



Ag & Food Traceability: Trends & Opportunities

Presentation to Syngenta with attendance by
U.S. research “Traceability Consortium”

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 **Pardalis**[®]

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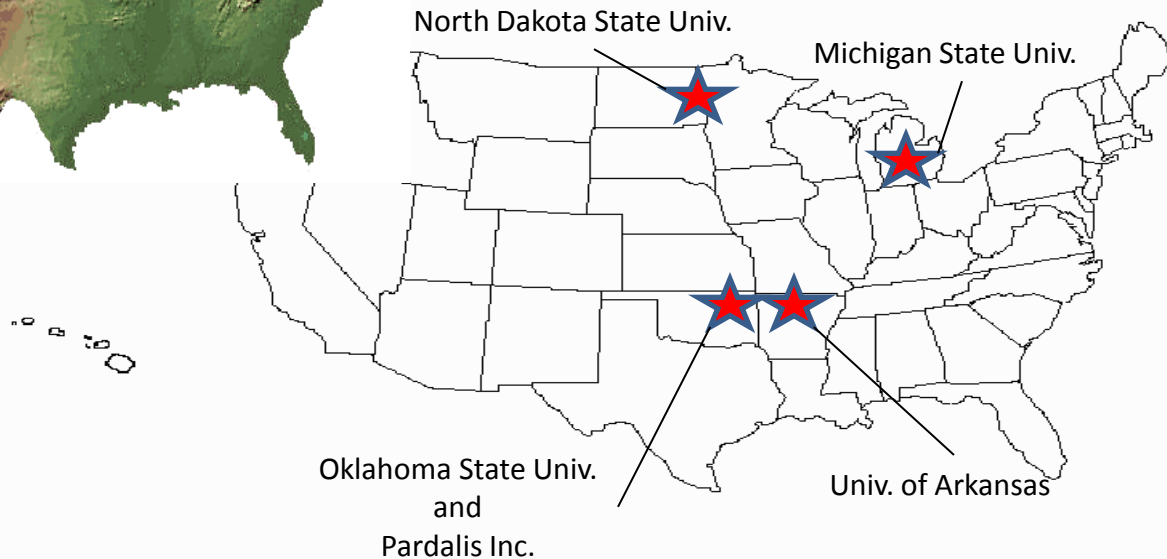
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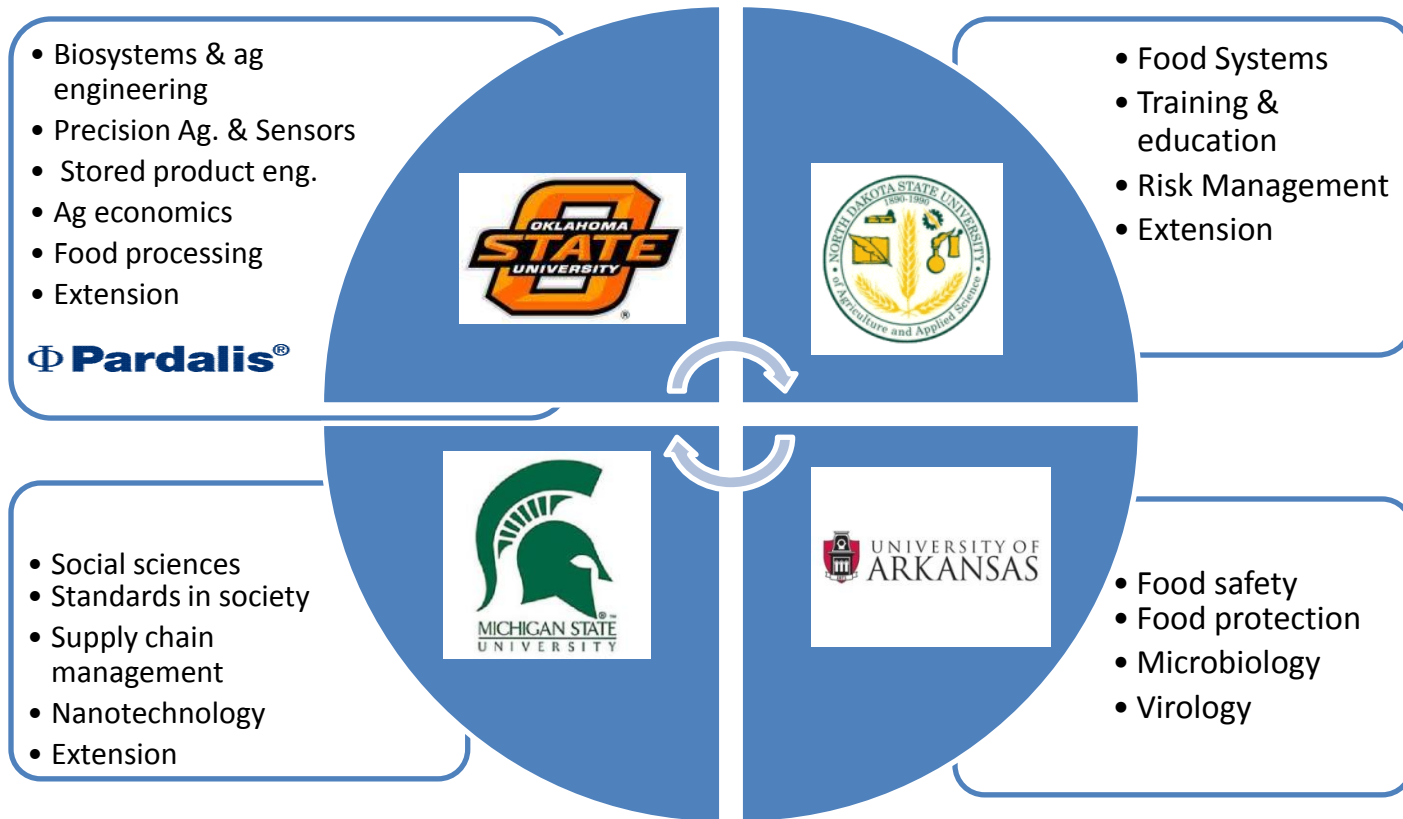
Traceability Consortium (geographically)



U.S. States - www.50states.com

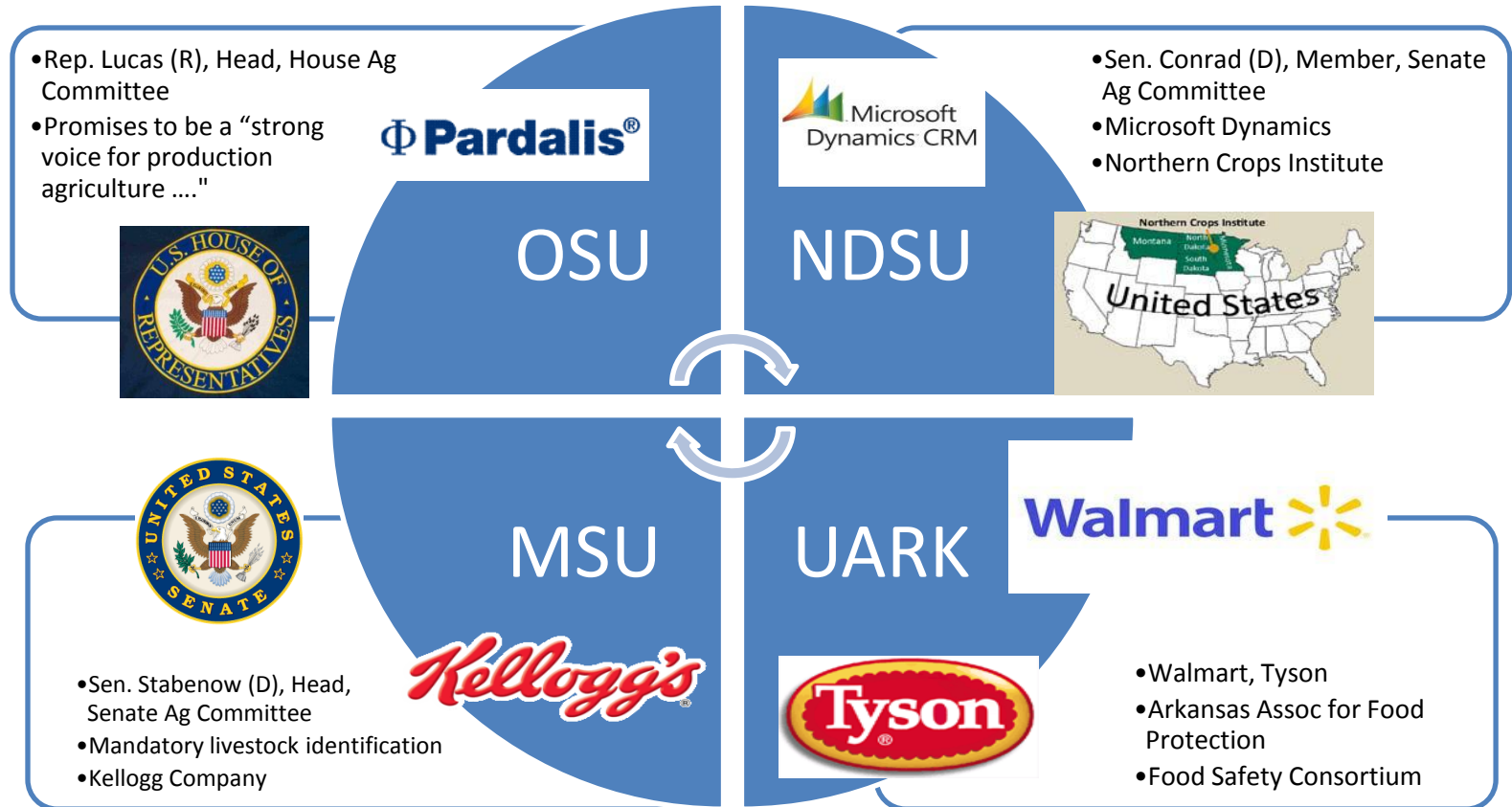


Traceability Consortium (attributes)



Traceability Consortium

(Interesting connections)



Northern Crops Institute



Industry Advisory Board includes:



Amaranth	Field Peas	Rye
Barley	Flax	Safflower Sorghum
Buckwheat	Lentils	Soybeans
Canola	Millet	<u>Sugar beets</u>
Corn	Mustard	Sunflowers
Crambe	Oats	Triticale
Dry Edible beans	Potatoes	Wheat, Durum
		Wheat, Hard Red Spring

[Duel Over Sugar Beet
Seeds Could Create
Shortage](#)

Ag Traceability Overview

- The promise of “whole chain” traceability for addressing:
 - Supply Chain Optimization
 - Vertically integrated & federated chains
 - Overcoming the Bullwhip Effect
 - The missing data of fragmented chains
 - You don’t know what you don’t know
 - Data ownership & privacy issues
 - Risks & Liabilities
 - Limits of one-up/one-down
 - Recognized by FDA/USDA
 - Public and industry relations
 - Global Trust Bust says Frank Yiannas, VP of Food Safety, Walmart
 - What would 12 jurors think?

Current context - Ag & Food traceability

- Food safety
 - Recall after recall Microbiological toxins (salmonella), viral toxins (norovirus), chemical toxins (dioxin)
 - Food allergies from GM Crops? Science versus perception.
- GMO seeds/grains (environmental impacts)
 - [Bayer to pay \\$1.5M in 2nd \(of 500\) lawsuits over GM Rice](#)
 - [Duel Over Sugar Beet Seeds Could Create Shortage](#)
 - crop differentiation, segregation, verification & food ingredient tracking
- Social media raising expectations for real-time supply chains
 - Effects of Facebook, Twitter, etc.

One-up/One-down Traceability (Legal Overview)

- One-up/one down: Vendors must know what is going on inside of their four walls.
- Representative laws and industry initiatives:
 - EU General Food Law
 - Hazard Analysis and Critical Control Point (HACCP) plans
 - US Bioterrorism Act of 2002
 - US Food Safety Modernization Act (food safety plans)



One-up/One Down

(limitations)

- EU and US Food Recalls
 - Investigations still take weeks to months
 - Innocents tainted by actions of others
 - Need for real-time, trustworthy data to respond to 24 hour news cycles
- Addresses supply chain optimization? No.
- Addresses real-time risk management? No.
- Addresses customer-driven supply chains? No.
- Addresses global trust bust? No.

“Whole Chain” Traceability

(working definition)

A “whole chain” product tracing system consists of information elements provided by persons in the supply chain to other persons in the supply chain (e.g. Value Chain).



Legal trends in US and EU

- One-up/one down traceability is the standard but because of its lack of real-time responsiveness there is increasing interest by FDA, USDA FSIS, European Commission in “whole chain” traceability
 - [Product Tracing Systems for Food](#), 74 FR 56843 (food safety)
 - [IFT/FDA Traceability in Food Systems](#) (food safety)
 - Recent EU Dioxin scare (food safety)
 - Turmoil over GMO crops (e.g., impacts on organic operations)
- Representative laws and/or standards:
 - None but murmurings
- Industry Initiatives are still one-up/one-down, too:
 - Produce Traceability Initiative
 - one-up/one down grocery industry initiative
 - US GS1 Rapid Recall Exchange
 - One-up/one down distributor/retailer initiative **but supportive interest by GS1 in Traceability Consortium**



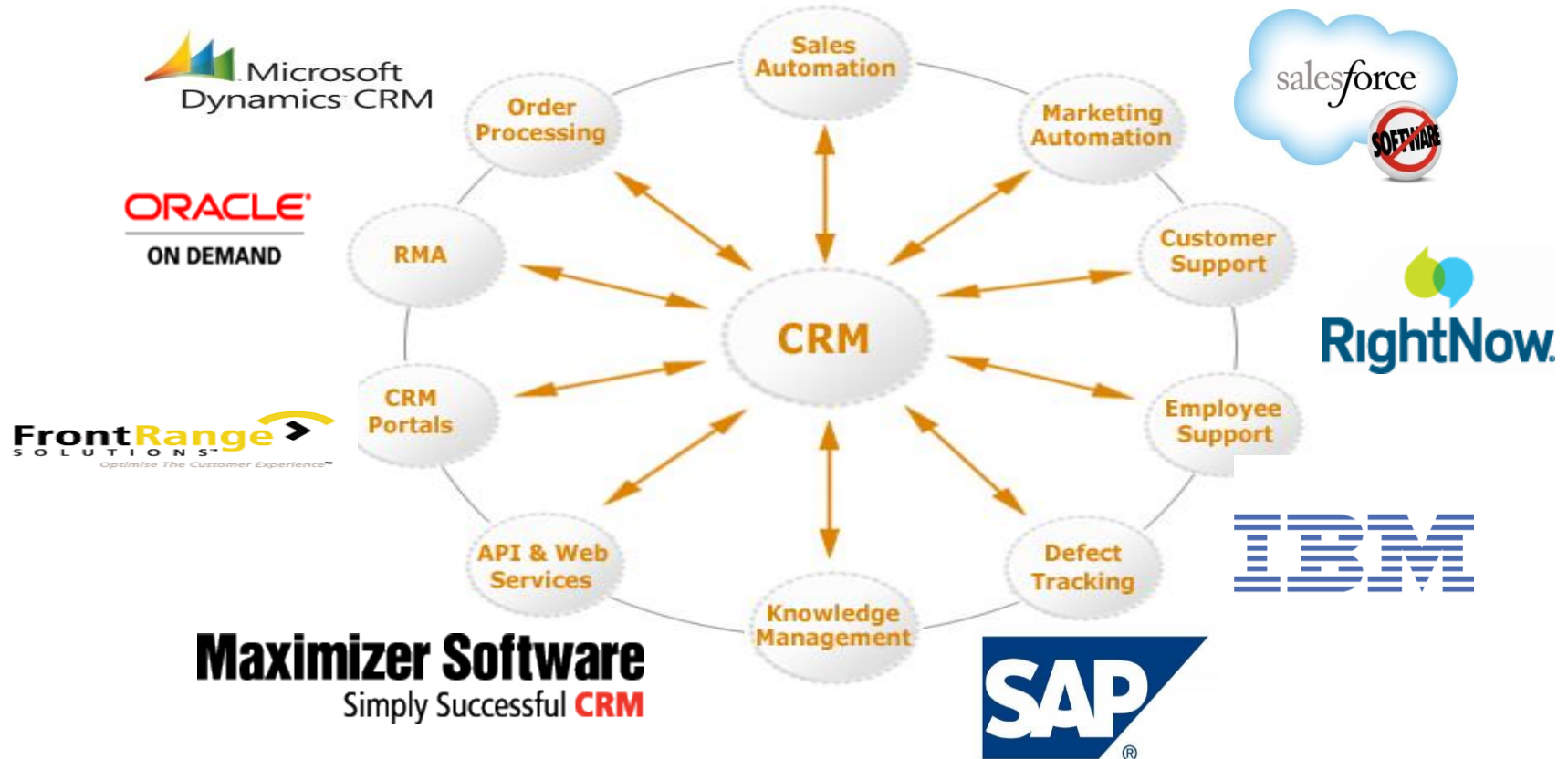
Hot off the Grill: What the regulators want ...

“[T]he regulators want a traceability system that is consistent, speedy, covers the entire supply chain, has electronic records, has interoperable systems, and covers domestic and imported foods. **On top of that, the FDA wants the industry to develop the tools and to pay for the system.**”

Issues and technical challenges

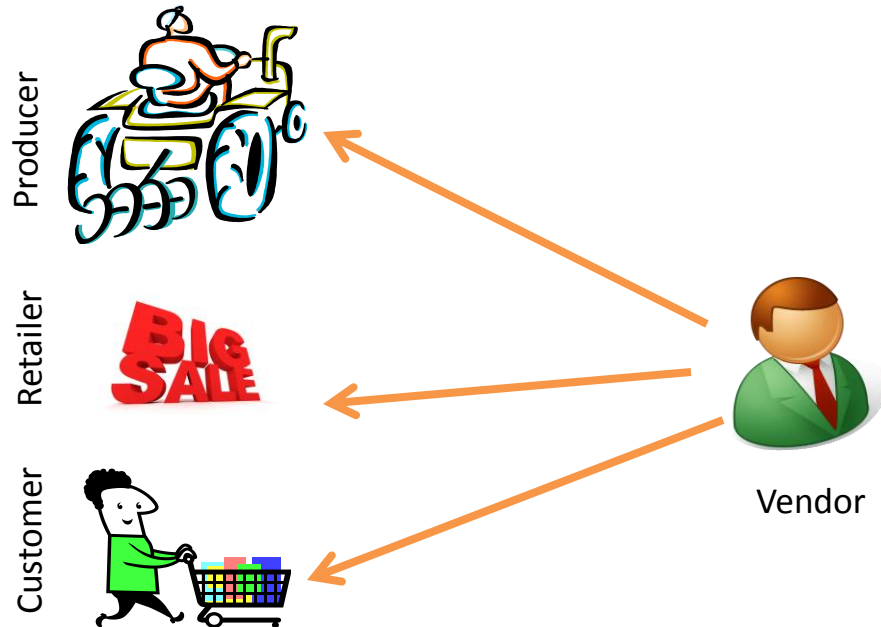
- Increasingly complex and lengthening global supply chains are poorly served by one-up/one-down
- High interest in “Value Chains” for optimizing supply chains.
- Whole chain traceability made possible by minimal disclosures of product identity data that are traceable and controllable by persons in supply chains
 - What does that mean? CRM versus VRM as an illustrative example ...

Customer Relationship Management (a universe of solutions?)



CRM graphic sources: How to pick an ATS and CRM for your company? (picture).

Customer Relationship Management



Customer Relationship Management (CRM) is about companies trying to manage their prospect and customer relationships. **Even though billions have been spent on CRM over the last 15 years (\$9+ billion in 2008 alone), overall customer satisfaction has remained flat.**

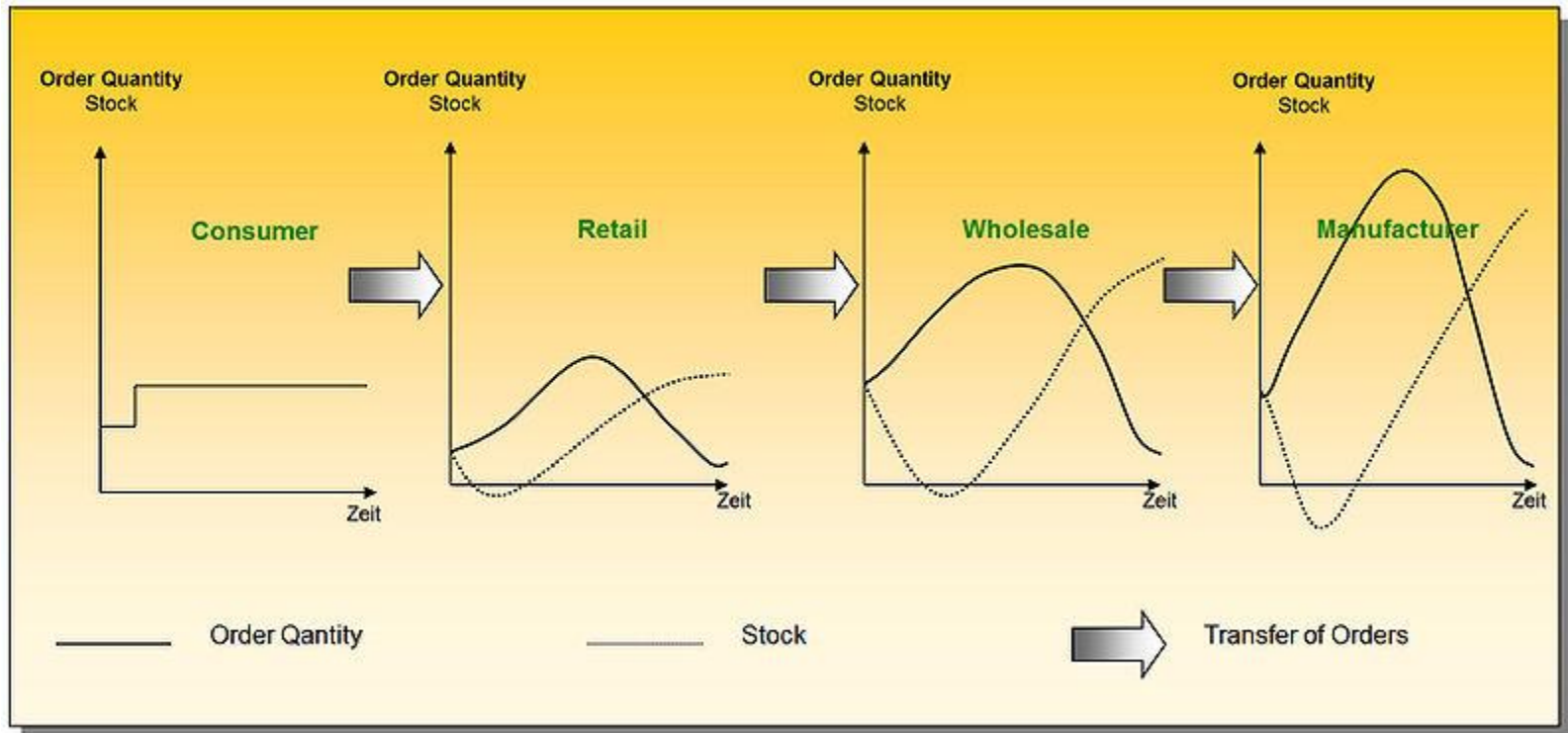
Source: Redefining Customer Experience: CRM, VRM and "Disruptive Technologies." by Michael Hinshaw (text). Picture inspired by work by Eve Maler.

Bullwhip Effect (graphical)



Source: http://en.wikipedia.org/wiki/File:Bullwhip_effect.png

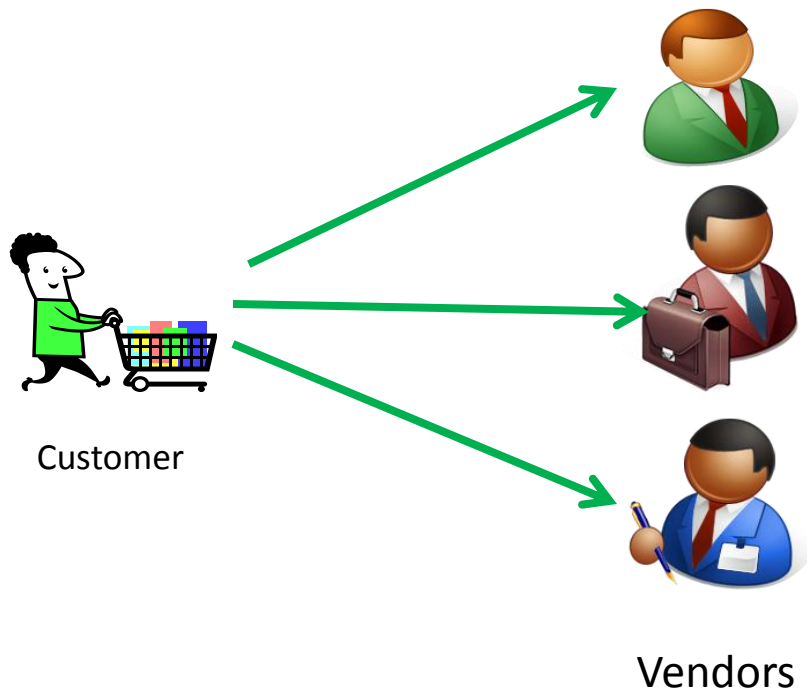
Bullwhip Effect (charted)



Source: http://en.wikipedia.org/wiki/File:Bulwhip_efect.jpg

Vendor Relationship Management

(“whole chain” lite)

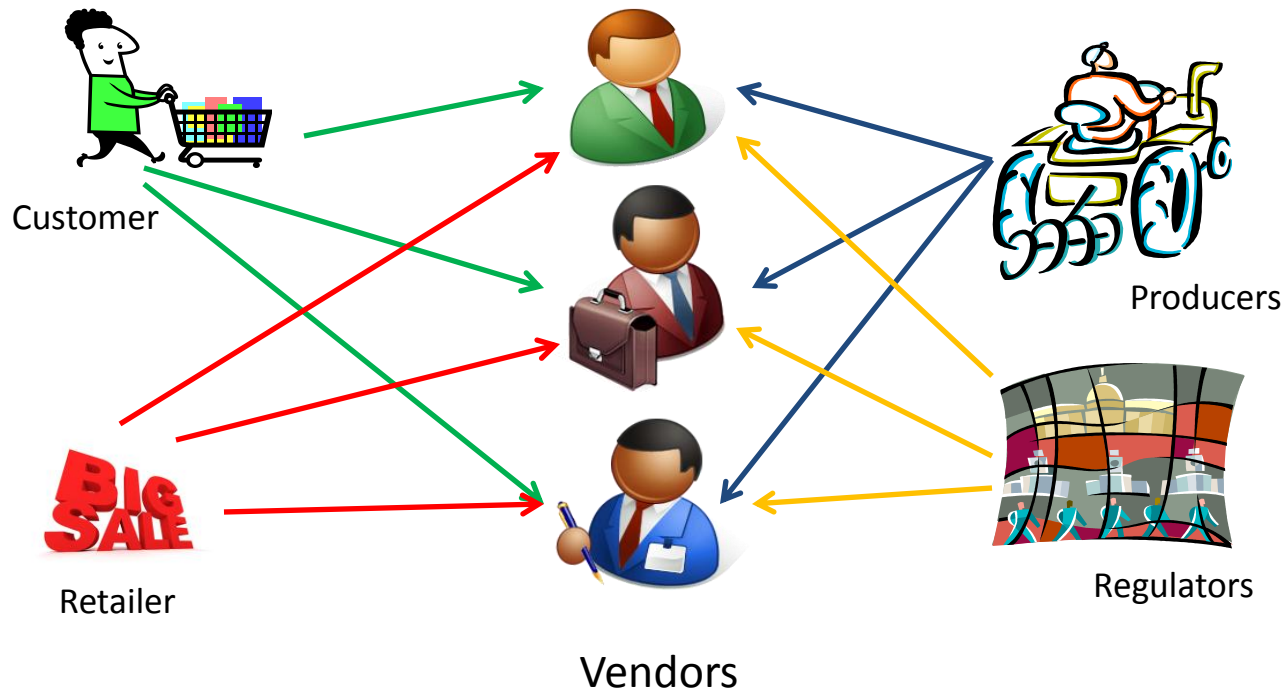


Vendor Relationship Management (VRM) is the flip side of CRM. VRM has the power to give people – individuals who recognize their value as customers, and wish to better define the terms of their relationships – the software, tools and ability to manage their vendor relationships, as well as their interactions and experiences.

Source: Redefining Customer Experience: CRM, VRM and “Disruptive Technologies.” by Michael Hinshaw (text). Picture inspired by work by Eve Maler.

Whole Chain Traceability

A starting point for the Value Chain



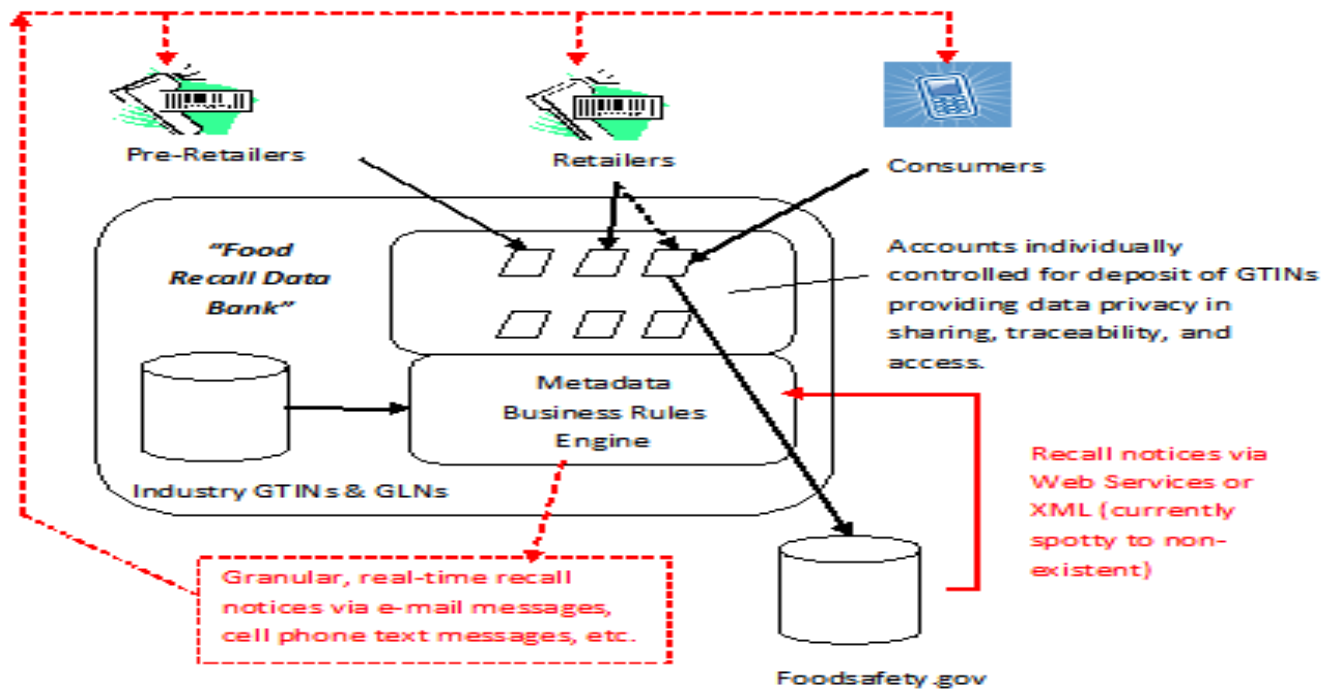
Source: Redefining Customer Experience: CRM, VRM and “Disruptive Technologies.” by Michael Hinshaw (text). Picture inspired by work by Eve Maler.

Whole Chain Traceability

A **technically achievable** starting point for the Value Chain



Food Recall Data Bank



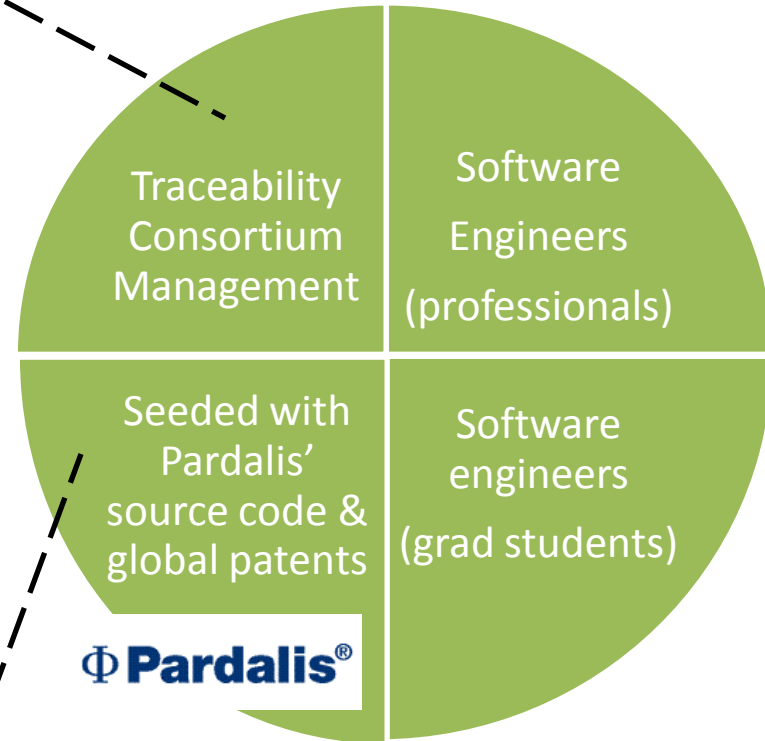
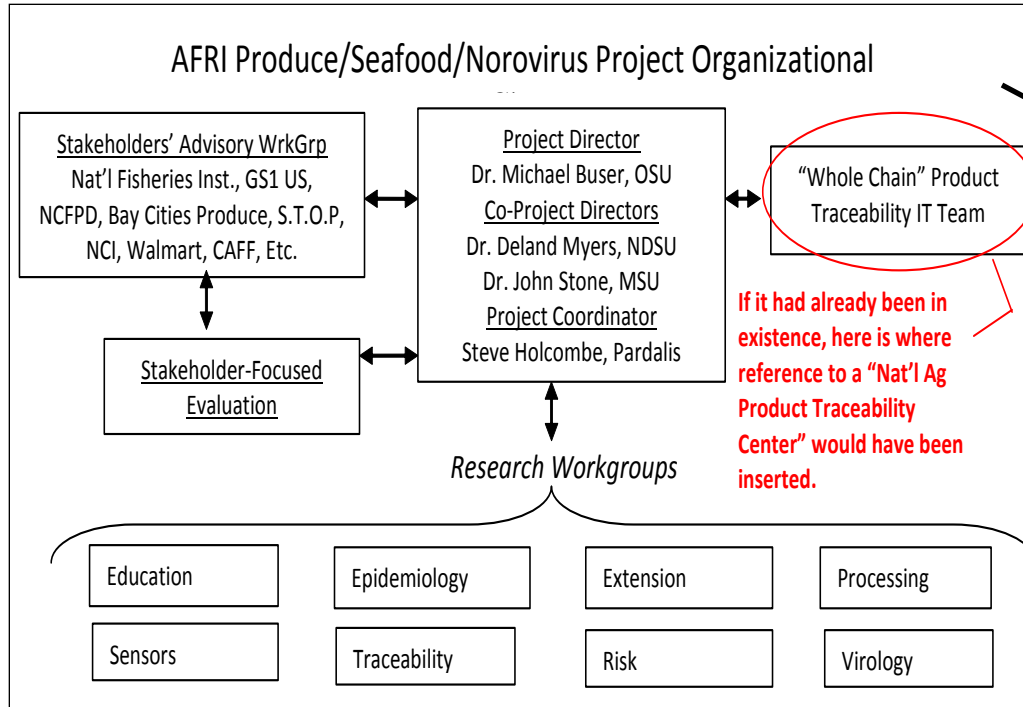
Solution of National Agricultural Product Traceability Center



- No such center currently exists. Why not?
 - Strangely, nobody has really asked!
- Center would anchor the multi-disciplinary "traceability consortium"
- Center would address both:
 - Stakeholder and industry needs
 - Regulatory needs

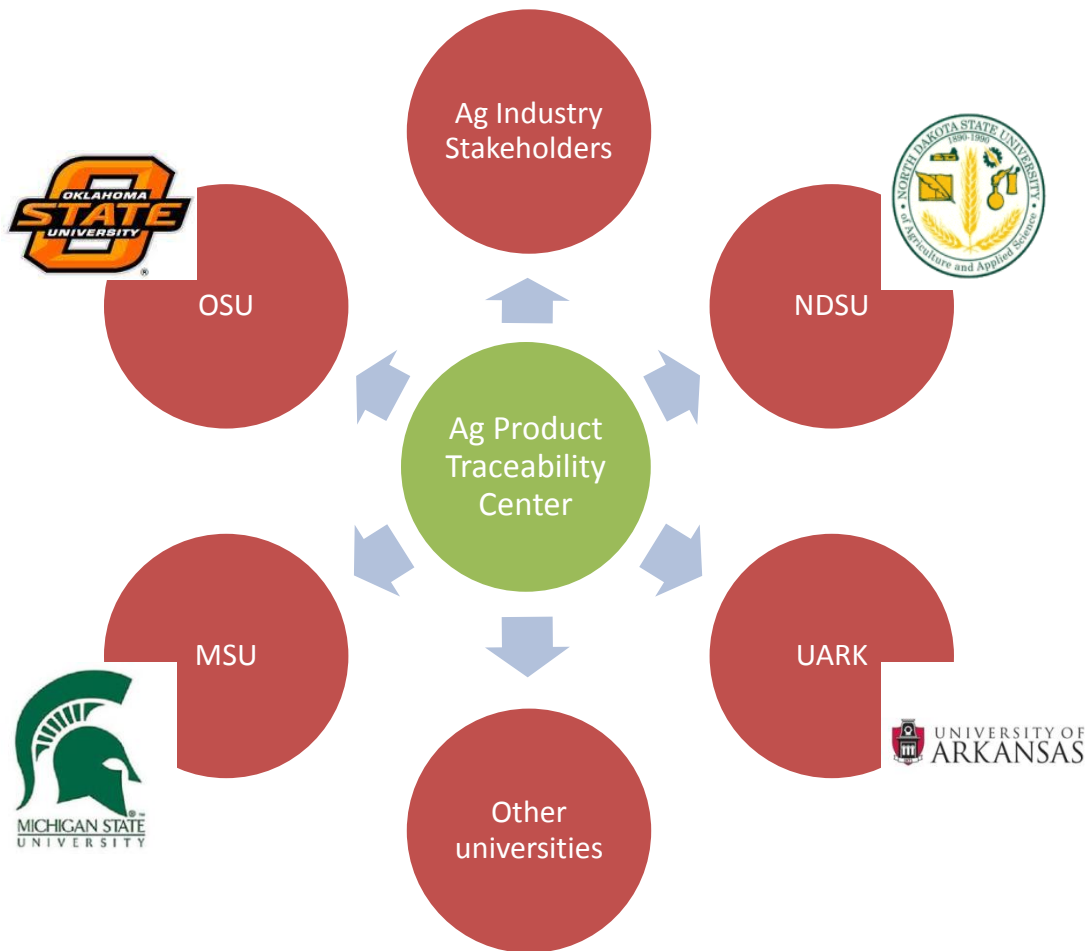


National (Int'l?) Ag Product Traceability Center



Previously engineered source code for "whole chain" traceability. Patents issued or pending in Australia, Brazil, Canada, China, Europe, Hong Kong, India, Japan, Mexico, New Zealand and the United States.

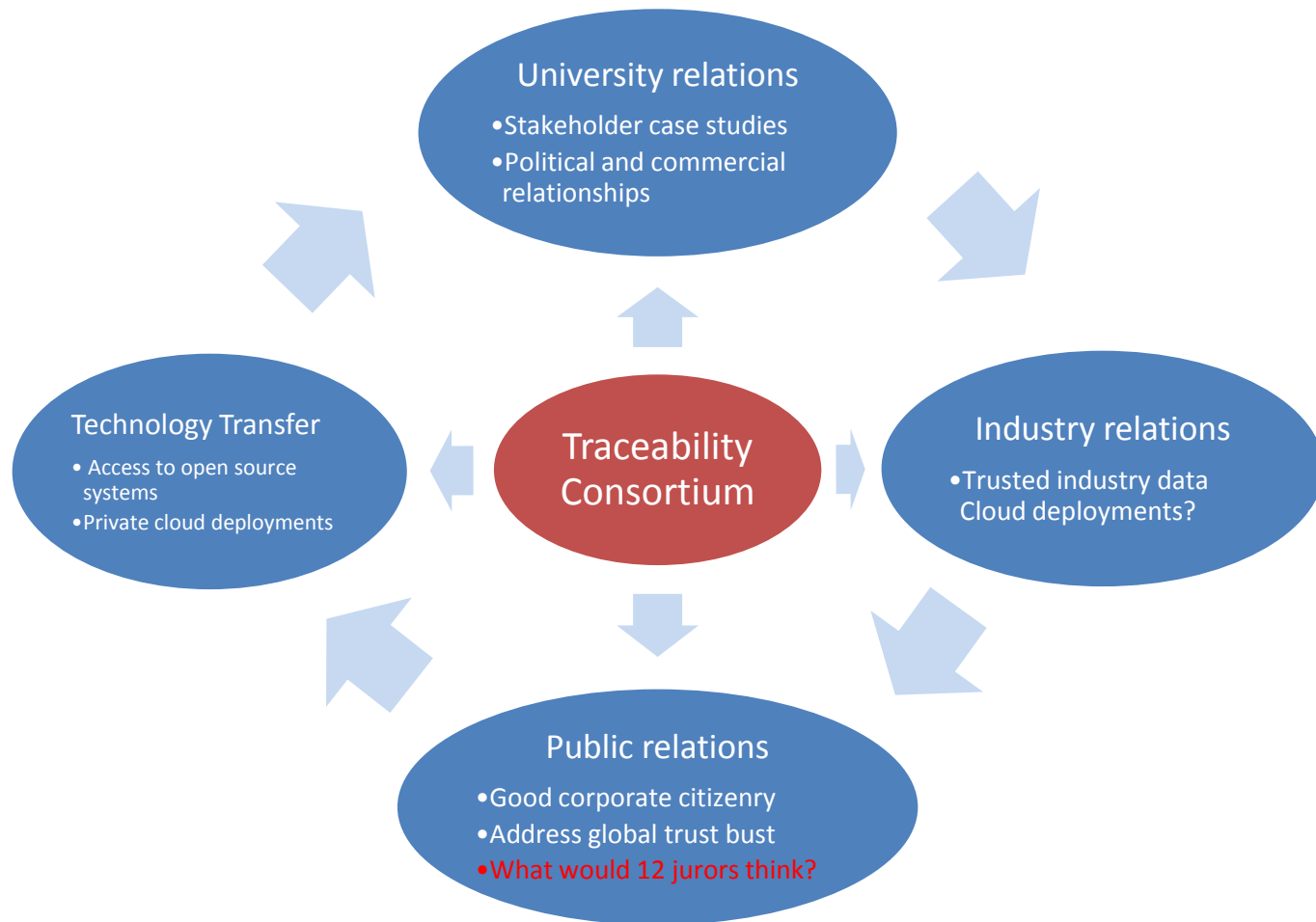
“Whole Chain” Traceability Consortium



Multi-disciplinary Research



Industry Stakeholder Benefits



Roadmap for such an initiative

- Formalization of trusted multi-state project between members of the "traceability consortium"
- Technology transfer and licensing agreement between OSU and Pardalis Inc.
- Continue with applications for competitive research funding (over \$50M in 2010 submissions)
- Pursue private funding with specific commercial applications
- Goal of operational Traceability Center by Q1 2012

What would 12 jurors think?

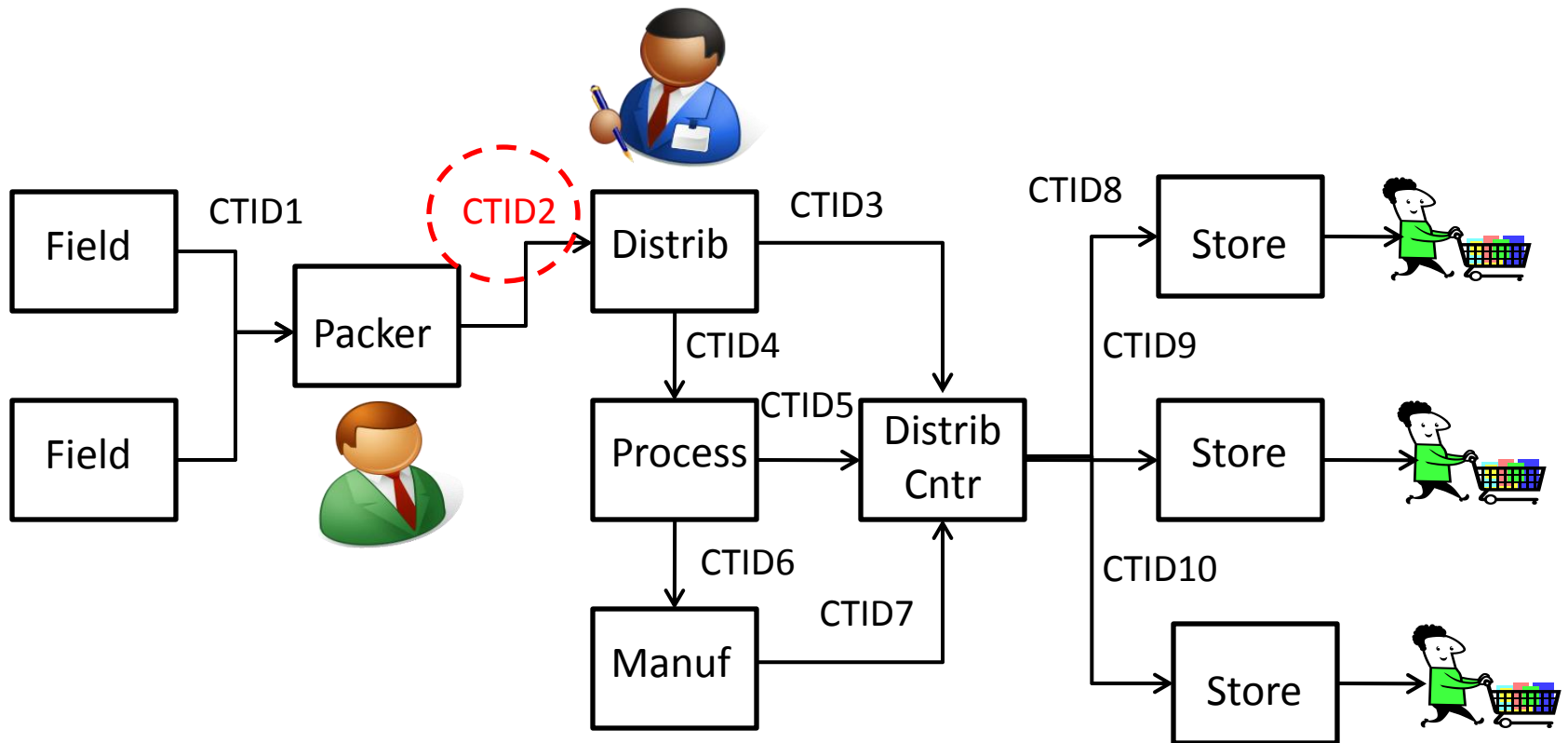
- Closing arguments to the jury:
 - Could the company have responded sooner to a crop or food traceability crisis with “whole chain” technologies?
 - Did the company take full advantage of “whole chain” technologies at hand for providing greater food security beyond one-up/one down?
 - Was the company a proactive, corporate citizen or did it recklessly ignore “whole chain” technologies to the detriment of consumers’ health, the environment, etc.?

How may Syngenta shape bigger game in this area?

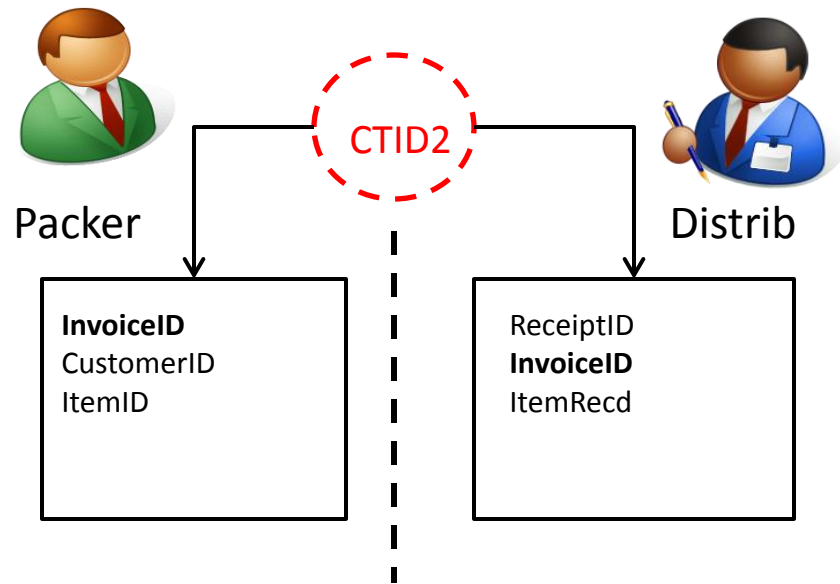
- Join us
 - Next, a “face to face” meeting?
 - Then, a short-term project or case study for building confidence?
 - Then, a plan of action for funding an International Ag Product Traceability Center?

Appendices

Critical Traceability Identifiers



One up/One Down Traceability of transactional data



No real-time, minimal disclosures of product identity data. Disclosures only upon recall and after food safety incident.

Whole Chain Traceability of transactional data

