CLACKAMAS COUNTY BOARD OF COUNTY COMMISSIONERS

Policy Session Worksheet

Presentation Date: 12/13/2016 **Approx. Start Time: 10:30am** **Approx. Length:** 1 hr.

Presentation Title: Economic Development Commission 2016 Final Committee Report

Department: Business & Community Services, Gary Barth, Director
Division: Business & Economic Development

Presenters:
Staff: Catherine Grubowski-Johnson, Business and Economic Development Manager
Richard Goddard, Chair, Economic Development Commission
EDC Executive Committee

Other Invitees:
2016 Economic Development Commission Members

WHAT ACTION ARE YOU REQUESTING FROM THE BOARD?
The purpose of this study session is to present the 2016 Economic Development Commission (EDC) final committee reports to the Board of County Commissioners.

EXECUTIVE SUMMARY:

The EDC, working through the management of the County's Economic Development Division, had a mission to explore, learn, and support the efforts of Industry Organizations in focusing on New Technologies that are advancing industries. The EDC developed recommendations for the BCC in support of opportunities to grow industries in Clackamas County
Key Clusters:

- Advanced Manufacturing – Metals & Machinery
- Professional Business Services
- Wood Products Manufacturing
- Wholesale Trade
- Trucking & Distribution
- Advanced Technology - High Tech
- Health Care
- Food & Beverage Processing
- Agriculture & Food Production
- Nurseries & Greenhouses
- Software & Media Production

Methods of outreach included:

- Directed one-on-one visits with Association Leaders
- Hosted an EDC meeting with Association Leaders as guest speakers
- EDC Member(s) attended Association meetings

Committees analyzed the feedback they received from outreach and participation in Associations/Organizations and reported back to the EDC.

FINANCIAL IMPLICATIONS (current year and ongoing): N/A
Staff time and program costs (undetermined at this time)

LEGAL/POLICY REQUIREMENTS:
No legal/policy requirements at this time. Policy recommendations in the report are made by the EDC for consideration by the BCC in future programming.

PUBLIC/GOVERNMENTAL PARTICIPATION:
Undetermined at this time

OPTIONS:
1. Accept the EDC 2016 Final Committee Reports
2. Do not accept EDC 2016 Final Committee Reports

RECOMMENDATION:
Staff respectfully recommends that the BCC accept the EDC 2016 Final Committee Reports.

ATTACHMENTS:
1. Economic Development Commission 2016 Final Committee Report and PowerPoint presentation.

SUBMITTED BY:
Division Director/Head Approval _____
Department Director/Head Approval _____
County Administrator Approval _____

For information on this issue or copies of attachments, please contact
Clackamas County Economic Development 503-742-4329

2016

Clackamas County
Economic Development Commission (EDC)
Final Committee Report
to Board of County Commissioners

December 13, 2016

EXECUTIVE SUMMARY

The Economic Development Commission (EDC) committee work for 2016, was focused on exploring **New Technologies** that are advancing industries in Clackamas County.

The EDC, working through the management of the County's Economic Development Division, focused on exploring and learning about the efforts of industry organizations who are utilizing new technologies that are advancing business. The EDC has developed recommendations to the BCC in support of opportunities to grow the economy in Clackamas County.

Using the Key Clusters identified in the Economic Development Division's annual report called, "Clackamas County Economic Landscape", the EDC members formed four committees that they believed had potential to report out on new technologies.

These committee's included Advanced Metals & Manufacturing; Wood Products Manufacturing; Software and Media; and Agriculture, Food Production, Nurseries & Greenhouses.

Key Clusters from Economic Landscape Report:

- Advanced Manufacturing – Metals & Machinery
- Professional Business Services
- Wood Products Manufacturing
- Wholesale Trade
- Trucking & Distribution
- Advanced Technology - High Tech
- Health Care
- Food & Beverage Processing
- Agriculture & Food Production
- Nurseries & Greenhouses
- Software & Media Production

Methods of outreach included:

1. Direct one-on-one visits with Association Leaders.
2. Committee members hosted an EDC meeting with Association Leaders as guest speakers.
3. EDC member(s) attended toured businesses.

This final report includes Key Findings and Recommendations from the EDC based on the feedback from the Associations/Organizations/Businesses contacted.

EDC COMMITTEES

Committee #1

Clusters Supported: **Advanced Metals & Manufacturing, High Tech, Health Care**

Committee Chair: Wilda Parks

Committee Members: Alfred McQuarters, Mark Meek, Robert Fowke, Matt Butts, Daniel Occhipinti, Julia Metz*, Greg Goloborodko*

(Non-voting members, staff from Clackamas Workforce Partnership)*

Organizations Contacted: Oregon Manufacturing Extension Partnership (OMEP)
Manufacturing 21
Pacific NW Defense Coalition
Clackamas Workforce Partnership

Committee #2

Rick Gruen*, Sam Dicke (*Hatfield Fellow*)*

(Non-voting members, staff from Clackamas County)*

Clusters Supported: **Wood Products Manufacturing**

Committee Chair: Robert Campbell

Committee Members: Jerry Simnitt, Tom Kane, John Drentlaw, Michael Selvaggio, Ken Humberston, Bridget Dazey

Organizations Contacted: Pacific NW Manufacturing Partnership
American Forest Resource Council

Committee #3

Clusters Supported: **Software and Media**

Committee Chair: Peter Lund

Committee Members: Ken McClintock, Michele Jones (formally Conditt), Nick Davies, Kasey Adler, Gordon Young, Zach Henkin Greg Goloborodko*

(Non-voting members, staff from Clackamas Workforce Partnership)*

Organizations Contacted: Oregon Story Board
Oregon Games Organization
Technology Association of Oregon
Clackamas Workforce Partnership

Committee #4

Clusters Supported: **Agriculture, Food Production, Nurseries & Greenhouses, Food & Beverage**

Committee Chair: Dave Nielsen

Committee Members: Kevin Kluppenger, Tammy Marquez-Oldham, Lynn Wallis, Rob McEachern, Derek Metson, Jerry Simnitt

Organizations Contacted: NW Food Processors Association
Oregon Association of Nurseries

COMMITTEE #1 REPORT

CLUSTERS SUPPORTED: Advanced Metals & Manufacturing, High Tech, Health Care

OVERVIEW OF COMMITTEE STUDY:
We researched what organizations and associations there were to provide assistance to businesses that fit within our scope, seeking those that dealt with changing innovations in metals, manufacturing, bioscience, health care and others similar. Meetings were held with Association leaders and on-site visits to some businesses were also part of the process. Guest speakers were sought who could address new technologies, both from an individual business aspect and from the association aspect.

While the team did value the information shared by the Association leaders, we determined that the best approach to answering specific questions on new technologies and how the County may be of assistance, would be to talk directly to the businesses

As an example, when team members visited with the Pacific Northwest Defense Coalition (PNDC) staff and an initial visit with Manufacturing 21 staff there did not seem to be information that would be helpful to our queries. Manufacturing 21's Executive said, in a first meeting in May, their biggest issue was getting to the CEO's and others who know information about advancements. There did not seem to be areas identified where the county could be of assistance. And they did not feel they needed any follow up.

We did, however, revisit Manufacturing 21, and their executive said, "The manufacturing is very diverse but what binds it into a single economic cluster are common needs for access to efficient transportation systems, highly reliable and inexpensive energy and a well trained workforce. Clackamas County can do little about energy. Transportation is part of a larger regional challenge (although again access is good given the I-205 corridor) so this leaves workforce. If it were me, I would focus my manufacturing strategy on assuring that the county has a work-ready and skilled workforce."

PNDC noted "most of our issues are federal in nature, (as shown in their Advocacy Agenda) although workforce challenges are huge for our members. In terms of technology, our members are in so many diverse sectors that there is no one central technology that impacts them all. Advances in robotics and in unmanned vehicles are concerns I regularly hear about from our members."

Two additional areas we discussed in our team, to serve our businesses better, were finding ways to grow our clusters in the county, and one way to do that might be supply chain elements. What is missing in the local economy to service local businesses, do these missing links offer opportunities for growth (team member Al McQuarters). We also discussed the issue of zoning, and whether that is an issue; are areas zoned correctly to permit new technologies to locate in the county?

Our team noted that outreach seems more significant when dedicating time to businesses instead of their Associations. So, in the end that is where we concentrated.

New Technology: On-Demand Joint Replacement

Description:

Orchid Orthopedic Solutions provided a fantastic and enlightening tour of their Oregon City plant. The company is involved in the following: (from their website)

- Product design, development, prototyping and manufacturing services to the orthopedic industry
- Forging , investment casting and finishing of medical implants and instruments
- Advanced machining and polishing technologies (metal and plastic)
- Plastic injection molding
- Sterilization and packaging solutions
- Complex instrument assemblies

The Oregon facility is a casting and advanced machining technology plant, producing a variety of products for joint replacement including patient specific joint replacements. Generally they work with OEMs (Original Equipment Manufacturers) as a supply chain solution provider and job shop. The facility has been in Clackamas County more than 40 years. The greatest emerging technologies are finishing implants and the use of 3D printers to produce patient specific implants & prototypes of alternate designs. More information can be found on their website at: http://www.orchid-ortho.com/

Key Findings:

Strengths: The local plant innovates, provides full service molding, casting, finishing. They are a sustainable LEAN manufacturer. They are innovative and are supported by a strong headquarters company in Michigan. On time delivery, customer service, production in a variety of volumes and one of a kind joint replacements is their niche.

Weaknesses: Finding qualified, ready to work employees, especially operators and engineers is difficult. It was noted they might go through 100 resumes to find one good engineer, and had to look nationally to find experienced people. Support (financial & coordination) to place "local talent" in work study or temporary assignments on innovation projects (sources may be Education, MECOP, Student in Industry or worker retraining programs). Customers frequently stay downtown due to a lack of local hotels near shops & off work activities.

Opportunities: Local installation of more Orchid Orthopedics technologies and services to provide "one stop" service to our customers, technical innovations in current supply chains and possible application of rapid prototyping & production capability to new markets.

Threats: Competitors, workforce needs, transportation to some extent (200 employees with varying shifts, lack of transit). Child care for working families is also an issue, therefore a threat to productivity.

New Technology: AMES stands for Assisted Movement with Enhanced Sensation.
Description:
This patented* technology combines *assisted movement*—a new, rapidly developing area of neurorehabilitation—with *muscle vibration*, a unique technology for enhancing movement sensation. http://www.amesdevices.com/

(From an email from OHSU)
First, a little background, and for brevity, I'm going to limit this analysis to stroke rehab. If you have a stroke, your chances of regaining any functional use of your affected arm is around 50%. If your prognosis is poor for recovery, you are shunted from physical to occupational therapy in order to teach you the workarounds. This is because most conventional approaches to physical rehab use functional movement as therapy, so you need some limb function to benefit from this approach. The problem is that the specific impairments that limit movement (e.g., weakness, spasticity, contraction, sensory loss) are not specifically addressed by conventional therapy, either manually or robotically applied.

Most rehab robots are designed to replace human therapists to save money. They are designed to provide basically the same therapy one or more therapists would provide, albeit in a semi-automated way. The bar that robotics companies set for their robots is that the devices need to work as well as a PT's manual therapy would work. Unfortunately, none of this works on the more debilitated half of the population. So, whether I recommend investing significant effort or finances into robotic devices depends on whether the goal is to save some FTEs with more functional patients (YES) or to provide some useful treatment to people with severe impairments (NO). However, see below.

For what it's worth, the AMES product is different from all other robotic devices in this field as it was designed to treat patients at the impairment (rather than functional) level, so it actually restores function in patients with severe impairment (as well as those with less severe impairment). The method and device were approved by the FDA a couple of years ago, but the company has not been able to raise the $3-5 million we need to get the device to market (big frustration!). If the EDC were interested in helping AMES get to market, I would consider moving the company to Clackamas County.

Contact information:
OHSU: Abhijit Banergee (banerjea@ohsu.edu)
AMES Technology, Inc.: Paul Cordo (pcordo@amesdevices.com)

New Technology: Aerial Technology
Description:
Aerial Technology International (ATI) in Wilsonville is a developer of agricultural drones. (ATI) has developed the AgBOT: a rotor drone purpose-built to assess crop health via airborne multispectral imagery. http://www.aerialtechnology.com/

Key Findings:
Strengths: Their ease of doing business, no business license required. There are a variety of other hi-tech firms in the area, so they are part of a cluster. Their target market is agriculture, and in Clackamas County they are right in the middle of their client base.

Weaknesses: Traffic congestion, need for more bridges in their area. Location to manufacturing supplies is slim to none.

Opportunities: Close to both urban and rural areas. Access to a wide range of environments to film and map. Wide range of customers from farmers to hi-tech.

Threats: International companies entering the US Market with a lesser price point product.

RECOMMENDATIONS TO BOARD OF COUNTY COMMISSIONERS:

- Support and encourage recruitment of businesses that provide manufacturing supplies to enhance the abilities of the local manufacturers. Conversation with the manufacturers should provide ideas of businesses to consider recruiting to the area. Some manufacturers note their local access to supplies is slim.
- Support and encourage additional bus or other transit services, especially at shift changing hours and in the outer regions and in key urban areas.
- Stage a workforce summit and/or a job fair. Do so in conjunction with other workforce entities and schools.

The businesses and the association we visited, who had suggestions or offered needs, were centered around workforce and especially soft skills, along with some comments regarding transportation needs.

Please note that the recommendations from Committee #3 also fit well with findings from Committee #1, and are endorsed by them.

Attached is a report from the Albany Chamber of Commerce on a workforce program initiated by that chamber and local workforce entities and schools. It may be beneficial for Clackamas County to research.

For the 2017 year we would like to see EDC focus on workforce issues, needs, concerns, opportunities, etc. This topic can easily be assigned to three to four teams, each with a specific purpose and goal.

COMMITTEE #2 REPORT

CLUSTERS SUPPORTED: Wood Products Manufacturing

NEW TECHNOLOGY: CROSS LAMINTATED TIMBER (CLT)

Description:

Cross Laminated Timber (CLT) is a new technology which is poised to bridge economic development in rural communities and the environmental concerns associated with timber harvests. Comprised of dimensional lumber, which has been trimmed and pressed using a special adhesive, this new building material offers architects and engineers a new set of freedoms for building large structures with wood. The panels on existing Glulam technologies increase structural integrity by turning the middle layers perpendicular instead of parallel to the top and bottom boards. Due to beams or panels increased structural integrity, CLT buildings are predicted to become more cost effective around the midrise 5 to 6 story range as fabrication is done at the mill and not at the construction site, saving the developer/contractor time and energy.

KEY FINDINGS:

This new industry is poised to become a catalyst for timber productions and building within the Pacific Northwest.

Strengths:	Green building principals
	Reduces carbon footprint
	Efficient building construction
Weaknesses:	Fire and seismic testing needs to be completed
	Startup cost of local mill transition to CLT
Opportunities:	Emerging new markets
	Collaboration with Oregon State University and other research institutions
	Bridge rural economic development with sustainably managed forests to revitalize the wood products industry
	Opportunity for metals manufacturing to provide new parts for building new building
	New workforce opportunity
Threats:	Access to supply
	Current building code compliance
	Competing materials
	Uncertain of support from environmental organizations to access raw materials for CLT

RECOMMENDATIONS TO THE BOARD OF COUNTY COMMISSIONERS:

- Form Code Compliance Task Force for CLT
- Support legislation for access to timber lands
- Support outreach to local mills/processors, architects/engineers, and environmental organizations to garner support for CLT across all segments of the supply chain.
- Clackamas County is poised to be the leader for the West Coast

COMMITTEE #3

CLUSTERS SUPPORTED: Software and Media Production

OVERVIEW OF COMMITTEE STUDY:
The software and media committee studied and assessed the opportunities for Clackamas County to grow its tech and media sectors. Overall trends in the Portland Metro Area indicate that Clackamas County enjoys a unique opportunity to grow its tech and media sectors. Portland's increasing commercial and residential real estate costs paired with a rapidly growing tech sector will continue to make Clackamas County an attractively priced destination for new and growing companies.

Barriers to growth exist. Many software and media companies located in the Portland core are unaware of the advantages of Clackamas County. Additionally, perceptions of the county in the software and media sector could be improved. Through targeted messaging to startups and growth stage companies, incentives, and engagement with organizations within the tech and media communities, Clackamas County can quickly gain high density and high wage jobs, while offering affordable housing options to tech and media employees. This report highlights a one technology, however the opportunity for Clackamas is not the technology itself but the promise of attracting software and media companies. Our key findings will focus specifically on what Clackamas County can do to best capitalize on this exciting opportunity.

New Technology: HoloLens
Description:
HoloLens is essentially a holographic computer built into a headset that lets you see, hear, and interact with holograms within an environment such as a living room or an office space.

Key Findings:
Clackamas County supports innovators such as Oregon Story Board and Clackamas Community College as they develop new curriculum and applications for businesses using Hololens. The combined Augmented/Virtual Reality industry is projected to grow to $80 billion in market value by 2020 and serving multiple industry sectors.

SWOT Analysis of Clackamas County Software and Tech Sector:

Strengths:
- Low cost office space in relation to Portland
- Good transit connectivity to Portland in urban Clackamas, particularly Milwaukie
- Low cost of living in relation to Portland
- Growing software and media cluster in Clackamas
- Superior support for companies through Clackamas Business and Economic Development

Weaknesses: Distance from Portland
Lack of knowledge of Clackamas opportunities in Portland software and media cluster
Negative perceptions of Clackamas among some members of Portland software and media cluster
Market moves more quickly than government
Smaller software and media ecosystem when compared to metro Portland

Opportunities: Partner with Milwaukie and Oregon City development groups to attract software and media companies
Create targeted messaging attractive to Portland software and media companies
Create incentive programs to encourage software and media development in Clackamas County
Engage with software media industry in Portland through industry events from OGO, TAO, OMPA, OEN
Outreach to out-of-state software and media companies through OGO, TAO, Business Oregon, Oregon Film

Threats: Rapid cost of living increases in Clackamas County
Competing incentive programs in other markets surrounding Portland metro
Outside market forces – Portland area software and media growth heavily reliant on strength of Silicon Valley & Hollywood

Key Findings (lack of knowledge to address these key finding):

1. Many early stage and growth companies are being priced out of the Portland downtown core.
2. Early and growth stage company employees are similarly moving towards the periphery of Portland metro core.
3. Tech and media sector companies have unfulfilled workforce demand.
4. Opportunities exist to encourage STEM/Tech career paths through collaboration with K-12 and community college systems.
5. Companies in these sectors prefer urban style services and environments, including walkable access to amenities like restaurants and coffee shops. Downtown Milwaukie and Downtown Oregon City are well suited to fulfill these expectations.

RECOMMENDATIONS TO BOARD OF COUNTY COMMISSIONERS:

- Advocate for increased public transit service in key areas of urban Clackamas (Milwaukie, McLoughlin Corridor, Oregon City.)
- Encourage and support targeted marketing efforts to Portland tech sector through PR (Oregonian, Willamette Week, OPB, PBJ, and Portland Monthly) and community engagement (TAO, OGO, Developer Meetups etc.)
- Consider the utility of Enterprise Zones and Urban Renewal Districts (ex. Using County CBX fiber network for free/low cost high speed internet access to high density employers.)
- Continue to support skills based tech and media education in Clackamas County and continue to collaborate with regional partners.
- Encourage mid-career training programs to bolster incumbent worker resilience.
- Consider zoning and use of space regulations to encourage creative/tech office space.
- Foster and encourage dialogue between industry sectors to identify areas of opportunity and collaboration.

COMMITTEE #4 REPORT

CLUSTERS SUPPORTED: Agriculture & Food Production, Nurseries & Greenhouses, Food & Beverage Processing

TECHNOLOGIES BROUGHT BEFORE FULL EDC

NEW TECHNOLOGY: SMART SPRAYER

Summary by Kevin Klupenger and Dave Nielsen

Overview: The smart sprayer is agriculture's answer for the questions of how to most efficiently apply chemicals and fertilizers to crops in the most economical and environmentally responsible way. The smart sprayer also helps Agricultural employers to reduce labor costs.

Description: Employing laser guided technology, the smart sprayer applies chemicals where there is plant material only. This includes adjusting for height of bushes/trees, as well as denseness of foliage. The smart sprayer does not apply chemical to open spaces. The Smart Sprayer is a collaborative project between Oregon State University, The Ohio State University, the University of Tennessee, and the United States Department of Agriculture (USDA). Currently the sprayer is available as a self-contained unit available to purchase or as a retrofit to existing sprayers. The technology is currently the possession of the partners listed above. They are working to make the technology available to local and national fabricators such as GK Machine in Oregon and John Deere nationwide.

Benefits/Advantages: Research has shown that smart sprayers reduce the amount of material used as well as the cost to apply the chemical by at least 50%. This not only saves material costs, it also reduces the use of chemicals in our farms. Spray loss - airborne and on the ground - is reduced between 40%-93%. And, since the sprayers don't have to be refilled as often (and the associated repairs/upkeep on the sprayers is needed less frequently), it saves on labor and maintenance costs. The payback period is reasonable, too.

Obstacles: Obstacles faced by the smart sprayer program are funding for researchers as well as development costs. Oregon State University needs to continue developing better versions of the sprayer as well as help bring this technology to market so that farmers, nurserymen, vineyards, orchardists, etc. can use this tool to enhance their operations and better protect the environment.

RECOMMENDATIONS TO BOARD OF COUNTY COMMISSIONERS:

Clackamas County could help overcome these obstacles by lobbying legislature for funding, creating programs or incentives to drive Agriculture operations to use this device, or other ideas the county may have to employ in helping with these obstacles.

NEW TECHNOLOGY: Clackamas County One-Stop Website

Summary by Lynn Wallis based on presentation by Rick Gruen and material from Cogan Owens Greene

Description: The Clackamas County Food System ONEStop is a virtual public, private, non-profit and academic partnership in support of the metropolitan region's food shed vision. The ONEStop will help connect the growing of local healthy food with the consumption of local healthy food.

Key Findings: The ONEStop is focused on food producers who market to the Portland region and beyond. This tool will provide a virtual place for farmers to access vendors and other farmers while providing a connection to markets, processors and distributors 24-7. The vision is to advance local economic development and job creation in the food system cluster while fostering sustainability and benefits such as public health, food equity and environmental stewardship.

The tool is designed so that a grower has a single ONEStop Partner as a lead. That lead will be able to draw on the services of all the partner organizations to benefit the grower. The goal is to leverage technical and financial resources among the partners to help growers. The ONEStop will increase and enhance each partner organization's capacity to assist growers and lead to increased production which will help close supply-demand gaps.

Challenges/Obstacles: The agricultural industry is a significant economic engine in Clackamas County and assistance to farmers to grow and sustain their small businesses is critical to the growth of the farm economy. According to Cogan Owens Greene, the Portland Metro region imports 90-95% of food consumed from outside the region. By providing a stronger connection between food producers and local markets, expectations are that the ONEStop will help to increase the amount of fresh, local and sustainable food to Portland regional consumers.

Opportunities for Marketing and Promotion:

- Public launch of press release by Clackamas County Public and Government Affairs (PGA), scheduled for October 25th, 2016
- Social media and website campaign coordinated by PGA and ONEStop partners
- Partners will create ONEStop links on their respective websites

RECOMMENDATIONS TO THE BOARD OF COUNTY COMMISSIONERS:

- Clackamas County to continue to support the marketing of this resource to industries that would benefit from the information provided.
- Support the transition of the current one stop advisory team to a formal Appointed Boards and Commission (ABC) as the Agricultural Advisory Committee.

OTHER AREAS/TECHNOLOGIES EXPLORED BY SUB-COMMITTEE – SUMMARIES

Automized Labor and Tissue Cultures (Nursery Industry)

Summary by Jerry Simnitt, based on conversations with OAN and Hazelnut Growers

Problem #1: Shortage of available and willing labor. Nursery is a traded sector industry and 80%+ of stock is shipped outside of Oregon. Most of the time it is shipped to states with a much lower minimum wage, making product higher cost.

Possible Technology Role: **Automized Labor**. One way to help the labor shortage and minimum increase is through mechanization. Midas (Hillsboro) and GK machine (Donald) shops are companies that specialize in cutting edge machinery to help nursery and agriculture clients. Examples of such machinery include: Potting machines, plant moving robots, watering systems, etc.

Problem #2: Needing to quickly replace plant varietals that have been susceptible to disease or to help Oregon stay on the leading edge of varietal trends.

Possible Technology Role: **Tissue Culture.** Another strategy is using Tissue Culture to rapidly replicate plants that are new to the industry or have a benefit over older varieties. Tissue Culture is cloning of plants so each plant is genetically identical and the crop can be uniform and have the protective traits of the parent plant. It is done in sterile labs with test tubes or other vessels using artificial growing media. The plants are very small and replicate rapidly. Over the past several decades the Filbert orchards were devastated by the Eastern Filbert Blight. Any tree planted would eventually succumb to the disease and die. Large orchards died as a result of the blight. Oregon State University developed several resistant strains of Filberts and through Tissue Culture that have rapidly replicated the plants. Now 1000's of acres are being planted in Clackamas, Marion and other counties. Oregon is the #1 producer of Filberts/Hazelnuts. The Tissue Culture industry also benefits nurseries by having new varieties on the market rapidly. One company is Terra Nova Nurseries in Canby. It provides the newest cultivars and allows Oregon nurseries to have the latest and hottest perennials on the market, giving Oregon an edge over other states.

Dulse Seaweed

Summary by Lynn Wallis based on conversations and reference materials from the Food Innovation Center

Description: Dulse Seaweed is a new patented strain of a succulent, red-marine algae. It was created by researcher Chris Langdon and colleagues at the Oregon State University's (OSU) Hatfield Marine Science Center. As a sea vegetable, Dulse has been used for centuries in the local foods of Ireland, Iceland, and Scandinavia.

Possible Technology Role: Because Dulse is an excellent source of minerals, vitamins and antioxidants and contains up to 16 percent protein in dry weight, it has the potential to emerge as a new industry in the state and is now classified as a specialty crop by the Oregon Department of Agriculture.

Key Findings: Dulse is grown using a water recirculation system so growers need only a modest amount of seawater and some sunshine to produce large vats of this patented seaweed. It is being currently grown (farmed) in bubbling vats of cold seawater at OSU and there are future plans to increase Dulse production from 20-30 pounds per week to 100 pounds a week.

The Food Innovation Center is working on creating products from this red marine algae and the fact that this product grows rapidly, has high nutritional value, and can be used dried or fresh makes it a good candidate for a commercial operation in the state. The first commercially available product is the Dulse Seaweed Dressing and Marinade which was recently created through a joint effort between New Seasons Market, Oregon State University, and Dulse Foods.

Challenges/Obstacles: Both the production and the value added products from this patented strain of sea vegetable are at the early stages of development and marketing. While potential demand for this product is not yet fully realized, colleagues at OSU's Hatfield Marine Science Center believe there is a future in growing Dulse for human consumption in Oregon.

2016 ECONOMIC DEVELOPMENT COMMISSION ROSTER

EXECUTIVE COMMITTEE

Chair
Richard Goddard, Portland General Electric

Immediate Past Chair
Robert Campbell, Clackamas Small Business Center

Vice Chair
Peter Lund, SuperGenius Studio

Wilda Parks, Milwaukie City Council

Dave Nielsen, Home Builders Association

MEMBERS:

Kasey Adler, Metal Toad
Matt Butts, Group Mackenzie
Michele Jones, Reliance Connects
Nick Davies, Fleet Complete
John Drentlaw, JLD Construction Consulting
Daniel Occhipinti, Pacific Seafood
Robert Fowke, Business Efficiency Consulting
Zack Henkin, Drive Oregon
Kenneth Humberston, Clackamas Regional Water Supply
Tom Kane, Portland Public Schools
Kevin Klupenger, Pacific Risk Management
Robert McEachern, Capacity Commercial
Kenneth McClintock, Edward Jones
Alfred McQuarters, Portland Community College
Mark Meek, Markram Properties
Derek Metson, Greenbox Architecture
Michael Selvaggio, ProspectPortland
Jerry Simnitt, Simnitt Nursery
Gordon Young, Clackamas County Vector Control District

ECONOMIC DEVELOPMENT COMMISSION 2016

Presented to Board of County Commissioners December 13, 2016

EXPLORING NEW TECHNOLOGIES FOR CLACKAMAS COUNTY INDUSTRIES

EDC Members formed four committees to strategize outreach to industries

Committee #1
Clusters Supported:
Advanced Metals & Manufacturing, High Tech, Health Care

Committee #2
Clusters Supported:
Wood Products Manufacturing

Committee #3
Clusters Supported:
Software & Media, Business & Professional Services

Committee #4
Clusters Supported:
Agriculture, Food Production, Nurseries & Greenhouses, Food and Beverage

COMMITTEE 1

CLUSTERS SUPPORTED:
ADVANCED METALS & MANUFACTURING
HIGH TECH
HEALTH CARE

COMMITTEE CHAIR:
WILDA PARKS

COMMITTEE MEMBERS:
ALFRED MCQUARTERS
MARK MEEK,
ROBERT FOWKE
MATT BUTTS,
DANIEL OCCHIPINTI
JULIA METZ*
GREG GOLOBORODKO*

(* STAFF FROM CLACKAMAS WORKFORCE PARTNERSHIP)

ORGANIZATIONS CONTACTED:
OREGON MANUFACTURING EXTENSION PARTNERSHIP (OMEP)
MANUFACTURING 21
PACIFIC NW DEFENSE COALITION
CLACKAMAS WORKFORCE PARTNERSHIP

New Technology: **ON DEMAND JOINT REPLACEMENT**

Orchid Orthopedic is a casting and advanced machining technology plant, producing a variety of products for joint replacement including patient specific joint replacements. Generally they work with OEMs (Original Equipment Manufacturers) as a supply chain solution provider and job shop. The facility has been in Clackamas County more than 40 years.

The greatest emerging technologies are finishing implants and the use of 3D printers to produce patient specific implants & prototypes of alternate designs

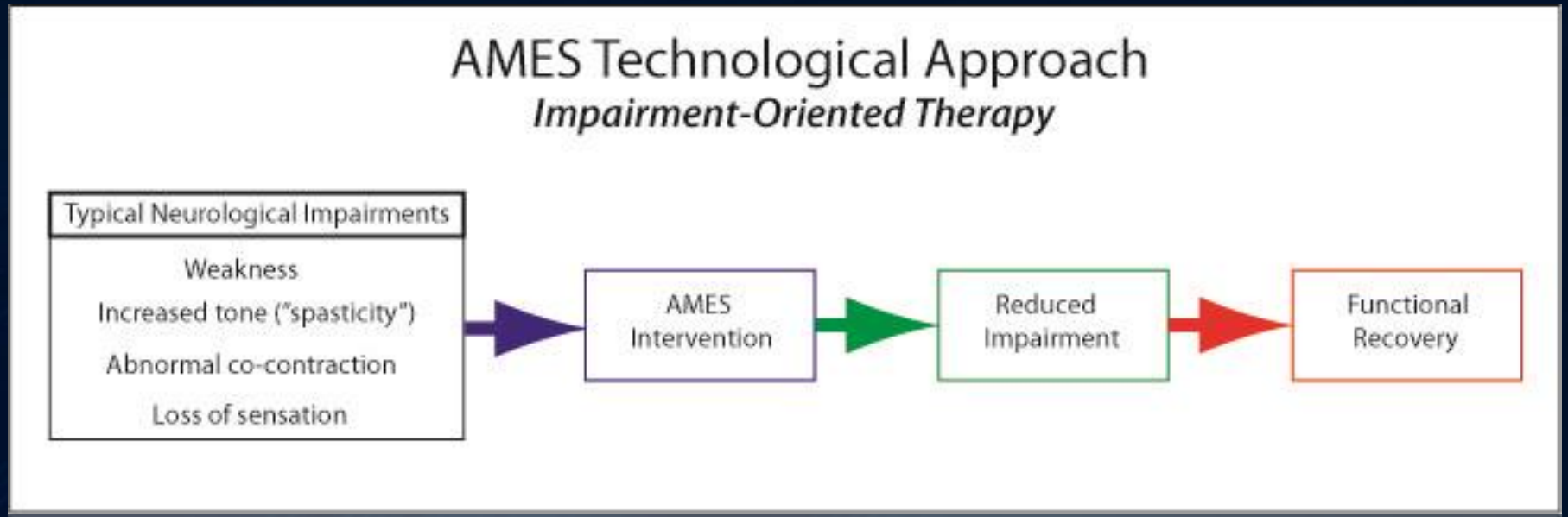
Key Findings:

Strengths:	Innovators, LEAN manufacturer, one of a kind joint replacements
Weaknesses:	Finding qualified, ready to work employees, especially operators and engineers
Opportunities:	Local installation of more Orchid Orthopedics technologies and services to provide "one stop" service, technical innovations in current supply chains and possible application of rapid prototyping & production capability to new markets
Threats:	Competitors, workforce needs, transportation (200 employees with varying shifts, lack of transit). Child care for working families

Committee 1

New Technology: ASSISTED MOVEMENT WITH ENHANCED SENSATION (AMES)

This patented* technology combines *assisted movement*—a new, rapidly developing area of neurorehabilitation—with *muscle vibration*, a unique technology for enhancing movement sensation. The AMES Rehabilitation Therapy Device utilizes patented therapeutic technology, which enhances specific sensory input and motor output connections in the brain for individuals recovering from stroke and other neurological disorders.



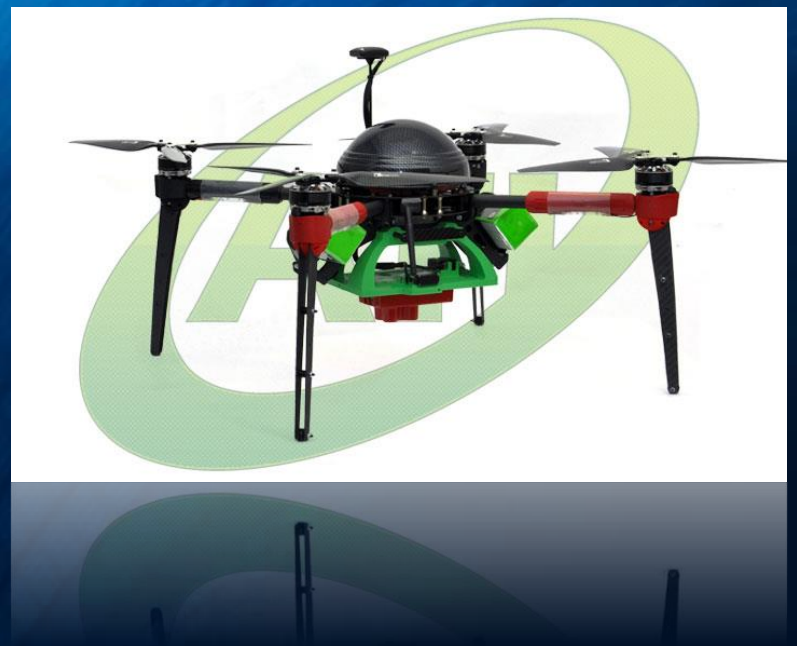
*U.S. Patent No. 6,878,122; U.S. Patent No. 7,563,234; U.S. Patent No. 7,566,311

New Technology: AgBOT **AERIAL TECHNOLOGY**

Aerial Technology International (ATI) in Wilsonville is a developer of agricultural drones. (ATI) has developed the AgBOT: a rotor drone purpose-built to assess crop health via airborne multispectral imagery

Key Findings:

Strengths:	Their ease of doing business, no business license required There are a variety of other hi-tech firms in the area, so they are part of a cluster. Their target market is agriculture, and in Clackamas County they are right in the middle of their client base
Weaknesses:	Traffic congestion, need for more bridges in their area Location to manufacturing supplies is slim to none
Opportunities:	Close to both urban and rural areas. Access to a wide range of environments to film and map. Wide range of customers from farmers to hi-tech
Threats:	International companies entering the US Market with a lesser price point product



Committee 1

Advanced Metals & Manufacturing, High Tech, Health Care

Recommendations to the Board of County Commissioners:

- Support and encourage recruitment of businesses that provide manufacturing supplies to enhance the abilities of the local manufacturers. Conversation with the manufacturers should provide ideas of businesses to consider recruiting to the area. Some manufacturers note their local access to supplies is slim.
- Support and encourage additional bus or other transit services, especially at shift changing hours and in the outer regions and in key urban areas.
- Stage a workforce summit and/or a job fair. Do so in conjunction with other workforce entities and schools.

Committee 3

COMMITTEE 2

CLUSTERS SUPPORTED: WOOD PRODUCTS MANUFACTURING

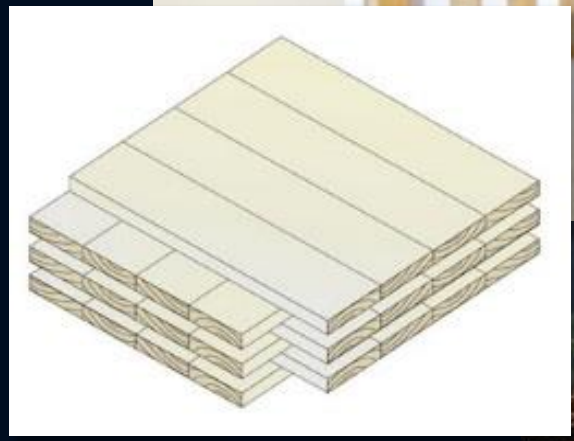
COMMITTEE CHAIR: ROBERT CAMPBELL

COMMITTEE MEMBERS:
JERRY SIMNITT
TOM KANE
JOHN DRENTLAW
MICHAEL SELVAGGIO
KEN HUMBERSTON
BRIDGET DAZEY
RICK GRUEN*
SAM DICKE (HATFIELD FELLOW)*
(* STAFF FROM CLACKAMAS COUNTY)

ORGANIZATIONS CONTACTED:
PACIFIC NW MANUFACTURING PARTNERSHIP
AMERICAN FOREST RESOURCE COUNCIL

New Technology: **CROSS LAMINATED TIMBER (CLT)**

Cross Laminated Timber (CLT) is a new technology which is poised to bridge economic development in rural communities and the environmental concerns associated with timber harvests. Comprised of dimensional lumber which has been trimmed and pressed using a special adhesive, this new building material offers architects and engineers a new set of freedoms for building with wood.



CROSS LAMINATED TIMBER (CLT)

KEY FINDINGS:

This new industry is poised to become a catalyst for timber productions and building within the Pacific Northwest.

Strengths:
- Green building principals
- Reduces carbon footprint
- Efficient building construction

Weaknesses:
- Fire and seismic testing needs to be completed
- Startup cost of local mill transition to CLT

Opportunities:
- Emerging new markets
- Collaboration with Oregon State University and other research institutions
- Bridge rural economic development with sustainably managed forests to revitalize the wood products industry
- Opportunity for metals manufacturing to provide new parts for building new building
- New workforce opportunity

Threats:
- Access to supply
- Current building code compliance
- Competing materials
- Uncertain of support from environmental organizations to access raw materials for CLT

Committee 2

CROSS LAMINATED TIMBER (CLT)

Recommendations to the Board of County Commissioners:

- Form an interdepartmental CLT Task Force
- Support legislation for access to timber lands
- Support outreach to local mills/processors, architects/engineers, and environmental organizations to garner support for CLT across all segments of the supply chain
- Clackamas County is poised to be a leader for the West Coast

Committee 2

COMMITTEE 3

CLUSTERS SUPPORTED: SOFTWARE AND MEDIA

COMMITTEE CHAIR: PETER LUND

COMMITTEE MEMBERS:
KEN MCCLINTOCK
MICHELE JONES
NICK DAVIES
KASEY ADLER
GORDON YOUNG
ZACH HENKIN
GREG GOLOBORODKO*

(* STAFF FROM CLACKAMAS WORKFORCE PARTNERSHIP)

ORGANIZATIONS CONTACTED:
OREGON STORY BOARD
OREGON GAMES ORGANIZATION
TECHNOLOGY ASSOCIATION OF OREGON
CLACKAMAS WORKFORCE PARTNERSHIP

New Technology: HoloLens

HoloLens is essentially a holographic computer built into a headset that lets you see, hear, and interact with holograms within an environment such as a living room or an office space.

Key Findings:

Clackamas County supports innovators such as Oregon Story Board and Clackamas Community College as they develop new curriculum and applications for businesses using HoloLens. The combined Augmented/Virtual Reality industry is projected to grow to $80 billion in market value by 2020 and serving multiple industry sectors.

Committee 3

Software and Tech Sector

Strengths:

- Low cost office space in relation to Portland
- Good transit connectivity to Portland in urban Clackamas, particularly Milwaukie
- Low cost of living in relation to Portland
- Growing software and media cluster in Clackamas
- Superior support for companies through Clackamas Business and Economic Development

Weaknesses:

- Distance from Portland
- Lack of knowledge of Clackamas opportunities in Portland software and media cluster
- Market moves more quickly than government
- Smaller software and media ecosystem when compared to metro Portland

Opportunities:

- Partner with Milwaukie and Oregon City development groups to attract software and media companies
- Create targeted messaging attractive to Portland software and media companies
- Create incentive programs to encourage software and media development in Clackamas County
- Engage with software media industry in Portland through industry events from OGO, TAO, OMPA, OEN
- Outreach to out-of-state software and media companies through OGO, TAO, Business Oregon, Oregon Film

Threats:

- Rapid cost of living increases in Clackamas County
- Competing incentive programs in other markets surrounding Portland metro
- Outside market forces – Portland area software and media growth heavily reliant on strength of Silicon Valley & Hollywood

Committee 3

Software and Tech Sector

Recommendations to the Board of County Commissioners:

- Advocate for increased public transit service in key areas of urban Clackamas (Milwaukie, McLoughlin Corridor, Oregon City.)
- Encourage and support targeted marketing efforts to Portland tech sector through PR (Oregonian, Willamette Week, OPB, PBJ, and Portland Monthly) and community engagement (TAO, OGO, Developer Meetups etc.)
- Consider the utility of Enterprise Zones and Urban Renewal Districts (ex. Using County CBX fiber network for free/low cost high speed internet access to high density employers.)
- Continue to support skills based tech and media education in Clackamas County and continue to collaborate with regional partners.
- Encourage mid-career training programs to bolster incumbent worker resilience.
- Consider zoning and use of space regulations to encourage creative/tech office space.
- Foster and encourage dialogue between industry sectors to identify areas of opportunity and collaboration.

Committee 3

COMMITTEE 4

CLUSTERS SUPPORTED:
AGRICULTURE AND FOOD PRODUCTION
NURSERIES AND GREENHOUSES
FOOD AND BEVERAGE PROCESSING

COMMITTEE CHAIR:
DAVE NIELSEN

COMMITTEE MEMBERS:
KEVIN KLUPPENGER
TAMMY MARQUEZ-OLDHAM
LYNN WALLIS
ROB MCEACHERN
DEREK METSON
JERRY SIMNITT

ORGANIZATIONS CONTACTED:
NW FOOD PROCESSORS ASSOCIATION
OREGON ASSOCIATION OF NURSERIES

New Technology: **SMART SPRAYER**

Overview:
The smart sprayer is agriculture's answer for the questions of how to most efficiently apply chemicals and fertilizers to crops in the most economical and environmentally responsible way. The smart sprayer also helps Agricultural employers to reduce labor costs.

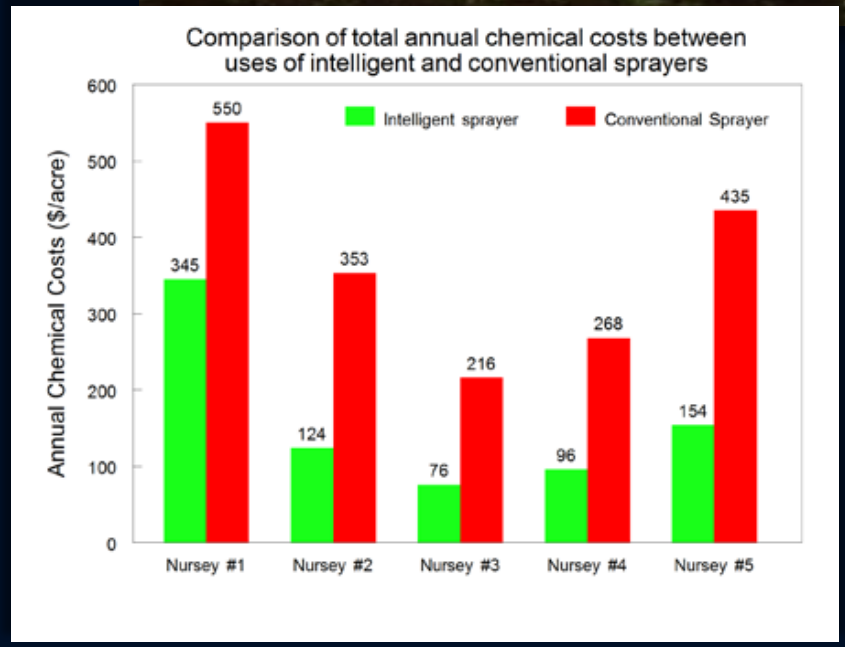
Description:
Employing laser guided technology, the smart sprayer applies chemicals where there is plant material only. This includes adjusting for height of bushes/trees, as well as denseness of foliage. The smart sprayer does not apply chemical to open spaces. The Smart Sprayer is a collaborative project between Oregon State University, The Ohio State University, the University of Tennessee, and the United States Department of Agriculture (USDA).

Committee 4

New Technology: **SMART SPRAYER**

Benefits/Advantages:
Research has shown that smart sprayers reduce the amount of material used as well as the cost to apply the chemical by at least 50%. This not only saves material costs, it also reduces the use of chemicals in our farms. Spray loss - airborne and on the ground - is reduced between 40%-93%. And, since the sprayers don't have to be refilled as often (and the associated repairs/upkeep on the sprayers is needed less frequently), it saves on labor and maintenance costs. The payback period is reasonable, too.

Obstacles:
Obstacles faced by the smart sprayer program are funding for researchers as well as development costs. Oregon State University needs to continue developing better versions of the sprayer as well as help bring this technology to market so that farmers, nurserymen, vineyards, orchardists, etc. can use this tool to enhance their operations and better protect the environment



Committee 4

New Technology: Smart Sprayer

Recommendations to the Board of County Commissioners:

- Clackamas County could help overcome these obstacles by lobbying legislature for funding, creating programs or incentives to drive Agriculture operations to use this device, or other ideas the county may have to employ in helping with these obstacles.

Committee 3

New Technology: **ONEStop Farmgate**

Clackamas County ONEStop Farmgate

- **A Virtual Farmgate** that makes it simple for growers to connect with resources from public, private, nonprofit, and educational entities, and is a place for real farmers to get real help.
- Uses a "concierge" format to make People to People connections. Not just another repository of information.
- The site will be online, available 24/7, and is quick and easy to navigate.
- The Farmgate platform is built on FoodHub – a successful website developed by Ecotrust to help wholesale food buyers and sellers do business – and has been designed to meet the specific needs of specialty crop growers in Clackamas County.

Visit: www.ClackamasFarmONEStop.com

New Technology: Onestop Farmgate

Recommendations to the Board of County Commissioners:

- Clackamas County to continue to support the marketing of this resource to industries that would benefit from the information provided.
- Support the transition of the current one stop advisory team to a formal Appointed Boards and Commission (ABC) as the Agricultural Advisory Committee.

Committee 3

Other New Technologies:

Automized Labor and Tissue Cultures

Dulse Seaweed

See full report for additional details on challenges and potential new technology solutions.

Committee 4

2016 ECONOMIC DEVELOPMENT COMMISSION ROSTER

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