CDI FY17 Request for Proposals
Building a User-Friendly National Wildlife Health Database

Submission Title: Building a User-Friendly National Wildlife Health Database

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Region: Midwest Region

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    Region: Midwest Region

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Region: Midwest Region

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Region: Midwest Region

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Region: Midwest Region

Organization: National Wildlife Health Center
OrcId: NA

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Mission Area: Ecosystems

Region: Midwest Region

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Science Support Framework Element 1: Communities of Practice

Science Support Framework Element 2: Data Management

Science Support Framework Element 3: Science Data Lifecycle - Publishing/Sharing

In-Kind Match: $25,372.00

List of anticipated deliverables from the project: In this project we propose the development of a user-friendly data entry form, an application programming interface (API; which allows participating partners to directly upload batches of data for wildlife health events occurring within their jurisdictions), and the creation of user groups within the WHISPer application. The data entry form will be written using that latest version of the dynamic AngularJS framework. This framework supports any modern browser, and offers testing and data management advantages which can be leveraged to ensure usability and form integrity. The API will be accomplished through design and implementation of a Python Web Services layer on top of the PostgreSQL database. Python will allow for extension of Web Services as needed going into the future. The other key aspect to the API is documentation describing to cooperators how to interact with it - for this we will offer a page similar to this: http://streamstatsags.cr.usgs.gov/streamstatsservices/# which describes how to use web services developed by Web Informatics and Mapping (WiM) for a different project. Creation of User Groups within the WHISPer application will be accomplished by creating and updating the appropriate tables within the PostgreSQL database. Management of these groups will be overseen by designated NWHC personnel. WHISPers will be promoted through a USGS factsheet, social media sources, and presentations at wildlife resource conferences and meetings.

Lead Cost Center: GGEMNC00

Notes, Comments: LeAnn White and Kimberli Miller have backgrounds in epidemiology, infectious diseases, and wildlife health data management and will ensure that the product meets partner needs through both its ease of use and content. Neil Baertlein will aid in data migrations, validations, and documentation and assist in communicating needs of NWHC epidemiologists and partners to application developers. Aaron Stephenson will be the lead developer on the project, taking point in design and development of the Web Services and providing guidance to the other developers. Other team members from WiM who will assist Aaron in development include Blake Draper for process documentation, requirements tracking, and client development, Mitch Samuels for client development and styling, Veni Kunchi for either web services support or client support, and Hans Vraga for team coordination and requirements tracking. All products associated with this proposal will be permanently available on the WHISPers site to federal, state, and tribal partners, in all 50 states, who have requested access. Current WHISPers metadata have been posted and are available at USGS's ScienceBase metadata repository and will be reviewed and updated regularly or when necessary due to relevant updates in the WHISPers application. After completion of the project, code will be uploaded to the USGS Bitbucket Repository.

Project Description: As the wildlife equivalent to the Centers for Disease Control and Prevention, the National Wildlife Health Center (NWHC) has performed national wildlife health surveillance for 40 years resulting in accumulation of the nation's largest wildlife disease dataset. Each year, state, federal, and academic partners submit 100s of requests for these data in order to perform trend analysis and disease response planning. Development of an interactive platform and effective tools for sharing and visualizing event information collected by government, laboratories and others including NWHC was identified as a priority need at a 2012 meeting of state, federal and tribal collaborators. Based on stakeholder input, a web based Wildlife Health Information Sharing Partnership event reporting system (WHISPers) was developed and went live publicly in 2015. Basic wildlife disease information from NWHC for over seven thousand events are provided through maps and tables which can be searched, sorted and downloaded by anyone, anywhere. However, the database is still incomplete as many more wildlife health events are documented in "information silos" within state, federal, tribal or diagnostic laboratory offices. Sharing of current and historical disease occurrences would lead to better situational awareness at a local level and reveal potential trends at a national level that could assist policy makers and biologists faced with choices about how to best manage resources and protect ecosystem health.

Total Budget: $49,660.00

Project title: Building a User-Friendly National Wildlife Health Database
USGS Lead Principal Investigator: C. LeAnn White, USGS-National Wildlife Health Center
Project Summary: Thousands of wildlife die annually, some from causes with human or domestic animal health implications. As the federal wildlife equivalent to the Centers for Disease Control and Prevention, the National Wildlife Health Center (NWHC) has been performing national surveillance of wildlife health for over 40 years, resulting in accumulation of the nation's largest wildlife health dataset. Each year, NWHC receives 100s of requests from state, federal, and academic partners reviewing trend analysis, baseline information, and disease response planning. Aging databases, information silos and inconsistent QA/QC historically slowed response time to these requests, as it often can require hundreds of hours to prepare the data for release. Development of an interactive platform and effective tools for sharing and visualizing event information collected not only by NWHC but other government entities and laboratories was identified as a priority need at a 2012 meeting of state, federal and tribal collaborators.

Based on stakeholder input for a collaborative information sharing platform as well as a desire to make NWHC historic data more publicly available, WHISPers, a web based Wildlife Health Information Sharing Partnership event reporting system was developed and went live publically in 2015. Basic wildlife disease information for over seven thousand events are provided through maps and tables which can be searched, sorted and downloaded by anyone, anywhere. However, the database is still incomplete as many more wildlife health events are documented in "information silos" within state, federal, tribal or diagnostic laboratory offices. Sharing of current and historical disease occurrences would lead to better situational awareness at a local level, reveal potential trends at a national level, and would assist policy makers and biologists faced with choices about how to best manage resources and protect ecosystem health.

The next phase of the WHISPers project would permit vetted partners to directly enter event information into WHISPers creating more robust data collection. However, partners have expressed concern about how much time data entry may take for their staff and also asked for a "user groups" feature to facilitate information exchange and collaboration between self-selected WHISPers participants. In this project we propose to fulfill partner needs through the development of a user-friendly data entry form, an application programming interface (API; which allows participating partners to directly upload batches of data for wildlife health events occurring within their jurisdictions), and the creation of user groups within the WHISPer application.

The data entry form will be written using that latest version of the dynamic AngularJS framework. This framework supports any modern browser, and offers testing and data management advantages which can be leveraged to ensure usability and form integrity. The API will be accomplished through design and implementation of a Python Web Services layer on top of the PostgreSQL database. Python offers excellent performance and flexibility, plenty of hosting options, and its wide use/variety of open source toolsets offers the chance to extend the Web Services as project needs evolve in the future. The other key aspect to the API is documentation describing to cooperators how to interact with it - for this we will offer a page similar to this: http://streamstatsags.cr.usgs.gov/streamstatsservices/# which describes how to use web services developed by Web Informatics and Mapping (WiM) for a different project.

Creation of User Groups within the WHISPer application will be accomplished by creating and updating the appropriate tables within the PostgreSQL database. Management of these groups will be overseen by designated NWHC personnel. WHISPers will be promoted through a USGS factsheet, social media sources, and presentations at wildlife resource conferences and meetings.

LeAnn White, Kimberli Miller, and Neil Baertlein are members of the Wildlife Epidemiology and Emerging Diseases (WEED) Branch at NWHC. Both LeAnn and Kimberli have backgrounds in epidemiology, infectious diseases, and wildlife health data management. Their roles in this project will be to ensure that the product meets partner needs through both its ease of use and content. Neil is formally trained as a biologist and has spent the past eighteen years working in data management. Neil's role will be to aid in data migrations, validations, and documentation. He will also assist in communicating needs of center epidemiologists, and partners, to application developers.

Aaron Stephenson is a full stack developer and solutions architect at WiM. He has a decade of experience in system administration, database administration, information management, systems analysis, as well as back end and front end development. Aaron will be the lead developer for WiM on the project, taking point on design and development of the Web Services and providing guidance to the other developers from WiM. Other team members from WiM who will assist Aaron in development include Blake Draper for process documentation, requirements tracking, and client development, Mitch Samuels for client development and styling, Veni Kunchi for either web services support or client support, and Hans Vraga for team coordination and requirements tracking.

The WHISPers website is currently available to the public and the products associated with this proposal will be permanently available on the WHISPers site to federal, state, and tribal partners, in all 50 states, who have requested access. Current WHISPers metadata have been posted and are available at USGS's ScienceBase metadata repository (https://www.sciencebase.gov/catalog/item/5633b8b4e4b048076347eff6). These metadata will be reviewed and updated regularly or when necessary due to relevant updates in the WHISPers application. After completion of the project, code will be uploaded to the USGS Bitbucket Repository.

Budget Category	Federal Funding "Requested"	Matching Funds "Proposed"
Federal Personnel	$32,000 (550 programming hours)	$18,600 (NWHC staff time)
Travel expenses	$3,000 (CDI event attendance)	$3,000 (conference attendance funded by NWHC)
Total direct costs	$35,000	$21,600
Indirect Costs (%)	$14,660 (31.953%)	$3,772
Grand Total	$49,660	$25,372

Deliverables	Start	Weeks	Finish	April-17				May-17					June-17				July-17					August-17				Sep-17			
				Apr-03	Apr-10	Apr-17	Apr-24	May-01	May-08	May-15	May-22	May-29	Jun-05	Jun-12	Jun-19	Jun-26	Jul-03	Jul-10	Jul-17	Jul-24	Jul-31	Aug-07	Aug-14	Aug-21	Aug-28	Sep-04	Sep-11	Sep-18	Sep-25
1. Permissions Management	04/03/17	8	05/29/17																											
1.1 User groups	04/03/17	8	05/29/17																											
1.2 Internal testing	04/10/17	7	05/29/17																											
1.3 Code documentation	04/03/17	8	05/29/17																											
2. Data Entry Applications	05/29/17	16	09/18/17																											
2.1 API (web services)	05/29/17	8	07/24/17																											
2.2 User-friendly data entry	07/24/17	8	09/18/17																											
2.3 Internal Testing	06/05/17	15	09/18/17																											
2.4 Code documentation	05/29/17	16	09/18/17																											