Food Chain Traceability

Jayanta Dey / VMWare
Edwin Heredia / Samsung
Mai Le / Yahoo
Todd Lipcon / Cloudera
Aparna Ramani / Cloudera
Jinghai Rao / Samsung
Is this on my dinner table?

<table>
<thead>
<tr>
<th>Recall Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>JFC International Inc. Recalls Hapi Pudding Due to Possible Undeclared Allergen - Milk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall Date</th>
<th>Product Description</th>
<th>Recalling Firm</th>
<th>Recall Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/17/14</td>
<td>All lots of 3-pack Hapi Pudding</td>
<td>JFC International Inc., Los Angeles, CA</td>
<td>Undeclared Allergen - Milk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall Class</th>
<th>Product Identification</th>
<th>Distribution</th>
<th>Affected Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Hapi Pudding (3 pack)</td>
<td>Nationwide including CA</td>
<td>N/A</td>
</tr>
<tr>
<td>Product Labels</td>
<td>Net Weight: 8.46 Ounces</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
'Fraud on a massive scale': Europe's horse meat scandal keeps on growing

Spinach Recall In 39 States After Taylor Farms E. Coli Scare
The Huffington Post | By Hunter Stewart
Published: 05/14/2013 8:38 pm EST | Updated: 05/16/2013 3:59 pm EST

Food Fraud: Honey And 7 Other Commonly Mislabeled Foods
By Lizette Borrell | Jul 17, 2013 02:06 PM

Sysco Fined Millions for Storing Seafood, Milk and Raw Meat in Unrefrigerated Sheds
Exclusive California to fine the food distribution company $15.4 million following an NBC Bay Area investigation into Sysco’s food storage practices.
By Vicky Nguyen and Kevin Nicks

Think You Ate Tuna Sushi For Lunch? Study Finds Mislabeled Fish Nationwide Problem

Four-State, 11-Person E. coli Outbreak Prompts 1.8 Million-Pound Meat Recall
Cases reported in Massachusetts, Michigan, Missouri and Ohio

Fruit Recalled for Potential Listeria Contamination, Wegmans Recalls Fruit Desserts
By NEWS DESK | JULY 02, 2014
Food recall - Expensive!

- 2006 Spinach E.Coli outbreak ($425M)
- 2007 Florida tomato salmonella ($500M)
- 2008 Beef recall ($117M)
- 2009 Peanut butter recall ($1B)

- Average cost of recall to supplier: $30M
- Estimated economic cost: $152B

[Produce Safety Project (part of Pew Charitable Trusts), 2010 report]
Contamination can happen anywhere!
Food Chain Traceability

Identify/track, for a given piece of produce/meat/etc., where it was grown, and every place it has been before reaching your table
Market overview

Source: Allied Market Research
Solution Provider: HarvestMark

- Silicon Valley startup
  - Differentiate on technology
  - Brand as a higher-end solution (high cost, higher value)
- 30-40 people
- >1B items traced in 2009
- “Daily Shopper” program
  - Focus on value for supply chain analysis, not “recall prevention”
Solution Provider: itrade network™

- 14-year old Pleasanton, CA company
- Acquired in 2010 for $525M by Roper Industries
- 8,000 customers (80% of largest US retailers, 90% of largest food distributors, 90% of Fresh shippers)
- Supply-chain management with traceability as a feature
- Moving to Cloud hosted offering

We offer a range of supply chain solutions supported by the largest trading network across the global food and beverage industry.

- Order Management
- Contracts & Rebates
- Product Traceability
- Sourcing
- Procurement
- Logistics
- Trade Intelligence
- Data Services (GDSN)
- Other Solutions
Solution Provider: Intermec

- Manufacturer of label printers, scanners, RFID, etc
- Acquired by Honeywell in 2013 for $600M (Honeywell Scanning and Mobility)
- Broad scanning/labeling solutions provider across many industries
- **Partners** with software providers for end-to-end traceability solutions (eg FoodLogiQ, RedLine, etc)
Opportunities for Suppliers

- Measure supply chain efficiency
  - Identify problem spots
- Exchange early warnings
  - Work collaboratively to resolve food crises or alerts
- Build brand recognition at farm level
  - Differentiate in an otherwise commodity market
- Direct connections to customers
  - Targeted real-time coupons, ads
Opportunities for Retailers

- 77% of consumers want more data on their purchased food
- 76% want more information on food origin
- 74% want more data about how food is grown, processed & manufactured
Figure 1
Online, big-box, and national chains rank lowest in food trustworthiness

How much do you trust each format to deliver local food?
(1 to 10, with 10 as most trustworthy)

Source: A.T. Kearney analysis
Traceability: Regulatory history

- Food traceability started as regulatory response
- 2001 Bioterrorism Act
  - Identify source of food within 24h or face FDA fine
- Mandate of traceability by USDA
  - 2011 Food Safety Modernization Act (FSMA)
Produce Traceability Initiative (PTI)

- **Goal**: Industry initiative to develop standards for traceability systems
  - improves efficiency and visibility of supply chain

- **Voluntary** organization created in 2007
  - in response to 2006 Spinach Crisis that had large human and economic costs
Market Summary

- Whilst born out of response to food safety, market opportunity is large
- Existing players: manufacturing / SCM
- First wave: cheap ubiquitous hardware
- Prediction: Second wave based around software and data
- **Challenges**
  - Low margin business today focusing just on food tracking
  - Harsh deployment environments for technology (e.g. field packing)
  - Small suppliers not participating, limiting food tracking penetration
  - Inability to track/validate authenticity beneath level of large batches

- **Opportunities**
  - Standardized data models enabling item level tracing
  - **Improved analytics** reducing cost and **driving top-line value**
  - Better B2B interop
  - Better targeting of consumers and farms
Questions?
Appendix
Major Milestone and Timing

- any estimates we have of future trends?
Opportunities: Consumers

- Rise of socially conscious consumers
  (include data here on organic, local, fair-trade)
- New ability to validate claims - eg. “Is this fresh fruit really fresh? Were these tomatoes really vine-ripened?”
References

- Tracing Your Food: Farm to Table is Not as Easy as It Sounds. The TFT Reader Investigation Continues... http://www.thefastertimes.com/genericfoodsinvestigation/2010/06/15/tracing-your-food-farm-to-table-is-not-as-easy-as-it-sounds-the-tft-reader-investigation-continues/
- Agriculture Giants Use Emergency Budget Bill to Sneak in Big Gifts for Themselves - Themselves(http://thinkprogress.org/health/2013/03/21/1753761/agriculture-riders-deregulation/)
Dietary supplement recalled:
Potential Salmonella contamination

Dairy Products recalled:
Possible Listeria contamination

NC farm recalls 150 products:
Possible Listeria contamination
Technical factors

- **Inexpensive** availability of mobile devices
  - RFID scanners, NFC, QR code readers, etc
- Broad and cheap network connectivity
  - to farm sites
  - to distribution sites (trucks/GPS, drop sites, etc)
  - to retail locations (3G/4G)
Food industry tracking

- Forecast to reach $10.6B revenue in 2014

- Boutique technology providers

- Existing producers
  - already had “internal traceability” (NB: need to explain intra-firm vs inter-firm tracing)
  - starting to market it to horizontals
  - usually stuff like Excel (step up from pen+paper)

- Label makers, KwikLok
  - http://www.thepacker.com/fruit-vegetable-news/
Caribbean Red
PAPAYAS
PACKED FOR BROOKS TROPICALS, LLC
18400 S E P Z, SAN ANTONIO, TX 78250
EPZ, SAN ANTONIO, TX 78250
2126 Brooks Tropicals, LLC Homestead, FL
Papaya Caribbean Red 10 CT
Net Weight 32 Lbs. Product of Belize
(01)00081679025006(10)PMA1272
TRUETRAC truetrac.com 1400 9809 5410 2085
Triple J Produce
8541 Bailey Rd.
Sims, NC 27880

SWEET POTATO
COVINGTON

40 LB Case
#1 ORGANIC

This case is traceable at HarvestMark.com

9322 0144
1960 TRJ1

(01) 10856170003153
(10) TJP - 051

Pack Date: 05/07/2012
Produce of US

28 11
THE FOOD SUPPLY CHAIN

1. Plant
2. Harvesting
3. Transportation
4. Processing
5. Transportation
6. Distribution
7. Transportation
8. Customer
9. Transportation
10. Collection
11. Recycling
12. Transportation
13. Transportation to Waste Site
Solution Provider: Redline

- 17 year old company based in Santa Clara, CA
- Automate over 120 produce growers, packers, and shippers across North America
- Electronic tracking, record keeping, integrated solution
- PTI Compliant
- E2E solutions - software, hardware, professional services, planning, installation, training, launch of system, online support
Solution Provider: TraceOne

- Platform powers $300B/yr in activities, Boston, MA
- Product Lifecycle management for 35 global brands, network of over 20,000 manufacturers, suppliers
- Creates transparency in supply chains
- Companies can exchange early warnings and collaboratively resolve food crises or alerts
- Provides a single view of the complete
Consumer Benefits

- Target healthier food
  - Leverage interest in local, organic
  - Avoid eating contaminated food

- Feed “information hunger”
  - Is this “fresh” fruit really fresh?
  - Were these tomatoes really “vine-ripened?”
Produce Traceability Initiative (PTI)

- Voluntary standards organization created in 2007
  - Response to the 2006 Spinach Crisis that had large human and economic costs
  - Sponsored by Canadian Produce Marketing Association, GS1 US, Produce Marketing Association and United Fresh Produce Association
- Goal: Develop a standardized industry approach to enhance the speed and efficiency of traceability systems for the future
- Working groups: Implementation, Master Data, Industry Communications, and Technology
- PTI recommendations and best practice documents:
  - Use of GS1 System standards for product information
  - Case level tracking
  - Electronic recordkeeping
  - Farm to Store identification procedures