

NWCTI Project Overview



M. D. Buser, C. C. Craige, and B. D. Adam

NWCTI-01

In 2011, an Oklahoma State University (OSU)-led team was awarded a U.S. Department of Agriculture (USDA) National Integrated Food Safety Initiative grant focused on developing a pilot scale, whole chain traceability system for beef cattle. The team included the University of Arkansas, The Samuel Roberts Noble Foundation, and Top 10 Produce (Figure 1). Our team's expertise included: agricultural economics, animal science, biosystems and agricultural engineering, computer science, food processing, food science, and legal. Further, the project was an integrated research, extension and outreach, and education effort.



Figure 1. The NWCTI project was a multi-institutional, multi-disciplinary effort between Oklahoma State University, University of Arkansas, The Samuel Roberts Noble Foundations, Top 10 Produce, and USDA.

The primary project goal was to develop a pilot-scale, farm-to-fork, whole chain traceability software system for beef cattle stakeholders. This pilot scale system was intended to demonstrate our traceability system concepts to potential stakeholders. Our secondary goal was to develop a system that could feed information forward through the supply chain. This process would establish an integrated feedforward and feedback system for tracing information through the entire supply chain (Figure 2). In this way the system can distribute data completely through the supply chain in both directions (farm to fork and fork to farm), maximizing value-added opportunities in production, processing, distribution, and sales operations, as well as improving food safety.



Figure 2. The NWCTI system allows individuals in the supply chain to share data about their products up and down the supply chain. Information can be selectively shared at any level of the supply chain by any data generator. Grey text indicates data not shared at that stage.

The third goal was defining data ownership and providing data owners a means of controlling access to their information. This goal supports our primary philosophy: users entering data into the system own the data. Other parties should have the ability to access information within the NWCTI system only if they have been given permission from the data owner. Also, data owners can remove the viewing privileges of any entity with which they have previously shared information. Keeping with this philosophy, government agencies should only be able to access the information with permission of the data owner, or after going through appropriate legal channels to obtain a subpoena.

The fourth goal was to develop data and system security concepts to protect individual user data and the system's integrity. Through this project, protocols for how and when to legally protect data owner rights were developed. These protocols included the evaluation of data immutability concepts. Distributed and centralized database structures were also compared to determine which structure offered the greatest benefits in terms of managing physical, social, and cyber security threats to maintain data integrity while protecting data owner rights.

The team completed the USDA National Integrated Food Safety Initiative grant in 2015. As a means of sharing the pilot system and concepts we developed, we created a series of videos and outreach documents. This series was broken down into five categories:

1. An overview of what our team believes a traceability system should encompass,
2. How a whole chain traceability system could be used in the beef cattle supply chain,
3. How our NWCTI whole chain traceability system works,
4. Questions stakeholders have asked about product traceability systems and our team's approach to addressing these questions, and
5. The future vision for the NWCTI.

For more information about the NWCTI system, contact Dr. Michael Buser using the information below. YouTube videos related to the NWCTI system can be viewed at <https://goo.gl/MwPhoS>.



THE SAMUEL ROBERTS
NOBLE
FOUNDATION

U of A
DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System



This is a publication of the
National Whole Chain Traceability Institute.
Funding Agency: USDA National Integrated Food Safety
Initiative – Project Agreement No. 2011-51110-31044

Collaborators include the Oklahoma State University Departments of Agricultural Economics, Biosystems and Agricultural Engineering, Computer Science, and the Food and Agricultural Products Center; the Samuel Roberts Noble Foundation; University of Arkansas, Dale Bumpers College of Agriculture, Food & Life Sciences – Food Science; Top10 Produce.

Visit <http://nwcti.okstate.edu/> for more information or contact:
Dr. Michael Buser, Associate Professor
113 Agriculture Hall,
Stillwater, OK 74078
buser@okstate.edu

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the Americans with Disabilities Act of 1990, and other federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitehurst, OSU, Stillwater, OK 74078-1035; Phone 405-744-5371; email: eeo@okstate.edu has been designated to handle inquiries regarding non-discrimination policies: Director of Equal Opportunity. Any person (student, faculty, or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9154. Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy.