

**A TEN-YEAR  
STRATEGIC PLAN  
FOR THE  
NATIONAL INSTITUTE  
FOR STRATEGIC TECHNOLOGY  
ACQUISITION AND  
COMMERCIALIZATION**

Strengthening Kansas and America  
Through Technology Acquisition and Commercialization  
during 2005-2014

**Updated September 2008**

## **EXECUTIVE SUMMARY: 2008 UPDATED NISTAC STRATEGIC PLAN**

Formed in 1994, the National Institute for Strategic Technology Acquisition and Commercialization (NISTAC) has established a strong foundation for technology-based economic development (TBED) for the region, state and nation. It is well established that strong TBED initiatives are measured in decades rather than years in terms of taking new technologies to market and realizing significant returns from technology-based ventures.

NISTAC's 1<sup>st</sup> decade established a strong foundation for growth in our 2<sup>nd</sup> decade of existence:

- 15 startups have been created to commercialize strategic technologies, yielding 148 new jobs with an average annual wage of nearly \$45,000 – over 50% above the private sector average in the community. 41 of these positions were filled with graduates of Kansas State University.
- NISTAC initiatives and client companies have generated an inflow of about \$115 million dollars into the Manhattan region through product and service sales, investment capital, research funding from a variety of sources and royalties and other payments from technology licenses.
- Over 1000 patents were acquired via the nationally acclaimed Technology Acquisition, Development and Commercialization program between '98 and '04. Currently, 43% of this portfolio is licensed or sold, and global licensed product sales are more than \$45M annually.
- A strong working relationship with Kansas State University has been established. For example, via contract with the KSU Research Foundation (KSURF), NISTAC markets and negotiates license agreements for all KSU technologies, and leads in the creation of startups like Nanoscale Materials, AgRenew, Global Lipidomics and Nacelle Therapeutics. Additionally, NISTAC worked with the president of KSURF and the university Provost in creating the KSU Commercialization Leadership Council (CLC) to create broader recognition of commercialization potential within the university among administrators, college deans, and star researchers and also to establish a more stream-lined ability for the university to internally recognize and facilitate research that has potential in the marketplace.
- A \$1.8 million seed capital fund was established via \$600,000 matching investments from KTEC, the City of Manhattan, and the KSU Foundation in Manhattan Holdings, LLC.
- Operation of the Kansas Entrepreneurial Center, a technology-based business incubator - now in partnership with the City of Manhattan, the Manhattan Area Chamber of Commerce and Pottawatomie County - enabling tenant companies to conduct laboratory, pilot plant and production operations in the local region.
- In strong partnership with the City of Manhattan, K-State and the Kansas Bioscience Authority, a 30,000 sf wet-lab city-owned incubator - the Manhattan/K-State Innovation Center – was built to provide lab, office, and conference room space for NISTAC, KSURF and client companies.
- Establishment of NISTAC as the commercialization partner of the K-State Olathe Innovation Campus (KOIC) in Johnson County. Already, NISTAC has been a key player in developing early private and institutional relationships that will serve to guide, augment and enhance both the growth and commercialization opportunities for the campus.
- Formulation of an innovative local partnership with K-State, KSURF, the KSU Foundation, the Manhattan Area Chamber of Commerce and the City of Manhattan to aggregate collective assets and skill sets in leveraging local opportunities for commercial and research joint ventures with existing American corporations, the attraction of small emerging knowledge-based companies and the marketing of local and regional TBED assets nationally and globally.

NISTAC's strategic plan is defined in a classical OGSM (objectives, goals, strategies and measures) framework. Long-term objectives include acceleration of progress against key regional measures of growth and prosperity, including high value job creation and worldwide exports of high value products and services, including technology licensing and transfer. Toward such objectives, specific, quantitative and measurable performance goals are set, and strategies defined to achieve those goals. Performance measures are defined to track progress during this ten year plan.

## **2008 UPDATED NISTAC STRATEGIC PLAN (2005-2014)**

### **FOREWORD**

This updates the ten-year Strategic Plan defined in late 2004 for the National Institute for Strategic Technology Acquisition and Commercialization (NISTAC). That 2004 plan itself was an update on an initial five year Strategic Plan defined in December 1999 for NISTAC, then named the Mid-America Commercialization Corporation (MACC). This plan update adjusts for the progress and changes made in the initial four years of the 2004 plan for the 2005 through 2014 period.

This strategic plan provides a useful framework to map NISTAC's future potential and its strategies to accomplish its goals. Such a plan necessarily must be based upon the progress and learnings made to date, as well as an analysis of the challenges and opportunities ahead. Accordingly, the strategic plan is divided into three parts:

1. Background with a historical overview of MACC's development and progress from 1995 through 2004;
2. A traditional SWOT (strengths, weaknesses, threats and opportunities) analysis for NISTAC today; and
3. The plan for the future, presented in a classical OGSM (objectives, goals, strategies and measures) framework.

### **BACKGROUND**

A 501(c)3 Kansas corporation based in Manhattan, MACC was founded as an extraordinary partnership between government at two levels, academe and the business community. Specifically, the State of Kansas, via the Kansas Technology Enterprise Corporation (KTEC), catalyzed the organization of MACC in partnership with Kansas State University (K-State), the City of Manhattan, Kansas, and the regional business community, as represented by the Manhattan Chamber of Commerce. Reporting directly to the Governor of the State of Kansas, KTEC is a statutory company with a mission to strengthen the Kansas economy through technological innovation. Founded in 1863, K-State is an original Land Grant research institution, which also is supported by the State of Kansas.

MACC's original and NISTAC's continuing mission is to create and sustain a formal network that will support technology advancement, technology transfer, education and scientific research. Under this mission, MACC was empowered to help strengthen the regional Kansas economy by facilitating:

- (a) Technology transfer from and to regional academic institutions, particularly K-State;
- (b) The start-up and expansion of technology-based, high growth enterprises, particularly those based upon technologies licensed from K-State and other regional institutions, including MACC itself; and
- (c) The development of a supportive infrastructure, which encompassed the:
  - Improvement of regional access to risk investment capital; and
  - Enhancement of relevant people-skills through experience-based, educational programs in the fields of technology entrepreneurship and management.

Effectively beginning operations with the appointment of permanent staff in early 1995, MACC actually was one of three Kansas Innovation and Commercialization Corporations organized in association with each of the three primary research universities in Kansas – K-State, the University of Kansas and Wichita State University. Aligned with K-State in the rural, non-industrial community of Manhattan, MACC lacked a significant industrial and entrepreneurial base upon which to build. Accordingly, MACC initially focused on developing strong linkages with K-State and its component units, as well as its regional community and beyond.

The initial corporate organization was designed by KTEC, and encompassed a structure of two affiliated for-profit companies around a core 501(c)3 not-for-profit company. In MACC's case, the affiliates were (and remain): **Mid-America Technology Management, Inc. (MTM)**, a management services company and wholly owned subsidiary of MACC, now NISTAC; and **Manhattan Holdings, LLC (MHL)**, a seed investment fund organized as a Kansas limited liability company and managed by MTM.

**MTM** was created to deliver the full range of both not-for-profit and for-profit management services that are needed by both MACC itself and its client companies. Accordingly, under a contract with MACC which is overseen by the Boards of both companies, MTM is the actual employer of all full-time MACC, now NISTAC employees. Only student interns and certain other part-time, occasional employees remain on the NISTAC payroll, with the services provided by NISTAC through MTM traditionally including:

- Technology Transfer, that is, marketing and licensing of technologies, particularly those derived from university research as well as those acquired by NISTAC from other sources, as detailed below;
- New company creation, that is, the organization and administration of start-up companies, including matters of incorporation, governance structure and operations;
- Market research;
- Business and strategic planning;
- Intellectual property management, including definition of patenting and other protection strategies;
- Business and technology valuations;
- Procurement of financing;
- Proposal preparation for federal and state contracts, particularly those related to the federal Small Business Innovative Research (SBIR) program;
- Operational management on an interim basis, including "hands-on" service by MTM staff as officers and directors of the start-up companies -- until each company can afford and attract the full-time dedicated management staff it needs; and
- Financial, accounting and human resource services, including management of payroll, accounts receivable and payable, budget planning and tracking, and provision of employee benefit programs otherwise unaffordable to startup or small companies.

**Manhattan Holdings, LLC (MHL)** operates a risk capital fund, which primarily invests in local startup or emerging, technology-based enterprises with high growth potential. Representing MACC's three principal sponsors, the investors in MHL are: KTEC Holdings, Inc.; the City of Manhattan; and the Kansas State University Foundation (KSUF). Each institutional investor made a matching investment of \$600,000 to create a \$1.8 million fund to meet regional needs. Investments made by MHL are usually in the form of equity instruments, and each investment decision is made by an Investment Committee, which is comprised of representatives from each institutional investor. Investment decisions are based upon recommendations of the Fund Manager (i.e., MTM), which is a non-voting member of the Committee. The three institutional investors in that fund already have received a cash distribution of nearly \$140,000 from an early harvest of an investment and the fund has also received return-of-capital a part of which has already begun to be deployed in new investments. Ultimately, the three MHL investors are likely to receive financial returns much greater than their initial investments.

As suggested above, NISTAC and MTM together facilitate access to financing for regional startup and other small businesses through a variety of means. Along with its counterpart regional funds, such as KTEC Holdings, MHL represents an earliest stage investor, which

provides money to "seed" the start of development and procurement of additional funds by a new venture. Notably, investments by MHL frequently have attracted parallel investments from other regional funds around the State of Kansas into the Manhattan region.

In 2008, NISTAC reactivated the Mid-America Angel Investor Network and renamed it as the **K-State Angel Network (K-State Angels)**, comprised of "accredited investors", each of whom meets certain criteria set by the Securities and Exchange Commission (SEC). These criteria define sophisticated investors who have the knowledge and financial resources needed to understand, and accept the risks of early stage investments under certain private placement stock offerings. K-State Angels includes investors from coast to coast within America, each of whom has expressed interest in considering pre-screened investment opportunities. Again via MTM services, NISTAC has assisted startup and emerging small businesses within the Manhattan region to raise over \$18 million in private early stage investment capital (an additional \$8.5M since 2004). This has been done by accessing regional investment funds, K-State Angels, and even institutional venture capital funds outside Kansas.

NISTAC also facilitates the early procurement of financing for technology development in startup companies through the federal government's Small Business Innovation Research (SBIR) program. As the name suggests, this program provides funding for small businesses to develop technologies and products that address federal agency and other market needs. Through the services provided by MTM, NISTAC has facilitated the procurement of over \$26 million in funding from SBIR and other federal grant sources beginning with an initial award for Nanoscale in 1996 (an additional \$13.5M since 2004).

Together with KTEC, the City of Manhattan has leveraged funding for the delivery of certain local economic development services via NISTAC since 1995. Although declining in inflated dollar terms, KTEC grant funding has remained relatively constant in absolute dollar terms since 1995, and therefore declined as a percent of budget. City cash funding has steadily declined on a year-to-year plan as originally proposed by MACC in 1996. Specifically, since 1996, City operational funding for NISTAC has by agreement declined by stages to the point of zero funding by 2005. This, however, does not suggest a decline in city support for NISTAC when account is taken of the \$5.65M investment by the City of Manhattan in the Manhattan/K-State Innovation Center. Indeed, the imputed value of this in-kind support approaches \$200,000 per year on an annual basis.

Overall, this cost-effective leveraging of economic development dollars represents a relatively unique local-state government partnership, which has been promoted as a model for other local governments across the state and beyond. The results generated by NISTAC'S activities have been significant. For example, cumulatively over the first decade NISTAC initiatives have generated an inflow of over \$115 million dollars into the Manhattan region of Kansas through product and service sales of startup companies, investment capital, research funding from a variety of sources and royalties and other payments from technology licenses (an additional \$60M since 2004). This essentially represents the economic impact of cumulative money brought into the Manhattan region from outside the region over the last 14 years.

In 1995 through an agreement with the **Kansas State University Research Foundation (KSURF)**, a separate 501(c)3 company, NISTAC began to serve as the licensing agent for technologies derived from research at K-State, where NISTAC markets and negotiates the license agreements for K-State technologies held by KSURF on behalf of the University. NISTAC's mission and infrastructure also introduced the option of licensing K-State technologies to new local companies founded specifically to commercialize these technologies.

**Nanoscale Materials** was the first technology spin-out company from K-State. It was founded in late 1995 to commercially develop and market certain nanotechnologies created through decades of research under the leadership of Dr. Ken Klabunde, a K-State University Distinguished Professor of Chemistry. In 2002, Nanoscale graduated from the KEC incubator to become the anchor tenant in the new **K-State Research Park**.

Other startup companies based upon K-State research capability include:

- **AgRenew** is focused on developing and marketing new, cost-effective, environmentally superior biomaterials often arising from research within K-State's Department of Grain Science and Industry. AgRenew has several products in its pipeline related to bioenergy, biopolymers, biochemicals and biocomposites, including a PLA-Starch plastic that offers a biodegradable option to **replace traditional petroleum based plastic planting pots for use by commercial greenhouses** that sell plants directly to the lawn and garden departments of some of the Nation's largest big box retailers.

On a prior development note, the biodegradable barrel, which AgRenew licensed to Ridley in 2006, continues to have strong and growing sales, with 50,615 units sold in 2007. Not only is the barrel being viewed as an environmentally superior product, but with the ever increasing cost of both steel and plastic containers, **the "BioBarrel" is quickly becoming the more economical choice** as well. This shift in cost structure, along with healthy customer acceptance, should allow AgRenew to continue to grow the revenue stream from this product, which returns both a royalty to KSURF and repayment to KTEC for their initial investment in product development.

- **Global Lipidomics LLC** is a new start-up company through which KSU is positioned to be a global leader in lipid profiling under the direction of Dr. Ruth Welti, a nationally recognized expert on lipids. *Lipidomics is an emerging market that is similar to genomics and proteomics and is anticipated to reach \$600 million plus per year in the next decade.* Global is a first mover company and well-positioned to stake claim on a major portion of that market. Lipid profiling is useful in understanding animal health, crop health and human health issues.
- **Veterinary Diagnostic Laboratories (VDL)** is an *analytical service and molecular diagnostic rollout company from the College of Veterinary Medicine*. VDL's initial focus will be directed towards economically important diseases in cattle and swine. BVD causes the highest loss for cattle producers in the U.S. VDL has launched a new BVD test based upon new technology from Germany that has been brought into the U.S. by Enfer Diagnostics. VDL is currently the only lab using this next generation BVD diagnostic test. Porcine Circovirus (PCV2) is a swine disease that emerged ten years ago and is quickly becoming one of the most economically challenging diseases affecting swine producers. Based on proprietary technology developed by the K-State Swine Team, VDL is positioned to be the leading PCV2 analytical testing lab in the country. Revenue for the company is on pace to surpass \$4M in FY2009.

Nanoscale and other companies provide the kind of opportunities needed by K-State graduates to remain in or return to, and contribute to the economic growth of the Manhattan region. Many of the employees of companies fostered by NISTAC are recent K-State graduates or older K-State grads who have returned to Manhattan from employment elsewhere in response to new local opportunities. These alumni are proving to be an invaluable resource for staffing new and growing regional technology-based companies.

Also in 1995, NISTAC assumed responsibility for the operations of a previously existing not-for-profit business incubator, the **Kansas Entrepreneurial Center (KEC)**. At that time, KEC operated from leased offices in a Southwestern Bell Telephone building, and was subsidized jointly by: the City of Manhattan; Riley and Pottawatomie Counties; K-State; KSUF; the Manhattan Chamber of Commerce; and the Southwestern Bell Telephone Company. Upon assumption of responsibility, *MACC committed to achievement of KEC's operational self-funding, that is, elimination of the annual cash subsidy required for operations within three years. That goal was achieved within two years.*

Upon amalgamation with NISTAC, KEC was refocused on delivering incubation facilities and administrative support principally for new technology-based, start-up companies with high growth potential. Although initially limited to office services only, services provided to tenants by KEC eventually included use of premises for office, laboratory, pilot plant and/or light manufacturing operations, as well as conference room access and mail, telecommunications, and other administrative services. KEC also traditionally has housed other key elements of the local supportive infrastructure, including KSURF and NISTAC itself.

In late 1996, the City purchased an existing building at 1500 Hayes Drive specifically for use by KEC as a technology business incubator under a "performance-based lease" for one dollar per year and other considerations. Other considerations included certain accountability requirements and the creation of 100 new jobs by 2006.

With the city's additional investment in the Manhattan/K-State Innovation Center at 2005 Research Park Circle, this similar "performance-based lease" was created for the new facility in 2007 for a period of ten years with additional, more stringent requirements. Performance and other considerations in the new lease include 1) Generation of 200 new net jobs (or a total of 300 since 1996) within the period of 2007-2017 at an average wage of \$45K, 2) Operation of the new facility being at NISTAC's expense without any stipend from the city and 3) All maintenance costs of the facility being borne 100% by NISTAC. To date, all stipulations of the lease have been met with 48 net new jobs (25% of goal) being created in the first 18 months of the lease at an average wage of \$44,800, all operating expenses of the facility being paid by the NISTAC operating budget (creating a net \$175K INCREASE in expenses from the KEC facility) and the establishment of a NISTAC maintenance reserve that repair and maintenance expenses of \$180K over the ten-year life of the lease.

Since 1996, substantial progress has been made under the KEC and Manhattan/K-State Innovation Center lease arrangements. Specifically, largely through the creation of fifteen new companies, about 148 jobs were created by June 2008. This means that not only was the original KEC job goal of 100 new net jobs reached by the specified 2006 timeframe – at an average wage of \$42,200 -, but progress is rapidly being made on the even more stringent goal of an additional 200 jobs by 2017.

Notably, NISTAC and NISTAC partners have made substantial investments in major leasehold improvements for the two City owned incubators – KEC and the Manhattan/K-State Innovation Center. Accordingly, if the two buildings eventually are sold by the City, the City is likely to receive a significant financial return on its original investment. In turn, this means *the City has already enabled the creation of 148 high paying jobs in Manhattan at no long term cost to the City* – indeed most likely while realizing a profit on the investments it initially made.

In late 1998 and with additional support from KTEC and K-State, NISTAC initiated a **Technology Acquisition, Development and Commercialization (TADAC)** program. The TADAC program was developed to test the hypothesis that technology donations can be used to strengthen national competitiveness by unlocking dormant corporate technologies by leveraging them with the host of resources present in and available to nonprofit and public sector organizations. U.S. corporations hold over 20 times the number of patents collectively held by all the universities, research institutions and federal laboratories in America, and yet commercially use only about six percent of the technologies held within their patent portfolios. In other words, dormant corporate technologies represent an immense reservoir of untapped potential wealth for the nation. For sponsors such as K-State and KTEC, this means the potential existed for a dramatic expansion of the technology base upon which the institutions can build to meet their respective missions.

In more specific terms, the **TADAC** program was intended to:

- (a) Acquire, by donation or other means, ownership or other rights to technologies from a variety of sources, particularly large corporations;
- (b) Promote use of the technologies for research and educational purposes at K-State and other tertiary and not-for-profit research institutions;
- (c) Further develop the technologies in concert with other institutions, particularly K-State and other institutional members of a statewide network for technological innovation; and
- (d) Commercialize the technologies by licensing to corporations, particularly regional start-up or small enterprises, for royalty and other returns to be used in support of the missions of NISTAC, KTEC and K-State.

This unique program has been extraordinarily successful, and has established NISTAC as the clearly recognized world leader in acquiring and using donated technologies. Specifically, since 1998, NISTAC assembled the world's largest portfolio of patented technologies acquired by tax-deductible donations. The TADAC portfolio now consists of over 1000 U.S. and foreign patents and patent applications. These patents were acquired through about 50 donations from many different corporations. Under licensing agreements, NISTAC acquires royalty interests, and in the case of cash-starved startup licensee companies, equity interests in lieu of some cash payments. As of this update, 43% of the portfolio is licensed or sold, with global licensed product sales exceeding \$45M per year on a global basis.

Some of these licensees are regional startup companies specifically organized to commercially develop and market the technologies – while also creating high value jobs within the region. A prominent example is provided by **NutriJoy**, which was organized to develop and commercialize nutritious food and beverage products that are primarily consumed for enjoyment. An initial line of nutritious beverage products has been developed and marketed by NutriJoy under the **Cal-C®** brand name, with national distribution established by August 2004. Cal-C® is based upon patented nutritious beverage technologies acquired by NISTAC from The Procter & Gamble Company under the TADAC program. In January 2008, the power of donated technologies became readily apparent with the 51% acquisition of NutriJoy by The Coca-Cola Company. This acquisition gave Coca-Cola its first corporate operating presence in the state of Kansas and established NutriJoy as one of Coke's six external global R&D centers – this one focused on nutritious non-carbonated beverages.

Due primarily to the national prominence of the TADAC program, on 29 June 2004, MACC changed its name to the National Institute for Strategic Technology Acquisition and Commercialization (NISTAC), with its underlying mission remaining unchanged. In this context, strategic technologies refer to technologies, which are of prospective value for enhancing not only Manhattan and the State of Kansas but also regional economies throughout the nation, and are acquired by a variety of means including, but not limited to technology donations. The name change also signaled the extension of the geographical scope of the intended programs and benefits from a regional to national basis.

NISTAC was named as the commercialization partner for the new **K-State Olathe Innovation Campus (KOIC) in Greater Kansas City**. This represents a tremendous opportunity over time for NISTAC as K-State Olathe grows and establishes private sector and institutional partnerships focused on innovation. Already, commercialization opportunities are arising even before the KOIC campus has had its first groundbreaking. This suggests opportunities for technology-based economic development for NISTAC are likely to accelerate in the future. This in turn suggests qualitative and quantitative improvements in NISTAC's resources and capabilities will be needed to help ensure future opportunities are realized.

Overall, NISTAC's initial thirteen years, from 1995 through 2008, may be viewed as formative and momentum-building, with measurable, meaningful results achieved. Progress to date has been encouraging and provides a basis to believe that NISTAC will deliver significant contributions toward economic prosperity in Manhattan, as well as other regions throughout Kansas and the nation, as it matures during the next ten years. The key to NISTAC's progress

to date may be seen to be due to the "extraordinary Manhattan partnership" of support which NISTAC enjoys in its regional community. Most particularly, NISTAC's integrated relationships with K-State and its affiliates have proven to be critical to NISTAC's ability to generate regional economic benefits through the commercialization of technologies. Expansion of relationships to other institutions as well are likely to expand the range of opportunities available for creating new jobs within, and securing new revenue flows into the Manhattan and Kansas.

Strategic planning traditionally begins with a performance audit which looks at an organization's internal strengths and weaknesses and the external opportunities and threats that may impact the organization in the future. Such an analysis is commonly known by the acronym "SWOT".

**Strengths:** NISTAC's key strengths might be summarized as follows:

1. Comprehensive, integrated local support infrastructure, including the three-dimensions of support: incubation facilities, via the KEC and Manhattan/K-State incubators; investment capital, via MHL and KSAN, and management services, via MTM. This integrated infrastructure has been recognized as a model for adoption elsewhere by groups, such as the prestigious American Association for the Advancement of Science (AAAS). Importantly, the \$1.8 million seed capital fund available via MHL appears to be a national pace-setter in terms of its magnitude relative to the size of the community it serves.
2. An autonomous, but close affiliation with Kansas State University, a major regional research institution. This affiliation is comprehensive and encompasses functional technology transfer responsibilities, as well as academic development and delivery of experience-based educational and training programs. Importantly, active support from the institution's senior administrators enables progress that otherwise would be impossible to achieve. NISTAC's responsibilities for tech transfer also enable opportunities to identify venture prospects at early stages of disclosure.
3. A broad base of local community support, recognized by former Governor Bill Graves as "the extraordinary Manhattan Partnership." This local support base actively bridges across the private and public sectors.
4. Integration with the Kansas Technology Enterprise Corporation, which provides essential financial and non-financial resource support, access to the KTEC Holdings capital fund, access to the important KTEC Proof of Concept (PoC) program funding, access to other network member angel investor networks and information exchange vital to the conduct of NISTAC's mission.
5. An efficient and entrepreneurial management team, which can draw upon a broad range of community and university business and academic experience/expertise and manage a broad range of initiatives with relative limited resources.
6. National recognition and an extensive working network of contacts within multinational corporations, federal agencies and prominent research institutions. This largely has developed through NISTAC's technology transfer (licensing and acquisition) and commercialization programs, as well as through networking. The credibility NISTAC has gained and its growing network of institutional relationships provides the potential for increased access to new technologies, sources of investment, and strategic alliances which may prove to be of great value.
7. Access to high quality incubator space both in the Manhattan/K-State Innovation Center and the Kansas Entrepreneurial Center. Since occupation of the new incubator space and the refurbishing of the KEC facility is has become increasingly clear that NISTAC now has at its disposal the ability to meet the needs of high quality incubation candidates and has already been able to accommodate several new technology-based startup companies.

**Weaknesses:** NISTAC'S apparent weaknesses include the following:

1. A relatively remote rural location, which is distant from a significant base of industrial, financial and entrepreneurial resources. Apart from the obvious presence of the academic/research expertise at K-State, this location assures there will, over time, be limited "walk-in" or "off-the-street" startup company opportunities.
2. A relatively small staff, which is stretched thin across many labor-intensive activities, and thereby constrained in its ability to take on new clients and initiatives.
3. Limited ability to meet new venture demands for wet-lab space. While the Manhattan/K-State Innovation Center incubation facility is excellent, it is becoming increasingly clear that the need to convert the 5,000 sf of pilot/manufacturing space may be fast approaching. The demand for wet-labs seems to be relentless, but there is currently no apparent way to finance the \$900,000 cost for converting the pilot space to perhaps as many as five scientific labs. Once converted however, access to manufacturing space would be lost and along with it NISTAC's ability to meet the needs of technology-based manufacturing startup companies.
4. Limited locally accessible sources for follow-on investment capital – particularly in the \$2-3M range, which is essential for sustaining growth and momentum for the companies NISTAC creates and nurtures through their early stages.
5. With passage of the Jobs Act of 2004, Congress has effectively ended patent donations in the country. With this ending, NISTAC has lost a tremendously innovative program that served for many years to broaden access to a wide-ranging and nearly endless stream of patented, idle, near-market technologies used to generate licensing income and startup opportunities.
6. No defined or contractual access to patented technologies beyond the K-State and TADAC portfolios. There is an inherent mismatch between the real commercialization – particularly with regard to startup companies – opportunities arising on an annual basis from these pools of innovation and the community/university expectations for company and job creation.
7. A lack of a local, readily accessible pool of experienced and successful entrepreneurs and business managers, particularly those experienced in technology-based, high growth enterprises as needed to sustain the growth of NISTAC's client ventures. The K-State alumni base provides a partial, but not complete means to address this need.

**Opportunities:** Identified opportunities include the following:

1. Opportunities exist for creation of additional technology-based startups, based upon a relative wealth of technologies sourced from K-State and corporate or other institutional intellectual property portfolios around America. Capitalizing on existing and newly-created relationships to enhance access to innovation will be of critical importance as NISTAC progresses through the coming decade. Available technologists to underpin such ventures include not only faculty and staff, but importantly new and former K-State graduates with the particular skills needed for specific ventures. These graduates are predisposed to stay in, or return to the Manhattan region and provide an important resource and competitive edge for local ventures.
2. Through its TADAC program, NISTAC possesses a significant, though increasingly dated, portfolio of patented technologies upon which to further build. This portfolio represents a tremendous potential asset for building companies and future revenue streams via royalties from licensing.
3. Additional opportunities for new ventures are being identified through inquiries from out of state capital and innovation principals, whose attention has been drawn to the Kansas infrastructure, particularly including NISTAC. This is particularly true in the arena of energy, Bioenergy and alternative fuels, but also seems to include such diverse areas as environmental remediation and communications.

4. The opportunity exists for NISTAC to become a commercialization partner-of-choice, both for out-licensing and new business startup, for corporations and research institutions of significance regionally or even nationally. Increasingly, such entities are recognizing they lack sufficient "in-house" capabilities and resources for these functions. In truth, it will be essential in the coming decade for NISTAC to create relationships such as this in order to create a closer match between innovation opportunity and local, regional, and national technology-based growth expectations. Relationships of this nature would enable selection of technologies most suitable for commercialization in the Manhattan region to occur, while also providing opportunities for revenue flows to return to Manhattan in the form of royalties and/or equity interests in commercialization ventures elsewhere.
5. Defining the myriad of opportunities that will be created over time with the advent of the K-State Olathe Innovation Campus. There is little doubt that as this Greater Kansas City urban campus develops, it will establish partnerships, innovation and commercial opportunities that will add new dimension to those currently a part of Kansas State University. As the named commercialization agent for the K-State Olathe Innovation Campus, NISTAC is placed in an excellent position to realize in the coming decade shared opportunity that can only come with a major urban presence.
6. Taking full advantage of what is now the tremendous global brand of the Animal Health Corridor. In the three years since inception, the Greater Kansas City Animal Health Corridor emphasis and designation has achieved national and world-wide recognition. Geographically stretching from Columbia, MO to Manhattan, the Corridor activities have already begun to create interesting early glimmers of opportunity not only for K-State research, but also in the area of commercialization and business startup.
7. Realizing the opportunities associated with the Knowledge-Based Economic Development initiative will provide NISTAC with additional much-needed potential access to emerging knowledge-based companies and entrepreneurial talent from other regions of the country and also from other locales around the world. Through an aggressive recruitment of these small three-to-seven-years-in-existence startup companies, the KBED partnership can provide for Manhattan, K-State, Kansas and NISTAC additional knowledge-based opportunities well beyond that which currently exists.

**Threats:** Identified threats include the following:

1. The general market and economic conditions may turn unfavorable for financing or harvesting new ventures. This could stymie future growth opportunities, particularly the ability to fund companies through their early, rapid growth phases.
2. Needs for experienced, proven entrepreneurs and managers to sustain the growth of new ventures might not be met by either the available local talent pool or by recruiting qualified individuals from outside the region. This also could stymie NISTAC's ability to successfully grow the companies, as well as restrain NISTAC from "freeing-up" resources to take on new projects.
3. It may not be possible to establish access to non-TADAC, non-Kansas State University technology portfolios on a basis that provides meaningful stream of income or equity opportunity. Should this prove to be the case, the long-term dynamics and value proposition of the organization will change dramatically.
4. With changing leadership that naturally occurs over time, the many partnerships and relationships upon which NISTAC depends - including KSURE, Kansas State University, KOIC, KTEC and others - may alter, creating new challenges or lost opportunity.
5. Financing may not be available to either transform unused Manhattan/K-State Innovation Center space into a format that is needed by promising new companies or to keep existing lab space current with increasingly complicated and expensive equipment. In this case,

NISTAC will become more limited in its ability to progress incubation of new technology-based ventures, as well as to achieve its potential.

## THE STRATEGIC PLAN

This plan will be presented in a classical OGSM framework, that is, in terms of *Objectives, Goals, Strategies, and Measures*. In this cascading framework, each element leads the next in sequence, with objectives and strategies being qualitative statements, while goals and measures are quantitative ones.

### **Objectives (The Vision): Regional Prosperity through Technology Commercialization**

NISTAC will become a nationally recognized, prominent entity for acquiring and deploying technologies from corporations and research institutions into regional economies here at home and beyond. Through the efforts of NISTAC and its affiliated companies, the Manhattan region of Kansas particularly will realize accelerated improvements in key measures of economic growth and prosperity, particularly high value job creation and worldwide exports of high value products and services, including technology licensing.

These measurement improvements will outpace national and statewide averages on a per capita or otherwise normalized and comparable basis, thereby indicating incremental gain in the relative economic standard of living within the regional community.

Based upon its traceable and demonstrated results, the NISTAC group of affiliated companies will be widely recognized for its excellence in mobilizing regional resources, extending global networks and successfully facilitating the commercialization of new and acquired technologies, particularly those relating to, or arising from research within Kansas State University, other research institutions or large corporations.

**Goals:** In the remaining six years of the original ten year plan, from 2009 through 2014 NISTAC will achieve the end goals originally set in 2004. As previously stated, these goals flow from the broad objectives above and represent an acceleration of progress rates over those realized during NISTAC's initial ten years:

1. National Progress: NISTAC will be recognized as a leader for acquiring and deploying technologies throughout the region and across the country. By 2014, NISTAC will have secured a significant on-going royalty stream of income, that is, at least \$1M per year, along with equity holdings equating to about \$3M of indicated value from licensing technologies within its own portfolio. Additionally, by 2014 NISTAC will have established commercialization relationships with at least two portfolio holders of intellectual property of national or international significance and cumulatively generated at least \$2M in royalty income and/or indicated equity value from those two portfolios.
2. Statewide Progress: In cooperation with KTEC, members of the KTEC network and other NISTAC partners, NISTAC will have achieved notable progress in facilitating the commercialization of technologies arising from: the bioscience initiatives sponsored under the Kansas Bioscience Authority; emanating from the K-State Olathe Innovation Campus and its related activities; and technology/knowledge-based business attraction activities. Specifically, during the ensuing six-year period, NISTAC will sponsor or create at least three companies in total from these Kansas initiatives with an indicated equity value of at least \$3M.
3. Regional Company & Job Creation: Building from a current base of about fifteen (20?) companies, the cumulative number of new companies created or expanded through the direct assistance of NISTAC and its affiliates will exceed 25 technology-based companies on a net basis, after any offsetting losses for failed companies. These will generate annual revenues in excess of \$50 million per year, building from a base of about \$12 million in 2008. Also building from a 2008 base of 148 jobs, these companies will employ over 300 people earning about twice the average private sector wage in the Manhattan community. Importantly, merely one major success alone could achieve these numbers. Accordingly, the upside potential is substantially greater for job and revenue generation.

4. K-State Technology Licensing & Transfer: A cumulative total of over 100 different K-State technologies will have been licensed and/or optioned, generating a cumulative total return of over \$15 million in new research funding, license fees, royalties and legal reimbursements to KSURF, K-State and its component units, and K-State researchers. Importantly, by the end of 2014, royalty returns could be generating an average net annual cash "dividend" to the University of \$3-500,000 per year for unrestricted central research support, after deductions for KSURF expenses and payments to component units and researchers. Overall, this also represents a significant acceleration of progress over previous years.
5. Company "Harvests": At least one of the startup companies will have achieved an initial public offering (IPO) of its stock, and at least two others will have achieved stock liquidity either through IPOs or acquisitions by other companies. In each case, early stage investors, including Manhattan Holdings, will have realized a compounded rate of return on their investments of at least 44% (6X in 5 years), and the matured startups will be poised to continue growth and become substantial employers within Kansas.
6. Company Investments: At least \$25 million in investment capital will have been raised for NISTAC-fostered startup and other client companies during the next ten years.
7. Government Contract Awards: A cumulative total of over \$25 million in Federal awards under SBIR, STTR, ATP and procurement contracts will have been generated for NISTAC-assisted startup companies. These funds will have been used to develop some products and services that are reflected in the annual sales rates cited above.
8. Incubator Capacity: Having accomplished the original 2004 goal of acquiring new incubator facilities, NISTAC will acquire the necessary funding to transform under-utilized pilot space into either a combination of wet-labs/offices or into fully functioning manufacturing space. Additionally, NISTAC – in collaboration with its partners – will have continued to maintain the KEC facility in such a fashion that it continues to be a fully functioning technology/community incubator. It is understood that both these incubators will be needed to achieve NISTAC company and job creation goals. Additionally, NISTAC will work with K-State Olathe officials and others to assure the building of an appropriate incubator/innovation facility in the Kansas Bioscience Park.
9. Investment Fund: Manhattan Holdings will be fully invested, and have realized highly profitable returns from at least two of those investments. Although each investment is made with an ROI objective of 44%, the overall expected ROI on the fund is in the range of 16-20%, after losses are taken into account. Additional investment capital needs then will be met by creation of - or access to - a second fund, perhaps within Manhattan Holdings, of \$5-10 million.
10. Financial Progress: NISTAC will continue to reduce its dependency on governmental grant support for operations to less than 20% of expenditures. This will be done while building a prudential level of financial reserves to both protect against unexpected adverse events and enable the pursuit of new opportunities. Importantly, financial returns will be generated and distributed to each financial sponsor of the NISTAC TADAC program in amounts that exceed each sponsor's cumulative "investments." Those sponsors of course include KTEC, K-State and the City of Manhattan.
11. Intern Program: About 50 Interns will have graduated from NISTAC's Intern program conducted in cooperation with the KSU College of Business, perhaps extended to other colleges as well.

**Strategies:** The following strategies are intended to enable achievement of the above goals.

NISTAC shall continue to:

1. Search out and screen new technologies and/or new technology business opportunities provided by the university and the NISTAC owned patent portfolio to identify the most promising prospects for company creation or business expansion. Additionally, in recognition of its importance for pipeline development, attention will be given to acquiring

preferential access to non-KSU, non-TADAC intellectual property portfolios of national scope and substance, and perhaps spin-outs of orphan businesses from large corporations. Recognizing the first sales of a company are the most difficult to achieve, this shifts focus toward rapid expansion of an existing base.

2. Identify out-of-region knowledge or technology-based companies that have been generating sales for multiple years and assessing the value proposition associated with relocating the company into the Manhattan region as a NISTAC client company. This responds to the reality that the first sales of a company are the most difficult to achieve.
3. Assist in starting up new companies, particularly ones based upon spin-outs of university and TADAC technologies, via MTM and other resources.
4. Assist in the development of new products and technology-based services, particularly through market research and assisting development teams within the startup company ventures.
5. Provide access to "hands-on" operational and financial management for start-up ventures on a temporary, interim basis, and assist in recruiting key managerial and technical staff for startup ventures, as needed and appropriate. This primarily will be accomplished via MTM, including having MTM staff serving as officers and directors of client companies in specific instances.
6. Seek a "return on its investment" in new ventures and other initiatives through equity interests, service fees and royalties. This is intended to promote a partnership approach between NISTAC and the ventures it helps create and/or expand, and enables NISTAC to "share in the successes it helps create" according to the value it adds. In this way, NISTAC will gradually reduce dependency on governmental grant support over the longer term, while continuing to generate new returns on the governmental investments previously made.
7. Meet the technology transfer needs of K-State and KSURF, as approved by University administration and/or the KSURF Board, as appropriate.
8. Assist client companies in the development of strategic and business plans, and the procurement of investment capital. The latter generally will only be done for ventures in which NISTAC holds equity interests.
9. Assist client companies in identifying opportunities and proposal preparation for federal and state contracts, particularly under the federal SBIR, STTR, and ATP programs.
10. Identify and present opportunities for investment to the Investment Committee of Manhattan Holdings, and identify and realize opportunities to create an additional multi-million dollar fund to enable some support for follow-on, as well as new investments.
11. Sustain and procure additional funding support to expand the intern program. The latter approach will emphasize cost-sharing with client companies who benefit from intern work.
12. Assist in the development and delivery of new university-related courses and programs to upgrade the skills of officers, directors, managers and entrepreneurs associated with technology-based enterprises within the region. This includes development and delivery of courses within the MBA and other existing programs, as well as the creation and delivery of non-credit, professional development and executive education programs.
13. Assist in the development of university initiatives, policies and programs that promote commercial development and utilization of intellectual properties derived from university research and expansion of university research capabilities.
14. Add additional staffing capability to expand NISTAC's capabilities to realize additional opportunities and meet new needs, as financially practicable, that is, within the constraints, and while meeting the financial goals of NISTAC and its affiliates.

**Measures:** The following measures will be used to track progress toward the goals. Tracking generally will be done quarterly, but in any event at least annually.

1. Opportunity Identification: the number of new technologies and/or technology business opportunities screened. On average, 50 such opportunities should be evaluated each year.
2. New Company Startups: the number of new companies started-up. On average two new companies should be started each year, plus additional ones needed to offset any losses of companies due to failures. As opportunities arise, expansion of existing, technology-based companies also will be facilitated and tracked.
3. New Product Development: the number of new products introduced by NISTAC/MTM client and former client companies. On average, two new products or services should be introduced each year that are made available for commercial sale.
4. Job Creation: the number of new jobs created or sustained through NISTAC/MTM supported ventures, as well as the average wages paid for these jobs. This is an important, but indirect outcome of other measures since NISTAC cannot directly influence the hiring of new people. Because of the time lag faced in company growth curves (which appears similar to an exponential curve), most of the job creation growth is expected in the last five years of the ten-year period.
5. Technology Licensing: the number of new technology licenses from each K-State and NISTAC-acquired technologies, as well as the financial returns related to such licenses, including license fees, royalties, legal reimbursements and related research funds.
6. Company Harvests: Financial returns from equity investments – based on either provision of cash or "sweat-services". These represent the "home runs" that will enable NISTAC to accomplish its mission on a continuing basis without requiring continuing support from government. Importantly, the other measures will continue to be tracked post-IPO or acquisition, if possible, after such an IPO or acquisition event. This will be done even if the company no longer remains a NISTAC or MTM client, but as long as the company continues to impact the Kansas economy.
7. Company Investments: The amount of investment capital raised by or for NISTAC/MTM supported startup or other company ventures, and the nature of the source, that is, private or institutional investors.
8. Contract Awards: The number and dollar value of proposals submitted under SBIR and other programs by NISTAC supported companies, as well as the number and dollar value of any awards.
9. Incubator Operations: The number of tenants and graduates, as operational measures for the incubator (fees, space utilization, etc.).
10. Investment Fund: The operation of the Manhattan Holdings fund and any other NISTAC-created or affiliated funds, in terms of number and dollar amount of investments, as well as absolute and annualized rates of return on investments.
11. TADAC Operations: The number of patents and fields of technology maintained by NISTAC and NISTAC-assisted entities, with results from utilization or licensing of the patents tracked as above. Of course, there will be attrition from the existing TADAC portfolio which is only likely to be partially offset by new access to other technologies from elsewhere.
12. Operational Funding: The funding and source of funds for NISTAC and NISTAC-affiliated companies, particularly including governmental grants as a percent of total revenues.
13. Intern Program: The number and source of interns entering and graduating from the program. Some attempt will also be made to track career developments of interns after they graduate from the program.

14. Educational and Training Programs: NISTAC participation in university-related educational and training programs, including academic appointments, lectures and course delivery and initiatives to develop new courses and programs.
15. Other Measures will be developed as new programs and initiatives are developed that fall outside of the defined measures above.

Overall, early in the new millennium, NISTAC and its affiliated companies appear well positioned to deliver meaningful contributions to the economy of the Manhattan region of Kansas and beyond.

This strategic plan establishes a starting point to chart the course for achieving what is possible. However, like any business or strategic plan it must remain a "living document" that is adjusted as additional learnings or unanticipated changes occur.

In any event, NISTAC promises to deliver outstanding returns on the investments made in NISTAC and its affiliates by the key stakeholders -- the State of Kansas (via KTEC), the City of Manhattan, Kansas State University and its affiliates, and the local business community represented by the Chamber of Commerce. Key to NISTAC's success will be the continuing support of these key stakeholders, who enable NISTAC to undertake challenges that otherwise would be insurmountable.

**Indeed, based upon the experience of the last decade, the "extraordinary Manhattan partnership" is proving to be the key ingredient that makes the impossible possible.**

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