Standards for traceability, food safety and sustainable agricultural supply chains

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“Implementing a traceability system does not, in itself, ensure food safety; it does allow a more rapid and efficient response to food safety problems, enabling quick identification of problem sources and their location in the supply chain”*

“Food traceability systems are ... becoming critical for the food industry and the public sector, as well as for consumers”

“It is expected that traceability systems will be increasingly adopted in food exporting countries as a strategy to improve competitiveness in the global food market”

“In order to establish a secure food chain traceability system, it is necessary to ensure consistent standards not only within individual organizations, but also between food business operators along the supply chain”

Internal & External Traceability
Traceability within individual organizations vs. traceability between organizations

Note: A traceability partner can be a grower, packer/repacker, distributor/trader, retail store or foodservice operator.
The Food Safety and the Traceability Challenge
Food Safety Incidents

It is not looking good

• Each year 600 million, or almost one in 10 people fall ill after consuming contaminated food. Of these 420,000 people die, including 125,000 children under five years, according to WHO

• WHO Southeast – Asia region has the second highest burden of foodborne disease, with more than 150 million cases and 175,000 deaths a year
The problem: What do stakeholders want?

1. **TRUST**
   - Contaminations, recalls and counterfeits change consumer perceptions and purchasing behaviours
   - Want safe, genuine products and trust information on products they buy

2. **RELIABILITY**
   - Industry needs to track, trace and authenticate their products/components from their origin
   - Want to make sure products they supply to consumers are safe

3. **COMPLIANCE**
   - Ensure safe environment for citizens through new regulatory requirements
   - Products sold to consumers must be safe
The Context of Today’s Food Supply Chain

Trends related to the food supply chain:

• **Stricter Food Safety requirements** with a number of incidents leading to more stringent requirements from customers & government

• **Food Trade Facilitation** with increasingly internationalized food supply chains and regional work towards more liberal trade environment

• **Data – Enabled Technologies** more accessible and affordable, driving change in how the food system operates, connecting supply chain partners and consumers in new ways
The Traceability Challenge
The Traceability Challenge
One up – one down
Universally recognized barcodes are found on virtually every consumer product in the world.

The barcode and the encoded Product Identification number provides a unique, international and non ambiguous identification.

The GS1 product identification code is used for around 6 billion transactions per day.
The method of identifying the units of goods traded is based on the EAN.UCC system that is already in use throughout the world. The information is keyed to unique IDs given to the individual trade units (e.g. boxes of fish or cases of products) but the scheme also accommodates trade in logistic units made up of numbers of trade units (e.g. pallets of boxes or cases). Businesses that create logistic units have to label them with a logistic unit ID and also record the IDs of the component trade units.

International Standard ISO/IEC 15459-2

2. Register ordered by Issuing Agency Code

| 0 thru 9 | GS1 Global Office | GS1 AISBL  
| Blue Tower  
| Avenue Louise 328, bte 10  
| BE 1050 Brussels  
| Belgium |
| D | NATO AC/135  
| NAMSA, LZ-C  
| 11 Rue de La Gare  
| L-8302 CAPELLEN  
| G.D. LUXEMBOURG |
| J | Universal Postal Union | Universal Postal Union  
| Case Postale  
| 3000 BERNE 15  
| SWITZERLAND |
UN/CEFACT - GS1 Cooperation

UN/CEFACT*
Traceability Standards

Based on ISO/IEC 19987 which itself is based on the GS1 Electronic Product Code Information Service (EPCIS) standard.

*Within the United Nations the United Nations Centre for Trade Facilitation and electronic Business (UN/CEFACT) is the focal point for the development of trade facilitation recommendations and standards for electronic business. UNECE develops policy recommendations, standards, guidelines.
What Underpins Full Chain Traceability?

At the core is the ability to know:
- Where an object is and where it is headed
- Where the object was and what happened to it

Meaning the ability to track and trace items, ingredients, products in the supply chain and its location, transformation and custodians.
The GS1 Global Traceability Standard defines a minimum set of traceability requirements within supply chain processes and is independent of any technology.

This standard allows an end-to-end traceability system, linking the flow of information to physical products.
Hierarchy levels of traceable items
Traceability using product identification & batch/lot

For solid products (fruits) with different business processes (repacking and commingling), traceability is fairly straight-forward.

Business example of repacking

Hometown Farms
250 cases 88 count Green Apples
GTIN 10245894332241
Batch/Lot 220524X23

Precision Packing creates 300 cases of 5lb bags of Green Apples under Work Order WO112233

Sam’s Independent Grocer
50 cases of 5 lb. bags Green Apples
GTIN 1033998740006
Batch/Lot WO112233

Really Big Retail
250 cases of 5 lb. bags of Green Apples
GTIN 10339987400006
Batch/Lot WO112233

(Source: PTI Official Webinar, 2012)

GS1 standards: A standardised way to incorporate all required information

• The GS1 Label provides a standard way to incorporate all required information about a pallet or other logistics units.

• Each party handling the logistic unit will know in advance what it is and will be able to scan the bar coded label to confirm its arrival.

• Information encoded in bar codes can include:
  - Item number
  - Unique identification for standard and mixed pallets
  - Lot / batch number
  - Expiry date

Additional information can be added: GLN, class/size of product.
Global Location Number-location types

As a general rule a separate Location Number is required whenever organisations need to be able to distinguish between one location and another. A Location Number may be used to identify a legal entity, a physical location, a function or a digital location.

The identification of physical locations and parties (i.e. senders and receivers) involve throughout the supply chain enables an efficient flow of goods and information.
How we work with industry for consumer trust and transparency in food supply chains

FOOD SAFETY

- Process & system management
- Regulations
- Food safety culture
- Food fraud management
- Hygiene
- Risk management
- Cold chain

TRACEABILITY: A FOUNDATION FOR FOOD SAFETY

- Identification of products
- Identification of actors and locations
- Data records & sharing
- Procedures & systems

Food Industry

- Food safety scheme assurance & harmonization
- Capacity building leadership
- Government partnership

Joining forces to improve food safety, transparency & consumer trust

- Global data standards
- Local implementation support
- Collaboration

The more we improve traceability, the more we improve food safety!
GS1 Standards Help Meet the Requirements - Providing interoperability in a complex environment

**WHAT**

- European Commission
- FDA
- GFSi
- ISO
- The Consumer Goods Forum
- BRC
- Global G.A.P.
- Food Safety System Certification 22000

**HOW**

- GS1 Global Traceability Program
- Interoperability Enabling Automation
- Full Chain Traceability

**WHY**

CONSUMER SAFETY & TRUST

The Global Language of Business

© GS1 [Country] 2015
Introduction the standards for e-traceability for sustainable agricultural supply
This work is being done in the context of the SDG

Focus on SDG 2, 8 and 12
Help working towards a global solution

What is the solution?

- A neutral **global platform**, which:
  - Gives previously invisible farmers and agribusinesses of any size a **visible online presence**
  - Encourages them to enhance their **sustainability practices**
  - Connects them to the **global buyers** who prioritize **sustainable sourcing**
  - Allows them to assess compliance with national and international **voluntary standards** as well as a way to **improve performance**

Source: ITC
The vital information at the core of the initiative – location number

- A unique ID the **GLN** issued by GS1, identifies a farm or SME in any part of a food and agriculture value chain.

- The number is attached to a profile containing **key information** on the individual farmer or agribusiness.

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**This is Public**
(Mandatory)
1. Name
2. Gender
3. Product (with GPC Code)
4. Location
5. Contact

**This is Private**

- Photos
- Videos
- GAP Certificates
- ISO Certificates
- My national certifications
- My business partners
- My company registrations
- My no. of employees
- My annual turnover
- My land titles
- My health and safety permits
- My best practice

Share?

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Source: ITC
To sum it up

It is:

• A unique numerical agricultural business identifier
• Reporting and evidencing responsible behavior and or compliance with good sand sustainable agricultural practice
• Getting visibility via a UN platform
• Enabling connectivity to existing GLNs already issued by GS1
Examples of global collaboration by GS1

APEC GDS Pilot (Peru-US)
## APEC Global Data Standards Pilot – Overview

<table>
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<th>No.</th>
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<th>Product</th>
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<th>Transportation</th>
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<td>1</td>
<td>Hong Kong</td>
<td>Wine</td>
<td>Australia to HK</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>Boxed Beef</td>
<td>Australia to US</td>
<td>By Sea</td>
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<td>2016</td>
<td>3</td>
<td>Malaysia</td>
<td>Durian (Fresh/Frozen)</td>
<td>Malaysia to HK &amp; China</td>
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<tr>
<td>4</td>
<td>Peru</td>
<td>Asparagus</td>
<td>Peru to US</td>
<td>By Air</td>
</tr>
<tr>
<td>5</td>
<td>Mexico</td>
<td>Tequila</td>
<td>Mexico to US</td>
<td>By Land</td>
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<tr>
<td>2017</td>
<td>6</td>
<td>ABAC/LSIF</td>
<td>Pharma</td>
<td>TBC</td>
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</table>
APEC Pilots Projects 2016
Expected Results

“enhance supply chain visibility as related to traceability and expedited product admission while coping with existing customs clearance system and future single window”
Peru-US Asparagus pilot being implemented right now

Peru is the world’s leading asparagus exporter

Peru is the largest supplier to USA (main fresh green asparagus market)

GS1 is working with BETA, the leading Peruvian exporter to improve their processes, targeting efficiency gains and visibility improvements in the supply chain.
KPIs measured during the pilot

- Increase supply chain visibility to 100%
- Reduce 10% in information searching time & cost
- Avoid 10% loss by temperature (cold chain) monitoring
- Reduce 20% response time in Acceptance/Reception of pallet, Truck attention and reduce 10% response time in Pallet assembly

- Next step working with Peru FDA on ways to share regulatory information of the exported products with importing authorities for easier market access
Malaysia Durian Pilot Project

• Export of frozen packed durian fruits and its products have been completed for the trade route Malaysia – China. Initiative driven by Malaysian Durian Exporter Association (MDEA), supported by Malaysian Ministry of Trade and Industry.

• Nine processing plants certified by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) for export of packed Musang King Durian fruit to China.

• The focus is to explore, how better visibility and risk management processes in the international supply chain can improve Malaysian exports to China and Hong Kong.

• Currently discussing with Malaysian Government how to better capture and share the regulatory information required to enhance supply chains and market access to China.
  ➢ Department of Agriculture (DoA)
  ➢ Federal Agricultural Marketing Authority (FAMA)
  ➢ Malaysian Quarantine & Inspection Services (MAQIS)
A key outcome was the Ministerial declaration which recognizes the progress of private sector led pilot projects and highlights the value of Global Data Standards for food trade.

**Article 18.**

*We welcome economies’ efforts to streamlining customs and other procedures to disseminate timely and accurate information on food export and import requirements to facilitate expanding food trade and food security in the region and we encourage economies to continue this effort. We welcome progress in a number of pilot projects focused on the use of global data standards to enhance supply chain connectivity, integrity and security and to reduce the costs of food trade.*
Conclusion
Improved Food Safety and Sustainable Supply Chains Requires

- Realization that Food Supply Chains are International
- Cooperation between Governments
- Technology Applied as an Enabler
What is needed to address the supply chain e-traceability challenge?

For improved sustainability and traceability along the entire supply chain it is vital that all parties have a common globally unique object and location identification and ways to capture and share data...

based on open, interoperable global standards that facilitate widespread cost effective deployment, building on a foundation of:

**Unique identification:** Global product identification number and global location identification number & Lot/batch number or serial number (unique number at the unit level)

**Data capture:** Barcodes or radio frequency identification (RFID)

**Links management:** Managing identification from the farm/point-of-manufacture to the point-of-sale/point-of-care/end of supply chain

**Data communication**” Associate the physical flow of products with the information flow