

Powering the Portland Region

PSU's role in economic development



PSU is deeply committed to advancing the Portland metro economy. Discover the many ways we're aligning our programs with regional development priorities to accelerate economic growth.

Powering the Portland Region

“Let Knowledge Serve the City” is the guiding motto for Portland State, Oregon’s largest and only urban-serving university. It inspires us to act as a strong civic partner and contribute in relevant and meaningful ways to the economic vitality of the Portland metropolitan region.

Sharpening Our Focus on Economic Development

Educating students and producing a qualified workforce is the most significant way PSU advances the state’s economy. In 2014, PSU graduated more than 6000 students, the vast majority of whom will remain in the metro area. Our graduates work in every imaginable field. PSU alumni can be found at virtually every large public and private employer in the metro region.

In 2009, PSU leadership declared its commitment to promote economic development across other dimensions as well. That year, PSU produced its first-ever economic development report laying out a 10-year plan for increasing PSU’s contribution to economic growth. The following year, the Office of Research and Strategic Partnerships was established to cohere and accelerate programming to deliver on regional growth and development priorities.

Today, in addition to our core mission of educating the future workforce, PSU advances regional economic development through focused sets of activities in the following areas:

- Entrepreneurship and business acceleration
- Programming aligned with priority industry clusters
- Technical assistance and demonstration projects
- Regional economic research

This reports highlights key developments in each area and demonstrates how a concerted focus on economic development over the past five years has produced dramatic results.

The next several years promise to be equally dynamic with an expanded and renovated School of Business Administration, a deepening partnership with the Technology Association of Oregon, more joint programming with OHSU in science innovation and entrepreneurship, and PSU’s engagement with Greater Portland Inc. and the Portland Metro 20/20 Plan.

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Strategic Partners for Economic Growth

Since 2010, PSU has institutionalized strategic partnerships with the following business and civic organizations. These partnerships inform our curriculum and programming and ensure that we meet the needs of regional employers.

- Greater Portland Inc.
- Intel
- Mentor Graphics
- Oregon Health and Science University
- Oregon Innovation Council
- City of Portland
- Portland General Electric
- Port of Portland
- Technology Association of Oregon

www.pdx.edu/partnerships

PARTNER Profile:

Oregon Health and Science University

PSU and OHSU formed a strategic alliance in 2010 to develop and expand a joint portfolio of academic, research and economic development activities that deliver on Oregon and Portland’s shared goals of innovation, scholarship and job creation. Through closer programmatic integration, PSU and OHSU are fulfilling the region’s ambition for the capabilities of a world class, public research and medical university.

Collaborative Life Sciences Building

The CLSB, located in the South Waterfront, combines PSU’s new science labs with OHSU’s Knight Cancer Research Center and OSU’s School of Pharmacy. The new building, completed in June of 2014, is the first of its kind in the state to combine the resources of multiple universities in a single location. PSU science majors will take biology and chemistry classes in a state-of-the-art lecture hall while select PSU faculty will utilize CLSB’s high tech lab space.



1. Entrepreneurship and Business Acceleration

The startup scene is exploding in the Portland metro region. A proliferation of local tech incubators and successive rounds of venture capital in fast-growing firms have enhanced Portland's reputation as a destination for technology innovation. PSU plays a key role in this dynamic ecosystem through the Center for Entrepreneurship and the PSU Business Accelerator.



PSU Center for Entrepreneurship

The PSU Center for Entrepreneurship sits in the heart of one of the world's most entrepreneurial cities and serves as the university hub for all things start up. The Center connects PSU students, faculty and amenities with the startup community — including mentors, investors and entrepreneurs — through business competitions, pitch fests and community events. The Center delivers year-round, hands-on programming for PSU students and faculty to refine, commercialize and communicate their business ideas.

Annual PSU Entrepreneur Events:

- Kickstart Weekend — annual fall student startup weekend
- Lab2Market — student and faculty researchers learn how to take their ideas to market guided by experienced entrepreneurs and venture capitalists
- PSU Cleantech Challenge, presented by Wells Fargo — student teams compete for \$50,000 in prize money with game-changing prototypes

www.pdx.edu/entrepreneurship

PSU Cleantech Challenge

Launched in 2013 with Wells Fargo sponsorship, the PSU Cleantech Challenge provides seed funding to a cross-section of teams including undergraduate and graduate students and faculty from a wide variety of disciplines. Teams compete in the spring for a chance to receive a \$2,500 grant to develop a working prototype over the summer, with showcase and pitch opportunities in early fall at BEST FEST, Oregon's premier Cleantech event, where grand prizes are awarded.

The PSU Cleantech Challenge team is working to expand the competition statewide next year and to establish a micro-incubator within the PSU Business Accelerator dedicated to cleantech innovation.

Meeting Demand for Entrepreneurial Experience and Training

PSU students have a big appetite for new enterprise development. Over 1,000 PSU students participated in an entrepreneurship activity or program in the 2013-2014 academic year and at least 15 student-led technology endeavors took steps toward incorporation and commercialization. In response to demand, PSU established 3 new professional certificates and a capstone program for budding entrepreneurs in 2014:

- School of Business Administration Entrepreneurship Certificate
- Impact Entrepreneurs Social Entrepreneurship Certificate
- Maseeh College of Engineering and Computer Science Graduate Certificate in Technological Entrepreneurship
- Launch in 9 Capstone program, where business and engineering students team up to develop and launch companies

Award Winning Student Start Ups

GlobeSherpa: Mobile Payment and Mobile Tickets

GlobeSherpa grew out of a student project when Nat Parker and Michael Gray were pursuing their MBAs at Portland State. The company has quickly grown to be one of the most effective mobile payment and ticketing systems in the nation and is changing how people ride and pay for public transportation. GlobeSherpa is racking up awards. In April, it was named Technology Start Up of the Year by the Technology Association of Oregon. In 2014, GlobeSherpa won the Oregon Entrepreneurs Network annual award for best Development Stage Company.

HoneyComb

Founded in 2012 by PSU engineering student Ryan Jensen, HoneyComb combines unmanned aircraft systems and information and imaging technology to improve outcomes in precision agriculture. HoneyComb operates at the forefront of technological advances that will greet the next generation of precision agriculture farmers. The company incubated in the Portland State Accelerator before moving to larger digs in Wilsonville. In 2013, Honeycomb won the Angel Oregon Concept Company Competition.

ThorVolt wins 2014 Clean Tech Challenge

Judges awarded the \$10,000 grand prize to ThorVolt for its alternative car battery. The ThorVolt team — Andrew Thorsvik, a PSU graduate student in Engineering and Technology Management, and his brother Jonathan — developed a super-capacitor and lithium-ion car battery that eliminates the environmental and health risks associated with lead-acid batteries. The duo also took home the \$2,500 award for the best pitch award and the \$2,500 for the people's choice award.



Globe Sherpa Founders Nat Parker '10 and Michael Gray '11 met as graduate students in PSU's Masters in International Management (MIM) program. Globe Sherpa won the Oregon Entrepreneurs Network 2014 Development Stage Company of the Year Award.

2013 Business Accelerator Stats:

PSBA companies raised
\$11.8 million
in private capital;

generated
\$17 million
in revenue;

received grants of
\$4.3 million;

employed
196
full time employees;

and provided hands-on
work experience for
68
PSU students.

Accelerator company **Nouvola** wins Grand Prize at 2014 Angel Oregon Competition

Nouvola means “cloud” in Italian. It’s a fitting name for a start up launched by two Italian computer scientists, Paola Moretto (CEO) and Paola Rossaro (CTO). Nouvola provides cloud-based performance testing and predictive analytics solutions for mid-sized companies. The company enables the testing of online products before they launch to gauge how they will perform in a real cloud computing environment. The seeds for Nouvola were planted when Moretto, a proven technology executive, was director of software for Intel’s Data Center Group, where she worked on solving scalability issues for companies like Facebook. Nouvola’s promise was recognized with the grand prize of \$256,000 at 2014 Angel Oregon, the state’s largest angel investment competition, and at regional angel events.

PSU Business Accelerator

Ground Zero for entrepreneurial activity, providing office space and a wealth of resources to startup science and technology companies

The Accelerator is Oregon’s oldest and largest business accelerator and was named a Top 25 university business incubator globally by UBI Index, a global benchmarking firm based in Stockholm. PSU Business Accelerator is home to more than 30 startup companies in technology, bioscience, and cleantech, including companies started by PSU and OHSU faculty and students. Over 10 years, these companies have attracted more than \$150 Million in private venture capital and government grants to Oregon. More than 1,100 jobs have been created, 10 companies have been acquired and one went public. Many are still growing strong right here in Oregon.

The Accelerator offers turnkey space and services to promising, high-growth companies. Companies gain access to mentors, connections and a range of structured and informal sessions such as CEO Council, pitch fests, brown bag topics and social networking events. They also gain access to PSU student teams and interns working on business or engineering projects, who serve as a talent pipeline in a competitive tech hiring market. The secret sauce? The 200-strong community of resident entrepreneurs, who face similar challenges and opportunities in their race to bring important new products to market.

www.pdx.edu/accelerator



Paola Moretto, CEO of Nouvola.

2. Aligning Programming with Priority Industry Clusters

The Portland metro region’s economic development strategy focuses on bolstering key, traded sector industries to increase jobs and economic growth. To support this strategy and insure programming aligns with the needs of regional industry clusters, PSU has established and expanded strategic partnerships with key employers, business associations and economic development organizations.

Computer Electronics

Computer electronics represent a critically important part of Oregon’s economy accounting for 22 percent of the state’s manufacturing economy and 35 percent of the state’s export economy. This high-value sector is characterized by excellent wages with an annual average salary of \$114,000. Leading companies include Intel, Tri-Quint Semiconductor, ON Semiconductor, IBM and HP.

Students recognize the opportunity. Since 2009, the number of degrees granted in Electrical and Computer Engineering and Computer Science by PSU’s Maseeh College of Engineering and Computer Science have increased nearly 30 percent.

Mentor Graphics Design Verification and Emulation Lab

Mentor Graphics is a global leader in electronic design automation software. In 2012, the company made a significant contribution to PSU’s Maseeh College of Engineering and Computer Science to enable the school to add a faculty member and open a lab dedicated to design verification education and research. The support will allow the Maseeh College of Engineering to move to the frontier of the growing and relatively new field of chip verification by emulation.

PARTNER Profile:

Intel-PSU Strategic Partnership

Intel, the state’s largest employer, has 17,000 employees located in Washington County. Intel’s economic impact on the state and region are enormous and will continue to grow with investment in D1X, the new, \$3 billion research factory at the company’s Ronler Acres campus.

PSU’s partnership with Intel focuses on building the STEM pipeline, work ready graduates and faculty research. Today, Intel employs 1,000 PSU alumni — more than any other Oregon university.

Inventing New Information Technologies for Big Data

PSU Computer Science professor Dave Maier is a faculty member of Intel’s Science and Technology Center for Big Data. ISTC Big Data is a collaboration among leading researchers from Brown, MIT, Carnegie Mellon, Portland State, Stanford, University of Tennessee, UC Santa Barbara and University of Washington. Its mission is to produce new data management systems and architectures for Big Data. Professor Maier is a nationally recognized expert in data management for large scale scientific data.

Software

Oregon's software industry is on a roll. Software jobs are growing at a double-digit rate, and two-thirds of the jobs are in the Portland metro area. Oregon has the third-largest concentration of software developers of any state in the country.

Sharp growth in software jobs is fueled by a new generation of start-up companies — such as Urban Airship, Puppet Labs, Janrain and Treehouse — that have received significant venture capital investment. In addition, major Bay Area companies such as Salesforce.com, eBay and New Relic are establishing significant outposts in the Portland metro area. PSU's Computer Science Department and the School of Business Administration are working closely with the Technology Association of Oregon to understand industry needs and deliver graduates who fit the bill.

Hands-on Learning and Earning

Portland software companies can't hire PSU computer science majors fast enough. To meet demand for graduates with hands-on, industry experience, Computer Science Chair Warren Harrison launched the PSU/PDX Cooperative Education Program (PCEP). PCEP is a two-year program in which computer science students combine six-month rotations at three or four local software companies while taking eight to twelve credits each term on campus at Portland State. PCEP provides students with experience in several different roles — including software development, quality assurance, and operations support. The program began with 3 companies and 6 students in 2012. Today, 12 software (or software-enabled) companies, employ 28 PSU students all of whom will receive full-time job offers upon graduation. Founding companies Jive, Tripwire and Webtrends have been joined in successive years by ADP, Cambia, Viewpoint, Con-way, Thetus, Janrain, Multnomah County, Urban Airship and Web MD.

New Beginnings: A Computer Science Career Pathway for Non-Majors

How to meet ever-growing demand for software engineers? Tap non-computer science majors. "New Beginnings" is an intensive nine-month, cohort-based immersion program that covers the foundational knowledge in programming, theory and systems that undergraduates typically acquire during their first three years as a computer science major. It is intended for returning students who already have a bachelor's degree but little to no knowledge of computer science or programming experience. Launched in July 2014 with twelve students, New Beginnings provides a unique pathway for high-achieving students who may lack the undergraduate credentials to quickly gain the skills they need to thrive as professionals in computer science.

www.pdx.edu/computer-science

Athletic and Outdoor Industry

Portland is the epicenter for the athletic and outdoor industry in the United States. As home to Nike, Columbia Sportswear, Adidas, KEEN and many others, the region has become a global hub for sportswear design and marketing.

A 2011 report funded by the Portland Development Commission found that Oregon has more than 800 athletic and outdoor companies and employs more than 14,000 with average wages of \$80,000. The report also found that Oregon had limited higher education infrastructure for apparel and footwear design, manufacturing and marketing. Additionally, no specific programs had been developed to give creative designers the opportunity to learn the business side of what is feasible.

www.pdx.edu/athletic-outdoor

A&O Professional Certificate Programs

PSU's School of Business Administration charged Professor Lauren Beitelspacher with the design of industry-driven curriculum for the athletic and outdoor industry. The result? Two new Athletic and Outdoor Industry Certificates designed for undergraduates, graduate students and working professionals.

Athletic and Outdoor Industry Certificate is a 6-course, for credit certificate for undergraduate and graduate business majors who want to examine competitive industry issues in marketing, retailing, distribution and sales.

Athletic and Outdoor Product Management Certificate is a 5-course, non-credit sequence that examines larger competitive industry issues in marketing, retailing, distribution, and sales. The certificate programs include guest lecturers from industry leaders including Nike, Adidas, Columbia, Keen, Gerber, Icebreaker and others.



PSU and Pensole Partnership: Diversifying the A&O workforce

While people of color represent a significant share of the customer base for athletic footwear, few people of color are represented in the design ranks of major companies. PSU is partnering with D'Wayne Edwards, former Nike footwear designer and founder of the Pensole design academy in Portland, to address this problem. The program will bring students from historically black colleges to Portland to study footwear design. Beginning in fall 2015, students will spend six months working with Edwards and earning a certificate from PSU's Athletic and Outdoor Industry program.

jive

tripwire

webtrends

Clean Technology

PSU faculty, staff and students share a deep commitment to sustainable cities, low-carbon transportation solutions, and renewable energy. To support these goals, PSU is engaged in a growing number of business and civic partnerships that deploy, test and research clean technologies. PSU is also training the next wave of engineers who must understand renewable energy portfolio standards and new grid technology.



PGE Power Engineering Lab: Training the Next Generation of Power Engineers

PGE generously supported Professor Bob Bass' Power Engineering Laboratory to help train the next generation of power engineers. The energy industry is facing tremendous change in the next decade: Massive numbers of skilled utility employees are heading for retirement, and at the same time utilities must incorporate new renewable power standards and new transmission technologies. This creates pressure to establish a dependable, knowledgeable workforce pipeline. Through the Power Engineering Lab, faculty, students and energy companies can come face-to-face with changing industry dynamics and new technologies.

www.pdx.edu/power-lab

Smart Grid for Sustainable Communities

Smart Grid for Sustainable Communities is a two-term course designed for graduate students and professionals to gain an understanding of emerging concepts, technologies, applications and business models necessary to transform the nation's century-old, centralized power grid into a climate friendly "Smart Grid." Sponsored by PGE, Intel and Veris Industries, the course combines theory, practice, case studies, and guest lectures by industry veterans to provide students with a comprehensive understanding of issues involved in smart grid design and implementation.

www.pdx.edu/cps/smart-grid-for-sustainable-communities

Advanced Manufacturing

Manufacturing is the backbone of Oregon's economy and accounts for a greater share of our state's gross domestic product than any other state in the country. Portland manufacturers have developed a global reputation in semiconductors and transportation equipment including flatbed railcars, streetcars, industrial trucks and tractors. PSU is engaged in a number of statewide initiatives to maintain and enhance the competitiveness of the manufacturing sector.

Center for Electron Microscopy Nanofabrication (CEMN)

CEMN is a signature research center of Oregon's Nanoscience and Microtechnologies Institute (ONAMI) located at PSU. Led by physics and engineering professor, June Jiao, CEMN provides students and researchers with state-of-the-art facilities for the characterization of nano-scale materials and devices. Over 60 companies and research institutions use CEMN for research and product development. Industry partners include On Semiconductor, Microchip, TriQuint Semiconductor and Pacific Light Technologies.

www.pdx.edu/CEMN

Oregon Metals Initiative

PSU is a research partner in the Oregon Metals Initiative, a consortium of metal industry companies and research institutions that pursue research to improve the long-term competitiveness of the metals industry in Oregon. OMI partners invest \$1 million annually in over 20 research projects. The Oregon University System matches each corporate research project on a 1:1 basis. Both PSU and Oregon State University are partners in OMI. In 2013-2014, PSU faculty conducted research projects with Intel, PCC Structural, On Semiconductor, Ezra North America, DeMarini Sports and Fought & Company.

www.oregonmetal.org

PARTNER Profile:

PSU-PGE Partnership

Portland General Electric and Portland State University established a long-term, strategic collaboration in 2010 to enhance the economic, social and environmental sustainability of the Portland Metro region. The partnership showcases PSU and PGE as anchor institutions in clean technology research and practice. The partnership has a strong focus on urban mobility and transportation electrification. Collaborative efforts, including Electric Avenue and EV Roadmap, have helped position Portland as a leader in electric vehicle deployment.

• **Electric Avenue** – Electric Avenue is the first all electric street in the country. Located at the heart of the PSU campus,

Electric Avenue is an urban showcase for electric vehicles and charging technology. Electric Avenue launched in August 2011 and is a collaboration between PSU, PGE and City of Portland. It has served as a new product launch site for Nissan, Ford, Mitsubishi and GM and attracted visitors from across the United States, Europe and Asia

• **EV Roadmap** – EV Roadmap is a conference series produced by PSU, PGE and Drive Oregon. It is the Pacific Northwest's premier electric vehicle gathering and one of the leading electric vehicle conferences in the United States. It brings together Oregon's early adopters with national and international experts to inform electrification transportation options for the country.

3. PSU Technical Assistance Services Advance Regional Business Competitiveness

PSU faculty and staff are committed to applied, hands-on learning and research. Campus laboratories and service centers test and solve real-world problems for regional business clients ranging from large semiconductor companies to craft-based, micro-enterprises.

Green Building Research Lab

The Green Building Research Lab, led by Mechanical Engineering Professor Dave Sailor, was established to support research in green building technologies and to provide learning resources for students studying building science. Companies use the lab to test new technologies to see how they will perform in different climates and regions around the world, and uncover potential flaws. Architects and builders use the lab to measure energy savings of particular technologies, monitor the water quality of green-roof runoff, or evaluate the thermal performance of a building.

greenbuilding.pdx.edu

Community Environmental Services

As more and more companies seek to shrink their carbon footprint, diverting waste from the landfill becomes a key goal. PSU's Community Environmental Services provides partners with the tools, staff and expertise to help companies achieve zero waste. CES programs track and analyze waste and determine the most effective methods for recycle and reuse. CES is staffed by student employees working on-site at businesses and organizations throughout the metro region.

www.pdx.edu/CES

Business Outreach Program

Small business is big business in Oregon. The state has 300,000 qualified "microenterprises" comprised of fewer than five employees. That's 86 percent of all registered businesses according to the US Department of Commerce. Helping these businesses grow strengthens the local economy.

Since 1994, PSU's Business Outreach Program has helped local small businesses, including emerging, minority and women-owned businesses, achieve their potential while providing students with opportunities for community based learning. BOP provides consulting and technical support in the form of business strategy, marketing, human resources, accounting and other services.

www.pdx.edu/business-outreach

Business Outreach Program: 20 Years of Success

Over
650
companies supported

Over
1,650
students placed as consultants

\$1 million
of student consulting services
provided (based on
\$3,000
per project)



Satisfied Customers:

Indow Windows: Keep the Warmth Inside

Sam Pardue created Indow Windows in 2010 to improve the energy performance of older homes with beautiful but drafty windows. The company produces internal window inserts made of acrylic and edged with a patented compression tube. The inserts provide energy saving performance equivalent to double pane windows at a fraction of the cost.

To back up the savings claim, Pardue needed data. He turned to PSU Professor Dave Sailor and the Green Building Research Lab to get it. With support from Oregon BEST, Sailor undertook a range of acoustic, air-flow and thermal performance tests that demonstrated the prototype out performed standard double pane windows. With additional support from Oregon BEST, a PSU graduate student in geographic information systems helped the company create a database of owner-occupied houses across the U.S. that have architecturally significant windows. This helped the company target markets and recruit dealers.

The award winning company has received successive rounds of venture capital, established 62 dealers in 28 states and installed inserts in over 800 homes and businesses in the U.S. since beginning its national expansion in 2012.

Measuring What Matters: New Seasons Market is Zero Waste Confirmed

New Seasons Market hired CES to conduct an objective assessment of the company's waste management system. Students spent more than 300 hours sorting through tons (literally) of New Seasons' trash to provide a clear picture of what the company was recycling, repurposing, donating and hauling. CES validates that New Seasons recovers and/or diverts 92 percent of its landfill bound waste, exceeding the zero waste threshold.

Hungry Heart Cupcakes

When owner Jax Button enrolled with the Business Outreach Program, Hungry Heart Cupcakes had just expanded from a single mobile food truck to include a second, stationary food cart location. Business was growing quickly, and Hungry Heart needed a stronger foundation to sustain the growth. BOP supplied support on re-branding, a revised business plan, market research, performance projections, employee management and QuickBooks training. The more solid foundation has enabled the company to continue to grow, adding employees, expanding the menu and taking on events and special orders.

4. Regional Economic Research

Portland State University provides the hard data to guide an inspiring vision for our region's future.

A solid strategy for growth needs to be built on a strong foundation of objective economic research. PSU plays a key role in documenting industry and demographic trends and tracking leading indicators of economic growth. Within our College of Urban and Public Affairs, three centers focus on regional economic and social research:

- **Institute of Portland Metropolitan Studies** — The Institute of Portland Metropolitan Studies advances the economic, environmental, and social goals of the Portland metropolitan region by gathering and disseminating credible information, convening regional partners, and stimulating dialogue and action about critical regional issues.

www.pdx.edu/IMS

- **Population Research Center** — PRC provides timely, accurate and relevant analyses of demographic issues facing Oregon and the Portland metropolitan region. It delivers demographic and Geographic Information Systems consulting to private firms, public agencies and not-for-profit groups.

www.pdx.edu/PRC

- **Northwest Economic Research Center** — In 2012, PSU launched NERC in response to community partners' need for objective, third-party economic analysis. Led by Tom Powtiosky, former state economist for Oregon, NERC specializes in modeling, data management, research, and analytical methods applicable to issues of urban and regional economic development.

www.pdx.edu/NERC

IMS leads Greater Portland Pulse

Greater Portland Pulse is an up-to-date, easy-to-read Data Repository for regional policy development and assessment. Housed and developed by the Institute for Metropolitan Studies, GPP provides a continuously updated state-of-the-region overview tracking 40 regional indicators of economic and social health for the seven-county metropolitan statistical area. GPP began as a partnership of IMS and Metro in 2010 and has expanded to include multiple partners including Multnomah County, City of Beaverton, City of Vancouver, Washington State University Vancouver and City of Portland.

PortlandPulse.org

NERC documents Electric Vehicle Industry in Oregon

Drive Oregon — a public-private membership organization focused on transportation electrification — commissioned NERC to conduct the state's first assessment of the electric vehicle industry. The report sought to establish a clearer definition of the electric vehicle industry and its supply chain as well as establish a baseline of its economic impact. The report found the Oregon's EV industry employs more than 400 people full time in approximately 100 firms providing more than \$89 million in total employee compensation. Notably, the industry continued to grow during the Great Recession when other transportation industries suffered enormous losses.



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