



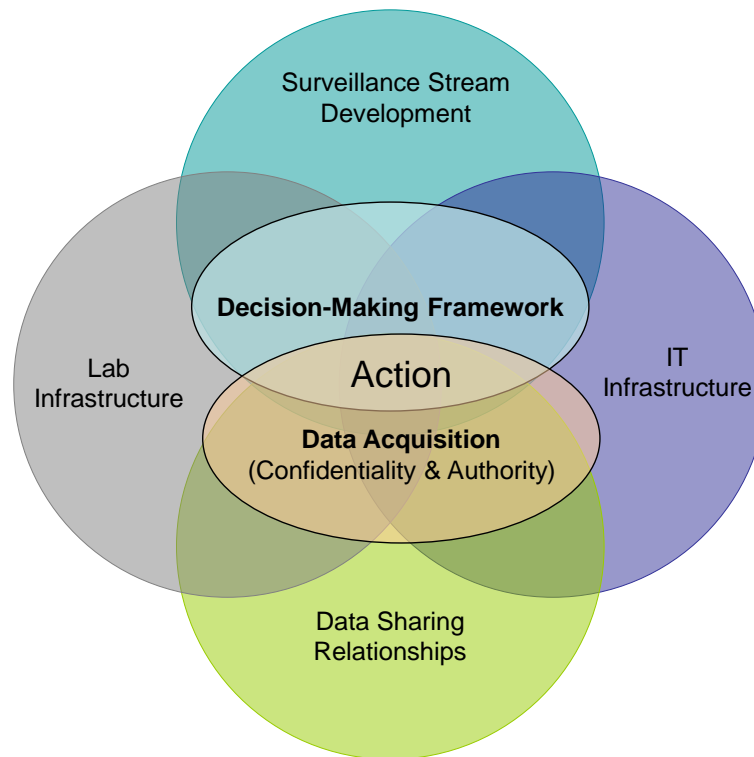
# **Veterinary Services 2015 Project**

**Surveillance for Action**

**Strategic Direction**

**The Surveillance for Action Working Group  
Final for inclusion in Synthesis Plan, 3/1/11**

# VS2015 Surveillance for Action Strategy



Prepared by the VS2015 Surveillance for Action Working Group  
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# VS2015 Surveillance for Action Strategy

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## Document Scope

The VS2015 Surveillance for Action Strategy document is a prioritized summary guide for developing and implementing a stream-based comprehensive and integrated animal disease surveillance system. This document is not an exhaustive list of activities; rather it outlines critical issues that VS must address to provide effective surveillance to: 1) support disease detection, control and eradication programs, including FAD's; 2) serve as an early warning system for emerging diseases; 3) demonstrate disease status for enhanced trade opportunities; and 4) monitor for possible zoonoses in partnership with public health.

## Executive Summary

VS2015 envisions a more agile agency, well-positioned to address future animal disease challenges faced by our animal health stakeholders. This more flexible VS mission will include endemic diseases of economic importance, newly emerging diseases, those with potential to impact trade and zoonotic diseases at the human - animal interface.

As VS redefines its mission, it must also develop new methods and improve stakeholder partnerships to collect mission-critical surveillance information. Veterinary Services' (VS) ability to obtain and fund the collection of animal health data has diminished as several successful disease eradication programs near completion. **VS must shift its surveillance paradigm from state-centric regulatory program activities towards a National, comprehensive, integrated, and stream-based surveillance approach to effectively address its altered agency mission.**

The foundation of an effective surveillance program is built on obtaining quality data. VS should embrace an enhanced and diverse information infrastructure built on surveillance streams.

**Surveillance streams are accessible sources of critical animal health data, often located at animal concentration points where important biological samples and epidemiological information for multiple conditions can be easily accessed.** Examples of surveillance streams include livestock markets, slaughter plants, and animal disease diagnostic laboratories. Data streams may also include observational information recorded by stakeholders and relevant non-VS databases and other non-traditional sources of information. **Surveillance "data" streams are the cornerstone of Surveillance for Action in 2015 because they provide a cost-efficient information collection infrastructure with flexibility and scalability to provide critical surveillance information in response to changing disease threats.**

**The following key issues must be addressed to achieve the VS2015 vision for Surveillance for Action:**

1. VS, in partnership with its stakeholders, must develop a well defined, transparent and flexible decision-making framework for addressing appropriate responses to surveillance information. Stakeholder engagement in these processes is crucial to generate support for wider-ranging information sharing.

2. VS must strengthen processes for acquiring complete animal health data from States, industry, and other key partners. These processes include (a) clarification of animal health data required by VS to fulfill its mission, (b) creating clear client-appropriate information sharing relationships, (c) obtaining and providing clear guidance on confidentiality issues, including seeking any new authorities needed to protect sensitive data, (d) providing a process for developing data confidentiality and sharing agreements, and (e) better use of existing, modified or new legal authorities, as appropriate.
3. VS must develop and refine existing and new surveillance streams into complete, scalable, and integrated information sources to provide data for analysis, reporting, and decision-making.
4. VS must develop more effective information sharing relationships with external stakeholders by jointly creating client-appropriate data confidentiality and information sharing standards.
5. VS must continue to support and develop its NVSL-FADDL and NAHLN lab infrastructure to generate validated surveillance results. This initiative must include expanded consultations and partnerships with the laboratory and research communities to more quickly integrate new diagnostic capabilities into surveillance for action planning and implementation.
6. VS must develop an integrated cross-functional IT infrastructure for national surveillance information management, analysis and dissemination which integrates seamlessly across all VS and stakeholder animal health and surveillance functions.

VS must designate specific new roles and responsibilities within a management structure that nurtures this surveillance vision. The agency must evolve from an independent, regulatory environment towards a more collaborative culture that supports a national animal health surveillance network via realignments in roles, responsibilities, performance metrics and resources across all VS units.

This strategy document more fully describes each issue and recommends specific actions to be undertaken in FY11 through FY14, including necessary shifts in roles and responsibilities that align with each issue. Some work has been accomplished through pilot projects undertaken by this Working Group which are also described in this document. Continued exploration of innovative ideas and activities through pilot projects should be an ongoing priority for VS.

## **Vision for Surveillance for Action**

By 2015, VS will be a more flexible agency equipped and positioned to address future animal disease challenges, including endemic diseases of economic importance, newly emerging diseases, those with potential to impact trade and zoonotic diseases at the human - animal interface. Surveillance activities will shift from a traditional disease program focus to a comprehensive, integrated, and stream-based surveillance approach. In 2015, VS's surveillance will be enhanced through new data acquisition approaches based on the use of surveillance streams, syndromic surveillance, and partnerships focused on acquiring and sharing animal health information. VS staff at all levels will understand their new roles and responsibilities in collecting animal health surveillance information and building partnerships to acquire information to protect animal health.

As these refined surveillance activities lead to detection of emerging animal or human health concerns, VS and its stakeholders will utilize a clear and flexible decision-making framework to develop appropriate internal and external responses. Response to new surveillance information may range from information sharing and educational outreach to implementation of mandatory control measures, depending on the threat to animal and public health.

Surveillance for Action advocates a fundamental shift from a 20<sup>th</sup> century focus on surveillance for defined regulated diseases towards a 21<sup>st</sup> century information-centric surveillance approach that identifies new animal health challenges while continuing to provide surveillance information for established disease programs. This shift will require significant cultural change within VS, new roles and responsibilities throughout VS and innovative budget development and allocation processes.

## **Background Information and Terminology**

The Surveillance 2015 Working Group used concepts developed by the National Surveillance Unit (NSU), the USAHA National Animal Health Surveillance System (NAHSS) Steering Committee, and the 2001 Animal Health Safeguarding Review to develop this strategy document. The 2015 Surveillance for Action strategy is built on ideas about national animal health surveillance developed within VS and other regulatory animal health groups over the past decade. Three concepts evolved that form the basis for 2015 Surveillance for Action:

**Surveillance Streams:** A surveillance stream is an accessible source of critical animal health data, often located at animal concentration points where important biological samples and epidemiological information can be easily accessed. Simple examples are animal concentration points such as livestock markets and slaughter plants. Other streams include interstate movement or site inspections, where biological samples and/or epidemiological information can be collected. Surveillance streams may also be events where observational animal health data are recorded for surveillance purposes. Diagnostic laboratories are an important surveillance stream because they may provide epidemiologic and testing data for diseases of interest. Surveillance streams may also be animal health data sources provided to VS by partner agencies or stakeholders or through mining of publicly available data. Key features of all surveillance streams are that they (1) provide animal health data that flows into VS processes for

decision-making, and (2) are designed with scalability so they may be “turned up” (or down) in response to new issues where surveillance data are needed. For example, slaughter surveillance infrastructure may routinely provide limited data on one or two diseases; however, it should be designed so it can be readily modified to capture similar data on different diseases or at higher rates. The surveillance stream concept is the cornerstone for Surveillance for Action because it provides an efficient infrastructure for obtaining “the right surveillance information at the right time” in response to changing disease threats

**Comprehensive Surveillance:** Comprehensive refers to a surveillance approach that includes diverse types of health indicators, relies on multiple data sources, and includes all aspects of the surveillance process. Comprehensive surveillance follows a specific plan, is objective driven, and is coordinated at many levels. Data elements are standardized, allowing for multiple-level (including national) analysis and decision-making.

**Integrated Surveillance:** Integration refers to combining or coordinating surveillance system components that have common characteristics and standardized data. This integration increases surveillance efficiency and enhances data analysis for reporting and sharing of information that informs decision making and facilitates any needed response activities.

**Terminology:**

**Unstructured data/unstructured information:** For the purposes of this document, unstructured data or unstructured information refers to text based information, or to data or information that is not easily analyzed with use of traditional epidemiological tools.

## **Surveillance for Action: Issues, Actions and New Roles & Responsibilities**

The following six issues must be addressed to move VS towards a national surveillance system that can provide key animal health information for accurate and timely decision-making on current and future animal health issues. For each issue, initial action items and new roles and responsibilities are identified that are needed to resolve and improve each area of concern. Action on these issues is critical to shifting VS from its 20<sup>th</sup>-century regulatory disease focus to a more flexible agency equipped to address the disease challenges of the future.

**Issue #1: VS, in partnership with its stakeholders, must develop a well defined, transparent and flexible decision-making framework for addressing appropriate responses to surveillance information. Stakeholder engagement in these processes is crucial to generate support for wider-ranging information sharing.**

Through new surveillance streams, technologies, and collaborations, VS will increasingly be presented with animal health information requiring decisions and appropriate responses beyond VS' historic scope of emergency response and regulatory programs. VS will need clear policies and guidelines that define decision-making authority related to how and when it will respond to this information. Surveillance actions may range from simple communication with partner agencies and stakeholders to intensive outbreak control responses. Currently, VS has a strong understanding of how and when it responds to regulated diseases, but it lacks guidelines for other diseases of interest or new situations (e.g., the 2009 novel swine influenza virus situation).

It is critical that surveillance partners understand and have a role in the decision-making process; this will demonstrate Agency transparency, foster trust and improve information sharing.

When completed, the rules of engagement will define the "action" part of surveillance by unambiguously describing the agency's policy concerning when and how it acts on specific types of animal health information, and what roles different groups within VS will assume. All of VS will need to absorb some change in their role as the agency changes from a primarily regulatory focus to a comprehensive animal health mission.

### **Recommended Actions**

- **Assign a VS Work Group with a charter to develop flexible business processes for how VS will act on surveillance information**, and what roles different units or positions will have in the process. The business process or rules of engagement should consider the likely types of surveillance information that VS will receive from current surveillance activities as well as future stream development. The



process needs to be adaptable to new situations. The use of the Tool for Assessment of Intervention Options (TAIO) should be included as part of the approach for decision-making. The National Surveillance Coordinator and Virtual VS Surveillance Team (see page 24) should be engaged in this to garner input and buy-in from a cross-section of stakeholders within and outside of VS.

*Target completion: FY11*

### **New Roles & Responsibilities**

- Individuals or groups need to be identified and assigned authority and accountability for acting on surveillance information, and their specific responsibilities must be defined. Different surveillance streams or commodities may have different responsible parties.
- Individuals or groups need to be tasked with acquiring, analyzing, and communicating surveillance information; this should include and be coordinated among stakeholders at local, State, regional and national levels. The specific responsibilities also need to be defined to assure that appropriate and timely information is provided to those responsible for acting on surveillance information.
- A VS national surveillance coordinator will be responsible for communicating VS' rules of engagement and decision-making processes for responding to surveillance information throughout VS and with external audiences.

**Issue #2: VS must strengthen processes for acquiring complete animal health data from States, industry, and other key partners. These processes include (a) clarification of animal health data required by VS to fulfill its mission, (b) creating clear client-appropriate information sharing relationships, (c) obtaining and providing clear guidance on confidentiality issues, including seeking any new authorities needed to protect sensitive data, (d) providing a process for developing data confidentially and sharing agreements and, and (e) better use of existing, modified or new legal authorities, as appropriate.**

VS is responsible for providing critical animal health information to trading partners to support commerce and for making informed decisions in response to possible animal and public health threats from diverse animal disease agents. These responsibilities cannot be fulfilled without timely baseline National animal health surveillance data from partners, especially States. VS currently struggles to acquire adequate basic surveillance data from States, laboratories, and industry partners needed to fulfill our mission.

To address this issue, VS needs to better understand and use existing authorities and modify authorities where needed to acquire baseline national animal health surveillance data critical for protecting animal and public health and facilitating commerce. Minimum standards for data sharing must be defined and enforced so that baseline surveillance data is available to VS to perform core functions. National animal health data standards (e.g., consistent use of terminology and standardized lists of values) are needed to assure that animal health data can be readily shared and exchanged. Effective information sharing relationships (see Issue #4) are essential for acquiring surveillance data. VS needs to develop new approaches to assure our partners that personally identifiable information and sensitive business information included in shared data will be confidential; confidentiality is important in gaining acceptance for surveillance authority and compliance with basic data reporting standards. VS needs to develop a process for developing confidentiality and data sharing agreements. Additionally, VS must provide IT infrastructure and available technology for our partners to provide required data to us (see Issue #6: IT infrastructure needs for surveillance). VS must provide key animal health information back to States and partners so they may use this information for their own internal purposes; bi-directional information sharing provides partners with information that they can use and provides an incentive to maintain a relationship with VS.

### **Recommended Actions**

- **Assign a Working Group to clarify VS' regulatory authority for acquiring data for national animal health surveillance** and describe how VS should appropriately use existing authority to acquire data

from States and other key sources. Where authority is determined to be lacking, the group should describe mitigation approaches. This task should involve OGC consultation at an early stage to identify the best approach to achieving this objective, as well as involving the National Surveillance Coordinator and Virtual VS Surveillance Team (page 24).

*Target completion: FY11*

- **Complete the National List of Reportable Animal Diseases (NLRAD), and determine reporting requirements (mandatory or voluntary) for stakeholders.** Consideration should be given to including syndromic reporting to support the 2015 vision. The NLRAD will guide our data collection efforts and allow us to establish appropriate categories for action such as control measures, increased data gathering, and/or communication. The National Surveillance Coordinator and Virtual VS Surveillance Team (see page 24) and NASAHO should be engaged in this project to assure input and buy-in from affected stakeholders.

*Target completion: FY12*

- **Define the minimum animal health data reporting standards for States and other partners** based on existing regulations and the new NLRAD and develop protocols to assure that data reporting occurs as specified in partner agreements. As with the above action items, this project should include collaboration with the National Surveillance Coordinator (page 24) and State stakeholders.

*Target completion: FY13*

- **Create a work group representing States, industry, and VS to develop best options for protecting confidentiality of surveillance data** provided to VS by States, laboratories, industry, accredited veterinarians, and other surveillance partners. The group should consider current protections, such as the Farm Bill and classification of some types of data (e.g. futures market) and examine the need for new regulations to protect data privacy. As with the above action items, this project should include collaboration with the National Surveillance Coordinator (page 24) and State stakeholders. *Target completion: FY12*

## New Roles & Responsibilities

- VS will need to identify and task appropriate personnel and engage OGC and other experts with knowledge of existing authority for surveillance data collection to address current authority issues as well as developing a strategy for the authority needed for comprehensive surveillance.
- VS will need to identify and task a group or groups who will be responsible for routinely reviewing surveillance data provided by partners and assuring minimum reporting standards are achieved by stakeholders engaged in providing surveillance data to VS. The focus of this effort will be to ensure proper baseline information is shared in accordance with regulations, policies and agreements. VS will need to task a group to be responsible for developing a process and identifying roles for monitoring surveillance output to assure confidentiality guidelines are met.

**Issue #3: VS must develop and refine existing and new surveillance streams into complete, scalable, and integrated information sources to provide data for analysis, reporting, and decision-making.**

VS must expand and modify existing surveillance streams, and develop new streams as needed, to efficiently and effectively capture animal health surveillance data (see page 5 for a definition of surveillance streams). Many surveillance streams are already used by VS in existing programs, and several could be strengthened by expanding their focus to include multiple diseases and improving data capture processes. New surveillance streams may also be developed via data-sharing collaborations with other agencies and stakeholders. For this reason, work aimed at developing surveillance streams must be closely coupled with work aimed at developing information sharing partnerships with external stakeholders (Issue #4, below).

A general model for developing surveillance streams is described in Appendix 1 and outlines the key considerations for developing any surveillance stream. Surveillance stream identification, development, maintenance and assessment of its effectiveness in providing surveillance data will be an ongoing, dynamic process.

### Recommended Actions

- **Task a VS unit with the function of facilitating the identification, development and integration of new surveillance streams.** To fulfill its expanded mission, VS will need to promote the identification and exploration of new sources of animal health data that are needed on a continual basis. For example, novel approaches may be needed to collect animal health surveillance information on exotic animals or wildlife populations that may interface with domestic livestock or have zoonotic or public health implications. The group will not necessarily develop the surveillance streams, but will provide a format for analyzing the potential utility of new streams. NSU may be a candidate for providing this function. Pilot projects may be effectively used to explore some approaches to tapping into new surveillance streams.

*Target completion: FY11*

The following surveillance streams are the most critical for future stream development or enhancement, and exploration of these streams are considered as action items.

- **Develop livestock markets and interstate movement surveillance streams.** Livestock markets and interstate movement inspections are two existing surveillance streams where VS must better capture animal health surveillance data; VS also has defensible authority to capture data in these areas. Although surveillance occurs in these places / events, data are currently not effectively captured for surveillance purposes. VS must develop processes and protocols for capturing surveillance data from markets and interstate movement inspections and assure that these data

The Surveillance for Action Working Group initiated a pilot project to develop a [new](#) surveillance stream: Surveillance of Exotic Animal Commerce (see page 20 for pilot project information)

are available for local and national surveillance actions. Data from these sources should include origin and destination location data for animals in movement to support targeted surveillance and trace back in emergency situations. This effort should be integrated with VS 2015 Movement and Marketability initiatives.

*Target completion: FY13*

- **Develop an active accredited veterinarian surveillance stream.** Accredited veterinarians are the front line point of detection for Foreign Animal Diseases (FADs) and newly emerging diseases, but they are currently under-utilized as a resource for providing national surveillance data. New partnerships, incentives, training opportunities and communications are needed to actively engage private veterinarians in VS' national surveillance efforts. These approaches should be explored through pilot projects that test new approaches to actively engaging accredited veterinarians as key players in national surveillance, particularly for FADs, emerging diseases, and unusual syndromic events.

The Surveillance for Action Working Group struggled to find a successful pilot project to probe the concept of engaging accredited veterinarians in surveillance; a study of existing programs and best practices was completed (see page 22 for pilot project information).

*Target Date: FY14*

- **Enhance slaughter surveillance** by optimizing the efficient collection of surveillance samples and animal identification termination data at selected slaughter plants and improving processes for collecting and recording animal health surveillance data at slaughter plants.

The Surveillance for Action Working Group initiated a pilot project to enhance data collection in the slaughter surveillance stream: Automating Surveillance Sample Selection at Slaughter (see page 21 for pilot project information).

*Target Date: FY12*

- **Enhance surveillance data collection that occurs within the context of program diseases** to maximize the surveillance information acquired from this data source. VS should record (and fund) observational surveillance data and samples collected for other diseases while completing established disease program surveillance activities.

*Target Date: FY12*

- **Enhance diagnostic laboratory surveillance** by increasing capabilities of NAHLN laboratories to electronically submit (message) testing data for a range of diseases and conditions, starting with all program diseases and other diseases of interest to VS (e.g., SIV). Also, VS must support the development, evaluation, and use of innovative diagnostic technologies such as assays for multiple disease agents. *Appropriate usage of diagnostic lab data must be addressed as components of Issue 1 (Response) and Issue 2 (Authority)*

The Surveillance for Action Working Group initiated a pilot project to enhance diagnostic laboratory surveillance in NAHLN labs: Engaging NAHLN labs in FAD surveillance (see page 22 for pilot project information).

*Target Date: FY12*

- **Further development of unstructured data mining and analysis** by identifying specific areas of surveillance that will benefit from unstructured data monitoring and analysis. VS needs to define a clear purpose for gathering and analyzing unstructured data, as well as identifying the customer, the process and expected outcomes or actions. Examples of unstructured data mining and analysis could be: social or political factors that change a specific disease risk, changes in vector habitat that could change surveillance strategy, changes in production that effect disease emergence risk, etc.

*Target Date: FY12*

## New Roles & Responsibilities

- A stream-based surveillance system will require a highly trained regional, area, and field staff that can effectively develop and maintain these data sources and collaborate with key stakeholders to enhance

disease awareness and surveillance data collection in each stream. Regional, area, and field staff should be encouraged to take a lead role in defining and appropriately expanding roles and responsibilities needed to develop a VS field force that can effectively accomplish VS' surveillance goals. Field roles and responsibilities may expand in parallel with developing surveillance streams. VS will need to provide training as well as modify performance metrics to expand the role of field personnel as animal health surveillance experts and key resources for accomplishing communications and relationship-building with surveillance partners.

- VS should consider structuring surveillance coordination as a discrete activity with budgetary capability, perhaps under a National Surveillance Coordinator (see recommendations, page 24). This new role would coordinate VS core functional areas that contribute key elements of successful surveillance: regional, area and field staff; laboratory personnel; program managers; analysts and surveillance planning and evaluation experts; and those involved in emergency response and preparedness.
- The roles and responsibilities of multiple VS units and positions involved in surveillance and how these units relate to the surveillance infrastructure need to be defined and included in position descriptions and performance elements, creating a clear understanding throughout VS of the roles and interactions required for successful surveillance and also creating accountability for effective implementation of VS' surveillance initiatives.
- Ideally, specialist roles (or units with specialized knowledge) should be developed at a National level for each stream and work closely with existing commodity experts. Stream and commodity experts will collaborate to assure that each stream provides useful information to address issues relevant to each commodity. Stream and commodity experts should also be responsible for assuring that data collection from surveillance streams is supported and maintained. Also as appropriate; based on data confidentiality guidelines; that stream-based data is shared with partners directly involved in the stream (e.g., livestock market or slaughter plant managers should receive surveillance data provided at their operations, creating useful feedback to those partners). See Appendix 1 (General model for developing surveillance streams, p. 27) for more information on stream and commodity specialists.

**Issue #4: VS must develop more effective information sharing relationships with external stakeholders by jointly creating client-appropriate data confidentiality and information sharing standards.**

VS cannot and does not need to collect all of the animal health information needed for comprehensive surveillance; rather, we need to form effective partnerships that are focused on information and data sharing. VS must identify and develop mutually beneficial information sharing relationships with producer organizations, States, and other Federal agencies to acquire and expand surveillance data. These relationships will occur at all levels of VS. VS' field staff (defined as regions, area offices, area epidemiologists, field VMOs and AHTs) will play a vital role in building and maintaining relationships with stakeholders. As eradication programs near completion, field staff will need to develop new activities to create value and enhance relationships with stakeholders and cooperators. APHIS and VS are currently working to develop useful guidelines on building and maintaining productive relationships with stakeholders; these general guidelines may need to be customized to address surveillance needs. Utilizing diagnostic labs, accredited veterinarians and livestock markets as surveillance streams will provide VS field staff with new opportunities for interaction and management of VS field activities. These interactions will assist in enhancing surveillance, building and maintaining vital relationships, and aid in field staff preparedness for inevitable animal health emergencies. The issue of developing effective information sharing partnerships is related to all other strategic issues described herein.

**Recommended Actions**

- **A VS unit or outside experts should be tasked with customizing the APHIS guidelines for relationship building** to address surveillance relationships at all levels from upper management down to the field level, and provide any needed training or mentoring to meet the guidelines. Effective business processes for relationship development will be addressed, including but not limited to:
  - Identifying the key partners whom VS wants to have more effective information-sharing and mutually beneficial relationships
  - Identifying how VS staff should develop those information-sharing and mutually beneficial relationships
  - Creating accountability and performance metrics at all levels so that relationships are not something that we simply hope will happen, but something that we work at every day as a critical element of our jobs.
  - Survey stakeholders to determine what they perceive as value from VS*Target completion: FY11*
- **VS will empower field staff to create viable relationships in new areas** through modification of job descriptions, promoting culture change within the agency, and creating an atmosphere of collaboration.  
*Target completion: FY13*

- **Pilot studies** [page 20] can be used to determine how to actively engage accredited veterinarians as key players in national surveillance, particularly for FADs and emerging diseases, and collecting syndromic animal health data.  
*Target completion: FY13; will be ongoing process as well*
- **Incentives and electronic processes for States and other collaborators to share data should be explored and pilot tested.** This can be built into many of the pilot projects that will be conducted in stream development and enhancement. [described in Issue 3]  
*Target completion: FY12*

### New Roles & Responsibilities

- Field staff (defined as regions, area offices, area epidemiologists, field VMOs and AHTs), will see a role change as a result of the shift in focus from regulating disease to building relationships with stakeholders, particularly accredited veterinarians and managers of animal concentration points at the local level. This will be accomplished by modifying role descriptions, providing guidance, and empowering field staff to serve as local surveillance managers and participants for market stream surveillance. Field staff will also play critical new roles in developing, maintaining, and using information from surveillance streams, and may be the conduit of communication of some surveillance information. VS decision-makers and managers will need to modify their responsibilities and work culture to include relationship building in strategic planning and work activities by identifying important partnerships/collaborations and acting to build them for comprehensive surveillance.



**Issue #5: VS must continue to support and develop its NVSL-FADDL and NAHLN lab infrastructure to generate validated surveillance results. This initiative must include expanded consultations and partnerships with the laboratory and research communities to more quickly integrate new diagnostic capabilities into surveillance for action planning and implementation.**

It is imperative that VS acquire the animal health data, needed to support the cultural and strategic changes embodied in the VS 2015 vision. In addition to enhancing the diagnostic laboratory surveillance data stream, VS must develop a permanent frame-work for laboratory feed-back and participation in the generation of “fit for purpose” tests that provide the appropriate surveillance data. NVSL, FADDL, and NAHLN engagement in the process of surveillance planning will result in acquisition of higher quality data and more efficient use of resources. These resources include NVSL and NAHLN for standardized protocols on detection of pathogens; NVSL and FADDL for FAD and emerging diseases, serotype shifts, and changes in host or virulence; and the CVB for testing and licensure of appropriate vaccines and diagnostic kits. Laboratories, as a cornerstone of surveillance for action in 2015, have to be ready to meet VS and stakeholder needs and expectations, providing high quality data as need to identify and manage changing disease threats, and in a cost-effective manner. Diagnostic testing should be based on robust formats adaptable to a variety of diagnostic scenarios: high throughput and discrete number of samples, field or laboratory conditions, technical personnel of varying levels of training and specialization, etc. Development of new and more efficient diagnostic methods is necessary to support the expansion of the VS mission, addressing new and emerging animal health issues. Laboratory techniques need to advance from traditional disease-specific tests towards more comprehensive, multiplex and multi-factorial diagnostic tools.

To address this issue, VS must maintain a policy of continued exploration of available tools and innovative designs that can be adapted to address new and existing animal disease challenges, including endemic and emerging diseases. It has to consider innovative ways to respond to changing circumstances using flexible budget and allocation processes. Effective information and data sharing relationships, strong collaboration with research and academic groups, full time dedicated laboratory infrastructure and personnel must be provided.

#### **Recommended Actions**

- **Assign a person or group of persons to participate in the Virtual VS Surveillance Team** to advise the National Surveillance Coordinator to act as linkage between both streams (surveillance and laboratories), get feed-back and clarify VS' guidelines and policies on surveillance information.
- **Form a VS group or unit to identify and explore new methodologies and cover gaps in our surveillance testing.** For example, there should be definition of best biological samples to be used for multiple

diagnostics, also evaluation of novel approaches to produce data on wild populations that may impact human or domestic animal health.

- **Strengthen collaborative relationships with public and animal health data collection units** (e.g. CDC and state diagnostic labs that collect influenza and rabies data). Identify partners and effective communication channels to achieve the proposed goals.
- **Develop and standardize diagnostic and investigative testing techniques at NAHLN and NVSL labs.** Provide SOPs and validation to other laboratories. Increase the number of accredited NAHLN Laboratories. Additional labs may be needed in the event of a large scale disease outbreak.
- **Encourage and facilitate the approval of new vaccines and diagnostic kits at the CVB** when they meet national animal health needs (prior examples include West Nile virus vaccine for equine use, pH1N1 vaccine for use in swine, and BSE diagnostic kits).

### New Roles & Responsibilities

- VS will need to identify and task appropriate personnel with awareness of pertinent advancements in research and diagnostic test development. Such personnel would monitor the literature and develop relationships with experts in the field so that they can quickly identify and facilitate the acquisition and adaptation of new tools for diagnostic application.
- VS will need to assign an individual, possibly the National Surveillance Coordinator or the NVSL lab director, with input from appropriate VS units, stakeholders and outside experts, to routinely review new and innovative proposals, advise on their use, be responsible for resources devoted to their development, and when indicated plan and coordinate their implementation.

**Issue #6: VS must develop an integrated cross-functional IT infrastructure for national surveillance information management, analysis and dissemination which integrates seamlessly across all VS and stakeholder animal health and surveillance functions.**

Effective national surveillance relies on standardized, accurate, and timely national animal health data that can be rapidly accessed, integrated, and analyzed to provide officials with data for confident decision-making. VS must have an integrated IT infrastructure that aligns with stream-based surveillance business needs, supports VS' expanded mission, provides usable information at national, regional and local levels, and facilitates data sharing with key collaborators.

The fundamental Surveillance for Action business needs related to IT systems are:

- The VS IT system must be developed to efficiently and effectively capture data acquired through existing and new surveillance streams. VS' IT infrastructure must shift from a disease-centric focus to systems that facilitate efficient data collection from surveillance streams for multiple diseases and syndromes.
- VS will increasingly collect and use syndromic, active observational, and unstructured data, and VS IT systems must be capable of managing this type of information.
- Because surveillance streams are designed to allow rapid modification in response to changing disease threats, VS' IT infrastructure must have similar flexibility so data management processes can be quickly shifted to provide additional information such as adding data collection and reporting for additional species, diseases or syndromes, and new data elements to existing information collections and reports, or to change the volume of data acquisition, in response to changing animal health information needs.
- By 2015, VS will have effective data sharing partnerships and unambiguous standards for reporting basic animal health information that VS requires from partners to fulfill its mission. VS' IT infrastructure must support these information-sharing partnerships and requirements by providing simple, secure processes for information exchange between these partners and VS.
- To support its expanded mission, VS' IT infrastructure must be able to accommodate information needs for multiple species, and surveillance streams appropriate for those species, beyond the scope of traditional livestock.
- VS must greatly enhance its ability to acquire, aggregate, analyze and report animal health surveillance data at national, regional, State, and local levels. IT systems must be enhanced and developed to provide timely and accurate animal health data that are required to (1) effectively plan and manage surveillance for programs at local, State, regional or national levels, (2) respond effectively to emerging situations or outbreaks, and (3) respond to international requests for national animal health information.

- VS IT systems must be developed to efficiently integrate animal health data that are collected and used across multiple business areas (surveillance, emergency response, program management, laboratory testing, animal movement, traceability, and others), thereby enabling data to be ‘collected once and used many times’. VS IT systems must also support new workflows where individuals routinely work and enter data across multiple business areas. For example, in Surveillance for Action environment, VS staff will routinely collect and/or use animal data associated with surveillance, program management, emergency response, laboratory testing, and animal movement; IT systems must be integrated with a common “look and feel” to seamlessly facilitate these complex workflows.
- Data standards. VS must lead and support the development, implementation, and enforcement of data standards because effective data integration relies on standardized data.

These VS 2015 Surveillance for Action IT requirements build on initial concepts described in the AHSM Business Case (May, 2009). Action items and roles and responsibilities needed to achieve these IT needs must be developed and implemented by the VS Office of the Chief Information Officer.

## **Pilot Projects**

The Surveillance for Action Working Group initiated and developed pilot projects aimed at exploring potential solutions or approaches to the key issues described above. The working group strongly recommends the continued use of pilot projects within VS because they provide an ideal tool to discover approaches to addressing complex problems, to foster grass-roots ideas for improving VS surveillance efforts, and to generate effective relationship-building teams within VS. All of the pilot projects that were suggested by the Working Group were related to developing surveillance streams (Issue #3 in this document) and developing more effective relationships (Issue #4 in this document); the fact that pilot projects align so strongly under these core issues demonstrates the importance of these issues to the Working Group members.

The projects listed below are a small first step towards finding solutions to complex problems associated with accomplishing animal health surveillance. In addition to the projects listed below, several pilot projects were proposed but not pursued; those projects focused on (1) relationship building with wildlife biologists in other federal and State agencies, (2) developing effective working relationships between VS staff and accredited veterinarians, and (3) identifying and clarifying the role of field VMOs in surveillance for action in 2015 and beyond. Although these projects were not undertaken by this Working Group, they are excellent candidate ideas for future pilot projects.

### *Pilot projects undertaken by the VS2015 Surveillance for Action Working Group:*

#### *Surveillance of Exotic Animal Commerce*

VS2015 Connection: This project directly addressed issue #3(Develop surveillance streams) by identifying and developing a novel data stream to provide information on a segment of agricultural commerce with which VS has previously had minimal interaction.

This project addressed issue #4(Develop effective information-sharing relationships) through discussions with stakeholders and other State and Federal agencies about data sharing. Several mutually beneficial areas were identified where data sharing could occur. Data sharing and confidentiality were discussed in the abstract at the meeting, and all agreed that confidentiality was of paramount importance, addressing Issue # 2 (Strengthen acquisition and protection of animal health data). If the project were expanded or continued, it would also relate to Issue #6 (Develop functional IT infrastructure for surveillance information management).

Pilot Project Overview: Briefly, AHTs utilize their skills and knowledge of the local area to locate venues where exotic animals are sold, traded, bartered or distributed. Pet stores were intentionally excluded from the pilot project because their locations are already known or easily obtained. When a venue is identified, the AHT makes a site visit to interview the owner/manager and obtain basic information regarding the demographics of the venue and a rough inventory of the animals on-site. The information collected is entered into a spreadsheet to allow basic collation of data. A meeting was held with industry stakeholders and other federal and state agencies to discuss and refine the project. Representatives of the Reptile industry, exotic animal importers, Federal and State Wildlife agencies, The State Dept. of Agriculture, and Public Health were represented at the meeting.

Goals of the project are:

- Explore opportunities for VS Animal Health Technicians to become involved in monitoring exotic animal trade and participating in activities related to exotic animals.
- Determine locations of venues, and frequency of events where exotic animals are sold, traded, bartered, or distributed.
- Obtain a rough inventory of all animals, whether non-domesticated or domesticated, present at events where exotic animals are sold, traded, bartered, or distributed
- Develop a needs assessment survey of attendees at exotic animal venues to aid in filling information gaps about exotic animal commerce within the project geographic area.
- Establish relationships and increase collaboration between stakeholders and local, state, and federal agencies.
- Expand the VS mission to respond not only to issues impacting animal agriculture, but also to public health concerns connected to animal populations of any kind.

Status:

- Pilot project approved by VSMT – *January 2010*
- Data collection in trial counties (Florida) by 3 field AHTs – *March-May 2010 (Complete)*
- One-day project work conference and a one-day training course for additional field AHT's and expansion of field team to 7 AHTs total (8 including AIC)– *July 2010 (Complete)*
- Continue data collection by field team members. Expand project to include all of state (Florida) – *June – November 2010 (In Progress)*
- Mid-project review and survey development conference call – *October 2010*
- Project completion and debriefing teleconference, determine resources needed to effectively maintain or expand this project, submission of deliverables. – *December 2010*

#### *Automating Surveillance Sample Collection at Slaughter*

VS2015 Connection: This project is aligned with Issue #3 (Develop surveillance streams) and Issue #6 (Develop functional IT infrastructure for surveillance information management). This pilot project is designed to enhance an existing surveillance stream, using a new IT approach to support surveillance streams.

Pilot Project Overview: This pilot project uses an automated approach in the selection of targeted surveillance samples at slaughter plants using mobile IT devices. Nationally, the cattle brucellosis program is collecting samples from close to one hundred percent of adult cattle and the pseudorabies program is obtaining samples from over ten percent of cull sows at slaughter. Pseudorabies and brucellosis surveillance plans will rely on a significant reduction in the number of animals sampled. This reduction in sample numbers will require a randomized sample of the national population. This project is testing the ability of an IT device to obtain a random sample at the speed of commerce, while still recording identification devices verifying termination. The project will include an evaluation of the costs and benefits of using MIM devices for automating surveillance sample selection at a cull sow slaughter plant. Phase 1 of the pilot project provided an estimated annual cost savings due to reduced shipping costs and laboratory sorting costs of over \$6800. Phase 2 of the project will test the IT device under normal operating conditions to select samples for testing.

Status: This pilot project was approved by VSMT in February, 2010 and is scheduled for completion by December, 2010.

*Study: Engaging Accredited Veterinarians in Emerging Disease and FAD Surveillance.*

VS2015 Connection: Developing accredited veterinarian surveillance streams. This project is aligned with Issue #3 (Develop surveillance streams) and Issue #4 (Develop effective information-sharing relationships).

Overview: This study was intended to determine if VS could leverage one or more of the successful tactics used in State programs (and avoid the known pitfalls) to engage accredited veterinarians throughout the U.S. in emerging disease and FAD surveillance. This study is focused on gleaning information from existing State programs, discovering and documenting State programs that are engaging private veterinarians in animal health surveillance and using this information to develop suggestions about how VS could better engage accredited veterinarians in emerging and FAD surveillance nation-wide.

Status: Study completed in May 2010

Recommendations: The Syndromic Surveillance Program, in New Mexico and Arizona, is the program that best incorporates the private sector veterinarians in disease surveillance and should be looked at as a model of reference to build programs on a national level using incentives; including but not limited to; fee for service, continuing education credits and participation in Emergency Veterinary Response Teams.

*Study: Engaging NAHLN laboratories in FAD Surveillance.*

VS2015 Connection: The project directly supports Issue #5 (Integrating lab infrastructure) by making use of the technical capabilities of the NAHLN laboratories in order for VS to detect an FAD outbreak. It will serve field forces and stakeholders by increasing the Nation's capability of early detection and response to low profile or atypical presentations of FADs. It also addresses Issue #3 (Develop surveillance streams) through veterinarian surveillance streams of information related to syndromic screening and to international trade data requests to support the absence of FAD diseases.

Pilot Project Overview: This pilot project expands the role and makes use of the technical capabilities and expertise of NAHLN laboratories to screen FADs (FMDV has been selected as model given its high profile and advanced state of implementation in NAHLN) in samples that are already being collected. The NAHLN lab will select samples that fit into pre-defined screening criteria which don't include evidence or suspicion of vesicular/ulcerative lesions. The participating NAHLN labs will have preapproval granted to select and screen for FMDV using approved real time RT-PCR methods and will notify the NAHLN coordinators of the selected sample and intent to test. In case of a presumptive positive or inconclusive result, Animal Health Authorities will be notified to confirm and investigate the case.

The results of this pilot project will impact positively several aspects of VS functions and linkages with field and stakeholders, such as: (i) enhance the NAHLN surveillance stream by screening non-FAD related submitted samples from sick animals; (ii) include small ruminants and asymptomatic animals in surveillance; (iii) potential to expand NAHLN capabilities to other significant domestic or exotic diseases; (iv) increase USDA documentation of disease freedom to OIE to gain prestige on international grounds;(v) exercise current plans for action, cooperation and communication systems in case of emergency; and, (vi) create a new stream of information for surveillance.

Status: This pilot project was approved by VSMT in August 2010 and is scheduled for completion by October 2011.

*VMO Observer Listserv*

VS2015 Connection: Maintaining a highly trained workforce of technical personnel with a broadened awareness of national disease activities, emerging issues, and public health concerns of various animal industries. In addition, a new potential stream of information for syndromic surveillance will be established. This project is aligned with Issue #3 (Develop surveillance streams), Issue #4 (Develop effective information-sharing relationships), and Issue #6 (Develop functional IT infrastructure for surveillance information management).

Pilot Project Overview: The project creates a nationwide communication network for VS personnel responsible for conducting or coordinating animal disease investigations to share and discuss case reports and diagnostic investigations.

Status: This pilot project was approved by VSMT in August 2010 and is scheduled for completion by October 2011.



## **Future Directions for Surveillance for Action Planning**

A comprehensive, flexible, and action-oriented surveillance system must be dynamic and poised for change. VS must commit the human and financial resources needed to continuously evaluate, assess and adapt to new data streams, new concerns, and changing information needs. The initial framework development will require ongoing input and action by those in VS whose expertise and responsibilities fit the strategy.

The VS2015 Surveillance for Action working group recommends that a National Surveillance Coordinator position be established at the VSMT level. This position will coordinate (1) implementation, planning for and monitoring of new surveillance activities that will be performed by the VS field force and cooperators, (2) planning, analysis and evaluation of new and existing surveillance functions (e.g., current NSU and CEAH activity), (3) surveillance implementation planning and coordination with responsible VS units, cooperators and other stakeholders(e.g., current program staff activity), (4) continued development of an effective laboratory infrastructure for national surveillance, and (5) continued development of IT systems to support surveillance. The national coordinator will identify and develop key linkages between VS' surveillance, emergency management, movement & marketability, and one health functional areas. The national coordinator will be a leader in identifying, developing, and maintaining key external relationships and internal roles and responsibilities that are critical for successful national surveillance. Lastly, the national coordinator will need to be able to allocate resources as needed to assure the implementation of VS' surveillance for action vision through oversight of the AHMS budget and input into the other line items that have surveillance components.

In addition to a National Surveillance Coordinator, the Surveillance for Action working group recommends the development of a virtual team for national surveillance that will represent VS units that form the foundation of VS' surveillance infrastructure: the regions, areas and field staff, laboratories, IT staff, emergency management, CEAH, NSU, and program staff. The Virtual VS Surveillance Team will be lead by the National Surveillance Coordinator and serve to funnel innovative grass-roots ideas for improving VS' surveillance efforts to the national coordinator and to assist the coordinator in identifying, developing, evaluating and implementing VS initiatives and programs that comprise the VS surveillance infrastructure.

Identifying and consolidating key issues, needed actions, areas for exploration and new or changing roles and responsibilities have been a major undertaking for the Surveillance for Action Working Group. For this strategy to become operational, it will be important for this Working Group or some subset of the working group to continue on past the one year timeline. The unique synergy and membership of the Working Group, particularly the interaction between field staff and staffs at centers in Riverdale, Ames, Plum Island and Fort Collins, has allowed new ideas and viable strategies to be developed. The surveillance for action working group requests to continue past 2010 to assist the Synthesis Group in their efforts to create a unified VS2015 strategy and to assist in the formation of the virtual team described above.

## Summary of Surveillance for Action Priorities

### In Progress

1. Develop an effective national surveillance information management (IT) infrastructure which integrates seamlessly with program and disease response information management (Target complete by date: September 2014).
2. Develop an effective, collaborative, integrated laboratory network which meets the needs for surveillance and disease response (Target complete by date: September 2014).

### Initiate Immediately

3. Seek authority to keep sensitive information confidential (Target complete by date: FY2013).
4. Clarify existing authorities and takes steps allowed under those authorities to position VS to gather surveillance information such as adding all concentration points to the blood tissue collection rule, establishing a national reportable diseases/syndromes list, and requiring the reporting of positive and negative test results for reportable diseases. Identify areas where VS lacks needed authority and take steps to gain that authority (Target complete by date: FY2013).

### Initiate by the end of FY 2011

5. Assign a GS 15 as the National Surveillance Program Coordinator. This position would need to have the authority and responsibility for surveillance policy development, implementation planning and coordination, stakeholder engagement, the AHMS budget and coordination of surveillance activities associated with other line items (Target complete by date: September 2011).
6. Support the National Surveillance Program Coordinator in development of a cross functional virtual team representing the other units within VS involved with or impacted by surveillance (Target complete by date: October 2011).
7. Engage internal and external stakeholders through working groups, workshops, list serves or other methods to facilitate dialog between VS personnel, states, other federal agencies and industry to identify new surveillance data sources, enhance work processes and to determine industry, state and national data needs and to test potentially useful ideas through pilot projects (Target complete by date: September 2012 to establish and fully implement process, engagement will be ongoing).
8. Establish business processes for acquiring, analyzing and sharing surveillance information appropriate to each stakeholder group and assign responsibility for these activities to specific position(s) (Target complete by date September 2012).
9. Develop business processes for identifying actionable surveillance information and delegate authority to specific positions to decide what actions if any will be taken in response (Target complete by date: September 2012).

### Initiate by the end of FY 2012

10. Modify VS decision-makers and managers' responsibilities and work culture to prioritize relationship building in strategic planning and work activities by identifying important

partnerships/collaborations and acting to build them for comprehensive surveillance (Target complete by date: September 2013).

11. Empower field staff to create viable relationships in new areas through modification of job descriptions, promoting culture change within the agency, and creating an atmosphere of collaboration (Target complete by date: September 2014).
12. Identify and task commodity and stream specialists to assist the national coordinator in identifying surveillance activities that would be of value to each commodity group and in developing and maintaining surveillance streams (Target complete by date: September 2013).
13. Develop or enhance surveillance streams including livestock markets, accredited veterinarians, slaughter surveillance, program disease surveillance, diagnostic laboratories, imported animals, and unstructured data sources (Target complete by date: September 2014).

## Appendix 1: General Model for Developing Surveillance Streams

This appendix describes the general considerations for developing any surveillance stream. This appendix is the result of a brainstorming session and is not intended to be a complete model.

### *A. Acquiring data from the stream*

1. Describe the purpose and benefits of collecting data from the stream.
2. Define the data to be gathered from the stream  
Important considerations:  
minimum data needed to meet surveillance objectives,  
identify confidentiality issues,  
determine minimal degree of granularity of the data (i.e. level of reporting such as state, zip code, or premises-level); as fine as necessary; some optional, some required elements?  
[database utilized should be able to collect optimal data, with option for less granularity, still capturing minimum data needs]  
Determine data quality standards  
Determine the frequency of collection  
Define potential triggers and actions that the data will inform
3. Identify the partners and build relationships  
Identify key partners, data users, and other stakeholders involved with or impacted by surveillance stream  
Foster relationships with key partners  
-What benefits / incentives to key partners to assure they provide timely data
4. Manage resources and the flow of information  
Capture and disseminate the data  
Develop IT infrastructure to capture data & provide data to users  
Funding for acquiring data  
Cost/benefit analysis of surveillance stream  
How to pay for data acquisition/sampling  
Source  
Mechanism for payment  
How can we gain efficiencies in data collection...  
What are the special data acquisition features of this stream & how do we address those?

### *B. Define internal and external roles and responsibilities*

Key roles:

#### **Field personnel:**

Description of role: Stakeholder engagement, serve as liaison between stream stakeholders and VS, sample acquisition

Responsibilities: develop and maintain relationships with stream stakeholders, provide back-up for other field personnel across state borders for efficiency

Culture change: decrease territoriality

**Commodity specialist:**

*Description of role:* Represents commodity issues in surveillance stream development

*Responsibilities:* Work together with stream specialist, field staff and surveillance staff to put together a surveillance package for each stream addressing commodity needs, develops and maintains good relationships with industry stakeholders, assist in identification of action triggers and development of response plans

**Stream specialist:**

*Description of role:* understands and is sensitive to the operational concerns of the stream stakeholders, such as efficiency, cost, safety, confidentiality, and the proprietary nature of operational information

*Responsibilities:* Work together with commodity specialist, field staff and surveillance staff to put together a surveillance package for each stream addressing commodity and stream stakeholder needs, develops and maintains good relationships with stream stakeholders, assist in identification of action triggers and development of response plans

**Surveillance staff:**

*Description of role:* Provides insight on data needs for analysis, assembles and analyzes raw data

*Responsibilities:* Provide business case for stream, work with stream specialist and commodity specialist to develop a stream that can be analyzed for action; receive raw data, assemble, and analyze data, report analyzed information to appropriate stakeholder; develop communication plan for two-way reporting of the data

**Regions:**

*Description of role:* Facilitate field input for surveillance planning and implement field activities related to the stream

*Responsibilities:* Work together with commodity and stream specialist and the surveillance staff to put together a surveillance package for each stream addressing commodity and stream stakeholder needs, develops and maintains good relationships with stream stakeholders, assist in identification of action triggers and development of response plans

*Culture change:* Allow free exchange of appropriate information and ideas within and between the regions and with the surveillance staff on an ongoing basis; ensure resources are provided to initiate and maintain the surveillance stream

**VSMT:**

*Role:* Champion flexible and timely information collection and exchange

*Responsibilities:* Provide resources to field personnel and surveillance staff for surveillance mission, support and help cultivate relationships between VS and stakeholders

*Culture change:* Allow free exchange of information and ideas within and outside of the organization on an ongoing basis

***C. Acting on the surveillance information:*** [actions will be built into stream business case and communication plans- surveillance staff role]

Define mechanism for action

Develop communication plan for two-way reporting of data including process for review and revision  
Consider possible outcomes including impacts of releasing information that may negatively impact stakeholders

Develop pathway for identifying and addressing data acquisition and response to diseases of sensitivity for stakeholders

Define appropriate action triggers and responses

Identify who is responsible for discovering the triggers and who is responsible for responding to triggers

getting data to those who can act and who will act: Commodity specialists, stream specialists, work unit requiring data

-define who sorts, filters info – decides what should be recommended for action and how this is done

\*Supplements, but does not replace standard reporting mechanisms for USDA regulated diseases