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Battelle Proposal OPP106565

Analysis of the Importance and Value of Southern Agricultural Experiment Stations and Extension Services

From

Battelle Memorial Institute
Battelle Technology Partnership Practice
505 King Avenue
Columbus, OH 43201

To

University of Arkansas on behalf of the Southern Association of Agricultural Experiment Station Directors and the Association of Southern Region Extension Directors

March 19, 2012

INTRODUCTION

A recent Battelle report, "Power and Promise: Agbioscience in the North Central United States", highlighted the economic and societal benefits attached to agbioscience and the key role of land grant universities and their experiment station and extension service operations in realizing these benefits. The report highlighted the signature assets of North Central institutions, their key functional impacts, and sought to raise awareness and support for agbioscience R&D, experiment stations and extension services as key engines of technological, economic and social progress.

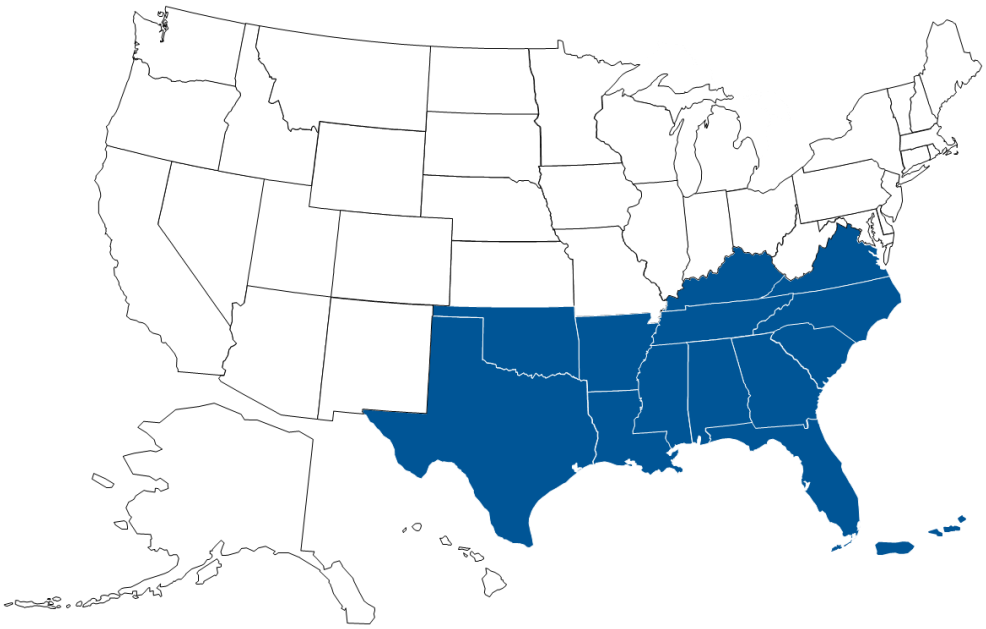
The North Central region sponsors of the Power and Promise report have leveraged the document and associated presentation materials to raise awareness and recognition regarding agbioscience R&D and extension service programs with key decision making audiences and stakeholders.

Recognizing the benefits that the *Power and Promise* report has brought for North Central land grant institutions, representatives of the Southern Region's experiment stations and extension services have requested a proposal from Battelle for a similar program of work. The envisioned project for the Southern Region will build upon many of the themes contained in the North Central report, but also go further to reflect the uniquely diverse agricultural and community base within the Southern region, and the importance of other natural resource-based economic activities in the region such as forestry and fisheries. It is also intended that the report for the Southern region will place a greater emphasis on the broad range of extension activities and programs that generate economic, societal, family and individual benefits. The potential project sponsors in the Southern Region seek a well rounded document that will highlight their institutional importance and relevance, key assets, and the economic and functional benefits associated with their broad-range of research and extension activities.

The Southern region of the U.S. includes the important agricultural states of Texas, Oklahoma, Arkansas, Louisiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia, and the two U.S. territories, Puerto Rico and the U.S. Virgin Islands. These 13 states and two territories produce more than 80 percent of the nation's broilers, more than two-thirds of its cotton, over half of its rice, and more than one-quarter of its cattle.[1] In addition, the region produces a wide and diverse array of crops and commodities including the production of sugar cane, aquaculture, greenhouse stock, horses, oranges, peanuts, turkeys, and tomatoes. Taking all agricultural commodities into account (including crops and livestock), the Southern region accounts for more than one-quarter of all agricultural production within the U.S. In addition to agricultural production, the Southern Region is also home to an intensive forestry and forest products industry, and has broad-ranging opportunities associated with biomass production and associated bio-based products

[1] Battelle calculations from data on USDA-ERS State Fact Sheets (2010 data). Accessed at http://www.ers.usda.gov/StateFacts/

development. This is also a region that leverages its diverse water resources for fisheries and aquaculture.[2]



The region is also, not surprisingly, home to some of the premiere institutions in agbiosciences research, education and extension, with leadership provided by:

- Auburn University
- Clemson University
- Louisiana State University
- Mississippi State University
- North Carolina State University
- Oklahoma State University
- Texas A&M University
- University of Arkansas Fayetteville
- University of Florida
- University of Georgia
- University of Kentucky
- University of Puerto Rico
- University of Tennessee
- University of the Virgin Islands
- Virginia Polytechnic Institute & State University

Despite having these robust assets, there remains a lack of accurate awareness and knowledge among state and national leaders regarding the relevance of the Southern Region's extension

[2] In this draft scope-of-work the term "agbioscience" is used generically to encompass agricultural production, forestry, fisheries and associated economic and R&D activity.

services and agricultural experiment stations in the modern economy. The Southern region will benefit from having an independently produced and compelling report that accurately captures the importance of the agbioscience and associated industry[3] to the region, and depicts the critical impact that the research and extension activities have on the economy and society. Specifically, the report will document:

1. The range of opportunities in modern agbiosciences and associated fields, and the large-scale economic development promise contained within these opportunities into the future.
2. The critically important role that agricultural experiment stations and extension services serve, and will serve, in realizing these opportunities.
3. The major advantages and significant assets that the Southern region has for research and development and the commercialization of agbioscience and associated innovations.
4. The central role of extension in providing research based programs and education that support human capital development, the diffusion of knowledge, and the development of the resilient societal, community and family resources required to sustain a robust and sustainable development environment.

Battelle proposes to develop a report that directly addresses these core themes. The report will outline the tremendous economic opportunities associated with agbiosciences-based development, the crucially important role that both extension and experiment stations play and will play in realizing these opportunities, and why the Southern region of the U.S. is a unique environment for agbioscience R&D and collaborative multi-state initiatives. We also propose to outline the important role that extension plays in supporting resilient communities and the populations that are required to generate a favorable development environment. We propose, herein, a project that will provide Southern region extension services and experiment stations with an independent report and tools for illustrating and demonstrating their importance to key stakeholder groups and the unique opportunities contained within the region.

The report will be designed for maximum value to all extension operations and experiment stations in communicating with key external and internal stakeholder groups and funders. In addition to authoring the paper Battelle proposes to work with project leadership in the production of additional communications and presentation materials which extension and experiment station leaders may use to further communicate the findings of the project.

[3] Agbioscience industry includes the following subsectors: Agricultural production, including crop, animal, and forestry and logging production, agricultural services, food processing, agricultural processing, drugs and pharmaceuticals, organic and agricultural chemicals, agricultural machinery and equipment, biological research and testing, and agricultural research and testing. Because of the economic profile of the Southern region, fisheries will be added to this definition.

STATEMENT OF WORK

TASK 1: ORIENTATION

Battelle recommends that the Association of Southern Region Extension Directors and the Southern Association of Agricultural Experiment Station Directors form an Advisory Committee for this project comprising representatives of extension services and experiment stations within the region. We recommend the Committee be kept small (circa 6 to 8 representatives) in order to facilitate arranging meetings, telephone discussions or other communications required during the conduct and review of the project.

As a first step in the project, the Battelle project team will meet with the assembled Advisory Committee to discuss and finalize several items, including goals and objectives for the report, the project work plan and timeline, key contact points, and other matters pertaining to performance of the project.

Following the initial meeting Battelle will produce a refined work plan for Advisory Committee approval. This document will be amended and recirculated as necessary based on Committee input.

Principals: Tripp, Cummings, Nelson
Time Frame: Month 1
Deliverables: Meeting, Finalized Work Plan

TASK 2: GATHERING EXISTING REPORTS AND INFORMATION

Battelle will conduct a literature review in order to identify existing information, data and reports pertaining to:

- The current and future importance of agbiosciences to state, regional and national economic development
- The functional impacts of extension services, including: implementation of technical and practice innovations, technology transfer, workforce development, distance education, youth and family development, and community development.
- The functional impacts of agbiosciences research and experiment stations
- The key advantages of the Southern region and its key agbioscience institutions as an environment for agbioscience research and extension activities.

Existing information in the literature, published research reports, government and industry statistics, and on-line information resources will provide a large part of the information used in compiling the research report. Battelle will seek input and recommendations from the Steering Committee with regards to known resources, as well as conduct an independent literature review.

Principals: Tripp, Cummings, Nelson
Time Frame: Months 1 and 2
Deliverable: Informational Resources Gathered

TASK 3: QUANTITATIVE ECONOMIC IMPACT ANALYSIS (OPTIONAL)

The extension and experiment station operations of the 15 land grant universities that are members of the Southern Association of Agricultural Experiment Station Directors, in addition to the extension outreach services by these same institutions represented by the Association of Southern Region Extension Directors, are in and of themselves substantial. In terms of economic impact, there are direct and indirect benefits generated in the state and regional economies through the expenditures of these entities. While the central message of the proposed report concerns the functional impacts generated by the actual research and extension activities performed, it may also be beneficial for the institutions to have their expenditure impacts quantified. To that end, Battelle proposes (as an optional work element) to undertake a quantitative input/output analysis based economic impact analysis of the 15 Universities' extension services and experiment station expenditures.

Economic impact will be measured in terms of monetary and employment benefits generated, both directly and indirectly, by the operational expenditures of 15 institution's extension services and experiment station expenditures and efforts. This is what is termed "backward linkage" impacts and represent the standard impacts measured in an economic impact study. It should be noted that this optional task only examines expenditure related impacts – the more important functional impacts of research and extension, (forward linkage impacts) will be addressed under Task 4, using examples and case studies.

Battelle will develop a set of data and information collection forms that will be supplied to each institution for completion. The forms will seek information and data pertaining to current amounts and sources of funding, staffing levels, research activities, extension activities, industry relationships, community relationships, and technology transfer/commercialization activities. Each institution will have the responsibility for assuring the timely completion of these forms.

Battelle will calculate the direct and indirect business volume and employment impacts on the region using IMPLAN input/output impact analysis techniques. The impact analysis will measure the combined impact of the institutions on the region.

Principals: Tripp, Cummings, Grueber
Time Frame: Months 3 and 4, assuming timely completion of the survey.
Deliverable: Quantitative Economic Impact Analysis.

TASK 4: QUALITATIVE IMPACT ANALYSIS OF THE FUNCTIONAL IMPACTS OF RESEARCH AND EXTENSION

It is important that this report highlight examples of the work of extension and experiment stations in the 13 states and 2 territories that comprise the Southern region. Key benefits identified in Tasks 2 that are relevant to the Southern region will certainly be emphasized in the report, but it would also be useful to include short vignettes or case studies of impactful work undertaken by or currently in progress at each of the 15 extension services and experiment stations. As a result of this need, following the quantitative expenditure impact modeling, Battelle will undertake a qualitative assessment of the 15 Universities' extension service and experiment station impacts on the Southern region. The impact assessment will serve to highlight the additional economic benefits that occur through various mechanisms, including:

- Research
- Implementation of technical and practice innovations
- Technology transfer
- Workforce and practitioner development
- Teaching and education
- Youth and family development
- Community development.

The analysis will include examining work in a range of areas, including, but not limited to:

- Educational and workforce development services
- Research and development activities
- Consultancy and advisory services
- Implementation of technical and practice innovations
- Technology transfer and commercialization
- Community services.

In order to collect this qualitative information, Battelle will design a short survey form that will be distributed to each of the extension and experiment station leaders from each state and territory. To help guide the completion of the survey, Battelle will prepare a summary listing of key benefits and value messages relating to extension and experiment stations that were identified in Task 2. This summary will be included with the survey sent to each of the extension service directors and experiment station directors, allowing all recipients to comment on the list, provide insight in any areas of benefit or value perceived to be missing, and to provide further information relevant to their organizational operations in relation to these benefits and key value propositions.

In addition to gathering information from the survey, existing reports, data and information resources, Battelle also recommends conducting a small series of telephone-interviews with persons in industry, government and other stakeholder functions that may serve to produce useful quotes, case study vignettes or other impactful information able to enhance the research

report and associated communications materials. Battelle anticipates conducting up to 30 interviews, two per state or territory to reflect both the impact of extension services and experiment station activities. Persons/organizations to be interviewed will be discussed with the project Advisory Committee.

Our goal will not be to provide an exhaustive quantitative accounting of all activities, but rather to provide an objective overview and illustration of the many and varied ways in which the 15 Universities' efforts benefit the Southern region. These will need to be kept short and punchy given that it would need to potentially cover 30 organizations.

In consultation with the Advisory Committee we may also want to include an appendix to the report summarizing a few key statistics on personnel, budgets, research volume, resources, etc. for each state – this would enable recipients of the published report to gain a quick insight into the size and scope of extension and experiment station operations in their home state.

Principals: Tripp, Cummings, Nelson
Time Frame: Months 4 through 6
Deliverable: Survey Development, Distribution. Interviews with key leaders/stakeholders. Summary of Key Benefits and Value Propositions.

TASK 5: PROJECT REPORT DEVELOPMENT

Staff assigned to the project will review all of the information, materials and input provided through the preceding work steps and develop a formal project report. It is not intended that this report will be a long and exhaustive dissertation on the value of extension and experiment stations; rather we anticipate a briefing document (minus the appendix) designed to be very readable and easily reviewed for top-line messages that are most important to communicate.

It is understood that one of the primary uses of this report will be as supplementary support information for federal and other grant applications submitted by Southern regional institutions. To this end, the report will succinctly communicate the key benefits and unique signature capabilities of the region as identified during the course of the project.

Principals: Tripp, Cummings, Nelson
Time Frame: Month 7
Deliverable: Full Project Report

TASK 6: COMMUNICATIONS MATERIALS DEVELOPMENT

Key project staff will meet with the Advisory Committee to review the report and discuss the development and content of additional communications materials. Battelle anticipates the following communications materials being developed:

- The written report on the value and relevance of extension and experiment stations in the 21st Century economy
- A 4-page brochure-format executive summary document summarizing key findings and communications
- A PowerPoint presentation summarizing the findings and conclusions of the project.

Principals: Tripp, Cummings
Time Frame: Month 8
Deliverable: Full Project Report, Executive Summary and Presentation of Findings

PROJECT TIMING

The project is anticipated to take a total of 8 months to complete with the starting date of the project being when the orientation meeting is held. Assuming a project start-date of April 1, 2012 this would mean Battelle anticipates completing all work on the project by November 30, 2012. Steering Committee meetings will need to be convened periodically throughout the project. Whether or not these meetings will be held in-person or via teleconference or video-conference will be at the discretion of the chair(s) of the Steering Committee. Battelle is prepared to support any of these three venues.

BATTELLE'S QUALIFICATIONS AND EXPERIENCE

The Battelle Technology Partnership Practice is particularly well suited to develop a report on the value and importance of agricultural extension services and experiment stations in the Southern region of the U.S.

The Technology Partnership Practice is the strategic planning, policy and economic development consulting arm of Battelle, the nation's largest non-profit, independent research and development organization. Battelle undertakes more than 4,500 projects each year for industry, higher education, the public sector, and other clients. Battelle also provides proactive management of key U.S. government national laboratories including: Pacific Northwest National Laboratory; Brookhaven National Laboratory, Idaho National Lab; the National Renewable Energy Laboratory; Oak Ridge National Laboratory and Lawrence Livermore.

In 1990, Battelle created the Technology Partnership Practice (TPP) to focus Battelle's broad experience and capabilities to better serve state and local organizations, universities, non-profit technology organizations, and others in the design, implementation, and assessment of strategic programs. Members of TPP have assisted almost every state, plus many regional and locally based non-profit organizations, universities, and regions.

The Battelle Technology Partnership Practice (TPP) has considerable experience working in agbiosciences and the emerging biobased economy. TPP has been providing economic impact studies in this area for major colleges of agriculture and extension services, and undertaking in-depth strategic planning assignments for universities, states and regions in developing their economies around agbioscience and biobased economic development assets.

Battelle's independence as a free-standing non-profit research organization gives our work great credibility with key audiences.

STAFFING

Mr. Simon Tripp is Senior Director of Battelle's Technology Partnership Practice. He has 23 years of direct experience working in research, strategic planning and state and community development. From 1991 to 2003, Mr. Tripp was President and CEO of the Pittsburgh-based research and planning corporation Tripp, Umbach & Associates, Inc. From 2003 through the close of 2008, Mr. Tripp was Senior Partner of Impact Economics, LP, performing complex projects in economic development and economic impact analysis—including multiple subcontract projects with Battelle's TPP. In addition to his position leading economic development consulting firms, Mr. Tripp has also held positions as Director of North American Operations for the West Midlands Development Agency and as North American Business Development Representative for the Welsh Development Agency under separate consulting contracts. Prior to founding Tripp Umbach, Mr. Tripp was a Senior Consultant for a business research and development consulting organization. Mr. Tripp is based in TPP's Pittsburgh Pennsylvania office.

Ms. Deborah Cummings is a Senior Program Manager in Battelle's Technology Partnership Practice. Ms. Cummings has almost 20 years of experience in state and regional technology-based economic development, both as a consultant and government official. Her business career has encompassed both the private and public sectors, and has been comprised of strategic planning activities, cluster development, economic impact analyses, program assessments, best practice methodology, and science and technology policy. In her efforts for the State of Ohio, Ms. Cummings originally conceived of Ohio's Third Frontier initiative, a widely acclaimed $2.2 billion economic development investment, as a consultant to the State, and then had the responsibility for implementing, evolving and renewing that strategy as Assistant Director at the Ohio Department of Development.

Mr. Martin Grueber is Research Leader of Battelle's Technology Partnership Practice as well as co-author of the annual Battelle/R&D Magazine Global R&D Forecast. He has over 20 years experience in science and technology-based economic development, and leads TPP's data and analytics efforts. His most recent projects include efforts examining state or regional industries including: automotive, aviation, high tech manufacturing, renewable energy, agriculture, and logistics. Prior to joining Battelle, Mr. Grueber served as Deputy Director of the Rhode Island Economic Policy Council where he managed the Slater Technology Development Fund. He also worked as a Manager with the Michigan Manufacturing Technology Center, one of the largest NIST/MEP programs, and was a project manager and principal analyst for industry and regional contract research activities for the Industrial Technology Institute.

Mr. Peter Nelson is a consultant to the Battelle technology Partnership Practice and Principal in BioDimensions Inc., a company dedicated to facilitating collaborations between agricultural biotechnology and chemistry to create a new bioeconomy. The company is involved in all segments of the supply chain including crop diversity research, relationships with farmers, and the deployment of green technology with industrial partners. Mr. Nelson's career in agricultural-based technology began in 1996. Since that time he has been a frequent speaker and writer on the subject, as well as a key member of committees and organizations. Through a trade organization he cofounded, Mr. Nelson influenced key components of Title IX of the 2002 Farm Bill which encouraged the development and use of biobased products. He was an original steering team member of the Southeast Sun Grant Initiative and is currently progressing the development of the "Regional Strategy for Biobased Products in the Mississippi Delta" a 5-state, 98 county initiative coordinated by the Memphis Bioworks Foundation and developed by Battelle. He is also an advisor to Infinite Enzymes LLC., based in Jonesboro, Arkansas and Stemergy, based in Ontario, Canada. Mr. Nelson is based in Memphis, Tennessee.

Résumés of the key Battelle staff planned for this project can be found in Attachment A.

BATTELLE EXPERIENCE

This section provides selected examples of previous experience that is directly applicable to this project.

- **Power & Promise: Agbioscience in the North Central United States.** This Battelle report highlights the fact that agriculture and modern agbiosciences represent a public investment of central importance to the future of the United States. While agriculture is an economic sector present and important in every state, the twelve-state North Central region of the U.S. stands as a preeminent location for agbioscience R&D, high-volume and high-efficiency agricultural production, and for agribusiness generating value-added products for domestic consumption and export. By directly addressing key challenges and opportunities associated with agriculture and agbioscience the North Central regional land grant universities are playing a central role in U.S. progress across a range of fronts. Land-grant universities, and their experiment stations and extension services, are on the frontline of sustaining and securing America's leadership and competitiveness in what is the key macroeconomic sector of our time. Sustaining these institutions, further investing in them, and addressing their challenges is of central importance to a sustainable economic future for the United States.

- **Oklahoma State University's Division of Agricultural Sciences and Natural Resources (OSU DASNR).** Battelle was engaged to provide an assessment of DASNR's overall economic impact on the State of Oklahoma, and to illustrate the specific ways in which the Division brings benefits to the state and its communities. Specifically, the economic impact was measured in terms of monetary and employment benefits generated, both directly and indirectly, by DASNR's operations. In addition, the impact assessment highlighted the additional economic benefits that occur through various DASNR-related mechanisms, including: research; technical and practice innovations; technology transfer; workforce and practitioner development; and community service.

- **Ohio Agricultural Research and Development Center (OARDC).** Battelle was engaged to provide an assessment of OARDC's overall economic impact on the State of Ohio, and to illustrate the specific ways in which the Center brings benefits to the state and its communities. Specifically, the economic impact of the Center was measured in terms of monetary and employment benefits generated, both directly and indirectly, by OARDC's operations. In addition, the impact assessment highlighted the additional economic benefits that occur through various OARDC-related mechanisms, including: research; technical and practice innovations; technology transfer; workforce and practitioner development; and community service. After completing the Economic Impact Assessment, the Battelle team then conducted a comparative advantage assessment of OARDC's strengths, particularly its R&D strengths, to identify areas for future infrastructure and programmatic investments. This assessment led to the identification

of core technology platforms of the Center based on market trends that resulted in a strategic framework identifying critical investments opportunities.

- **The Ohio State University Extension.** OSUE engaged Battelle to provide an assessment of the overall economic impact of The Ohio State University (OSU) Extension on the State of Ohio, and to illustrate the specific ways in which OSU Extension brings benefits to the state and its communities. Economic impact is measured in terms of monetary and employment benefits generated, both directly and indirectly, by the operations of OSU Extension. In addition, the impact assessment highlights the additional economic benefits that occur through various Extension-related mechanisms, including: implementation of technical and practice innovations, technology transfer, workforce development, distance education, youth and family development, and community development.

- **Ohio Agricultural Research and Development Center (OARDC).** Battelle was engaged to assess opportunities for OARDC to increase its collaboration with industry. The project included a diagnostic analysis of the region's opportunities and inventoried both OARDC and the private sector to identify strengths and opportunities upon which to build sustained partnerships between the Center and industry. The strategy will help position OARDC to better leverage its resources and assets to form mechanisms that will promote joint projects and other collaborative endeavors including conceptualization of a possible research park.

- **Regional Strategy for Biobased Products in the Mississippi Delta.** Memphis Bioworks Foundation coordinated with Battelle to assess the Mid-South Mississippi Delta region (comprising 98-counties in five states) for opportunities in biomass-based economic development and growth built around a new biomass production and processing industry. Importantly, among renewable resource options, biomass stands out as the most flexible resource for economic development, as it can be used to generate energy (heat and electricity) and serve as a sustainable and adaptable feedstock for downstream processing to produce liquid transportation fuels, chemicals, and materials.

- **The University of Nebraska Institute of Agriculture and Natural Resources (IANR).** Battelle was engaged to provide an assessment of IANR's overall economic impact on the State of Nebraska, and to illustrate the specific ways in which the Institute brings benefits to the state and its communities. Specifically, the economic impact of the Institute was measured in terms of monetary and employment benefits generated, both directly and indirectly, by IANR's operations. In addition, the impact assessment highlighted the additional economic benefits that occur through various IANR-related mechanisms, including: research; technical and practice innovations; technology transfer; workforce and practitioner development; and community service. Battelle's analysis revealed that the impact of IANR's programs and expenditures represents a leverage of state funding that is conservatively estimated to exceed fifteen to one.

- **International Sorghum and Millet Cooperative Research and Support Program (INTSORMIL).** Battelle was engaged to provide an assessment of INTSORMIL's overall impact, and to illustrate the specific ways in which the CRSP brings benefits to the countries and communities it serves. The impact assessment highlighted the economic and social benefits that occur through various INTSORMIL-related mechanisms, including: research; technical and practice innovations; technology transfer; and social and community well-being.

- **Economic Reach and Impact of the Fresh Produce and Floral Industry.** The Produce Marketing Association (PMA) engaged Battelle to assist in developing a model to estimate the economic impact of the fresh produce and floral industry in the U.S., with additional estimations for state-level and U.S. Congressional District level impacts. The analysis showed that the reach and impact of the fresh produce and floral industry touches every state and every legislative district in the nation.

- **North Carolina Biotechnology Center Impact Assessment.** Battelle undertook a comprehensive assessment of the economic impact of biosciences development in North Carolina and the associated impact of the North Carolina Biotechnology Center over the past 25 years. This analysis involved input/output analysis, identification of functional benefits and detailed customer and stakeholder survey research. The assessment provided an objective, fact-based analysis that supported both the recognition of how important the biosciences are to North Carolina's economy, but the biosciences broad functional impacts on the quality of life and economic development of North Carolina. The study demonstrated the high value and strong customer and stakeholder satisfaction with the North Carolina Biotechnology Center.

- **Arkansas Research Alliance: A Strategic Assessment of Arkansas' University and Government Lab Research Base.** Battelle helped the Arkansas Research Alliance, a newly formed public-private partnership in Arkansas, by assessing the core research strengths across Arkansas' universities and government labs and identifying nine strategic focus area opportunities for advancing job-creating research in the state. For each strategic focus area, Battelle created profiles that focused on its potential to create significant gains in economic development for Arkansas in growing or emerging markets using key criteria such as the opportunity to leverage multidisciplinary, inter-institutional fields of research, ability to attract external funding, market potential, and economic linkages with Arkansas. Battelle also developed an approach for each of the strategic focus areas to assist the Arkansas Research Alliance with identifying potential candidates that are rising or productive faculty (i.e., ARA Fellows) at the state universities and government labs, and performed a benchmarking effort of eminent scholars programs across the nation that helped to establish the criteria for recruiting star faculty to Arkansas.

- **Targeted Technology-based Industry Development for the Innovation Valley Region.** Battelle assisted Innovation Valley, a public-private economic development partnership

in the Knoxville-Oak Ridge region, in assessing likely technology-related industry targets for a business development outreach strategy based on the region's core competencies. For each target, Battelle developed profiles focusing on their presence in the region, competitiveness, market potential, broader economic linkages to the region and suggested development paths. Battelle developed for three of the targeted industry opportunities more detailed outreach and recruitment approaches, involving an analysis of key location drivers, strategic recruitment approaches and identification of possible prospects.

- **Tennessee Valley Authority (TVA) Strategy for Positioning the Southeast to Develop an Auto-Industry R&D Capability.** The TVA engaged Battelle to assess the potential of increasing value added activities in the automotive industry that has grown in the Southeastern United States and in its supplier base. Battelle examined trends in the automotive sector, assessed the capacity in the Southeast to support higher value-added automotive-related industry, identified potential automotive-related opportunities for the Southeast, and suggested approaches to capitalize on these opportunities.

- **The Greater Oklahoma City Chamber.** The Greater Oklahoma City Chamber engaged Battelle's Technology Partnership Practice to assist in formulating a bioscience Roadmap for the Greater Oklahoma City region. The Battelle project team collected and analyzed data on Greater Oklahoma City's bioscience research and industry base; assessed the region's competitive position vis-à-vis a number of competitor and peer regions; and interviewed academic, research, business, and civic leaders to develop an understanding of Greater Oklahoma City's existing bioscience research strengths and capabilities and to gather input on the types of investments that need to be made to enable Greater Oklahoma City to become a well-recognized regional bioscience center. The final report, Moving Forward Together: Greater Oklahoma City's Bioscience Future identified specific technology niches for focus and recommended strategies and actions to further develop them.

- **Oklahoma Center for the Advancement of Science and Technology (OCAST).** Battelle conducted a performance review for OCAST of the Oklahoma Technology Development Corporation (OTDC). Specifically, Battelle reviewed background data and information provided by OCAST on the performance of OTDC; participated in an on-site review of OTDC; and conducted interviews with staff, clients, and stakeholders of the corporation. An assessment of the performance of OTDC was provided in addition to recommendations for changes that would be appropriate based on the review findings.

- **Georgia Biotechnology Strategy.** Battelle assisted the State of Georgia and the Georgia Research Alliance (GRA) in developing a strategic framework to guide Georgia's investments in support of the bioscience sector. The project included an economic analysis of Georgia's bioscience base, a benchmarking analysis, an assessment of

Georgia's bioscience core competencies, and completion of a Georgia Bioscience Technology Strategic Framework.

- **Georgia Information Technology Strategy.** Battelle assisted the State of Georgia and the Georgia Research Alliance in developing an Advanced Communications/ Information Technology Roadmap that will provide the Georgia Research Alliance with the necessary detail and information so that the state's overall economic development efforts address and take into account new and emerging technology fields of the future. This effort will also enable the Alliance to work with industry to link technology and talent capabilities found in the state's research organizations, both public and private, with the needs of recruited firms, existing firms that are expanding, and new startups.

- **Georgia State Research Foundation.** Battelle was engaged to form *A Development Path for Georgia State University's Science Park*, a comprehensive assessment and positioning strategy that will assist Georgia State University in building upon its base of bioscience research activities for the development of the GSU Science Park.

APPENDIX A: RESUMES

Résumés of key staff proposed for this project are on the following pages.

SIMON TRIPP

Senior Director
Technology Partnership Practice, Battelle

EDUCATION

B.A., Geography, University of Portsmouth (UK)
M.A., Geography (Regional Science), West Virginia University

QUALIFICATIONS

Mr. Tripp has 23 years of direct experience in designing and managing research, strategy and implementation projects for economic development. Prior to joining Battelle in early 2009 as Senior Director of TPP he founded and led two boutique consulting groups providing customized regional research, strategy and impact analysis services. He has extensive experience in cluster-based and technology-based economic development, leading major state and regional projects across the U.S. and internationally. Mr. Tripp also has broad and deep experience in economic impact analysis, having conducted comprehensive economic impact studies for government, institutional, education, corporate and non-profit clients throughout the U.S. Mr. Tripp also has ten years of experience in direct international inward investment marketing and economic development project management having served two major UK regions as their U.S. representative.

RELEVANT EXPERIENCE

Mr. Tripp joined the Battelle TPP in early 2009, but has worked with Battelle on a senior sub-contractor basis since 2004. For TPP Mr. Tripp co-manages the group and is a senior practice lead in advanced technology-based economic development strategies for states and regions and economic impact analysis for a broad range of public and private sector clients. Some examples of Battelle projects for which Mr. Tripp has been a principal consultant include:

- Agbioscience impact studies and strategies for development in Ohio, Nebraska, Oklahoma, Iowa and Tennessee
- Bioscience and biomedical economic development strategies in Ohio, Colorado, Arizona, Tennessee, Iowa, California, West Virginia and South Dakota
- Core competency assessments across multiple technology platforms in Ohio, West Virginia and Iowa
- Multiple economic and social impact studies, including major projects for the North Carolina Biotechnology Center, The Ohio State University, University of Nebraska, Oklahoma State University and the Ohio Soybean Council.
- International assignments in West Africa and Turkey.

Prior to joining Battelle in 2009 Mr. Tripp was Senior Partner of Impact Economics LP, a research, planning and strategy corporation headquartered in Pittsburgh, Pennsylvania. Mr. Tripp co-founded the company to leverage his expertise in research methodology design and the

application of research and strategic planning to cultural, social and development issues. Mr. Tripp's experience working with TPP extends back to 2004 where, through ongoing subcontracts with Impact Economics, he acted as a special consultant leading economic development and impact analysis projects from 2004 through 2009.

Since 1990, Mr. Tripp has grown a blue chip national and international client base, comprising a wide range of business, government, institutional and non-profit groups. Clients range from national and state governments to individual communities – from the largest academic health systems to small community hospitals – from Ivy League and Big 10 universities to small colleges – and from Fortune 500 corporations to emerging technology business enterprises.

Mr. Tripp is well known for his leadership of Tripp, Umbach & Associates, Inc. which he co-founded in 1990 and grew into a leading provider of customized market research and development research services. For five years prior to forming Tripp Umbach, he served as Principal Consultant with Deckmann Associates, an economic development and industrial market research consulting firm. Mr. Tripp has also served as U.S. marketing representative for the British Government's Welsh Development Agency and Director of U.S. operations for the West Midlands Development Agency under separate long-term consulting contracts.

DEBORAH E. CUMMINGS

Senior Program Manager
Technology Partnership Practice, Battelle
Columbus, Ohio

EDUCATION

M.B.A. The Ohio State University
B.B.A., Summa Cum Laude, Ohio University's Honors Tutorial College
B.A., Summa Cum Laude, Political Science, Ohio University's Honors Tutorial College

QUALIFICATIONS

Ms. Cummings is a Senior Program Manager in Battelle's Technology Partnership Practice. Ms. Cummings has almost 20 years of experience in state and regional technology-based economic development, both as a consultant and government official. Her business career has encompassed both the private and public sectors, and has been comprised of strategic planning activities, cluster development, economic impact analyses, program assessments, best practice methodology, and science and technology policy. In her efforts for the State of Ohio, Ms. Cummings had the unique experience of conceiving Ohio's Third Frontier initiative, a widely acclaimed $2.2 billion economic development investment, as a consultant to the State, and then had the responsibility for implementing, evolving and renewing that strategy as Assistant Director at the Ohio Department of Development.

RELEVANT EXPERIENCE

Senior Program Manager, Technology Partnership Practice, Battelle Memorial Institute. Ms. Cummings is a member of the Technology Partnership Practice, managing or participating in numerous state and regional technology strategies and program designs, which have been successfully implemented into robust economic development initiatives. In this capacity, she has created technology-based economic development strategies, including developing a technology-based cluster strategy for the State of Ohio. She has expertise in the area of economic impact analyses, conducting research for several land grant institutions, including The Ohio State University and the University of Nebraska. She has also developed biotechnology strategies for the Georgia Research Alliance, the States of Missouri, Arizona, and Colorado, and regions such as Central Ohio and Pittsburgh. In addition, she developed an information technology workforce strategy for the State of Connecticut, and served as a consultant to the Illinois Coalition and the Ohio Agricultural Research and Development Center by aiding in the development of science and technology research parks. Her work includes analyzing a region's business community and higher education and governmental institutions to determine what factors contribute to the area's competitive advantage; analyzing their economic position in relation to peer entities; developing strategies and actions upon which the region can position itself for future development; and, presenting findings, both orally and in written form, to clients and national audiences.

Assistant Director, Ohio Department of Development.
Prior to rejoining Battelle, Ms. Cummings was the Assistant Director of the Technology and Innovation Division within the Ohio Department of Development. In this role, Ms. Cummings worked to shape the future economy of the state through the delivery of a balanced portfolio of programs to support research and commercialization, entrepreneurial assistance, cluster development, and expansion of Ohio's talent pool through the $2.2 billion Ohio Third Frontier. This included overseeing the strategic development, management, and administration of the Ohio Third Frontier, Ohio's Thomas Edison Program, the Ohio Venture Capital Authority, and Ohio's Technology Investment Tax Credit Program. Ms. Cummings also helped to lead the successful economic impact assessment of the program and the eventual renewal before the citizens of Ohio.

Policy Analyst, State Science and Technology Institute.
Ms. Cummings conducted policy research for the State Science and Technology Institute, which focused primarily on federal/state collaborative science and technology development initiatives. Her work included the examination of state science and technology program operations and best practice methodology, the analysis of trends in venture capital distribution, the compilation of a comprehensive resource guide for performance benchmarking, and the development and facilitation of professional dialogues, conferences, and meetings. SSTI is a national non-profit organization dedicated to improving government-industry programs that encourage economic growth through the application of science and technology. The Institute also works to advance cooperation between the states and federal technology programs for more effective economic development.

Manager, State of Ohio's Thomas Edison Incubator Program.
Ms. Cummings managed the Edison Technology Incubator Program, which consisted of nine incubators located throughout the State of Ohio. During her tenure, she assisted in the creation of five out of the current nine existing incubators, and served as the State's appointee to each of the incubators' Board of Directors. Ms. Cummings directed a management assessment study conducted by an outside vendor, and implemented the report's key performance benchmark recommendations. In addition, she formed the Edison Technology Incubator Council, a forum that allowed for informal networking and sharing of best practices among the Incubator Directors. Ms. Cummings also developed marketing and promotional materials for the Edison Incubator Program. She was a frequent speaker at numerous economic and small business conferences, both at the national and regional level. She conducted research on incubators and business start-up issues, challenges, and government programs. Ohio's Thomas Edison Program is one of the nation's largest and most respected state technology development initiatives. It is a governmental initiative that effectively brings together technology providers and users to create commercial opportunities.

National Business Incubation Association.
Previous work with the National Business Incubation Association includes assessing the impact of small business and economic development legislation at the Federal level. NBIA, the international association for incubator professionals, conducts research, compiles industry statistics, and produces publications that provide hands-on approaches to developing and managing effective incubator programs.

MARTIN P. GRUEBER

Research Leader
Technology Partnership Practice, Battelle
Cleveland, OH

EDUCATION

B.S., Social Science, Michigan State University
M.A., Geography, Michigan State University

QUALIFICATIONS

Mr. Grueber has over twenty years' experience performing regional and industry research projects and designing, implementing, assisting, and managing state and local economic development programs. As part of these efforts, Mr. Grueber has been responsible for establishing numerous cooperative working relationships among business, academic and government agencies. Mr. Grueber's experience includes strategic program development, in-depth industry studies, targeting studies, cluster mapping projects, survey research projects, and program monitoring, evaluation, and impact assessment.

RELEVANT EXPERIENCE

Research Leader, Battelle. Mr. Grueber is a Research Leader with the Technology Partnership Practice, Battelle's consulting practice for technology-based economic development. In this role, he leads the data research and analysis capabilities of TPP and performs various project tasks ranging from core competency quantitative and qualitative analysis, economic impact modeling, regional economic analysis and benchmarking, and the integration of these efforts into strategies, and actions. Mr. Grueber's projects have included the development of core competency analyses and strategic plans for a wide variety of national, state, and regional industries ranging from the biosciences to renewable energy, from logistics to the produce industry, and from the aviation/aerospace industry to the automotive industry. Additionally, Mr. Grueber is co-author of the annual Battelle/R&D Magazine Global R&D Forecast.

Deputy Director, Rhode Island Economic Policy Council and Manager, Samuel Slater Technology Fund. Mr. Grueber developed, launched and managed Rhode Island's $3.5 million technology program—the Samuel Slater Technology Fund. This fund includes the state's Research Center of Excellence program and the Innovation Partnership Grant Program that provided state investment funds for industry-university cooperative research projects, industry/cluster/multi-firm collaboration projects, and technology entrepreneur seed grants. Additionally, Mr. Grueber performed industry and technology-based economic development research and analysis, developed policy recommendations and co-authored a strategic plan for Rhode Island's economy, and served as a proposal reviewer for the University of Rhode Island's Transportation Research Center.

Research Staff, Industrial Technology Institute. Mr. Grueber was a project manager and principal analyst for industry and regional analysis contract research activities for a large number of federal, state, and local agencies.

PETER A. NELSON

Consultant to the Battelle Technology Partnership Practice.
Principal, BioDimensions, Inc.

EDUCATION

B.A., Creative Writing, University of Memphis

QUALIFICATIONS

Peter Nelson is a principal in BioDimensions, Inc., a company dedicated to facilitating the creation of the new bioeconomy. BioDimensions (www.biodimensions.net) is involved in a wide spectrum of opportunities including regional strategic planning, crop diversity research, new relationships with farmers, and the deployment of green technology with industrial partners. A major focus is promoting the dynamic opportunity for new synergies between rural and urban development that will generate new green jobs while simultaneously addressing global environmental issues.

Among current projects, BioDimensions is partnering with Memphis Bioworks Foundation (www.memphisbioworks.org), a Memphis-based nonprofit, to develop a regional strategic plan for the bioeconomy which encompasses 98 counties in five states; is helping develop new supply chains of renewable ingredients for a Fortune 500 chemical company; and is serving as an advisor to Arkansas-based Infinite Enzymes and Ontario-based Stemergy.

Mr. Nelson earned a degree in creative writing from the University of Memphis and regularly writes articles on topics related to technology, sustainability, and community development. He is frequently featured in articles and interviews including recently on Smart City Radio, Delta Farm Press, and the Memphis Commercial Appeal. Mr. Nelson's diverse speaking engagements range from the Gandhi-King Conference on Peacemaking in Memphis to the World Congress on Industrial Biotechnology in Montreal. Mr. Nelson's career in agricultural-based technology began in 1996 and he has been active in farm policy and the development of regional initiatives since that time. He frequently collaborates with Tennessee State University, (www.tnstate,edu) an 1890 land grant university, is active in community development projects, and has completed two short term assignments in Khartoum, Sudan where he assisted a small newspaper and taught English and agriculture.

Mr. Nelson has worked most recently with the Battelle Technology Partnership in the development of a regional strategy for agbioscience and biobased product development in the mid-south Mississippi Delta region of the United States.