A New Paradigm for Food Traceability

World Seafood Congress
September 30, 2013
What is IFT?

IFT is dedicated to working together to advance the science of food, with the ultimate goal of ensuring a safe and abundant food supply, contributing to healthier people everywhere.
Vision

To become the global resource and authoritative voice on food traceability.

Mission

To serve the agriculture and food sectors, by providing applied research, objective advice, and practical expertise about data collaboration and food traceability for business benefit and public good.
Our approach will be to engage stakeholders in the development of solutions, as well as in their delivery.
What’s Driving Traceability?

- Highly visible cases of foodborne illnesses and food adulteration: Governments seeking to manage impact
- Increasing consumer emphasis on transparency in a complex, globalized food system
- Retailers requiring assurance of performance (quality, safety, sustainability, etc.)
- Food businesses looking to capture markets and customers
- Need to reduce waste in the food system from all sources

➤ These “stressors” will only continue – The issue is not going away
Impact on Consumers & Businesses

- Economic loss from negative impact of recalls and food waste
- Rising distrust of the food supply – Fragile consumer confidence
- Proof of food product claims required more often
- Increased demand for regulations and guidelines
- Increased business costs to comply with regulations
Financial payback is the long term driver of traceability

“Traceability is Free”

Industry Competitiveness

Whole-chain Productivity

Compliance

Quality

Safety

Applications beyond Traceability

Value Chain (System) Traceability

Limited (one-up/one-down) Traceability

Internal (Enterprise-wide) Traceability

Internal (Business Unit) Traceability
Current Challenges

- Tracking and tracing requires relevant, reliable and readily available information . . .

- Easy to say – hard to do
  - Chain of activities between harvesting & sales channel is complicated
  - Lack of a common terminology
  - Various systems, repositories, databases are all serving commercial or regulatory needs

- Result: Proliferation of systems and broadly distributed information that lack consistency and reliability

“The systems don’t talk to each other!”
The Solution?

- A set of interoperable protocols – i.e. uniform tools for gathering, storing, and sharing data, which
  - sits on top of, and complements, existing business systems
  - provides cross referencing to various existing databases
  - is capable of being rapidly deployed – Weeks not months
  - delivers a seamless user experience – any authorized user
Concept: What would it look like?

- Business to Business: Not a consumer-focused system
- Agnostic: Interoperability is critical – Not dependent on one technology or tech supplier
- Distributed (not a centralized database) – Permitted to access data that is already part of decentralized business systems
- Harmonized with other systems that may be launched in international markets
- Protect sensitive data: Tool for authorized users only
- Integrate the user experience, not the technical plumbing
Business Characteristics

- Flexible: Allowing smaller companies/ harvesters to more easily participate
- Low investment cost: Quick to implement with a minimum of commercial disruption
- Low operating cost: Effective use of existing resources & business practices
- Accessible: Web-based and mobile
- Scalable: Across any stakeholder sector & adaptable to mandatory compliance if required
Relevant Example

- Pre-1982: Banks pursued their own systems for ATM’s
- 1982: Major players decided to collaborate and build international system leveraging each network
- No requirement for ‘sameness’ – A few simple standards to which all would adhere and support
- Result? Billions of annual global transactions that are seamless to the user
Toward a Seafood Solution: Step 1  
Access **Existing** Seafood Data

<table>
<thead>
<tr>
<th>Transactional Data</th>
<th>Suppliers</th>
<th>Fishers/Farms</th>
<th>Processors</th>
<th>Distributors</th>
<th>Retailers / FS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Tracking Events</td>
<td>Initial order receipt</td>
<td>Confirmation</td>
<td>Fish preparation</td>
<td>Product pickup</td>
<td>Product shipment</td>
</tr>
<tr>
<td></td>
<td>Product receipt</td>
<td>Production start</td>
<td>Production complete</td>
<td>Packaging &amp; labeling</td>
<td>Disposal – Waste</td>
</tr>
<tr>
<td></td>
<td>Order receipt</td>
<td>Product pickup</td>
<td>Product delivery</td>
<td>Loss – Waste</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shipper ID</td>
<td>BOL #</td>
<td>Source Plant #</td>
<td>Finished Lot #</td>
<td>Product Code</td>
</tr>
<tr>
<td></td>
<td>Destination ID #</td>
<td>Product Descript.</td>
<td>Retailer POS Code</td>
<td>Bar Code</td>
<td>Weight</td>
</tr>
</tbody>
</table>
Concept: Step 2 – “Virtual Lock Box” to Enable Cross-Referencing Various Systems

Key Data Elements
- Catch location/Site #
- Catch Lot # - BOL #
- Catch Order #
- Fisher Product Code
- Customer PO#
- Weight
- No. of containers
- PO # - BOL #
- Production #
- Plant-Site #
- Product Code
- Weight
- Finished Lot #
- No. of containers
- Shipper ID
- BOL #
- Source Plant #
- Finished Lot #
- Product Code
- Product Descript.
- Weight
- Selling price
- Destination ID #
- Product Descript.
- Retailer POS Code
- Bar Code
- Weight
- Selling price

Critical Tracking Events
- Initial order receipt
- Email confirmation
- Fish preparation
- Product pickup
- Product shipment
- Disposal – Waste
- Product receipt
- Production start
- Production complete
- Packaging & labeling
- Disposal – Waste
- Order receipt
- Product pickup
- Product delivery
- Loss – Waste
- Product receipt
- Package opened
- Repackage & label
- Sale
- Disposal – Waste

Standard Protocols & Security

“Virtual Lock Box” – Seafood Industry Solution

Suppliers
Fishers/Farms
Processors
Distributors
Retailers
Food Service
Overall Concept for Seafood Traceability

Agriculture & Food Traceability System

Integrated User Experience

Business & Industry Applications
- Premises Registries
- Product Registries
- Participant Registries
- Terminology Registry
- Context Registries

Movement Tracking

“Virtual Lock Box” – Seafood Industry Solution

Suppliers
Fishers/Farms
Processors
Distributors
Retailers Food Service

Standard Protocols & Security

Organizations with traceability systems meeting NAFTS requirements

* Represents components of the solution
Five Lessons Learned

1. The ‘cost of traceability’ is too high → Traceability is free – it reduces other costs
2. Traceability means increased liability → Traceability reduces risk exposure & liability
3. Traceability means lost confidentiality → Traceability means increased transparency
4. Traceability is useful for regulatory recalls → Traceability is a tool to increase margins
5. Traceability is in the domain of IT → Traceability is a business responsibility
Summary

- Traceability is about more than recalls or animal health.

- Lowers costs, improves value chain efficiencies and strengthens brand equity.

- Traceability has more to do with changing perceptions than gathering, storing and sharing data.

“Traceability is Free”
Thank you

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# Pillars of Traceability

Typical KDE Requirements

<table>
<thead>
<tr>
<th>Premises ID</th>
<th>Product ID</th>
<th>Movement Tracking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMPLIANCE TRACEABILITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergencies, Recalls, and Animal/Plant Welfare</td>
<td>Unique Premises ID</td>
<td>Place of Origin</td>
</tr>
<tr>
<td></td>
<td>Premises Owner</td>
<td>Point of Receipt</td>
</tr>
<tr>
<td></td>
<td>Primary Contact</td>
<td>Quantity</td>
</tr>
<tr>
<td></td>
<td>Premise Type</td>
<td>Unit of Measure</td>
</tr>
<tr>
<td></td>
<td>Commodities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Date/Time of Update</td>
<td></td>
</tr>
<tr>
<td><strong>VALUE TRACEABILITY</strong></td>
<td>Owner</td>
<td></td>
</tr>
<tr>
<td>Competitiveness, Brand Equity, Risk Mitigation and Value Chain Productivity</td>
<td>Animal ID Number</td>
<td>Lot / Batch control</td>
</tr>
<tr>
<td></td>
<td>Lot/Batch ID</td>
<td>Cold chain performance</td>
</tr>
<tr>
<td></td>
<td>Place of origin</td>
<td>Real time location</td>
</tr>
<tr>
<td></td>
<td>Date of Birth/Origin</td>
<td>Co-mingling restrictions</td>
</tr>
<tr>
<td></td>
<td>Unit of Measure</td>
<td>Container tracking</td>
</tr>
</tbody>
</table>

**Provincial**

**Industry**

**Federal**
## Selected History of Traceability

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700 BC</td>
<td>Mesopotamia shepherds mark animals</td>
</tr>
<tr>
<td>350 BC</td>
<td>Alexander the Great’s horse</td>
</tr>
<tr>
<td>7th century</td>
<td>China tattoos breed horses</td>
</tr>
<tr>
<td>1275</td>
<td>First documentation of diseased ewe (France)</td>
</tr>
<tr>
<td>1348</td>
<td>Link of animal welfare to human health</td>
</tr>
<tr>
<td>1556</td>
<td>Naples/Venice hire inspectors</td>
</tr>
<tr>
<td>17th century</td>
<td>Persian royal stables marks horses</td>
</tr>
<tr>
<td>1711</td>
<td>200M head of cattle perish in Europe</td>
</tr>
<tr>
<td>1714</td>
<td>France outlaws uninspected meat</td>
</tr>
<tr>
<td>1740–90</td>
<td>Various decrees to protect health (UK)</td>
</tr>
<tr>
<td>1862</td>
<td>USDA formed</td>
</tr>
<tr>
<td>1875</td>
<td>Marking of live animals with tags</td>
</tr>
<tr>
<td>1904</td>
<td>Typhoid Mary Mallon (USA)</td>
</tr>
<tr>
<td>1960</td>
<td>HACCP developed with NASA</td>
</tr>
<tr>
<td>1999</td>
<td>Dioxin in animal feed (Belgium)</td>
</tr>
<tr>
<td>2002</td>
<td>General Food Law adopted in Europe</td>
</tr>
<tr>
<td>2003</td>
<td>BSE identified in Canadian beef herd</td>
</tr>
<tr>
<td>2005</td>
<td>Sudan1 colorant contamination (UK)</td>
</tr>
<tr>
<td>2009</td>
<td>Peanut Corporation of America</td>
</tr>
<tr>
<td>2012</td>
<td>FSMA &amp; SFCA both passed into law</td>
</tr>
</tbody>
</table>
Traceability can achieve a broad range of benefits . . .

**Improved Public Safety**
- Food quality & safety - Nutrition
- Food fraud
- Animal / Plant disease management
- Bio-threats & terrorism
- Consumer confidence

**Increased Competitiveness**
- Productivity on the farm, through processing, to final point of sale
- Innovation - new technology & business processes to deliver competitive advantage
- Brand equity and image management

**International Trade – Market Access**
- Secure and increase access to key markets and customers
- Sectors dependent on trade and new markets - Diversification
- Consumer expectations and regulatory requirements

**Risk Mitigation & Lower Costs**
- Reduce cost of quarantine/recall
- Absolve unaffected businesses
- Accurately track product movement to isolate and quickly resolve issues
- Mitigate waste costs

Traceability as an essential component of long term industry & business vitality

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Market Access Benefits

- Focuses on revenue growth and margin improvement

- Different markets demand different product attributes
  - Organic products/ Locally grown/ Sustainable/ etc.
  - Premium products – feed, specialty grains, handling, etc.
  - Non-genetically modified

- Market entry requirement – prove the product has specific attributes
  - Traceability provides tool to support claims
Risk Mitigation

- Significantly lower costs of business
  - Reduce the time to trace suspected products
  - Correctly identify affected products and companies
  - Reduce the scope of recall or withdrawal
  - Reduce potential fraud and counterfeit products
  - Decrease risk & liability – Lower insurance costs
Value Chain Productivity

- Main objective of firms in other sectors (such as Automotive, Pharmaceuticals, Electronics)
  - Requires open collaboration with partners
  - Traceability enhances control of value chain processes
  - Improved processes reduce costs and raise quality
  - Long term positioning & significant competitive advantage

- Traceability becomes an outcome of practices and procedures already being done
Key Data Element (KDE) and Critical Tracking Event (CTE)

- Key Data Elements – data from transactions that occur at significant points along the value chain
  - For example, data like source party, target party, premises/location, lot or batch identifier, quantity, etc.

- Critical Tracking Events – attributes of a product that identify a unique quality of a product
  - For example: shipment, receipt, transformation, depletion, and disposal.

- Capture KDE’s during specific times, i.e. CTE’s

- The required data elements are uniform and quite minimal

- Challenge then is to identify those CTE’s that provide value and fit your business