New Mexico State University

ARROWHEAD CENTER

LEADING ECONOMIC DEVELOPMENT FOR NEW MEXICO STATE UNIVERSITY

National Security Technology Incubation Strategic Plan

National Security Preparedness Project
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NNSA
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Live, Learn and Thrive

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EXECUTIVE SUMMARY

With the events of 9/11, the global community faces ever increasing and emerging threats from hostile groups determined to rule by terror. According to the National Nuclear Security Administration (NNSA) Strategic Plan, the United States must be able to quickly respond and adapt to unanticipated situations as they relate to protection of our homeland and national security. Technology plays a key role in a strong national security position, and the private business community, along with the national laboratories, academia, defense and homeland security organizations, provide this technology. Fostering innovative ideas, translated into relevant technologies answering the needs of NNSA, is the purpose of the National Security Technology Incubation Program (NTSI).

A wealth of technology exists in New Mexico, due to the numerous research and development (R&D) projects underway in a state where federally funded R&D is a major industry. The need exists to identify, incubate, and rapidly implement technology to meet the NNSA mission. These efforts must be leveraged across universities, US government agencies, and businesses, especially those businesses without ready access to NNSA Science and Technology (S&T) analysts or decision-makers. Because of New Mexico's geographic location, national security requirements are met by the availability of actual testing in a border and/or desert environment or by use of synthetic simulation environments.

The Arrowhead Center of New Mexico State University (NMSU) is the operator and manager of the NSTI. To develop the NSTI, Arrowhead Center must meet the planning, development, execution, evaluation, and sustainability activities for the program and identify and incubate new technologies to assist the NNSA in meeting its mission and goals. Technology alone does not give a competitive advantage to the country, but the creativity and speed with which it is employed does. For a company to succeed, it must have sustainable competitive advantages in seven key areas: geography, products and businesses, distribution, sales and service culture, efficiency, brand, and most important, people. The four strategic goals of the plan are to:

1. Identify and recruit small businesses with technology applications for national security.
2. Design and implement a national security incubator program that provides incubator services and physical space for the targeted businesses.
3. Provide business assistance and technical leadership to NSTI clients to assist in bringing their products to market.
4. Construct a new multi-tenant facility with dedicated physical space for businesses with technology applications for national security.

By nurturing entrepreneurs focusing on the NSTI and encouraging technology based economic development, NMSU, as an economic driver, can foster domain expertise in the region and increase access to capital. By matching NNSA technology requirements with technologies of small businesses, the NSTI will assist small businesses in finding customers and the NNSA with finding technologies to make the nation more secure.

"The end state of national security still begins with basic building blocks: planning, training, education, and leadership."[1] To support the "NNSA of the Future," Arrowhead Center will employ these building blocks to develop a sustainable technology incubator program in New Mexico.

[1] Brooks, L. F. (2004). The national nuclear security administration strategic plan, message from the administrator. *US Department of Energy.* DOE/NA-0010, November 2004.

1.0 INTRODUCTION

A key goal of the National Security Preparedness Project (NSPP) is a robust technology and business incubation program focused on the southwestern United States and oriented toward small businesses with national security technologies. Objectives to achieve this goal include developing incubator plans (strategic, business, action, and operations), creating an incubator environment, creating a support and mentor network for companies in the incubator program, attracting security technology businesses to the region, encouraging existing business to expand, initiating business start-ups, evaluating products and processes of the incubator program, and achieving sustainability of the incubator program.

This strategic plan contains sections on the vision, mission, business and technology environment, goals, objectives, and incubation process of the NTSI program at Arrowhead Center. The purpose of this plan is to respond to the deliverable requirement of the DOE Grant but also to leverage the program with the immense capabilities in New Mexico to begin the creation of a sustaining capability for the area and the nation.

Arrowhead Center will concentrate on the recruitment of emerging small businesses with security technologies into the NSTI. Initially incubation activities and support will be housed in a facility on the Las Cruces campus of New Mexico State University (NMSU). Incubator companies will have hands-on mentoring in general business matters, marketing, government contracting, management, accounting, and finance. Additionally, networking opportunities and technology development assistance will be provided.

Arrowhead Center is currently conducting a feasibility study for a multi-purpose incubator program at NMSU. An initial assessment reveals that a market exists for a business incubator to help improve the success rate of start-up companies. This feasibility study will provide a portion of the requirements definition for the design and development of the NSTI, including

- Analysis of the market for a Southern New Mexico incubator
- Identification of unmet needs for business assistance among area entrepreneurs
- Assessment of the community's economic development goals and how the incubator can contribute to the economic development efforts in Southern New Mexico

2.0 VISION AND MISSION

The vision of the NSTI is to be a successful incubator of technologies and private enterprise that assist the NNSA in meeting new challenges in national safety and security.

The mission of the NSTI is to identify, incubate, and accelerate technologies with national security applications at various stages of development by providing hands-on mentoring and business assistance to small businesses and emerging or growing companies. Part of this support is envisioned to be research and development of companies' technology initiatives while also providing robust test and evaluation of actual development activities.

3.0 BUSINESS AND TECHNOLOGY ENVIRONMENT

New Mexico is a prime location for a national security technology incubation program with a large presence of people, facilities, and institutions supporting the defense and protection of the United States.

New Mexico is one of the top 20 fastest growing states and is the birthplace of rocket science, home to White Sands Missile Range (WSMR), Los Alamos National Laboratory, Sandia National

Laboratories, and three research intensive universities including New Mexico State University, New Mexico Institute of Mining and Technology, and the University of New Mexico.

New Mexico is the number one state in the nation for federal research investment per capita. It has the second highest ratio in the nation of federal research and development dollars to gross state product and the fifth highest rating of private-sector research and development as a percent of gross state product. New Mexico is considered the fifth best state for economic development from nanotechnology.

A wealth of technology exists in New Mexico, due to the numerous R&D projects underway in the State, where federally funded R&D is a major industry. These technologies are at various stages of development, ranging from proof-of-concept to technologies in prototype development to market-ready technologies. Most often, the technology evaluated by Arrowhead Center is at an early stage in development.

NMSU is currently very actively engaged in our nation's security and safety. NMSU provides critical technology consultation to border protection activities by serving on the Southwest Border Security Task Force and hosting the Southwest Border Food Safety and Defense Center. NMSU has successfully demonstrated the use of Unmanned Aircraft Systems on the southwest border and in Alaska with Department of Homeland Security organizations. NMSU received a prestigious science and technology Army award in 2004 for the rapid development of a Counter Improvised Explosive Device technology. Additionally, NMSU serves as an "honest broker" evaluator of cutting-edge prototype technologies for a number of federal organizations and industry.

Arrowhead Center, under a grant from the Small Business Administration, has started a virtual business incubation program, offering business assistance support to small businesses, but does not have a facility dedicated to incubator companies. Currently, Arrowhead Center is making space available to incubator companies in a building complex called the Genesis Center as tenant leases expire. The Genesis Center, located on the campus of NMSU, will house the first NSTI clients until a new multi-tenant building is completed in fall 2008. National security technologies will be a primary focus of the overall Arrowhead Center incubation program.

3.1 STRATEGIC PARTNERSHIPS

The Arrowhead Center enjoys a close working relationship with many New Mexico research and development organizations that have a focus on defense and national security. These include the NNSA sites of Sandia National Laboratories and Los Alamos National Laboratory, the Air Force Research Lab, National Aeronautics and Space Association (NASA), White Sands Test Facility, New Mexico Institute of Mining and Technology, Holloman Air Force Base, the 46th Test Group, Kirtland Air Force Base, Cannon Air Force Base, Fort Bliss Army Base, and White Sands Missile Range. Arrowhead Center will leverage these relationships to identify security needs and technologies for incubation.

Arrowhead Center will utilize the resources of the New Mexico Science & Technology Research Park Alliance in the development of the NSTI. The Alliance is a consortium dedicated to advancing the common interests of the technology and research parks and associated incubators in the State. The members seek to optimize economic opportunities and capitalize on the technology capabilities of the State through sharing best practices, leveraging potential for joint research projects, and legislative priorities. One of the Alliance's goals is to position New Mexico as an international gateway for technology through shared marketing opportunities for the science and technology parks.

3.2 Location and Transportation Infrastructure

The NSTI will be housed in the Arrowhead Research Park (Arrowhead Park), located at the southern end of the Las Cruces campus of NMSU. This location has several attractive features including easy access to two major interstates and to an international airport within an hour's drive. The Arrowhead Park, the future site of the NSTI, is located at the intersection of Interstate 10, the primary east/west highway serving the southernmost regions of the United States, and Interstate 25, the Pan American Freeway, heading north to Denver, Colorado, and Canada and south to El Paso, Texas, and Mexico. Additionally, New Mexico is served by major freight line carriers, which can handle local, regional, and national shipments.

In the heart of the Southwest, Southern New Mexico offers convenient accessibility to all national markets through a local regional airport, the El Paso International airport, two interstate highways, a network of railroads, and three border crossings into Mexico. New Mexico shares its southern border with the state of Texas and the state of Chihuahua, Mexico. The region, comprised of the Las Cruces New Mexico MSA, the El Paso Texas MSA, and Ciudad Juarez, Chihuahua, Mexico, is the largest metropolitan area along the U.S.-Mexico border.

The Arrowhead Park is located within a Historically Underutilized Business Zone (HUBZone), offering businesses an opportunity to bid on HUBZone contract opportunities. The HUBZone program provides federal contracting opportunities for qualified small businesses located in these distressed areas to stimulate economic development and employment growth.

3.3 World Class Telecommunications

The Arrowhead Park offers incubator clients the ultimate in state-of-the-art telecommunications in the Southwest. Incubator clients will have the opportunity to choose from the following amenities, offering an on-site world-class telecommunication network for their businesses:

- I-2 connectivity with access to NASA and White Sands Missile Range
- Cisco gigabit backbone
- Multi-building fiber-optic interconnectivity
- Digital Subscriber Line (DSL)
- Long-Reach Ethernet (LRE)
- IP tunneling
- Wireless Point-to-Point
- Lambda Rail Connectivity

3.4 NMSU Research and development strengths

Part of the planning for the NSTI involves developing a security technology focus that supports the NNSA while leveraging strengths of R&D expertise and capabilities at NMSU and in New Mexico.

NMSU is among only four percent of colleges and universities classified by the Carnegie Foundation for the Advancement of Teaching as Doctoral/Research University-Extensive. NMSU ranks in the top 110 institutions in the country in terms of federal research expenditures and is the top U.S. Department of Defense contractor among Hispanic-serving universities. To facilitate interdisciplinary research across departments and colleges, NMSU has created five research clusters in its areas of strength – aerospace and space, the border, biosciences, information sciences, and natural resources. By taking advantage of regional economic development goals incorporating the research clusters, Arrowhead Center can identify opportunities for applicable security technologies that build on institutional strengths and respond to local, regional, and national security needs.

The research clusters encompass interdisciplinary work involving NMSU's six colleges and independent research units, including the Water Resources Research Institute and the Physical Science Laboratory. Additionally, the various colleges collaborate with the national laboratories, other research institutions, and national consortiums in support of federal, state, and private grants and contracts.

4.0 CHALLENGES

Arrowhead Center faces many challenges in the process of establishing a specialized business incubator program, including the following:

- Accurate assessment of businesses and their technologies to support the needs of NNSA
- Recruitment of incubator businesses to the NSTI
- Offering the right mix of services and support to the NTSI clients
- Finding the best technology entrepreneur to work intimately with incubator businesses
- Securing funding to sustain and grow the NSTI.

In building an incubation program, a necessary step is the development of plans (strategic, business, operations, and evaluation) to guide the NSTI team. As Arrowhead Center plans for the future of the NSTI, it must incorporate lessons learned from other incubator programs to ensure incorporation of best practices.

5.0 GOALS AND OBJECTIVES

Arrowhead Center, working with key stakeholders and strategic partners in the region including the Mesilla Valley Economic Development Alliance (MVEDA), the New Mexico Economic Development Department (NMEDD) and the High Tech Consortium (HTC), will identify, target, and recruit small businesses with national security technology applications to participate in the NSTI program. Both mentor companies and start-up or emerging companies will be identified and recruited.

The NSTI program will be based on best practices and principles proposed by the National Business Incubation Association (NBIA) and distinguished from the competition based on its focus on national security technologies and current and future applications for the NNSA. An appropriate support network will be in place for the entrepreneurs to provide sufficient access to professional service providers, capital, university technologies, and other key community resources. Experienced management will develop relationships with incubator clients, and coordinate and facilitate effective support services that will contribute to the opportunity for growth and development of the individual businesses. Besides providing physical space, Arrowhead Center will establish a set of core services as the heart of the incubation program and will leverage the community resources through partnerships with local service providers including the Small Business Development Center (SBDC).
The NSTI will:

- Characterize NSTI customers, products and services, focusing on incubator clients and the NNSA
- Complete a self-evaluation, thoroughly analyzing existing capabilities and those needed to meet internal and external goals and objectives
- Establish processes and procedures for the success of both the incubator program and the client companies
- Develop a project plan with a timeline, performance measures, and financial commitments
- Maintain on-going relationships with the incubator clients and the strategic partners

- Build a relationship based on trust and mutual respect with client companies
- Develop and define appropriate exit strategies for the program graduates

Arrowhead Center has identified four strategic goals toward achieving its mission for a robust incubator program for the NNSA.

GOAL 1:	**Identify and recruit small businesses with technology applications for national security.**
OBJECTIVE 1:	Team with key stakeholders to identify small businesses.
OBJECTIVE 2:	Recruit identified businesses through a well-designed marketing plan.

GOAL 2:	**Design and implement a national security incubator program that provides incubator services and physical space for the targeted small businesses.**
OBJECTIVE 1:	Establish policies and procedures for the incubator program.
OBJECTIVE 2:	Determine physical location of business incubator.
OBJECTIVE 3:	Accept incubator clients and begin providing services.
OBJECTIVE 4:	Create a virtual business incubation program.

GOAL 3:	**Provide business assistance and technical leadership to NSTI clients to assist in bringing their products to market.**
OBJECTIVE 1:	Assess the existing service provider network, identify gaps, and leverage resources to provide the identified business assistance.
OBJECTIVE 2:	Create a mentor network for incubator clients.

GOAL 4:	**Construct a new multi-tenant facility with dedicated physical space for small businesses with technology applications for national security.**
OBJECTIVE 1:	Submit a proposal to EDA to secure funding to construct an incubator facility in Arrowhead Park.
OBJECTIVE 2:	Identify current physical space in the community for clients in the interim.
OBJECTIVE 3:	Commence construction of incubator facility.

6.0 INCUBATION PROCESS

The steps in the NSTI process have been identified and are shown in Figure 1. First, an interested party may self-refer or be referred to the Arrowhead Center by one of the strategic partners. The business or individual then submits an online request for additional information. An Arrowhead Center team member responds to the request within a 48-hour time period to provide initial information about the incubator program, status of development, and present capabilities. If the candidate seems appropriate for the incubator program, additional information is forwarded to them either electronically or through posted mail, including information provided from the strategic partners such as MVEDA or SBDC.

If the client is qualified and remains interested in joining the program, they submit an application for entry. Arrowhead Center team members review the application; meet with the potential client, and request information that includes a business plan or concept. If the client needs help with preparing or completing a business plan, Arrowhead Center may provide assistance or refer the potential client to one of the participating service providers. Once an applicant is admitted into the program, they will meet with the Technology Business

Entrepreneur to assess their needs, review policies and procedures of the incubator, and sign required agreements for entry. The Technology Business Entrepreneur will work with the client to provide business and technology assistance until such time as they meet their established milestones. Once all the milestones have been met, the client will graduate from the program into the local economy. Graduates may remain as affiliate clients of the incubator program for up to five years and also serve as mentor companies to new incubator clients.

Figure 1. NSTI Program Process