Electronic traceability: the theory (part 4 of 4)

Presented by:
Gwynne Foster
g.foster@mweb.co.za

Based on materials from:
Dr Heiner Lehr
heiner@syntesa.eu
The agenda

• Traceability concepts
• Stakeholder views
• Why is traceability important?
• Traceability principles

• Implementing traceability

• Stakeholder benefits of electronic traceability
• Additional materials
  – Types of traceability systems
Implementing traceability in a business

1. Establish traceability business requirements, motivators and priorities.
2. Identify / assign identities to traceable products
3. Identify / assign identities to traceable locations
4. Identify / assign identities to traceability partners
5. Discuss planning and preparations in relation to the product and business cycles.
6. Determine the traceability records that are needed
7. Determine what it will take to implement, manage and monitor the traceability system
8. Determine how to conduct withdrawals and recalls.
9. Initiate the implementation.
Implementing a traceability system

1. Before you start
2. Call a start-up meeting
3. Develop a process map of the selected product
4. Identify traceable unit(s)
5. Establish data recording routines
6. Map current information systems and data capture practice
7. Implement and maintain software for data recording and information management
8. Exchange data electronically
Implementing a traceability system

1. **Before you start**
   - Check if there are traceability or coding standards for your type of products or in the industry.
   - Identify the traceability implementation team.

2. **Call a start-up meeting**
   - Discuss objectives and expectations.
   - Decide on the scope of the implementation.
   - Decide which ingredients and products are to be traced. *(Start with a product with a simple chain.)*
   - Decide which departments and locations will be involved.
   - Identify who would approve the programme.
3. Develop a process map of the selected product

- Document the flow of products, from reception of raw materials and ingredients, through production, to shipping of finished products.
- Document the accompanying information flows.

This flow diagramme will help to identify:

- Critical traceability points and the relevant trade units
- Recommended changes in product and information flows (e.g. batch size, definition of traceable unit, less/more mixing, etc.)
- Accountabilities and responsibilities.
Implementing a traceability system

4. Identify traceable unit(s)
   - For trade units going out
     *(finished products units that go to the next company in the chain)*
   - For trade units coming in
     *(shipments of raw materials and ingredients from other company, units that come from previous link in supply chain)*

Receiving products:
   - Examine the existing product label and accompanying documentation; identify and record codes.
   - If there are no codes, get codes from suppliers or use internal codes.

Internal processes:
   - Raw material batches and production batches may use internal codes.
   - Raw material batch codes must be explicitly linked to corresponding incoming trade units.
   - The production batch code must be explicitly linked to the corresponding outgoing trade units.
5. Establish data recording routines

- Establish internal routines for recording of data; this can be split into several sub-steps:
  - Select what types of data you want to record.
  - Select the stages at which data recording should take place.
  - Select how transformations should be recorded.
  - Select what product-related data should be recorded.

- The outcome of this phase is a plan of how manual routines must be changed to enable systematic identification and associated data recording, and the physical linking between products and accompanying information (labels, freight forms, certificates, etc).
Implementing a traceability system

6. Map current information systems and data capture practice
   - Data recordings must be linked to the Trade Unit ID
   - It must be possible to document all transformations from raw material to finished product
   - The outcome of this phase is a description of existing information and communication (ICT) systems and the necessary changes needed to enable data capture.

7. Implement and maintain software for data recording, data exchanges and information management

8. Exchange data electronically
   - Special processes for receiving and sending data messages electronically in standard message formats
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Some drivers for chain food information management

- Compliance to standards and regulations
- Trade and efficiency
- Sustainability
- Marketing and brand assurance
- New business models
- Marketing and brand assurance
“Our clients want traceability because…”

• Market differentiation by having documented evidence of certain practices of social, religious nature such as fair trade, Halal, or adherence to certain standards

• To show foods which originate in a certain area (“Made in …”) or are prepared in a certain fashion (“Taste of …”)

• Internal performance improvements such as stock reduction

• Calculation of parameters related to sustainability, such as food miles, carbon footprint, fossil energy savings etc

• Performance feedback, especially for the feed – animal – food chain

• Fraud prevention
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Data must be accurate

- A food business is obliged to record and share vital data relating to a food product
  
  *(For example use of chemicals, ingredients and food safety practices)*

- **Data must be recorded accurately**
  
  *(Data that is wrong or incomplete increases the risk to a company if there is an investigation or a recall)*

- **Records must be at the appropriate level of detail**
  
  *(It is unwise - or impossible - to generate more detailed information later)*

- **Product identities should be unique**
  
  *(Batches should not be too big.)*

- **Product transformations or movements should be documented**
  
  *(These are traceability control points)*

- **Farms are also businesses – the same principles apply**
  
  *(Many smallholder farmers do not keep records)*
Push model

- Each Food Business Operator (FBO) submits data to a central database
- FBOs deliver data to partners in their supply chains
- Characteristics
  - Simple to implement
  - The pace of implementation varies between partners
Push model

- FBOs submit a well-defined data set to a “hub”
- The data set is designed in a way that allows connection with other data sets
- (In some systems, the data set is replaced by data pointers)
- Queries are executed solely on the hub level

Characteristics
- Robust and fast
- Buy-in from whole chain
- Dedicated management
Distributed systems or “pull” models

- FBOs store and manage their own data
- Queries are resolved in hopping from one FBO to another following the trace.
  - “One up-one down” systems.
- Usually some form of search service to obtain the initial entry point for a query.
- Characteristics
  - Scalability
  - Increased control over data access
- If a commonly accepted standard for electronic exchange of information existed, this could be a good, if fragile model.
Mixed or layered models

- FBOs submit a well-defined, minimal data set to a hub. Other data remains on-site, but connected through well-defined interfaces.
- Specific queries, e.g. related to regulations, can be executed within the hub.
- Other queries, e.g. in case of a food crisis, can be executed through the network.
- Characteristics
  - A realistic implementation model.
  - Based on the Public-Private Partnership thinking model.
Key traceability concept - Standardization

Standardization is essential to enable supply chain partners to exchange data electronically

- Standardized rules
- Standardized formats
- Common interpretation of codes and information
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Thank you for your attention!

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