McKINNEY™
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Mr. Shekar Rao
Center for Innovation
202 E. Border St. Suite 300
Arlington, TX. 76010

Dear Shekar,

Thanks to you and Ben for taking the time today for our orientation to the Center for Innovation. As per our conversations today, there are a number of areas that I feel like we can work with your organization.
A partial list of areas to partner (which is not meant to be exhaustive) is:

- Bring the Center's aviation consortium together with MISD and Collin College's aviation program in McKinney to bring value to the program's goals and possible real life internships and jobs for students / graduates of the Aviation program…
- Bring the Center's Healthcare Consortium together with Collin College's Healthcare Program to add value to the program and provide possible jobs for students.
- Use the Center as an additional vetting resource for future Virtual Incubator companies.
- Use the Center for possible funding opportunities for McKinney start-ups.
- Provide the opportunity for local inventors making $75,000 or less to use the Center's free patent services.
- Provide access to the federal research labs as applicable for McKinney companies and the McKinney municipality.
- Use the Center as a source for leads for new technology companies as well as the expansion of established companies in the applicable fields.
- Leverage relationships with other Center partner organizations for McKinney Economic Development Opportunities.

Again, Thanks so much for yours and Ben's time today and we look forward to partnering with the Center for Innovation!

Sincerely,

Jim Wehmeier
President-CEO

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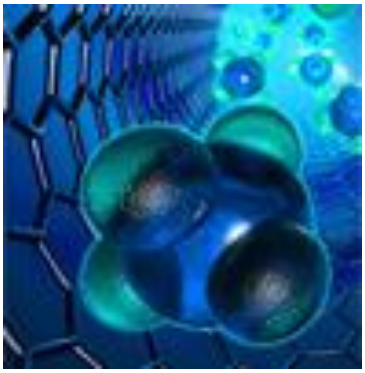

TechCommM

Technology Commercialization & Manufacturing™

"Creating access to the federal innovation marketplace."

CENTER FOR innovation™

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THE CENTER FOR INNOVATION (CFI)

The Center for Innovation (CFI), a nonprofit LLC, serves as a catalyst for technology based economic development. The Center supports a strategic approach to the formation of collaborative partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how. CFI is focused on the commercialization of technology-based research outcomes from universities, industries and U.S. federal labs, leading to the evolutionary development of integrated industry clusters.

The Center is focused on three strategic initiatives:

1. Deal Flow: creating world-class deal flow, by fostering technology discovery and access to technology from federal labs, universities, and industry.

2. Venture Capital: catalyzing the formation of a strong venture capital industry in our multi-state region, creating access to the nation's venture capital industry.

3. Talent & Know How: developing and attracting talent & know how, by supporting entrepreneurial development, in partnership with our nation's educational institutions, governmental entities, and the business community, creating the environment that nurtures and sustains an entrepreneurial culture.

The Center's work is global, national, regional, and local in scope, premised on the concept that our future U.S. economic sustainability is dependent upon fostering collaboration among and between our nation's federal labs, research oriented universities, technology based economic development entities, and the venture capital industry; resulting in greater affordability, reliability, and efficiency for all parties.

CENTER FOR innovation™

Premise

TechComm is premised on the belief that our future economic sustainability is dependent upon our ability to foster collaboration among and between our nation's federal labs with (1) industry; (2) research oriented universities; (3) technology based economic development entities; (4) venture capital; and (5) governmental entities.

TechComm

Introduction

The **Center for Innovation (CFI)** established **TechComm**, a federal Partnership Intermediary, in 2010, in response to an invitation by the **U.S. Department of Defense**, under Congressional authorization (15 USC 3715) that grants federal agencies the authority to contract with non profits as Federal Partnership Intermediaries to facilitate technology transfer, in support of the Domestic Technology Transfer Program.

Since then, **TechComm** has grown to become an inter-agency coalition of 9 U.S. federal agencies and more than 300 federal labs, managed by **CFI** to (1) advance the commercialization of federally funded research, by the licensing of federal patented technology to business and industry for commercial use and manufacturing through **Patent License Agreements** (PLAs); (2) facilitate and establish **Cooperative Research and Development Agreements** (CRADAs) between federal labs with both university, business and industry partners; and (3) source technology from industry and university partners to meet the needs of the federal labs and their respective agencies.

- TechComm represents the following Federal Agencies, and more than 300 labs they operate; under Federal Contracts & Agreements;
  - U.S. Department of Defense (120 labs)
  - U.S. Department of Agriculture (90 labs & research centers)
  - U.S. Department of Homeland Security (1 lab & 8 research centers)
  - National Institutes of Health (27 research institutes)
  - U.S. Department of Energy (17 labs)
  - U.S. Department of the Interior (1 lab)
  - U.S. Environmental Protection Agency (24 labs)
  - U.S. Small Business Administration
  - U.S. Patent & Trademark Office

- TechComm is focused on facilitating partnerships through:
  - Patent License Agreements (PLA's)
  - Cooperative Research & Development Agreements (CRADA's)
  - Trust Fund Cooperative Agreements (TFCA)
  - Reimbursable Cooperative Agreements (RCA)
  - Non-Assistance Cooperative Agreements
  - Agreements with other Federal Agencies (Interagency Agreements)
  - Educational Partnership Agreements (EPA)
  - Enhanced Use Lease Authority (EUL)

Affiliate Partner Network

INTRODUCTION

TechComm has established a network of "affiliate federal partner intermediaries," comprised of corporations, universities, economic development organizations, trade associations, venture funds, municipalities, and government entities throughout the U.S.

In addition, TechComm has begun the establishment of an International Affiliate Partner Network, currently working with organizations in Africa, Australia, India, Mexico and New Zealand.

CFI works with and through this network of affiliate partners; connecting the affiliate partners to TechComm's federal partner agencies and labs, thereby enabling technology transfer and commercialization on a broad, national and international scale.

Members of the "network" function under subcontract agreements with CFI as "affiliate federal partnership intermediaries." Affiliate Partners provide direct guidance and direction to CFI in the development of TechComm. In return, they receive direct support from CFI on an ongoing basis, as well as direct access and preferential participation in all CFI/TechComm activities.

CURRENT AFFILIATE PARTNERS (23)

Corporate (10)

- BASF
- Lockheed Martin
- L-3 Link Simulation & Training
- Pioneer Natural Resources
- Raytheon
- Siemens
- SR2O
- Texas Health Resources
- Walmart
- Wilson, Sonsini, Goodrich, & Rosati

Economic Development (3)

- Dayton Development Coalition (Ohio)
- Enid Regional Development Alliance (Oklahoma)
- McKinney Economic Development Corporation (Texas)

Government (3)

- City of Arlington (Texas)
- City of Greensburg (Kansas)
- Dallas Fort Worth International Airport

Universities (2)

- Tarrant County College
- University of Texas at Arlington

Venture Capital (3)

- Doskocil, LTD
- EFO Holdings
- Texas Emerging Technology Fund

International (2)

- Federation of Indian Chambers of Commerce & Industry (India)
- BASIX

Beta Lab Network

INTRODUCTION

In May 2012, TechComm established the **Beta Lab Network**, with 14 labs selected from the 263 federal labs CFI represents, to work directly with the **Center for Innovation** in the development of the **TechComm** model.

The **Beta Lab Network** engages these selected federal labs to provide guidance, direction, and oversight to TechComm on how federal labs can interact with TechComm's **"Affiliate Partner Network"** of corporate, university, economic development, venture capital, and municipal affiliates. TechComm works with and through the **Beta Lab Network** to develop its processes, leveraging its **Affiliate Partner Network** to commercialize Beta Lab technologies and invite R&D through cooperative research.

PARTICIPATING BETA LABS

Current Beta Labs include:

U.S. Department of Agriculture (1)

- Agriculture Research Service (ARS) – Rob Griesbach

U.S. Department of Defense (7)

- Air Force Research Lab – Propulsion Directorate – Wright Patterson – Ohio -Tricia Randall, Dave Sikora, Kristen Schario
- Aviation & Missile Research, Development & Engineering Center - Alabama – Russ Alexander
- NAVAIR – China Lake – California – Michael Owens, Michael Wright, Dylan Riley
- Naval Surface Warfare Center – Crane Division – Indiana – John Dement
- SPAWAR (Navy) Pacific – San Diego – Brian Suh
- Telemedicine and Advanced Technology Research Center (TATRC) – Maryland – Ron Marchessault
- Tinker Air Force Base – Air Force Logistics Center – Oklahoma – Ed Kinkaid

U.S. Department of Energy (2)

- National Renewable Energy Lab - Colorado – Matt Ringer
- Sandia National Lab (DOE) – Albuquerque – John Freisinger

U.S. Environmental Protection Agency (1)

- EPA – Kathleen Graham

U.S. Department of Interior (1)

- Bureau of Reclamation – Chuck Hennig

U.S. Department of Homeland Security (1)

- Homeland Security Transportation Security Lab – Maryland – Marlene Owens

National Institutes of Health (1)

- National Institutes of Health Office of Technology Transition – Maryland – Mojdeh Bahar

The TechComm Federal Innovation Marketplace

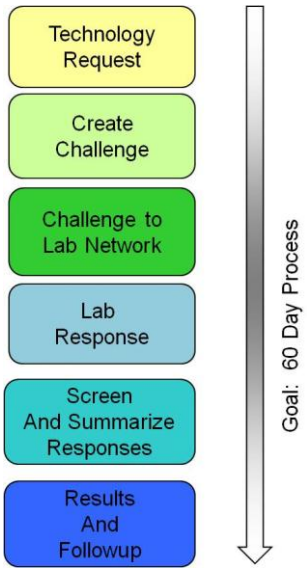
INTRODUCTION

CFI, in partnership with our **Beta Lab Network**, is developing what will be branded as **"The TechComm Federal Innovation Marketplace".** The Marketplace represents our approach to establish access to the resources of the federal labs. This includes (1) more than 20,000 patents available through Patent License Agreements; (2) $100 billion in annual research initiatives, available to universities and industry through Cooperative Research and Development Agreements; (3) $2 billion in annual SBIR/STTR grant awards; and (4) billions in procurement opportunities. We are doing so through the development of new processes for communication and exchange between the labs and industry.

To date, two primary components have been developed and launched:

TECHNOLOGY CHALLENGE

Our **Technology Challenge** matches industry needs for new products with technologies in the portfolios of our Innovation Network, which includes federal labs and universities. The program is based on the concept that "technology pull" can be an effective and efficient way to achieve license and collaboration efforts. We use a six step process to identify industry needs, create a challenge, seek responses from the federal labs in our network, summarize the results, and connect technology Requestors with providers of technology. ***Requestors*** are TechComm Affiliates seeking new technologies or innovations to supplement their portfolio of new products or services. ***Responders*** come from our Innovation Network, which includes federal labs, universities, and corporate research facilities.



COMMUNITIES OF PRACTICE

TechComm **Communities of Practice** are groups established within the TechComm network of individuals and/or entities who share a common concern or goal, and actively participate in efforts to identify solutions and create collaborative research in an effort to solve their common problem or concern. **Communities of Practice** are created to leverage resources within the TechComm network to create solutions to pressing national problems.

A key to success is engaging a broad spectrum of federal labs, businesses, universities, and sources of funding to support applied research, development and innovative problem solving. This effort is designed to identify and establish selected **Communities of Practice** to solve problems that are important to the Federal laboratories, TechComm Affiliates, and the nation.

Communities of Practice provide a platform for labs, Affiliates, and Federal agencies to identify problems, create opportunities to share technologies, and work together to solve those problems. Examples of topics we are currently pursuing as the basis for a community of practice include (1) production/frac water treatment, (2) battery power, (3) corrosion control, and (4) cyber security.

TechComm Industry Consortiums

INTRODUCTION

TechComm currently manages four (4) **"Industry Consortiums."** These Consortiums are essentially collaborative coalitions comprised of government, academic, and industry partners, focused on emergent opportunities in (1) biofuels, biochemicals; and bio products; (2) unmanned aircraft & autonomous vehicle systems, (3) software development: and (4) food/nutrition/healthcare opportunities.

Each Consortium is essentially managed by the members of the Consortium, who collectively establish strategic goals, as well as the initiatives and projects necessary to achieve the goals.

The Consortiums are managed by the staff of the **Center for Innovation**. Current Consortiums and their current priorities and/or strategic objectives include the following:

- **BioProducts Consortium: Areas of Strategic Focus**
  - Feedstock Development
  - Bioproduct Development
  - Access to Capital
  - Policy & Standards Development

- **Unmanned Aircraft Systems Consortium (UASC): Areas of Strategic Focus**
  - Research, Development & Commercialization
  - Industry Sector Development, through Prototype Design, Development & Testing
  - Workforce Development & Training
  - Policy & Standards Development

- **Software Development**
  - Industry Sector Development
  - Technical Issues
  - Research, Development, Commercialization
  - Investment Opportunities
  - Networking

- **Food/Nutrition/Healthcare Consortium**
  - Research, Development & Commercialization
  - Industry Sector Development, through Prototype Design, Development & Testing
  - Access to Capital
  - Workforce Development & Training
  - Policy & Standards Development

VenComm

VenComm is a "for-profit" venture capital affiliate of the **Center for Innovation**, enabling the Center to develop for-profit partnerships to (1) secure federal and state grants, (2) secure venture and debt equity capital, and (3) incubate **CFI** projects and initiatives.

TechMatch+++

The TechComm network is supported by **TechMatch**, a web based "portal" linking our federal agencies and their labs with our affiliate partner universities, economic development organizations, corporations and venture funds.

The "portal" provides an interoperable communication capacity among and between the partners and labs, while maintaining the confidentiality and proprietary nature of the data.

1) **Federal labs** provide information on their research priorities and patent portfolios;

2) **Universities** provide information on their research activities and patent portfolios;

3) **Industry** provides information on their capabilities, gaps and needs, including their patent portfolios.

This enables us to assist industry to "pull" technologies from federal labs, and enables us to assist both universities and industry to "push" technologies into federal labs to meet the joint needs of business and industry.

US Patent Trade Mark Office – Pro Bono Patent Assistance Center

The Center for Innovation has been chosen to serve as the Texas and Southwestern U.S. regional office for the **Inventor Assistance Pro Bono Program** as part of the **American Invents Act (AIA)** pro bono initiative. The office is staffed by the Center for Innovation, and will open on April 30, 2013.

By way of background, Congress passed the **America Invents Act** in 2011, which called for new satellite patent offices to be opened nationwide. In response, the USPTO has announced that 4 regional offices will be established: in Silicon Valley; Denver, Co; Detroit, MI; and north Texas by 2014. The Act also called for the establishment of Pro Bono Assistance Centers as companions to the regional offices.

Texas and Southwest U.S. cities are among the top sources of new patent applications in America, with more than a quarter of these patents awarded to small businesses. So, our establishment of the satellite office to serve the Southwest U.S. will be important for those businesses to continue creating jobs. Yet, one comment most often heard is that independent inventors sometimes cannot afford the cost of getting competent legal service to assist them in the preparation and prosecution of their patent application.

One of the many answers to the concern of patent costs that the America Invents Act provides is the establishment of an ***Inventor Assistance Pro Bono Program***. The Inventor Assistance Pro Bono Program provides a way to offer services to inventors and small businesses that meet a certain financial need level, have done a search themselves or through a service provider, and have gone through a training package developed by the USPTO. Under the Inventor Assistance Pro Bono Program, today patent attorneys and agents in regions across the country are beginning to serve inventors for advancing invention-based economic development.

Specific CFI/TechComm Opportunities

This section describes opportunities that the **Center for Innovation** is currently pursuing with members of our **Affiliate Partner Network**, **Beta Lab Network**, and **Industry Consortiums**.

AVIATION SECTOR

- **Research for New Emerging Technologies:**
  As the FAA develops plans for full integration of UAS into the national airspace by 2015, research leading to technological advances will be needed for navigation, communications, and materials, supporting both the evolution of UAS from military use to the private sector, and the integration of manned and unmanned aircraft systems sharing the airspace.

- **Training for Unmanned & Autonomous Aircraft Systems:**
  Currently, there are few accredited pilot and operator training programs for UAS in the U.S. Sinclair Community College and The University of North Dakota are the first in the nation to announce they are developing certificate programs in these areas. There is virtually no training available for the broader, emergent industry, outside the U.S. Department of Defense. We are working with the Texas Workforce Commission and the Texas Governor's Office to develop curriculum for certificate, 2 year and 4 year degree programs, working with members of TechComm's UAS Consortium.

- **NSF Grants:**
  Annually, NSF allocates $6-7 billion for the technology, materials and development of aviation related industry, with 20% appropriated for colleges and universities. CFI is assisting our partners in pursuit of this funding.

- **Rapid Innovation Funds Grant (DOD):**
  Each year, funds are appropriated from the Department of Defense for research and development in urgent areas of defense. CFI is assisting our partners in the formation of research teams with proposals in place to leverage this funding.

- **SBIR/STTR Grants with Small Businesses:**
  CFI assists our partners to secure SBIR/STTR grants. In January 2012, Congress reauthorized the SBIR/STTR Program and in the process authorized over $2 billion of annual R&D funding through an allocation of funds from within the R&D budgets of each Federal Agency to support innovation by small businesses across a broad range of technologies. SBA oversees this program through its issuance of Federal Rules that establishes the guiding principles for SBIR and STTR. The Departments of Agriculture, Commerce - NOAA and NIST, Defense, Education, Energy, Health and Human Services, Homeland Security, Transportation, and the Environmental Protection Agency, the National Aeronautics and Space Administration, and the National Science Foundation funds SBIR/STTR projects through competitive solicitations from each Federal organization.

  Phase I. The objective of Phase I is to establish the technical merit, feasibility, and commercial potential of the proposed R/R&D efforts, and to determine the quality of

performance of the small business awardees organization, prior to providing further Federal support in Phase II. SBIR Phase I awards normally do not exceed $150,000 in total costs for 6 months.

Phase II. The objective of Phase II is to continue the R/R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the project proposed in Phase II. Only Phase I awardees are eligible for a Phase II award. SBIR Phase II awards normally do not exceed $1,000,000 in total costs for 2 years**. SBIR encourages but does not require the SBC to partner with a research institution.**

Phase III. The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The SBIR program does not fund Phase III. Some Federal agencies in Phase III may involve follow-on, non-SBIR funded R&D or production contracts for products, processes or services intended for use by the U.S. Government.

- **Aviation/Defense Industry Clusters:**
  Placement and hiring of new graduates (focusing on women and minorities).
  Aviation related companies are interested in recruiting graduates locally, especially, women and minorities.

ENERGY SECTOR

- **The Department of Energy: Research and Development Grants:**
  CFI is working on or assisting with a variety of grants and proposals; for example, a coal to liquid project.

- **The US Department of Agriculture:** CFI is working on or assisting with a variety of research proposals and grants; for example, a USDA loan guarantee for the development of a biofuel refinery.

HI-TECH MFG/CONSTRUCTION SECTOR

- **Federal and States Research and Development Grants:**
  Grants are available for soil, cement, electrical, plumbing and new materials in construction products.
  Paint application and chemical base is a high priority for hi-tech manufacturers, especially with the development of the F-35 at Lockheed Martin and the V-22 at Bell Textron.

- **Training for New Technologies:**
  CNC – Manufacturing, machining and working with new materials with General Motors/ Lockheed Martin/ Bell Textron and other high tech manufacturers.

- **Department of Labor – Employment and Training Act (ETA) Grants:**
  We are working through CFI's UAS and Biofuels Clusters to take advantage of grant opportunities available from the Department of Labor.

OTHER

- **Procurements Project:**
  Small businesses are seeking expertise from engineers to develop and expand their research capabilities to commercialize the technologies they are creating within their business area.

  CFI is working with the Air Force Logistics Center in Oklahoma City, as well as the Regional SBA Office, Accion Texas and Cross Timber Procurement Center (DoD) to develop a demonstration project that will identify potential businesses for procurement of legacy parts contracts with the Air Force Logistic Center.

- **Nano Scholars:**
  The Nano Scholar grant program was started by Tarrant County College and UTA in 2009.

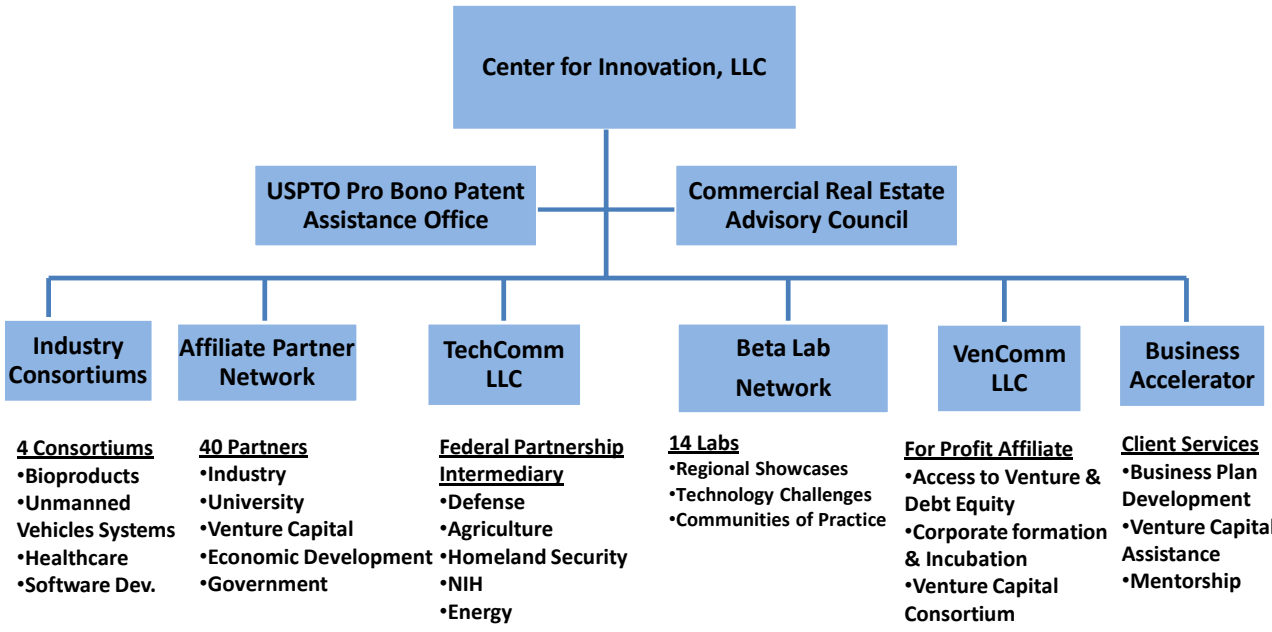
  Over the past three years, the Nano Design Commercialization Center (NDCC) in collaboration with UTA/UTD and TCC has received over $2 million dollars in funding from the Texas Workforce Commission to develop engineering talents. The first year was a collaboration with other Texas Universities to bring freshman and sophomores from other Colleges and Universities within Texas to intern with Lockheed Martin and Bell Helicopter. TCC has served as the administrator of the grant. The next step is to work with UTA to provide and support the next grant, working with juniors and seniors for the career ladder progression.

- **Lockheed Martin:** CFI is working with Lockheed Martin to assist with the identification of universities for strategic partnering.

- **SR2O:** CFI is working with SR2O to identify 25 sites nationwide to build biofuel refineries, and USDA's Office of Rural Economic Development.

- **General Motors:** CFI is working with General Motors and NASA's Johnson Space Center to secure support for the development of advanced robotic systems.

Organization Chart



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Center for Innovation

Unmanned Aircraft Systems Consortium (UASC)

A consortium for the research, development, implementation and commercialization of new technologies to improve all aspects of the unmanned aircraft system industry, and the related education and training needed to ensure a competitive workforce.

CENTER FOR innovation™

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TECHCOMM

In 2010, the Center for Innovation established TechComm at the invitation of the U.S. Department of Defense, as a "multi-agency" Federal Partnership Intermediary. As such, TechComm is responsible to support the formation of strategic "public-private" partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how.

We are in the third year of a five year plan to develop a nationwide network of Affiliate Partner Intermediaries that the Center will work with and through in order to seek (1) applicants from business and industry to license federal patented technologies for their use, manufacture, or production; (2) research from both industry and academia that is aligned with the research priorities of our federal partners, for consideration by their federal labs as cooperative research and development projects; and (3) technology discoveries from both academia and industry that can be procured by one of our federal agency partners.

TechComm currently represents five federal agencies, including (1) the U.S. Department of Defense (DoD),(2) the U.S. Department of Agriculture (USDA), (3) the U.S. Department of Homeland Security (DHS), (4) the National Institutes of Health (NIH), and (5) the U.S. Department of Energy. TechComm works with these agencies through their Offices of Technology Transfer and Transition, and the 263 labs they operate. These labs collectively spend $100 billion annually on research, employ 100,000 federal researchers and scientists, with 20,000 patents available for license by business and industry for their own use, manufacture, or production.

The Unmanned Aircraft System Consortium (UASC)

An Industry led Initiative, Implemented Through the Collaboration of Industry, High Technology Companies, Universities, and Government

Introduction

The establishment of DFW Airport in 1973 is generally viewed as one the most significant projects in the history of north Texas, in terms of its impact on the economic growth and viability of the region. It has essentially been the foundation for the emergence of north Texas as a center for the aerospace industry and as a primary logistics and distribution hub, despite the regions lack of access to navigable water.

In the past 40 years, however, the aerospace industry has changed, with the emergence of unmanned and autonomous systems, along with the need to develop the technologies to integrate them with a variety of payloads to meet a rapidly growing demand from both the federal government and first responder community.

Today, Texas competes in a globally competitive yet integrated, knowledge-based and innovation-driven economy. Therefore, to remain competitive, we have to re-position our state and region, particularly in the aerospace industry, in partnership with other emergent regions, nationally and globally, to focus on research and innovation in the field of unmanned and autonomous systems. This will result in our leadership in new commercializable discoveries in the emerging unmanned aircraft system industry.

In our view, doing so will require two things:

(1) New models, that can enable our state and region to emerge as leaders in the unmanned aircraft system industry, by enabling and supporting collaboration among existing entities, rather than the creation of new organizations often perceived as competition; and (2) new ways of thinking, in support of those collaborations, while extending those collaborations into other regions, nationally and globally, that have similar abilities and ambitions.

The Unmanned Aircraft System Consortium (UASC) has been established by the Center for Innovation (CFI) as a catalyst to bring together the aviation industry with universities, economic development, and government entities, with the support of three primary federal agencies represented by CFI: the U.S. Department of Defense; the U.S. Department of Agriculture; and the U.S. Department of Homeland Security, supported by the Federal Aviation Administration.

The Consortium it is focused on enabling collaboration on five primary strategic objectives:

1. Research, development, and commercialization;
2. Industry sector development;
3. Access to Capital
4. Education, workforce development, and training; and
5. Policy and standards development

Consortium Concept

The Center for Innovation (CFI) has established the Unmanned Aircraft System Consortium (UASC) as a means to respond to the rapidly emerging demand for Unmanned Aircraft and Unmanned Vehicle Systems, particularly in terms of meeting the needs of three of the federal agencies CFI represents as a federal partnership intermediary: the U.S. Department of Defense; the U.S. Department of Homeland Security, and the U.S. Department of Agriculture.

EXPECTED OUTCOMES

A major objective of the Consortium is to foster cooperative relationships between the Center for Innovation member institutions and the federal agencies the Center represents, as a catalyst for the emergence and growth of the UAS industry, to address the demand being created by the Agencies.

Important metrics to assess the Consortium's effectiveness include (1) the number of federal patents licensed; (2) number of Cooperative Research and Development Agreements established; (3) number of member invention disclosures and patents filed; (4) publications & conference presentations; (5) amount of funded research projects secured; (6) the development of training curriculum and training capacity; and (7) number of graduates trained and employed in key support industries.

UAS CONSORTIUM STRATEGIC OBJECTIVES

The Center has established five strategic objectives for the UAS consortium, each guided by a Technical Guidance Committee comprised of Consortium members:

1. **Research, Development & Commercialization:**
   A research component has been established, offering both university and industry sector partners the opportunity to work with and through the 263 federal laboratories CFI represents to expedite the transition of federal UAS/UAV technologies from the federal agencies into the commercial sector. This will also support industries' capabilities to develop and increase the manufacturing of UAS, providing assistance with the production and manufacturing of UAS.

   Specifically, the Consortium will:

   - Seek federal partners for research and product development to support the technology needs of the UAS industry, through Cooperative Research & Development Agreements (CRADAs);
   - Enable efforts to commercialize new technologies;
   - Expedite the transition of technologies from federal agencies/labs into the commercial sector through Patent License Agreements (PLAs), as well as technologies from the private and academic sectors;
   - Validate prototype designs

2. **Industry Sector Development:**
   The Consortium will develop access to testing facilities for government, academic, and corporate research, and enable consortium members to test and evaluate research ideas by helping them gain access to testing facilities.

   Specifically, the Consortium will:

   - Provide support for prototype development;
   - Provide access to testing facilities and airspace for government, academic, and corporate research;
   - Serve as a catalyst to develop the manufacturing capacity needed to meet emerging markets demand.
   - Serve as a catalyst to develop the prototype supply chain necessary for the growth of the industry.

3. **Access to Capital**

The Consortium will determine the capital needs of the industry, and work to establish access to the various types and sources of capital necessary to support the growth of all industry sectors, to include (1) **venture investors**, inclusive of Angels, Angel funds, Pre-Seed, Seed stage and later stage funds; (2) **debt equity capital**; (3) **state and federal grant** funds; and (4) **SBIR/STTR** funding.

Specifically, the Consortium will:

- Establish access to venture capital
- Establish access to debt equity capital
- Establish access to state and federal funding

4. **Education, Workforce Development & Training:**

From a workforce perspective, the Consortium will support the development of the workforce needed for the job growth that is projected by the Association of Unmanned Vehicle Systems International (AUVSI) driven by the Congressional mandate to the FAA to integrate Unmanned Aircraft Systems (UAS) into the National Airspace System (NAS) by 2015, as well as DoD's plan to double defense spending on UAS over the next 8 years. More than 23,000 jobs are expected to be created in the next three years. The Consortium will work with a broad range of industry partners, primarily those that will directly create these high paying positions, to understand the skills needed; the Consortium will also engage the Public Workforce System at federal, state and local levels to ensure the alignment of training resources.

From a training perspective, the Consortium will work with public universities, community colleges, independent school districts, and other educational institutions who are invested in aerospace and aviation related research and development (R&D) to develop the curriculum and instructional delivery methods necessary to provide the training needed for UAS aerospace related jobs.

Specifically, the Consortium will:

- Identify the emergent jobs and related skill sets needed
- Develop the curriculum necessary to support workforce development for certificate, 2 year, and 4 year degree programs
- Develop the training capacity and capability necessary to train the needed workforce

5. **Policy & Standards Development:**

As the Unmanned Systems industry emerges, both standards and public policy that regulate the industry will be formulated and promulgated by federal, state, and local governments. From that perspective, the Consortium will work with and through our members to provide direct input to the formation of policy and standards.

Specifically, the Consortium will:

- Actively seek and propose solutions for the safe and effective operation of manned and unmanned aircraft systems, including standards development.
- Provide recommendations to policy makers for public policy and standards development
- Establish a Policy Research Center & Clearinghouse for research to develop safety standards and requirements
- Align the work of the Consortium with the federal governments work to define policy & standards for the UAS industry.

Consortium Operations & Governance

PURPOSE

The purpose of the Consortium is to create a nationally recognized, investor based consortium of industries, local governments and universities to serve as a catalyst for the emergence of the Unmanned Aircraft System Industry. The Consortium will focus on 3 over-arching priorities:

(1) the development, implementation, and commercialization of new technologies to develop, and expand the unmanned aircraft system industry;

(2) to improve efficiency, energy and environmental sustainability, safety, security, logistics, training, technologies, and the like, all of which directly affect the competitiveness and profitability of the industry; and

(3) to educate and train the next generation of skilled workers in key technology areas required by sector industries to support the UAS industry.

GUIDING PRINCIPLES

The Consortium is designed to help speed the movement of new ideas, technology solutions, and products to commercialization. Key to success is engaging businesses, universities, and government to support applied research that focuses on finding solutions to common UAS industry problems.

ADVISORY BOARD

The Consortium is an investor based organization, operated as an affiliate of the Center for Innovation, with investors providing guidance through an Advisory Board that oversees operations in accordance with the consortium's mission. The initial Advisory Board was comprised of the founding members, as of June 18, 2012. As the Consortium expands, the Advisory Board will expand to reflect new investor stakeholders and their level of support. The Center for Innovation provides the staff support to implement and coordinate both internal and external operations of the Consortium.

EXECUTIVE COMMITTEE

The Consortium has established an Executive Committee that provides direct oversight to the operations of the Consortium, while developing and proposing strategic goals and objectives.

TECHNICAL GUIDANCE COMMITTEES

The Consortium has established Technical Guidance Committees (TGC) that address critical needs areas of Consortium members. The TGCs are the working committees of the consortium. The TGCs guide the focus of collaborative activities and identify specific research and development needs for the industry cluster. They also disseminate and evaluate requests for proposals for UAS research and funding. Each project selected by the TGCs is managed by an assignee from one of the Consortium stakeholders.

Business Model

The Consortium is organized under the auspices of the **Center for Innovation (CFI)**, a nonprofit LLC. The Consortium is supported by **TechComm**, a CFI affiliate that serves as a Federal Partnership Intermediary representing 5 U.S. federal agencies and the 263 labs they operate. The Consortium is also supported by **VenComm**, the Center's for-profit affiliate, to establish new business ventures, fund research, or seek funding for commercialization.

The Consortium is sustained by the Center for Innovation's **Affiliate Partner Network,** supplemented by leveraging federal and state research and development and related funding. The Consortium seeks three-year commitments from participating investors.

INTELLECTUAL PROPERTY

The Consortium is committed to identify and/or develop new technologies and solutions that can be translated to enhance the business operations of its investors. The guidelines for patent, copyright, technical data and software policies that apply to the Consortium shall be based on principles that best accommodate the goals of the Consortium investors.

Ownership of intellectual property shall be in accordance with U.S. Patent law. For Consortium funded and/or managed research, participating investors will be required to submit all planned publications, research reports, and invention disclosures derived from that supported research to the Consortium for a 90-day prior review by all Consortium investors. This review will allow each investor the option of negotiating an exclusive or non-exclusive license for any IP generated from these the Consortium funded or managed projects, and/or negotiating sponsored research agreements (SRAs) directly with the institution(s) performing the research to continue and expand the specific research agenda.

Consortium investors will have the option to negotiate Sponsored Research Agreements separately and directly between and/or with other consortium investors. This research is not Consortium funded or managed research. Intellectual property rights would then be governed by the policies at the performing institution(s).

Consortium investors receive assistance from CFI to both license federal patents and/or establish Cooperative Research & Development Agreements with and through the 262 federal labs CFI represents. Further provisions will be described for handling Non-Disclosure Agreements, rights to publish, indemnification, and liability.

ACCOUNTING, RESEARCH AGREEMENTS AND FLOW OF FUNDING

All annual investments, project commitments and contributions will be payable to the Center for Innovation when an investor first joins. Subsequent commitments for future years will be payable on the anniversary date when the when the Investor joined. All Consortium funded or managed research projects (SRPs) will be contracted between the Consortium and investors. Sponsored research agreements (SRAs) will be made directly between corporate/industry/university investor sponsors and/or the performing institutional sponsors.

The CFI Staff, on behalf of the Technical Guidance Committees, will execute Consortium funded/sponsored/managed grant agreements for proposals selected for awards.

Master NDA terms will follow industry standards.

A *pro forma* financial plan for specifics on income, operational expenses, and capital expenditures for the first three years of operation will be provided once the membership fees have been established and an estimate of the number of members is made.

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Notification of Proprietary Information

The information furnished in this report is proprietary to the Center for Innovation at Arlington and, therefore, is privileged and confidential. It shall not be disclosed outside the Government for any reason (including Freedom of Information Act requests), without the prior written approval of The Center for Innovation, or duplicated, used, or disclosed, in whole or in part, for any other purpose than to evaluate the proposal, provided that if a contract, a Patent License Agreement, or Cooperative Research & Development Agreement secured, as a result, or in connection with the review, evaluation, or submission of any such information, the Government agencies represented by TechComm shall have the right to see, or to disclose this information to the extent provided in the contract. This restriction does not limit the Government's right to use data contained in such information if obtained from any other source without restrictions.




Center for Innovation BioProducts Consortium

A consortium for the research, development, implementation and commercialization of new technologies to improve all aspects of the bio products industry, and the related education and training needed to ensure a competitive workforce.

CENTER FOR INNOVATION™

THE CENTER FOR INNOVATION (CFI)

The Center for Innovation (CFI), a nonprofit LLC, serves as a catalyst for technology based economic development. The Center supports a strategic approach to the formation of collaborative partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how. CFI is focused on the commercialization of technology-based research outcomes from universities, industries and U.S. federal labs, leading to the evolutionary development of integrated industry clusters.

The Center is focused on three strategic initiatives:

1. Deal Flow: creating world-class deal flow, by fostering technology discovery and access to technology from federal labs, universities, and industry.

2. Venture Capital: catalyzing the formation of a strong venture capital industry in our multi-state region, creating access to the nation's venture capital industry.

3. Talent & Know How: developing and attracting talent & know how, by supporting entrepreneurial development, in partnership with our nation's educational institutions, governmental entities, and the business community, creating the environment that nurtures and sustains an entrepreneurial culture.

The Center's work is global, national, regional, and local in scope, premised on the concept that our future U.S. economic sustainability is dependent upon fostering collaboration among and between our nation's federal labs, research oriented universities, technology based economic development entities, and the venture capital industry; resulting in greater affordability, reliability, and efficiency for all parties.

TECHCOMM

In 2010, the Center for Innovation established TechComm at the invitation of the U.S. Department of Defense, as a "multi-agency" Federal Partnership Intermediary. As such, TechComm is responsible to support the formation of strategic "public-private" partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how.

We are in the third year of a five year plan to develop a nationwide network of Affiliate Partner Intermediaries that the Center will work with and through in order to seek (1) applicants from business and industry to license federal patented technologies for their use, manufacture, or production; (2) research from both industry and academia that is aligned with the research priorities of our federal partners, for consideration by their federal labs as cooperative research and development projects; and (3) technology discoveries from both academia and industry that can be procured by one of our federal agency partners.

TechComm currently represents five federal agencies, including (1) the U.S. Department of Defense (DoD),(2) the U.S. Department of Agriculture (USDA), (3) the U.S. Department of Homeland Security (DHS), (4) the National Institutes of Health (NIH), and (5) the U.S. Department of Energy. TechComm works with these agencies through their Offices of Technology Transfer and Transition, and the 263 labs they operate. These labs collectively spend $100 billion annually on research, employ 100,000 federal researchers and scientists, with 20,000 patents available for license by business and industry for their own use, manufacture, or production.

The BioProducts Consortium

An industry led initiative, implemented through the collaboration of industry, universities, and government.

Introduction

In an era of reliance on finite petroleum based assets, and a growing demand for energy and products derived from petroleum, the once nascent bioproducts industry is rapidly emerging to provide a biomass based alternative to products derived from petroleum.

The Center for Innovation's (CFI) **"BioProducts Consortium"** is focused on three of the nation's most critical federal research priorities: (1) improving our national **Energy Security**, by developing biofuels from non-food feedstock biomass and municipal solid waste at a cost competitive in price to petroleum; (2) developing **biochemicals** from biomass, thereby further reducing our nation's dependence on petroleum; and (3) developing **bioproducts**, thereby broadening the nation's agri-business sector.

In our view, doing so will require two things:

(1) New models, that can enable regions to emerge as leaders in the bioproducts industry, by enabling and supporting collaboration among existing entities, rather than the creation of new organizations often perceived as competition;

(2) new ways of thinking, in support of those collaborations, while extending those collaborations into other regions, nationally and globally, that have similar abilities and ambitions.

The **Bioproducts Consortium** was established in 2011 as a catalyst to address the need to develop biofuels from non food biomass, in response to three federal agencies CFI represents as a Federal Partnership Intermediary; the **U.S. Department of Defense (DoD)**, the **U.S. Department of Agriculture (USDA)** and the **U.S. Department of Energy (DOE)**.

During the past year, our work on biofuels has resulted in an increased emphasis on biochemicals. In addition, the U.S. Department of Agriculture has requested that we broaden the focus to include bioproducts.

The Consortium it is focused on enabling collaboration on five primary strategic objectives:

1. Feedstock development;
2. Product development;
3. Access to capital;
4. Workforce development & training; and
5. Policy and standards development.

Consortium Concept

The Center for Innovation (CFI) has established the BioProducts Consortium as a means to respond to and support the rapidly emerging bioproducts industry, particularly in terms of meeting the needs of three of the federal agencies CFI represents as a Federal Partnership Intermediary: the U.S. Department of Defense; the U.S. Department of Agriculture, and the U.S. Department of Energy.

EXPECTED OUTCOMES

A major objective of the Consortium is to foster cooperative relationships between the Center for Innovation member institutions and the federal agencies the Center represents to address critical needs for the emergence and growth of the bioproducts industry.

Important metrics to assess program effectiveness include (1) the number of federal patents licensed; (2) number of Cooperative Research and Development Agreements established; (3) number of member invention disclosures and patents filed; (4) the number of publications and conference presentations; (5) the amount of funded research projects secured; (6) the development of training curriculum and training capacity; and (7) the number of graduates trained and employed in key support industries.

BIOPRODUCTS CONSORTIUM STRATEGIC OBJECTIVES

The Center has established five strategic objectives for the Consortium:

1. **Feedstock Development**: Identification and validation of viable nonfood feed stocks is vital to the growth of all sectors of the industry.

   The Consortium's work is primarily focused on four key areas:

   - Identification of Biomass
     - Evaluation of non agriculture based
     - Evaluation of non-traditional renewable sources
     - Evaluation of sustainable sources of carbon
   - Development of Transitional Feedstock
     - Natural Gas to liquid fuel
   - Quality Control
     - Reliable
     - Consistent
   - Process
     - Example: Fracking, remediation

2. **Product Development**: Identification of products that can be developed from biomass is also critical to the growth of all sectors of the industry.

   The Consortium's work is focused on 6 areas:

   - Uses for Agricultural add products
     - Example: sugar derived from biomass, red cedar oil
   - Final Products
   - By Products
     - Example: ARS – C5 & C6 + lignon
   - Identification of new products the market/industry needs

- Identification of new markets that can utilize existing products (i.e. butanol, sugars, etc.)
- Pathways
    - Example: Thermo chemical

3. Access to Capital

The Consortium will determine the requirements for capital and work to establish and secure access to various sources of capital to support the growth of all industry sectors, to include (1) **venture investors**, inclusive of Angels, Angel funds, Pre-Seed, Seed stage and later stage funds; (2) **debt equity capital**; (3) **state and federal grant** funds; and (4) **SBIR/STTR** funding. These funds will be critical to support the development of the supply chain necessary to establish the bioproducts industry sectors, as well as other needs, such as capital for construction of refineries, and validation of both technology and feedstock sources.

Specifically, the Consortium will:

- Establish access to venture capital
- Establish access to debt equity capital
- Establish access to state and federal funding

4. Education, Workforce Development & Training:

From a workforce perspective, the Consortium will support the development of the workforce needed for the job growth that is projected from the bioproducts industry. The Consortium will work with a broad range of industry partners, primarily those that will directly create these high paying positions, to understand the skills needed; the Consortium will also engage the Public Workforce System at federal, state and local levels to ensure the alignment of training resources.

From a training perspective, the Consortium will work with public universities, community colleges, independent school districts, and other educational institutions who are invested in bioproducts related research and development (R&D) to develop the curriculum and instructional delivery methods necessary to provide the training needed for bioproducts related jobs.

Specifically, the Consortium will:

- Identify the emergent jobs and related skill sets needed
- Develop the curriculum necessary to support workforce development for certificate, 2 year, and 4 year degree programs
- Develop the training capacity and capability necessary to train the needed Workforce

5. Policy & Standards Development:

As the bioproducts industry sectors emerge and expand, both standards and public policy that regulate the various sectors of the industry will be formulated and promulgated by federal, state, and local governments. From that perspective, the Consortium will work with and through our members to provide direct input to the formation of policy and standards.

Specifically, the Consortium will:

- Actively seek solutions for the safe and effective operation of bioproducts systems, including standards development.
- Establish a Policy Research Center & Clearinghouse for research to develop safety standards and requirements.
- Align the work of the consortium with the federal governments work to develop the bioproducts industry.
- Provide recommendations to policy makers for public policy and standards development.

Consortium Operations & Governance

PURPOSE

The purpose of the Consortium is to create an internationally recognized, investor based consortium of industries, governments and academia, serving as a catalyst for the emergence and growth of the bioproducts industry.

GUIDING PRINCIPLES

The Consortium is designed to help speed the movement of new ideas, technology solutions, and products to commercialization. Key to success is engaging businesses, universities, and government to support applied research that focuses on finding solutions to common industry problems.

ADVISORY BOARD

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EXECUTIVE COMMITTEE

The Consortium has also established an Executive Committee, that provides direct oversight to the operations of the Consortium, while developing and proposing strategic goals and objectives.

TECHNICAL GUIDANCE COMMITTEES

The Consortium has established Technical Guidance Committees (TGC) that address critical needs areas of Consortium members. The TGCs are the working committees of the consortium. The TGCs will guide the focus of collaborative activities and identify specific research and development needs for the industry cluster. They will also disseminate and evaluate requests for proposals for bioproducts research and funding. Each project selected by the TGCs will be managed by an assignee from one of the Consortium stakeholders.

Business Model

The Consortium is organized under the auspices of the **Center for Innovation** (CFI), a nonprofit LLC. The Center's Affiliate Partners also have access to **TechComm**, a CFI affiliate that serves as a Federal Partnership Intermediary representing 5 U.S. federal agencies and the 263 labs they operate. Partners may also utilize **VenComm**, the Center's for-profit affiliate, to establish new business ventures, fund research, or seek funding for commercialization.

The Consortium is sustained by its investors, supplemented by leveraging federal and state research and development funds. The Consortium seeks three-year commitments from participating investors.

INTELLECTUAL PROPERTY

The Consortium is committed to identify and/or develop new technologies and solutions that can be translated to enhance the business operations of its investors. The guidelines for patent, copyright, technical data and software policies that apply to the Consortium shall be based on principles that best accommodate the goals of Consortium investors.

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The CFI Staff, on behalf of the Technical Guidance Committees, will execute Consortium funded/sponsored/managed grant agreements for proposals selected for awards.

Master NDA terms will follow industry standards.

A *pro forma* financial plan for specifics on income, operational expenses, and capital expenditures for the first three years of operation will be provided once the membership fees have been established and an estimate of the number of members is made.

Current Consortium Initiatives

Feedstock Resource Center

The consortium is working with the Enid Economic Development Corporation in Enid, Oklahoma, one of our Affiliate Partners, to establish a Feedstock Resource Center that will demonstrate and validate the value chain processes by:

- Assemble contracts to harvest feedstock
- Design the economic model for investment in feedstock harvesting
- Identify processes for transforming targeted invasive species into bioproducts
- Validate processes that can be performed technically and economically at near commercial scale
- Demonstrate that the resultant bioproducts will meet all standards established by both the Department of Defense and commercial aviation, and that bio chemicals will meet all chemical industry standards

Demonstration Refineries

The Consortium is working with SR2O, one of our Affiliate Partners, to identify communities, commercial aviation facilities, and municipalities that have an interest in developing a bio fuel plant. Currently, we are working with partners in (1) Enid, Oklahoma; (2) DFW Airport; and (3) Greensburg, Kansas to build model refineries. Our goal is to build 25 refineries over the next 5-10 years.

Model Supply Chain

The Consortium is currently identifying partners that are interested in the development of model supply chains, that will serve as replicable, scalable, and sustainable demonstration models for the industry, to include:

- Feedstock Development
- Transportation
- Biomass Conversion
- Fuel Testing, Performance and Certification
- Harvest Sustainability
- Partnerships for Economic Development

Validation Projects

Woody Biomass:
The consortium is working with USDA's Agricultural Research Service to address the entire bioproducts value chain from feedstock supply to multiple value-added co-product development to product quality to biorefinery commercialization. The focuses are on significant land area infestations in Oregon, Nevada, and Oklahoma. Three vegetation types will be studied: western juniper, piñon pine/Utah juniper, and eastern red cedar.
An interdisciplinary team of federal agencies, industry, and universities has been assembled to address-upfront supply chain dynamics, land use change, fed livestock market effects, and environmental impacts that would result from harvesting invasive wood species for use in renewable jet fuel production.

This project also focuses on developing an adaptable, portable transportation infrastructure logistics model to allow planners and bioproducts stakeholders to analyze the optimal transportation modes and pathways for any western U.S. region.

The projects focus is on expanding the supply chain network and aligning participant and stakeholder interests to promote effective partnerships for rural economic development opportunities, through the development of an effective outreach program focused on results to support the establishment of commercial renewable jet fuel biorefineries in the U.S.

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Center for Innovation Healthcare Consortium

A consortium for the development and acceleration of technology transfer and the commercialization of Federal discovered research outcomes in support of the Healthcare cluster.

CENTER FOR INNOVATION™

THE CENTER FOR INNOVATION (CFI)

The Center for Innovation (CFI), a nonprofit LLC, serves as a catalyst for technology based economic development. The Center supports a strategic approach to the formation of collaborative partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how. CFI is focused on the commercialization of technology-based research outcomes from universities, industries and U.S. federal labs, leading to the evolutionary development of integrated industry clusters.

The Center is focused on three strategic initiatives:

1. Deal Flow: creating world-class deal flow, by fostering technology discovery and access to technology from federal labs, universities, and industry.

2. Venture Capital: catalyzing the formation of a strong venture capital industry in our multi-state region, creating access to the nation's venture capital industry.

3. Talent & Know How: developing and attracting talent & know how, by supporting entrepreneurial development, in partnership with our nation's educational institutions, governmental entities, and the business community, creating the environment that nurtures and sustains an entrepreneurial culture.

The Center's work is global, national, regional, and local in scope, premised on the concept that our future U.S. economic sustainability is dependent upon fostering collaboration among and between our nation's federal labs, research oriented universities, technology based economic development entities, and the venture capital industry; resulting in greater affordability, reliability, and efficiency for all parties.

TECHCOMM

In 2010, the Center for Innovation established TechComm at the invitation of the U.S. Department of Defense, as a "multi-agency" Federal Partnership Intermediary. As such, TechComm is responsible to support the formation of strategic "public-private" partnerships, facilitating and enabling the integration of industry, academic, and government research and discovery with venture capital and talent & know how.

We are in the third year of a five year plan to develop a nationwide network of Affiliate Partner Intermediaries that the Center will work with and through in order to seek (1) applicants from business and industry to license federal patented technologies for their use, manufacture, or production; (2) research from both industry and academia that is aligned with the research priorities of our federal partners, for consideration by their federal labs as cooperative research and development projects; and (3) technology discoveries from both academia and industry that can be procured by one of our federal agency partners.

TechComm currently represents five federal agencies, including (1) the U.S. Department of Defense (DoD),(2) the U.S. Department of Agriculture (USDA), (3) the U.S. Department of Homeland Security (DHS), (4) the National Institutes of Health (NIH), and (5) the U.S. Department of Energy. TechComm works with these agencies through their Offices of Technology Transfer and Transition, and the 263 labs they operate. These labs collectively spend $100 billion annually on research, employ 100,000 federal researchers and scientists, with 20,000 patents available for license by business and industry for their own use, manufacture, or production.

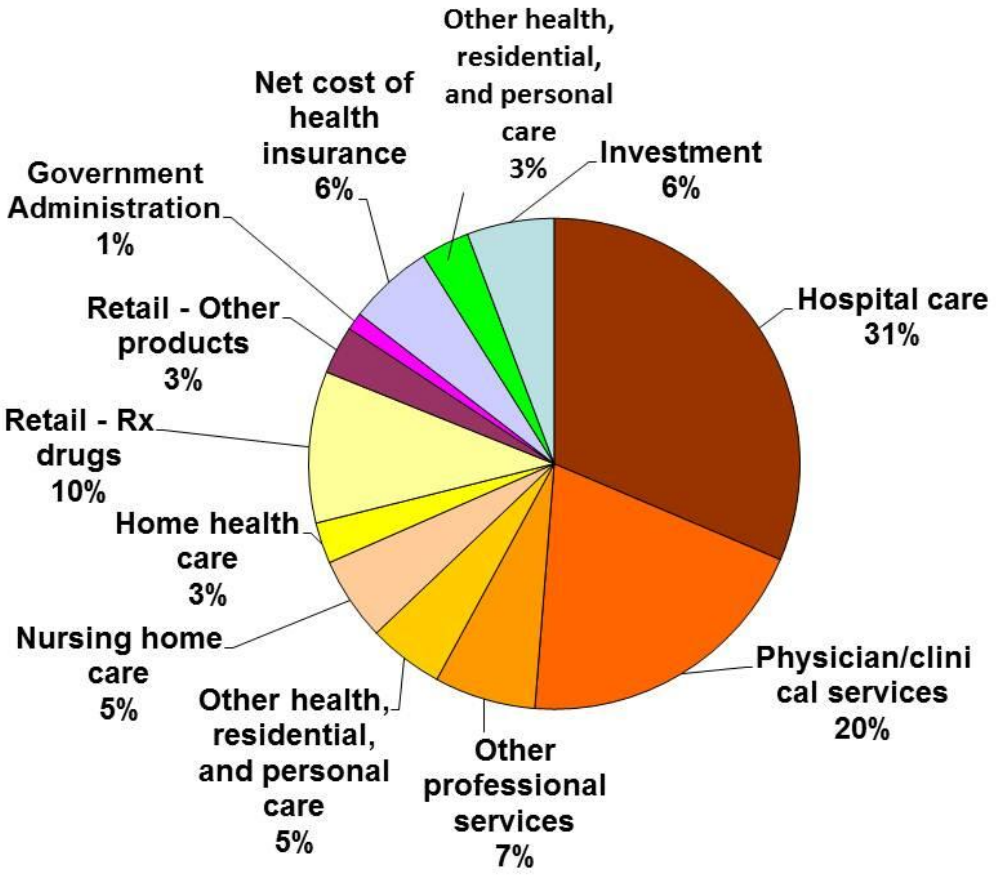
Introduction

Affordable Care Act

The passage of the Affordable Care Act on March 2010, is viewed as one of the most significant healthcare reforms in the history of the United States. From 2014 to 2020 numerous provisions will be put into effect and several existing policies will be affected at the federal, state and local levels for all parties.

The impact of the Act on health expenditures in the United States, which neared $2.6 trillion in 2010, is still unknown. Currently, hospital care and physician/clinical services combined account for half (51%) of the nation's health expenditures. Our establishment of a Consortium enables both the Center and our participating partners to engage in a meaningful way with both federal policy makers and regulators, and to gain direct access to federal health related research, enabling the Consortium to respond appropriately to the needs of the healthcare industry.

National Health Expenditures, 2010



Total = $2.3 Trillion

Source: Martin A.B. et al., "Growth In US Health Spending Remained Slow in 2010: Health Share of Gross Domestic Product Was Unchanged from 2009," *Health Affairs*, 2012.

Federal Support

On October 28, 2011 the President issued a Presidential Memorandum, requiring federal agencies with Federal research laboratories to develop and implement their own mission-specific plans to improve the rate of technology transfer and thereby improve the economic impact of Federal research. These plans include agency-defined goals and metrics to measure progress and evaluate the success of new efforts to encourage technology transfer activities.

The Center for Innovation represents 7 of these agencies, through TechComm, as a Federal Partner Intermediary, and has been asked to assist them in responding to the Presidential Memorandum. Our establishment of this Consortium is one of our responses.

Healthcare innovation can be defined as the introduction of a new concept, idea, service, process, or product aimed at improving treatment, diagnosis, education, outreach, prevention, and research, and with the long term goals of improving quality, safety, outcomes, efficiency and costs.

The Center's fundamental purpose for establishing the healthcare consortium is to serve as a catalyst to bring together the healthcare industry with interested universities and economic development entities, working with three of the federal agencies CFI represents that are conducting extensive medical, healthcare, and healthcare related research: (1) the U.S. Department of Defense, through DoD's Medical Research Command; (2) the National Institutes of Health (NIH), through 27 Institutes; and (3) the United States Department of Agriculture (USDA), through their Nutrition, Food Safety and Quality Research Initiative.

Our initial proposal suggests the Consortium focus on enabling collaboration on and around four primary strategic objectives:

1. Research, development, and commercialization of technologies;
2. Healthcare Industry sector development;
3. Education, workforce development, and training; and
4. Policy and standards development.

Consortium Concept

The Center for Innovation (CFI) has established the Healthcare Consortium (HC) as a means to (1) respond to the needs of three of the federal agencies CFI represents as a federal partnership intermediary: the U.S. Department of Defense; the National Institute of Health (NIH) and the United States Department of Agriculture (USDA); and (2) enable the effective integration of our regional healthcare industry with the resources of these federal agencies.

EXPECTED OUTCOMES

A major objective of The Consortium is to foster cooperative relationships between member institutions to address critical needs and maintain global competitiveness for the emergence and growth of the healthcare industry.

Important metrics to assess program effectiveness will include (1) the number of federal patents licensed, (2) number of Cooperative Research and Development Agreements established, (3) number of member invention disclosures and patents filed, (4) publications and conference presentations, (5) amount of federally funded research projects secured, and (6) development of the workforce, to include number of graduates employed in key support industries, and the development of training curriculum and training capacity, as needed.

HEALTHCARE CONSORTIUM STRATEGIC OBJECTIVES

The Center has proposed four primary strategic objectives for the consortium:

1. **Research, Development & Commercialization of Federal Research Outcomes**:

   The National Institutes of Health (NIH) is the nation's biomedical research agency. The objective of the NIH Technology Transfer Program ("Program") is to facilitate the application of new knowledge; to further research; and to optimize commercialization, by building partnerships to develop and commercialize inventions arising from NIH and FDA intramural research, so that public investment in NIH research yields benefit for the people in the U.S. and abroad.

   The Department of Defense (DoD) Office of the Congressionally Directed Medical Research Programs (CDMRP) manages Congressional Special Interest Medical Research Programs (CSI) encompassing breast, prostate, and ovarian cancers, neurofibromatosis, military health, and other specified areas. Since fiscal year 1992, the CDMRP has managed approximately over $6.5 billion in Congressional appropriations for peer-reviewed research aimed to prevent, control, and cure disease. Through fiscal year 2010, approximately 10,719 awards have been made to advance health care solutions via extramural grants, contracts, and cooperative agreements.

   The United States Department of Agriculture (USDA) are actively engaged in clinical research with a focus on disease prevention. There are 2 agencies within the USDA that engaged in clinical research: The Agriculture Research Service (ARS) and the National Institutes of Food and Agriculture. Both agencies conduct clinical research examining the role that food, nutrition, and physical activity play in preventing human disease. The total ARS budget is $1.14 billion, and 7% or about $85 million is devoted to human nutrition research. The National Institutes of Food and Agriculture has a $1.2 billion budget, with approximately $15 million for nutrition research.

2. **Industry Sector Development, through Prototype Design, Development and Testing:** We propose facilitating the exchange of proprietary materials by connecting the Consortium with the following resources:

   (1) NIH Electronic Transfer Agreement Dashboard (TAD). This will streamline the transfer of NIH-developed research materials to the biomedical research community via Material Transfer Agreements (MTAs), via the electronic Research Materials website (eRMA), an analogous system for licensing unpatented research materials to for-profit entities.

   (2) Department of Defense TechMatch is a web-based portal designed to provide industry and academia a Department of Defense-sponsored solution to find Research & Development Opportunities, Licensable Patents, and information on approximately 120 DoD Labs located across the United States. Registered users will receive a daily e-mail taking them to their matching R&D opportunities from FedBizOpps, Grants.gov, and SBIR/STTR solicitations; Calendar events; and Licensable Patents relevant to your business.

   (3) United States Department of Agriculture Research Service's Office of Technology Transfer helps move ARS research discoveries to the marketplace. USDA ARS have a proven reputation for partnerships leading to commercial success. The agency has

formed more than 1,000 government and industry partnerships. They have also entered into more than 200 active license agreements with businesses.

3. **Education, Workforce Development, and Training:** We propose an assessment to determine the needs of the members and to determine how we might coordinate with public universities, community colleges, independent school districts, and other educational institutions who are invested in healthcare to develop the curriculum and instructional delivery methods necessary to provide the training needed for healthcare related jobs in our region.

4. **Policy & Standard Development:** We propose to identify areas of concern, as the first step towards developing a strategic plan in this area.

Consortium Operations & Governance

PURPOSE

The purpose of the Healthcare Consortium (HC) is to create a nationally recognized, investor based consortium of industries, government partners and universities for (1) the development, and implementation, of new technologies to healthcare providers in our region; and (2) to educate and train the next generation of skilled workers in key areas required by sector industries to support the development of the Healthcare Industry.

GUIDING PRINCIPLES

The Consortium is designed to help speed the movement of new ideas, technology solutions, and products to assist federal procurement. Key to success is engaging businesses, universities, and government to find new funding sources, commercialization, and methodology.

ADVISORY BOARD

The Consortium is an investor based organization, operated as an affiliate of the Center for Innovation, with investors providing guidance through an Advisory Board that oversees operations in accordance with the consortium's mission. The initial Advisory Board will be comprised of the founding members, as of May 29, 2013. Once established, the Consortium will expand to reflect new investor stakeholders and their level of support. The Center for Innovation will provide the staff support needed to implement and coordinate both internal and external operations of the Consortium.

TECHNICAL ADVISORY COMMITTEES

The Consortium will also establish Technical Guidance Committees (TGC) that addresses critical needs areas of Consortium members. The TGCs are the working committees of the consortium. The number of members each consortium member can appoint will be related to the level of their investment. The TGCs will guide the focus of collaborative activities and identify specific research and development needs for the industry cluster. They will also disseminate and evaluate requests for proposals for research and funding. Each project selected by the TGCs will be managed by an assignee from one of the Consortium stakeholders.

Business Model

The Consortium is organized under the auspices of the Center for Innovation (CFI), a nonprofit LLC. The Consortium members will also have access to TechComm, a CFI affiliate that serves as a Federal Partnership Intermediary representing 7 U.S. federal agencies and the 355 labs they operate. The Consortium members may also utilize VenComm, the Center's for-profit

affiliate, to establish new business ventures, fund research, or seek funding for commercialization.

The Consortium will be sustained by its investors, supplemented by leveraging federal and state research and development funds. The Consortium will seek three-year commitments from participating investors at various investment levels.

INTELLECTUAL PROPERTY

The Consortium is committed to identify and/or develop new technologies and solutions that can be translated to enhance the business operations of its members. The guidelines for patent, copyright, technical data and software policies that apply to the Consortium shall be based on principles that best accommodate the goals of the Consortium members.

Ownership of intellectual property shall be in accordance with U.S. Patent law. For the Consortium funded and/or managed research, participating members will be required to submit all planned publications, research reports, and invention disclosures derived from that supported research to the Consortium for a 90-day prior review by consortium members. This review will allow each member the option of negotiating an exclusive or non-exclusive license for any IP generated from these Consortium funded or managed projects, and/or negotiating sponsored research agreements (SRAs) directly with the institution(s) performing the research to continue and expand the specific research agenda.

The Consortium members will have the option to negotiate Sponsored Research Agreements separately and directly between members. This research is not The Consortium funded or managed research. Intellectual property rights would then be governed by the policies at the performing institution(s).

The Consortium members will receive assistance from CFI to both license federal patents and/or establish Cooperative Research & Development Agreements with and through the 272 federal labs CFI represents. Further provisions will be described for handling Non-Disclosure Agreements, rights to publish, indemnification, and liability.

ACCOUNTING, RESEARCH AGREEMENTS AND FLOW OF FUNDING

All membership investments, project commitments and contributions will be payable to the Consortium by the first of the calendar year. All Consortium funded or managed research projects (SRPs) will be contracted between the Consortium and members. Sponsored research agreements (SRAs) will be made directly between corporate/ industry/university member sponsor and/or the performing institutional member(s).

The CFI Staff, on behalf of the Technical Guidance Committees, will execute Consortium funded/sponsored/managed grant agreements for proposals selected for awards.

Master NDA terms will follow industry standards.

A *pro forma* financial plan for specifics on income, operational expenses, and capital expenditures for the first three years of operation will be provided once the membership fees have been established and an estimate of the number of members is made.

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Notification of Proprietary Information

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