The EDA JIAC Program: Assessment & Metrics

Final Report

October 30, 2014

SRI International

Prepared for:
Economic Development Administration, U.S. Department of Commerce, under Cooperative Grant Agreement #10946538

Acknowledgements

This project was funded by a grant from the U.S. Department of Commerce, Economic Development Administration (EDA). Special thanks to the EDA headquarters staff that contributed to the project:

- Thomas Guevara,
- Bryan Borlik,
- Samantha Schasberger, and
- John F. Cobb.

The Center for Science, Technology, and Economic Development at SRI International conducted this research. Report authors and key contributors include Katherine Johnston, Roland Stephen, Elizabeth Tennant, and Sara Yanosy. The data for this project were collected from November 2013-April 2014.

This project would not have been possible without the contributions of many people – too many to name individually, with the exception of Maryann Feldman, at UNC Chapel-Hill. In particular, we thank the JIAC grantee staff for their help. We are especially grateful to the two grantees that hosted our site visits.

Due to the short deadlines required for this report not all grantees participated or were able to provide us with every piece of data we needed. Further, as discussed in greater detail below, the different data gathering approaches pursued were subject to a variety of constraints. The JIAC program only dates from 2011, and participants include a rich but difficult to capture variety of clients and partners. Within these limitations, we believe this report provides an accurate overview and detailed analysis of the JIAC program. The findings and observations contained in this report are those of the authors and do not necessarily reflect the views of any particular interviewee or of the Economic Development Administration in general.

Table of Contents

Executive Summary i

I. Introduction 1

II. Overview of the JIAC Program 3
Description of the JIAC Program 3
JIAC Program Goals 3
JIAC Program Implementation & Grantee Characteristics 4

III. Framework for JIAC Program Evaluation 9
Key Challenges for JIAC Program Evaluation 9
Use of Logic Models for Program Evaluation 11
Recommended Logic Model for JIAC Program Evaluation 11
A Note About Initial Conditions & Capacities 12
Study Data Collection Methods 14

IV. JIAC Inputs: Grantees, Partners, & Resources 15
Portfolio of Programs 16
EDA Funding & Other Funding 16
Client/Participant Resources 17

V. Measuring Outputs: JIAC Project Activities 19
Events, Networking, & Referrals 21
Mentoring, Coaching, & Technical Assistance 21
Facilities & Equipment 21
Research & Technology Development 22
Financing Support 22

VI. Measuring Enhanced Capabilities: Direct Results & Impacts 25
Enhanced Capabilities: Direct Results of Program Activities 27
Enhanced Capabilities: Impacts of the Program 31

VII. Implications for Program Evaluation 35

Appendix A: JIAC Grantee Profiles A-1

Appendix B: JIAC Grantee Client/Participant Survey B-1

Appendix C: List of Abbreviations C-1

Executive Summary

In order to ensure effective program implementation and rigorous evaluation, EDA partnered with the University of North Carolina (UNC) at Chapel Hill and SRI International, via a three-year cooperative agreement (FY2012-2014), to explore new performance metrics and assessment methods that will enhance the ability of all economic development practitioners and policymakers to design, implement, and evaluate programs in effective and rigorous ways.

This report on the **Jobs and Innovation Accelerator Challenge (JIAC)** program represents one element of the larger effort.

About the JIAC Program

The JIAC initiative represents the implementation of a number of Obama Administration policy priorities, including the acceleration of bottom-up innovation strategies encompassing urban, rural, and multi-jurisdictional geographies to avoid the one-size-fits all approach to solutions.

The JIAC program focuses on a number of key objectives:

- Accelerate the formation of new businesses and the growth of existing businesses;
- Accelerate the creation of high-wage jobs;
- Advance the commercialization of research;
- Support the deployment of new processes, technologies, and products to grow sales and create jobs;
- Enhance the capacity of cluster businesses, including small and disadvantaged businesses;
- Increase exports and business interaction with international buyers and suppliers;
- Develop the skilled workforce needed to support growing clusters; and
- Ensure diverse workforce participation in clusters.

The 2011 JIAC program provided funding and technical assistance to 20 industry clusters across 21 states. In total, the multi-agency competition awarded $37 million to these cluster projects; funding agencies included the U.S. Department of Commerce's Economic Development Administration (EDA), the U.S. Department of Labor's Employment and Training Administration (ETA), and the Small Business Administration (SBA). Thirteen additional agencies pledged to provide technical assistance to the winning projects, which promote development in areas such as advanced manufacturing, information technology, aerospace, and clean technology.

Logic Model for JIAC Program Evaluation

The JIAC program engages in a diverse set of activities; serves a broad range of industries, regions, and clients; and yields diverse, not easily measured outcomes. To address this diversity, SRI created a logic model to serve as a framework for this study and for future JIAC program evaluations (see the graphic on the following page).

This report is organized around the components of the logic model:

- **Inputs:** Investments made in running the program.
- **Program Outputs/Activities:** Activities performed by grantees and their clients, which are the outputs of the program.
- **Enhanced Client Capabilities:** Direct/immediate benefits for participants and their broader impacts.

The focus of this study and the larger project is to identify and assess different metrics and data collection methods for conducting program evaluations; as such, the study does not assess the effectiveness of individual JIAC grantee's approaches or the JIAC program as a whole. However, the results reported below provide direction to grantees and EDA staff for the development and implementation of non-infrastructure programs in the future.

Recommended JIAC Program Logic Model

Initial Conditions & Capacities

- Economic conditions / business cycle (regional, national, global)
- Industry/cluster conditions, competitiveness & level of definition/ development
- Existing regional networks & innovation ecosystems
- Existing workforce skills & knowledge
- Existing facilities

Inputs

- Portfolio of Programs
- EDA Funding
- Other Funding
- Client/Participant Resources

Outputs (Project Activities)

- Events, Networking, & Referrals
- Mentoring, Coaching, & Technical Assistance
- Facilities & Equipment
- R&D & Technology Development Support
- Financing Support

Enhanced Capabilities

Direct Results

- Technology Development
- Product & Process Development
- Human Capital Development
- Markets & Business Development
- Financing

Impacts

Firm-Level:
- ***Improved Capacity & Knowledge***
- ***Improved Competitiveness***
- ***Growth & Expansion***

Regional-Level:
- ***Improved Capacity & Knowledge***
- ***Improved Competitiveness***
- ***Growth & Expansion***
- ***Improved Opportunities***

- Each item in the logic model can be measured and evaluated using a variety of quantitative and qualitative metrics.
- A variety of data collection methods can be used to gather these metrics, as outlined below. Each method has its own pros and cons, and multiple approaches are optimal to build a full picture of program outputs and outcomes.

Sample Quantitative and Qualitative Metrics:

- Regional, national cluster growth rates
- Prior innovation metrics (patenting, etc.)
- Ecosystem metrics
- Prior workforce Skills, Qualifications, & Abilities (SQAs)

- Existing capabilities (staff, programs)
- JIAC grantee funding received from EDA
- JIAC grantee match funding (cost-share)
- Technologies & ideas brought by clients/ participants

- # of events, participation, & satisfaction
- # of boot camps/accelerators, participation, & satisfaction
- # of entrepreneurs mentored
- New facilities established
- # of joint research projects conducted
- # of SBIR proposals supported

- # of technologies licensed or commercialized
- # new business plans developed
- # of new products launched by participants
- # of employees with new skills
- # of new business contacts made
- # of new investment deals, loans, or grants

- Improved capacity to access capital
- Workforce skills development
- Market diversification
- Improved innovation/ entrepreneurship ecosystem
- Job, revenues, and/or business growth
- Growth of target cluster
- New economic activities in a distressed region

Possible Direct and Indirect Data Collection Methods:

- **Grantee self-reporting** (*e.g., grant proposals*)
- **Third party data** (*through a standard set of regional and cluster indicators maintained by EDA)*

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Grantee site visits, interviews**

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Client/stakeholder surveys** (*standardized survey instrument*)
- **Grantee interviews, site visits**

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Client/stakeholder surveys** (*standardized survey instrument*)
- **Grantee interviews or site visits**
- **Third party data** (*to measure increased cluster, industry, community, and regional-level capacity and impacts over the long run)*

JIAC Program: Inputs

The "inputs" into the JIAC program are the resources available and investments made in running the program and serving its clients. The key input categories from the logic model are listed to the right. The heterogeneity in inputs is a clear function of the heterogeneous participants in the program, as indicated in the chart below, as well as significant heterogeneity in the economic and institutional environment.

The input categories are very broad and could potentially be parsed into many different measures, but given the inherently qualitative nature of these metrics, systematic, program-wide measurement is largely impractical (other than for funding metrics). These metrics could be tracked by EDA in a broad, qualitatively rich way via grantee applications and should be considered as an important factor in program evaluation.

The chart below (and the charts that follow) is based on a short web-based survey of JIAC participants (startups and firms) and partners (other clients of grantees, such as non-profits, higher education institutions, etc.), conducted by SRI, which gathered opinions on experiences, outputs, and impacts.

The survey was distributed by 19 JIAC grantees, and responses were received from clients/participants of 16 grantees. There were a total of 185 valid responses (roughly a 25% response rate, although the exact number of surveys sent out is uncertain, due to the role of grantees as intermediaries).

Key finding: Two thirds of JIAC clients are start-ups or existing businesses, while one-third are supportive workforce, higher education, and public/non-profit institutions.

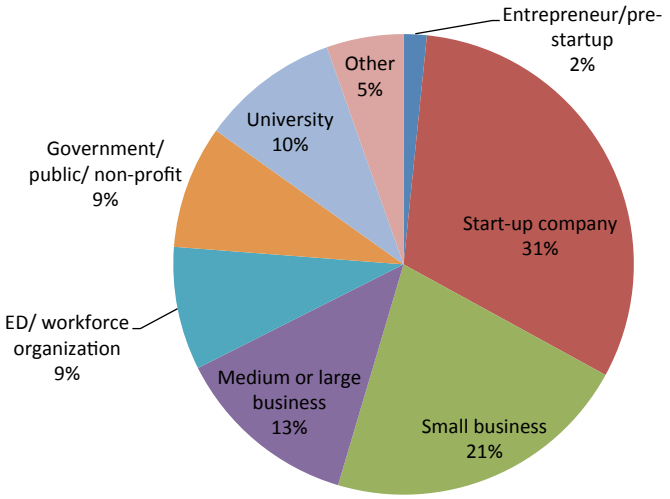
Portfolio of Programs
- Extent of grantee/partner staff support & relevant expertise
- Extent/quality of grantee networks of partners/stakeholders
- Extent/quality of grantee/partner facilities, labs, etc.

EDA Funding
- Amount of EDA funding to grantee

Other Funding
- Amount of grantee match
- Amount of other federal support (JIAC and non-JIAC)
- Amount of state & local funding
- Amount of private & non-profit funding

Client/Participant Resources
- Availability of technology & innovative ideas
- Availability of funding & cost-share for projects
- Extent of staff expertise
- Extent/quality of networks
- Extent/quality of facilities

Types of Clients/Participants in JIAC Grantee Programs



Source: SRI survey of JIAC clients/participants

JIAC Program Metrics: Project Outputs (Activities)

As illustrated in the logic model, the "outputs" of the program are a measurement of all of the activities performed by the JIAC grantees and their partners, clients, and participants. The key activities are listed to the right, together with possible metrics. Outputs help quantify what the program is doing and whether it is implementing what it set out to do. They build enhanced participant capabilities and foster other program outcomes. The evidence is that while clients and participants have a clear, shared focus on the regional cluster being supported, they engage with the JIAC grantees in different ways and at different levels.

Key finding: Shared focus on regional clusters.

Key finding: Bi-modal client engagement – some deep engagements, many brief connections.

Events, Networking, & Referrals
- # of events & trainings: participation & satisfaction
- # of conferences, showcases, exhibitions: participation & satisfaction
- # of referrals made to outside services

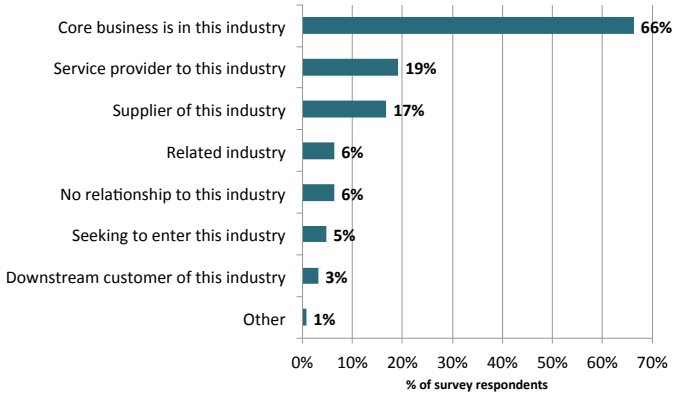
Mentoring, Coaching, & Technical Assistance
- # of boot camps/accelerators: participation & satisfaction
- # of businesses/entrepreneurs receiving mentoring/ coaching (& satisfaction)

Facilities & Equipment
- Sq.ft. & usage of new physical space provided for start-ups & businesses
- Sq.ft. & usage of shared facilities/labs/equipment

R&D & Technology Development
- # of joint research projects with entrepreneurs, start-ups, and businesses
- # assisted with technology transfer/ commercialization
- # assisted with patents & regulatory approvals

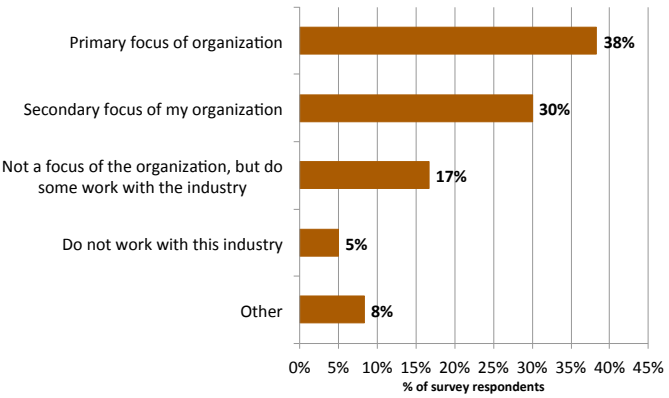
Financing Support
- # assisted in preparing a venture pitch/connecting with investors
- # assisted in grant/award proposals (e.g., SBIR) & success rate
- # of Angel/VC/seed competitions held & participation

Relationship of Business Clients/Participants to Grantee Industry Cluster Focus



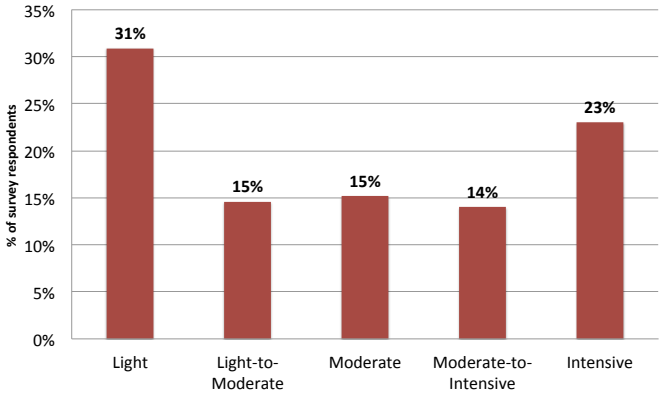
Source: SRI survey of JIAC clients/participants

Relationship of Other Client/Participant Institutions to Grantee Industry Cluster Focus



Source: SRI survey of JIAC clients/participants

Level of Client/Participant Engagement with JIAC Program



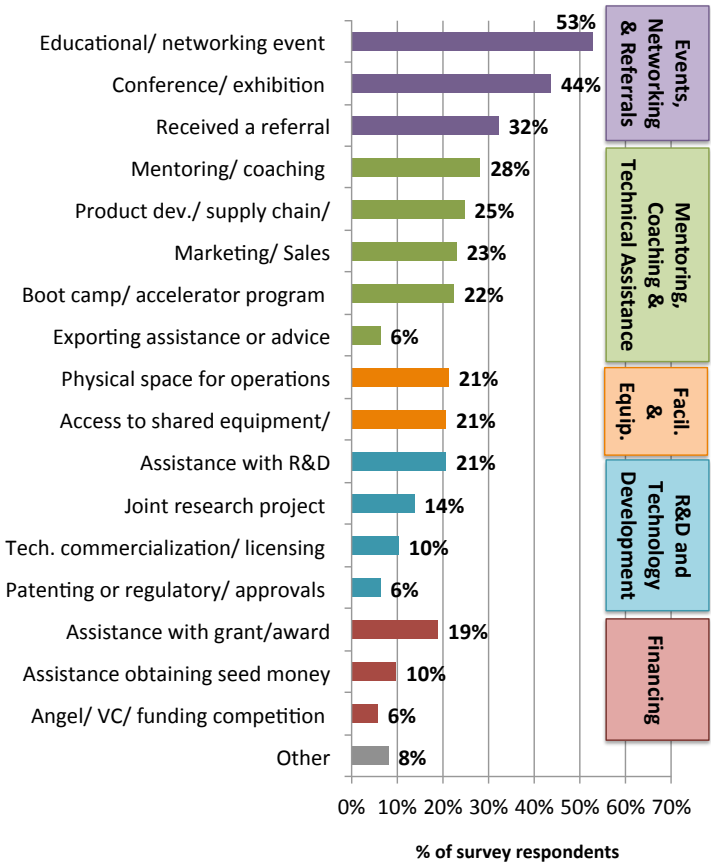
Source: SRI survey of JIAC clients/participants

Two grantees illustrate these two key categories of client engagement (deep engagement versus brief connections). The Ohio Speed-to-Market Accelerator worked closely with 35 clients, while the Center for Innovation and Enterprise Management at Wichita State focused on 11 clients. Each grantee also engaged hundreds of clients through networking, in addition to their deep engagement with a smaller number of clients.

The wide range of specific activities that JIAC grantees engage in (as shown in the chart to the right) illustrates the vast and diverse types of services that can lead to capacity-building.

Key finding: Clients are engaged with JIAC across a broad waterfront of activities.

JIAC Grantee Activities



Source: SRI survey of JIAC clients/participants

JIAC Program Metrics: Enhanced Capabilities

The activities of the JIAC program enhance the capabilities of the businesses, entrepreneurs, organizations, and others participating in it. These enhanced capabilities include the direct, short-term results of program activities (as described by the logic model categories to the right). They also lead to broader and longer-term impacts, as described on the next page.

Evidence from the client/participant survey indicates that 80% of respondents attributed direct positive results for their capacity as a result of the services or support that they received through the JIAC program; most reported results across multiple categories.

Key finding: Important direct results of JIAC include new markets, new products and processes, improved human capital, and accelerated technology development.

Direct Results

Technology Development
- # of technology concepts advanced (Technology Readiness Levels / TRLs)
- # of technologies commercialized/ licensed (and royalties)
- # of patents, government approvals received

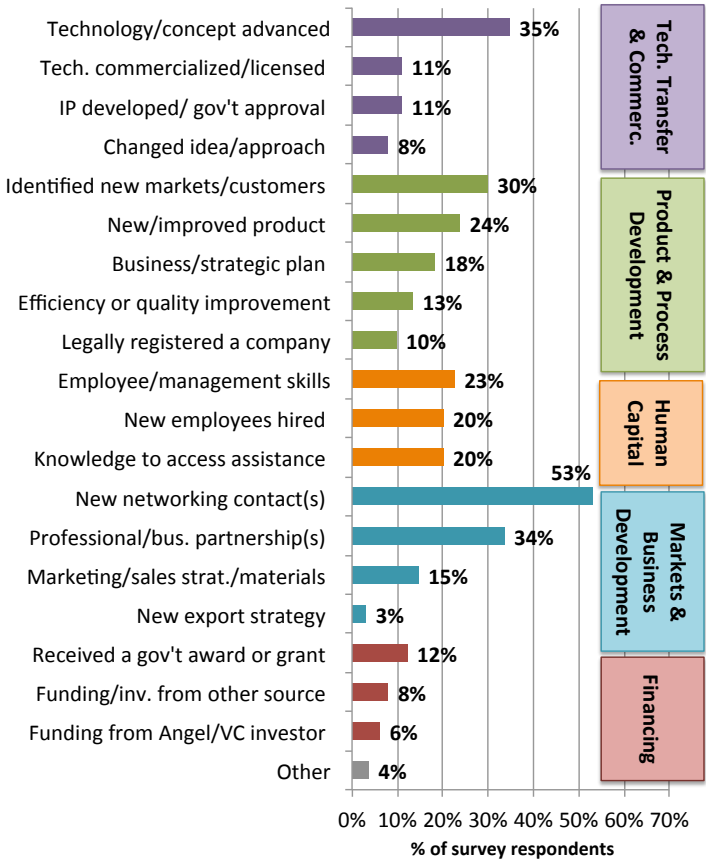
Product & Process Development
- # of businesses registered
- # of business/strategic plans
- # of new/improved products & processes
- # of businesses w/ cost, efficiency, quality improvements

Human Capital Development
- # of entrepreneurship/leadership programs completed & satisfaction
- # of technology/cluster-aligned degrees & certificates completed
- Extent of employee/management skills development in cluster firms
- Growth in knowledge about how to access outside assistance

Markets & Business Development
- # of businesses with new network contacts or partnerships
- # of businesses identifying new markets/customers
- # of new sales/marketing strategy or materials
- # of export strategies & new export sales

Financing
- # seed/angel/VC deals + amount
- # of loans obtained + amount
- # of government awards/grants/loan guarantees + amount

Direct Results Experienced Through Participation in JIAC



Source: SRI survey of JIAC clients/participants

The direct results experienced by JIAC program participants (as described above) translate into broader impacts on firm-level and organizational capabilities, both in the short-term and long-term. These impacts include **increased capacity and knowledge**, **increased competitiveness**, **growth and expansion**, and **new opportunities**, and the impacts can occur at both the firm/organizational level and at the regional level (as described in the logic model categories to the right).

JIAC program impacts are broadly distributed for the **businesses and start-ups** that responded to the survey, as shown in the chart below.

Half of the other **participants (non-profits, higher education, etc.)** (51%) indicated that their region experienced *growth or development of a key or targeted industry/cluster* and half (51%) indicated *growth of higher skill/wage job opportunities* in their region. Other key regional-level impacts include *improved innovation/entrepreneurship ecosystem* (47%); *improved opportunities for small businesses* (47%); and *workforce skills development* (40%).

Impacts

Firm-Level:

Improved Capacity & Knowledge

- Improved access to capital/investment
- Growth in management/employee capabilities and knowledge
- Expanded technical & business networks
- Environmental or energy efficiency improvements

Improved Competitiveness

- Increased productivity/efficiency
- Diversification, entering new markets, reaching new customers

Growth & Expansion

- Business stabilization/survival
- New/increased sales or revenues
- Increased employment
- New business creation
- Established a new location/moved business into the region
- Business acquisition or merger

Regional-Level:

Improved Capacity & Knowledge

- Workforce skills development
- Environmental or energy efficiency improvements

Improved Competitiveness

- Improved innovation/entrepreneurship ecosystem

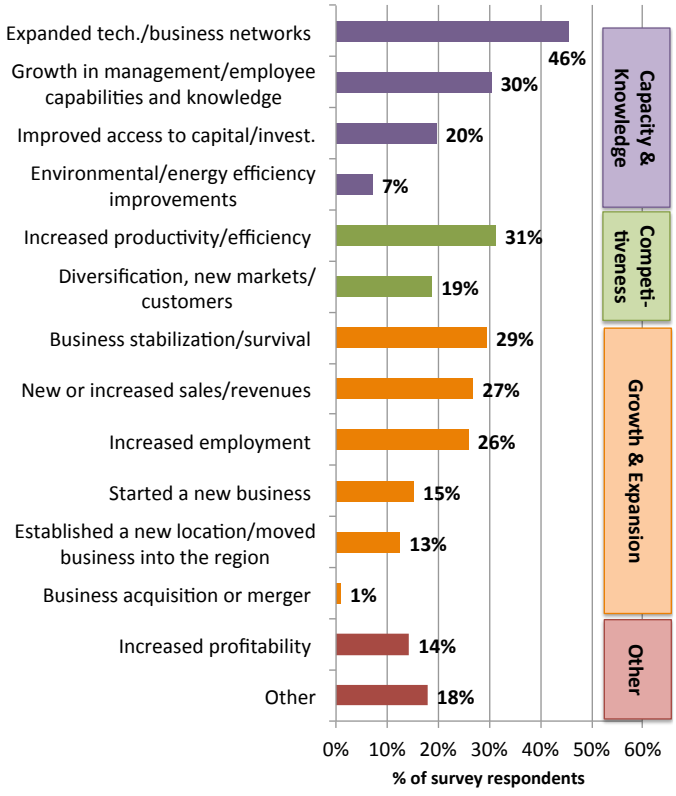
Growth & Expansion

- Growth/development of a key/targeted industry cluster
- Growth of existing businesses and/or startup of new businesses
- Growth of higher skill/wage job opportunities

Improved Opportunities

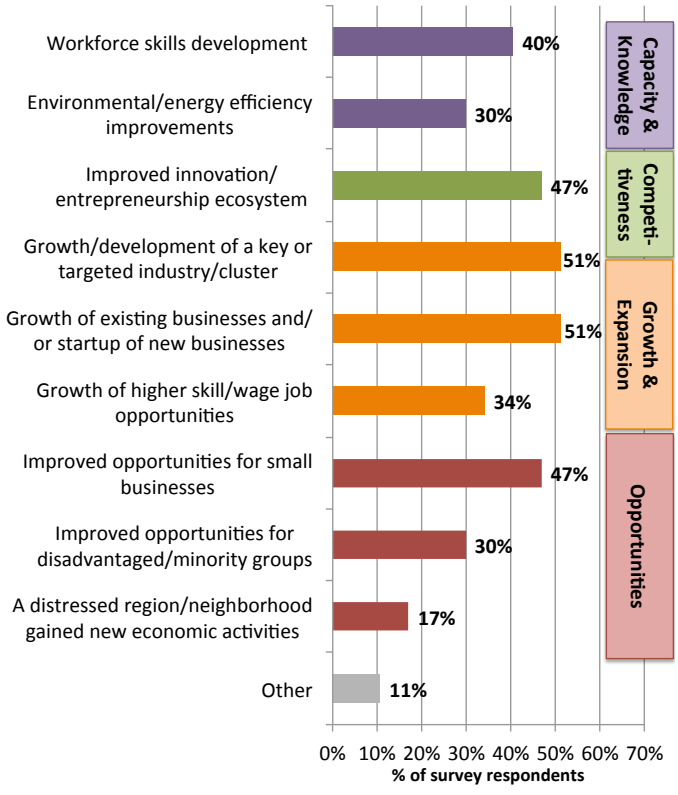
- Improved opportunities for small businesses
- Distressed region/neighborhood gains new economic activities
- Improved opportunities for disadvantaged/minority groups

Enhanced Firm-Level Capabilities: JIAC Impacts on Participating Businesses



Source: SRI survey of JIAC clients/participants

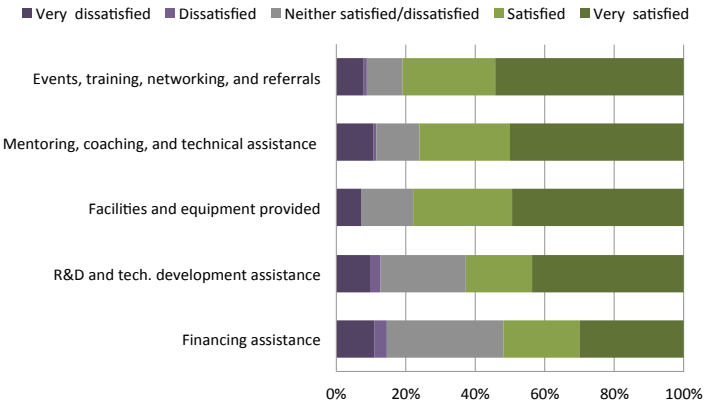
Enhanced Regional Capabilities: JIAC Impacts Experienced by Participating Organizations



Key finding: Businesses report better capacity to compete; other institutions report enhanced regional ecosystems.

The overwhelming majority of participants are satisfied or very satisfied with the various types of activities they participated in, except in the case of financing assistance, where results are more balanced.

Client/Participant Satisfaction with JIAC



Source: SRI survey of JIAC clients/participants

JIAC Program Recommendations

Recommendation 1: JIAC Program Data Collection Methods

Standardized EDA database	EDA should make the case to executive and legislative leaders for a significant investment in a single program database with a content management system open to grantees, home to standardized input, output, and outcome metrics (drawn from program logic models). The database should be appropriate to the needs of all EDA non-infrastructure programs and investments and would warrant the significant extra dollars (over and above existing program dollars) and EDA staff time (stretching over many months) that would be required.
Standardized use of metrics in program implementation	Successful program implementation and assessment requires reliable, consistent data. The metrics to be used, the protocols governing their collection, and the mechanisms by which they are reported and aggregated, should all be specified before the program is implemented. The FFOs and IWPs should reference these elements, and their adoption and implementation by grantees should be a contractual requirement, governing the content of the technical reports submitted.

Recommendation 2: JIAC Program Input and Activity Metrics

Program grantees should use Client Management Systems (CMS)	Many of the social capital building activities supported through the JIAC program should be tracked in a low-cost way through a Client Management System (CMS) and reported to EDA based on a standard protocol. Measuring social capital, or network-based activities and outputs, is difficult, and qualitatively rich tracking of this activity is likely to impose a burden on grantees and participants. However, because of the centrality of networks and social capital to the development of regional clusters and ecosystems, it is recommended that a simple score card is maintained by grantees, using a CMS, to track interactions, exchanges, meetings, etc.
Program grantees should employ and report a standard survey instrument	Many program activities and outputs can be captured through required surveys of participants and clients, for which the EDA should supply standardized instruments and protocols (surveys are also indispensible for tracking outputs and new capabilities). This standardized survey should err on the side of simplicity, focusing on key activities and goals of EDA programs. The use of technology should make collecting and reporting this information into a central database relatively low cost.

Recommendation 3: JIAC Program Output and Capacity metrics

Measure technology development with Technology Readiness Levels (TRL)	Program grantees should employ a standard definition of Technology Readiness Levels (TRLs) to measure success in technology development. A key goal of the EDA, and indeed the U.S. government, is to build successful regional economies through technology development and innovation. This requires a shared measure of technology development. TRLs are used effectively by other Federal agencies, and should become standard practice across EDA programs.

JIAC Program Recommendations (continued)

Recommendation 4: Sample Metrics and Possible Collection Methods

A variety of metrics are proposed and discussed throughout this report, organized and linked with the JIAC program logic model that captures program inputs, activities, outputs, and outcomes. The graphic below presents a sample of the proposed metrics for program evaluation, along with possible data collection methods.

Initial Conditions & Capacities	Inputs	Outputs (Project Activities)	Enhanced Capabilities: Direct Results	Enhanced Capabilities: Impacts
Sample Quantitative and Qualitative Metrics:				
• Regional, national cluster growth rates • Prior innovation metrics (patenting, etc.) • Ecosystem metrics • Prior workforce Skills, Qualifications, & Abilities (SQAs)	• Existing capabilities (staff, programs) • JIAC grantee funding received from EDA • JIAC grantee match funding (cost-share) • Technologies & ideas brought by clients/ participants	• # of events, participation, & satisfaction • # of boot camps/accelerators, participation, & satisfaction • # of entrepreneurs mentored • New facilities established • # of joint research projects conducted • # of SBIR proposals supported	• # of technologies licensed or commercialized • # new business plans developed • # of new products launched by participants • # of employees with new skills • # of new business contacts made • # of new investment deals, loans, or grants	• Improved capacity to access capital • Workforce skills development • Market diversification • Improved innovation/ entrepreneurship ecosystem • Job, revenues, and/or business growth • Growth of target cluster • New economic activities in a distressed region
Possible Direct and Indirect Data Collection Methods:				
• **Grantee self-reporting** (*e.g., grant proposals*) • **Third party data** (*through a standard set of regional and cluster indicators maintained by EDA)*	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Grantee site visits, interviews**	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Client/stakeholder surveys** *(standardized survey instrument*) • **Grantee interviews, site visits**	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Client/stakeholder surveys** *(standardized survey instrument*) • **Grantee interviews or site visits** • **Third party data** (*to measure increased cluster, industry, community, and regional-level capacity and impacts over the long run)*	

I. Introduction

About This Study

The U.S. Department of Commerce's Economic Development Administration (EDA) is the only federal government agency focused exclusively on economic development. Economic development *creates the conditions for economic growth and improved quality of life by expanding the capacity of individuals, firms, and communities to maximize the use of their talents and skills to support innovation, lower transaction costs, and responsibly produce and trade valuable goods and services*. Economic development requires effective, collaborative institutions focused on advancing mutual gain for the public and private sectors and is essential to ensuring the nation's economic future.

EDA recognizes that all of its programs should be designed in such a way as to allow for effective implementation and rigorous evaluation, in order to advance the objective of delivering smarter and more accountable government.[1] To that end, EDA partnered with the University of North Carolina (UNC) at Chapel Hill and SRI International, via a three-year cooperative agreement (FY2012-2014), to explore new performance metrics and assessment methods that will enhance the ability of all economic development practitioners and policymakers to design, implement, and evaluate programs in effective and rigorous ways.

The first phase of this project explored the various sources of digital data, from both private vendors and government agencies, which could be used to provide timely data that could be tailored to examine diverse configurations of firms within regions. This work culminated in the report, *Innovative Data Sources for Regional Economic Analysis*.[2]

The second phase of the study developed an EDA logic model and piloted a set of metrics.[3]

This report on the **Jobs and Innovation Accelerator Challenge (JIAC) program** represents one element of the larger effort, and has been produced alongside reports on parallel studies of the i6 Challenge (i6) and Trade Adjustment Assistance for Firms (TAAF) programs.

Building on the three program-focused studies, SRI will refine and prepare final recommendations for EDA on applying useful metrics to an evaluation system that will support economic practitioners and program staff in program design, progress monitoring, and assessment.

Study Methodology

SRI has used a variety of traditional and non-traditional data-collection approaches to gather the information presented in this report. The research team began by augmenting the EDA logic model to capture the inputs, outputs, and desired outcomes of the JIAC program. For each component of the logic model, the team has identified various data collection methods and metrics for effectively measuring and evaluating these inputs, outputs, and outcomes. Data collection methods included JIAC grantee site visits and interviews, a JIAC client survey, review of online and printed materials, the collection and analysis of metrics of regional capacity, and analysis of a JIAC client/participant database.

The SRI analysis of these data formed the basis for program recommendations on:

- Refining and improving EDA's evaluation and data collection methods for the JIAC program;

[1] See Office of Management and Budget, Memorandum to the Heads of Departments and Agencies, July 26 2013, "Next Steps in the Evidence and Innovation Agenda."

[2] Feldman, M. *et al*. (2012). *Innovative Data Sources for Regional Economic Analysis. Proceeding from a Conference.*

[3] Feldman, M. & Lanahan, L. (2014). *Stage I: Initial Findings on Metrics and Potential Data Sources. Examining the JIAC and the Jobs and Innovation Accelerator Challenge (JIAC) Projects*.

- Identifying implications of the new evaluation methods and metrics for JIAC program design and management.

The focus of this multi-program study is to assess the utility of different metrics and data collection methods for conducting program evaluations. While the study does not assess the effectiveness of individual JIAC grantee's activities, approaches, and outcomes, the data available to the project team about individual grantee programs were sufficient to provide a systematic understanding of the practices developed as part of program implementation. These inform the recommendations included in this report. The relatively short timeframe that the JIAC program has been in existence (since 2011) means that longer-term outcomes cannot yet be detected.

About This Report

This report presents the following information and analysis:

II. Overview of the JIAC Program. Provides a brief background on the JIAC program and how it is currently implemented.

III. Framework for JIAC Program Evaluation. Describes the key challenges faced in assessing the JIAC program and presents a logic model and data collection methods explored by this study for conducting future evaluations.

IV. Measuring Inputs: JIAC Grantees, Partners, and Resources. Presents the logic model structure, proposed metrics, and data collection methods for assessing JIAC program inputs.

V. Measuring Outputs: JIAC Project Activities. Presents the logic model structure, proposed metrics, and data collection methods for assessing JIAC grantee activities.

VI. Measuring Enhanced Capabilities: Direct Results and Impacts. Presents the logic model structure, proposed metrics, and data collection methods for assessing the enhanced client and participant capabilities that result from JIAC grantee activities, along with the longer-term impacts these have at the firm and regional levels.

VII. Key Findings & Implications for Program Evaluation. Presents SRI's findings and recommendations on JIAC program design, data collection, and evaluation methods, based upon the results of this study.

Appendix A: JIAC Grantee Profiles. Presents a profile for each JIAC grantee. Each grantee's profile contains details that differentiate its approach in terms of program operations, success strategies, and measuring outcomes.

Appendix B: JIAC Grantee Client/Participant Survey. Contains the survey instrument and summary results for the web survey of JIAC clients/participants.

II. Overview of the JIAC Program

The Jobs and Innovation Accelerator Challenge (JIAC) initiative represents the implementation of a number of Obama Administration policy priorities, including the acceleration of bottom-up innovation strategies encompassing urban, rural, and multi-jurisdictional geographies to avoid the one-size-fits all approach to solutions. The program is also designed to reduce federal silos and promote more coordinated federal funding opportunities that offer a more efficient system for accessing federal resources.

Description of the JIAC Program

The JIAC program was launched in 2011 and leverages existing financial and technical assistance from a variety of federal agencies and bureaus to support the development of high-growth clusters, selected through a competitive inter-agency grant process. Funds awarded to winning applications can be used to support industry clusters in urban and rural regions across the nation and across all industry sectors. Funds can be used to support and accelerate a range of outcomes, including innovation, commercialization, business formation and expansion, job creation, development of a skilled workforce, increasing exports, sustainable economic development, and global competiveness.

The JIAC program included three rounds of awards over two years (2011 and 2012). This study focuses on the grantees from the original round in 2011. In 2012, two additional rounds of the JIAC program were funded: the *Rural Jobs and Innovation Accelerator Challenge* and the *Advanced Manufacturing Jobs and Innovation Accelerator Challenge*. The thematic nature of these rounds of the JIAC program differed from the original 2011 program's more general focus on industry clusters. However, the basic premise of the program remained constant – multiple federal agencies teamed up to provide financial assistance to winning projects, and a number of additional agencies provided technical assistance.

For each round of the JIAC program, different agencies were involved in providing both funding and technical assistance, including the Economic Development Administration (EDA), Small Business Administration (SBA), and Department of Labor's Employment Training Administration (ETA) for the 2011 JIAC round. This study focuses specifically on grantee activities funded by the EDA. In practice, grantee activities funded by the three agencies were often intermingled and complementary; as a result, in many cases it was difficult and impractical for EDA activities, outcomes, etc. to be teased out by grantees in interviews and by SRI staff in reviewing program materials. However, wherever possible, the contents of this report of focus specifically on activities funded by the EDA portion of the JIAC grants.

JIAC Program Goals

The JIAC program was designed to help regions achieve the demonstrated benefits of collaborative, cluster-based regional development. Each round of the program focused on somewhat different goals that aligned with the general or thematic nature of the specific round.

The 2011 JIAC inaugural round focused on a number of key objectives:

- Accelerate the formation of new businesses and the growth of existing businesses;
- Accelerate the creation of high-wage jobs;
- Advance the commercialization of research;
- Support the deployment of new processes, technologies, and products to grow sales and create jobs;
- Enhance the capacity of cluster businesses, including small and disadvantaged businesses;
- Increase exports and business interaction with international buyers and suppliers;
- Develop the skilled workforce needed to support growing clusters; and
- Ensure diverse workforce participation in clusters.

The 2012 *Rural JIAC* round focused on slightly different goals specific to its emphasis on helping rural regions create jobs, strengthen their regional economies, and identify and grow their regional clusters. Additional objectives included: building assets in rural communities to support regional economic ecosystems; linking rural communities to markets; and ensuring rural economies are supported by efficiently-planned housing and community development.

Finally, the 2012 *Advanced Manufacturing JIAC* round emphasized somewhat different goals specific to its focus on supporting advanced manufacturing activities and cluster development. Specific objectives included: developing the advanced manufacturing workforce; accelerating investment in and deployment of advanced manufacturing technologies; expanding collaborative research and technology commercialization; and supporting testing of new products/processes using advanced modeling and simulation tools.

JIAC Program Implementation & Grantee Characteristics

The JIAC program recognizes that building on a region's economic strengths is a very effective strategy for economic development, and that regional innovation clusters are building blocks of American competitiveness. Thus, the JIAC program aims to support and strengthen regional clusters. Supporting regional clusters allows for the development of bottom-up approaches to regional economic development rather than imposing a one-size-fits-all approach on regions that may have widely varying strengths, weakness, opportunities, and needs.

While the JIAC program focuses resources on the development of clusters, the specific activities of each funded project vary widely depending on the characteristics of the regional cluster. Funded projects in 2011 run the gamut from providing technical assistance/support to IT entrepreneurs, to creating a commercial-scale proof of concept center for renewable energy technologies, to working with local governments to streamline the permitting process for advanced manufacturers looking to locate in a distressed region.

The 2011 JIAC program provided funding and technical assistance to 20 industry clusters across 21 states. In total, the multi-agency competition awarded $37 million to these cluster projects; funding agencies included the U.S. Department of Commerce's Economic Development Administration (EDA), the U.S. Department of Labor's Employment and Training Administration (ETA), and the Small Business Administration (SBA). In addition, 13 additional agencies pledged to provide technical assistance to the winning projects, which promote development in areas such as advanced manufacturing, information technology, aerospace, and clean technology. See Figures II-1 and II-2, below, for more details about the 20 JIAC grantees in 2011.

In this 2011 JIAC round, EDA funding was specifically targeted to advance cluster development leading to job creation, expanded markets, economic growth, and global competitiveness. Allowable project activities varied widely, as discussed above, as long as they were critical for accelerated cluster development leading to these desired outcomes. The project period for EDA activities was expected to last up to 24 months, with the option of EDA extending the period depending on funding availability and performance/progress of the project. EDA funding also required a matching share from non-federal sources, with the amount of EDA assistance not exceeding 50% of total project costs (projects in high need areas were eligible to receive up to 80% of project costs subject to EDA's discretion). The cost share requirement could be met through in-kind contributions, such as space, equipment, services, or assumptions of debt.

Figure II-1

EDA's 2011 Jobs & Innovation Accelerator Challenge Grantees

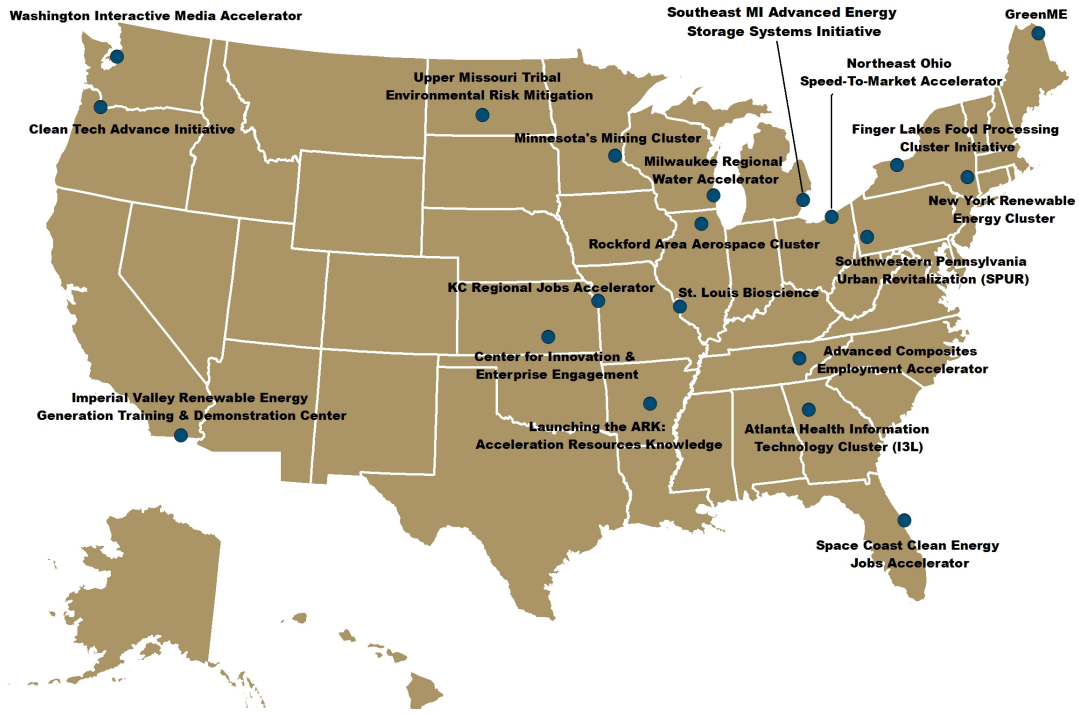


Figure II-2

2011 JIAC Grantees						
Project Title	**Grantee(s)**	**Key Partners**	**Location**	**Geographic Focus**	**Industry Focus**	**Total Funding Amount**
EDA Regional Office: Atlanta						
Atlanta Health Information Technology Cluster (I3L)	Georgia Institute of Technology	Advanced Technology Development Center Incubator at Georgia Tech	Atlanta, Georgia	State of GA, especially the Atlanta metro region	Health Information Technology	$1,650,000
Advanced Composites Employment (ACE) Accelerator	Roane State Community College	Oak Ridge National Laboratory; University of Tennessee Center for Industrial Services	Oak Ridge, Tennessee	Knoxville and Oak Ridge, TN 18 county area	Advanced Composites; focus on low-cost Carbon Fiber Technology	$1,627,185
Space Coast Clean Energy Jobs Accelerator	Space Florida		Cape Canaveral, Florida	East Central FL	Clean Energy	$2,148,198
EDA Regional Office: Austin						
Launching the ARK: Acceleration, Resources, Knowledge	Winrock International	University of Arkansas at Fayetteville; Innovate Arkansas; Small angel investor groups	Fayetteville, Arkansas	Northwestern Arkansas and bordering counties in AR, MO, and OK	Information Technology	$2,150,000

2011 JIAC Grantees (continued)						
Project Title	**Grantee(s)**	**Key Partners**	**Location**	**Geographic Focus**	**Industry Focus**	**Total Funding Amount**
EDA Regional Office: Chicago						
Minnesota's Mining Cluster – The Next Generation of Innovation and Diversification to Grow America	University of Minnesota Natural Resources Research Institute	NA	Duluth, Minnesota	Northeastern MN	Mining Cluster	$1,948,985
Milwaukee Regional Water Accelerator Project	University of Wisconsin - Milwaukee	The Water Council	Milwaukee, Wisconsin	Southeastern WI and Northeastern IL	Water Technology Cluster	$1,650,000
Northeast Ohio Speed-To-Market Accelerator	Northeast Ohio Technology Coalition (NorTech)	NA	Cleveland, Ohio	Cleveland and Akron, OH and surrounding counties	Energy and Flexible Electronics	$2,062,945
Rockford Area Aerospace Cluster Jobs and Innovation Accelerator	Northern Illinois University (NIU); Rockford Area Economic Development Council (RAEDC)	Rockford Area Aerospace Network (RAAN); Chicago area MEPs	Rockford, Illinois	Rockford MSA and surrounding region	Aerospace	$1,769,987
Southeast Michigan Advanced Energy Storage Systems Initiative	NextEnergy Center	NA	Detroit, Michigan	Detroit, MI and surrounding counties	Advanced Energy Storage Systems	$2,125,745
EDA Regional Office: Denver						
St. Louis Bioscience Jobs and Innovation Accelerator Project	St. Louis Economic Council; BioGenerator; BioSTL; Center for Emerging Technologies	NA	St. Louis, Missouri	St. Louis MSA	Bioscience	$1,825,779
Upper Missouri Tribal Environmental Risk Mitigation (UM-TERM) Project	United Tribes Technical College	Coalition of 7 tribal Colleges in the region	Bismarck, North Dakota	19 Tribal Reservations in the Upper Missouri River Basin, including MT, ND, and SD	Environmental Risk Mitigation	$1,716,475
Center for Innovation and Enterprise Engagement	Wichita State University	WSU College of Engineering and other WSU Centers and Institutes; Regional Economic Development Organizations	Wichita, Kansas	Wichita, KS and surrounding 10 county area	Advanced Manufacturing and Materials	$1,993,420
KC Regional Jobs Accelerator	Mid-America Regional Council	University of MO - Kansas City; KCnext; KC SmartPort	Kansas City, Missouri	Greater Kansas City region	Advanced Manufacturing and Information Technology	$1,891,338

2011 JIAC Grantees (continued)						
Project Title	**Grantee(s)**	**Key Partners**	**Location**	**Geographic Focus**	**Industry Focus**	**Total Funding Amount**
EDA Regional Office: Philadelphia						
Finger Lakes Food Processing Cluster Initiative	Rochester Institute of Technology, Center for Integrated Manufacturing Studies	Golisano Institute for Sustainability, RIT; New York State Pollution Prevention Institute	Rochester, New York	Finger Lakes region – 9 county area	Food Processing	$1,547,470
GreenME	Northern Maine Development Commission	NA	Caribou, Maine	Northeastern ME, including Aroostook and Washington counties	Renewable Energy	$1,928,225
New York Renewable Energy Cluster	The Solar Energy Consortium	Orange County Office of Business Services; City of Newburgh	Kingston, New York	Newburgh, NY	Renewable Energy and Advanced Manufacturing	$1,950,000
Southwestern Pennsylvania Urban Revitalization	Pittsburgh Central Keystone Innovation Zone (part of Urban Innovation 21)	Hill Community Development Corporation; Hill House Economic Development Corporation; Innovation Works; Duquesne University Small Business Development Center	Pittsburgh, Pennsylvania	Pittsburgh, PA – especially the Hill District and Homewood Neighborhood	Energy and Healthcare/Life Sciences	$1,959,395
EDA Regional Office: Seattle						
Portland Regional Clean Tech Advance Project	Portland Development Commission	Oregon Built Environment and Sustainable Technologies Center (Oregon BEST); Columbia River Economic Developmt. Council (CREDC); University of Oregon; Oregon Institute of Technology; Portland State University; Washington State University	Portland, Oregon	5-County Portland, OR and Vancouver, WA metro area	Clean Tech and Advanced Manufacturing	$2,150,000
Imperial Valley Renewable Energy Center Development Project (Center for Energy Sustainability)	San Diego State University Research Foundation	CleanTECH San Diego	Imperial County, California	San Diego and Imperial County, CA	Renewable Energy, focus on solar	$1,671,600
Washington Interactive Media Accelerator Project	Economic Development Council of Seattle and King County	Washington Interactive Network	Seattle, Washington	Puget Sound Region	Interactive Media	$1,229,000

Informational note on the two 2012 JIAC Rounds (*not included in this study*)

The two 2012 JIAC rounds were different than the 2011 round because they focused on specific themes. The 2012 *Rural Jobs and Innovation Accelerator Challenge* provided funding and technical assistance to 13 cluster projects in rural regions across the country. In total, $9 million was awarded to these projects; primary funding agencies included the EDA and the USDA. In addition, the Appalachian Regional Commission (ARC) and the Delta Regional Authority (DRA) acted as regional funding partners to provide funding to *Rural JIAC* projects in their respective regions. In this round, similar to the 2011 round, EDA funding was provided to strengthen linkages to advance cluster development leading to job creation, expanded markets, economic growth, and global competitiveness. The project period for EDA activities was expected to last up to 36 months, with the option of EDA extending the period depending on funding availability and performance/progress of the project. Matching requirements were similar to those for the 2011 JIAC round.

The second round of 2012 funding was the *Advanced Manufacturing Jobs and Innovation Accelerator.* This JIAC provided funding and technical assistance to 10 cluster projects across the country that strengthened advanced manufacturing at the local level. Projects included initiatives to connect innovative small suppliers with local companies, link research with starts-ups to commercialize new ideas, and train workers with skills relevant to firms' needs. A total of $20 million was awarded to these projects; funding agencies included EDA, NIST, DOE, ETA, and SBA. In addition, each winning application had the opportunity to receive assistance from a federal support team that included staff from the funding agencies as well as other support agencies.

These grants, often not fully implemented until late 2012 or early 2013, were too recent for even a preliminary assessment of program activities and outputs. However, we expect the recommendations from this study to be valuable for understanding and assessing these and other rounds of EDA's non-infrastructure programs.

III. Framework for JIAC Program Evaluation

A primary goal of this study is to explore how metrics and data collection methods may be used to assess the **Jobs and Innovation Accelerator Challenge (JIAC)** program. To provide an overall structure for these metrics and how they support program evaluation, the SRI team has prepared a JIAC program logic model that captures the key inputs, outputs, and outcomes of the program. This chapter lays out the rationale behind the logic model and explains how this model can be used as a framework for structuring JIAC program data collection approaches and metric identification.

Key Challenges for JIAC Program Evaluation

A number of challenges exist in evaluating and measuring results for a program such as the Jobs and Innovation Accelerator Challenge (JIAC), which engages in a diverse set of activities; serves a broad range of industries, regions, and clients; and yields diverse, not easily measured outcomes.

Heterogeneous JIAC grantee approaches

The broad-ranging goals of the JIAC program mean that there is wide latitude in how grantees structure their project approaches. Examples of this diversity are captured in the JIAC grantee profiles presented in *Appendix A*. Some grantees have very centralized programs, with all activities and services managed by a single, lead organization. Other grantees operate as a network of partnering organizations with different activities and services administered by different organizations. The types of grantee organizations involved are diverse and include universities, economic development organizations, nonprofits, workforce agencies, and others. Each grantee focuses on a different industry cluster, and their geographic focus ranges from a single metro area, to a set of counties, to an entire state. All of these factors lead to incredible diversity in how JIAC grantees implement their programs and interact with their clients. These diverse approaches to program implementation make sense – they allow JIAC grantees to serve the unique needs of their own industry clusters and regions in the most effective way – but they also create challenges for program management and implementation. These variations in implementation approaches must be considered in evaluating program outcomes and impacts.

Difficult to define industry clusters

Each JIAC grantee focuses on advancing the growth of a different regional industry cluster. Per the specifications of the program's Federal Funding Opportunity Announcement (FFO), all grantees were required to define their industry clusters (supported by data and background information) as a key part of their grant applications. The types of industry clusters served range from broad, traditional industries (e.g., advanced manufacturing, mining) to more narrow and newer "innovation" industries (e.g., clean tech, interactive media, advanced composites). In practice, it is incredibly difficult to define and measure these industries using the quantitative tools and datasets available for this type of analysis, especially due to the limitations of the NAICS system, which is typically used to "define" industries. This problem is not unique to the JIAC program, but is true for all industry cluster analysis.

In particular, newer "high-tech" industries cannot be defined via NAICS codes, because there are no codes that capture sectors such as "clean tech" or "composites." These activities are embedded in a wide variety of NAICS codes that measure more traditional activities. For example, "clean tech" firms might fall under NAICS codes for power generation, electronic components, industrial equipment manufacturing, building construction, etc. – and it is not easy to discern which portion of these NAICs codes is really "clean tech" and which portion is simply

more traditional activities. To define and measure "high-tech" industry clusters, most JIAC grantees (and most regional organizations in general) find that they must look firm-by-firm to identify what businesses are actually part of their cluster.

Even traditional industry clusters can be difficult to measure using NAICS codes. For example, the "mining industry cluster" would probably include all firms under NAICS 21 ("Mining, Quarrying, and Oil and Gas Extraction") but would also likely include a variety of equipment suppliers and downstream processers and users that are not easily identified based on NAICS codes. These other activities would typically vary from region-to-region, dependent upon the unique characteristics of that region's cluster.

These challenges in industry definition and measurement create challenges for program evaluation, because it is difficult for researchers to use available industry datasets to measure and capture changes in regional industry clusters over time. In addition, occasionally grantees change their industry focus over the course of their grant. For example, a grantee proposal may specify that renewable energy is the cluster focus, but due to on-the-ground realities in grant implementation, may expand the focus to advanced manufacturing more broadly. Therefore, direct information from grantees is a crucial element in assessment.

These limitations to traditional approaches are the wellspring for the new set of indicators developed in the *Innovative Data in Regional Economic Analysis* report, referenced above. For example, value chain analysis is helpful in capturing all elements in a cluster, regardless of NAICs code.

Difficult to define geographic areas

Each JIAC grantee also focuses on a defined geographic region or service area. Per the specifications of the program's FFO, all grantees were required to define their geographic focus (supported by data and background information) as a key part of their grant applications. The geographic focuses of JIAC grantees can be rural or urban, large or small, or a mix of these – ranging from single metro areas, to a set of rural counties, to entire states. For some grantees, different types of activities may be concentrated in different parts of their geographic region. For some, while services are delivered *within* their geographic region, client firms may come from *outside* the region (especially for programs that focus on bringing new firms and entrepreneurs into a region to grow a cluster).

For some, the geographic focus may evolve as the program is implemented, in response to on-the-ground realities (for example, the focus may be an entire state, but all clients are located in a single metro area due to the nature of the industry cluster).

As a result of all of these factors, program evaluation is made more challenging. Direct information from grantees is crucial for assessment, to ensure that the geographic scope of each grantee's project is being assessed appropriately.

Heterogeneous client involvement

The client or participant base served by the JIAC program is comprised of a large but varied group of entrepreneurs, start-ups, small businesses, and larger businesses, as well as a smaller group of partnering organizations such as regional economic development organizations and research institutions. Each participant's situation is unique. As a result, the range of projects supported by JIAC grantees for any given participant are heterogeneous, encompassing such diverse issues as technology development, training, marketing, product and process improvements, business services, etc. It is therefore difficult to categorize and quantify in a systematic way the activities and projects that JIAC clients are doing, and to link these projects with quantifiable outcomes in the short run. The JIAC grantees that are the subject of this report received their grants beginning in 2011, also limiting a long-run review of outputs and impacts.

On the other hand, the kind of cluster impact intended by the JIAC program is a long-term impact – impact that is very nicely captured by the concept of *capacity-building*. Therefore, the capacity-building indicators developed as part of this overall project are well matched to evaluating cluster impacts, although these impacts may take 5-10 years or more to unfold, and are not necessarily measurable in the short term.

Both qualitative and quantitative outputs & outcomes

In the past, federal and other economic development programs have been assessed on easily quantifiable results (such as sales and job increases), albeit with mixed success. No one minimizes the value of new jobs, but tracking this metric alone will provide no information about what kind of jobs are being created (a key

aspiration of the JIAC program is to rely on the power of innovation and entrepreneurship to create "good jobs" with "good wages") or whether the jobs are here to stay (the JIAC program is aimed at a sustainable employment future).

The JIAC program is a project of the Taskforce for the Advancement of Regional Innovation Clusters (TARIC), with many other federal partners, and the broad goal is regional economic development through cluster-based innovation. As the analysis that follows below will show, there are many different elements necessary for success in regional development (for example technology, networks, skills, finance), and programs like JIAC that aim at such success will directly address some or all of these elements. These kinds of activities, while critical, will only show up in an indirect way in long-term employment figures. They are, in short, capacity-building activities of the kind discussed in EDA's revised definition of economic development.

Many of the outputs achieved by participants can only be captured through qualitative measures. While some types of client projects may lead to quantifiable results, such as cost reductions through efficiency improvements or a new bank loan obtained, the reality is that JIAC projects lead to capacity-building results that are only capable of measurement in the long-run (5-10 years or longer). The challenge addressed by this report – through the use of a logic model and self-reported improvements in capability – is to tie present activities to capacity-building outputs and outcomes in a meaningful and useful way.

External forces and causal relationships

Another key challenge for evaluating the JIAC program (and for most other programs of this nature) is establishing the causal relationships between program activities and program outcomes. The projects supported by the JIAC program do not occur in a vacuum, as local, national, and international economic conditions; ongoing industry and technology trends; networks and institutions; and many other external factors continuously shape participants' environment. It is therefore challenging to establish a direct causal relationship between JIAC projects and outcomes. The typical method for addressing this challenge is using rigorous statistical analysis and experimental/quasi-experimental design to establish correlations and causations, while controlling for external factors and addressing other forms of bias.

In the context of capacity-building, with its several critical elements, one approach is to apply capacity measures to a region and/or cluster before the program, and then track these indicators over the long term. This is an idea at the heart of this project, but requires a much greater timeframe than available to the team working on this report. The discussion of capacity metrics will illustrate how this could be done, even if the present program offers only a very limited opportunity to apply this approach.

Use of Logic Models for Program Evaluation

To address many of the challenges described above, the SRI team has created a logic model to serve as a framework for this study and for future JIAC program evaluations. The value of a logic model is that it provides a clear, graphical framework for identifying program inputs, outputs, and outcomes/impacts, as well as the logical, "if-then" relationships across these components. Logic models are well-established as useful programmatic tools for a number of purposes.

Recommended Logic Model for JIAC Program Evaluation

SRI's articulated logic model for the JIAC program is presented on the following page. The JIAC program logic model was informed by a variety of information sources and inputs, including individual JIAC grantee interviews and site visits, review of program documents, etc. As illustrated in the logic model graphic, each section of the model (inputs, outputs/activities, outcomes) can be measured and evaluated by a wide variety of possible metrics, both quantitative and qualitative in nature. These metrics can be gathered and tracked via a variety of different data collection methods, both direct and indirect in nature.

The value of the JIAC logic model as a programmatic tool is that it can help address many of the evaluation challenges described above:

- It can capture the heterogeneous issues and needs of JIAC participants, as well as the heterogeneous approaches used by grantees to work with their partners and participants.
- It captures both qualitative and quantitative activities, outputs, and outcomes via a variety of data collection methods.
- It can account for key immediate capacity-building and qualitative outcomes, while logically relating these to

longer-term quantitative outcomes (such as firm sales and job growth).

- It acknowledges the many external forces and underlying conditions that affect firms and participants outside of the work they do via the JIAC program – therefore addressing the issue that many program outcomes can be captured logically and qualitatively, but cannot always be "proven" statistically.

SRI recommends that this type of logic model can and should be used by EDA for the JIAC program, moving forward, to structure and guide program management, data collection, and evaluation.

The remaining chapters of this report explain and discuss key sections of the logic model – program inputs (*Section IV*), program activities/outputs (*Section V*), and enhanced capabilities (*Section VI*).

Each of the chapters that follow review, in detail, the data collection methods and key metrics that could potentially be used for measuring and evaluating each component of the logic model. The pros and cons of various data collection methods are discussed, as well as a comparison of what metrics are *currently* gathered versus what metrics *can and should* be gathered for improving JIAC program management and evaluation. The final chapter (*Section VII*) then provides the SRI team's overall recommendations about how to use this logic model to improve JIAC program data collection and evaluation, as well as the implications for improving program design, monitoring, management, and so on.

A Note About Initial Conditions & Capacities

It is important to note that the logic model takes a set of underlying conditions relating to economic, industrial, and regional conditions and competitiveness as the starting point, as these have an important influence on expected outcomes and program success.

Each JIAC grantee begins work from a different "baseline" in terms of the level of cluster development and capacity, network and innovation ecosystem development, workforce skills, facilities available, and so on. Some grantees utilize their JIAC award to catalyze development of small, nascent clusters with identified future potential in their region (for example, FL Space Coast Clean Energy Job Accelerator and Arkansas' Launching the ARK). Some seek to pivot well-established, legacy clusters into new, future-oriented and higher-growth activities (for example, Minnesota's Mining Cluster and Finger Lakes Food Processing Cluster). Others (such as St. Louis Bioscience and Washington Interactive Media Accelerator) have already established a foundation of support for their target cluster and use their JIAC award to extend and expand these activities.

In addition, each JIAC awardee's region has a different set of underlying economic conditions in terms of growth trends, unemployment, and other measures of economic "success" or "distress." For example, recent economic growth trends in cities such as Portland, OR and Atlanta, GA are very different than those experienced by other JIAC grantees in regions such as eastern Tennessee and northwest Arkansas. These factors influence the outcomes that might be expected from individual grantee's programs.

As mentioned above, the JIAC program FFO already requires all applicants to provide in their grant applications extensive baseline information of this nature, including regional economic indicators and trends; industry cluster definition, statistics, and level of development; description of existing cluster assets and partnerships; and detailed description of cluster needs and unaddressed opportunities. This data can and should be mined by EDA in the future to establish important baseline measurements for grantees, to be used in program evaluation; recommendations to this effect are discussed further in *Section VII*.

Technology Readiness Levels (TRLs) – discussed in more detail in *Section VI* and *Section VII* – are another tool that could be employed to establish underlying/baseline conditions for grantees, gauge progress against this baseline over time, and compare baseline conditions against program outcomes.

Recommended JIAC Program Logic Model

Initial Conditions & Capacities

- Economic conditions / business cycle (regional, national, global)
- Industry/cluster conditions, competitiveness & level of definition/ development
- Existing regional networks & innovation ecosystems
- Existing workforce skills & knowledge
- Existing facilities

Inputs

- Portfolio of Programs
- EDA Funding
- Other Funding
- Client/Participant Resources

Outputs (Project Activities)

- Events, Networking, & Referrals
- Mentoring, Coaching, & Technical Assistance
- Facilities & Equipment
- R&D & Technology Development Support
- Financing Support

Enhanced Capabilities

Direct Results

- Technology Development
- Product & Process Development
- Human Capital Development
- Markets & Business Development
- Financing

Impacts

Firm-Level:
- ***Improved Capacity & Knowledge***
- ***Improved Competitiveness***
- ***Growth & Expansion***

Regional-Level:
- ***Improved Capacity & Knowledge***
- ***Improved Competitiveness***
- ***Growth & Expansion***
- ***Improved Opportunities***

- Each item in the logic model can be measured and evaluated using a variety of quantitative and qualitative metrics.
- A variety of data collection methods can be used to gather these metrics, as outlined below. Each method has its own pros and cons, and multiple approaches are optimal to build a full picture of program outputs and outcomes.

Sample Quantitative and Qualitative Metrics:

- Regional, national cluster growth rates
- Prior innovation metrics (patenting, etc.)
- Ecosystem metrics
- Prior workforce Skills, Qualifications, & Abilities (SQAs)

- Existing capabilities (staff, programs)
- JIAC grantee funding received from EDA
- JIAC grantee match funding (cost-share)
- Technologies & ideas brought by clients/ participants

- # of events, participation, & satisfaction
- # of boot camps/accelerators, participation, & satisfaction
- # of entrepreneurs mentored
- New facilities established
- # of joint research projects conducted
- # of SBIR proposals supported

- # of technologies licensed or commercialized
- # new business plans developed
- # of new products launched by participants
- # of employees with new skills
- # of new business contacts made
- # of new investment deals, loans, or grants

- Improved capacity to access capital
- Workforce skills development
- Market diversification
- Improved innovation/ entrepreneurship ecosystem
- Job, revenues, and/or business growth
- Growth of target cluster
- New economic activities in a distressed region

Possible Direct and Indirect Data Collection Methods:

- **Grantee self-reporting** (*e.g., grant proposals*)
- **Third party data** (*through a standard set of regional and cluster indicators maintained by EDA)*

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Grantee site visits, interviews**

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Client/stakeholder surveys** (*standardized survey instrument*)
- **Grantee interviews, site visits**

- **Grantee self-reporting** (*e.g., grant proposals, reports*)
- **Grantee/partner surveys** (*standardized survey instrument*)
- **Client/stakeholder surveys** (*standardized survey instrument*)
- **Grantee interviews or site visits**
- **Third party data** (*to measure increased cluster, industry, community, and regional-level capacity and impacts over the long run)*

Study Data Collection Methods

As described above, the nature of the JIAC program requires both quantitative and qualitative data collection methods to capture the depth of what the program does and how it impacts client firms and other participants.

Review of Printed Materials

SRI reviewed each JIAC grantee's website (as available) and other background materials and printed materials supplied by the grantees. These documents provided a baseline of inputs into the analysis presented in this report, supplementing what was gathered via interviews, surveys, and data analysis.

JIAC Grantee Interviews and Site Visits

The SRI team conducted interviews with representatives of 17 out of the 20 JIAC grantees from the 2011 competition, to obtain an in-depth understanding of the operations, activities, and results experienced by each grantee. Guided by an interview protocol, the team visited two JIAC grantees to conduct in-person interviews with program directors and their staff; the remaining fifteen grantees were interviewed via telephone.

The two site visit locations [Atlanta Health Information Technology Cluster (I3L) in Atlanta, GA, and Northeast Ohio Speed-To-Market Accelerator (STMA) in Cuyahoga, OH] were chosen to cover different geographic regions and different types of JIAC programs. These visits enabled team members to gather the rich information that comes only from in-person meetings, in order to inform the interview protocol for the remaining grantees, which were each interviewed in a 45-90 minute telephone call. Interview results are used and presented throughout this report as a key component of program evaluation, and also provided important inputs into the JIAC grantee profiles presented in *Appendix A*.

JIAC Client Survey

SRI conducted a short web-based survey of JIAC clients, participants, and partners to gather their direct inputs on experiences, outputs, and impacts from their participation in the program. The survey instrument was designed based on findings from the JIAC interviews and site visits (the survey instrument is provided in *Appendix B*).

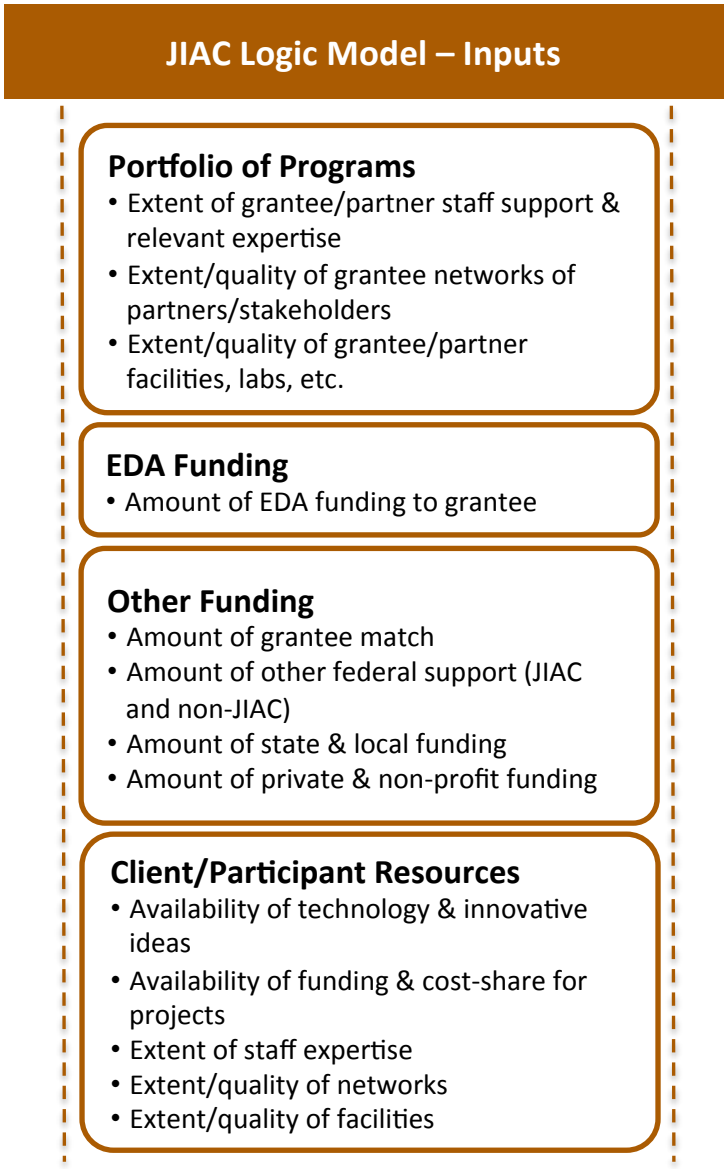
JIAC grantees distributed the anonymous survey, on behalf of SRI, directly to their own clients/participants via an invitation email and web link. The target population was defined as any businesses, organizations, or individuals that had received services from each JIAC grantee's program. The survey was distributed by 19 JIAC grantees, and responses were received from clients/participants of 16 grantees. There were a total of 185 valid responses, and while it is not possible to calculate an exact response rate due to the indirect distribution, the research team estimates that roughly one-quarter of clients/participants invited to participate responded to the survey. Given the modest response rate and the difficulties of interpreting non-response, especially in an anonymous survey, the findings of the survey provide a useful illustration of how the program can and often does work – but are not representative of the total JIAC client/participant population.

IV. JIAC Inputs: Grantees, Partners, & Resources

The "inputs" into the JIAC program are the resources available and investments made in running the program and serving its clients. While these inputs of course include the financial resources invested in the program, they also include a variety of other less obvious and less tangible factors, such as the experts, staff, and others dedicated to supporting program participants. The scope and quality of the resources invested in the JIAC program by any particular grantee clearly have an effect on the types of outputs and the magnitude of impact that can be expected to result from the program.

As illustrated in the JIAC logic model, the SRI team has identified four categories of inputs into the program, related to: 1) the portfolio of existing programs 2) EDA funding, 3) other funding, and 4) client/participant resources. The following sections elaborate on each of these categories of inputs, although systematic, program-wide measurement of these metrics is largely impractical. In particular, in the case of the JIAC program, there is a different mix of partners in each grant, with widely varying pre-existing capabilities and resources. A good, qualitatively rich understanding of each grantee and its partners is critical to assessment, but comprehensive comparative metrics are impractical.

Federal financial inputs and grantee match funding for JIAC are presently being measured consistently. Tracking some other selected, non-financial inputs would add a useful dimension to understanding the program's operations. What the SRI team recommends is that EDA track in a broad and qualitatively rich way the inputs mobilized by grantees as part of their JIAC program (for example, through standardized categories required on grant applications and/or in quarterly/annual reports), while recognizing the difficulties of a more systematic approach to this piece of the logic model.



Portfolio of Programs

- **Extent of grantee/partner staff support & expertise**
- **Extent and quality of grantee networks of partners/stakeholders**
- **Extent and quality of grantee/partner facilities, labs, etc.**

While new entities are often established as a result of successfully applying for a JIAC grant, it is fair to say that all grantees are building on existing institutions and existing activities in their regions. A common remark during interviews by the SRI team was that the JIAC program aimed at the same goals that they – the applicants – were already pursuing, which spurred them to submit an application. This should not be thought of as an objection, or that the JIAC program is duplicating existing effort. Rather, this is a key feature of the JIAC program, in which existing institutions and existing efforts are enlarged, and perhaps redirected, as a result of the grant. The effect, in the long run, will be to build far more economic development capacity than would be possible through a "green fields" initiative that involved establishment of new institutions and structures.

The implication is that the existing capabilities of grantees are worth being tracked (to the extent possible) because one can expect to observe a connection between these capabilities and program outputs and outcomes. Unfortunately, due to limited access to grantee proposals, the SRI team was unable to use the budget documents submitted with JIAC grantee proposals to estimate their **staff size and characteristics**. However, that data could be tracked by EDA in the future (especially if future grant applications and quarterly/annual reports specifically request such information).

Networks are even more difficult to track, yet are clearly recognized in the academic literature and by practitioners as crucial to economic development success. Networks help to resolve information problems, build trust, and foster the spillovers that are at the heart of successful regional clusters. A very simple requirement would be for applicants to have in place at the time of their application a basic Client Management System (and many grantees already use some kind of CMS). Simply keeping score of the quantity of interactions among partners and participants has limited value. But, if part of the JIAC program is to enlarge networks and use them more intensively, then some kind of low cost tracking is helpful, even if subject to all the drawbacks of self-reporting.

Grantees and partners also bring **physical assets** to the table, which in principle are easier to measure. However, a clean room or wet lab has a very different value compared to an incubator conference room. Since spaces of these kinds often have local market values, the $ per square foot for an annual lease could be a useful reporting metric, but the dollar value of these facilities is far less important than their intangible value in advancing the development and growth of participating entrepreneurs, firms, and partners. As with the other metrics discussed above, the physical assets brought to the table by grantees are difficult to track in a quantitative, systematic manner, but could be tracked qualitatively by EDA by drawing upon information provided in grant applications and grantee quarterly/annual reports (especially if these forms specifically request such information).

EDA Funding & Other Funding

- **Amount of EDA funding to grantee**
- **Amount of grantee match**
- **Amount of other federal support (JIAC and non-JIAC)**
- **Amount of state & local funding**
- **Amount of private & non-profit funding**

EDA funding is automatically tracked by the JIAC program, as are funds from ETA and SBA. As shown in Figure II-2 above, funding amounts fall into roughly the same range for each grantee. Tracking the grantees' match is also automatically part of the application process. Taken together, overall program funding is roughly at the same level for each grantee (with some variation in the match, both in level and kind – for example space vs. personnel, etc.).

More interesting is to track the level and source of other funds – state and local, non-profit etc. – that are mobilized by the JIAC grantee and partners. These resources are valuable in themselves and are a good proxy for the commitment of the others working on the JIAC projects. The number and levels of outside resources tapped into by grantees as part of the grant application could be considered as a predictor of outputs and impact. Outside resources mobilized in the course of the grant would be welcome items to be included as part of grantees' quarterly/annual reporting requirements.

Client/Participant Resources

- **Availability of technology & innovative ideas**
- **Availability of funding**
- **Extent of staff expertise**
- **Extent and quality of networks**
- **Extent and quality of facilities**

The clients and participants involved with each JIAC project are quite heterogeneous, although are generally dominated by start-ups and established businesses. The characteristics of the population of participants can be seen in Figure IV-1 (based on the SRI survey of JIAC clients/participants).

Two-thirds of survey respondents were entrepreneurs; start-ups; or small, medium, or large existing businesses. Workforce organizations, public/non-profit entities, and higher education comprised the remaining 1/3 of respondents.

This evident heterogeneity means that clients and participants bring to their JIAC projects a great deal of very different technologies and ideas; sometimes their own money; and always staff, facilities, and their own networks – all things that probably cannot easily be captured. Here, the trade-off between gathering and reporting useful information and the burden of doing so is relatively acute. It could be useful to have a standard set of measures relating to client/participant characteristics collected in the same way by all grantees; however, it would be burdensome to require this kind of data collection by all grantees. As a result, the quality of any data collected would be doubtful and its collection would impose costs on grantees.

Third-party indicators have an important role here. They can capture the technology level of the cluster in which the clients/participants are embedded; they can capture skill levels in a region or cluster; they can map existing facilities and other assets; and they can also capture entrepreneurial networks. The characteristics of those who participate in the JIAC grantees' work are likely to mimic these independent estimates. Indeed, these estimates can be used to judge the value of a grant application, as being predictive of the key characteristics brought to the table by the program clients and participants. They can also be used to track changes and growth in these characteristics over time, as program outcome measures.

Types of Clients/Participants in JIAC Grantee Programs

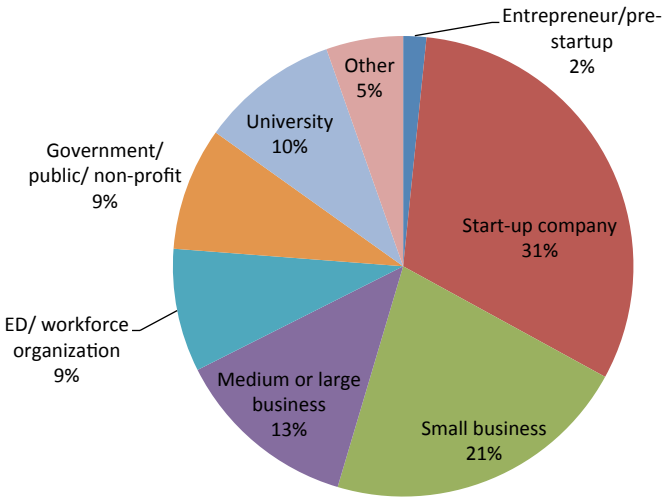


Figure IV-1 *Source:* SRI survey of JIAC clients/participants

JIAC Program Inputs: Two Case Study Examples

Milwaukee Regional Water Accelerator (2011 Grantee)

The *Milwaukee Regional Water Accelerator JIAC Project* builds upon the well-established water cluster in Milwaukee, which is rooted in the region's 100+ year-old beer brewing industry. When the 1972 Clean Water Act spurred all water users and suppliers to change their practices in order to restore and protect the nation's waters, the Milwaukee region organized the Great Lakes Water Institute and a new water research facility at University of Wisconsin-Milwaukee (UW-M). More recently in 2007-2008, a coalition of 80 local business and civic leaders organized efforts to identify and develop companies connected to the region's water cluster, which today number more than 150 companies. The Water Council was formally launched as a nonprofit organization in February 2009, with the aim of bringing together the region's water technology companies and universities, and an annual Water Summit was also launched. In response to these efforts, in 2009 UW-M established the School of Freshwater Sciences (with $50 million in state funding), the nation's only graduate school focused on freshwater studies, and Marquette University later launched a water law program.

This existing and extensive network of partners, organizations, and efforts focused on developing Milwaukee's water cluster formed the foundation for the initiatives launched under the region's 2011 JIAC grant, which focused on establishing a water-focused business accelerator and a Global Water Center facility. The organizations that were already active in the region's water cluster development (UW-M, the Water Council) were grantees and/or key partners on the JIAC grant and brought their extensive networks and experience to the JIAC activities. In addition to the JIAC grant, Milwaukee has been very successful in leveraging federal funding to support water research and business development, with more than $4 million in federal grants as of 2012. The project has also leveraged significant funding from private investors, along with over $1 million from the State of Wisconsin. The Global Water Center construction was financed through a variety of mechanisms ($20 million New Market Tax Credits by WHEDA; $4.3 million Federal Historic Tax Credits by C.D. Smith; $10.6 million tax-exempt bonds by the Redevelopment Authority of the City of Milwaukee; and $1.3 million in direct loan financing), while the JIAC funding supported the development of extensive networks, programs, and initiatives around the Center.

Launching the ARK: Acceleration, Resources, Knowledge – Northwestern Arkansas (2011 Grantee)

The *Launching the ARK JIAC Project*, located in northwestern Arkansas, is an entirely new initiative that was developed as a result of the JIAC program. Lead grantee, Winrock International, was founded in 1985 based upon charitable efforts launched by Winthrop A. Rockefeller. A nonprofit organization headquartered in Little Rock, AR, Winrock conducts a variety of projects that focus on empowering the disadvantaged, increasing economic opportunity, and sustaining natural resources – with a particular focus on assisting rural communities and small enterprises. Under the Innovate Arkansas program, Winrock works with the Arkansas Economic Development Commission to mentor technology companies in the state. When the JIAC program was announced, Winrock and other local partners saw it as an opportunity to extend additional services that would fuel a pipeline of start-up businesses in the northwest Arkansas region. This region is home to several major corporations, including Walmart (retail), Tyson Foods (food processing), and J.B. Hunt (distribution/transportation), but is not particularly known for technical innovation. Via the JIAC grant, the region was seeking to fuel innovation and new technology start-ups that could serve the region's already strong retail, food, and logistics industries.

Under the JIAC grant, Winrock brought to the table its extensive experience and leadership in supporting small businesses and entrepreneurs in Arkansas and elsewhere. Winrock ran the JIAC project out of its Little Rock, AR, offices and hired a full-time employee who was located in northwest Arkansas – this employee focused on running the day-to-day project activities and interacting with grant partner University of Arkansas-Fayetteville. The project's activities were primarily funded by the JIAC grant, with some additional funding leveraged from angel funds, individual investors, and the State of Arkansas to support start-up firms participating in the accelerator programs funded by the JIAC grant. In total, over $500,000 was raised from private investors for each of the two accelerator boot camps.

V. Measuring Outputs: JIAC Project Activities

As illustrated in the JIAC logic model, the "outputs" of the program are essentially a measurement of all of the activities performed by the JIAC grantees and their partners, clients, and participants. Outputs help quantify what the program is doing and whether it is implementing what it set out to do. They also lead to program outcomes. Outputs can be measured by both the *quantity* and *quality* of the work or activities that are being done.

Reflecting the broad-ranging goals of the JIAC program, the activities conducted by grantees are quite varied and difficult to categorize, ranging from the provision of lab space and other specialized facilities, to the provision of networking opportunities and leadership training. The figure opposite summarizes the categories of outputs from the JIAC logic model, together with some possible metrics that could be usefully tracked. Once again, we note that EDA will have to weigh carefully the value of collecting and reporting data against the burden on grantees – and often their clients – of doing so.

While none of the JIAC grantees conduct *all* of the activities described in this section, each one offers a cross-section of the types of activities illustrated here. It is up to each grantee to provide the mix of services and activities they think appropriate to the meet needs of their regional economy and cluster and the goals of their unique project. This variety in approaches is also a consequence of the two broad groups of participants identified in *Section IV*. The needs of the entrepreneurs and businesses that use the program are different from the needs of the other organizations involved.

Note that this chapter focuses specifically on the types and level of activities conducted by JIAC grantees, while the impacts of these activities on clients/participants are captured in the metrics discussed in *Section VI*.

JIAC Logic Model – Project Activities
(*with possible metrics for evaluation*)

Events, Networking, & Referrals
- # of events & trainings: participation & satisfaction
- # of conferences, showcases, exhibitions: participation & satisfaction
- # of referrals made to outside services

Mentoring, Coaching, & Technical Assistance
- # of boot camps/accelerators: participation & satisfaction
- # of businesses/entrepreneurs receiving mentoring/ coaching (& satisfaction)

Facilities & Equipment
- Sq.ft. & usage of new physical space provided for start-ups & businesses
- Sq.ft. & usage of shared facilities/labs/equipment

R&D & Technology Development
- # of joint research projects with entrepreneurs, start-ups, and businesses
- # assisted with technology transfer/ commercialization
- # assisted with patents & regulatory approvals

Financing Support
- # assisted in preparing a venture pitch/connecting with investors
- # assisted in grant/award proposals (e.g., SBIR) & success rate
- # of Angel/VC/seed competitions held & participation

Notwithstanding this diversity of activity, both the business and non-business groups of JIAC clients and participants are generally focused on the cluster being supported by the grant, as Figures V-1 and V-2 indicate (based on the SRI survey). **Although the kinds of activities being pursued are quite varied, almost all clients and participants share the same cluster development goal.**

Yet while they share the same focus on a cluster, the *level* of engagement varies across clients/participants (see Figure V-3), as well as the kinds of activities engaged in. Interestingly, a bi-modal character is evident, consistent with what was heard in interviews and site visits. Grantees engage some clients and participants very deeply (perhaps through a yearlong program of technology development) while working with others only briefly (perhaps through a networking event or a workshop).

Two grantees illustrate these two key categories of client engagement (deep engagement versus brief connections). The Ohio Speed-to-Market Accelerator worked closely with 35 clients, while the Center for Innovation and Enterprise Management at Wichita State focused on 11 clients. Each grantee also engaged hundreds of clients through networking, in addition to their deep engagement with a smaller number of clients.

However, it would be a mistake to automatically set a high value on the deeper engagements, and to imagine that shallow connections are merely the consequence of marketing efforts by the grantee, designed to identify and sift candidates for more serious work. This is certainly one role played such activities. But the connections made through a networking event – perhaps a one-time meeting between an innovator and a potential customer – could subsequently have tremendous long-term consequences. This kind of network-based interaction is at the heart of the capacity-building concept.

In summary, clients and participants engage with the JIAC grantees in different ways and at different levels.

These variations in engagement are captured, to the extent possible, in the analysis presented in this chapter.[4] The reported data in this section relies on client and participant surveys. The metrics suggested (examples of

[4] The variations in operating approaches across the 20 JIAC grantees being studied are also captured in the grantee profiles presented in *Appendix A*.

Relationship of Business Clients/Participants to Grantee Industry Cluster Focus

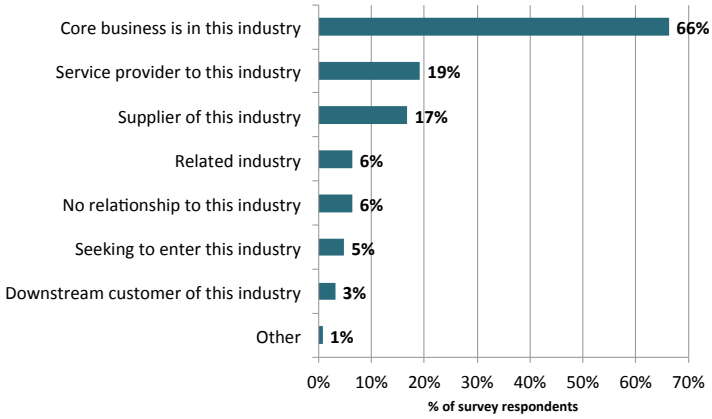


Figure V-1 *Source:* SRI survey of JIAC clients/participants

Relationship of Other Client/Participant Institutions to Grantee Industry Cluster Focus

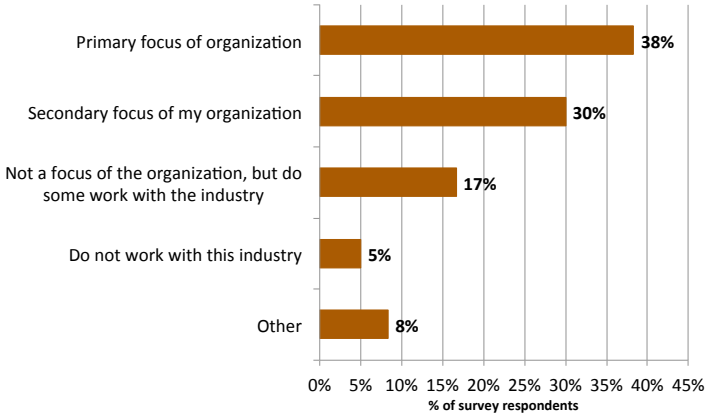


Figure V-2 *Source:* SRI survey of JIAC clients/participants

Level of Client/Participant Engagement with JIAC Program

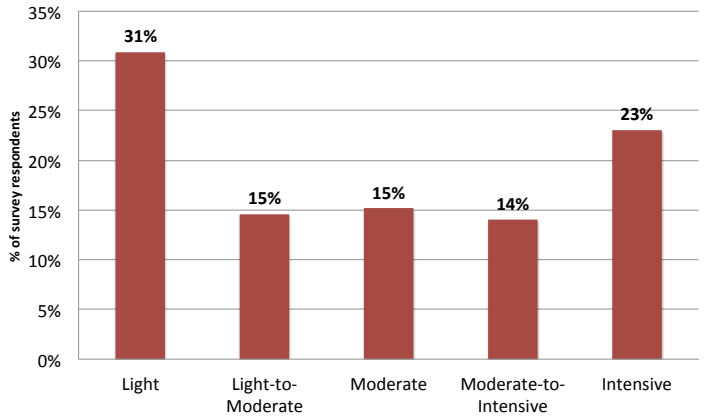


Figure V-3 *Source:* SRI survey of JIAC clients/participants

possible metrics to be adopted by EDA as appropriate) could be collected in the future through a combination of grantee surveys – employing a common survey instrument and reporting protocols developed by the EDA – and direct collection by grantees. The grantees would self-report, subject to validation as necessary by EDA through independent review.

Events, Networking, & Referrals

Proposed Metrics

- **# of events & trainings: participation & satisfaction**
- **# of conferences, showcases, exhibitions: participation & satisfaction**
- **# of referrals made to outside services**

Building and supporting networks and network-related activities is a critical, if unglamorous, piece of the puzzle when it comes to regional economic development. But cluster partners are often relatively isolated from information and connections. This activity is taken seriously by the Rockford Area Aerospace Cluster (IL), which supports activities that focus on networking and outreach such as symposia and other cluster events, attending trade shows, and meetings of the Rockford Area Aerospace Network (RAAN). The Space Coast Clean Energy Jobs Accelerator (FL) organized working groups around five key sub-sector focuses within clean energy. These groups allow firms and other members to engage in networking and collaboration, and to identify key sectoral issues to be addressed in the region. For example, recognizing the dearth of capital in available for small companies seeking to apply for federal awards (such as SBIR), working group members successfully lobbied the state government to create a $4 million Florida Clean Energy Matching Fund.

These kinds of straightforward activities – while valuable constituent elements of social capital – cannot be measured in a qualitatively rich way without making life burdensome for grantees. In keeping with the discussion in the previous section, a Client Management System is an easy way to keep a simple score of these kinds of activities. In addition, a standardized client/participant survey should also be part of the tracking mechanism (see recommendations in *Section VII*). Some grantees already conduct surveys, while some use more informal means for feedback. EDA should consider designing a short, standardized survey instrument, administered online using a standard protocol, so that client/participation satisfaction, in addition to participation, can be estimated.

Mentoring, Coaching, & Technical Assistance

Proposed Metrics

- **# of boot camps/accelerators, participation & satisfaction**
- **# of businesses & entrepreneurs receiving mentoring or coaching, & satisfaction**

Mentoring and coaching provide critical support for entrepreneurs and early stage companies, without which innovative technologies are likely to wither. For example, the Bio Entrepreneur Development (BED) Program in St. Louis provides coaching and mentoring for first-time bioscience entrepreneurs, including a 10-week course delivered by experts and successful entrepreneurs, coaching from a former entrepreneur, and mentoring by bioscience and entrepreneurship leaders. The Launching the ARK JIAC program in Arkansas focused its entire program around bringing entrepreneurs and start-ups to the northwest Arkansas region to participate in a 14-week boot camp-style accelerator program. Twenty-four start-ups participated in two “bootcamp” programs, and these firms were required to stay in the region to launch their businesses upon completion of the program.

These types of activities can be tracked both in terms of quantity/participation, which only says a little, and in terms of the satisfaction levels of the participants. As noted above, the impact of these and all other JIAC grantee activities is captured in the metrics discussed in the next section. The level of activity and the observed results/impacts, taken together, give a much richer picture of the value of the program.

Facilities & Equipment

Proposed Metrics

- **Sq. ft. & usage of new physical space provided for start-ups & businesses**
- **Sq. ft. & usage of shared labs/equipment**

These are relatively simple measures to capture the new space made available as a result of the JIAC program (rather than the facilities brought to the program by the grantee and partners, as discussed earlier in *Section IV*). The usage figure is important because, of course, experience has proven that it easy to use program funding to build or establish facilities that are too little used.

Information about facilities and equipment resulting from JIAC (and utilization rates of such assets) may already be reported by many grantees as part of their JIAC quarterly/annual reports; such information could be more easily obtained and analyzed by EDA if it is systemically and specifically requested on the relevant reporting forms.

While the i6 program is more deliberately focused on the provision of facilities for technology development, some JIAC grantees include this activity as part of their portfolio, often by leveraging partnerships. For example, the Milwaukee Regional Water Accelerator Project has constructed the Global Water Center, a 98,000 square foot building to house entrepreneurs, start-ups, and companies in the water technology cluster. Tenants in the building benefit from shared water lab facilities as well as significant networking and collaboration opportunities that arise from colocation.

Research & Technology Development

Proposed Metrics

- **# of joint research projects with entrepreneurs, start-ups, and businesses**
- **# assisted with tech transfer & commercialization**
- **# assisted with patents & regulatory approvals**

The Clean Tech Advance Initiative, in Portland, OR, is a good example of a grantee, embedded in a large network of partners, providing commercialization grants that support clean tech companies who want to partner with faculty and student researchers at area universities. These partnerships develop the technology and help bring it to market. As another example, the Advanced Composites Employment Accelerator (Tennessee) supports firms in pursuing joint research projects with the University of Tennessee Center for Industrial Services. As a result, these projects have access to lab research, tools production, and other activities utilizing advances in composites technology.

Note once again that these are only activities, to be aligned with results/impacts in terms of enhanced participant capabilities (see *Section VI*). Information on these types of activities is already collected and reported by some grantees, for example the amount of time spent on joint projects, money spent, etc. (although this information would be easier to gather and analyze if it is specifically and systematically requested on relevant reporting forms). Standardized client/participation satisfaction surveys could be employed here as well.

Financing Support

Proposed Metrics

- **# assisted in preparing a venture pitch/connecting with investors**
- **# assisted in grant/award proposals (e.g., SBIR) & success rate**
- **# of Angel/VC/seed competitions held and participation**

The i6 program is more narrowly focused on the financing of start-ups, but some JIAC grantees provide support in this area as well. For example, the Center for Innovation and Enterprise Engagement in Wichita, Kansas, conducts industry roundtable events to provide technical assistance to regional firms, covering topics such as SBIR/STTR funding options and business finance.

These activities depend on deep networks. The ability of grantees to deliver these kinds of services, and to do so successfully, will depend on the underlying conditions faced by the region. As discussed in *Section III*, all JIAC grantees provide extensive information in their grant proposals about their region's level of economic and cluster development along these lines, and this baseline information should be considered when assessing an individual grantee's progress in terms of financing support and other related activities.

The reality is that venture funding is distributed very unevenly across the country, and the presence and depth of angel networks also varies significantly. The depth of angel and venture capital resources available to participants in the San Diego region's Renewable Energy Generation Training and Demonstration Center, for example, is fundamentally different than the investor networks available in northwest Arkansas, where the Launching the ARK program is based. Distressed regions are, almost by definition, at a disadvantage in this area. The energetic pursuit of federal awards such as SBIRs can be a counterweight, and the SBIR program is an important partner for the JIAC program.

The spread of most of the activities discussed above was addressed by the SRI survey, which asked clients/participants about the activities they engaged in with the following question: ***What type(s) or service(s) or support have you received through the JIAC program?*** Of the 174 clients/participants who viewed the question, 89% indicated some type of services or support received. The nature of support and services reported covers a diverse set of activities (see Figure V-4): roughly three-quarters (74%) of respondents indicated an activity in the events, networking, and referrals category; half (50%) in mentoring, coaching, and technical assistance; about 35% indicated R&D and technology development; 31% facilities and equipment; and 26% financing.

In summary, all of the JIAC grantees offered a mix of some or all of the types of services described above and in Figure V-4. Lower cost networking and mentoring activities earned the highest response rate, but assistance with facilities and research & development were also significant. The wide range of activities that JIAC grantees engaged in illustrates the vast and diverse types of services that can lead to capacity-building. The next section addresses the impacts that these activities and services have on client and participant capabilities.

JIAC Grantee Activities, by Logic Model Category

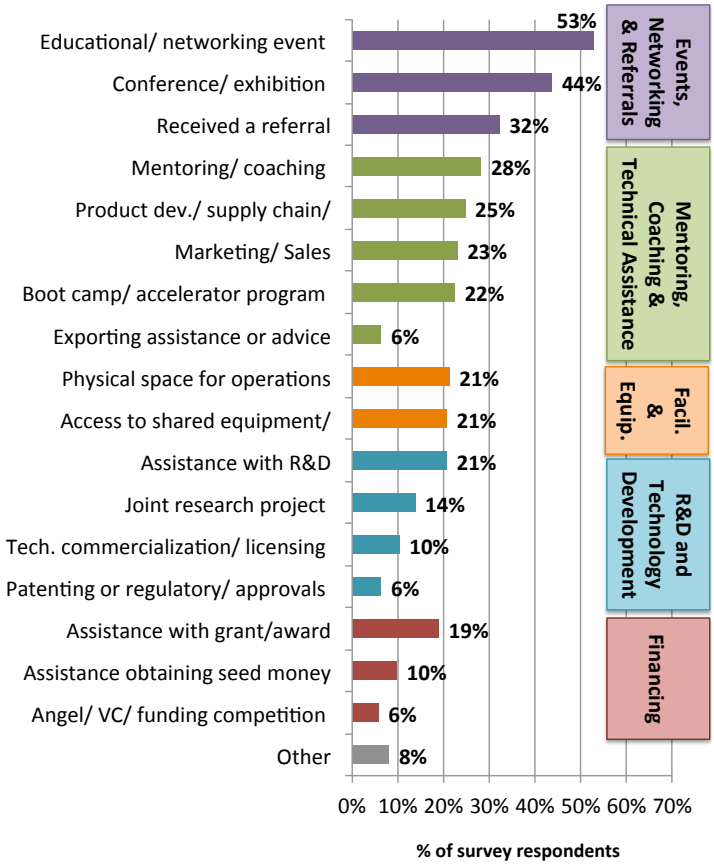


Figure V-4 *Source:* SRI survey of JIAC clients/participants

JIAC Program Outputs: Two Case Study Examples

Milwaukee Regional Water Accelerator (2011 Grantee)

The *Milwaukee Regional Water Accelerator JIAC Project* is focused on the Global Water Center, a unique, 98,000 square foot research center and business accelerator, focused on creating synergies among companies in the water technology cluster. While the construction of the building itself was financed by a variety of sources (as discussed on Page 19), the JIAC grant supported programming, staffing, networks, and other initiatives around the Center, including the creation of a water-focused accelerator program.

The Global Water Center facility fosters collaboration and partnerships among companies, entrepreneurs, and university researchers through co-location in the building. The Center opened in September 2013, and the benefits of co-location and collaboration are evident in the fact that the facility is already home to 30+ tenants, including large companies, medium- and small-sized companies, start-ups, university researchers, and utilities – all with a shared focus on water technology. Global Water Center tenants have access to a $500,000 state-of-the-art flow lab, donated by Badger Meter; this shared facility allows tenants to conduct highly accurate testing of water samples in real-time (testing that traditionally had to be outsourced). University of Wisconsin-Milwaukee (lead JIAC grantee) has offices and research labs in the Center, with a focus on commercialization (complementing the extensive research done by the university's School of Freshwater Sciences); Global Water Center tenants are able to network and collaborate with university researchers. Center staff also encourage networking and connections to global markets, and in 2013 the Center hosted international delegations from 14 nations, helping to market the region's brand for water technology.

The Global Freshwater Seed Accelerator for entrepreneurs (now renamed "The BREW") provides subsidized space in the Water Center, along with seed funding grants ($50,000 from the Wisconsin Economic Development Corporation), business training, access to academic faculty, and mentorship from water technology experts in the Center. Eight entrepreneurs in water technology took part in the accelerator under the JIAC grant.

Launching the ARK: Acceleration, Resources, Knowledge – Northwestern Arkansas (2011 Grantee)

The core activity of the *Launching the ARK JIAC Project* is a 14-week boot-camp-style business accelerator program for technology start-ups in northwestern Arkansas. The accelerator focuses primarily on high-tech start-ups that create internet platforms, mobile apps, or other technologies to serve three strong regional industry clusters: retail, food processing, and transportation/logistics. Through a competitive application process, entrepreneurs from anywhere in the world can apply for a spot in the ARK boot camp. Those chosen to participate have access to co-working space, start-up funding, mentorship services, and a competition to secure follow-on funding.

Two 14-week boot camps were run under the JIAC grant. Winrock partnered with Techstars (a national company that specializes in accelerators) to recruit participants and run the boot camps. The first boot camp included fifteen participants, while the second was more focused and included nine participants. Each of the participating teams received $20,000 to cover living expenses during the boot camp, in return for a 6% equity stake in their company. The participants had 24/7 access to a network of mentors from the private sector to assist them in building their product and their business. Participants were required to re-locate to northwestern Arkansas during the boot camp and were provided space in The Iceberg, a co-working facility in downtown Fayetteville. The participants were required to have a business concept prior to entering the program, and the boot camp helped them commercialize their concept and develop their business model. Each boot camp culminated in a demo day competition, and two winners from each boot camp received $150,000 in investment funding (in return for a negotiated equity stake). In both boot camps, the state government decided to provide additional funding for a third "winner" company.

VI. Measuring Enhanced Capabilities: Direct Results & Impacts

The activities conducted by the JIAC program are spread across a significant waterfront, as described in the previous section. These activities serve to enhance the capabilities of the businesses, entrepreneurs, organizations, and others participating in the program. Capturing these improvements is the subject of this section. We do this by reporting on the direct results of activities, and also on broader performance improvements as reported by the respondents to the SRI survey. These enhanced capabilities and impacts can be measured both qualitatively and quantitatively (as described by the logic model categories and metrics shown on the following page).

The 2011 JIAC FFO required applicants to submit a plan for tracking outputs and outcomes as part of the Integrated Work Plan (IWP) attached to their application, but did not specifically identify a core group of metrics to be tracked by all grantees. The 2012 Advanced Manufacturing JIAC FFO did identify the following specific metrics – "new businesses created; number of workers trained; increased cluster cooperation; number of jobs created, etc." – but more as suggestions rather than requirements. The design of the program performance tracking plan, and the specific metrics to be employed, are left up to the discretion of each individual grantee.

The inevitable result is a wide variety of different metrics differently defined by each JIAC grantee, making *ex post* program assessment based on grantee-reported data very difficult. Due to very limited access to the initial grantee proposals and quarterly reports, the study team has very limited information on grantee efforts in this direction, although telephone interviews were able to provide some information.

In the future, in order to establish a baseline for assessment, SRI recommends that grantees use a "look back" over a period leading up to their application (12 months, for example) and establish baselines for those metrics EDA wishes to track. (These metrics may be drawn from those suggested below, or others as judged appropriate.) Grantees will subsequently report on these metrics as part of their reporting requirements. There should be a clear expectations explicitly incorporated into grant contracts that reporting on metrics extends past the end date for grants (by at least 12 months).

This section focuses on measuring "Enhanced Capabilities" using metrics that can be gathered via client/participant surveys and direct reporting by grantees (as elaborated in the graphic on the following page). Some of these metrics could also be built on by using data sources collected from outside the program, whether from other parts of the Department of Commerce, or from other agencies or commercial sources. This data could be used to capture quantitatively the program's impacts and outcomes at a regional or industry cluster level. However, to be used effectively, third party metrics require a much longer timeframe for analysis than was available for this study, which examined grants made very recently (in 2011 and 2012).

JIAC Logic Model – Enhanced Capabilities
(*with possible metrics for evaluation*)

Direct Results

Technology Development
- # of technology concepts advanced (Technology Readiness Levels / TRLs)
- # of technologies commercialized/ licensed (and royalties)
- # of patents, government approvals received

Product & Process Development
- # of businesses registered
- # of business/strategic plans
- # of new/improved products & processes
- # of businesses w/ cost, efficiency, quality improvements

Human Capital Development
- # of entrepreneurship/leadership programs completed & satisfaction
- # of technology/cluster-aligned degrees & certificates completed
- Extent of employee/management skills development in cluster firms
- Growth in knowledge about how to access outside assistance

Markets & Business Development
- # of businesses with new network contacts or partnerships
- # of businesses identifying new markets/customers
- # of new sales/marketing strategy or materials
- # of export strategies & new export sales

Financing
- # seed/angel/VC deals + amount
- # of loans obtained + amount
- # of government awards/grants/loan guarantees + amount

Impacts

Firm-Level:

Improved Capacity & Knowledge
- Improved access to capital/investment
- Growth in management/employee capabilities and knowledge
- Expanded technical & business networks
- Environmental or energy efficiency improvements

Improved Competitiveness
- Increased productivity/efficiency
- Diversification, entering new markets, reaching new customers

Growth & Expansion
- Business stabilization/survival
- New/increased sales or revenues
- Increased employment
- New business creation
- Established a new location/moved business into the region
- Business acquisition or merger

Regional-Level:

Improved Capacity & Knowledge
- Workforce skills development
- Environmental or energy efficiency improvements

Improved Competitiveness
- Improved innovation/entrepreneurship ecosystem

Growth & Expansion
- Growth/development of a key/targeted industry cluster
- Growth of existing businesses and/or startup of new businesses
- Growth of higher skill/wage job opportunities

Improved Opportunities
- Improved opportunities for small businesses
- Distressed region/neighborhood gains new economic activities
- Improved opportunities for disadvantaged/minority groups

Enhanced Capabilities: Direct Results of Program Activities

The metrics proposed in this section capture near-term capability enhancements for firms and other participants achieved from the projects and activities they participated in via the JIAC program.

These metrics are chiefly collected via a survey, as they require clients/participants to self-report on the various enhanced capabilities they experienced through their program participation. An EDA-developed standardized client/participant survey form for tracking results (as discussed above, see also recommendations in *Section VII*) would enable these kinds of metrics to be gathered and tracked more easily and systematically.

The client/participant survey implemented by SRI as part of this study asked the following: ***What direct results would you attribute (wholly or in part) to the services or support you received through the JIAC program?*** The answer choices were structured to mirror the categories and items listed under "proposed metrics" below, in order to test how participants responded to these choices.

In the SRI survey, 80% of respondents attributed direct results for their capacity as a result of the services or support that they received through the JIAC program.

Most respondents reported results across multiple categories. As shown in Figure VI-1, more than half of respondents (59%) reported results related to markets & business development; 49% in product & process development; 43% in human capital development; 43% in technology transfer & commercialization; and 21% in financing. More detailed responses to this survey question are shown in Figure VI-2 and are described in greater detail below. In summary, as in the survey question on activities (reported in *Section V*), participants obtained results that span the gamut of JIAC program activities.

Direct Results of JIAC Program Activities: Broad Categories

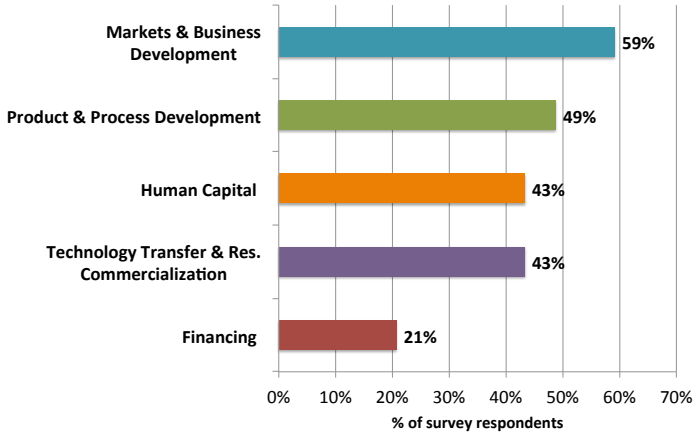


Figure VI-1 *Source:* SRI survey of JIAC clients/participants

Direct Results of JIAC Program Activities: Detailed Categories

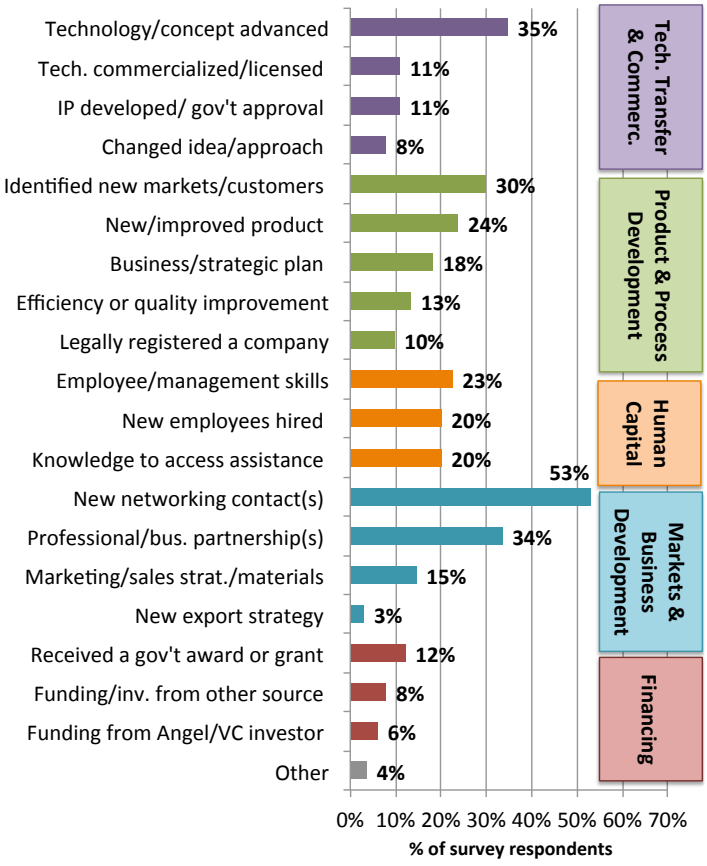


Figure VI-2 *Source:* SRI survey of JIAC clients/participants

Technology Transfer & Research Commercialization

Proposed Metrics

- **# of technology concepts advanced (TRL)**
- **# of technologies commercialized/licensed (and royalties)**
- **# of patents and govt. approvals received**

In the SRI survey, 43% of respondents reported that they experienced some kind results related to technology transfer & research commercialization.

Just over one-third of respondents (35%) indicated that a *new technology or concept was developed, tested, or taken to next stage of development*, while 11% indicated a *technology commercialized/licensed*, and 11% indicated *intellectual property developed or government approval received*.

Support for technology development is at the heart of an innovation-based regional economic development strategy. And while measures such as patenting and licensing are well known, so too are their deficiencies. They capture only a small part of the technologies developed by firms, and they are backwards looking (it takes years to obtain and report a patent). JIAC grantees report relying on gauges such as time spent in the lab, dollars spent on testing and trials, and so on, as alternative short-term measures.

However, there is a well-known scale that captures the development of technology that is not mentioned in the JIAC FFO, but is widely employed by other Federal agencies, as well as overseas in the European Union. The Department of Defense and NASA commonly employ *Technology Readiness Levels*, defined along a scale of 1-9, to judge and compare the development of technologies.[5] The definitions of each level, and the metrics that capture the transition of technologies across levels, are not settled and are open to a degree of subjectivity. (Using the increased costs of moving a technology along the scale is one solution to these measurement challenges.) [6] However, this scale offers a relatively simple framework for judging and reporting the development of technology in the short run.

If, in the long run, a program is moving technologies along this scale in a systematic way, we should expect to observe movement in capacity outcome metrics (patenting and licensing), and in the other newer indicators. But the JIAC program only dates from 2011, so a process metric like the *Technology Readiness Levels* (TRLs), which provides a framework for systematically reporting outputs, is a valuable tool that EDA should consider as a core metric for all future economic development programs.

The TRL metric could be integrated into a low cost reporting system, and EDA should settle on a protocol clearly defining each level. We note that the Center for Innovation and Enterprise Engagement in South Central Kansas uses TRLs to measure the success of their accelerator in moving start-ups across the "valley of death." This grantee could be a useful model for EDA in the application of this metric to other grantees and programs.

Product & Process Development

Proposed Metrics

- **# of businesses registered**
- **# of business/strategic plans**
- **# of new/improved products & processes**
- **# of businesses with cost, efficiency, quality improvements**

About half (49%) of survey respondents experienced results relating to product & process development.

Just under one-third (30%) of respondents *identified new markets/customers*, while one-quarter (24%) *developed a new or improved product*; 18% *developed a business plan or strategic plan*, and 13% experienced a *cost reduction, operational efficiency, or quality improvement/ certification*. Sixteen respondents (10%) *legally registered a company*.

Expanding business means increased efficiency, new processes, and new products. Defining a new production process, while worthy, is challenging. Many improvements in manufacturing are incremental, distributed, and not easily recorded. Some take the form of increased "learning by doing" – very valuable but impossible to measure. However, the dollar value of expenditures on production process improvements and changes (as opposed to maintenance) can be tracked, and holds some potential as a useful metric.

[5] http://www.bnl.gov/techtransfer/docs/Technology-Readiness-Levels-Definitions-and-Descriptions.pdf

[6] http://arc.aiaa.org/doi/abs/10.2514/6.2013-5369

New product announcements are more clear-cut, although minor extensions to existing product lines are potentially difficult to distinguish from an attempt to enter or even create a new product category. The incidence of new product announcements within a cluster is proposed in the pilot study as an indicator of innovative activities.[7] The development of new products directly as part of JIAC program outputs could possibly be matched to this broader indicator.

Human Capital

Proposed Metrics

- **# of entrepreneurship/leadership programs completed & participant satisfaction**
- **# of technology/cluster-aligned degrees & certificates completed**
- **Extent of employee/management skills development within cluster firms**
- **Growth in knowledge about how to access outside sources of assistance**

The JIAC program includes a significant role for workforce preparation, which is separately supported by the Department of Labor's Employment Training Administration (ETA). The workforce piece is critical, but is not the subject of this report, which addresses EDA-supported activities only. While the aspiration of the JIAC program as a whole is to achieve broad spillovers by combining the investments of three agencies, grantee interviews indicate that, in practice, the workforce element is operationally separate, although carefully coordinated.

The human capital results discussed here focus on the development of skills useful to entrepreneurs, business managers, and firms within targeted clusters. Grantee interviews indicate that this element of the program is just as important as technology development. Many entrepreneurs do not have business backgrounds, especially if they are pursuing an idea straight out of the lab. They need coaching and mentoring if their technology is going to make it to market. Some researchers or clinical professionals may never have thought of themselves as entrepreneurs, but may be drawn into pursuing a start-up through exposure to the possibility of entrepreneurship.

Forty-three percent (43%) of the survey respondents experienced some type of human capital improvements as a result of their participation in the JIAC program. These include *employee/management skills development* (23%), *new employees hired* (20%), and new *knowledge about how to access outside assistance, services or sources of financing* (20%).

Tracking the completion of entrepreneurship or leadership programs supported by grantees is another useful but high-level measure of output, made more valuable if it is combined with a standard satisfaction survey of participants. Follow-up surveys with participants months after the course ended are even more desirable, but harder to achieve. Another valuable way to support entrepreneurs is through mentorships, which are actively supported by many grantees. Retired executives from the cluster and/or the region, or serial entrepreneurs where available, can provide crucial ongoing support. Tracking mentorship matches made, and then surveying the continuing satisfaction of both mentors and the entrepreneurs being mentored, is a straightforward metric. However, mentors are generally busy volunteers, and any mechanism for obtaining feedback should carry a minimal burden.

Markets & Business Development

Proposed Metrics

- **# of businesses with new network contacts or partnerships**
- **# of businesses identifying new markets/customers**
- **# of new sales/marketing strategies or materials**
- **# of export strategies & new export sales**

The identification of new markets and new clusters is desirable, but a difficult activity to measure. It is intimately linked to the networks integrated into grantee activities. Information is exchanged and connections made through existing or new networks. The customer management programs discussed previously can be used to flag new customer acquisition, but only at a high level. Apart from the possibility of exports – which have low salience in the outputs of the JIAC program, as shown in Figure VI-2 – it is inherently hard to define a new market as distinct from new customers, unless it is associated with a new product.

As reported in Figure VI-2, contacts and partnerships can be tracked through surveys of program clients and participants. **In SRI's survey, 59% of respondents reported results related to markets & business development.**

[7] Feldman, M. & Lanahan, L. (2014). *Stage I: Initial Findings on Metrics and Potential Data Sources. Examining the i6 Challenge and the Jobs and Innovation Accelerator Challenge (JIAC) Projects*.

These results were primarily *new networking contacts* (53%) and new *professional/ business partnerships* (34%). Only a small share of respondents *developed new advertising, sales, marketing, or branding strategies and/or materials* (15%) or developed a new export strategy (5 respondents).

Tracking the interactions within a network and the outputs produced by these interactions faces the same difficulties identified above in the case of new customer identification. A customer management system is the standard practice, but this generally yields simple counts of contacts made. Qualitatively rich information can be captured, but at some cost in time and effort for grantees. There is a clear trade-off in this case between effectively tracking network activity and outputs, and the costs of doing so. Yet these activities are key to the development of social capital and long-term economic development capacity, as noted above.

One relatively simple way to track robust metrics about the usefulness of networking, referrals, new contacts, new partnerships, and new customers would be to include in a client survey a question specifically asking about the direct results of these activities. Survey respondents indicating that a new contact, partnership, etc. was made could then be asked whether that new contact led to new sales or revenue-generating activities for their business.

When we review all the mechanisms available for the direct collection of information on activities and outputs, surveys of clients/participants are clearly indispensible. We have already flagged the use of standardized instruments, used according to a standard protocol, as a practice to be strongly considered by EDA in the future; however, their use has to be tempered by consideration of the burden they place on participants who want to focus on developing new technologies and building new enterprises rather than filling out survey forms.

Financing

Proposed Metrics

- **# seed/angel/VC deals + amount**
- **# of loans obtained + amount**
- **# of government awards/grants + amount**

Early stage finance is the hardest piece of the puzzle to find and fit when fostering innovation-based regional economic development. Given the concentration of venture capital in a few major cities, availability of early stage finance is a challenge for most regions participating in EDA grant programs such as JIAC. This is not true in every case; for example, in Cleveland, Ohio, legacy institutions and foundations dating from the industrial era are good potential sources of support.

Many JIAC grantees are involved in seeking out or fostering angel networks, and in supporting entrepreneurs as they refine their pitches for later stage financing. Providing technical support for applications to the SBIR program, which is a specific partner to the JIAC program, is likely to be one of the most effective pathways to finding finance.

As reported in Figures VI-1 and VI-2, results in this area are currently modest. **Only 21% of survey respondents experienced results in the area of financing.** Twenty respondents (12%) *received a government award or grant*, while ten *received funding from an Angel/VC investor*, and 13 reported that they *received funding/investment from another source*.

A more in-depth way to look at financing-related metrics might be to measure the number of clients *assisted by* each JIAC grantee in seeking various types of financing (awards/grants, angel/VC investments, loans, etc.), as compared to the number of clients *actually receiving financing* – thereby generating a financing success rate. However, such metrics would require far more detailed recordkeeping and reporting on the part of JIAC grantees, with limited value, since there would be no pre-grant baseline on financing success rates to assess possible improvement over time. Given the types of clients served by JIAC programs, the simple measure of number of clients receiving funding represents an important measure of a program "result" that would not have otherwise occurred. Improvement in clients' capacity to seek and obtain financing in the future is another important and related metric, which is discussed in the following section.

Enhanced Capabilities: Impacts of the Program

The direct results experienced by JIAC program participants (as described above) translate into broader impacts on firm-level and organizational capabilities, both in the short-term and long-term. These impacts include ***increased capacity and knowledge***, ***increased competitiveness***, ***growth and expansion***, and ***new opportunities***, and the impacts can occur at both the firm/organizational level and at the regional level.

This expansion of participant capacity represents a bridge between the immediate consequences of the JIAC program and the long-term capacity-building that the EDA has as its central purpose. As a supplement to the metrics proposed above for measuring direct results, we propose metrics for participant impacts that can only be gathered via a client/participant survey, as they require self-reporting on the impacts experienced.

Proposed Metrics

# of clients/participants reporting the following impacts:

Capacity & Knowledge

- **Improved access to capital/investment**
- **Growth in management/employee capabilities and knowledge**
- **Workforce skills development (regionally)**
- **Expanded technical & business networks**
- **Environmental or energy efficiency improvements**

Competitiveness

- **Increased productivity/efficiency**
- **Diversification, entering new markets, reaching new customers**
- **Improved innovation/entrepreneurship ecosystem (regionally)**

Growth & Expansion

Firm-Level

- **Business stabilization/survival**
- **New/increased sales or revenues**
- **Increased employment**
- **New business creation**
- **Established a new location/moved business into the region**
- **Business acquisition or merger**

Regional-Level

- **Growth/development of a key/targeted industry cluster (regionally)**
- **Growth of existing businesses and/or start-up of new businesses (regionally)**
- **Growth of higher skill/wage job opportunities (regionally)**

Opportunities

- **Improved opportunities for small businesses (regionally)**
- **Distressed region/neighborhood gains new economic activities (regionally)**
- **Improved opportunities for disadvantaged/minority groups (regionally)**

Figure VI-3 shows how JIAC program impacts are broadly distributed for the **businesses** that responded to the SRI survey. By far, the most frequently reported impact is expanded technical/business networks (46% of business respondents), indicating the importance of JIAC in enhancing regional networks and ecosystems for cluster development. Other salient impacts for business participants in JIAC include *increased productivity/efficiency* (31%); *growth in management/employee capabilities and knowledge* (30%); *business stabilization/survival* (29%); *new/increased sales/revenues* (27%); and *increased employment* (26%).

Enhanced Firm-Level Capabilities: JIAC Impacts on Participating Businesses

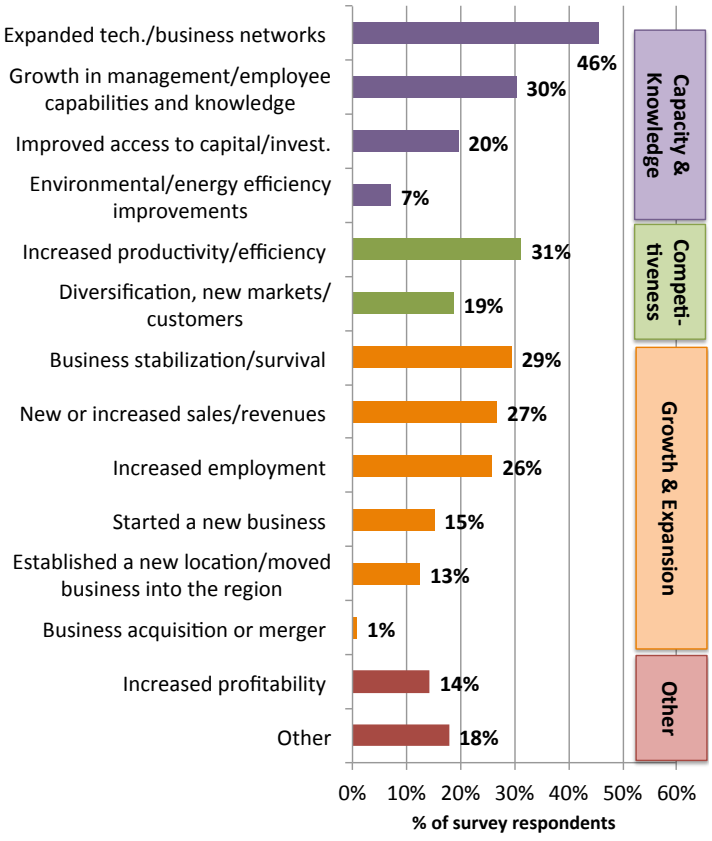


Figure VI-3 *Source:* SRI survey of JIAC clients/participants

Figure VI-4 illustrated the types of regional-level impacts indicated by the organizations that responded to the SRI survey. Half of the organizational respondents (51%) indicated that their region experienced *growth or development of a key or targeted industry/cluster* and half (51%) indicated *growth of higher skill/wage job opportunities* in their region. Other key regional-level impacts include *improved innovation/entrepreneurship ecosystem* (47%); *improved opportunities for small businesses* (47%); and *workforce skills development* (40%).

Note that this survey-based data presents only a limited picture of regional-level impacts from JIAC activities. This study has also considered a new set of metrics to measure the broader capacity-building and realized outcomes that occur in regions as a result of JIAC, largely drawing on third party data sources. These metrics are discussed in a separately produced section of the report.

Do these self-reported impacts translate into overall participant satisfaction? Given the modest response rate for the SRI survey, it is important to be reminded that while the findings of this survey provide a useful illustration of how the JIAC program can and often does work, they are not representative of the total JIAC client/participant population. However, with that caveat in mind, the results reported in Figure VI-5 for the overall satisfaction of JIAC program participants are relatively encouraging. The overwhelming majority of participants are satisfied or very satisfied with the various types of activities they participated in, except in the case of financing assistance, where results are more balanced.

Enhanced Regional Capabilities: JIAC Impacts Experienced by Participating Organizations

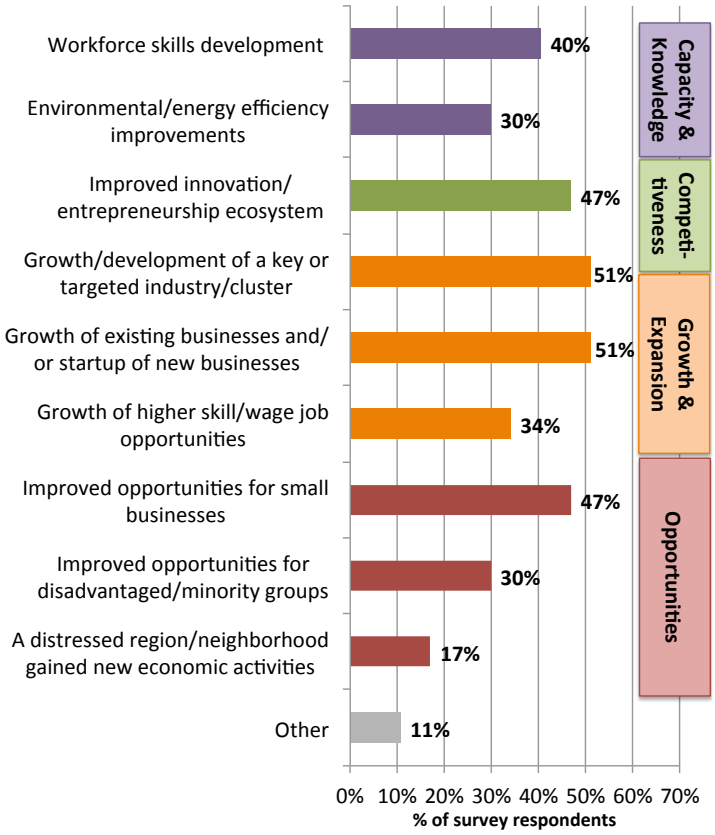


Figure VI-4 *Source:* SRI survey of JIAC clients/participants

Client/Participant Satisfaction with JIAC

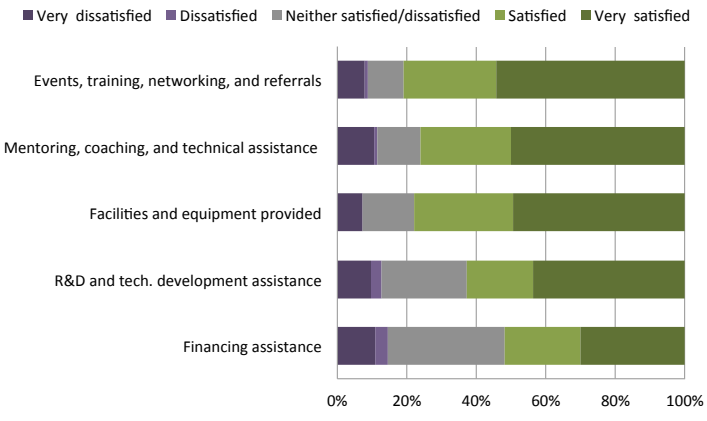


Figure VI-5 *Source:* SRI survey of JIAC clients/participants

JIAC Program Enhanced Capabilities: Two Case Study Examples

Milwaukee Regional Water Accelerator (2011 Grantee)

Although the Global Water Center facility has only been open just over a year at the time of this report, the Center and the activities launched via the region's JIAC grant have already established considerable momentum in developing Milwaukee's leading position as a center for water technology. Key capacity improvements and near-term impacts include the following:

- **Water cluster branding and business attraction:** The project has solidified Milwaukee's brand as a leading international water cluster. The water cluster is now well-recognized and established in the Milwaukee region, and it is talked about by community and government leaders. It has also attracted significant global attention, with many international delegations visiting the Center. While the Water Council did not initially envision attracting international companies into the Global Water Center, the success of the project has already attracted four French companies into the building; other international companies have expressed interest in moving there.
- **Innovation ecosystem development:** A key result of the program cited by all participants is the creation of new synergies and networking opportunities among the many players in Milwaukee's water cluster. Tenants in the Global Water Center are attracted by the opportunities to informally network and formally collaborate with large and small companies, university researchers, utilities, and entrepreneurs.
- **Water-focused entrepreneurship:** The initial accelerator program launched under the JIAC grant graduated five start-ups in June 2014, and all of these start-ups elected to remain in the region by extending their lease at the Water Center for another six months. A second round of six start-ups entered the program in September 2014 (see http://www.thebrew-mke.com/home.html).
- **Water-focused infrastructure:** The Global Water Center facility that opened during the JIAC grant period is already full, and larger tenants in the building pay market-rate leases, generating ongoing funding for the program's operations. The Center has also catalyzed the development of the 17-acre Reed Street Yards Global Water Technology Park (located across the street), currently under construction. This will be a mixed-use urban office, educational, research, and technology zone focused on the international water industry, and it will also serve as a showcase for new water management practices (see http://www.watertechnologypark.com/).
- **Community development:** The project has contributed to a renaissance in the once-blighted Walker's Point neighborhood, where the Global Water Center is located. New businesses, restaurants, apartments, and other services have opened in the area, many reusing underutilized and historic industrial structures (see http://biztimes.com/article/20131014/MAGAZINE03/310109984/0/FRONTPAGE).

Cluster development momentum has continued after the JIAC grant. In September 2014, the Water Council was selected by the Small Business Administration as one of four new Regional Innovation Cluster awardees, providing a $500,000 grant to develop a Center of Excellence for Freshwater Innovation and Small Business Development.

JIAC Program Enhanced Capabilities: Two Case Study Examples

Launching the ARK: Acceleration, Resources, Knowledge – Northwestern Arkansas (2011 Grantee)

The *Launching the ARK Project* enhanced innovation capacity in northwestern Arkansas with a number of important impacts over the near-term:

- **Innovation ecosystem development:** The ARK project has established a new mechanism for nurturing entrepreneurship and technology development in a region that previously had few such activities. Following on the two boot camps run under the JIAC grant, the state government and private investors have provided funding for a third and fourth round of accelerators in 2014. The third and fourth rounds are funding five participants in each round and are focusing on more mature start-ups in retail and logistics; the program is also expanding to central Arkansas in the fourth round (see http://www.arkansasbusiness.com/article/99641/ark-challenge-readies-for-third-installment?page=all). The program has also built and sustained a new network of private sector and IT mentors in northwest Arkansas, an important ingredient for a successful regional entrepreneurship ecosystem.
- **Business start-up:** The program brought entrepreneurs and new ideas to the region from outside of Arkansas – for example, in the first boot camp half of the participants were from other states (Ohio, Florida, California, Missouri) or other countries (India, Singapore). Participants are required to stay in Arkansas for five years after graduating from the program. Among the start-ups participating in the two boot camps run under the JIAC grant, ten are still in business and operating in the state. These ten companies are brand new businesses that average 3-5 employees with salaries above $50,000 (150% of the average wage in Arkansas).
- **Catalyzing the investor networks:** The ARK project catalyzed the formation of new investor groups in Arkansas, who became key partners in the program, contributing funds to run each boot camp and large follow-on funding for the winners of each boot camp's competitive demo day. For some of the existing angel investors, the JIAC program was an incentive for them to step forward and invest money in new start-ups. The formation of new angel investment groups will also benefit other regional start-ups in the future.

VII. Implications for Program Evaluation

Based on this preliminary report on the Jobs and Innovation Accelerator Challenge (JIAC) – a new and important program – the SRI team has developed some preliminary recommendations for refining and amending the way metrics can be employed in program design, implementation, and evaluation. These recommendations are drawn from the research team's review of background materials, meetings and interviews with the program grantees, and a JIAC client/participant survey.

It should be noted that while some of the recommendations offered below are intended to streamline and standardize reporting practices – which will have the effect of lowering the current reporting burden – other recommendations involve the collection and reporting of new metrics. This increases the burden on grantees, and in some cases, their clients. For this reason, while all the recommendations listed below are the product of careful, evidence-based analysis, the SRI team believes that they should be treated as a menu of possible new or improved metrics or practices. EDA should, with deliberate care, select for implementation only those changes that in its judgment yield the highest return in terms of usefulness.

The JIAC program is very new; furthermore, the time, resources, and information available for this report were limited. In combination, this means that no definitive judgment can be made at this juncture about the overall goals of the program, or the successes so far achieved by program grantees. However, as is immediately apparent from the summaries of grantee activities (see *Appendix A*), it is possible to make the following assessment:

A tremendous amount of work has been done by the JIAC grantees – trainings, referrals, new concepts, improved technologies, new business plans, new markets, and so on – in ways tightly aligned around program goals. This waterfront of activity, and the outputs and increased participant capabilities that flow from it, will surely grow and improve the regional economies that are the focus of the program.

We should add that the surveyed JIAC program clients, mainly start-ups and businesses, report high levels of overall satisfaction with the program.

The recommendations below focus on three specific operational issues:

1. **JIAC program data collection methods:** Proposes new, more effective, and more efficient methods for gathering and monitoring JIAC program and client data.
2. **JIAC program input & activity metrics:** Recommends mechanisms for directly collected metrics that could improve monitoring of program inputs and activities.
3. **JIAC program output and capability metrics:** Recommends a variety of directly collected metrics that could be used to improve monitoring and evaluation of program performance and outcomes, and also support the effective use of third-party capacity indicators.

The goal here is not to review the suggested metrics from the previous sections of this report. These metrics, or others thought desirable by EDA program staff, should be subject to continuous review as this and other EDA programs are implemented. Rather, the goal is to identify broader practices in the collecting and reporting of metrics that will increase and improve the data available for assessment, and that will also lower the burdens of reporting on, or inquiring about, grantee activities and outputs. These practices will be a complement to the practices to be developed in the collection of third-party indicators.

The table below summarizes the team's key recommendations.

JIAC Program Recommendations

Recommendation 1: JIAC Program Data Collection Methods

Standardized EDA database

EDA should make the case to executive and legislative leaders for a significant investment in a single program database. This database would have a content management system open to EDA staff and grantees, and would house standardized input, output, and outcome metrics (drawn from the JIAC logic model presented above). The database should be appropriate to the needs of all EDA non-infrastructure programs and investments. This would justify the significant extra dollars (over and above existing program dollars) and EDA staff time (many months) that would be required.

At present, grantees are required to make quarterly reports, following a standard format, with data that must be lifted out and reentered if it is to be aggregated and analyzed. This practice could be improved and simplified by an EDA program database into which grantees themselves enter a defined, carefully selected set of program metrics. If the data required is appropriately selected, this arrangement should reduce the incidence of requests for information to grantees by program staff. While such a database should meet the needs of EDA programs generally, the metrics that require direct collection may vary across programs, with a core set of metrics common to all programs being reported alongside a second set of metrics selected to meet the characteristics of a specific program.

In addition, the detailed information provided by grantees in their grant applications on underlying economic conditions and level of cluster development should also be incorporated into the standardized program database and metrics, to establish baseline conditions that can be tracked and gauged as a benchmark for program evaluation purposes.

Standardized use of metrics in program implementation

Successful program implementation and assessment requires reliable, consistent data. The metrics to be used, the protocols governing their collection, and the mechanisms by which they are reported and aggregated, should all be specified before the program is implemented. The FFOs and IWPs should reference these elements, and their adoption and implementation by grantees should be a contractual requirement, governing the content of the technical reports submitted.

Given the widely varying underlying economic/cluster conditions and characteristics across individual grantees, the definition of "success" and "impact" is different for every region and every grantee's program. Therefore, the specification of metrics and protocols should include establishment of baseline, pre-grant conditions for key indicators, so that progress and program outcomes can be assessed within an appropriate context.

Recommendation 2: JIAC Program Input and Activity Metrics

Program grantees should use Client Management Systems (CMS)

Many of the social capital building activities supported through the JIAC program should be tracked in a low-cost way through a Client Management System (CMS) and reported to EDA based on a standard protocol. Measuring social capital, or network-based activities and outputs, is difficult, and qualitatively rich tracking of this activity is likely to impose a burden on grantees and participants. However, because of the centrality of networks and social capital to the development of regional clusters and ecosystems, it is recommended that a simple score card is maintained by grantees, using a CMS, to track interactions, exchanges, meetings, etc.

Program grantees should employ and report a standard survey instrument

Many program activities and outputs can be captured through required surveys of participants and clients, for which the EDA should supply standardized instruments and protocols (surveys are also indispensible for tracking outputs and new capabilities). This standardized survey should err on the side of simplicity, focusing on key activities and goals of EDA programs. The use of technology should make collecting and reporting this information into a central database relatively low cost.

JIAC Program Recommendations (continued)

Recommendation 3: JIAC Program Output and Capacity metrics

Measure technology development with Technology Readiness Levels (TRL)

Program grantees should employ a standard definition of Technology Readiness Levels (TRLs) to measure success in technology development. A key goal of the EDA, and indeed the U.S. government, is to build successful regional economies through technology development and innovation. This requires a shared measure of technology development. TRLs are used effectively by other Federal agencies, and should become standard practice across EDA programs.

Recommendation 4: Sample Metrics and Possible Collection Methods

A variety of metrics are proposed and discussed throughout this report, organized and linked with the JIAC program logic model that captures program inputs, activities, outputs, and outcomes. The graphic below presents a sample of some of the proposed metrics for program evaluation, along with possible data collection methods.

Initial Conditions & Capacities	Inputs	Outputs (Project Activities)	Enhanced Capabilities: Direct Results	Enhanced Capabilities: Impacts
Sample Quantitative and Qualitative Metrics:				
• Regional, national cluster growth rates • Prior innovation metrics (patenting, etc.) • Ecosystem metrics • Prior workforce Skills, Qualifications, & Abilities (SQAs)	• Existing capabilities (staff, programs) • JIAC grantee funding received from EDA • JIAC grantee match funding (cost-share) • Technologies & ideas brought by clients/ participants	• # of events, participation, & satisfaction • # of boot camps/accelerators, participation, & satisfaction • # of entrepreneurs mentored • New facilities established • # of joint research projects conducted • # of SBIR proposals supported	• # of technologies licensed or commercialized • # new business plans developed • # of new products launched by participants • # of employees with new skills • # of new business contacts made • # of new investment deals, loans, or grants	• Improved capacity to access capital • Workforce skills development • Market diversification • Improved innovation/ entrepreneurship ecosystem • Job, revenues, and/or business growth • Growth of target cluster • New economic activities in a distressed region
Possible Direct and Indirect Data Collection Methods:				
• **Grantee self-reporting** (*e.g., grant proposals*) • **Third party data** (*through a standard set of regional and cluster indicators maintained by EDA)*	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Grantee site visits, interviews**	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Client/stakeholder surveys** *(standardized survey instrument*) • **Grantee interviews, site visits**	• **Grantee self-reporting** (*e.g., grant proposals, reports*) • **Grantee/partner surveys** (*standardized survey instrument*) • **Client/stakeholder surveys** *(standardized survey instrument*) • **Grantee interviews or site visits** • **Third party data** (*to measure increased cluster, industry, community, and regional-level capacity and impacts over the long run)*	

Appendix A: JIAC Grantee Profiles

Advanced Composites Employment Accelerator

The ACE program aims to help companies, including small businesses, learn how they can use breakthroughs in the composites industry to grow and create jobs.

Description

The goal of the Advanced Composites Employment (ACE) Accelerator is to help connect companies and start-ups to opportunities and knowledge to use advancements in composites technology to grow their businesses and create jobs. The project also aims to identify gaps in the composites supply chain and help match existing companies to fill those gaps. In addition, the Employment Training Administration (ETA) portion of the grant has created composite materials training programs, and graduates of these programs are able to access the expanded employment opportunities created by the other grant activities.

Activities

- Some funds are used for program staff to travel and attend conferences to increase the visibility of the ACE program.
- Program staff members work with companies to identify potential projects in the advanced composites space, and connect them with resources at the University of Tennessee Center for Industrial Services.
- The Center works with these companies to determine the feasibility of the project and specific needs, and connects them to regional resources such as Oak Ridge National Lab (ORNL).
- Most projects are joint efforts with the Center for Industrial Services and involve lab research, tools production, and other activities utilizing advances in composites technology.

Clients & Partners

- One of the main partners in this project is the University of Tennessee Center for Industrial Services, which partners with client companies on joint research projects.
- Another important partner is Oak Ridge National Laboratory, which is a leader in the field of low cost carbon fiber composites. Specifically, the Oak Ridge Fiber Composites Consortium, which focuses on commercializing Oak Ridge technologies and growing the cluster, is a strong regional partner with 13 regional member companies.

JIAC Grantee in 2011

Location

Oak Ridge, Tennessee

Industry Focus

Advanced Composites; focus on low-cost Carbon Fiber Technology

Geographic Focus

Knoxville and Oak Ridge, TN 18 county area

Grantee

- Roane State Community College

Key Partners

- Oak Ridge National Laboratory
- University of Tennessee Center for Industrial Services

Contact Information

Andrew Pokelwaldt, ACE Program Director

(865) 354-3000 ext. 4923

pokelwaldtag@roanestate.edu

http://www.roanestate.edu/?8201-Advanced-Composites-Employment

Leveraging

The advanced composites cluster in the region has received over $70 million in investment outside of the JIAC grant from various federal sources. The program heavily leverages the expertise of ORNL, the Fiber Composites Consortium, and the University's Center for Industrial Services as described previously. The Center for Industrial Services is also an EDA University Center, and these resources are leveraged to promote opportunities to industry cluster members in more rural parts of the region. The project also leverages private funds through the cost-share requirement for firms conducting joint research projects under the grant.

Key Outputs & Outcomes

- To date, 6 joint research projects have been completed with cluster companies, and 3 are in progress.
- The program helps to connect industry to joint research opportunities and make connections that may otherwise have been overlooked.
- In the long term, companies that complete joint research and commercialization projects have the opportunity to use the resulting product and process improvements to expand their businesses and create new jobs.
- The region successfully recruited a major conference in advanced composite materials to be held in the area for the first time. This was a joint effort of project partners – ORNL, the Carbon Fiber Consortium, the University, private companies, and others.

Atlanta Health Information Technology Cluster

This project funds the Interoperability & Integration Innovation Lab (I3L) at Georgia Tech, a center for the development, testing, and transfer of new, innovative HIT software and knowledge.

Description

The I3L provides a virtual and physical environment in which industry participants and stakeholders can cooperatively innovate with applications and across platforms that are interoperable, integrated, and in conformance with federal standards, to the direct benefit of individual and public health, and with direct opportunity for business growth and profitability for industry members. The I3L is intended to serve as the technology nexus for health and healthcare delivery-related faculty and industry research. The lab's industry members benefit from the I3L's resources to reduce the time and cost to bring a concept or prototype to market.

Activities

The I3L's activities focus on providing access to a growing Health IT innovation network, with both open source and commercial resources.

- The initial stages of the project were centered on putting together a suite of open source software, educational resources, and other materials, as well as developing a membership model for their clients.
- The I3L is now focused on increasing its membership base as well as providing a variety of services and resources for its current members.
- Members are paired with a Georgia Tech graduate student to develop a scope of work for a project to solve a specific business problem. Projects utilize the consulting capacity and resources of the I3L. Most of the project work is done in the cloud, utilizing the servers, applications, and cloud space housed at the center.

Clients & Partners

- The I3L mainly draws its client from the Advanced Technology Development Center incubator at Georgia Tech and through the professional networks of its staff.
- The I3L operates with a membership model for its clients, and they currently have 9 members. Clients choose from a range of 5 different membership models, each with its own benefits and associated fees.
- Graduate students working with I3L members also benefit from their participation in the project through increased probability of employment with their client companies.

JIAC Grantee in 2011

Location

Atlanta, GA

Industry Focus

Health Information Technology (HIT)

Geographic Focus

State of Georgia, especially in the Atlanta metro region

Grantee

- Georgia Institute of Technology

Key Partner

- Advanced Technology Development Center incubator at Georgia Tech

Contact Information

Marla Gorges, Associate Director, Health@ei2

(404) 894-6787

marla.gorges@innovate.gatech.edu

http://i3l.gatech.edu/

Leveraging

The I3L receives annual support from Georgia Tech, but its main source of funding outside of the JIAC grant is fees paid by its members. These fees cover member access to project consulting, resources, and other services. At this early stage the I3L has 9 members, and projects that it will require at least 23 members to become self-sustaining.

Key Outputs & Outcomes

The I3L has only recently begun gaining members and managing projects. A variety of outcomes are anticipated in the long term:

- Members identify potential new employees via the students they collaborate with on projects.
- Entrepreneurs commercialize or spin off new technologies.
- Companies are created/expanded and new jobs are created.
- Georgia Tech faculty are linked with real-world healthcare applications.
- HIT entrepreneurs and companies remain in Georgia to launch their new technologies.
- Downstream positive impact on healthcare delivery and outcomes as a result of new technologies developed to ultimately improve throughput and capacity of the healthcare system.

*"An all around terrific experience. We are hoping for additional opportunities to work with this team in the near future!" – Program participant**

*"We were able to learn about, test and implement an integration of our product and a top...vendor's product." – Program client**

* Quotes are drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

Center for Innovation and Enterprise Engagement

The CIEE is designed to strengthen and develop the innovation capacities of small and medium sized businesses interested in or already working in advanced materials manufacturing.

JIAC Grantee in 2011

Location

Wichita, Kansas

Industry Focus

Advanced Manufacturing and Materials

Geographic Focus

Wichita, KS and surrounding 10 county area

Grantee

- Wichita State University

Key Partners

- WSU College of Engineering and other WSU Centers and Institutes
- Regional Economic Development Organizations

Contact Information

Debra Franklin, Director of Business Development

(316) 978-5209

debra.franklin@wichita.edu

http://www.wichita.edu/thisis/home/?u=ciee

Description

The CIEE was established by Wichita State University to strengthen and develop innovation competencies in manufacturing processes and products among the regional manufacturing industry. The Center builds on regional strengths and works to expand the capacity of regional employment, research competencies, and facilities and infrastructure, thus encouraging the migration of advanced manufacturing processes and materials into additional industry sectors and business applications. These goals are supported by three main activities – industry roundtables, technology transfer and commercialization support, and competitive grants to firms.

Activities

The CIIE's three main activities aim to advance innovation in the regional advanced manufacturing and materials cluster.

- Competitive Innovation Accelerator: Competitive grants of up to $50k were made to innovative firms for process and product development.
- Industry Roundtables: The Center conducted industry roundtable events to provide technical assistance to regional firms. A total of 14 roundtable events were held, covering topics such as government contracting, SBIR/STTR funding options, workforce challenges and opportunities, and business finance.
- Technology transfer and commercialization: Competitive proposals for faculty-business partnerships were funded to support specific technical projects.

Clients & Partners

- The Center is working closely with 9 companies that have received funding through the competitive innovation accelerator and is providing them with technical assistance.
- Industry roundtable events have been popular and attracted a large number of participants. A total of over 1,000 individuals from about 300 different companies as well as other public and private entities have attended.
- Roundtable participants are polled through a traditional satisfaction survey after each event. These surveys are also used to guide topics of interest to firms for future events.

Leveraging

The CIEE was established as a successor organization to the work done under a Department of Labor WIRED grant the region received in 2007. This grant led to many beneficial outcomes for the region, and regional firms requested technical engineering assistance not available under the WIRED grant. The CIEE evolved from this need and was established and initially staffed under the authority of the Kansas Board of Regents in early 2011. The JIAC grant in late 2011 allowed the Center to expand its activities and scope of work.

Key Outputs & Outcomes

A total of 10 competitive awards have been made from the 42 applications received for the innovation accelerator. The CIEE tracks a number of measures on these companies.

- Jobs and student engagement with companies
- Additional investment pursued and received from public and private sources as well as retained earnings and investment of personal funds
- Technology Readiness Levels (TRLs): The accelerator helps firms move up on the TRL scale and better positions them for the next round of venture capital funding, pursuing SBIR awards, etc.
- Intellectual property activity, such as patents received

The Center also tracks the number of roundtable events held (14) and the number of participants (over 1,000), as well as participants' satisfaction with the events.

*"The conference helped me to understand the patenting process better. It was a great conference…Wichita State University and the Center for Innovation and Enterprise [Engagement] did a great job in arranging the conference. Thank you." – Program client**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

Cleantech Advance Initiative

The Cleantech Advance Initiative aims to enhance the Portland-Vancouver region's ability to develop new cleantech and advanced manufacturing products and services by providing assistance to innovative companies in these clusters.

JIAC Grantee in 2011

Location

Portland, OR

Industry Focus

Clean Tech and Advanced Manufacturing

Geographic Focus

5-County Portland, OR and Vancouver, WA metro area

Grantee

- Portland Development Commission (PDC)

Key Partners

- Oregon Built Environment and Sustainable Technologies Center (Oregon BEST)
- Columbia River Economic Development Council (CREDC)
- University of Oregon
- Oregon Institute of Technology
- Portland State University
- Washington State University

Contact Information

Jared Wiener, Senior Business Development Coordinator

(503) 823-1034

wiener@pdc.us

www.pdc.us/welcome.aspx

Description

The Cleantech Advance Initiative connects, leverages, and multiplies regional and national resources to connect cleantech innovations with manufacturing to increase the region's competitive advantage in the global marketplace. The project will accelerate the cleantech and advanced manufacturing clusters in the Portland-Vancouver region by focusing on technology commercialization, supply chain development, and product diversification and reengineering.

Activities

Grant activities, led and administered by the Portland Development Commission (PDC) in conjunction with its partners, currently focus on three main areas:

- *Supply chain development:* This effort, led by PDC in collaboration with the Columbia River Economic Development Council (CREDC), provides access to markets of scale and the integration of traditional manufacturers into cleantech industries through supply-chain matching. Project staff members conduct cluster networking and provide market analysis and assistance to businesses.
- *Technology commercialization:* This activity, led by Oregon BEST, provides commercialization grants to partner cleantech companies with faculty and student researchers at area universities to assist with technical research.
- *Product diversification and process reengineering:* Funds are used to provide competitive grants to early stage advanced manufacturing companies working in partnership with regional research universities on these types of activities. Universities will deliver applied research and engineering solutions to client companies.

Clients & Partners

- This project has a wide network of partners integral to the work being performed. Oregon BEST leads the effort to provide technology commercialization support to cleantech businesses. PDC manages the grant and, alongside their partner CREDC, provides supply chain development support. Area universities work in partnership with client companies in both technology commercialization and product diversification/process reengineering.

- Clients of the program can be divided into three broad categories:
  - Companies that receive technical assistance with technology commercialization and product diversification/process reengineering: approximately 10-20.
  - Companies that receive direct, customized assistance with supply chain development: approximately 200.
  - Companies and participants that attend educational events or that are reached through business visits: approximately 300-400.

Leveraging

Oregon BEST, one of the partners on this project, won an i6 Challenge grant in 2010 in partnership with other state Signature Research Centers, to support technology commercialization. The region's universities have also received research funding from various federal sources including the DOE, DOD, and NSF. Additionally, the PDC is currently pursuing a cooperative funding partnership with the EDA. The Oregon legislature has also contributed approximately $2 million in funding to continue efforts in collaborative research in the advanced manufacturing cluster, focusing more specifically on metals. PDC is also in the process of requesting $80k in funding from Portland's Innovation Fund to develop a technology-based tool to provide an interface between city bureaus and industry, identifying ways the city can use innovative industry tools to address diverse challenges.

Key Outputs & Outcomes

Program staff members track a number of results, including firm interactions/number of businesses reached and jobs created. Over the long term, the project is expected to produce a number of other outcomes, including:

- Increased technology commercialization and production of new products;
- Additional seed funding obtained by early stage companies;
- Business expansions and creations.

*"Several students gained direct benefit from applied research activities associated with [the] JIAC supported project." – Program client**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

Finger Lakes Food Processing Cluster Initiative

This program focuses on unifying the food processing cluster in the Finger Lakes region and aims to increase competitiveness of cluster businesses through efficient use of resources and implementation of innovative technologies.

JIAC Grantee in 2011

Location

Rochester, NY

Industry Focus

Food Processing

Geographic Focus

Finger Lakes region – 9 county area

Grantee

- Rochester Institute of Technology, Center for Integrated Manufacturing Studies

Key Partners

- Golisano Institute for Sustainability, RIT
- New York State Pollution Prevention Institute

Contact Information

Andy Harlan, Assistant Director of Operations

(585) 475-5385

axhasp@rit.edu

http://www.rit.edu/gis/flfpci

Description

This project provides assistance to regional food processing and agricultural businesses, which includes identifying and implementing technical improvements and sustainable manufacturing process technologies to reduce operating costs, minimize environmental impacts, open market opportunities, start new businesses, and retain and grow jobs. The program also provides networking and match making opportunities to help unify the cluster and hosts workshops to transfer knowledge to regional businesses, such as export opportunities and cost-saving sustainability practices.

Activities

The initiative focuses on providing organization and planning to strengthen the regional cluster as well as providing technical assistance to companies utilizing university resources. The program hosts workshops and conferences to provide regional food processing companies with information on crisis management, sustainability, energy efficiency, and other subjects.

Technical assistance to companies, through the partnership with the Pollution Prevention Institute, is provided on a variety of subjects, including:

- Waste-to-energy technology development and optimization,
- Energy and water use reduction,
- Process and quality improvement,
- New business development/start-up support, and
- Market expansion through sustainable supply chain efforts.

Clients & Partners

The Center for Integrated Manufacturing Studies at the Rochester Institute of Technology (RIT) works closely with its parent organization, the Golisano Institute for Sustainability, to identify RIT resources to assist companies. The New York State Pollution Prevention Institute is also a key partner in providing direct technical assistance to client companies.

Approximately 13 regional companies in the food processing cluster have received direct technical assistance through the grant activities.

Leveraging

The New York State Department of Environmental Conservation provided a funding match of $400k through the New York State Pollution Prevention Institute (NYSP2I). Client companies also provide a cost share for their projects in some instances. The program is pursuing additional grants from other federal agencies – without grant support, the program will be unable to maintain the level of services it currently provides.

Key Outputs & Outcomes

The initiative works closely with clients and has assisted approximately 13 companies. Before beginning projects, clients are asked to provide data on their current water and energy use, employment, sustainability, etc., and they are asked to project the changes in these metrics after a project is completed to determine the project's potential benefit. During the period of the grant, projects have had the potential to provide a number of benefits:

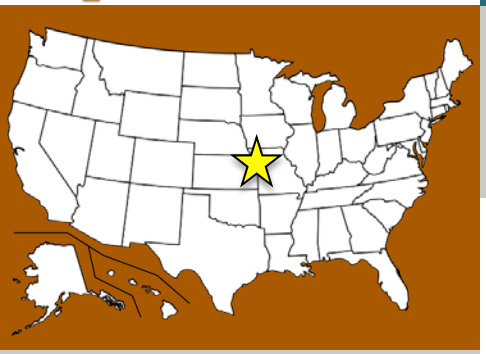
- Approximately 65 jobs created.
- Over $1.5 million in cost savings.
- Almost 1.5 million kWh/year of electricity saved.
- Over 80,000 MBTU/year of natural gas saved.
- Almost 83 million gallons/year of water usage saved.
- Over 75 million gallons/year of wastewater discharge saved.

*"This was a great relationship for our organization." – Program participant**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION ACCELERATOR CHALLENGE

KC Regional Jobs Accelerator



The KC Regional Jobs Accelerator project focused on increasing employment opportunities at the intersection of the advanced manufacturing and information technology industry clusters.

JIAC Grantee in 2011

Location

Kansas City, MO

Industry Focus

Advanced Manufacturing and Information Technology

Geographic Focus

Greater Kansas City region

Grantee

- Mid-America Regional Council

Key Partners

- University of MO – Kansas City
- Regional Economic Development Agencies
- KCnext
- KC SmartPort

Contact Information

Marlene Nagel, Director of Community Development
(816) 474-4240

mnagel@marc.org

http://marc.org/Home

Description

The KC Regional Jobs Accelerator focused on helping the region strengthen its global competiveness, become a hub for innovation and commercialization, and accelerate small businesses by providing them with needed services. An additional focus of the project was creating a regional workforce intelligence network to provide organizations with regular meeting opportunities to create stronger relationships and identify opportunities to work together. It also offered organizations information and analysis to drive better decisions on workforce resource investment, developing training programs, and industry sector focus.

Activities

The Mid-America Regional Council performed high-level policy analysis to guide the project and worked with its partner organizations to implement direct business services. Activities included:

- Providing stakeholders, including employers, community colleges, universities, workforce investment boards, and others with meeting opportunities to foster strong relationships.
- Working with equity organizations to provide technical services to small and medium sized companies.
- Helping small businesses develop export capacities and connections to larger companies.
- Developing a web platform and forming a steering committee to encourage interactions that increase technology commercialization.

Clients & Partners

The Mid-America Regional Council worked with a variety of partners that provided business services. Partners included:

- University of MO – Kansas City and KCSourceLink: Assisted small businesses with developing export capacities and hosted events and web platforms to increase technology commercialization.
- KC SmartPort: Provided export assistance to cluster firms in the region.
- Regional Economic Development Agencies: Provided technical assistance for businesses to support job creation and retention through innovation strategies.

Leveraging

The Mid-America Regional Council has been involved in workforce and cluster development for many years prior to the JIAC grant. Previously, they received a Department of Labor grant to strengthen the regional workforce system by connecting community colleges, local economic development organizations, area employers, and other stakeholders. Their partner organization, the University of MO - Kansas City, received an i6 grant after the JIAC grant was in place, and they are also part of the EDA University Centers program. The Council also receives substantial private corporate funding to support their work, and they are currently seeking new sources of funding to continue the work supported by the JIAC grant.

Key Outputs & Outcomes

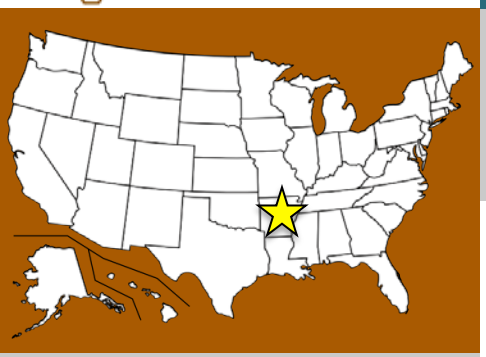
The key goals of the project included:

- Strengthening the region's workforce system to produce a qualified workforce for existing businesses and attracting new businesses.
- Strengthening the entrepreneurial and commercialization environment in the region to position start up companies for success.
- Connecting community colleges with industry to steer new programs toward careers with strong regional demand.
- Increasing awareness of the strong economic and workforce development systems in the region.

The Council collected a variety of metrics that included:

- Number of companies assisted.
- Number of new companies formed and jobs created.
- Number of people trained.
- Number of people placed in jobs as a result of training.
- Number of meetings/events held.

Launching the ARK: Acceleration, Resources, Knowledge



The ARK is a mentorship-driven business accelerator program for technology startups, located in The Iceberg, Northwest Arkansas' new co-working facility in the heart of downtown Fayetteville.

Description

The ARK is a 14-week boot camp-style business accelerator program for technology start-ups in Northwestern Arkansas. It focuses primarily on high-tech startups creating internet platforms or mobile apps for three strong regional industry clusters – retail development, food processing, and transportation and logistics. Start-ups from the region and all over the world enter a competitive application for a spot in the accelerator, and those chosen have access to co-working space, start-up funding, mentorship services, and a competition to secure additional funding.

Activities

The ARK boot camp provides a variety of key services and benefits for its client companies. Two boot camps were run under the JIAC grant.

- Each firm receives $20,000 to cover living expenses for the 14 week period of the program in return for a 6% equity stake in their company.
- Companies have access to a network of mentors from the private sector to assist them in building their product and their business.
- Clients locate in and receive 24/7 access to The Iceberg, a prestigious co-working facility in downtown Fayetteville.
- Each boot camp culminates in a demo day competition, and 2 winners receive $150,000 in investment in return for a negotiated equity stake.

Clients & Partners

- The first boot camp included 15 firms, while the second was more focused and included 9 firms.
- The majority of client firms are from the Arkansas area, but others come from all over the US as well as India and Singapore.
- Upon graduation from the program, successful companies are required to locate in Arkansas for as least five years.
- The ARK also catalyzed the formation of investor groups who became key partners in the program, contributing funds to run each boot camp and large follow-on funding for the winners of each boot camp's competitive demo day.

JIAC Grantee in 2011

Location

Fayetteville, Arkansas

Industry Focus

Information Technology

Geographic Focus

Northwestern Arkansas and bordering counties in AR, MO, and OK

Grantee

- Winrock International

Key Partners

- University of Arkansas at Fayetteville
- Innovate Arkansas
- Small angel investor groups

Contact Information

Tom Dalton, Director, Innovate Arkansas

(501) 280-3011

tdalton@winrock.org

http://arkchallenge.org/

Leveraging

The JIAC grant was the main source of funding for the ARK challenge, but significant funding was leveraged from the state of Arkansas as well as regional angel funds and individual investors. In total, over $500k was raised from private investors for each of the two boot camps. The Governor of Arkansas was impressed by the ARK project and wrote funding into the state budget to run two additional accelerators in 2014.

Key Outputs & Outcomes

A variety of outcomes in the Northwest Arkansas region were produced by the ARK project.

- Among the start-ups that participated in the first boot camp, 6 are still in business and operating in the state. From the graduates of the second boot camp, 4 are still in operation in Arkansas. These 10 companies are brand new businesses that average 3-5 employees with salaries above $50k, 150% of the average state wages.
- A network of private sector IT mentors was built and sustained by the program. This mentorship base is an important ingredient for a successful regional start-up ecosystem.
- The program also encouraged private angel funding in Arkansas. For some of the existing angel investors, the JIAC award was an incentive for them to step forward and invest money in the accelerator and its client companies. The formation of new angel investment groups will also benefit regional start-ups in the future.
- The ARK program is also viewed as a successful and replicable model that Winrock plans to use in the future in other regions.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Milwaukee Regional Water Accelerator

The Milwaukee Regional Water Accelerator aims to accelerate Milwaukee's emerging position as a globally-recognized water industry hub by connecting large and small businesses both regionally and internationally.

Description

The Milwaukee Regional Water Accelerator Project strives to advance the region's position as a global leader in water technology by creating synergies between a wide variety of entities that are focused on the water sector. The focal point of the project is the Global Water Center, a unique, 98,000 square foot research and business accelerator focused on companies in the water technology cluster. This center brings together companies of various sizes, entrepreneurs, and university researchers through co-location in the facility to help create opportunities for collaboration among participants from southeast Wisconsin, Northeast Illinois, and all over the world.

Activities

The Global Water Center's activities are focused around nurturing the success of the water technology cluster in the Milwaukee area by making connections between businesses and connecting regional water businesses to global markets.

- Co-location of companies of various sizes and other types of entities in the Center encourages collaboration.
- Entrepreneurs have ready access to mentors working alongside them in the Center.
- A seed accelerator program for start up companies provides subsidized space in the Center as well as seed funding grants.

Clients & Partners

The Center's clients and partners are diverse and represent a variety of interests all focused around water technology.

- Eight startup companies are part of their seed accelerator program. Another group of startups will enter the program in 2014.
- The Center is home to entities of various kinds – large companies, small startups, medium sized companies, university research facilities, and utilities.
- 150 water technology related businesses have been identified in the region. The project strives to create value for the entire cluster by addressing key water-quality, technology and policy issues.

JIAC Grantee in 2011

Location

Milwaukee, Wisconsin

Industry Focus

Water technology cluster

Geographic Focus

Southeastern Wisconsin & Northeastern Illinois

Grantee

- University of Wisconsin-Milwaukee

Key Partner

- The Water Council

Contact Information

Dean Amhaus, President & CEO, The Water Council

(414) 988-8750

damhaus@thewatercouncil.com

http://www.thewatercouncil.com/global-water-center/

Leveraging

The Global Water Center leverages significant funding from their parent organization, the Water Council, as well as private investors in the facility. The Center has a grant from the state to provide low cost rent to entrepreneurs as well as $50,000 seed grants, and the state's investment has thus far exceeded $1 million. Larger companies located in the building pay market rate for their space, which helps to support the Center.

Key Outputs & Outcomes

The Center's main outcomes stem from the co-location of the various sizes and types of entities. The synergy created through this co-location has various benefits:

- Increased opportunities for research collaboration.
- Knowledge sharing.
- Entrepreneurs are exposed to large, established firms and university research.
- Large companies benefit from networking, access to a specialized talent pool, and exposure to the cutting edge of water technology.

The seed accelerator program at the Center is also a strong contributor to creating and supporting new businesses in the region. Center staff members conduct interviews with program participants, compile quarterly reports on their progress, and track networking activities. Half the graduates of the program expect to continue operating their companies upon leaving the accelerator, and many plan to stay in the region.

The project is also reaping long-term capacity benefits. The Water Council was previously located in an office building, and they now have their dedicated space at the Water Center. The Center has spurred rapid development in the surrounding neighborhood, including the designation of a 17-acre formerly empty lot for the future creation of a water technology business park.

> *"Great support in general networking and connecting us with specifically targeted organizations and people that could help us reach our goals." – Program client**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

Minnesota's Mining Cluster

The Mining Cluster project aims to increase the region's capacity to conduct research on mining industry by-products and resource recovery, as well as support product development and manufacturing efficiencies for entrepreneurs and small businesses.

Description

The Minnesota Mining Cluster Project is an effort of the Natural Resources Research Institute to support a wide variety of technical projects focused on the mining cluster and related supply chain. The region has a long history in the mining business, and the Institute focuses its efforts on working with existing cluster businesses to improve their use of mining by-products, as well as develop new spin-off industries. The project is focused on moving beyond basic university research, and testing the feasibility of new technologies and processes to increase their commercialization.

Activities

The Institute is working with companies in the mining industry on seven different technical projects to support market development and the diversification of value-added mining opportunities.

- Research on the use of iron ore mining by-products.
- Assessing the rare earth minerals potential of the region.
- Non-ferrous, titanium dioxide, and precious metals recovery processing.
- Assessing legacy iron ore piles for potential processing using modern methods.
- Using nutrient-rich Lake Superior dredging sediment to fill mining basins to regrow plant materials.
- Developing biofuels from forest materials to replace coal used in mining activities.
- Assisting entrepreneurs and start-ups with product development and manufacturing efficiencies related to iron ore mining.

Clients & Partners

The mining cluster in Northeastern Minnesota is composed of mining and steel companies, suppliers, vendors, and organizations that support mining's strategic value to the region. The Institute's client companies are part of this mining industry and its related supply chain.

- Most clients are Minnesota-based companies, though some projects have the potential to bring new companies in to the region to take advantage of new technologies being developed.
- The Institute also works with shipping companies and public entities, such as the U.S. Army Corps of Engineers, on various aspects of technical projects.

JIAC Grantee in 2011

Location

Duluth, Minnesota

Industry Focus

Mining cluster

Geographic Focus

Northeastern Minnesota

Grantee

- University of Minnesota Natural Resources Research Institute

Contact Information

Don Fosnacht, Director, Center for Applied Research and Technology Development

218-720-4282

dfosnach@nrri.umn.edu

http://www.nrri.umn.edu/cartd/default.htm

Leveraging

The JIAC grant is matched by an $800,000 contribution from the Natural Resources Research Institute itself. The Institute also receives a base level of funding from the University and draws on University operating funds. They also have an endowment from a trust fund that supplies a significant share of their funding for minerals research. Over 60% of their funding is from external sales and grant activities. Currently and in the past, the Institute has had grants from a variety of sources, including the DOE, NSF, other EDA grants, USDA, MN state grants, and private organizations/endowments.

Key Outputs & Outcomes

The Institute establishes a long-term relationship with their clients and generally tracks outcomes, such as job creation, cost savings from new technologies developed, and new revenue, for about 5 years from the date of project completion. Key outcomes of the projects include:

- Creation of successful businesses and new jobs.
- Cost savings and new revenue from new technologies developed and new products brought to market.
- Providing a "reality check" to client companies with regard to non-feasible ideas; saving the company money it otherwise would have spent pursuing the idea.
- Demonstrating the feasibility of new technologies and processes to create permanent new mining-related industries in the region.
- Long-term environmental improvement from the use of biofuels to replace coal in mining activities.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

New York Renewable Energy Cluster

The New York Renewable Energy Cluster project focuses on growing and attracting companies in the renewable energy and advanced manufacturing sector in the City of Newburgh, New York.

Description

This project, led by The Solar Energy Consortium, aims to address structural unemployment in the city of Newburgh by encouraging companies in the renewable energy and advanced manufacturing sectors to expand in the city and take advantage of highly affordable real estate. The Consortium works closely with city and county offices to attract target businesses.

Activities

Currently, the project is focused on working with the local government to attract cluster businesses.

- The initial stages of the project uncovered a lack of collaboration among the various entities that all had the common goal of growing and attracting new business to the area.
- Relationship building was a key step in encouraging a mindset of collaboration and cooperation among the project partners.
- Consortium staff meet at least monthly with city staff.
- Permitting processes have been streamlined and expedited, growing and attracting new businesses to utilize existing manufacturing sites.
- A marketing campaign has been launched to further encourage the expansion of cluster businesses in the area.

Clients & Partners

The Consortium works closely with the local government and project consultants to attract businesses to Newburgh.

- A marketing campaign, led by project consultants, has thus far generated 18 opportunities, and the Consortium is actively pursuing them.
- Close working relationships between the Consortium and local government staff have been vital in creating a permitting process that actively encourages companies to expand into the city.

JIAC Grantee in 2011

Location

Kingston, NY

Industry Focus

Renewable Energy and Advanced Manufacturing

Geographic Focus

Newburgh, NY

Grantee

- The Solar Energy Consortium

Key Partners

- Orange County Office of Business Services
- City of Newburgh

Contact Information

Carl Meyer, President and CEO

(845) 336-5354

carl.tsec@gmail.com

http://thesolarec.org/Home.aspx

Leveraging

The project has leveraged the time and expertise of City of Newburgh staff, including the mayor, the city manager, and staff in the department of planning.

Key Outputs & Outcomes

- The marketing campaign has thus far produced 18 leads, and project staff members are working to attract some of these businesses to Newburgh. Staff track what becomes of these leads and the number of hits to the website.
- The creation of a solid partnership between the Consortium and city planning staff has transformed the permitting process for prospective companies into an easy, welcoming process that will result in more successful expansion by companies in the area.

Once the project starts generating business expansion, the project staff will track:

- Number of cluster business in Newburgh;
- Jobs created;
- New tax revenue;
- Permitting times for new businesses (benchmarked against a goal).

Northeast Ohio Speed-To-Market Accelerator

The Northeast Ohio Speed-To-Market Accelerator project aims to accelerate the commercialization of specific flexible electronics and advanced energy products, services, and platforms.

Description

The Northeast Ohio Speed-To-Market Accelerator (STMA) project is a collaborative program to accelerate the speed-to-market for high potential products in the region's advanced energy and flexible electronics industry clusters. The STMA employs a step-by-step process to accelerate the commercialization of products, increase the global competiveness of cluster companies, attract additional private capital to the region, and connect workers to educational and training programs.

Activities

The STMA's process includes a number of activities arranged in a step-by-step process to assist cluster members.

- Cluster Outreach STMA Workshops: The project team conducted a series of workshops to educate and inform existing and potential cluster members about the importance of speed to market and the availability of STMA services.
- One-On-One Counseling: The STMA team conducts interviews with companies to determine project needs and challenges and create a Path-To-Market assessment and program plan to identify areas where STMA partners can help address needs to accelerate the project.
- Market Development Services: As part of the program plan, companies receive services to align and access target markets, such as market assessments, market engagement assistance, application ideation sessions, and export counseling.
- Manufacturing Scale-up Services: Companies also receive assistance with manufacturing expansion issues such as design for manufacturing, equipment design, manufacturing process counseling, supply chain assistance, and access to capital counseling.
- Workforce Development Services: Program plans also include services to identify and fill workforce needs, such as talent plans, jobs and candidate profiling, internships, career pathways development, career counseling, and needs assessment.

JIAC Grantee in 2011

Location

Cleveland, Ohio

Industry Focus

Advanced Energy and Flexible Electronics

Geographic Focus

Northeast Ohio

Grantee

Northeast Ohio Technology Coalition (NorTech)

Key Partners

- JumpStart Inc.
- Lorain County Community College
- MAGNET

Contact Information

Ashley Sparks, NorTech

(216) 363-6883

asparks@nortech.org

http://www.nortech.org/speed-to-market-accelerator

Clients & Partners

A key part of the STMA project is the collaborative efforts of partner organizations.

- NorTech: STMA lead, cluster lead; conducts path-to-market assessments, and provides training and assistance in value proposition, market research, and other areas.
- MAGNET: Assists companies with application ideation, manufacturing scale-up services, and workforce development talent plans and internships.
- JumpStart: Provides market development and market engagement assistance and facilitates access to capital.
- Lorain County Community College: Talent and workforce development lead; engages with industry leadership to develop career pathways, and facilitates data-driven workforce innovation and regional collaboration.

Leveraging

The Speed to Market Accelerator leverages all of NORTECH's substantial network of partners, including 22 funders (including AT&T & the Cleveland Foundation), 4 regional economic development organizations, 8 regional chambers of commerce, 13 incubators & other business technology support organizations, and 15 institutions of higher education, (including Case Western Reserve University and Kent State University).

Key Outputs & Outcomes

The STMA project produced a number of outcomes as of December 2013:

- 4 STMA workshops held with 164 attendees.
- 34 Path to Market assessments and program plans created.
- 9 companies receiving management and technical assistance.
- 21 clients completed market opportunity training; 15 market assessments developed.
- 2 ideation sessions completed.
- 33 total manufacturing services projects completed, including design, equipment, process counseling, and supply chain projects.
- 8 custom talent plans created.
- 15 participants in a talent planning workshop
- 24 interns places at client companies.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

Renewable Energy Generation Training and Demonstration Center

This project established a physical site to perform commercial scale proof-of-concept demonstrations in the renewable energy cluster, supported by commercialization services.

Description

This project created the San Diego State University Center for Energy Sustainability (CES), located in California's Imperial Valley at SDSU's Brawley campus. The CES identifies and selects viable cutting-edge energy technologies to create a demonstration project housed at the facility, and provides business development services and linkages with additional regional resources. The CES provides a crucial pathway to support the pipeline of financial and intellectual capital from the San Diego region to Imperial County.

Activities

The main activity of this project is the establishment and support of the CES.

- Companies with potential technologies are located through the network of universities in San Diego as well as through CleanTECH San Diego, a non-profit industry association.
- Technologies are vetted by various steering committees to evaluate their suitability for a demonstration project at the CES as well as their potential impact on economic development in Imperial Valley.
- Selected client companies create a demonstration project of their technology at the CES.

Clients & Partners

The CES has approximately 5 companies that currently have demonstration projects located at the Center. They aim to add 1-2 additional projects per year. Preferred client company characteristics include:

- Existing renewable energy technology at the commercialization stage.
- Need for a large-scale technology demonstration space.
- Available funding for installing the demonstration at the CES.

Clients with technology demonstration projects located at CES benefit in a variety of ways.

- Land is provided to the companies to locate their large demonstration projects.
- The leasing process for the land is very facilitated and inexpensive.
- CES has an existing authorization under California law to perform the type of work included in the demonstrations projects on their land, so companies bypass significant regulatory hurdles.

JIAC Grantee in 2011

Location

Imperial County, California

Industry Focus

Renewable energy, focus on solar

Geographic Focus

San Diego and Imperial County, California

Grantee

- San Diego State University Research Foundation

Key Partner

- CleanTECH San Diego

Contact Information

John Crockett, Program Director
(619)594-3176
jcrockett@foundation.sdsu.edu
http://jiac.sdsu.edu/index.html

Leveraging

The CES has successfully created a long-term revenue stream from the power generated by the demonstration projects. They negotiated a collaborative power agreement with the local power utility, which provides preferred pricing for the energy generated up to a specified ceiling. This agreement will fund the long-term operations of the demonstration center.

Key Outputs & Outcomes

Key outcomes of the CES project are diverse and vary widely depending on the type of demonstration projects located at the Center.

- Demonstration projects allow companies to better understand the real-world implications and potential of their technologies, which allows them to refine their business models for higher profitability.
- Demonstration projects also allow companies to be more successful in accessing follow on funding, as potential investors can see a physical example of how the technology works.
- The projects create construction and operations jobs as well as positive environmental impacts for Imperial County. Early demonstration project stages create significant construction jobs, while over the long term, high skill/high wage operations jobs are created.
- Companies participating in the program have access to other physical and technical resources at San Diego State University, which allows them to better assess their technology and move it to the next stage of commercialization.

*"The effects of the JIAC efforts at SDSU Imperial Valley Campus are fundamental to transitioning those in the local workforce into high-paying renewable energy jobs. SDSU Imperial Valley Campus and the JIAC have also done a remarkable job of attracting technology companies to take a look at the region and to locate the development efforts of new renewable energy technologies here. The JIAC grant has made a huge difference." – Program participant**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Rockford Area Aerospace Cluster

This project aims to accelerate the growth of small and medium sized businesses in the Rockford regional aerospace cluster and support job creation and innovation.

JIAC Grantee in 2011

Location

Rockford, Illinois

Industry Focus

Aerospace

Geographic Focus

Rockford MSA and surrounding region

Co-Grantees

- Northern Illinois University (NIU)
- Rockford Area Economic Development Council (RAEDC)

Key Partners

- Rockford Area Aerospace Network (RAAN)
- Chicago area MEPs

Contact Information

Mansour Tahernezhadi, Associate Dean, Research & Graduate Programs, NIU

(815) 753-1220

mtaherne@niu.edu

http://www.linkedin.com/groups?gid=4175991

http://www.niu.edu/ceet/CorpratePartners/Engineersinresidence/index.shtml

Description

The Rockford Area Aerospace Cluster project aims to support the growth of small and medium sized cluster businesses in the region and accelerate the growth of the cluster. By developing the collaboration infrastructure necessary to keep pace with expected growth in the aerospace industry, the project will grow the market for the regional cluster from regional to international over the long term. The project also aims to increase the technical knowledge and capacity of small and medium sized cluster businesses, as well as promote technology transfer with regional universities.

Activities

The EDA portion of this project focuses on two main activities – regional cluster branding and product innovation in the aerospace industry.

- Branding: Led by the Rockford Area Economic Development Council (RAEDC), activities focus on networking and outreach such as hosting symposia and other cluster events, attending trade shows and meetings of the Rockford Area Aerospace Network (RAAN), creating and maintaining a LinkedIn page for the cluster, and contracting with public relations firms to increase media placements.
- Product Innovation: This work, led by Northern Illinois University (NIU), is conducted through an Engineer-in-Residence program housed at the NIU College of Engineering. Companies receive the services of faculty and graduate students to work on a specific technical project or problem.

Clients & Partners

- NIU and the RAEDC work closely with the RAAN to identify cluster needs and projects that can address these needs.
- Approximately 10 small and medium sized aerospace businesses have been served by the Engineer-in-Residence program.
- Hundreds of companies have been reached through marketing materials, events, and media outlets as part of the regional cluster branding effort.

Leveraging

The project received matching funds from NIU. In addition, project staff work closely with Manufacturing Extension Programs in the Chicago area, and this partnership recently resulted in a substantial grant from the National Institute of Standards and Technology, of which NIU was a major recipient. The JIAC grant enabled NIU to have a more direct relationship with the MEP, which helped them win the NIST grant.

Key Outputs & Outcomes

Project staff receive feedback on outcomes from companies that participate in the Engineer-in-Residence program, and the project is also focused on long-term outcomes for the regional aerospace cluster.

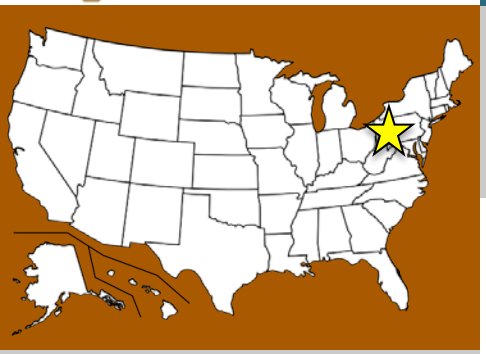
- At the conclusion of Engineer-in-Residence projects, participating faculty have a discussion with the client company to ascertain if the project met their needs and solved their problem.
- The branding effort resulted in 84 media placements for the regional cluster, and helped to elevate the status of the region as a global player in the aerospace industry.
- Over the long term, the project aims to create new investment in the cluster, spur job creation, and catalyze diversification of cluster companies in to new, related clusters, such as transportation.

*"[We] improved competitiveness through better technology." – Program client**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Southwestern Pennsylvania Urban Revitalization



The goal of the SPUR project is to connect residents from underserved Pittsburgh communities with the local energy and health care industry clusters.

JIAC Grantee in 2011

Location

Pittsburgh, PA

Industry Focus

Energy and Healthcare/Life Sciences

Geographic Focus

Pittsburgh, PA – especially the Hill District and Homewood Neighborhood

Grantee

- Pittsburgh Central Keystone Innovation Zone (part of Urban Innovation 21)

Key Partners

- Hill Community Development Corporation
- Hill House Economic Development Corporation
- Innovation Works
- Duquesne University Small Business Development Center

Contact Information

Bill Generett, President and CEO, Urban Innovation 21

(316) 978-5209

wgenerett@urbaninnovation21.org

http://spurinitiative.org/

Description

The SPUR project promotes entrepreneurship in severely underserved areas, spurring community development, job creation, and wealth generation for some of the poorest residents of the Pittsburgh region, primarily African American individuals. The project aims to expand the region's already successful energy and healthcare clusters to underserved communities and encourage the creation of supply chain and support businesses through the dual focus of the project – recruiting start-ups and high growth companies to the area as well as supporting resident-owned businesses and economic development projects in the underserved communities.

Activities

The SPUR project supports multiple activities to meet its goals.

- *Internship programs*: These programs build capacity of students at local universities and assist firms through the services provided by the interns.
- *Community outreach and organizing*: Community-based entrepreneurs are identified to start direct cluster and supply-chain support businesses. Companies are connected to a diverse array of consultants and business services. The project also provides support to community development organizations to work on projects important to the residential communities.
- *Business consulting technical assistance:* Cluster start-up firms are recruited and incentivized to locate in the Innovation Zone. These firms receive technical assistance services including export consulting, commercialization strategies, executive-in-residence programs, and identifying needs and available assistance.

Clients & Partners

- The project partners are instrumental to project activities, and each partner is involved in one or more areas. Partners are also heavily involved in referring clients to the services provided by the project.
- The project currently works with 48 client firms, which includes resident-owned support businesses as well as high-tech cluster firms.
- The internship programs engage approximately 100 student interns each year from local universities.

Leveraging

The SPUR project receives additional funding from its partner organizations – each organization contributes approximately $25k in funding annually. Other funding comes from the state of Pennsylvania, as well as local and national foundations. Resident-owned client companies in financial need also benefit from free legal services from Reed Smith, an international law firm with offices in Pittsburgh.

Key Outputs & Outcomes

SPUR project staff track key metrics through a questionnaire that is completed by client firms and interns every 6 months. Metrics collected now and planned for future collection include:

- Jobs created;
- Follow-on funding received;
- Patents;
- Changes in gross revenue;
- Number of community members creating successful businesses;
- Small business loans secured;
- Intern confidence;
- Follow-up internships in high-growth sectors;
- Job placement.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Space Coast Clean Energy Jobs Accelerator

The Space Coast Clean Energy Jobs Accelerator is a collaborative regional effort designed to enable the rapid expansion of job growth, business creation, and technology innovation in clean energy in Central Florida.

JIAC Grantee in 2011

Location

Cape Canaveral, FL

Industry Focus

Clean Energy

Geographic Focus

East Central Florida

Grantee

- Space Florida

Key Partner

- Energy Florida (formerly the Space Coast Energy Consortium)

Contact Information

Mike Aller, Executive Director, Energy Florida

(321) 613-2973

michael.aller@energyflorida.org

http://www.energyflorida.org/

Description

The Space Coast Clean Energy Jobs Accelerator is a collaborative effort across the East Central Florida region, with connections and networks developed across the state of Florida and the Southeast region of the United States. The main focus of the effort is to develop and strengthen an innovation ecosystem in support of energy-related technology development, manufacturing and services. The program has set out to build an integrated support network for clean energy research, as well as technology and business activities throughout the project region, especially leveraging the existing regional assets from the Kennedy Space Center and its related activities.

Activities

The JIAC grant was administered by Space Florida, with the bulk of the activities being managed by Energy Florida. The main activities included:

- Industry Working Groups: Companies were recruited by Energy Florida to establish working groups around 5 identified clean energy sub-sectors. These groups provide networking, collaboration, and pursue common goals. They review the supply chain and business ecosystem in the region and identify gaps and ways to address these gaps.
- Space and Energy Innovation Center: This virtual center leverages existing resources and facilities at Kennedy Space Center and related area resources to link firms with the federal government for partnership opportunities and collaborative agreements, such as the use of NASA facilities to support innovative energy-related research and activities.

Clients & Partners

- The project partnered with Kennedy Space Center and other regional facilities and resources to link companies with opportunities for collaboration, such as using specialized NASA facilities to perform x-ray diagnostics of large turbines without having to disassemble them.
- Approximately 120 companies received direct assistance through the program over 2 years.
- The program also assisted 34 companies with identifying and accessing funding over the period of the grant.

Leveraging

- The key to the project is the NASA-related resources that have been leveraged to provide companies with collaboration opportunities to develop and expand their clean energy businesses.
- In 2012, Energy Florida also received an EDA grant to assist property owners with accessing financing for renewable and energy efficiency retrofits to existing buildings; the grant is expected to create jobs in the clean energy industry for displaced Kennedy Space Center workers.
- Energy Florida is also considering other ways to sustain its programs in the future, such as pursuing other grants, moving to a paid membership model for its programs, and providing business development and supply chain consulting on a fee basis.

Key Outputs & Outcomes

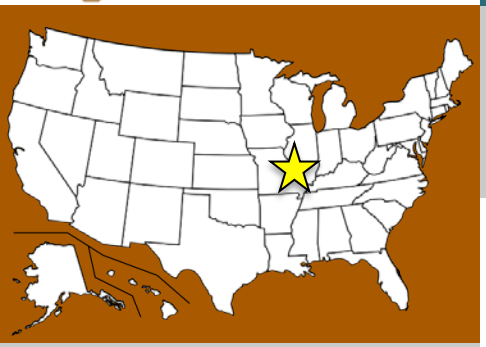
- As a result of this project, many companies are collaborating and using NASA facilities of which they would otherwise be unaware.
- The work of the industry working groups led to a key outcome in the State of Florida. Group members identified a need among small innovative Florida companies for matching funds to apply for federal awards. This concern was presented to the state legislature, resulting in $4 million in fiscal year funding for the Florida Clean Energy Research & Development Match Fund.
- Energy Florida staff also conduct in person and telephone surveys of client companies to capture information on job creation and investment.
- During the period of the grant, 238 jobs were created in energy related companies, and client companies secured numerous contracts and follow on investments. While the program cannot take full credit for these outcomes, it has helped to build the regional ecosystem and connect the resources that supported these companies in their efforts.

*"So appreciative of Mike and his Energy Florida Team. They have worked hard to help my new startup company succeed, and have truly come along side me in the process." – Program client**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION
ACCELERATOR CHALLENGE

St. Louis Bioscience



The St. Louise Bioscience project aims to accelerate the growth of the bioscience cluster in the region and create new companies and associated jobs.

JIAC Grantee in 2011

Location

St. Louis, MO

Sector Focus

Bioscience

Geographic Focus

St. Louis MSA

Co-Grantees

- St. Louis Economic Council
- BioGenerator
- BioSTL
- Center for Emerging Technologies

Contact Information

Benjamin Johnson, Program Director, BioSTL

(314) 880-8872
bjohnson@biostl.org
http://biostl.org/bioscience/
http://www.bedprogram.com

Description

The St. Louise Bioscience JIAC project's goal is to boost the capacity of the region's talent in bioscience, in part through using entrepreneurs-in-residence (EIRs) to work with start-ups and inventors to guide new companies and identify technology with commercial potential. The project also created a hands-on Bio Entrepreneur Development (BED) Program for first-time bioscience entrepreneurs.

Activities

- The BioGenerator created an EIR program, which hired experienced bioscience entrepreneurs to mentor and develop companies created by the region's i6 program as well as other clients.
    - EIRs work closely with clients and become integral parts of their management teams.
- The Center for Emerging Technologies (CET) created the Bio Entrepreneur Development (BED) Program for first-time bioscience entrepreneurs. The program includes:
    - A 10-week course delivered by experts and successful entrepreneurs.
    - Coaching from the director, a former entrepreneur.
    - Mentoring by bioscience and entrepreneurship leaders.
    - Business services including office space, internet access, conference rooms, and access to office equipment.

Clients & Partners

- Clients of the JIAC project are early stage companies in the bioscience industry. EIRs serve a wide variety of companies, including individual entrepreneurs, 1-2 person companies, and small-medium companies with less than 30 employees.
- The BED training program graduated entrepreneurs from approximately 40 start-up companies between the Spring of 2011 and Spring of 2012.
- BioGenerator led the implementation of the JIAC project and the EIR program, while the CET led the BED program.

Leveraging

- BioSTL provided a funding match of $700k for the JIAC project.
- The project allowed the BioGenerator and its partners to pilot and build capacity for these programs, and to prove their need and effectiveness. As the JIAC funding for the project comes to a close, a proven model for success for these projects will be taken to their leadership board to explore ways to continue the programs.
- The St. Louise region received an i6 grant in 2010 to provide pre-seed technology commercialization funding in biosciences. Many of the companies that were formed from the i6 program accessed the mentorship and support services offered under the JIAC grant.

Key Outputs & Outcomes

- The BED training graduated entrepreneurs from approximately 40 start-up companies between the Spring of 2011 and Spring of 2012.
- Overall, the BioGenerator and its partners, through the JIAC project and other programs, provide support to approximately 150 entrepreneurs.
- Project staff members are working to improve their collection of metrics, such as company formation, follow on capital received, strategic partnerships, and revenue growth.
- Over the longer term, job creation is the primary metric. However, job growth, especially in the bioscience industry, tends to significantly lag other important milestones.

*"They're doing a phenomenal job! – Program participant**

* Quote is drawn from an anonymous, online survey of JIAC program clients and participants, administered by SRI International in March-April 2014.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Upper Missouri Tribal Environmental Risk Mitigation Project

The UM-TERM project helps Native American reservations located in the upper Missouri River basin mitigate environmental risk and distress in their communities while also promoting economic development for the reservations.

JIAC Grantee in 2011

Location

Bismarck, North Dakota

Industry Focus

Environmental Risk Mitigation

Geographic Focus

19 Tribal Reservations in the Upper Missouri River Basin, including Montana, North Dakota and South Dakota

Grantee

- United Tribes Technical College

Key Partners

- Coalition of 7 Tribal Colleges in the region

Contact Information

Dr. Barbara Schmitt, United Tribes Economic Development Director

(701) 255-3285 ext. 1436

bschmitt@uttc.edu

http://www.um-term.com/

Description

The UM-TERM project helps improve health and create business opportunities on 19 regional reservations by providing training and technical assistance in the areas of tribal water, land and wildlife resources, and environmental risk and distress mitigation. The project also helps tribal planners create business development opportunities, and encourages communication among regional environmental risk mitigation professionals. The business development support aims to accelerate the growth of businesses and reduce unemployment on the reservations.

Activities

The activities of the UM-TERM project focus on providing training and include:

- Training provided to coalition colleges in environmental risk and distress mitigation areas such as hazard mitigation and tribal water, land, and wildlife resources.
- Training provided to economic development planners and organizations located in the project area.
- Training is also provided to native-owned businesses in the basics of entrepreneurship and running a business.
- Training sessions are held at least once per quarter.

Clients & Partners

- The UM-Term project works with tribal organizations and both public and private sector Native American businesses, as well as individuals from the 7 tribal colleges in the coalition. Coalition colleges include:
  - Community Colleges: Cankdeska Cikana, Fort Berthold, Fort Peck, and Turtle Mountain;
  - United Tribes Technical College and Sitting Bull College;
  - Sinte Gleska University.
- The project currently provides service to 39 organizations both directly and indirectly.
- Over 200 individuals have been trained in the area of tribal risk mitigation.

Leveraging

The United Tribes Technical College, the grant recipient, is a non-profit Tribal University College that receives public sector funding from various government agencies, including the Department of Education and the Department of Labor.

Key Outputs & Outcomes

- Tribal planners have identified specific environmental risk mitigation services and businesses needed for their reservation.
- Over 200 individuals have been trained in tribal environmental risk mitigation. After each training session, participants fill out an evaluation form to give feedback on the program.
- The Tribal Environmental Risk Network held a network forum with over 100 participants who indicated high levels of satisfaction with Forum activities.

JOBS & INNOVATION ACCELERATOR CHALLENGE

Washington Interactive Media Accelerator

The Washington Interactive Media Accelerator strives to create an eclectic, engaged community of interactive media industry participants, and to create a space where the industry community can interact and collaborate.

JIAC Grantee in 2011

Location

Seattle, Washington

Industry Focus

Interactive Media

Geographic Focus

Puget Sound region

Grantee

- Economic Development Council of Seattle and King County (formerly enterpriseSeattle)

Key Partner

- Washington Interactive Network (WIN)

Contact Information

Kristina Hudson, Executive Director, WIN

(206) 389-8657

kristina@washingtoninteractivenetwork.org

http://www.washingtoninteractivenetwork.org/

Description

The Washington Interactive Media Accelerator, known as the REACTOR, is a project of the Washington Interactive Network (WIN), a non-profit spinoff of the Economic Development Council of Seattle and King County. The REACTOR acts as a magnet for the interactive media industry, bringing together startups, experts, and the community to accelerate the interactive Media Industry in the Seattle area. Their mission is to cultivate a thriving community of interactive media enthusiasts, including independent developers, entrepreneurs, professionals, and executives, to communicate ideas, share best practices, and collaborate.

Activities

The REACTOR is a physical space where start up companies locate and receive a variety of services, as well as a virtual accelerator where pre-start ups and others outside the immediate region can receive services. The REACTOR's activities include:

- 6 month resident program for start-ups based on a competitive application process; companies receive free space in the accelerator.
- Workshops covering business and technical development topics.
- Weekly collaborative meetings between resident companies to share ideas and updates on their progress.
- Networking events.
- Weekly mentor visits for hands-on support from industry experts.

Clients & Partners

The REACTOR's clients consist of the accelerator companies as well as the network of industry and community mentors who provide critical support.

- 23 companies have gone through the resident program.
- Approximately 10 industry expert mentors provide services to resident companies on a volunteer basis.
- Other interactive media companies can access the virtual accelerator, which provides a series of videos and presentations covering a variety of topics of interest to start-ups in the industry.

Leveraging

The Washington Interactive Network has been active since 2004 with the support of its parent organization, the Economic Development Council of Seattle and King County (formerly enterpriseSeattle). WIN has recently pursued 501(c)(3) status with the goal of pursuing grant funding available only to non-profit organizations. They have thus far been unable to secure additional EDA grants due to the improving unemployment figures in the region, but they are actively pursing other types of federal grants as well as private funding.

Key Outputs & Outcomes

Ultimately, the goal of the REACTOR is to support the start-ups that come through the program and increase their chances of success upon graduation. Successful companies and the connections they make during the resident program will contribute to the health of the interactive media cluster in the region, and will eventually lead to new companies and jobs.

REACTOR staff conduct exit interviews with all resident program graduates and follow up with them for at least a year post-graduation. WIN also tracks a variety of metrics relevant to their REACTOR program:

- Number of companies that enter the program (23 total).
- Number of mentors and mentor hours.
- Number of companies that pitch to investors and/or pursue crowd funding (such as Kickstarter).
- Companies that secure funding/amount of funding received – 5 companies have acquired funding totaling $5 million.
- Number of workshop/event participants.
- Media placements for REACTOR and resident companies.

Appendix B: JIAC Grantee Client/Participant Survey

The SRI team conducted a short web-based survey of JIAC clients to gather their direct inputs on experiences, outcomes, and impacts from their participation in the program. The survey instrument was designed based on findings from the JIAC interviews and site visits. JIAC grantees distributed the anonymous survey, on behalf of SRI, directly to their own clients via an invitation email and web link. The target population was defined businesses, organizations, or individuals that had received services from the JIAC Challenge grantee program.

The survey was distributed by 19 JIAC grantees and responses were received from clients/participants of 16 grantees. There were a total of 185 valid responses, and while it is not possible to calculate an exact response rate due to the indirect distribution, we estimate that roughly one-quarter of clients/participants invited to participate responded to the survey. Given the modest response rate and the difficulties of interpreting non-response, especially in an anonymous survey, the findings of the survey provide a useful illustration of how the program can and often does work – but are not necessarily representative of the total JIAC client population. The survey was analyzed using R software. The survey instrument and descriptive statistics are included in this section.

JIAC Grantee Client/Participant Survey Instrument & Descriptive Statistics

Introduction

Thank you for participating in our survey.

SRI International and the University of North Carolina (UNC) are administering this survey as part of a study of i6 and Jobs & Innovation Accelerator projects funded in FY 2010-2011.

This survey is short, with only 8 questions, and should take about 10 minutes of your time to complete.

This survey is anonymous. No personally identifiable information will be collected and there will be no individual attribution to any survey response. Any survey data provided to anyone outside of the SRI and UNC team, including to the i6 and Jobs & Innovation Accelerator Challenge grantee organizations, will be purged of information that could be used to identify individual responses.

Your participation in this survey is voluntary. If you begin the survey you can stop at any time.

The results of our study will inform economic development practitioners about effective approaches for metrics and data collection to potentially be incorporated into future program evaluations. This work will be an aggregate study of the outputs and outcomes of each program and will not evaluate any single project or grantee.

Please click "Next" at the bottom of this page to start the survey. If you would like to see detailed Survey Navigation Instructions select "Show Instructions" below before continuing.

If you have any technical questions about the web survey, please contact [technical manager]. If you have general questions about the study, please contact [survey team].

Please choose all that apply:

- ☐ Show Instructions

Instructions

Please use the onscreen navigation buttons while taking the survey, not your browser's forward and back buttons.

The following options will be available to you while taking the survey:

- "Next" – will move you ahead to the next group of questions.
- "Previous" – will move you back to the previous group of questions.
- "Submit" -on the last page – submits your responses.

Please Click "Next" Below to Continue

Question 1. What kind of firm/organization do you belong to?

Please select only one answer.

- ☐ Entrepreneur/pre-startup (have not yet formed a legal business entity)
- ☐ Start-up company (legal business entity)
- ☐ Small business (not a start-up company)
- ☐ Medium or large business
- ☐ Economic development or workforce organization
- ☐ Government/public entity
- ☐ Other non-profit
- ☐ University (e.g., department, research center, tech transfer office)
- ☐ Individual (no organizational affiliation)
- ☐ Other, please describe: [TEXT BOX]

Question 1: What kind of firm/organization do you belong to?		
	Number of respondents	**Percentage**
Entrepreneur/pre-startup (have not yet formed a legal business entity)	3	2%
Start-up company (legal business entity)	58	31%
Small business (not a start-up company)	40	22%
Medium or large business	24	13%
Economic development or workforce organization	16	9%
Government/public entity	9	5%
Other non-profit	7	4%
University (e.g., department, research center, tech transfer office)	18	10%
Individual (no organizational affiliation)	2	1%
Other	8	4%
Question viewed by 183 respondents. *Question format: multiple choice, select only one.*		

Question 2A* One focus of the JIAC program in your region is to support the growth and development of [Cluster/ Industry Group]. How does your business relate to this industry?

*Answered only by respondents who identified in Question 1 as: Entrepreneurs/pre-startups; Start-up companies; Small businesses; Medium or large businesses

Please select all that apply, and comment on the precise nature of your business:

- ☐ My core business is in this industry
- ☐ My business is a supplier of this industry
- ☐ My business is a service provider to this industry
- ☐ My business is a downstream customer of this industry
- ☐ My business is in a related industry
- ☐ My business is seeking to enter this industry
- ☐ My business has no relationship to this industry
- ☐ Other
- ☐ I don't know

Question 2A: One focus of the JIAC program in your region is to support the growth and development of [Cluster/ Industry Group]. How does your business relate to this industry?	
	Number of respondents
My core business is in this industry	83
My business is a supplier of this industry	21
My business is a service provider to this industry	24
My business is a downstream customer of this industry	4
My business is in a related industry	8
My business is seeking to enter this industry	6
My business has no relationship to this industry	8
Other	1
I don't know	0
Question viewed by 125 respondents. *Question format: multiple choice, select all that apply.*	

Question 2B* One focus of the JIAC program in your region is to support the growth and development of [Cluster/ Industry Group]. How does your organization relate to this industry?

*Answered only by respondents who identified in Question 1 as: Economic development or workforce organizations; Government/public entities; Other non-profits; University; Individuals; or Other

Please select all that apply, and comment on the precise nature of your business:

- ☐ It is a primary focus of my organization (e.g., a target cluster)
- ☐ It is a secondary focus of my organization
- ☐ It is not a focus of my organization, but we do some work with the industry
- ☐ We do not work with this industry
- ☐ Other
- ☐ I don't know

Question 2B: One focus of the JIAC program in your region is to support the growth and development of [Cluster/ Industry Group]. How does your organization relate to this industry?	
	Number of respondents
It is a primary focus of my organization (e.g., a target cluster)	23
It is a secondary focus of my organization	18
It is not a focus of my organization, but we do some work with the industry	10
We do not work with this industry	3
Other	5
I don't know	0
Question viewed by 60 respondents. *Question format: multiple choice, select all that apply.*	

Question 3. How did you hear about the JIAC program?

Please select all that apply.

- ☐ Word of mouth - I know another client of the program
- ☐ Word of mouth - general knowledge
- ☐ Program website
- ☐ Referral from an economic development organization, MEP, or similar organization
- ☐ Referral from university faculty/staff
- ☐ Direct outreach by the program
- ☐ Program presentation or booth at an event
- ☐ Other source (please describe): [TEXT BOX]

Question 3: How did you hear about the JIAC program?	
	Number of respondents
Word of mouth - I know another client of the program	10
Word of mouth - general knowledge	35
Program website	16
Referral from an economic development organization, MEP, or similar organization	45
Referral from university faculty/staff	38
Direct outreach by the program	40
Program presentation or booth at an event	11
Other source (please describe):	29
Question viewed by 181 respondents. *Question format: multiple choice, select all that apply.*	

Question 4. Please describe your level of engagement with the JIAC program:

[HELP SECTION]

Definitions:

Light: received minor services, isolated or infrequent interaction. *For example, participated in a seminar or informational event.*

Moderate: received minor services on a periodic or ongoing basis, or a more substantial service of short duration. *For example, a series of brief consultations with an entrepreneur-in-residence or technical expert, or received support in applying for a grant or award.*

Intensive: received substantial services or support, typically over a sustained period. *For example, participated in an accelerator or incubation program, or performed a collaborative research project.*

Question 4: Please describe your level of engagement with the JIAC program:		
	Number of respondents	**Percentage**
Light	55	31%
Light-to-Moderate	26	15%
Moderate	27	15%
Moderate-to-Intensive	25	14%
Intensive	41	23%
Question viewed by 178 respondents. *Question format: multiple choice, select only one.*		

Question 5. What type(s) of service(s) or support have you received through the JIAC program?

Please select all that apply.

Events, Networking, & Referrals

- ☐ Participated in an educational, training, or networking event
- ☐ Participated in a conference, showcase, or exhibition
- ☐ Received a referral (e.g., to a researcher, business contact, investor, etc.)

Mentoring, Coaching, & Technical Assistance

- ☐ Participated in a boot camp or accelerator program
- ☐ Business/entrepreneurship mentoring and coaching
- ☐ Product development, supply chain, or operational assistance or advice
- ☐ Marketing, sales, or market research assistance or advice
- ☐ Exporting assistance or advice

Facilities & Equipment

- ☐ Physical space for operating my business or project
- ☐ Access to shared equipment, laboratory, clean rooms, etc.

R&D and Technology Development

- ☐ Joint research project with a university partner or federal lab
- ☐ Assistance with research and development (e.g. proof-of-concept, prototyping, testing, technology scale-up, etc.)
- ☐ Technology commercialization/licensing assistance
- ☐ Assistance with patenting or regulatory/government approvals

Financing

- ☐ Received support or assistance to obtain seed money for a start-up business
- ☐ Received support or assistance for a grant proposal or award application
- ☐ Participated in an Angel/VC/seed funding competition

Other service(s) or support

- ☐ Other (please describe): [TEXT BOX]

Comments on services or support received (optional): [TEXT BOX]

Question 5: What type(s) of service(s) or support have you received through the JIAC program?	
	Number of respondents
Events, Networking, & Referrals	
Participated in an educational, training, or networking event	92
Participated in a conference, showcase, or exhibition	76
Received a referral (e.g., to a researcher, business contact, investor, etc.)	56
Mentoring, Coaching, & Technical Assistance	
Participated in a boot camp or accelerator program	39
Business/entrepreneurship mentoring and coaching	49
Product development, supply chain, or operational assistance or advice	43
Marketing, sales, or market research assistance or advice	40
Exporting assistance or advice	11
Facilities & Equipment	
Physical space for operating my business or project	37
Access to shared equipment, laboratory, clean rooms, etc.	36
R&D and Technology Development	
Joint research project with a university partner or federal lab	24
Assistance with research and development (e.g. proof-of-concept, prototyping, testing, technology scale-up, etc.)	36
Technology commercialization/licensing assistance	18
Assistance with patenting or regulatory/government approvals	11
Financing	
Received support or assistance to obtain seed money for a start-up business	17
Received support or assistance for a grant proposal or award application	33
Participated in an Angel/VC/seed funding competition	10
Other service(s) or support	
Other (please describe):	14
Question viewed by 174 respondents. *Question format: multiple choice, select all that apply.*	

Question 6. What direct results would you attribute (wholly or in part) to the services or support you received through the JIAC program?

Please select all that apply.

Technology Development

- ☐ New technology or concept was developed, tested, or taken to next stage of development
- ☐ Technology commercialized/licensed
- ☐ Intellectual property developed or government approval received
- ☐ Realized an idea/technology wouldn't work and changed my idea/approach

Product & Business Development

- ☐ Legally registered my company (federal/state registration, permitting, etc.)
- ☐ Developed a business plan or strategic plan
- ☐ Developed a new or improved product
- ☐ Identified new markets/customers
- ☐ Cost reduction, operational efficiency, or quality improvement/certification

Human Capital

- ☐ Employee/management skills development
- ☐ New employees hired
- ☐ Knowledge about how to access outside assistance, services or sources of financing

Networking/Marketing

- ☐ New networking contact(s)
- ☐ New professional/business partnership(s)
- ☐ Developed new advertising, sales, marketing, or branding strategies and/or materials
- ☐ Developed a new export strategy

Financing

- ☐ Received a government award or grant
- ☐ Received funding from an Angel/VC investor
- ☐ Received funding/investment from another source

Other direct results

- ☐ Other (please describe): [TEXT BOX]

Comments on direct results (optional): [TEXT BOX]

Question 6: What direct results would you attribute (wholly or in part) to the services or support you received through the JIAC program?	
	Number of respondents
Technology Development	
New technology or concept was developed, tested, or taken to next stage of development	57
Technology commercialized/licensed	18
Intellectual property developed or government approval received	18
Realized an idea/technology wouldn't work and changed my idea/approach	13
Product & Business Development	
Legally registered my company (federal/state registration, permitting, etc.)	16
Developed a business plan or strategic plan	30
Developed a new or improved product	39
Identified new markets/customers	49
Cost reduction, operational efficiency, or quality improvement/certification	22
Human Capital	
Employee/management skills development	37
New employees hired	33
Knowledge about how to access outside assistance, services or sources of financing	33
Networking/Marketing	
New networking contact(s)	87
New professional/business partnership(s)	55
Developed new advertising, sales, marketing, or branding strategies and/or materials	24
Developed a new export strategy	5
Financing	
Received a government award or grant	20
Received funding from an Angel/VC investor	10
Received funding/investment from another source	13
Other direct results	
Other (please describe):	6
Question viewed by 164 respondents. *Question format: multiple choice, select all that apply.*	

Question 7A* What impacts would you attribute (wholly or in part) to the services or support you received through the JIAC program?

*Answered only by respondents who identified in Question 1 as: Entrepreneurs/pre-startups; Start-up companies; Small businesses; Medium or large businesses

Please select all that apply.

- ☐ Started a new business
- ☐ Business stabilization and/or survival
- ☐ Business acquisition or merger
- ☐ Established a new location/moved business into the region
- ☐ New or increased sales/revenues
- ☐ Increased employment
- ☐ Increased productivity/efficiency
- ☐ Increased profitability
- ☐ Diversification, entering new markets, reaching new customers
- ☐ Improved access to capital/investment
- ☐ Growth in management/employee capabilities and knowledge
- ☐ Expanded technical and business networks
- ☐ Environmental and/or energy efficiency improvements
- ☐ Other, please describe: [TEXT BOX]

Comments on impacts (optional): [TEXT BOX]

Question 7A: What impacts would you attribute (wholly or in part) to the services or support you received through the JIAC program?	
	Number of respondents
Started a new business	17
Business stabilization and/or survival	33
Business acquisition or merger	1
Established a new location/moved business into the region	14
New or increased sales/revenues	30
Increased employment	29
Increased productivity/efficiency	35
Increased profitability	16
Diversification, entering new markets, reaching new customers	21
Improved access to capital/investment	22
Growth in management/employee capabilities and knowledge	34
Expanded technical and business networks	51
Environmental and/or energy efficiency improvements	8
Other	20
Question viewed by 112 respondents. *Question format: multiple choice, select all that apply.*	

Question 7B* What impacts would you attribute (wholly or in part) to the services or support of the JIAC program?

*Answered only by respondents who identified in Question 1 as: Economic development or workforce organizations; Government/public entities; Other non-profits; University; Individuals; or Other

Please select all that apply.

- ☐ Environmental and/or energy efficiency improvements
- ☐ Improved innovation and entrepreneurship ecosystem in my region
- ☐ Growth and development of a key or targeted industry/cluster in my region
- ☐ Improved opportunities for small businesses in my region
- ☐ Improved opportunities for disadvantaged/minority groups in my region
- ☐ A distressed region/neighborhood gained new economic activities
- ☐ Workforce skills development in my region
- ☐ Growth of higher skill/wage job opportunities in my region
- ☐ Growth of existing businesses and/or startup of new businesses in my region
- ☐ Other, please describe:

Comments on impacts (optional): [TEXT BOX]

Question 7B: What impacts would you attribute (wholly or in part) to the services or support of the JIAC program?	
	Number of respondents
Environmental and/or energy efficiency improvements	14
Improved innovation and entrepreneurship ecosystem in my region	22
Growth and development of a key or targeted industry/cluster in my region	24
Improved opportunities for small businesses in my region	22
Improved opportunities for disadvantaged/minority groups in my region	14
A distressed region/neighborhood gained new economic activities	8
Workforce skills development in my region	19
Growth of higher skill/wage job opportunities in my region	16
Growth of existing businesses and/or startup of new businesses in my region	24
Other, please describe:	5
Question viewed by 47 respondents. *Question format: multiple choice, select all that apply.*	

Question 8. How satisfied or dissatisfied were you with:

Comments (optional): [TEXT BOX]

Question 8: How satisfied or dissatisfied were you with:						
	Very dissatisfied	**Dissatisfied**	**Neither satisfied nor dissatisfied**	**Satisfied**	**Very satisfied**	**Not Applic-able**
Events, training, networking, and referral services	10	1	13	33	68	24
Mentoring, coaching, and technical assistance services	11	1	13	27	52	45
Facilities and equipment provided	7	0	14	27	47	54
R&D and technology development assistance	9	3	23	18	41	55
Financing assistance	9	3	28	18	25	66
Question viewed by 157 respondents. *Question format: multiple choice, select only one.*						

Appendix C: List of Abbreviations

ARC	Appalachian Regional Commission
BED	Bio Entrepreneur Development Program
CMS	Client Management System
DRA	Delta Regional Authority
EDA	Economic Development Administration
EPA	Environmental Protection Agency
ETA	Employment and Training Administration
FFO	Federal Funding Opportunity Announcement
GCMI	Global Center for Medical Innovation
i6	i6 Challenge
ISIX	Innovative Solutions for Invention Xceleration
IT	Information Technology
IWP	Integrated Work Plan
JIAC	Jobs and Innovation Accelerator Challenge
MEP	Manufacturing Extension Partnership
MSA	Metropolitan Statistical Area
NAICS	North American Industry Classification System
NIH	National Institutes of Health
NSF	National Science Foundation
RAAN	Rockford Area Aerospace Network
SBA	Small Business Administration
TARIC	Taskforce for the Advancement of Regional Innovation Clusters
TRLs	Technology Readiness Levels
UNC	University of North Carolina
USPTO	U.S. Patent and Trade Office
VC	Venture Capital