Ramona Schindelheim, WorkingNation editor-in-chief:

You're listening to Work in Progress. I'm Ramona Schindelheim, Editor-in-Chief of WorkingNation. Work in Progress explores the rapidly changing workplace through conversations with innovators, educators and decision-makers, people with solutions to today's workforce challenges.

Ramona Schindelheim, WorkingNation editor-in-chief:

In 2018, when there were still undergrads at the University of Oklahoma, William Booker and Catherine Ha had an idea for a health tech application. They developed it and pitched it at a 24-hour programming competition, and they won. Now they had a product, Babel, an app to make electronic health records more intercompatible. But as Booker explains, they ran into a conundrum that most start-up companies face, deciding what to do next.

William Booker, Babel Analytics CTO:

You're sort of coming out of college, have no idea what you're really getting yourself into. The thought was kind of to give it the old college try. It became sort of a process of putting one foot in front of the other until we're a lot further along than we sort of initially expected.

Ramona Schindelheim, WorkingNation editor-in-chief:

Then they were introduced to Tom Wavering. We met him in the first episode of Destination Tulsa: Tech Hub in the Heartland. Wavering showed them how to get a government grant through the Small Business Innovation Research program, but there was a hitch. In order to get the money, Booker and Ha needed to develop a product to solve a problem in the federal government. So, they pivoted.

William Booker, Babel Analytics CTO:

We were initially working with the Defense Health Agency to build a system to detect laser eye injury in pilots. The DHA at the time was very concerned about pilots over Iraq and Afghanistan being shot with lasers, and so they were wanted a way to detect that whenever they landed.

Ramona Schindelheim, WorkingNation editor-in-chief:

They got the grant and developed the app, but then they had another hurdle. It was going to be hard to market the app to consumers in the civilian population, because laser eye injury is so rare.

William Booker, Babel Analytics CTO:

We wound up pivoting that technology, which is what we're working on right now, into the pediatric space, using it to detect rare eye diseases in children. It's used by nurses or assistants, as opposed to the physician themselves. The way that rare disease screening is done today is called the red reflex exam, where the physician will shine a bright light in the back of the patient's eye. They'll look to see if the reflection that comes back to them is red. The problem with this is it's not very sensitive and it's not very specific. It's very, very error-prone. They miss a lot of conditions, and there's a lot of conditions that they see that aren't really conditions. They're just seeing reflections off of different retinal structures.

William Booker, Babel Analytics CTO:

What we have is we have a camera that the nurse uses to take a picture of the back of the eye, and then we have our artificial intelligence system on top of that, which analyzes the image and returns the result, letting them know if they need to either refer the patient or if the patient is healthy.

Ramona Schindelheim, WorkingNation editor-in-chief:

Babel recently submitted an application for a second round grant from the National Cancer Institute. They've already built an initial prototype and tested it on 30 participants with success. In Phase 2, they'll be getting it market-ready and then proving it in a rigorous clinical trial. As a two-person start-up company, Babel Analytics has a potentially bright future. But they've had help, not just from Wavering in the Tom Love Innovation Hub, but also from 36 degrees north. That's an incubator space in the heart of Tulsa. We'll be taking a closer look at that space in the final episode. It's likely there'll be more health tech and data analytics start-ups in Tulsa in the coming years. The Tulsa Innovation Labs is making these tech areas a priority as it grows into the nation's newest tech hub.

Shawna Khouri, Tulsa Innovation Labs:

Our vision is for Tulsa to be the easiest place to do business in virtual health.

Ramona Schindelheim, WorkingNation editor-in-chief:

Shawna Khouri is the virtual health manager at Tulsa Innovation Labs.

Shawna Khouri, Tulsa Innovation Labs:

The things that we're building here will help create the funding environment, the clinical environment, the workforce environment, as well as policy environment, to help make that happen. One of the additional strategic advantages that Tulsa has in this area is being a right-sized city where you mobilize partners and get things done quickly, where there's mutual strategic interest, and where we're really amping up that source of value with all the resources that are specific to virtual health opportunities.

Ramona Schindelheim, WorkingNation editor-in-chief:

Virtual health is more than just traditional telemedicine. It's the software, hardware and services used to decentralize healthcare. That's important for rural populations where health outcomes are worse and their life expectancies are shorter than their urban counterparts. Khouri says virtual health applications can improve the health of more people, not just in Oklahoma, but around the country.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

We've built a highly-centralized healthcare system that revolves around huge capital investments into hospital beds. When you have a distributed population, it can be hard for them to get equal access to those resources. We're at a place now, from a technology development standpoint, whether that's sensors, AI, remote patient monitoring, in some ways even cybersecurity and the Internet of Medical Things, that we can start deploying some of these solutions in a way that can provide a really healthy disruption for how we deploy healthcare in this country. The models and technologies that we're deploying in Tulsa and in our surrounding community have the ability to impact on how care is delivered, not just regionally or nationally, so things that work in Southeastern Oklahoma should be able to work in Kansas and Nebraska and the 19% of the US's population that lives in a rural part of this country.

Ramona Schindelheim, WorkingNation editor-in-chief:

The need for virtual health applications accelerated with the COVID pandemic, because people were wary of going to clinics and doctors' offices.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

Not only are these hybrid in-person and virtual or just straight virtual care episodes comparable, in some cases they're better. There's also data to suggest, especially for some of these hospital-at-home programs, they're actually preferred by patients. When you have something that's a better patient experience than a comparable, if not better, outcome, it's very compelling as we move to patient-centered care rather than building a whole care process around the fact that you've spent a $100 million on a building. It creates a much better experience for everybody all around.

Ramona Schindelheim, WorkingNation editor-in-chief:

Khouri says Tulsa is an ideal place for health tech start-ups, because it's an urban gateway to rural America.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

The healthcare of Oklahomans today and the subsequent impact on productivity from an economic perspective, it's not sustainable. A lot of the state's legislators, through the executive branch and then even at the city level, are looking at how to deploy their resources to improve the health outcomes. If you look at most health outcome indicators, Oklahoma is, if not at the bottom, in the bottom two when you look at things like avoidable cancer deaths, hypertension, obesity, type 2 diabetes. Chronic disease burden here is tremendous. There's a tremendous need for patients, so there's a great reservoir to help test some of these. That need is a huge part of what's helping drive this for Tulsa.

Ramona Schindelheim, WorkingNation editor-in-chief:

Khouri says start-ups in this field are leveraging the successful Project ECHO. That's a communications network linking specialists and community physicians across the state.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

When the hepatitis B therapeutic came out, it was a very expensive drug, but it literally cures the condition.

Ramona Schindelheim, WorkingNation editor-in-chief:

Right.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

Getting that education out to general practitioners in the community who understand when to prescribe it, how to prescribe it, was really important. That was a very successful use case. For COVID, when you have a situation where we're, especially early-on, constantly learning new things about the disease, learning about how to treat it, how not to treat it, and even looking at local and regional caseloads and what the current burden is on different hospital systems, they were able to rapidly stand up and deploy a way to communicate that across the state .

Ramona Schindelheim, WorkingNation editor-in-chief:

Because health tech and data analytics are still emerging fields, tools are still being developed and talent needs to be cultivated. That's why Tulsa Innovation Labs created a new way to connect professors with clinical and technical expertise and promising undergrads with great ideas to the right funding sources. The initiative is called Canopy. It's a consortium linking Tulsa Innovation Labs with the University of

Oklahoma, Oklahoma State University and the University of Tulsa, as well as the Oklahoma Center for the Advancement of Science and Technology.

Shawna Khouri, Tulsa Innovation Labs virtual health manager:

A grad student or a faculty member who wants to commercialize their research that they've been working on for a few years, that has some evidence that there could be something here that could make a clinical impact, and then we supercharge their efforts to turn that initial little sparkle of evidence into a full-fledged business case and product that can either go and be tested or taken to the next level with private sector funding.

Ramona Schindelheim, WorkingNation editor-in-chief:

Canopy is staffing up now, and they expect the first solicitation letters to go out by early summer. Tulsa already has a track record of successful start-ups. One venture capital fund has been funding new companies for more than two decades. The Oklahoma Life Sciences Fund, or OLSF, invests in new medical diagnostic companies and technology-enabled services businesses. William Paiva is OLSF's managing partner.

William Paiva, OLSF managing partner:

Investors putting money into venture capital funds was record times in '99 to 2000, really driven off of Internet technologies, telecommunications, wireless, all the kind of explosion of, let's call it, the Internet economy. Because of that, healthcare kind of got lost in the shuffle, so a group of investors in Oklahoma came together and invested in an entity called OLSF Ventures, which was really designed... and all of them had a vested interest for any number of reasons... in propagating early-stage healthcare opportunities in our region. They came together. They recognized the need that a very high percentage of the money was actually going in Internet technologies and healthcare was getting overlooked. That was the original intent of the fund was to recognize that there was a dearth of capital going into healthcare because of that time and let's create a pool of money in a fund to invest only in early-stage healthcare companies in this region.

Ramona Schindelheim, WorkingNation editor-in-chief:

Over 21 year years, OLSF has helped to build several successful companies based in Tulsa. One is Cellectis, which developed a monoclonal antibody to treat sickle cell disease. AliveCor is another company. Their device converts a smartphone into a clinical quality EKG to detect heart arrhythmias. Another start-up funded by OLSF is called CareATC. They developed an onsite clinic for companies that self-insure their employees.

William Paiva, OLSF managing partner:

They're able to take an employer's historical claims data and predict for them their future healthcare costs if they do not provide the appropriate near-site/onsite clinics and preventative medicine to manage their future healthcare cost of their employers.

Ramona Schindelheim, WorkingNation editor-in-chief:

Paiva notes that these companies and many others in health tech and data analytics are significant drivers of high-paying jobs. The average wages at these companies are three times the state average. Another Tulsa health tech company is Sway Medical. It's been around since 2010, but it relaunched in

2018. The Oklahoma Life Sciences Fund helped them with the most recent round of fundraising. Sway uses a smartphone app to screen a person for concussion risk. The data collected on the phone are sent to a medical professional for assessment. Chase Curtiss is Sway Medical's CEO.

Chase Curtiss, Sway Medical CEO:

Our product is cleared for use by the FDA for medical professionals, but we have people that use it for sideline evaluation. Others use it for an angle sprain and looking at their balance and recovery into it. There're a lot of different use cases that that professional would use to get quick, real-time data. I mean, yeah, it's hard to get to a computer lab to do screening to look at somebody's balance or cognitive function. That information is needed now or it's needed on the road. One of the big advancements of our product is just being able to use a mobile device to assess and evaluate and get that information quickly and in real-time. We've got a lot of great customers. World Surf League uses us all over the world. Being able to have that type of environment where you could test somebody anywhere is critical.

Ramona Schindelheim, WorkingNation editor-in-chief:

Curtiss says it's hard to identify where health tech stops and data analytics starts. At his company, they work together.

Chase Curtiss, Sway Medical CEO:

I mean, I think we're really software as a medical device, but because of the amount of data we're collecting and we're calculating the total number of stability from the accelerometer, there's 10,000 data points that are occurring over the course of 10 or 20 seconds evaluation. Then all of that is raw data that's sitting in our data sets. When we go back and analyze that, we're using machine learning to look at patterns, to create data outputs. It's hard to divorce those two and say you're a health tech company, or a medical device company, or a data and analytics company. We're kind of all three of those, and they're becoming more and more intertwined in their value to themselves and to kind of ecosystem, overall.

Ramona Schindelheim, WorkingNation editor-in-chief:

As an established company, Sway can now help others get their start, and because it's Tulsa, the environment is more collaborative than competitive.

Chase Curtiss, Sway Medical CEO:

There's five, six, seven kind of health tech-based companies here. I mean, I talk with leaders in those companies an every other week, once a month type of basis to learn what's working for them, what's working for us. It's that kind of tight-knit community I think that you are much more ingrained in than just the passerby in a lot of those bigger systems. I love that part of it and just being able to have that kind of support of a younger, but up-and-coming type of hub.

Chase Curtiss, Sway Medical CEO:

I think one of the areas we need to grow into is how do we get more partnerships with bigger companies that are outside of the area, as well? I think seeing more and more of that as a kind of platform to grow. Obviously, a lot of the work with Tulsa Innovation Labs on trying to be more intentional about how do we build out this health tech ecosystem is going to be really positive in what the next five years look like in Tulsa.

Ramona Schindelheim, WorkingNation editor-in-chief:

One Tulsa-based company is squarely in the data analytics camp with a social application. It's called Asemio. It's managing partner, Aaron Bean, calls it an advanced ecosystem for the knowledge generation. It uses privacy-enhancing technology to merge different data sets that would help a local government or social service organization better understand the needs of a certain community without violating the privacy.

Aaron Bean, Asemio managing partner:

We don't aggregate and hold any data. This is a different model than if you look in the private sector where the accumulation and centralization of data directly correlates to a large amount of power, of market power. In the social impact sector that doesn't behoove us as a vendor to do that, because we're not trying to accumulate market power. It's more knowledge generation, so educational health and private and philanthropic institutions can come together and decide what questions they want to ask themselves and use our platform to keep the sensitive data from ever being an issue there. The sensitive, personally-identifiable information never leaves the data contributor's location.

Aaron Bean, Asemio managing partner:

The secret sauce is it gets hashed using a cryptographic hashing algorithm to be turned into a linkage key, you could think of. I'm oversimplifying the technology, but that linkage key there can match the identity of an individual without releasing the details about that individual themselves. Without talking about the name, the date of birth, the Social Security number, you can tell that this individual is across disparate data sets, which enables your researchers then to ask these questions like, "Well, how many kids in the school system might be facing eviction?"

Ramona Schindelheim, WorkingNation editor-in-chief:

Bean says his goal for using data is to help society.

Aaron Bean, Asemio managing partner:

One of the questions we asked early-on in our journey, so we're about eight years old, and we said, "Where could we have the most impact with technology on society for in a positive way? Who's concerned with community-level outcomes?" Local government, state government, certainly philanthropy, academic institutions, local activist leaders, anyone who's interested in the population movement of outcomes in general, from a social impact perspective, is going to be asking questions that require you to bring together disparate data sets.

Aaron Bean, Asemio managing partner:

For example, during the early part of the pandemic, it was very clear that evictions that could lead to homelessness would be a problem, but there wasn't one single database that combines together the eviction data and the education data from Tulsa Public Schools. We were able to use this technology to answer questions around the magnitude of the problem that we might be looking at in the baseline that had been established historically.

Ramona Schindelheim, WorkingNation editor-in-chief:

People we interviewed for Destination Tulsa: Tech Hub in the Heartland say that the city itself is becoming a draw, rather than a drawback, to tech growth. Again, Aaron Bean.

Aaron Bean, Asemio managing partner:

As most of the world, and certainly the nation, is feeling more polarized, there's always been a strong sense of community in Tulsa in that we're willing to collaborate together to solve some of the hard problems there. It's the kind of city where when you get in involved, people are willing to reach out and help you. When I was living in Austin, there was just a freneticness that seemed to sometimes preclude me from meeting someone on the street that's connected to several other people I know that could help out with an initiative I'm working on. But in Tulsa, you're very likely to run into at your favorite coffee shop to someone who's working on a parallel initiative.

Ramona Schindelheim, WorkingNation editor-in-chief:

William Paiva says the lifestyle of Tulsa is an advantage.

William Paiva, OLSF managing partner:

The arts, the community, the Bricktown areas, the restaurants, the social scene, et cetera, focusing on those things is also equally important to keep people in the community, so exciting opportunity and exciting lifestyle. I mean, we've seen a generational shift over time. I mean, when I graduated college what we focused on was getting a good job and that was it, period, end of story. Now it's shifted towards people are looking for a strong work/life balance. They're looking for wonderful work opportunities, but also wonderful communities within which to have their lifestyle, start a family, that kind of stuff.

Ramona Schindelheim, WorkingNation editor-in-chief:

William Booker from Babel Analytics was raised in Oklahoma, and he also resisted the lure of bigger cities to make his mark.

William Booker, Babel Analytics CTO:

My network is here, and so that was really beneficial for me. There's also a much lower cost of living, which is really helpful whenever you're trying to kind of scrimp and save in order to make this dream a reality. I think that a lot of people that are here are really here for the long haul, especially if you wound up founding a start-up here in Tulsa. The trick is you've got to get a lot of people here to Tulsa to start those start-ups and then start growing them here so once they start growing, they're actually rooted.

Ramona Schindelheim, WorkingNation editor-in-chief:

You've been listening to the fourth episode in a special series for the Work in Progress podcast, Destination Tulsa: Tech Hub in the Heartland. In the final episode, we'll talk to some more Tulsa entrepreneurs, including one woman who founded a smartphone-based mobile laundry service with the help of a Tulsa tech incubator. We'll also talk with the head of Tulsa's community and economic development efforts, who's making sure that the growth of tech benefits the whole community. We'll meet an entrepreneur and activist who's using a tragic incident in Tulsa's history to encourage a more diverse tech community. Destination Tulsa was written and produced by Larry Buell. I'm Ramona Schindelheim, Editor-in-Chief of WorkingNation and the host of the Work in Progress podcast.