

# ATEA

American Technical Education Association

# Journal

ATEA Board of Trustees 2019 &  
National Conference



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## ATEA JOURNAL

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### Publications Guidelines

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Cinthia Npheed Young, Graphic Design Student at Dunwoody College of Technology

Cover photo: ATEA Board of Trustees and Group photos. Continues on page 27.

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The American Technical Education Association (ATEA) was founded in 1928 and incorporated as a non-profit professional education association in 1960. In 1973 the national headquarters was moved from Delmar, New York to Wahpeton, North Dakota. In 2012 ATEA relocated to the Dunwoody College of Technology, Minneapolis, MN. ATEA is the only autonomous and non-affiliated international association devoted solely to the purposes of postsecondary technical education. ATEA is the leading association for the postsecondary technical educator with emphasis on professional development. Educators and individuals from business and industry come together at conferences to discuss the latest trends and developments in technology. The organization is dedicated to excellence in the quality of postsecondary technical education with emphasis on practical teaching ideas and best practices.

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Mr. Cliff Wightman, President, Tennessee College of Applied Technology, Crossville, TN

Dr. Lin Zhou, President, Bates Technical College, Tacoma, WA

Ms. Dana Wolff, President of Regional Council Presidents, President of Region 5, Instructor of Financial Services, Southeast Tech, Sioux Falls, South Dakota

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President Sussex County Community College, Newton, NJ

Region 2: Cliff Wightman  
Tennessee College of Applied Technology, Crossville, Tennessee.

Region 5: Dana Wolff  
Southeast Technical Institute, Sioux Falls SD

Region 6: Marie Price  
Director for Workforce Training and Community Education, North Idaho

## American Technical Education Association

### Values:

To communicate the role and importance of technical education

To share best practice

To build professional relationships

To identify trends that effect technical education

### Mission

The organization is dedicated to excellence in quality of postsecondary technical education focusing on practical teaching ideas and best practices. ATEA recognizes outstanding performance and leadership and provides a network for career connectivity.





**Sandra Gehlen Krebsbach, Ph.D.**  
Executive Director of the American  
Technical Education Association

## Executive Director and Managing Editor

The 2019 national conference is the time of change of leadership at the President's level. Thank you to Dr. Bryan Albrecht for your outstanding and inspiring leadership and welcome to Sue Smith as the new ATEA President, 2019-2021.

The ATEA Journal cover captures the comradery of the ATEA Board as they were about to be convened for their spring meeting in Indianapolis held in conjunction with the national conference. The other cover photo is a group picture. We appreciate their service and their commitment to technical education and ATEA.

At their meeting, the Board authorized the ATEA Business Council. The Business Council will start with 8-10 members, one from each of the 6 regions. Membership is \$5000 and the charter is covered on page 11.

The Board of Trustees authorized the Dr. Harry Bowman Outstanding Board of Trustee Award. The criteria based on the attributes of Dr. Bowman's service is respectfully articulated at the

national conference by Trustees Dana Wolff and Dr. James Sherrard on pages 12-13. The first award will be at the 2020 national conference.

ATEA 3 D Futures Competition was held this spring. Thank you to Dassault Systemes for the prizes. The winners were from Chippewa Valley Technical College page 18-19.

There are reports from the national conference "Racing to Industry 4.0" hosted by Ivy Tech Community College in Indianapolis, April 3-5. Thank you Ivy Tech Community College, Sue Smith for chairing. Vearl Turnpaugh for chairing the trade show and Cathy Cutshall for coordinating the conference. The keynote by Dr. Randy Swearer, Autodesk VP for Learning Futures, is summarized on pages 20. His message is organizations will have to know how to learn to move with the changes and it will be coworkers who do the teaching and mentoring. Another "co" will be cobots, humans and robots working and learning together to meet the needs of the 2050 population of 10 billion many in the middle class.

Mr. Paul Perkins' keynote is on page 21. Paul's keynote received the highest rating for value in delivering on Industry 4.0.

This year the ATEA National Awards were a "South Dakota Sweep." Western Dakota Technical Institute took student, teacher and business, congratulations to Dr. Ann Bolman President. Congratulations to Lake Area Technical College for your outstanding program, Electronics and Robotics Technology. Award winners' and finalists photos are on pages 14-17.

The Jean Koch Award for a life time of achievement in technical education was awarded to James King. Well deserved, page 10.

We are excited to announce the national conference 2020 will be in New Jersey, co-chaired by Dr. Aaron Fichtner, President of New Jersey County College Council and Dr. Jon Connolly, President of Sussex County College. The fall Region 5 2019 conference is hosted by Dunwoody College of Technology in Minneapolis, Minnesota Oct. 3 and 4. Information is on the website, [www.ateaonline.org](http://www.ateaonline.org)

Best regards,

Sandra

Thank you for participating with ATEA.

**Sandra Gehlen Krebsbach, Ph.D., M.S.**



## president's letter

Dear ATEA,

It is my great honor to serve as the president of ATEA. This is an amazing organization that has been blessed with visionary leaders who have served as both stewards directing the operation and mentors supporting the growth and development of its members. ATEA membership includes many benefits including access to the knowledge, best practices, and technical expertise for excellence in training and education through sharing with colleagues and peers.

I have been involved with ATEA in various capacities over the last 20 plus years and it has been an invaluable organization in the history of technical education in the United States and in the future of technical education both nationally and just beginning to form international relationships.

Above all ATEA values all members and we want members to get the most benefit from belonging to this group of technical experts and professionals. We are interested in hearing from you. Dr. Sandra Krebsbach, Executive Director of ATEA, works tirelessly to improve the organization and the member experience. We are interested in your ideas to improve and add to the value of ATEA. Please reach out to us with your suggestions.

I look forward to my term as president. We are in exciting times for technical education. It is a time of disruption and we have been disrupting higher education by innovating in knowledge, equipment, certifications and best practices since the beginning of ATEA.

By the end of my term of service we will likely be well into and perhaps through the fourth industrial revolution. There will be careers and occupations that do not exist today. At ATEA we have the advantage of relying on each other and working together to ensure that technical education continues to provide the competencies and skills critical to students and employers. We are the past and the future!

Thank you for this opportunity. I look forward to support from past presidents and our active and engaged board to continue to grow and develop ATEA!

Best Wishes,

*Sue*

**Sue Smith**

**President ATEA Board of Trustees**

**Ivy Tech Vice President School of Advanced**

**Manufacturing, Engineering, and Applied Science**

## Executive Committee leadership 2019-2020



**Mary Kay Bredeson**  
ATEA 1st Vice President

Mary Kay Bredeson is the Executive Director for the Center of Excellence (COE) of Aerospace and Advanced Manufacturing at Everett College, Everett Washington. She was appointed in 2003. Mary Kay focuses on a targeted industry that drives the state's economy and is built upon a reputation for fast, flexible, quality education and training programs. The COE provides a central point of contact for industry employers to share their workforce needs with all 34 community and technical colleges within Washington state as well as other education and training providers. The COE for Aerospace has been very successful in implementing numerous state and federal Department of Labor grants focusing on building training capacity and transitioning students into high demand aerospace and advanced manufacturing jobs.



**Jon Connolly**  
ATEA 2nd Vice President

Jon Connolly, Ph.D. is the president of Sussex County Community College, Newton, New Jersey. Prior to this appointment to the presidency in 2015, he served in multiple administrative roles in institutions in Maine and Wyoming. He is a graduate of Colby College, Waterville, Maine, with majors in Biology and Geology-Biology; holds a masters of Forest Science from Yale University School of Forestry and Environmental Studies and a Ph.D. in Biological Science from the University of Maine. He has published many peer-reviewed research articles, and has presented at numerous conferences to international audiences and at many higher education leadership seminars.



**Dr. Bryan D. Albrecht**  
Immediate Past President

Dr. Bryan Albrecht has served as Gateway's President since 2006. Serving as the college's chief executive, Dr. Albrecht oversees the college's 70 academic programs, 9 campus and center locations, and the college foundation. Gateway represents Kenosha, Racine, and Walworth counties and has an economic impact of more than \$400 million annually. In this role, Dr. Albrecht represents the college on more than 50 local, state, and national boards. He supports a comprehensive and vision-driven college, by increasing student support, contemporary programming, positive community partnerships, and innovative classrooms and facilities that reflect the business and industry. Guiding this vision is a team of more than 600 education professionals and 400 industry advisory committee partners. He is central to the transformation of southeastern Wisconsin's move to artificial intelligence, advanced manufacturing and other technical advancements spurred by the Foxconn location in his area. Dr. Albrecht holds his B.S., M.S., and Ed.S. degrees from the University of Wisconsin - Stout and his Ed.D. from the University of Minnesota.

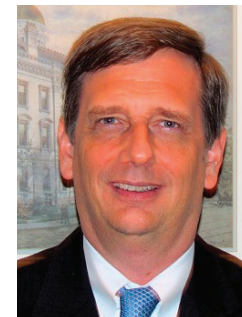
## New Board Members



**Ms. Marie Price**  
Director of Training and Development for the Idaho Forest Group, Coeur d'Alene, Idaho

Marie Price is the Director of Training and Development for the Idaho Forest Group, Coeur d'Alene, Idaho. She is the former Director for Workforce and Community Education at North Idaho College where she oversaw the short term, non-credit courses offered by the Workforce Training Center in Post Falls. She chaired ATEA's Region 6 conference in 2012 and the Region 3-6 Members conference at the Gigafactory in Reno, Nevada.

She has a bachelor's degree in psychology from Seattle University, a master's degree in Recreation Management from University of Montana and an Education Specialist degree in Adult, Organizational Learning and Leadership from University of Idaho. She is a certified Program Planner and certified Contract Training Specialist. Marie is married with two sons. In her spare time she enjoys camping, waterskiing, snow skiing and enjoying all there is to do in Coeur d Alene Idaho.



**Aaron Fichtner**  
President, New Jersey Council of County Colleges

Aaron Fichtner, Ph.D. is the President of the New Jersey Council of County Colleges, a nonprofit organization, enshrined in state law, that supports and strengthens the state's 19 community colleges. The Council is currently working with stakeholders to develop a framework for the future, called Vision 2028, that will articulate a bold vision for New Jersey's community colleges.

Fichtner served as Commissioner of the New Jersey Department of Labor and Workforce Development from September 2016 to January 2018. He joined the Department in 2010, serving as Assistant Commissioner for Labor Planning and Analysis and Deputy Commissioner.

Before joining state government, Fichtner was the Director of Research and Evaluation at the Heldrich Center for Workforce Development at Rutgers University. Fichtner earned a Ph.D. in Planning and Public Policy from Rutgers University, a master's degree in City Planning from the Georgia Institute of Technology, and a bachelor's degree in History from Vassar College.



**Dr. Scott R. Mickelsen**  
President of the New Jersey Council of County Colleges

Dr. Scott R. Mickelsen serves as President of Dawson Community College located in Glendive, Montana, a position he has held since July 2016. Prior to his current appointment, he held the position of Vice President of Academics at DCC.

Dr. Mickelsen is a member of AACC's Commission of Small and Rural Colleges and was recently appointed by Governor Steve Bullock to the advisory council of Get Outdoors Montana. Locally, he serves on the boards of Dawson County Economic Development Council and Makoshika Wellness. Previously, Dr. Mickelsen served as Associate Dean and Interim President at University of Nebraska's College of Technical Agriculture in Curtis, Nebraska. He has also held positions at North Central Technical College in Wausau, Wisconsin, and at Iowa Lakes Community College in Estherville, Iowa.

Dr. Mickelsen received his doctorate in Agriculture Education from Iowa State University; both his MS-Adult Education and BS-Agriculture Education from Utah State University and an associate's degree from Ricks College. He feels fortunate to have worked with some of the best minds in education. Says Mickelsen, "I've just had a great career and I feel blessed for that and blessed to be in Glendive."

### Executive Committee Announcement

Dr. Scott Mickelson has been named Interim Treasurer. Dr. Mickelson will be working with Mr. Bob Wallace on the end of the year and financial statement and the budget for 2019-2020. The ATEA Board will make the appointment at its fall meeting in Minneapolis October 3.

**Thank you Bob for your service!**



**BOB WALLACE**



**DR. SCOTT MICKELSEN**



**Dr. James Barrott**  
Executive Vice President  
Technical College, TCAT,  
Chattanooga State Community  
College Chattanooga,  
Tennessee

Dr. James (Jim) Barrott currently serves as Executive Vice President, Technical College (TCAT) at Chattanooga State Community College. Jim started with Chattanooga State as a full-time faculty member teaching CAD/CAM and has served in various campus leadership roles over the last 33 years, with 14 years as Vice President. Known for his innovative approaches to program and workforce development, he is the founder of the Volkswagen Academy and the Wacker Institute concepts and programs. Jim has a fervent passion for technical and STEM education and the role they play in our society. He earned a Bachelor of Science Degree in Design Graphics Technology from Brigham Young University, a Master of Science Degree in Engineering Management from the University of Tennessee-Chattanooga, and a Doctorate of Education Degree from the University of Tennessee-Knoxville. In the community, Jim currently serves on the Steering Committee for Chattanooga 2.0, as Chairman of the Board for the Cherokee Area Council, Boy Scouts of America, and as a Counselor in the Chattanooga Stake Presidency of The Church of Jesus Christ of Latter Day Saints. He and his wife Sue live in Lakesite, TN and are active in family, church, and civic responsibilities, and thus far, five of their eight children have graduated from college, all in STEM disciplines.

Cliff Wightman began his career at the Crossville campus and with the Tennessee Board of Regents (TBR) system in 2007 as a machine tool technology instructor, following an 18-year career as a machinist and engineering technician in the private sector, including 12 years at Delbar Products Inc. in Crossville. He served as TCAT-Crossville's marketing and industrial training coordinator from 2012 to 2015, when he was elevated to assistant director. He was appointed president in 2017.



**Cliff Wightman**  
President, Tennessee College  
of Applied Science, Crossville  
Tennessee

Wightman's experience ranges from the teaching to the finances and building projects. He maintains relationships with industry and the community to promote continuing education and partnerships with our community colleges. "I firmly feel that my entire life has evolved into where I am today because of the education I received as a student here, and I can convey to area residents the need for skilled training to change their lives for the better."

After his high school graduation, Wightman continued his studies at TCAT-Crossville and graduated from the machine tool technology program. He later earned an Associate of Applied Science in general technologies at Roane State Community College, a Bachelor of Science in interdisciplinary studies at Tennessee Technological University and a Master's in Business Administration from Bethel University.

Wightman also attended the Tennessee Colleges of Applied Technology Leadership Training Academy and has been a presenter at the Tennessee Board of Regents' New Faculty Institute. He has attended team member training at the Council on Occupational Education, the national accreditation agency for technical colleges. Wightman also serves on the National Education Team for Skills USA.

After completing the machining program at Wallace State Community College, Jimmy Hodges began his career as a machinist in 1981 in Cullman, Alabama at what was then known as Speedring Ultra-Precision machine shop. He spent the next 19 years in a variety of manufacturing positions, primarily in the aero-space industry in the North Alabama region. In 2000, Jimmy began his career as an educator teaching Drafting and Design at the Earnest Pruett Center for Technology and working as an adjunct drafting instructor at Northeast Alabama Community College. He was hired at Wallace State Community College in June 2009 as the Drafting and Design department chair and accepted the position of Dean of Applied Technologies in November 2011. Since that time, he has worked diligently to improve and expand the technical programs at Wallace State, working very closely with business and industry to ensure current and relevant program offerings. Wallace State's technical programs consistently rank among some of the best in Alabama and even the nation with regard to SkillsUSA competitions and nationally recognized certifications. Jimmy and his wife of 35 years, Lynn, have three children, Matthew, Laura, and Ginny. All three are educated and employed and have given Jimmy and Lynn six wonderful grandchildren, three girls and three boys, which are the center of Jimmy and Lynn's world. Jimmy is very excited about the future of career/technical education.



**Jimmy Hodges**  
Dean of Technical Programs  
Wallace State College  
Hanceville, Alabama

## Board of Trustees Reappointments



### BROOKS JACOBSEN

Brooks is a supervisor and instructor in the Lake Area Technical Institute, Watertown, South Dakota's robotics and electronics technology systems program. He joined the ATEA Board in 2013 and was reappointed to his 2nd term. Brooks is the Chair of the ATEA National Awards Nomination Committee. Lake Area Tech Institute, through Brook's leadership, is a strong supporter of ATEA Region 5 conferences, bringing 100 participants to the 2015 conference in Sioux Falls, South Dakota. Brooks serves the National Guard as the Missile Launch Repair Team. Brooks is a graduate of the AAS Robotics Program at Lake Area Tech and a BS in Engineering Management from Grantham University Kansas City, Missouri. He is certified in FANUC and Kawasaki Robotics USA Inc.



### SHAWN MACKEY, Ed.D.

Shawn Mackey is the Deputy Executive Director for Programs and Accountability" for the Mississippi Community College Board, Jackson Mississippi. Dr. Mackey also served as Associate Executive Director for Workforce and Career and Technical Education for the MCCB. Shawn joined the ATEA Board in 2013 and was reappointed to his second term in 2016. Prior to joining the Mississippi Community College Board, he worked in the non-profit sector for 10 years and in higher education for 10 years as an instructor and Assistant Dean of Career Technical Education at Coahoma Community College, Clarksdale, Mississippi. Dr. Shawn Mackey is a three-time graduate of Delta State University with a Bachelor of Science Degree in Criminal Justice (1997), a Bachelor of Arts in Psychology (1997), and a Master's Degree in Social Science Education (2000). Dr. Mackey received his Doctorate of Education Degree from the University of Memphis in the area of Higher Education Administration (2008). He brings a strong perspective to the Board from his direct leadership and experience with workforce development.



### CHELLE TRAVIS

Chelle Travis, Director of Workforce and Economic Development for the Tennessee Higher Education Commission, was reappointed to a 4th term on the ATEA Board of Trustees. Chelle has served as the Assistant Vice Chancellor for Student Services for the Tennessee Colleges of Applied Technology, Tennessee Board of Regents. Chelle led the system's SkillsUSA programs and competitions; worked with the Tennessee Promise and Tennessee Reconnect Programs as well as the NC3 Certifications system wide.

Chelle was the 2013 ATEA national conference Co-Chair along with Mark Lentz, Director the Nashville TCAT held in Chattanooga and the 2017 national conference held in Nashville. She serves on the ATEA National Awards Committee and is dedicated ATEA Board member offering the student perspective and experience from other national programs. Chelle is a graduate of Middle States Tennessee and is working on a graduate degree.



### VICTOR BRANCH

Manager of Education Training & Digital Tools for Mississippi State University Bagley College of Engineering CAVS Extension in Canton Mississippi. He is the facility administrator over mechanical, environmental and building maintenance. He is a Master Technical Trainer with over 25 years of experience that includes stand up (classroom), Synchronous (e-learning is a virtual classroom), Asynchronous (e-learning online) in private industry and state school system. He received his B.S. in Computer Science from University of Arkansas in 1976. His passion has been in Technical Education and Skills Training from high school to the factory floor and executive management. He is certified as a Master Trainer on several software Computer Aided Design (CAD). packages such as CATIA, SolidWorks and AutoCAD.

## ATEA Board Retirement



Cliff Smith, ATEA Board member 2017-2019, former Associate Chief of Facilities and prior to that Dean of Technical Programs, Kansas City Kansas Community College. ATEA Region 5 Conference Chair, 2017

"Thank you and for introducing me to all the great people. ATEA is the best organization I have ever been a part of for technical education. Let me know if you ever need anything photo is of his acceptance speech."



Thank you to Dr. John Randell Langrell III for six years of service on the ATEA Board of Trustees and for hosting the Washington "Key Leaders Meeting" the fall of 2014.

## Jean Koch Outstanding Technical Education Achievement Award

Mr. James King received the award for his outstanding life time achievement in technical education on April 4, 2019.

Mr King's Award Proclamation reads:

WHEREAS, Mr. King, has meritoriously contributed to the improvement, promotion, development and progress of postsecondary technical education and the American Technical Education Association:

WHEREAS, he has contributed and achieved prominence in technical education at the local, state, regional and national levels: and

WHEREAS, he consistently spends significant time and energy in support of technical education; and

WHEREAS, he served for 36 years with the Tennessee Board of Regents, beginning as the Assistant Director at the Tennessee Center of Technology (TTC) at Whiteville 1983-86, then Director at TCC Crump 1986-1997, Director at TTC-Memphis 1996-1997; TCC-Jackson 1997-1999, then Vice Chancellor for the TTC's then the Tennessee Colleges of Applied Technology until 2017 when he was appointed Executive Vice Chancellor, completing his career as President of the Northeast State Community College



James King, ATEA Past President accepting award from Dr. Bryan Albrecht

WHEREAS, he has served on the Board of the American Technical Education Association as president for three terms from 2007-2011, hosted landmark American Technical Education Association national conferences in 2008 and 2013 in Chattanooga and 2017 in Nashville where there was a record 700 attendees.

WHEREAS, Mr. King's applied his professional character, depth of knowledge and experience to inspire innovation that benefited students, employers, technical colleges and their states

WHEREAS, the trustees of the American Technical Education Association wish to recognize the outstanding career and contributions of Mr. James King and express its appreciation for his superb leadership; and  
NOW, THERE FOR I, Bryan Albrecht, President, do hereby confer the Jean Koch Outstanding Technical Education Achievement Award on Mr. James King on April 4, 2019

Dr. Bryan Albrecht  
President ATEA Board of Trustees

## AMERICAN TECHNICAL EDUCATION ASSOCIATION BUSINESS COUNCIL

APPROVED BY ATEA BOARD OF TRUSTEES APRIL 3, 2019

The ATEA Board of Directors has established a national business advisory council to guide the organization in three strategic areas:

1. Addressing the national skilled worker shortage
2. Aligning of the skill needs of business and industry with educational programming
3. Changing the perception of technical education

The work of the advisory council will be:

1. Assist the national ATEA Board with educational programming and related professional development for faculty
2. Assist with the national messaging of the value of technical education;
3. Engage youth and adults in the dignity of work through meaningful learning strategies.
4. Guide industry supported competitions, including the 3 D Futures Competition established prior to the Business Council

Business Council Membership Benefits:

1. Direct connection to ATEA member colleges through newsletters, professional development programs and special events which communicate important topics, trends, and opportunities.
2. Provide guidance and technical expertise for professional development of college faculty
3. Provide presenters at conferences and technical training seminars
4. Provide oversight and judging of ATEA student competitions and input to the focus and content of future student competitions.
5. Develop relationships with colleges and faculty to strengthen corporate brand identity in the technical education community.
6. Establish a brand identity with technical education to expand good name promoting technical education and great jobs.
7. Support youth and adults who have selected technical education as their pathway to a career.

Council membership appointment will be by the ATEA Board of Trustees:

1. The Council will maintain an active membership of 8-10 members with at least 1 member also serving on the ATEA Board as a representative of the Business Council.
2. Membership on the council will require a \$5,000 sponsorship of the organization.
3. Representatives are private sector industries.
4. Business representatives are from each of the 6 ATEA membership regions are a first priority.

2019 ATEA Business Council Co-Chairpersons:

Al Bunshaft, SVP Global Affairs, Dassault Systèmes and Paul Perkins, President and CEO, Amatrol

## Dr. Harry Bowman Outstanding Board of Trustee Award

*Dana Wolff's and Dr. Jim Sherrard's tribute to Dr. Harry Bowman, April 4, 2019*

Good Afternoon everyone,

Even though we come from many different states, educational institutions, and various industries, it is certain that we all have one thing in common: our admiration of a man who had a positive attitude and outlook in life, loved his family and friends, and was passionate about education. That man, of course, was Dr. Harry Bowman.



Dana Wolff contributing to Dr. Harry Bowman's Tribute

Please allow me to share a few testimonials that came into ATEA with the sad news of Harry's passing.

- Harry was an inspiration. His love for education and especially technical education was unsurpassed. He helped make ATEA the leading post-secondary technical education advocate that it has become. He was dear colleague and will be missed.
- Harry was a dedicated, inspirational and passionate leader for our profession.
- He was so dedicated to ATEA and it will be hard to replace our historian, parliamentarian, and keeper of the by-laws.
- Harry was an inspiration to all humanity, a rare individual that was a gentleman, scholar and mentor. I will never forget the years we served together on the Board and I always looked to Harry for wisdom and fore thought.
- He was super intelligent, passionate and dedicated and a man of faith which showed through everything he did. I would also add that I know of no one who has contributed more to postsecondary technical education than Harry Bowman has. His impact is absolutely astounding. He will be deeply missed by all who knew and appreciated him.

Debbie, his wife, shared a commencement address and he titled it "Selected Character Traits of Tiger" (Memphis State University) to achieve fulfillment in life. Harry lived these:

**T** - *truthfulness: honesty, fairness, and integrity were the foundation for his relationships with others.*

**I** - *idealistic: seeking to attain the highest level of excellence possible in all his endeavors.*

**G** - *generous: in sharing his gifts of expertise and resources to benefit others. He readily gave his time, talent and treasure.*

**E** - *energy: as he applied his abilities. He strove to be efficient and enthusiastic in life.*

**R** - *responsibility: to his faith, his family, his friends, his profession, and his role as a member of the community and the world.*

Harry enjoyed his work with ATEA and treasured his many friendships with ATEA colleagues. He especially looked forward to reminiscing with James King about their shared past; participating in new adventures with Jim Sherrard, providing transportation for Board members as needed, being present for the industry tours, and working with the many dedicated ATEA leaders to make a difference in Technical Education.

In 2016, Harry wrote: I participate in ATEA because it is the top / premier / first class professional development organization for post-secondary technical education in the United States. It is the only organization that focuses solely on post-secondary technical education in the country.

Harry was appointed to the ATEA Board in 2003 and served 15 years as an active board member. Although there will be a void left by Harry's passing, his legacy of dedication, service, insight and humor will live on in multiple ways. For one of those ways, **ATEA would like to recognize an outstanding board member annually starting next year at the national conference with the Dr. Harry Bowman Outstanding Board Member Award.**

Truthful, Idealistic, Generous, Energetic, and Responsible – May Harry's own words be a lasting gift and a challenge to us all. We are all better for having been associated with Harry and there will be a void at both the table of education and the ATEA organization.

I want to share the life of Dr. Harry Bowman,

Harry Leon Bowman was born in Jacks Creek, Tennessee. raised in Henderson County, Tennessee, and graduated as Valedictorian from Lexington High School. After receiving a B.Th. from Pentecostal Bible Institute in Tupelo, MS, he was awarded a B.S. from Union University, Jackson, TN. He completed his educational studies by earning a M.S. and an Ed.D. in Foundations of Education from George Peabody College, Nashville, Tennessee.

Beginning his career as an educator, he worked for the Southeastern Education Laboratory in Atlanta and for Northeast Louisiana State University in Monroe. He joined the College of Education faculty at the University of Memphis in 1970. He retired as Associate Dean of the College of Education to begin a career with the Commission on Occupational Education Institutions (COEI) with the Southern Association of Colleges and Schools. Under his leadership as Executive Director, COEI became an independent accrediting agency for post-secondary vocational schools. When he retired from the Council on Occupational Education (COE), he was named Director Emeritus. Although retired, he continued to invest his time by leading numerous accreditation visits to vocational schools and at the time of his death he was serving on the boards of Mid-South Educational Research Association, the American Technical Education Association, and was Executive Secretary of the Consortium of State and Regional Educational Research Associations.

The University of Memphis recognized him as an Outstanding Researcher and the College of Education recognized him as a recipient of the Earl Crader Award. The Mid-South Education Research Association created the Harry Bowman Service Award which is given annually. ATEA awarded him the Jean Koch Outstanding Achievement Award.

He faithfully served as a member on the Board of the Episcopal College Ministry, the Metropolitan Ministry and the Episcopal Counseling Center for the Diocese of West Tennessee. In the past he served as a member of the vestry at All Saints' Episcopal Church (Memphis), as Treasurer at Church of Our Saviour (Atlanta), and as Senior Warden of St. Matthias Episcopal Church (Clermont, FL). He attended numerous Diocesan conventions as a Lay Delegate.

He is preceded in death by his parents and his brothers Wayne and Mason Bowman.

His survivors include his wife, Deborah; his children Kimberly Volner, Harry "Robin" Bowman, Jr. of Lexington, TN, Christopher Bowman (Delaine) of Franklin, TN, and Robert Bowman (Ashley) of Tallahassee, FL; his siblings Omega Turpin (Stevie), Patsy Free, and Samuel Bowman (Brinda). He leaves 10 grandchildren, 4 great-grandchildren and 16 nieces and nephews.

Harry was a man of faith, a devoted husband, a loving father and a loyal colleague. He was a good man and he will be missed by all who knew him.



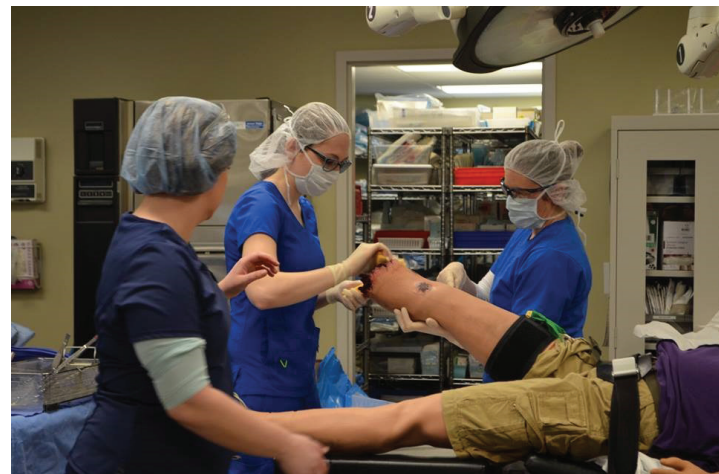
Dr. Jim Sherrard speaking at the podium

# student

## Outstanding Technical Student Award Winner 2019

*Dani Hersrud, Associate of Applied Science in Surgical Technology Program, Western Dakota Technical Institute, Rapid City, South Dakota.*

Dani graduated May 2019 as a Surgical Technician. She also holds a Bachelor of Science in Occupational Education which she earned in 2010 from Wayland Baptist University, San Antonio, Texas; Army Medic US Army, San Antonio, Texas April 2002-2005. A former Data Technician, JSW Diversified, San Antonio, June 2011-2012 responsible for installing data lines, phone lines and fiber-optic cables. She was the only female technician. Dani received the award for excelling in all of the criteria for the award, exceptional student, volunteer, community service and leadership. Dani is a model for others of having a bachelor's degree and moving into a certification field for her BS in Occupational Education to a Surgical Technology AAS degree. This is the roadmap for employment and ultimately promotion or teaching which is Dani's goal.



Dani in the surgical technology lab.

# teacher

## ATEA 2018 Outstanding Technical Teacher

*Jade Hollister, Surgical Technician Instructor, Western Dakota Tech, Rapid City, South Dakota*



She was promoted to Program Director within one year of teaching in Surgical Technology. She is "tough but caring" and gets excellent reviews from her students. Ms. Hollister's program retention is 95%.

Jade was recognized by the Vice President for Teaching and Learning, Tiffany Howe, for her ability to innovate, organization, and effortlessly handling of any increase in her workload.



First ever ATEA Outstanding Awards to student and teacher in a program, Dani Hersrud and Jade Hollister

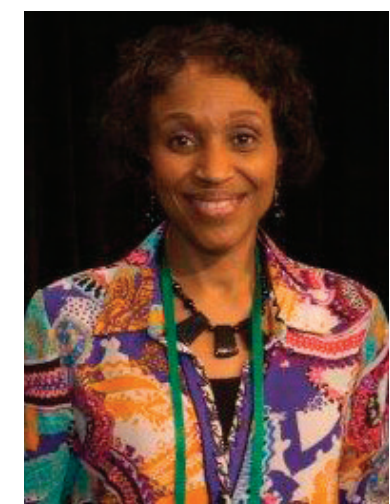
## ATEA 2019 Outstanding Technical Teacher Finalists

### Rebecca Russell, TCAT, Knoxville 2018



Dwight Murphy, President of Tennessee College of Applied Technology, Knoxville wrote in his nomination letter that Rebecca (Becky) is on the cutting edge of providing learning materials to students on day one. She is part of Digital Engagement Initiative Pilot Program and is providing all students access to materials on day 1. She also consulted with cosmetology programs at Elizabethton and Crossville TCAT's on board laws and rules, equipment, curriculum and supplies. Counselor Boyd Hestand commended her transforming for their SkillsUSA high school regional competition and state competition. Student nominator, Rei Norris, said, "Ms Russell, has inspired them to be the best version of themselves in regards to their field."

### Diane Jackson



Ms. Jackson is the department head of Business Operations, the largest department at the TCAT with 7 programs and 12 faculty members which was noted along with her instructional abilities by Dr. Mike Ricketts, Dean of Tennessee College of Applied Technology-Chattanooga. The student nominator, Andrea Boston, wrote, "She has a great personality and will lift the rain on a bad day." Associate Vice President, Mosunmola George-Taylor, Ph.D. wrote that Ms. Jackson's students get an education related to both soft and technology skills.



## Outstanding Program Award Winner 2019

### Electronic Systems Technology/Robotics (EST/ROB)

Lake Area Tech Institute has been offering this program for 53 years, the foundation of electronics has stayed the same but the content has evolved including robotics, collaborative robots (cobots) and Autonomous Guided Vehicles (AGVs). There is a 94% placement rate and an articulation agreement with South Dakota State University in Electronic Engineering or Manufacturing Engineering Technology. Industries in Watertown, South Dakota are 3M, Daktronics, Basin Electric, Valley Queen Cheese, Trail King, Ottertail Power, Agropur, Horton, NASA, Wurth Electronics and automated dairies. The program students are supported by Build South Dakota (BDS), a scholarship with a commitment to work in the field in South Dakota for three years. Industry provides additional scholarships.



L-R: Brooks Jacobson, Program Supervisor and Instructor, Tim Moes Instructor, Mathew Weirnzal instructor, Bob Poor, Instructor, and Dr. Bryan Albrecht, ATEA Board of Trustee President

The program is "Industry Facing" meaning it responds quickly to needs of partners. Their board is made up of 30 industry partners, a student, a South Dakota Department of Labor, and Lake Area Tech support staff and administrators. Robot Games is an annual event where students collaborate, work in teams and use their knowledge to construct a robot. 3M recently awarded a \$100,000 grant for Fanuc Robots and associated training.

Electronic Systems Technology/Robotics participates in a free Community U by offering a 3 D Printer class. They developed the MakerSpace program at LATI. The students provide mentoring with in their program to support the project based learning.

President Michael Cartney wrote in the nomination letter that "you would be hard pressed to find a program with higher competition, retention, and placement rates." LATI Robotics will be the only two year post-secondary program in the nation to be provide COBOT and Autonomous Vehicle Technology by National Instruments Standards and Technology (NIST).

Advisory Board member, Mike Rawlins, Senior Engineer, Pivotal Health Solutions commended the faculty for listening and responded with changes in the curriculum. Advisory board members participate in the capstones and get to know the students. Matthew Neuberger, Service Manager, Dakota Fluid Power commended the students as thoroughly trained and confident in troubleshooting, mechanical and critical thinking skills.

## Nominations for 2020 ATEA National Award

September 1 will be time for the ATEA Board of Trustees to invite nominations for the 2019 ATEA National Awards. The will be due Tuesday December 3, 2019. We encourage you to review the criteria posted on the ATEA website and nominate a worthy colleague, student, or program for an award. They will appreciate your recognition. The awards are outstanding technical student, outstanding technical faculty, outstanding program and the Silver Star of Excellence to a business exemplifying the standard for supporting technical education. It is jointly awarded with the National Technical Honor Society. The awards will be presented at the 57th ATEA national conference on technical education, On Tools, March 21-23. There will be an Awards dinner on Wednesday March 21, 2018. National conference updates will be on [ateaonline.org](http://ateaonline.org), ATEA's website.

Nomination forms and details will be emailed on September 1 and available on the ATEA Website.

## Silver Star of Excellence Award Winners 2019

jointly awarded by ATEA and the National Technical Honor Society, written by Ana Bolman, Ed.D

Regional Health is very generous in providing several medical programs at Western Dakota Tech with supplies, including surgical, laboratory, and medical simulation materials. These contributions save Western Dakota Tech money each year and shows Regional Health's clear commitment to health-related education. Recently, Western Dakota built an 8,500 square foot medical simulation center to provide state-of-the-art training to students as well as community healthcare providers. Regional Health was integral in that project. In fact, the simulation center is designed to look like Regional Hospital, and Regional Health's leadership and staff were very generous in giving input and granting access to their facilities to ensure the simulation experiences at Western Dakota Tech closely mimic the actual look and feel of the largest healthcare facility in our region.

Regional Health has also provided training for Western Dakota Tech Facility and students at their facilities for no charge to the College—most recently an opportunity for the surgical technology students to learn about the Da Vinci Robotics operating technology. Regional Health routinely provides conference room space for large association meetings held by many of Western Dakota Tech's medical programs. In addition, they have provided HIPAA training and countless hours of clinical space and preceptor time for Western Dakota Tech's LPN, surgical technology, medical lab tech, phlebotomy, and paramedic program students at their sites. The medical director for Western Dakota Tech's paramedic program is the current Chief Emergency Officer at Regional Health. As part of its commitment to health education, Regional Health provides facility space to two nursing schools, the South Dakota State University nursing school and the University of South Dakota nursing school. This facility allows training that otherwise would not be available in our community.

Regional Health has also partnered with Western Dakota Tech, South Dakota State University, the University of South Dakota, and the other community health groups to develop a regional Area Health Education Center (AHEC). This Center will provide resources for community health training and medical field "pipeline" development in western South Dakota. Regional Health's staff members will be called upon to provide some of the important community training, as well as to partner with the region's schools to encourage students to consider medical careers. While headquartered in Rapid City, Regional Health also has hospitals, clinics, and long-term care facilities in smaller communities that serve residents of rural western South Dakota. These facilities are critical to the AHEC program and the goal of sustaining quality healthcare in rural areas of our state.

Western Dakota Tech holds an interdisciplinary simulated mass casualty event each spring semester to give students an opportunity to practice their skills in conjunction with students from other programs. To carry out a training session this community volunteers assist. Over the past three years, Regional Health has sent employees from many different departments, including emergency doctors, to mentor students and carry out a variety of simulation roles.



L-R, Brooks Jacobson ATEA Board member and Chair of the Awards Committee, Jill Tice Regional Health and Dr. Bryan Albrecht, President of ATEA Board of Trustees and President and CEO of Gateway Technical College, Kenosha WI

Not only does Regional Health provide educational benefits to its employees to encourage them to upskill, often in Western Dakota Tech programs, but this year, Regional Health has stepped up to provide Build Dakota scholarship matching funds so that three of Western Dakota Tech's LPN students can attend nursing



school on a full-ride scholarship. Regional Health is also a major employer of Western Dakota Tech's total graduating class of 2017.

Employees of Regional Health sit on several Western Dakota Tech advisory committees, including medically-related programs such as for the LPN, surgical technology, health information technology, paramedic, medical assisting, medical lab tech, phlebotomy, and Simulation Center. In addition, Regional Health employees sit on advisory boards for the business computer science programs, since the hospital system hires graduates from these programs as well. Currently, Regional Health has 20 employees from varying departments that participate in 10 different Western Dakota Tech advisory boards. Regional Health's ties to Western Dakota Tech are such that Regional Health's representatives on Western Dakota Tech advisory boards are often Western Dakota Tech graduates themselves, so their advice and insight are highly valued.

Representatives from Regional Health also sit on the College's community-based "Skilled Workforce Advocacy Council" (SWAC) and on the College's Foundation Board. Regional Health has provided ideas and feedback about potential future medical-field related programming including Diagnostic Medical Sonography and Physical Therapy Assisting most recently.

The Rapid City Area School District has also benefited from the participation of Regional Health employees as the district has undertaken the development of a career pathways framework for the high school curriculum. Regional Hospital employees have been members of the "STEAM2" taskforce, the district's "Pathways Taskforce," and the medical careers pathway work group. Regional Health was also a co-sponsor of the district's 8th grade career fair, which was held on the Western Dakota Tech campus. Their participation in these efforts' benefits students, employers, and our community.

Western Dakota Tech is very grateful to Regional Health for the multiple layers of support they provide to Western Dakota Tech, not just Western Dakota Tech's medical-related fields. Regional Health System has earned every ounce of the recognition the ATEA Silver Star of Excellence Award bestows.

Thank you very much for your consideration of this proposal.

*Ann Bolman, Ed.D.*

Ann Bolman, Ed.D.  
President  
Western Dakota Technical Institute  
Rapid City, South Dakota

## ATEA 3D-Futures Competition Winners



AI Bunshaft SVP for Global Affairs, Dassault Systemes presenting the ATEA 3D Futures Competition at the National Award Luncheon.

The American Technician Education Association announced a new student competition featuring student design solution to real world problems. ATEA 3D Futures Competition. The intent of the competition was to demonstrate the knowledge, skills, and digital tools that are required in industry today. Students had to identify a problem or opportunity related to their field. The solution had to use digital technology or be based in digital technology. Entries were judged on the following criteria: Statement of the problem or opportunity; Solution described and/or demonstrated; Description of the digital tools used and Quality of presentation materials. Entries were submitted electronically in the form of a 3-minute video. The submission video could include any media: live video, screen captures, PowerPoint charts with narration as required to cover the necessary points.

Thank you Dassault Systemes for the support of this competition. Dassault Systemes provided the prize money of \$1500 first prize, \$1000 2nd and \$500 third. A six person national panel including academics and industry judged the entries.



### AL BUNSHAFT

SVP for Global Affairs, Dassault Systemes presenting the recognition award to Jeff Sullivan, Dean of Technical and Skilled Programs, Chippewa Valley Technical College, Eau Claire, Wisconsin



Mr. Al Bunshaft meeting Dean Sullivan and Award Winner Team instructors, Lahroodi and Vydrzal in Chippewa Valley Technical College, Eau Claire WI, June 10, 2019

### KARA LEARNING MECHANISM

**1st Prize Kara Learning Mechanism, Chippewa Valley Technical College, River Falls, Wisconsin**

In the field of technology, one tool that hasn't been seen much use yet in most technical colleges is Machine Learning. Machine learning has been a great success in the fields of image and language processing. Our main goal is to apply the same ideas to the problems of processing and learning force and motion in mechanical systems. In this design, we are going over how we at Chippewa Valley Technical College believe that Machine Learning is a great learning opportunity for anyone interested in Mechanical Design, Math, Electronics, and Computing. Kara as a mechanism is very simple. Its whole design purpose is to be a simple mechanism that easily explains the basics of machine learning. We have used SolidWorks to design it and Mojo and Form 2 3D printers to manufacture it. It uses two motors and an Arduino board to execute the code of our Machine Learning Algorithm. Using this algorithm, both motors are able to learn from one another, the goal being able to sync up their movement. When one motor moves, the other should follow in perfect synchronization and the industry internet of things but they do not know how to.



L-R: Mahmood Lahroodi, Instructor of Mechanical Design, Team Kara Learning Mechanism: Franklin Lorzano, Rick Heuer, Andrew Boster II, and Jonathan Knapp.



### ROBOTIC ARM AND GRIPPER

**2nd Place Chippewa Valley Technical College, River Falls, Wisconsin**

L-R Mahmood Lahroodi, Instructor, Mechanical Design, Andrew Boster II, Alex Husfleon, and Eric Wolle

Our task is to create a gripper that has the ability to pick up multiple objects of various sizes, shapes, textures and hardness. We also needed the gripper to be able to be attached to a robotic arm so the gripper is able to pick and place whatever object it needs to. Our gripper uses magnetic connections on multiple different designs, making it diverse. Using diameters from a plastic bottle and a pencil, two of the finger designs were then 3D printed. However the 3rd finger, is designed to be adaptive and flexible for many different objects. This adaptive finger was printed with flexible material, as well as adding hinges to the frame, giving it the ability to flex. Our manipulator arm is built to be both compact and modular. By being modular it gives us the ability for multiple configurations, and has an appealing look. The arm also houses a small electric motor which creates the side to side movement. The modular pieces were crucial, giving the arm the ability to be portable and adaptive depending on use.

We leveraged In-Context design across our design process which gives us an ability to edit the sketch and features of the part in the assembly context. This approach saves designing time and effort because we can see the preview of the change and its possible effects in our design.



### THIRD PLACE WINNER FILES FOR A PATENT

L-R Dean Jeff Sullivan, CVTC Dean of Skilled Trades and Engineering Programs, Dr. Sandra Krebsbach, ATEA Executive Director, Team members: Derek Ortner, David Smith, Zachary Gunderson, Ethan Palmer, and Joshua Bartlett, student who recorded the video, and Joseph Vydrzal Instructor Mechanical Design Program ATEA 3D Futures Competition 3rd Place winner filed their idea for a patent, Zack Gunderson, David Palmer.

Presentation of the 3rd Place Prize checks to the Chippewa Valley Technical College, Eau Claire, Mechanical Design students, They filed for a patent on May 21, 2019 for their idea presented in the ATEA 3D Futures Competition. ATEA 3D Competition, Power Transmission Infrastructure Tool.

## The Future of Industry 4.0

Randy Swearer, Vice President, Learning Futures, Autodesk



*Learning in the future is a continuous process of improvising, being aware of your surroundings, approaching complexity in the moment, and in general, learning in the moment while applying what you know. It is it's less about majors or stocks of knowledge and more about the mission of continuous, unending, passionate learning.*

### 2050

Today there are 7-1/2 billion people on the planet, expected to be 10 billion by 2050 and 25 people per minute are entering the middle class. They will need motorized transportation, housing, sofas, and computers, all of the things that are definitional for entering the middle class. Each day 3,600 more buildings than are built now will be needed to meet that population growth. This will require reciprocity between machines and humans.

**Learning reciprocity is where the system learns from humans, and humans learn from the system.** The future of work will be the joint performance of humans and machines. The human user frames a problem with a computer system and then the computer system creates a solution set that is in turn curated by the human user. This is going to be definitional for industry at 4, 5, 6, whatever.0.

**An example of the relationship between machine intelligence, IOT, and advanced manufacturing.** Autodesk had Hackrod weld up a chassis and then "we sensed the hell out of that chassis creating essentially a digital nervous system across the chassis and then we had one of the Bandido Brothers, drive this thing out in the desert, and he just drove it within an inch of his life. The chassis is the nervous system that's collecting all the data about that particular drive, all the loads the driver was putting on the car. We were also measuring the brain waves of the driver. And we took all of that data and we put it into a generative design system where we co-created with the computer system a new chassis. This chassis was then produced through advanced manufacturing in titanium. So it's incredibly strong, incredibly light, and what's amazing about it is it actually responds... this chassis was custom made for that one driver, driving that one time around the racecar track and collecting that data so it's radically customized.

**Learning to do or doing to learn.** Learning to do is learning a stable stock of knowledge through university or college major then going out in the world to deploy that stable stock of knowledge.

**Doing to learn is learning through practice.** It's about a world where

you no longer have these stable silos of professional knowledge that are deployed, but have professional flows of knowledge that are constantly changing and being influenced by radically new technologies. Doing to learn is more like improvisation, jazz, learning in the moment while applying what you know, being aware of those around you... learning during the process of improvisation, continuous, passionate, unending learning.

**The comparison of Blockbuster and Netflix is the same.** Netflix exposes you to areas of entertainment adjacent to what you're familiar with, but it is a recommender algorithm that pushes you sometimes in a direction you wouldn't otherwise think about and they do that with really deep learning through machine intelligence.

Education today is like Blockbuster with majors that are compartmentalized and boxed up and put in a linear framework that represent that set of well-worn majors, maybe there are 20 or 30 of them depending on the school you're at, but you do the learning and it's in a linear sequence, and then you're done and you employ it.

So the Netflix world users are dynamic. They grow and they change by learning. There is a need to help people not only understand how to use the tools, but how to navigate their career. Autodesk has a product that you can see what you don't know, and you can see what you need to know to get the task done. So you see what our competencies are. You can click on your command clusters in order to understand what your competencies are. You can get learning resources automatically fed to you. You can even connect with peers who opt into the system who can help you. This is a cool feature that we got some early feedback on that people really like. You can actually see yourself grow over time, right?

There's a team viewer which a lot of professors get very excited about, because it allows them to see the competencies of an entire class. And click on individuals in the class to learn more about what they know and what they don't know.

**The currency of work today is teams.** Autodesk team builder software allows you to automatically assemble teams. The team manager can select axes or variables that define the project for their team. SO in this case, the work that they're doing is important in the area of rendering, modeling, and generative storytelling. You add one person and you can see they have some skills, but you need others. And so you can continually add until you get most of the functionality you need and most of the skill set and knowledge you need. You can even auto-populate to create the optimal team.

**Proximal learning will be recognized as needed for at organizational level.** How well you teach and mentor will become a fundamental skill for future industry. It's not just applying your skill, its teaching other people on your team the skill and being rated and tasked on that in terms of your performance. Professional development in the future includes courses in pedagogy in teaching methods and mentoring. Everything ultimately ladders up and organizational learning.

**Autodesk Aware** allows you to visualize who does what, where, who knows what, quickly and efficiently. You can see throughout the organization who's working on learning, how that work is being organized, and then drill into who is on each team and who knows what.

Doing to learn is driving insights across the levels of individuals, teams, and organizations and creating rich learning reciprocities between intelligent systems and humans. It's that velocity of learning that I think is going to be so definitional to the future of working for industry 4, 5, 6, 7, 8, 9, and 10.0.

## Industry 4.0: Shaping the World

Paul Perkins, President and CEO of Amatrol "Smart Factories"



We are truly living in very exciting times, with technologies that are greatly changing our lives. The advancements in computer technology, the Internet, networking, and software have enabled us to access information and control our world in ways few would have thought possible, even just a few years ago. These advancements are the ele-

ments of Industry 4.0, which is enabling companies to compete in a global marketplace because they can be smarter and faster about how they run their businesses. Success is all about increasing speed to market, reducing downtime, increasing efficiencies, and improving quality. Industry 4.0 accomplishes these objectives through smart devices that take less time to program and provide data through networks to data analytics software that can determine the most efficient ways to deliver the product or service.

The following are just a few of the many examples how Industry 4.0 is changing our workplace:

- Smart sensors that monitor their own health and tell the operator to service them before failure.
- Smart photoelectric sensors that can tell the operator when their lenses are dirty.
- Machine controllers that adjust to tool wear and change their own programs to compensate so they continue to make good parts that would otherwise be scrap (machine learning).
- Vision systems on robots that locate parts without precision fixtures, and thereby reduce setup time.
- Smart automatic guided vehicles that are faster to program because they use vision, GPS, and sonar location technologies to chart their path through a facility and adapt to unforeseen obstacles.
- Network technologies, such as Ethernet, that interconnect the many control and sensing devices on the plant floor while also connecting them to the internet to monitor, control and analyze data. This is the Industry Internet of Things (IIoT).

IIoT, a component of Industry 4.0, enables components and systems to be quickly installed and easily replaced. With IIoT devices and powerful data communications, much more data can be collected, and control signals can be sent between controllers via Ethernet rather than using miles of discrete hardwiring. The Industrial Internet of Things has also enabled software to be used on the plant floor in new and creative ways. For example, no longer will workers use a radio to tell them when a machine needs maintenance. It will be a PUSH notification, or text message, sent to a smart phone. The notification doesn't even have to come from the operator; that PUSH notification will more likely come from a machine that signals the operator to service it.

The large amount of data collected through IIoT devices and networks also presents the opportunity to analyze problems that aren't obvious to operators or others on the plant floor. Amatrol's partner, FANUC Robotics, has developed data analytics software called Zero Downtime Maintenance, or ZDT, which monitors robots across the world via the Internet 24/7 and spots trends through Big Data analysis.

FANUC's ZDT software sends notifications to robot users that their robot is about to fail so they can address the problem before the failure occurs. In the first year implemented at General Motors, GM didn't have a single minute of unplanned robotic downtime.

Data analytics software is a rapidly growing field that is impacting everything we do. The most basic types of data analytics are Descriptive and Diagnostic, which answer these types of questions:

- Descriptive Analytics-What happened?
- Diagnostic Analytics-Why did it happen?

Basic Data Analytics is useful because it helps companies keep problems from happening again, but it is lacking because failures still occur.

Advanced Data Analytics includes Predictive and Prescriptive, which help answer such questions as:

- Predictive Analytics-What is about to happen?
- Prescriptive Analytics-How to avoid what is about to happen

As you can imagine, better results are found with Advanced Data Analytics because it has the potential to avoid all failures. This is what FANUC's ZDT software does.

While the benefits presented by Industry 4.0 technologies are great, these technologies are also creating significant challenges in preparing our workforce. Three major workforce challenges include:

- Upskilling our existing and entering workforces in the use Industry 4.0 technologies that are already in industry today.
- Training our workforce in technologies that cross the lines of traditional occupations.
- Continuing to upskill our current workforce to keep pace with the accelerated rapid change of Industry 4.0 technologies.

For example, everyone on the plant floor will need some level of networking knowledge. To keep up, incumbent workers need to be upskilled and continue to be upskilled as technology changes. The scope of many occupations needs to be expanded and current educational program content frequently updated. Technologies that were once considered advanced are now commonplace. We should reflect this in our curricula. Configuring an Ethernet IP address, for example, was once an advanced PLC topic. This is now one of the first things required before performing even the most basic task.

These new technologies offer many benefits but we aren't going to be able to keep adding new learning content to educational programs without finding more efficient ways to teach what we are already teaching. A great example how this is being addressed is at Ivy Tech Community College in Indiana with their Flipped Classroom concept. It uses hybrid learning to minimize teacher lecture and maximize hands-on, student-centered learning.

Another excellent example is the Industry 4.0 curriculum being implemented at Gateway Technical College in Kenosha, Wisconsin. GTC created new introductory courses in their Advanced Manufacturing Associate Degree to teach Industry 4.0 courses to both adult and high school students. This program design infuses Industry 4.0 throughout the 2-year program and enables the program to advance further because students start their study of Industry 4.0 while in high school.

All this is to say that a lot of change is coming to the plant floor. Much is already here, but even more is soon to come. It will continue to accelerate. The benefit these changes hold for our society is great but only if we have skilled workforce to support and take advantage of this new world.



## From Scaling to Upscaling the Workforce for an Incentivized Industry, the experience of Truckee Meadows Community College 2016-2019

*Sandra Gehlen Krebsbach, Ph.D. in consultation with Barbara Walden, Interim Dean Technical Science, Truckee Meadows Community College, Reno, Nevada*



In 2014 Tesla was awarded by the State of Nevada \$2.5B in tax incentives for creating 6500 jobs. This was to be done over a five year period. ATEA was interested in how Truckee Meadows Community College in Reno would respond and what might be the lessons for other technical colleges facing the same challenge.

On November 9-10 2017 ATEA held a 2017 members conference in conjunction with Truckee Meadows Community College, Reno, Nevada, to learn about the impact of the Gigafactory on Reno and how Truckee Meadow responded to the workforce training needs at the largest battery factory in the world. The Gigafactory is owned 80% by Tesla and 20% by Panasonic but at that time the space utilization and number of employees were the reverse, Panasonic had 80% of the workforce. Tesla wisely partnered with this global leader in batteries with generation of experience and expertise.

Truckee Meadows responded to the challenge to scale up an entry level manufacturing workforce in a region of service industries (casinos, retail, entertainment, etc.) In preparation for staffing the Gigafactory project, TMCC converted the instructor led Advanced Manufacturing program to a modularized (half-credit), flexible delivery format. Working with the employers, college then built two customized pre-employment programs for material handlers (4 credits) and production operators (6 credits) that prepared workers to enter manufacturing and provide a stackable pathway to a credit based skill certificate. This was known as the P3 program. TMCC created a position to manage students, communicate with the companies and build relationships with Tesla and Panasonic. That position attended Gigafactory recruiting events, some at Truckee Meadows going through in a year. Truckee Meadows was able to quickly build workforce credentials to meet the need by using existing curriculum. Chris Reilly, Director of Workforce Training at Tesla, in an April 2018 interview stated that Tesla had met the workforce creation goal two years early.

### From Scaling to Upscaling the Gigafactory Workforce.

A check in with Barbara, March 2019, found the the Gigafactory has changed from staffing to upscaling workers, many of whom came through the initial program. This time it is through apprenticeship programs. TMCC began sponsoring registered apprentices with 1 apprentice in the fall of 2017. The numbers quickly grew to 420 apprentices in fall of 2018, and 475 in spring of 2019. How are they doing it?

They are using many of the same practices as the scaling effort. The same coordinator from the P3 effort communicates the information on the apprenticeships: the expectations; aspects of the program; and the future benefits such as promotion. She meets at the Gigafactory with incumbent employees who then move into the apprenticeship program. Other pathway programs that Tesla had with K-12 connect with Truckee Meadows when the student has graduated from high school and is employed at the Gigafactory. This enables Truckee Meadows to work with subcontractors such as WFDA (Workforce Department Apprenticeship) who work with pathway students who arrive in Reno as high school graduates, stay at the University of Nevada dorms and are becoming apprentices. WFDA offers testing and other support for this age student/apprentice that might be similar to a traditional freshman in college. They then move into Truckee Meadows program when they are employed by Tesla.

### Truckee Meadows has developed a training program with two school districts, Sparks and Hugg, Nevada.

### Two Regions Connect on "Scaling for incentivized industries".

By the time of the conference, November 2017 ATEA member Gateway Technical College, Racine and Kenosha Wisconsin, learned that they would be experiencing scaling for Foxconn LCD manufacturing site with a potential 13,000 employees. Gateway used their ATEA system membership to bring the college's ecosystem of economic development leaders, neighboring Schools of Engineering, K-12 partners, and Gateway leadership and faculty to learn from the Truckee Meadows, Reno and Nevada experience. The Foxconn State of Wisconsin agreement was signed on November 10, 2017 when the college's ecosystem was in Reno. The President of Gateway and a few other stayed back for the signing. This connection grew into a reciprocal invitation to Racine and Kenosha by Truckee Meadows Community College representatives and the Reno and Nevada leaders they met at the conference.

## Game Changer Role of Incentivized Global Technical Companies on Technical Education

Sandra Gehlen Krebsbach, Ph.D., M.S.

*This white paper is a continuation of research in 2019 for a Plan B paper on “Scaling Technical Education for Incentivized Industries, the Gigafactory in Reno, Nevada, and Foxconn in southeastern Wisconsin” for completion of a master’s degree in the Management of Technology from the College of Science and Engineering through the Technical Leadership Institute at the University of Minnesota. The paper focused on the creation and delivery of jobs as part of a tax incentive package in each state. The technical two-year level of education that would produce or support the entry level hiring of a workforce for the Gigafactory was by Truckee Meadows Community College and for Foxconn the impact would be on Gateway Technical College. The research found in both states there the impact was of “Game Changer” was prior to job numbers for the tax incentives. The net effect was a “leapfrog” of technological advancement and global attention. Small cities were attractive for both global industries because the promise of jobs in their areas produced greater leverage to get the tax incentives, and, none, or comparatively little demolition was needed to build the facility and infrastructure. This white paper is based on a July 26, 2019 conversation with Dean Ray Koukari, Gateway Technical College and tour of the intersection of Highway H and Highway 11 and the Foxconn site. Reviewed by Dr. Bryan Albrecht, President of Gateway Technical College.*

An update on Foxconn’s impact in southeastern Wisconsin as of July of 2019

This paper will look at Foxconn in Wisconsin in 2019, two years after the agreement was signed for \$4.5 billion incentive package. The agreement is still in the pre-employment stage in the contract even though it contained benchmarks for job creation in 2019. This paper is about the impact before the advanced manufacturing plant is built which will be in 2021. In 2019 the story is not jobs at Foxconn, it is the multiplier effect of Foxconn. Incremental growth cannot produce this level of technological advancement. At the same time, there is no “ducking” that change is here and more to come for southeastern Wisconsin. More to come includes three new hospitals.

The background story is southeastern Wisconsin in 2019 still talks about the factory that was never built, Chrysler’s Jeep factory. Everyone knows where the site is. It has been cleared and was the site President Trump saw from the air February 2017 on a flight with Rence Prebis, then his Chief of Staff. Rence is from Kenosha. It prompted President Trump to contact Terry Gau President and CEO of Foxconn to build an advanced manufacturing plant in Wisconsin. Governor Scott Walker and Gau connected and in July of 2017 started planning for the Wisconsin tax incentive package of \$4.5 B with the state paying as the jobs are created. The early risk was in the infrastructure.

Foxconn coming to this region of Wisconsin is the equivalent of creating infrastructure for a city, in this case, a city of advanced manufacturing. The real upfront dollar investment was by Racine County in tax increment financing of over \$700M for the substation, roads, 26 inch water pipe from Lake Michigan, water management system, leveling of the site for screen production and purchase of homes and farms to create and build the site. So far, the jobs are in construction, safety and civil engineering and have topped 300 on site (conversation with Dean Ray Kouhari)

The Foxconn project is 3000 acres in size and the facility will be 1.2 million square ft. To date 6 houses have been purchased at 140% of value and the farms at \$50,000 per acre. This is the end of property buy out directly related to the project. There are houses along Highway H that are occupied and will remain there unless the owners choose to sell.

This was my third trip to the iMET Center of Gateway Technical College. During each of those trips, I drove along Highway H going from Gateway iMet in Sturdivant to Kenosha. On this trip, I could feel and hear the tempo of change that comes off of I 94. It is a powerful energy of movement with a pulsing sound that permeates the area which is transforming from agriculture with some industrial along a two lane road to, now, four lanes and one will be six lanes.

Dean Kouhari and I approached the corner of Highway H and Highway 11 driving south, on the left is the substation funded by TIF. The capacity will be 365kv. This is power for Foxconn and other industries that are and will come into the Industrial Park. On the other side of the road is a major holding pond as part of water management on the site. When it was farm land the individual farmers managed the water through drainage ditches. Water is a major part of production

so the other water infrastructure is the pipeline. Power and water management are there for the benefit of the larger area up to Interstate 94. Sturdivant did not have a water system prior to these improvements. There are new frontage roads along Interstate 94 which were needed to be able to move between Kenosha and Racine threading in Mount Pleasant and Sturdivant.

What is new from a previous trip is a large logistics company, Dayton Freight that came in post agreement and Ulit on the other side which was prior to the agreement. Foxconn will be significantly larger than with 1.2 million square feet. What is on the Foxconn site is an industrial internet service business, Industrial Internet, led by Dr. Jay Lee. Dr. Lee’s team is already partnering with Gateway Technical College.

Global technology business moves fast and this global player is calculating what it can and will manufacture in Wisconsin. Foxconn is both looking at and taking action to build the level of engineers and technicians it will need. The numbers come later. This is an important ramp up time. Foxconn is growing the trained workforce through Wisconsin institutions, primarily Gateway Technical College and University of Wisconsin Milwaukee and University of Wisconsin Parkside. Foxconn has a plan for training as they bring on employees. The collaboration is among business, industry, students and the colleges. There is also a sister institution in Taiwan.

Foxconn has been bringing Gateway administrators and faculty to its plant in Japan which is the model for the Wisconsin plant. Foxconn will build the Wisconsin factory in Taiwan, dismantle it and ship to Wisconsin and reassemble on site. Presently there are 5 Gateway students interning in Taiwan and 15 University of Wisconsin Milwaukee engineering students. They will become the nucleus of the Wisconsin based workforce.

Programs at Gateway are changing on pace with the plans for Foxconn. Gateway has completed a 36,000 sq. ft. addition to their iMET Center leveraging the \$5M state investment to \$11M in corporate partnerships. The upgrades are Smart classrooms with Sharp boards, conference room space, and an expansion of industrial cabling room. New programs at Gateway Technical College are:

Advanced Manufacturing, Electrical Engineer Associates Degree, Mechanical Engineering Associates Degree, and Civil Engineering with Surveying certificates and Associates Degree, Water Technology Associates Degree and Highway Construction Associates Degree. There is a Foxconn “seal” that will go on courses that Foxconn approves and provides the equipment. At iMET will be data analytics, advanced manufacturing, cybersecurity and supply chain management. Industrial Artificial Intelligence is led and supported by Dr. J. Lee, Foxconn Industrial Internet Division.

Upon learning of the Foxconn location to their region, collaboration began among multiple levels of technical education, in part, because of an ATEA conference held in Reno on “Scaling Technical Education for Incentivized Industries” for the Gigafactory. It was hosted by Truckee Meadows Community College who were responding to their sudden need for large numbers of technically trained workforce. When Foxconn was announced, Gateway arranged to send twenty members of their ecosystem: economic development, K-12, and surrounding universities to the conference, November 8-10, 2017. On November 10 the State of Wisconsin signed the incentive agreement. The two groups followed up with a meeting in Wisconsin the summer of 2018. By then they were positioned to move ahead with pathways from middle school (elementary at K-tech) through Gateway and eventually to engineering at the universities. It is or soon will be possible to become a certified engineer in three years if you start taking college level courses in high school. Gateway is transforming from a two year technical college to a three year polytechnic. Education in this region is moving beyond scaling to “just-in-time” and “just-what is needed” to keep pace and to set the pace for innovation. Additionally, Foxconn promotes innovation in Wisconsin with innovation centers in Eau Claire and Green Bay.

In Wisconsin, and in Reno, the global incentivized industry has had a “tide lifting” effect. The message to employers is “Continue to invest here because there is no need to look for more innovative and forward thinking regions, we are it.” In Wisconsin S C Johnson is investing in its Kenosha plant. Reno has seen similar investment of industries thinking about Reno who are now in Reno.



## A Critical Analysis on College Affordability

By Sheriece L. Robinson, Ed.D, Curriculum Specialist, Mississippi Community College Board

### Abstract

The debate surrounding making college affordable and providing free tuition at community colleges has become a national conversation and a platform for political campaigns. Due to national pressing issues encompassing access and affordability, policymakers, board members, administrators, faculty, and staff are addressing these matters. Student debt and the rising cost of tuition raise concerns whether education is affordable. The rising cost of tuition and the diminishing amount of financial aid, places a huge burden on students and their families. As a result, some students are accruing debt and/or working unlimited hours in an effort to attend college while others are leaving college in debt with no academic credentials. Due to the cost of tuition, fees, course materials, and living expenses, students cannot manage this financial burden without some type of financial assistance. These concerns resulted in states re-evaluating their postsecondary education system. The concept of cost shifting by reducing the cost of education on one population and increasing the burden on another population is another critical issue. These controversial topics have critics debating rather education is a public and/or private good. Due to the national agenda, postsecondary education (to include career and technical education) is evolving to address these critical matters. Conversations are essential and must continue to be part of the agenda to improve affordability in postsecondary education. This article will provide an analysis on affordability while highlighting tuition assistance programs for community and junior colleges in Mississippi.

### Rising Cost of Tuition

The rising cost of tuition has outpaced inflation the past two decades (Sullivan, 2010) resulting in many students struggling to pay the cost to receive an education. The National Center for Public Policy and Higher Education (2008) claimed that after financial aid is awarded, low-income and working-class families have to sacrifice 24% of their income to cover the cost to attend a two-year college. Although, Wiener (2015) questioned the reason for tuition skyrocketing over the years; Bowen & McPherson (2016) pointed out that there has been a spike in tuition prices over the past decade due to a decline in state funding. Slaper & Foston (2013) mentioned other reasons to consider for the rising cost of tuition could be a result of increased operations and facility costs. Dickler (2019) affirmed that during the recession, a decline in public funds caused the increase in tuition. As a result of the rising cost, many are questioning the value of higher education (Cubberley, 2015).

The price for postsecondary education is not affordable for some students and families, but the benefits for providing tuition assistance programs specifically for career and technical education (CTE) could result in a positive return on the investment for students, institutions, and local communities. Career and technical education allows students to pursue a specialized program of study resulting in a shorter timeframe to degree completion. This pathway gets students into the workforce in a shorter period of time so they can start earning or increasing their wages. As the world becomes more competitive, institutions must continue to generate more college graduates and highly skilled workers. Therefore, it is imperative that states and institutions continue to provide the educational foundation that will propel students to become competitive and productive citizens in society.

### The Controversy of Free Tuition

The landscape surrounding making college affordable and providing tuition-free community college programs has evolved, resulting in controversy over the years. Sandeem argued that affordability is the biggest issue facing higher education (Bowen & McPherson, 2016). Despite the low tuition costs that two-year institutions provide, The National Center for Public Policy and Higher Education (2008) explained that due to the rising cost of tuition, higher education has become less affordable to students. The rising cost of tuition places a huge financial burden on some students as they struggle to pay the cost for their education.

Many conversations exist regarding tuition-free community college programs, placing it at the forefront in postsecondary education. Kelly (2016) explained making college tuition-free is a way of price control which could result in lowering the chances of students completing a degree. Bowen and McPherson (2016) asserted college is a shared cost that should be equitable and affordable but not free. Research supports the need for students to pay for a portion of their postsecondary education because states are rapidly becoming minority shareholders in higher education (Slaper

& Foston, 2013). On the contrary, Wiener (2015) endorsed that making college free is fair and politically possible. In an effort to increase access to education, stakeholders are addressing this matter. As a result, some states have designed and implemented tuition-free and tuition assistance community college programs.

### Tuition-Free and Tuition Assistance Community College Programs

Nearly 20 states offer tuition-free community college programs across the nation (Powell, 2019). The majority of the programs utilize pell grants and state aid to exhaust the cost of tuition and the remaining balance is covered by their state's tuition-free college program (Powell, 2019). To qualify for a statewide program, students must meet certain eligibility requirements and some programs require recipients to live and work in the state for a period of time upon completion of school (Powell, 2019).

In Mississippi, the House recently passed House Bill 405 to cover tuition for state residents to attend community college for vocational-technical studies provided they maintain at least a 2.0 grade point average (Pender, 2019). The Mississippi Career-Tech Scholars Program would cover tuition after all other aid (federal, state, and institutional) have been exhausted. Although, this bill did not pass, Mississippi offers multiple tuition assistance programs to assist students. For example, there are Community College Tuition Guarantee Programs throughout the state that provide free tuition for county residents at participating colleges based upon eligibility requirements and availability of funds (RiseUpMS, 2019). Another initiative provided by institutions include some colleges offering career-technical scholarships for full-time and half-time students. In addition, colleges offer the career-technical student organization Competition Scholarship to Mississippi residents that are full-time, "first-time to enter college" freshmen career/technical students who have a high-school diploma, completed a two-year secondary career/technical program, and have either placed first in a state competition or first, second, or third in a national competition sponsored by a Mississippi Department of Education recognized student organization (Mississippi Gulf Coast Community College, 2019).

To assist colleges, the Mississippi Community College Board also supports the public community and junior colleges by awarding CTE Challenge Grants to assist colleges with the initial cost of establishing a CTE program. These grants "fund the establishment of industry specific CTE programs that align to a sector or business and industry within a college district that do not qualify for traditional workforce training dollars" (Copiah-Lincoln Community College, 2019). These programs demonstrate a need to reduce the skills gap, increase per capita incomes, and increase the participants skill levels (Copiah-Lincoln Community College, 2019). Thus, to remain competitive nationally and globally, Mississippi continues to make strides to increase the workforce, impact the communities, enhance economic development, and sustain the economy.

### Recommendations for Practice

Student debt and the rising cost of tuition raise concerns regarding the affordability of education. In an effort to improve affordability, states should consider but not limit their practice to re-examining aid policies, increasing/establishing early college high school programs, increasing dual enrollment, and examining and redesigning programs of study. This problem is significant to postsecondary education (to include CTE) through ongoing conversations framed around affordability and accountability. The recommendations include enhancing partnerships, re-examining policy, and improving practice which provide a plethora of information for policymakers and institutions regarding affordability and accountability. This information can be beneficial to policymakers by developing measures to improve access and affordability for students.

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### Sheriece L. Robinson, Ed.D

Sheriece L. Robinson serves as a curriculum specialist at the Mississippi Community College Board in Jackson, Mississippi. She received a bachelor's and master's degree from Mississippi State University and a doctorate from the University of Mississippi.

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## Graphic Designer, Cinthia N. Young

Thank you to Cinthia Npheed Young, Dunwoody Graphic Arts Student for the layout, graphic arts, and most of all interest in ATEA's work and activities.



*Continue from page 2*

## ATEA Board Group Photo

**L-R backrow:** Dr. Shawn Mackey, Al Bunshaft, Dr. Alex Clifford, Dr. Bryan Albrecht President 2017-2019, Brooks Jacobsen, Dr. Rich Wagner Past President 2013-15, Dr. Betty Reynard, Adrian San Miguel, Jim New, Ryan Purdy, Cliff Wightman, Front row: Sandra Gehlen Krebsbach, Executive Director, Jimmy Hodges, James King Past President 3 term 2006-11, Dr. Ann Bolman, Marie Price, Dana Wolff, Dr. James Sherrard, Paul Perkins, Dr. Lin Zhou, Dr. Jon Connolly and Dr. Scott Mickelsen

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### SCHEDULE AT A GLANCE

#### WEDNESDAY, OCTOBER 2, 2019

3 p.m.	National ATEA Board Meeting, Anderson Legacy Room, Dunwoody College
5:30-8 p.m.	Networking Social & Early Registration, DoubleTree

#### THURSDAY, OCTOBER 3, 2019 @ DUNWOODY

7:30 a.m.	Board Bus to Dunwoody
8-9 a.m.	Registration, Breakfast & Welcome
8 a.m. - 1 p.m.	Vendor Showcase
9-9:50 a.m.	Breakout I
10-10:50 a.m.	Breakout II
11-11:50 a.m.	Breakout III
11:50 a.m.	Lunch & Business Award
1-4:30 p.m.	Industry Tours
4:30-6 p.m.	Tour of Dunwoody, Networking & Hors d'oeuvre Reception
6 p.m.	Board Bus to Hotel; Evening Free to Explore the Twin Cities

#### FRIDAY, OCTOBER 4, 2019 @ DOUBLETREE

7:30-8:15 a.m.	Region 5 Board Meeting
8:30-9:45 a.m.	Breakfast & Networking
10 a.m.	Keynote Speaker: Jason Feist
10:30 a.m.	Awards & Door Prizes
11:30 a.m.	Next Year's Host & End of Conference

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### KEYNOTE SPEAKER



**Jason Feist**  
Managing Technologist, CTO Office  
Seagate Technology

**Artificial Intelligence:  
Relevant Analytics,  
Key Skill Sets & Industry Trends**

Jason Feist has 17 years of experience working in the storage industry with hands-on engineering experience in device physics, servo control, and product development. He is currently responsible for developing Seagate's hyperscale cloud and edge storage research technology strategy with emphasis on canonical use cases for data analysis, data storage, data movement, and data security.

During his career, Feist has earned five patents and become an influential leader in the data-storage industry. He has managed a variety of teams and projects, both locally and internationally.

Feist's career has spanned engineering, market development, product planning, product development, research, and innovation. As a thought leader, he has implemented complex technical solutions in the storage industry related to hardware, software, and systems.

Areas of expertise include:

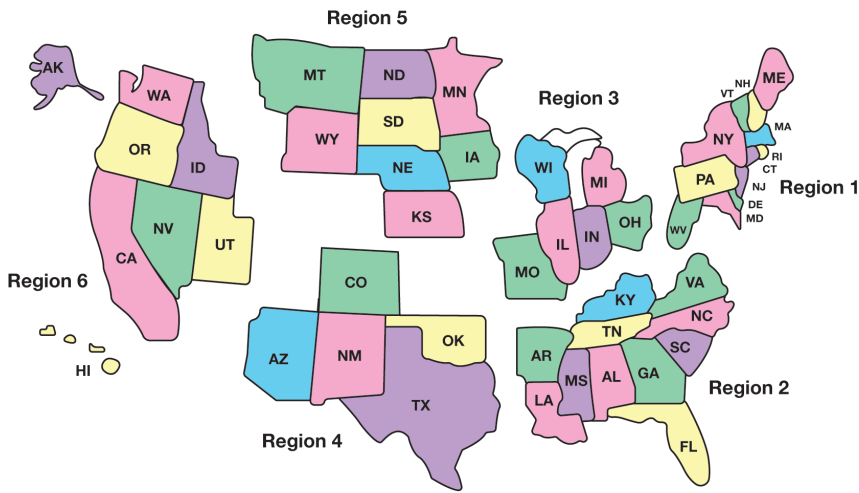
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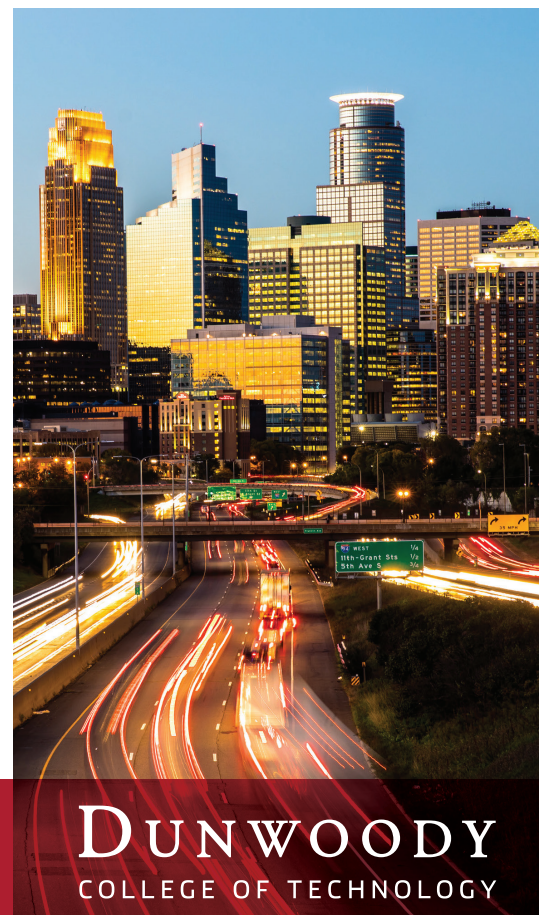
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