

Meeting the Needs to Come

Report on Findings and Recommendations | June 27, 2014 |
Winston-Salem, North Carolina

A Regional Roundtable on Additive, Disruptive Advanced Manufacturing Technology & Skills Development

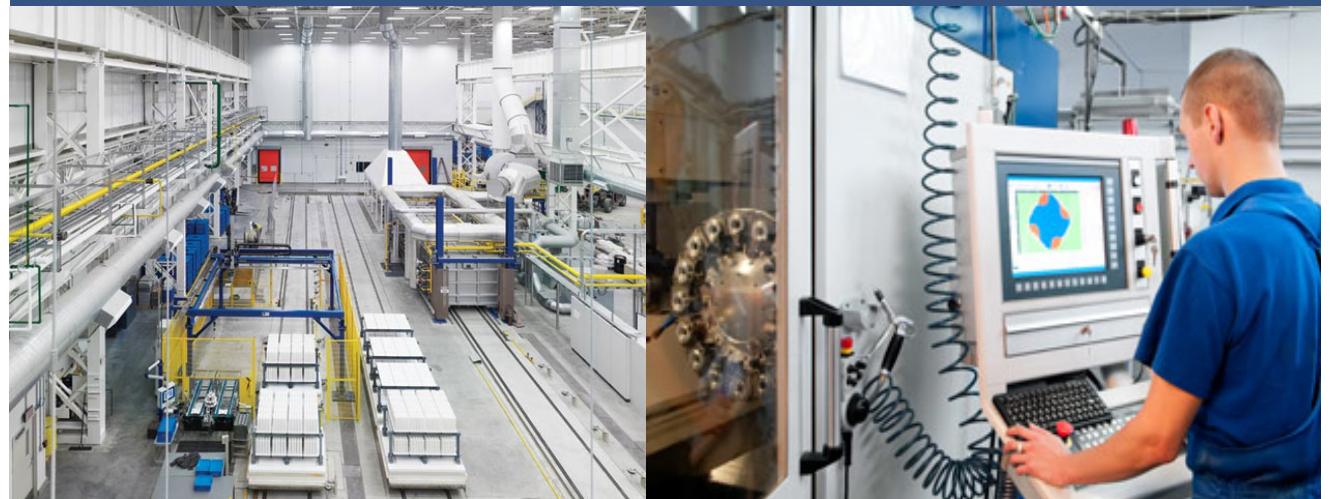


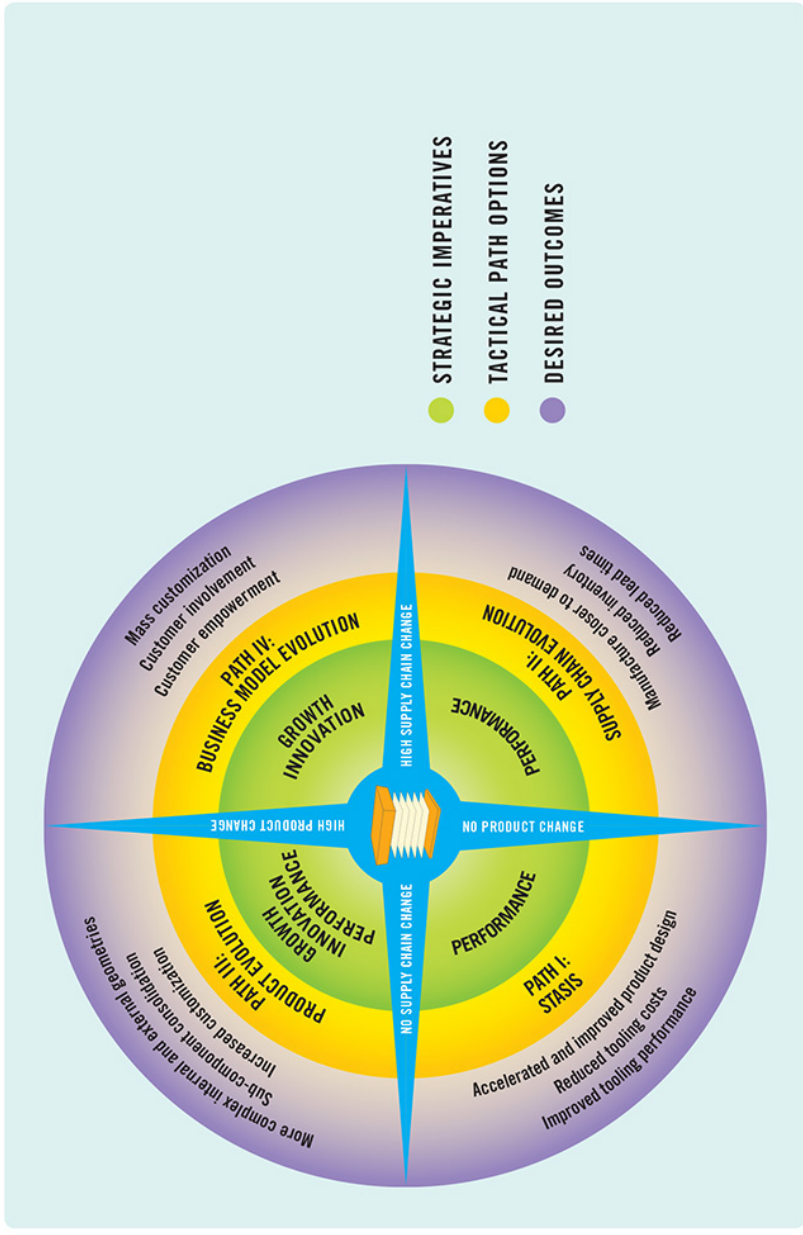
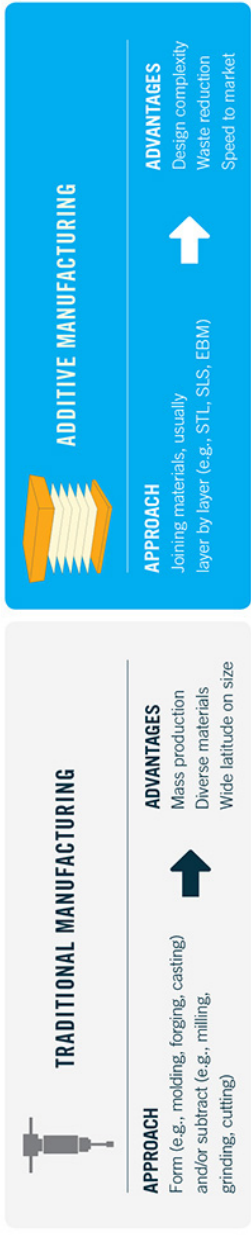
Table of Contents:

Overview of Agenda	page 4
About the Piedmont Triad	page 5
Participant & Staff List	page 6
Executive Summary	page 7
Findings of Roundtable	page 8
Recommendations	page 9
Establishing A Baseline	page 10
Agenda: Morning Sessions	page 11
Session Highlights: Technology & Industry	page 12
Role of Information Tech/Software	page 13
Session Highlight: Skills Development	page 14-16
Addressing THE Hurdle in Manufacturing	page 17
Roundtable Breakout Session Materials	page 18
Implementation Steps & Road Map	page 19
Further Reading and Follow-up	page 20


Manufacturing From A Different Perspective?

3D OPPORTUNITY ADDITIVE MANUFACTURING PATHS TO PERFORMANCE, INNOVATION, AND GROWTH


Additive manufacturing—popularly known as **3D printing**—is a set of innovative technologies that offers the potential to transform manufacturing over the next decade. Understanding how AM technologies can complement traditional manufacturing processes can help businesses craft strategies to improve performance, drive innovation, and speed growth.




Companies in the below industries and others are using AM technologies to create new products, reengineer how existing products are made, and refine how products move through supply chains.



AEROSPACE



AUTOMOTIVE



CONSUMER PRODUCTS



HEALTH CARE



Overview of Roundtable Objectives & Agenda:



- Establish a baseline of understanding among various interests in the Piedmont Triad region on the current and future state of manufacturing, impacted by the acceleration of additive and disruptive technologies, systems, and end-uses;
- Identify gaps, limitations, and barriers that – once addressed – will improve collaboration among these interests, leading to a more responsive, effective, and efficient skills development for the region’s sectors and growth opportunities;
- Learn from successful best practices, principals, and benchmarked regional strategies so as to adopt and adapt similar tactics and performance for the Piedmont Triad manufacturing community;
- Form an initial set of recommendations and a framework for action to ensure discussion, ideas, and employer interest progresses from talk to implementation.

AGENDA

Regional Roundtable for Talent Development for Additive and Disruptive Manufacturing June 27, 2014

Location: Richard Childress Racing • 425 Industrial Drive • Welcome, NC 27374

7:30am – 8:00am	Registration & Breakfast
8:00am – 8:30am	Welcome and Introductions
8:30am – 8:45am	Objectives and Agenda
8:45am- 9:45am	Keynote Kickoff Presentations & Tech Showcase
9:45am – 10:00am	Participant Polling: Priorities
10:00am – 10:45am	Panel Discussion: Sector Landscape of Current and Emerging Technologies
10:45am-11:00am	Participant Polling: Goals
11:00am-11:45am	Panel Discussion: Talent, Skills and Workforce Strategies
11:45am-Noon	Participant Polling: Critical Objectives
Noon – 1:30pm	Lunch and Keynote Speaker
1:30pm – 1:45pm	Breakout Description and Assignments
1:45pm – 2:15pm	Assignment One: Future Plans & Required Outcomes
2:15pm – 2:45pm	Assignment Two: Leadership, Structure and Performance/ Results Metrics
2:45pm-3:15pm	Reporting Out
3:15pm-3:30pm	Next Steps
3:30pm	Adjourn
3:30pm-4:00pm	Optional Tour of RCR Facility

“Participant Polling” is snapshot polling through 5-7 questions, with real-time response and calculation, clarifying and stimulating insights and ideas.

About the Piedmont Triad: Manufacturing Capacity and Capabilities



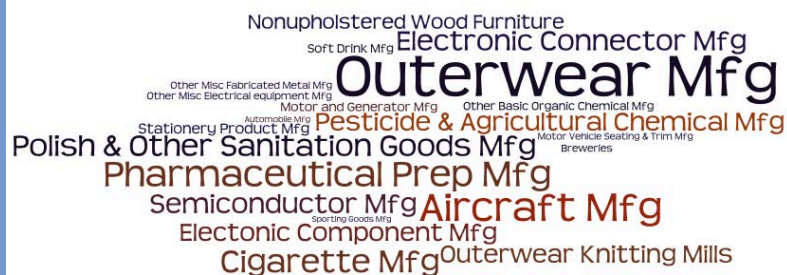
- The Piedmont Triad region has a historical manufacturing talent base in textiles, tobacco, and transportation with many skills that are applicable to the emergence of newer sectors, including avionics, pharmaceuticals, and next generation materials.

- Through fifteen community colleges, technical schools, and four-year institutions in the

region, the Piedmont Triad is well positioned to engage with employers, supply chains, technology firms, innovators and entrepreneurs in addressing the immediate and sustainable future of manufacturing talent demand

- Currently, there are thousands of individuals employed in manufacturing, with salaries above the average annual wage.
- Based on a spot-assessment of active job postings in the region (as compared to other North Carolina and national manufacturing locations, the following graphics define who is looking and what are skills in demand.

What Manufacturing Industries are Hiring?



Winston-Salem-Greensboro

What Hard Skills are in Demand?



Winston-Salem-Greensboro

Participants and Staff:

Fred Adkins	Guerilla RF	Vance Lanier	Deere-Hitachi
Beth Agnello	Forsyth Technical Community College	Brett Ladetto	Volvo Trucks North America
Phyllis Alderman	Forsyth Technical Community College	Elbert Lassiter	Randolph Community College
Michael Ayers	Forsyth Technical Community College	Michael Locke	Herbalife Manufacturing, LLC.
Tom Baker	Wieland Copper Products, LLC.	Michael Massoglia	Forsyth Technical Community College
Jessica Beaver	Targacept, Inc.	Jennifer McNelly	The Manufacturing Institute
Amogh Bhonde	Siemens Energy, Inc.	Bart Meroney	US Dept. of Commerce, Intl. Trade Admin.
Todd Bishop	Forsyth Technical Community College	Matt Meyer	NC Community College System
Kip Blakely	TIMCO Aviation Services	Michael Miller	Surry Community College
Rochelle Blaustein	Blaustein Consulting	Dawn Mitchell	Forsyth Technical Community College
Jaimie Brown	Forsyth Technical Community College	Alan Murdock	Forsyth Technical Community College
Wanda Cannady	JobsCorps	Martha Murphy	Reuben Rink
Dr. Pam Carpenter	NC State University NMII	Rick Powell	PEMMCO Manufacturing
Celeste Carter	National Science Foundation	David Pritchett	Guilford Technical Community College
Matthew Carter	Cook Medical, Inc.	Dan Quatrone	Alamance Community College
Doris Carver	Peidmont Commnuity College	Jason Randall	Surry Community College
Tamisha Clark	Cook Medical, Inc.	Les Range	US Employment & Training Admin.
Laura Coffee	Rockingham Community College	G. Nagesh Rao	US Small Business Administration
Camylle Coley	Small Business Programs Dept.of Defense	Dr. Mary Rittling	Davidson County Community College
Reid Conrad	Commerciality	Heather Robinson	Caterpillar, Inc.
Jennifer Coulombe	Forsyth Technical Community College	Eric Roe	Polk State Corporate College, Florida
Dan DeMaioNewton	Empyra	Suzanne Rohrbaugh	Rockingham Community College
Mike Fenley	Office of Senator Richard Burr	Adam Self	Alamance Community College
Mike Fogleman	Deere-Hitachi	Richard Seline	Regionnovate
Wendy Walker Fox	Guilford Technical Community College	Wally Shearin	Alamance Community College
Dr. Algie Gatewood	Alamance Community College	Mark Smith	Ingersoll Rand
Dr. Gary Green	Forsyth Technical Community College	Doug Speight	Cathedral Innovation Group
Randy Gunter	Montgomery Community College	Perry Stephens	Duke Energy
Althea Hairston	Piedmont Triad Regional Council	Eric Surmann	Caterpillar, Inc.
Nancy Hawley	Reynolds American	Mamie Sutphin	Forsyth Technical Community College
Rob Hinshaw	Forsyth Technical Community College	Tony Turner	Guilford Technical Community College
Rodney Jackson	Davidson County Community College	Ben Obinero Uwakweh	NC A&T University
Crystal Jester	Forsyth Technical Community College	Penny Whiteheart	Piedmont Triad Partnership
Leonard Kiser	Forsyth Technical Community College	Conley Winebarger	Forsyth Technical Community College
Craig Lamb	Rowan-Cabarrus Community College	Margaret Winslow,	Office of Senator Kay Hagan
Sherri Kong	Forsyth Technical Community College	Jeannie Woody	Davidson County Community College

“Yes, we are in the NASCAR business...but each day and each race are driven by the advances in technology and the manufacturing process...”



On June 27, 2014 over seventy-five representatives from national, state, and regional manufacturing interests gathered at the Richard Childress Racing Headquarters to explore and frame the challenges, opportunities, and required actions in response to the constantly changing environment caused by additive and disruptive technologies.

No better setting demonstrates the “future of manufacturing” than Richard Childress Racing - where engineering, design, operations, track conditions, and driver interaction are brought together into a unified technology strategy. Materials, construction, data in and out of the car, and a whole range of sophisticated sensors, performance monitoring, and electronics – NASCAR joins the likes of Siemens, Caterpillar, GE, Volvo, Cook Medical, and thousands of other industry examples leading in the next generation of America’s manufacturing renaissance.

Executive Summary of Findings & Recommendations

Key to having a dialogue on the current and future of sector competitiveness through advanced manufacturing was the need to find a baseline understanding of what defines “manufacturing.” Similar to debates in the 1980s about “technology versus high technology” – the Regional Roundtable on Additive, Disruptive Technologies in Advanced Manufacturing and Skills Development participants agreed at the outset on a common perspective.

All of manufacturing is now permanently driven by advances in a broad range of technologies – 3D printing, data analytics, lighter and stronger materials to name a few – as well as by the mindset for manufacturing as an exciting, entrepreneurial, innovative economic and employment opportunity.

Findings:

- Industrial design roles, competencies, and talent development are becoming very critical to product manufacturing – and not just an ancillary part of the process as in the past;
- New technologies allow testing and evaluation to ‘fail faster, fail cheaper’ – and thereby accelerate products into the marketplace with more resilience;
- Several existing challenges in skills and workforce strategies remain regardless by additive and disruptive technologies: the need to be more creative and innovative in job descriptions and postings, forming highly cross functional teams with multiple levels of expertise (blue-collar to PhD), and an even stronger message about unique opportunities in 21st manufacturing for a new generation of youth and students;
- To avoid the so-called “Green Tech” syndrome – thousands of job-training initiatives for what amounted to little or no real positions – recognize that there are no “additive manufacturing” jobs – there are technical and technology oriented skills, competencies, and positions;
- The exciting scenarios for manufacturing must be based on practical application and must include

Additive manufacturing could reduce energy use by **50 percent** and reduces material costs by up to **90 percent** compared to traditional manufacturing.



inventors, innovators, entrepreneurs along side the traditional engineering and operations leadership to obtain the possibilities and promise;

- Place, location, geography of manufacturing jobs continues to challenge the relevancy of industry, sector clusters – given the ability to deploy and distribute various aspects of the manufacturing process through the increasing use of technology;
- It’s not China! Overwhelmingly participants in the Roundtable identified Germany and the USA as leaders in the transformation of manufacturing - with Korea, Japan, and Canada discussed as other countries with strong manufacturing technology creation and use;
- The process development of “parts” – replacements, updates, and collaboration with newly identified partners for generating alternative solutions – is already changing the vendor-supplier chains in significant ways including Tier One selection of suppliers based on their adoption of additive, disruptive technologies over competitors, laggards;
- Impacts are NOT incremental – moving from manual to laser welding reduce certain project time from 2 hours to 20 minutes, waste scrap from 25% to 1%.

Recommendations:

Training & Skills Development

- Identify pilot or demonstration projects for on-site, just-in-time training and certification in the most challenging areas that manufacturers are defining as “hardest to fill” or “highest growth potential;”
- Form a demand-driven verification model on specific positions so as to avoid the “Green Tech” syndrome of over supply in unnecessary certifications, programs;
- Explore a licensing arrangement or strategic alliance with the Florida’s Manufacturing Talent Development Institute as well as the other best practices to shape a Piedmont Triad model for sustainable education, training, and certification innovation;
- Partner with information, digital arts, software, analytics, and sensor-monitoring firms, expertise, and education programs to align with the “Internet of Everything” and the value of data in the future of manufacturing; and
- Conduct monthly or quarterly ‘classes’ for human resource, hiring, and employment managers or service providers to challenge and transform job descriptions, posting, and overall employment communications strategies – thereby better defining ‘what is manufacturing’ for an exciting, relevant, and more practical message

Regional Collaboration

- Launch a quarterly Regional Manufacturers’ Forum – a gathering of employers – large and small – to discuss, evaluate performance, and identify ongoing needs for skills, talent, and workforce development aligned with the findings from the Roundtable;
- Collaborate on a regional “Maker Incubator” by leveraging under utilized facilities, equipment, expertise, and most importantly market-driven project opportunities;
- Create a youth and student regional “Maker Movement” engagement strategy including manufacturing hackathons, challenges, competitions based on specific needs of employers – with prizes including cash, access to other resources, apprenticeships/internships, and course credit.

Branding & Marketing

- Create – in partnership with local traditional and social media, education programs, and industry – a broadly distributed and engaged branding and marketing initiative around the current and future realities of advanced, technology-based manufacturing. Focus significantly on a “Piedmont Triad Year of Manufacturing” campaign leveraging the above activities and measureable results; and
- Promote – through economic and technology-based development organizations – the importance of entrepreneurial, innovation inspired manufacturing that positions the Piedmont Triad on a national and global scale.

Establishing A Baseline for Discussion

Defining Manufacturing: participants debated several descriptions, phrases, and uses of words (“Advanced,” “Disruptive,” “Additive,” “Technology-Driven,”) that often seek to delineate historical, current and future manufacturing. Consensus was reached by agreeing on form, function, sector, and end-use:

1. **Manufactured Products – Volvo Trucks, Caterpillar Axles, Honda Aircraft**
2. **Distributed Processes – Amazon’s purchasing and inventory systems**
3. **Applied Principals – IDEO Design including end-use packaging**

Recent Manufacturing Institute Survey found:

67% using 3D printing
24.7% in near term
8% not considering

Over 2 ½ year time period,
3D printing revenues have
gone from \$0 to \$150 million
annually

Examples of the “Democratization” of Manufacturing

Based on the presentation and comments from Jennifer McNelly of the Manufacturing Institute, the recognition that manufacturing is increasingly becoming ‘democratized’ or more broadly open to every size, scale, and scope beyond just the Fortune 500. However, the walls per se are coming down around the Fortune 500 through their open-source innovation practices, engagement with entrepreneurs and inventors, and through strategies aligned with consumer and customer demand at the beginning of the process rather than as a feedback upon delivery of products and solutions. These include:

- Intel’s printing of semiconductor chips without silicon
- Boeing’s just-in-time parts for the \$3.4 billion aerospace, aviation maintenance and overhaul sector
- Cook Medical and Johnson & Johnson’s customized medical devices
- Nestlé’s “Food Replicator” – the Easy-Bake Oven of the 21st Century
- GE’s First Build Initiative “New World of Home Appliances”
- Production ‘Farms’ of 3D Printing and Massive Flash Production

Hundreds of other examples are emerging where manufacturing is no longer the traditional smokestack and factory floor of the 19th and 20th centuries. Customization, consumer and client early stage design input, and accelerated process of ‘concept to production in a day’ – these are transformative times! America’s return to manufacturing competitiveness is evident in the growth of jobs, scientific discoveries, technical patents, positive environmental sustainability measures, and company bottom-lines and balance sheets.

AGENDA OVERVIEW: MORNING SESSIONS



TECHNOLOGY SHOWCASE

- Amogh Bhonde (Siemens)
- Matthew Carter (Cook Medical)
- Mark McArdle (Childress Racing)

"... new technologies, methods, and processes are creating environments where it's okay to fail faster but more accurately, allowing us to rapidly adjust at less costs and reduced cycle times..."

INDUSTRY LANDSCAPE

- Penny Whiteheart (Piedmont Triad Partnership)
- Nagesh Rao (US Small Business Administration Entrepreneur In Residence)
- Brett Ladetto (Volvo Truck North American)
- Doug Speight (Cathedral Innovation Group/Oak Ridge National Lab)

"...entrepreneurs, inventors, and small businesses, coupled with some really cool industrial design, are transforming America and the future of manufacturing..."

SKILLS AND TALENT DEVELOPMENT

- Les Range (Regional Administration, US Employment & Training Administration),
- Dan DemaioNewton (Empyra),
- Dr. Eric Roe (Polk State Corporate College- Florida)

"...manufacturing needs an extreme hiring makeover – you just cannot recruit, interest, and engage recent graduates and new hires to manufacturing when we still make it look like the 1900's industrial age..."

Session Highlights: Opportunities for the Piedmont Triad

TECHNOLOGY SHOWCASE

Presentations and participants sparked several actions that could strengthen the broader application of technology in the region by convening and engaging employers around:

- **“Production Optimization Forums”** – How to Fail Fast and Maximize Value for Immediate Success
- **Hybrid Equipment Design and Demonstration Center** – combining traditional and additive applications (e.g. CNC + Metal Printing, Carbon Fiber Papers, Printed Electronics)
- **Lessons Learned Roundtables** – non competitive learning dialogues among regional manufacturers, plant managers, business and operations leadership

INDUSTRY LANDSCAPE

Panelists discussed a number of innovative, creative approaches responding to the needs of larger employers while increasing the interest, excitement and possibilities in the future of manufacturing for the Region:

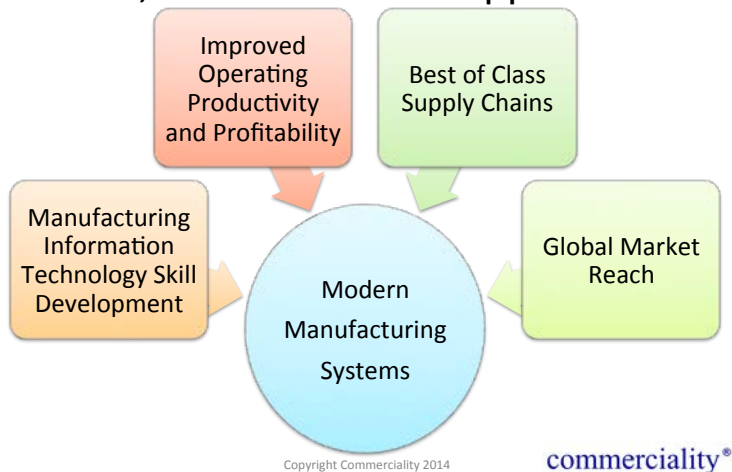
- **Rapid Prototyping and Fab-Lab Center** – re-engineering out of warranty, out of production parts as a focus for training, certification, apprenticeships in a market-driven, real-world setting
- **Maker Movement Partnerships** – channels to connect entrepreneurs, innovators with growth and mature company upstream market opportunities, demonstrations, and production breakthroughs
- **New Market Virtual Incubators, Agreements, Alliances** – align regional interests and capabilities with targeted global scenarios and exports, leading to advanced manufacturing ‘sister city’ economic development

The Role of Information, Software, & Data Analytics Competencies

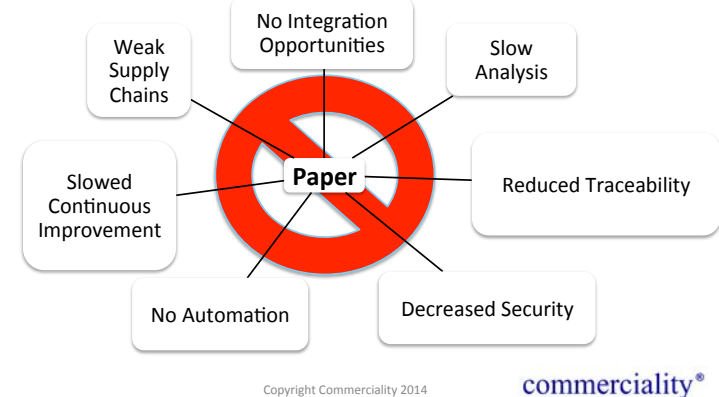
Roundtable participants identified that on-going requirement – and even increasing demand for trained, skilled workforce in information, software, and data analytics. The more advanced the technologies, the more required data exchange, analysis, and ability to translate into immediate use along the entire value chain of manufacturing.

An immediate barrier or limitation to the growth of small and medium size manufacturers is the reliance upon paper versus digital information tools. Smaller employers – less than 500 – are often challenged by limited resources and skilled workers to manage the significant volume of hourly and daily feeds of information.

Modern Manufacturing Will Create Better, Sustainable Job Opportunities



Paper Based Manufacturing Systems Impede Continuous Improvement, Productivity and Job Opportunities



Opportunities for Collaboration

The Piedmont Triad has existing institutional skills development in the information, software, and data analytics arena. There is a unique opportunity to create a regional program in advanced manufacturing IT for small and medium employers by introducing a new cadre of information curricula and training programs through collaborations with regional universities, IT and data firms, and software, business process entrepreneurs. The so-called “internet of everything” with sensors, electronics, and monitoring semiconductor chips will continue to produce data that must be managed, analyzed, and converted to action in processes.

Session Highlight: Skills & Talent Development

Existing skills, talent, and workforce 'systems' are furthered challenged by the extent to which technologies are applied in the design, development, and distribution of products, services, and support. Increasingly manufacturing is embracing a broad spectrum of skills. Students – future employees and those seeking recertification - require real-world settings with integrated equipment, information and data, and the latest generation of materials. Yet, reliance upon prior knowledge – the 'art of manufacturing' – cannot be lost and therefore apprenticeships remain critical as a bridge between so-called 'old school and new school' knowledge. Therefore, the future of manufacturing requires a new model for ensuring employers and employees are aligned and responsive to the pace by which skills are certified.

Alternative Certification: Relevance, Source, and Application

Industry Certifications: Industry certifications are credentials that are based on a third-party assessment, using standards that are set by industry. A certification is different from an education certificate because it is not dependent on a particular education program or curriculum. Whereas a certificate will usually indicate completion of a class or program of study, a certification is an assurance of competency. Certifications can be measured by an industry exam or by a practical performance of a skill (such as welding or machining) that is judged by an independent inspector. The Manufacturing Institute has endorsed industry certifications that are nationally portable, third-party validated, industry-supported, with data on results for manufacturers. The Skills Certification System consists of industry credentials from the following partners:

ACT	American Society for Quality
American Society of Transportation and Logistics	American Welding Society
Association for Operations Management	Fabricators & Manufacturers Association
International Fluid Power Society	International Society of Automation
Manufacturing Skill Standards Council	National Institute for Metalworking Skills
North American Die Casting Association	Packaging Machinery Manufacturers Institute
Society for Manufacturing Engineers	The Manufacturing Skills Institute

Therefore Regional Roundtable participants learned from the Manufacturing Institute, the US Department of Labor's Employment and Training Administration, the US Commerce Department as well as industry leaders that the future of manufacturing skills and talent development MUST be dynamic and beyond the traditional workforce system approach, and to include a robust independent but recognized certification process to swiftly respond to demands for technology-oriented employees to match requirements in an age of constantly changing and transformative manufacturing processes, operations, and product delivery.

New Model of Manufacturing: Continuum of Competencies and Roles

Panelists and participants discussed the depth and breadth of new competencies that are emerging faster than Standard Occupation Codes can keep up with and track the multitude of roles in American manufacturing. Best practices and programs from other regions are already implementing skills and talent development initiatives in these specialties, cross-walked against certification and applied training that are often engineering focused but may not require a four-year engineering degree.

- **Rendering and Digital Modeling**
- **Animation & Visualization**
- **Human-Machine Interface & Interactive Engagement**
- **Digitally Engineered Testing, Evaluation, Demonstration**
- **Failure Rated QA/QC**
- **Validation and Verification by Multiple Distributed End-Users (Consumers, Customers, Value Chain)**
- **Production Line Systems, Data, and Sensor-Connected Optimization “Intelligence”**
- **Real-Time Operational Improvements of Value Chains’ Tools, Equipment, Production**



Reference: Dr. Eric Roe, Polk State Corporate College, Manufacturing Talent Development Institute, State of Florida.

Traditional and Non-Traditional Career Paths in Manufacturing

Career Pathways

Effective career pathways rely on coordination across education and training programs in order to offer a clear sequence of industry-relevant coursework and credentials to job seekers. Today's education and training programs include online and in-person opportunities.



After being in the workforce, a person may choose to go back for more credentials to make an upward or lateral career move.



Participants were presented a number of skills, talent and workforce development 'best practices' being utilized around the country – mainly stimulated by federal funding and industry sector collaborations. Federal speakers and discussants identified several national and regional initiatives that the White House have and will continue to fund. From the Department of Labor to the Department of Commerce - along with Energy, Defense, even Health and Human Services – the importance of manufacturing has received significant attention. Yet, both the Administration and Congress understand the nature of transformation underway through technology and innovation. Possible Workforce Investment Act (WIA) Reform and other changes being considered by both sides of the political spectrum suggest that policy is catching up to the accelerated pace of industry demand for flexible and dynamic talent.

Addressing THE Hurdle for the Future of Manufacturing:

Participants often returned throughout the Roundtable to a hurdle that remains a significant roadblock: the perception that manufacturing is not a viable option for employment, careers, and long-term job satisfaction. Based on surveys conducted by the National Manufacturing Institute, federal agencies, and corporate human resource organizations, less than 30% of current high school graduates view “manufacturing” as an immediate employment option. And yet, when describing the activities, the products, and uses and benefits from the current and future manufacturing settings, an overwhelming positive response emerges.

A number of recommendations – through general discussion and breakout sessions – for overcoming this hurdle include:

1. Incorporate middle and high school education with museum and exhibitions, regional competitions, and maker-fair after-school programs;
2. Conduct quarterly 8th, 9th and 10th grade manufacturing plant and facility tours tied to science, economic, history, and math courses, addressing “relevance” issues;
3. Launch a Regional Manufacturing Week or Year rather than only participating in the National Manufacturing Day initiative;
4. Form “Makers Clubs” for 8th-12th graders including competitions for summer manufacturing programs, senior-year scholarships for regional colleges, and hackathons around real-world manufacturing issues;
5. Create a regional youth and student manufacturing “roundtable” to meet consistently throughout the year with plant managers, industrial designers, and cutting edge entrepreneurs, inventors, innovators; and
6. Engage with local and regional media to craft a series of specialized articles, stories, and content around the positioning of manufacturing’s robust and innovative economic development impact.

“...the image, perception even branding of manufacturing remains stuck in the Industrial Age or caught up in the stories about Detroit’s challenges with the automobile sector...and the reality is that the future of manufacturing anything but what kids and parents are hearing..”

Roundtable Engagement: Breakout Sessions

Goal for Regional Framework: Identify a framework – the principles by which the region proactively defines the needs, expectations, and alignment of activities required for developing talent and skills in response to the pace and acceleration of new technologies being adopted by advanced manufacturing.

Questions:

1. In two years, what will the regional “operating model” be in response to a new manufacturing scenario? How would we describe the region to industry, entrepreneurs, inventors and end-users?
2. In one year, what will the training, skills development “model” look like? How should we be delivering skills development in light of additive, disruptive technologies?
3. What are 4-6 critical metrics, performance outcomes that MUST be considered for success?

Goal for Near-Term Road Map: Define specific action steps for implementing a framework into a new regional model. These are action steps that will be taken over the course of the next six months, leading to a regional strategy and region-wide summit.

Questions:

1. What are THE most critical skills, competencies, capabilities required for meeting the challenges and opportunities discussed today?
2. In six months, what will be the results from today’s discussion and initial planning? What are 2-3 specific actions necessary to address challenges, opportunities?
3. Who is missing from our conversation? Who are additional key players that should be involved in the planning, design, and leadership of a regional framework and road-map?

Framework for Implementation: Next Steps

At the conclusion of the Roundtable, conversations among participants began to shape four specific next steps that will collectively position the region and its manufacturing allies as a national and global competitive 'environment.' These next-step actions are designed to be highly inclusive of a broad set of stakeholders in the region – as the Piedmont Triad has done in the past.

- **Regional Road-Map:** a three-year strategic implementation of findings and recommendations from today's work;
- **Regional Strategy:** six months of collaborative planning for a new partnership on advanced manufacturing skills and industry growth;
- **Regional Summit:** a broad town-hall format gathering to engage business, economic development, education, civic, and other leaders in the design, progress, and impact of the road-map;
- **Regional Manufacturers Roundtable:** quarterly sessions between workforce, skills development and plant operations, managers, and operations/HR

Reading Materials and Related Roundtable Documents:

www.ForsythTech.edu/manufacturingroundtable