

Project Number: NRSP1

Project Title: Multistate Research Information Management and Impact Communications Program

Requested Duration: October 1, 2017 through September 30, 2022

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STATEMENT OF ISSUES AND JUSTIFICATION:

NRSP1 serves two critical functions for the State Agricultural Experiment Station (SAES) System. First, it supports the National Information Management and Support System (NIMSS). NIMSS was designed to facilitate the management of multistate research and Extension activities supported by the Hatch Multistate Research Fund (MRF), from proposal conception to project termination. NIMSS is a web-based application allowing: (1) online submission of proposals, peer reviews and progress reports, (2) management of participants, (3) scheduling of annual project meetings, and (4) ready access to this information. An automated e-mail notification function prompts users to take action and sends out notifications for meetings and report deadlines. Researchers, Extension educators, stakeholders, and other cooperators can review and keyword search NIMSS for relevant and timely information related to multistate research projects. In addition, the public has access to research project outlines and impacts. NIMSS is now serving all of the 1862 and 1890 Land-grant institutions, allowing them to manage, in a paperless environment, their multistate research portfolios. The U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) also uses NIMSS to download and integrate some data into its management dashboard and pre-populate federal forms.

Following a successful three-year NIMSS redesign, hosting, and maintenance contract that transformed NIMSS into a modern, secure work-flow database, the Experiment Station Section (ESS) wishes to continue its work with Clemson University ITT by renewing the project for another five years, from October 1, 2017 through September 30, 2022. This renewal would allow for the continuation of critical multistate research support services, as well as improved system efficiency, continued security enhancement, daily data back-ups, and continued correction of legacy system data integrity. Moreover, Clemson developers and the regional NIMSS system administrators (RSAs) will work together with stakeholders to continue to cooperatively identify and develop new system features.

The second important function that NRSP1 serves is the communication of impacts from multistate research and Extension activities to decision-makers and stakeholders. The impact communications component of NRSP1 enhances the visibility of Land-grant institutions and the success of multistate research projects. Impact statements are prepared by a communications specialist and shared with Administrative Advisors (AAs), project participants, Regional Association offices, NIFA representatives, and kglobal (the communications and marketing firm contracted to support ESCOP and ECOP along with AHS/ACOP efforts). The statements are

often shared with partner trade associations, elected officials, regulatory organizations, college leadership, and other stakeholders. The impact statements are also posted on the Multistate Research Impacts website (www.multistateresearchimpacts.org), featured on Regional Association websites, and entered into the NIMSS database and the National Land-grant Impact Database (<http://www.landgrantimpacts.org>). Impact statements are posted in multiple locations in order to reach a variety of audiences and serve different purposes. For example, visitors to NIMSS are largely internal participants in the Multistate Research Program, so impact statements are uploaded to this database for mostly archival purposes. The National Land-grant Impact Database makes impact statements accessible to NIFA and communicators. The Multistate Research Impacts website is devoted to Multistate Research Program impact statements and information and presents both in a public-friendly format, making it an appropriate site to link with social posts (the communications specialist shares impact statements on social media using the hashtags #MRFImpacts and #NIFAImpacts). This website is the only one of the three that showcases the final design of the impact statements.

Impact statements are used by NIFA staff to prepare reports, blog posts, speeches, and responses to Congressional and other inquiries. kglobal features impact statements in the “Why Ag Matters” newsletter and on Ag Is America social media feeds. Through the distribution efforts of the impact communications specialist and kglobal, the collective social media reach of any given impact statement is over 35,500 individuals.

The communications specialist also works with kglobal to turn impact statements into press releases. These press releases typically earn around 200 media hits (how many times the press release was repurposed by a news outlet) and 20 million to 91 million impressions (how many people potentially saw the press release as measured by a news outlet’s circulation/website traffic). Some impact statements are further highlighted in feature stories and op-ed pieces in traditional media. Going forward, we also propose to share impact statements using trending formats to reach a broader audience.

Feedback from SAES directors universally points to the need for additional faculty/staff training on how to write impact statements. A cursory examination of annual reports in NIMSS supports this notion. While many groups complete the section on impacts, few truly answer the essential questions “So what?” and “Who cares?” Articulating the impact and public value of multistate work is essential to maintaining support for this program and leveraging multistate activities.

Since 2013, the impact communication workshops have been given (in-person and by webinar) to a variety of groups—from individual multistate projects to faculty at a particular college to participants at national meetings like the National Extension and Research Administrative Officers Conference to NIFA’s communications staff. Workshops give participants the tools and knowledge they need to craft better reports and to recognize strong impact statements and then parlay them into other communication pieces (e.g., social media posts, press releases, infographics, etc.). Demand for workshops is increasing. This proposal offers solutions for addressing the critical need for improving impact reporting capabilities nationwide.

The impact communications component of NRSP1 has been in place since June 2012 and has been extremely effective and well received within the Land-grant University system, NIFA, its

public and private partners, its stakeholders, and the public in general. Collectively, the NIMSS database system and the impact communications program provide for open and transparent systems that enhance compliance and accountability for SAES.

IMPLEMENTATION:

Objectives and Projected Outcomes

Objective 1: Maintain and enhance the effectiveness, functionality, and utilization of NIMSS.

Objective 2: More effectively document and communicate impacts of multistate research and Extension activities.

Objective 1 Outcomes:

As we proceed into the next five-year cycle for NRSP1, the NIMSS lead RSAs; currently Christina Hamilton (NCRA) and Sarah Lupis (WAAESD) will continue to solicit system enhancements from our stakeholders, some of whom include federal and state partners, producers, commodity groups, foundations, and foreign scientists. The lead RSAs will work closely with the Clemson developers via email and regular calls to implement these improvements, making NIMSS workflows more efficient, secure, and effective for as many users as possible, basing project and proposal functions consistently on the national ESCOP Guidelines for Multistate Activities.

Separately, Clemson ITT will continue to regularly administer and develop NIMSS at the system level. First, the developers will consistently monitor the NIMSS server to ensure that the applications running NIMSS are kept up-to-date and work well together, allowing the system to operate at peak efficiency and avoid slow page loading. Second, security systems, access, and error logs will be continually monitored and new software installed as it becomes available. Because the NIMSS application has been online for many years, it is subject to hundreds of attempted attacks every day, which renders regular assessment of risks and updates to security systems' software absolutely critical to prevent another breach. Review of error logs also will help correct bugs introduced into the system as applications and code are updated. Coupled with security improvements, developers will periodically check the accuracy of server and data file locations, while also performing regular backups of NIMSS' data and code in multiple locations. In the unlikely event of a system crash, NIMSS users can be confident that no data or work will be lost. In addition, modern database administration (DBA) services will be employed and updated as new database search techniques are developed, keeping access to NIMSS' data efficient and system resources low.

Moreover, while most of the legacy NIMSS data issues have been corrected, developers will continue to monitor and correct errors as they appear. As the original NIMSS system fell into disrepair, many fundamental database management practices were overlooked or violated and resulted in the need for the developers to manually correct issues in order to provide a consistent experience to NIMSS users. Finally, our developers will routinely review and update NIMSS' code to maintain system efficiency. These changes will be documented and records maintained

for the life of the project. All codebase versions will be stored in a Git repository, which is a versioning storage system that allows easy access to previous code.

The new NIMSS budget will also allow developers to continually improve user interfaces as technology advances, so as to provide a more professional and aesthetically pleasing system. Part of this process will include updating the system to provide responsive layouts, so that users will be able to effectively use the NIMSS system from any device available, including mobile interfaces. Finally, developers will improve the application program interface (API) to allow for better data transactions with NIFA's REEport and REEIS. API improvements will automate data transfer across systems, thus reducing or eliminating the staff workload required to share reporting data from state AES offices to NIFA partners.

Overall, we envision NIMSS continuing to serve as an effective communication tool for sharing research data and easing the burden of multistate project management for years to come. An effective and secure database will ease the application of new discoveries and technology transfer supporting and advancing agricultural research. Continual process and development improvements, as described above, are critical as a best practice to maintain an effective national system.

Objective 2 Outcomes:

The impact communications component of NRSP1 will continue to generate high-quality impact statements in diverse formats and designs that will be useful to a variety of audiences and easily repurposed by Land-grant University communications personnel, kglobal, and the NIFA communications staff, among others. Depending on the quality of annual reports submitted by multistate committees, the kglobal editorial calendar, and the volume of terminating projects in a given year, the communications specialist will continue to produce approximately 10-15 impact statements per year. The communications specialist will work with kglobal to ensure that at least four impact statements are translated into press releases. The communications specialist will also work with kglobal and NIFA throughout the year to flag important projects for possible op-eds, feature stories, newspaper articles, and other communication pieces. The goal will be to pitch at least two such pieces. Printed briefs will be distributed to stakeholders, industry groups, university leadership, decision-makers, and others as needed or requested. Going forward, we also propose to explore sharing impact statements using trending formats to reach a broader audience.

To meet increasing demand for impact communication workshops, we propose changes to the travel budget to accommodate more in-person workshops and make them accessible to all regions. Workshop participants will complete evaluations so that we can gather feedback and measure success. We also propose that the communications specialist travel to an array of conferences for professional development.

The communications specialist will continue to ensure that each finalized impact statement is uploaded to the NIMSS database, the LGU Impacts Database, and the Multistate Research Impacts website. Our impact communication efforts will continue to include social media posts via kglobal's @AgisAmerica Twitter account and the @MRFimpacts Twitter account. In recent

years, most of the social media work was left up to kglobal. However, since kglobal/@AgisAmerica does not share every impact statement we produce, nor do they exclusively represent the Multistate Research Program in social media engagement, we propose increasing the @MRFimpacts social media presence. Going forward, our social media efforts will ensure that each multistate research and Extension impact statement is shared via the @MRFimpacts Twitter account and that the Multistate Research Program is represented in relevant social media conversations. This proposal to bolster our social media efforts to reach a wider audience and provide a way for audiences to engage with our content.

Effective social media and database use requires constant monitoring and updating. To ensure that these tasks are given the attention they need, we propose an additional part-time employee focused on maintaining the databases and the @MRFimpacts account. A position dedicated to these tasks would ensure that this work is done in a timelier, comprehensive, and meaningful manner. This position, imagined as a part-time student employee, would be responsible for:

- Composing tweets about each recently finalized impact statement
- Creating graphic content to supplement social media text
- Keeping track of trending topics on social media
- Composing tweets highlighting multistate research projects that fit trending topics
- Daily engagement on social media (retweeting, liking, sharing, friending, following, etc.)
- Entering finalized impact statements into the NIMSS and Land-grant Impacts Database within one week of finalization.

We will establish benchmarks to measure the success of social media efforts during the first year with the student employee. While we are currently proposing social media engagement via the Twitter platform, we acknowledge that social media is an evolving outlet. Expansion or shifting to emerging platforms will be evaluated regularly. See the business plan below for details on the management and budget for this position.

Management, Budget, and Business Plan

General oversight, policy development, proposal preparation, and budget recommendations will be provided by a Management Committee composed of: four AAs, representing each of the four SAES regions; an ARD Administrator; a Cooperative Extension Director; the four Regional System Administrators; two director's administrative assistants who use NIMSS routinely; and two communicators/writers to advise the impact reporting program. NIFA will assign one or more non-voting representatives to the Committee.

Funding for NRSP1 will be provided through an off-the-top allocation from the Hatch Multistate Research Fund. The annual range of NRSP1, combining NIMSS and the Impact Communications Effort, runs from \$213,023 to \$234,826 (Table 1). The five-year grand total investment is \$1,116,517 for NRSP1. NRSP1 will provide important administrative support services to research administrators and staff, project participants and other users of NIMSS, and the impact communication efforts. Funding for NRSP1 is seen as an administrative expense and alternative sources of funding are not anticipated.

Objective 1:

NIMSS is managed by each of the Regional Associations serving the SAES. The RSAs from NCRA and WAAESD will serve as the primary leads with routine interactions with Clemson ITT. All RSAs handle the day-to-day tasks related to updating the system and answer queries from their regional users. Funds for continued development and maintenance of NIMSS will be transferred by NIFA to Clemson University AES, for distribution to the Information Technology Team (ITT) at Clemson's Youth Learning Institute. The annual budget ranges from \$126,980 in FY2018 to \$142,730 in FY 2022 to reflect for increases in technology, salary, and fringe rates (Table 2). As a point of reference, years two and three for the NIMSS redesign project were \$128,500.

To accomplish system administration and development, the NRSP1 budget for NIMSS would accommodate a part of the salary and fringe of multiple technical professionals who would be responsible for maintaining, updating and developing new features as needed or requested for their particular programmatic areas. Technical professionals are needed for UI / Front End Development and Administration, Application Development and Administration, Database Administration, System Administration and Security, QA/QC, and Project Management. For those interested, specific job duties and justifications for these positions are found below. Within the software development community, the term 'development' is commonly used to reflect the on-going and dynamic nature of a continually changing environment.

User Interface/Front End Development and Administration

User Interface (U/I)/Front End Development is the process of designing and developing interfaces that an end user interacts with when they are using the NIMSS system. It is necessary to invest time in User Interface /Front End development during the initial development phase as well as in the maintenance phase of the development cycle as web applications do not live in a static environment. Users must access web-based applications through a web browser. There is currently no standard that all web browsers must adhere to and, as such, bugs are introduced from the user/client side on a continual basis. Our UI/Front End Developer is responsible for staying informed of the changing web environment and works to ensure that all users are able to access and interact with the NIMSS system with minimal front-end issues.

Application Development and Administration

Application development, in the case of NIMSS, is the process of developing code utilizing the Laravel framework to gather information collected by the UI/Front End Developers that interfaces and manipulates/stores that information in databases designed and maintained by a data base administrator (DBA). This person is also responsible for creating and maintaining system features as well as adapting the current system to work with new technologies that are currently available as well as to proactively redevelop sections in the NIMSS system to take advantage of these new technologies.

Database Administration

Database administration refers to the tasks in NIMSS that are centered on saving and retrieving information from our relational databases. Server environments must periodically be updated to avoid falling too far behind modern technology and the services provided by a DBA helps to

mitigate these issues and ensure that resources that are allocated to the database are being used effectively and efficiently. Data backups and recovery are also critically important for system reliability. Both making sure that data is stored in multiple locations and that data stores contain valid and recoverable data are aspects of what must be done to ensure work is not lost due to hardware or software issues. Another critical task for a DBA is database security. Databases are often targets for hackers and must be reasonably protected. In all cases, security measures must be managed proactively to minimize the risks of system access from unwanted agents, who are constantly changing their approaches and finding new exploits to gain access to systems. Database administrators will regularly track system access logs to look for possible injections into the database as well as to review possible slow queries.

System Administration and Security

Much of what is accomplished by system administration is similar to database security in technique and purpose. The main difference between these two areas is that system administration refers to securing the server, whether physical or virtual, from unwanted access. This is done by keeping track of trends in security and intrusion techniques and patching them as soon as is possible.

QA/QC

This refers to quality control and assurance of the NIMSS product. It is a best practice to employ a non-developer to review and test the system and write test cases for automated testing. It is this person's responsibility to make every effort to eliminate bugs or other issues from the system before it is made available to our end users. This person also coordinates larger alpha and beta testing groups and serves as a bridge between the various developers and the stakeholders.

Project Management

This person coordinates the resources available in order to execute the project. In the case of NIMSS, this person would review newly developed code to make sure it meets the standards set forth by the initial development. They would monitor the timeline of the project to make sure all areas of development and administration are working together effectively. They oversee documentation of the project and provide reports to stakeholders and partners to ensure all parties are satisfied with the process. The NIMSS technology costs in the budget would cover the server expenses, ownership of the domain name, hosting, SSL (secure sockets layer; a technology that maintains system security by encrypting the connection between the user and the NIMSS site), email systems server and all data backups.

Objective 2:

The impact communications effort is managed by the WAAESD Office (WDO) under the guidance of the RSA/WAAESD Assistant Director. Funding for the impact communications effort will be transferred by NIFA to Colorado State University (CSU) AES for distribution to the WDO. The overall proposed budget for the communication of multistate impacts varies from year to year and ranges from \$86,043 in FY2018 to \$92,096 in FY2022 (Table 3).

To accomplish effective communication for the multistate research program, the NRSP1 budget for communications would support a part-time Program Director, one full-time Communications

Specialist, and one part-time Social Media Specialist. In addition, the budget supports travel and infrastructure needed to maintain this program.

Program Director

The part-time Program Director provides overall strategic vision for the impact communications project, supervises staff, and is responsible for higher-level coordination of activities with other ESCOP initiatives including ESCOP/ECOP Communications and Marketing Committee activities and the National Land-grant Impact Database, and coordinates with the host institution at CSU (human resources, travel authorizations/reconciliations, and budget).

Communications Specialist

As detailed above, the full-time Communications Specialist is responsible for execution of the overall communications strategy. As detailed above, responsibilities include:

- Creation of impact statements about multistate projects
- Distribution of impact statements to a wide audience
- Maintenance of a dedicated Multistate Research Impacts website (www.multistateresearchimpacts.org)
- Strategic coordination with communications and marketing partners at kglobal
- Development and presentation of impact communication workshops
- Direct supervision of part-time social media specialist

Social Media Specialist

The part-time student employee would also be based at CSU in the WDO and would report to the NRSP1 communications specialist. Hiring a student offers workforce development opportunities to CSU students majoring in Agricultural Business or Education with a focus in Journalism and Media Communication to get hands-on, real-world experience. As detailed above, this individual will be responsible for:

- Sharing impact statements via social media
- Creating graphic content for social media
- Keeping track of trending topics on social media
- Composing posts highlighting multistate research projects that fit trending topics
- Daily engagement on social media (retweeting, liking, sharing, etc.)
- Entering finalized impact statements into the NIMSS and Land-grant Impacts Database

Salary and Fringe

The proposed budget includes salary and fringe for a part-time Program Director, a full-time Communications Specialist and one part-time student employee. Salary for the full-time Communications Specialist is set to meet market standards and FLSA minimum requirements. A cost of living increase is also factored in. Fringe is budgeted at the CSU's FY16 rate of 25.4%.

Printing/Copying

Under special circumstances printed materials may be needed to support the overall communications strategy. Special circumstances might include promotion of ESS special initiatives, timely events and regional promotions. Creation and production of printed material

will be done in consultation with the NRSP1 Management Committee and partners at kglobal and Cornerstone Government Affairs, so that these products are prepared and distributed when it is most beneficial to overall national efforts and supports national priorities.

Computer Hardware/Software

We propose to replace the communication specialist's laptop in FY18. At that time, it will be necessary to also obtain a yearly site license for the Adobe Creative Suite. In addition, the budget includes funds for an external speaker/microphone/camera for conducting webinar workshops. This would also make the existing laptop available for use by the student-employee.

WAAESD Support

The WDO provides coordination, editorial oversight, and physical space to the impact communications component of NRSP1. With the communications specialist reporting directly to the WAAESD Assistant Director (i.e., Program Director of the Impact Communications Project), this provides salary support. The WDO also provides coordination between this effort and the ongoing efforts of ESCOP and ECOP (i.e., with kglobal, Cornerstone Government Affairs, the Communications and Marketing Committee, and the National Land-grant Impacts Database Project). The WAAESD Assistant Director serves on the ESCOP/ECOP Communications and Marketing Committee and the National Land-grant Impact Database Committee and is thus able to ensure that multistate communications efforts are taking place in concert with overall national efforts and are in line with and supportive of national priorities.

Travel

To meet increasing demand for impact communication workshops, we propose a travel budget that accommodates multiple in-person workshops and expands access to all multistate regions. Workshops would target faculty, specialists, and other multistate project participants.

In addition, travel funds are provided for professional development. Professional meetings may include (but would not be limited to) the annual Association for Communications Excellence meeting, the National Association of Science Writers annual meeting, the International Federation of Agricultural Journalists, and the U.S. Ag Media Summit. In FY18, the budget would support attendance at the 10th World Conference of Science Journalists in San Francisco, CA.

Integration and Documentation of Research Support

NRSP1 was developed to facilitate the management and communication of the impacts of integrated research and Extension activities supported by the Hatch Multistate Research Fund. It supports all 1862 and 1890 Experiment Station and Cooperative Extension participants. The program can also accommodate integrated education activities as the need arises.

Outreach, Communications and Assessment

Input from SAES administrators and scientists on issues of policy, planning, and management of NRSP1 is an essential element in sustaining it as an effective support system. The approval of this NRSP provides the mechanism to support the representation of user interests and provide a

forum to assess the effectiveness of the outreach of the NRSP1 programs.

The four NIMSS RSAs will serve as the primary contacts and source of information and training for university administrators, program managers, investigators, business officers, and station staff using NIMSS. The lead RSAs will provide quarterly updates on new NIMSS developments during NRSP1 meetings will collect feedback from AAs and NIFA on user comments/experiences, as available. Lead RSAs may also send out short surveys to the user community and/or conduct ad hoc interviews during conferences such as NERAOC in order to gain improved understanding of user needs.

The WDO will serve as the primary contact and source of information on the impact communications component. The NRSP1 Management Committee with representation from regional associations, staff from director’s offices across regions, NIFA and the AAs will serve as stakeholder representatives in addressing assessment issues and to help evaluate the effectiveness of outreach efforts. The representatives will be responsible for collecting information from the institutions in their respective regions or associations to reflect the effectiveness of the NIMSS and the impact communications programs in meeting their needs and objectives.

PROJECT PARTICIPATION: All 1862 and 1890 Land-grant Institutions

LITERATURE CITED: N/A

BUDGET:

Table 1. Combined NRSP1 Five-Year Project Budget FY18-22.

	FY18	FY19	FY20	FY21	FY22
NIMSS	\$126,980	\$130,746	\$134,624	\$138,618	\$142,730
Impact Communications	\$86,043	\$86,349	\$88,208	\$90,123	\$92,096
Yearly Totals	\$213,023	\$217,095	\$222,832	\$228,741	\$234,826

Table 2. NRSP1 Objective 1: NIMSS System Administration and Development Budget FY18-22.

Technology	FY18	FY19	FY20	FY21	FY22
Servers	\$2,500	\$2,543	\$2,586	\$2,630	\$2,674
Hosting, SSL, Email, and Back-ups	\$850	\$866	\$878	\$894	\$909
System Administration and Development					
Server Maintenance	\$7,800	\$8,034	\$8,275	\$8,523	\$8,779
System Development	\$93,600	\$96,408	\$99,300	\$102,279	\$105,348
U/I Development	\$7,722	\$7,954	\$8,192	\$8,438	\$8,691
Project Management	\$14,508	\$14,943	\$15,392	\$15,853	\$16,329
Yearly Totals	\$126,980	\$130,746	\$134,624	\$138,618	\$142,730

Table 3. NRSP1 Objective 2: Impact Communications Budget FY18-22.

	FY18	FY19	FY20	FY21	FY22
Personnel					
Salary	\$48,000	\$49,440	\$50,923	\$52,450	\$54,023
Salary - Student Employee	\$6,500	\$6,500	\$6,500	\$6,500	\$6,500
Fringe	\$13,843	\$14,209	\$14,585	\$14,973	\$15,373
Operating Expenses	\$3,200	\$3,200	\$3,200	\$3,200	\$3,200
Computer hardware/software	\$2,500	\$500	\$500	\$500	\$500
WAAESD Support	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000
Travel	\$8,500	\$6,500	\$6,500	\$6,500	\$6,500
Yearly Totals	\$86,043	\$86,349	\$88,208	\$90,123	\$92,096