

**TALENT:
MANUFACTURING'S
COMPETITIVE
ADVANTAGE**

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THE IMPERATIVE

Talent is the #1 driver of economic growth:
it can accelerate or inhibit success

The Manufacturing Talent Dilemma

According to Deloitte and the Manufacturing Institute

- Most manufacturers plan to increase production in next five years
- 80% of manufacturing jobs are categorized as skilled or highly skilled
- 75% of manufacturers report significant skill gaps/shortages
- Skill shortages are resulting in lost revenues and increased costs

Add to that

- Many mission-critical jobs are held by aging workers (with little succession planning by companies)

Technology Trends in Manufacturing

- **Big Data** (it's only as good if someone can use it effectively)
- **Internet of Things** (No longer the new kid)
- **Convergence of Digital and Machine Automation**

Manufacturing Spending

| | 3Q'15 | 4Q'15 | 1Q'16 | 2Q'16 | 4Q'16 |
|--|------------|------------|------------|------------|------------|
| Percent planning to increase spending (net, next 12 months) | 82% | 86% | 80% | 80% | 98% |
| New product or service introduction | 48% | 44% | 55% | 52% | 67% |
| Research and development | 37% | 41% | 50% | 40% | 52% |
| Information technology | 22% | 36% | 35% | 30% | 42% |
| Facilities expansion | 20% | 22% | 18% | 20% | 33% |
| Marketing and sales promotion | 10% | 15% | 17% | 20% | 27% |

Note: In 4Q 2016 total respondents = 60. Data not available for 3Q 2016.
Source: PwC Manufacturing Barometer, January 2017

THE REVOLUTION OF
MANUFACTURING IS SPURRED
BY TECHNOLOGY, BUT
OPTIMIZED BY PEOPLE

OREGON TALENT PLAN HIGHLIGHTS

The Oregon Talent Plan

A statewide roadmap that uses an economic development lens to:

- Identify trends affecting talent in advanced industries
- Understand and analyze the demand factors affecting key occupational clusters
- Research models that have measurable impact on skill competitiveness
- Recommend investments for how industry and the public sector can work together on addressing the competitiveness of our talent pool

Initial Plan completed in Fall 2015; updated Plan June 2017

Why Care?

- The average vacancy cost employers \$500/day in lost productivity/revenue; average vacancy is 90 days or \$45,000 per vacancy
\$9 Billion lost opportunity for Oregon employers each year
- The average training cost to upskill a worker = \$1,500 – 2,500 or ~5% of a vacancy cost
- Companies and the state spend little on training
Oregon has ~2 million workers and the State of Oregon spends less than \$3/worker per biennium on training for existing workers (less than 1% of higher education budget for students)

Talent V. Workforce

| | TALENT | WORKFORCE |
|------------|--|---|
| Definition | Ability to be good at something; Right skills and experience | The availability of labor/people for work or a specific job |
| Metrics | Quality & Value | Quantity |

Take-away: Industry is experiencing a SKILLS or TALENT shortage more than a workforce shortage



ADVANCED MANUFACTURING

Significant openings and projected growth, primarily as replacement jobs

Many jobs with a higher than average percent of workers near retirement

IOT & automation driving changes at multiple levels with advanced technology skills

Increased use of data analytics

Key Occupational Clusters

- Industrial Machinists
- Millwrights and Plant Electricians
- Industrial Mechanics & Service Technicians
- Interdisciplinary Engineering (I.E., E.E. & M.E.)
- First line supervisors
- Accountants, Auditors & Compliance Officers
- Management/Business Analysts
- Welders & Skilled Trades

Key Cross-cutting Occupations

Business Finance & Compliance

- Accountants & Auditors
- Compliance Officers
- Financial Specialists

Over 22,500 jobs
2.4% annual growth rate
900+ projected annual openings
High exposure to retirements

Systems and Data Administration

- Computer Support Specialist
- Network Administrators
- Database Administrators

Over 16,000+ jobs
1.4% annual growth rate
500+ projected annual openings
Mix of new and replacement jobs

Data-enabled Operations Analysts

- Business Operations Specialists
- Management Analysts
- Market Research Analysts

Over 33,000 jobs
2.3% annual growth rate
1,100+ projected annual openings
Mix of new and replacement jobs

Human Resource Management

- Human Resource Specialists
- Training & Development
- Benefits Specialist

Over 12,000+ jobs
1.9% annual growth rate
500 projected annual openings
Two-thirds replacement jobs

Critical Manufacturing Skills

- Technologically-savvy machinists
- Millwrights and industrial maintenance with applied analytics and programming skills
- Quality assurance workers with more statistical knowledge
- Software engineers with manufacturing experience or industrial/mechanical engineers with software development
- Data analytic positions in production operations, marketing, and supply chain management
- Key positions with business process management and workflow standardization knowledge

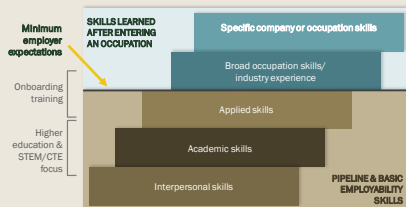
The new set of employability skills

- Critical thinking and problem solving
- Applied technical skills (daily use of data/statistics, software)
- Team work & project management
- Interpersonal skills
- Communication & customer service perspective
- Self-directing and willingness to learn

Skills that relate to the gaps identified in the RAMP survey

Employer Expectations

MOST TECHNICAL SKILLS ARE NOW LEARNED AFTER ONE ENTERS A CAREER



Data that helps to focus on HOW

- **The Pace of Change:** At the end of WWII knowledge doubled every 25 years; now it is less than 12 months.
 ~ 1/2 of technical knowledge learned by a college student is out of date by graduation
 - **80-20 Rule:** 80% of workers needed 10 years from now are ALREADY in the workforce
- AND...
- 1 out of every 5 jobs for advanced industries are filled from out of state.
 - More than 2/3 of all projected openings will come from replacement jobs.
 - Most replacement jobs will require occupational or industry experience.
 - Almost 1/4 of Oregon's workforce will be eligible to retire in the next 10 years.

Addressing Rogue Valley Mfg Talent

RAMP Survey for Key Issues

- Finding qualified employees = 100%
- Maintaining a skilled workforce = 100%
- Lack of work readiness = 95%
- Motivated employee = 94%
- Quality = 94%
- Keeping employees up to date = 90%
- Aging workforce/succession planning = 61%

Over 400 manufacturers and >10,000 employees

>60% of mfg in the region are very small

The markets served are diverse

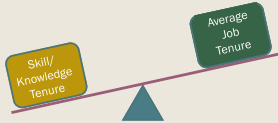
JUST FOCUSING ON THE PIPELINE OF NEW WORKERS IS INADEQUATE

INCUMBENT WORKER TRAINING IS AN IMPERATIVE FOR ECONOMIC GROWTH

The Training Dilemma

"If I invest in training, my workers will only go across the street to ABC's and they will benefit from my investment."

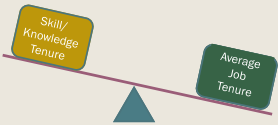
This reasoning may have been logical when people changed jobs faster than skills changed...



The Tipping Point

Somewhere about 2007-2010, the rate of new knowledge (how fast knowledge doubled) became LESS THAN the average job tenure

Now key skills can change 4X faster than people change jobs



Investment in skills training becomes imperative not just prudent

HOW TO ADDRESS
TRAINING WHEN THERE
IS NO "ONE SIZE FITS
ALL"

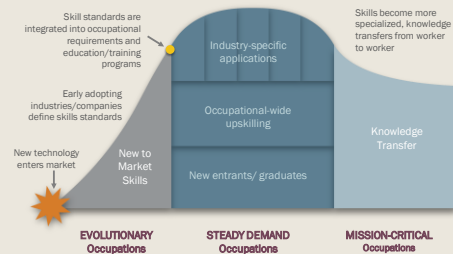
The Nuances of Occupations

- Some occupations were in an **evolutionary** stage
 - Very high growth rates + more new than replacement jobs
(examples: Cybersecurity, Data Scientists)
- Some occupations were in a **steady-demand** stage
 - Critical mass of jobs; above average growth rates; a mix of new and replacement jobs
(examples: Industrial Mechanics, Software Developers)
- Some occupations were in a **transitional/mission-critical** stage
 - High location quotient or concentration; Higher than average exposure to retirement with more replacement than new jobs
(examples: Millwrights, Compliance Officers)

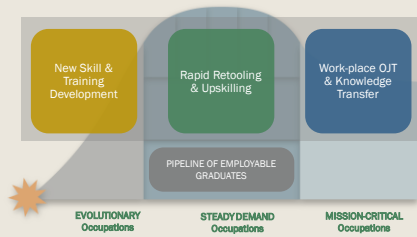
Common Employer Pain Points

1. **NEW SKILL STANDARDIZATION (#4 for mfg)**
When skills or technologies are new, it is hard to understand how to train workers or identify job competencies that matter
2. **RAPID RE-TOOLING (#2 for mfg)**
When there is a need to quickly retool (e.g. a new regulation) or when an industry has a specific skill application, it is difficult to find condensed training to ramp-up workers
3. **KNOWLEDGE TRANSFER (#1 for mfg)**
As key jobs face retirement or as companies grow rapidly, a consistent way transfer knowledge from one worker to another is necessary
4. **QUALIFIED PIPELINE (#3 for mfg)**
New entrants into the job market lack employability skills more than technical skills or academic credentials; most education programs do not place enough emphasis on applied skills.

Skill Acquisition Model



Skill Development Framework



Oregon-based Solutions That Work

- Oregon BioPro and BioCatalyst (Consortium Model)
- OMEP's Smart Talent (Structured OJT Model)
- Industry-Rogue CC Knowledge And Skills Transfer Program (Industry-Education Partnership for Shared Training)

Oregon BioPro and BioCatalyst

- Started in 2010 to address mfg QA needs of different companies in Portland
- Focused on a combination of technical, applied and communication skills
- Industry-led and shared training model with industry recognized certifications (typically 80 hours of training with ~ 8 modules per certification)
- Competency-based curriculum defined by employers; training providers chosen through a competitive process
- Delivered in condensed 2 week courses, traditional timeframes and on-demand classes
- Model expanded to across the state and to manufacturing, food processing and tech industries

BioPro Stackable & Agile Training

Each certification = stackable "badges" (typically 6-8) that represent 4-12 hours of training; 80 hours in total

- Sector specific**
 - FDA reporting
 - Food safety
- Fundamentals**
 - Safety basics
 - QA basics
- Cross-cutting**
 - Communications
 - Project management

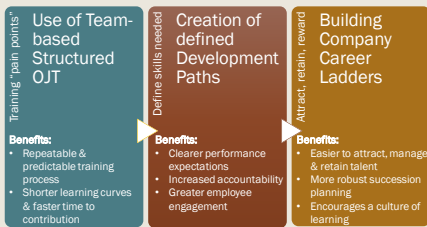
Employees can go to one or all classes, depending on skill gaps

There is no minimum number of employees per company, so small companies have access

Courses are competency based with applied projects

It is a pay as you go system, where training costs are shared among participating companies

OMEP Smart Talent



Knowledge and Skills Transfer Program (KSTP): Industry-RCC Partnership

- New employee training for Millwrights with electrician certification and programmable logic controller experience.
 - Structured mentoring process: Pair experienced employees (Mentor) with a high potential employees (Mentee); structured group and individual mentoring sessions to share practices; coaching from RCC
 - Mentees enrolled in 2 credit course: 1-1 workplace training with RCC providing additional training for basic skill gaps.
- Industry saw a clear ROI; recommendation to grow program

Additional Trending Solutions

- New and traditional applications of apprenticeships & guilds
- PEO's and staffing agencies providing competency-based training and certifications
- Cooperative employment arrangements (job sharing) for specialized positions
- Use of agile, on-demand staffing solutions (e.g., Toptal, HIRED)
- Technical knowledge in bit size chunks: Nano degrees (e.g., GreenFig University's digital marketing)

Examples of Other Promising Practices

- **Western MA Healthcare Consortium** (*occupational upskilling*)
- **Kentucky's Grant-In-Aid Program** to industry consortiums (*industry specific training*)
- **Man Power credential training** (*new to market and occupational upskilling*)
- **Oregon Story Board** (*pipeline of graduates*)
- **MEIRxRS Apprenticeships** for biosciences (*drug safety, regulatory affairs, clinical trials*)
- **CEWD Veteran's Training for Energy Careers** (*industry-specific retooling*)

BUILDING EFFECTIVE INDUSTRY CONSORTIUMS

A Consortium Approach to Training

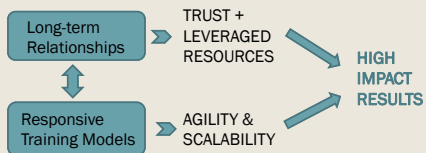
| Typical "Retail" Approach | Consortium "Wholesale" Approach |
|---|---|
| Companies do their own training or work 1-1 with a training institution | Companies collaborative on non-proprietary training; |
| Each program has their own curriculum and advisory councils | Programs utilize a common set of skill competencies and shared advisory council |
| Objective is to train/educate individuals | Objective is to train/educate AND build capacity |
| Time and cost repeated program by program | Time reduced and cost shared while increasing the value and ROI |

New Models of Talent Consortiums

Employers and training provider collaborations to develop models that can rapidly adjust to changing skill needs and measure impact

- Industry-led and supported
- Focused on models and building capacity
- Competency-based programming
- Agile and workplace delivery systems
- Develops a culture of learning along side skill development
- Shared costs and ability for smaller companies to participate
 - Shared incumbent worker and "finishing school" training programs
 - Shared apprenticeship/education coordinator

Effective Investment Lessons



Embedding Impact into Program Design



Do the benefits outweigh the costs?

Can the scale of learning be measured in the bottom line?

Can the application of skills be measured in job performance?

Can we demonstrate the job competencies learned in the training/ educational program?

Measurable Impact

BENEFITS TO EMPLOYERS

- Repeatable training models with measurable quality and/or revenue improvements
- Reduces time to fill open vacancies
- Decreases ramp-up time to productivity
- Improves the ROI in capital investments

BENEFITS TO WORKERS

- Increased wages
- Increased job satisfaction
- Increased career/upward mobility options

Measurable Impact

BENEFITS TO EDUCATION

- Connects cutting edge skills to education
 - *Attracts students and faculty*
- Refines what core skills are most critical and provides standardization for curriculum that is directly related to employability skills
 - *Help reduce development time*
 - *Enhances the quality and relevance*
- Identifies and re-risks likely demand

A Consortium Agenda

1. **Keeping the Current Workforce Competitive:** Establish industry-led incumbent worker training efforts
2. **Enhancing the Employability of New Workers:** Create active regional alliances for education, training and advocacy
3. **Ensuring Capacity and Support for Ongoing Training:** Push for state policies that promote talent development

Working with Education and Workforce Organizations

Go beyond "meetings"

- Be engaged in state and regional workforce boards and policies; push for incumbent worker programs and high utilization of training \$
- Be proactive advisors for education curriculum; Deploy RAMP strategy and work to push competency standards and applied/employability skills
- Engage in mentoring, internships, and public awareness campaigns
 - Use consortium to help small companies benefit

"If you aren't part of the solution, don't complain"

Public Sector Role

| Common State Level Activities | Oregon |
|--|---------------|
| STEM/CTE efforts and funding | YES |
| Formal state-level incumbent worker training strategy | NO |
| State consortium grants and training incentives for companies | NO |
| Regional funds to develop industry training collaboratives | Yes (limited) |
| Talent as an integral part of economic & industry sector efforts | NO |

Public Policies to Support Ongoing Training

Income tax credit program to encourage skill upgrades. (Typically \$1,250-2,000 per employee focused on small & medium businesses in key industries)

- **An array of states offer tax credits over and above federal credits.**
 - Rhode Island's Job Training Tax Credit and Apprenticeship Tax Credit programs
 - Kentucky's Skills Training Investment Credit
 - New York's Employee Training Incentive Program (E-TIP) for employee training and internships
 - Georgia's Retraining Tax Credit
 - Wisconsin's On-The-Job Training Initiative
 - Washington's Customized Employment Training Program

The Bottom Line

- Talent is about skills and applied knowledge
- Regions that can build agile training capacity will move ahead
- Incumbent worker training is a necessity and has a growing ROI
- Industry consortium models offer immediate and long-term benefits
- Oregon's public policies and funding to support talent development is anemic and needs modification
- Utilizing regional workforce investments to catalyze capacity-building models will pay off

THANK YOU!
