NCATC
National Coalition of Advanced Technology Centers
Celebrating 25 Years of Advanced Technology Expertise

NCATC News
Volume 14, no. 2
Spring 2013

From the Director ...

NCATC Friends and Colleagues,

NCATC is off to a great start after the first quarter of 2013.

2013 is a very special year for NCATC as it marks the organization's 25th year of improving economic and workforce development programs and services across the country through its network of advanced technology expertise. Over the years, NCATC membership has continued to grow to encompass many of the best and brightest innovative thinkers throughout higher education.

As an Affiliated Council, NCATC continues to work very closely with the American Association of Community Colleges (AACC). We continue to align our mission, goals, and outcomes around four of the seven recommendations of the 21st Century Commission's Report published in 2012. Be sure to visit us at the AACC Convention in San Francisco during April 2013 and at our 2013 National Events.

We are very lucky to have Ivy Tech Corporate College hosting the 2013 Summer Workshop in Terre Haute, IN on June 12-14, 2013. Coupled with business and industry, this workshop will continue to raise the bar on best practices in technician-focused workforce skills and training. Highlights include industry tours of Sony DADC, Advics, and CSN along with great sessions, exhibitors, and networking opportunities.

And, the NCATC 25th Anniversary Fall Conference will be in Panama City, FL hosted by Gulf Coast State College on October 9-11, 2013. You DO NOT want to miss this one—mark your calendars now!

NCATC boasts 25 Strategic Partners that you can learn more about under the Strategic Partners tab on the NCATC website. Please feel free to send suggestions to our operations manager, Holly Rolf, for improvements in our website and social media sites, as we continue to evolve our communications and value-added services for all NCATC members.

We look forward to continuing to serve you as well as seeing you at our two **25th Anniversary** events in June and October 2013.

Craig

J. Craig McAtee
NCATC Executive Director ◆

St. Louis Community College: A Value Added Partner to Aerospace Industry

St. Louis Community College has a long legacy of serving the needs of the aerospace industry. For over 20 years, the college has partnered with aerospace and aviation companies, large and small, to deliver cutting edge workforce programs. In recent years, this partnership has resulted in over 200 graduates and 175 students obtaining employment as aerospace technicians.

Despite losses in manufacturing jobs over the past decade, St. Louis is home to 31 aerospace and parts manufacturing firms employing over 14,000 workers. These include the headquarters for Boeing's Defense, Space and Security unit, DRS Sustainment Systems, GKN Aerospace, and many smaller suppliers (US Bureau of Labor Statistics). The aircraft assembly workforce is projected to grow by 8.6 percent over the next decade with significant job vacancies due to retirement (Missouri Economic Research and Information Center).

Boeing fuels much of this demand. In recent years, leaders at the company expressed serious concerns about the lack of skilled assembly technicians in the pipeline to replace large numbers of baby boomers nearing retirement. St. Louis Community College's Workforce Solutions Group and the Emerson Center for Engineering & Manufacturing formed a joint venture with Boeing (with assistance from the State of Missouri Division of Workforce Development), to develop and provide a Pre-employment Training Program to create an ongoing pool of employee candidates for Boeing.

The award-winning program was designed and developed by staff from Boeing and SLCC, based upon curriculum provided by Boeing including hands-on performance demonstration projects. Each session of the program provides 408 hours of instruction (offered over 10 weeks) in aircraft assembly techniques, work instructions, teamwork, interview skills, and resume writing. Currently there is no cost to students to attend this training. The costs are covered by a combination of resources provided by Boeing, St. Louis Community College, and the Missouri Division of Workforce Development.

Twenty-three sessions have been completed since November 2007 with 206 students completing training and 175 being placed into employment at Boeing and GKN Aerospace reflecting an 85% job placement rate**.** Two additional sessions are scheduled for this spring. The program was recently cited as a model to grow the community college system in India by Tara

See "St. Louis CC," page 4

Plot Your Own Course with Northland's Imagery Analysis Program

Imagine the possibility of getting a free college education in a program that is the first of its kind in America. Northland Community & Technical College is pleased to announce the addition of just that. Northland's newest program, Imagery Analysis (IA), started its first semester this spring.

The IA program is located at Northland's Thief River Falls, Minnesota, campus. The program is funded through a Department of Labor TAACCCT grant which covers the cost of student tuition for the life of the grant. "The Imagery Analysis program will prepare students to enter an emerging field. Because Northland's students will be among the first in the nation so trained, they will be prepared to be the pioneers and leaders as this industry opens," said Northland president Dr. Anne Temte.

The innovative IA program provides 30 credits over two semesters, preparing students to become skilled Imagery Analysts for the industry's entry-level positions. Students learn how to interpret and distinguish imagery from a variety of sources and sensors that are being used in the field today. With the increased use of unmanned aerial vehicles for surveillance, the field is overwhelmed with data and lacks adequate numbers of professionals to interpret it. Northland Aerospace saw the need for skilled imagery analysts and developed the IA program to prepare students to fill this emerging workforce gap.

Students receive hands-on training from industry experts using the newest technology in simulated workplace environments and Full Motion Video UAS derived imagery and other sensor data in ultra-modern labs. Students are taught how to identify key features and obtain precise measurements within an area of interest, integrate and interpret maps and charts as they relate to imagery, and develop imagery information dissemination skills. Students will acquire a variety of skills ranging from Unmanned Aerial Systems (UAS) general knowledge to a precise depiction of the imagery objective. "Northland has built a platform from which imagery analysis curriculum can be articulated. One would be perplexed to find a comparable certificate program at this academic level," added Sterling Williams, Imagery Analysis program manager.

An imagery analyst should be able to be a strong communicator (both verbal and nonverbal), an active learner, critical thinker, attentive to details, and proficient on a computer. An imagery analyst also should be able to work independently, use innovation as it relates to the workplace, be adaptable and flexible, be persistent, and have excellent self-control.

As an imagery analyst, there are four core functions students learn: 1) interacting with technology; namely computers, full motion video, and still imagery 2) gathering and reporting vital information through observation and analysis from a variety of sources 3) processing information by compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data 4) communicating verbally and nonverbally to supervisors, peers, and subordinates through all communication channels.

Program graduates are expected to command salaries averaging $69,000 depending on company size, location, industry and applicant's experience. To learn more about the program visit www.northlandaerospace.com or contact **Jim Retka** at James.Retka@northlandcollege.edu. ◆

Strategic Partner Alliance Update

NCATC's Strategic Partner Alliance (SPA) members continue to add value and provide essential resources to member colleges. Many of these organizations have been members of the SPA team for many years and have worked with NCATC member colleges to support the education and training process. Websites of SPA members can be found on the NCATC website by selecting the Strategic Partners tab. Several SPA members offer discounts to NCATC member colleges.

NCATC is proud to recognize organizations that have become SPA members during the past year:

- ETA International
- Fanuc Robotics
- IBM Power Systems
- NIDA Corporation
- Ron Williams
- Solidworks/The STEM Academy
- SpaceTec

Visit our SPA members at the upcoming Summer Workshop and 25th Anniversary Fall Conference.

Updates and Reminders

Welcome to our New Members:
San Jacinto College
Fabricators & Manufacturers Association, International

Reminder: Fall Conference presentation proposals are **due May 31**. Apply online at www.ncatc.org.

Congratulations to Dr. Annette Parker, former NCATC Board Member who was recently named president of South Central College in Minnesota.

Work and Learn Program Replicated through Colleges

Every ATC hears two things regularly from their business partners: Students don't have the work ethic they need, and there is a large retirement bubble coming due to the baby boomer generation.

To address those issues Bluegrass Community & Technical College (BCTC) developed a "Work and Learn" internship program with their local partner, Toyota Motor Manufacturing Kentucky (TMMK) as part of the AMTEC (Automotive Manufacturing Technical Education Collaborative) project. TMMK identified a lack of multi-skilled maintenance technicians as a serious need not only because of the baby boomer issue, but because the plant is 26 years old and a large number of team members were hired when the plant opened. Working together the college and TMMK developed an internship program in which students work Monday, Thursday, and Friday in the plant and go to school all day Tuesday and Wednesday.

To address the work ethic or soft skill deficiency, presentation and team work skills have been integrated into the curriculum. In addition, the students are able to earn raises every 18 weeks based on four factors: Work performance, work attendance, academic performance, and class attendance. Classes relating directly to the Toyota culture and production system are also included. Students are expected to present to college visitors and give tours of the Advanced Manufacturing Center to hone their social skills. Each piece of the program is meant to reinforce the work ethic and soft skills that many students lack.

Upon graduation, each student is assessed with the same instrument that is used when hiring experienced skilled maintenance team members. Five areas are assessed and to date the graduating students have scored higher than proficient in all five areas. This average is higher than the results of experienced skilled applicants. TMMK and BCTC attribute this to the careful recruitment of students, the high performance standards set for the students, the deliberate design of the curriculum, and the ability

for students to apply technical concepts in a production environment immediately.

Because of its success, the program has been replicated in other Toyota locations with AMTEC partner colleges. Bridgemont Community & Technical College (WV), Vincennes University (IN), and the Alamo College District (TX) are all working with their respective Toyota facilities to deliver the program, known as the Advanced Maintenance Technician program. A key to program replication is the ability for partner colleges to exchange information about improving the program and addressing challenges. Hopefully what is learned through this program can be integrated into other programs to address those same issues we hear from every business, and make us more successful in providing a workforce that is capable of hitting the ground running their first day on the job.

For complete program details, contact **Mark Manuel** at mark.manuel@kctcs.edu. ◆

VIEWPOINT

From Rapid Prototyping to a Manufacturing Revolution: 3D Printing Is Coming of Age

Dr. Paul Pierpoint, Vice President for Community Education, Northampton Community College

Airbus is planning to print out a wing for an airliner in the near future. They are not planning to print out a plan for the wing or a picture of the wing or even a 3D prototype. They are going to print the actual wing itself—a wing that will someday be part of an aircraft flying at 500 miles per hour at 40,000 feet altitude.

This is just one amazing example of what The Economist magazine calls The Third Industrial Revolution—the Digitization of Manufacturing. The first industrial revolution harnessed steam power and mechanization and defined the Nineteenth Century. The second industrial revolution combined standardization and mass production to define the Twentieth Century. The third industrial revolution is already defining the Twenty-First Century through the process of additive manufacturing—especially 3D printers.

3D printers and other additive technologies like stereo lithography have been in use in product prototype development for some time now. They have had a profound impact on new product development because of their ability to create rapid prototypes allowing engineers to develop an idea in the morning, design it in the afternoon, and create and test it before going home for dinner. But in recent years new materials and new printing technology have allowed companies to use these amazing machines as production units. Today it is possible to print with high-grade titanium alloys, glass, plastics, concrete and ceramics. New printable manufacturing materials are being created almost daily.

The results can be stunning. Paul Tate reports that one university in the UK recently built the first printed

See "3D Printing," page 4

• *"St. Louis CC," continued from page 1* •

Sonenshine, the Under Secretary for Public Diplomacy and Public Affairs for India's Ministry of Human Resource Development.

In partnership with Boeing, GKN Aerospace and other smaller aerospace companies, the college has managed to leverage the success of this program into a full-blown Aerospace Institute through a USDOL Community Based Job Training grant. The institute offers courses in Aerospace Fundamentals, Blueprint Reading, Metal Structures, Electrical and Mechanical Assembly and Installation, Torque Certification, and Composites Fabrication and Assembly. All are courses that meet the needs of the region's aerospace companies.

The institute is currently working with St. Louis' Gateway STEM High School and local aviation companies to develop a dual enrollment program for an FAA-certified Airframe and Power Plant (A&P) program. The partnership will provide an affordable pathway for high school graduates to complete their licenses while providing a popular new offering to adult students. Currently, urban students travel out-of-state or to rural Missouri to obtain their A&P license.

The existing programs along with the new A&P program will ensure the college continues to build on its legacy as the premier provider of aerospace and aviation training in the St. Louis region.

For more information, please contact **Don Robison** at drobison@stlcc.edu. ◆

• *"3D Printing," continued from page 3* •

drone in just one week — from design to first flight. (Additive Manufacturing: Can It Bring Manufacturing Home? www.manufacturing-executive.com)

But speed of development and production is only one benefit of additive manufacturing. Because products are made by adding material instead of cutting material away, there is virtually no waste—a big advantage over cutting blocks of titanium, for example. Distribution costs can be virtually eliminated. A manufacturer can locate 3D printers wherever his markets are. Retooling costs also disappear — simply download the latest design software developed by the company's engineers and be ready in minutes to manufacture for the local markets.

Some even predict that in the not-too-distant future people will have 3D printers in their homes and, rather than have products shipped to them, will download design files and produce the products on their kitchen counters.

A few leader community colleges like Saddleback, Florence Darlington's SiMT, Portland, Cuyahoga, and Edmonds have been at the forefront of developing curriculum and promoting 3D manufacturing technology transfer. They are helping US companies recognize the value of this technology and assisting them with its implementation.

But overall US manufacturing is lagging much of the rest of the world in adopting Additive Manufacturing. The Department of Defense is especially interested in advancing Additive Manufacturing in the US. Through the National Center for Defense Manufacturing and Machining, DOD is funding the National Additive Manufacturing Innovation Institute (NAMII) to try to jumpstart the development and adoption of this technology across American industry. NAMII membership includes some of the nation's top research universities and a handful of community colleges poised to train the workforce to implement and use the technology this consortium will develop. If successful, NAMII will bring the Third Industrial Revolution to American companies and transform manufacturing.

NCATC needs to continue being a big part of this revolution. I believe that NCATC can and should continue fostering this latest Industrial Revolution in America. What is your college doing to help your region's manufacturers adopt this new technology? How can NCATC institutions be agents for technology transfer? We will need to do more than train the workforce because until more companies invest in the technology, there isn't a lot of need for training.

American manufacturing led the world in the Second Industrial Revolution. We need to get out in front of the Third Revolution. Everyone in manufacturing of almost any kind needs to become familiar with additive manufacturing or risk seeing their industry go the way of the steam loom and the Model T — world changers at one time but swept aside by the tides of change. We will serve our communities best if we can become agents of change and that is a challenge I believe we can meet. ◆

Summer Workshop

NCATC's Summer Workshop—"Partnerships for Progress," June 12-14—will be hosted by the Ivy Tech Corporate College on the campus of Ivy Tech Community College – Wabash Valley in Terre Haute, IN. Keynote speakers and panelists will represent major regional corporations Clabber Girl, Bemis Corporation, and Taghleef Industries. Concurrent sessions will feature Ivy Tech faculty and Corporate College team members.

Attendees will tour Ivy Tech's Center for Workforce Development and Sony DADC or CSN, LLC (the nation's most advanced independent steel processing facility) and Advics. Your registration fee includes meals, materials, and transportation between the hotel and workshop events. Ivy Tech will provide complimentary transportation between the Indianapolis airport and the Holiday Inn Terre Haute the afternoons of June 12 and 14.

The conference brochure, coming to your mailbox soon, is available at www.ncatc.org. Take advantage of the **Early Bird registration discount before May 1**!