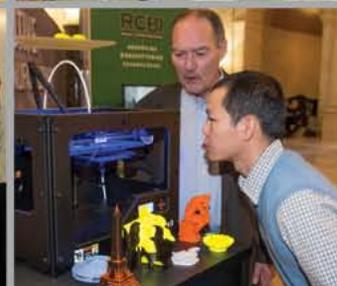


# StartUp WEST VIRGINIA

Final Report  
to the  
U.S. Economic  
Development Administration

June 30, 2014



Final Report  
Grant 01-79-14105  
Submitted to the  
U.S. Economic Development Administration  
June 30, 2014



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*TechConnect West Virginia expresses deep appreciation to the U.S. Economic Development Administration, Philadelphia Regional Office, and the State of West Virginia, for making the StartUp West Virginia program possible. Through this program, jobs have been created, innovations launched, and lives changed. Thank you!*

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## EXECUTIVE SUMMARY

With EDA support, TechConnect has led the charge for innovation-based economic development in West Virginia by designing and implementing programs to promote a pro-active business climate with technical assistance that will support the growth, attraction and retention of technology-based companies. These programs have integrated the key building blocks of growth—intellectual capital and physical infrastructure—throughout the state’s “hockey stick” region of innovation. That region extends from Morgantown in the northern part of the state, south along Interstate 79 to Charleston, and west on Interstate 64 to Huntington. TechConnect has aligned resources and partners throughout the region to maximize efforts to produce results. These include:

### Outcomes

Key highlights of the StartUp West Virginia program include:

- Created 7 new statewide programs that are collaborating to foster and advance technology-based economic development;
- Spearheaded the establishment of an innovation coalition across the state that now numbers 162 entities, including development organizations, small businesses, service providers, startups, and agencies (see Exhibit H);
- Provided 146 companies with a variety of services (operational assistance, startup financing, prototyping, advanced manufacturing expertise, and more) and assisted in networking/outreach for them;
- Initiated programs with 13 colleges and universities that focused on research, tech transfer, and commercialization;
- Educated and engaged more than 2,800 individuals through conferences and special cluster-development events;
- Helped to launch the nation’s only chemistry-based business incubator, which is another step in further innovation development of the human capital long associated with the region’s extensive chemical industry;
- Provided a foundation for the launch of the \$13.1 million West Virginia Capital Access Program (WVCAP), ranked second in the nation by the U.S. Treasury Department; and
- Supported creation of the West Virginia Research Trust Fund, which led to 488 percent growth in state funding for research.

### Success Stories

From programs and activities to strengthen the state’s innovation ecosystem to targeted cluster development activities, EDA support has resulted in a wide range of success stories, as noted throughout this report. What does success look like? Here are a few examples:

- **StartUp West Virginia Manufacturing:** This program served 18 firms, created and/or retained 35.5 jobs, and resulted in one new patent with six additional pending applications. Participant MarTek, Ltd. of Big Chimney, WV, designs and manufactures a unique line of patented electrical safety equipment sold throughout the United States and Canada and beyond. MarTek co-owner Russ Safreed said the company’s involvement in the StartUp West Virginia Manufacturing program has been very beneficial in terms of both design and prototyping. “We joined the program in early 2012,” Safreed said, “and by June of 2013 we moved to a larger building due to increased demand and an expanded product line.” He noted that the company has increased its product line to more than 20 models, and that the recent growth had resulted in the company running out of space for inventory, production and staff.
- **ChemCeption Business Incubator:** TechConnect partnered with The Chemical Alliance Zone (a member of TechConnect), to launch the ChemCeption business incubator, located in the

West Virginia Regional Technology Park. The only incubator in the nation focused solely on commercializing chemistry-based technology, ChemCeption is an innovation hub for any technology involving chemistry, from traditional to green, water to plastics, biotechnology to energy, and more. ChemCeption is ready to go just as ethane cracking plants are in the process of being built in West Virginia and the region, revitalizing the chemical industry.

- **Spirit of Innovation Awards:** TechConnect launched the Spirit of Innovation Awards in 2013 in order to celebrate innovation success stories and demonstrate that in West Virginia, the innovation economy is not just a concept—it’s a reality. Thirty-three nominations were submitted for the five award categories in the program, which received backing from the private sector, state government, and higher education institutions. TechConnect plans to hold the Spirit of Innovations Awards on a biennial basis, in conjunction with the WV Higher Education Policy Commission’s Science, Technology and Research (STaR) Symposium.

### Leadership

TechConnect worked with the State of West Virginia Department of Commerce and Small Business Development Center to encourage collaborative and efficient use of time and resources. This, in turn, generated new partnerships among service providers as well as new business, technical, and financial support for West Virginia companies. TechConnect also brought the issue of technology-based economic development to the attention of the West Virginia Legislature’s committees on economic development through annual presentations and meetings. TechConnect continues to:

- Build a trusted public forum where interested parties and competitors can explore opportunities and collaborate;
- Elevate discussion about economic diversity and identify areas where the state is economically competitive;
- Foster an environment to attract early-stage capital investment and connect potential partners with tech companies;
- Reach out to West Virginia’s Congressional Delegation to provide updates on TechConnect activity and solicit interest and support.

TechConnect’s leadership in innovation-based economic development is underscored by a variety of special invitations to participate in state and national forums, including the Clinton Global Initiative in 2012 and 2013, and the White House Rural Conference, coming up in July 2014.

### Sustainability

Since the EDA grant was awarded, TechConnect has been able to leverage \$1,283,000 in additional funding from the following sources:

- \$50,000 from the Claude Worthington Benedum Foundation, for Implementation of the Innovation Transfer Consortium
- \$165,000 from the Claude Worthington Benedum Foundation, for Implementation of the Chemicals and Advanced Materials Blueprint
- \$250,000 in funding from the State of West Virginia for FY2012-13
- \$250,000 in funding from the State of West Virginia for FY2013-2014
- \$231,250 in funding from the State of West Virginia for FY2014-2015
- \$13,750.00 in subcontract with URS Corporation
- \$98,000 from Innovation Works made possible by funding from the Claude Worthington Benedum Foundation, for the Innovation Adoption Program
- \$225,000 from the Claude Worthington Benedum Foundation, for continuing TechConnect and Innovation Adoption Program activities.

Because of the EDA's support, TechConnect has been able to catalyze entrepreneurship and tech development by bringing together industry, higher education, public and private research, and the public sector to build a more diverse and robust economy. Jobs have been created and the innovation ecosystem is stronger than before. And TechConnect is sharing the stories of success within and beyond the state's borders, through both conventional and social media sources.

Thanks to the EDA, TechConnect has been able to fulfill its role as a collaborating organization with a host of partner organizations, both private and public. TechConnect thanks all of our members and partners who are directly responsible for delivering services, providing expertise and guidance, and assisting startup firms and entrepreneurs in West Virginia.

Sustaining the programs and activities made possible by the EDA will be critical for continuing success in job creation and cluster development. But sustainability is not simply maintaining funding sources; it includes sustaining an energy and drive that motivates a group to move forward and grow. As new developments, including the rapidly increasing natural gas production in West Virginia, continue to offer limitless opportunities, TechConnect will continue its underlying mission to promote and develop West Virginia's economy, while adapting to the ever-changing needs in the marketplace.

TechConnect is proud to have had the support of the EDA and the State of West Virginia on the StartUp West Virginia project. While great progress has been made, TechConnect plans to accelerate the push for innovation-based economic development in the months and years ahead.

#### Counties Served by StartUp West Virginia:

Barbour, Boone, Braxton, Cabell, Calhoun, Clay, Doddridge, Fayette, Gilmer, Harrison, Jackson, Kanawha, Lewis, Lincoln, Marion, Mercer, Monongalia, Nicholas, Ohio, Preston, Putnam, Raleigh, Roane, Taylor, Upshur, Wayne, Webster, Wetzel

## STARTUP WEST VIRGINIA FINAL REPORT

With the EDA's support, this project has grown and expanded companies and jobs in West Virginia's targeted technology clusters by promoting a pro-active business climate and fostering a culture of innovation and entrepreneurship through a comprehensive communications strategy. *StartUp West Virginia* served 28 counties in West Virginia and addressed four key areas of work, described in detail below.

### **Task 1. Promote a pro-active business climate with incentives that will grow, attract and retain technology-based companies.**

*"This project will spur technology-based economic development through targeted promotion of key assets and infrastructure and support for access to capital that will grow business and support job growth. StartUp West Virginia will promote the state's partners in technology infrastructure, including research parks, incubators, and laboratories that are central to West Virginia's targeted technology and location strengths. Assistance programs and tools will be emphasized."* –from Project Narrative

#### **Accomplishments**

TechConnect led programs, training, and education designed to promote a pro-active business climate with technical assistance that will support the growth, attraction and retention of technology-based companies. Accomplishments include:

- Nine meetings with Members and Staff of WV Congressional Delegation (See Exhibit A)
- Seven meetings with West Virginia Legislative leadership, including 3 meetings of the West Virginia House of Delegates Listening Tour (Clarksburg, Huntington, Beckley) (See Exhibit A)
- Appearances before the West Virginia Senate Economic Development Committee; the West Virginia Legislature's Joint Committee on Finance; the West Virginia House of Delegates Committee on Small Business and Entrepreneurship
- Regular meetings with WV Secretary of Commerce
- 6 media outlets featured op-eds and articles
- \$250,000 in State of West Virginia funding secured for FY2012-13
- \$250,000 in State of West Virginia funding secured for FY2013-14
- \$231,250 in State of West Virginia funding secured for FY2014-15



Anne Barth, Rep. Nick Rahall, Russ Lorince—July 2013

Increasing access to capital is central to supporting the growth, attraction and retention of technology-based companies in West Virginia. EDA's support allowed TechConnect to promote programs that made it easier for entrepreneurs and small businesses to find capital, thereby spurring innovation and creating jobs. Two significant developments stand out as success stories: the WV Capital Access Program and the launch of the West Virginia Growth Investment LLC.

Of special note is the **West Virginia Capital Access Program (WVCAP)**, which provided \$13.1 million in U.S. Treasury funds to equip small businesses with the capital they need to invest, expand and create jobs. TechConnect worked closely with the West Virginia Jobs Investment Trust, which administered the

program, to promote its purpose, availability, and success.

With the EDA's support, West Virginia's innovation network was growing stronger just as this opportunity was announced by the U.S. Treasury. **As a result, West Virginia was able to deploy its funding at the second fastest rate in the nation. Overall, WVCAP has created and or retained nearly 1,000 jobs and leveraged more than \$62 million in private investment in almost 60 transactions.** With a 10-to-1 leverage in private funding for every dollar of federal support by the program's end, West Virginia's \$13.1 million allocation is expected to result in \$130 million in new investment over the course of the five-year initiative. (See Exhibit B.)

For exemplary work in creating and retaining jobs, the WV Capital Access Program was presented with the “Investor Recognition Award” at the inaugural TechConnect West Virginia Spirit of Innovation Awards Banquet in October 2013.

TechConnect promoted the WVCAP through its online newsletter (April 2012, October 2012), Twitter account, Facebook page, website blog posts, and an op-ed authored by Anne Barth and distributed in the Charleston Daily Mail, December 12, 2013 (readership 69,200). In March 2014, TechConnect issued a press release touting the success of the WVCAP, which appeared in the Charleston Daily Mail. In addition, Anne Barth contacted Members of the West Virginia Congressional Delegation to share news of the program’s success and express support for continuing the State Small Business Credit Initiative program, which funded the program.

In August 2013, Anne Barth attended a meeting of the newly organized **West Virginia Growth Investment LLC**, a private fund backed by West Virginia investors who will provide financing for new small businesses, product innovation and expansion of existing businesses, along with other services needed by developing companies. The program is an investment fund formed to pool and invest the capital resources of sophisticated and accredited investors in and around West Virginia and the region. Its objective is to provide both favorable investment returns to Investors and to promote small business and economic development. The fund was formally announced by Governor Earl Ray Tomblin and Appalachian Regional Commission (ARC) Federal Co-Chair Earl on November 6, 2013 at an ARC entrepreneurship conference in Charleston in November 2013.

Anne Barth and TechConnect leadership held regular meetings with the state Secretary of Commerce to seek input and guidance, and to ensure coordination between the state’s development efforts and those of TechConnect.

TechConnect helped to identify entrepreneurs and small startup firms to attend the first three stops on the West Virginia House of Delegates Small Business Listening Tour, which began in the fall of 2013. These meetings were held in Clarksburg, Huntington, and Beckley, WV. Organized by West Virginia House of Delegates Speaker Tim Miley and the House Committee on Small Business, Entrepreneurship and Economic Development, the meetings provided an opportunity for recipients of specific programs—such as the WV Capital Access Program—to highlight the important role of these programs and to underscore the need for continued support.

Anne Barth attended the sessions and helped to line up businesses in order to highlight entrepreneurs and the role that successful programs such as the WVCAP have played in their success. Firms assisted by TechConnect that appeared at these meetings include Vandalia Research, Flocco Apps, and Liberty Hydro. TechConnect is working with Speaker Miley and the committee members to explore finding additional funds to continue and expand the CAP programs for more small businesses and entrepreneurs.

**TechConnect was awarded \$250,000 in funding for FY 2013-14, and \$231,250 in funding for FY2014-15 from the State of West Virginia to conduct technology-based economic development activities statewide.**

**Task 2. Build a culture that supports innovation and entrepreneurship and the creation and growth of technology-based companies.**

*“As a component of the communications campaign, TechConnectWV will 1) promote a marketing strategy that builds on the technology and location strengths of West Virginia and 2) increase understanding of the technology economy and the opportunities it will provide to West Virginians. TechConnectWV will facilitate direct communications to all stakeholders in the state, including public officials, private industry, education and research leaders, workforce developers, the media, students, and the general public. This effort will center on a direct marketing effort and seek new and innovative ways to promote a culture of innovation and entrepreneurship.”* – from Project Narrative

**Accomplishments**

TechConnect implemented a set of actions designed to facilitate technology-based economic development and support entrepreneurs and the growth of entrepreneurial companies, building on the technology and location strengths of West Virginia. TechConnect facilitated direct communications to all stakeholders in the investment

region, including public officials, private industry, education and research leaders, workforce developers, the media, students, and the general public. Efforts were made to seek out private sector partners. Activities included both traditional and non-traditional direct marketing efforts. Highlights include:

**Events:**

- Engaged more than 2,800 people through events and conferences
- Sponsored the first Women In Technology Conference on October 18-19, 2012
- Launched the first statewide *Spirit of Innovation Awards* program on October 22-24, 2013
- Rebranded Annual Innovation & Entrepreneurship Day at the State Capitol and increased participation by more than 50 percent (March 11, 2013 and January 28, 2014)
- Co-sponsored the 2013 and 2014 Annual Summit of the WV Biosciences Association
- Co-sponsored the 2012 and 2013 TransTech Energy Business Development Conference
- Partnered with the Chemical Alliance Zone to launch ChemCeption, the nation’s only business incubator focused on chemistry-related technology
- 2014 Women & Technology Conference, October 16-17, 2014

**Media and Communications:**

- Maintains West Virginia Innovation Economy Map (rear cover of report) indicating growth in technology clusters, manufacturing, and entrepreneurship
- Launched revitalized TechConnect website to educate about technology-based economic development benefits, inform of events and activities, celebrate successes, and enhance entrepreneurship
- Op-ed on Women in Technology in the Charleston Gazette (readership 110,600) 10/14/12
- Op-ed on Research & Development, the National Energy Technology Laboratory, and the National Radio Astronomy Observatory in Green Bank, West Virginia; in the Charleston Gazette (readership 110,600) 12/12/12
- Op-ed on Entrepreneurship in the Charleston Gazette (readership 110,600) 2/5/13
- Op-ed on Incentive Prize Contests in the Charleston Daily Mail (readership 69,200) 7/8/13
- Op-ed on Incentive Prize Contests in the State Journal (circulation 10,000) 7/12/13
- Op-ed on Empowering Women for the Greater Good in the Charleston Gazette (readership 110,600) 7/17/13
- Anne Barth quoted about biometrics in West Virginia, Delta Sky Magazine, July 2013
- Op-ed on Tipping Point is Close in the Charleston Gazette (readership 110,600) 10/9/13
- Op-ed on a Model Funding Program (WVCAP) in the Charleston Daily Mail (readership 69,200) 12/12/13
- Op-ed on Ten Trends Shaping Innovation in the Charleston Gazette-Mail (readership 179,800) 1/5/14
- Op-ed on West Virginia’s Hockey Stick of Innovation in the State Journal (circulation 10,000) 1/31/14
- Op-ed on Why Research Matters, in the Charleston Gazette (readership 110,600) 2/26/14
- 34 monthly newsletters (September 2011 – May 2014) for a total contact distribution of 70,484 (monthly average of 2,073)
- Increased the size of the TechConnect email distribution list by nearly 150 percent
- Circulated calendar of events and posted on website (total contact distribution of <71,000)
- 6 presentations before community and civic groups throughout the state
- Participated in fourteen events and activities with collaborative partner groups and economic development organizations
- Invited to and attended Clinton Global Initiative-Chicago meeting in 2013
- Invited to participate in the White House Rural Conference in 2014
- Four firms assisted through TechConnect hailed by Governor Earl Ray Tomblin during Small Business Week, May 16, 2014: RockyBrook Sinkers, Mighty Tykes LLC, Polyhedron Learning Media, and MarTek, Ltd. (See Exhibit C.)

### Presentations to community, civic, and educational groups by Anne Barth:

- Morgantown Chamber of Commerce on November 14, 2012 (30 individuals)
- Regional Intergovernmental Council, December 13, 2012 (25 individuals)
- Huntington Entrepreneur Café, January 13, 2013 (40 individuals)
- Bridgeport Rotary Club, August 6, 2013 (18 individuals)
- Forum on Innovation and Entrepreneurship with Rep. David McKinley at Alderson-Broaddus University, September 23, 2013 (65 individuals)
- Vandalia Rotary of Charleston, WV, November 20, 2013 (35 individuals)
- Charleston Rotary, Charleston, WV, July 21, 2014

### 2012 WOMEN IN TECHNOLOGY CONFERENCE



TechConnectWV presented the “*Women in Technology: A Formula for Success*” Conference on October 18-19, 2012 at Oglebay Resort and Conference Center in Wheeling, WV. The conference was designed to inspire and support West Virginia women involved in all aspects of technology, including science and engineering education and research, the private sector, business development, governmental agencies, and entrepreneurship.

The conference was attended by 99 individuals, including twelve women college students, West Virginia Secretary of State Natalie Tennant, representatives of eight higher education institutions, and federal and state officials.

From Silicon Valley to the Boston I-495 Tech Corridor, women are under-represented in technology: on university campuses, in large and small businesses, government R&D, and among high-growth startup firms. Developing this potential source of untapped talent could help to diversify and grow the economy, and encouraging more women to enter tech fields and become tech entrepreneurs is an important goal for West Virginia and the nation.

In addition to support from the U.S. Economic Development Administration and the State of West Virginia, sponsors included the West Virginia Department of Education and the Arts, the West Virginia Higher Education Policy Commission- Division of Science & Research, West Virginia University, the Robert C. Byrd Institute at Marshall University, and Steptoe & Johnson, PLLC.

NASA Astronaut Dorothy Metcalfe-Lindenburger delivered a powerful keynote address at the opening luncheon on Thursday, October 18, relating to the crowd that her parents engaged her in science with trips to museums and NASA space camp. Despite a lack of female professors in the geology department at her college, she found inspiration in other role models and continued to pursue her dream of becoming an astronaut while teaching high school science for five years.

Dr. Cindy Powell, Director of Research and Development for the National Energy Technology Laboratory, addressed the gathering on Friday, October 19, 2012 and discussed her own experiences as an example of one way to develop a technology career. Her words were encouraging to women of all ages in the conference.

In a strong collaboration of the conference with the U.S. Small Business Administration, the Region III Minority Small Business Person of the Year Award was presented to Judy K. Sheppard, President and CEO of Professional Services of America, Inc., by Natalia Olson-Urtecho, SBA Regional Administrator at the opening luncheon. In addition, Frances and Gene Brooks of Dunbar, West Virginia were presented with a copy of SBA’s national publication featuring their photograph on the cover, recognizing their award in May as 2012 Small Business Persons of the Year.



NASA Astronaut Dorothy Metcalfe-Lindenburger addresses conference

An impressive group of women from West Virginia and the surrounding region participated in panels and forums including: Lynn M. Brusco, Pittsburgh Life Sciences Greenhouse; Patricia H. Lee, West Virginia University College of Law; Robin S. Levine Stoller, Steptoe & Johnson PLLC; Michele O’Connor, West Virginia Jobs Investment Trust; Kristina J. Oliver, West Virginia Small Business Development Center; Jeanne Finstein, Polyhedron Learning Media, Inc.; Dr. Marcia Harrison-Pitaniello, Marshall University; Mindy Walls, Chesapeake Energy Corporation; Mary Hunt, Claude Worthington Benedum Foundation; Lynn Dombrowski, LAD Studio; Dr. Jan Fox, Marshall University; Fonda Holehouse, West Virginia University; Rebecca Spyke Keiser, NASA; Casey Cid, Media Thirty Seven; Crystal Dempsey, From the Hip Communications LLC; Ginny Painter, Marshall University Research Corporation; Dr. Jocelyn Sheppard, Red House Consulting; Alia Accad, LifeQuest International, LLC; Tarabeth Brumfield, Marshall University Early Education STEM Center; Gayle C. Manchin, West Virginia Board of Education; Nancy Sturm, The Sextant Group, Inc.; Dr. Jan R. Taylor, Division of Science and Research, WV Higher Education Policy Commission; Roberta Newlon, Elanic Edge Consulting; and Jennifer Kmiec, Delaware Sustainable Chemistry Alliance.

### 2013 BIOSCIENCES CONFERENCE



L-R: Protea CEO Steve Turner, WV Senate Economic Development Committee Chair Bob Williams, WVU’s Dr. Scot Remick

TechConnect co-sponsored the Third Annual West Virginia Biosciences Summit on February 28, 2013, which featured Dave Scholl, former CEO of Athens, Ohio based Diagnostic Hybrids, as the keynote speaker. Scholl, whose company sold for \$130 million in 2010, told attendees that West Virginia can have significant success in the biotech industry, provided there is enough support, time, and persistence. More than 120 people attended the conference, including university researchers, biotech entrepreneurs, economic developers and others. Scholl’s comments were echoed by Fritz Bittenbender, Vice President for State Government Relations for the Biotechnology Industry Organization, who noted that the biosciences industry is a powerful engine for economic development because it offers high-paying jobs and the ability to help society.

Governor Earl Ray Tomblin addressed the conference and offered support and encouragement, noting that all \$50 million invested by the State in the WV Research Trust Fund has been matched at West Virginia University and Marshall University. U.S. Senators Jay Rockefeller and Joe Manchin, Congresswoman Shelley Moore Capito, Congressman Nick Rahall and West Virginia Secretary of State Natalie Tenant also addressed or provided comments to the conference.

West Virginia Higher Education Policy Commission Chancellor Paul Hill addressed the importance of research and the various R&D initiatives underway in the state. Other presenters included Jeff May, Senior Vice President, North American Product Strategy for Mylan Pharmaceuticals; Steve Turner, CEO of Protea Biosciences in Morgantown; Dr. John Maher, Vice President, Marshall University Research Corporation; Dr. Glenn Dillon, Vice President for Health Sciences Research and Graduate Education, WVU Health Sciences; Dr. Gagan Kaushal, University of Charleston School of Pharmacy; Dr. Robert Barney, Associate Director of Research, West Virginia State University; and Shana Phares, CEO, Blanchette Rockefeller Neurosciences Institute.

A separate panel featured West Virginia bioscience company representatives and funders discussing the challenges involved with raising capital and policies that could ease the funding crunch. The panel was moderated by TechConnect West Virginia Executive Director Anne Barth and included: Derek Gregg, Vandalia Research; Gardiner Smith, Progenesis Technologies; and Michele O’Connor, West Virginia Jobs Investment Trust.

The event highlighted clinical trials taking place in the state and the societal and economic importance of these programs. Presenters included Dr. Glen Dillon, Vice President for Health Sciences Research and Graduate Education, West Virginia University; Dr. Nader Abraham, Vice Dean for Research, Joan C. Edwards School of Medicine, Marshall University; and Jeff Trewhitt with the Pharmaceutical Research & Manufacturers of America.

Technology transfer and commercialization experts discussed strategies for turning innovation into enterprise during a panel discussion on the topic. Presenters included: Dr. Gary Morris, Associate Director, Office of Tech Transfer, West Virginia University; Amy Melton, Assistant Director, Technology Transfer, Marshall University; Jack Carpenter, Director, Innovation Transfer Consortium; and Robin Levine Stoller, Esq., Steptoe & Johnson PLLC.

News of the event was carried on a number of statewide media outlets, including *The Charleston Gazette*, *The Charleston Daily Mail*, *The State Journal*, *the Huntington-Herald Dispatch*, West Virginia Public Broadcasting (television and radio), WBOY-TV, WSAZ-TV, and WOWK-TV.

### INNOVATION AND ENTREPRENEURSHIP DAY AT THE STATE CAPITOL 2013

TechConnect partnered with Industries of the Future – West Virginia to rebrand an annual event at the West Virginia State Legislature as “Innovation and Entrepreneurship Day at the Capitol” for the first time on March 11, 2013. The event’s purpose is to promote innovation companies, programs, and organizations and showcase their economic importance to the state’s economy.

The 2013 event drew a record number of 43 exhibitors, and added a new component of 85 groups and companies that signed on as participating organizations. Altogether, they represented a diverse group of companies, agencies, startups, manufacturers, organizations and entrepreneurs, all working to advance innovation businesses and jobs throughout the state. It was a strong demonstration to West Virginia lawmakers that the innovation economy in the state is not just a concept, but a reality.

In recognition of the important innovation work underway across the state, Governor Earl Ray Tomblin presented attendees with a Proclamation naming March 11, 2013 “Innovation and Entrepreneurship Day”. In addition, the West Virginia Senate recognized the day with the adoption of a resolution, and the West Virginia House of Delegates passed a special citation noting the occasion. Recognition by the executive and legislative branches of state government underscores the importance of innovation and entrepreneurship to the economy.

The day also included an awards luncheon and an afternoon panel discussion. Beri Fox, President of Marble King, won the Governor’s Award for Excellence in Industrial Energy Efficiency, and Charlotte Weber, Director of the Robert C. Byrd Institute for Advanced Flexible Manufacturing, won the Governor’s Award for Leadership in Advanced Green Manufacturing.

### 2013 SPIRIT OF INNOVATION AWARDS

In order to celebrate innovation success stories in West Virginia, TechConnect created the Spirit of Innovation Awards program in 2013. By showcasing creative efforts and the people behind them, TechConnect demonstrated that in West Virginia, the innovation economy is not just a concept—it’s a reality.

Thirty-three nominations were submitted for judging by a panel of experts, and the five award winners were celebrated in a banquet held October 22, 2013 in Morgantown, WV, which was attended by 107 individuals. Six sponsors were recruited, including Jackson Kelly PLLC, INNOVA Commercialization Group, West Virginia University, Marshall University, the West Virginia Department of Commerce, and Steptoe & Johnson PLLC.

The five awards presented were for advances in energy technology, educational software, vote verification technology, ophthalmic patents and a model funding program.

The program showed that from universities, laboratories and startup firms across West Virginia, hard-working researchers and entrepreneurs are bringing innovative products, services and technologies to market. These innovations are force multipliers in the state’s economy. The 2013 winners include:



Governor Tomblin issues proclamation for “2013 Innovation & Entrepreneurship Day”

**Dr. Xingbo Liu** was named the 2013 Innovator of the Year for his work in developing solid oxide fuel cell interconnect, Integrated Gasification Fuel Cell system, and superalloys for steam turbine blades and advanced battery technologies. Liu is an associate professor in the West Virginia University Department of Mechanical and Aerospace Engineering.

**Racheal Fetty** and **Caleb Greathouse** of Glenville State College were named the 2013 Student Innovators of the Year. They created the *EZ Reader*, an electronic voting machine ballot reader used for reading the five percent of ballots mandated by law to be read by hand. *EZ Reader* is manufactured in West Virginia and more than 100 units have been sold to date.



2013 Spirit of Innovation Award Winners

The StartUp Innovation of the Year award was presented to **eTouchSciences** of Grafton, led by Dr. Marjorie Darrah. She pioneered an innovative learning system that uses the technology of haptics to add touch to science and math education. The programs are geared toward middle school, and can be used by both students with visual impairments and sighted students. Dr. Darrah won an SBIR award to help develop this technology.

**Dr. Stephanie Skolik** was named the 2013 Outstanding Woman in Technology. Skolik, a practicing ophthalmologist in Huntington, is the founder and director of the American Retina Research Foundation. She is also the CEO of Eyedea Inc., holds multiple patents for ophthalmic medical devices and is widely recognized for her research in retinopathy.

The **West Virginia Capital Access Program (WVCAP)**, spearheaded by the West Virginia Jobs Investment Trust, was awarded the 2013 Investor Recognition Award. At the time of the awards ceremony, the WVCAP program had created more than 366 new jobs, retained over 480 jobs and spurred \$62 million in private investment.

The event was supported by Arch Coal, Jackson Kelly, Marshall University, Steptoe & Johnson, the West Virginia Department of Commerce, the West Virginia High Technology Consortium Foundation, and West Virginia University.

### INNOVATION AND ENTREPRENEURSHIP DAY AT THE STATE CAPITOL 2014

Innovators and entrepreneurs from around the state filled the rotunda and hallways of the State Capitol on January 29 for “2014 Innovation & Entrepreneurship Day.” Co-sponsored by TechConnect West Virginia and Industries of the Future – West Virginia, the event drew nearly 150 people to Charleston to show support for West Virginia’s innovation economy.

Forty-six exhibitors from a wide variety of industry sectors and organizations demonstrated that innovation is alive and well across the state. Nearly 130 entities joined the effort as participating organizations, up from 85 in 2013.



Governor Earl Ray Tomblin and supporters of the West Virginia Innovation Economy, January 2014

For the second year in a row, TechConnect achieved its objective to showcase innovation companies, entrepreneurs, manufacturers, lending organizations, technical assistance groups, agencies, and firms that make up the state’s innovation economy. The wide variety of exhibitors demonstrated the steps in the innovation lifecycle—from research and development, to commercialization and startup, to a new business gaining a sound financial footing—and what is needed to help the entrepreneur at each step.

Exhibitors included eTouchSciences, led by CEO and WVU Mathematics Professor Dr. Marjorie Darrah, which was the 2013 winner of TechConnect’s Spirit of Innovation award in the startup category.

The event is an indicator of how the technology sector of the state's economy is becoming more widespread and self-sustaining. Entrepreneurs ranged from students to people who are launching a second career, all of whom are making a positive impact on the economy in their communities and across the state.

Other highlights of the day included Governor Earl Ray Tomblin issuing a Proclamation making January 29, 2014 "Innovation & Entrepreneurship Day in West Virginia," which noted that "facilitating innovation-based economic development and the growth of entrepreneurial companies are critical to our state's future and prosperity."

In addition, the West Virginia Senate recognized the day with a special resolution sponsored by Senate President Jeff Kessler and Senators John Unger, Clark Barnes, Craig Blair, Sam Cann, Mitch Carmichael, Bill Cole, Mike Hall, Art Kirkendoll, William Laird, Brooks McCabe, Ronald Miller, Corey Palumbo, Ron Stollings, Dave Sypolt, Chris Walters, Erik Wells, Bob Williams, Jack Yost, Herb Snyder, Gregory Tucker, Robert Plymale, Roman Prezioso, Donald Cookman, Rocky Fitzsimmons, Evan Jenkins and Daniel Hall.

In the House of Delegates, Speaker Tim Miley joined Delegates Doug Skaff, Jason Barrett, Bill Hartman, Carol Miller, and Joe Ellington in recognizing the day with a special Citation. Recognition by the Legislature and the Governor helps to shine a light on innovation and entrepreneurship as drivers of economic growth.

Anne Barth and Dr. Marjorie Darrah were guests on West Virginia Public Broadcasting's "The Legislature Today" television show on January 29, 2014, a statewide program favored by legislators and policymakers.

### 2014 BIOSCIENCES CONFERENCE



Nexeon MedSystems CEO Dr. Mark Bates and Del. Doug Skaff, House Small Business Committee Chair

TechConnect co-sponsored the Fourth Annual West Virginia Biosciences Summit on January 27-28, 2014, which drew a record crowd of legislators to the opening night reception, featured a variety of panels and presenters, and was energized by keynote speaker Dr. Mark Bates who addressed "The Seeds of Innovation."

With more than 40 legislators in attendance, the reception offered clear evidence that the profile of the biotech sector in West Virginia has risen significantly since the formation of the Bioscience Association of West Virginia (BioWV) in 2011.

The 2014 summit, which attracted nearly 100 attendees, featured panel discussions on university research being conducted at a number of higher education institutions around the state, clinical

trials underway, and profiles of leading biotech companies in West Virginia. Experts also addressed the all-important questions of how to commercialize university research and where to seek opportunities for funding.

West Virginia native and physician/inventor Dr. Mark Bates delivered the keynote address. The holder of 25 patents with many more pending, Dr. Bates said, "Nothing is more valuable than the life sciences," adding that he opted to return to West Virginia because "the work ethic, core values, and compassion make West Virginia unique."

He discussed the "anatomy of an end-user innovator," noting that difficult medical cases have spurred him to develop innovations to solve medical challenges, including stroke, carotid artery function, heart attacks, and more.

An end-user innovator "doesn't like to lose and won't take 'no' for an answer," Dr. Bates said.

In 2005, he started an accelerator in Charleston to explore and develop medical devices to improve outcomes for patients. Backed by angel investors, he brought devices to market, including the smallest heart stent, later forming Nexeon MedSystems. After spinning out other technologies, the firm merged with Celo Nova, and a holding company was formed for their intellectual property.

Dr. Bates' experiences in launching a firm and shepherding it through early stage, startup, and growth offered solid advice for West Virginians who want to prosper in the bioscience sector: 1) find the 'white space' where there is an unmet need; 2) protect intellectual property and beware the new rules of "first to file"; 3) surround yourself with people who have had companies before, whether or not they were successful; 4) secure investments to sustain early stage growth

Dr. Bates referred to TechConnect's *Blueprint for Technology-Based Economic Development* as an excellent guide for developing the bioscience industry, noting that it lists the important steps that must be taken to foster innovation and entrepreneurship, including: 1) Cultivate native talent; 2) Provide legal and business support to emerging firms; 3) Build infrastructure and enhance communities; 4) Support continued improvements in business climate.

### COLLABORATIVE EVENTS

TechConnect participated in 14 events with partners in entrepreneurship education and economic development (see Exhibit D). Of special note is TechConnect's participation in the now annual Educator|Industry Institute, hosted by the Charleston Area Alliance and designed to help educators understand workforce needs of regional employers. Other collaborative events include:

- Participation in the Clinton Global Initiative meeting in Chicago in June 2013, a collaborative effort with the Appalachian Regional Commission
- Meetings of the Charleston Area Alliance and Morgantown Chamber of Commerce
- Presenter at the Charleston Area Alliance Elevations Academy on 10/30/13

### COMMUNICATIONS

During the grant period, TechConnect issued 1,053 tweets; maintained an active Facebook presence with more than 100 postings and 402 likes; established a presence on LinkedIn; published 12 op-eds that ran in state media for a combined readership/circulation reach of 1,042,471; distributed a monthly newsletter (total contact distribution: 70,484) and circulated a monthly calendar of events (total contact distribution: <70,000). TechConnect increased the size of its email list by nearly 150 percent, from just under 1,000 names to 2,460 as of June 1, 2014.

TechConnect routinely published "Success Stories" about firms and entrepreneurs making gains in West Virginia in the monthly newsletter, website, and social media including Facebook and LinkedIn. As an example of the kind of publicity these stories generated for startup firms, TechConnect's profile of Mighty Tykes was picked up by the Fairmont Times-West Virginian in a lengthy, 30 column inch article that was later reprinted by newspapers in Wheeling, Martinsburg, and Charleston newspapers, resulting in an advertising equivalency value well in excess of \$10,000. (See Mighty Tykes Success Story, Exhibit E.)

Anne Barth and Dr. Marjorie Darrah, CEO of eTouch Sciences, were guests on West Virginia Public Broadcasting's "The Legislature Today" television show on January 29, 2014, a statewide program favored by legislators and policymakers.

### EDUCATIONAL PRESENTATIONS

Anne Barth made formal presentations to six community, civic, and educational groups, including:

- Morgantown Chamber of Commerce on November 14, 2012 (30 individuals)
- Regional Intergovernmental Council, December 13, 2012 (25 individuals)
- Huntington Entrepreneur Café, January 13, 2013 (40 individuals)
- Bridgeport Rotary Club, August 6, 2013 (18 individuals)
- Forum on Innovation and Entrepreneurship with Rep. David McKinley at Alderson-Broaddus University, September 23, 2013 (65 individuals)
- Vandalia Rotary of Charleston, WV, November 20, 2013 (35 individuals)

### **Task 3. Grow West Virginia's technology clusters by building R&D and commercialization capacity around the targeted technology platforms.**

*"To compete in today's economy, a state must have both sources of technology and a way to bring that technology to the marketplace. A strong presence of research institutions and assets – including universities, national laboratories, private companies, and nonprofit research institutions – is critical for states seeking to grow technology-based economies."* –from Project Narrative

According to a recent series of reports by the Battelle Institute, existing technology clusters in the state include advanced energy, chemicals and advanced materials, biometrics, and biotechnology. TechConnect works to promote increased development within each cluster, including the infrastructure needed for such development.

#### **Accomplishments**

EDA funding allowed TechConnect to continue or launch several programs that are building the clusters and creating jobs in West Virginia. Highlights include:

##### **Cluster Development**

- TechConnect continued serving startup firms and entrepreneurs in the *StartUp West Virginia Manufacturing and Venture* programs (see pages 19-30).

##### **Cluster Development – Chemicals and Advanced Materials**

- TechConnect and The Chemical Alliance Zone partnered on the launch of ChemCeption, the only incubator in the nation focused solely on commercializing chemistry-based technology.

##### **Cluster Development – Advanced Energy**

- TechConnect participated in the Governor's Energy Conference in 2012 and 2013.
- TechConnect participated in the National Energy Technology Laboratory's Regional University Alliance Energy Innovation Conference in November 2012.
- TechConnect was a co-sponsor of the TransTech Energy Business Development Conference in 2012 and 2013.
- Anne Barth and other TechConnect Board Members attended "Linking Innovation and Industry in Collaboration" event focused on energy at West Virginia University, October 3, 2013
- TechConnect led meetings of EnergyNet West Virginia throughout 2013, designed to support the energy industries in the state and better connect them with the National Energy Technology Laboratory in Morgantown, WV.
- TechConnect partnered with West Virginia University and the INNOVA Commercialization Group to expand the Shale Gas Innovation Contest into West Virginia; NG Innovations of Cross Lanes, WV was a \$25,000 winner in the May 15, 2014 final competition.
- TechConnect was invited to participate in a Regional Stakeholders Meeting at the National Energy Technology Laboratory with U.S. Department of Energy Assistant Secretary Chris Smith on 2/13/13.

##### **Cluster Development – Biotechnology**

- Anne Barth and other TechConnect Board Members attended "Linking Innovation and Industry in Collaboration" event in biotechnology at West Virginia University, February 12, 2013.
- TechConnect was a co-sponsor of the West Virginia Biosciences Summit in 2013.
- TechConnect was a co-sponsor of the West Virginia Biosciences Summit in 2014.
- Protea Biosciences Group, a Morgantown, WV firm developing new bioanalytical technology, went public in 2014. Protea is the recipient of a 2012 "R&D 100 Award."
- TechConnect has connected inventor Dr. Peilin Zhang with subject-matter experts and sources of possible funding to further develop his point of contact testing system for cardiac markers using nanotechnology. Dr. Zhang will join BioWV at the 2014 Bio International Show in June 2014.

- Through the West Virginia Biosciences Association (BioWV), Tech Connect has enabled internships for startup companies Cordgenics and Microbiological Associates. BioWV has also provided prototyping assistance to Cordgenics, contributing \$8,500 of the total \$50,000 amount.
- BioWV will lead the West Virginia Delegation at the 2014 Bio International Show, to be held June 23-26, 2014 in San Diego, CA.

##### **Cluster Development – Biometrics & Identity Management**

- Anne Barth and other TechConnect Board Members attended "Linking Innovation and Industry in Collaboration" event focused on security and intelligence research at WVU, November 12, 2013
- Anne Barth and Commerce Secretary Keith Burdette met with FBI officials to underscore the scope and depth of intellectual capital and physical infrastructure in place in West Virginia in biometrics and identity management.

##### **Cluster Development – Advanced Manufacturing**

- TechConnect was part of a winning application in the 2012 Rural Jobs & Innovation Accelerator Grant awards. The "Third District Accelerator" focuses on advanced manufacturing ten southern West Virginia counties. Other partners include Marshall University, Concord University, the Robert C. Byrd Institute for Advanced Flexible Manufacturing, and the Natural Capital Investment Fund.
- TechConnect introduced a new program aimed at helping small manufacturers—the Innovation Adoption Program—with the initial assistance of Innovation Works in Pittsburgh, PA.
- TechConnect joined a team led by the Robert C. Byrd Institute for Advanced Flexible Manufacturing in a grant application of the Investing in Manufacturing Communities Partnership program (2013 and 2014)

##### **Cluster Development - Leadership**

- TechConnect was a co-sponsor of the 2013 and 2014 Teaming to Win Conference.
- TechConnect was invited to present at the Appalachian Regional Commission's meeting to discuss entrepreneurship and emerging opportunities in February 2014.
- TechConnect asked to join the Advisory Committee of E\*Quad, a new curriculum in the West Virginia University Davis College of Agriculture, Natural Resources & Design that focuses on Energy, Environment, Economics, and Entrepreneurialism.
- TechConnect was invited to participate in a meeting at the National Energy Technology Laboratory with U.S. Department of Energy Secretary Ernest Moniz on 7/29/13.
- Anne Barth was invited to judge the West Virginia University Tech Entrepreneurs Business Plan Competition in 2013 and 2014.
- TechConnect was invited to participate in the 2014 National Meeting of the NASA Space Grant Consortium.
- TechConnect was invited to serve on the newly reorganized Advisory Committee of the West Virginia University Manufacturing Extension Partnership.
- TechConnect participated in the 2013 and 2014 Annual Business Summit of the West Virginia Chamber of Commerce.
- TechConnect participated in the Bright Economic Future For the Mountain State, a forum hosted by the Union of Concerned Scientists and the West Virginia Center on Budget and Policy.
- TechConnect attended the 2013 and 2014 annual meetings of the State Science & Technology Institute.
- TechConnect participated in U.S. Small Business Administration-led events in May 2013.
- TechConnect has been invited to participate in the 2014 White House Rural Conference.

##### **Cluster Development – Research**

- TechConnect formed the Innovation Transfer Consortium to serve the state's smaller colleges and universities, and eight institutions are members of the entity.
- Through its Innovation Transfer Consortium, TechConnect facilitated a biomedical collaboration between the University of Charleston and West Virginia State University.

- TechConnect awarded a seed grant through its Innovation Transfer Consortium to West Liberty University and Polyhedron Learning Media, Inc., a startup firm developing science labs for tablet and PC use.
- TechConnect sponsored the Science, Technology & Research (STaR) Symposium in October 2013.
- TechConnect awarded a seed grant through its Innovation Transfer Consortium to Wheeling Jesuit University and PLANTS, LLC, a startup firm focused on hydroponics instructional materials.
- TechConnect led a meeting of the eight-member Innovation Transfer Consortium at Alderson-Broadbudd University in February 2014.
- TechConnect held regular meetings with faculty and staff at West Virginia's higher education institutions.
- The State of West Virginia's spending on research grew 488 percent between 2006-2011, due to creation of the West Virginia Research Trust Fund in 2008. WV's spending grew from \$6 million in 2006 to \$35.5 million in 2011. As a result, the number of degrees awarded at higher ed institutions has increased by 7.6 percent over the past five years, and degrees and certificates in the STEM fields – science, technology, engineering and mathematics – increased by 12.1 percent.
- TechConnect participated in the 2013 and 2014 WV NASA Space Grant Consortium Annual Meetings.
- Hosted entrepreneur presentation opportunities in conjunction with TechConnect Board Meetings

### LAUNCH OF CHEMCEPTION

TechConnect partnered with The Chemical Alliance Zone (a member of TechConnect), to launch the ChemCeption business incubator, located in the West Virginia Regional Technology Park, on April 1, 2014. The only incubator in the nation focused solely on commercializing chemistry-based technology, ChemCeption is an innovation hub for any technology involving chemistry, from traditional to green, water to plastics, biotechnology to energy, and more.

The event featured West Virginia Secretary of Commerce Keith Burdette, West Virginia House of Delegates Speaker Tim Miley, and a keynote from Greg Babe, President and CEO of Liquid X Printed Metal, Inc. and former President and CEO of Bayer Corporation. Babe is also Chairman of the Board of the Mid-Atlantic Technology, Research, and Innovation Center (MATRIC).

In his remarks, Babe said, "This is a great initiative and I am elated to see that West Virginia is taking the lead. Commercialization is the key ingredient to real innovation, and ChemCeption is well positioned with both uncommon infrastructure and uncommon expertise at the West Virginia Regional Technology Park."

The launch received widespread media coverage and was featured in the May-June 2014 edition of *West Virginia Focus* magazine. (See Exhibit G.)

ChemCeption opened with three start-up companies from West Virginia (SGA Polymers, PolyPlex and Liberty Hydro), a larger anchor tenant (GAS Analytical Services), and an affiliate member that is a start-up headquartered in Florida (EigenChem Technologies Inc.). The inclusion of an affiliate member demonstrates the uniqueness of ChemCeption – a combination of both rare commercialization facilities at the WVRTP and exceptional commercialization expertise with one of CAZ's strategic partners–MATRIC.

EigenChem is coming to ChemCeption to work with MATRIC and utilize the large scale laboratory or pilot plant facilities at the WVRTP. Dr. Alexander Oliferenko, President of EigenChem, said, "If you want to scale-up and commercialize your technology, ChemCeption is the place to do it. They have the facilities and the know-how."



Ribbon cutting for ChemCeption, April 1, 2014

Dr. Kevin DiGregorio, executive director of the Chemical Alliance Zone and the Director of ChemCeption, said, "We are excited to assist entrepreneurs and small companies not only get their technologies to market, but also create wealth and jobs in our community, our region, and even the nation."

Although CAZ is spearheading the initiative, working closely with TechConnectWV, nine other strategic partners are key collaborators – WVRTP, Charleston Area Alliance, MATRIC, INNOVA Commercialization Group, WV Small Business Development Center (WVSBDC), West Virginia University, Marshall University, WV Higher Education Policy Commission, and Robert C. Byrd Institute for Advanced Flexible Manufacturing.

INNOVA and WVSBDC will provide comprehensive entrepreneurial, start-up, and business services to ChemCeption clients, and MATRIC will provide technical expertise and support.

It is no coincidence that ChemCeption is being launched within the cradle of the petrochemical industry, where innovation in the 1920's and before led to the world's first cracker, the rise of Union Carbide Corporation, and the development of one of the leading commercialization centers in the world, the former Union Carbide and Dow Technical Center (and now the WVRTP). It is also no coincidence that ChemCeption is situated in the heart of the Marcellus Shale formation, one of the world's newest and richest sources of ethane that is transforming the chemical industry and manufacturing in the United States.

"It's exciting to see new innovation in a place where decades of innovation led to products we all use and rely on every day, from car seats to carpeting and antifreeze to trash bags," DiGregorio said. "After all, new chemicals and polymers and new uses of those materials are the starting points for new products like iPads and iPhones."

U.S. Senators Jay Rockefeller and Joe Manchin sent congratulations that were read during the launch, as did Rep. Shelley Moore Capito. The Claude Worthington Benedum Foundation provided funding for the development of ChemCeption through a grant to TechConnectWV.

### INNOVATION TRANSFER CONSORTIUM



A key strategy in technology-based economic development is increasing the research capacity of West Virginia's higher education institutions. The two largest universities in the state have technology transfer offices and can provide assistance to faculty who wish to commercialize their new technologies, services, or products, but the state's smaller colleges and universities lack (for the most part) those services. To address this need, TechConnect formed the Innovation Transfer Consortium (ITC) in 2011 as a new way for researchers at public and private institutions of higher education to evolve research into products, industries and jobs.

ITC works to connect West Virginia college and university researchers to business experts and demonstrate to the business community that great ideas with great potential are consistently being generated at the state's institutions of higher education. ITC works with representatives of colleges and universities, economic development organizations, regional businesses and potential investors to stimulate applied research, innovation and commercialization.

Since its inception, eight West Virginia institutions of higher education have been engaged with ITC – three more than the number anticipated when the project was begun. The participants include:

Bluefield State College	University of Charleston
Concord University	Alderson Broaddus University
West Virginia State University	Fairmont State University
West Virginia Wesleyan	West Liberty University

Two additional institutions have asked to participate – Wheeling Jesuit University and Shepherd University.

In addition, ITC has reached out to the West Virginia private business sector to spur interest in the activities of the researchers at WV colleges and universities. By learning about the needs of the private sector ITC can help match expertise with need and encourage WV-based innovation answers to industry problems.

A key part of the three-month plan for ITC was to hold two meetings for members of the consortium. The first was significantly delayed because of the harsh winter weather. The delay forced a postponement of the second meeting beyond the first quarter.

At a recent meeting of the institutional participants, a presentation was given by John Golden of Innovation Adoption Program that focused attention on industry interests in innovation and commercialization. Representatives expressed an interest in further engagement with the business community through collaborative efforts particularly through establishment of technical assistance and internships to support business and university objectives.

ITC's initial emphasis was on promotion of the Seed Grant Program for collaborations between higher education and private industries to advance research and products. The promotion took the form of extensive outreach to individual contacts at each eligible college and university in West Virginia with research potential in order to encourage them to pursue contacts in the private sector. The process was slow and yielded less than hoped for results. Therefore, the program has pivoted to a more promising approach. ITC is now engaged in reaching out to economic development officers and private sector companies directly to identify areas where expertise is needed to advance company product goals and strategies. Then, ITC identifies college and university expertise, resources and assets that can be applied to answer private sector needs. ITC has also begun an effort to reach out to the other projects under the TechConnectWV umbrella. For example, by collaborating with the Innovation Adoption Program ITC can develop additional contacts leading to potential seed grant partnerships. Similar collaborations with Biosciences Association of West Virginia, and the Chemical Alliance Zone's Incubator Program can lead to similar potential.

The ITC seed grant program provides small matching research grants of up to \$5,000 for "close to commercialization" projects involving partnerships between primarily undergraduate institutions and the private sector. A partnership between West Liberty University and Polyhedron Learning Media of Wheeling focused on developing and marketing a better way to teach college level science is the recipient of the first ITC Seed Grant.

ITC also awarded a \$5,000 seed grant to Wheeling Jesuit University's Appalachian Institute for PLANTS LLC to develop and commercialize educational programming for an inexpensive and easy to implement hydroponic vegetable production system to address the Appalachian area need for higher nutritional food accessible to low income populations.

An ITC planning event was held at Alderson Broaddus University on February 24, 2014. Seven of the eight participating institutions were involved and heard presentations from Tom Vorbach, an attorney with Steptoe and Johnson and Vice Chair of TechConnectWV; John Golden of the Innovation Adoption Program; and Dr. Richard Creehan, President of Alderson Broaddus. Representatives of the institutions provided insights regarding their ongoing research concentrations; current outreach to the business communities; and the status of intellectual property policies. Outcomes included:

- Exchange of information regarding the research capabilities of each institution
- Discussion of opportunities for collaborative projects between institutions based on research, expertise and instrumentation capabilities
- Activity to shape the agenda for a follow-on meeting that will highlight methods to help researchers become more comfortable and confident when they enter into discussions with business representatives on intellectual property issues

As part of the ITC outreach plan, a second follow-on survey is under way to identify areas in which ITC can help prioritize action items in collaboration with participating organizations such as creation of a database of research and other unique capabilities of the institutions and pathways to pursue alternative funding for continued support of the ITC goals. ITC's first survey, conducted in fall of 2013, identified that:

- All but two participating institutions have intellectual property policies in place

- Collectively, the research capabilities identified were broad and wide ranging
- There has been a very limited history of collaboration between businesses and higher education in West Virginia
- All institutions identified the following needs for greater success – greater funding for commercialization activities; incentives for increased collaboration between institutions and businesses; a greater level of commitment by institutions' administrations; and faculty release time

To increase its outreach and communication with stakeholders, the media and target audiences, ITC created two specific products: an informational fact sheet and a comprehensive web site. The fact sheet has been widely circulated through an electronic mailing to the West Virginia Chamber of Commerce membership as well as colleges and universities. It has also been provided to other key stakeholders. The official ITC web site - <http://www.innovationtransfer.org> - provides visitors with important information about the program, its seed grant effort, a gateway to the database input portion of the TechConnectWV web site, news releases and announcements of special events.

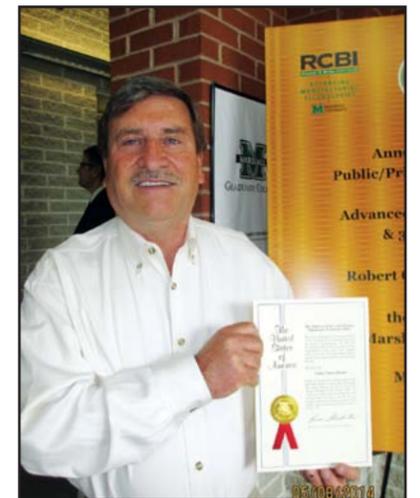
### STARTUP WV MANUFACTURING

With the support of the EDA, TechConnect implemented the "StartUp WV Manufacturing" program to help entrepreneurs and startup firms develop prototypes and use advanced manufacturing services. Through a partnership of TechConnect and the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI), startup firms and entrepreneurs were able to turn ideas for new products or processes into reality, generating new jobs across the state. The program helped them access the expertise and state-of-the-art equipment needed to turn ideas for new products or processes into reality.

This effort has attracted, created and encouraged new business opportunities as well as retained and expanded existing businesses, especially those in the technology-based manufacturing sector of our economy.

#### Success highlights include:

- **Eighteen firms were served.**
- **35.5 jobs were created or retained.**
- **Six patents are pending.**
- **One new patent awarded: Tim Bell, CEO of Craft-Totes, a participant in the first round of StartUp WV Manufacturing awards, has since been awarded a patent for the product he developed in the program.**
- **Provided outreach to 88 individuals across the grant region in the reporting period**
- **A total of 364 contacts were made since the grant began in September 2011.**



Tim Bell with patent

Companies served by StartUp West Virginia Manufacturing in 2013 and 2014 include:

- 1) **Vintec, LLC**, a Nicholas County machine shop, is developing a "Hose Chain Reel" and modifications. This part will be used in the energy sector to support extraction of coal.
- 2) **Extreme Endeavors**, of Barbour County, is developing with RCBI Design Works Lab an Energy Efficiency & Renewable Energy Technical System called Intelligent Power Automation Control (IPAC) RCBI will assist in Design3D modeling and additive manufacturing for numerous prototype electrical box to be housed within the main IPAC system which will monitor water treatment plants and their electrical systems.
- 3) **MarTek, LLC** is a Kanawha County company known for its GE electrical breaker switch turning connecting and disconnecting high voltage transformers. This new system will be more generic and have higher voltage capabilities. RCBI assisted in the design, 3D modeling and additive manufacturing to gain capabilities for a compact but wider range of breaker systems. MarTek has a

patent pending on its new design developed under StartUp WV Manufacturing program utilizing the Design Works Labs at RCBI and the center's advanced manufacturing technology and capabilities. (MarTek was nominated for the 2013 Spirit of Innovation Awards in the StartUp Innovation of the Year category.)

- 4) **HCS Technologies, Inc.**, of Preston County, has developed a low cost system to measure up to three voltages (3 phases) and twelve different currents. The system also allows e-mail alerts on potential problem areas happening with the electrical system. The system is remote controllable. When connected to the network and the Internet, the system can be managed from anywhere in the world. The system allows users to track power usage and develop trends to use to develop a power usage plan to save energy. The objective is to design and manufacture a metal enclosure, with three knockouts to allow ease of installation of data and electrical cables. This system needs to be large enough to allow the BrainBox module to easily fit and enough room to allow ease of installation of connectors and air circulation to keep the system from overheating. A BrainBox system was installed at RCBI, and the company is working with an RCBI mechanical engineer to design an appropriate enclosure that will work with the system. When the design is finalized and approved, HCS will work with RCBI to produce the enclosure.
- 5) **Trinity Engineering**, of Putman County, fabrication shop request assistance on developing drawings and printing a secure mining box for display for shows. Currently there are 4 orders for offshore delivery. These will used to house miners during a fire or entrapment in the mines.
- 6) **Industrial Fuels, LLC** of Kanawha County, is developing technology to provide diesel fuel users with relief from high fuel costs. Generally, this is the number one business expense besides labor. Additional opportunities exist by increasing the market size and demand for W.Va. natural gas. The project objectives are two-fold: 1/ to domestically manufacture the F.I.T. System in West Virginia and 2/ to create new manufacturing jobs in West Virginia. Commercialization is possible through IF's network of installation facilities and customers that already want to deploy the system in their Class 8 trucks. RCBI will assist in the design and prototyping of the energy fuel system.
- 7) **Kanawha Electric, Inc.**, an electrical motor rewind and manufacturing facility in Charleston, W.Va., required assistance in engineering, design works lab, 3D printing and prototyping to develop a new coil wiring appliance. The scope of the project is to remanufacture DC coil winding heads. The benefits of this project are make a quality DC coils every time, increased production, bigger job opportunities for Kanawha Electric to expand on staff requirements.
- 8) **Preston Machine, Inc.** of Kingwood, W.Va. requested assistance with engineering design for an impeller or blade set in a small-scale hydro-turbine. The impeller will be used in turbine systems that can produce power from small streams without the requirement of a dam. The finished product will be used in a system that can produce electric power with zero greenhouse gas emissions and minimum environment impact.
- 9) **Guyan International**, a family-owned business based in Barboursville, W.Va., identified a need for assistance to develop a prototype hydro-electric controller to prevent mechanical components damage in hydraulic system peak load and vibration shocks.
- 10) **P3 Composites, LLC** of Hurricane, W.Va. requires assistance in developing molds for hand layup of motorcycle parts made of carbon fiber. Currently the company is using fiberglass parts.
- 11) **Agape Enterprises**, a Cabell County manufacturer and R&D shop, is in need of assistance in printing a prototype of a Electrical turbine appliance which will house a turn and generator to produce power when the auto in in the gas phase causing wind to produce electric reducing the fuel intake
- 12) **Z Electrical**, invented an electrical generator system to operate an automobile after leveling the sendoff. The generator would make electric to operate the auto.

## STARTUP WV VENTURE

A related program operated through a partnership between TechConnectWV and INNOVA, the commercialization arm of the West Virginia High Technology Consortium Foundation.

Success highlights include:

- **NG Innovations won \$25,000 in Shale Gas Innovation Contest, May 2014**
- **StartUp WV Venture firm eTouch Sciences won "StartUp Innovation of 2013" in Spirit of Innovation Awards Contest**
- **Patent Cooperation Treaty filed for Katherine Bomkamp International in 2013**
- **Provisional patent filed for White Musical Instruments in 2013**
- **Lithium Ion Battery's chief researcher, Dr. Xingbo Liu, was honored as "Innovator of the Year" in 2013 Spirit of Innovation Awards Contest**

Firms served in 2013 and 2014 include, by sector:

### Medical Device Companies



**Katherine Bomkamp International, LLC:** Katherine Bomkamp, a junior at WVU, invented the Pain Free Socket, a prosthetic device that is intended to ease phantom limb pain in amputees. The device, based on the theory that as the nerve endings are warmed, the brain is forced to focus on the heat rather than send signals to the absent limb, works by applying heat to the amputee's joint socket through thermal biofeedback.

Katherine has developed 2 prototypes through the Center for Applied Research & Technology, Inc., at Bluefield State College, which incorporates a proprietary heating socket into a commercially available prosthesis. However, no human testing of the direct application of heat has been undertaken to prove that this method is effective. INNOVA utilized the services of two law firms in Washington, DC to draft an overview of FDA human clinical trial requirements, medical device classification definitions and legal guidance, oversight and applications necessary.

INNOVA has coordinated a team to include Mike Green, a seasoned executive who serves as an advisor, investor or board member of several privately-held technology companies, and Mindy Walls, the former Director of the Entrepreneurship Center at WVU who still serves as a mentor to Katherine. Through contacts of Mike Green and INNOVA we have reached out to University of Pittsburgh researchers Jon Pearlman, PhD, Associate Director of Engineering: Human Engineering Research Labs and Assistant Professor: Department of Rehab Sciences & Technology and Mark R. Schmeler, PhD, OTR/L, ATP, Assistant Professor and Director, Continuing Education Program, Department of Rehabilitation Science & Technology School of Health & Rehabilitation Sciences, University of Pittsburgh and members of their staff.

INNOVA also reached out to a consultant it uses in Boston who is well versed with the National Institutes of Health. Dr. Neil Krieger, who received a Ph.D. in Biochemistry from Harvard University, is a principal of West Rock Associates. He was a faculty member and research director at the University of Pennsylvania Medical School and the Harvard Medical School over a 20-year period.

The Pain Free Socket provisional patent application expired February 16, 2013. Numerous options were examined for how to proceed from a pending U.S. provisional patent application. The most advantageous course is the filing of a Patent Cooperation Treaty, (PCT). The PCT application is an international application that is published and searched but never matures into an enforceable patent. Instead, after filing the PCT application, the applicant has another 18 to 19 months to then file what are called "national phase" applications in each country where patent protection is desired (including the United States).

**Start-Up WV Funds were used for a Patent Cooperation Treaty, (PCT) International Patent.**

INNOVA is currently working with Katherine on drafting a licensing agreement for the further development and commercialization of her technology through TekConnX, LLC, a Northern Virginia-based, Veteran-Owned business development and solutions provider. An additional collaborator is the Veterans Educational Institute, based out of Virginia, who partners with some of the world's top companies to provide advanced technology products and services along with a major prosthetics manufacturer.

**Neuwired:** A West Virginia University initiative, the product is a software algorithm for use with Microsoft Xbox Kinect that quantitatively analyzes the motion range of patients who may have suffered from a disease or injury that has limited their range of motion. The Kinect sensor's hardware is already configured to perform such calculations. For example, it can "watch" people dancing and assign a score based on how well they perform compared to a benchmark. The algorithm generates a standard clinical score based on how extensive the patient's range of motion is compared to a normal range of motion. Scores are recorded and sent to the doctor and/or patient. Since the system is used with Kinect, it is low cost and can be used in patient's homes as well as doctor's offices.

The key features of this invention are the algorithm and the implementation of a low cost system for tracking motion. Prior systems utilized expensive body sensors that could not quantify the movement.

Both founding partners are Ph.D. level Assistant Professors implementing translational research in biomedical engineering field with applications in Exercise Physiology and Physical Therapy. The co-founders are both software engineers and designers who are developing the software and designing hardware enclosures. They work collaboratively on all aspects of product production. As the company expands, new employees will be recruited from graduates of West Virginia University.



Primary strengths are in the scientific education and medical research experience of the founding partners who are comfortable using interdisciplinary tools from computer science, biomechanics, engineering, and physiology for the development of products that quantify, analyze, and provide real-time feedback to people with disabilities, scientists, and medical professionals.

The team is seeking \$65,000 in early stage funding for an initial working prototype suitable for the professional clinical environment. Discussions will be held on coordinating with TechConnect WV's Innovation Adoption Program.

INNOVA has also reached out to Dr. Neil Krieger, who received a Ph.D. in Biochemistry from Harvard University, and is a principal of West Rock Associates. He was a faculty member and research director at the University of Pennsylvania Medical School and the Harvard Medical School over a 20-year period. **West Rock Associates** is a grant recruitment firm that focuses on Small Business Innovation Research (SBIR) grants from the National Institutes of Health (NIH), the National Science Foundation (NSF) and the Department of Defense (DOD) and on Orphan Drug grants from the Food and Drug Administration (FDA).

INNOVA will be working with Neuwired on an NIH SBIR solicitation for August submission.

### Sensor Development

**Alba Scientific:** Alba Scientific is a products based company that focuses on the design and production of sensing, monitoring and response equipment to support environmental and industrial safety. The environmental/industrial safety market is a growing field that is predicted to have a 50% growth over the next 10 years. Alba Scientific's initial focus area of concentration will be supporting the mineral extraction industry, in particular the natural gas and coal mining industries.

The Salamander Water Quality Sensor is a low-cost, portable water measurement system that measures conductivity levels in water. The conductivity of water is the ability of water to conduct an electrical current. This is important because changes in conductivity reflect changes in water quality conditions. For example, the

higher the conductivity measurement the greater the level of materials (chemicals, or through an algorithm of conductivity and temperature: "total dissolved solids") are dissolved in the water.

Salamander detects and sends information to any cell phone in real-time and with a sales price at a fraction of competing products, will be a game-changer in the water monitoring industry. The system will be purchased by customers of three segments within the environmental monitoring market; scientific consulting & services industry; public utilities; and, academic/government researchers and citizen scientists.

To greatly enhance water quality monitoring in small tributaries - creeks, stream and small rivers - that run into the Ohio and Monongahela Rivers, the Salamander Water Quality Sensor will provide low cost, real-time detection and mapping of pollution of these tributaries from industrial sources, such as, shale gas extraction and processing sites; coal mines and impoundments; and factories or other processing

A preliminary feasibility study, supported through the Benedum Foundation Professional Resource funding, was undertaken which demonstrated the market applicability of the Salamander Water Quality Sensor.

In addition to the two principals the core staff will include Dr. Ben Stout III, now in his 19th year as Professor of Biology at Wheeling Jesuit University, and considered one of the leading aquatic biologists in the eastern U.S.

**A prototype has been developed and tested. The team is seeking funding for an initial short run production of a few dozen units suitable for a professional clinical environment test and evaluation by potential customers.**

Alba Scientific is under application for consideration for \$200,000 of early stage financing.

Start-Up WV Funds: Funding for engineering and product development

### Software Development



Senator Brooks McCabe with Dr. Marjorie Darrah, CEO of eTouch Sciences

**e-Touch Sciences:** Marjorie Darrah has founded e-touch sciences to provide advanced learning technologies to help sight impaired students learn science and mathematics more effectively through the utilization of sensory feedback..

Haptics is the science and physiology of the sense of touch. Haptic sensations can be created in consumer devices by actuators, which create a vibration. The vibrations are controlled by software solutions. Haptic technologies can enhance the users experience by improving usability by engaging touch, sight, and sound. In addition, haptic technologies enhance realism through excitation of a user's senses and can restore mechanical feel, which can improve tactile confirmation when audio or visual confirmation is insufficient.

Applications for haptic technologies are primarily in video games and medical simulations, such as surgical simulations. In recent years, research studies have shown that individuals with vision loss are potential users of haptic technologies since visual elements on the computer screen can now be made accessible with the technologies.

e-Touch Sciences has developed a haptic technology to provide sensory feedback that simulates physical properties and forces. The technology could be used to enhance opportunities for visually impaired students to study science, technology, engineering, and math. These subjects generally rely heavily on the presentation of content in visual methods with diagrams and simulations. The visual presentations are not easily accessible to students with visual impairment. The applications can lead to sensations, which can convey information to the users including shape, weight, viscosity, texture, vibration, magnetism, and elasticity of objects. The application is paired with an external haptic device, which can be gripped and managed by users.

e-TouchSciences currently has sixteen applications (exploring an atom, experiencing gravity on planets, exploring different landscapes around the globe, exploring a coral reef ecosystem, exploring a desert ecosystem, and computing volumes of different objects) available in its ecommerce store with a retail price of approximately \$10 each, [www.etchsciences.com](http://www.etchsciences.com)

Each application is a complete lesson that covers one or two of the national standards in math or science. In addition, each application has full audio description for the users and includes high contrast graphics for students with low vision. Using the haptic controller, users can explore the object that appears on the screen and that is being discussed in the audio description.

StartUp WV Funds: Funding for technology assessment and commercialization study

**Curry-Tek:** Founder Brian Curry presented a concept for creation of a faith-based virtual environment – similar to SimCity but built around a specific topic area. The goal is to develop a game that promotes Biblical values by giving the gamer 3-D, immersive, interactive and educational experiences from the Bible. This is a long term project with high expectations that it will be used in homes, churches, and schools. “We are making the Bible and the experience of it more interactive, more fun, and more engaging than ever before.”

Curry Tek has identified, and INNOVA has reviewed, a developer to create the virtual world envisioned. Designing Digitally, Inc. actually has Marshall University as one of their clients. Original cost estimates and two sets of revisions, with concurrent changes in the scope of work, have been provided by Designing Digitally and reviewed and a final estimate and work plan have been delivered. INNOVA provided Professional Assistance funding for initial cost estimate and scope of work development.

Additional Professional Assistance funding was provided for two (2) additional market assessments.

Initial development and launch are in the range of \$500k and discussions on sources of capital are in progress.

StartUp WV Funds were used to 1) design digital development - Scope of Work to include cost estimates and two sets of revisions, with concurrent changes in the Scope of Work; prepare a research Report – ascertain the dynamics of the gaming industry to better understand different developers’ platforms for reality based simulations and development costs; and 3) prepare a research Report – competitive analysis of other Bible-based online games and simulations.

### Manufacturing Product Companies



**White Musical Instruments, LLC:** In 2005 Andrew White entered and won the WV Business Plan Competition at which time Andrew White Guitars was launched as a high end, hand crafted one of a kind guitar. As a result of the success of his high end clientele Andrew has signed a licensing agreement with a South Korean manufacturer who will produce and distribute proprietary Andrew White branded models throughout Asia and Europe. Andrew is now looking to establish an American produced mid-level priced guitar which serves as a bridge between the hand-crafted, one of a kind custom guitars and the entry level guitars produced overseas. The goal is establishment of a production facility in West Virginia.

Andrew arranged a conference call with a contact in the process of establishing a production facility similar to what we envision for White Musical Instruments. This provided a wealth of knowledge on raw materials and sources of supply, facility needs, equipment, and personnel. Baseline funding needed, as extrapolated from our follow-on analysis would be \$750,000 - \$1,250,000. Much time was also spent on marketing strategy and brand building. It is imperative to re-establish the custom made ultra high end market while looking to time the introduction of the Korean made entry level models.

Andrew is being offered the opportunity to serve as the Master Distributor for the Korean made guitars in America with sales to commence upon his return from Shanghai in October. This involves three (3) areas of responsibility with three different timelines: Distribution of Korean made guitars – immediate; need to learn the

business, determine marketing and sales strategy, establish sales mechanisms, set pricing, develop distribution, etc. Re-establish the custom made ultra high end market – ongoing; this is the “halo” over the Korean, and eventually, the American made guitars which through its placement and ownership establish AW Guitars as a premium musical instrument. This is critical but the most time consuming for Andrew individually. Establishing the American made guitars – long term, 18 – 24 months. Planning and strategy begins now while establishing the Korean entry level and building buzz around the high end guitars. Strategic planning meetings have been held. The WVU Entrepreneurship Center within the school of Business has expressed an interest in participating in AW Guitars and meetings are being scheduled to discuss a potential collaboration. *Funding was provided to purchase trade industry market and sales analysis reports.*

In addition INNOVA helped Andrew prepare for the National Association of Music Merchants (NAMM) show, one of the two largest music product trade shows in the world, held every January in Anaheim, California. NAMM is a trade-only business show catering to domestic and international dealers and distributors, and the product exhibits are an integral part of the show, allowing the dealers and distributors to see what’s new, negotiate deals and plan their purchasing for the next 6 to 12 months. Here Andrew will introduce his Korean made guitars to the US market and commence sales. INNOVA was able to facilitate a \$3,000 grant from TechConnectWV to help offset costs of attendance and display at this trade show.

Simultaneously to the above, Andrew has developed a hardware and software acoustical amplification and replay technology. A prior art search is being funded through Professional Assistance funding. In addition a provisional patent was issued in the first quarter of 2013.

Interest at the NAMM show was quite high and Andrew solicited a number of potential distributors. It is estimated the line will begin to show a profit in mid-2014 at 150 units per month. With the 2015 NAMM show as the spring board, the target will be 2500 units in 2015 grossing more than \$1.1 million in revenue. By year 5 it is hoped to capture nearly 1% of the US market with over 2 million in revenue and 5,000 units sold. Future plans include the development of a US Manufacturing capability that will benefit of the creation of this distribution channel and brand development of Andrew White Guitars.

White Musical Instruments, LLC is under application for consideration of \$150,000 of early stage financing through a joint investment of INNOVA and the Natural Capital Investment Fund.

StartUp WV Funds: Trade industry market and sales analysis reports; provisional patent and prior art search.

**RockyBrook Sinkers** uses quarried, natural limestone rock and transforms it into fishing sinkers. These unique sinkers are sold throughout the U.S. and Canada, and beginning to enter more international markets.

Limestone used as fishing sinkers has both practical and scientific benefits. The practical side involves limestone’s specific density. It has a natural lift or suspension when pushed by the stream’s current. The result is a fishing sinker heavy enough to cast and sink, yet harder to snag. Other practical benefits include its suspension which adds great action to the angler’s bait or lure. When clicking against rocks, it makes one of the best “rattling sounds” to attract fish.



In order to increase production, a building or space specifically designed for manufacturing is needed of approximately 6,000 square feet (3,000 manufacturing & 3,000 administration) plus 5 raw material bays and 1 loading dock. More importantly are tools for automation. Currently all “manufacturing” is done by hand with numerous and overlapping stages of production. Machinery and technology must be sourced in to automate as much of the process as possible.

For the short term the company has located a temporary facility, with a one year lease, which will allow them to increase production utilizing their current assembly process. The move will begin in March and operations should transfer during the second quarter of 2013. The Company will seek to employ Veterans, WVU students and other individuals as it ramps up production. Prior to automation, it’s anticipated that 30 individuals will be required to meet immediate production rates.

Concurrently the company has sourced a supplier to design and develop automated systems for insertion into the manufacturing process. Quotes will be provided in the third quarter of 2014.

At this point in time a new facility will be found meeting the needs of the newly automated process and enhanced manufacturing process.

**WV MEP will be contracted to provide a work flow analysis and efforts will be coordinated through the TechConnect WV Innovation Adoption Program. The Company expects this will reduce cost of goods by 65%.**

Early stage financing of \$200,000 is under consideration through a joint investment of INNOVA, the WV Jobs Investment Trust, and the Natural Capital Investment Fund with possible participation from the WV EDA.



**Groundbreak Products, LLC:** Matthew Baldwin wishes to manufacture and sell his patent protected manual post-pulling tool. The patent protected feature of the Bull Pull is the system of multiple receiving slots on the tower, which allow the user to generate leverage from multiple angles without adjusting the gripping mechanism. This feature allows a Bull Pull user to extract deeply set posts or deep rooted shrubs of sizes up to at least 6"x6" easily and quickly. In addition to the versatility, the product is lightweight (under 20 lbs) and operable by a single person.

Baldwin has a mechanical and engineering background and worked in the aerospace industry for many years. He drew up the plans in 1992 and got the patent approved in 2009. He built the Bull Pull to fill a need he saw when he owned a small hobby farm in Doddridge County. He has used the Bull Pull to extract a section of telephone pole sunk 40 inches in the ground 30 years ago to hold a gate.

The Bull Pull has been demonstrated to numerous state Departments of Transportation, and a crew in Tampa, Fla., is using one of the prototypes.

Meetings have been held with a fabricator to discuss manufacturing to include set-up costs, minimum production runs, costing, delivery and distribution, etc. Currently BullPull is working with RX Metals in Columbus Ohio.

The sales strategy is to aggressively pursue sales to tool rental companies to gain product exposure and brand awareness, eventually leading to sales to Tractor Supply, Northern Tool, etc. Another large potential customer in the tool rental space is United Rental and Groundbreak has requested INNOVAs help in establishing contact. In addition, two complimentary units will be provided to the president of Alco Fence.

The Bull Pull has been tested in a variety of situations such as pulling highway signs, telephone pole-type gate posts, and steel posts with concrete bases. The Bull Pull also pulls up shrubs from the roots. He has had interest from landscapers, fencing companies, highway sign crews and Ranchers.

The BullPull fence post and shrub puller has already been featured on the cover of **Farm Show Magazine** and also in *Successful Farming*. Demonstration videos are available on You Tube.

Cost of manufacturing is extrapolated around \$250.00, in the box and ready to ship with a retail price of \$549.00. Funding is sought for an initial run of 15 units featuring the new enhanced design. All units previously made have been sold. Orders were received from Oregon to Maine, Florida to Texas as well as several to Canada.

Bull Pull is attracting interest through their web site, [www.thebullpull.com](http://www.thebullpull.com). Current needs are for a migration to a new host as well as maintenance and Search Engine optimization to include key ad words and analysis.

Early stage funding for GroundBreak® is under consideration.

**NG Innovations, Inc.:** is a research and development company with experience in developing innovative processes, machine designs and process solutions for removing impurities from natural gas and coal bed methane. **NG Innovations won a \$25,000 award in the 2014 Shale Gas Innovation Contest, which TechConnect helped to promote, on May 15, 2014.**

NGI created a new filtering technology suited for the purification of fracking water associated with the Marcellus Shale play. INNOVA invested \$75,000 in 2008 for field testing and evaluation.



NGI continues research and development and further enhancements of existing technologies and the creation of new devices. Current product line-up includes:

- The NGPure™ Separation Unit is a specially constructed membrane unit that can treat water up to 50,000 ppm TDS. Water is first pretreated then treated by multi-filtration membranes producing permeated water. The unit contains a six month historian for records and information collection and can transmit information via satellite to remote sites.
- The NGPure™ Recovery Unit treats high TDS brackish water from shale gas or oil wells in excess of 200,000 ppm, containing multi contaminants to include heavy metals, salts, surfactants, etc. coming from initial flowback or production water. Heavy metals, salts, permeated water are all separated and can be sold as standalone products. The unit contains a six month historian for records collection and can transmit information via satellite.
- The NGPure™ MRU will remove or reduce heavy metals to acceptable levels as required by WV DEP while producing water for reuse. This unit can be stand alone or used with other products that NGI has developed and can be installed in a trailer, metal shipping container, or skid mounted for ease in transport from location to location. The unit contains a six month historian for records collection and can transmit information via satellite.
- The NGPure™ C-FIT Unit was developed to track fluids during transport. The unit records the GPS location, volume in gallons loaded or unloaded, time of day with date stamp, and can include the drivers' name, hauling company and weight of the fluid loaded. The unit contains a six month historian for records and information collection and can transmit information via satellite to remote sites per customers' requirements.

*The company is actively pursuing an oilfield opportunity and has a proposal outstanding with a group in Oklahoma. StartUp WV Funds: marketing materials design and printing.*

**PolyPlex, LLC:** was formed as a spin-off from MATRIC to develop new polymers – the VisiPlex™ Series – for use in ophthalmic lenses, goggles, various lens assemblies, light-weight face and body shields, view ports, fiber optic applications and light-weight bullet-resistant glazing applications. VisiPlex™ technology compares favorably to existing polymers in many key areas: (1) lower overall densities; (2) similar hardness; (3) equal or better light transmission characteristics; (4) significantly higher clarity; (5) better solvent resistance; and (6) better ballistics resistance.



Jon Pauley, PolyPlex

PolyPlex closed on the sale of \$103,500 in preferred equity units on January 31, 2012. INNOVA invested \$75,000 from its investment funds, and matched those two amounts with an additional investment of \$178,500 utilizing the WV Capital Access Program funds for a total of \$253,500. In all, the financing round raised \$357,000. **PolyPlex is a client of the ChemCeption business incubator, as well.**

Investment proceeds were used for: (i) ongoing research and development activities relating to addressing product cosmetics (color), comprehensive ballistic testing, exploration of injection molding processes and sample production; (ii) intellectual property expenses; (iii) implementation of the manufacturing component of PolyPlex's business model; and (iv) continued commercialization work and laboratory efforts.

PolyPlex recently closed a Series C round of investment for additional research and development and scaling up operations. INNOVA and the WV Jobs Investment Trust have reserved the remaining \$321,500 of funding for which PolyPlex is eligible through the WV Capital Access Program to match \$321,500 private investment by a regional venture capital group.

The company has identified approximately \$6 million of new sales opportunities. Follow-on funding will be utilized for additional equipment, raw materials and personnel needed for commercial launch, manufacturing and fulfillment of sales orders.

StartUp WV Funds: Funding for two market and industry research studies to support sales opportunities identified: safety and security market space; ophthalmic market space.

## Select Other Companies

**Bulls-I Breeding Technology, LLC:** Meg Grzeskiewicz, a senior attending WVU, is the winner of the WV Business Plan Competition. Bulls-I Breeding Technology, LLC is an intellectual property (IP) development company that designs and licenses innovative artificial insemination (AI) equipment for cattle. The company's principal product, the soon to be patent-pending Bulls-I AI Positioner, is the first video-assisted breeding device in the cattle industry. It utilizes an endoscopic camera and wireless monitor to make AI faster, easier and more accurate.

Meg has been working with a law firm, coordinated through a legal representative on the WV SBDC staff, in pursuing a patent. Initial response she was given was that the abundance of prior art and similar concepts already patented would make it extremely difficult if not impossible to patent her device. INNOVA is in conversation with the SBDC agent and is passing all of Bulls-I information to one of our law firms in Washington, DC. This firm specializes in technology with each of its personnel having both engineering and law degrees.

*As of December Meg has decided that the pursuit of a patent would be problematic and has decided not to move forward with the Bulls-I technology.*

**MVM Research and Development Group, Inc:** The goal of the company is to solve the present flooding problems throughout the United States and the world, and significantly reduce the plastic entering landfills, oceans and the food chain. The patented mixture of the MVM-Blok has a proven record of resisting decomposition, has a high tolerance to UV rays and repels water. MVM-Bloks are very dense and heavy, and even when manufactured with a hollow core, are not buoyant. The strength of materials has been tested by other companies and has an exceptional impact durability ratio. The Company's MVM-Blok interlocks to form levees and embankments for 500-year flood plans and irrigation channels.

The MVM-Blok is being designed to be environmentally safe and will be manufactured to weigh 3x the specific gravity water and prevent leaching. When used properly, there is no erosion of materials or toxins affecting the earth. MVM RD is repurposing the planet's plastic to protect public, commercial and residential properties from floods and other natural disasters.

INNOVA has facilitated the exchange of NDAs with MVM and the WVU Research Corporation. The WVU Research Corporation has provided a technical review and evaluation of the technology and utilization claims as part of a due diligence assessment by INNOVA. A number of questions have been generated which have been passed on to MVM. This assessment was paid through Benedum Foundation Professional Assistance funds.

*MVM has looked to California for manufacturing and as such will not have a presence in WV.*



Dr. Xingbo Liu receives Innovator of the Year Award for 2013

**Lithium Ion Battery:** Dr. Xingbo Liu, Professor, Mechanical Engineering is developing a reproducible, stable, scale-up ready, low-cost Lithium-ion battery with higher energy density and similar power density than the current state-of-art. Dr. Liu was named the College of Engineering and Mineral Resources Outstanding Researcher in 2008 and 2009, and won the Spirit of Innovation "Innovator of the Year" award in 2013.

Battery technology is currently a hot topic, and high priority investment area in the VC space. Important to this particular initiative is that local interest is high with the success of Aquion in Pittsburgh, who have raised 2 rounds of financing of \$20 million and most recently an additional \$15 million from both local and

Silicon Valley investors. In addition Dr. Liu is also not only familiar with other battery research being undertaken nationally and internationally but has personal relationships with a number of the researchers.

Dr. Liu provided a second, more detailed presentation at INNOVA to include the WV Jobs Investment Trust. There is great interest in moving this technology forward with the realization that it is still in the R&D stage and development will be extremely costly. The WVU Office of Technology Transfer has underwritten an independent Technical Evaluation and Market Assessment which they will share upon receipt. In light of the recent large and successful investments in battery technology in Pittsburgh outreach has been initiated to Innovation Works to look at potential synergies, collaborations and/or support.

*WVU is currently establishing a Center for Electro-Chemical Storage – at such a time as feasible will continue development of this technology.*

## Innovation Adoption Program

EDA's support of TechConnect has strengthened the organization's network and capabilities and allowed the establishment of new programs in addition to the StartUp West Virginia initiative. One such program is the Innovation Adoption Program (IAP), launched by TechConnect in 2012 and designed to help small West Virginia manufacturers (less than 250 employees) develop new products, improve their existing product lines, and become more efficient in their manufacturing processes to stay ahead of the competition.

By pairing small manufacturers with the expertise offered at various West Virginia "centers of excellence," they can develop new products, diversify their product lines, increase sales and revenues, and improve their overall competitiveness. The program helps companies become more resilient in challenging economic times.

The program provides up to \$25,000 in project funding to help a selected company contract for services through one of several designated centers of excellence, such as the Robert C. Byrd Institute for Advanced Flexible Manufacturing at Marshall University and the WVU Manufacturing Extension Partnership Program. This amount of funding is capped at 50% of the total project costs, and thus each participating company is expected to match (1:1) the funding provided for the project either through cash or a qualified in-kind match. The funds awarded can be used for the expertise and/or new product development needs of existing manufacturers by connecting them with the prototyping, design, testing, and analytical capabilities of the designated centers of excellence.

IAP funding is provided by the Claude Worthington Benedum Foundation, which contributes to the sustainability of TechConnect's programs and innovation-based economic development programs across West Virginia.

Two companies have participated in the IAP to date and more applications are in the pipeline:

- 1) Uncle Bunk's Condiments - A specialty food company that manufactures gourmet products using the freshest possible, locally grown produce and based on traditional Appalachian recipes. The WVU Industrial Extension's Manufacturing Extension Partnership assisted Uncle Bunk's in identifying and implementing methods to 1) optimize its available manufacturing space, 2) increase manufacturing capacity, 3) increase efficiencies in shipping and receiving, 4) expand distribution to include large specialty food retailers, and 5) bring more efficiencies to the company's production processes. The goal is to help the company eventually create approximately 30 new products of multiple varieties and sizes over the next two years. The company's employment goals are to retain its three full-time employees while adding three additional employees within two years.
- 2) FCX Systems - FCX Systems designs and manufactures a broad line of solid-state Ground Support Equipment for the commercial, military, industrial and ship-shore markets around the world. The WVU Industrial Extension's Manufacturing Extension Partnership provided the expertise required to update the C Software code the company needed to upgrade its 90KVA power frequency converter to a 180KVA model necessary for the commercial airport market to accept the new Boeing 787-10 ("Dreamliner") aircraft that began service in early 2014. The project's overarching goals were to help position FCX Systems as a key supplier in the Ground Support Equipment market and increase orders for the company's power frequency converters. The company's employment goals are to retain its current 75 employees and add an additional 13 new full-time positions over the next two years.

(See Exhibit F for more detailed information on the IAP.)

## Chemicals & Materials Commercialization Assistance Fund

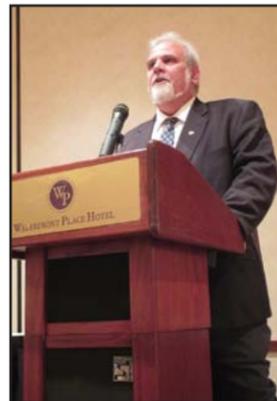
EDA's support of TechConnect has also strengthened the ecosystem in the Chemicals and Advanced Materials sector, setting the stage for new programs aimed at growing this industry cluster. TechConnect partnered with The Chemical Alliance Zone to create the Chemicals and Materials (CAM) Commercialization Fund.

The CAM Commercialization Fund assists researchers, entrepreneurs, startup companies and small-to-medium firms with the commercialization of technology and products related to the chemicals and materials sectors in

West Virginia. Funds are provided through a grant to TechConnect West Virginia from the Claude Worthington Benedum Foundation. The Chemical Alliance Zone administers the program with the assistance of an advisory group made up of representatives from the INNOVA Commercialization Group, Mountaineer Capital, the West Virginia Angel Network and the West Virginia Jobs Investment Trust. Grants have been awarded to three West Virginia-based companies to help bring new technologies to market. These include:

- 1) **Liberty Hydro, Inc.** was awarded \$20,000 for a portable water-filtration pilot unit needed for customer-site demonstrations of Liberty Hydro's clean-water technology. Liberty Hydro, a spinoff of the Mid-Atlantic Technology and Research Innovation Center (MATRIC) and located at the West Virginia Regional Technology Park (WVRTP), uses its proprietary technology to develop water purification systems for industry.
- 2) **Vandalia Research, Inc.** was awarded \$18,220 for an analytical system that will help the company commercialize a key product and achieve important industry certification and compliance. Vandalia is a biotechnology company and a spinout from Marshall University that is located in Huntington, WV. The company's Triathlon DNA production technology allows for the large-scale production of DNA.
- 3) **Keen Process Technologies, LLC** was awarded \$15,000 for proof-of-concept studies and intellectual property protection for a new, green process to make acrylic acid, a key raw material used in the production of various plastics, coatings, and other materials, including diaper products. Keen Process Technologies is located at the WVRTP.

### 2012 TransTech Energy Business Development Conference



WVU Engineering  
Dean Gene Cilento



TechConnect co-sponsored the inaugural TransTech Energy Business Development Conference, held Nov. 14-16, 2012 in Morgantown, West Virginia. The event attracted more than 130 participants from 13 states. The goal of the TransTech Conference is to promote investment in, and nurturing of, new companies and commercializable projects that provide solutions to energy, environmental, and economic challenges such as creating new jobs and more competitive industries.

TransTech Energy (TTE) refers to transition technologies and strategies that move toward a lower carbon, industrially competitive, clean energy economy of the future. TTE technologies reduce greenhouse emissions, improve industrial competitiveness, increase demand for advanced manufacturing processes, and create new business development opportunities.

During the conference, panel discussions examined the development and deployment of TransTech Energy innovations, advanced manufacturing, intellectual property, and the future of industrial energy use and vehicle technologies. In addition, 15 startup firms—focused on fossil energy, renewables, or energy recovery—pitched their business proposals for new and innovative technologies before panels of judges.

Dr. Cheryl Martin, newly appointed Interim Director of ARPA-E, discussed the agency's goals for stimulating and commercializing research. In his keynote remarks, Greg Babe of Orbital Engineering discussed the role of sustainability, innovation and education in terms of TransTech energy opportunities. David Wilhelm called on conference participants to be intentional about creating sustainable value for the Appalachia region with TransTech investments, saying, "Things don't happen by accident."

Conference co-sponsors included ARPA-E, American Electric Power, the National Energy Technology Laboratory, DOE's Advanced Manufacturing Office, the WV Division of Energy, the WV Manufacturing Extension Program, WVU National Research Center for Coal and Energy, Innovation Works, and Dinsmore and Shohl.

### 2013 Teaming to Win Conference

TechConnect co-sponsored the 23rd Annual Teaming to Win Conference, held in Morgantown on May 28-29, 2013. Teaming to Win is designed to serve West Virginia's business community, to foster collaboration and to highlight the unique competencies of the many regional companies and individuals in attendance. The conference was attended by 325 people, including U.S. Senators Jay Rockefeller and Joe Manchin, and Rep. David McKinley.

TechConnect organized a learning track on 3D printing, in which a panel of experts examined the role of 3D printing and additive manufacturing in terms of new jobs and opportunities for West Virginia. Participants learned how this revolutionary technology—which is available through various centers of excellence in West Virginia—is changing how goods are made in all sectors, including industrial parts, consumer goods, medical devices, and more.

Participants included Charlotte Weber, Director of the Robert C. Byrd Institute for Advanced Flexible Manufacturing at Marshall University/Vice President for Federal Programs, Marshall University; Bob Wood, Director, ExTEC Division, ExOne Digital Part Materialization; Larry Malone, Malone Consulting Services (consultant to RCBI); and Tom Minnich, Director, Business Development & Special Projects, Robert C. Byrd Institute for Advanced Flexible Manufacturing at Marshall University.

Other speakers included SBA Regional Administrator Natalia Olson, West Virginia SBA District Director Judy McCauley, West Virginia Secretary of State Natalie Tennant, West Virginia University President Jim Clements, motivational speaker Morris Morrison.



U.S. Senator Jay Rockefeller  
and Small Business Person  
of 2013, Diane Lewis

### 2013 TransTech Energy Business Development Conference

More than 170 entrepreneurs, researchers, investors and industry representatives attended the Second Annual TransTech Energy Business Development Conference, held Nov. 6-7, 2013 in Morgantown. Participants hailed from 12 states and the District of Columbia, and included 26 high school students with the local robotics team.



Hosted by Industries of the Future-West Virginia and co-sponsored by TechConnect, the conference featured 23 pitches, including seven from West Virginia entrepreneurs and startup firms. Two of the seven West Virginia pitches were presented by WVU graduate students who have started companies based on research done with their professors.

Conference organizer Carl Irwin with Industries of the Future-WV coined the term "TransTech" to mean transition technologies and strategies that move along the pathway to a lower-carbon, industrially competitive, and globally sustainable economy of the future. The goal is to create an entrepreneurial ecosystem that encompasses startup companies, investors, and established companies that can be customers or strategic partners of the startups.

Six of the 23 pitches made at the conference were for commercializable projects – five for technologies developed at the National Energy Technology Laboratory and one for work currently in progress by a WVU graduate student and his professor.

Vandalia Technologies LLC of Princeton, WV won the \$10,000 "WVU Research Office Technical Assistance Award." Vandalia Technologies creates safety devices using light for the mining industry and TechConnect has supported this firm through its program to increase global competitiveness. Top scoring WVU student companies were WindPax LLC, led by Justin Chambers of Glen Dale and Aspinity, Inc., led by Brandon Rumberg of Morgantown. Each won \$2,500 awards.

WindPax LLC specializes in portable power generating wind turbines for outdoor recreational use. The company currently has a patent pending unit and has other patentable units under development. Aspinity, Inc. specializes in the commercialization of ultra-low power electronics in sensor networks, which could be used in many types of monitoring.

## Shale Gas Innovation Contest 2014

TechConnect partnered with the Shale Gas Innovation Center in State College, PA in expanding the annual Shale Gas Innovation Contest (SGIC) into West Virginia in 2014. The INNOVA Commercialization Group and the West Virginia University Office of Research & Economic Development also participated in promoting the contest, which aims to identify and develop shale gas technologies that will solve challenges faced in the oil and natural gas industry while also creating jobs.

The contest provides an opportunity for entrepreneurs and early-stage companies in southwestern Pennsylvania and West Virginia to submit business ideas and technology innovations connected to the region's shale industry. Those ideas are reviewed by a judging panel, and then finalists are given an opportunity to provide pitch presentations at the finals competition.

NG Innovations of Cross Lanes, WV was one of the four winners of \$25,000 at the event, held on May 15, 2014 in Southpointe, PA. The firm won for its "C-FIT" unit that identifies the density and amount of fluid being transported from drill sites, and identifies the loading/unloading points, tracking and date/time stamping truck movement via satellite. NG Innovations was a participant in the StartUp WV Venture program of TechConnect.

More than 80 applicants entered this year's competition, from which 13 finalists were chosen. Of the 80 applicants, 22 came from 18 companies in West Virginia. Carbon Fiber Composites of Ona (a participant in the StartUp WV Manufacturing program of TechConnect) also made it to the final round of competition for its "out of autoclave" process to produce lower cost, high strength carbon fiber composites for use in oil and gas applications where corrosion resistance is paramount.

TechConnect is working with the Shale Gas Innovation Center to identify funding options to continue the contest past 2015.



L-R Anne Barth, Tony Anderson of NG Innovations, Lindsay Emery, Guy Peduto at the 2014 SGIC

## 2014 Teaming to Win Conference



L-R SBA District Director Judy McCauley; SBA Small Business Person of the Year Kenneth Allman; SBA Regional Director Natalia Olson

The 2014 Teaming to Win Conference, held May 28-29, 2014 at the WVU Erickson Alumni Center in Morgantown, featured a variety of informative panels, strategic forecasts, and keynote speakers. 260 people attended the event.

TechConnect organized a learning track on Small Business Innovation Research (SBIR) awards, entitled "SBIR Awards: Tapping into Federal Research Funding." A panel of experts examined the SBIR program and how it encourages small businesses to engage in research that has the potential for commercialization. Topics covered included how to apply, who should apply, and how to write a winning application. Panel participants included Dr. Jerald Fletcher, Director and Professor, Natural Resource Analysis Center and US-China Energy Center, West Virginia University; Justin Gaull, In-Tech Director, West Virginia Small Business Development Center; Guy Peduto, Director, The INNOVA Commercialization Group; Marjorie Darrah, CEO, eTouch Sciences; and Alan Rhodes, SBIR Program Manager, NOAA.

SBA Regional Administrator Natalia Olson joined WV SBA District Director Judy McCauley in presenting the annual awards for small business. Kenneth Allman, the founder and CEO of PracticeLink.com and MountainPlex Properties, Inc., was honored as the Small Businessperson of the Year. PracticeLink.com—one of the oldest and largest physician job banks—was started by Allman in 1994 and is headquartered in Allman's hometown of Hinton, WV. He founded MountainPlex Properties, Inc., in 2007, which is dedicated to the restoration and sustainability of the Hinton Historic District in Hinton.

In nominating him for the award, former Hinton Mayor Cleo Mathews noted that Allman's extensive efforts to renew the community and create good-paying jobs is causing Hinton to "awake from a long slumber."

## Task 4. TechConnectWV will coordinate with the WV Department of Commerce and the Small Business Development Center to encourage collaborative and efficient use of time and resources.

"TechConnectWV will foster a greater understanding of resources and programs available to entrepreneurs and high growth businesses in the state in conjunction and coordination with ongoing WV Department of Commerce efforts." –from Project Narrative

### Accomplishments

Activities include:

- Regular and frequent meetings held with Secretary of WV Department of Commerce to ensure alignment of objectives and efficient utilization of resources
- Participation by the Secretary of WV Department of Commerce in key TechConnect events
- Active participation by Secretary of WV Department of Commerce and State Director of WV Small Business Development Center in TechConnect programs and meetings
- Anne Barth appointed to the (statutory) Advisory Board of WV Small Business Development Center

Regular presentations have been made to the WV Department of Commerce and WV Small Business Development Center, with the goal of quarterly meetings having been exceeded. The WWSBDC State Director and staff have been integrated into TechConnect efforts to assist entrepreneurs and start-up firms through programs such as the learning track offered by TechConnect at the 2014 Teaming to Win Conference, the 2012 Women in Technology Conference, the 2013 Spirit of Innovation Awards Banquet, and the 2014 launch of ChemCeption. Further, the WWSBDC assisted with technical evaluations of StartUp WV Manufacturing.

In addition, Anne Barth worked with staff of the West Virginia Department of Commerce to provide material on a frequent basis for the agency's monthly EDGE business report. Anne Barth met with Region III Planning & Development Council regularly, including a meeting to discuss CEDS report. Updates were provided to all regional planning and development councils in the state.

### Increasing Global Competitiveness

TechConnect provided support to five firms to increase their global competitiveness by assisting them in attending, and benefitting from, trade shows. The six include:

- 1) CrossCutting Concepts – A spin-out of Vandalia Research, CrossCutting Concepts develops, manufactures, and markets innovative hands-on science education products for high school and post-secondary education. At the 2013 National Science Teachers Association Conference, the firm made 161 contacts within the targeted market; met with two prior customers who provided video testimonial for the firm's website; and made 24 sales following the event.
- 2) Vandalia Research - A biotechnology company located in Huntington, WV. Vandalia's core technology is its Triathlon DNA production technology, which allows for the large-scale production of specific DNA sequences using the polymerase chain reaction (PCR). The firm participated in the State Trade and Export Promotion Grant Program (STEP) in the first quarter of 2013. During the trip, CEO Derek Gregg met with the firm's largest customer in Japan and made contacts with potential distribution and services providers in Asia.
- 3) White Musical Instruments – White Musical Instruments manufactures a high end, hand-crafted one-of-a-kind guitar. CEO Andrew White has signed a licensing agreement with a South Korean manufacturer who will produce and distribute proprietary Andrew White branded models throughout Asia and Europe. Andrew is now looking to establish an American produced mid-level priced guitar which serves as a bridge between the hand-crafted, custom guitars and the entry level guitars produced overseas. The goal is establishment of a production facility in West Virginia.

- 4) Vandalia Technologies – This startup firm is a rapid prototyping and product development company, engaged in developing lighting technology to be used in underground mining, which utilizes remote power source to remove the possibility of accidental fires. At the MINExpo International 2012 Show, the firm 1) made 35 contacts; 2) contracted for \$95,000 in sales and installation with Stahura Conveying Products; 3) held five significant customer meetings within the target market; and executed a contract with Stahura Conveying Products.
- 5) RockyBrook Sinkers – This startup firm produces eco-friendly sinkers for use in the recreational fishing product industry. It uses quarried, natural limestone rock to produce unique sinkers, which are now sold throughout the U.S. and Canada, and beginning to enter more international markets.



**Exhibit A**

**Meetings to support Task I, Promote a pro-active business climate with incentives that will grow, attract and retain technology-based companies**

10/2/2012	Met w/staff of Rep. Nick Rahall to discuss overall EDA grant progress
10/3/2012	Met w/staff of Sen. Joe Manchin to discuss overall EDA grant progress
10/3/2012	Met with staff of Sen. Jay Rockefeller to discuss overall EDA grant progress
10/5/2012	Distributed TechConnect Midpoint Report to EDA to staff in Governor's Office
3/13/2013	Senate Economic Development Committee
4/1/2013	Email urging action on SB 520, Project Launchpad, sent to 2,327 contacts
4/3/2013	Senate Economic Development Committee for WVJIT presentation
4/8/2013	Urged U.S. House Members to sign on to bill supporting Regional Innovation
7/23/2013	Meetings with WV Members of Congress in Washington
8/21/2013	Joint Finance Committee, WV Legislature, WVCAP
8/30/2013	Meeting of WV High Growth Investment Fund (during Business Summit)
9/23/2013	Congressman McKinley Forum in Philippi, WV
12/9/2013	House of Delegates Small Business Comm. Meeting and Speaker Miley Meeting
2/11/2014	House of Delegates Small Business Listening Tour in Clarksburg
2/17/2014	House of Delegates Small Business Listening Tour in Huntington
3/28/2014	Letters to Congressional Delegation re: SSBCI program
5/20/2014	House of Delegates Small Business Listening Tour in Beckley

**The Success of a Results Oriented Economic Initiative**

**Number 2 in the Nation!**

*West Virginia is the second highest of the fifty states and seven territories in the utilization of Federal funds.*

The West Virginia Capital Access Program (WVCAP) arose following the passage of The Small Business Jobs Act of 2010 initiated under The American Reinvestment and Recovery Act (The Stimulus) which under the State Small Business Credit Initiative (SSBCI) designed \$1.5 Billion to significantly stimulate the availability of private capital for business expansion and strengthen state programs that provide access to capital. Each state was provided an allocation, with West Virginia receiving \$13.1 M.

West Virginia Jobs Investment Trust (WVJIT) was designated to design, implement and administer the program and allocation of funds. WVJIT designed a program that is unique to the capital needs of the state's business community and complements the existing capital initiatives currently being undertaken by various other economic development organizations that were invited to participate in what became known as the West Virginia Capital Access Program. Beyond that, WVCAP was structured with a sound understanding of the state's entrepreneurial challenges and desired opportunities to enhance the business community and assist businesses that are creditworthy but may not fully qualify for traditional lending sources.

**For West Virginia, this program will result in a \$130 million in new private**



**The Distinctive West Virginia Program**

The SSBCI set forth three overarching criteria; (1) all funds must be allocated within two years; (2) all public dollars must be initially matched 1:1 with private capital; (3) and at the end of five years the objective is a cumulative tenfold leverage of private funds for each public dollar invested.

In order to meet the two-year time frame for use of Federal funds the West Virginia program partnered with seven economic development organizations in addition to WVJIT. This shared approach allowed accessibility to the business community through lending and investing intermediaries across the state. The program accelerated an otherwise often slow and deliberate investment process providing quicker access to capital for the job creators.

**Mid-Ohio Valley Regional Council  
INNOVA  
Natural Capital Investment Fund  
WVJIT  
New River Gorge Regional Development Authority  
Wyoming Economic Development Authority  
Center for Rural Health Development  
Regional Economic Development Partnership**

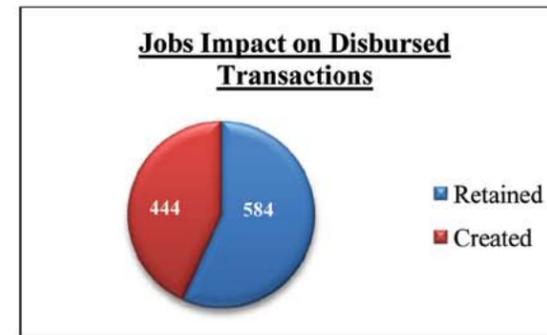
While speed to market was important, it was essential that loans and equity investments be granted where the recipients would achieve success and, in turn, increase the probability of repayment. To accomplish this objective the program was designed so that each WVCAP Partner will capture the interest and fees on transactions immediately, and as loans mature the principal payment will be captured by each Partner, adding to that organization's capital base and available immediately to fund additional transactions.

A parallel program was created with funds from a private foundation for operational and technical assistance to help businesses be better prepared to apply for investment or to improve their company performance and corporate capacity.

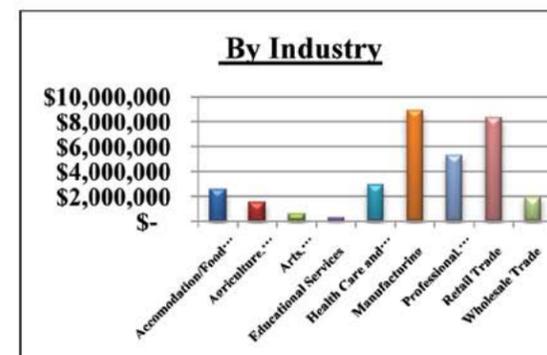
The participating WVCAP Partners collaborate monthly on their loan activities formalizing their request for funds through the WVCAP Committee. This regular dialogue set the stage for co-investing on several transactions that were beyond the capacity of an individual WVCAP Partner. This monthly conference will continue for the purpose of sharing information and teaming for larger accomplishments.

**Results for West Virginia Jobs**

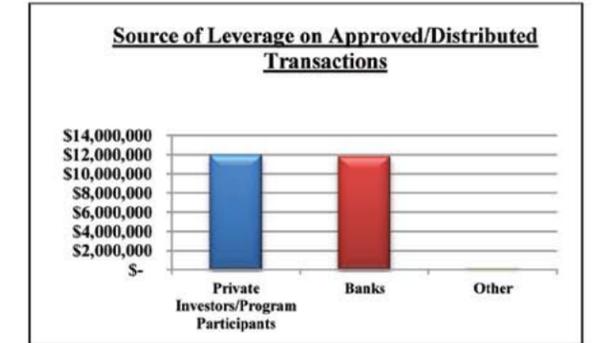
The proof of the WVCAP concept is measurable. First and foremost in today's economy, meeting the primary objective, the program has enabled recipients to finance their business expansion preserving current jobs as they create new job growth. **To date the WVCAP Program has had success in attaining that objective having retained 584 jobs and created 444 projected new jobs.**



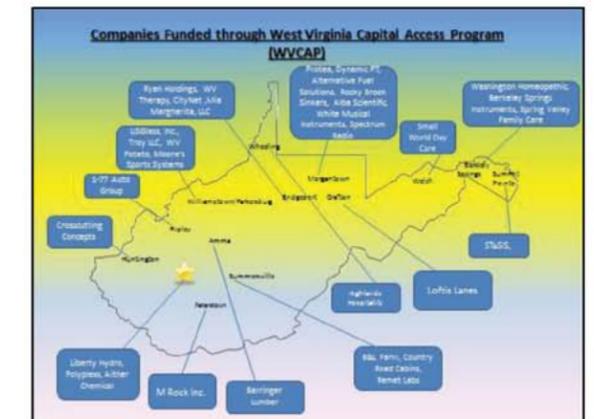
**The WVCAP is currently the 2<sup>nd</sup> highest achieving SSBCI initiative, in the nation.** Through the combined efforts of the eight partners, the WVCAP Program met its objective, deploying 47% all available funds into the market in 19 months, five months before the initial deadline. **These funds provided capital for 37 transactions and were matched with \$62,068,278 in additional private capital for a current leverage ratio of 4.94 to 1 as of 12/31/13.**



**Based on the success of these innovative strategies, the WVCAP and its Partners are currently exploring ways to continue this effort and expand the participation along with some modifications from the lessons learned. Together we are working to develop alternative, sustainable funding mechanisms. The challenge we face is gaining the financial commitment which we conservatively estimate at \$25 million for the next three year period.**



These projects are geographically dispersed across the state and represent a diversity of industries.



The WVCAP Operational & Technical Assistance Initiative provided \$108,000 to twelve companies to date.

**Clearly, economic development efforts in West Virginia have benefited from participation in this effort, be it an increased capital base, operational assistance funds, collaboration, and perhaps most important, a local economy with enhanced potential for business expansion and job growth. While it is beyond our expertise to estimate the direct and indirect financial benefit derived by the state, there is a meaningful increase in local and state taxes paid by the businesses, as well as by those who are newly employed.**

From: "Gov. Earl Ray Tomblin" <[govofficecomm@wv.gov](mailto:govofficecomm@wv.gov)>

Date: May 16, 2014 at 9:48:50 AM EDT

Subject: COLUMN: Small Business, Big Vision



**SMALL BUSINESS, BIG VISION**

*A column by Governor Earl Ray Tomblin*

(May 16, 2014) - I have had the opportunity to meet the owners of many successful small businesses across West Virginia since becoming your governor. Often their companies started as a life's passion. As we wrap up our celebration of National Small Business Week, it is important we recognize the small businesses in West Virginia that grew from inspiration and passion - companies like RockyBrook Sinkers, MightyTykes™ LLC, Polyhedron and MarTek Ltd.

During my State of the State Address in January, I had the opportunity to recognize and honor a father and son fishing team, Dwight and Brook Pauley, who turned frustration into function with Rocky Brook Sinkers. These avid fishermen created limestone sinkers that were easy to cast and less likely to snag. Now RockyBrook Sinkers are available in local fishing stores, as well as retail giants such as Cabela's, Dick's Sporting Goods and Wal-Mart. They are also sold in Canada, Japan and Russia.

For Isabella Yosucio of Morgan County, her passion sprang from her determination to help her son, Isaac. To improve Isaac's poor muscle tone caused by Down Syndrome, Isabella crafted ankle and wrist weights, sized to fit infants and toddlers. After seeing positive results with her son, Isabella looked into creating Mighty Tykes™ LLC - early intervention weights for other children with similar muscular impairments. Isabella developed the concept and later sought guidance through the West Virginia Small Business Development Center (SBDC) and business coach Bob Marggraf.

Following a 20-year teaching career, Jeanne Finstein is now making the grade with a new business venture: Polyhedron Learning Media, Inc. She - and her team

who produced educational materials for NASA - founded a new education technology company. Since 2004, Polyhedron has won two Small Business Innovation Research (SBIR) contracts from the U.S. Department of Education to develop high school and college-level online, virtual physics labs. As part of TechConnectWV, Polyhedron worked in partnership with West Liberty University and used a seed grant from the Innovation Transfer Consortium to refine online physics lab simulations. The company also offers iPad apps including physics and experimental psychology simulations, and another is on the way for kids to build 3D train sets. To date, their apps have been sold in 57 countries.

The idea for MarTek Ltd. was sparked - literally - by the risk of an arc blast in an electrical substation. Charlie McClung, who started his career as an electrician at a major chemical company, thought a remote switch to operate the circuit breaker from a safe distance already existed. It didn't - so McClung went to work in his garage. His good friend and business partner, Russ Safreed, was McClung's sounding board and performed the first field test of the prototype model. In a few short years, they've refined and marketed the product, thanks in part to technical assistance from the Robert C. Byrd Institute for Advanced Flexible Manufacturing (RCBI).

In West Virginia, 96 percent of all businesses are small. Yet by other measures - vision, entrepreneurial spirit and innovation - our small businesses are big. I'm proud to help celebrate their accomplishments. For more information about small business opportunities in the Mountain State, contact the [West Virginia Small Business Development Center](#).

**Follow us on Twitter [@GovTomblin](#)**

###



**Exhibit D**

**Collaborative Events, Task II**

11/13/2012	CAA Speed Networking
11/14/2012	Morgantown Chamber presentation
1/13/2013	Unlimited Futures--Huntington Café group
3/27/2013	CAA Economic Devel Comm Meeting
4/8/2013	Capture Team Make it in America FFO Conference Call
4/24/2013	Entrepreneur Advancement Lunch (Advantage Valley)
5/1/2013	SBA Events in Beckley and Bluefield
6/6/2013	WV Women's Business Center Event in Beckley
6/12/2013	Clinton Global Initiative Meeting, Chicago
7/8/2013	CAA Educator Industry Institute--instructor
10/4/2013	Submitted joint application to Blackstone Foundation with CAA and CAZ
10/30/2013	CAA Elevations Academy
10/31/2013	Met with Steven Spalding, Point A Consulting, and CAA re: WVRTP
3/12/2014	CAA Economic Devel Comm Meeting
5/21/2014	Meet w/Morgantown Chamber of Commerce President



**Exhibit E**

**Entrepreneurial Support Programs Provide Investment To Enable Growth Of Mighty Tykes™**

*Product Fills the Gap for Early Intervention Market*

Innovators can come from all walks of life, and West Virginia's newest innovator is a "mompreneur." Berkeley Springs, West Virginia resident Isabella Yosuco has developed an invention that will aid kids aged six months to three-years old. Designed with input from physical and occupational therapists, Mighty Tykes™ Infant and Child Weights are cheerful wrist and ankle weights that may help with one-sided weakness, weakness due to injury or illness, hypotonia (low muscle tone), palsic movements, tremors and sensory issues. These and other issues are common in children with a variety of conditions like infant stroke, prematurity, cerebral palsy, Down Syndrome, autism-spectrum disorders, muscular dystrophy, and many others. They're cuter, smaller in size, and lighter than what's commonly available.

Her business recently received \$200,000 in funding from two West Virginia entrepreneurial support programs -- the INNOVA Commercialization Group, (INNOVA®), an initiative of the West Virginia High Technology Consortium Foundation (WVHTC Foundation), and the West Virginia Jobs Investment Trust (WVJIT). Both provided \$100,000, which included funding available through the WV Capital Access Program. The Mighty Tykes™ product will be formally introduced at the upcoming Abilities EXPO in New York City, which is the nation's oldest and largest expo of products and services for the community of people with disabilities, their families, caregivers, seniors and healthcare professionals. Attendance at this major trade show is supported in part by TechConnect West Virginia.

Yosuco explained that therapists using MightyTykes™ have found that the weights are a simple, safe and potentially effective treatment for several common problems that impair a child's timely mobility and the ability to fully explore their environment and in turn, learn and socialize." Yosuco had a unique incentive to develop the infant and child weights; her three-year-old son Isaac who has Down Syndrome. When she learned about her son's hypotonia from her Birth to Three assigned physical therapist, Yosuco sprang into action.

"Honestly, it seemed really obvious, so I went down to my basement and used some leftover fleece and a bit of our boys' sandbox sand to make up these tiny little weights," Yosuco explained. "When our Physical Therapist saw them, she was really impressed, and encouraged me to explore manufacturing them." MightyTykes™ Infant & Child wrist and ankle weights can be used--by parents and professionals alike--in targeted exercises and also incorporated to enhance the effects of both structured and casual play effectively building strength, particularly in the arms, legs and abdomen. In addition, wearing them can help minimize unwanted movements and provide comfort to young children with sensory issues who enjoy the feeling of weight on their limbs.

As part of the product development effort and to test the receptivity of the product to the market, MightyTykes™ initiated a market trial in the fall of 2012. Prototypes and a survey were sent to early intervention program families, professionals and institutions around the country. Among them, three appeared on *U.S. News & World Report* "Honor Roll" of the best Children's Hospitals and all of which provided favorable feedback.

"I met Isabella in the summer of 2012", stated Guy Peduto, Director of INNOVA. "When I heard the idea over the phone I really had no idea what to expect. But after meeting Isabella and hearing her story about creating these early versions in her basement, working with Isaac's therapist and understanding what she was trying to create, I was committed to helping bring these to market and began to put together the team to make it a reality."

Also instrumental to this effort was Robert Marggraf, a West Virginia Small Business Development Center Business (WVSBDC) Coach. Living in the area, Bob was able to provide the day-to-day business coaching, business plan development and financial analysis needed to meet the investor's requirements.

Finally, the West Virginia Jobs Investment Trust is co-investor with INNOVA in MightyTykes™. "Mighty Tykes is an example of what the spirit of entrepreneurship is – identifying a problem, developing a solution to meet the market demand and having the courage to do it", said Andy Zulauf, executive director of WVJIT.

"The collaboration between INNOVA, WVJIT, WWSBDC and the company allowed each group to contribute vital resources to best position the company for future success. This collaborative support is exactly what entrepreneurs in West Virginia need to help them achieve their growth goals," said Anne Barth, TechConnectWV's executive director.

"I am deeply grateful and very excited about the future," said Yosucio. "As both a 'mompreneur' and a resident of West Virginia, I am so thankful and impressed that there are those who are willing and able to nurture creativity and drive to solve problems, help others, and promote economic vitality, taking thoughtful risks to support people like me."

Learn more at <http://www.mightytykes.com>.



Exhibit F

*Summary of Final Report  
on  
TechConnect WV's Innovation Adoption Program  
May 21, 2014*

The Innovation Adoption Program (IAP) projects funded during the grant period are examples of how TechConnect West Virginia can encourage and support innovation in West Virginia's manufacturing sector. The projects also highlight the role that a Center of Excellence can fill. The projects also give the IAP's growing network of economic developers, business and community leaders, and other potential referral sources a frame of reference for how a project can benefit a local manufacturer.

As representatives of West Virginia's Center of Excellence (CoE) community will confirm, developing referral sources and moving a manufacturing company from prospect to participant require ongoing communication. Maintaining contact with those potential referral sources and prospects continues to be central to the IAP effort.

The IAP also continues to exchange best-practice ideas and experiences within the CoE community. That exchange has included Innovation Works to discuss unique and common challenges faced, ideas on how both organizations might market and target their Innovation Adoption Programs going forward, and ideas on how to expand higher education's participation as Centers of Excellence.

An additional noteworthy outcome involved a company in Logan County. Mining Repair Specialists (MRS), a Holden company that has more than 25 years of successful experience building and repairing equipment for the mining industry. The company's leadership agreed to accept a meeting to learn about the IAP. That meeting eventually led to a conversation with both the company's owners. Those discussions led to an understanding that the company would like to diversify into other markets, particularly the oil and natural gas industry. However, the company had no connectivity to that industry; they knew no one and had no ideas for how to become engaged. John Golden introduced the company to the West Virginia Manufacturers Association (WVMA) and its Marcellus 2 Manufacturing Expo (M2M). Following John's guidance, MRS exhibited at the 2014 M2M Expo. WVMA estimated that 5,000 regional decision-makers attended the two-day event, along with more than 300 exhibitors. The company's representatives at the event reported they made several contacts that will be valuable in their efforts to become established in the oil and natural gas industry.

Through on-site visits, group presentations, and conference calls, more than 150 manufacturers, state and local economic development representatives, trade organization members, Centers of Excellence leaders, and business and community leaders across West Virginia directly received information about the Innovation Adoption Program during the grant period (April 3, 2012 – December 31, 2013). A conservative average estimated pass-along rate of three additional impressions per contact would bring the estimated reach to more than 450. The following represents the current list of manufacturers and potential referring organizations directly reached to date (map attached):

- Almost Heaven Cupcakes (Taylor County)
- Andrew White Guitars (Monongalia County)
- Atoms Architectural Products (Wood County)
- Azimuth (Marion County)
- Barbour County Economic Development Authority
- Barney's Bakery (Hancock County)
- Carbon Fiber Composites (Cabell County)
- Center for Applied Research and Technology at Bluefield State College (Mercer County)
- Chico's Enterprises (Monongalia County)
- Eagle Manufacturing (Brooke County)

## Exhibit F (cont.)

- Eagle Research (Putnam County)
- Eyemarker Systems (Monongalia County)
- FCX Systems (Monongalia County)
- Fulmin Industries (Mineral County)
- Greenbrier Valley Economic Development Corporation (Greenbrier County)
- Gurkees Sandals (Monongalia County)
- Guyan International (Cabell County)
- Hay Scott Rustic Fence (Randolph County)
- HCS Technologies (Preston County)
- Heat Cell (Lewis County)
- Huntington Area Development Council (Cabell County)
- Jackson County Economic Development Authority
- Jefferson County Economic Development Authority
- Kanawha Electric (Kanawha County)
- Kanawha Manufacturing (Putnam County)
- Kidematics (Monongalia County)
- Legacy Designs (Wood County)
- Maggie's Salsa (Kanawha County)
- Marble King (Tyler/Wetzel counties)
- Marion Regional Development Council (Marion County)
- Marshall University Division of Engineering and Computer Science (Cabell County)
- Marshall University Research Corporation (Cabell County)
- Marsico Brothers (Fayette County)
- MarTek (Kanawha County)
- MC Industries (Greenbrier County)
- Meadowworks (Greenbrier County)
- Mid-Atlantic Technology, Research & Innovation Center (MATRIC) (Kanawha County)
- Mid-Ohio Valley Regional Council (Wood County)
- Miller Aviation Reclaim Systems (Kanawha County)
- Mingo County Redevelopment Authority
- Mining Repair Specialists (Logan County)
- Morgantown Area Economic Partnership (Monongalia County)
- New River Gorge Regional Development Authority (Fayette County)
- Ohio Valley Steel (Ohio County)
- Oliverio's Peppers (Harrison County)
- Progressive Industries (Monongalia County)
- Putnam County Development Authority
- Quality Metal Roofing (Mingo County)
- Randolph County Economic Development Authority
- ReBuilder Medical (Jefferson County)
- Robert C. Byrd Institute for Advanced Flexible Manufacturing
- Rockybrook Sinkers (Monongalia County)
- SanShell (Fayette County)
- SDR Plastics (Jackson County)
- Southern West Virginia Community and Technical College (Logan County)
- Talbott Lumber (Barbour County)
- Tomaro's Bakery (Harrison County)
- Touchstone Research Laboratories (Ohio County)
- Tramco (Mingo County)
- Troy LLC (Ritchie County)
- Uncle Bunk's (Tyler County)
- Vintec (Nicholas County)
- Virgin Timber Lumber (Fayette County)
- Walhonde (Kanawha County)
- West Virginia Economic Development Office
- West Virginia Forest Products (Upshur County)
- West Virginia Manufacturers Association (presentation at WVMA's June 2013 Annual Meeting)
- West Virginia Small Business Development Center (presentation to statewide staff)
- West Virginia University Davis College of Agriculture, Natural Resources and Design
- West Virginia University Industrial Extension's Manufacturing Extension Partnership
- West Virginia University Research Corporation
- ZEV Electric Vehicles (Monongalia County)

Moving a manufacturer from IAP prospect to active participant requires that a level of understanding and trust be established between the manufacturer and IAP/TechConnect WV. If the manufacturer has never worked with the Center of Excellence (CoE) identified to be the best match for the project, the IAP must help create that same relationship between the company and the CoE.

The goal for the grant period was to fund and monitor two projects. That goal was met when funding was approved and projects begun with Uncle Bunk's and FCX Systems.

## Exhibit F (cont.)

### Uncle Bunk's LLC (Sistersville, Tyler County)

- IAP Grant Amount: \$2,780
- Center of Excellence: West Virginia University Industrial Extension's Manufacturing Extension Partnership (MEP)

Uncle Bunk's LLC is a specialty food company that manufactures gourmet products using the freshest possible, locally grown produce and based on traditional Appalachian recipes. The WVU Industrial Extension's MEP assisted Uncle Bunk's in identifying and implementing methods to: 1) optimize its available manufacturing space, 2) increase manufacturing capacity, 3) increase efficiencies in shipping and receiving, 4) expand distribution to include large specialty food retailers, and 5) bring more efficiencies to the company's production processes. The goal is to help the company *Uncle Bunk's relishes, pickles and other "Condiments With a Kick" have won several national awards in the specialty food product industry.* eventually create approximately 30 new products of multiple varieties and sizes over the next two years. The company's employment goals are to retain its three full-time employees while adding three additional employees within two years.

Prior to the project, Uncle Bunk's ownership had concluded that it must begin looking for a larger facility and dedicating resources toward a purchase or lease, which would have limited the company's ability to invest the time, attention, and financial resources needed to develop new products and markets. The IAP project helped the company discover ways to better utilize its existing space and to improve its logistics. For example, the company had been receiving and storing on site the glass containers in which products are packaged and sold. By recommending that it drop-ship those containers to an available off-site location and then bring them to the production space only when needed, the IAP project changed the company's mindset about the immediate need for a larger facility. That adjustment is allowing the company to focus on its continued growth.



"Uncle Bunk" Larry Young at work in Uncle Bunk's production kitchen.



The project's review of the company's processes also resulted in a refined HACCP (Hazardous Analysis and Critical Control Points) plan, which is allowing the company to pursue sales with larger dealers.

Finally, the IAP project's review of the company's existing administrative processes uncovered methods and tools that are resulting in a more effective accounts payable system. Those adjustments are expected to improve the company's cash flow.

The company has just begun to implement the changes discovered through the IAP project. While the administrative changes have required no new investments, some of the physical space adjustments do have a cost associated with them. For example, the IAP project developed a new layout for the company's production area (i.e., kitchen space) and associated equipment. The total investment in those upgrades is estimated to be \$17,000. Uncle Bunk's

estimates the investment will allow it to triple its production capacity. It looks forward to realizing its improved cash flow and securing the resources needed to fully implement those changes.

### FCX Systems (Morgantown)

- IAP Grant Amount: \$25,000
- Center of Excellence: West Virginia University Industrial Extension's Manufacturing Extension Partnership (MEP)

FCX Systems designs and manufactures a broad line of solid-state Ground Support Equipment for the commercial, military, industrial and ship-shore markets around the world. The WVU Industrial Extension's MEP provided the expertise required to update the C Software code the company needed to upgrade its 90KVA power frequency converter to a 180KVA model necessary for the commercial airport market to accept new 787-10 aircraft that began service in early 2014. The project's overarching goals were to help position FCX Systems as a key supplier in the Ground Support Equipment market and increase orders for the company's power frequency converters. The company's employment goals are to retain its current 75 employees and add an additional 13 new full-time positions over the next two years.

The project resulted in an updated product that allows FCX Systems to keep pace with changes in its markets and to build on its reputation for quality and innovation. If market conditions hold as expected, the company anticipates adding employees to meet production demands.



Focus[On]

BOTTOM DRAWER

## About Bloody Time for a Bloody Mary

We take a look at West Virginia's liquor laws.

WRITTEN BY KATIE GRIFFITH

**ADMIT IT.** How many times have you made Sunday morning runs to grocery stores, absentmindedly grabbing a case of beer or a bottle of wine, only to be halted by checkout cashiers staring pointedly at a wall clock? It's 11 a.m. Businesses in West Virginia can't sell alcohol until 1 p.m.

It's annoying, it's a nuisance, it could be economically damaging, and it may be a thing of the past. A bill proposing the legal sale of alcohol in West Virginia clubs, restaurants, and hotels at 10:30 a.m. almost passed through the Legislature during the 2014 session. Though time ran out before the bill was signed into law, amending our state's liquor laws had wide support.

This isn't just about swigging martinis on Sunday mornings. Our lack of imbibing at prime brunching hours means restaurants lose customers, according to bill sponsor Stephen Skinner (D-Jefferson). It's tourism money we're losing, not to mention local customers. "I watch West Virginia dollars drive right by my door every Sunday, and I'm not able to pull Virginia dollars in," says Rob Losey, director of sales and distribution at Bloomery SweetShine in Charles Town. "Our legislators have been very supportive. Even though this year's Sunday bill didn't come to a vote, we are hopeful the support for small business, agritourism, and economic development continue next session."

After all, brunch isn't really brunch without a mimosa or a Bloody Mary, and alcohol is served earlier throughout many neighboring states.

DATA

## Mapping Growth

A new online tool lets us see where in the state companies are opening and closing—now and way into the past.

WRITTEN BY PAM KASEY

**A** hundred years ago last month, four new businesses registered in the state: one each in Cabell, Fayette, Kanawha, and Ohio counties. Last month, hundreds registered, at least one in every county of the state.

A half century ago, "civic and special organizations" represented by far the largest number of organizations registered in the state—now it's "lessors of real estate." A quarter century ago, they were neck and neck.

Also 25 years ago, Charleston had the greatest number of business registrations of any city, at about 1,700, with Huntington's 1,100 a distant second; Morgantown was a sleepy backwater behind Wheeling and Parkersburg. Today Charleston is still in the lead, at 4,700, but number two Morgantown has far overtaken Huntington, with 4,200 and 2,300 respectively.

OK, this may not be the highest use of the secretary of state's new satisfyingly queryable online Business Industry Growth (BIG) Map, but who can resist having a little fun with business registration numbers by county and city by month going back essentially forever—to the state's independence and beyond?

Through the BIG Map, the secretary of state shares with all of us information that until now has been buried in business filings. "We have so much data on the growth of business in West Virginia," says Secretary of State Natalie Tennant. "The BIG Map takes all of that data and puts it in

one place where people can go and see how the economy is faring across the state or down the street." It includes all businesses that file with the secretary of state's office, including corporations and LLCs.

Let's talk, then, about the more useful stuff. "I think pretty much everyone would like to use this information," says Jake Glance, spokesperson for the West Virginia secretary of state's office. "Reporters to gauge economic growth, people who want to see how their county is doing compared

to the rest of the state, and business owners to see where the booming parts of the state are." So a higher use of the BIG Map than my idle data-surfing might be for an entrepreneur wondering, "Given that I have ties to both, would an expansion of my catering business find more business customers in Beckley or Clarksburg?" Or a statewide social service organization that wants to know, "Which counties in the state need the most help for small businesses?" Or an aspiring retiree asking, "What small town could I retire to that has a dynamic business environment?" The BIG Map can't answer these questions definitively, but it can serve as one source of data for making important business, policy, and life decisions.

To be clear, the secretary of state's database includes entities that have taken most forms of business organization, including corporations, LPs and LLPs, business trusts, and others. It does not include sole proprietorships.

One further note: The BIG Map offers a charting function that allows comparisons of business registrations and closures for cities, counties, or groups of cities or counties by month for the past year—it's a very limited use of this data. But *West Virginia Focus* has put in a request for a more robust charting function that would allow charting of numbers of registrations going back either monthly or annually to the beginning of the database. It's unclear yet whether it will be possible—check back!

[apps.sos.wv.gov/business/big](http://apps.sos.wv.gov/business/big)



Exhibit H

West Virginia Innovation & Entrepreneurship Coalition

- |  |  |
|--|--|
| Industries of the Future-West Virginia                     | Downstream Strategies                        |
| TechConnect West Virginia                                  | eTouch Sciences                              |
| Advantage Valley   | Electronic Specialty Company                 |
| Affiliate Services Group                                   | Energy Efficient West Virginia               |
| Air Robotics   | Expense Assist LLC                           |
| Allegheny Science & Technology                             | Fairmont State University                    |
| Alternative Fuel Solutions of West Virginia, LLC           | Fifth Third Bank                             |
| Appalachian Log Structures                                 | Flocco Apps                                  |
| Appalachian Power  | GADDIS Consulting Group                      |
| Arnett Foster Toothman                                     | Gilmer Braxton Technology Institute          |
| BB&T Center for American Capitalism at Marshall University | Girl Scouts of Black Diamond Council         |
| Berkeley Springs Instruments, LLC                          | Glenville State College                      |
| Bioscience Association of West Virginia                    | Green Energy Products                        |
| Blanchette Rockefeller Neurosciences Institute             | Green Rivers                                 |
| Carbon Fiber Composites                                    | HCS Technologies                             |
| Center for Applied Research & Technology, Inc.             | Huntington Entrepreneur Café                 |
| Center for Economic Options                                | Huntington Area Development Council          |
| Charleston Area Alliance – GROW/SAGE/THRIVE                | Information Research Corporation             |
| Chemical Alliance Zone                                     | The Innovation & Entrepreneurship Center     |
| CHERSCO LLC  | INNOVA Commercialization Group               |
| Claude Worthington Benedum Foundation                      | Innovation Adoption Program—TechConnectWV    |
| Collective Impact  | Innovation Transfer Consortium—TechConnectWV |
| ComAssist  | Intelligent Simulations                      |
| Composite Transport Technologies, Inc.                     | I-79 Development Council                     |
| Concord University   | Keyser Primary Middle School                 |
| Continental Brick Company                                  | Kicking Stones Consulting                    |
| Cordgenics   | Koppers, Inc.                                |
| Crosscutting Concepts                                      | Liberty Hydro                                |
| Digiso   | Marshall University Research Corp.           |
| Discover the Real West Virginia Foundation                 | MarTek                                       |

## Exhibit H (cont.)

MATRIC - Mid-Atlantic Technology, Research & Innovation Center	TASC
Mighty Tykes	Tamarack Artisan Foundation
Mountain Point	Teaming To Win
Mountain State Insurance	Three Sixty Strategies
Keyser Primary Middle School	TransTech Energy Innovations
MTV Solar	Unlimited Future
NASA WV Space Grant Consortium	U.S. Small Business Administration
National Energy Technology Laboratory	Vision Shared
National Radio Astronomy Observatory	Walhonde Tools, Inc.
National Research Center for Coal & Energy	Water Sentry
Natural Capital Investment Fund	West Liberty University Center for Entrepreneurship
New River Community & Technical College	WV Angel Investor Network
New River Gorge RDA/SBDC	WV Cable Telecommunications Association
NG Innovations	WV Capital Access Program
Office Meds	WV Development Office
Ohio-West Virginia Youth Leadership Association	WV Division of Energy
PCC Energy, Special Metals Corp.	WV Growth Investment LLC
Pierpont Community & Technical College	WV Higher Education Policy Commission, Science & Research Division
PLANTS LLC	WV High Technology Consortium Foundation
Polyhedron Learning Media, Inc.	WV High School Entrepreneurship Program
Polymer Alliance Zone	WV Jobs Investment Trust
Protea Biosciences Group, Inc.	WV Manufacturing Extension Partnership
Regional Contracting Assistance Center	WV Regional Technology Park
Robert C. Byrd Institute for Advanced Flexible Mftg.	WV Small Business Development Center
RockyBrook Sinkers	West Virginia State University
SecurLinx	West Virginia University
ShaleXchange	WVU BrickStreet Center for Innovation & Entrepreneurship
Small Business Administration	WVU College of Law Entrepreneurship Law Clinic
SGA Polymers	WVU E*Quad Program
Steptoe & Johnson PLLC	WVU Industrial Extension
Stone Strategies, LLC	WVU National Research Center for Coal & Energy
Stonewall Capital	WVU Division of Forestry
Summit Transport & Environmental	West Virginia Wesleyan College
Sunbelt	
Sunpulse Consulting	
Sustainability Institute at Bridgemont	
Sustainable Williamson	

## Exhibit I

# West Virginia's Innovation Economy



### Universities and General Technology

Alderson Broaddus University	NASA IV&V
Bethany College	NASA WV Space Grant Consortium
Bluefield State College	National Radio Astronomy Observatory
Charleston Area Alliance	National Resource Center for Coal and Energy
Charleston Area Alliance Business Incubator - SAGE/GROW	New River Community & Technical College
BB&T Center for Capitalism at Marshall University	Pierpont Community & Technical College
Blue Ridge Community & Technical College	Robert C. Byrd Institute For Advanced Flexible Manufacturing at Marshall University
Bridgemont Community & Technical College	Shepherd University
Center for Applied Research and Technology, Inc.	Southern WV Community & Technical College
Concord University	Sustainability Institute at Bridgemont
Digiso	TechConnect West Virginia
Eastern WV Community & Technical College	University of Charleston
Fairmont State University	Upper Kanawha Valley Technology Business Center
Gilmer Braxton Technology Institute	West Liberty University
Glenville State College	West Virginia Regional Technology Park
Higher Education Policy Commission	West Virginia High Tech Consortium Foundation
I-79 Technology Park	West Virginia Manufacturing Extension Partnership
Industries of the Future-West Virginia	West Virginia Northern Community & Technical College
INNOVA Commercialization Group	West Virginia State University
Innovation Adoption Program of TechConnectWV	West Virginia University
Innovation Transfer Consortium of TechConnectWV	WVU B&E Center for Innovation & Entrepreneurship
Kanawha Valley Community & Technical College	WVU College of Law Innovation and Entrepreneurship Law Clinic
Marshall University Institute for Interdisciplinary Research	WVU Division of Forestry & Natural Resources
Marshall University	WVU E*Quad Program, Davis College
Marshall University Research Corp.	WVU Industrial Assessment Center
Marshall University Visualization Laboratory	WVU National Research Center for Coal and Energy
Mid-Atlantic Technology Research and Innovation Center (MATRIC)	WVU-Parkersburg
Mountwest Community & Technical College	WVU Research Corp.
	West Virginia Wesleyan College



### Biometrics and Identity Management

Allegheny Science & Technology	Lockheed Martin
Advanced Concepts Center	Lockheed Martin Biometric Experimentation and Advanced Concepts Center
Azimuth	ManTech Enterprise Integration Center
Biometric ID Systems	Marshall University
Biometric Services International	Marshall University Forensic Science Center
Booz Allen Hamilton	MITRE
Center for Identification Technology Research at WVU	National White Collar Crime Center
Complete Consultants Worldwide (CCW)	NewBold Enterprises
Cross Resolve	Northrop Grumman
CSC Identity Labs	Performance Results Corporation
Department of Defense Biometrics Task Force	Platinum Solutions
Extreme Endeavors Consulting	Plethora Technology
FBI Biometrics Center	PPPFD- Shady Spring
FBI Criminal Justice Information Services Division	SecurLinx Corporation
Galaxy Global Corporation	TASC
Global Science and Technology	Tygart Technology
HGO Technology	Videntity Systems
Ideal Innovations I3	West Virginia University
Identification Intelligence Ridge	Yura Consulting
Information Research Corporation	
Innovative Management Technology Services	

Exhibit I (cont.)

**Biotech**

Alcon Laboratories Inc.	Mylan Pharmaceuticals
Bioscience Association of West Virginia	National Institute for Occupational Safety and Health Laboratory
Blanchette Rockefeller Neurosciences Institute	Nexeon Medsystems
Cordgenics	Progenesis
Erma Byrd Biomedical Research Center at WVU	Protea Biosciences
Mary Babb Randolph Cancer Center at WVU	Robert C. Byrd Biotechnology Science Center at Marshall University
Mid-Atlantic Technology Research and Innovation Center (MATRIC)	Vandalia Research
	West Virginia Biomedical Research Infrastructure

**Chemicals and Materials**

3M Co.	Cytec Industries, Inc.	Mylan Pharmaceuticals Inc.
AC&S, Inc.	The Dow Chemical Co.	Pilot Galvanizing Corp.
Air Products & Chemicals, Inc.	DuPont	Polymer Alliance Zone
Alpharma, Inc.	Dyna-Mix, Inc.	PolyPlexx LLC
Aplicare, Inc.	Ecolab, Inc.	PCC Energy, Special Metals Corp.
Astellas Pharma Us Inc.	Elementis	PPG Industries, Inc.
Austin Powder Co.	Goodrich Corp.	Proviron
BASF	IVS Hydro	Rubberlite, Inc.
Bayer Cropscience LP	Kingsford Products Co., Inc.	Rust-Oleum Corp.
Bayer MaterialScience LLC	Koppers, Inc.	Sabic Innovative Plastics US
Braskem PP Americas, Inc.	Kureha	SGA Polymers
Carbon Fiber Composites	Linde LLC	Touchstone Laboratory, Ltd.
Chemical Alliance Zone	M&G Polymers USA LLC	Union Carbide Corp.
Chemtura Corp.	MATRIC	West Point Products LLC
Clearon Corp.	Momentive Performance Mtls	WVA Manufacturing LLC

**Energy**

Energy Efficient West Virginia	Catenary Coal Co. LLC	Lignetics
Mountain View Solar	Cenergy International Services	Marathon Petroleum
WV Division of Energy	Central Operating Co.	Marfork Coal Co., Inc.
HCS Technologies	Chesapeake Energy	Mclunkin Red Man Corp.
9three	Cliffs North American Coal LLC	Mettiki Coal Corp.
MarTek	Coal-Mac, Inc.	Mountain View Solar
Acacia Environmental Group	Consolidation Coal Co.	Mountaineer Energy LLC
AES Wind	Denex Petroleum Corp	Mountaineer Gas
Allied/Alternative Energy	Dominion	Mountaineer State Energy Inc.
Allegheny Development	Eastern Associated Coal Corp.	National Energy Technology Laboratory
Allegheny Energy Service Corp.	Elk Run Coal Co.	North American Drillers, Inc.
Alpha Natural Resources, Inc.	EQT	Northeast Natural Energy
Alternative Fuel Solutions of West Virginia, LLC	Evergreen Mining Co.	Omar Mining Co.
American Electric Power SVC	First Energy	Patriot Coal
Appalachian Wood Pellets	Green Valley Coal Co.	Pine Ridge Coal Co.
Arch of West Virginia, Inc.	Haliburton Energy Services	Powell Construction Co., Inc.
Argus Energy LLC	Hamer Pellet Fuel	Rockspring Development, Inc.
Ark Land Co.	HCS Technologies	Select Energy Services LLC
Atlantic Lease Co. LLC	Hobet Mining LLC	Stowers & Sons Trucking, Inc.
Augusta Systems	ICG Eastern LLC	TransGas Development Systems
Baylor Mining Inc.	IGS Energy	Triana Energy
BJ Services Co.	JF Allen Co., Inc.	Union Drilling, Inc.
Brookfield Renewable Power	Johnson Controls	URS Corporation
Buck White Coal Co.	Key Energy Services, Inc.	US Windforce
Caiman Energy	Kingston Processing, Inc.	Waco Oil & Gas
	Laurel Creek Co., Inc.	Williams Corp.

Exhibit I (cont.)

**MANUFACTURING (Small Mftrs)**

Robert C. Byrd Institute for Advanced Flexible Manufacturing at Marshall University	Kanawha Electric (Cabin Creek)
Eagle Manufacturing Company	MarTek (Elkview)
Innovation Adoption Program of TechConnectWV	Miller Aviation Reclaim Service (Charleston)
Barney's Bakery (Weirton)	Maggie's Salsa (St. Albans)
Uncle Bunk's (Sistersville)	Vintec (Dixie)
Troy LLC (Harrisville)	West Virginia Forest Products (Buckhannon)
Atoms Architectural Products (Parkersburg)	Azimuth (Fairmont)
Legacy Designs (Mineral Wells)	Almost Heaven Cupcakes (Grafton)
Carbon Fiber Composites (Ona)	Hay Scott Rustic Fence (Elkins)
Guyan International (Barboursville)	Fulmin Industries (Mineral County)
Heat Cell (Jane Lew)	HCS Technologies (Reedsville)
SDR Plastics (Ravenswood)	Talbott Lumber (Belington)
Tramco (Williamson)	Rockybrook Sinkers (Morgantown)
Quality Metal Roofing (Lenore)	Chico's Enterprises (Morgantown)
Mining Repair Specialists (Holden)	Eyemarker Systems (Morgantown)
Virgin Timber Lumber (Oak Hill)	ZEV Electric Vehicles (Morgantown)
Marsico Brothers (Montgomery)	Progressive Industries (Morgantown)
SanShell (Oak Hill)	Andrew White Guitars (Morgantown)
Kanawha Manufacturing (Eleanor)	FCX Systems (Morgantown)
Eagle Research (Hurricane)	Kidematics (Morgantown)
Meadoworks (Rupert)	Gurkees Sandals (Morgantown)
MC Industries (Maxwellton)	Oliverio's Peppers (Clarksburg)
Walhonde (Kanawha)	Tomaro's Bakery (Clarksburg)
	Marble King (Paden City)
	Touchstone Research Laboratories (Tridelfphia)
	Eagle Manufacturing (Wellsburg)

**ECONOMIC DEVELOPMENT**

Advantage Valley	U.S. Small Business Administration
Center for Economic Options (CEO)	West Virginia Angel Investor Network
Charleston Area Alliance--GROW/SAGE/THRIVE	West Virginia Capital Access Program
Huntington Area Development Council	West Virginia Development Office
I-79 Development Council	West Virginia Jobs Investment Trust
Natural Capital Investment Fund	WV Small Business Development Center
New River Gorge RDA/SBDC	
TechConnect West Virginia	

**ENTREPRENEURSHIP**

AirRobotics	Tamarack Foundation
Berkeley Springs Instruments	Teaming to Win
Crosscutting Concepts	Unlimited Future
eTouch Sciences	Vandalia Technologies, Inc.
Electronic Specialty Company	Vision Shared, Inc.
Huntington Entrepreneur Café	Walhonde Tools
Intelligent Simulations	West Liberty University Center for Entrepreneurship
PLANTS LLC	WV Small Business Development Center
Polyhedron Learning Media, Inc.	



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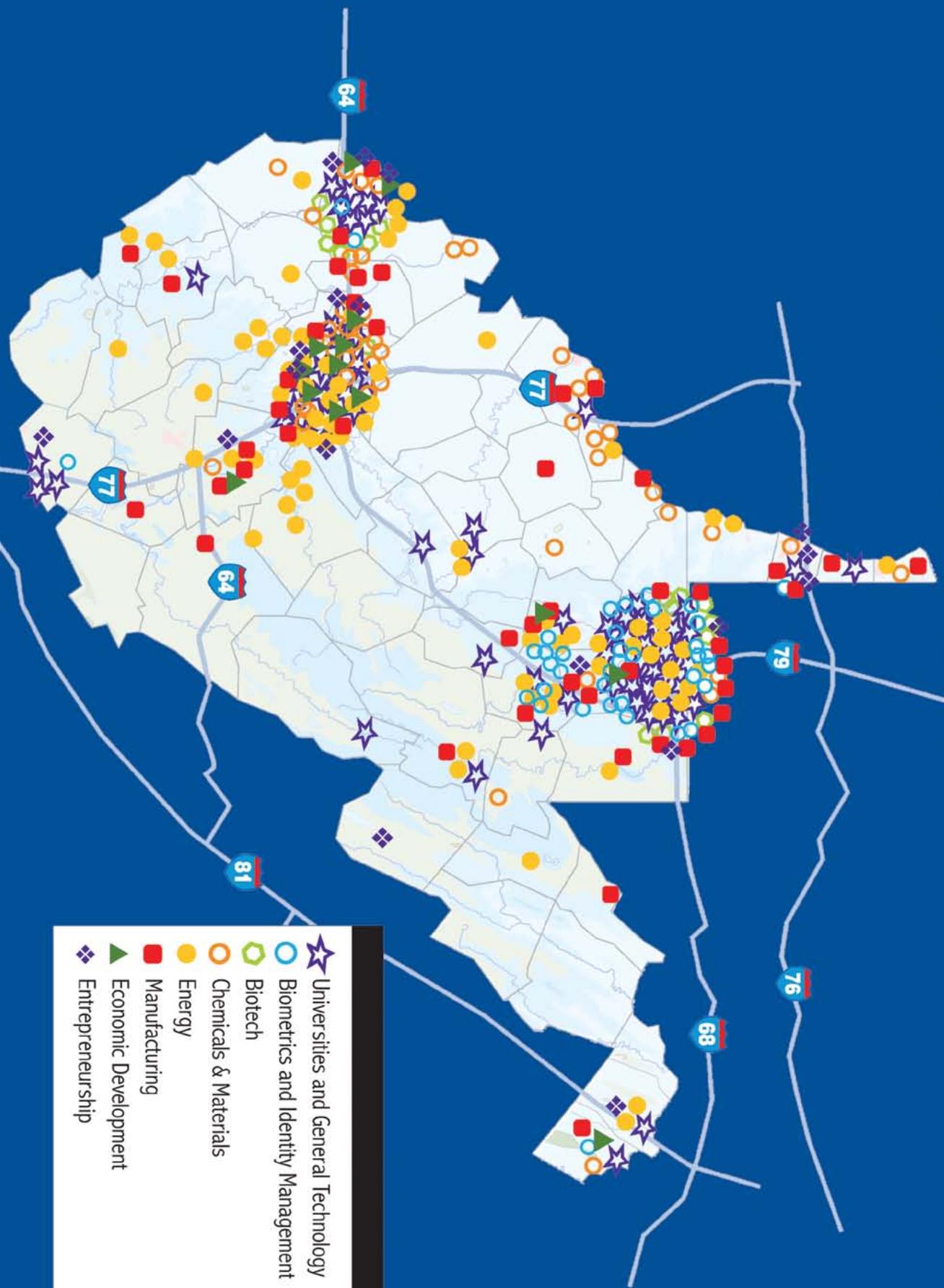
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**TechConnectWV Staff**

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**Anne Barth**  
*Executive Director  
TechConnectWV*

# West Virginia's Innovation Economy



- ☆ Universities and General Technology
- Biometrics and Identity Management
- Biotech
- Chemicals & Materials
- Energy
- Manufacturing
- ▲ Economic Development
- ◆ Entrepreneurship