



Mr. Chairman and members of the committee, I'm Brenda Wyland and I serve as the CEO of the NDSU Research and Technology Park in Fargo located on NDSU's campus. I'm here today testifying in strong support of SB2256. This bill requests \$20 Million to support the new vision and path forward we are going to share with you today.

This is my return to the Research Park. I was with the Park from 2008-2013. Prior to my return to the Park, I spent the last 10 years in the private sector working for a fast-growth technology company primarily focusing on starting and leading our government and defense division before jumping back over to the precision ag side of the business.

A little over a year ago, I was recruited back to the Park to create a bold new vision and business model.

We intentionally started with a few goals in mind. We didn't want to duplicate key assets in the State like Grand Farm, Grand Sky, or the Northern Plains UAS Test Site. Instead, we wanted to find a way to leverage them and contribute to their success in a meaningful way.



## PROBLEM STATEMENT

North Dakota State University (NDSU) is a leading educational and research institution but is not positioned to convert research discoveries into commercial products that support the rapidly evolving needs of industry.

## OPPORTUNITY

Emphasize the productization of *intelligent autonomous mobile equipment*.

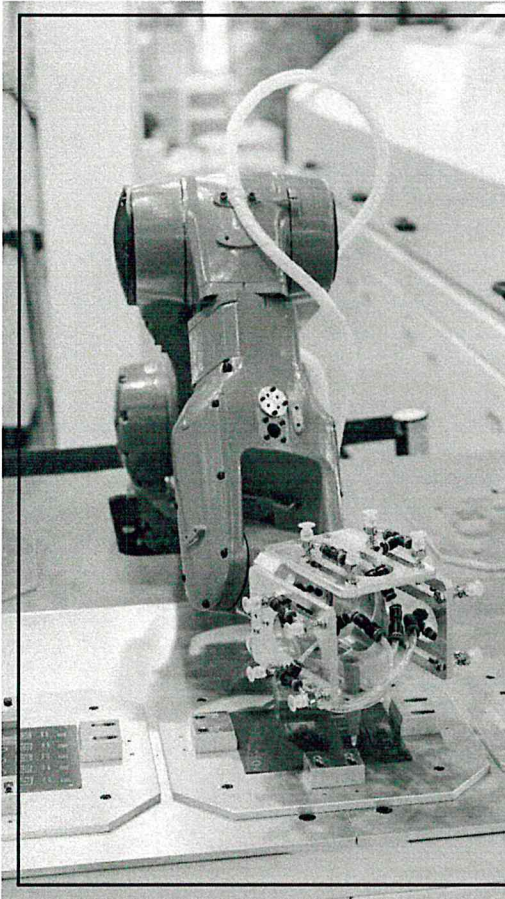
Connect world class engineers and researchers in six specific technology areas to the needs of industry.

Bridge the needs of the global marketplace with the convergence of technologies to solutions.

NDSU RESEARCH & TECHNOLOGY PARK

We also spent time looking at the role of the University and that of the Park. NDSU is a leading educational and research institution, but, like many other Universities, it is not positioned to convert those discoveries into commercial products. However, if we were to optimize that capability, think of the significant impact we could have on the economy.

**As a result, the Park created an agile and focused business model that's going to focus on intelligent autonomous mobile equipment.** We'll talk more about this in a minute. Further, we are connecting engineers to six specific technology areas directly related to the needs of industry. Thus, enabling us to bridge the gap between discovery and societal benefit.



## BUSINESS MODEL

We create solutions that solve global problems then transition those products into the market.

Revenue generated by our engineering projects and product solutions is reinvested to ensure our mission thrives.

*Our model will serve as a catalyst to drive growth for the State of North Dakota*

NDSU RESEARCH & TECHNOLOGY PARK

The next thing we focused on was creating a new business model, one that was going to allow us to become profitable and continue to reinvest those profits into funding our core operations in future years. ***This model will create multiple revenue streams by engaging in contracts directly with the commercial market and military to design, engineer, and test advance automation and robotics prototypes.*** As we move through my testimony, you'll hear about future plans to move beyond prototyping along with how we are going to build the expertise to do so.

## SUCCESSFUL BUSINESS MODELS



- ✓ Rapid proof -of-concept and in-depth development and testing
- ✓ \$800 million in Sales
- ✓ 27 years of making robotics a reality
- ✓ 850+ individual inventions
- ✓ 120 start-ups



- ✓ Rapid proof -of-concept, prototyping and commercialization
- ✓ 80 years of innovations
- ✓ 13,000 patents filed (100+ active licenses)
- ✓ 50+ spin-off companies/30+ start-ups in portfolio



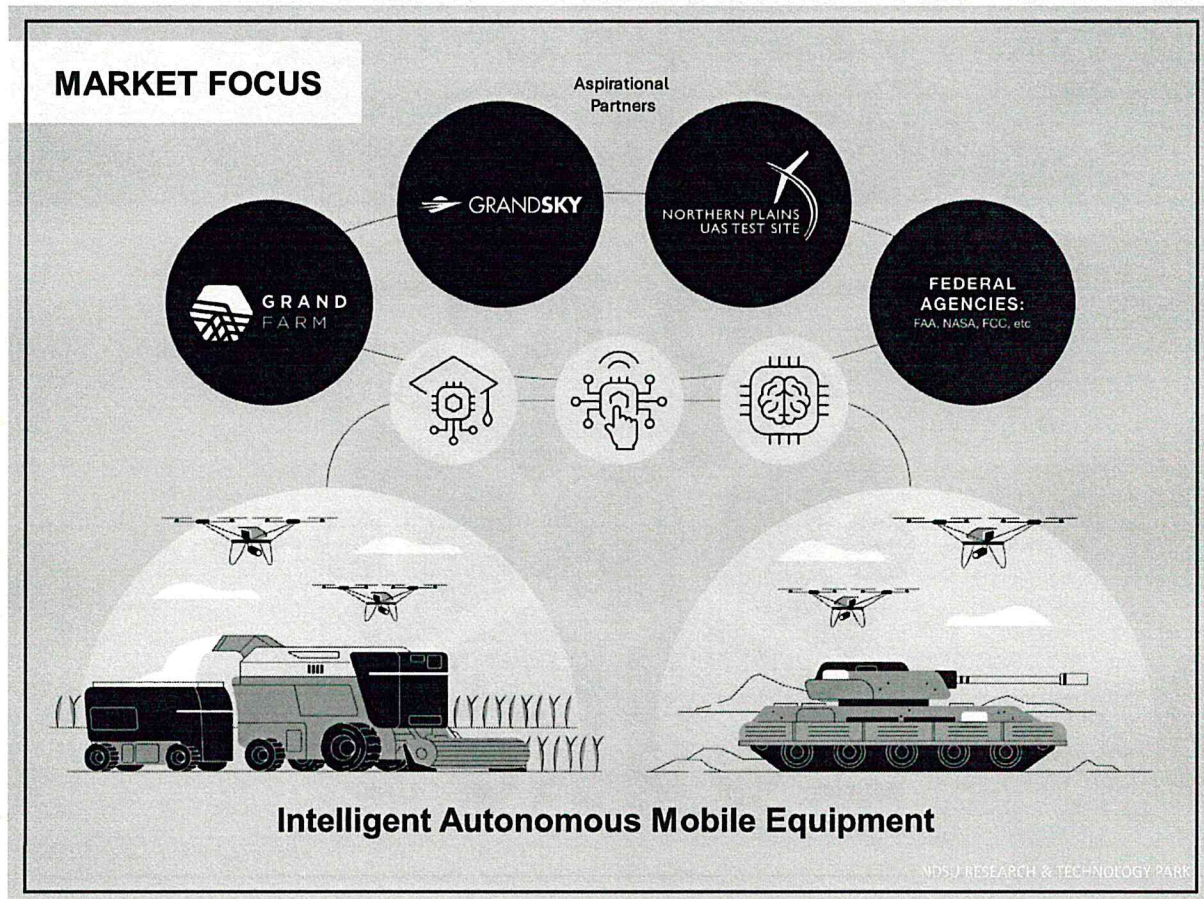
- ✓ \$40 million hypersonic and applied research facility
- ✓ Single location for industry partners to work on materials and manufacturing innovations and test capabilities
- ✓ Vertically integrated prototyping center to design and manufacture
- ✓ Opened June 6, 2023

NDSU RESEARCH & TECHNOLOGY PARK

As this business model started to take shape, we began looking into whether others were doing similar activities. It turns out that yes, a few are. For example, Carnegie Mellon's National Robotics Engineering Center (often referred to as NREC) has core functions like what we are going to start doing. As you can see on this slide, they conduct rapid proof-of-concept and in-depth development and testing. They have been highly successful with their model generating \$800 Million in Revenue over the years.

SRI stands for the [Stanford Research Institute](#). They also conduct similar activities but do go beyond into other means of commercialization activities. Both NREC and SRI have had significant start-ups created and spun out because of their model.

Finally, Purdue University. Last summer they opened a manufacturing innovation and test center. They are a vertically integrated prototyping center that will go beyond that stage and into manufacturing.

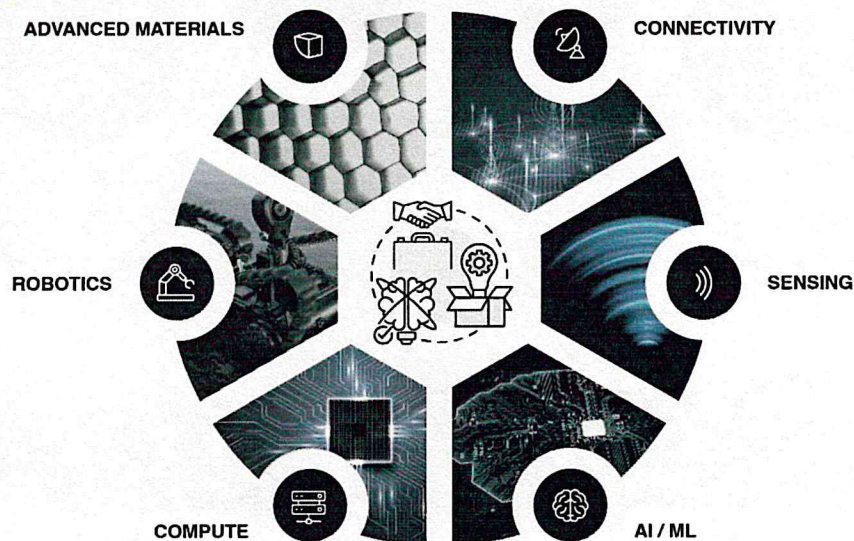


While our vision and business model were starting to take shape, we turned our attention to market focus. We can't be everything to everyone, so we are focusing on the precision ag and defense markets. The technical problems that exist in making a ground and air system work seamlessly are the same in precision ag and defense. You wouldn't necessarily know that unless you spent time working in both industries like me and my Chief Technology Officer have.

An underlying enabler is also the Energy market. To do the types of activities we are going to talk more about we need power – computational power – which means we need Energy Innovation. ***We want to compliment the work the EERC is doing by focusing on robotics and AI to advance that industry while they continue the great work they are doing in energy and geology.***

Also, as you can see, we want to leverage the environmental test capabilities that exist in the State. We have no intentions of duplicating those efforts but instead leveraging them.

## CONVERGENCE OF TECHNOLOGIES TO SOLUTIONS



NDSU RESEARCH & TECHNOLOGY PARK

To develop intelligent autonomous mobile equipment, we needed to identify the key technologies that we were going to build a team and industry expertise around. As you can see by this slide, when you peel back the technical layers of what goes into developing autonomous equipment, key technologies rise to the top. They need to be connected to networks to enable them to work in all kinds of different environments. They need to be able to sense and think. We need to leverage AI as a tool to give them utility or purpose so they can perform specific tasks and so forth.

Recently, I hired Josh Gelinske to serve as the Park's Chief Technology Officer. He brings significant technical expertise in several of these areas like connectivity, sensing, and artificial intelligence. He's now tasked with developing a high-caliber, high-performing team of engineers and industry experts to begin working on contracts and/or our own products. You'll hear more about our model in just a minute.



## CARNEGIE MELLON UNIVERSITY NATIONAL ROBOTICS ENGINEERING CENTER



- World leader in engineering robotics solutions for agriculture, defense, mining, automotive, and energy.
- Develop and mature robotic technologies from concept to commercialization.
- Rapid proof-of-concept demonstration followed by in-depth development and testing.

**\$800**  
Million in Sales

**27**

Years of Making  
Robotics a  
Reality

**350+**  
Projects  
Successfully  
Delivered

**850+**  
Individual  
Inventions

**160+**  
Robotics  
Experts

✓ Targeted robotics partner

✓ Access to technical expertise in world-leading robotics

✓ Highly respected reputation

✓ Acceleration of Park's vision and strategy

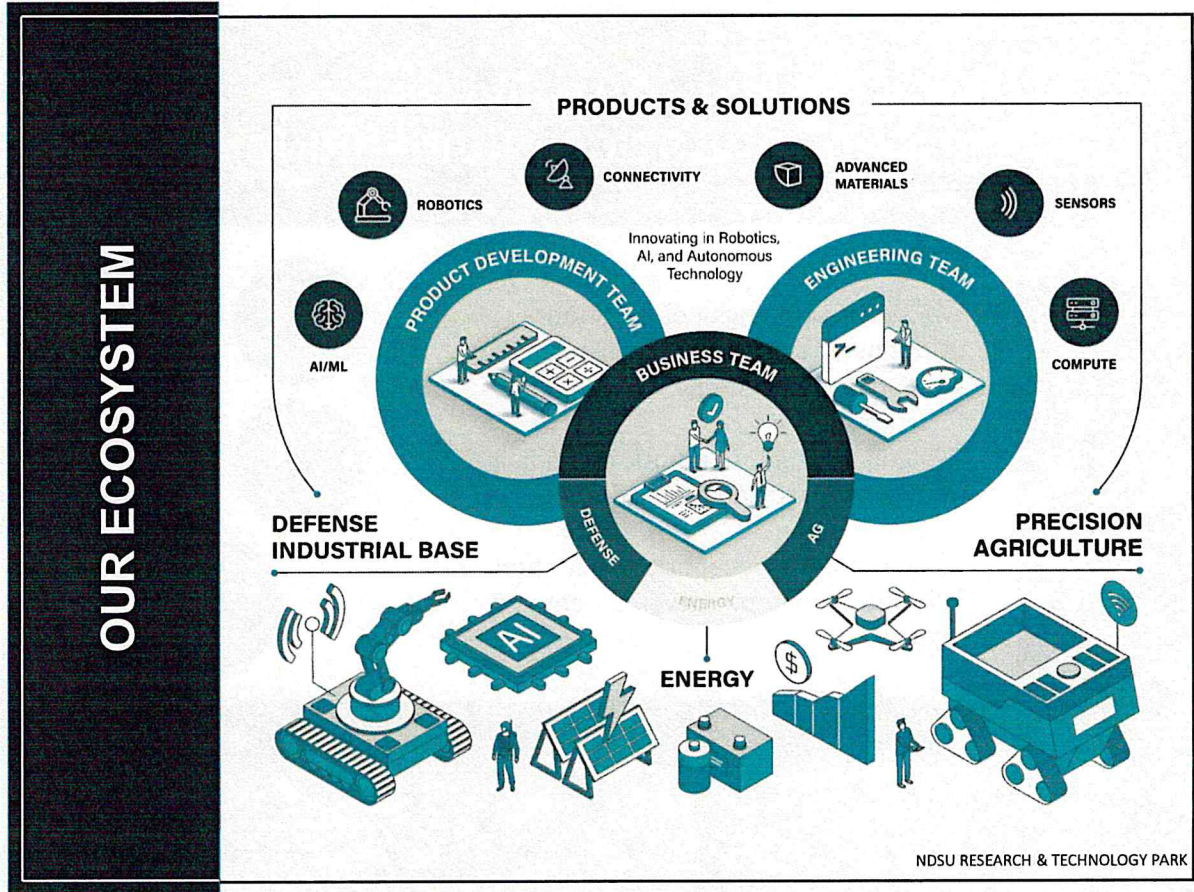
✓ Intellectual property policies and procedures already  
accepted by the private sector and military

NDSU RESEARCH & TECHNOLOGY PARK

Back in February of last year, we reached out to Carnegie Mellons' National Robotics Engineering Center as we wanted to visit and learn more. As time progressed, we discovered they were looking for a strategic partner. They also see what we see and want further diversification in precision ag and defense.

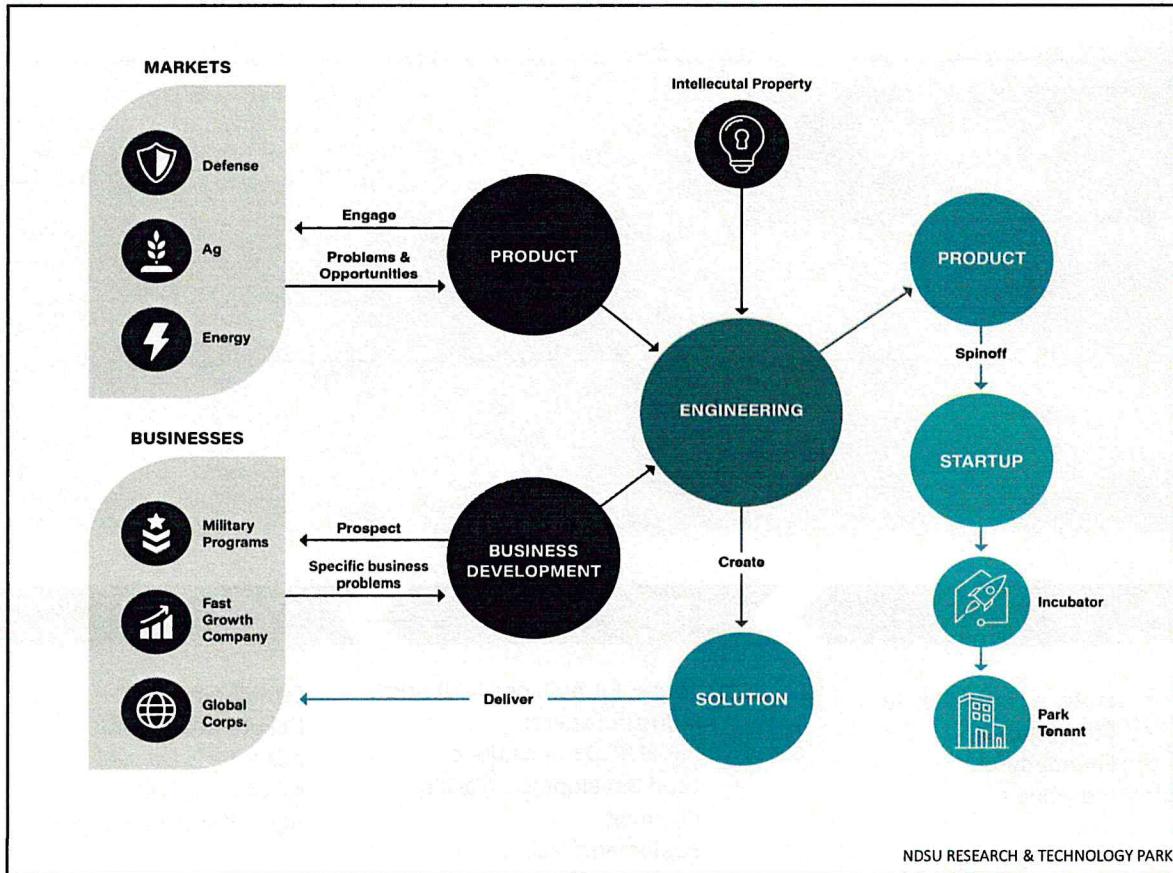
We have since entered into a Letter of Intent with NREC and are in the process of working through a collaborative agreement with them. Mr. Jeff Legault, Associate Director, NREC will follow with testimony and explain NREC's support of this project.

Win-Win Partnerships. NREC brings significant technical expertise to the table in niche areas. They are a highly respected global leader in robotics, having deployed robotics on every continent around the world. In addition, you don't generate the level of Revenue that they have without having figured out the IP strategy to engage with the commercial market and military. All of this will enable us to accelerate our vision. In turn, NREC has access to complimentary technical skills in areas they have an interest in, a strategic partner to collaborate with on federal programs, and a fast-track to further market opportunities.



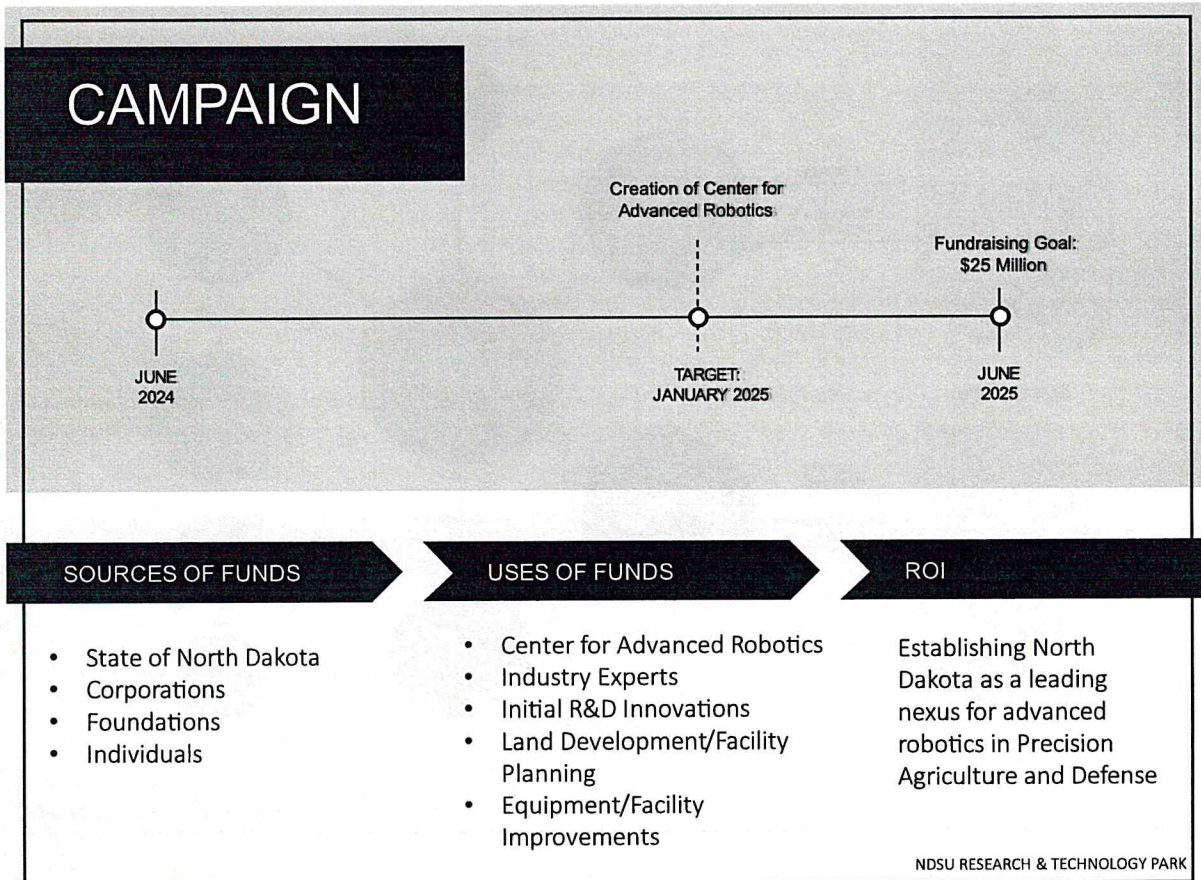
Let's bring this back to us. This is a look at the future state of the Park. Starting in the center of the screen these are the key teams we are building internally. They will connect us to the markets we serve and the key technologies we plan to focus on that you see at the top of the screen.

The result of this is going to be the impact we bring. **Advanced automation addressing jobs that continue to remain unfilled.** Technology advancements and new product development that enables the commercial market and military to improve their Return on Investment by further integrating intelligent autonomous mobile equipment into their operations.



If we peel back another layer, you can see the markets we are going to serve on the left as we engage with them to determine which problems and opportunities to focus on. Those will be pushed to our Engineering team where they'll either leverage existing IP from others or create our own. The result is going to be either a solution that is then delivered back to our customer or a product that we decide to spin out. This will create our own internal pipeline of start-ups to fill the incubator with some subset of those growing large enough to become a tenant in the Park.

We will still work with other start-ups in the region and across the State, but this model allows us to also lean into our own activities and create an internal pipeline of start-ups.



As I close, we are in the process of fundraising and intend to use those funds to establish a yet-to-be-named Center for Advanced Robotics, continue to hire industry experts to grow our team so we can begin engaging with the private sector and military, and/or begin working on our own products. We also have infrastructure needs (water and sewer, roads, signage, etc.) to develop some land in the Park. Finally, we need to make some facility improvements to accommodate the electronics equipment we need to start layering into the 8,000 sq ft Innovation Studio that we have in the Technology Incubator.

## ECONOMIC EFFECTS EXPECTED IN NORTH DAKOTA

| JOB                                                                                                                                                                                                                                                                                                                                 | PAYROLL                                                                                                                                                                                                                                                                | SALES                                                                                                                                                                                                                                                   | VALUE ADD                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Total of 900+ jobs will be created in the region</b></p> <ul style="list-style-type: none"><li>• 900+ jobs will be on going each year</li><li>• 400+ direct<sub>2</sub></li><li>• 400+ ripple effect jobs</li></ul> <p><small>1. 10 Year Cumulative, ND Region<br/>2. Research Park Operations + Spinoff Startups</small></p> | <p><b>\$375M+ in new payroll/benefits in the region<sub>1</sub></b></p> <ul style="list-style-type: none"><li>• \$80M+ in recurring payroll/benefit</li><li>• \$100K+ average direct annual salary<sub>2</sub></li><li>• \$70K+ average ripple effect salary</li></ul> | <p><b>\$900M+ in sales to businesses in the region<sub>1</sub></b></p> <ul style="list-style-type: none"><li>• \$250M+ sales will be on-going each year</li><li>• \$180M+ in direct sales<sub>2</sub></li><li>• \$70M+ in ripple effect sales</li></ul> | <p><b>\$300M+ in contribution to Gross State Product<sub>1</sub></b></p> <ul style="list-style-type: none"><li>• \$60M+ will be ongoing each year</li><li>• \$10M+ in direct<sub>2</sub></li><li>• \$50M+ in ripple effect</li></ul> |



Our Return on Investment is centered around establishing North Dakota as a leading nexus for advanced robotics in precision ag and defense. Today there are **620 jobs in the Park with an average total salary of roughly \$52,402,790**. When we fast forward 10 years and turn around, we want those years to have counted.

This is a very preliminary and conservative look at the economic effect which is building on the foundation we have today. We worked with outside parties to develop an initial look at the Year 10 effect which includes additional job creation and economic impact.

We started with the question, Why? Why are we doing this? The answer – we believe we have the right industry experience and the pieces in North Dakota to excel in bringing advanced automation and robotics to industry and the military. Now is the time to do so. We believe the future impact on the State will be profound.

Thank you for your time and consideration of our request. I'm happy to answer any questions you may have.