Counterfeit Measures	Not without other measures	Yes
FIFO Inventory Management	Not without other measures	Yes

Next you need to examine the data capacity of current data carriers. For instance, if an example GS1-128 case label was generated per the GS1US Foodservice Case Label Guidance a data carrier that could contain the data elements (or to use the GS1US term - application identifiers) - that can meet the requirement are listed in the table below.

Data Carrier	Comments
U.P.C.-A/EAN/Databar/ITF14	Contains GTIN only – not recommended for traceability since the item is identified only at the class level
QR Code, GS1 DataMatrix, GS1-128	GS1-128 is limited in size to 48 characters so the combination of elements cannot exceed that size / QR Code, GS1 DataMatrix can contain all needed data elements
Digital Watermarking	GTIN+ serial number and/or Batch/Lot and Expiration Date
RFID	GTIN+ serial number in base memory and Lot/Batch and Expiration Date in user memory as needed

4) Core set of events

AIM North America recognizes the GS1 EPCIS, which has also been published as: ISO/IEC 19987 Information technology — EPC Information services — Specification, as the leading standard for event data capture and recommend its global adoption.

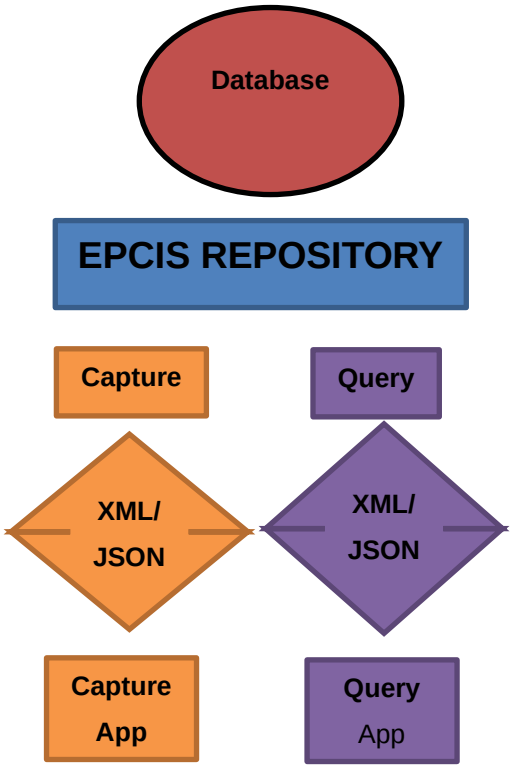
The GS1 EPCIS specifies the syntax that the data can be exchanged. The key data elements (KDE) or critical tracking events (CTE) required to meet the global traceability initiative is beyond the scope of this document. The minimal supply chain events that are captured in the food supply chains can and does vary today among solution partners. This limits supply chain interoperability and could add unnecessary cost / friction into the globally ubiquitous traceability of food.

In order to address this situation, AIM North American recommends that the FDA set the minimal level set of supply chain events and the key data elements that are required to ensure interoperability at the base level.

5) Global access to interoperable data repositories

The FDA needs to consider the time span required for a trace back. Current paper processes time varies dramatically from a few days to a few months. If the FDA establishes that they require the trace back data within a few seconds that will compel industry to develop electronic path for the data transfer.

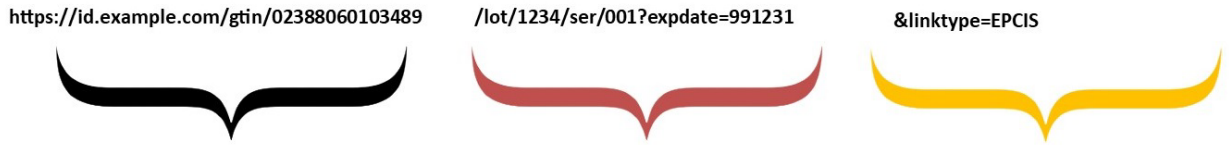
GS1 EPCIS Query Interface is diagramed below to provide an example of a potential method of meeting the trace back data retrieval times by accessing one or more EPCIS repositories. In the typical scenario of a trace back from multiple start points through one or more middle points to the source it is a certainty that more than one data repository will be involved.



Another emerging GS1 standard – GS1 Digital Link may provide another method of walking back the chain. The GS1 Digital Link Standard example could be enabled for authenticated access of EPCIS data for the GTIN, lot/batch, serial number, expiration date.

GS1 Digital Link Example

https://id.example.com/gtin/02388060103489/lot/1234/ser/001?expdate=991231 linktype=EPCIS



When a GS1 Digital Link is interpreted the Global Trade Item Number is recognized as the class of items the link refers to

This section identifies the specific instance of product by using the lot/batch, serial number and expiration date of Dec 31, 2099

Linktype=EPCIS will retrieve the GS1 EPCIS data for this item.

A significant part of the business case – or incentive – for investing in traceability technology is responding to rapidly growing consumer demand for greater product information. Combined with advances in consumer technology (i.e., smart phones and consistent internet access), consumers are demanding far more information than can be stored on a label or packaging. It is clear that intelligent connected labels are the way of the future. To ensure regulations do not become obsolete before they can even be implemented, and to allow interested parties to maximize the benefits of deploying traceability solutions, FDA should ensure that its regulations specify the minimum data attributes compelled to be on the package contain the same data attributes for the same application .

6) Digitally signed data carriers

As the use of global food traceability increases it will be prudent to enable a method of generating verified symbols that can be authenticated either in an online connected manner or in a stand-alone application. Both the GS1 and ISO organizations have developed approved standards for digitally signed carriers.

ISO/IEC 20248 specifies a method whereby data stored within a barcode and/or RFID tag is structured and digitally signed. The purpose of the standard is to provide an open and interoperable method, between services and data carriers, to verify data originality and data integrity in an offline use case. The ISO/IEC 20248 data structure is also called a "DigSig" which refers to a small, in bit count, digital signature.

ISO/IEC 20248 also provides an effective and interoperable method to exchange data messages in the Internet of Things [IoT] and machine to machine [M2M] services allowing intelligent agents in such services to authenticate data messages and detect data tampering

B. Ensuring Extensibility and Scalability

Without interoperability, a vast amount of critical food supply chain data remains siloed, preventing a visible supply chain. The producers and growers at the start of the food supply chain tend to be small businesses, particularly as compared to the large distributors and retailers participating down the line. Supply chain participants can be asked to comply with multiple different/conflicting transparency and traceability demands, which can be burdensome to meet, particularly in the aggregate. Industry collaboration driven by interoperable standards is necessary to lower the technological and financial barriers to adoption and participation, particularly for smaller players. Standardization will also reduce the need for customization allowing for a more seamless and scalable onboarding processes for participants deploying transparency and traceability solutions.

FDA November 2016 document on FDA Does not have an Efficient and Effective Food Recall Process called out that, "Weaknesses in the current system have been identified by the Health and Human Services' Office of the Inspector General (OIG) and that FDA did not have an efficient and effective food recall initiation process that helps ensure the safety of the Nation's food supply.. In a 2009 report, OIG auditors attempted to trace 40 food products from retail sale back to the farm and only five food products were fully traceable. Problems identified in tracing the food by the OIG included failure by firms to maintain lot-specific information and the co-mingling of products from many farms.

AIM North America recommends conducting additional National/International Food recall simulations at the following intervals.

1. Q1, 2022 Benchmark current state of food trace back
2. Q1, 2023 Interim Report on Progress of Smarter Food Supply Chain
3. Q1, 2024 Report out of Smarter Food Supply Chain and recommendations for next steps

B. Brand Power & Consumer Demand

Direct digital interactivity between the consumer and the product is becoming a key means of encouraging brand loyalty and re-purchasing. In 2018, 75% of consumers would be willing to switch brands if another offered them more in-depth product information beyond the label, up

from 39% in 2016 as reported by FMI and Label Insights report, "Transparency Imperative". Similarly, consumers are increasingly demanding information about sustainability. More than ever, consumers are willing to engage with businesses that invest in food safety technology. Meeting this demand for ingredients and process transparency requires information to be collected, stored and shared throughout each step of the supply chain. Enhanced data carriers, such as RFID and 2D barcodes, can identify a specific product throughout the supply chain. One data carrier may not be sufficient in meeting the needs throughout the supply chain. For instance, when receiving product or taking inventory, RFID may enable labor reductions. But when selecting an ingredient for a transformation event in a small foodservice, a direct line of sight data carrier may be better suited. If the data carriers on pack contained the same data elements, they could be used interchangeably throughout the supply chain.

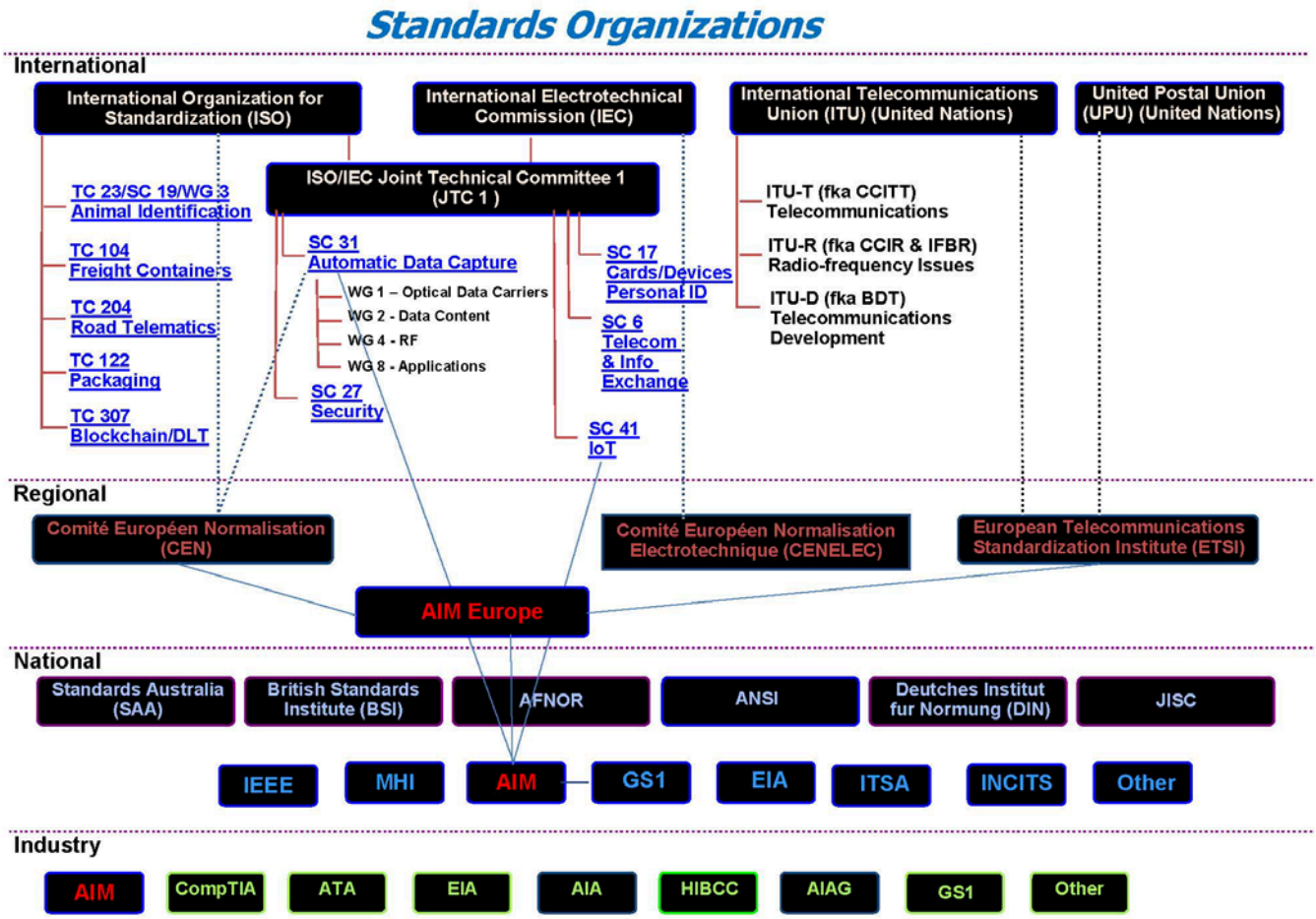
Traceability should not require customized solutions. If the same solution can satisfy regulatory requirements and enable businesses to connect with consumers, there is likely to be less resistance to adopting compliance measures. Additionally, investing in technology-driven traceability helps to create a food safety culture of trust and transparency.

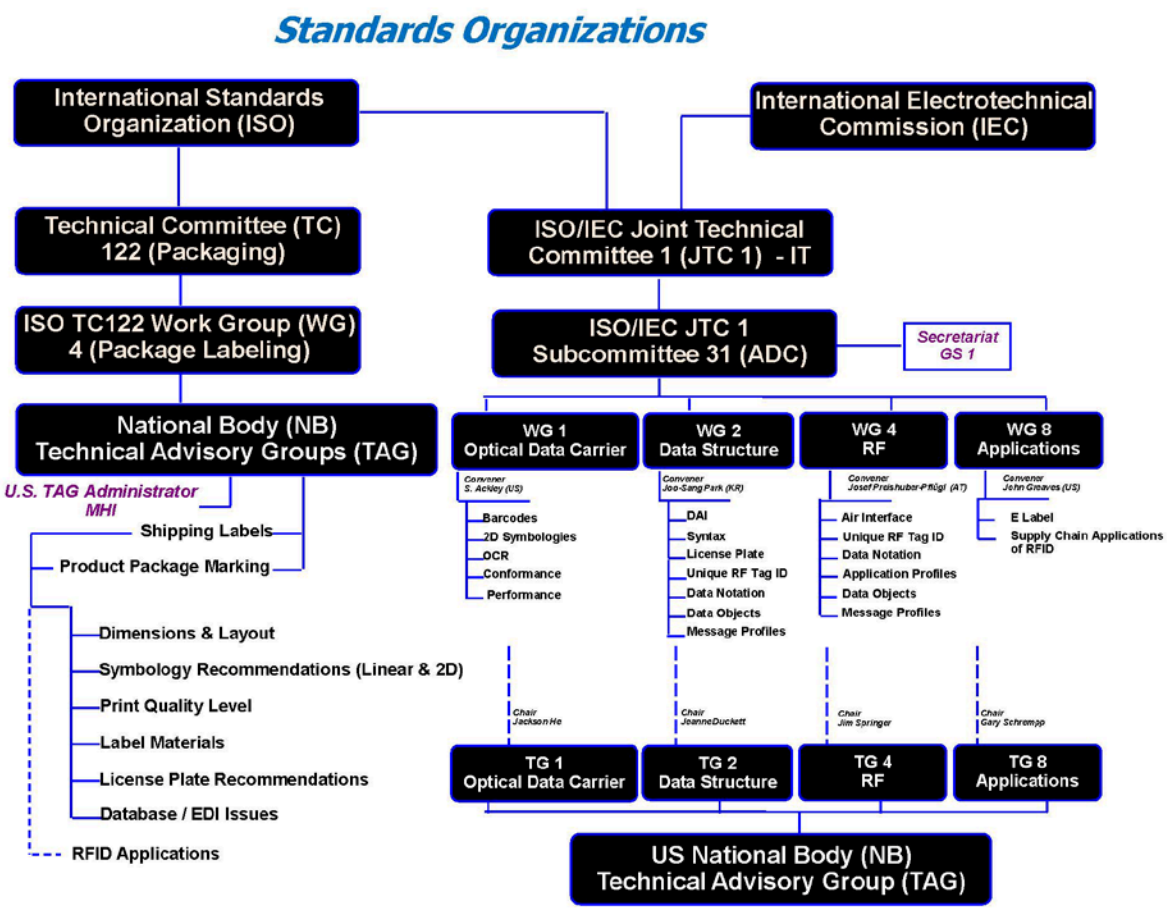
CONCLUSION

The General Principles for Food Standards Modernization must focus on the adoption of technology to bring automation, integrity and data management solutions to supply chain traceability. The role of government is to establish minimum standards that will facilitate the use of technology allowing them to work seamlessly.

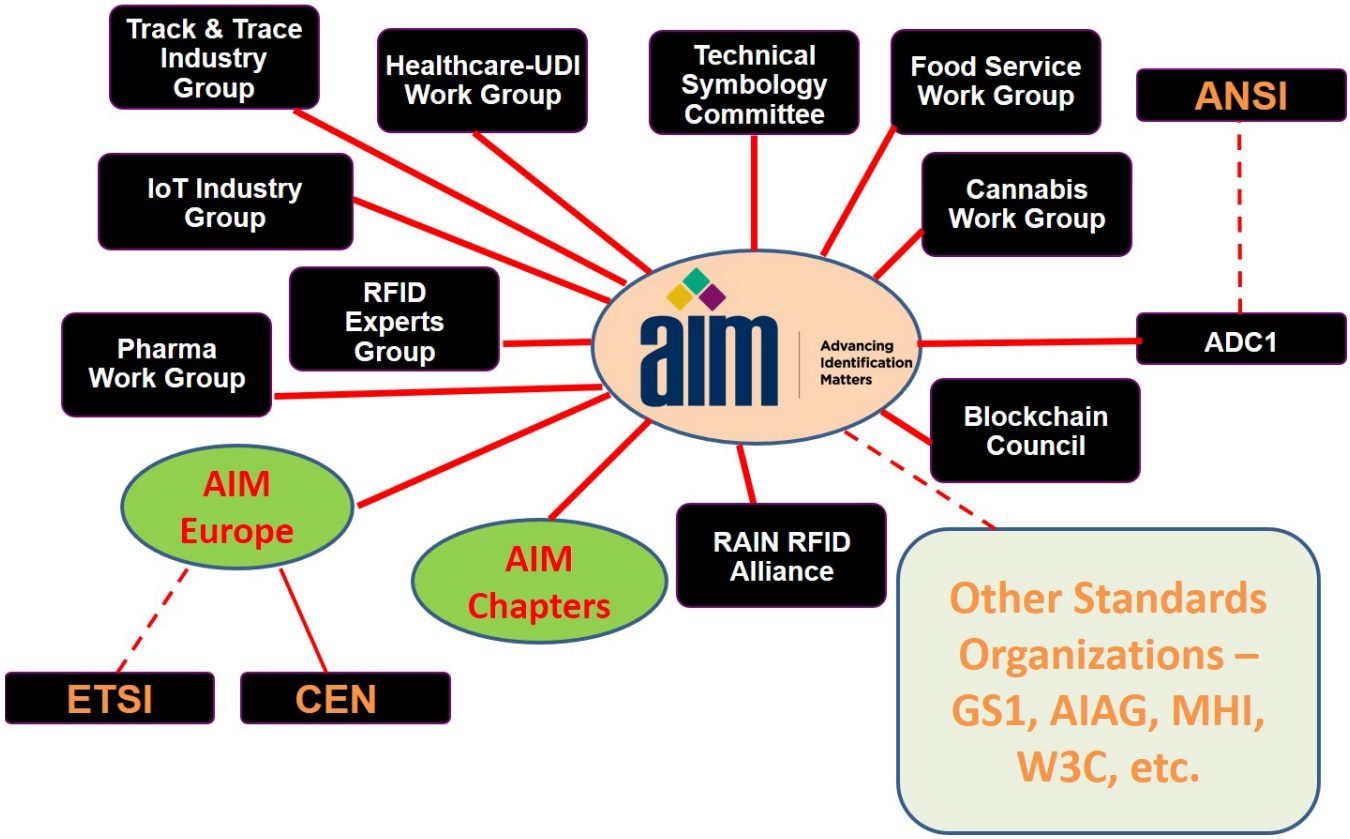
AIM North America thanks the FDA for this very useful effort, and for its consideration of our comments. If we can provide additional information or answer any questions, please do not hesitate to contact the undersigned.

APPENDIX A

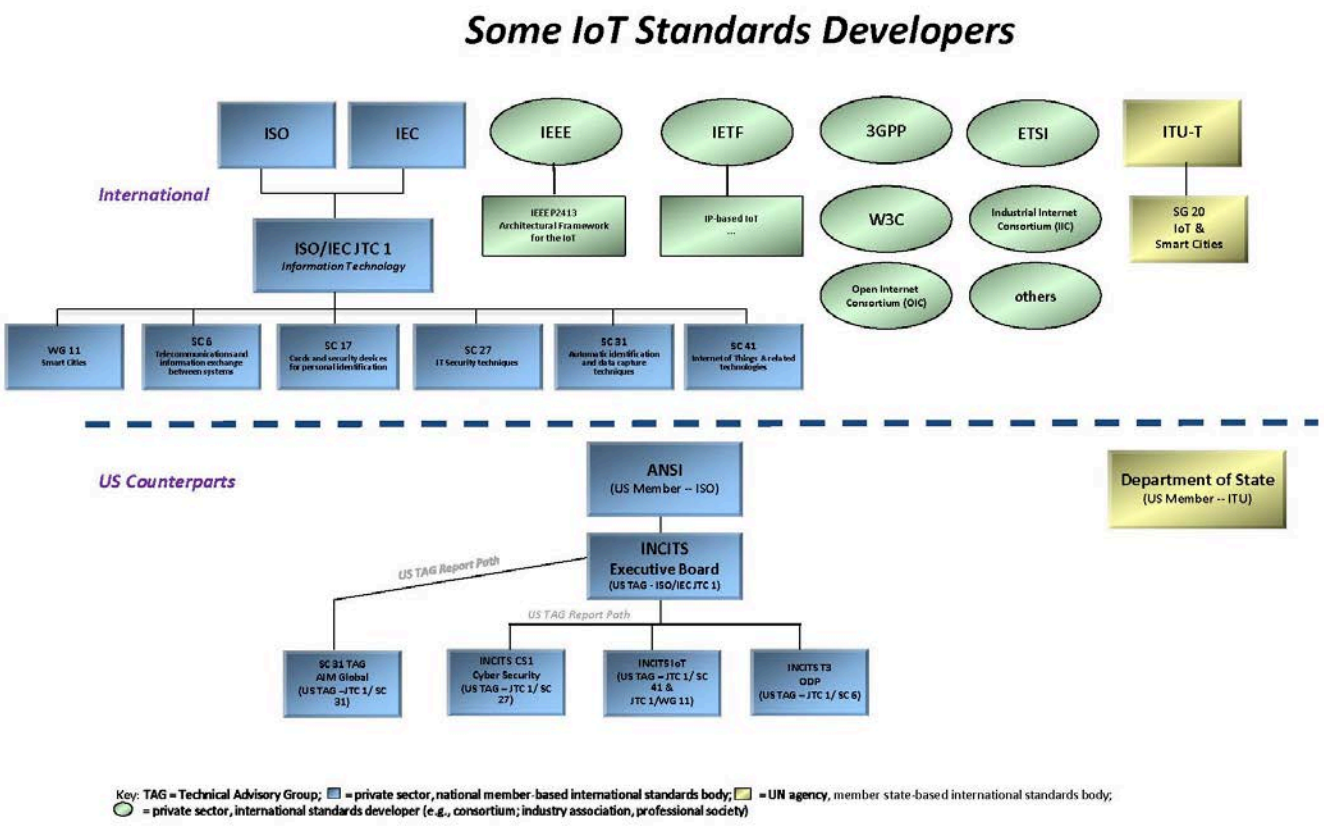

Standards Organizations
International
International Organization for Standardization (ISO)
International Electrotechnical Commission (IEC)
International Telecommunications Union (ITU) (United Nations)
United Postal Union (UPU) (United Nations)
TC 23/SC 19/WG 3 Animal Identification
TC 104 Freight Containers
TC 204 Road Telematics
TC 122 Packaging
TC 307 Blockchain/DLT
ISO/IEC Joint Technical Committee 1 (JTC 1)
SC 31 Automatic Data Capture
WG 1 – Optical Data Carriers
WG 2 - Data Content
WG 4 - RF
WG 8 - Applications
SC 27 Security
SC 17 Cards/Devices Personal ID
SC 6 Telecom & Info Exchange
SC 41 IoT
ITU-T (fka CCITT) Telecommunications
ITU-R (fka CCIR & IFBR) Radio-frequency Issues
ITU-D (fka BDT) Telecommunications Development
Regional
Comité Européen Normalisation (CEN)
Comité Européen Normalisation Electrotechnique (CENELEC)
European Telecommunications Standardization Institute (ETSI)
AIM Europe
National
Standards Australia (SAA)
British Standards Institute (BSI)
AFNOR
ANSI
Deutches Institut fur Normung (DIN)
JISC
IEEE
MHI
AIM
GS1
EIA
ITSA
INCITS
Other
Industry
AIM
CompTIA
ATA
EIA
AIA
HIBCC
AIAG
GS1
Other


Standards Organizations
International Standards Organization (ISO)
International Electrotechnical Commission (IEC)
Technical Committee (TC) 122 (Packaging)
ISO/IEC Joint Technical Committee 1 (JTC 1) - IT
ISO TC122 Work Group (WG) 4 (Package Labeling)
ISO/IEC JTC 1 Subcommittee 31 (ADC)
Secretariat GS 1
National Body (NB) Technical Advisory Groups (TAG)
WG 1 Optical Data Carrier
WG 2 Data Structure
WG 4 RF
WG 8 Applications
U.S. TAG Administrator MHI
Shipping Labels
Product Package Marking
Dimensions & Layout
Symbology Recommendations (Linear & 2D)
Print Quality Level
Label Materials
License Plate Recommendations
Database / EDI Issues
RFID Applications
Barcodes
2D Symbologies
OCR
Conformance
Performance
DAI
Syntax
License Plate
Unique RF Tag ID
Data Notation
Data Objects
Message Profiles
Air Interface
Unique RF Tag ID
Data Notation
Application Profiles
Data Objects
Message Profiles
E Label
Supply Chain Applications of RFID
TG 1 Optical Data Carrier
TG 2 Data Structure
TG 4 RF
TG 8 Applications
US National Body (NB) Technical Advisory Group (TAG)

AIM Relationships



Some Key IoT Standards Developers



Key: **TAG = Technical Advisory Group;** **= private sector, national member-based international standards body;** **= UN agency,** member state-based international standards body;
= private sector, international standards developer (e.g., consortium; industry association, professional society)

APPENDIX B

AIM Contributed ISO Standards

AIM Ultracode International Symbology Standard

AIM 7351731 Medical Electrical Equipment & Sys Electro Immunity Test for RFID Readers

AIM ISS DotCode Symbology Specification

Global Numeric Code Issuing Agencies in accordance with ISO 15459
https://www.aimglobal.org/uploads/1/2/4/5/124501539/register-iac-def_2019.pdf

ISO/IEC 15459-1:2014 Information Technology - Automatic Identification and Data Capture Techniques - Unique Identification - Part 1: Individual Transport Units

ISO/IEC 15459-2:2015 INFORMATION TECHNOLOGY — AUTOMATIC IDENTIFICATION AND DATA CAPTURE TECHNIQUES — UNIQUE IDENTIFICATION — PART 2: REGISTRATION PROCEDURES

ISO/IEC 15459-3:2014 Information technology — Automatic identification and data capture techniques — Unique identification — Part 3: Common rules

ISO/IEC 15459-4:2014 Information Technology - Automatic Identification and Data Capture Techniques - Unique Identification - Part 4: Individual Products and Product Packages

ISO/IEC 15459-5:2014 Information technology — Automatic identification and data capture techniques — Unique identification — Part 5: Individual returnable transport items (RTIs)

ISO/IEC 15459-6:2014 Information technology — Automatic identification and data capture techniques — Unique identification — Part 6: Groupings

ISO/IEC 15459-8:2009 Information technology — unique identifiers — Part 8: Grouping of transport units

ISO/IEC TR 21000-11 Information technology — Multimedia framework (MPEG-21) — Part 11: Evaluation Tools for Persistent Association Technologies

GS1/ ISO Standards list

ISO Standard	GS1 Component
ISO/IEC 15459-6	GTIN (Global Trade Item Number
ISO/IEC 15459-4	SGTIN (Serialized Global Trade Item Number
ISO/IEC 6523	GLN (Global Location Number
ISO/IEC 15459-1	SSCC (Serial Shipping Container Code
ISO/IEC 15459-4 & 5	GIAI (Global Individual Asset Identifier
ISO/IEC 15459-5	GRAI (Global Returnable Asset Identifier
ISO/IEC 15418	GSRN (Global Service Relationship Number
ISO/IEC 15418	GDTI (Global Document Type Identifier
ISO/IEC 15418	GINC (Global Identification Number for Consignments
ISO/IEC 15459-6	GSIN (Global Shipment Identification Number
ISO/IEC 15418	GCN (Global Coupon Number
ISO/IEC 15418	CPID (Component / Part Identifier
ISO/IEC 15418	Application Identifiers
ISO 22274	Global Product Classification (GPC
IETF RFC 3986	EPC URI Syntax
ISO 9735	EANCOM syntax
UN/CEFACT UNSMs	EANCOM content
W3C XML	GS1 XML syntax
W3C XML	GS1 XML content
ISO/IEC 15424	Symbology identifiers
ISO/IEC 15420	EAN/UPC
ISO/IEC 16390	ITF-14
ISO/IEC 15417	GS1-128
ISO/IEC 24724	GS1 DataBar
ISO/IEC 16022	GS1 DataMatrix
ISO/IEC 24723	GS1 Composite
ISO/IEC 18004	GS1 QR Code
ISO/IEC 18000-63	UHF Class 1 Gen 2 /IEC 18000-63
ISO/IEC 18000-3	HF Class 1 Gen 2
ISO/IEC 15962	EPC Tag Data Standard
ISO/ICE 24791-5	Low-level Reader Protocol (LLRP)
ISO/IEC 24791-2	Application Level Events (ALE)
ISO/IEC 24791-3	Reader Management (RM)
ISO/IEC 24791-3	Discovery, Configuration, and Initialization (DCI)
ISO/IEC 19987	EPC Information Services
ISO/IEC 19988	GS1 Core Business Vocabulary (CBV)

Food Supply Chain Management

REPORT TO CONGRESS ON ENHANCING TRACKING AND TRACING OF GOOF AND RECORDKEEPING SUBMITTED PURSUANT TO SECTION 204 OF THE FDA FOOD SAFETY MODERNIZATION ACT, PUBLIC LAW 111-353 SUBMITTED BY US DEPARTMNET OF HEALTH AND HUMAN SERVICES FOOD AND DRUG ADMINSTRATION NOV 11, 2016
FOOD SAFETY CULTURE CREATING A BEHAVIOR BASED FOOD SAFETY MANAGEMENT SYSTEM
FOOD TRACEABILITY FROM BINDERS TO BLOCKCHAIN EDITED BY DR JENNIFER MCENTIRE AND ANDREW KENNEDY
COMPARING GLOBAL FOOD SAFETY INITIATIVES (GFSI) RECOGNIZED STANDARDS
ROMAINE TASK FORCE FINAL REPORT AND RECOMMENDATIONS, SEPTEMBER 2019
PRODUCE TRACEABILITY INITIATIVE GUIDANCE FOR SHARING TRACE-BACK DATA STANDARDS
PROCEEDINGS GLOBAL SEAFOOD DIALOG WORKGROUP 1 ALIGNMENT OF KEY DATA ELEMENTS, AND WORGROUP 2 DATA SHARING: TECHNOLOGY ARCHITURE + PROTOCOL (AVERY DENNISON SITS ON THE BOARD FOR GLOBAL SEAFOOD DIALOGUE)
THE TRANSPARENCY IMPERATIVE- PRODUCT LABELING FROM THE CONSUMER PRESPECTIVE
NATIONAL ACADEMIES OF SCIENCE, ENGINEERING, MEDICINE: STANDARDS, CONFORMITY ASSESSMENT, AND TRADE
STANDARDS I HAVE REVIEWED (I HAVE COPIES OF ALL OF THESE DOCUMENTS)
ISO 22000:2018 FOOD SAFETY MANAGEMENT SYSTEMS — REQUIREMENTS FOR ANY ORGANIZATION IN THE FOOD CHAIN
ISO 22005”2007 TRACEABILITY IN THE FEED AND FOOD CHAIN — GENERAL PRINCIPLES AND BASIC REQUIREMENTS FOR SYSTEM DESIGN AND IMPLEMENTATION
ISO 9001 QUALITY MANAGEMENT SYSTEMS — REQUIREMENTS
CODEX CAC/GL 60-2006 - PRINCIPLES FOR TRACEABILITY/PRODUCT TRACING AS A TOOL WITHIN A FOOD INSPECTION AND CERTIFICATION SYSTEM
USDA HARMONIZED GOOD AGRICULTURAL PRACTICES (GAP) REQUIREMENTS FOR TRACEABILITY
GLOBAL FOOD SAFETY INIAITIVE (GFSI) APPROVED SCHEMES INCLUDING BRC, CANDAGAP, PRIMUSGFS, SQF
FOUNDATION FOOD SAFETY SYSTEM CERTIFICATION 22000 (FSSC 22000)