

Oklahoma Innovations Radio Show

Air Date: October 24-25, 2015

Guests: **Brad Rickelman**, Meridian Technology Center for Business Development, and **Kenneth Sewell**, Vice President for Research at Oklahoma State University

>> From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine, brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is science and technology. The OCAST mission is to identify and fund promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of Oklahoma's most gifted scientists, inventors, entrepreneurs, manufacturers, educators and business leaders who all have one common goal: developing technology based economic growth for all Oklahomans. Now, here are your hosts Gary Owen and Chad Mullen.

[Music]

>> Thank you so much for joining us this week on "*Oklahoma Innovations*". Chad and I are in Stillwater once again and we are coming to you from the Meridian Technology Center's, Center for Business Development and this is a really cool facility Chad.

>> Yeah Gary, it's a great facility. We here at OCAST work a lot, well with a lot of the career techs and their incubators across state and Meridian Tech I have to say has, is definitely in the very top of that. They have great programs. A lot of companies that OCAST and i2E has invested in have incubated here at this center and then have gone on to bigger and better things so we're happy to be here on the campus of the Center for Business Development at Meridian Tech and we're excited to have Brad Rickelman today to talk a little bit about the center.

>> Brad Rickelman, you are the assistant director for the facility. Tell us a little about you.

>> Yes, well I originally worked in software as a product manager, did some marketing, marketing communications, things like that and so about eight years ago when Amy Polancheck, a former director of the Department of Commerce came on board she said, you know I'm dealing with all these companies. A lot of them are technology companies. A lot of them are Oklahoma State University technology companies. We'd love to have somebody who can talk to them really about new product development, getting your product in the market, talking to the market. We'd love to have you come on board and so I've been here ever since as the Assistant Director.

>> I thought you said you're, I would have said you're in radio or something. You've got a great radio voice.

>> [Laughter] thank you very much.

>> Is it my understanding, did you say you do a little bit of work in the Stillwater area in radio?

>> We do. I have a show, a business for breakfast show with Bill Van Ness on AM radio in 780 on every other Monday morning at 8:15 and we also work through our marketing department on both the show on the FM station as well.

>> Well, very cool.

>> You know, get a chance to do a little bit of that and also a way to communicate really with people out there about entrepreneurship, starting your own business.

>> So what kind of businesses do you have in the incubator right now? Can you give us a scope of what you have here? It's pretty broad I would assume.

>> It's a fairly large scope. For the first eight or ten years of this business incubator it was a technology-based business incubator and so the businesses had to be technology-based. We widened that over the last four or five years but I would say at least half of our technology is Oklahoma State or Oklahoma State faculty type of technology or businesses. Right now we have about nine companies and so in terms of OSU technology and since for our upcoming speaker roll to roll technologies, right doing things with web publishing. We have also Billy Goat Ice Cream which is.

>> Billy Goat Ice Cream?

>> Billy Goat Ice Cream. It's goat milk ice cream.

>> Really?

>> They were a, with Rashaun Robinson and his partner were, Caleb, were OSU Master's students in Entrepreneurship. This was an idea. We're here. What do we have? We [inaudible] student at Langston. What does Langston have a lot of? Goats. What would people like with goats? Ice cream and so they've come up with this ice cream and so we have Billy Goat Ice Cream.

>> How does the ice cream taste?

>> So, it actually, it does not taste like goat at all.

>> Really?

>> It's very interesting. Goat milk has a very low milk fat content and so it's a very hard, a very dense ice cream. It's very cold, very dense. It's in stores throughout the Stillwater area and they're expanding through the region as it is so while you're in town.

>> Billy Goat Ice Cream.

>> Pick up a pint. You know, so we have a number of technologies like that, that are from the university but also community type of businesses that are growing. One of the things I love is Holy Cow Couture. She designs her own purses with kind of a Western flair. She was doing them in her house. She has thousands and thousands of Facebook followers. She literally will take a picture of a new purse. She posts it on Facebook and people just flood in to buy these hand-made purses. Well, she needed to grow her cutting and sewing. Where am I going to do that? So we have some space here that that's where she's doing it. So, it's a wide variety of businesses but they're all relatively local in our community and they're all showing growth and economic impact and that's really what we're looking for.

>> Absolutely.

>> Employees, economic impact.

>> And Brad, tell us a little bit about, I mean what, for those at home, what is an incubator? What's the purpose behind it? What do you do in an incubator?

>> That's a great question. A business incubator to me is an organization that nurtures development of companies during their first few years of business. And they do that by providing services, help you marketing, things like that and space, of facilities. For many years it was very much about space right. We've got a building in town. We don't really know what to do with it. Let's have all those entrepreneurs, all those start-up people come sit in it. But really what we've realized is the space is really ancillary to the entire project. It's the services. It's the connections. It's the networking. It's the things you can make happen amongst the businesses that really make an incubator incubate. And it's for the early stage right, not so early that they don't have a product.

>> Right.

>> But when they're just kind of getting off the ground and they're not really sure what they're trying to do and they're trying to learn what does that first customer want and.

>> And they don't have a lot of business capital to start-up so you have a lot of benefits in the certain background services provided.

>> You do although it's funny because people often think of, immediately think to money but oftentimes for small businesses money, everybody needs more of it, but it's actually less of an effect than ordering too much inventory and now what do you do?

>> Yeah.

>> It's really about helping them overcome all those little mistakes or problems that happen as you're sort of hiring your first employee and he or she turns out to be a terrible hire. Well, when you've got 100 employees, one bad, but if you have one employee, your first one and they're not right that could be a disaster. It certainly puts a bad taste in your mouth about your insecurities of, I don't know that I have the skills to hire the right persons.

>> Exactly and a lot of the times when faculty especially come in here, they're like look I'm a researcher. I'm a lab-coat wearing you know engineer. I'm a professor, whatever I am and now I have this business idea. Well now I've got to hire people or think about time clocks or I've got to think about what's marketing? And they're asking me what color blue do I want my blue to be in? And those kinds of questions are exactly the kinds of things that just, that can create paralysis. Oh, maybe I'll just scurry back into academia that way. But if we can provide some of those things, get them off the ground, get a few years under them and then they can go out and now they're going to be in their community and they're going to have those things and maybe they can overcome a few of those little issues that occur right when you're starting up. We often say you know I can't take a business that would be unsuccessful and make it successful, that's impossible, but what I can do is take a business that has good legs in it. It has an opportunity there and maybe by just, kind of clearing away a little bit of the thicket of all those mistakes or problems or issues that come for those first couple of years they're able to then come out and now they've got sales. They've got a process. They've got an organization and now they're able to really be successful in our community.

>> And here I think Brad makes a great point in the discussion about the entrepreneurs especially in the high tech world. A lot of times these folks are engineers. They're chemists. They're inventors and that's the most important part, they're inventing the product and they may not have a firm grasp on HR issues, OSHA issues, tax issues, accounting issues.

>> Business.

>> Maybe marketing issues, that sort of thing. And more importantly I don't think you want the inventor that can go out and make the technical sale or continue to improve that product wasting his time filling out you know paperwork and that sort of thing and so that's where I, and Brad correct me if I'm wrong but the incubators really, really do play a vital role in helping kind of build that structure around a really great product or technology that has a good commercial potential.

>> Absolutely. And I think you could almost think of it as incubators and various programs like them are a way to create an infrastructure or an ecosystem which is a very popular word now in entrepreneurship. It creates an environment wherein businesses can be successful, can achieve the goals they're trying to get to and that's really important for all of us insofar as we're trying to increase the economic development in our communities. Everybody wants it but how do you get there? You know, what are the types of things we have to offer to make that happen? And incubators can fill one part of that. Of course you need the money.

>> Right.

>> You need the opportunities. You need the technical expertise. You need the talent, the faculty, the individuals. You need all those pieces but if there's not any way to bring them all together kind of in the same room, good things can't happen.

>> Right.

>> And so if you don't have any way to do that, instead what you get are these sort of disparate individuals off running around and different things and there's no organization to any of it and so in a way incubators and their ilk, we provide that little semblance of organization that allow them to be more successful.

>> People, talk about the people you connect with at the university, at OSU. You have some connections there at [multiple speakers]?

>> Absolutely. Our closest connections for many years have been with the Riata Center which is the Center for, their Center for Entrepreneurship within the program at their School of Entrepreneurship. We also work very well with their New Products Development Center which is a center organized by the university which helps people develop, particularly mid-size businesses, a new product, things of that sort. And then there are those individual faculty connections that we've made over the years, whether they were people that came here and have tried or something and then they left or that they are still here or entrepreneurs in the community. So really in those three areas are the ones that we work with the most. Obviously The Morgan Accelerator Building is just away from our campus. It's the OSU place to develop. Also their businesses, their Technology Transfer Office we deal with very regularly because we're talking about technologies and if it's a faculty, what is the status of the IP is the first question we have to ask? The Technology Transfer Office clearly is one we're going to interact with, so it's many of these ways that we interact with one another at the university, some of which are formal because we have relational ones but most of the time, and I think that's sort of what it is to be in Stillwater, most of it is personal-related because you get to know those individuals. We're not so large that it's you know 37 people I've got to call over there. There's about five or six of us that all deal with the same kinds of things so you interact with them again and again and you build those relationships and now you can call each other and say hey, we've got something going on, you know, can you help us with this? And that's where we really make it work.

>> I think that's a great point and Gary that's one of the things I think that makes Stillwater a little bit on the unique side. They have and I guess ecosystem would be the right word to describe it. A lot of our state's technology and new start-up companies originally started on the campus of Oklahoma State University and they came through some sort of center on their way out like Brad's and there's just a really thriving, innovative, entrepreneurial ecosystem here really in Stillwater and I think maybe some of it is geography and some of it is the people.

>> Does OCAST have any clients that are possibly or in the past who used this facility? I mean do you have some star [multiple speakers]?

>> Oh absolutely and of course one that's currently in the incubator right now is Roll to Roll Manufacturing, Aravind Seshadri and his team. They're doing a fantastic job. They were at. They were a spin-out from Oklahoma State University. They have really got their product. I think we're fine. They're out making sales right now so you're going. They're going to be a big success. The other, it's one-person, two companies I can think of is MaxQ and XploSafe from that [inaudible] and they've recently graduated from the incubator. They have their own space now and are in the process of making sales and expanding.

>> Great. Brad Rickelman, thank you so much for educating us about the Meridian Technology Center and the Center for Business Development. It sounds like you've got an exciting job and you're a pumped-up guy [multiple speakers].

>> I have, thank you very much.

>> Yeah, it sounds great. When we come back we're going to be talking to our next guest who is the current vice president for research at Oklahoma State University, Dr. Kenneth Sewell when we return on your Oklahoma Science Radio Magazine, "*Oklahoma Innovations*".

[Music]

>> When I invented my new product I faced a lot of challenges from securing capital to recruiting qualified employees. It's a very complex path from innovation to the marketplace and I needed some help navigating the process.

>> The Oklahoma Center for the Advancement of Science and Technology and its strategic partners the Oklahoma Manufacturing Alliance and i2E help entrepreneurs. They support existing and start-up companies so they can succeed and create jobs, increase per capital income and grow the state's economy. In its 26-year history OCAST has funded nearly 2500 research projects and provided support to hundreds of Oklahoma-based companies. The investments made in these businesses, yield high returns for our state by strengthening and diversifying our economy. Advancing innovation is investing in a positive future, that's what OCAST is all about. For more information call OCAST, toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov

>> Now in its 20th year this is "*Oklahoma Innovations*" on the OCAST radio network.

[Music]

>> His position started back in June of 2015, a role where he oversees the policies, offices and service units that support and promote research, scholarship and creative artistry at Oklahoma State University. His name is Dr. Kenneth Sewell, current Vice President for Research at OSU. Welcome to the program, tell us a little about you, how you. You're a native of Oklahoma but you haven't been here quite a bit.

>> I am a native of Oklahoma, been gone for a very long time and it's wonderful to be back home in my native state. I'm a native of Coweta, Oklahoma.

>> Coweta?

>> Coweta, the Coweta Tigers which I love telling people that they are the Tigers because they inherited their first football equipment of Oklahoma State University, from way back in time.

>> Interesting.

>> The old Oklahoma A&M Tigers kind of concept and so we adopted the orange and black so the first picture of me in a football uniform that's orange and black I think I was three years old so I've been wearing OSU orange and black my entire life and just glad to be back.

>> Now you're a clinical psychologist by training which I think interesting but you've always embraced kind of that scientist world.

>> Well, I come from a, training as a clinical psychologist in a scientist practitioner model so many people associate clinical psychology with just laying on a couch and talking about your feelings and I can't say there's never been any of that aspect in my background but I was trained in the model of clinical psychology. We're trained as a scientist first and then in the practice component of psychology as an add-on and integrated component with the scientific approach so caught the research bug very early while in graduate school. I actually published some of the first works that I had begun as an undergraduate researcher and then continued publishing the work that we were doing in collaboration with faculty in graduate school and really became fascinated by, enamored by and kind of hooked on the world of science and the world of scientific communication and that took me in the academic direction so I've been in academia my entire career.

>> And by the way Chad he's being very modest. According to his resume here he's published more than 100 peer-reviewed articles and book chapters in addition to several edited books, psychological tests and test manuals.

>> Oh that's simply amazing and Dr. Sewell we're glad to have you here on the show today and we're excited you're going to talk a little bit about some of the great things that are going on in research and tech-based development here at OSU as we kind of alluded to at the front of the show. Oklahoma State University has had a tremendous impact on our state's economy over the last, I mean many, many years but the last 10 or 15 years of bringing new products to market, starting new companies, launching new companies and you really have a network of sites across state now, it's not just here in Stillwater so we see entities in Oklahoma City and the Helmerich Center in Tulsa.

>> Absolutely.

>> And many other places as well, so looking forward to talking about that. Tell us a little bit about you know, just what's going on at OSU that you're most excited about? Or what made you choose Oklahoma State University, how did you come here?

>> Well I honestly, the land grant roots was the most attractive thing. I cut my own teeth as an undergraduate at Kansas State University. I went up that direction following a football scholarship otherwise. So I came here and played against Oklahoma State I'm sad to say rather than for them but you can blame Jimmy Johnson for that, but got the experience of undergraduate research at a land grant university that really puts their focus on making research

matter, doing research that matters to the community beyond the laboratory, the community beyond the classroom. Look where the classroom is fed by that research and the classroom experience feeds the research and that sort of spirit and ethos of the land grant university that's a part of why we're in every county in the state and have the research tentacles across the entire State of Oklahoma. That's the spirit that grabbed me and one I was thrilled to participate in.

>> I can relate to that as hosting this program over the years that we've have interviewed a number of researchers at the campus and every time I come to this campus it's amazing the synergy and the energy, you just feel it on campus.

>> Absolutely. And now you came, Dr. Sewell from the University of North Texas and then you went to the University of New Orleans were you were Vice President of Research and Economic Development and those two are really tied together.

>> Absolutely, in fact both of my previous positions, the research and economic development was part of the title. Here prior to, prior to me joining OSU they'd made the decision and I think it's a great one, to really partner me with the economic development side of the house. So it's a big part of what the vice president for research has as an agenda but I don't have to oversee the entire operation so we have the OSU Research Foundation which within that has our Technology and Development Center and our Cowboy Technologies and I'm able to operate the research part and some of that outward-facing work and we're great partners whereas in my previous positions I really had to spearhead that along with championing the faculty research which is really the primary job of a vice president for research.

>> Sure. Let's talk a little bit about some of the programs, I mean this is a pretty broad scope. Can you just give us an overview of the caliber of research going on here? I mean it's pretty impressive.

>> Yeah, I really do want to preface any response to that question by really talking about the scope of research at a comprehensive research university like Oklahoma State University. We really have research going in virtually every discipline you can imagine and when I say research there I'm talking about research, I call it research with a capital 'R'. Oftentimes we think of research confined to technological or straightforward hard scientific fields but we have researchers in the arts and humanities that are pushing the boundaries of their disciplines forward. We have researchers in many of the social sciences and business research that often doesn't register in people's research consciousness. But OSU is a big place and the research that goes on there is big research.

>> It is.

>> And I'm happy to drill down into some of the specific areas particularly that are on our radar screen as some of our top priorities as we move forward. I'm helping the deans and the university groups really articulate what those priorities are but some of the hotter areas we can drill down into but I wanted to mainly start out by talking about research being across the campus and in virtually every department on campus.

>> Can you tell he's passionate about his new job?

>> Couldn't tell at all [laughter].

>> Oh well, this is exciting and we're going to learn a lot more as we visit with our guest Dr. Kenneth Sewell. He's the new VP of Research at Oklahoma State University. And see folks, you

never know what you're going to hear on this program and that's why I like doing it because I learn something every week and I hope you do too. We'll be back after the break on "*Oklahoma Innovations*".

[Music]

>> From Oklahoma City to Tulsa, Woodward to Lawton, this is your Science and Technology Radio Magazine, "*Oklahoma Innovations*" on the OCAST radio network.

>> Pancreatic cancer is the fourth leading cause of cancer deaths with a median survival range of only six months. As an oncologist I see far too many families suffer from the effects of this terrible disease. We need better treatment options for patients.

>> With the support of the Oklahoma Center for the Advancement of Science and Technology the researchers at Core Biotechnology have what they hope will eventually be a treatment, even a cure for pancreatic cancer. They have identified a protein that if blocked may prevent tumors or keep them from growing. With help from OCAST and i2E the team at Core was recently awarded an SBIR research grant to enable them to continue their research and move closer to a treatment for pancreatic cancer. If you're a researcher or a small business in Oklahoma and are considering applying for a federal SBIR funding contact OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov

>> I'll graduate college soon. I wanted real-world experience that would make me stand out to potential employers. That's what I like about my internship. It's preparing me for a competitive job market.

>> With the support of the Oklahoma Center for the Advancement of Science and Technology more than 500 Oklahoma students have interned with science and engineering companies. The OCAST intern program helps students connect with mentors, operate instruments not available in the classroom, build confidence and gain practical experience.

>> The OCAST internship gives me the opportunity to put into practice what I study in the classroom. It's a great learning experience and a chance to work with top-notch professionals.

>> Internships play an important role in connecting Oklahoma's brightest students to quality technology jobs in Oklahoma. Creating opportunities, that's what OCAST is all about. For more information call OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov

>> Research and development, technology transfer and commercialization creating high-paying jobs in Oklahoma, it's what OCAST is all about. This is "*Oklahoma Innovations*" on the OCAST radio network.

[Music]

>> Dr. Kenneth Sewell is our guest. He's Vice President for Research at Oklahoma State University and he's only been at the helm about, just a few months but he's very excited and enthusiastic about his position overseeing a lot of major projects and working with a lot of the deans and Chad he's got a bullet list of topics here he wants to talk about. I know one of the things that is very hot among Oklahomans is if you're an animal and you hear about medical breakthroughs or you think your pet or farm animal might be a candidate for some research of OSU, I know that's a big topic.

>> Yeah, people don't often.

>> You have a lot of respect I should say in this type of [multiple speakers] research.

>> People don't often think about the numbers of animals that are associated with Oklahoma State University. We have a lot of students. You know, I don't know what's the exact count this year, 26,000 some odd, some odd students, a whole lot of employees and we do a lot of research that involves humans and we do a lot of research that involves inanimate objects and so forth. But between the food and fiber and research and testing animals at Oklahoma State University there are about 40,000 at any one time.

>> Wow.

>> That we're currently working with and for and treating and attempting to understand everything from how sled dogs have their resilience and can continue to operate in extreme environments and how that might apply to other kinds of animal environments but how it might apply to how our military trains and facilitates the exertion of our troops in combat settings. So the implications of our animal research at OSU certainly have direct, direct importance for a person with a pet who might be worried about tick infestations and an environment that has that or a farmer with a group of animals that are feeding America. But it also has implications for human health because much of the research we do particularly in veterinary medicine is on toxicology and diseases that can impact animals that, but the treatments for which have direct implications for human health. So even though in Stillwater at least we don't have a medical school per se, we really do have a medical school, it's called the Vet-Med operation and because. The research that we do there has direct implications for animal health and human health and the connection between our healthy animals and healthy people is quite direct.

>> So are you saying that you think some of the animals research being done here, it could have some, have an impact on crossing over into human research?

>> Oh absolutely, absolutely. In fact much of our animal research is directly funded by the National Institutes of Health so it's funded because of its direct implications for human health.

>> Well I think. I mean what we're saying here is you are what you eat Gary and certainly.

>> That's true.

>> And certainly the National Institutes of Health have put a large focus on that, that to understand the condition of the human body better is to understand the food that we eat better. And then of course we've seen in the news here especially recently food safety is a huge issue and I know OSU is a leader in that field as well.

>> Absolutely. In fact the, I kind of in my own mindset think of it as how we power Oklahoma.

>> Right.

>> And we power the people and of course we have some much research going in the energy realm as well. We'll leave that aside for a second but how food safety, water supply and water utilization and how we cross that border between how water supports food, how water supports energy, how energy supports water and that whole nexus point is a strong area for OSU. And because of our land grant mission, because of that agricultural and mechanical origins of Oklahoma State University we've got strong hands in each of those areas and food safety is

certainly one that I think we're really looking to be a leader along with a few other land grant institutions in the middle part of the country as really being at the front of that field.

>> Sure.

>> Now one of the things that I'm curious about, we do a lot of work with here at OCAST is unmanned aerial systems or UAVs, Unmanned Aerial Vehicles or Drones, frankly speaking and OSU I believe is the only university that has a PhD program through their aerospace and mechanical engineering program and unmanned aerial systems, Governor Fallin has certainly made it a priority in her, some of the positions that she's taken that we're invested in it here in Oklahoma and that we want to be a leader in that industry. Tell us a little bit about some of the things that are going on UAS related here at OSU and?

>> Yeah, it's a fantastic field. In fact we really are a top program when it comes to unmanned aerial side of things but much of the expertise we have turns out is really applicable even more broadly than that. The unmanned systems really covers unmanned underwater, unmanned land-based vehicles and unmanned aerial. Now we've, the unmanned aerials is what's hottest right now and we get a lot of mileage out of that but many of the tools that are developed here in auto-piloting and the algorithms that are developed for swarm technologies and so forth are very much applicable in those other unmanned systems, ranges. But we have expertise in about the broadest possible manner in unmanned aerial systems. We have folks who design and build the platforms themselves. We have folks who design and program and develop the technological aspects of avionics, how these things fly around and how they can manage to have auto-piloting technologies, the sensor development, so sensors that may be useful for gathering data that are the purpose of deploying the unmanned aircraft such as sensing the things related to agriculture or the integrity of power lines that they may be monitoring, so the sensor technologies. But also, another important sensor component that we're very much interested in, being a part of is the 'sense and avoid' technology because once you're putting these things into environments that are, and we're not, they're not being manned with a person right at the controls. They've got to be able to notice when something unexpected is in the way or something needs to be avoided so the sense and avoid technologies. As well as the application side of things, whether that application is the, as I said, going and monitoring the power lines at a particular electrical distribution system, whether it's precision agriculture-related and coming up with new and innovative ways to utilize the technologies, we're partnering very strongly with our colleagues at Oklahoma University whose expertise, as you know, they're the world leaders in radar technology so when we think about weather applications we don't have to build that expertise here but we bring the expertise of the platform and the avionics side of things to that partnership. So, we're strong partners with OU where we build and design and they engineer and create the technologies to do the weather monitoring side.

>> And Dr. Sewell, we know, I believe we've had Jamey Jacob, Dr. Jamey Jacob here at OSU on the radio show before and it kind of brings out, this segment full circle. He is looking at using unmanned aerial systems to actually track the health of cattle herds and other herds of animals where they can go out and sense temperature and migrate around feeding patterns and where they're at in the field and that sort of thing. So I and to your point and also Gary, some of our viewers, we need to get them on the radio show sometime but there's a budding entrepreneur out of OSU named Dr. Ben Loh created a company called Unmanned Cowboys.

>> Absolutely.

>> And he's created a, he used to call it this, I believe he calls it the sphere now so this is his unmanned vehicle that incorporates really technologies from across the university, structural, material technologies, structural technologies.

>> Wow.

>> Sensing technologies and all that sort of thing and to have, to be an opportunity to meet with.

>> I have and in fact that particular innovation is one that's quite important and illustrates the breadth of potential for unmanned aerial vehicles in doing some of the things that we'd really rather our unmanned aerial vehicles do rather than people.

>> Such as?

>> Such as going into a burning building and being able to navigate in a. There are many innovations about that but one of the great things about that particular tool is that all of the propulsion systems and propellers are internal to a, an external shell that can bump into things and so it really can operate in a hazardous environment in a way that still is able to bring back images or other kinds of sensed data that lets us know, do we need to send firefighters into this very hazardous area? Are there people there? Are there reasons to stay out of this hostile environment and to do with a tool that can operate in that environment and then come out and be reusable? And that's very important.

>> It's easy to fly and it's indestructible. I mean it's the perfect UAV for me so.

>> You know I'm amazed when you look at unmanned vehicles and the scope of new technologies coming out and the maneuverability, the camera technology that's going on some of these vehicles, I tell you it's just mindboggling the people that are designing this equipment and the broad scope upon which these vehicles are being used in applications. It's just amazing and it's going to be the new future. We've got to take a break here Dr. Sewell because the clock commands but we have a lot more to talk about and we want to also when we come back I want to talk about how OSU is kind of getting into what we, I guess you label community-engaged research. I think that's another fascinating topic, a lot more to learn, when we come back on "*Oklahoma Innovations*".

[Music]

>> This is one of the longest-running weekend radio talk shows in America, "*Oklahoma Innovations*" on the OCAST radio network.

>> As a police officer one of the most dangerous parts of my job is arriving on a scene where an armed suspect has barricaded himself or where we suspect some type of booby trap. We're most vulnerable when we don't know what kind of explosives or weapons are on the other side. It could be deadly.

>> Tactical Electronics, an Oklahoma-based company invents, manufactures and sells tools such as under-door cameras and video fiberscopes that are used by law enforcement officers, military and counter-terrorism personnel around the globe. The tools allow areas and packages to be inspected from a safe distance which reduces the risk of injuries and death. With the support of OCAST the company is developing image recognition software that scans packages and within milliseconds identifies what's inside. OCAST is advancing science and technology that not only improves but also saves lives. For more information call OCAST toll free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov

[Music]

>> Chad and I are delighted to be talking about Oklahoma State University and Dr. Kenneth Sewell who is the Vice President for Research at OSU. Before the break I was teasing the audience about a comment you made during one of the breaks talking about community-engaged research. What do you mean by community?

>> Yeah, that's a good question. We oftentimes think of communities as being things that exist as population bases in a particular area, town, a city et cetera and that certainly can be a community but with the various communities that we engage with at OSU they can be communities of identity. The veteran community, certainly the various tribal entities that we want to partner with in mutually beneficial ways as well as municipalities but also the corporate community, the business community. And research at OSU, I mentioned before, it's research that matters to people and things outside of the campus and so one of the things that's a history of, part of the history of research in the United States really is the researchers going out as the experts and saying okay I see you have a problem, I can help you solve that. But oftentimes we, what we really need to do is engage with the community and help co-define the problems because the communities that we're talking about and here we're talking again about maybe a municipality but also a tribal entity or a school district as a community where the experts, the real experts are also in that community. And we go and partner with them, define a problem together and then work out the research that is seen as mutually-beneficial that we're both bringing tools to bear on and the outcome of that research then isn't just a publication that maybe gets me credit towards tenure or a promotion at the university or that gets me recognition in my field, maybe it's that also but it's really a solution that can be implemented back in that community so that the expertise brought to bear is part of the relationship between the university and the community and the solution then becomes mutually-beneficial to both sides. And so we're really looking, there's a lot of that that's already going on but we're looking to attempt to highlight it and resource our experts at the universities. Many of us, a psychologist for example has got expertise about psychology but I might not have any expertise about working effectively with a school system or working effectively with a tribal entity. But bringing those other experts just like we were talking about with businesses that some of those specialty expertise sets, bringing those to bear on that partnership so that we can create the partnership in the community.

>> And Dr. Sewell, you make an interesting point there. Gary and I are generally speaking talk dollars and cents and products and widgets and spin-out companies, that sort of thing but there's a lot of research that happens that, as you say, goes back in the community so you partner with health care systems, mental health systems, school systems and they provide innovative ways really to provide treatment or intervention.

>> Yes.

>> With very positive economic impacts really in the long run.

>> Absolutely. And the economic impacts are sometimes a little less directly calculable but they're there none the less. And you know the university, a university like OSU has its economic impact in lots of ways one of primary which is actually the workforce development, town development for the state but one of the ways that it has its economic impact is just creating that sense of importance and relevance to various communities, be they again towns and communities like that but also broader communities like the farming community for instance.

>> Sure.

>> And those partnerships that have long been there in the farm and field side of the relationship with the community I'm looking to help promote the expansion of that and almost the institutionalization of it so that we're seen as the go-to place for solving those kinds of problems.

>> Wow, that's great. You have a super computer project with some federal grant money behind this I hope?

>> Yes. We in fact, Oklahoma State University has, already has a super computer, that's for part of the state super-computing programs but that super-computer is called Cowboy. We're very proud of Cowboy, it's working very well. We're leveraging it in lots of great ways and helping our big data problems get solved with big data solutions. But most recently our director of super-computing has written a proposal to the federal government. The National Science Foundation saw that proposal as being highly meritorious.

>> Cool.

>> And is funding a new super-computer that we're going to bring online alongside Cowboy so we're not just going to retire Cowboy and replace it, we're going to expand it by bringing this new, super-computer online. We tossed around a few names. Stallion got in there somewhere but I think somebody in the country has already claimed Stallion as the name of their super-computer. So we're actually talking now about Pistol Pete so we might have Cowboy right alongside Pistol Pete.

>> There you go, why not?

>> And so, it really. I mean it sounds kind of cool just as a thing but the power of a super-computer is really how it allows big data problems to be tackled in innovative ways and we've got faculty that are researching the possibility of new kinds of drugs, DNA sequencing problems that can be benefitted by the super-computer but also data mining and just big data problems. We talked about the unmanned aerial systems, the amount of data that these kinds of tools will capture and bring in, that dataset only becomes useful when we can tackle it with heavy computing resources and that's what the Cowboy and its new, big brother will be able to provide.

>> I can hear tongue in cheek commentary, yeah Pistol Pete, the super-computer, the big gun that really kicks out big daddy you [multiple speakers].

>> You like that [laughter]?

>> Maybe the big gun, I don't know. There might be some other, some other implications to choosing that.

>> Now Dr. Sewell, will this computer, the super computer, is this open to other? Is it a collaborative use? Do folks at other universities use it for public industry? Or is it there on campus?

>> It's primarily user-set, in the campus community because they're the ones with the skillset to be able to utilize it most readily but we do have a program in place at a state level where OSU cooperates in where other entities and users are able to come on campus and take advantage of that super-computer.

>> Well, that's fantastic. Tell us a little bit about, what kind of, and I think we like to ask all our guests this, you know what's, what's the future? What do you see for OSU or really just the field of technology development and research?

>> Well, my vision for OSU is to take some of these, the strengths that are already here, leverage those so that we simultaneously create that kind of impact that we've been talking about but also leverage them in a way that becomes infused with the identity of the university. Graduate students choose a place to go to school primarily because they've chosen a field and they know there are researchers and mentors at that university who can take them in the direction they already want to go. Undergraduate students often don't quite know what they want to do yet but they also are likely to think about, well there's a good student experience there, a good dorm life there, a good.

>> Football.

>> Athletics there at that university.

>> The overall university experience.

>> The overall university experience. My vision is that we elevate research at OSU to a point that it enters that conversation and after the game on Saturday you could walk across this campus and hear people saying, you know when we recovered that fumble in the fourth quarter, wasn't that really cool? They used that first person pronoun to talk about the athletics at the university. I want that first person pronoun to be when we're talking about UAVs. You know what we do at OSU? And to have that permeate and part of that is getting the undergraduates into the laboratories and out into the fields with their mentors, with their graduate student colleagues. We're introducing some new programs in that regard right now and expanding the programs that we currently have to really make that be part of the consciousness of the university. That it's ultimately about the students. Now I know we talk about research and impacting the world but if we don't impact the students, if we don't infect the students with that desire to solve tomorrow's problems then it doesn't matter how many new tools we develop today, it will all end in the generation.

>> That's right.

>> And so the whole research enterprise at OSU my vision is to have it be a part of the culture, a part of the ethos, a part of the identity of the university.

>> You know talking to you through this program I see you having a motivational impact on the research OU because you, obviously our audience can tell about your passion and your vision but your enthusiasm, it's like you just want to surround the entire campus and motivate everybody to get excited, not just about education but about the focal point of how important the research sector of your university is and you want the whole campus to be buzzing about that and I think that's a really exciting approach to what you're doing in your new position.

>> Well thank you and I really do think that when OSU is hitting on all cylinders it's transforming people's lives.

>> It is and you'll get a great. You'll get a new perspective from the public as well.

>> Well [multiple speakers].

>> [Multiple speakers] thank you. I think that's really smart. We are out of time. Listen, Dr. Sewell, you've been a phenomenal guest and we've got to have you back.

>> Oh absolutely.

>> And learn more about what's going in research at OSU and we thank you so much for being a part of our program and Chad, when we come back I think we're going to be, in future shows we're going to be talking about weather in an upcoming show soon.

>> Well it's coming up next.

>> The National Weather Service so we'll be talking to you. So stay, stick around every week. You'll never know what you're going to learn on "*Oklahoma Innovations*". Have a good week.

[Music]

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