



FSIS Data Infrastructure Improvements

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Inspection and Data Infrastructure Improvements

- FSIS is taking a public health-based, data-driven approach to improving processing and slaughter inspection.
 - Approach evolved from earlier work on Risk Based Inspection
- The Agency is developing an integrated infrastructure to support a comprehensive, timely and reliable data-driven inspection system.
- OIG December 2007 audit identified a number of areas for improvement in FSIS' data infrastructure.
 - OIG has agreed to all 35 of FSIS' responses to its recommendations.



OIG Recommendations

- Develop strong scientific and statistical basis for resource allocation
- Undertake third party review of Agency programs
- Prioritize Food Safety Assessments (FSAs) and utilize their findings to inform resource allocation
- Conduct in depth review of data systems and develop an integrated data infrastructure
- Consistently produce data reports to inform decision makers



What will the Public Health Information System (PHIS) offer FSIS?

- Integrate FSIS data streams
- Support a data-driven approach to FSIS inspection, foreign auditing, and scheduling
- Facilitate greater information sharing with external agencies
- Allow FSIS to take a more proactive approach to public health protection



What will PHIS offer FSIS?

- **Domestic Inspection**

- Enhanced establishment and inspection data (e.g. Establishment Profile Information, In-Plant Verification Activities, and Food Safety Assessments)
- Data-driven inspection activities and Food Safety Assessments

- **Import Inspection**

- Data-driven foreign country audits and POE inspection activities
- Interface with CBP ACE/ITDS and business to government exchange of shipment data
- Receipt of electronic foreign health certificates for advanced notice of incoming shipments

- **Export Inspection**

- Automation of export certification process
 - PHIS will ensure certificates accurately reflect foreign country import requirements.



What will PHIS offer FSIS?

- **Will allow analysts to carry out ad hoc data analyses using multiple FSIS data sources in order to identify trends and anomalies**

- Example: Relationship between *Salmonella* test results and inspection findings

- **Will monitor establishment data in real time and will have built-in alerts for anomalies***

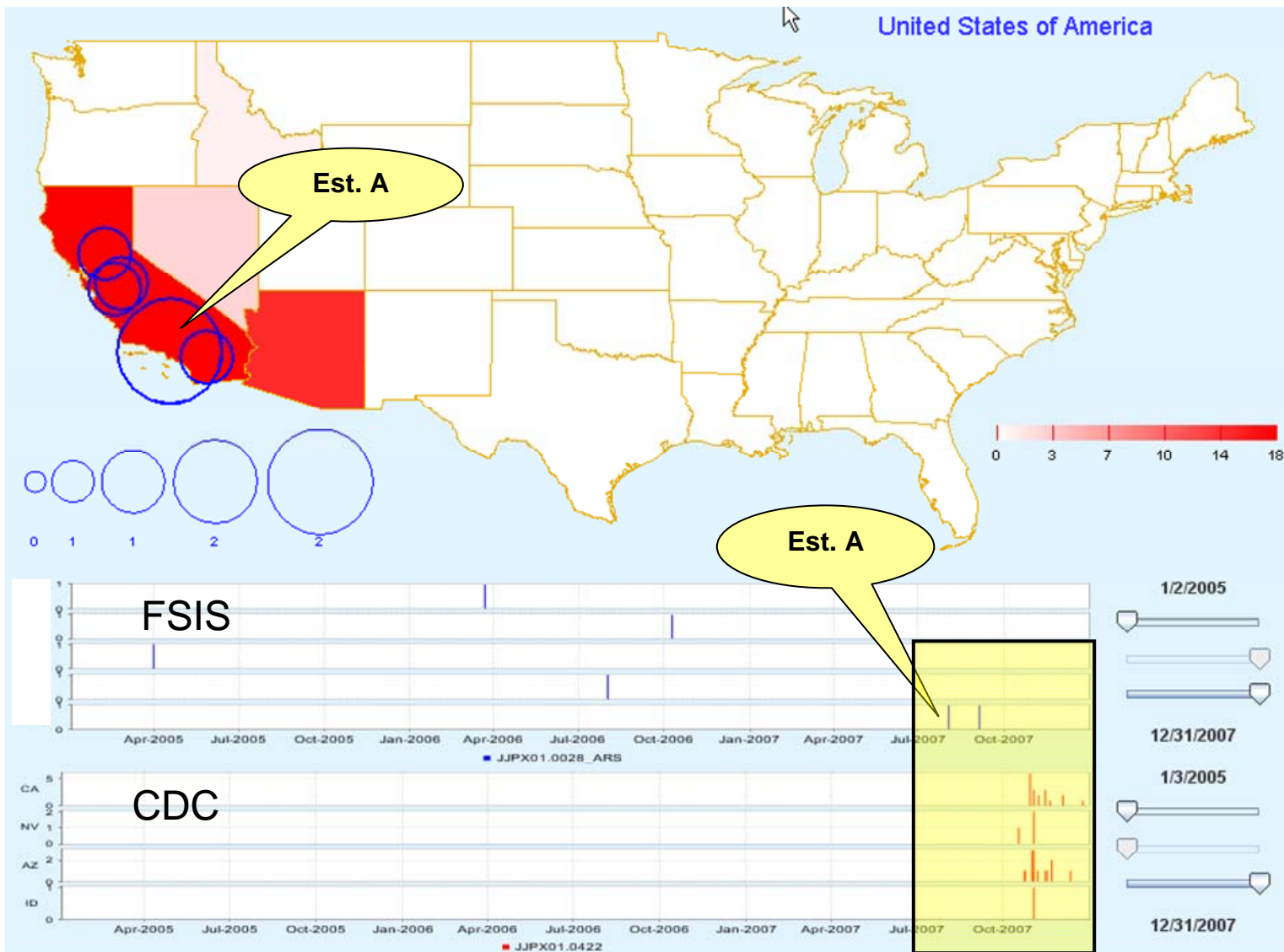
Examples:

- Large number of inspection activities not completed in an establishment
- High rates of noncompliance in an establishment
- Positive pathogen test result in an establishment (e.g., *E.coli* in ground beef, *Listeria monocytogenes* in ready-to-eat products)

*Alerts will be sent to personnel at headquarters and in the field (e.g. inspectors, supervisors, district managers).



Outbreak Investigation Data Visualization



Est. A had positives immediately prior to the human cluster. It is located in the same area as the human cases.



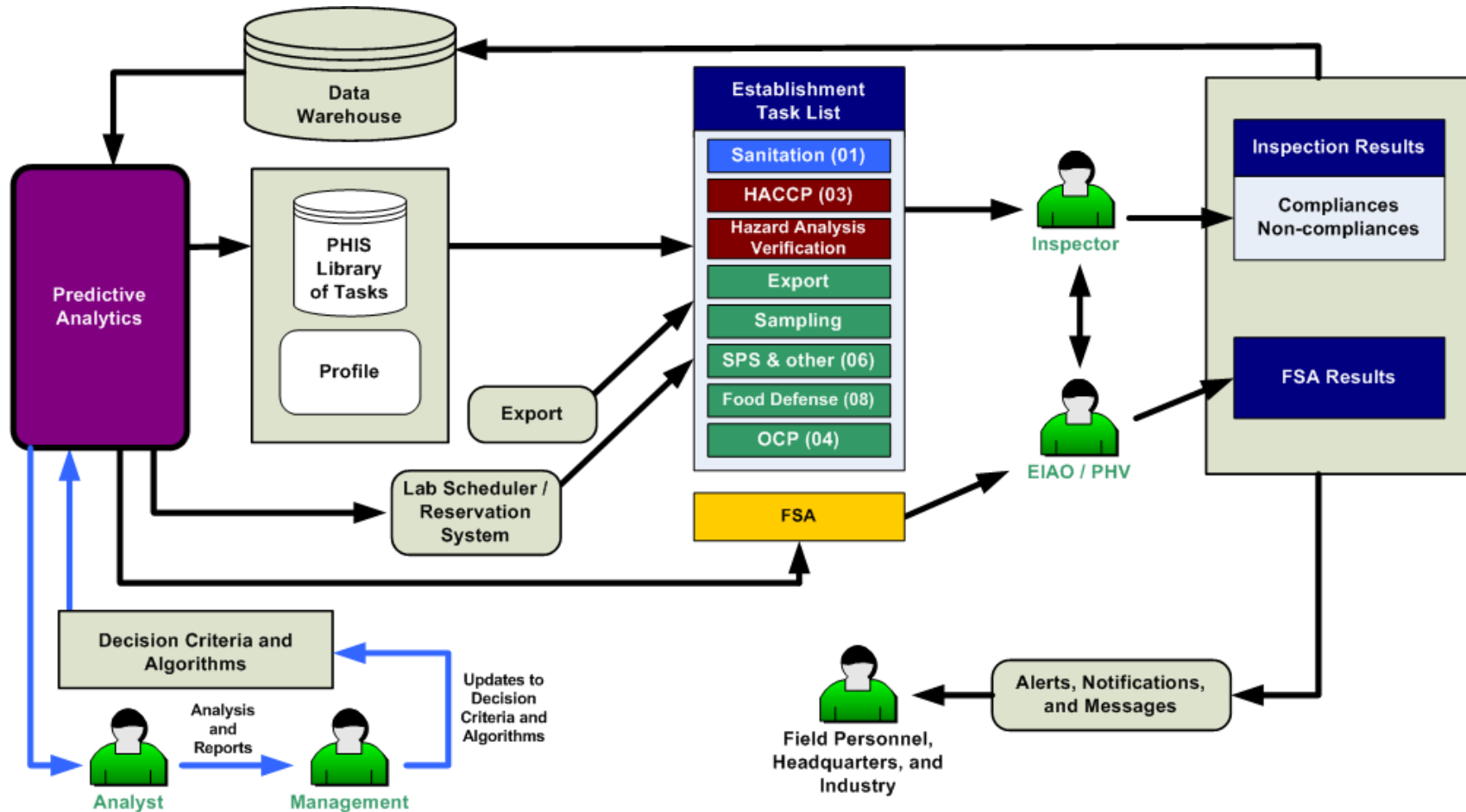
What will PHIS offer FSIS?

- **Will have automated algorithms for consistent reporting and scheduling of inspection activities**

Examples:

- Performance measure calculation
 - Risk-based sampling algorithms (*Salmonella*, *E. coli*, and *Listeria*)
 - Scheduling of Food Safety Assessments based on indicators of process control
 - District Activity Reports with flags for analysts and district managers
 - Foreign country audit ranking
- **Will have automated self-learning algorithms that analyze data and create models to detect patterns in disparate data**
 - Example: Analysis of relationship between pulsetype information from CDC's PulseNet data on human illnesses and FSIS' VetNet data on product sampling

PHIS Domestic Data Feedback Loops





PHIS DATA FLOW



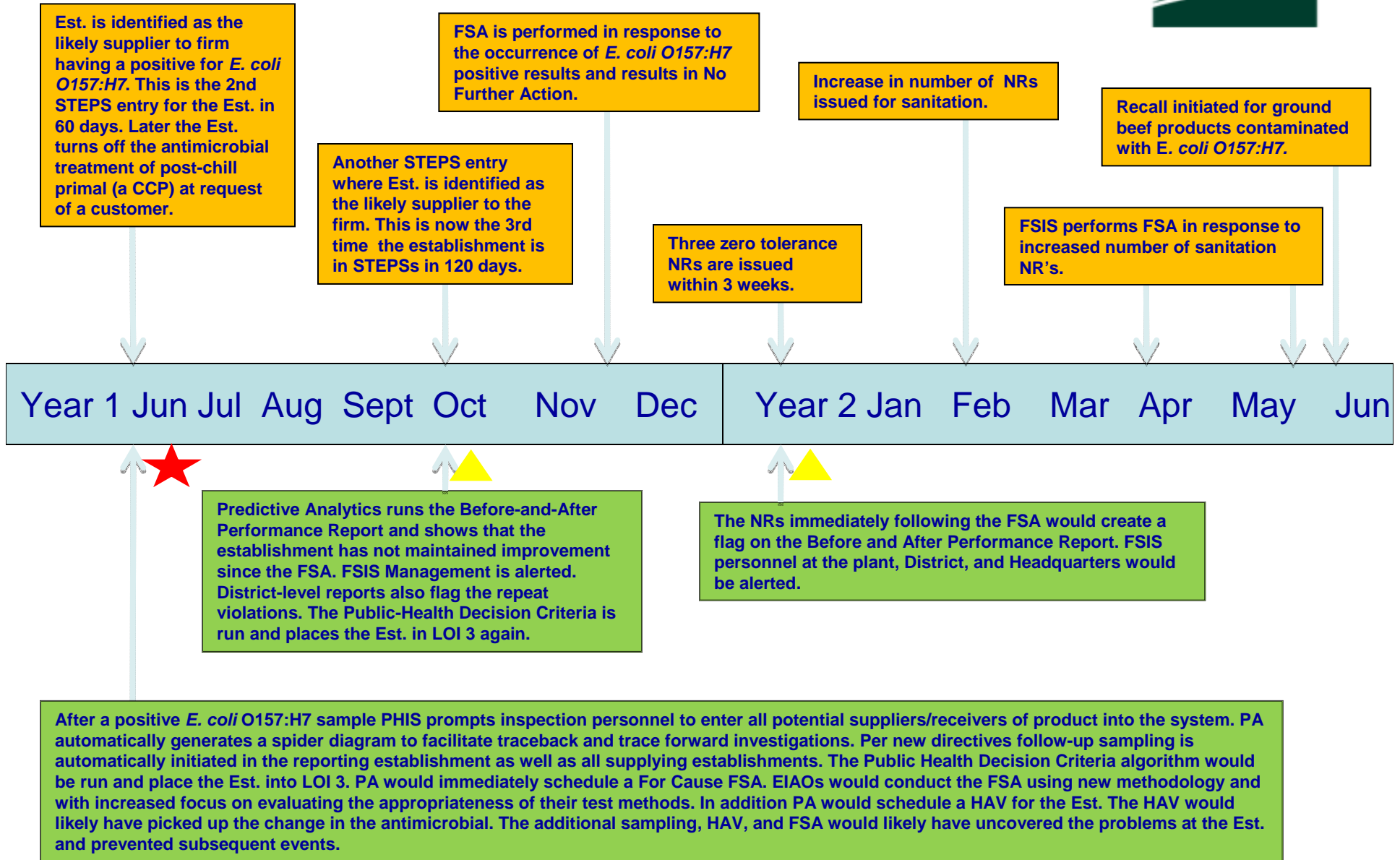
PHIS CASE STUDY



Case Study

- **FSIS's inspection and data infrastructure improvements will significantly enhance its ability to identify and respond to potential public health risks.**
- **These improvements include:**
 - **Implementation of PHIS /Predictive Analytics (PA) (including automated alerting and scheduling),**
 - **Enhanced establishment profiles to include monthly updates detailing any demographic, operational or food safety system changes within the establishment,**
 - **New Food Safety Assessment methodology,**
 - **New directives for follow up to positive lab samples,**
 - **Initiation of Hazard Analysis Verifications (HAV) which would require inspection personnel to complete a detailed review of the establishments' food safety system,**
 - **Training Enforcement Investigation Analysis Officers on the evaluation of establishment test methods,**
 - **New management controls to monitor in-plant inspection actions.**

United States Department of Agriculture Food Safety and Inspection Service



★ Intervention at this point most likely would have prevented subsequent events

▲ Failsafe point



Case Study Findings

- **Infrastructure improvements implement a variety of checks and balances that ensure food safety risks have a much greater chance of being detected rapidly and/or prevented.**
 - **The HAV improves the chance of inspection personnel identifying more rapidly potential causes of failure within the establishment food safety system.**
 - **The Public Health Decision Criteria and new Food Safety Assessment methodology, along with Enforcement Investigation Analysis Officer training, will likely uncover serious issues more quickly and prevented further events from occurring.**
 - **Consistent establishment profile updates, automatic scheduling of additional procedures / follow-up samples, and alerts will facilitate earlier problem identification and more rapid response.**



PHIS Timeline*

- Currently in design and development phase
- PHIS delivery planned from contractor:
FY 2010 Q2
- Certification & Accreditation expected
completion: FY 2010 Q 3-4
- Targeted PHIS implementation: FY 2010 Q4

**Prior to PHIS implementation the Agency will fulfill any and all of its obligations to the National Joint Council of Food Inspection Locals pursuant to the Statute and the parties Labor Management Agreement. The Agency will also consult with its employee associations (National Association of Federal Veterinarians and the Association of Technical and Supervisory Professionals).*



Summary

- PHIS will revolutionize how FSIS uses data to inform inspection activities and develop policies.
- More proactive and efficient response to allow FSIS to protect public health
 - Field and HQ alerts
 - Automated reports and anomaly identification
 - Communication with other Agencies & stakeholders
 - More rapid outbreak investigations & trace back