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A Q&A with Paul Maxwell, CEO of the Bi-National Sustainability Laboratory
by Dan Huff

Paul Maxwell, an international expert in science and technology policy, is executive director and CEO of the Bi-National Sustainability Laboratory (BNSL) headquartered in Santa Teresa.

BNSL is an initiative of Sandia National Laboratories and other regional organizations, including UTEP and NMSU.

Its mission is to bring together business experts, border community leaders, physical and social scientists, civil servants and engineers from Mexico and the U.S. to spin emerging technologies into economic gold for the border region.

Maxwell had been vice president for research and sponsored projects at UTEP from 1999 to 2005. He was responsible for the university's $185 million research portfolio and also spearheaded UTEP's efforts to connect to high-speed, broadband research internets – including one of only two national links to Mexico.

Maxwell has also worked for the U.S. State Department as an environmental, science and technology counselor at various embassies, including Mexico City from 1966 to 1998. There he was principal liaison between the Mexican and U.S. scientific communities.

Maxwell earned his doctorate and master's degrees in materials science and engineering from Stanford University. He did his undergraduate work in metallurgical engineering at UTEP.

El Paso Inc. talked to Maxwell at BNSL headquarters near the Santa Teresa airport.

Q. What's the purpose of the Bi-National Sustainability Lab?

We're trying to build border businesses. That's our mantra and that's our goal. We're trying to generate wealth within the border region as a result of our activities.

Our mission is to act as an engine for sustained economic development within the U.S./Mexican border region by creating bi-national strategic partnerships for economic development, and looking for public and private stakeholders – from the Gulf of Mexico, Matamoras-Brownsville, all the way to San Diego-Tijuana.

Right now we're now focused here in the Paso del Norte region, in the tri-state region that includes Texas, Chihuahua and New Mexico.

Q. What does the lab offer in the way of services?

What we're offering includes specialized facilities related to microelectronic mechanical systems technology, or MEMS.
This is related to nanotechnology. MEMS technology represents really teeny, tiny little things that are going to do great things in the future.
Some of our advanced HDTVs are already using MEMS in our homes. And air-bag deployment systems are dependent on MEMS accelerometer technology to activate airbags in today's cars. So there are already MEMS in our lives, but we just don't know about it. The opportunities in the future are fairly significant. What we offer is flex space that would allow for incubating upward of seven to eight companies, and then part of what we would do is offer incubation of business acceleration through technology-driven enterprises.

Q. Can you outline some of the specific projects BNSL is working on?
At this point we've been in existence since September of last year, and right now we've got some 24 programs and projects that we're evaluating and considering for inclusion within our facilities and our activities.
One of the programs we're looking at is what's called the El Paso del Norte MEMS Packaging Cluster Group, and that involves a coalition of all the major universities within our region. We've been working with the cluster group and are putting together a proposal; we've already been to Washington twice with members of the coalition, talking to the National Science Foundation.
This is a $12 million project that we hope would be funded by the National Science Foundation. Most of the monies would go to the universities, and some of the monies would come to our facilities in looking at specific applied technologies and activities related to the MEMS packaging.
As I mentioned earlier, MEMS are these tiny devices. Well, they're very fragile, but they need to go into some harsh environments – sometimes within the engines of automobiles, sometimes within the human body. So you've got to think about packaging them in such a way that they're protected from the environments they've got to operate in. That aspect of MEMS is something that, quite frankly, has not been considered very carefully by most of the researchers in this field. So we think it's a major opportunity for the El Paso del Norte region.
I would also note that UTEP, University Autonomo in Juarez, New Mexico State and others have invested somewhere on the order of $8 million or $9 million in the area of MEMS, for clean room and other infrastructure for this research. So the $12 million we're looking for from the National Science Foundation would be matched with investments that are already being made by the universities themselves.
Of course we're also looking to partner with Mexico in this. We're in discussions to see if Mexico will match that potential $12 million we're seeking from the National Science Foundation. So potentially we've got out somewhere on the order of $28 million in investment that we would be trying to make in this activity within this region.

Q. How is this operation funded?
We have some base funding from our partners, but more importantly we're

looking to work with individuals or companies to go after small business, innovation-type funding, of which the U.S. federal government has some $700 million available annually for those kinds of activities.
We also offer business mentoring and consultation; we have partners that can bring in experts from universities. Dr. Frank Hoy, for instance, and his UTEP program in entrepreneurial, is one of our key partners. We have students who are already evaluating business plans and activities within our group.
And then we're working closely with the financial community in identifying sources of financing for some of the new startups we hope to be working with, and this would be through angels or venture capitalists.
In the case of the State of Texas, we have the Regional Centers for Incubation and Commercialization under Gov. (Rick) Perry. I serve on one of the boards for the biotech regime, for instance, for the statewide efforts in biotechnology. I also serve on the governor's board for small-product development and small-business incubation that is also supporting business ventures in Texas.
And then, finally, we're looking to partner with our friends at the community college and universities in providing necessary inputs to companies that need employees with advanced training for certain types of equipment or certain types of processes.

Q. One would normally assume that a good idea finds its way to market fairly quickly, but from what you've said so far, we could surmise that's not necessarily so.
What we're essentially doing here is trying to bridge what they call the Valley of Death. Our universities, our research labs, our national research facilities are all very good at creating intellection capital, creating new research-driven products. But they're not very good at creating businesses from the results of their research. In essence people face a gap in understanding the different cultures that operate within a university environment, an academic environment, and what exists in a business environment.
While it's easy to make that observation, it's difficult to see how you actually bring those different cultures together in a way that allows for taking laboratory results, in which we've invested millions of dollars in research, and moving that to a point where it actually benefits society.
So BNSL is a mechanism for trying to bridge that gap between business interests, societal interests and what we create within our research environments.

Q. How do you do that, precisely?
We'll do that sometimes through prototype development all the way to technology and business development.
So we'll work with business groups as well as academic groups. You know, when I went through engineering school, I didn't take any courses in business and my knowledge of how the business environment worked was minimal On the other hand, most business majors rarely have any interaction with the engineering students. They operate in different worlds.

But you really need to bring those two interests together if you're going to have a technology-driven business enterprise. So we're working to push those two sectors together.

We're also looking to be pulling technology across that gap. Some researchers have the attitude, "Well, I've come up with this wonderful invention that's going to be the greatest thing since sliced bread, so come and buy it." That's the way the normal thinking tends to go in the academic community when, in reality, you've got to work very closely with business interests, often from the very inception of your idea, to get it to the point where you can move forward into the marketplace. We'll be taking very specific actions to make that process happen.

Q. What are the major organizations involved with this effort?

Our principal stakeholders are the Department of Commerce Economic Development Agency, on the U.S. side; in Mexico it's CONACyT (Mexican National Council of Science and Technology), the Mexican equivalent of the National Science Foundation, which is providing a funding level matching that of the Department of Commerce.

Also FUMEC, or the U.S. Mexico Science Foundation, has been instrumental in driving this particular idea. They're based both in Mexico City and Washington, D.C., although Mike Acosta is the border representative for FUMEC at UTEP.

And Sandia National Labs is credited with bringing the initial concept of BNSL forward and then partnering with folks like FUMEC, CONACyT and the Department of Commerce in bringing this forward. The Materials Research Lab in Chihuahua, has also been instrumental in driving some of the projects we're doing here.

Of course, I could go on and mention UTEP as well as El Paso Community College. And the State of New Mexico has stepped forward with funding from its Department of Economic Development. We're also working closely with our friends in Austin as we seek economic-development funding from the State of Texas.

Many of our universities, both within our region as well as Texas A&M and the University of Texas at Austin and others, are supporting our efforts. Texas A&M and Austin are willing to work with us in using their intellectual property. Austin, for example, has some 3,000 patents they're willing to use in the public service that we're going to try to bring into the border region.

And finally, Verde Realty is one of our supporters in providing the facilities we're using in Santa Teresa. I've had some very rewarding discussions with William Sanders (Verde Realty owner) about the immense economic potential of the U.S. Mexico border region.