A portfolio of projects made possible by funding through Oregon INC
Dear Colleague,

Oregon’s spirit of innovation is a key ingredient to creating and retaining businesses throughout the state. Over the past four biennia, the mission of the Oregon Innovation Council’s initiatives has been to help entrepreneurs turn cutting edge research into new companies; open the door to hard-to-find capital; provide businesses with access to otherwise out-of-reach R&D labs and researchers, and show established industries how innovation can revitalize their products and their profits.

On the pages that follow, you can see the results of their hard work in support of Oregon’s businesses. Included here are profiles of more than 90 companies which have received direct assistance from Oregon InC. They represent the successful start-up companies that are diversifying Oregon’s economy and creating the new industries that will help our state compete in a global marketplace.

With the leadership of Gov. Kitzhaber and the generous support of Oregon’s Legislature, Oregon InC will continue to help grow the next generation of jobs and companies in Oregon.

Thank you,

John W. Morgan
Chair
The Oregon Innovation Council
ABOUT:

Applied Exergy is an energy storage company focused on commercializing a grid-scale energy storage system using a novel process developed at Oregon State University. The energy storage system can be sited at any industrial facility that has waste heat. The company’s product promises to be one of the few grid scale energy storage systems that provide favorable economics for electric utilities.

MARKET OPPORTUNITY:

The product is a new option for the multi-billion dollar market for grid-scale energy storage.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable Applied Exergy to develop and validate a fully functioning sub-scale prototype system in collaboration with OSU researchers at the Microproducts Breakthrough Institute.
Arcimoto is a specialty electric vehicle company and provider of EV technology. It's focus is on the microEV market and other small electric vehicles. Arcimoto is developing its own branded vehicles and also developing advanced battery pack technology for OEM markets.

The newly developed battery pack targets the growing global market for small electric vehicles including microEVs, e-bikes and other small vehicles.

Oregon BEST provided commercialization funding to OIT and Arcimoto to collaborate in the development of a new battery pack architecture and interconnection technology. The new technology will enable the production of a low cost battery pack for small electric vehicles such as MicroEVs, e-bikes and small electric buses.
Columbia Green Technologies is an eco-technology company that creates and sells engineered vegetative roofs. The products help manage quality and quantity of stormwater, energy use, and air and water pollution. Vegetative roofs are being used in cities around the world, and the company's specialized products will help to meet that growing demand.

The product targets the growing market for the use of vegetative roofs in urban construction to manage storm water runoff.

Oregon BEST provided commercialization funding to characterize the company's initial product using specialized green roof labs at Portland State University and to develop engineering guidelines for use by civil engineers in applying the product. The project also included the research and development of a more highly engineerable second generation vegetative roof product.
CSD Nano specializes in products using leading-edge nano coatings. CSD Nano sells Anti-Reflective Coating (ARC) technology to solar cell companies to improve their products. ARC coatings increase the efficiency of the solar modules and therefore make them more cost-effective. CSD Nano is also developing coatings for other applications including architectural glass. These coatings can provide an optimal mix of daylighting performance and infrared heat rejection to lighten the load on building energy systems.

**Market Opportunity:**

The product targets the global market for glass coatings that is forecast to exceed 360 million square meters by 2015.

**Project Overview:**

Oregon BEST provided commercialization funding to develop and test coatings for double pane windows that meet the end use need of the customers (structure, quality, durability) and which set benchmark levels for combined daylighting and energy performance. The project is a multiple step project utilizing the OPIC lab at OSU and the ESBL lab at UO and with validation testing provided by Jeld-Wen.
EcNow Tech is a developer of innovative products based on plant based, recycled and non-toxic materials. EcNow Tech provides compostable (plant based) food service products to restaurants, events and businesses and ensures as many products as possible are collected for composting. In 2010, EcNow Tech facilitated the composting of over 30 tons of waste which would have landed in the land fill.

The company's filled biopolymer technology targets a variety of markets for compostable disposables including plastic dinnerware and food packaging.

Oregon BEST provided funding to enhance the capabilities of the Green Building Materials Lab at OSU and to enable EcNow Tech to collaborate with OSU on new product development. The project is focused on the development of compostable food packaging products using bioplastics and fillers derived from agricultural waste products.
Energy Storage Solutions (ESS) is developing an advanced flow battery technology that utilizes earth-abundant iron as its energy storage medium. The All-Iron Flow Battery (IFB) will set a new benchmark for cost effectiveness in retail, industrial and utility-scale energy storage needs. With a non-toxic, non-hazardous, and completely recyclable iron-based electrolyte, the IFB sets a high bar for safe, reliable and environmentally conscious energy storage.

The product targets the multi-billion dollar opportunity for distributed energy storage by providing a cost effective product that represents a short payback for buyers.

Oregon BEST provided match funding in collaboration with PSU to leverage a $1.2 M federal grant from the Department of Energy's prestigious ARPA-E program to fund the development of the ESS energy storage product.
ABOUT:

EnergyRM provides energy efficiency metering services, program development services, software-based analytics, and financing support to the energy efficiency sector. The company’s patented “negawatt” meter provides a key enabling technology for the cost-effective measurement of energy efficiency in commercial retrofit applications. This will drive the adoption of energy efficiency power purchase agreements that will provide a needed source of financing for this industry.

MARKET OPPORTUNITY:

The product targets the growing energy retrofit market and has potential to catalyze significant growth in commercial building retrofits thereby indirectly stimulating construction markets.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to develop the user interfaces and utility billing system interfaces necessary for the commercialization of the company’s “negawatt meter”. These software architectures and programs will help the company deploy its technology in real world utility-connected energy efficiency retrofit projects.
HM3 Energy is the developer of a process to convert biomass into clean fuel that can replace coal in many power plants. The use of this fuel can significantly reduce harmful emissions and shrink a power plant's carbon footprint.

The product targets the energy generation market and has the potential to displace billions of dollars worth of coal.

Oregon BEST provided commercialization funding to enable OSU researchers to test and optimize a critical process element of HM3's biomass torrefaction process. Permitting a commercial torrefaction facility will require an estimate of airborne emissions. The project tested emissions from a biomass dryer from various forest-derived fuels.
ABOUT:

Honeycomb is a specialized data services company focused on utilization of unmanned aerial systems and imaging solutions for precision agriculture and forestry. Honeycomb’s AgDrone system is a completely autonomous UAS for airborne surveying that comes standard with visible and multispectral cameras for high-resolution imaging and NDVI-based crop stress detection.

MARKET OPPORTUNITY:

The product targets the emerging market for commercial unmanned aerial vehicles and the application of UAS in agriculture and forestry.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding (augmented by federal funding received under a jobs accelerator grant) to advance the commercialization of HoneyComb’s UAS systems and software.
ABOUT:

Indow Windows produces and sells specialized thermal window inserts. These insulated windows are simple, affordable, and environmentally responsible. After being easily inserted into a leaky or underperforming window, they provide insulation, comfort, and even noise reduction at a lower cost than comparable double-pane windows. The added insulation of these window inserts will reduce energy costs significantly.

MARKET OPPORTUNITY:

The product targets consumers and building owners seeking to achieve better energy efficiency with a cost effective alternative to window replacement.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable the GBRL lab at PSU to perform and document the energy performance of the Indow Windows product.
Inspired Light is a manufacturer of a novel concentrated PV solar product that brings highly efficient solar energy conversion to commercial rooftop applications. This new type of solar module is a lightweight and cost effective product that collects far more energy than conventional systems and thereby produces more solar electricity per square foot of roof space than any other competing system.

The product targets owners of flat roof commercial buildings seeking a cost effective way to deploy solar energy to offset electricity costs.

Oregon BEST provided commercialization funding to advance the research and development of Inspired Light’s novel concentrated solar technology in collaboration with OSU. The project encompasses the development of an optimized anti-reflective coating for the solar optic and the advancement of the concentrating PV module from the prototype to pre-commercial status.
ABOUT:

IT Aire provides precision cooling systems and services for data rooms, and does so using much less energy than conventional systems. These systems employ a new approach to system redundancy and are optimized for small-to-medium sized data room applications. The products provide robust and reliable cooling of data rooms while simultaneously hitting industry benchmark levels for energy efficiency.

MARKET OPPORTUNITY:

The product targets the operators of the rapidly growing number of data centers all of whom spend more on electricity than any other operating cost category.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding (augmented by federal funding received under a jobs accelerator grant) to enable IT Aire to develop, install and validate its first article system. This is a pilot project installation and performance monitoring of IT Aire's data room cooling technology at the Gresham City Hall.
KersTech designs and manufactures economical, high efficiency hydraulic and electric hybrid vehicle systems for retrofit and OEM applications. The company has pioneered a kinetic energy recovery technology that offers a compact form factor for a variety of vehicles that experience frequent start-stop run cycles. This drive train platform is suitable for forklifts, transit buses, garbage trucks and a variety of other vehicles.

The product targets the large and growing market for electric forklifts, hybrid transit buses and operators of waste hauling vehicles.

Oregon BEST is providing commercialization funding in concert with OIT, NACCO, OTREC and Drive Oregon for the development and testing of a hybrid electric/hydraulic forklift utilizing a first article kinetic energy recovery drive train being developed by KersTech. The project will result in the development of a full scale forklift prototype to be tested in the NACCO R&D center in Portland.
ABOUT:

Local Food Marketplace provides a white label e-commerce platform for the food hub market. The software application connects locavores with local food and the farmers that grow it. The software shows users exactly how and where the food is grown, and enables farmers to offer specials to better coordinate harvest and inventory. The white label mobile application is a favorite of consumers and restaurant chefs who are on the go.

MARKET OPPORTUNITY:

The product targets the emerging market of growers and local food hubs that provide local food items for consumers, chefs and progressive grocery stores. The pricing and product management features of the application help growers serve grocery stores with multiple departments and buyers.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable LFM to collaborate with computer science researchers at UO in the development of a mobile application for the company’s e-commerce software platform. The project was focused on the development of a white space mobile app to be utilized by LFM customers while on the go.
ABOUT:

M3 Wave Energy is commercializing a new ocean power device that is fully submerged and installed on the ocean floor. The system captures wave energy and converts it to electricity for connection back to terrestrial grids. The system is designed to have a low carbon footprint and to have minimal impact on both the ocean ecosystem and the commercial and recreational uses of the ocean.

MARKET OPPORTUNITY:

The product targets the energy generation markets by offering a new category of renewable generation that provides a less intermittent source than wind or solar energy.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable M3 Wave Energy to advance the commercialization of a new ocean power device that is fully submerged and installed on the ocean floor. The project, performed in collaboration with OSU and the Northwest National Marine Renewable Energy Center, was focused on advancing the development of the company's product to address a series of manufacturing issues and environmental impacts.
ABOUT:

MTEK is commercializing a desalination technology that could cut energy consumption associated with removing salt from seawater by 50 percent and boost potable water yields. The system utilizes microchannel technology developed at Oregon State University. This will address the growing need for clean water and reduce the massive amounts of energy that are now consumed by desalination plants.

MARKET OPPORTUNITY:

The product targets the existing and growing multi-billion dollar markets for fresh water derived from salt water sources. The diminishing per capita supply of fresh water is a global problem and the lower energy consumption of the product offers a new option for addressing that problem.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable OSU researchers at the Microproducts Breakthrough Institute to advance the research and development of the energy efficient desalination technology being developed at OSU and licensed to MTEK. The project is to build a pre-commercial micro-channel unit to demonstrate the functionality of the core technology and to work out a basic materials and manufacturing plans.
ABOUT:
North West Renewable Energy Corporation manufactures renewable energy products including the SunCooler. The SunCooler is a solar powered energy optimization system for commercial buildings. The system provides ventilation and de-stratification for heating and cooling applications in lieu of or in addition to conventional HVAC systems. By using solar power, it eliminates the need for provision of electrical circuits and associated costs.

MARKET OPPORTUNITY:
The product targets owners of high-bay and similar buildings including shops, manufacturing facilities, prisons and big box stores. The product offers a way for owners to reduce their operating costs and improve interior comfort levels for occupants.

PROJECT OVERVIEW:
Oregon BEST provided commercialization funding to enable OIT to test and validate the NWREC Suncooler product to enable the company to provide third-party verified data to prospective customers and investors. The project involved integrating the test program into the student curriculum and included testing of ventilation performance, de-stratification performance and improved HVAC efficiency in a typical high-bay building environment.
NRG Independence LLC, in partnership with Oregon State University, is commercializing a technology designed to drastically extend the lifetime of a redox flow battery (RFB) – a leading contender in large scale energy storage. This commercialization effort addresses a growing need for grid level energy storage necessary to incorporate distributed energy generation and power quality associated with renewable energy generation.

The product targets the multi-billion dollar opportunity for various applications of redox flow batteries for large scale energy storage.

Oregon BEST is providing commercialization funding to enable NRG to collaborate with OSU in the advancement of a novel electrode treatment technology developed at OSU.
About:
Onboard Dynamics, Inc. is developing natural gas compressor technology that provides self-fueling capability to vehicles with $1 GGE (gasoline gallon equivalent) natural gas from a low-pressure source, such as a home or business gas line. Onboard’s technology will enable compressed natural gas powered vehicles to be refueled from low pressure natural gas sources.

Market Opportunity:
Natural gas as a transportation fuel can save fleet and vehicle owners thousands of dollars over the lifetime of a vehicle, when compared to gasoline or diesel. The company products are a progression of bolt-on, proprietary, and OEM products that will make widespread adoption of CNG vehicles a reality.

Project Overview:
Onboard Dynamics is commercializing a novel natural gas compression technology developed at the Oregon State University Cascades Campus. The company has recently won a major ARPA-E award, which BEST is helping to supplement funding the project at OSU to improve the thermal efficiency of compression cylinders using the Onboard Dynamics technology.
Pacific Light Technologies (PLT) is an emerging leader in optical nanomaterials development and manufacturing. PLT is developing rare-earth-free down converter materials for high-efficiency solid state lighting (SSL), and is the only quantum dot company focused solely on lighting. PLT allows a new realm of high-performance materials that can stand up to the harsh environmental realities of high-power LEDs.

The product targets the existing and growing multi-billion dollar markets for LED lighting. By enabling a more cost effective and energy efficient LED, the company’s product promises to capture an important market share of the supply chain for LED manufacturers.

Oregon BEST provided commercialization funding to OSU and Pacific Light Technologies to develop, characterize and commercialize a new chemistry and process for the manufacturing of quantum dot materials for solid state lighting (LED) applications. This project focused on the development of compounds and coatings that don’t use environmentally challenging materials such as Cadmium and also on the application of a continuous process technology developed at the OPIC lab at OSU.
Puralytics is the creator of a new photochemical technology for water purification. The technology uses light to drive a photochemical reaction that destroys water contaminants without creating a hazardous waste disposal problem. The company provides water purification products for test laboratories, developing countries, and recreational users. The company is also pioneering the use of its technology in stormwater management applications.

The product targets the large and growing markets for on-site storm water treatment being mandated by regulatory agencies in order to address growing environmental contamination of waterways.

Oregon BEST is providing commercialization funding to deploy a first article pre-commercial storm water treatment system utilizing Puralytics’ photochemical treatment technology. The project includes the deployment of the system in collaboration with OSU and conducting real-world testing at the Benton County/City of Corvallis maintenance facility in a newly constructed rain garden for on-site treatment.
Rogue Rovers, LLC is a developer and manufacturer of autonomous all terrain electric vehicles for precision agriculture applications. The company is developing a robotically controlled electric ATV optimized for use in orchards and vineyards. The product also provides a wireless data collection platform to provide a gateway between a variety of sensors and cloud-based farm management applications.

The product targets growers of orchards and vineyards by offering a labor saving product that also enables collection of sensor data for precision agriculture.

Oregon BEST provided commercialization funding to OIT to develop a semi-autonomous electric ATV for agricultural applications in collaboration with Rogue Rovers. The project includes the development of a full scale ATV prototype with an onboard robotic guidance system for navigating terrain typical of orchards and vineyards.
ABOUT:

Shelterworks Ltd. is a manufacturer of Faswall, a building block system made from recycled wood chips that is affordable, durable, and sustainable. The block material creates the forms for poured concrete walls that have excellent energy performance and improve structural performance. Faswall blocks can be easily used by experts and do-it-yourself builders alike in residential or commercial applications.

MARKET OPPORTUNITY:

The product targets the existing market for poured form walls that represents a 70 million square foot market opportunity annually.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding to enable Shelterworks to collaborate with the iSTAR lab at PSU in the construction, structural testing and seismic testing of the Faswall product for use in multi-story commercial construction applications. The project is focused on providing the necessary technical validation to open up the commercial construction sector for the company’s product.
ABOUT:
Stevens Water is a company that provides water monitoring systems such as water quality sensors, soil moisture sensors, water flow measurement, and many more. The company also provides data loggers, including multiple options for both short-range and long-range communication of environmental monitoring data, and engineering support for applications.

MARKET OPPORTUNITY:
The product targets domestic water management applications including irrigation and water quality monitoring.

PROJECT OVERVIEW:
Oregon BEST provided commercialization funding to enable the spin out of a low cost, long-battery-life environmental monitoring technology developed at PSU. Stevens Water has collaborated with PSU to license the technology for domestic water monitoring applications and to develop a manufacturing capability to produce the system components.
About:
Sunmark Environmental brings a biochar-based, high performing filter medium for the treatment of storm water runoff applications. The target application and customer will be pre-treatment, on-site at/near the source from the municipal and industrial customers in an urban setting with high metals pollution levels, nutrients, and organics.

Market Opportunity:
The product targets the large and growing markets for on-site storm water treatment being mandated by regulatory agencies in order to address growing environmental contamination of waterways.

Project Overview:
Oregon BEST provided commercialization funding to OSU (augmented by federal funding received under a jobs accelerator grant) to develop and characterize a storm water filtration media using biochar and other natural materials to be commercialized by Sunmark.
ABOUT:

SupraSensor is commercializing a novel nitrate sensor technology originally developed at the University of Oregon. This technology is the first of its kind to provide the capability for the in-ground real time sensing of nitrate levels. This allows farmers to fine tune their application of fertilizer and results in less use of chemical fertilizer, better water conservation and a reduction of fertilizer runoff into streams and rivers.

MARKET OPPORTUNITY:

The product targets the multibillion dollar markets for precision agriculture by providing a first in class sensor for nitrates that can operate while embedded in agricultural fields.

PROJECT OVERVIEW:

Oregon BEST provided commercialization funding for manufacturing engineering and a field trial related to the commercialization of a nitrate sensor technology developed at U of O. The project will provide critical testing of the technology in a real world agricultural environment to demonstrate readiness for commercial deployment and manufacturing scale up.
ABOUT:

SweetSense provides a variety of high resolution, low power sensors and cloud-based analytical software for challenging application in developing countries and off-grid applications. Originally developed at Portland State University, the company’s technology is used by international development organizations to implement and monitor programs related to water, sanitation, household energy, and rural infrastructure.

MARKET OPPORTUNITY:

The product targets governments and NGOs in developing countries by providing low cost and long battery life sensors to monitor and optimize public health initiatives.

PROJECT OVERVIEW:

SweetSense Inc. was formed after the spin out of the environmental monitoring technology from PSU funded by Oregon BEST and implemented by Stevens Water. The formation of SweetSense is a byproduct of the commercialization funding provided to PSU and Stevens Water.
Walking Point Farms

TECHNOLOGY AREA:
Agriculture & Forestry

LOCATION:
Sherwood

ABOUT:
Walking Point Farms produces Biochar-based seed coatings and soil amendments. WalkingPoint Biochar products use only the finest pyrolyzed woody biomass for fast and efficient soil penetration. Biochar is an excellent choice for agriculture, gardening, soil remediation, golf courses, landscapes and ornamentals. These top quality products are an excellent choice for large scale agricultural operations, as well as environments where large equipment and dust are prohibited.

MARKET OPPORTUNITY:
The products target the large existing markets for soil amendments and coated seeds and offers a new option for fertility enhancement and better germination rates.

PROJECT OVERVIEW:
Oregon BEST provided commercialization funding to enable Walking Point Farms to collaborate with researchers at OSU in the development of biochar-based agricultural amendments and seed coatings. One aspect of the project, performed at the Columbia Basin Agricultural Research Center, focused on the use of biochar-based soil amendments to improve the yield of wheat crops in eastern Oregon. The other aspect focused on the use of biochar coated seeds to improve germination rates of crops and native plants in wildfire restoration operations.
Waste2Watergy is commercializing a cutting-edge technology developed at Oregon State University focused on providing new solutions for waste water treatment. The company’s Microbial Fuel Cell (MFC) is a clean-energy technology capable of generating electricity directly from wastewater, while simultaneously accomplishing highly efficient wastewater treatment.

The product targets brewers and food processors who currently pay large fees to water treatment districts due to the nature of their effluent.

Oregon BEST provided commercialization funding to OSU and Waste2Watergy to develop, install and test a pilot scale on-site waste water treatment system at the Widmer Brewing facility. This project is a critical step in scaling up and transitioning this OSU-developed technology out of the lab and into the market through a commercial pilot project.
ABOUT:

Alltrax designs and manufactures motor controllers for DC brushed motors, typically within the 2-40 horsepower range. They currently focused on the golf cart industry.

MARKET OPPORTUNITY:

The company is currently moving to serve the light electric vehicle and recreational vehicle industries.

PROJECT OVERVIEW:

As member of Drive Oregon, Alltrax has also taken advantage of networking opportunities, finding industry partners, funding information such as the New Market Tax Credit (NMTC) program, and new opportunities such as market development funding through a Rural Business Enterprise Grant (USDA).
About:

Arcimoto is an electric vehicle manufacturer developing the Pulse/SRT, a tandem two-seat, three-wheeled enclosed frame ultra-efficient electric vehicle. Arcimoto’s 5,000 sq-foot design studio is headquartered in Eugene Oregon.

Market Opportunity:

Using proven emerging technologies, Arcimoto is combining aerodynamic tandem seating, a lightweight platform, and battery agnostic drive train to create a zero-emission vehicle that meets the needs of everyday driving. Arcimoto’s SRK is classified as a motorcycle yet provides greater safety and comfort.

Project Overview:

Drive Oregon provided Arcimoto a matching grant to support an initial vehicle production run. The funding matched $250,000 from incoming private investors to complete pilot vehicle assembly. Pilot vehicles have been pre-sold to high-visibility early adopters, including Hollywood actors, political figures, and Silicon Valley executives.
The Advanced Transportation Technology Center (ATTC) at Linn Benton Community College is a 35,000 square foot facility with classrooms, car repair bays, and testing equipment, focused on training the people who will maintain and service the growing number of advanced fuel vehicles, including electric vehicles.

As one of the first facilities of its type, the ATTC will be training the trainers, training instructors working with alternative fuels from other community colleges. The ATTC also provides instruction to emergency responders on how to safely perform their duties when responding to accidents that involve electric vehicles.

Drive Oregon provided LBCC a matching grant to support the purchase of testing equipment for the community college’s new Advanced Transportation Technology Center in Lebanon. The funding matched $500,000 in incoming private money for the construction of the Center, which opened in late 2013 and is now training the next generation of mechanics to service alternative fuel vehicles.
About:
The OpConnect Electric Vehicle Charging System™ applies innovative technology to optimize the relationship with the natural environment while successfully addressing the business challenges faced by a diverse population of electric vehicle drivers. The company has developed a rich network of suppliers and partners to develop, produce and support the OpConnect Electric Vehicle Charging System™. They have grown from 25 electric charging stations in four states to 270 stations nationwide.

Market Opportunity:
OpConnect stations can charge up to four vehicles at a time, and supports both 120V and 240V charging. The stations feature a modular design that allows for quick, cheap, and easy upgrades. Its new smartphone payment technology allows for quick payments through a smart phone app or OpConnect’s charging station touchscreens.

Project Overview:
Drive Oregon provided a matching grant to a private investment to fund the conversion of a newly acquired Hawaii network to OpConnect stations. This will generate new jobs in Oregon, as the firm adds software engineers, marketing personnel and manufacturing support.
ABOUT:

Polaris offers battery development and testing for its customers, offering a range of services including prototyping services, business consulting, and testing of next generation rechargeable battery technologies. Clients include large OEMs, start-ups, and variety of other firms working to develop small personal device batteries, more energy-dense electric vehicle batteries, and more.

MARKET OPPORTUNITY:

In addition to helping with discrete testing and prototyping, Polaris Battery Labs can guide companies from battery prototyping to full production.

PROJECT OVERVIEW:

In 2012, Polaris received a grant through Drive Oregon’s Matching Grant Program to receive $700,000 in incoming investor funds and enabling the firm to purchase testing equipment and materials for their lab.
Rinehart Motion Systems designs and manufactures high quality, lightweight power electronics assemblies and traction controls for a wide range of electric vehicle applications, plus three Formula 1 racing teams rely on the RMS Kinetic Energy Recovery System to provide extra speed to their cars.

While working with major automotive customers such as Freightliner, Lamborghini, Keppler Motors and Brammo, Rinehart is also expanding into new market segments such as the wind industry. Rinehart motor controllers match the needs of wind turbine manufacturers looking for high-quality motors to use in their turbine rotors.

Rinehart received two Drive Oregon trade show grants that have led to new business for the firm. In June 2013, Drive Oregon provided $744 and booth space for RMS to attend that nation’s electric vehicle trade show (EDTA); in November 2013, Drive Oregon provided $2,845 and booth space for RMS to attend the world’s largest electric vehicle trade show (EVS 27).
ABOUT:
Ryno Motors is a builder of a one-wheeled, self-balancing motorcycle that can be legally ridden in areas where even a bicycle can’t go. Half the size of a bike and capable of 10 mph, it’s meant to mix with pedestrian traffic. The RYNO – at less than half the length of a bicycle – fits where you stand, and can pivot 360 degrees on a vertical axis. Users can ride into an elevator, spin around, press the floor button, and then effortlessly back up like any other person on foot.

MARKET OPPORTUNITY:
Users of Ryno products include those making the daily micro-commute from a downtown condo to the office urban transportation; government security officers, and industrial customers or workers needing to cover big spaces (i.e. the tarmac at an international airport).

PROJECT OVERVIEW:
Ryno Motors received a grant from Drive Oregon matched a $1.2 million investment from the Oregon Angel Fund and supported the firm’s first pre-production run of vehicles.
ABOUT:

Stites Design builds human-electric trikes that can haul loads useful to the business community, providing reliable delivery services to urban cores where traffic, parking and cost is a concern. Builder of the “Truck Trike,” a human-electric cargo trike capable of hauling 400-600 pounds of cargo via a zero-emission, easy-to-use vehicle for small-to-medium sized companies looking for sustainable and economical methods to move goods and employees within a 3 mile radius or less.

MARKET OPPORTUNITY:

The market includes urban delivery firms, food cart start-ups, pedi-cab companies, bike share services, and large conference centers or warehouses.

PROJECT OVERVIEW:

Drive Oregon has provided Stites Design numerous introductions and promoted the start-up company’s unique cargo trike to potential customers in Oregon and beyond. Drive Oregon has also helped the firm gain greater visibility; for example, Stites Design participated in the 2013 Better Living Show at the invitation of Drive Oregon.
Amorphyx is an innovator at the intersection of materials science and electronics for the display market. They leverage our expertise in amorphous metals and the creation of high-quality thin films in developing the Amorphous Metal Nonlinear Resistor (AMNR) device, subpixel circuit, and PECVD-based manufacturing process for rigid and flexible LCDs from smartphones to TVs and large-format panels.

The AMNR reduces display screen backplane complexity and cost, enabling the display industry to reverse annual losses in the billions of dollars.

ONAMI provided Amorphyx a grant while working together with OSU, to demonstrate proof-of-concept process integration and testing capabilities to realize a metal-insulator-metal (MIM) diode-based display pixel switch employing discrete MIM diodes fabricated with amorphous metal electrodes.
ABOUT:

Applied Exergy is an energy storage company focused on commercializing a grid-scale energy storage system using a novel process developed at Oregon State University. The energy storage system can be sited at any industrial facility that has waste heat. The company’s product promises to be one of the few grid scale energy storage systems that provide favorable economics for electric utilities.

MARKET OPPORTUNITY:

The product is a new option for the multi-billion dollar market for grid-scale energy storage.

PROJECT OVERVIEW:

ONAMI provided a GAP grants to Exergy and they partnered with OSU to demonstrate the viability of a Thermal Approach for Grid Energy Storage using water as a storage medium that utilizes low-grade waste heat to enable efficient storage of energy in a manner that is cost effective and environmentally sound.
CASCADE PRODRUG is a pharmaceutical R&D company developing novel prodrugs for the treatment of cancer. The company’s lead compound, CPD 100, is a novel treatment for certain forms of cancer. The company’s prodrug technology enables the therapy to be delivered site specific in an inactive form and converts to an active form in the presence of low oxygen or “hypoxia” which is a prevalent condition of fast growing tumors.

**MARKET OPPORTUNITY:**

The oncology therapeutics market was $48 billion in 2008 and expected to grow at an 11% CAGR over the next 5 years, reaching $81 billion by 2013. With over 24 million cancer patients worldwide, 12 million new cases added per year and a demographic expected to grow by 50% by 2020, cancer poses an enormous medical challenge for society.

**PROJECT OVERVIEW:**

ONAMI provided GAP grant funding to Cascade Prodrug who partnered with University of Oregon to develop targeted prodrug therapies for the treatment of hyper-proliferative diseases.
Crystal Clear Technology

ABOUT:
Crystal Clear Technology provides innovative technical solutions to solving complex water treatment issues on a clean green sustainable platform. Crystal Clear Technology is able to remove contaminants from water and wastewater to low microgram or nanogram levels.

MARKET OPPORTUNITY:
The water treatment market is in the billions for Clear Water Technology. The markets include Storm Water, Agricultural Processing, Oil & Gas Fracking, Electric Power Utilities, Potable Water.

PROJECT OVERVIEW:
ONAMI provided Crystal Clear Technology a GAP grant. They partnered with University of Oregon to bring a unique means to remove heavy metals from water. This technology has gathered interest from government and commercial partners worldwide. The company also received a SBIR Grant from NSF to support commercialization of this technology.
About:

CSD Nano specializes in products using leading-edge nano coatings. CSD Nano sells Anti-Reflective Coating (ARC) technology to solar cell companies to improve their products. ARC coatings increase the efficiency of the solar modules and therefore make them more cost-effective. CSD Nano is also developing coatings for other applications including architectural glass. These coatings can provide an optimal mix of daylighting performance and infrared heat rejection to lighten the load on building energy systems.

Market Opportunity:

The product targets the global market for glass coatings that is forecast to exceed 360 million square meters by 2015.

Project Overview:

ONAMI provided a GAP grant to CSD Nano, Inc. and partner OSU to demonstrate the commercial viability of a novel anti-reflective coating for glass covers on solar modules. They received an NSF SBIR Phase I grant and are positioned for a Phase 2 grant. The team demonstrated a novel micro-reactor based manufacturing process that provides a high performance coating. The project seeks to produce testing data needed to attract solar cell manufacturers as commercialization partners.
ABOUT:
DesignMedix develops drugs to overcome drug resistance in multiple diseases that kill millions of people each year. All anti-infective and most cancer drugs develop resistance over time, causing the drugs to become ineffective. With an initial focus on malaria, the Company has demonstrated the validity its technology approach and has a drug almost ready for clinical trials in humans.

MARKET OPPORTUNITY:
The total market need for antimalarial drugs is approximately $500 million. In emerging markets such as India, China, Southeast Asia and Brazil, pharmaceutical markets are growing at rates of 17-20% per year, rapidly increasing the number of patients who can afford medical treatment. The markets for cancer drugs and antibiotics are multi-billion.

PROJECT OVERVIEW:
ONAMI provided DesignMedix and partner PSU a GAP grant to develop nanotechnology-based drug delivery methods for malaria prevention and treatment. The team selected the nanocarriers most appropriate for preventative delivery of malaria drugs and developed a scale-up process.
Dune Sciences, Inc. provides transmission electron microscopy (TEM) sample preparation solutions. It offers active TEM grids that simplify and standardize TEM sample preparation for biological materials.

Dune Sciences materials and expertise allows matching the surface functionalization to samples. This dramatically improve sample uniformity and coverage while eliminating sample preparation artifacts such as aggregation and drying effects, yielding more accurate data and better images.

ONAMI provided GAP grant funding to Dune Sciences. Dune Sciences and the University of Oregon worked on developing and commercializing new products to serve the market needs of electron microscope analysis. In instrument alignment and calibration and in substrates for focused ion microanalysis.
**ABOUT:**
Element 1 produces scalable, reliable and affordable hydrogen generators designed to meet global hydrogen requirements for fuel cell systems, providing telecom backup power and continuous power for off-grid or unreliable grid telecom sites. Scalable hydrogen generators make the gas available on-site and on-demand in a compressed form.

**MARKET OPPORTUNITY:**
Significantly reduces the cost and logistical issues associated with the transportation and storage of compressed hydrogen at the application site.

**PROJECT OVERVIEW:**
ONAMI provided a GAP grant to Element 1 (e1). They are working with the Microproducts Breakthrough Institute at OSU are working to develop a novel way to produce ultra-pure hydrogen gas. This project seeks to develop a fabrication method for applying an ultra-thin palladium-alloy foil to a supporting substrate (microscreen).
ABOUT:

Energy Storage Solutions (ESS) is developing an advanced flow battery technology that utilizes earth-abundant iron as its energy storage medium. The All-Iron Flow Battery (IFB) will set a new benchmark for cost effectiveness in retail, industrial and utility-scale energy storage needs. With a non-toxic, non-hazardous, and completely recyclable iron-based electrolyte, the IFB sets a high bar for safe, reliable and environmentally conscious energy storage.

MARKET OPPORTUNITY:

The product targets the multi-billion dollar opportunity for distributed energy storage by providing a cost effective product that represents a short payback for buyers.

PROJECT OVERVIEW:

ONAMI provided a grant to Energy Storage Systems, Inc. (ESS) to help fund an innovative multi-layer electrode and cell design for Vanadium Redox flow Batteries that maximizes active electrode surface area while minimizing system pressure drops. Working with PSU, ESS aims to improve the cell performance to a total of 10-fold through material and design optimization.
Floragenex is a biotechnology company that provides solutions for genomic analysis in human, plant and animal systems. We focus on applications involving Restriction-site Associated DNA Sequencing, also known as RAD sequencing (RAD-Seq). RAD-Seq is a cutting-edge technology integrated with next-generation DNA sequencing platforms that enables scientists to efficiently discover and genotype large amounts of genetic information, in any plant or animal system, at a competitive cost.

Worldwide spending on genomics research in 2012 totaled over $6 billion. This translates in a large pool of scientists that require genomics support to advance their research goals.

ONAMI provided a GAP grant to Floragenex to partner with U of O on a novel gene sequencing process for preparing DNA samples utilizing microreactor technology in partnership with the Microproducts Breakthrough Institute at OSU.
About:
Inpria Corporation is a pioneer in extending semiconductor lithography with inorganic photoresists for nanoscale patterning.

Market Opportunity:
Inpria's patented photo-condensed molecular oxides offer customers the unique ability to deposit – directly from solution – atomically smooth, intrinsically dense, and directly photopatternable metal oxide films, enabling advanced performance with simplified processing.

Project Overview:
ONAMI provided Inpria GAP grant funding to develop the new technology that provides highly efficient deposition and patterning of functional materials for device applications.
ABOUT:

Microflow CVO provides high performance micromixers and microfluidic components that improve reaction control, reduce waste, and lower capital costs. The company brings deep practical experience in product development, microfluidic device design, quality manufacturing methods, and responsiveness to the evolving needs of our customers.

MARKET OPPORTUNITY:

Microflow CVO's technology enables significant advances in flow chemistry in industries ranging from pharmaceutical and fine chemical to petrochemical and consumer products.

PROJECT OVERVIEW:

Microflow CVO was provided a GAP grant from ONAMI to develop and commercialize high performance micromixers. The were created at the Microproducts Breakthrough Institute at Oregon State University.
MTEK Energy Solutions, Inc.

TECHNOLOGY AREA:
Renewable Energy

LOCATION:
Corvallis

ABOUT:
MTEK Energy Solutions is commercializing a desalination technology that could cut energy consumption associated with removing salt from seawater by 50 percent and boost potable water yields. The system utilizes microchannel technology developed at Oregon State University. This will address the growing need for clean water and reduce the massive amounts of energy that are now consumed by desalination plants.

MARKET OPPORTUNITY:
The product targets the existing and growing multibillion dollar markets for fresh water derived from salt water sources. The diminishing per capita supply of fresh water is a global problem and the lower energy consumption of the product offers a new option for addressing that problem.

PROJECT OVERVIEW:
ONAMI provided MTEK a GAP grant to enable OSU researchers at the Microproducts Breakthrough Institute to begin electrode development to proof of concept testing of the energy efficient desalination technology being developed at OSU and licensed to MTEK.
**NemaMetrix**

**TECHNOLOGY AREA:**
Bioscience

**LOCATION:**
Eugene

**ABOUT:**
NemaMetrix is only in its infancy, but the University of Oregon spin-out is drawing interest from biotechnology firms and pharmaceutical companies for the “microfluidic device” (or “chip”) developed by the UO team. The apparatus captures and monitors tiny roundworms, allowing scientists to study the effects of particular compounds.

**MARKET OPPORTUNITY:**
The NemaMetrix device has the greatest potential to accelerate the discovery of drugs used to eliminate worm infections in humans and livestock.

**PROJECT OVERVIEW:**
ONAMI provided GAP grant funding to NemaMetrix. The project is pursuing a proof of concept for microfluidic device designed to accelerate drug discovery. The electrical signals can be monitored as an indicator of drug toxicity.
ABOUT:
Northwest Medical Isotope’s (NWMI) mission is to provide a domestic, secure, and reliable supply of Mo-99 for medical diagnostics. Mo-99 is an artificial element used in medical imaging for brain, heart and bone scans.

MARKET OPPORTUNITY:
NWMI will produce half of North America’s Mo-99 needs beginning in early 2017 which will support eliminating potential shortages of Mo-99 and having a major impact on the health of thousands of patients requiring nuclear imaging procedures.

PROJECT OVERVIEW:
ONAMI provided GAP grant funding to NWMI who partnered with Oregon State University, Pacific Northwest Nuclear Labs and Samaritan Health Systems to address the shortage of Mo-99. The team is developing a procedure to use low enriched uranium as a source material for Mo-99.
ABOUT:

Northwest UAV (NWUAV) has delivered thousands of propulsion modules to defense contractors since 2005. They provide our clients cost effective solutions for their specific land, sea or air unmanned applications, COTS solutions, custom or build-to-print engine systems.

MARKET OPPORTUNITY:

NWUAV is poised to meet the high volume production needs of companies that utilize unmanned engine systems required for air, land and sea vehicles.

PROJECT OVERVIEW:

NWUAV was provided GAP grant from ONAMI. The company partnered with Microproducts Breakthrough Institute to develop a novel microchannel-based fuel injector capable of atomizing heavy fuels for use in spark ignition engines. They developed a fuel injection device that functions in extreme temperatures and altitudes, typical of field use.
ABOUT:

Onboard Dynamics, Inc. is developing natural gas compressor technology that provides self-fueling capability to vehicles with $1 GGE (gasoline gallon equivalent) natural gas from a low-pressure source, such as a home or business gas line. Onboard’s technology will enable compressed natural gas powered vehicles to be refueled from low pressure natural gas sources.

MARKET OPPORTUNITY:

Natural gas as a transportation fuel can save fleet and vehicle owners thousands of dollars over the lifetime of a vehicle, when compared to gasoline or diesel. The company products are a progression of bolt-on, proprietary, and OEM products that will make widespread adoption of CNG vehicles a reality.

PROJECT OVERVIEW:

Onboard Dynamics is commercializing a novel natural gas compression technology developed at the Oregon State University Cascades Campus. The company has recently won a major ARPA-E award, which ONAMI is helping to supplement funding the project at OSU to improve the thermal efficiency of compression cyclinders using the Onboard Dynamics technology.
Rechargeable lithium-cobalt oxide batteries are making the future greener, propelling electric cars and keeping laptops charged longer. OnTo Technology is making them go even further, with a process to extract material from the spent batteries and recycle them into new ones.

Opportunity to bring “green” technology to lithium batteries and reusing materials.

ONAMI provided a grant to OnTo Technology and partner OSU to develop technologies that refurbish advanced batteries. These environmentally friendly processes can produce low cost rejuvenated material for battery manufacturing. This project will develop lithium-ion batteries manufactured with OnTo’s refurbished positive electrode material and ready for testing/customer demonstration.”
ABOUT:

OR-CAL is a Manufacturing Company specializing in crop protection for both the Agricultural and Consumer Markets. The company has developed many products for industrial and retail outlets that provide crop protection.

MARKET OPPORTUNITY:

The company is focusing on product development for small niches of the market but present large challenges to crop growers who manage insects and diseases. They are developing innovative and cost-effective solutions.

PROJECT OVERVIEW:

ONAMI provided funding to OR-CAL that is working with researchers at OSU on the use of naturally found and no-toxic substances to increase agricultural yields. The project focuses on development of nanocellulose-based edible coating and films for fruits.
Pacific Light Technologies (PLT) is an emerging leader in optical nanomaterials development and manufacturing. PLT is developing rare-earth-free down converter materials for high-efficiency solid state lighting (SSL), and is the only quantum dot company focused solely on lighting. PLT allows a new realm of high-performance materials that can stand up to the harsh environmental realities of high-power LEDs.

The product targets the existing and growing multi-billion dollar markets for LED lighting. By enabling a more cost effective and energy efficient LED, the company’s product promises to capture an important market share of the supply chain for LED manufacturers.

ONAMI provided GAP grant funding to Pacific Light Technologies. In collaboration with Portland State University, PLT is developing a high performance, low cost LED lighting solution. Specifically, this project produced nanomaterials and formulated them into a matrix. Enabling PLT sell their product to LED module manufacturers.
About:

Perpetua Power Source Technologies delivers a sustainable alternative to batteries for remote wireless sensors through a thermoelectric technology solution that converts waste heat into electric energy.

Market Opportunity:

The new technology allows replacement of the batteries previously necessary to power remote sensors, ending maintenance, storage and handling issues. Resulting in increased input for analysis and modeling, important to efficiently managing processes like enhanced oil recovery.

Project Overview:

ONAMI provided a GAP grant to Perpetua Power Source Technologies who partnered with University of Oregon and Oregon State University on R&D efforts to produce increased thermoelectric energy properties. This is to improve commercial opportunities for powering remote wireless sensors in the agriculture and environmental monitoring markets using renewable energy solutions. Their product, the Perpetua Power Puck, has an international customer base and wide application.
Polaris Battery Labs offers battery development and testing for its customers, offering a range of services including prototyping services, business consulting, and testing of next generation rechargeable battery technologies. Clients include large OEMs, start-ups, and variety of other firms working to develop small personal device batteries, more energy-dense electric vehicle batteries, and more.

In addition to helping with discrete testing and prototyping, Polaris Battery Labs can guide companies from battery prototyping to full production.

ONAMI provided a GAP grant to Polaris Battery Labs, working with PSU and OIT, is working to expedite the advance of new battery technologies. This project is performing initial trials on the core electrode, cell assembly, and testing processes.
Puralytics is the creator of a new photochemical technology for water purification. The technology uses light to drive a photochemical reaction that destroys water contaminants without creating a hazardous waste disposal problem. The company provides water purification products for test laboratories, developing countries, and recreational users. The company is also pioneering the use of its technology in stormwater management applications.

The product targets the large and growing markets for on-site storm water treatment being mandated by regulatory agencies in order to address growing environmental contamination of waterway.

ONAMI provided Puralytics and partner OHSU a GAP grant to develop a unique water treatment capability that uses ultra-violet light and fibers coated with nanomaterials to remove contaminants from water. The team effectively doubled the contaminant removal capability through optimized photoreactor flow parameters and development of nanoparticle catalyst materials.
ABOUT:
SupraSensor Technologies’ in-soil sensors offer precision agriculture a completely wireless and autonomous tool for monitoring nutrients via real-time information about fertilizer levels at any depth in a growing field. With such minute-to-minute detail, growers can resist over-fertilization and save input dollars, while reducing both the environmental footprint and overhead costs of their operations.

MARKET OPPORTUNITY:
The reduction over-application of nitrogen fertilizer would save US growers more than $4 billion annually.

PROJECT OVERVIEW:
ONAMI provided SupraSensor Technologies a GAP grant to develop the integration of sensor module components in low-profile form requirements.
Trillium FiberFuels, Inc.

TECHNOLOGY AREA:
Renewable Energy

LOCATION:
Corvallis

ABOUT:
Trillium FiberFuels is creating process technology and equipment for converting cellulosic feedstocks into ethanol.

MARKET OPPORTUNITY:
Trillium FiberFuels was able to find a low cost source of an enzyme that will dramatically improve the ability to replace petroleum with biofuels and bio-based products.

PROJECT OVERVIEW:
ONAMI provided a GAP grant to Trillium FiberFuels and OSU to develop a microfiber isomerization reactor and system which enables xylose fermentation to ethanol using agricultural residues, such as wheat or grass straw, as the source for this valuable fuel. Trillium FiberFuels was awarded a Phase I SBIR Grant from the U.S. DOE for their work in this area.
ABOUT:
Valliscor exploits the synergy between industrial know-how and academic innovation to provide access to high-value organic building blocks for the pharmaceutical, biotech and agrochemical industries.

MARKET OPPORTUNITY:
Valliscor can take preliminary lab protocol and develop it into a robust and scalable process suitable for operation in a pilot plant. Using a "quality by design approach" combined with state of the art lab and analytical facilities they provide customers with the most cost effective, safe and environmentally compliant process possible.

PROJECT OVERVIEW:
ONAMI provided GAP grant funding to Valliscor in cooperation with OSU researchers to develop specialized pharmaceutical components that are in high demand by companies not just domestically but also around the world.
Voxtel Nano is a world leader in the development and sales of advanced photonics and 3D imaging devices and systems, specializing in time-of-flight, LIDAR, LADAR, and dual-mode active/passive detectors and focal plane arrays, including those hardened for harsh radiation and environmental applications.

The technology is aimed at meeting the markets need for full-scale manufacturing of high-quality, low cost nanomaterials, a capability that is not currently on the market.

ONAMI provided GAP grant funding to the Oregon State University/Voxtel Nano partnership. The project is working to develop a high throughput, automated, microwave-assisted continuous flow, high volume nanoparticle Engine. The project includes continuous product monitoring, quality feedback and process control with low product composition size and morphology variation.
The mission of ZAPS Technologies is to create and produce online, real-time, water quality monitoring equipment to aid professionals involved in water treatment, water analysis, and environmental analysis. To achieve our mission we apply patented and proprietary solid-state optical techniques requiring no chemicals, reagents, operators or routine maintenance, resulting in equipment that runs unattended 24/7 while producing millions of tests per day on moving water.

ZAPS’ technology enables the world’s first real time testing for E.coli, BOD, and TOC. By concurrently measuring multiple compounds using ZAPS stations, clients can dynamically adjust water treatment to save chemical costs, electricity, wet lab fees, reagent expenses, and labor.

ZAPS Technologies, along with the Keck Collaboratory at OSU, worked on developing a means to quickly, reliably and automatically measure water quality. ONAMI’s GAP grant funding expanded the ZAPS compound library. LiquiID(tm), a device for rapid detection of TOC, BOD and multiple compounds in large amounts for flowing water, is the first solid-state optical water quality monitoring instrument developed by ZAPS.
13therapeutics

**ABOUT:**

13therapeutics is an Oregon Health & Science University spinoff company residing in the OTRADI Bioscience Incubator (OBI). 13therapeutics is a research and drug development company identifying and characterizing novel anti-inflammatory therapeutics for unmet medical needs with high commercial potential. The company has an innovative platform for isolating novel peptides from immunoregulatory proteins produced by pathogens that impact the immune system.

**MARKET OPPORTUNITY:**

13therapeutics is moving its lead peptide, P13, forward for the prevention/treatment of noise-induced hearing loss.

**PROJECT OVERVIEW:**

OTRADI has developed new experiments/assays for company and introduced them to Venture Capital groups. 13therapeutics is adding up to 2-3 employees this year. The company is one of the original client companies residing in OTRADI Bioscience Incubator (OBI).
ABOUT:
AbSci has developed a proprietary micro-engineered Escherichia coli (E. coli) expression system that will allow for an easily optimizable and scalable production of soluble recombinant monoclonal antibodies, as well as other therapeutic proteins. These therapeutic proteins and antibodies are used in cancer and hormone therapies, as well as autoimmune and blood disorder therapies.

MARKET OPPORTUNITY:
AbSci's products target a multi-billion dollar industry for cancer treatment, hormone, autoimmune and blood disorders therapies.

PROJECT OVERVIEW:
OTRADI has helped to developed new techniques to automate this company's experimental process to expand their products offered to customers. AbSci is the recipient of an OTRADI Innovation and Commercialization Funding award. AbSci has added 4 employees within the past year. The company is one of the original client companies residing in OTRADI Bioscience Incubator (OBI). In 2014, AbSci has written and submitted a joint small business SBIR grant with another OBI company, illustrating the synergy of OBI company interactions.
ABOUT:
AGAE is an Oregon State University spinoff company, whose main focus is developing and manufacturing more bio-friendly surfactants for industrial usage. A major R&D focus for AGAE Technologies is developing cost-effective application of rhamnolipid biosurfactants. They now provide a full spectrum of high-purity rhamnolipid biosurfactant products, including customized rhamnolipid products. AGAE works with companies to aggressively commercialize and apply these bio-friendly surfactants.

MARKET OPPORTUNITY:
AGAE has advanced their technology to achieve significant improvements in production capacity, cost and purity. Their products target the industrial needs for bio-friendly surfactants.

PROJECT OVERVIEW:
OTRADI has performed fee-for-service scientific work and data analysis for AGAE. Through working with OTRADI, AGAE has been able to test many more samples that it was previously able to do in its own facilities. OTRADI has helped AGAE increase production and better select its key products to market.
Agere Pharmaceuticals

ABOUT:

Agere Pharmaceuticals is a spinoff company from Bend Research, the largest contract manufacturing company in Oregon. Agere offers differentiated solubilization solutions to companies facing bioavailability challenges. Agere is a leading contract development and manufacturing organization (CDMO) providing pre-clinical formulation development through clinical-stage cGMP manufacturing services for drug products.

MARKET OPPORTUNITY:

Agere Pharmaceutical specialize in improving the oral bioavailability of BCS II – IV compounds through fundamental science, solubilization expertise, and proprietary solubilization technologies.

PROJECT OVERVIEW:

OTRADI has worked with Agere since its start in Bend, OR in 2009. OTRADI has helped Agere co-write SBIR grants and consulted with them to identify new markets for their innovative products. OTRADI has also helped drive business to Agere from researchers and small companies looking for a partner to produce/manufacture their compound or drug of interest.
About: Aronora is an Oregon Health & Science University spinoff company residing in the OTRADI Bioscience Incubator (OBI). Aronora is engaged in the commercial development of proprietary therapeutics. Rational design of its innovative therapeutic agents is expected to result in products that may be able to reduce the growth of life-threatening blood clots without the detrimental bleeding side effects characterizing antithrombotic drugs currently given to stroke patients.

Market Opportunity: Aronora's products are intended for difficult-to-treat, severe, rapidly progressing, or catastrophic thrombotic blood clotting diseases (stroke, heart disease, etc.).

Project Overview: OTRADI has worked with Aronora for five years. OTRADI has performed many scientific experiments for Aronora, acted as consultants for their drug development work, written 3 SBIR grants with Aronora and introduced them to venture capital groups. Aronora has grown from 2 to 10 employees, is the largest awardee of SBIR grants in the State of Oregon and currently has a partnership and funding from Bayer Pharmaceuticals. In 2014, Aronora has written and submitted a joint small business SBIR grant with another OBI company, illustrating the synergy of OBI company interactions.
BioMed Diagnostics

ABOUT:

Biomed Diagnostics Inc. is an innovative manufacturer of microbiology diagnostic devices that save money and time, improve workflow and throughput, and reduce sample exposure and contamination. Medical professionals, veterinarians, research teams, and environmental and industry scientists worldwide accurately identify bacteria, parasites, fungi, and more using Biomed point-of-care ready devices.

MARKET OPPORTUNITY:

Biomed Diagnostics’ patented InTray™ and InPouch™ devices combine sample collection, transport, and culture in a single platform with no need to separately prepare a wet mount slide. Reducing the risk of exposure or contamination. InTray™ products featuring Colorex™ technology enable easy-to-interpret visual results from a simple color change.

PROJECT OVERVIEW:

OTRADI has helped BioMed Diagnostics write its first SBIR grant to NIH. OTRADI is currently working with BioMed to develop independent lab testing, at OTRADI, to confirm and validate BioMed’s diagnostic products. This work would lead to safer, more reliable testing kits for large animal/farm veterinarians to use in the field.
BVBiomed was established to research the causes of multiple sclerosis (MS) and other CNS diseases. Their research has been focused on the role of relaxins CNS disease. Relaxins are a family of peptides with diverse mechanisms of action. They are anti-inflammatory, immune modulators which cause vascular dilation and help to stabilize the blood brain barrier. One of these peptides is also required for remyelination while another only exhibits its effects during the last stages of pregnancy.

MARKET OPPORTUNITY:
BVBiomed is currently moving toward clinical trials to test the efficacy of the pregnancy related peptide in treating acute exacerbation in MS. They are in the pre-clinical stages with a small molecule similar to relaxin which may be used for the chronic treatment of the disease.

PROJECT OVERVIEW:
OTRADI has helped BVBiomed by providing them with fee-for-service scientific work and research consulting. In addition, we are helping BVBiomed write their first SBIR grant. OTRADI has also leased space in our lab for limited amounts of time to BVBiomed so that their company could perform research outside of Medford in order to meet pressing deadlines.
DesignMedix

TECHNOLOGY AREA:
Bioscience

LOCATION:
Portland

ABOUT:
DesignMedix develops drugs to address the large medical need caused by the rapid rise in drug resistance in multiple diseases. Diseases like malaria and diarrhea kill millions of people each year and cause untold suffering.

MARKET OPPORTUNITY:
The World Health Organization considers drug-resistance to be one of the top three threats to human health today. Costs are rising with the use of stronger drugs and even the strongest therapies do not kill the resistant pathogens. Using proprietary technology, DesignMedix is developing novel drugs to help efforts to alleviate and eliminate these infections.

PROJECT OVERVIEW:
OTRADI has worked with DesignMedix for six years. In that time OTRADI has helped DesignMedix with: conducting numerous fee-for-service scientific experiments and protocols for their work, 2) expanding the scope of their company by finding new indications for their malaria drugs as anti-bacterial drugs, 3) writing successful SBIR grants, 4) preparing for Angel Oregon competition, which they then won, and 5) funding their work through an OTRADI Innovation and Commercialization grant.
DianaPlantSciences

ABOUT:
DIANA works alongside its clients in the food, pet food, nutraceutical, aquaculture and cosmetics industries to increase the sensorial and nutritional performance of their products and to win new markets. DianaPlantSciences relies on a unique expertise in plant cell culture.

MARKET OPPORTUNITY:
DianaPlantSciences expertise in plant cell culture helps them develop natural, innovative actives for the nutrition, food supplement and cosmetics industries, while preserving biodiversity.

PROJECT OVERVIEW:
OTRADI has performed fee-for-service scientific work for DianaPlantSciences to test their natural plant products and mixtures for possible activity as new drugs or treatments for human diseases. Additionally, OTRADI tested the efficacy and safety of their natural products and mixtures. OTRADI is extending their work with DianaPlantSciences in the coming year, which will enable them to grow their market and hire scientists in Oregon for this branch of their international company.
Elex Biotech

TECHNOLOGY AREA:
Bioscience

LOCATION:
Portland

ABOUT:
Elex Biotech designs and develops novel drugs to treat heart failure and ventricular arrhythmias. Often associated with aging, heart failure is the inability of the heart to maintain cardiac output sufficient to meet the body’s needs; ventricular arrhythmia is an abnormal heart rate that, if left unchecked, can lead to death, especially in people over 65.

MARKET OPPORTUNITY:
Elex Biotech’s mission is to provide treatments to help stop heart failure and arrhythmias claiming more than 300,000 lives a year at a cost of roughly $34.4 million.

PROJECT OVERVIEW:
OTRADI has performed fee-for-service scientific work for Elex Biotech to test their innovative chemistry/compounds for drug-like activity. OTRADI co-wrote a successful SBIR grant that provided funding to launch Elex at its initial stage. Elex has also received funding through an OTRADI Innovation and Commercialization grant.
Entia Biosciences seeks to develop products to benefit many aspects of human health. They use natural products and mixtures derived from plant cultures. Entia brings the credibility of biotechnology to the food science and supplementation markets. The company’s growing portfolio of intellectual property currently spans some of the most powerful antioxidants and bio nutrients occurring in nature.

Entia Biosciences is rapidly becoming a global leader in Nutrigenomics by identifying, scientifically validating, and commercializing solutions that address multi-billion dollar markets for organic health, beauty and agriculture.

OTRADI has performed fee-for-service scientific work for Entia Biosciences to test their natural products and plant derivatives for drug-like activity. OTRADI is advising Entia Biosciences on writing SBIR grants and accessing capital.
ABOUT:

Floragenex is a biotechnology company that provides solutions for genomic analysis in human, plant and animal systems. We focus on applications involving Restriction-site Associated DNA Sequencing, also known as RAD sequencing (RAD-Seq).

MARKET OPPORTUNITY:

RAD-Seq is a cutting-edge technology integrated with next-generation DNA sequencing platforms that enables scientists to efficiently discover and genotype large amounts of genetic information, in any plant or animal system, at a competitive cost.

PROJECT OVERVIEW:

OTRADI is currently using our robotics, liquid handling and scientific expertise to help Floragenex fully automate their company’s product, which is DNA sequencing. Floragenex is the recipient of an OTRADI Innovation and Commercialization Funding award. Floragenex is one of the original client companies residing in OTRADI Bioscience Incubator (OBI). In 2013, with the help of OTRADI and a growing market, Floragenex had its most profitable year to date.
Galena Biopharma is a biopharmaceutical company developing and commercializing innovative, targeted oncology treatments that address major unmet medical needs to advance cancer care.

Galena Biopharma technology is developing innovative solutions to create better treatment solutions for a multi-billion cancer care industry.

OTRADI, together with Oregon Bioscience Association and the Portland Development Commission, actively met with and helped to recruit Galena Biopharma to Oregon. Since moving to Oregon, Galena Biopharma has created twenty technical jobs. OTRADI helped Galena Biopharma secure physical space for their headquarters in the building housing OTRADI and the OTRADI Bioscience Incubator (OBI). Galena employees with valuable knowledge and experience are now helping answer questions for startups in the OBI and others that work with OTRADI.
Gamma Therapeutics

**ABOUT:**

Gamma Therapeutics is an early stage biotechnology venture developing cardiovascular disease diagnostic tests, surgical therapy and military medicine solutions.

**MARKET OPPORTUNITY:**

Gamma Therapeutics developed, has managed manufacturing and is now bringing to market their novel cardiac biomarker assay kits, which once cleared by the FDA, will further assist physicians in the testing and prognosis of their at-risk patients.

**PROJECT OVERVIEW:**

OTRADI has worked with Gamma Therapeutics on scientific and grant writing projects. Gamma Therapeutics is interested in leasing space and joining the OTRADI Bioscience Incubator within the upcoming year. Currently, OTRADI is working with Gamma Therapeutics to help ramp up production of their diagnostic kits.
Hawthorne Materials Corporation

**ABOUT:**
Founded in 2012 and using technology developed at Portland State University, Portland’s Hawthorne Materials Corp. develops bismuth-based X-ray contrast agents that image better and brighter than other agents currently used in the medical field.

**MARKET OPPORTUNITY:**
Every year these surgical sponges cost hospitals millions and force patients back into the operating room. Sponges account for fully two-thirds of all objects retained after surgery. In order to prevent this many surgical sponges come “tagged” with radiopaque materials. The contrast agents used to date, however, produce dull images that can be difficult to detect.

**PROJECT OVERVIEW:**
OTRADI has performed fee-for-service scientific work for Hawthorne Materials to test their bismuth agents for cell toxicity and stability, which are important hurdles to clear in getting a medical product approved. OTRADI is advising Hawthorne Materials on writing SBIR grants and accessing business partners.
Marker Gene Technologies

ABOUT:
Marker Gene Technologies, Inc. develops new products for the biotechnology and medical industries. The company has received a number of competitive grant awards for its work in cancer research and therapeutics from the National Institutes of Health as well as funding from the National Science Foundation for new uses of Marker Genes for agricultural biotechnology, cell culturing, bacteriology and basic research applications.

MARKET OPPORTUNITY:
The company has expertise to develop products in the areas of carbohydrate chemistry and biology, organic synthesis, fluorescence chemistry, molecular biology, DNA sequencing, subcloning, Northern blotting, Western blotting, cell culture, gel electrophoresis of DNA, RNA, and proteins, cell viability assays, bacterial detection, and related areas.

PROJECT OVERVIEW:
OTRADI has performed extensive fee-for-service scientific services for Marker Gene. Marker Gene uses OTRADI's robotics, liquid handling and scientific expertise to help Marker Gene provide the proof of concept data necessary to compete for a contract with a large company. The work provided by this contract would allow both Marker Gene and OTRADI to hire additional scientific workers. As part of a partnership with OTRADI, through our EDA i6 Award, Marker Gene was awarded $100,000 of supplemental NSF SBIR funding.
MitoSciences was founded in 2004 with the mission of supporting critical research areas in cancer, neurodegeneration and metabolic disorders. They produce and distribute immunoassays and high performance monoclonal antibodies via an online catalog consisting of over 400 products in the areas of metabolism and apoptosis.

MitoSciences expertise specializes in developing novel and effective techniques for screening, characterizing, and validating monoclonal antibodies that are critical for treatment of cancer, neurodegeneration and metabolic disorders.

OTRADI has performed extensive fee-for-service scientific services for MitoSciences, including cell toxicity, antibody analysis and other types of assays. Future collaboration may include testing their new antibodies, substrates or other materials.
NemaMetrix

ABOUT:
NemaMetrix is only in its infancy, but the University of Oregon spin-out is drawing interest from biotechnology firms and pharmaceutical companies for the “microfluidic device” (or “chip”) developed by the UO team. The apparatus captures and monitors tiny roundworms, allowing scientists to study the effects of particular compounds.

MARKET OPPORTUNITY:
The NemaMetrix device has the greatest potential to accelerate the discovery of drugs used to eliminate worm infections in humans and livestock.

PROJECT OVERVIEW:
OTRADI has performed scientific work for NemaMetrix to test their innovative microfluidic testing apparatus. NemaMetrix has received funding through an OTRADI Innovation and Commercialization grant.
About:

Paragon BioTeck, Inc., is a specialty pharmaceutical and medical device company focused on the discovery and development of prescription drugs and medical devices in eye care.

Market Opportunity:

The company looks to make significant contributions in the fight to prevent blindness, investing in the discovery and development of new diagnostic and therapeutic solutions.

Project Overview:

OTRADI has performed scientific work and consulting for Paragon BioTeck. OTRADI helped Paragon BioTeck secure physical space for their headquarters in the building housing OTRADI and the OTRADI Bioscience Incubator (OBI). Paragon’s CEO, and other employees with valuable knowledge and experience, are now helping answer questions for startups in the OBI and others that work with OTRADI.
QuickBeam

TECHNOLOGY AREA:
Bioscience

LOCATION:
Portland

ABOUT:
Quickbeam is biotech company that works on developing pharmacotherapeutics for the treatment of methamphetamine addiction. Lead compounds in preclinical development for this work are licensed from the Methamphetamine Abuse Research Center (MARC) at Oregon Health & Science University (OHSU).

MARKET OPPORTUNITY:
As methamphetamine addiction continues to be a large issue throughout the U.S., Quickbeam is working to find effective medical treatment for this addiction.

PROJECT OVERVIEW:
OTRADI has extensively advised QuickBeam on experimental design and introduced them to scientific and business collaborators. Additionally, OTRADI is co-authoring an SBIR grant with Quickbeam Bio.
About:

Senju Pharmaceutical develops health care products for the ears, eyes, nose, skin and throat. For nearly five decades, Senju has developed ophthalmological products, recently diversifying into other areas that ensure the healthy functioning of our senses.

Market Opportunity:

Senju Pharmaceutical collaborates with international research initiatives, academic institutions and researchers, and industry specialists to unlock medical secrets that lead to pharmaceutical breakthroughs.

Project Overview:

OTRADI has worked with Senju Pharmaceutical scientifically and as business collaborators. OTRADI is working to automate microscopy experiments for Senju. In 2013, Senju became one of the original client companies residing in OTRADI Bioscience Incubator (OBI).
**TomegaVax**

**TECHNOLOGY AREA:**  
Bioscience

**LOCATION:**  
Beaverton

**ABOUT:**

TomegaVax is an OHSU spinoff company. TomegaVax is developing novel prophylactic and therapeutic vaccines for unmet medical needs in infectious disease and cancer. TomegVax’s core technology is the spread deficient Cytomegalovirus (CMV) vaccine vector. It was initially developed to address human immunodeficiency virus (HIV).

**MARKET OPPORTUNITY:**

Currently, more than 33 million people are living with HIV/AIDS worldwide with approximately 1.8 million deaths in 2009 alone, including 260,000 children. The core technology can be leveraged to develop vaccines for other forms of infectious disease, such as malaria and tuberculosis, as well as to develop novel anti-cancer vaccines.

**PROJECT OVERVIEW:**

OTRADI is currently working with TomegaVax on scientific projects as well as helping to design physical lab/office space for them within the expanded OTRADI Bioscience Incubator (OBI).
Virogenomics

ABOUT:
Virogenomics, Inc. is a privately held Oregon-based biotechnology company whose business strategy is to identify and obtain rights to early-stage technologies, manage and develop these technologies to a critical phase, and then spin-off the developed technologies into new start-up companies. Virogenomics has obtained rights to technologies in diagnostic devices and in three general disease areas including autoimmune diseases, stroke, and infectious diseases.

MARKET OPPORTUNITY:
Virogenomics continues to evaluate promising early stage biomedical technology and look for more spin-off companies in the future.

PROJECT OVERVIEW:
OTRADI has performed scientific experiments and provided results and data that allowed Virogenomics to be awarded two STTR grants from the NIH.
ABOUT:
WelVU Mobile provides iPad and iPhone based platforms that combine medical illustrations, custom images, and verbal conversation to create patient-specific health information videos that are portable, shareable, and personalized.

MARKET OPPORTUNITY:
WelVU patient engagement platform provides rich features that empower healthcare providers and organizations to deliver customized, specific patient engagement solutions that powerfully address critical business and clinical issues that face major clinics, hospitals, and payers today.

PROJECT OVERVIEW:
OTRADI has provided feedback and ideas to help WelVU tailor their products for consumer and physician use. OTRADI has participated on two different startup judging panels, which both led to WelVU receiving funding and/or free business services. OTRADI is working with WelVU on access to capital and investment issues.
Yecuris is an OHSU spinoff company, which was founded in 2007 to commercialize the FRG® KO mouse technology developed in the laboratory of Dr. Markus Grompe. Since then, Yecuris has been a global leader in the development and use of humanized animal models in drug development research. The company is committed to creating unique tools and applications for researchers that improve the predictivity and efficacy of drug development, gene, and cell therapy.

Yecuris has built a set of tools and reagents for discovery research including the FRG® KO animal technology, our HepaCur™ primary cell products, and our CuRx™ reagents. These products are utilized in many applications including drug metabolism, infectious disease, gene therapy, and toxicology.

OTRADI has performed extensive scientific experiments and analysis for Yecuris to validate their in house results using our independent laboratory, equipment, data analysis and expertise. OTRADI is formulating a plan with Yecuris to offer collaborative imaging and analysis services, performed at OTRADI, as a value-add to Yecuris’ clients and customers.

TECHNOLOGY AREA:
Bioscience

LOCATION:
Tualatin
Atmocean, Inc. is developing the Atmocean Wave Energy (AWE), a clean, renewable ocean energy source that reduces dependence on fossil fuels, and benefits the environment by reducing CO2 emissions. The system is very reliable, and poses no risk to the environment. AWE works on the same principle as hydropower – sending water to an onshore turbine that spins an electrical generator.

Capable of producing clean renewable energy in remote island communities around the world, Atmocean, Inc.’s technology has great market opportunity. The technology can also be used for desalinization purposes, thus increasing the opportunities for use in areas with little or no freshwater.

OWET funding was guided towards the manufacture and deployment of a single buoy in the summer of 2013 near Coos Bay, OR. Additionally, funding was used to design deployment and retrieval methods to reduce the cost and risk of those activities. While deployed, Oregon State University monitored the acoustic signatures of the device and provided a detailed report of their findings.
Columbia Power Technologies, Inc. is the worldwide leader in direct-drive wave energy systems. They are commercializing a next-generation solution that will deliver the qualities their customers need to develop profitable wave energy projects: survivability, a competitive cost of energy, and a low environmental and stakeholder impact.

Wave energy is a highly desirable resource. Its practical worldwide potential is projected to be between 2 and 4 trillion kilowatt hours per year. The World Energy Council estimates that about 10% of worldwide electricity demand could be met by harvesting ocean energy, and the US DOE has reported that the available wave energy resources could power 100 million US homes.

OWET has provided commercialization grants to Columbia Power Technologies, Inc. to support the advancement of the Stingray Technology. OWET grant money has been directed toward the development of advanced power take-off units and remote control systems crucial to the survivability of the device. OWET has also provided Columbia Power Technologies, Inc. with DOE Matching Funds for land-based and tank testing of the device.
**ABOUT:**

M3 Wave Energy is commercializing a new ocean power device that is fully submerged and installed on the ocean floor. The system captures wave energy and converts it to electricity for connection back to terrestrial grids. The system is designed to have a low carbon footprint and to have minimal impact on both the ocean ecosystem and the commercial and recreational uses of the ocean.

**MARKET OPPORTUNITY:**

The product targets the energy generation markets by offering a new category of renewable generation that provides a less intermittent source than wind or solar energy.

**PROJECT OVERVIEW:**

OWET has supported M3 Wave LLC to engage in controlled environment testing at Oregon State University's OH Hinsdale Wave Research Laboratory. OWET is also providing financial and regulatory support for M3 Wave LLC's upcoming ocean deployment at Camp Rilea in Clatsop County, OR in September 2014.
**About:**

Northwest Energy Innovations (NWEI) is developing the AzuraTM wave power technology for converting the endless supply of ocean waves into electricity to meet the rapidly growing global demand for renewable energy. Since commencing operations in 2010, NWEI and its partners have successfully completed pilot scale projects in New Zealand and Oregon, and NWEI is now preparing for a grid-connected demo project at the US Navy’s Wave Energy Test Site at the Marine Corps Base Hawaii.

**Market Opportunity:**

The upcoming ocean test in Hawaii provides a unique opportunity to demonstrate the technology in a region greatly in need of reliable, clean energy. Hawaii’s dependable wave resource and reliance on diesel fuel for power generation, will be early adopters of wave energy projects.

**Project Overview:**

OWET funding has aided NWEI in the commercialization efforts of the technology. Specifically, funding was directed to verify ocean wavelength functionality of the device in a controlled environment as well as assistance to the manufacture of the half scale device that was deployed at Oregon State University’s North Energy Test Site in 2012. Most recently, OWET provided matching funds to a US Department of Energy grant that called for upgrades to the device prior to its deployment in Hawaii.
ABOUT:

Ocean Motion International LLC was formed to develop and deploy a revolutionary yet practical concept for a wave-driven seawater pumping system that can be used to drive multiple utility production components. The OMI WavePump can provide an efficient, cost-effective and reliable supply of 1) electricity, 2) potable water, and 3) high-purity, commercial-grade hydrogen.

MARKET OPPORTUNITY:

The market opportunity for wave energy is massive, but when combined with the market for providing clean, potable water, this technology expands into an urgently needed and enormous market. These services are needed in island communities and remote coastal villages throughout the world.

PROJECT OVERVIEW:

Ocean Motion International LLC utilized OWET funding for the design, manufacture and controlled environment testing of a single OMI WavePump device. With proof of concept now realized, Ocean Motion International LLC can continue to refine the technology towards commercialization.
ABOUT:

Principle Power, Inc. is a technology developer focused on the intermediate and deep-water depth (greater than 40 meters) offshore wind energy market. Principle Power Inc.’s enabling product, a floating wind turbine foundation called WindFloat, provides for siting of offshore wind turbines independent of water depth, thus exploiting the world’s highest capacity wind resources. Deep-water offshore wind installations, to date, have not been feasible due to economic and technological limitations.

MARKET OPPORTUNITY:

Offshore winds can produce more energy as they are not encumbered by topographical features such as buildings or hillsides and afford a more consistent wind profile. Although recovering energy from offshore wind is slightly more expensive, the resource can provide 50% more energy.

PROJECT OVERVIEW:

OWET provided Principle Power, Inc. with matching funds towards a US Department of Energy grant towards the development of the nation’s first offshore floating wind project, and the only offshore wind project on the west coast of the United States. OWET funding was used to conduct required environmental reporting, preparation of the Bureau of Ocean Management Lease Request, preparation of construction and operations planning, and the creation of a project specific website.
Shift Power Solutions

**TECHNOLOGY AREA:**
Wave Energy

**LOCATION:**
Corvallis

**ABOUT:**
Shift Power Solutions, Inc. is developing a modular system that extracts power from ocean waves as they strike breakwaters and other marine structures. In addition to generating electricity, their system defends the structures themselves from the heavy impact of the waves.

**MARKET OPPORTUNITY:**
Breakwaters around the world are at the mercy of the waves constantly crashing against them. With a wave energy system that can reduce the impact of ocean swells, as well as convert that energy into usable electricity, the longevity of those breakwater structures can be expanded, providing lower maintenance costs and security for the protected harbors.

**PROJECT OVERVIEW:**
OWET funding allowed Shift Power Solutions, Inc. to work with Oregon State University to model and test a prototype of the device.