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Why Us?

The role of a leader of innovation is not to set a vision and motivate others to follow it. It's to create a community that is willing and able to generate new ideas.

-Harvard Business Review -





Welcome Letter

I may have the best job in the world! The innovators like those featured in the **2021 Innovation Hub Annual Report**, are helping rebuild our economy and inspire the future. My team and I are filled with gratitude because each year we work with hundreds of entrepreneurs, passionate community partners, innovative industries, the Lubbock Economic Development Alliance, the City of Lubbock and our region's economic development organizations to make an impact.

Our startups since 2017 have collectively generated \$54M of impact to our region through revenue generated, capital attracted, and grants supporting commercialization activities. In 2021, startup impact was \$18.5M in investment, 207 employees, and 81 IPs (including patents, copyrights, and trademarks) creating value for our economy. In this report we highlight the innovation and entrepreneur stories of new venture creation. We have woven into the fabric of the innovator's story with our programs in 1) Ideation, 2) Commercialization, and 3) Acceleration. The programs are foundational to support the businesses that serve as the engine for economic growth. Our local innovators and entrepreneurs are in the driver's seat with the support and guidance of our volunteers, the Texas Tech Research Park Board and iTTU mentors, who provide countless hours of know-how. Our community is our "superpower" in West Texas. Our startups are headed for great accomplishments. We're proud to support them with programs, seed funding, mentorship, and sustainable infrastructure now and always.

Our new normal will be helping the underserved and underrepresented as well as adjust to helping our entrepreneurs to address new markets and new needs as we overcome challenges propelling them to new heights. A new program we added this year is the Seraph Hub Fuel Fund, our first venture fund, find details on **page 16**. Each year we release this annual report to reflect on the innovator and entrepreneur journey, we feature their stories and how their ideas are changing our world and making it better!

Finally, we welcome our new version of the Commercialization Roadmap highlighted on **page 8 & 9**. The team has reimagined how we think about great ideas and developed the Red Raider "COMMERCIALIZATION ROADMAP 2.0." The TTUHSC leadership and Innovation Hub team have added healthcare innovations to the resource to assist healthcare professionals, healthcare students and anyone interested in developing ideas in medical device, diagnostics, and digital health. Thank you to everyone contributing to the success of our innovators and entrepreneurs, they are enjoying the journey!

Associate Vice President of Innovation and Entrepreneurship

The **CHALLENGE**

Developing the innovation ecosystem. How can the Texas Tech Innovation Hub support entrepreneurs and small businesses.

Jobs created annually by small companies **MILLION** Microbusinesses in the U.S with less than 10 employees 90% techcrunch.com

MILLION

Of the business population represents small & medium size business sba.gov

Our **SOLUTION**

Creative collision, the integration of research tech transfer, new venture creation, company growth, support, and competitive funding.



To support and catalyze ideas that impact and benefit our world.



Inspiring Inventorship

The Office of Research Commercialization strives to protect our Red Raider investors and helps to market those technologies on behalf of the Texas Tech University System.



Research Commercialization

Entrepreneurship Education

The Innovation Hub provides entrepreneur programming for faculty, students, alumni, and the community. Programs support ideas and the development of company formation and initial funding.





Small Business Development

Northwest Texas Small Business Development Center provides consulting, training, and research to small business owners and entrepreneurs.



PROPERTY PROTECTION





Texas Tech
System Research

INNOVATION
ASSESSMENT

Red Raider Startup

i Launch

Innovation Hub
New Venture Development & Support

Office of Research Commercialization
Intellectual Property Protection and Licensing

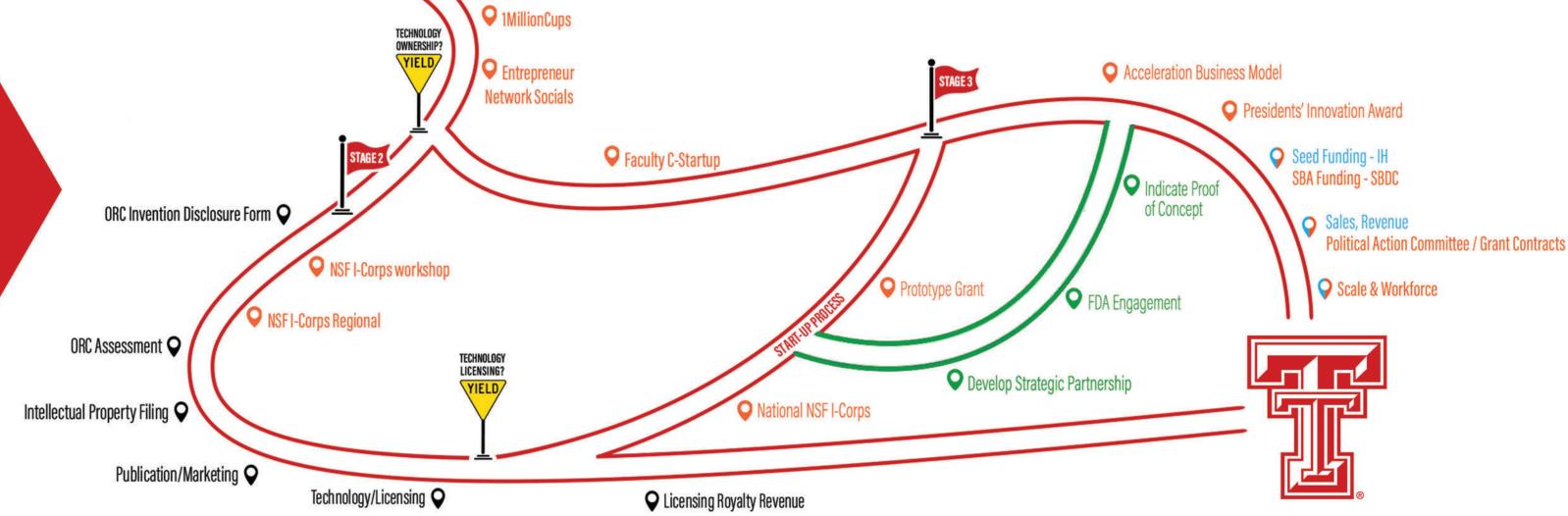
Small Business Development Center
Consulting, Training, and Research Support for Small Businesses

Office of Research Innovation, TTUHSC Support Sling Health Innovations



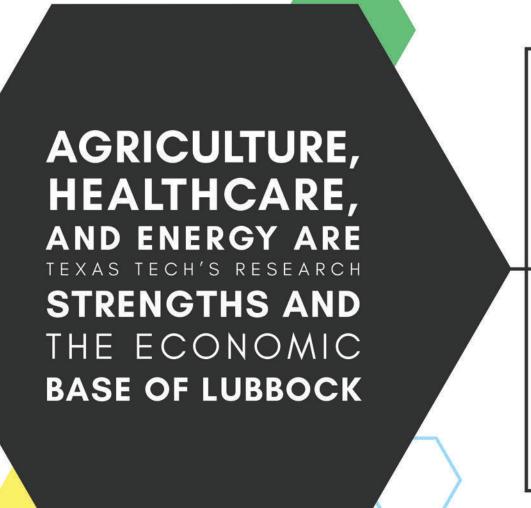
Our 2020 Annual Report introduced the Commercialization Roadmap, a tool for entrepreneurs to be in the driver's seat of their idea. This year we are introducing version two of the roadmap that includes TTUHSC resources. All markers along the map help the entrepreneur and researcher be proactive in the development of their idea and determine the best route for success.

Find the roadmap at: www.depts.ttu.edu/research/research-park/ie



Jobs, Technology, Startups, Community, Industry & Investor Engagement, Revenue

Drivers of COMMERCIALIZATION & INNOVATION



AGRICULTURE

- 14% of R&D funding for TTU & TTUHSC
- Largest driver of private funding for research at TTU
- Texas Tech ranks 2nd in the state for total R&D funding

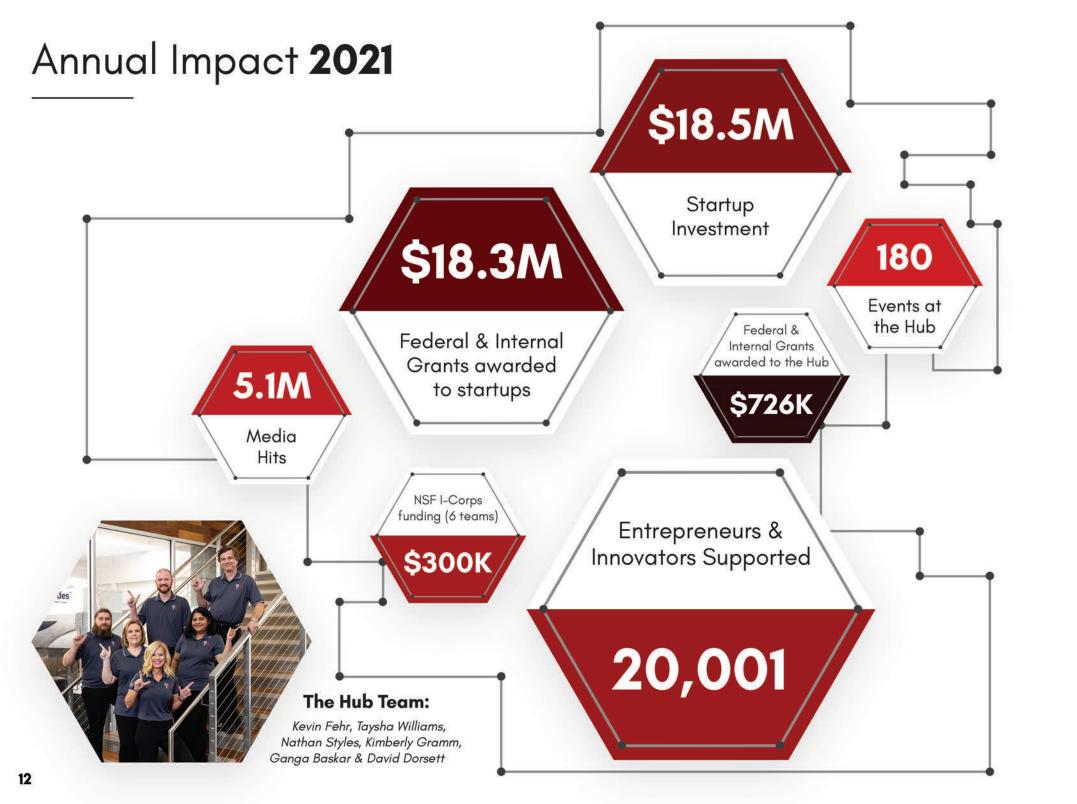
HEALTHCARE

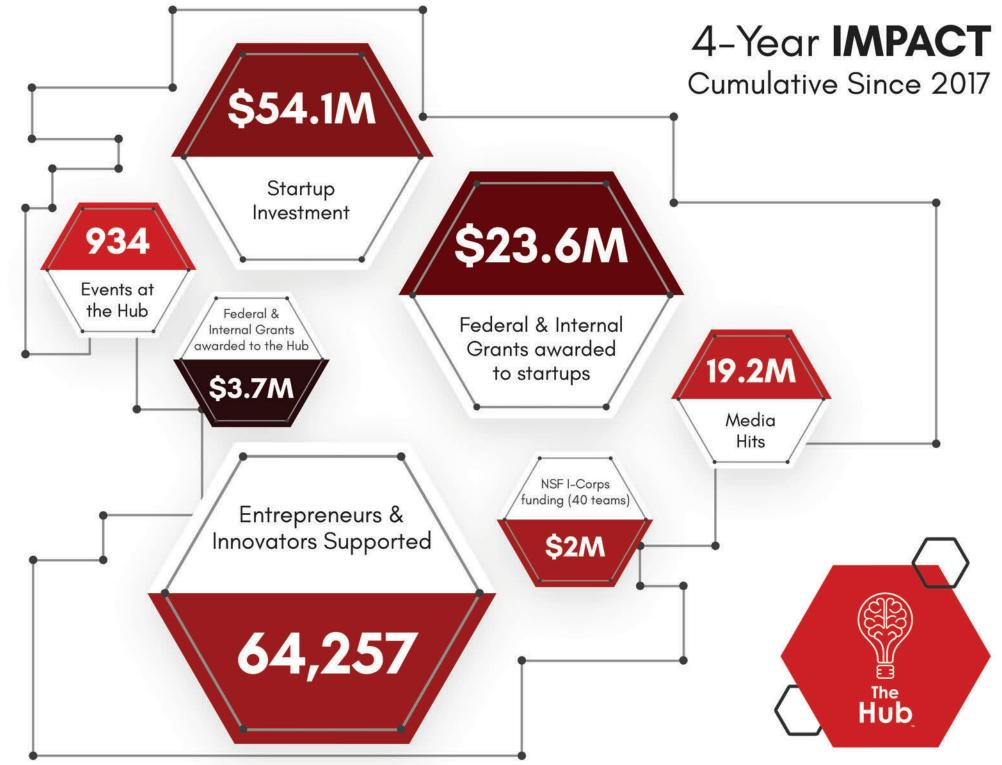
- 13% of total employment in Lubbock
- TTU ranked 9th in the State of Texas for healthcare R&D funding
- 27% of total R&D funding for TTU & TTUHSC

ENERGY

- 15% of total employment in West Texas
- Fastest growing industry in West Texas
- 760 new jobs created in the past 5 years







Texas Tech Research Park, Inc.

Established in March 2020, Texas Tech Research Park, Inc. (TTRP) set out to create an Innovation District in Lubbock. The visioning for the innovation district began with the Innovation Hub as the first building and was constructed in 2014 and opened in fall 2015. The Innovation Hub, a Texas Tech University initiative, is now a broader mission for an innovative entrepreneurial ecosystem that will bring together and benefit all components of the TTU System and the West Texas community.

In the beginning months of the Innovation Hub's opening, a visioning task force was created to determine what the innovation district could become.

Less than four years later, TTRP was established, and a board of directors was created to embark on the collaborative endeavor to bring the innovation district to life.

The 501(c)(3), enables the TTRP Board of Directors to engage and recruit industry that will create job opportunities for our Red Raiders and for our community. The TTRP Board brings expertise to the table to help our students, faculty, and community compete in the global marketplace. The TTRP board is positioning Texas Tech Research Park Inc, to better support economic growth, innovative industries in West Texas, and foster a startup community.



TTRP Board of Directors



The TTRP Board members are some of the brightest minds and some of the most experienced individuals that dovetail perfectly into what we're trying to accomplish.

Board of Directors

















Ex-Officio Members

















Q & A With THE SERAPH HUB FUEL FUND

1. What is the Seraph Hub Fuel Fund?

The Seraph Hub Fuel Fund is a Texas Tech University Innovation Hub initiative and provides access to capital in support of agriculture technology (Ag-Tech) startups in the West Texas region.



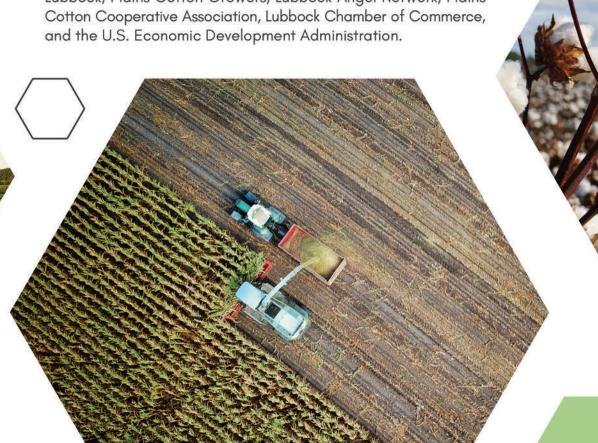




David Miller Managing Director Seraph Hub Fuel Fund

2. Who are the partners that support the fund?

The nine partners on the FUND are the Texas Tech Innovation Hub, Seraph Group, Lubbock Economic Development Alliance, City of Lubbock, Plains Cotton Growers, Lubbock Angel Network, Plains Cotton Cooperative Association, Lubbock Chamber of Commerce, and the U.S. Economic Development Administration.





3. How can the fund help support Texas Tech?

The Fund will be able to support Texas Tech's effort in promoting the growth of agricultural research in the region by investing in agricultural technology and innovations to benefit farmers and producers.

4. What is the goal of the Seraph Hub Fuel Fund?

The goal is to fund early-stage startups. Many of these startups are commercializing technology, resulting in new business and job creation in a region where much of the state's farmland and agriculture business need innovation to support the state's growing economy. The Seraph Hub Fuel Fund is the first venture fund in West Texas. The initiative will undertake a five-step process including fund management, fundraising, marketing and sustainability modeling. The Fund anticipates funding 25–35 AgTech ventures, supporting more than 300 direct jobs.

5. How can Seraph Group's model help fundraise?

Seraph Group was founded in 2004 by Tuff Yen, a UC Berkeley and Yale graduate and a former VC with Chase Capital Partners and Hambrecht & Quist. Seraph Group is one of the first micro-VC/seed funds in early 2000's and invented the Structured Angel Fund™, a specialized fund designed specifically for 'angel investing'. Seraph has a 15-year record of accomplishment, encompassing 10 funds, 106 investments, and 21 exits.

Our **MENTORS**



Priya GillDirector of Team Mentoring



Alejandra Marin Director of Recruitment & Retention





























"Eventually, due in part to the expansion of the logistics operation, we started to establish a reputation for innovation in the computer industry, primarily in the small business sector," Mike Ryan said. "One of our clients at the time, AT&T, suggested that our expertise in this area might be more rewarding than logistics. That was the birth of our computer business." "Over time, our computer business expanded both in the small/medium business market and as a supplier of talent for AT&T and Bell Laboratories (later Lucent Technologies). We were now engaged in design and installation of networks, computer systems and server technology. We also

While you need to be fully committed to the business. Never leave your family or community behind. Always make sure you remember the most critical elements of your life - the ones you love and the people around you.

Featured Mentor: MIKE RYAN

- Michael Ryan, Innovation Hub Mentor of the Year

Michael (Mike) Ryan has always wanted to be an entrepreneur. Ryan's father worked in the heating and air conditioning business, often taking him along to help on jobs. This experience helped lead him to start his own air freight business with his wife, Sandra.

After meeting at Imperial Air Freight in Newark, New Jersey, where both Mike and his wife, Sandy, worked, it was only natural that the couple's first venture capitalized on their background in air freight. The couple decided they had the ability to deliver a better product that would meet the needs of potential clients. As the business grew, it expanded to offer a range of logistics, including warehousing and pull-and-pack operations.

provided web design, hosting and other tech services during this stage."

"Collectively, these services led to a more expansive role in talent acquisition and management for our clients."

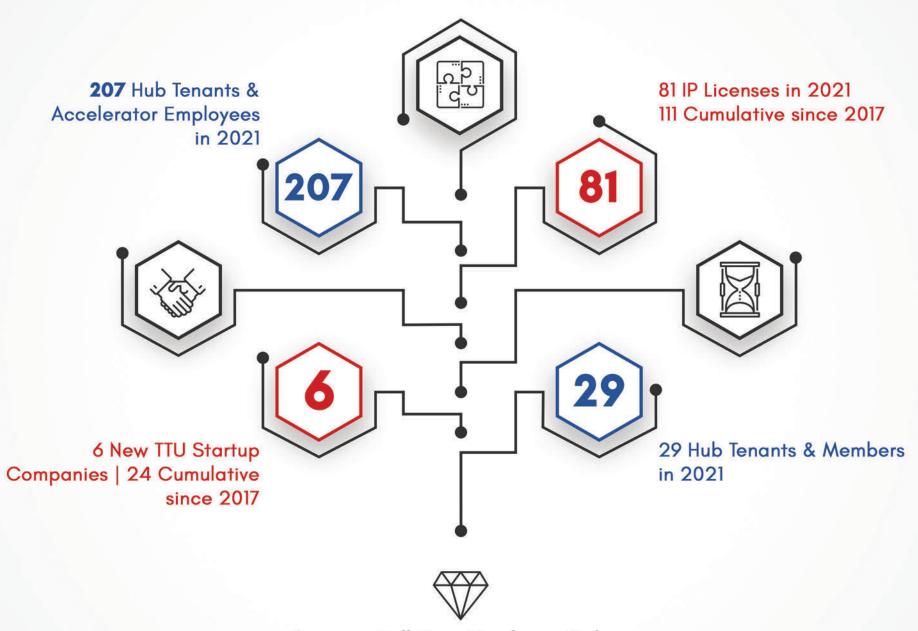
The couple began with a single air freight company, then expanded to logistics, migrated into computers and networks, and provided web design and management services. "In the mid-90s, AT&T scaled back on the use of outside consultants. We were unwilling to accept the significantly lower fees they were willing to pay, so we gradually withdrew from that aspect of the business. We maintained involvement with the small business community. This eventually led to my career in academia."

Giving Back

Mike teaches business management courses, with a focus in leadership and entrepreneurship, at the Jerry S. Rawls College of Business Administration. As a part of the committee engaged in forming the Innovation Hub, Mike Ryan became involved in the development of the Hub's programs. Mike received the Innovation Hub's Mentor of the Year Award in 2021 for his dedication to supporting startups.

Throughout his academic career teaching and being a member of the Hub's community, Mike Ryan has realized what most entrepreneurs discover: success occurrs in spite of our mistakes. The experiences with entrepreneurs throughout the community has impacted the way Mike has taught for the better.





Average Full Time Employee Salary

\$66,000

Tenant Feature: GiSC

Today we are dealing with a wave of agriculture technology. Adoption of new technology is low but GiSC seeks to help bridge the gap between farmers and innovative technology.

- Billy Tiller, Co-Founder of GiSC



GISC STORY:

Numbers, graphs, and models might seem boring to some, but in the agriculture industry, this data can be a big step in bridging the gap between traditional farming and modern innovation.

Billy Tiller, a 1986 Jerry S. Rawls College of Business graduate, discovered his passion for business while studying at Texas Tech University. "I love the idea of building a business from scratch," Tiller said. "I have been involved either as an owner, partner, investor or consultant in dozens of businesses over the last 39 years. I can't remember a time when I did not want to be involved in business."

Tiller invested 10 years as an agricultural banker and was involved for 22 years in rural telecommunication companies that deploy cellular and internet services to customers. Now he's using that experience to help bridge the gap between farming and innovation.

A farmer's power with data

In late 2012, Tiller co-founded Grower Information Services Cooperative (GiSC), where he currently serves as CEO. GiSC was formed to empower farmers around the idea that data has value, and the future of agriculture would be best navigated by realizing the power of business insights from accurate data.

The cooperative is owned by its patrons and members, which are farmers. Tiller explains that in the future these owners may include other cooperatives like marketing cooperatives, processing cooperatives, and input cooperatives which sell farmers fuel, seed and chemicals. GiSC designs and builds digital products that fill gaps between data insights and a farmer's work, for data to be effectively used.

Where is GiSC Today?

GiSC quickly realized that working with farmers across the United States presented numerous challengers. In 2018, Tiller and his team decided to focus their efforts in Nebraska's Twin Platte Natural Resource District. "We became the lead partner in developing a Water Data Program for their farmers and the district which uses surface water from the Platte River and groundwater from the Ogallala aquifer. GiSC contracted to measure irrigation pumping volume on over 300,000 acres and today we have over 64% of those acres signed into the program by farmers." GiSC used existing IoT available via the electric smart meter on most the 3,000 wells to create a daily water pumping record.

GiSC's Future

When asked what is in store for GiSC's future, Tiller stated, "We are focused solely now on how we can help farmers navigate the current landscape of water conservation and carbon sequestration. We hope to be in the middle of all the discussions because there will be many farmer opportunities in the future with what can be validated data. Our next step will be in the design, development, and implementation of a virtual water market that will be underpinned with asset grade data for the creation of 'water offsets'... It is an exciting time, and the opportunities are endless."

Innovation in agriculture

"Innovation is important to agriculture as we try to increase productivity to feed a growing population," Tiller said. "The agriculture industry must utilize innovation to become more sustainable via a continuous improvement loop. Innovation over the last century, from the plow to the tractor and mechanized farming, has been unbelievable."







Our **PROGRAMS**



Red Raider Idea Competition

Entrepreneurs submit a 60-second video on the next BIG idea and vie for public votes. The top voted video is awarded \$2,000.



Hub Camp

Business plan workshops offered 7 times per year and essential for creating a stellar business plan.



Faculty C-Startup

\$2,500 grants awarded to faculty to support commercialization education. Faculty become ambassadors for the Innovation Hub and support entrepreneurship programs and events.



NSF I-Corps Program

This prestigious program enables scientists, engineers, and inventors to identify a product market fit for inventions. Offered two times per year, and focuses on the business model canvas, customer discovery, and team development.



TTU Accelerator

This year-long program assists entrepreneurs to launch startups or discover licensing opportunities based on university research and/patented technology. Accelerator companies are awarded a \$25,000 grant and have access to Hub co-working space and mentors.



iTTU Mentor Program

Industry mentors are chosen for their know-how, investment and technical expertise, and network to aid in the launch of new enterprises.



Red Raider Startup

This exciting 3-day program focuses on idea generation, team formation, customer discovery, and pitching.



iLaunch Competition

This high-energy pitch competition is Texas Tech University's very own Shark Tank ™. A panel of industry experts decide who takes home the 1st place prize of \$10,000.



Prototype Fund

Awards \$80,000 to technology startups for creation of much needed prototypes to test the market.



The Seraph Hub Fuel Fund invests in seed-stage companies in high-opportunity technology markets with a focus on agriculture.



Presidents' Innovation Award

The Office of the President of Texas Tech University and Texas Tech University Health Sciences Center award a total of \$100,000 to startups to assist in equipment and office space at the Innovation Hub.



Discoveries to Impact

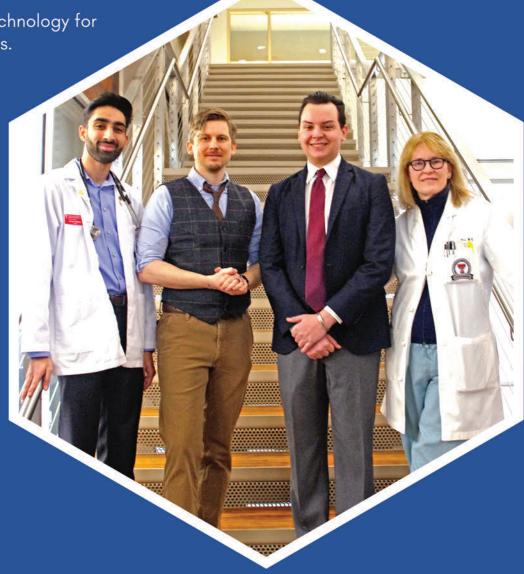
Week-long event that showcases the best of the best in research, innovation, engagement, and startups at Texas Tech and the West Texas Community.

Hub Feature: **SURGIC**

Surgic is the next major step in medical education technology for future health care providers and academic institutions.

I have always felt an innate entrepreneurial drive that I knew would one day manifest into a startup, irrespective of when or where.

- Travis Reiss, CEO & Founder of Surgic



(From left to right) Arham Siddiqui, Paul Egan, Travis Reiss, & Dr. Catherine Ronaghan

SURGIC STORY:

Surgic's surgical training device is the next big innovation in medical education. Travis Reiss, co-founder and CEO of Surgic, explains that "Surgic aims to substantially improve the educational toolkit available to medical residents."

Surgic provides hospitals and surgeons the opportunity to practice procedures without the high cost of traditional cadavers. The company's first product, which they aim to release in summer 2022, "will simulate and provide a training platform for midline laparotomies exclusively."

Two founders, including Travis Reiss, formed their initial team in Dr. Paul Egan's Mechanical Engineering Capstone. Dr. Egan is one of the Innovation Hub's esteemed 2020–2021 Faculty Ambassadors.

Igniting the Entrepreneurial Spirit

Prior to pursuing his dream, Reiss began his college career at the Edward E. Whitacre Jr. College of Engineering. "I often felt that I was right where I was meant to be, amongst my engineering student peers, as we worked to solve problems together, step-by-step and with precision, with all necessary information clearly described. The way of the engineer."

It wasn't until Dr. Egan's class that Reiss' entrepreneurial spirit was ignited. The capstone course integrated entrepreneurship and engineering design. "It really motivated me early on and helped me recognize that I could pursue entrepreneurial endeavors as an engineer." The project Reiss started in class with co-founder Kyle Fenn. Dr. Egan's background in healthcare, led the two mechanical engineers to Dr. Catherine Ronaghan, a surgeon and professor at the TTUHSC.



After several meetings with Dr. Ronaghan to discuss the limitations of current surgical training devices, Reiss and Fenn launched the project through NSF I-Corps. "NSF I-Corps was hugely instrumental in pushing my group's capstone project from the classroom and into prospective startup landscape. Following huge validation and encouragement during customer discovery, Kyle and I were brimming with excitement and ready to take this to the next level." Surgic was formed on February and 2001

Travis Reiss, Dr. Paul Egan, and Kyle Fenn, with the guidance of Dr. Catherine Ronaghan, set their sights on Innovation Hub programs including the Presidents' Innovation Award and TTU Accelerator.

As Surgic began to grow through the team's involvement in Innovation Hub programs, the team recognized they were missing a few key players. The mechanical engineers onboarded Arham Siddiqui, a medical student and MBA, as Surgic's CFO. Shortly after that, the team connected with Chris Ackerman, an engineering consultant and TTU alumni. Surgic welcomed Ackerman as their

In fall 2020, Surgic won the TTUHSC's President's \$25,000 award. Spurred by the momentum of the win, the team competed in the 2021 Discoveries to Impact TTU Accelerator program and was accepted into the one-year program.

Equipped with a diverse team of mechanical engineers and business and medical professionals, Surgic aims to launch their minimum viable product (MVP) by next year.



TTU Accelerator Startups



Campus Live

A multi-platform collegiate media company with the goal of informing and engaging college fans of the exciting things happening at the schools they love.



Captivist

An app providing customers detailed information and analysis of social and environmental impact to make informed purchasing decisions pertaining to the quality, environmental, sociological, and health of a product.

Class Companion

CritiColl, LLC

An app solution that provides a stress-saving platform for professors with tools to promote academic success for students.



GoodLine Beer

A hybrid production brewery and taproom focusing on providing equally high quality beers and taproom experience for the fine thirsty folks in Lubbock.



PCOS Innovation, LLC

A research proven based app solution to help woman diagnosed with Polycystic Ovary Syndrome (PCOS) that provides a nutrition guide, grocery list, recipes, BMI tracker, motivational videos and resources for support.



Therapoints

Aiding in the cognition of fine motor control, this treatment method helps people with cognitive difficulties regain functional capacity in their fingers.



Hub Feature: OGALLALA GREENS

Team Members: Cory Roof - Founder & CEO & Austin Ochoa - CTO

Botanist and entrepreneur Cory Roof is dedicated to West Texas and the development of hydroponic farms. Over the past five years in the industry, Cory worked for Cloud City farm and Plenty Farms, two of the most advanced greenhouses in world.

After arriving to West Texas with an idea and the experience to accomplish his dream, Cory Roof was referred to the Innovation Hub from the Jerry S. Rawls College of Business and was accepted into the Texas Tech Accelerator program. Cory's mission was to launch Ogallala Greens, a hydroponic farm system that caters to West Texas's agricultural needs.

Lubbock's main source of fresh water is the Ogallala Aquifer. In recent years, the aquifer has been heavily reduced from the strain of the key local industry: agriculture. Due to the dwindling resource and the arid climate of West Texas, Lubbock imports much of its produce from the Rio Grande Valley and California. Ogallala Greens aims to change that.

The hydroponic farm system launched by Roof uses up to 95% less water than traditional farming methods but still grows exceptional produce. Ogallala Greens aims to ease the pressure on the aquifer while empowering West Texas to produce its own vegetables. Not only will the hydroponic farms work to lessen the toll of the water crisis, but due to the controlled environment of these greenhouses the food produced will be more flavorful and nutritious because of the ideal growing conditions.

Ogallala Greens' produce will have a longer shelf life due to the produce being harvested locally. Locally sourced produce has a smaller carbon footprint from reduced transportation. In addition, no pesticides are used on the plants for growing leafy vegetables, a healthy alternative for consumers.



INTERVIEW WITH CORY ROOF

1. Why did you choose to develop Ogallala Greens?

Like so many of our natural wonders, the Ogallala is under threat due to misuse and climate change. In the near future the loss of this resource will affect our agricultural community as well as West Texas' rapidly growing urban centers. Hydroponic farms like ours, use up to 95% less water than traditional farming methods, allowing us to ease the pressure on our precious aquifer while growing incredibly delicious food.

2. Tell me about your background and career in the Green industry.

While I was beginning to scheme of the green housing business I would one day build, I became quite interested in the developing technological capacity for hydroponics.

I found that a company called Plenty was hiring. In December I applied for the job and was rejected. In April of the following year, I found a Craigslist add for an employment agency looking to hire for a hydroponics company in Laramie, Wyoming. "Could it be?" I thought and applied for the job. Sure enough, this is how I got into a company that typically only hires Harvard and Standford grads.

In my two and a half years at Plenty, I managed over 180 experiments in their \$20 million discrete grow space. I collected stock options, flew to San Francisco regularly to consult on a mega farm called Tigris.

3. What lead you to the Texas Tech Innovation Hub?

I moved to West Texas with a plan to start small and begin looking for innovators. The business college directed me here since I am a member of the community, and I am so glad they did. The programs here have been an incredible experience, and our mentors have helped us identify the true potential inherent in our idea.

4. What are your goals for the future of Ogallala Greens?

Ogallala will be building facilities in Lubbock, Midland, Abilene and Amarillo. In the future we plan to expand northward into other mid-sized cities. These cities, like Topeka, Lincoln or Sioux Falls are growing rapidly and looking for health and lifestyle products that were once only available in larger cities. We want to provide nutritional and culinary options to these emerging markets.



Attendees in 2021 **Events** in 2021 in 2021

Community **IMPACT**

1 Million Cups

Based on the notion that entrepreneurs discover solutions and engage with their communities over a million cups of coffee, 1 Million Cups (1MC) is hosted at the Hub once a month to educate and inspire entrepreneurs. Two startup companies are invited to present each month to gain insight and resources from other in the entrepreneurial community.

Red Raider Startup High School Program

The Innovation Hub partners with area school districts to host the Red Raider Startup High School Program. Students progress through a set of hands-on learning sessions that focus on ideation, team formation, customer discovery, and pitch workshops. The teams presented in front of an investor panel at the end of the 3-day event.

Lubbock Angel Network (LAN)

The Lubbock Angel Network provides angel funding and support capital for innovative startups in West Texas and beyond. LAN is the only form of privately organized capital for venture investing in Lubbock. Partners work closely with the Innovation Hub for access to deal flow. The Innovation Hub is a key community partner for LAN, provides meeting space, and supports LAN's fundraising efforts.

Entrepreneur Socials

The Hub hosts networking socials at fun and unique places in the community. Connections are made with students, mentors, and industry leaders to create a culture of innovation and entrepreneurship in West Texas.

Discoveries to Impact Conference

The Annual Discoveries to Impact Week (DTI) brings together participants every year to showcase research, engagement, innovation and business startups; compete for prize money for the best innovations and startup ideas; and hear from numerous thought leaders, intriguing panel discussions and dynamic entrepreneur speakers. Teams, students, and faculty work for a year to position their research, projects, and startups for this important annual showcase. In 2021, winners took home a combined total of \$199,000 to support scholarly activities and venture creation.

Our **PARTNERS**





































Center for Transformative Undergraduate Experiences

Center for Integration of Stem Education and Research

Office of Outreach & Engagement

Office of Research and Innovation

Office of Research Commercialization



Small Business Development Center

Texas Tech Alumni Association

Texas Tech Collegiate Entrepreneurial Organization

Texas Tech University Health Sciences Center

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Exploration is the engine that drives innovation.
Innovation drives economic growth. So let's all go exploring.

-Edith Widder -

